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### SHORT TERM RESPONSE ACTION PLAN (STRAP) PROPOSED LIQUEFACTION PROJECT

### 121 Terminal Road / 642 Allens Avenue Providence, Rhode Island

May 12, 2017 GZA File No.: 03.0033554.60 RIDEM File No.: SR-28-1152 FERC Docket No.: CP16-121-000



**PREPARED FOR:** Rhode Island Department of Environmental Management (RIDEM) Providence, Rhode Island

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May 12, 2017 File No. 03.00033554.60

#### 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: Short Term Response Action Plan (STRAP) Proposed Liquefaction Project 121 Terminal Road / 642 Allens Avenue Providence, Rhode Island RIDEM Case No. 98-004 / Site Remediation File No. SR-28-1152 FERC Docket No. CP16-121-000

Dear Mr. Martella:

On behalf of National Grid LNG, LLC (NGLNG), GZA GeoEnvironmental, Inc. (GZA) is pleased to present to the Rhode Island Department of Environmental Management (RIDEM) the attached *Short Term Response Action Plan* (STRAP).

This STRAP describes proposed soil and groundwater management activities associated with the construction of a proposed liquefaction plant to be constructed at the 121 Terminal Road / 642 Allens Avenue Site. In addition, this STRAP describes engineered caps to be re-installed in the area of the liquefaction plant.

Should you have any questions or comments regarding the information presented herein, please do not hesitate to contact the undersigned or Amy Willoughby at (781) 907-3644 or William Howard at (401) 784-7490.

Very truly yours, GZA GEOENVIRONMENTAL, INC.

Sophia Narkiewicz, P.E. Assistant Project Manager

Margaret S. Kilpatrick, P.E. Associate Principal

MSK/tlb

Attachment: STRAP Proposed Liquefaction Project cc: Amy Willoughby, National Grid Bill Howard, National Grid

James J. Clark, P.E. Senior Principal



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#### 1.0 INTRODUCTION

On behalf of National Grid LNG, LLC (NGLNG), GZA GeoEnvironmental, Inc. (GZA) is pleased to present to the Rhode Island Department of Environmental Management (RIDEM) this *Short Term Response Action Plan (STRAP)* for the former 121 Terminal Road / 642 Allens Avenue Manufactured Gas Plant (MGP) located in Providence, Rhode Island (herein referred to as the "Site").<sup>1</sup> A Locus Map is presented on Figure 1, *Cover Sheet with Site Locus*. This *STRAP* describes soil and groundwater management activities associated with the construction of a proposed liquefaction plant to be built within the existing Liquefied Natural Gas (LNG) facility at the 121 Terminal Road / 642 Allens Avenue Site. In addition, this *STRAP* describes engineered caps to be installed in the area of the proposed liquefaction plant.

The limits of work are presented on Figure 2, *Overall Aerial Photograph* as the "Project Work Site" and the limits of soil and groundwater disturbance are presented as the "STRAP Area". Only non-intrusive work (for example, above ground piping and conduit) is planned for the portion of the Project Work Site that is outside the STRAP Area. Figure 2 also depicts the location of existing buildings, roads, landscaped areas and approximate property boundaries based on tax map information at the Site.

This *STRAP* has been prepared to address applicable requirements of Section 6.00 – Emergency or Short Term Response, of the RIDEM <u>Rules and Regulations for the Investigation and Remediation of Hazardous Materials Releases</u> (Remediation Regulations).

Construction of the proposed liquefaction facility (referred to herein as the "Project") is being permitted under the Federal Energy Regulatory Commission (FERC). Information pertaining to the Project (including all permitting and design documents), can be found on the FERC website known as eLibrary (<u>https://www.ferc.gov/docs-filing/elibrary.asp</u>). All information pertaining to the Project is located in Docket Numbers PF15-28-000 and CP16-121-000.

This *STRAP* is subject to the Limitations included in Appendix A.

The following figures were prepared to accompany this *STRAP* and to illustrate the scope of the Project:

- Figure 1 Cover Sheet with Site Locus
- Figure 2 Overall Aerial Photograph
- Figure 3 Exploration Location Plan
- Figure 4 Completed Remedial Activities
- Figure 5 Erosion and Sedimentation Control Plan
- Figure 6 Proposed Final Conditions Plan
- Figure 7 Capping Cross Sections

<sup>&</sup>lt;sup>1</sup> NGLNG does not waive any of its arguments concerning preemption or the inapplicability of the Remediation Regulations to its Project.



#### 1.1 PROJECT OBJECTIVES

This *STRAP* has been prepared to establish soil and groundwater management procedures associated with ground disturbance activities during construction of the Project. In addition, this *STRAP* presents proposed engineered caps to be installed/reinstalled in the area of the Project. These activities will be performed within the STRAP Area shown on the attached Figures. Results of previous testing of soil and groundwater within the STRAP Area indicate impacts in excess of certain RIDEM Method 1 Criteria as defined in the Remediation Regulations. As described herein, activities proposed within the STRAP Area include limited clearing and grubbing, installing erosion and sedimentation controls, testing of and import of clean fill materials, grading and off-Site disposal/recycling of excess materials, management of excess soil and groundwater during earthwork activities for pile installations and utility installations (water, drainage, natural gas and both overhead and underground electric), installation of engineered caps and restoration activities (fencing and gate installation). All areas of soil and groundwater disturbance will be capped as described herein to mitigate direct exposure to underlying impacted soils consistent with RIDEM requirements. The installation of engineered caps includes stormwater management via a forebay and lined sand filter with discharge of stormwater to the Providence River. As described herein, no stormwater infiltration is proposed under this *STRAP*.

#### 2.0 SITE BACKGROUND

The following sections present a summary of relevant background information for the Site, including relevant historical operations, regulatory history and the status of the RIDEM-listed Site.

#### 2.1 SITE DESCRIPTION AND HISTORY

The Site is located at 642 Allens Avenue in the southeastern portion of the City of Providence, Rhode Island and is identified as Assessor's Plat (A.P.) 56, Lots 5, 273, 316 and 317, and A.P. 101, Lot 1. The entirety of the Site is currently owned by the Narragansett Electric Company (TNEC) d/b/a National Grid (National Grid). NGLNG holds a lease on A.P. 56 Lot 316 and Holcim US, Inc. (Holcim) holds a lease on A.P. 56 Lot 273. The Site consists of approximately 42 acres with frontage on Allens Avenue to the west and bounded to the east by the Providence River. It is adjoined to the northwest by Motiva/Texaco, and to the south by Terminal Road, the former Sun Oil/Providence Port facility, and New England Bituminous Terminal Corporation. Currently, active natural gas regulation and distribution, gas construction storage, a compressed natural gas (CNG) fueling station, LNG storage and distribution, and cement storage and distribution activities are conducted at the 642 Allens Avenue property. The table below presents a summary of current Site use:

A.P.	Lot	Current Owner	Address	Current Use(s)
101	1	TNEC	642 Allens Avenue 670 Allens Avenue	Natural Gas Construction Storage Natural Gas Regulation and Distribution CNG Fueling Station
56	5	TNEC	642 Allens Avenue	Natural Gas Construction Storage Natural Gas Regulation and Distribution
56	273	TNEC	139 Terminal Road	Cement Storage and Distribution
56	316	TNEC	121 Terminal Road	LNG Facility
56	317	TNEC	121 Terminal Road	Access Road

The Site is generally level with gentle slopes towards the Providence River. Based on several rounds of investigations performed at the Site, subsurface conditions generally consists of urban fill underlain by organic silt, glacial outwash and glacial till. The depth to bedrock is generally more than 150 feet below ground surface (bgs). Groundwater is generally



encountered within the fill unit, is classified as GB or not suitable for drinking water use without treatment, and flows towards the tidally influenced Providence River.

A United States Army rifle range operated at the Site in the late 1800s, prior to the use of the Site as a MGP. From 1910 until 1954, a MGP operated at the Site producing coal gas, carbureted water gas, and high-BTU oil gas. MGP by-products were routinely managed through recovery, storage, recycling, reprocessing, and resale. Such by-products included coke, coal tar, ammonia, toluene, and benzene. B.P. Clapp operated an ammonia works at the 642 Allens Avenue property beginning in 1910, and managed the recycling and sale of ammonia by products. The United States Government operated a toluene facility at the Site for a short period of time during 1918. By 1954, coal gasification operations at the Site had ceased. From 1952 until the 1960s, a liquefied petroleum gas distribution plant operated on the Site. Gulf Oil had a facility at the Site to store kerosene from 1957 to 1971. The southeastern portion of the Site has been utilized for cement storage and distribution since 1961. Propane storage and distribution occurred at the Site from the 1960s to the 1980s for peak shaving purposes. The LNG storage and distribution facility has operated on the eastern and southeastern portions of the Site since the early 1970s.

#### 2.2 RIDEM REGULATORY HISTORY

RIDEM issued a Letter of Responsibility (LOR) dated February 13<sup>th</sup>, 1998 to Providence Gas Company. The Site was listed as State Site #98-004 (RIDEM File No. SR-28-1152) following the issuance of the LOR.

The Site is listed with RIDEM due to certain soil and groundwater impacts at concentrations in excess of Method 1 standards as defined in the Remediation Regulations. Investigation activities have been conducted at the Site in several phases since 1994 and have been documented in several reports submitted to RIDEM. Constituents detected include, total petroleum hydrocarbons (TPH), cyanide, polynuclear aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and certain inorganic compounds (primarily arsenic and lead). Sporadic observations of light non-aqueous phase liquids (LNAPL) have been made in certain Site monitoring wells. Additional information relative to investigation activities within the STRAP Area are presented in Section 4.0

Several remedial activities have been completed at the Site between 1995 and 2017 under the jurisdiction of RIDEM, including remedial activities in the STRAP Area. Additional information relative to remedial activities conducted in the STRAP Area is presented in Section 3.4. On September 6, 2016, RIDEM informed National Grid that the Department received a formal request for development of a Public Involvement Plan (PIP). GZA, on behalf of National Grid, submitted the PIP to RIDEM on October 28, 2016; a revised version of the PIP was submitted on May 4, 2017. Consistent with Rule 7.07E of the Remediation Regulations, the PIP was prepared to address relevant and applicable requirements of Rules 6.06 and 7.07 A, B, C and D of the Remediation Regulations. Per Rule 7.07 (Public Involvement), the PIP addresses the following primary elements: 1) Public Notice, 2) Fact Sheets and Enhanced Communication, 3) Community Meetings, and 4) Information Repositories. Further information relative to compliance with the PIP is presented in Section 7.0.

#### 3.0 **PROJECT INFORMATION**

As described previously and as presented on Figure 2, *Overall Aerial Photograph*, the Project Work Site consists of approximately 9.21 acres on the eastern portion of the Site and is located on A.P. 56 Lots 5 and 316. Approximately half of the Project Work Site is utilized as an existing LNG storage and distribution facility and the other half of the Project Work Site is currently vacant. The STRAP Area (limits of soil and groundwater disturbance associated with the Project) is approximately 4.9 acres. Only non-intrusive work is planned for the portion of the Project Work Site that is outside the STRAP Area.



#### 3.1 PROJECT DESCRIPTION

The proposed liquefaction Project schematic is illustrated on Figure 6, *Proposed Final Conditions Plan*.

Activities under this *STRAP* will include limited clearing and grubbing, installing erosion and sedimentation controls, testing of and import of clean fill materials, grading and off-Site disposal/recycling of excess materials, management of excess soil and groundwater during earthwork activities for pile installations and utility installations (water, drainage, natural gas and both overhead and underground electric), installation of engineered caps and restoration activities (fencing and gate installation). All areas of soil and groundwater disturbance will be capped as described herein to mitigate direct exposure to underlying impacted soils consistent with RIDEM requirements. The Project will result in the creation of additional impervious area in the STRAP Area. The stormwater runoff generated from the new impervious areas will be managed 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.

Note the majority of the Project Work Site will be raised approximately 9 to 11 feet above existing grade. Raising the area will help to protect the liquefaction facility from damage during storm events. All imported fill will be tested in accordance with the sampling requirements discussed in Section 6.4, below.

It is currently estimated that approximately 3,000 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 below in Section 6.1). All excess soil materials will be disposed/recycled of off-Site at a NGLNG-approved facility.

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. Crushed stone will be utilized to stabilize surfaces for storage and parking.

#### 3.2 FORMER MGP STRUCTURES

The former propane house and other MGP foundation remnants (refer to Figure 3, *Exploration Location Plan*) are located within the Project Work Site. The proposed design assumes that the propane house will be demolished and remnant foundations will remain in place and will not be removed during construction.

#### 3.3 SURFACE WATER

The Site is situated on the Providence River and a portion of the Project Work Site is located within the 100-year floodplain of the river. The Providence River is tidally influenced and discharges to the Atlantic Ocean via Narragansett Bay. The Providence River has been designated by the CRMC as Type 6 waters, Industrial Waterfronts and Commercial Navigation Channels. It is classified as SB1{a} waters by RIDEM. The SB1 portion of the classification is assigned to saline waters designated for primary and secondary contact recreational activities and wildlife habitat; suitable for aquacultural uses, navigation, and industrial cooling; and good aesthetic value. The designation assumes that primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges, and the "{a}" indicates that it is a "partial use designation due to impacts from combined sewer overflows (CSOs)."

The Providence River is currently listed by the RIDEM Office of Water Resources on the *State of Rhode Island 2014 303(d) List of Impaired Waters,* dated May 2014. The 2014 303(d) list identifies water bodies within the state, which may not



currently meet Rhode Island Water Quality Standards and for which a Total Maximum Daily Load (TMDL) may be needed. TMDLs are water quality restoration plans that identify water quality goals, necessary pollutant reductions, sources, and implementation plans to achieve the required reductions. RIDEM identifies the segment of the Providence River adjacent to the Site as Water Body ID RI0007020E-01B and lists the impairments as low dissolved oxygen, nutrients, and pathogens.

#### 3.4 PREVIOUSLY CONDUCTED REMEDIAL ACTIONS IN THE STRAP AREA

Remedial actions were performed in the STRAP Area between July and August 2002. Remedial actions consisted of excavation to expose structures for cleaning, soil excavation for disposal, backfill, and restoration activities (including the installation of engineered caps). These activities were summarized in the November 2002 *Remedial Action Closure Report* prepared by Vanasse Hangen Brustlin, Inc. (VHB) on behalf of the New England Gas Company (NEGC), which has been previously submitted to RIDEM. For additional details, refer to the November 2002 *Remedial Action Closure* Report. The locations of these structures are presented on Figure 3, *Exploration Location Plan* and a summary of remedial activities completed in the STRAP Area is presented on Figure 4, *Completed Remedial Activities*. Note that this summary focuses on remedial activities that were previously completed in the STRAP Area.

#### 4.0 STRAP AREA INVESTIGATIONS

Soil and groundwater in the STRAP Area were impacted with petroleum hydrocarbons and/or other MGP-related constituents. Some of these impacts represent RIDEM Method 1 exceedances as defined in the Remediation Regulations. Based on visual and olfactory observations, field screening and analytical results, soil impacts appear to be primarily limited to the fill layer which is located above the contiguous organic silt layer. The majority of these exceedances are currently located below the existing remedial engineered caps installed in the STRAP Area discussed above in Section 3.4.<sup>2</sup>

The following provides a brief summary of the nature of the observed soil and groundwater impacts; additional details are provided further below:

- Soil Impacts:
  - Arsenic, lead, TPH, and several PAHs have been detected in soil at concentrations above the RIDEM Industrial/Commercial Exposure Criteria (I/C-DEC);
  - TPH, benzene, toluene, and ethylbenzene concentrations have been detected in soil above the RIDEM GB Leachability Criteria; and
  - TPH has been detected in soil at concentrations above the RIDEM Upper Concentration Limits (UCLs).
- Groundwater Impacts:
  - Dissolved phase benzene, ethylbenzene, naphthalene and toluene concentrations have been detected in groundwater above the RIDEM GB Groundwater Objectives;

<sup>2</sup> Approximately 60% of the STRAP Area was previously capped. Impacted soils (primarily urban fill-like impacts) do remain at the surface in areas that are currently uncapped. All areas that are included in the limits of proposed earthwork during construction of the liquefaction facility will be capped as part of this work.



- LNAPL is present on the water table; and
- While dissolved phase groundwater impacts were observed in wells screened in both the organic silt layer and the fill layer, LNAPLs have only been observed in wells screened in the fill layer.

One hundred and fifty-one (151) explorations were performed within the STRAP Area, to depths ranging from 6 to 174 feet below ground surface (bgs). These explorations are shown on Figure 3, *Exploration Location Plan*. Additional details are as follows:

- Forty-seven (47) explorations were performed for geotechnical purposes (PGC-1, PGC-6, PGC-10, B-20, B-21, B-22, B-24, B-25, B-27, B-40, B-41, B-50A, B-62, B-63, B-70A, B-71, B-72, B-73A, B-75, SWBL-1, SWBL-2, SWBL-3, SWBL-4, GZ-7A, GZ-7B, GZ-7C, GZ-7D, GZ-7E, GZ-8, GZ-203, GZ-204, GZ-204A, GZ-205, GZ-213, GZ-214, GZ-215, GZ-216, GZ-217, SB-01, SB-02, SB-04, SB-06, B-201, B-202, B-203, B-204 and B-205).
- Ten (10) test pits were completed for environmental characterization purposes (ETP-13, ETP-19, ETP-20, ETP-21, ETP-31, ETP-35, ETP-38, B07, B09 and TP-301).
- Twenty (20) test pits were performed for waste characterization purposes (TP-1, TP-2, TP-4, TP-6, TP-8, TP-9, TP-19, TP-25, TP-26, TP-27, TP-28, TP-29, TP-30, TP-31, TP-32, TP-33, TP-34, TP-35, TP-36 and TP-37).
- Five (5) recovery wells were installed (CHES RW-2, CHES RW-3, CHES RW-4, CHES RW-5 and RW-1).
- Sixty-two (62) explorations were performed for environmental characterization purposes (RCA-4, RCA-5, RCA-14, RCA-20, RCA-21, RCA-23, RCA-39, RCA-40, RCA-R6, RCA-R7, RCA-R10, RCA-R18, RCA-R19, A67, B02, B03, B04, B05, B06, B07, B08, B09, B10, B11, B12, B13, B14, B17, B18, B19, B20, B21, B22, B23, B24, B25, B27, B28, B35, B36, B42, B43, B44, B45, B46, B55, B56, B64, B65, B66, D32, D38, D57, D58, D59, D62, VHB-17, VHB-23, GZ-314S/D and GZ-315D).
- An intact former gasholder foundation is located in the western portion of the STRAP Area. The following seven (7) borings are located within this former gasholder foundation: RHB-1, RHB-2, RHB-3, RHB-4, RHB-5, RHB-6 and RCA-B11.

Available logs from both the geotechnical and environmental borings are attached as Appendix B. No analytical samples were collected from the geotechnical borings and information regarding visual and olfactory indicators of residuals is limited. The geotechnical borings ranged in depth from 31.5 to 174 feet bgs, while the environmental borings ranged in depth from 6 to 52 feet bgs. Sampling depths that are noted in the following discussion are from the original grades within the STRAP Area. As discussed above, portions of the STRAP Area have been remediated and capped and relative sampling depths are unknown.

The discussion of environmental impacts presented in the following sections pertains to material remaining within the STRAP Area following completion of the 2002 remedial activities. For additional details regarding the remedial activities, refer to the November 2002 *Remedial Action Closure Report*.

#### 4.1 <u>GEOLOGY</u>

A review of boring and test pit logs in the STRAP Area indicates the presence of approximately 15 to 20 feet of fill underlain by organic silts (variable thickness of at least 12 to up to 83 feet), outwash deposits (also known herein as bearing sand; at least 60 feet in thickness) and glacial till (unknown thickness to bedrock). In general, the fill consists of sands and gravels with cinders, cinder ash, coke and coal fragments.



#### 4.2 FIELD SCREENING AND OBSERVATIONS OF IMPACTED SOILS

A review of boring and test pit logs in the STRAP Area indicates the presence of approximately 15 to 20 feet of fill underlain by organic silts (variable thickness of at least 12 to up to 83 feet), outwash deposits (also known herein as bearing sand; at least 60 feet in thickness) and glacial till (unknown thickness to bedrock). In general, the fill consists of sands and gravels with cinders, cinder ash, coke and coal fragments.

Visual indicators of petroleum sheening, staining, saturation or odors were noted in the fill materials in the majority of the explorations performed across the area. These visual indications of petroleum impacts and odors were observed at various depths within the fill materials but were generally most significant coincident with the natural groundwater table (approximately 6 to 14 feet bgs). In addition to the petroleum impacts, visual indicators of MGP residuals (*i.e.*, blue/green/yellow/black staining) were noted in borings B56 (5-6 feet bgs), RHB-1 (1 to 3 feet bgs), RCA-39 (9-10 feet bgs) and TP-301 (5.5-13 feet bgs). "Asphaltic odors" were also noted in boring RCA-40 from 16 to 20 feet bgs. Total Volatile Organic Compounds (TVOCs) via field screening with a photoionization detector (PID) ranged from non-detect (ND) to approximately 1,700 ppmv. Generally, TVOC readings increased with depth until approximately 2 to 4 feet below the water table and decreased thereafter, consistent with visual observations. Very slight visual and olfactory indicators of impacts were noted in the top few feet of organic silt, decreasing with depth into the organic silt. Visual or olfactory indicators of impacts were not noted in the bearing sand or the glacial till layers.

Odors, petroleum or other indications of impact were generally not noted in explorations located south of the current driveway and the former Propane House (B14, B27, B28, B35, B36, B45, B46, B55, B56, B64, B65, B66, D32, D38, D57, D59, D62, ETP-21, ETP-31 and GZ-203) and in the area just northwest of the foam building (B-42, B-43, B-44, B-50A and SWBL-4).

Borings located within the former gasholder foundation (RHB-1, RHB-2, RHB-3, RHB-4, RHB-5, RHB-6 and RCA-B11) generally indicated odors increasing with depth to the base of the relieving platform (concrete pile cap section). "Dark yellow petroleum" was observed in RCA-B11 from 6 to 9.5 feet bgs. This was not detected in other borings within the former gasholder foundation.

Refusal and obstructions were noted in B-10 (6-6.5 feet bgs), GZ-7A (1.5 feet bgs), GZ-7B (7.5 feet bgs), GZ-7D (several obstructions less than 10 feet bgs), GZ-204 (8 feet bgs), GZ-215 (2 feet bgs), GZ-217 (6-9 feet bgs), SB-06 (10.5 feet bgs), RCA-21R1 (10.5 feet bgs), B47 (4-4.5 feet bgs) and VHB-17 (6 feet bgs). Borings located within the former gasholder foundation generally indicated 1 foot of concrete at the surface (pre-capping) and refusal at 9.5 feet bgs. It is likely that the timber pile relieving platform remains intact beneath the engineered cap placed within the former gasholder area. As shown on Figure 3, *Exploration Location Plan*, the STRAP Area was the location of many former MGP features and structures; the observed refusal and obstructions are likely associated with these former features.

One hundred and nine (109) of the one hundred and fifty-one (151) explorations were terminated in the fill unit, fortytwo (42) of the explorations were advanced into the underlying organic silt and twenty-nine (29) of these forty-two (42) were advanced into the underlying bearing sands or deeper. Based on cross sections prepared by Weidlinger Associates, Inc. on behalf of Kiewit Engineering and Design Company (included in Appendix C), the organic silt layer appears to be continuous in the area closest to the Providence River. Cross Section A-A (in Appendix C) presents the geological stratum perpendicular to the Providence River, which shows thicknesses of up to 67 feet close to the Providence River (SB-06) and thicknesses of 5 feet proximate to the proposed foam building (B-25) in the central portion of the Project Work Site (approximately 350 feet to the southeast of the Providence River). Cross Section B-B (in Appendix C) presents the geological stratum parallel (approximately 225 feet to the southeast of the Providence River), which shows relatively continuous thicknesses of organic silt parallel to the Providence River of approximately 10 to 30 feet in thickness. Refer to



Site Piling Plan (Drawing Number 102761-B-00-0000-STR-SF-5800 rev A) (in Appendix C) which presents the location of proposed piles for the Project.<sup>3</sup>

Former MGP impacts are generally located throughout the fill and the upper 1 to 2 feet of the organic silt. As the majority of the proposed piles will be installed through the organic silt, a "smeared" interface will likely occur at the pile/organic silt contact. Due to the physical properties of organic silt (low permeability and the affinity of organic compounds to adhere to organic soils), the significant thickness of the organic silt unit in this area (at least 12 to up to 83 feet) and lack of known downward seepage gradients<sup>4</sup>, downward migration of impacts more than a few feet during pile driving is not anticipated.

#### 4.3 SOIL ANALYTICAL RESULTS

As indicated above, ninety-nine (99) environmental explorations were performed in the STRAP Area. From the majority of the borings, both a surface (within 2 feet of the ground surface) and a subsurface soil sample were collected and analyzed. A subsurface soil sample (collected from 2 feet below the water table) was collected from most of the test pits. As noted above, certain portions of the STRAP Area have been capped and therefore actual sampling depths from current grades are unknown. Analytical results presented herein and in the attached Tables 1 through 4 are divided into three categories: soil beneath an engineered cap (Table 1), soil within the former gasholder foundation beneath an engineered cap (Tables 3 and 4).<sup>5</sup>

As indicated previously, soils removed as part of previous remedial activities have not been included in these data summaries. For more information, please refer to the November 2002 *Remedial Action Closure Report*.

#### 4.3.1 Soils Beneath the Engineered Cap

Sixty (60) soil samples from below engineered caps were collected and analyzed for total petroleum hydrocarbons (TPH), semi-volatile organic compounds (SVOCs), VOCs, polychlorinated biphenyls (PCBs), pesticides and inorganic compounds. As indicated in Table 1, the compounds detected in excess of RIDEM Method 1 Criteria were Benzo [a] Pyrene (0.9 to 43.3 mg/kg), Dibenzo [a, h] Anthracene (0.36 to 7.8 mg/kg), Benzo [a] Anthracene (0.37 to 48 mg/kg), Benzo [b] Fluoranthene (0.37 to 57.6 mg/kg), Indeno [1,2,3-cd] Pyrene (0.72 to 27 mg/kg), TPH (281 to 41,000 mg/kg), TPH (diesel range) (777 to 21,000 mg/kg), arsenic (1.5 to 15 mg/kg), lead (3.7 to 895 mg/kg), ethylbenzene (0.01 to 97.3 mg/kg), styrene (0.041 to 77 mg/kg), and toluene (0.134 to 81 mg/kg). TPH was detected at elevated concentrations (more than 10,000 mg/kg) in RCA-20 (10-12 feet bgs), RCA-40 (8 to 10 feet bgs), ETP-19 (7-8 feet bgs), ETP-20 (4.5-6 feet bgs), TP-2, TP-3, TP-4, TP-6, TP-8, TP-26, TP-27, and B04 (2-4 feet bgs). Note, logs are not available for test pits TP-2, TP-3, TP-4, TP-6, TP-8, TP-26, or TP-27, therefore these sampling depths are unknown. The boring log for RCA-20 noted "oily" from 6-14 and 16-17 feet bgs with "petroleum odors" detected from 6-10 feet bgs. TPH was detected at a concentration 1,610 mg/kg from 16-17 feet bgs in RCA-20. The boring log for RCA-40 noted "dark yellow petroleum" from 8-10 feet bgs with

<sup>&</sup>lt;sup>3</sup> Note that this figure was provided by NGLNG and was prepared by their Contractor.

<sup>&</sup>lt;sup>4</sup> Two monitoring well couplets were located at the STRAP Area: MW-314S screened in the fill and MW-314D screened in the organic silt below and RCA-5 screened in the fill and MW-315D screened in the organic silt below. As shown in Table 5, *Summary of Groundwater and NAPL Measurements,* consistent groundwater elevation monitoring was performed at these couplets between 2014 and 2016, with groundwater elevation differences of less than 0.1 feet in each couplet, indicating that there are no significant seepage gradients.

<sup>&</sup>lt;sup>5</sup> As described in the Remediation Regulations, the Direct Exposure and Leachability Criteria apply throughout the vadose zone. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons described below and summarized in the tables compare all soil data (vadose and saturated zone) to the I/C-DEC and GB Leachability criteria. In addition to the I/C-DEC and GB-Leachability, soil concentrations were compared to the numeric RIDEM UCL standards under Rule 8.07 of the Remediation Regulations.



"petroleum odor" from 10-12 feet bgs and "asphaltic odor" from 16-20 feet bgs. The test pit log for ETP-19 noted "oily" from 7-8 feet bgs with TVOC concentrations of up to 362 ppm. The test pit log for ETP-20 noted "slight petroleum odor" from 2-6 feet bgs with TVOC concentrations of up to 203 ppm. The boring log for B04 noted "...black petroleum staining ... petroleum odor" from 5-6 feet bgs. Elevated VOC impacts (ethylbenzene, toluene and styrene) were observed in TP-27 and TP-28. Table 1, *Soil Analytical Data (Existing Capped Portion of STRAP Area)*, presents the range of concentrations for each detected compound and the number of exceedances of RIDEM criteria along with analytical soil data collected from below areas capped.

#### 4.3.2 Soils within the Former Gasholder Foundation Footprint

Twenty-seven (27) soil samples from within the former gasholder foundation were collected and analyzed for TPH, SVOCs, and VOCs. As shown on Figure 3, *Exploration Location Plan*, this former gasholder foundation is located beneath an engineered cap. The compounds detected in excess of RIDEM Method 1 Criteria were Benzo [a] Pyrene (0.23 to 96 mg/kg), TPH (110 to 27,400 mg/kg), benzene (0.001 to 31 mg/kg) and ethylbenzene (0.001 to 83 mg/kg). TPH was elevated (more than 10,000 mg/kg) in three samples RCA-B11 (3.5-5.5 and 7.5- 9.5 feet bgs) and RHB-4 (10-12 feet bgs) at concentrations of 27,400 mg/kg, 21,500 mg/kg, and 12,000 mg/kg, respectively. The boring log for RCA-B11 noted "dark yellow petroleum" from 6-9.5 feet bgs and "petroleum odor" from 10-12 feet bgs. The boring log for RHB-4 noted "slight odor" from 2-6, 8-9 and 10-10.5 feet bgs and "stronger odor" from 9-10 feet bgs. Table 2, *Soil Analytical Data, Collected from within the Former Gasholder Foundation*, presents the range of concentrations for each detected compound and the number of RIDEM criteria exceedances for soil and the analytical soil data collected within the former gasholder foundation.

#### 4.3.3 Uncapped Soils (Surface and Subsurface Samples)

Twenty-six (26) surface soil samples (collected from 0 to 2 feet bgs) from uncapped areas were collected and analyzed for TPH, SVOCs, VOCs, PCBs, pesticides and inorganic compounds. The compounds that were detected in excess of RIDEM Method 1 Criteria Benzo [a] Pyrene (0.391 to 20 mg/kg), Dibenzo [a, h] Anthracene (0.54 to 4.4 mg/kg), Benzo [a] Anthracene (0.437 to 32 mg/kg), Benzo [b] Fluoranthene (0.42 to 26 mg/kg), Indeno [1,2,3-cd] Pyrene (0.72 to 10 mg/kg) and arsenic (1.5 to 14.5 mg/kg). As indicated in Table 3, *Surface Soil Analytical Data (Uncapped Portion of STRAP Area)*, exceedances of RIDEM's I/C-DEC were detected in twelve (12) of the 26 samples analyzed, and occur in a widespread area within the uncapped portion of the STRAP Area. These exceedances are typical of urban fill impacts.

Thirty-five (35) subsurface soil samples from uncapped areas were collected and analyzed for TPH, SVOCs, VOCs, PCBs, pesticides and inorganic compounds. The compounds that were detected in excess of RIDEM Method 1 Criteria were Benzo [a] Pyrene (0.08 to 36 mg/kg), Dibenzo [a, h] Anthracene (1.1 to 5.6 mg/kg), Benzo [a] Anthracene (0.12 to 45 mg/kg), Benzo [b] Fluoranthene (0.09 to 44 mg/kg), Indeno [1,2,3-cd] Pyrene (0.71 to 20 mg/kg), TPH (526 to 15,390 mg/kg), benzene (0.17 to 18 mg/kg) and ethylbenzene (0.08 to 160 mg/kg). Elevated levels of VOCs were detected in B13 from 2-4 feet bgs. The boring log for this interval indicated "light petroleum odors" and TVOCs concentrations ranging from 2.8 to 156 ppm. Elevated TPH concentrations were detected in B03 from 2-4 feet bgs. The boring log for this interval indicated "light petroleum odors" and TVOCs concentrations ranging from 2.8 to 156 ppm. Elevated TPH concentrations of up to 164 ppm (at the water table, approximately 5 feet bgs). Elevated VOCs and TPH were detected in VHB-17 at 6 feet bgs. The boring log indicated "strong chemical odors". Table 4, *Subsurface Soil Analytical Data (Uncapped Portion of STRAP Area)*, presents the range of concentrations for each detected compound and the number of exceedances of RIDEM criteria along with analytical subsurface soil data collected in the STRAP Area. These impacts are generally more isolated.



#### 4.4 GROUNDWATER AND NAPL MEASUREMENTS

Currently, there is one (1) active monitoring well present in the STRAP Area (RCA-39). As indicated on Figure 3, this well is located proximate to the truck scale in the southeastern portion of the STRAP Area. There were an additional eleven (11) monitoring wells (RCA-4, RCA-5, RCA-14, RCA-20, RCA-21, RCA-40, GZ-204A, GZ-216, GZ-314S, GZ-314D and GZ-315D) and five (5) recovery wells (CHES RW-2, CHES RW-3, CHES RW-4, CHES RW-5 and RW-1) in the area. Nine (9) monitoring wells (RCA-5, RCA-14, RCA-20, RCA-40, GZ-204A, GZ-216, GZ-314S, GZ-314D and GZ-315D) and the five (5) recovery wells (CHES RW-2, CHES RW-3, CHES RW-4, CHES RW-5 and RW-1) were decommissioned during a Site-wide effort in the summer of 2016 in anticipation of upcoming facility projects and select wells will be re-installed after completion of the projects. RCA-4 and RCA-23 were noted as "destroyed" at some point during the 2002 remediation work. Two (2) grab groundwater samples were also collected from two borings (B05 and B22) during 2000. The only monitoring wells screened in the organic silt were GZ-314D and GZ-315D and the remainder of the wells located in the area were screened in the fill. Based on elevation data from these monitoring wells, groundwater is expected to be encountered approximately 6 to 14 feet bgs in the area. A summary of historical groundwater elevation data for monitoring wells within the STRAP Area is presented in Table 5, Summary of Groundwater and NAPL Measurements (Monitoring Wells Located with STRAP Area). Groundwater is tidally influenced (0.5 to 3.5 fluctuations have been observed). LNAPL has been historically 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. Dense non-aqueous phase liquid (DNAPL) has not been detected in the area.

LNAPL was detected in RCA-21 at thicknesses ranging from 0.75 to 3.58 feet between 2011 and 2014. RCA-21 was not gauged between 2003 and 2011. RCA-21 was removed during an investigatory test pit effort and was then replaced with RW-1 to aid in the recovery of LNAPL in 2014. Following the 2014 installation of RW-1, LNAPL was detected at thicknesses ranging from trace and 0.02 feet. As indicated above, RW-1 was decommissioned in 2016. GZA gauged and recovered LNAPL from RCA-21 on a weekly basis for one month during 2012 and then monthly during 2012, 2013 and the first half of 2014. Initially, the thickness of LNAPL in RCA-21 was 2.79 feet. During monthly gauging and recovery, the thickness of LNAPL decreased to approximately 1 foot. The LNAPL thickness that was observed in RCA-21 is likely an isolated source based on surrounding well observations. LNAPL has been detected in other monitoring wells that are approximately within 100 feet of RCA-21 (CHES RW-4, CHES RW-5, and RCA-40), but in much lesser thicknesses (ranging from trace to 0.22 feet). NAPL has not been observed in MW-314S, MW-314D or MW-315D. Table 6, *Historic NAPL Thicknesses (Monitoring Wells Located within STRAP Area)*, presents a summary of historical NAPL thicknesses observed in monitoring wells within the area and Table 7, *Summary of LNAPL Gauging and Recovery – RCA-21 and RW-1*, presents a summary of LNAPL gauging and recovery activities for RCA-21 and RW-1.

#### 4.5 GROUNDWATER ANALYTICAL RESULTS

Thirty-four (34) groundwater samples were collected in the STRAP Area between 1994 and 2016 and analyzed for VOCs, SVOCs, TPH and total cyanide. Naphthalene, benzene, ethylbenzene and/or toluene have been detected in excess of the RIDEM GB Groundwater Objectives in samples collected from RCA-4, RCA-21, B05, MW-314S, MW-314D and MW-315D. Benzene has been detected in excess of the RIDEM GB Upper Concentration Limit (UCL) in samples collected from RCA-4. Groundwater samples collected from RCA-5, RCA-14, RCA-20, RCA-39, RCA-40 and B22 had relatively low levels of detected VOCs and SVOCs with no elevated concentrations or exceedances of RIDEM criteria detected. Table 8, *Groundwater Data (Monitoring Wells Located within STRAP Area)*, presents the range of concentrations for each detected compound, the number of exceedances and the analytical data for groundwater samples collected within the area.



#### 5.0 STRAP SPECIFIC - AIR EMISSION EVALUATION

Implementation of this Project will involve earthwork activities that require excavation and management including temporary stockpiling and off-Site disposal/recycling of certain impacted material. No earthwork is proposed outside the STRAP Area (as presented on Figure 6, *Proposed Final Conditions Plan*). GZA performed an evaluation of the potential volatile emissions associated with the proposed earthwork, including a determination related to the applicability of the RIDEM Air Pollution Control Permits (APC) (Regulation No. 9).

The applicability of Regulation No. 9 was evaluated based on potential volatile emissions calculations/modeling performed consistent with published United States Environmental Protection Agency (EPA) guidance. As described below, this evaluation is a two-step process; first a conservative estimate of emissions potential is calculated and used to evaluate the applicability of Regulation No. 9 (see Section 5.1). If the results indicate an emission potential above the minimum quantities presented in Regulation No. 9, the results are further evaluated using predictive modeling using EPA guidance (Section 5.2). This emissions modeling was developed for the specific earthwork activities to be performed during this effort. As described further herein and in Appendix D, the results of this modeling indicate that earthwork activities completed under this *STRAP* do not have the potential to increase emissions by greater than the minimum quantities specified in Appendix A of RIDEM APC Regulation No. 9, and, therefore, a minor source permit is not required for this activity.

#### 5.1 EMISSIONS POTENTIALS

The emissions potential of a particular analyte was calculated by assuming all of the mass of the analyte volatilizes during the associated earthwork activities. This would represent the maximum amount of mass of the specific analyte in the volume of soil being excavated and managed on-Site. It is based on analyte concentration, soil volume disturbed, and typical bulk density. The predicted modeled emissions, described in the subsequent section, are generally lower than these calculated emissions potentials.

Planned excavation activities will consist of various pile installation activities (one hundred and ninety four (194) micropiles drilled to approximately 85 feet bgs, pre-drilling of eighty (80) slope stability piles to approximately 10 feet bgs and installation of a slope stability footing to 2 feet bgs) and various utility installations (stormwater management piping and systems, tie-in to existing natural gas line, tie-in to existing potable water supplies, and installation of various LNG lines and supports). It is anticipated that the pile installation will involvement management of approximately 410 CY of soil and the utility installation will involve management of approximately 2,578 CY of soil for a total of 2,988 CY. Locations and estimates describing these excavation activities were prepared by NGLNG (or their Contractor) and are included in the following figures included in Appendix D:

- Site Piling Plan (Drawing Number 102761-B-00-0000-STR-SF-5800 rev A)
- Plot Plan (Drawing Number 102761-B-00-0000-MEC-PP-1000 rev E)

To evaluate the excavation emissions potentials and modeled excavation emissions, GZA used data collected in the vicinity and at the depths of expected excavation associated with the above activities. The data used in the evaluation consisted of two-hundred and twenty-six (226) soil samples collected during site investigation activities conducted between 1994 and 2014 or collected as confirmatory samples during remedial activities in 2002. The data is presented in Table D-1 (in Appendix D) of the areas of pile installation and in Table D-2 (in Appendix D) of the areas of utility installation. The calculations only utilized soil samples collected at approximate depths from within areas with planned cuts (excavations).



Exploration locations in the STRAP Area are presented on Figure 3, *Exploration Location Plan* and confirmatory sampling locations are presented on figures included in the November 2002 *Remedial Action Closure Report*.

Using both the average and maximum concentrations for the potential calculation, GZA conservatively calculated the total emissions potential (in pounds (lbs)) for all the detected VOCs with minimum quantities included in Appendix A of RIDEM's APC Regulation No. 9. This calculation assumes all the mass of the VOCs in the associated soil is emitted, providing conservative upper bounds to potential excavation emissions. As indicated in Tables D-3 (pile installation areas), D-4 (utility installation areas) and D-5 (STRAP Emissions Potential Total) (in Appendix D), benzene and naphthalene have an excavation emissions potential exceeding the RIDEM annual minimum quantities (10 lbs/year and 3 lbs/year, respectively) based on both the average and maximum measured concentrations. Based on these calculations, benzene and naphthalene were further evaluated using emissions modeling consistent with published EPA guidance to estimate the predicted emissions that would be generated during the planned earthwork.

#### 5.2 EMISSIONS MODELING

Based on the results of the emissions potentials calculations described above for the earthwork activities, predicted emissions related to benzene and naphthalene were calculated based on modeling. The predicted emissions modeling used the average concentration of benzene and naphthalene that was detected. Appendix D describes these emission modeling calculations, which were based on the following EPA guidance document:

• Eklund, et al. 1997. <u>Air Emissions from the Treatment of Soils Contaminated with Petroleum Fuels and Other</u> <u>Substances</u>. Prepared for U.S. Environmental Protection Agency Office of Air and Radiation and Office of Research and Development Washington, D.C. EPA-600/R-97-116. October.

The modeling results for the excavation activity are presented in Tables D-6 (pile installation areas) and D-7 (utility installation areas) (in Appendix D). GZA assumed that one re-handling event would occur for each of the earthwork activities when the excavated soil was loaded from stockpiles to trucks for subgrade backfilling on-Site or for off-Site disposal/recycling.

Table D-8 (STRAP Estimated Emissions Total) (in Appendix D) and the following presents a summary of the modeled predicted total excavation emissions for benzene and naphthalene (expressed in pounds) compared to RIDEM's Minimum Quantities (expressed in pounds/year) published in Regulation No. 9, Appendix A. As indicated below, the total modeled emissions for both benzene and naphthalene are both well below the RIDEM Annual Minimum Quantities.

Analyte	Total Modeled Excavation Emissions (lbs)	RIDEM Annual Minimum Quantity (lbs)
Benzene	0.61	10
Naphthalene	0.03	3

#### 6.0 PROPOSED STRAP ACTIVITIES

As described previously, activities to be performed under this *STRAP* include limited clearing and grubbing, installing erosion and sedimentation controls, testing of and import of clean fill materials, grading and off-Site disposal/recycling of excess materials, management of excess soil and groundwater generated during earthwork activities for pile and utility installations (water, drainage, natural gas and electric), installation of engineered caps and restoration activities (fencing and gate installation). All areas of soil and groundwater disturbance will be capped as described herein to mitigate direct exposure to underlying impacted soils consistent with RIDEM requirements.



The stormwater runoff generated from the new impervious areas will be treated via a forebay and a 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*.

The following figures were prepared to illustrate the scope of the proposed STRAP:

- Figure 5 Erosion and Sedimentation Control Plan;
- Figure 6 Proposed Final Conditions Plan; and
- Figure 7 Capping Cross Sections.

An environmental professional will be on-Site full time during earthwork activities to provide guidance regarding the management of potentially impacted soil and groundwater and ensure that all work is performed consistent with this *STRAP*.

All areas of expected soil and groundwater disturbance within the STRAP Area associated with the Project will be completed with an engineered cap to mitigate potential direct exposure to underlying impacted soils. Figure 6, *Proposed Final Conditions Plan* and Figure 7, *Capping Cross Sections* present the locations and cross sections the following engineered control caps:

- Asphalt Engineered Cap (approximately 41,088 SF 0.94 acres): the engineered cap will consist of at least 4-inches of asphalt underlain by at least 6-inches of processed gravel, sand or other clean imported granular fill.
- Riprap Engineered Cap (approximately 5,351 SF 0.12 acres): the engineered cap will consist of a non-woven geotextile overlain by at least 12-inches of imported Riprap.
- Concrete Engineered Cap (approximately 27,275 SF 0.63 acres): the engineered cap will consist of a competent concrete surface consisting of at least 4-inches of concrete underlain by at least 6-inches of clean imported granular fill.
- Crushed Stone Engineered Cap (approximately 73,333 SF 1.68 acres): the engineered cap will consist of at least 18inches of imported granular fill and finished with 6-inches of imported 2-inch crushed stone.
- Sand Filter (approximately 3,270 SF 0.08 acres): the sand filter will consist of a linear low density polyethylene (LLDPE) liner system, overlain by at least 12-inches of %" peastone, overlain by a geotextile and finished with at least 18-inches of clean imported C-33 sand. As noted above, no infiltration is proposed under this STRAP.

#### 6.1 EXCAVATED SOIL REUSE

The contractor may reuse Site soils generated during earthwork in the STRAP area, but will only do so under an engineered cap (described above). If observations of NAPL, buried containers, or unusual odors are made during the course of excavation, work in the subject areas will stop immediately. These materials will be segregated by the contractor and characterized (visual observations and TVOC headspace screening via a PID or equivalent) by the environmental professional. The contractor, with guidance from the environmental professional, will segregate 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 contamination will be segregated for off-Site disposal/recycling at a licensed facility approved by NGLNG. Should soils with evidence of NAPL be discovered during excavation, these materials and/or soils shall be



segregated for off-Site transport and disposal/recycling at a licensed facility approved by NGLNG. All soil disposal/recycling will be in accordance with Section 6.3. Soils excavated from the Site shall not be re-used at locations off-Site.

#### 6.2 STORMWATER MANAGEMENT

As described previously, the engineered caps have been designed with an integral stormwater management/treatment system. As stipulated in the *Stormwater Regulations*, the amount of stormwater that must be treated is defined as the Water Quality Volume (WQv). The WQv is equivalent to 1 inch of runoff generated from the first 1.2 inches of rainfall over impervious areas (initial abstraction is assumed to account for the first 0.2 inches of rainfall). By using prescribed methods detailed in the *Stormwater Regulations*, the goal is to reduce 85% of total suspended solids, 60% of pathogens, and 30% of total nitrogen for discharges to saltwater or tidal systems.

Stormwater runoff generated from the proposed Site improvements will be collected by catchbasins installed at final grades. The WQv will be conveyed via piping and manholes to a system of several precast forebay structures and a lined sand filter located in the northern portion of the STRAP Area, as depicted on Figure 6, *Proposed Final Conditions Plan*. The lined sand filter will discharge through a new designed outfall into the Providence River. No infiltration is proposed under this *STRAP*.

#### 6.3 SOIL DISPOSAL/RECYCLING

It is currently estimated that approximately 3,000 CY of existing Site soils will be removed to facilitate installation of piles and utilities as part of the Project. The contractor may reuse soil materials in the STRAP Area, but only do so under an engineered cap (described above in Section 6.1). All excess soil will be transported and disposed/recycled at an off-Site licensed receiving facility.

Soil disposal documentation for all excess soil will be maintained at the Site by the environmental professional. All excess soils will be shipped to a NGLNG approved disposal/recycling facility. Prior to off-Site disposal/recycling, representative samples will be collected from the stockpiled soil and analyzed based on the frequency and the parameters required by the selected disposal/recycling facility. The NGLNG Environmental contact will arrange for the disposal/recycling of all excess material and will sign as the generator of these materials on all waste profiles and shipping manifests.

Copies of all manifest(s) and/or Bills of Lading (BOLs) documenting the off-Site disposal/recycling of these materials will be included in the *Short Term Response Action Closure Report*.

#### 6.4 IMPORT SAMPLING

Samples representative of any imported soil material (collected as composite samples from the source) will be tested for the analyte groups described below. Granular fill, riprap, bedding sand, C-33 sand and various sizes of crushed stone aggregate material is expected to be imported to the Site under this *STRAP*.

Analyte	EPA Test Method
Total Petroleum Hydrocarbons	8100M
Volatile Organic Compounds	8260
Semi-Volatile Organic Compounds	8270
Priority Pollutant Metals (PP-13)	6010 & 7471A

The frequency of sampling and testing will be:



- Full suite of analysis for up to 2,000 cubic yards, with an additional full suite for each subsequent 2,000 cubic yards of material; and
- Arsenic each 500 cubic yards of material.

All imported fill (including bedding sand and C-33 sand), with the exception of quarry run aggregate materials (i.e., riprap, washed crushed stone, etc.) will be sampled prior to delivery and placement, regardless of the source of the material. Prior to the import of any imported fill (included quarry run aggregate materials) to the Site, the Contractor performing the work will be required to provide a certification from the source that the fill is from a clean virgin source.

Laboratory samples will be analyzed and compared to RIDEM Method 1 Residential Direct Exposure Criteria (R-DEC). Soils not meeting these criteria will be rejected for use at the Site. The laboratory testing results of the approved soil source(s) will be provided to RIDEM as part of the *Short Term Response Action Closure Report*.

#### 6.5 DEWATERING AND GROUNDWATER MANAGEMENT

We do not anticipate that significant excavation dewatering will be required during performance of this *STRAP*. Any necessary dewatering will likely be conducted during the installation of utilities. Any resulting groundwater will be containerized into fractionation tanks and disposed/recycled off-Site at a licensed disposal/recycling facility approved by NGLNG. Copies of all manifest(s) and/or BOLs documenting the off-Site transport and disposal/recycling will be included in the *Short Term Response Action Closure Report*.

#### 6.6 REQUIRED AIR MONITORING AND CONTROLS

The air monitoring program for this *STRAP* was developed based on the results of the Estimated STRAP Emissions presented in Section 5.0, above. The air monitoring program for this *STRAP* is consistent with previous air monitoring programs used for similar size/scope projects performed at the Site.

#### 6.6.1 <u>Perimeter Air Monitoring</u>

During all Project earthwork activities, real time perimeter air monitoring will be performed involving the use of the following hand held 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 will be measured at the perimeter of the Project Work Site approximately every two hours during each day or more frequently depending on field conditions (at least four times a day).
- 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 (μg/m<sup>3</sup>). Similar to the PID, the readings from this hand-held instrument will be measured at the perimeter of the Project Work Site approximately every two hours during each day or more frequently depending on field conditions (at least four times a day).

Hand held portable field equipment was determined to be appropriate for the *STRAP*. In addition, the use of hand held field equipment allows field personnel to alter monitoring locations based on the activity being performed and changing wind directions.



Perimeter TVOCs and respirable dust (PM<sub>10</sub>) monitoring will be performed during all earthwork activities. This monitoring will include both any observations of odors or visual dust as well as measurements of TVOCs and respirable dust using field instruments. The following table presents the real-time monitoring threshold levels for the perimeter work area locations.

Real Time Monitoring – Action Levels	
Compound	Perimeter
Total Volatile Organic Compounds (TVOC)	1 ppm
Respirable Particulate Dust (PM <sub>10</sub> )	150 μg/m³

#### 6.6.2 <u>Dust Controls</u>

Dust control measures will be employed to mitigate the potential for release of airborne particulate matter beyond the limits of the Site in accordance with RIDEM *Air Pollution Control Regulation No. 5, Fugitive Dust*. Methods of dust control will consist of sprinkling the ground surface with water and/or calcium chloride, covering of temporary stockpiles, mulching, or similar methods. If excessive dust generation occurs and cannot be reasonably controlled, the job shall be shut down by the environmental professional or NGLNG until appropriate engineering control measures are implemented by the contractor.

#### 6.6.3 Odor Controls

Odor and organic vapor control measures will be employed to mitigate the potential for release of odors and organic vapors during the *STRAP* work. Methods of control will consist of backfilling excavations, covering stockpiles or excavations with 6-mil polyethylene sheeting, application of specially engineered foams or other methods. If excessive odors or TVOCs readings occur and cannot be reasonably controlled, the job shall be shut down by the environmental professional or NGLNG until appropriate engineering control measures are implemented by the contractor.

#### 6.7 DECONTAMINATION PROTOCOL

Since heavy equipment/hand tools may remain onsite for several days, decontamination need not occur on a daily basis. At the conclusion of the construction activities, heavy equipment and tools will be decontaminated. At a minimum, soil will be brushed from the equipment and containerized prior to washing the equipment surfaces if needed. The containerized material will be sampled for disposal determination (as required) and then properly disposed/recycled at on off-Site licensed receiving facility. All liquid (water) will be containerized and sampled for disposal determination (as required), and then properly disposed at on off-Site facility.

Tracking pads will be installed in the vicinity of entrances to the Project Work Site to mitigate the transport of on-site soils beyond the limits of work. The tracking pads will consist of crushed stone. 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.

#### 6.8 SOIL STOCKPILE MANAGEMENT REQUIREMENTS

Impacted excavated materials will be temporarily staged on two layers of minimum 6-mil polyethylene sheeting in working stockpiles or in water-tight containers 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 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.

Long-term soil, construction material and/or debris stockpile areas shall not be located on any coastal feature.

#### 6.9 SEDIMENTATION AND EROSION CONTROLS REQUIREMENTS

Prior to the commencement of any Site work, staked Filtrexx Siltsoxx, silt sacks and construction entrances will be installed by the contractor to mitigate the potential migration of Site contaminants with stormwater run-off. The approximate layout of these sedimentation and erosion control devices is shown on Figure 5, *Erosion and Sedimentation Control Plan*.

#### 6.10 BOOM MAINTENANCE

National Grid currently maintains a boom in the Providence River directly proximate to the proposed liquefaction work area. The boom consists of a combination of absorbent sections and hard plastic sections. The boom is inspected on an at least monthly basis. National Grid also currently conducts at least monthly inspections of the cove proximate to the proposed liquefaction work area for the presence of sheen / LNAPL on the surface of the Providence River.

NGLNG will also continue this boom maintenance and monitoring program during the *STRAP* activities. The environmental professional will inspect the boom on a daily basis during all work activities to ensure the boom is in good condition and to document any sheens proximate to the Project Work Site. If any deficiencies are noted in the boom or excessive sheen generation occurs and cannot be reasonably controlled by the boom, the boom configuration will be augmented, repaired or replaced as needed. The boom configuration is illustrated on Figure 2, *Overall Aerial*.

#### 6.11 MONITORING WELL RE-INSTALLATION

After the Project is completed, select monitoring wells will be replaced/installed and the proposed post-development groundwater monitoring program will be implemented. We currently anticipate that three monitoring wells will be replaced (RCA-5R, RCA-40R and GZ-315DR). As the proposed post-development well installation and groundwater monitoring work is expected to be at least approximately three (3) years away, National Grid, will submit a *Site Investigation Work Plan (SIWP)* with final proposed locations to RIDEM for review and approval prior to performing this work. The SIWP will also include a summary of the proposed groundwater monitoring program, including sampling frequency and parameters.

#### 6.12 <u>REPORTING</u>

Subsequent to completion of the activities described herein, a *Short Term Response Action (STRA) Completion Report* will be prepared in accordance with Rule 6.09 of the Remediation Regulations and submitted to RIDEM. The report will summarize field activities and document the completion of the work described herein.

#### 7.0 PUBLIC INVOLVEMENT PLAN (PIP) REQUIREMENTS

A revised Public Involvement Plan (PIP) was submitted to RIDEM on May 4, 2017 and is publicly available on the 642 Allens Avenue website maintained by RIDEM (<u>http://www.dem.ri.gov/programs/wastemanagement/site-</u>



<u>remediation/Providence-Gas-Co.php</u>). As described previously, the requirements of the PIP will be followed as part of these *STRAP* activities. For this *STRAP*, NGLNG will be responsible for all PIP activities.

NGLNG will carry out the following activities as part of this *STRAP*:

- Prior to STRAP implementation:
  - <u>Prepare a STRAP.</u> NGLNG has prepared this document for RIDEM review and approval describing proposed STRAP activities necessary to support earthwork associated with construction of the proposed liquefaction facility.
  - <u>Host Public Meeting.</u> NGLNG will host a public meeting to present the proposed *STRAP* activities. We currently anticipate this community meeting will be held at the Juanita Sanchez Educational Complex located at 182 Thurbers Avenue in Providence, Rhode Island (based on availability). Translation assistance will be provided for non-English speaking individuals, upon request. NGLNG will submit a written summary of the meeting to RIDEM in hard copy and electronic format within 20 days of the meeting. The meeting summary will include identification of the main issues of concern, document requests by the public and proposed responses. <u>NGLNG tentatively anticipates that this public meeting will be held in mid-June; the final date will be circulated via the mailing list at least 2 weeks prior to the meeting. This notice will be provided in both English and Spanish.
    </u>
- After completion of *STRAP* activities:
  - <u>Prepare a Completion Notification</u>. This notification will include a description of completed *STRAP* activities. The notification will include a translation header in multiple languages stating: "This is an important notice. Please have it translated." The notification will be disseminated to the Site mailing list, websites and other information repositories. It is anticipated that this abutter notification will be distributed before submittal of the *STRAP Completion Report*.
  - <u>Prepare the STRA Completion Report.</u> NGLNG will prepare a document to provide a summary of the STRAP consistent with the requirements of Rule 6.09 of the Remediation Regulations. NGLNG will submit this document to RIDEM no more than 30 days following the completion of STRAP activities. The Completion Report will be disseminated to the information repositories.

#### 8.0 PROPOSED SCHEDULE

The schedule for implementation of the work described herein will depend on receipt of the *STRAP* Approval from RIDEM and receipt of other necessary permits and approvals. The Project is projected to begin in 2017 and continue through 2019. Earth disturbing activities are not expected to begin until early 2018.

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TABLES

	<b>RIDEM Industrial</b>			Sample Name:				Range Detected	RCA-4	RC	A-5	RC	<b>A-20</b>	RC	A-21	RCA-40		ETP-19	,	
	<b>Commercial Direct</b>		Concentration	Date Collected:	Number of	Number of	Number of	nange L	Delecieu	September 1994	Septem	ber 1994	Octob	er 1995	Octob	er 1995	April 1996		1996	
	Exposure Criteria	Critoria		Sample Depth:	Samples	Detections	Exceedances	Minimum	Maximum	8 - 10 FT	10 - 12 FT	14 - 16 FT	10 - 12 FT	16 - 17 FT	4 - 6 FT	8 - 10 FT	8 - 10 FT	2 FT	4-5 FT	7-8 FT
	(I/C DEC)	Citteria		Units				IVIIIIIIIIIIIIIIII	IVIAAIIIIUIII											
Semi-Volatile Organic Compo	ounds (SVOCs)																			
4-Nitroaniline	NE	NE	10,000	mg/kg	49	1	0	11.7	11.7	11.7	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
m-Nitrosodiphenylamine	NE	NE	10,000	mg/kg	49	1	0	15.4	15.4	15.4	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
2-Methylnaphthalene	10,000	NE	10,000	mg/kg	56	31	0	0.42	349	ND	ND	37.8	46.4	31.6	31.5	25.8	320	18.7	46.3	64.2
Acenaphthene	10,000	NE	10,000	mg/kg	57	24	0	0.69	122	100	9.1	105	10.5	7.4	7.4	ND	122	4.9	13.4	ND
Acenaphthylene	10,000	NE	10,000	mg/kg	55	30	0	0.36	288	25.2	39.9	11.3	ND	ND	ND	8.4	288	14.8	18.9	45.1
Anthracene	10,000	NE	10,000	mg/kg	55	33	0	0.39	200	79.7	76.3	34.7	ND	ND	4.6	4.8	200	12.9	26.5	ND
Benzo [a] Anthracene	7.8	NE	10,000	mg/kg	55	35	16	0.37	48	28.5	32.2	12.2	ND	ND	2.2	3	ND	17.8	36.1	ND
Benzo [a] Pyrene	0.8	NE	10,000	mg/kg	55	30	30	0.9	43.3	14.8	14.4	8.1	ND	ND	1	0.9	ND	10.2	17.1	ND
Benzo [b] Fluoranthene	7.8	NE	10,000	mg/kg	55	34	14	0.37	57.6	21.2	24.7	6.5	ND	ND	2.2	1.9	ND	14.8	28.8	ND
Benzo [g,h,i] Perylene	10,000	NE	10,000	mg/kg	55	21	0	0.4	26	6	6	ND	ND	ND	0.4	ND	ND	3.9	5.1	ND
Benzo [k] Fluoranthene	78	NE	10,000	mg/kg	55	25	0	0.65	22.7	7.6	10.9	ND	ND	ND	1.3	0.9	ND	4.5	9	ND
Bis [2-Chloroethyl]ether	NE	NE	10,000	mg/kg	49	1	0	0.36	0.36	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
Carbazole	NE	NE	10,000	mg/kg	49	5	0	0.44	13	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
Chrysene	780	NE	10,000	mg/kg	55	33	0	0.42	42	24.4	30.4	11.2	ND	ND	1.6	2.2	ND	16.7	30.5	ND
Dibenzo [a,h] Anthracene	0.8	NE	10,000	mg/kg	57	9	8	0.36	7.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	10,000	NE	10,000	mg/kg	49	9	0	0.4	14	ND	ND	ND	6.1	ND	0.4	2.5	NA	NA	NA	NA
Fluoranthene	10,000	NE	10,000	mg/kg	57	38	0	0.52	84	65.4	64.4	23.6	ND	ND	3.8	5.4	ND	38.7	75.8	ND
Fluorene	10,000	NE	10,000	mg/kg	56	30	0	0.37	85.1	12.6	68.5	11.8	10.4	4.7	5.1	6.2	85.1	16.2	31.8	ND
Indeno [1,2,3-cd] Pyrene	7.8	NE	10,000	mg/kg	55	22	5	0.72	27	5	6.1	ND	ND	ND	ND	ND	ND	5.3	9.2	ND
Naphthalene	10,000	NE	10,000	mg/kg	56	35	0	0.38	365	172	ND	144	252	43.5	13.5	59.2	217	5.6	20.6	161
Phenanthrene	10,000	NE	10,000	mg/kg	57	47	0	0.37	170	169	169	106	17.8	ND	13.8	14.6	111	45.1	101	53.1
Pyrene	10,000	NE	10,000	mg/kg	57	43	0	0.4	132	126	132	55.3	ND	ND	4.2	5.3	41.9	50	72.9	ND
<b>Total Petroleum Hydrocarbo</b>	ns (TPH)																			
ТРН	2,500	2,500	30,000	mg/kg	49	24	17	281	41000	7690	NA	6250	14800	1510	4520	1170	41000	2710	4300	10600
TPH (gasoline range)	2,500	2,500	30,000	mg/kg	10	10	0	11.7	1120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (diesel range)	2,500	2,500	30,000	mg/kg	10	10	8	777	21000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics																				
Total Cyanide	10,000	NE	10,000	mg/kg	35	27	0	0.053	52.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	820	NE	10,000	mg/kg	14	8	0	0.33	8.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	7	NE	10,000	mg/kg	26	24	4	1.5	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	10,000	NE	10,000	mg/kg	24	23	0	6.6	116	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	1.5	NE	10,000	mg/kg	14	14	0	0.23	0.54	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	1,000	NE	10,000	mg/kg	25	12	0	0.037	3.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	10,000	NE	10,000	mg/kg	25	24	0	0.9	19.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	10,000	NE	10,000	mg/kg	14	14	0	2.5	176	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NE	NE	10,000	mg/kg	32	32	0	4880	30200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	500	NE	NE	mg/kg	25	25	1	3.7	895	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	610	NE	10,000	mg/kg	25	11	0	0.027	0.78	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	10,000	NE	10,000	mg/kg	13	13	0	1.5	19.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	10,000	NE	10,000	mg/kg	25	8	0	1.14	14.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	10,000	NE	10,000	mg/kg	25	10	0	0.58	6.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	10,000	NE	10,000	mg/kg	14	14	0	26.6	99.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

	<b>RIDEM Industrial</b>			Sample Name:				Pango (	Dotoctod	RCA-4	RC	A-5	RCA	<b>\-20</b>	RC	A-21	RCA-40		ETP-1	9
	<b>Commercial Direct</b>		RIDEIVI Opper	Date Collected:	Number of	Number of	Number of	Kanger	Jelecleu	September 1994	Septem	ber 1994	Octobe	er 1995	Octob	er 1995	April 1996		1996	,
	Exposure Criteria	Criteria	Limit (UCL)	Sample Depth:	Samples	Detections	Exceedances	Minimum	Maximum	8 - 10 FT	10 - 12 FT	14 - 16 FT	10 - 12 FT	16 - 17 FT	4 - 6 FT	8 - 10 FT	8 - 10 FT	2 FT	4-5 FT	7-8 FT
				Units																
Volatile Organic Compounds (	(VOCs)		40.000			1.0				10			50.7							
1,2,4 Trimethylbenzene	NE	NE	10,000	mg/kg	52	16	0	0.0368	95.3	ND	ND	ND	50.7	ND	5.1	ND	NA	NA	NA	NA
1,3,5 Trimethylbenzene	NE	NE	10,000	mg/kg	52	15	0	0.031	30.2	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
4-IsopropyItoluene	NE	NE	10,000	mg/kg	52	9	0	0.25	14.4	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
Benzene	200	4.3	10,000	mg/kg	52	11	0	0.0477	2.95	ND	ND	0.96	ND	ND	ND	ND	NA	NA	NA	NA
Chloroform	940	NE	10,000	mg/kg	52	2	0	0.0112	0.0159	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
Ethylbenzene	10,000	62	10,000	mg/kg	52	17	1	0.01	97.3	35.4	0.47	13	18.7	ND	ND	ND	NA	NA	NA	NA
Isopropylbenzene	10,000	NE	10,000	mg/kg	52	5	0	0.785	8.9	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
Methylene Chloride	760	NE	10,000	mg/kg	52	7	0	0.007	28	28	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
Naphthalene	NE	NE	10,000	mg/kg	52	22	0	0.45	825	ND	ND	ND	309	20.5	18.6	383	NA	NA	NA	NA
n-Butylbenzene	NE	NE	10,000	mg/kg	52	3	0	1.45	3.24	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
n-Propylbenzene	NE	NE	10,000	mg/kg	52	6	0	0.518	5.6	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
sec-Butylbenzene	NE	NE	10,000	mg/kg	52	5	0	0.41	3	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
Styrene	190	64	10,000	mg/kg	52	2	1	0.041	77	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
tert-Butylbenzene	NE	NE	10,000	mg/kg	52	3	0	0.0574	0.16	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
Total Xylenes	10,000	NE	10,000	mg/kg	52	17	0	0.139	165	53.4	0.8	22.7	ND	ND	ND	ND	NA	NA	NA	NA
Toulene	10,000	62	10,000	mg/kg	52	8	1	0.134	81	13.5	0.19	2.47	ND	ND	ND	ND	NA	NA	NA	NA
Pesticides and Poly-Chlorinate	ed Biphenyls (PCBs)																			
4-DDT	NE	NE	10,000	mg/kg	12	1	0	0.089	0.089	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1242	10	10	10,000	mg/kg	45	3	0	0.57	7.9	NA	NA	NA	ND	NA	NA	ND	NA	NA	NA	NA
Aroclor-1248	10	10	10,000	mg/kg	45	3	0	0.08	0.4	NA	NA	NA	ND	NA	NA	ND	NA	NA	NA	NA
Delta-BHC	NE	NE	10,000	mg/kg	12	1	0	0.025	0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	NE	NE	10,000	mg/kg	12	2	0	0.12	0.41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan (II)	NE	NE	10,000	mg/kg	12	1	0	0.0063	0.0063	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Ketone	NE	NE	10,000	mg/kg	14	2	0	0.0044	0.0076	NA	NA	NA	ND	NA	NA	ND	NA	NA	NA	NA
Endosulfan sulfate	NE	NE	10,000	mg/kg	14	1	0	0.026	0.026	NA	NA	NA	ND	NA	NA	ND	NA	NA	NA	NA
Gamma-BHC	NE	NE	10,000	mg/kg	12	1	0	0.0021	0.0021	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	NE	NE	10,000	mg/kg	12	1	0	0.0023	0.0023	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

#### <u>Notes</u>

Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards and subject to Note 2 below.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows explorations with the Liquefaction Work Area

ND - Not Detected

NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As such, the final grades are unknown and as such the modified sampling depths are unknown. Collected confirmatory samples are not included on this table.

Note 1. Sample depth is unknown, but noted as 2 feet below the water table.

Note 2. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and GB Upper Concentration Limit (UCLs).

	<b>RIDEM Industrial</b>			Sample Name:				Banga	Detected	ET	P-20	ETP-35	ETP-38	RCA-R10	B04	B05	B06	B09	B10	B11
	<b>Commercial Direct</b>		RIDEIVI Upper	Date Collected:	Number of	Number of	Number of	Kange i	Detected	19	996	1996	1996	1996	1/27/2000	1/27/2000	1/27/2000	1/27/2000	1/27/2000	1/27/2000
	Exposure Criteria	Criteria		Sample Depth:	Samples	Detections	Exceedances	Minimum	Maximum	2-4.5 FT	4.5-6 FT	6 FT	8.5 FT	0-2 FT	2 - 4 FT	2 - 4 FT	2 - 4 FT	2 - 4 FT	2 - 4 FT	2 - 4 FT
	(I/C DEC)	citteria		Units				IVIIIII	Waximam											
Semi-Volatile Organic Compo	ounds (SVOCs)																			
4-Nitroaniline	NE	NE	10,000	mg/kg	49	1	0	11.7	11.7	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND
m-Nitrosodiphenylamine	NE	NE	10,000	mg/kg	49	1	0	15.4	15.4	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	10,000	NE	10,000	mg/kg	56	31	0	0.42	349	35	156	NA	NA	NA	70	0.46	ND	NA	1.2	0.73
Acenaphthene	10,000	NE	10,000	mg/kg	57	24	0	0.69	122	8.8	ND	NA	NA	NA	ND	ND	ND	ND	ND	ND
Acenaphthylene	10,000	NE	10,000	mg/kg	55	30	0	0.36	288	10.7	67.4	NA	NA	NA	NA	ND	ND	NA	ND	ND
Anthracene	10,000	NE	10,000	mg/kg	55	33	0	0.39	200	6.2	58	NA	NA	NA	NA	ND	ND	NA	0.67	ND
Benzo [a] Anthracene	7.8	NE	10,000	mg/kg	55	35	16	0.37	48	7.7	ND	NA	NA	NA	NA	0.71	ND	NA	1.4	ND
Benzo [a] Pyrene	0.8	NE	10,000	mg/kg	55	30	30	0.9	43.3	ND	ND	NA	NA	NA	NA	ND	ND	NA	ND	ND
Benzo [b] Fluoranthene	7.8	NE	10,000	mg/kg	55	34	14	0.37	57.6	4.6	ND	NA	NA	NA	NA	0.79	ND	NA	1.5	ND
Benzo [g,h,i] Perylene	10,000	NE	10,000	mg/kg	55	21	0	0.4	26	ND	ND	NA	NA	NA	NA	ND	ND	NA	ND	ND
Benzo [k] Fluoranthene	78	NE	10,000	mg/kg	55	25	0	0.65	22.7	ND	ND	NA	NA	NA	NA	ND	ND	NA	0.65	ND
Bis [2-Chloroethyl]ether	NE	NE	10,000	mg/kg	49	1	0	0.36	0.36	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND
Carbazole	NE 700	NE	10,000	mg/kg	49	5	0	0.44	13	NA F.4	NA	NA	NA	NA	ND	ND	ND	ND	ND 17	ND
Dibonzo [a b] Anthracono	780	INE	10,000	mg/kg	55	33	0	0.42	42	5.4 ND			NA NA			0.5	ND		1.7	ND
Dibenzo [a,1] Antifacerie	10.000	NE	10,000	mg/kg		9	0	0.50	1.0	ND	ND									
Eluoranthene	10,000	NE	10,000	mg/kg	49 57	38	0	0.4	14 8/	0 NA	2.0	NA NA	NA NA	NA NA	2	0.72	ND	0.57	ND	ND
Fluorene	10,000	NE	10,000	mg/kg	56	30	0	0.32	85 1	10.3	18.2	NA	NA	NA	66	0.72 ND	ND	0.57 NA	ND	ND
Indeno [1 2 3-cd] Pyrene	7.8	NE	10,000	mg/kg	55	22	5	0.37	27	ND	ND	NΔ	NΔ	NΔ	0.0 ΝΔ	ND	ND	NΔ	ND	ND
Nanhthalene	10,000	NE	10,000	mg/kg	56	35	0	0.72	365	13	246	NA	NA	NA	220	0.55	ND	NA	3.1	0.8
Phenanthrene	10,000	NE	10.000	mg/kg	57	47	0	0.37	170	14.9	20.3	NA	NA	NA	12	0.63	0.37	0.97	2	1.1
Pyrene	10,000	NE	10.000	mg/kg	57	43	0	0.4	132	14.4	ND	NA	NA	NA	3.4	0.84	ND	0.63	2.8	0.55
Total Petroleum Hydrocarbo	ns (TPH)						-													
ТРН	2,500	2,500	30,000	mg/kg	49	24	17	281	41000	2580	15900	3220	9580	281	12000	ND	ND	1800	ND	5900
TPH (gasoline range)	2,500	2,500	30,000	mg/kg	10	10	0	11.7	1120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (diesel range)	2,500	2,500	30,000	mg/kg	10	10	8	777	21000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics																				
Total Cyanide	10,000	NE	10,000	mg/kg	35	27	0	0.053	52.3	NA	NA	NA	NA	ND	0.32	1.5	1.8	0.71	2.6	6.3
Antimony	820	NE	10,000	mg/kg	14	8	0	0.33	8.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	7	NE	10,000	mg/kg	26	24	4	1.5	15	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA
Barium	10,000	NE	10,000	mg/kg	24	23	0	6.6	116	NA	NA	NA	NA	42	NA	NA	NA	NA	NA	NA
Beryllium	1.5	NE	10,000	mg/kg	14	14	0	0.23	0.54	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	1,000	NE	10,000	mg/kg	25	12	0	0.037	3.5	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA
Chromium	10,000	NE	10,000	mg/kg	25	24	0	0.9	19.2	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA
Copper	10,000	NE	10,000	mg/kg	14	14	0	2.5	176	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NE	NE	10,000	mg/kg	32	32	0	4880	30200	NA	NA	NA	NA	NA	9680	11400	14300	16400	26400	18900
Lead	500	NE	NE	mg/kg	25	25	1	3.7	895	NA	NA	NA	NA	117	NA	NA	NA	NA	NA	NA
Mercury	610	NE	10,000	mg/kg	25	11	0	0.027	0.78	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA
Nickel	10,000	NE	10,000	mg/kg	13	13	0	1.5	19.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	10,000	NE	10,000	mg/kg	25	8	0	1.14	14.7	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA
Silver	10,000	NE	10,000	mg/kg	25	10	0	0.58	6.6	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA
Zinc	10,000	NE	10,000	mg/kg	14	14	0	26.6	99.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

	<b>RIDEM Industrial</b>	ndustrial ial Direct RIDEM GB RIDEM Upper Sample Name: Date Collected: Number of Number of Number of Number of 1996	ETP-35	ETP-38	RCA-R10	B04	B05	B06	B09	B10	B11									
	<b>Commercial Direct</b>		Concentration	Date Collected:	Number of	Number of	Number of	Kange	Deletleu	19	96	1996	1996	1996	1/27/2000	1/27/2000	1/27/2000	1/27/2000	1/27/2000	1/27/2000
	Exposure Criteria	Critoria		Sample Depth:	Samples	Detections	Exceedances	Minimum	Maximum	2-4.5 FT	4.5-6 FT	6 FT	8.5 FT	0-2 FT	2 - 4 FT	2 - 4 FT	2 - 4 FT	2 - 4 FT	2 - 4 FT	2 - 4 FT
	(I/C DEC)	Citteria		Units				Winninum	IVIAXIIIUIII											
Volatile Organic Compounds	(VOCs)																			
1,2,4 Trimethylbenzene	NE	NE	10,000	mg/kg	52	16	0	0.0368	95.3	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
1,3,5 Trimethylbenzene	NE	NE	10,000	mg/kg	52	15	0	0.031	30.2	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
4-Isopropyltoluene	NE	NE	10,000	mg/kg	52	9	0	0.25	14.4	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
Benzene	200	4.3	10,000	mg/kg	52	11	0	0.0477	2.95	NA	NA	NA	NA	ND	2.8	0.76	ND	ND	ND	0.41
Chloroform	940	NE	10,000	mg/kg	52	2	0	0.0112	0.0159	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	10,000	62	10,000	mg/kg	52	17	1	0.01	97.3	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	10,000	NE	10,000	mg/kg	52	5	0	0.785	8.9	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	760	NE	10,000	mg/kg	52	7	0	0.007	28	NA	NA	NA	NA	0.007	ND	ND	ND	ND	ND	ND
Naphthalene	NE	NE	10,000	mg/kg	52	22	0	0.45	825	NA	NA	NA	NA	ND	300 E	ND	ND	ND	ND	3.8
n-Butylbenzene	NE	NE	10,000	mg/kg	52	3	0	1.45	3.24	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NE	NE	10,000	mg/kg	52	6	0	0.518	5.6	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	NE	NE	10,000	mg/kg	52	5	0	0.41	3	NA	NA	NA	NA	ND	1.3	ND	ND	ND	ND	0.41
Styrene	190	64	10,000	mg/kg	52	2	1	0.041	77	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	NE	NE	10,000	mg/kg	52	3	0	0.0574	0.16	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	10,000	NE	10,000	mg/kg	52	17	0	0.139	165	NA	NA	NA	NA	ND	2.6	0.3	ND	ND	ND	ND
Toulene	10,000	62	10,000	mg/kg	52	8	1	0.134	81	NA	NA	NA	NA	ND	ND	0.41	ND	ND	ND	ND
Pesticides and Poly-Chlorinate	ed Biphenyls (PCBs)																			
4-DDT	NE	NE	10,000	mg/kg	12	1	0	0.089	0.089	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1242	10	10	10,000	mg/kg	45	3	0	0.57	7.9	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	10	10	10,000	mg/kg	45	3	0	0.08	0.4	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
Delta-BHC	NE	NE	10,000	mg/kg	12	1	0	0.025	0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	NE	NE	10,000	mg/kg	12	2	0	0.12	0.41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan (II)	NE	NE	10,000	mg/kg	12	1	0	0.0063	0.0063	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Ketone	NE	NE	10,000	mg/kg	14	2	0	0.0044	0.0076	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	NE	NE	10,000	mg/kg	14	1	0	0.026	0.026	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-BHC	NE	NE	10,000	mg/kg	12	1	0	0.0021	0.0021	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	NE	NE	10,000	mg/kg	12	1	0	0.0023	0.0023	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

#### <u>Notes</u>

Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards and subject to Note 2 below.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows explorations with the Liquefaction Work Area

ND - Not Detected

NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As such, the final grades are unknown and as such the modified sampling depths are unknown. Collected confirmatory samples are not included on this table.

Note 1. Sample depth is unknown, but noted as 2 feet below the water table.

Note 2. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and GB Upper Concentration Limit (UCLs).

RIDEM Industrial			Sample Name:				Damas	Detected	B	14	B	17	B18	B19	B	20	B	21	В	22	B2	23	
	<b>Commercial Direct</b>		RIDEIVI Upper	Date Collected:	Number of	Number of	Number of	Kange	Detected	1/27	/2000	1/31	/2000	1/27/2000	1/27/2000	1/31/	/2000	1/31,	/2000	1/31	/2000	1/31/	/2000
	Exposure Criteria	Critoria		Sample Depth:	Samples	Detections	Exceedances	Minimum	Maximum	0-2 FT	2-4 FT	0 - 2 FT	4 - 6 FT	4 -6 FT	2 - 4 FT	0 - 2 FT	4 - 6 FT	0 - 2 FT	4 - 6 FT	0 - 2 FT	4 - 6 FT	0 - 2 FT	4 - 6 FT
	(I/C DEC)	Citteria		Units				IVIIIIIIIIIIIIIII	Wiaximum														
Semi-Volatile Organic Compo	ounds (SVOCs)																						
4-Nitroaniline	NE	NE	10,000	mg/kg	49	1	0	11.7	11.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m-Nitrosodiphenylamine	NE	NE	10,000	mg/kg	49	1	0	15.4	15.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	10,000	NE	10,000	mg/kg	56	31	0	0.42	349	32	8.8	ND	ND	0.89	ND	ND	ND	3.8	ND	0.58	ND	ND	ND
Acenaphthene	10,000	NE	10,000	mg/kg	57	24	0	0.69	122	34	9.3	ND	ND	ND	ND	ND	1.5	ND	17	ND	ND	ND	ND
Acenaphthylene	10,000	NE	10,000	mg/kg	55	30	0	0.36	288	1.6	0.41	0.87	ND	2.7	0.73	1.7	ND	33	11	8.2	ND	ND	ND
Anthracene	10,000	NE	10,000	mg/kg	55	33	0	0.39	200	46	13	ND	ND	1.2	0.39	0.51	0.61	8.9	18	2.5	ND	ND	ND
Benzo [a] Anthracene	7.8	NE	10,000	mg/kg	55	35	16	0.37	48	48	11	2.7	ND	6.8	1.8	3	ND	21	10	15	ND	ND	ND
Benzo [a] Pyrene	0.8	NE	10,000	mg/kg	55	30	30	0.9	43.3	28	7.1	2.1	ND	5.2	1.5	2.6	ND	32	6.5	14	ND	ND	ND
Benzo [b] Fluoranthene	7.8	NE	10,000	mg/kg	55	34	14	0.37	57.6	33	7.9	3.6	ND	8.4	2.4	3.8	ND	50	5.1	16	ND	ND	ND
Benzo [g,h,i] Perylene	10,000	NE	10,000	mg/kg	55	21	0	0.4	26	12	2.5	ND	ND	3.5	1.2	1.6	ND	26	ND	6.9	ND	ND	ND
Benzo [k] Fluoranthene	78	NE	10,000	mg/kg	55	25	0	0.65	22.7	10	2.1	1.8	ND	2.7	0.93	1.7	ND	ND	2.5	6.5	ND	ND	ND
Bis [2-Chloroethyl]ether	NE	NE	10,000	mg/kg	49	1	0	0.36	0.36	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NE	NE	10,000	mg/kg	49	5	0	0.44	13	13	3.5	ND	ND	ND	ND	ND	ND	0.84	ND	ND	ND	ND	ND
Chrysene	780	NE	10,000	mg/kg	55	33	0	0.42	42	42	9.9	3.9	ND	7.3	2.2	3.6	ND	28	11	16	ND	ND	ND
Dibenzo [a,h] Anthracene	0.8	NE	10,000	mg/kg	57	9	8	0.36	7.8	5.6	0.81	ND	ND	ND	ND	ND	ND	7.8	ND	1.9	ND	ND	ND
Dibenzofuran	10,000	NE	10,000	mg/kg	49	9	0	0.4	14	14	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	10,000	NE	10,000	mg/kg	57	38	0	0.52	84	84	20	2.8	ND	12	3.3	3.5	0.52	21	13	18	ND	ND	ND
Fluorene	10,000	NE	10,000	mg/kg	56	30	0	0.37	85.1	35	9.6	ND	ND	0.6	ND	ND	1.7	ND	34	ND	ND	ND	ND
Indeno [1,2,3-cd] Pyrene	7.8	NE	10,000	mg/kg	55	22	5	0.72	27	12	2.6	0.91	ND	3.2	1.1	1.6	ND	27	1.3	6.7	ND	ND	ND
Naphthalene Dharaarthaara	10,000	NE	10,000	mg/kg	56	35	0	0.38	365	32	9	ND 1.0	ND	1.4	0.84	ND 1.0	0.66	4.3	1.2	0.44	ND	ND	
Phenanthrene	10,000	NE	10,000	mg/kg	57	47	0	0.37	170	170	44	1.9	ND	8.1	1.9	1.9	3.1	8.5	49	4.1		ND	
Total Potroloum Hydrocarbo	10,000	INE	10,000	тід/кд	57	43	0	0.4	132	95	23	7.3	ND	19	3.4	ð	1.1	01	50	49	0.4	ND	ND
		2 500	30,000	ma/ka	/0	24	17	281	41000	ND	1100	ND	ND	ND	ND	ND	ND	2800	2500	ND	ND	ND	ND
TPH (gasoline range)	2,500	2,500	30,000	mg/kg	49	10	0	11 7	1120	NA	NA	NA	NΔ	NΔ	NA	NA	NA	NA	ΝΔ	NA	NΔ	NA	
TPH (diesel range)	2,500	2,500	30,000	mg/kg	10	10	8	777	21000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics	_,	_,			10	10																	
Total Cvanide	10.000	NE	10.000	mg/kg	35	27	0	0.053	52.3	0.2	0.053	2	0.059	2.2	0.37	0.6	0.24	10.7	0.095	0.97	0.15	0.16	0.099
Antimony	820	NE	10,000	mg/kg	14	8	0	0.33	8.7	ND	NA	8.1	NA	NA	NA	1.2	NA	1.5	NA	0.7	NA	0.65	NA
Arsenic	7	NE	10,000	mg/kg	26	24	4	1.5	15	4.6	NA	14.1	NA	NA	NA	6	NA	13.5	NA	5.2	ND	3	NA
Barium	10,000	NE	10,000	mg/kg	24	23	0	6.6	116	36.4	NA	116	NA	NA	NA	55.9	NA	28	NA	34.8	ND	15.7	NA
Beryllium	1.5	NE	10,000	mg/kg	14	14	0	0.23	0.54	0.37	NA	0.51	NA	NA	NA	0.4	NA	0.31	NA	0.3	NA	0.23	NA
Cadmium	1,000	NE	10,000	mg/kg	25	12	0	0.037	3.5	0.52	NA	3.5	NA	NA	NA	0.8	NA	1.4	NA	0.76	NA	1.8	NA
Chromium	10,000	NE	10,000	mg/kg	25	24	0	0.9	19.2	7.5	NA	19.2	NA	NA	NA	7.3	NA	11.1	NA	4.1	NA	10.6	NA
Copper	10,000	NE	10,000	mg/kg	14	14	0	2.5	176	28.3	NA	176	NA	NA	NA	35	NA	35.6	NA	13.8	NA	13.5	NA
Iron	NE	NE	10,000	mg/kg	32	32	0	4880	30200	13700	16500	30200	7910	15200	17800	6530	11800	14100	5370	7170	6760	16600	6840
Lead	500	NE	NE	mg/kg	25	25	1	3.7	895	192	NA	895	NA	NA	NA	176	NA	292	NA	76.7	NA	17	NA
Mercury	610	NE	10,000	mg/kg	25	11	0	0.027	0.78	0.18	NA	0.44	NA	NA	NA	0.085	NA	0.78	NA	0.12	NA	ND	NA
Nickel	10,000	NE	10,000	mg/kg	13	13	0	1.5	19.5	16.2	NA	19.5	NA	NA	NA	8.9	NA	12.6	NA	5.9	NA	11.6	NA
Selenium	10,000	NE	10,000	mg/kg	25	8	0	1.14	14.7	3.9	NA	ND	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA
Silver	10,000	NE	10,000	mg/kg	25	10	0	0.58	6.6	3.6	NA	6.6	NA	NA	NA	1.4	NA	2.7	NA	1.1	NA	2.8	NA
Zinc	10,000	NE	10,000	mg/kg	14	14	0	26.6	99.1	41.1	NA	99.1	NA	NA	NA	52.7	NA	34.7	NA	32.5	NA	46	NA

	<b>RIDEM Industrial</b>	M Industrial nercial Direct Leachability		Sample Name:				Range I	Detected	B	14	B	17	B18	B19	B	20	В	21	B	22	B2	23
	<b>Commercial Direct</b>			Date Collected:	Number of	Number of	Number of	Nalige I	Delected	1/27	/2000	1/31	/2000	1/27/2000	1/27/2000	1/31/	/2000	1/31	/2000	1/31,	/2000	1/31/	/2000
	Exposure Criteria	Criteria		Sample Depth:	Samples	Detections	Exceedances	Minimum	Maximum	0-2 FT	2-4 FT	0 - 2 FT	4 - 6 FT	4 -6 FT	2 - 4 FT	0 - 2 FT	4 - 6 FT	0 - 2 FT	4 - 6 FT	0 - 2 FT	4 - 6 FT	0 - 2 FT	4 - 6 FT
	(I/C DEC)	Cincenta		Units					Maximum														
Volatile Organic Compounds (	VOCs)																						
1,2,4 Trimethylbenzene	NE	NE	10,000	mg/kg	52	16	0	0.0368	95.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.58	ND	ND	ND	ND
1,3,5 Trimethylbenzene	NE	NE	10,000	mg/kg	52	15	0	0.031	30.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.35	ND	ND	ND	ND
4-Isopropyltoluene	NE	NE	10,000	mg/kg	52	9	0	0.25	14.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.44	ND	ND	ND	ND
Benzene	200	4.3	10,000	mg/kg	52	11	0	0.0477	2.95	0.35	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	940	NE	10,000	mg/kg	52	2	0	0.0112	0.0159	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	10,000	62	10,000	mg/kg	52	17	1	0.01	97.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	10,000	NE	10,000	mg/kg	52	5	0	0.785	8.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	760	NE	10,000	mg/kg	52	7	0	0.007	28	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	NE	NE	10,000	mg/kg	52	22	0	0.45	825	16	ND	ND	ND	ND	ND	ND	ND	ND	3.3	ND	ND	ND	ND
n-Butylbenzene	NE	NE	10,000	mg/kg	52	3	0	1.45	3.24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NE	NE	10,000	mg/kg	52	6	0	0.518	5.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	NE	NE	10,000	mg/kg	52	5	0	0.41	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	190	64	10,000	mg/kg	52	2	1	0.041	77	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	NE	NE	10,000	mg/kg	52	3	0	0.0574	0.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	10,000	NE	10,000	mg/kg	52	17	0	0.139	165	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toulene	10,000	62	10,000	mg/kg	52	8	1	0.134	81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pesticides and Poly-Chlorinate	ed Biphenyls (PCBs)																						
4-DDT	NE	NE	10,000	mg/kg	12	1	0	0.089	0.089	ND	NA	ND	NA	NA	NA	ND	NA	ND	NA	0.089	NA	ND	NA
Aroclor-1242	10	10	10,000	mg/kg	45	3	0	0.57	7.9	ND	0.63	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	10	10	10,000	mg/kg	45	3	0	0.08	0.4	ND	ND	ND	ND	ND	0.4	ND							
Delta-BHC	NE	NE	10,000	mg/kg	12	1	0	0.025	0.025	ND	NA	ND	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endrin	NE	NE	10,000	mg/kg	12	2	0	0.12	0.41	0.12	NA	ND	NA	NA	NA	0.41	NA	ND	NA	ND	NA	ND	NA
Endosulfan (II)	NE	NE	10,000	mg/kg	12	1	0	0.0063	0.0063	ND	NA	ND	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endrin Ketone	NE	NE	10,000	mg/kg	14	2	0	0.0044	0.0076	ND	NA	ND	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endosulfan sulfate	NE	NE	10,000	mg/kg	14	1	0	0.026	0.026	ND	NA	ND	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA
Gamma-BHC	NE	NE	10,000	mg/kg	12	1	0	0.0021	0.0021	ND	NA	ND	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA
Heptachlor Epoxide	NE	NE	10,000	mg/kg	12	1	0	0.0023	0.0023	ND	NA	ND	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA

#### <u>Notes</u>

Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards and subject to Note 2 below.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows explorations with the Liquefaction Work Area

ND - Not Detected

NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As such, the final grades are unknown and as such the modified sampling depths are unknown. Collected confirmatory samples are not included on this table.

Note 1. Sample depth is unknown, but noted as 2 feet below the water table.

Note 2. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and GB Upper Concentration Limit (UCLs).

	<b>RIDEM Industrial</b>	RIDEM Industrial		Sample Name:				Range Detected		B24		B25		B35		B55		DS	58	D59		TP-1	TP-2
	Commercial Direct		RIDEM Upper	Date Collected:	Number of	f Number of Detections	Number of Exceedances	Kange	Jetected	2/1/	/2000	2/1/	2000	2/22	/2000	3/2/	2000	12/8/	/1999	12/8/1999		5/20/2002	5/20/2002
	Exposure Criteria	Critorio		Sample Depth:	Samples			Minimum	Maximum	0 -2 FT	6 - 8 FT	0 -2 FT	4 - 6 FT	0-2 FT	8-10 FT	0-2 FT	4-6 FT	0-2 FT	6-8 FT	0-2 FT	4-6 FT	Note 1	Note 1
	(I/C DEC)	Citteria		Units				winning	Waximum														
Semi-Volatile Organic Compou	unds (SVOCs)																						
4-Nitroaniline	NE	NE	10,000	mg/kg	49	1	0	11.7	11.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m-Nitrosodiphenylamine	NE	NE	10,000	mg/kg	49	1	0	15.4	15.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	10,000	NE	10,000	mg/kg	56	31	0	0.42	349	ND	1.1	0.42	1.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	12.9
Acenaphthene	10,000	NE	10,000	mg/kg	57	24	0	0.69	122	ND	ND	ND	ND	ND	ND	ND	0.69	1.7	ND	ND	ND	3.23	11.2
Acenaphthylene	10,000	NE	10,000	mg/kg	55	30	0	0.36	288	ND	3.4	0.36	8.2	ND	0.47	ND	0.62	ND	ND	ND	ND	ND	ND
Anthracene	10,000	NE	10,000	mg/kg	55	33	0	0.39	200	ND	1.3	ND	4.2	ND	0.5	ND	2	4.4	ND	ND	ND	ND	6.27
Benzo [a] Anthracene	7.8	NE	10,000	mg/kg	55	35	16	0.37	48	1	4.9	1.3	16	0.37	1.7	ND	11	7	ND	ND	ND	ND	3.3
Benzo [a] Pyrene	0.8	NE	10,000	mg/kg	55	30	30	0.9	43.3	1.2	6.2	1.3	27	ND	1.2	ND	12	3.4	ND	ND	ND	ND	ND
Benzo [b] Fluoranthene	7.8	NE	10,000	mg/kg	55	34	14	0.37	57.6	1.4	6.5	1.9	25	0.37	1.6	ND	17	4.2	ND	ND	ND	ND	ND
Benzo [g,h,i] Perylene	10,000	NE	10,000	mg/kg	55	21	0	0.4	26	0.75	4.4	0.79	23	ND	0.93	ND	7	1.2	ND	ND	ND	ND	ND
Benzo [k] Fluoranthene	78	NE	10,000	mg/kg	55	25	0	0.65	22.7	0.81	2.6	0.85	11	ND	0.73	ND	5.8	2	ND	ND	ND	ND	ND
Bis [2-Chloroethyl]ether	NE	NE	10,000	mg/kg	49	1	0	0.36	0.36	ND	0.36	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NE	NE	10,000	mg/kg	49	5	0	0.44	13	ND	ND	ND	ND	ND	ND	ND	1.8	0.44	ND	ND	ND	ND	ND
Chrysene	780	NE	10,000	mg/kg	55	33	0	0.42	42	1.2	5.2	1.5	19	0.42	1.6	ND	15	7.2	ND	ND	ND	ND	ND
Dibenzo [a,h] Anthracene	0.8	NE	10,000	mg/kg	57	9	8	0.36	7.8	ND	0.99	ND	3	ND	ND	ND	2	0.36	ND	ND	ND	ND	ND
Dibenzofuran	10,000	NE	10,000	mg/kg	49	g	0	0.4	14	ND	ND	ND	ND	ND	ND	ND	0.46	0.63	ND	ND	ND	ND	ND
Fluoranthene	10,000	NE	10,000	mg/kg	57	38	0	0.52	84	1.3	4.6	1.9	15	1.2	4.2	ND	24	15	ND	ND	ND	ND	7.59
Fluorene	10,000	NE	10,000	mg/kg	56	30	0	0.37	85.1		1	ND 0.70	ND	ND	0.37	ND	0.68	2.1	ND	ND		ND	8.25
Indeno [1,2,3-cd] Pyrene	7.8	NE	10,000	mg/kg	55	22	5	0.72	27	0.72	4.1	0.79	25		1		7.6	1.4	ND	ND		ND	
Phenanthrana	10,000	NE	10,000	mg/kg	50	55 //7	0	0.56	170	0.79	1.5 5 1	0.5	2.5	1.2	2.5		12	12					10.5
Durene	10,000	NE	10,000	mg/kg	57	47	0	0.37	122	0.75	20	2.1	70	0.60	3.5		22	11				/.42	11.2
Total Petroleum Hydrocarbon	s (TPH)	NL.	10,000	111 <u>6</u> / Kg	57	45	0	0.4	152	2.7	20	5.4	70	0.05	5	ND	22			ND	ND	4.15	11.2
трн	2,500	2.500	30.000	mg/kg	49	24	17	281	41000	ND	ND	ND	ND	ND	ND	ND	ND	1500	ND	ND	ND	NA	NA
TPH (gasoline range)	2.500	2,500	30.000	mg/kg	10	10	0	11.7	1120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	128	77.8
TPH (diesel range)	2,500	2,500	30,000	mg/kg	10	10	8	777	21000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10000	11900
Inorganics			,	0, 0																			
Total Cyanide	10,000	NE	10,000	mg/kg	35	27	0	0.053	52.3	0.23	2.1	0.87	2.5	ND	0.47	ND	3.6	ND	ND	ND	ND	NA	NA
Antimony	820	NE	10,000	mg/kg	14	8	0	0.33	8.7	0.33	NA	0.81	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA
Arsenic	7	NE	10,000	mg/kg	26	24	4	1.5	15	2	NA	9.3	NA	1.9	NA	1.5	NA	5.1	NA	6.6	NA	3.62	2.93
Barium	10,000	NE	10,000	mg/kg	24	23	0	6.6	116	12.9	NA	39.8	NA	8.3	NA	6.6	NA	17.6	NA	28.9	NA	31	28.3
Beryllium	1.5	NE	10,000	mg/kg	14	14	0	0.23	0.54	0.27	NA	0.46	NA	0.3	NA	0.29	NA	0.48	NA	0.54	NA	NA	NA
Cadmium	1,000	NE	10,000	mg/kg	25	12	0	0.037	3.5	0.49	NA	1.9	NA	0.1	NA	0.037	NA	1.4	NA	1.5	NA	ND	ND
Chromium	10,000	NE	10,000	mg/kg	25	24	0	0.9	19.2	2.8	NA	13.6	NA	1.7	NA	0.9	NA	9.4	NA	12.5	NA	2.62	4.3
Copper	10,000	NE	10,000	mg/kg	14	14	0	2.5	176	12.5	NA	22.4	NA	2.5	NA	2.5	NA	14.4	NA	19.5	NA	NA	NA
Iron	NE	NE	10,000	mg/kg	32	32	0	4880	30200	5480	5660	21000	12900	5600	13300	4880	12800	15100	15000	18100	17400	NA	NA
Lead	500	NE	NE	mg/kg	25	25	1	3.7	895	16.7	NA	87.4	NA	3.7	NA	3.8	NA	11.2	NA	35.5	NA	15.5	23.8
Mercury	610	NE	10,000	mg/kg	25	11	0	0.027	0.78	0.027	NA	0.061	NA	ND	NA	ND	NA	ND	NA	0.027	NA	ND	ND
Nickel	10,000	NE	10,000	mg/kg	13	13	0	1.5	19.5	4.2	NA	17.1	NA	NA	NA	1.5	NA	15.7	NA	18.4	NA	NA	NA
Selenium	10,000	NE	10,000	mg/kg	25	8	0	1.14	14.7	ND	NA	ND	NA	ND	NA	ND	NA	12.3	NA	14.7	NA	1.61	ND
Silver	10,000	NE	10,000	mg/kg	25	10	0	0.58	6.6	0.98	NA	2.9	NA	ND	NA	ND	NA	0.58	NA	0.87	NA	ND	ND
Zinc	10,000	NE	10,000	mg/kg	14	14	0	26.6	99.1	26.6	NA	60	NA	30.4	NA	33.4	NA	57.7	NA	41.2	NA	NA	NA

	<b>RIDEM Industrial</b>			Sample Name:				Pango	Detected	B	324	В	25	В	35	BS	55	D58 12/8/1999		D5	59	TP-1	TP-2
	<b>Commercial Direct</b>	Direct	Concentration	Date Collected:	Number of Samples	Number of Detections	Number of Exceedances	Kalige	Jelecleu	2/1	/2000	2/1/	2000	2/22	/2000	3/2/2	2000			12/8/1999		5/20/2002	5/20/2002
	Exposure Criteria	Critorio		Sample Depth:				Minimum		0 -2 FT	6 - 8 FT	0 -2 FT	4 - 6 FT	0-2 FT	8-10 FT	0-2 FT	4-6 FT	0-2 FT	6-8 FT	0-2 FT	4-6 FT	Note 1	Note 1
	(I/C DEC)	Citteria		Units				winninum	Waximum														
Volatile Organic Compounds (VOCs)																							
1,2,4 Trimethylbenzene	NE	NE	10,000	mg/kg	52	16	0	0.0368	95.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.4	ND	ND	13.3	3.44
1,3,5 Trimethylbenzene	NE	NE	10,000	mg/kg	52	15	0	0.031	30.2	ND	ND	ND	ND	ND	ND	ND	ND	0.033	0.82	0.031	ND	4.35	0.67
4-Isopropyltoluene	NE	NE	10,000	mg/kg	52	9	0	0.25	14.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	0.57
Benzene	200	4.3	10,000	mg/kg	52	11	0	0.0477	2.95	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.57	ND	ND	ND
Chloroform	940	NE	10,000	mg/kg	52	2	0	0.0112	0.0159	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	10,000	62	10,000	mg/kg	52	17	1	0.01	97.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.1	0.21	ND	1.65	0.38
Isopropylbenzene	10,000	NE	10,000	mg/kg	52	5	0	0.785	8.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	760	NE	10,000	mg/kg	52	7	0	0.007	28	ND	ND	ND	ND	ND	0.63	ND	ND	0.077	1.6	0.066	0.074	ND	ND
Naphthalene	NE	NE	10,000	mg/kg	52	22	0	0.45	825	ND	0.45	ND	ND	ND	ND	ND	ND	ND	83	ND	ND	51	9.71
n-Butylbenzene	NE	NE	10,000	mg/kg	52	3	0	1.45	3.24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NE	NE	10,000	mg/kg	52	6	0	0.518	5.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	NE	NE	10,000	mg/kg	52	5	0	0.41	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	190	64	10,000	mg/kg	52	2	1	0.041	77	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	NE	NE	10,000	mg/kg	52	3	0	0.0574	0.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	10,000	NE	10,000	mg/kg	52	17	0	0.139	165	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.8	ND	ND	3.95	0.9
Toulene	10,000	62	10,000	mg/kg	52	8	1	0.134	81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>Pesticides and Poly-Chlorina</b>	ted Biphenyls (PCBs)																						
4-DDT	NE	NE	10,000	mg/kg	12	1	0	0.089	0.089	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA
Aroclor-1242	10	10	10,000	mg/kg	45	3	0	0.57	7.9	ND	ND	0.57	7.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	10	10	10,000	mg/kg	45	3	0	0.08	0.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Delta-BHC	NE	NE	10,000	mg/kg	12	1	0	0.025	0.025	ND	NA	0.025	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA
Endrin	NE	NE	10,000	mg/kg	12	2	0	0.12	0.41	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA
Endosulfan (II)	NE	NE	10,000	mg/kg	12	1	0	0.0063	0.0063	ND	NA	ND	NA	ND	NA	ND	NA	0.0063	NA	ND	NA	NA	NA
Endrin Ketone	NE	NE	10,000	mg/kg	14	2	0	0.0044	0.0076	ND	NA	ND	NA	ND	NA	ND	NA	0.0044	NA	0.0076	NA	NA	NA
Endosulfan sulfate	NE	NE	10,000	mg/kg	14	1	0	0.026	0.026	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.026	NA	NA	NA
Gamma-BHC	NE	NE	10,000	mg/kg	12	1	0	0.0021	0.0021	ND	NA	ND	NA	ND	NA	ND	NA	0.0021	NA	ND	NA	NA	NA
Heptachlor Epoxide	NE	NE	10,000	mg/kg	12	1	0	0.0023	0.0023	ND	NA	ND	NA	ND	NA	ND	NA	0.0023	NA	ND	NA	NA	NA

#### <u>Notes</u>

Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards and subject to Note 2 below.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows explorations with the Liquefaction Work Area

ND - Not Detected

NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As such, the final grades are unknown and as such the modified sampling depths are unknown. Collected confirmatory samples are not included on this table.

Note 1. Sample depth is unknown, but noted as 2 feet below the water table.

Note 2. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and GB Upper Concentration Limit (UCLs).

	<b>RIDEM Industrial</b>	Istrial		Sample Name: Date Collected: Sample Depth:	Number of Samples	f Number of	Number of	Dance Detected		TP-4	TP-6	TP-8	TP-9	TP-19	TP-25	TP-26	TP-27	GZ-314D	GZ-315D
	<b>Commercial Direct</b>		RIDEM Upper					Kange	Detected	5/20/2002	5/20/2002	5/20/2002	5/20/2002	5/20/2002	5/20/2002	5/20/2002	5/20/2002	05/27/2014	05/28/2014
	Exposure Criteria	Critorio	Limit (UCL)			Detections	Exceedances	Minimum	Marimum	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	4 - 6 FT	4 - 6 FT
	(I/C DEC)	Citteria		Units				winnum	wiaximum										
Semi-Volatile Organic Compounds (SVOCs)																			
4-Nitroaniline	NE	NE	10,000	mg/kg	49	1	0	11.7	11.7	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
m-Nitrosodiphenylamine	NE	NE	10,000	mg/kg	49	1	0	15.4	15.4	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
2-Methylnaphthalene	10,000	NE	10,000	mg/kg	56	31	0	0.42	349	ND	26.1	58.6	24.8	ND	ND	182	349	141	10.5
Acenaphthene	10,000	NE	10,000	mg/kg	57	24	0	0.69	122	ND	19.1	14.8	14.2	ND	ND	10.4	62.3	36.1	ND
Acenaphthylene	10,000	NE	10,000	mg/kg	55	30	0	0.36	288	ND	ND	23.9	4.95	ND	ND	40.4	27.4	8.01	55.2
Anthracene	10,000	NE	10,000	mg/kg	55	33	0	0.39	200	ND	11.2	20.6	14.5	ND	ND	12.5	38.5	25.9	15.2
Benzo [a] Anthracene	7.8	NE	10,000	mg/kg	55	35	16	0.37	48	ND	5.94	12.4	6.93	ND	ND	6.06	21.6	14.1	22.3
Benzo [a] Pyrene	0.8	NE	10,000	mg/kg	55	30	30	0.9	43.3	ND	4.29	10.7	5.61	ND	ND	5.05	18.3	10.7	43.3
Benzo [b] Fluoranthene	7.8	NE	10,000	mg/kg	55	34	14	0.37	57.6	ND	4.62	10.7	4.62	ND	ND	4.04	15.8	7.49	57.6
Benzo [g,h,i] Perylene	10,000	NE	10,000	mg/kg	55	21	0	0.4	26	ND	ND	ND	ND	ND	ND	ND	ND	2.95	20.1
Benzo [k] Fluoranthene	78	NE	10,000	mg/kg	55	25	0	0.65	22.7	ND	5.25	ND	ND	ND	ND	ND	ND	3.02	22.7
Bis [2-Chloroethyl]ether	NE	NE	10,000	mg/kg	49	1	0	0.36	0.36	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
Carbazole	NE	NE	10,000	mg/kg	49	5	0	0.44	13	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
Chrysene	780	NE	10,000	mg/kg	55	33	0	0.42	42	ND	ND	10.7	5.28	ND	ND	4.38	18.3	12.5	28
Dibenzo [a,h] Anthracene	0.8	NE	10,000	mg/kg	57	9	8	0.36	7.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.37
Dibenzofuran	10,000	NE	10,000	mg/kg	49	9	0	0.4	14	ND	ND	ND	ND	ND	ND	6.4	13.3	NA	NA
Fluoranthene	10,000	NE	10,000	mg/kg	57	38	0	0.52	84	ND	12.9	26.4	14.5	ND	ND	12.1	38.2	27.7	26.9
Fluorene	10,000	NE	10,000	mg/kg	56	30	0	0.37	85.1	ND	16.5	25.6	17.2	ND	ND	18.2	49.8	24.6	6.32
Indeno [1,2,3-cd] Pyrene	7.8	NE	10,000	mg/kg	55	22	5	0.72	27	ND	ND	ND	ND	ND	ND	ND	ND	2.56	17.7
Naphthalene	10,000	NE	10,000	mg/kg	56	35	0	0.38	365	ND	13.2	31.4	10.6	ND	ND	108	365	127	17.2
Phenanthrene	10,000	NE	10,000	mg/kg	57	47	0	0.37	170	25.2	33	66	59.4	6.27	ND	40.4	158	106	21
Pyrene	10,000	NE	10,000	mg/kg	57	43	0	0.4	132	23.5	18.5	38	23.8	ND	ND	24.9	76.4	34.5	51.7
Total Petroleum Hydrocarbon	s (TPH)																		
	2,500	2,500	30,000	mg/kg	49	24	17	281	41000	NA	NA	NA	NA 150	NA	NA	NA	NA	6920	6310
TPH (gasoline range)	2,500	2,500	30,000	mg/kg	10	10	0	11.7	1120	113	107	588	150	300	11./	912	1120	NA	NA
IPH (diesel range)	2,500	2,500	30,000	mg/kg	10	10	8	///	21000	21000	11000	12200	5420	3410	///	2050	10600	NA	NA
Inorganics Tatal Crasida	10.000	NE	10.000		25	27	0	0.052	<b>53.2</b>	NA	NA	NA	NA	NIA	NIA	NA	NIA	ND	<b>FD</b> 0
Antimony	10,000		10,000	mg/kg	14	27	0	0.055	52.5	NA	NA	NA	NA	NA		NA	NA		9 7
Arsonic	820	NE	10,000	mg/kg	26	24	0	1.55	15	2.54	6.48	4.76	1.22	4.57	2.28	2.02	2 7/	3.8	15
Barium	, 10,000	NE	10,000	mg/kg	20	24	4	6.6	116	20.3	0.48	4.70	20.2	4.57	10	14.2	17.1	5.8 NA	15
Beryllium	10,000	NE	10,000	mg/kg	1/	1/	0	0.0	0.54	20.3 NA	11.0 NA	20.2 NA	20.2 NA	NA	NA	14.2 NA	17.1 NA	0.54	0.35
Cadmium	1,000	NE	10,000	mg/kg	25	17	0	0.23	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55 ND
Chromium	10,000	NE	10,000	mg/kg	25	24	0	0.057	19.2	3 54	8	10.7	11 1	10.5	8 51	6.82	8 27	77	87
Copper	10,000	NE	10,000	mg/kg	14	14	0	2.5	176	<u>5.5</u> 4	NA	NA	NA	10.5 ΝΔ	NA	NA	NA	13.2	30.9
Iron	NF	NE	10,000	mg/kg	32	32	0	4880	30200	NA	NA	NA	NA	NA	NA	NA	NA	13.2 ΝΔ	NA
Lead	500	NE	NF	mg/kg	25	25	1	37	895	26	12.4	11	7 29	125	31.7	62	134	30.7	299
Mercury	610	NF	10,000	mg/kg	25	11	0	0.027	0.78	ND	ND	ND	ND	0.41	ND	ND	ND	0.047	0.451
Nickel	10,000	NF	10,000	mg/kg	13	12	0	1 5	19.5	ΝΔ	ΝΔ	ΝΔ	ΝΔ	NA NA	ΝΔ	ΝΔ	ΝΔ	7.2	11 3
Selenium	10,000	NF	10,000	mg/kg	25	8	0	1 14	14 7	1,38	1,14	2,29	1.34	ND	ND	ND	ND	ND	ND
Silver	10,000	NF	10,000	mg/kg	25	10	0	0.58	6.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	10.000	NF	10.000	mg/kg	14	14	0	26.6	99.1	NA	NA	NA	NA	NA	NA	NA	NA	28.7	46.4
	_0,000		20,000	o'' \o	- ÷ ·		, v	_0.0	55.1										

	<b>RIDEM Industrial</b>	RIDEM GB	RIDEM Upper	Sample Name:				Range	Detected	TP-4	TP-6	TP-8	TP-9	TP-19	TP-25	TP-26	TP-27	GZ-314D	GZ-315D
	Commercial Direct	Leachability	Concentration	Date Collected:	Number of	Number of	Number of	- 0-		5/20/2002	5/20/2002	5/20/2002	5/20/2002	5/20/2002	5/20/2002	5/20/2002	5/20/2002	05/27/2014	05/28/2014
	Exposure Criteria	Criteria	Limit (UCL)	Sample Depth:	Samples	Detections	Exceedances	Minimum	Maximum	Note 1	4 - 6 FT	4 - 6 FT							
	(I/C DEC)			Units															
Volatile Organic Compounds (																			
1,2,4 Trimethylbenzene	NE	NE	10,000	mg/kg	52	16	0	0.0368	95.3	3.08	5.9	47.2	9.5	0.14	11.4	68	95.3	13.3	0.0368
1,3,5 Trimethylbenzene	NE	NE	10,000	mg/kg	52	15	0	0.031	30.2	2.08	2.1	24	2.7	ND	5.1	27.8	30.2	2.36	0.0352
4-Isopropyltoluene	NE	NE	10,000	mg/kg	52	9	0	0.25	14.4	0.325	ND	4.15	ND	0.25	1.4	ND	14.4	1.5	ND
Benzene	200	4.3	10,000	mg/kg	52	11	0	0.0477	2.95	ND	ND	2.7	ND	ND	ND	2.95	2.6	1.97	0.0477
Chloroform	940	NE	10,000	mg/kg	52	2	0	0.0112	0.0159	ND	0.0112	0.0159							
Ethylbenzene	10,000	62	10,000	mg/kg	52	17	1	0.01	97.3	0.2	1.15	22.5	1.85	ND	4.6	37.6	97.3	5.98	0.01
Isopropylbenzene	10,000	NE	10,000	mg/kg	52	5	0	0.785	8.9	ND	ND	4.1	ND	0.785	1.2	ND	8.9	0.883	ND
Methylene Chloride	760	NE	10,000	mg/kg	52	7	0	0.007	28	ND	ND								
Naphthalene	NE	NE	10,000	mg/kg	52	22	0	0.45	825	3.97	23.7	779	123	4.06	25.2	825	760	120	0.868
n-Butylbenzene	NE	NE	10,000	mg/kg	52	3	0	1.45	3.24	ND	1.45	ND	ND	3.24	ND	ND	ND	2.61	ND
n-Propylbenzene	NE	NE	10,000	mg/kg	52	6	0	0.518	5.6	ND	ND	1.2	ND	1.97	1.15	2.3	5.6	0.518	ND
sec-Butylbenzene	NE	NE	10,000	mg/kg	52	5	0	0.41	3	ND	ND	ND	ND	1.47	ND	ND	3	0.469	ND
Styrene	190	64	10,000	mg/kg	52	2	1	0.041	77	ND	ND	ND	ND	ND	ND	77	ND	ND	0.041
tert-Butylbenzene	NE	NE	10,000	mg/kg	52	3	0	0.0574	0.16	0.16	ND	ND	ND	0.125	ND	ND	ND	0.0574	ND
Total Xylenes	10,000	NE	10,000	mg/kg	52	17	0	0.139	165	1.2	1.09	61.9	2.95	ND	7.4	165	107	2.67	0.139
Toulene	10,000	62	10,000	mg/kg	52	8	1	0.134	81	ND	ND	3.7	ND	ND	ND	81	ND	0.43	0.134
Pesticides and Poly-Chlorinate	ed Biphenyls (PCBs)																		
4-DDT	NE	NE	10,000	mg/kg	12	1	0	0.089	0.089	NA	NA								
Aroclor-1242	10	10	10,000	mg/kg	45	3	0	0.57	7.9	ND	NA	NA							
Aroclor-1248	10	10	10,000	mg/kg	45	3	0	0.08	0.4	ND	ND	ND	ND	0.08	ND	ND	ND	NA	NA
Delta-BHC	NE	NE	10,000	mg/kg	12	1	0	0.025	0.025	NA	NA								
Endrin	NE	NE	10,000	mg/kg	12	2	0	0.12	0.41	NA	NA								
Endosulfan (II)	NE	NE	10,000	mg/kg	12	1	0	0.0063	0.0063	NA	NA								
Endrin Ketone	NE	NE	10,000	mg/kg	14	2	0	0.0044	0.0076	NA	NA								
Endosulfan sulfate	NE	NE	10,000	mg/kg	14	1	0	0.026	0.026	NA	NA								
Gamma-BHC	NE	NE	10,000	mg/kg	12	1	0	0.0021	0.0021	NA	NA								
Heptachlor Epoxide	NE	NE	10,000	mg/kg	12	1	0	0.0023	0.0023	NA	NA								

#### <u>Notes</u>

Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards and subject to Note 2 below.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows explorations with the Liquefaction Work Area

ND - Not Detected

NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As such, the final grades are unknown and as such the modified sampling depths are unknown. Collected confirmatory samples are not included on this table.

Note 1. Sample depth is unknown, but noted as 2 feet below the water table.

Note 2. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and GB Upper Concentration Limit (UCLs).
# Table 2Soil Analytical DataCollected from within the Former Gasholder FoundationSTRAP - LiquefactionProvidence, Rhode Island

	<b>RIDEM Industrial</b>			Sample Name:				Banga	Detected	RCA	-B11			RHB-1				RH	B-2			RH	B-3	
	<b>Commercial Direct</b>		RIDEIVI Opper	Date Collected:	Number of	Number of	Number of	Kange	Detected	Octob	er 1995		Se	ptember	1998			Septem	oer 1998			Septemb	ber 1998	,
	Exposure Criteria	Leachability	Concentration	Sample Depth:	Samples	Detections	Exceedances	Minimum	Maximum	3.5 - 5.5 FT	7.5 - 9.5 FT	1 - 2 FT	2 - 4 FT	4 - 6 FT	6 - 8 FT	8 - 10 FT	0 - 2 FT	2 - 4 FT	4 - 6 FT	6 - 8 FT	0 - 2 FT	2 - 4 FT	4 - 6 FT	6 - 8 FT
	(I/C DEC)	Criteria	Limit (UCL)	Units				wimmum	Waximum															
Semi-Volatile Organic Compo	ounds (SVOCs)																							
2-Methylnaphthalene	10,000	NE	10,000	mg/kg	27	17	0	0.28	336	336	301	ND	ND	ND	0.28	ND	ND	ND	15	9.9	ND	ND	ND	8.6
Acenaphthene	10,000	NE	10,000	mg/kg	27	15	0	0.22	73.6	73.6	45.8	ND	ND	ND	ND	ND	ND	ND	5.3	3	ND	ND	ND	2
Acenaphthylene	10,000	NE	10,000	mg/kg	27	13	0	0.26	197	197	169	ND	ND	ND	ND	ND	ND	ND	0.72	0.62	ND	ND	ND	ND
Anthracene	10,000	NE	10,000	mg/kg	27	15	0	0.29	130	130	ND	ND	ND	ND	ND	ND	ND	ND	2.5	1.8	ND	ND	ND	0.69
Benzo [a] Anthracene	7.8	NE	10,000	mg/kg	27	12	0	0.27	6.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.4	1.4	ND	ND	ND	0.28
Benzo [a] Pyrene	0.8	NE	10,000	mg/kg	27	11	5	0.23	96	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.8	96	ND	ND	ND	ND
Benzo [b] Fluoranthene	7.8	NE	10,000	mg/kg	27	10	0	0.21	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	0.76	ND	ND	ND	ND
Benzo [g,h,i] Perylene	10,000	NE	10,000	mg/kg	27	7	0	0.23	0.95	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.48	0.23	ND	ND	ND	ND
Benzo [k] Fluoranthene	78	NE	10,000	mg/kg	27	7	0	0.24	1.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.48	0.24	ND	ND	ND	ND
Chrysene	780	NE	10,000	mg/kg	27	14	0	0.22	22	ND	ND	0.22	ND	ND	22	ND	ND	ND	2.2	1.4	ND	ND	ND	0.26
Dibenzo [a,h] Anthracene	0.8	NE	10,000	mg/kg	27	4	0	0.087	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.14	0.087	ND	ND	ND	ND
Dibenzofuran	10,000	NE	10,000	mg/kg	25	13	0	0.22	9.1	NA	NA	ND	ND	ND	ND	ND	ND	ND	1.7	1	ND	ND	ND	0.48
Fluoranthene	10,000	NE	10,000	mg/kg	27	14	0	0.41	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.2	1.5	ND	ND	ND	0.5
Fluorene	10,000	NE	10,000	mg/kg	27	15	0	0.36	42.4	38.1	42.4	ND	ND	ND	ND	ND	ND	ND	5.1	ND	ND	ND	ND	1.4
Indeno [1,2,3-cd] Pyrene	7.8	NE	10,000	mg/kg	27	7	0	0.21	0.82	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.45	0.23	ND	ND	ND	ND
Naphthalene	10,000	NE	10,000	mg/kg	27	17	0	0.22	559	559	511	0.22	ND	ND	0.25	0.32	ND	9.2						
Phenanthrene	10,000	NE	10,000	mg/kg	27	18	0	0.25	104	104	86.6	ND	ND	ND	0.38	0.25	ND	ND	12	7.4	ND	ND	ND	3
Pyrene	10,000	NE	10,000	mg/kg	27	15	0	0.27	19	ND	ND	0.27	ND	ND	ND	ND	ND	ND	5.4	2.6	ND	ND	ND	0.73
<b>Total Petroleum Hydrocarbo</b>	ns (TPH)																							
ТРН	2,500	2,500	30,000	mg/kg	26	16	6	110	27400	27400	21500	ND	ND	ND	ND	ND	ND	NA	950	1500	ND	ND	ND	1100
Volatile Organic Compounds	(VOCs)																							
Benzene	200	4.3	10,000	mg/kg	25	20	1	0.001	31	NA	NA	0.02	0.019	0.033	0.015	0.1	0.003	ND	ND	0.6	0.001	0.006	0.24	0.12
Ethylbenzene	10,000	62	10,000	mg/kg	25	20	2	0.001	83	NA	NA	0.004	0.003	ND	0.001	0.016	ND	0.0011	10	17	ND	ND	11	0.62
Total Xylenes	10,000	NE	10,000	mg/kg	25	20	0	0.005	150	NA	NA	0.018	0.012	ND	0.007	0.034	ND	ND	9.3	4.9	ND	0.005	9.2	0.51
Toulene	10,000	62	10,000	mg/kg	25	14	0	0.001	1	NA	NA	0.017	0.01	0.001	0.006	0.016	0.002	ND	ND	ND	ND	0.003	ND	ND

#### <u>Notes</u>

Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards and subject to Note 2 below.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows explorations with the Liquefaction Work Area

ND - Not Detected

NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As such, the final grades are unknown and as such the modified sampling depths are unknown. Collected confirmatory samples are not included on this table.

Note 2. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and GB Upper Concentration Limit (UCLs).

# Table 2Soil Analytical DataCollected from within the Former Gasholder FoundationSTRAP - LiquefactionProvidence, Rhode Island

	<b>RIDEM Industrial</b>			Sample Name:				Demos	<b>Nata ata d</b>		R	HB-4			Rł	IB-5			RH	B-6	
	<b>Commercial Direct</b>	RIDEM GB	RIDEM Upper	Date Collected:	Number of	Number of	Number of	Kange L	Detected		Septer	nber 1998	}		Septem	ber 1998	;		Septem	ber 1998	
	Exposure Criteria	Critoria	Limit (UCL)	Sample Depth:	Samples	Detections	Exceedances	Minimum	Maximum	2 - 4 FT	6 - 8 FT	8 - 10 FT	10 - 12 FT	2 - 4 FT	4 - 6 FT	6 - 8 FT	8 - 10 FT	1- 3 FT	3 - 5 FT	5 - 7 FT	7 - 9 FT
	(I/C DEC)	Citteria		Units				Winnun	Waximam												
Semi-Volatile Organic Compo	unds (SVOCs)																				
2-Methylnaphthalene	10,000	NE	10,000	mg/kg	27	17	0	0.28	336	3.3	0.87	33	220	19	250	17	14	ND	0.52	8.7	43
Acenaphthene	10,000	NE	10,000	mg/kg	27	15	0	0.22	73.6	0.22	0.3	3.4	24	1.1	13	4.1	2.8	ND	ND	1.5	4.2
Acenaphthylene	10,000	NE	10,000	mg/kg	27	13	0	0.26	197	1.1	0.41	1.3	5.5	1.6	0.65	1.6	1.5	ND	0.26	ND	ND
Anthracene	10,000	NE	10,000	mg/kg	27	15	0	0.29	130	0.6	0.37	2	12	1.3	6.1	2.2	1.8	ND	0.29	0.62	1.7
Benzo [a] Anthracene	7.8	NE	10,000	mg/kg	27	12	0	0.27	6.2	0.43	0.27	0.94	6.2	1.2	3.4	1.3	0.95	ND	ND	ND	0.58
Benzo [a] Pyrene	0.8	NE	10,000	mg/kg	27	11	5	0.23	96	0.31	0.23	0.72	4.7	0.73	2.4	0.98	0.71	ND	ND	ND	0.42
Benzo [b] Fluoranthene	7.8	NE	10,000	mg/kg	27	10	0	0.21	3.5	0.21	ND	0.51	3.5	0.64	2	0.81	0.59	ND	ND	ND	0.32
Benzo [g,h,i] Perylene	10,000	NE	10,000	mg/kg	27	7	0	0.23	0.95	ND	ND	0.24	0.95	0.23	0.65	0.28	ND	ND	ND	ND	ND
Benzo [k] Fluoranthene	78	NE	10,000	mg/kg	27	7	0	0.24	1.3	ND	ND	0.35	1.3	0.45	0.73	0.38	ND	ND	ND	ND	ND
Chrysene	780	NE	10,000	mg/kg	27	14	0	0.22	22	0.37	0.23	0.81	5.1	1.1	3	1.2	0.86	ND	ND	ND	0.51
Dibenzo [a,h] Anthracene	0.8	NE	10,000	mg/kg	27	4	0	0.087	0.3	ND	ND	ND	0.3	ND	0.26	ND	ND	ND	ND	ND	ND
Dibenzofuran	10,000	NE	10,000	mg/kg	25	13	0	0.22	9.1	0.22	0.24	1.8	9.1	0.71	8.2	1.9	1.5	ND	ND	0.77	2.3
Fluoranthene	10,000	NE	10,000	mg/kg	27	14	0	0.41	10	0.77	0.44	1.6	10	2.1	8.5	3	2.3	ND	0.41	0.45	1.6
Fluorene	10,000	NE	10,000	mg/kg	27	15	0	0.36	42.4	1	0.63	3.7	22	2.5	12	4.3	3.5	ND	0.36	1.5	4
Indeno [1,2,3-cd] Pyrene	7.8	NE	10,000	mg/kg	27	7	0	0.21	0.82	ND	ND	0.22	0.82	0.21	0.71	0.31	ND	ND	ND	ND	ND
Naphthalene	10,000	NE	10,000	mg/kg	27	17	0	0.22	559	2.6	0.79	32	280	14	390	17	14	ND	0.29	4.8	46
Phenanthrene	10,000	NE	10,000	mg/kg	27	18	0	0.25	104	3.2	2	9.9	58	8.8	36	8.8	7.6	ND	1.3	3	7.7
Pyrene	10,000	NE	10,000	mg/kg	27	15	0	0.27	19	1.3	0.84	3.4	19	3.6	6	3.1	2.3	ND	0.52	0.46	1.5
<b>Total Petroleum Hydrocarbon</b>	ns (TPH)																				
ТРН	2,500	2,500	30,000	mg/kg	26	16	6	110	27400	310	440	3000	12000	1000	8300	1600	2200	ND	110	850	2500
Volatile Organic Compounds	(VOCs)																				
Benzene	200	4.3	10,000	mg/kg	25	20	1	0.001	31	0.005	0.005	31	2.7	0.03	ND	ND	0.21	ND	0.002	0.11	0.55
Ethylbenzene	10,000	62	10,000	mg/kg	25	20	2	0.001	83	0.027	0.018	83	79	0.43	14	0.49	0.81	ND	0.002	0.42	0.3
Total Xylenes	10,000	NE	10,000	mg/kg	25	20	0	0.005	150	0.26	0.035	130	150	0.48	23	0.44	0.64	ND	0.007	0.23	0.11
Toulene	10,000	62	10,000	mg/kg	25	14	0	0.001	1	0.018	0.002	0.71	1	ND	ND	ND	0.012	ND	0.001	0.019	ND

#### <u>Notes</u>

Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards and subject to Note 2 below.

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	<b>RIDEM Industrial</b>			Sample Name:				_		RCA-R6	RCA-R7	RCA-R11	A67	B02	B03	B07	B08	B12	B13	B26	B27
	<b>Commercial Direct</b>	RIDEM GB	RIDEM Upper	Date Collected:	Number of	Number of	Number of	Range	Detected	1996	1996	1996	2/25/2000	1/27/2000	1/27/2000	1/27/2000	1/27/2000	1/27/2000	1/27/2000	2/3/2000	2/22/2000
	Exposure Criteria	Leachability	Concentration	Sample Depth:	Samples	Detections	Exceedances			0-2 FT	0-2 FT	0-2 FT	0 - 2 FT	0-2 FT	0 - 2 FT	0 - 2 FT	0 - 2 FT	0 - 2 FT	0 - 2 FT	0-2 FT	0-2 FT
	(I/C DEC)	Criteria	LIMIT (UCL)	Units				IVIINIMUM	Iviaximum												
Semi-Volatile Organic Compound	ds (SVOCs)																				
2-Methylnaphthalene	10,000	NE	10,000	mg/kg	26	5	0	0.39	9.6	ND	ND	ND	ND	ND	ND	ND	0.39	ND	2.5	ND	ND
Acenaphthene	10,000	NE	10,000	mg/kg	26	3	0	1	14	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	ND
Acenaphthylene	10,000	NE	10,000	mg/kg	26	10	0	0.46	3.4	ND	ND	ND	ND	ND	ND	ND	3.1	ND	3.1	1.4	ND
Anthracene	10,000	NE	10,000	mg/kg	26	10	0	0.44	25	ND	ND	ND	ND	ND	ND	ND	1.2	ND	9	1.1	ND
Benzo [a] Anthracene	7.8	NE	10,000	mg/kg	26	15	6	0.437	32	0.437	12.8	ND	ND	ND	ND	ND	7.6	ND	25	3.3	ND
Benzo [a] Pyrene	0.8	NE	10,000	mg/kg	26	14	12	0.391	20	0.391	12.1	ND	ND	ND	ND	ND	6.6	ND	20	3.4	ND
Benzo [b] Fluoranthene	7.8	NE	10,000	mg/kg	26	15	7	0.42	26	0.821	20.6	ND	ND	ND	ND	ND	8.7	ND	26	4.7	ND
Benzo [g,h,i] Perylene	10,000	NE	10,000	mg/kg	26	11	0	0.7	10	ND	ND	ND	ND	ND	ND	ND	5.2	ND	10	2.4	ND
Benzo [k] Fluoranthene	78	NE	10,000	mg/kg	26	12	0	0.32	7.8	ND	ND	ND	ND	ND	ND	ND	1.9	ND	7.8	1.6	ND
Carbazole	NE	NE	10,000	mg/kg	26	5	0	0.4	5.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.5	ND	ND
Chrysene	780	NE	10,000	mg/kg	26	16	0	0.39	27	0.492	12.6	ND	ND	ND	ND	ND	8	ND	19	2.9	ND
Dibenzo [a,h] Anthracene	0.8	NE	10,000	mg/kg	26	9	6	0.54	4.4	ND	ND	ND	ND	ND	ND	ND	1.5	ND	3.4	0.72	ND
Dibenzofuran	10,000	NE	10,000	mg/kg	26	4	0	0.78	7.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	ND	ND
Fluoranthene	10,000	NE	10,000	mg/kg	26	17	0	0.388	42	1.08	29.8	0.388	ND	ND	0.77	ND	9	ND	39	5.4	ND
Fluorene	10,000	NE	10,000	mg/kg	26	5	0	0.49	15	ND	ND	ND	ND	ND	ND	ND	ND	ND	5	ND	ND
Indeno [1,2,3-cd] Pyrene	7.8	NE	10,000	mg/kg	26	11	2	0.72	10	ND	ND	ND	ND	ND	ND	ND	4.4	ND	10	2.5	ND
Naphthalene	10,000	NE	10,000	mg/kg	26	7	0	0.4	7.6	ND	ND	ND	ND	ND	0.68	ND	0.51	ND	3.4	ND	ND
Phenanthrene	10,000	NE	10,000	mg/kg	26	15	0	0.761	66	0.761	23.7	ND	ND	ND	1.1	ND	4.3	ND	32	3.1	ND
Pyrene	10,000	NE	10,000	mg/kg	26	18	0	0.464	59	0.771	21.5	0.464	ND	ND	1.6	ND	22	ND	33	4.9	ND
Total Petroleum Hydrocarbons (	TPH)																				
ТРН	2,500	2,500	30,000	mg/kg	26	2	0	46	415	46	415	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Inorganics																					
Cyanide	10,000	NE	10,000	mg/kg	26	20	0	0.083	1.4	ND	0.7	ND	ND	0.65	0.5	0.73	1.3	0.28	0.4	0.6	ND
Antimony	820	NE	10,000	mg/kg	23	1	0	0.32	0.32	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	7	NE	10,000	mg/kg	26	23	4	1.5	14.5	ND	ND	ND	6.2	3.1	5.6	4.7	4	6.6	4.4	6.4	1.5
Barium	10,000	NE	10,000	mg/kg	26	25	0	6.5	197	17	165	ND	13.8	27.5	19.1	21.9	197	16.7	36.8	37.4	6.5
Beryllium	1.5	NE	10,000	mg/kg	23	23	0	0.29	0.8	NA	NA	NA	0.34	0.36	0.38	0.3	0.39	0.31	0.45	0.4	0.29
Cadmium	1,000	NE	10,000	mg/kg	26	20	0	0.1	1.8	ND	ND	ND	ND	0.46	0.63	0.5	0.73	0.54	0.86	1.5	0.1
Chromium	10,000	NE	10,000	mg/kg	26	24	0	1.1	52.1	ND	45	ND	5.3	10	10.5	7.6	52.1	9.5	11.2	10.8	1.8
Copper	10,000	NE	10,000	mg/kg	23	23	0	1.5	49.3	NA	NA	NA	4.1	15.3	15.8	15.3	40.4	13.5	18.2	22.1	3.4
Iron	NE	NE	NE	mg/kg	23	23	0	4930	18800	NA	NA 101	NA	11200	14500	16900	13600	16500	15500	18100	15500	5490
Lead	500	NE	10,000	mg/kg	26	25	0	2.9	181	9	181	ND	7.7	33.4	176	115	117	14.5	58.5	57.5	6.9
Mercury	610	NE	10,000	mg/kg	26	18	0	0.045	1.3	ND	1.3	ND	ND	0.09	0.35	ND	0.31	0.21	0.18	0.48	ND
Nickel	10,000	NE	10,000	mg/kg	18	17	0	3.1	28.4	NA	NA	NA	5.2	7.5	13.5	8.2	28.4	13.1	15	19.8	NA
Steenum	10,000	NE	10,000	mg/kg	26	13	0	0.4	10	ND		ND	ND	2.2	4.7	3.5	4.5	3.0	4.4		ND
Silver	10,000	NE	10,000	mg/kg	26	13	0	0.22	4.5	ND	ND	ND	ND	1.4	2 B	1.2	2	2.7	4.5	2.6	ND
Zinc	10,000	NE	10,000	тід/кд	23	23	0	23.8	274	NA	NA	NA	23.8	39.4	41	44.7	274	33.5	44.9	69.5	30.4
1.2.4 Trimethylhenzone		NE	10.000	malka	26	1	0	0.022	0.022	ND	0.022		ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4 ITIMethylbenzene			10,000	mg/kg	20	1	0	0.022	0.022		0.022		ND	ND		ND	ND	ND	ND		ND
1,3,5 ITIMetryidenzene	200	1 2	10,000	mg/kg	20	2	0	0.02	0.048		0.02							0.20	2.1		
Chloroform	200	4.3 NE	10,000	mg/kg	20	1	0	0.037	0.22									0.29 ND	2.1	0.22	
Ethylbenzene	10 000	62	10,000	mg/kg	20	1 2	0	0.22	1 1										1 1	0.22 ND	
Methylene Chloride	760	NF	10,000	mg/kg	20	7	0	0.1	0.64												
Nanhthalene	NE	NE	10,000	<u>116/ Ν</u> δ mg/kg	20	2	0	0.041	1		0.034			ND				ND	1	0.57	
Toluene	10,000	62	10,000	mg/kg	20	6	0	0.034	3.9	ND	ND	ND	ND	ND	ND	ND	ND	0.22	39	ND	ND
Total Xylenes	10,000	NF	10,000	<u>116/ Ν</u> β mg/kg	20	6	0	0.045	20			0.005	ND	0 1 2				0.22 ND	20	ND	ND
i otal Aylenes	10,000	146	10,000	δ″ /a···	20	0	U	0.005	2.5			0.005		0.10					2.5	110	

	<b>RIDEM Industrial</b>			Sample Name:				Bango	Dotoctod	RCA-R6	RCA-R7	RCA-R11	A67	B02	B03	B07	B08	B12	B13	B26	B27
	Commercial Direct		RIDEIVI Opper	Date Collected:	Number of	Number of	Number of	Kalige i	Jelecleu	1996	1996	1996	2/25/2000	1/27/2000	1/27/2000	1/27/2000	1/27/2000	1/27/2000	1/27/2000	2/3/2000	2/22/2000
	Exposure Criteria	Leachability		Sample Depth:	Samples	Detections	Exceedances	N.A. in the second	Marian	0-2 FT	0-2 FT	0-2 FT	0 - 2 FT	0-2 FT	0 - 2 FT	0 - 2 FT	0 - 2 FT	0 - 2 FT	0 - 2 FT	0-2 FT	0-2 FT
	(I/C DEC)	Criteria		Units				winimum	waximum												
Pesticides and Poly-Chlorinated	Biphenols (PCBs)																				
Aroclor-1248	10	10	10,000	mg/kg	26	1	0	0.492	0.492	ND	0.492	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Alpha-Chlordane	NE	NE	10,000	mg/kg	23	1	0	0.0032	0.0032	NA	NA	NA	ND	0.0032	ND	ND	ND	ND	ND	ND	ND
4,4-DDE	NE	NE	10,000	mg/kg	23	1	0	0.11	0.11	NA	NA	NA	ND	ND	ND						
Delta-BHC	NE	NE	10,000	mg/kg	23	1	0	0.021	0.021	NA	NA	NA	ND	0.021	ND						
Endrin	NE	NE	10,000	mg/kg	23	2	0	0.0053	0.13	NA	NA	NA	ND	0.13	ND						
Endrin Ketone	NE	NE	10,000	mg/kg	23	1	0	0.14	0.14	NA	NA	NA	ND	ND	ND						
Heptachlor Epoxide	NE	NE	10,000	mg/kg	23	1	0	0.038	0.038	NA	NA	NA	ND	ND	ND						

#### <u>Notes</u>

#### Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows explorations with the Liquefaction Work Area

ND - Not Detected

NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As such, the final grades are unknown and as such the modified sampling depths are unknown. Collected confirmatory samples are not included on this table.

As described in the Remediation Regulations, the Direct Exposure and Leachability Criteria apply throughout the vadose zone. All surface soil data collected at the Site were collected within the vadose zone and comparisons to applicable I/C-DEC, GB Leachability Criteria and GB Upper Concentration Limits (UCLs) are presented for each sample.

	<b>RIDEM Industrial</b>			Sample Name:				_		B28	B36	B42	B43	B44	B45	B46	B56	B64	B65	B66
	<b>Commercial Direct</b>	RIDEM GB	RIDEM Upper	Date Collected:	Number of	Number of	Number of	Range	Detected	2/23/2000	2/22/2000	2/22/2000	2/22/2000	2/22/2000	2/22/2000	2/18/2000	2/18/2000	2/18/2000	2/18/2000	2/18/2000
	Exposure Criteria	Leachability	Concentration	Sample Depth:	Samples	Detections	Exceedances			0-2 FT	0-2 FT	0 - 2 FT	0 - 2 FT	0 - 2 FT	0 - 2 FT	0 - 2 FT	0-2 FT	0-2 FT	0-2 FT	0-2 FT
	(I/C DEC)	Criteria	Limit (UCL)	Units				Minimum	Naximum											
Semi-Volatile Organic Compound	ds (SVOCs)																			
2-Methylnaphthalene	10,000	NE	10,000	mg/kg	26	5	0	0.39	9.6	ND	ND	1.8	ND	ND	ND	ND	0.84	ND	9.6	ND
Acenaphthene	10,000	NE	10,000	mg/kg	26	3	0	1	14	ND	ND	ND	ND	ND	ND	ND	1.1	ND	14	ND
Acenaphthylene	10,000	NE	10,000	mg/kg	26	10	0	0.46	3.4	ND	0.72	3.4	0.67	3	ND	ND	0.88	0.46	0.68	ND
Anthracene	10,000	NE	10,000	mg/kg	26	10	0	0.44	25	ND	0.58	6.3	0.52	2.9	ND	ND	3.4	0.44	25	ND
Benzo [a] Anthracene	7.8	NE	10,000	mg/kg	26	15	6	0.437	32	ND	3.1	11	2.4	10	ND	ND	8.7	2.4	32	1.1
Benzo [a] Pyrene	0.8	NE	10,000	mg/kg	26	14	12	0.391	20	ND	2.9	7.4	1.9	9.5	ND	ND	6.7	1.9	20	0.96
Benzo [b] Fluoranthene	7.8	NE	10,000	mg/kg	26	15	7	0.42	26	ND	3.9	9.9	3.3	14	ND	0.42	8.6	2.9	23	1.3
Benzo [g,h,i] Perylene	10,000	NE	10,000	mg/kg	26	11	0	0.7	10	ND	2.1	3.7	1.5	4.9	ND	ND	3.8	1.7	10	0.7
Benzo [k] Fluoranthene	78	NE	10,000	mg/kg	26	12	0	0.32	7.8	ND	1.6	3.3	1.2	5.1	ND	ND	3.8	1.3	6.4	0.5
Carbazole	NE	NE	10,000	mg/kg	26	5	0	0.4	5.9	ND	ND	2.2	ND	0.4	ND	ND	0.98	ND	5.9	ND
Chrysene	780	NE	10,000	mg/kg	26	16	0	0.39	27	ND	3.4	9.2	2.6	10	ND	0.39	7.5	2.5	27	1.1
Dibenzo [a,h] Anthracene	0.8	NE	10,000	mg/kg	26	9	6	0.54	4.4	ND	0.54	1.6	0.66	2	ND	ND	1.4	ND	4.4	ND
Dibenzofuran	10,000	NE	10,000	mg/kg	26	4	0	0.78	7.1	ND	ND	2.4	ND	ND	ND	ND	0.78	ND	7.1	ND
Fluoranthene	10,000	NE	10,000	mg/kg	26	17	0	0.388	42	ND	6.3	22	ND	16	ND	0.47	18	3.3	42	2
Fluorene	10,000	NE	10,000	mg/kg	26	5	0	0.49	15	ND	ND	3.6	ND	0.49	ND	ND	1.4	ND	15	ND
Indeno [1,2,3-cd] Pyrene	7.8	NE	10,000	mg/kg	26	11	2	0.72	10	ND	2.4	4.9	1.8	5.6	ND	ND	4.3	1./	10	0.72
Naphthalene	10,000	NE	10,000	mg/kg	26	/	0	0.4	7.6	ND	ND 2.4	1.6	ND 1.C	0.4	ND	ND	1.5	ND	7.6	ND
Prienanthrene	10,000	INE NE	10,000	mg/kg	26	15	0	0.761	50	ND	2.4	18	1.0	3.1	ND		11	2 4 F	50	1.1
Total Potroloum Hydrocarbons (	10,000	INE	10,000	під/кд	20	18	0	0.404	59	ND	4.7	12	5.1	15	ND	0.67	11	4.5	59	1.7
	2 500	2 500	20.000	ma/ka	26	2	0	16	/1E	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2,500	2,500	50,000	iiig/ kg	20	2	0	40	415	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanida	10.000	NE	10.000	mg/kg	26	20	0	0.083	1.4	0.13	0.93	0.61	0.45	0.96	ND	ND	0.5	0.58	0.42	1.4
Antimony	820	NE	10,000	mg/kg	20	1	0	0.005	0.32	ND	ND	ND	0.45 ND	ND						
Arsenic	7	NE	10,000	mg/kg	26	23	4	1.5	14.5	2.1	13.8	5.4	7.6	5.6	1.6	3.1	8.4	5.9	6.5	4.2
Barium	10.000	NE	10.000	mg/kg	26	25	0	6.5	197	9.4	37.6	37.7	34.7	33.5	8.8	21.8	124	40.3	31.5	85.7
Bervllium	1.5	NE	10.000	mg/kg	23	23	0	0.29	0.8	0.42	0.4	0.34	0.55	0.49	0.3	0.33	0.64	0.41	0.4	0.4
Cadmium	1,000	NE	10,000	mg/kg	26	20	0	0.1	1.8	0.2	0.23	0.27	0.46	0.24	0.1	ND	0.38	0.23	0.26	ND
Chromium	10,000	NE	10,000	mg/kg	26	24	0	1.1	52.1	2.4	9.8	11.1	9.8	10.4	1.1	3.4	12.9	8.5	9	12.5
Copper	10,000	NE	10,000	mg/kg	23	23	0	1.5	49.3	3.3	20.6	30	25.9	20.7	1.5	7.1	49.3	24.3	25.6	15.6
Iron	NE	NE	NE	mg/kg	23	23	0	4930	18800	6000	14800	15500	18800	14200	4930	6690	18600	11200	13900	10000
Lead	500	NE	10,000	mg/kg	26	25	0	2.9	181	4.7	57.9	96.2	37.3	58.6	2.9	22	164	72.2	53.2	38.8
Mercury	610	NE	10,000	mg/kg	26	18	0	0.045	1.3	ND	1.3	0.049	0.045	0.11	ND	0.27	0.19	0.31	0.3	0.26
Nickel	10,000	NE	10,000	mg/kg	18	17	0	3.1	28.4	3.1	NA	ND	NA	NA	NA	4.7	19.8	11.6	11	9.5
Selenium	10,000	NE	10,000	mg/kg	26	13	0	0.4	10	0.4	0.59	0.82	0.53	ND	ND	ND	ND	0.41	ND	ND
Silver	10,000	NE	10,000	mg/kg	26	13	0	0.22	4.5	ND	ND	0.53	0.22	ND	ND	ND	ND	ND	ND	1.7
Zinc	10,000	NE	10,000	mg/kg	23	23	0	23.8	274	33.1	62.4	133	96.3	60.7	29.9	39.5	146	60	55.1	51.2
Volatile Organic Compounds (VC	DCs)																			
1,2,4 Trimethylbenzene	NE	NE	10,000	mg/kg	26	1	0	0.022	0.022	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5 Trimethylbenzene	NE	NE	10,000	mg/kg	26	2	0	0.02	0.048	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	200	4.3	10,000	mg/kg	26	6	0	0.037	2.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.92	ND
Chloroform	940	NE	10,000	mg/kg	26	1	0	0.22	0.22	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	10,000	62	10,000	mg/kg	26	2	0	0.1	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	760	NE	10,000	mg/kg	26	7	0	0.041	0.64	ND	0.64	0.61	0.45	ND	0.49	ND	ND	ND	ND	ND
Naphthalene	NE	NE	10,000	mg/kg	26	3	0	0.034	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	10,000	62	10,000	mg/kg	26	6	0	0.045	3.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.66	ND
Total Xylenes	10,000	NE	10,000	mg/kg	26	6	0	0.005	2.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

	<b>RIDEM Industrial</b>			Sample Name:				Pango	Dotoctod	B28	B36	B42	B43	B44	B45	B46	B56	B64	B65	B66
	<b>Commercial Direct</b>		RIDEIVI Opper	Date Collected:	Number of	Number of	Number of	nalige	Delecieu	2/23/2000	2/22/2000	2/22/2000	2/22/2000	2/22/2000	2/22/2000	2/18/2000	2/18/2000	2/18/2000	2/18/2000	2/18/2000
	Exposure Criteria	Leachability	Concentration	Sample Depth:	Samples	Detections	Exceedances	D.d. in income	D. Annuine sume	0-2 FT	0-2 FT	0 - 2 FT	0 - 2 FT	0 - 2 FT	0 - 2 FT	0 - 2 FT	0-2 FT	0-2 FT	0-2 FT	0-2 FT
	(I/C DEC)	Criteria		Units				wiinimum	iviaximum											
Pesticides and Poly-Chlorinated	Biphenols (PCBs)																			
Aroclor-1248	10	10	10,000	mg/kg	26	1	0	0.492	0.492	ND										
Alpha-Chlordane	NE	NE	10,000	mg/kg	23	1	0	0.0032	0.0032	ND										
4,4-DDE	NE	NE	10,000	mg/kg	23	1	0	0.11	0.11	ND	0.11	ND	ND	ND						
Delta-BHC	NE	NE	10,000	mg/kg	23	1	0	0.021	0.021	ND										
Endrin	NE	NE	10,000	mg/kg	23	2	0	0.0053	0.13	ND										
Endrin Ketone	NE	NE	10,000	mg/kg	23	1	0	0.14	0.14	ND	0.14	ND	ND	ND						
Heptachlor Epoxide	NE	NE	10,000	mg/kg	23	1	0	0.038	0.038	ND	0.038	ND								

#### <u>Notes</u>

#### Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows explorations with the Liquefaction Work Area

ND - Not Detected

NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As such, the final grades are unknown and as such the modified sampling depths are unknown. Collected confirmatory samples are not included on this table.

As described in the Remediation Regulations, the Direct Exposure and Leachability Criteria apply throughout the vadose zone. All surface soil data collected at the Site were collected within the vadose zone and comparisons to applicable I/C-DEC, GB Leachability Criteria and GB Upper Concentration Limits (UCLs) are presented for each sample.

	RIDEM Industrial			Sample Name:				_		D32	D38	D57
	Commercial Direct	RIDEM GB	RIDEM Upper	Date Collected:	Number of	Number of	Number of	Range I	Detected	12/1/1999	12/3/1999	12/8/1999
	Exposure Criteria	Leachability	Concentration	Sample Depth:	Samples	Detections	Exceedances			0-2 FT	0-2 FT	0-2 FT
	(I/C DEC)	Criteria	Limit (UCL)	Units				Minimum	Maximum			
Semi-Volatile Organic Compoun	ds (SVOCs)											
2-Methylnaphthalene	10.000	NF	10.000	mg/kg	26	5	0	0.39	9.6	ND	ND	ND
Acenanhthene	10,000	NE	10,000	mg/kg	26	3	0	1	14	ND	ND	ND
Acenanhthylene	10,000	NE	10,000	mg/kg	26	10	0	0.46	3.4	ND	ND	ND
Anthracene	10,000	NE	10,000	mg/kg	26	10	0	0.44	25	ND	ND	ND
Benzo [2] Anthracene	7.8	NE	10,000	mg/kg	26	15	6	0.437	32	0.64	0.82	ND
Benzo [a] Pyrene	0.8	NE	10,000	mg/kg	26	14	12	0.457	20	0.04	ND	ND
Benzo [b] Eluoranthene	7.8	NE	10,000	mg/kg	26	15	7	0.331	26	0.45	ND	ND
Benzo [g h i] Pervlene	10,000	NE	10,000	mg/kg	26	11	,	0.42	10	ND	ND	ND
Benzo [k] Eluoranthene	78	NE	10,000	mg/kg	20	12	0	0.7	7.8	0.32	ND	ND
Carbazole	NE	NE	10,000	mg/kg	20	5	0	0.52	5.0	0.52	ND	ND
Chrysone	780	NE	10,000	mg/kg	20	16	0	0.4	2.5	0.41	0.87	ND
Dibenzo [a h] Anthracene	780	NE	10,000	mg/kg	20	10	6	0.59	27	0.41	0.87	ND
Dibenzofuran	10.000		10,000	mg/kg	20	3	0	0.54	4.4		ND	ND
	10,000		10,000	mg/kg	20	4	0	0.78	/.1		1.0	ND
Fluorancielle	10,000		10,000	mg/kg	20		0	0.388	42	0.58	1.9	ND
Indone [1,2,2,ed] Durana	10,000		10,000	mg/kg	20		0	0.49	10	ND	ND	ND
Nanhthalana	7.8		10,000	mg/kg	20	- 11	2	0.72	10	ND	ND	ND
Desenthese	10,000	NE	10,000	rng/kg	26	15	0	0.4	7.0	ND	ND	ND
Phenanthrene	10,000	NE	10,000	rng/kg	26	15	0	0.761	50	ND 0.54	1.1	ND
Pyrene	10,000	INE	10,000	rng/kg	26	18	0	0.464	59	0.54	0.59	ND
Total Petroleum Hydrocarbons (		2,500	20,000		20	2	0	4.0	415	ND	ND	ND
IPH	2,500	2,500	30,000	mg/kg	26	2	0	46	415	ND	ND	ND
Inorganics Guanida	10.000	NE	10.000		20	20	0	0.002	1.4	0.44	0.16	0.083
	10,000	INE NE	10,000	rrig/kg	26	20	0	0.083	1.4	0.44	0.16	0.083
Anumony	820	NE	10,000	rng/kg	23	1	0	0.32	0.32	ND 4.0	0.32	
Arsenic	/	NE	10,000	rng/kg	26	23	4	1.5	14.5	4.9	14.5	5.5
Barium	10,000	NE	10,000	mg/kg	26	25	0	6.5	197	24.2	44.3	16.8
Beryllium Cadaaiwaa	1.5	NE	10,000	rng/kg	23	23	0	0.29	0.8	0.41	0.8	0.38
Character	1,000	INE NE	10,000	rng/kg	26	20	0	0.1	1.8	1.7	1.8	1.2
Chromium	10,000	NE	10,000	mg/kg	26	24	0	1.1	52.1	7.9	9.9	9
Copper	10,000	NE	10,000	mg/kg	23	23	0	1.5	49.3	22.2	24.7	12.8
Iron	NE F00	NE	NE 10.000	mg/kg	23	23	0	4930	18800	15300	15300	14000
Lead	500	NE	10,000	mg/kg	26	25	0	2.9	181	70.2	49.2	30.6
Nercury	610	NE	10,000	mg/kg	26	18	0	0.045	1.3	0.16	0.072	ND 112
	10,000	NE	10,000	mg/kg	18	17	0	3.1	28.4	14.3	13	14.2
Selenium	10,000	NE	10,000	mg/kg	26	13	0	0.4	10	10	ND	7.5
Silver	10,000	NE	10,000	mg/kg	26	13	0	0.22	4.5	1.3	3.1	0.71
	10,000	NE	10,000	mg/kg	23	23	0	23.8	274	40.1	61.2	33.1
Volatile Organic Compounds (Vo	DCs)		10.000									
1,2,4 Trimethylbenzene	NE	NE	10,000	mg/kg	26	1	0	0.022	0.022	ND	ND	ND
1,3,5 Trimethylbenzene	NE	NE	10,000	mg/kg	26	2	0	0.02	0.048	ND	ND	0.048
Benzene	200	4.3	10,000	mg/kg	26	6	0	0.037	2.1	0.13	0.037	0.14
Chloroform	940	NE	10,000	mg/kg	26	1	0	0.22	0.22	ND	ND	ND
Ethylbenzene	10,000	62	10,000	mg/kg	26	2	0	0.1	1.1	ND	ND	0.1
Methylene Chloride	760	NE	10,000	mg/kg	26	7	0	0.041	0.64	0.079	0.041	0.084
Naphthalene	NE	NE	10,000	mg/kg	26	3	0	0.034	1	ND	ND	ND
Toluene	10,000	62	10,000	mg/kg	26	6	0	0.045	3.9	0.16	0.045	0.21
Total Xylenes	10,000	NE	10,000	mg/kg	26	6	0	0.005	2.9	0.1	0.034	0.28

	<b>RIDEM Industrial</b>			Sample Name:				Range [	Detected	D32	D38	D57
	Commercial Direct		Concentration	Date Collected:	Number of	Number of	Number of	Nange	Detetteu	12/1/1999	12/3/1999	12/8/1999
	Exposure Criteria	Critorio		Sample Depth:	Samples	Detections	Exceedances		D.C	0-2 FT	0-2 FT	0-2 FT
	(I/C DEC)	Criteria		Units				wiinimum	waximum			
<b>Pesticides and Poly-Chlorinated</b>	Biphenols (PCBs)											
Aroclor-1248	10	10	10,000	mg/kg	26	1	0	0.492	0.492	ND	ND	ND
Alpha-Chlordane	NE	NE	10,000	mg/kg	23	1	0	0.0032	0.0032	ND	ND	ND
4,4-DDE	NE	NE	10,000	mg/kg	23	1	0	0.11	0.11	ND	ND	ND
Delta-BHC	NE	NE	10,000	mg/kg	23	1	0	0.021	0.021	ND	ND	ND
Endrin	NE	NE	10,000	mg/kg	23	2	0	0.0053	0.13	ND	0.0053	ND
Endrin Ketone	NE	NE	10,000	mg/kg	23	1	0	0.14	0.14	ND	ND	ND
Heptachlor Epoxide	NE	NE	10,000	mg/kg	23	1	0	0.038	0.038	ND	ND	ND

#### <u>Notes</u>

#### Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows explorations with the Liquefaction Work Area

ND - Not Detected

NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As such, the final grades are unknown and as such the modified sampling depths are unknown. Collected confirmatory samples are not included on this table.

As described in the Remediation Regulations, the Direct Exposure and Leachability Criteria apply throughout the vadose zone. All surface soil data collected at the Site were collected within the vadose zone and comparisons to applicable I/C-DEC, GB Leachability Criteria and GB Upper Concentration Limits (UCLs) are presented for each sample.

	<b>RIDEM Industrial</b>			Sample Name:				Pango	Detected	R	CA-14	R	CA-23	RC	A-39	ETP-21	ETP-31	SV	VBL-4	A67	B02	B03	B07
	<b>Commercial Direct</b>		Concentration	Date Collected:	Number of	Number of	Number of	Kange	Deletleu	1	.994	Octo	ber 1995	Apri	l 1996	1996	1996	1	1995	2/25/2000	1/27/2000	1/27/2000	1/27/2000
	Exposure Criteria	Critorio		Sample Depth:	Samples	Detections	Exceedances	Minimum	Maximum	6-8 FT	19-20 FT	4 - 6 FT	14 - 16 FT	8 - 10 FT	12 - 14 FT	8 FT	0-6 FT	6-8 FT	20-22 FT	4-6 FT	2-4 FT	2 - 4 FT	4 -6 FT
	(I/C DEC)	Citteria		Units				winnun	widximum														
Semi-Volatile Organic Compoun	ds (SVOCs)																						
2-Methylnaphthalene	10,000	NE	10,000	mg/kg	31	13	0	0.44	110	ND	ND	21.2	3.9	ND	ND	ND	ND	NA	NA	5	0.84	68	NA
Acenaphthene	10,000	NE	10,000	mg/kg	30	14	0	0.42	70.9	12.7	ND	ND	0.8	7.2	3.4	ND	ND	NA	NA	6.4	NA	NA	NA
Acenaphthylene	10,000	NE	10,000	mg/kg	29	12	0	0.35	52.4	52.4	ND	ND	ND	8.2	1.1	ND	ND	NA	NA	1.8	NA	NA	NA
Anthracene	10,000	NE	10,000	mg/kg	29	14	0	0.43	27	16	ND	ND	ND	5.2	3.9	ND	ND	NA	NA	5.7	NA	NA	NA
Benzo [a] Anthracene	7.8	NE	10,000	mg/kg	29	14	4	0.12	45	4.9	ND	ND	ND	2.9	2.5	ND	ND	NA	NA	9	NA	NA	NA
Benzo [a] Pyrene	0.8	NE	10,000	mg/kg	29	14	12	0.08	36	0.5	ND	ND	ND	1.7	1.4	ND	ND	NA	NA	8.9	NA	NA	NA
Benzo [b] Fluoranthene	7.8	NE	10,000	mg/kg	29	14	5	0.09	44	1.7	ND	ND	ND	1.3	1.1	ND	ND	NA	NA	11	NA	NA	NA
Benzo [g,h,i] Perylene	10,000	NE	10,000	mg/kg	29	12	0	0.5	18	0.5	ND	ND	ND	0.5	ND	ND	ND	NA	NA	4.8	NA	NA	NA
Benzo [k] Fluoranthene	78	NE	10,000	mg/kg	29	10	0	0.7	11	1.3	ND	ND	ND	ND	ND	ND	ND	NA	NA	2.9	NA	NA	NA
Carbazole	NE	NE	10,000	mg/kg	26	6	0	0.46	6.4	ND	ND	ND	ND	NA	NA	ND	ND	NA	NA	1	NA	NA	NA
Chrysene	780	NE	10,000	mg/kg	29	14	0	0.15	42	1.8	ND	ND	ND	1.7	1.4	ND	ND	NA	NA	8.2	NA	NA	NA
Dibenzo [a,h] Anthracene	0.8	NE	10,000	mg/kg	29	6	6	1.1	5.6	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	1.3	NA	NA	NA
Dibenzofuran	10,000	NE	10,000	mg/kg	26	9	0	0.37	7.5	0.7	ND	ND	0.5	NA	NA	ND	ND	NA	NA	2.5	NA	NA	NA
Fluoranthene	10,000	NE	10,000	mg/kg	30	15	0	0.33	74	3.9	ND	ND	ND	4.2	3.8	ND	ND	NA	NA	17	NA	NA	NA
Fluorene	10,000	NE	10,000	mg/kg	30	16	0	0.41	49.2	ND	ND	ND	0.7	2.5	1.4	ND	ND	NA	NA	7.4	NA	NA	NA
Indeno [1,2,3-cd] Pyrene	7.8	NE	10,000	mg/kg	29	10	1	0.71	20	0.8	ND	ND	ND	ND	ND	ND	ND	NA	NA	5.5	NA	NA	NA
Naphthalene	10,000	NE	10,000	mg/kg	31	19	0	0.36	1970	ND	ND	370	51.7	1	0.8	ND	ND	NA	NA	16	6.1	600	NA
Phenanthrene	10,000	NE	10,000	mg/kg	32	19	0	0.49	102	ND	ND	ND	1.7	14.5	10.6	ND	ND	NA	NA	23	NA	11	0.49
Pyrene	10,000	NE	10,000	mg/kg	30	16	0	0.25	68	3.1	ND	ND	ND	8.3	7.4	ND	ND	NA	NA	21	NA	NA	NA
Total Petroleum Hydrocarbons	ТРН)																						
ТРН	2,500	2,500	30,000	mg/kg	34	12	7	526	15390	ND	NA	7880	995	595	526	ND	ND	ND	ND	2400	ND	10000	3200
Inorganics																							
Barium	10,000	NE	10,000	mg/kg	2	2	0	21	27	NA	NA	NA	NA	NA	NA	27	21	NA	NA	NA	NA	NA	NA
Chromium	10,000	NE	10,000	mg/kg	2	1	0	6	6	NA	NA	NA	NA	NA	NA	6	ND	NA	NA	NA	NA	NA	NA
Cyanide	10,000	NE	10,000	mg/kg	23	18	0	0.07	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6	0.56	0.41	0.31
Iron	NE	NE	NE	mg/kg	23	23	0	6870	21800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10100	14700	12600	12700
Lead	500	NE	10,000	mg/kg	2	1	0	28	28	NA	NA	NA	NA	NA	NA	ND	28	NA	NA	NA	NA	NA	NA

	RIDEM Industrial			Sample Name:				Danga	Detected	R	CA-14	R	CA-23	RC	A-39	ETP-21	ETP-31	S۱	NBL-4	A67	B02	B03	B07
	<b>Commercial Direct</b>		RIDEM Opper	Date Collected:	Number of	Number of	Number of	Kange	Delecied	1	.994	Octo	ber 1995	Apri	l 1996	1996	1996	:	1995	2/25/2000	1/27/2000	1/27/2000	1/27/2000
	Exposure Criteria	Critorio	Limit (UCL)	Sample Depth:	Samples	Detections	Exceedances	Minimum	Maximum	6-8 FT	19-20 FT	4 - 6 FT	14 - 16 FT	8 - 10 FT	12 - 14 FT	8 FT	0-6 FT	6-8 FT	20-22 FT	4-6 FT	2-4 FT	2 - 4 FT	4 -6 FT
	(I/C DEC)	Criteria	Limit (OCL)	Units				winnum	waximum														
Volatile Organic Compounds (V	OCs)																						
1,2,3 Trichlorobenzene	NE	NE	10,000	mg/kg	32	1	0	0.007	0.007	ND	ND	ND	ND	ND	NA	0.007	ND	NA	NA	ND	ND	ND	ND
1,2,4 Trimethylbenzene	NE	NE	10,000	mg/kg	32	4	0	0.84	84.4	ND	ND	ND	8.1	ND	NA	ND	ND	NA	NA	0.84	ND	ND	ND
1,3,5 Trimethylbenzene	NE	NE	10,000	mg/kg	32	5	0	0.29	41.7	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND	0.29	ND
4-Isopropyltoluene	NE	NE	10,000	mg/kg	32	4	0	0.09	3.8	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND	ND	ND
Benzene	200	4.3	10,000	mg/kg	32	7	2	0.17	18	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	0.25	0.44	1.6	ND
Carbon Disulfide	NE	NE	10,000	mg/kg	32	1	0	0.004	0.004	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND	ND	ND
Ethylbenzene	10,000	62	10,000	mg/kg	32	7	1	0.08	160	0.08	ND	ND	ND	ND	NA	ND	ND	NA	NA	0.43	ND	2	ND
Isopropylbenzene	10,000	NE	10,000	mg/kg	32	3	0	0.09	9.6	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND	ND	ND
Methylene Chloride	760	NE	10,000	mg/kg	31	8	0	0.008	0.99	ND	ND	ND	ND	NA	NA	ND	0.008	NA	NA	ND	ND	ND	ND
n-Butylbenzene	NE	NE	10,000	mg/kg	32	2	0	0.25	5.4	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND	ND	ND
n-Propylbenzene	NE	NE	10,000	mg/kg	32	2	0	0.17	5.1	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND	ND	ND
Naphthalene	NE	NE	10,000	mg/kg	32	13	0	0.057	2195	ND	ND	500	133	ND	NA	0.057	ND	NA	NA	11	2.7	25	0.71
sec-Butylbenzene	NE	NE	10,000	mg/kg	32	2	0	0.26	1.8	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND	ND	0.26
Styrene	190	64	10,000	mg/kg	32	2	0	0.24	1.55	0.24	ND	ND	ND	ND	NA	ND	ND	NA	NA	ND	ND	ND	ND
Toluene	10,000	62	10,000	mg/kg	32	7	0	0.04	6.4	ND	ND	ND	ND	ND	NA	ND	ND	NA	NA	0.4	0.91	0.19	ND
Total Xylenes	10,000	NE	10,000	mg/kg	32	8	0	0.42	112.9	1.3	ND	ND	ND	ND	NA	ND	ND	NA	NA	0.42	0.5	1.1	ND

#### Notes

#### Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards and subject to Note 2 below.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows explorations with the Liquefaction Work Area

ND - Not Detected

NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As such, the final grades are unknown and as such the modified sampling depths are unknown. Collected confirmatory samples are not included on this table.

Note 2. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and GB Upper Concentration Limit (UCLs).

	<b>RIDEM Industrial</b>			Sample Name:				Range	Detected	B08	B12	B13	B26	B27	B28	B36	B42	B43	B44	B45
	Commercial Direct		Concontration	Date Collected:	Number of	Number of	Number of	Nalige	Detected	1/27/2000	1/27/2000	1/27/2000	2/3/2000	2/22/2000	2/23/2000	2/22/2000	2/22/2000	2/22/2000	2/22/2000	2/22/2000
	Exposure Criteria	Critorio		Sample Depth:	Samples	Detections	Exceedances	Minima	Maximum	4 -6 FT	4 -6 FT	2 - 4 FT	4-6 FT	4-6 FT	8-10 FT	4-6 FT	4-6 FT	4 - 6 FT	8 - 10 FT	4 - 6 FT
	(I/C DEC)	Criteria		Units				winnmum	waximum											
Semi-Volatile Organic Compoun	ds (SVOCs)																			
2-Methylnaphthalene	10,000	NE	10,000	mg/kg	31	13	0	0.44	110	NA	67	110	ND	ND	0.6	ND	2.1	ND	ND	1.1
Acenaphthene	10,000	NE	10,000	mg/kg	30	14	0	0.42	70.9	1.6	5.1	15	0.6	ND	ND	ND	ND	ND	ND	0.42
Acenaphthylene	10,000	NE	10,000	mg/kg	29	12	0	0.35	52.4	NA	ND	ND	0.35	ND	0.88	ND	ND	ND	1.9	2.6
Anthracene	10,000	NE	10,000	mg/kg	29	14	0	0.43	27	NA	2.2	ND	1	ND	0.73	ND	0.47	ND	8.9	2.4
Benzo [a] Anthracene	7.8	NE	10,000	mg/kg	29	14	4	0.12	45	NA	ND	ND	1.9	ND	2.3	ND	1.5	ND	6.7	8
Benzo [a] Pyrene	0.8	NE	10,000	mg/kg	29	14	12	0.08	36	NA	ND	ND	1.7	ND	1.9	ND	1.3	ND	8.8	7.3
Benzo [b] Fluoranthene	7.8	NE	10,000	mg/kg	29	14	5	0.09	44	NA	ND	ND	2.5	ND	2.5	ND	1.8	ND	5.8	8.6
Benzo [g,h,i] Perylene	10,000	NE	10,000	mg/kg	29	12	0	0.5	18	NA	ND	ND	1.3	ND	1.1	ND	0.62	ND	3.2	4.4
Benzo [k] Fluoranthene	78	NE	10,000	mg/kg	29	10	0	0.7	11	NA	ND	ND	0.7	ND	0.78	ND	0.7	ND	ND	2.9
Carbazole	NE	NE	10,000	mg/kg	26	6	0	0.46	6.4	NA	ND	ND	0.46	ND	ND	ND	ND	ND	ND	1.4
Chrysene	780	NE	10,000	mg/kg	29	14	0	0.15	42	NA	ND	ND	2	ND	2.6	ND	1.5	ND	8.8	7.3
Dibenzo [a,h] Anthracene	0.8	NE	10,000	mg/kg	29	6	6	1.1	5.6	NA	ND	ND	ND	ND	ND	ND	ND	ND	1.4	1.2
Dibenzofuran	10,000	NE	10,000	mg/kg	26	9	0	0.37	7.5	NA	5.2	ND	0.37	ND	ND	ND	0.77	ND	ND	ND
Fluoranthene	10,000	NE	10,000	mg/kg	30	15	0	0.33	74	0.48	1.9	ND	4	ND	3.4	ND	ND	ND	12	13
Fluorene	10,000	NE	10,000	mg/kg	30	16	0	0.41	49.2	1.2	5.4	8.6	0.72	ND	0.41	ND	1.9	ND	ND	1
Indeno [1,2,3-cd] Pyrene	7.8	NE	10,000	mg/kg	29	10	1	0.71	20	NA	ND	ND	1.1	ND	1.1	ND	0.71	ND	5.5	4.6
Naphthalene	10,000	NE	10,000	mg/kg	31	19	0	0.36	1970	NA	150	620	0.36	ND	2.6	ND	1.3	ND	0.66	1.4
Phenanthrene	10,000	NE	10,000	mg/kg	32	19	0	0.49	102	3.1	12	19	4.2	ND	2	ND	3.2	ND	4.2	8.1
Pyrene	10,000	NE	10,000	mg/kg	30	16	0	0.25	68	0.92	2.1	ND	3.8	ND	4	ND	1.4	ND	14	15
Total Petroleum Hydrocarbons (	(TPH)																			
ТРН	2,500	2,500	30,000	mg/kg	34	12	7	526	15390	ND	6800	7400	ND	ND	ND	ND	ND	ND	ND	ND
Inorganics																				
Barium	10,000	NE	10,000	mg/kg	2	2	0	21	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	10,000	NE	10,000	mg/kg	2	1	0	6	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	10,000	NE	10,000	mg/kg	23	18	0	0.07	6	0.29	0.43	0.33	4.8	0.25	3.5	ND	0.62	ND	0.22	0.67
Iron	NE	NE	NE	mg/kg	23	23	0	6870	21800	13600	10700	14300	11800	6870	9790	14700	8710	16800	8530	13100
Lead	500	NE	10,000	mg/kg	2	1	0	28	28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

	RIDEM Industrial			Sample Name:						B08	B12	B13	B26	B27	B28	B36	B42	B43	B44	B45
	Commercial Direct	RIDEM GB	RIDEM Upper	Date Collected:	Number of	Number of	Number of	Range I	Detected	1/27/2000	1/27/2000	1/27/2000	2/3/2000	2/22/2000	2/23/2000	2/22/2000	2/22/2000	2/22/2000	2/22/2000	2/22/2000
	Exposure Criteria	Leachability	Concentration	Sample Depth:	Samples	Detections	Exceedances			4 -6 FT	4 -6 FT	2 - 4 FT	4-6 FT	4-6 FT	8-10 FT	4-6 FT	4-6 FT	4 - 6 FT	8 - 10 FT	4 - 6 FT
	(I/C DEC)	Criteria	Limit (UCL)	Units				Minimum	Maximum											
Volatile Organic Compounds (VO	DCs)																			
1,2,3 Trichlorobenzene	NE	NE	10,000	mg/kg	32	1	0	0.007	0.007	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4 Trimethylbenzene	NE	NE	10,000	mg/kg	32	4	0	0.84	84.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5 Trimethylbenzene	NE	NE	10,000	mg/kg	32	5	0	0.29	41.7	ND	0.5	8.8	ND	ND	ND	ND	ND	ND	ND	ND
4-Isopropyltoluene	NE	NE	10,000	mg/kg	32	4	0	0.09	3.8	ND	ND	3.8	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	200	4.3	10,000	mg/kg	32	7	2	0.17	18	ND	0.69	18	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	NE	NE	10,000	mg/kg	32	1	0	0.004	0.004	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	10,000	62	10,000	mg/kg	32	7	1	0.08	160	ND	2.1	160	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	10,000	NE	10,000	mg/kg	32	3	0	0.09	9.6	ND	ND	9.6	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	760	NE	10,000	mg/kg	31	8	0	0.008	0.99	ND	ND	ND	ND	0.45	ND	0.44	0.99	0.61	ND	ND
n-Butylbenzene	NE	NE	10,000	mg/kg	32	2	0	0.25	5.4	ND	ND	5.4	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NE	NE	10,000	mg/kg	32	2	0	0.17	5.1	ND	ND	5.1	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	NE	NE	10,000	mg/kg	32	13	0	0.057	2195	ND	34	500	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	NE	NE	10,000	mg/kg	32	2	0	0.26	1.8	ND	ND	1.8	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	190	64	10,000	mg/kg	32	2	0	0.24	1.55	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	10,000	62	10,000	mg/kg	32	7	0	0.04	6.4	ND	ND	ND	ND	ND	0.4	ND	ND	ND	ND	ND
Total Xylenes	10,000	NE	10,000	mg/kg	32	8	0	0.42	112.9	ND	0.45	35	ND	ND	ND	ND	ND	ND	ND	ND

#### Notes

#### Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards and subject to Note 2 below.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows explorations with the Liquefaction Work Area

ND - Not Detected

NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As such, the final grades are unknown and as such the modified sampling depths are unknown. Collected confirmatory samples are not included on this table.

Note 2. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and GB Upper Concentration Limit (UCLs).

	RIDEM Industrial	RIDEM GB	RIDEM Upper	Sample Name:	Number of	Number of	Number of	Range	Detected	B46	B56	B64	B65	B66	D32	D38	D57	VHB-17	MHA-1
	Exposure Criteria	Leachability Criteria	Concentration Limit (UCL)	Sample Depth:	Samples	Detections	Exceedances	Minimum	Maximum	4 - 6 FT	4-6 FT	2-4 FT	2-4 FT	4-6 FT	4-6 FT	6-8 FT	2-4 FT	6 FT	172872003 12 - 14 FT
Semi-Volatile Organic Compoun	ds (SVOCs)			onito															
2-Methylnaphthalene	10,000	NE	10,000	mg/kg	31	13	0	0.44	110	0.44	4.4	ND	6.7	ND	ND	ND	ND	ND	ND
Acenaphthene	10,000	NE	10,000	mg/kg	30	14	0	0.42	70.9	1.1	8.4	ND	10	ND	ND	ND	ND	70.9	ND
Acenaphthylene	10,000	NE	10,000	mg/kg	29	12	0	0.35	52.4	0.65	3	ND	ND	ND	ND	ND	ND	25.6	0.66
Anthracene	10,000	NE	10,000	mg/kg	29	14	0	0.43	27	3	27	ND	16	ND	ND	ND	ND	ND	0.43
Benzo [a] Anthracene	7.8	NE	10,000	mg/kg	29	14	4	0.12	45	5.7	45	ND	6	ND	ND	ND	ND	19.7	0.12
Benzo [a] Pyrene	0.8	NE	10,000	mg/kg	29	14	12	0.08	36	5	36	ND	10	ND	ND	ND	ND	17.8	0.08
Benzo [b] Fluoranthene	7.8	NE	10,000	mg/kg	29	14	5	0.09	44	6.3	44	ND	10	ND	ND	ND	ND	19.7	0.09
Benzo [g,h,i] Perylene	10,000	NE	10,000	mg/kg	29	12	0	0.5	18	3.7	18	ND	5.3	ND	ND	ND	ND	9.9	ND
Benzo [k] Fluoranthene	78	NE	10,000	mg/kg	29	10	0	0.7	11	1.8	11	ND	6	ND	ND	ND	ND	9.9	ND
Carbazole	NE	NE	10,000	mg/kg	26	6	0	0.46	6.4	1.8	6.4	ND	3.9	ND	ND	ND	ND	ND	NA
Chrysene	780	NE	10,000	mg/kg	29	14	0	0.15	42	5.8	42	ND	14	ND	ND	ND	ND	19.7	0.15
Dibenzo [a,h] Anthracene	0.8	NE	10,000	mg/kg	29	6	6	1.1	5.6	1.1	5.6	ND	2.3	ND	ND	ND	ND	ND	ND
Dibenzofuran	10,000	NE	10,000	mg/kg	26	9	0	0.37	7.5	0.91	7.5	ND	5.2	ND	ND	ND	ND	ND	NA
Fluoranthene	10,000	NE	10,000	mg/kg	30	15	0	0.33	74	15	74	ND	25	ND	ND	ND	ND	49.2	0.33
Fluorene	10,000	NE	10,000	mg/kg	30	16	0	0.41	49.2	1.6	12	ND	11	ND	ND	ND	ND	49.2	1.32
Indeno [1,2,3-cd] Pyrene	7.8	NE	10,000	mg/kg	29	10	1	0.71	20	4.1	20	ND	5.8	ND	ND	ND	ND	ND	ND
Naphthalene	10,000	NE	10,000	mg/kg	31	19	0	0.36	1970	0.78	7.8	ND	5.1	ND	ND	ND	ND	1970	79.2
Phenanthrene	10,000	NE	10,000	mg/kg	32	19	0	0.49	102	12	64	ND	46	ND	ND	ND	ND	102	1.78
Pyrene	10,000	NE	10,000	mg/kg	30	16	0	0.25	68	8.5	68	ND	32	ND	ND	ND	ND	41.4	0.25
Total Petroleum Hydrocarbons	(TPH)																		
ТРН	2,500	2,500	30,000	mg/kg	34	12	7	526	15390	ND	3100	ND	ND	ND	ND	ND	ND	15390	1451
Inorganics																			
Barium	10,000	NE	10,000	mg/kg	2	2	0	21	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	10,000	NE	10,000	mg/kg	2	1	0	6	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	10,000	NE	10,000	mg/kg	23	18	0	0.07	6	1.6	0.91	ND	ND	ND	0.07	0.092	0.6	NA	NA
Iron	NE	NE	NE	mg/kg	23	23	0	6870	21800	13300	21800	15100	16000	13300	14000	13800	15400	NA	NA
Lead	500	NE	10,000	mg/kg	2	1	0	28	28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

	<b>RIDEM Industrial</b>			Sample Name:				Dongo	Detected	B46	B56	B64	B65	B66	D32	D38	D57	VHB-17	MHA-1
	<b>Commercial Direct</b>		RIDEIVI Opper	Date Collected:	Number of	Number of	Number of	Kange	Delected	2/18/2000	2/18/2000	2/18/2000	2/18/2000	2/18/2000	12/1/1999	12/3/1999	12/8/1999	1/17/2002	1/28/2003
	Exposure Criteria	Critorio		Sample Depth:	Samples	Detections	Exceedances	Minima	Maximum	4 - 6 FT	4-6 FT	2-4 FT	2-4 FT	4-6 FT	4-6 FT	6-8 FT	2-4 FT	6 FT	12 - 14 FT
	(I/C DEC)	Criteria		Units				winnum	Iviaximum										
Volatile Organic Compounds (VO	OCs)																		
1,2,3 Trichlorobenzene	NE	NE	10,000	mg/kg	32	1	0	0.007	0.007	ND									
1,2,4 Trimethylbenzene	NE	NE	10,000	mg/kg	32	4	0	0.84	84.4	ND	84.4	4.08							
1,3,5 Trimethylbenzene	NE	NE	10,000	mg/kg	32	5	0	0.29	41.7	ND	41.7	2.38							
4-Isopropyltoluene	NE	NE	10,000	mg/kg	32	4	0	0.09	3.8	ND	0.46	ND	ND	ND	ND	ND	ND	3.1	0.09
Benzene	200	4.3	10,000	mg/kg	32	7	2	0.17	18	ND	6.2	0.17							
Carbon Disulfide	NE	NE	10,000	mg/kg	32	1	0	0.004	0.004	ND	0.004								
Ethylbenzene	10,000	62	10,000	mg/kg	32	7	1	0.08	160	ND	18.2	2.3							
Isopropylbenzene	10,000	NE	10,000	mg/kg	32	3	0	0.09	9.6	ND	5.5	0.09							
Methylene Chloride	760	NE	10,000	mg/kg	31	8	0	0.008	0.99	ND	ND	ND	ND	ND	0.078	0.059	0.089	ND	ND
n-Butylbenzene	NE	NE	10,000	mg/kg	32	2	0	0.25	5.4	ND	0.25								
n-Propylbenzene	NE	NE	10,000	mg/kg	32	2	0	0.17	5.1	ND	0.17								
Naphthalene	NE	NE	10,000	mg/kg	32	13	0	0.057	2195	ND	2.8	ND	1	ND	ND	ND	ND	2195	61.2
sec-Butylbenzene	NE	NE	10,000	mg/kg	32	2	0	0.26	1.8	ND									
Styrene	190	64	10,000	mg/kg	32	2	0	0.24	1.55	ND	1.55								
Toluene	10,000	62	10,000	mg/kg	32	7	0	0.04	6.4	ND	ND	ND	ND	ND	0.04	ND	ND	6.4	1.13
Total Xylenes	10,000	NE	10,000	mg/kg	32	8	0	0.42	112.9	ND	112.9	8.13							

#### Notes

#### Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards and subject to Note 2 below.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows explorations with the Liquefaction Work Area

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Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As such, the final grades are unknown and as such the modified sampling depths are unknown. Collected confirmatory samples are not included on this table.

Note 2. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and GB Upper Concentration Limit (UCLs).

STRAP - Liquefaction Project

Providence, Rhode Island

	Surve	ved Elevatio	ns			Well Install	ation Details									July 2011							A	ugust 2011			
Well ID	Top of Casing Elevation (Feet)	Top of PVC Elevation (Feet)	Grade Elevation (Feet)	Type of Well	Well Depth Modifier	Stratum	Date of Installation	Measured Well Depth (feet bgs)	Screened Interval (feet bgs)	Range of LNAPL Observed (feet)	Range of DNAPL Observed (feet)	Depth to LNAPL (ft)	Depth to Water (ft)	Depth to DNAPL (ft)	Total Well Depth (ft)	GW Elevation (feet)	LNAPL Thickness (feet)	DNAPL Thickness (feet)	Corrected Groundwater Elevation (feet)	Depth to LNAPL (ft)	Depth to Water (ft)	Depth to DNAPL (ft)	Total Well Depth (ft)	GW Elevation (feet)	LNAPL Thickness (feet)	DNAPL Thickness (feet)	Corrected Groundwater Elevation (feet)
			-												-								-				
VHB-23	12.98	12.80	11.37	Standpipe	Shallow	Fill	1/29/2003	16.37	6 - 16	trace - 0.05	NP	7.88	7.89	-	17.25	4.91	0.01	NP	4.91	8.50	8.55	-	17.25	4.25	0.05	NP	4.29
RCA-5	12.68	12.27	10.79	Standpipe	Shallow	Fill	9/7/1994	15.92	6 - 16	NP	NP	-	10.04	-	13.33	2.23	NP	NP	2.23	-	10.33	-	13.33	1.94	NP	NP	1.94
RCA-14	13.09	12.75	11.06	Standpipe	Shallow	Fill	9/12/1994	13.61	5 - 15	NP	NP	-	8.4	-	15.28	4.35	NP	NP	4.35	-	9.91	-	15.28	2.84	NP	NP	2.84
RCA-20	13.25	12.95	11.01	Standpipe	Shallow	Fill	10/18/1995	12.26	3.5 - 13.5	NP	NP	-	8.16	-	10.95	4.79	NP	NP	4.79	-	9.09	-	10.95	3.86	NP	NP	3.86
RCA-21	NS	13.72	10.48	Standpipe	Shallow	Fill	10/30/1995	11.39	4 - 14	0.91 - 3.58	NP	10.07	13.65	-	13.75	0.07	3.58	NP	3.11	10.72	13.66	-	13.75	0.06	2.94	NP	2.56
RCA-39	14.07	13.86	11.43	Standpipe	Shallow	Fill	5/3/1996	12.32	3 - 13	NP	NP	-	8.81	-	14.6	5.05	NP	NP	5.05	-	9.65	-	14.6	4.21	NP	NP	4.21
RCA-40	12.76	12.24	10.47	Standpipe	Shallow	Fill	5/3/1996	15.15	4 - 14	trace - 0.04	NP	-	10.01	-	16.75	2.23	NP	NP	2.23	-	10.37	-	16.75	1.87	NP	NP	1.87
CHES RW-2	14.27	14.27	11.09	Recovery Well	Shallow	Fill	2002	13.12	Unknown	trace	NP	-	9.85	-	16.24	4.42	NP	NP	4.42	-	10.41	-	10.24	3.86	NP	NP	3.86
CHES RW-3	14.30	14.30	11.24	Recovery Well	Shallow	Fill	2002	14.84	Unknown	trace	NP	-	11.35	-	17.9	2.95	NP	NP	2.95	-	12.25	-	17.9	2.05	NP	NP	2.05
CHES RW-4	13.08	13.08	9.09	Recovery Well	Shallow	Fill	2002	8.57	Unknown	trace - 0.03	NP	10.92	10.94	-	12.35	2.14	0.02	NP	2.16	11.27	11.3	-	12.35	1.78	0.03	NP	1.81
CHES RW-5	14.32	14.32	11.16	Recovery Well	Shallow	Fill	2002	11.34	Unknown	0.01	NP	-	11.6	-	13.8	2.72	NP	NP	2.72	-	11.9	-	13.8	2.42	NP	NP	2.42
GZ-204A	13.86	12.83	11.30	Standpipe	Shallow	Fill	4/12/2005	15.92	4 - 16	NP	NP	-	8.75	-	17.3	4.08	NP	NP	4.08	-	9.4	-	17.3	3.43	NP	NP	3.43
GZ-216	12.85	11.61	10.34	Standpipe	Shallow	Fill	5/17/2005	16.45	5 - 15	NP	NP	-	6.61	-	17.75	5.00	NP	NP	5.00	-	7.65	-	17.75	3.96	NP	NP	3.96
RW-1	14.18	14.18	11.84	Recovery Well	Shallow	Fill	6/17/2014	11.66	8 - 13	trace - 0.02	NP																
GZ-314S	14.35	14.19	11.13	Standpipe	Shallow	Fill	6/3/2014	18.88	4 - 19	NP	NP																
GZ-314D	14.24	14.11	11.22	Standpipe	Deep	Organic Silt	6/3/2014	34.11	24 - 34	NP	NP																
GZ-315D	13.06	12.93	10.17	Standpipe	Deep	Organic Silt	6/4/2014	30.29	20 - 30	NP	NP																

Notes

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

STRAP - Liquefaction Project

Providence, Rhode Island

	Surve	eved Elevatio	ns			Well Instal	lation Details								Fe	bruary 2012								ulv 2012			
Well ID	Top of Casing Elevation (Feet)	Top of PVC Elevation (Feet)	Grade Elevation (Feet)	Type of Well	Well Depth Modifier	Stratum	Date of Installation	Measured Well Depth (feet bgs)	Screened Interval (feet bgs)	Range of LNAPL Observed (feet)	Range of DNAPL Observed (feet)	Depth to LNAPL (ft)	Depth to Water (ft)	Depth to DNAPL (ft)	Total Well Depth (ft)	GW Elevation (feet)	LNAPL Thickness (feet)	DNAPL Thickness (feet)	Corrected Groundwater Elevation (feet)	Depth to LNAPL (ft)	Depth to Water (ft)	Depth to DNAPL (ft)	Total Well Depth (ft)	GW Elevation (feet)	LNAPL Thickness (feet)	DNAPL Thickness (feet)	Corrected Groundwater Elevation (feet)
									-					i		<b>i</b>			-		i						
VHB-23	12.98	12.80	11.37	Standpipe	Shallow	Fill	1/29/2003	16.37	6 - 16	trace - 0.05	NP	trace	8.8	-	17.85	4.00	trace	NP	4.00	-	9.44	-	17.85	3.36	NP	NP	3.36
RCA-5	12.68	12.27	10.79	Standpipe	Shallow	Fill	9/7/1994	15.92	6 - 16	NP	NP	-	10.75	-	13.45	1.52	NP	NP	1.52	-	10.44	-	13.45	1.83	NP	NP	1.83
RCA-14	13.09	12.75	11.06	Standpipe	Shallow	Fill	9/12/1994	13.61	5 - 15	NP	NP	-	8.81	-	15.35	3.94	NP	NP	3.94	-	9.03	-	15.2	3.72	NP	NP	3.72
RCA-20	13.25	12.95	11.01	Standpipe	Shallow	Fill	10/18/1995	12.26	3.5 - 13.5	NP	NP	-	8.85	-	11.07	4.10	NP	NP	4.10	-	9.1	-	11.07	3.85	NP	NP	3.85
RCA-21	NS	13.72	10.48	Standpipe	Shallow	Fill	10/30/1995	11.39	4 - 14	0.91 - 3.58	NP	10.95	13.74	-	13.94	-0.02	2.79	NP	2.35	11.17	12.82	-	14.35	0.90	1.65	NP	2.30
RCA-39	14.07	13.86	11.43	Standpipe	Shallow	Fill	5/3/1996	12.32	3 - 13	NP	NP	-	9.45	-	14.7	4.41	NP	NP	4.41	-	9.85	-	14.65	4.01	NP	NP	4.01
RCA-40	12.76	12.24	10.47	Standpipe	Shallow	Fill	5/3/1996	15.15	4 - 14	trace - 0.04	NP	trace	10.78	-	16.9	1.46	trace	NP	1.46	trace	10.47	-	16.8	1.77	trace	NP	1.77
CHES RW-2	14.27	14.27	11.09	Recovery Well	Shallow	Fill	2002	13.12	Unknown	trace	NP	trace	10.24	-	10.35	4.03	trace	NP	4.03	-	10.57	-	10.61	3.70	NP	NP	3.70
CHES RW-3	14.30	14.30	11.24	Recovery Well	Shallow	Fill	2002	14.84	Unknown	trace	NP	-	12.35	-	18	1.95	NP	NP	1.95	-	12.31	-	17.92	1.99	NP	NP	1.99
CHES RW-4	13.08	13.08	9.09	Recovery Well	Shallow	Fill	2002	8.57	Unknown	trace - 0.03	NP	11.67	11.68	-	12.45	1.40	0.01	NP	1.41	trace	11.4	-	12.4	1.68	trace	NP	1.68
CHES RW-5	14.32	14.32	11.16	Recovery Well	Shallow	Fill	2002	11.34	Unknown	0.01	NP	-	12.3	-	13.8	2.02	NP	NP	2.02	-	12.08	-	13.8	2.24	NP	NP	2.24
GZ-204A	13.86	12.83	11.30	Standpipe	Shallow	Fill	4/12/2005	15.92	4 - 16	NP	NP	-	9.19	-	17.41	3.64	NP	NP	3.64	-	9.49	-	17.43	3.34	NP	NP	3.34
GZ-216	12.85	11.61	10.34	Standpipe	Shallow	Fill	5/17/2005	16.45	5 - 15	NP	NP	-	6.88	-	17.65	4.73	NP	NP	4.73	-	7.72	-	17.68	3.89	NP	NP	3.89
RW-1	14.18	14.18	11.84	Recovery Well	Shallow	Fill	6/17/2014	11.66	8 - 13	trace - 0.02	NP																
GZ-314S	14.35	14.19	11.13	Standpipe	Shallow	Fill	6/3/2014	18.88	4 - 19	NP	NP																
GZ-314D	14.24	14.11	11.22	Standpipe	Deep	Organic Silt	6/3/2014	34.11	24 - 34	NP	NP																
GZ-315D	13.06	12.93	10.17	Standpipe	Deep	Organic Silt	6/4/2014	30.29	20 - 30	NP	NP																

Notes

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NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

STRAP - Liquefaction Project

Providence, Rhode Island

	Surve	eved Flevatio	ns			Well Instal	lation Details				_	ſ			Fe	bruary 2013							Nov	ember 2013			
Well ID	Top of Casing Elevation (Feet)	Top of PVC Elevation (Feet)	Grade Elevation (Feet)	Type of Well	Well Depth Modifier	Stratum	Date of Installation	Measured Well Depth (feet bgs)	Screened Interval (feet bgs)	Range of LNAPL Observed (feet)	Range of DNAPL Observed (feet)	Depth to LNAPL (ft)	Depth to Water (ft)	Depth to DNAPL (ft)	Total Well Depth (ft)	GW Elevation (feet)	LNAPL Thickness (feet)	DNAPL Thickness (feet)	Corrected Groundwater Elevation (feet)	Depth to LNAPL (ft)	Depth to Water (ft)	Depth to DNAPL (ft)	Total Well Depth (ft)	GW Elevation (feet)	LNAPL Thickness (feet)	DNAPL Thickness (feet)	Corrected Groundwater Elevation (feet)
		_						-			-		_														
VHB-23	12.98	12.80	11.37	Standpipe	Shallow	Fill	1/29/2003	16.37	6 - 16	trace - 0.05	NP	8.21	8.22	-	17.8	4.58	0.01	NP	4.58	-	9.86	-	17.3	2.94	NP	NP	2.94
RCA-5	12.68	12.27	10.79	Standpipe	Shallow	Fill	9/7/1994	15.92	6 - 16	NP	NP	-	10.59	-	13.55	1.68	NP	NP	1.68	-	10.77	-	13.45	1.50	NP	NP	1.50
RCA-14	13.09	12.75	11.06	Standpipe	Shallow	Fill	9/12/1994	13.61	5 - 15	NP	NP	-	8.71	-	15.3	4.04	NP	NP	4.04	-	9.76	-	15.35	2.99	NP	NP	2.99
RCA-20	13.25	12.95	11.01	Standpipe	Shallow	Fill	10/18/1995	12.26	3.5 - 13.5	NP	NP	-	8.83	-	14.35	4.12	NP	NP	4.12	-	10.27	-	11.03	2.68	NP	NP	2.68
RCA-21	NS	13.72	10.48	Standpipe	Shallow	Fill	10/30/1995	11.39	4 - 14	0.91 - 3.58	NP	11.41	12.85	-	14.35	0.87	1.44	NP	2.10	12.26	14.17	-	14.35	-0.45	1.91	NP	1.17
RCA-39	14.07	13.86	11.43	Standpipe	Shallow	Fill	5/3/1996	12.32	3 - 13	NP	NP	-	9.86	-	14.75	4.00	NP	NP	4.00	-	10.8	-	14.64	3.06	NP	NP	3.06
RCA-40	12.76	12.24	10.47	Standpipe	Shallow	Fill	5/3/1996	15.15	4 - 14	trace - 0.04	NP	trace	10.85	-	16.8	1.39	trace	NP	1.39	-	10.7	-	16.85	1.54	NP	NP	1.54
CHES RW-2	14.27	14.27	11.09	Recovery Well	Shallow	Fill	2002	13.12	Unknown	trace	NP	trace	10.42	-	16.3	3.85	trace	NP	3.85	-	11.22	-	16.2	3.05	NP	NP	3.05
CHES RW-3	14.30	14.30	11.24	Recovery Well	Shallow	Fill	2002	14.84	Unknown	trace	NP	-	12.71	-	17.9	1.59	NP	NP	1.59	-	12.8	-	17.92	1.50	NP	NP	1.50
CHES RW-4	13.08	13.08	9.09	Recovery Well	Shallow	Fill	2002	8.57	Unknown	trace - 0.03	NP	trace	11.77	-	12.5	1.31	trace	NP	1.31	11.60	11.61	-	12.4	1.47	0.01	NP	1.48
CHES RW-5	14.32	14.32	11.16	Recovery Well	Shallow	Fill	2002	11.34	Unknown	0.01	NP	-	12.4	-	13.8	1.92	NP	NP	1.92	-	12.25	-	13.7	2.07	NP	NP	2.07
GZ-204A	13.86	12.83	11.30	Standpipe	Shallow	Fill	4/12/2005	15.92	4 - 16	NP	NP	-	9.62	-	17.42	3.21	NP	NP	3.21	-	10.21		17.53	2.62	NP	NP	2.62
GZ-216	12.85	11.61	10.34	Standpipe	Shallow	Fill	5/17/2005	16.45	5 - 15	NP	NP	-	7.22	-	17.65	4.39	NP	NP	4.39	-	8.67		17.65	2.94	NP	NP	2.94
RW-1	14.18	14.18	11.84	Recovery Well	Shallow	Fill	6/17/2014	11.66	8 - 13	trace - 0.02	NP																
GZ-314S	14.35	14.19	11.13	Standpipe	Shallow	Fill	6/3/2014	18.88	4 - 19	NP	NP																
GZ-314D	14.24	14.11	11.22	Standpipe	Deep	Organic Silt	6/3/2014	34.11	24 - 34	NP	NP																
GZ-315D	13.06	12.93	10.17	Standpipe	Deep	Organic Silt	6/4/2014	30.29	20 - 30	NP	NP																

Notes

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

STRAP - Liquefaction Project

Providence, Rhode Island

	Surve	yed Elevatio	ns			Well Install	ation Details				Dawaa af					June 2014								July 2, 2014	l .		
Well ID	Top of Casing Elevation (Feet)	Top of PVC Elevation (Feet)	Grade Elevation (Feet)	Type of Well	Well Depth Modifier	Stratum	Date of Installation	Measured Well Depth (feet bgs)	Screened Interval (feet bgs)	Range of LNAPL Observed (feet)	DNAPL Observed (feet)	Depth to LNAPL (ft)	Depth to Water (ft)	Depth to DNAPL (ft)	Total Well Depth (ft)	GW Elevation (feet)	LNAPL Thickness (feet)	DNAPL Thickness (feet)	Corrected Groundwater Elevation (feet)	Depth to LNAPL (ft)	Depth to Water (ft)	Depth to DNAPL (ft)	Total Well Depth (ft)	GW Elevation (feet)	LNAPL Thickness (feet)	DNAPL Thickness (feet)	Corrected Groundwater Elevation (feet)
									-										-						-		
VHB-23	12.98	12.80	11.37	Standpipe	Shallow	Fill	1/29/2003	16.37	6 - 16	trace - 0.05	NP	9.22	9.25	-	17.8	3.55	0.03	NP	3.57								
RCA-5	12.68	12.27	10.79	Standpipe	Shallow	Fill	9/7/1994	15.92	6 - 16	NP	NP	-	10.39	-	17.4	1.88	NP	NP	1.88	-	10.55	-	17.25	1.72	NP	NP	1.72
RCA-14	13.09	12.75	11.06	Standpipe	Shallow	Fill	9/12/1994	13.61	5 - 15	NP	NP	-	8.42	-	15.3	4.33	NP	NP	4.33								
RCA-20	13.25	12.95	11.01	Standpipe	Shallow	Fill	10/18/1995	12.26	3.5 - 13.5	NP	NP	-	9.09	-	14.2	3.86	NP	NP	3.86								
RCA-21	NS	13.72	10.48	Standpipe	Shallow	Fill	10/30/1995	11.39	4 - 14	0.91 - 3.58	NP	11.04	11.95	-	14.63	1.77	0.91	NP	2.54				Well destr	oyed - replace	ed with RW-1		
RCA-39	14.07	13.86	11.43	Standpipe	Shallow	Fill	5/3/1996	12.32	3 - 13	NP	NP	-	9.42	-	14.75	4.44	NP	NP	4.44								
RCA-40	12.76	12.24	10.47	Standpipe	Shallow	Fill	5/3/1996	15.15	4 - 14	trace - 0.04	NP	-	10.4	-	16.92	1.84	NP	NP	1.84								
CHES RW-2	14.27	14.27	11.09	Recovery Well	Shallow	Fill	2002	13.12	Unknown	trace	NP	-	9.98	-	16.3	4.29	NP	NP	4.29								
CHES RW-3	14.30	14.30	11.24	Recovery Well	Shallow	Fill	2002	14.84	Unknown	trace	NP	-	11.98	-	17.9	2.32	NP	NP	2.32								
CHES RW-4	13.08	13.08	9.09	Recovery Well	Shallow	Fill	2002	8.57	Unknown	trace - 0.03	NP	Trace	11.33	-	12.56	1.75	NP	NP	1.75								
CHES RW-5	14.32	14.32	11.16	Recovery Well	Shallow	Fill	2002	11.34	Unknown	0.01	NP	-	12.59	-	14.5	1.73	NP	NP	1.73								
GZ-204A	13.86	12.83	11.30	Standpipe	Shallow	Fill	4/12/2005	15.92	4 - 16	NP	NP	-	9.27	-	17.44	3.56	NP	NP	3.56								
GZ-216	12.85	11.61	10.34	Standpipe	Shallow	Fill	5/17/2005	16.45	5 - 15	NP	NP	-	7.19	-	17.72	4.42	NP	NP	4.42								
RW-1	14.18	14.18	11.84	Recovery Well	Shallow	Fill	6/17/2014	11.66	8 - 13	trace - 0.02	NP									10.24	10.26	-	14	3.92	0.02	NP	3.94
GZ-314S	14.35	14.19	11.13	Standpipe	Shallow	Fill	6/3/2014	18.88	4 - 19	NP	NP	-	11.91	-	21.94	2.28	NP	NP	2.28	-	12.28	-	21.80	1.91	NP	NP	1.91
GZ-314D	14.24	14.11	11.22	Standpipe	Deep	Organic Silt	6/3/2014	34.11	24 - 34	NP	NP	-	11.83	-	37.00	2.28	NP	NP	2.28	-	12.18	-	37.00	1.93	NP	NP	1.93
GZ-315D	13.06	12.93	10.17	Standpipe	Deep	Organic Silt	6/4/2014	30.29	20 - 30	NP	NP	-	11.13	-	33.05	1.80	NP	NP	1.80	-	11.26	-	32.90	1.67	NP	NP	1.67

Notes

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

STRAP - Liquefaction Project

Providence, Rhode Island

	Surve	eved Elevatio	ns			Well Install	ation Details				Deven				July 23,	2014							October 201	4		
Well ID	Top of Casing Elevation (Feet)	Top of PVC Elevation (Feet)	Grade Elevation (Feet)	Type of Well	Well Depth Modifier	Stratum	Date of Installation	Measured Well Depth (feet bgs)	Screened Interval (feet bgs)	Range of LNAPL Observed (feet)	DNAPL Observed (feet)	Depth to LNAPL (ft)	Depth to Dep Water (ft) DNA	th to Total PL (ft) Depth	Vell GW (ft) Elevatio (feet)	LNAPL n Thickness (feet)	DNAPL Thickness (feet)	Corrected Groundwater Elevation (feet)	Depth to LNAPL (ft)	Depth to Water (ft)	Depth to ) DNAPL (ft	Total Well ) Depth (ft)	GW Elevation (feet)	LNAPL Thickness (feet)	DNAPL Thickness (feet)	Corrected Groundwater Elevation (feet)
						-																				
VHB-23	12.98	12.80	11.37	Standpipe	Shallow	Fill	1/29/2003	16.37	6 - 16	trace - 0.05	NP								-	9.12	-	17.3	3.68	NP	NP	3.68
RCA-5	12.68	12.27	10.79	Standpipe	Shallow	Fill	9/7/1994	15.92	6 - 16	NP	NP	-	10.68 -	17.3	5 1.59	NP	NP	1.59	-	10.67	-	17.42	1.60	NP	NP	1.60
RCA-14	13.09	12.75	11.06	Standpipe	Shallow	Fill	9/12/1994	13.61	5 - 15	NP	NP								-	8.84	-	15.25	3.91	NP	NP	3.91
RCA-20	13.25	12.95	11.01	Standpipe	Shallow	Fill	10/18/1995	12.26	3.5 - 13.5	NP	NP								-	9.92	-	14.22	3.03	NP	NP	3.03
RCA-21	NS	13.72	10.48	Standpipe	Shallow	Fill	10/30/1995	11.39	4 - 14	0.91 - 3.58	NP			Well	lestroyed - rep	laced with RW-1						Well dest	royed - replace	d with RW-1		
RCA-39	14.07	13.86	11.43	Standpipe	Shallow	Fill	5/3/1996	12.32	3 - 13	NP	NP								-	10.01	-	14.84	3.85	NP	NP	3.85
RCA-40	12.76	12.24	10.47	Standpipe	Shallow	Fill	5/3/1996	15.15	4 - 14	trace - 0.04	NP								-	10.7	-	16.96	1.54	NP	NP	1.54
CHES RW-2	14.27	14.27	11.09	Recovery Well	Shallow	Fill	2002	13.12	Unknown	trace	NP								-	10.34	-	18.3	3.93	NP	NP	3.93
CHES RW-3	14.30	14.30	11.24	Recovery Well	Shallow	Fill	2002	14.84	Unknown	trace	NP								-	11.57	-	12.67	2.73	NP	NP	2.73
CHES RW-4	13.08	13.08	9.09	Recovery Well	Shallow	Fill	2002	8.57	Unknown	trace - 0.03	NP	Trace	11.51	- 12.	6 1.57	Trace	NP	12.56	Trace	10.71	-	12.55	2.37	Trace	NP	2.37
CHES RW-5	14.32	14.32	11.16	Recovery Well	Shallow	Fill	2002	11.34	Unknown	0.01	NP	-	10.68	- 17.	5 3.64	NP	NP	3.64	-	12.8	-	14.4	1.52	NP	NP	1.52
GZ-204A	13.86	12.83	11.30	Standpipe	Shallow	Fill	4/12/2005	15.92	4 - 16	NP	NP								-	9.52	-	17.49	3.31	NP	NP	3.31
GZ-216	12.85	11.61	10.34	Standpipe	Shallow	Fill	5/17/2005	16.45	5 - 15	NP	NP								-	8.05	-	17.62	3.56	NP	NP	3.56
RW-1	14.18	14.18	11.84	Recovery Well	Shallow	Fill	6/17/2014	11.66	8 - 13	trace - 0.02	NP	Trace	10.46	- 14.0	2 3.72	Trace	NP	3.72	10.67	10.68	-	14	3.50	0.01	NP	3.51
GZ-314S	14.35	14.19	11.13	Standpipe	Shallow	Fill	6/3/2014	18.88	4 - 19	NP	NP	-	12.48	- 21.	1 1.71	NP	NP	1.71	-	12.54	-	21.76	1.65	NP	NP	1.65
GZ-314D	14.24	14.11	11.22	Standpipe	Deep	Organic Silt	6/3/2014	34.11	24 - 34	NP	NP	-	12.48	- 36.9	5 1.63	NP	NP	1.63	-	12.43	-	36.93	1.68	NP	NP	1.68
GZ-315D	13.06	12.93	10.17	Standpipe	Deep	Organic Silt	6/4/2014	30.29	20 - 30	NP	NP	-	11.36	- 32.	3 1.57	NP	NP	1.57	-	11.39	-	33.07	1.54	NP	NP	1.54

Notes

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

STRAP - Liquefaction Project

Providence, Rhode Island

	Surve	eyed Elevatio	ns			Well Install	ation Details				Dense of					April 2015								October 201	5		
Well ID	Top of Casing Elevation (Feet)	Top of PVC Elevation (Feet)	Grade Elevation (Feet)	Type of Well	Well Depth Modifier	Stratum	Date of Installation	Measured Well Depth (feet bgs)	Screened Interval (feet bgs)	Range of LNAPL Observed (feet)	DNAPL Observed (feet)	Depth to LNAPL (ft)	Depth to Water (ft)	Depth to DNAPL (ft)	Total Well Depth (ft)	GW Elevation (feet)	LNAPL Thickness (feet)	DNAPL Thickness (feet)	Corrected Groundwater Elevation (feet)	Depth to LNAPL (ft)	Depth to Water (ft	Depth to DNAPL (ft	Total Well ) Depth (ft)	GW Elevation (feet)	LNAPL Thickness (feet)	DNAPL Thickness (feet)	Corrected Groundwater Elevation (feet)
					-																						
VHB-23	12.98	12.80	11.37	Standpipe	Shallow	Fill	1/29/2003	16.37	6 - 16	trace - 0.05	NP	-	7.44	-	17.32	5.36	NP	NP	5.36	-	9.65	-	17.45	3.15	NP	NP	3.15
RCA-5	12.68	12.27	10.79	Standpipe	Shallow	Fill	9/7/1994	15.92	6 - 16	NP	NP	-	10.76	-	17.28	1.51	NP	NP	1.51	-	10.65	-	17.32	1.62	NP	NP	1.62
RCA-14	13.09	12.75	11.06	Standpipe	Shallow	Fill	9/12/1994	13.61	5 - 15	NP	NP	-	8.16	-	15.38	4.59	NP	NP	4.59	-	9.2	-	15.52	3.55	NP	NP	3.55
RCA-20	13.25	12.95	11.01	Standpipe	Shallow	Fill	10/18/1995	12.26	3.5 - 13.5	NP	NP	-	8.71	-	14	4.24	NP	NP	4.24	-	10.18	-	14.28	2.77	NP	NP	2.77
RCA-21	NS	13.72	10.48	Standpipe	Shallow	Fill	10/30/1995	11.39	4 - 14	0.91 - 3.58	NP		1		Well dest	royed - replac	ed with RW-1				1		Well dest	royed - replace	d with RW-1		
RCA-39	14.07	13.86	11.43	Standpipe	Shallow	Fill	5/3/1996	12.32	3 - 13	NP	NP	-	9.23	-	14.6	4.63	NP	NP	4.63	-	10.45	-	14.82	3.41	NP	NP	3.41
RCA-40	12.76	12.24	10.47	Standpipe	Shallow	Fill	5/3/1996	15.15	4 - 14	trace - 0.04	NP	10.75	10.79	-	16.8	1.45	0.04	NP	1.48	trace	10.6	-	17.84	1.64	trace	NP	1.64
CHES RW-2	14.27	14.27	11.09	Recovery Well	Shallow	Fill	2002	13.12	Unknown	trace	NP	-	9.61	-	16.3	4.66	NP	NP	4.66	-	10.72	-	16.5	3.55	NP	NP	3.55
CHES RW-3	14.30	14.30	11.24	Recovery Well	Shallow	Fill	2002	14.84	Unknown	trace	NP	trace	12.38	-	17.85	1.92	trace	NP	1.92	-	12.68	-	18	1.62	NP	NP	1.62
CHES RW-4	13.08	13.08	9.09	Recovery Well	Shallow	Fill	2002	8.57	Unknown	trace - 0.03	NP	trace	11.62	-	12.4	1.46	trace	NP	1.46	-	11.35	-	12.44	1.73	NP	NP	1.73
CHES RW-5	14.32	14.32	11.16	Recovery Well	Shallow	Fill	2002	11.34	Unknown	0.01	NP	12.82	12.83	-	14.1	1.49	0.01	NP	1.50	-	12.69	-	14.34	1.63	NP	NP	1.63
GZ-204A	13.86	12.83	11.30	Standpipe	Shallow	Fill	4/12/2005	15.92	4 - 16	NP	NP	-	8.54	-	17.3	4.29	NP	NP	4.29	-	9.85	-	17.45	2.98	NP	NP	2.98
GZ-216	12.85	11.61	10.34	Standpipe	Shallow	Fill	5/17/2005	16.45	5 - 15	NP	NP	-	6.43	-	17.7	5.18	NP	NP	5.18	-	8.48	-	17.73	3.13	NP	NP	3.13
RW-1	14.18	14.18	11.84	Recovery Well	Shallow	Fill	6/17/2014	11.66	8 - 13	trace - 0.02	NP	trace	9.64	-	13.9	4.54	trace	NP	4.54	trace	11.14	-	14.14	3.04	trace	NP	3.04
GZ-314S	14.35	14.19	11.13	Standpipe	Shallow	Fill	6/3/2014	18.88	4 - 19	NP	NP	-	12.3	-	21.75	1.89	NP	NP	1.89	-	12.52	-	21.89	1.67	NP	NP	1.67
GZ-314D	14.24	14.11	11.22	Standpipe	Deep	Organic Silt	6/3/2014	34.11	24 - 34	NP	NP	-	12.2	-	37.00	1.91	NP	NP	1.91	-	12.47	-	37.00	1.64	NP	NP	1.64
GZ-315D	13.06	12.93	10.17	Standpipe	Deep	Organic Silt	6/4/2014	30.29	20 - 30	NP	NP	-	11.46	-	32.90	1.47	NP	NP	1.47	-	11.32	-	32.93	1.61	NP	NP	1.61

Notes

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

STRAP - Liquefaction Project

Providence, Rhode Island

	Surve	yed Elevation	ıs			Well Install	ation Details				Banga of					May 2016			
Well ID	Top of Casing Elevation (Feet)	Top of PVC Elevation (Feet)	Grade Elevation (Feet)	Type of Well	Well Depth Modifier	Stratum	Date of Installation	Measured Well Depth (feet bgs)	Screened Interval (feet bgs)	Range of LNAPL Observed (feet)	DNAPL Observed (feet)	Depth to LNAPL (ft)	Depth to Water (ft)	Depth to DNAPL (ft)	Total Well Depth (ft)	GW Elevation (feet)	LNAPL Thickness (feet)	DNAPL Thickness (feet)	Corrected Groundwater Elevation (feet)
			•												•			•	<u></u>
VHB-23	12.98	12.80	11.37	Standpipe	Shallow	Fill	1/29/2003	16.37	6 - 16	trace - 0.05	NP	-	9.11	-	17.68	3.69	NP	NP	3.69
RCA-5	12.68	12.27	10.79	Standpipe	Shallow	Fill	9/7/1994	15.92	6 - 16	NP	NP	-	10.8	-	17.32	1.47	NP	NP	1.47
RCA-14	13.09	12.75	11.06	Standpipe	Shallow	Fill	9/12/1994	13.61	5 - 15	NP	NP	-	8.95	-	15.3	3.80	NP	NP	3.80
RCA-20	13.25	12.95	11.01	Standpipe	Shallow	Fill	10/18/1995	12.26	3.5 - 13.5	NP	NP	-	9.17	-	14	3.78	NP	NP	3.78
RCA-21	NS	13.72	10.48	Standpipe	Shallow	Fill	10/30/1995	11.39	4 - 14	0.91 - 3.58	NP				Well dest	royed - replaced	l with RW-1		
RCA-39	14.07	13.86	11.43	Standpipe	Shallow	Fill	5/3/1996	12.32	3 - 13	NP	NP	-	9.65	-	14.55	4.21	NP	NP	4.21
RCA-40	12.76	12.24	10.47	Standpipe	Shallow	Fill	5/3/1996	15.15	4 - 14	trace - 0.04	NP	10.69	10.71	-	16.8	1.53	0.02	NP	1.55
CHES RW-2	14.27	14.27	11.09	Recovery Well	Shallow	Fill	2002	13.12	Unknown	trace	NP	-	10.34	-	16.32	3.93	NP	NP	3.93
CHES RW-3	14.30	14.30	11.24	Recovery Well	Shallow	Fill	2002	14.84	Unknown	trace	NP	-	11.62	-	12.35	2.68	NP	NP	2.68
CHES RW-4	13.08	13.08	9.09	Recovery Well	Shallow	Fill	2002	8.57	Unknown	trace - 0.03	NP	-	11.05	-	0.00	2.03	NP	NP	2.03
CHES RW-5	14.32	14.32	11.16	Recovery Well	Shallow	Fill	2002	11.34	Unknown	0.01	NP	-	12.77	-	14.1	1.55	NP	NP	1.55
GZ-204A	13.86	12.83	11.30	Standpipe	Shallow	Fill	4/12/2005	15.92	4 - 16	NP	NP	-	9.30	-	18.65	3.53	NP	NP	3.53
GZ-216	12.85	11.61	10.34	Standpipe	Shallow	Fill	5/17/2005	16.45	5 - 15	NP	NP	-	7.41	-	18.59	4.20	NP	NP	4.20
RW-1	14.18	14.18	11.84	Recovery Well	Shallow	Fill	6/17/2014	11.66	8 - 13	trace - 0.02	NP	trace	10.21	-	13.9	3.97	trace	NP	3.97
GZ-314S	14.35	14.19	11.13	Standpipe	Shallow	Fill	6/3/2014	18.88	4 - 19	NP	NP	-	11.98	-	21.75	2.21	NP	NP	2.21
GZ-314D	14.24	14.11	11.22	Standpipe	Deep	Organic Silt	6/3/2014	34.11	24 - 34	NP	NP	-	11.92	-	36.85	2.19	NP	NP	2.19
GZ-315D	13.06	12.93	10.17	Standpipe	Deep	Organic Silt	6/4/2014	30.29	20 - 30	NP	NP	-	11.45	-	32.8	1.48	NP	NP	1.48

Notes

Elevations are relative to NAVD88

NP - Indicates No Product observed.

NS - Not Surveyed

Blanks indicate no measurement collected on that particular day.

Potentiometric elevations for wells exhibiting LNAPL include 0.85 correction factor.

## Table 6 Historic NAPL Thicknesses (Monitoring Wells located within the STRAP Area) STRAP - Liquefaction Project Providence, Rhode Island

											LI	NAPL Thickne	ss (feet)										
	Date	11/12/01	06/20/02	09/12/02	10/08/02	10/22/02	11/15/02	12/07/02	12/24/02	01/08/03	02/03/03	02/11/03	02/28/03	Sept 2003	Sept 2005	Mar 2006	June 2006	July 2006	Oct. 2006	Dec 2006	Mar 2008	Dec. 2009	June 2010
VHB-23		NI	NI	NI	NG	NG	NG	NG	NG	NG	trace	NG	NG	trace	ND	0.05	ND	ND	ND	ND	0.01	NG	NG
RCA-4		0.17	NG	Dest	Dest	Dest	Dest	Dest	Dest	Dest	Dest	Dest	Dest	Dest	Dest								
RCA-5		ND	NG	ND	NG	NG	trace	trace	NG	NG	NG	NG	NG	NG	NG	NG							
RCA-21		NG	NG	ND	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG							
RCA-39		ND	NG	ND	NG	NG	ND	trace	NG	NG	NG	NG	NG	NG	NG	NG							
RCA-40		0.25	NG	0.01	NG	NG	trace	trace	0.1	0.21	0.18	0.22	0.01	0.01	NG	NG							
CHES RW-2		NI	NI	NI	ND	ND	ND	ND	ND	ND	NG	ND	ND	NG	ND	NG	NG	NG	NG	NG	trace	NG	NG
CHES RW-3		NI	NI	NI	ND	ND	ND	ND	ND	ND	NG	ND	ND	NG	ND	NG	NG	NG	NG	NG	NG	NG	NG
CHES RW-4		NI	NI	NI	0.03	0.02	0.09	0.08	0.05	0.03	NG	0.03	0.02	NG	2	ND	0.18	0.13	0.1	0.08	0.09	NG	NG
CHES RW-5		NI	NI	NI	0.05	0.04	0.12	0.09	0.06	0.05	NG	0.02	0.02	NG	0.5	0.1	ND	ND	0.01	ND	trace	NG	NG
RW-1		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI										

#### Notes:

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

ND - Not Detected

trace - sheen or less than 0.01 feet

Dest - Destroyed

NG - Not Gauged

NI - Not Installed Yet

RCA-21 was destroyed in late June 2014 and replaced with RW-1

This table presents LNAPL thickness data for monitoring wells that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

#### 5/4/2017 GZA File 03.00033554.00

## Table 6 Historic NAPL Thicknesses (Monitoring Wells located within the STRAP Area) STRAP - Liquefaction Project Providence, Rhode Island

							LNA	APL Thickness	(feet)					
Date	January 2011	July 2011	Aug 2011	Feb 2012	July 2012	Feb 2013	Nov 2013	June 2014	July 2, 2014	July 23, 2014	October 2014	April 2015	October 2015	May 2016
VHB-23	NG	0.01	0.05	trace	ND	0.01	ND	0.03	NG	NG	ND	ND	ND	ND
RCA-4	Dest	Dest	Dest	Dest	Dest	Dest	Dest	Dest	Dest	Dest	Dest	Dest	Dest	Dest
RCA-5	NG	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RCA-21	NG	3.58	2.94	2.79	1.65	1.44	1.91	0.91	Dest	Dest	Dest	Dest	Dest	Dest
RCA-39	NG	ND	ND	ND	ND	ND	ND	ND	NG	NG	ND	ND	ND	ND
RCA-40	NG	ND	ND	trace	trace	trace	ND	ND	NG	NG	ND	0.04	trace	0.02
CHES RW-2	NG	ND	ND	trace	ND	trace	ND	ND	NG	NG	ND	ND	ND	ND
CHES RW-3	NG	ND	ND	ND	ND	ND	ND	ND	NG	NG	ND	trace	ND	ND
CHES RW-4	NG	0.02	0.03	0.01	trace	trace	0.01	ND	NG	trace	trace	trace	ND	ND
CHES RW-5	NG	ND	ND	ND	ND	ND	ND	ND	NG	ND	ND	0.01	ND	ND
RW-1	NI	NI	NI	NI	NI	NI	NI	NI	0.02	trace	0.01	trace	trace	trace

Notes:

Gray shading indicates NAPL thickness of equal to or more than 0.01 feet

ND - Not Detected

trace - sheen or less than 0.01 feet

Dest - Destroyed

NG - Not Gauged

NI - Not Installed Yet

RCA-21 was destroyed in late June 2014 and replaced with RW-1

This table presents LNAPL thickness data for monitoring wells that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

#### 5/4/2017 GZA File 03.00033554.00

### Table 7Summary of LNAPL Gauging and Recovery - RCA-21 and RW-1

STRAP - Liquefaction Project

Providence, Rhode Island

Well ID	Date	Gauging	Depth to LNAPL	Depth to Water	LNAPL Thickness	Estimated Volume	Tide Condition
WCITE	Date	Time	(feet)	(feet)	(feet)	Purged (gallons)	The condition
	7/1/2011	NR	10.07	13.65	3.58	NR	NR
	8/3/2011	NR	10.72	13.66	2.94	NR	NR
	2/3/2012	13:00	10.95	13.74	2.79	2.25 gal	Mid
	2/8/2012	14:30	10.93	13.28	2.35	2 gal	Low
	2/15/2012	11:20	11.28	12.75	1.47	1.25 gal	Low
	2/23/2012	13:13	11.56	12.6	1.04	0.75 gal	Low
	3/2/2012	13:45	11.77	12.52	0.75	1 gal	High
	3/9/2012	12:30	11.38	12.29	0.91	0.75 gal	Low to Mid
	4/13/2012	9:43	11.88	13.45	1.57	1.5 gal	Low to Mid
	5/16/2012	13:18	10.6	12	1.4	1 gal	Mid
	6/29/2012	9:16	10.7	12.55	1.85	1 gal	Low
	7/19/2012	9:21	11.17	12.82	1.65	1 gal	High
	8/24/2012	9:45	10.62	12.25	1.63	1.5 gal	Mid
	9/25/2012	13:24	10.85	12.33	1.48	2 gal	Mid
	10/31/2012	9:35	10.71	12.6	1.89	1.5 gal	High
	11/19/2012	13:45	10.87	12.55	1.68	0.75 gal	High to Mid
	12/20/2012	12:00	11.4	12.76	1.36	1 gal	High
RCA-21	2/1/2013	11:30	11.41	12.85	1.44	1 gal	High
	2/26/2013	12:20	10.45	12.35	1.9	1 gal	Low
	3/25/2013	11:15	10.53	10.6	0.07	NR	Mid
	4/24/2013	10:30	11.09	12.43	1.34	1 gal	Mid
	5/31/2013	10:00	11.65	12.75	1.1	0.75 gal	Mid to Low
	6/25/2013	11:30	10.15	10.51	0.36	0.25 gal	Mid
	7/31/2013	7:00	10.9	12.77	1.87	1.25 gal	Mid
	8/28/2013	12:00	10.9	12.42	1.52	1.5 gal	Mid
	9/27/2013	11:00	10.83	12.25	1.42	1 gal	Mid
	10/30/2013	14:00	10.97	12.13	1.16	1 gal	Mid
	11/19/2013	10:30	12.26	14.17	1.91	1 gal	Low to Mid
	12/20/2013	10:45	11.45	12.72	1.27	1.25 gal	Mid to Low
	1/27/2014	10:00	10.98	12.32	1.34	1 gal	Low
	2/25/2014	13:00	10.81	11.8	0.99	0.5 gal	Mid
	3/20/2014	9:00	11.08	11.7	0.62	0.5 gal	Mid to High
	4/29/2014	12:30	10.81	11.42	0.61	0.5 gal	Mid to Low
	5/22/2014	13:00	11.17	11.75	0.58	0.5 gal	Mid to High
	6/17/2014	Replaced R	CA-21 with RW-1.				

### Table 7Summary of LNAPL Gauging and Recovery - RCA-21 and RW-1

STRAP - Liquefaction Project

Providence, Rhode Island

Well ID	Date	Gauging	Depth to LNAPL	Depth to Water	LNAPL Thickness	Estimated Volume	Tide Condition
Wenib	Date	Time	(feet)	(feet)	(feet)	Purged (gallons)	The condition
	6/19/2014	9:35	10.30	10.30	trace	NR	Mid-Low
	7/24/2014	15:00	10.46	10.46	trace	NR	Mid
	8/28/2014	11:00	10.54	10.55	0.01	NR	High
	9/29/2014	11:15	11.06	11.06	trace	NR	High
	10/30/2014	12:00	10.67	10.68	0.01	NR	High
	11/13/2014	12:05	10.55	10.55	trace	NR	High
	12/12/2014	13:00	8.8	8.8	trace	NR	Mid
	1/29/2015	11:30	10.54	10.54	trace	NR	Mid
	2/25/2015	9:00	10.92	10.92	trace	NR	High
	3/23/2015	9:30	10.25	10.25	trace	NR	High
	4/9/2015	3:30	9.64	9.64	trace	NR	Mid
	5/22/2015	7:30	10.49	10.49	trace	NR	Low
RW-1	6/17/2015	3:00	10.92	10.92	trace	NR	Low
	7/17/2015	11:15	10.26	10.26	trace	NR	Mid
	8/28/2015	12:00	10.84	10.84	trace	NR	Low
	9/16/2015	9:30	11.16	11.16	trace	NR	Mid-High
	10/24/2015	9:00	11.02	11.02	trace	NR	High
	11/17/2015	12:00	11.47	11.47	trace	NR	High
	12/30/2015	11:30	10.19	10.19	trace	NR	High
	1/29/2016	8:30	9.87	9.87	trace	NR	High
	2/22/2016	11:00	10.17	10.17	trace	NR	Low
	3/17/2016	8:00	9.67	9.67	trace	NR	Mid-Low
	4/28/2016	3:30	9.95	9.95	trace	NR	Mid-High
	5/18/2016	8:45	6.07	6.07	trace	NR	Mid
	6/10/2016	11:30	10.22	10.22	trace	NR	Mid-High

Notes: NR = Not Recovered

Volume purged was noted as a mixture of LNAPL and groundwater

#### Providence, Rhode Island

									RCA	-4	RCA-5		RCA-14						
									Screened In	nterval : 6	rval : 6 Screened Interval : 6 - 16 feet bes		<b>6</b>		for the second				
									- 16 fee	et bgs	5	Screened Interval : 0 - 10 leet bgs			Screened	d Interval : 5 - 15	feet bgs		
	Concentration	Groundwater		Number of Samples	Number of Detects	Number of Exceedances	Range D	etected	Screenee	Screened in Fill			Screened in Fill				Screened in Fill		
	Limit (UCL)	Objectives							October	March	October	March	November	June	June	October 1994	March 1996	November	
			11					<b></b>	1994	1996	1994	1996	2001	2013	2014	October 1994		2001	
Valatila Organia Compounda ()			Units				Iviinimum	Iviaximum											
1.2 A-Trimethylbenzene	NE	NE	mg/l	32	20	0	0.002	0 338	ND	ND	ND	0.024	0.0051	ND	0.0039	ND	ND	0.002	
1 3 5-Trimethylbenzene	NE	NE	mg/L	32	12	0	0.002	0.558	ND	ND	ND	0.024 ND	0.0051 ND	ND	0.0035	ND	ND	0.002 ND	
4-lsopropyltoluene	NE	NE	mg/L	32	12	0	0.0013	0.102	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Acetone	NE	NE	mg/L	32	4	0	0.0012	0.010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Benzene	18	0.14	mg/L	34	25	12	0.0028	28.5	19.3	28.5	0.105	ND	0.0036	0.0038	0.008	0.066	ND	ND	
Carbon Disulfide	NE	NF	mg/L	32	25	0	0.0033	0.0023	ND	ND	0.105 ND	ND	0.0050 ND	0.0050 ND	ND	ND	ND	ND	
Chlorobenzene	3.2	56	mg/L	32	1	0	0.00023	0.0003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Ethylbenzene	16	1.6	mg/L	34	25	4	0.0003	2 5	1.75	2.5	0.41	0.008	0.0151	0.0016	0.0094	0.026	ND	ND	
Isopropylbenzene	NF	NF	mg/l	32	15	0	0.001	0.0794	ND	ND	ND	ND	ND	ND	0.0017	ND	ND	ND	
Methylene Chloride	NE	NE	mg/L	32	4	0	0.006	1.5	1.5	ND	0.05	ND	ND	ND	ND	0.006	ND	ND	
Naphthalene	NE	2.67	mg/L	34	25	11	0.0032	29.5	ND	7	ND	0.041	0.0339	ND	0.0199	ND	0.31	ND	
n-Butvlbenzene	NE	NE	mg/L	32	2	0	0.0027	0.014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
n-Propylbenzene	NE	NE	mg/L	32	11	0	0.0027	0.0229	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
sec-Butylbenzene	NE	NE	mg/L	32	9	0	0.0008	0.0026	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Styrene	2.2	50	mg/L	32	2	0	0.0005	0.0032	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
tert-Butylbenzene	NE	NE	mg/L	32	2	0	0.0003	0.0003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Toluene	21	1.7	mg/L	34	14	1	0.001	2.25	ND	2.25	ND	ND	ND	ND	ND	0.036	ND	ND	
Xylenes (Total)	NE	NE	mg/L	34	22	0	0.0018	1.75	ND	1.75	0.395	0.006	0.0083	ND	0.0037	0.275	ND	ND	
Semi-Volatile Organic Compou	inds (SVOCs)																		
2-Methylnaphthalene	NE	NE	mg/L	16	10	0	0.001	8.78	0.821	0.95	0.001	ND	ND	ND	NA	0.237	ND	ND	
Acenaphthene	NE	NE	mg/L	16	6	0	0.0106	0.76	0.268	0.176	0.309	ND	0.024	0.0106	NA	ND	ND	ND	
Acenaphthylene	NE	NE	mg/L	16	10	0	0.0127	2.9	0.022	0.127	0.183	ND	0.019	0.0127	NA	0.054	ND	ND	
Anthracene	NE	NE	mg/L	16	6	0	0.0061	3.67	0.09	0.019	0.063	ND	ND	0.0061	NA	ND	ND	ND	
Benzo [a] Anthracene	NE	NE	mg/L	16	5	0	0.0007	0.319	0.042	0.022	0.022	ND	ND	0.0007	NA	ND	ND	ND	
Benzo [a] Pyrene	NE	NE	mg/L	16	3	0	0.0004	0.138	0.017	ND	ND	ND	ND	0.0004	NA	ND	ND	ND	
Benzo [b] Fluoranthene	NE	NE	mg/L	16	4	0	0.0003	0.153	0.027	0.01	ND	ND	ND	0.0003	NA	ND	ND	ND	
Benzo[k]flouranthene	NE	NE	mg/L	16	1	0	0.0001	0.0001	ND	ND	ND	ND	ND	0.0001	NA	ND	ND	ND	
Chrysene	NE	NE	mg/L	16	5	0	0.0006	0.229	0.038	0.012	0.022	ND	ND	0.0006	NA	ND	ND	ND	
Fluoranthene	NE	NE	mg/L	16	6	0	0.0028	0.615	0.065	0.043	0.033	ND	ND	0.0028	NA	ND	ND	ND	
Fluorene	NE	NE	mg/L	16	7	0	0.01	1.4	0.093	0.114	0.092	ND	0.033	0.0168	NA	ND	ND	ND	
Indeno(1,2,3-cd)Pyrene	NE	NE	mg/L	16	1	0	0.0001	0.0001	ND	ND	ND	ND	ND	0.0001	NA	ND	ND	ND	
Naphthalene	NE	2.67	mg/L	16	9	3	0.0005	23.5	1.37	3.5	1.1	ND	ND	0.0005	NA	1.29	ND	ND	
Phenanthrene	NE	NE	mg/L	16	8	0	0.0217	3.54	0.358	0.209	0.264	ND	0.026	0.0217	NA	ND	ND	ND	
Pyrene	NE	NE	mg/L	16	6	0	0.005	0.846	0.162	0.068	0.093	ND	ND	0.005	NA	ND	ND	ND	
Total Petroleum Hydrocarbons	s (TPH)																		
ТРН	NE	NE	mg/L	10	8	0	2.16	595	90	34.8	ND	NA	NA	2.16	NA	NA	ND	NA	
Inorganics																			
Total Cyanide	NE	NE	mg/L	1	1	0	0.006	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

#### <u>Notes</u>

#### Data is compared to RIDEM Method 1 Standards. Shaded results represent numerical exceedances of standards.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows sample collected from with the Liquefaction Work Area

ND - Not Detected

NA - Not Analyzed

#### Providence, Rhode Island

									RCA-20		RCA-21	RCA-23	RCA-39						
												Screened Interval : 4 - Screened Interval : 4		4					
									Screer	ned Interval : 3	- 13 feet bgs	14 feet bgs	14 feet bgs	Screened Interval : 3 - 13 f		et bgs			
	Concentration	Groundwater		Number of Samples	Number of Detects	Number of Exceedances	Range I	Detected		Screened in Fill		Screened in Fill	Screened in Fill		Scre	ened in Fill			
	Limit (UCL)	Objectives							March 1996	September 2003	September 2005	March 1996	March 1996	March 1996	November 2001	September 2003	September 2005		
			Units				Minimum	Maximum											
Volatile Organic Compounds	(VOCs)																		
1,2,4-Trimethylbenzene	NE	NE	mg/L	32	20	0	0.002	0.338	0.12	0.0241	ND	ND	0.3	ND	ND	ND	ND		
1,3,5-Trimethylbenzene	NE	NE	mg/L	32	12	0	0.0019	0.102	ND	ND	ND	ND	ND	ND	ND	ND	ND		
4-Isopropyltoluene	NE	NE	mg/L	32	10	0	0.0012	0.016	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Acetone	NE	NE	mg/L	32	4	0	0.0028	0.102	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Benzene	18	0.14	mg/L	34	25	12	0.0033	28.5	ND	0.0466	0.0033	ND	0.85	ND	ND	ND	ND		
Carbon Disulfide	NE	NE	mg/L	32	2	0	0.0023	0.0023	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Chlorobenzene	3.2	56	mg/L	32	1	0	0.0003	0.0003	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Ethylbenzene	16	1.6	mg/L	34	25	4	0.0011	2.5	0.055	0.0742	ND	ND	0.7	ND	ND	ND	ND		
Isopropylbenzene	NE	NE	mg/L	32	15	0	0.001	0.0794	ND	0.0104	0.001	ND	ND	ND	ND	ND	ND		
Methylene Chloride	NE	NE	mg/L	32	4	0	0.006	1.5	0.71	ND	ND	ND	ND	ND	ND	ND	ND		
Naphthalene	NE	2.67	mg/L	34	25	11	0.0032	29.5	ND	0.615	0.0032	29.5	7.05	0.015	ND	ND	ND		
n-Butylbenzene	NE	NE	mg/L	32	2	0	0.0027	0.014	ND	ND	ND	ND	ND	ND	ND	ND	ND		
n-Propylbenzene	NE	NE	mg/L	32	11	0	0.0027	0.0229	ND	0.00374	ND	ND	ND	ND	ND	ND	ND		
sec-Butylbenzene	NE	NE	mg/L	32	9	0	0.0008	0.0026	ND	0.00107	ND	ND	ND	ND	ND	ND	ND		
Styrene	2.2	50	mg/L	32	2	0	0.0005	0.0032	ND	ND	ND	ND	ND	ND	ND	ND	ND		
tert-Butylbenzene	NE	NE	mg/L	32	2	0	0.0003	0.0003	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Toluene	21	1.7	mg/L	34	14	1	0.001	2.25	ND	0.001	ND	ND	ND	ND	ND	ND	ND		
Xylenes (Total)	NE	NE	mg/L	34	22	0	0.0018	1.75	ND	0.0187	0.0018	ND	ND	ND	ND	ND	ND		
Semi-Volatile Organic Compo	unds (SVOCs)																		
2-Methylnaphthalene	NE	NE	mg/L	16	10	0	0.001	8.78	0.149	NA	NA	8.78	0.35	0.015	ND	NA	NA		
Acenaphthene	NE	NE	mg/L	16	6	0	0.0106	0.76	ND	NA	NA	0.76	ND	ND	ND	NA	NA		
Acenaphthylene	NE	NE	mg/L	16	10	0	0.0127	2.9	0.24	NA	NA	2.9	0.039	ND	ND	NA	NA		
Anthracene	NE	NE	mg/L	16	6	0	0.0061	3.67	ND	NA	NA	3.67	0.034	ND	ND	NA	NA		
Benzo [a] Anthracene	NE	NE	mg/L	16	5	0	0.0007	0.319	ND	NA	NA	0.319	ND	ND	ND	NA	NA		
Benzo [a] Pyrene	NE	NE	mg/L	16	3	0	0.0004	0.138	ND	NA	NA	0.138	ND	ND	ND	NA	NA		
Benzo [b] Fluoranthene	NE	NE	mg/L	16	4	0	0.0003	0.153	ND	NA	NA	0.153	ND	ND	ND	NA	NA		
Benzo[k]flouranthene	NE	NE	mg/L	16	1	0	0.0001	0.0001	ND	NA	NA	ND	ND	ND	ND	NA	NA		
Chrysene	NE	NE	mg/L	16	5	0	0.0006	0.229	ND	NA	NA	0.229	ND	ND	ND	NA	NA		
Fluoranthene	NE	NE	mg/L	16	6	0	0.0028	0.615	0.021	NA	NA	0.615	ND	ND	ND	NA	NA		
Fluorene	NE	NE	mg/L	16	7	0	0.01	1.4	ND	NA	NA	1.4	ND	0.01	ND	NA	NA		
Indeno(1,2,3-cd)Pyrene	NE	NE	mg/L	16	1	0	0.0001	0.0001	ND	NA	NA	ND	ND	ND	ND	NA	NA		
Naphthalene	NE	2.67	mg/L	16	9	3	0.0005	23.5	0.574	NA	NA	23.5	3.09	ND	ND	NA	NA		
Phenanthrene	NE	NE	mg/L	16	8	0	0.0217	3.54	0.07	NA	NA	3.54	0.034	ND	ND	NA	NA		
Pyrene	NE	NE	mg/L	16	6	0	0.005	0.846	0.011	NA	NA	0.846	ND	ND	ND	NA	NA		
Total Petroleum Hydrocarbo	ns (TPH)		0,																
ТРН	NE	NE	mg/L	10	8	0	2.16	595	67.1	NA	NA	595	19.3	2.3	NA	NA	NA		
Inorganics																			
Total Cyanide	NE	NE	mg/L	1	1	0	0.006	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			-	•			•	•					•						

#### <u>Notes</u>

#### Data is compared to RIDEM Method 1 Standards. Shaded results represent numerical exceedances of standards.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows sample collected from with the Liquefaction Work Area

ND - Not Detected

NA - Not Analyzed

#### Providence, Rhode Island

										RCA-40		B05	B22		VHB-23			MW-314S	
									Screen	ed Interval : 4	14 feet bgs	Grab Sample	Grab Sample	e Screened Interval : 6 - 16 feet bgs			Screened	Interval : 4 - 19	) feet bgs
	Concentration	Groundwater		Number of Samples	Number of Detects	Number of Exceedances	Range Detected			Screened in	Fill	Collected from Fill	Collected from Fill		Screened in F	ill	5	creened in Fill	
	Limit (UCL)	Objectives							March 1996	September 2003	September 2005	March 2000	March 2000	February 2003	September 2003	September 2005	June 2014	October 2015	May 2016
			Units				Minimum	Maximum											
Volatile Organic Compounds	(VOCs)														1	1			
1,2,4-Trimethylbenzene	NE	NE	mg/L	32	20	0	0.002	0.338	0.076	0.0069	0.0322	NA	NA	0.178	0.242	0.309	0.247	0.258	0.338
1,3,5-Trimethylbenzene	NE	NE	mg/L	32	12	0	0.0019	0.102	ND	0.00406	0.0019	NA	NA	0.102	0.00255	0.014	0.0667	0.049	0.0862
4-Isopropyltoluene	NE	NE	mg/L	32	10	0	0.0012	0.016	ND	ND	0.0012	NA	NA	ND	0.00429	0.0048	0.0111	0.016	0.0141
Acetone	NE	NE	mg/L	32	4	0	0.0028	0.102	ND	ND	0.102	NA	NA	ND	ND	0.0357	ND	ND	ND
Benzene	18	0.14	mg/L	34	25	12	0.0033	28.5	0.09	0.0318	0.0306	0.17	0.012	0.142	0.0844	0.0448	7.27	7.67	4.83
Carbon Disulfide	NE	NE	mg/L	32	2	0	0.0023	0.0023	ND	ND	ND	NA	NA	ND	ND	ND	ND	ND	ND
Chlorobenzene	3.2	56	mg/L	32	1	0	0.0003	0.0003	ND	ND	ND	NA	NA	ND	ND	ND	ND	ND	0.0003
Etnyibenzene	16	1.6	mg/L	34	25	4	0.0011	2.5	ND	0.0011	0.0097	0.089	0.031	1	1.26	1.03	1.57	2.37	1.83
Nothylana Chlarida	NE	NE	mg/L	32	15	0	0.001	0.0794	ND	0.00102	0.0025	NA	NA	0.0366	0.0532	0.0353	0.0579	0.052	0.0794
Nanhthalana	NE	1NE 2.67	mg/L	32	4	11	0.006	1.5	0.29		0.0205	0.72		2 19	ND	256	5.27		6.41
	NE	2.07	mg/L	22	25	11	0.0032	29.5	0.56	0.00782	0.0205	0.75	0.51	5.10 ND	2.7	2.50	5.57	4.44	0.014
n-Propylbenzene	NE	NE	mg/L	32	11	0	0.0027	0.014		ND	0.0027	NA	NA	0.0005	0.0154	0.0094	0.018	ND	0.014
sec-Butylbenzene	NE	NE	mg/L	32	9	0	0.0027	0.0223	ND	ND	0.0027	NA	NA	0.0035 ND	0.0134 ND	0.0034	0.018	ND	0.0223
Styrene	2.2	50	mg/L	32	2	0	0.0005	0.0032	ND	ND	ND	NA	NA	ND	ND		ND	ND	0.0032
tert-Butylbenzene	NF	NF	mg/L	32	2	0	0.0003	0.0003	ND	ND	ND	NA	NA	ND	ND	ND	ND	ND	ND
Toluene	21	1.7	mg/L	34	14	1	0.001	2.25	ND	ND	ND	0.002	0.012	0.003	ND	0.0015	0.0368	0.052	0.043
Xvlenes (Total)	NE	NE	mg/L	34	22	0	0.0018	1.75	ND	0.00453	0.0065	0.03	0.079	0.826	0.0488	0.0767	0.412	0.772	0.681
Semi-Volatile Organic Compo	ounds (SVOCs)		0,														-		
2-Methylnaphthalene	NE	NE	mg/L	16	10	0	0.001	8.78	1.12	NA	NA	NA	NA	0.039	NA	NA	NA	NA	NA
Acenaphthene	NE	NE	mg/L	16	6	0	0.0106	0.76	ND	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Acenaphthylene	NE	NE	mg/L	16	10	0	0.0127	2.9	1.23	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Anthracene	NE	NE	mg/L	16	6	0	0.0061	3.67	ND	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Benzo [a] Anthracene	NE	NE	mg/L	16	5	0	0.0007	0.319	ND	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Benzo [a] Pyrene	NE	NE	mg/L	16	3	0	0.0004	0.138	ND	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Benzo [b] Fluoranthene	NE	NE	mg/L	16	4	0	0.0003	0.153	ND	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Benzo[k]flouranthene	NE	NE	mg/L	16	1	0	0.0001	0.0001	ND	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Chrysene	NE	NE	mg/L	16	5	0	0.0006	0.229	ND	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Fluoranthene	NE	NE	mg/L	16	6	0	0.0028	0.615	ND	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Fluorene	NE	NE	mg/L	16	7	0	0.01	1.4	ND	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)Pyrene	NE	NE	mg/L	16	1	0	0.0001	0.0001	ND	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Naphthalene	NE	2.67	mg/L	16	9	3	0.0005	23.5	ND	NA	NA	NA	NA	0.25	NA	NA	NA	NA	NA
Phenanthrene	NE	NE	mg/L	16	8	0	0.0217	3.54	ND	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Pyrene	NE	NE	mg/L	16	6	0	0.005	0.846	ND	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbo	ns (TPH)					-													
трн	NE	NE	mg/L	10	8	0	2.16	595	281	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics		N:=					0.000	0.000						0.000				<b>N</b> 14	
Total Cyanide	NE	NE	mg/L	1	1	0	0.006	0.006	NA	NA	NA	NA	NA	0.006	NA	NA	NA	NA	NA

#### <u>Notes</u>

#### Data is compared to RIDEM Method 1 Standards. Shaded results represent numerical exceedances of standards.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows sample collected from with the Liquefaction Work Area

ND - Not Detected

NA - Not Analyzed

#### Providence, Rhode Island

										MW-314D		MW-315D
									Screen	ed Interval : 24	- 34 feet	Screened Interval :
										bgs		20 - 30 feet bgs
	RIDEM Upper	RIDEM GB		Number of	Number of	Number of	Range Detected					Screened in Organic
	Concentration Limit (UCL)	Groundwater Objectives		Samples	Detects	Exceedances			Scr	eened in Organ	ic Silt	Silt
		•							June 2014	October 2015	May 2016	June 2014
			Units				Minimum	Maximum				
Volatile Organic Compounds (	VOCs)											
1,2,4-Trimethylbenzene	NE	NE	mg/L	32	20	0	0.002	0.338	0.183	0.0825	0.12	0.2
1,3,5-Trimethylbenzene	NE	NE	mg/L	32	12	0	0.0019	0.102	0.0379	0.0218	0.0185	0.056
4-Isopropyltoluene	NE	NE	mg/L	32	10	0	0.0012	0.016	0.0083	0.0038	0.0035	0.0117
Acetone	NE	NE	mg/L	32	4	0	0.0028	0.102	ND	0.0028	0.0028	ND
Benzene	18	0.14	mg/L	34	25	12	0.0033	28.5	2.01	1.79	1.22	0.698
Carbon Disulfide	NE	NE	mg/L	32	2	0	0.0023	0.0023	ND	0.0023	0.0023	ND
Chlorobenzene	3.2	56	mg/L	32	1	0	0.0003	0.0003	ND	ND	ND	ND
Ethylbenzene	16	1.6	mg/L	34	25	4	0.0011	2.5	0.642	0.518	0.438	0.596
Isopropylbenzene	NE	NE	mg/L	32	15	0	0.001	0.0794	0.0448	0.0296	0.0253	0.055
Methylene Chloride	NE	NE	mg/L	32	4	0	0.006	1.5	ND	ND	ND	ND
Naphthalene	NE	2.67	mg/L	34	25	11	0.0032	29.5	3.43	2.99	2.52	3.89
n-Butylbenzene	NE	NE	mg/L	32	2	0	0.0027	0.014	ND	ND	0.0027	ND
n-Propylbenzene	NE	NE	mg/L	32	11	0	0.0027	0.0229	0.018	0.0092	0.0082	0.0164
sec-Butylbenzene	NE	NE	mg/L	32	9	0	0.0008	0.0026	0.002	0.0011	0.0008	0.0016
Styrene	2.2	50	mg/L	32	2	0	0.0005	0.0032	ND	0.0005	ND	ND
tert-Butylbenzene	NE	NE	mg/L	32	2	0	0.0003	0.0003	ND	0.0003	0.0003	ND
Toluene	21	1.7	mg/L	34	14	1	0.001	2.25	0.0147	0.0145	0.0086	0.0184
Xylenes (Total)	NE	NE	mg/L	34	22	0	0.0018	1.75	0.185	0.117	0.117	0.375
Semi-Volatile Organic Compou	unds (SVOCs)											
2-Methylnaphthalene	NE	NE	mg/L	16	10	0	0.001	8.78	NA	NA	NA	NA
Acenaphthene	NE	NE	mg/L	16	6	0	0.0106	0.76	NA	NA	NA	NA
Acenaphthylene	NE	NE	mg/L	16	10	0	0.0127	2.9	NA	NA	NA	NA
Anthracene	NE	NE	mg/L	16	6	0	0.0061	3.67	NA	NA	NA	NA
Benzo [a] Anthracene	NE	NE	mg/L	16	5	0	0.0007	0.319	NA	NA	NA	NA
Benzo [a] Pyrene	NE	NE	mg/L	16	3	0	0.0004	0.138	NA	NA	NA	NA
Benzo [b] Fluoranthene	NE	NE	mg/L	16	4	0	0.0003	0.153	NA	NA	NA	NA
Benzo[k]flouranthene	NE	NE	mg/L	16	1	0	0.0001	0.0001	NA	NA	NA	NA
Chrysene	NE	NE	mg/L	16	5	0	0.0006	0.229	NA	NA	NA	NA
Fluoranthene	NE	NE	mg/L	16	6	0	0.0028	0.615	NA	NA	NA	NA
Fluorene	NE	NE	mg/L	16	7	0	0.01	1.4	NA	NA	NA	NA
Indeno(1,2,3-cd)Pyrene	NE	NE	mg/L	16	1	0	0.0001	0.0001	NA	NA	NA	NA
Naphthalene	NE	2.67	mg/L	16	9	3	0.0005	23.5	NA	NA	NA	NA
Phenanthrene	NE	NE	mg/L	16	8	0	0.0217	3.54	NA	NA	NA	NA
Pyrene	NE	NE	mg/L	16	6	0	0.005	0.846	NA	NA	NA	NA
Total Petroleum Hydrocarbon	s (TPH)											
ТРН	NE	NE	mg/L	10	8	0	2.16	595	NA	NA	NA	NA
Inorganics												
Total Cyanide	NE	NE	mg/L	1	1	0	0.006	0.006	NA	NA	NA	NA

#### <u>Notes</u>

#### Data is compared to RIDEM Method 1 Standards. Shaded results represent numerical exceedances of standards.

Table only indicates the compounds that were detected, other compounds were submitted for analysis, but not detected.

Table only shows sample collected from with the Liquefaction Work Area

ND - Not Detected

NA - Not Analyzed



FIGURES

# NATIONAL GRID PROPOSED LIQUEFACTION PLANT PROVIDENCE, RHODE ISLAND SHORT TERM RESPONSE ACTION PLAN (STRAP) **MAY 2017**

PREPARED FOR:

### national**grid**

PREPARED BY:



GZA GEOENVIRONMENTAL, INC. 530 BROADWAY PROVIDENCE, RHODE ISLAND 02909

**DESIGNED BY:** 

KIEWIT ENGINEERING AND DESIGN CO. 9401 RENNER BOULEVARD LENEXA, KANSAS 66219



THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY NATIONAL GRID OR THE NATIONAL GRID'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND NATIONAL GRID ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND NATIONAL GRID, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND NATIONAL GRID.



SCALE: 1 INCH = 2000 FEET

INDEX OF DRAWINGS								
SHEET #	SHEET TITLE							
1	COVER SHEET WITH SITE LOCUS							
2	OVERALL AERIAL PHOTOGRAPH							
3	EXPLORATION LOCATION PLAN							
4	COMPLETED REMEDIAL ACTIVITIES							
5	EROSION AND SEDIMENTATION CONTROL PLAN							
6	PROPOSED FINAL CONDITIONS PLAN							
7	CAPPING CROSS SECTIONS							

SHEET 1 OF 7



CZA Geofinuironmental Inc. GZA-J:\FNV\33554.4BU\FIGURES\CAD\DWGS\33554\_OVERALI\_AFRIALDWG\_2\_STRAP\_MAY\_8\_2017\_2:03\_PM\_LISA\_THFRIAU

#### LEGEND:

---- PROPERTY LINES

642 ALLENS AVENUE FORMER MGP SITE PROJECT WORK SITE

STRAP AREA (LIMITS OF SOIL AND GROUNDWATER DISTURBANCE)

#### **REFERENCE NOTES:**

- 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.

W E

SCALE IN FEET 1" = 150'

THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY NATIONAL GRID OR THE NATIONAL GRID'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND NATIONAL GRID. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND NATIONAL GRID, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR L I A B I L I T Y T O G Z A A N D N A T I O N A L G R I D.

450

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

#### **OVERALL AERIAL PHOTOGRAPH**

PREPARED BY:		PREPARED FOR:						
GZA Geo Enginee	Environmental, Inc. rs and Scientists ww.gza.com	nation	al <b>grid</b>					
PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: SDN	DRAWING					
DESIGNED BY: SDN	DRAWN BY: LDT	SCALE: AS NOTED	0					
DATE:	PROJECT NO.	REVISION NO.						
MAY, 2017	33554.60	0	SHEET NO. 2 OF 7					



### LEGEND:



PROPERTY LINE PROJECT WORK SITE STRAP AREA (LIMITS OF SOIL AND GROUNDWATER DISTURBANCE) EXISTING BUILDING UTILITY POLE LIGHT POLE STEEL POST PILING — EDGE OF WATER RAILROAD TRACKS EXISTING CONTOUR

> (MAJOR 5 FOOT INTERVAL) EXISTING CONTOUR (MINOR 1 FOOT INTERVAL) HISTORIC STRUCTURE OR FEATURE

PAVEMENT

CONCRETE PAD

HYDRANT

**200 FOOT CRMC SETBACK** 



SCALE IN FEET 1" = 50'





FORM FORMER GAS TANK STATION A39

#### **GENERAL NOTES:**

1) EXISTING CONDITIONS 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
- ON-SITE INVESTIGATIONS AND SURVEYS BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2016.
- 2) PROPERTY LINES AND LOT INFORMATION ESTABLISHED FROM INFORMATION PROVIDED ON A DRAWING 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.
- 3) EXPLORATION LOCATION PLANS WERE DEVELOPED FROM THE FOLLOWING:
  - SITE PLANS PROVIDED BY RESOURCE CONTROLS ASSOCIATES (RCA) IN THE RIDEM-SUBMITTED JULY 5, 1994 "SITE CHARACTERIZATION PLAN" PREPARED ON BEHALF OF THE PROVIDENCE GAS COMPANY. PLANS PROVIDED BY NATIONAL GRID.
  - SITE PLANS PROVIDED BY RCA IN THE RIDEM-SUBMITTED JUNE 28, 1996 "PHASE IB FIELD CHARACTERIZATION INVESTIGATION" PREPARED ON BEHALF OF THE PROVIDENCE GAS COMPANY. PLANS PROVIDED BY NATIONAL GRID.
  - SITE PLANS PROVIDED BY ESS IN THE RIDEM-SUBMITTED OCTOBER 21, 1999 "SUBSURFACE INVESTIGATION AND PROPOSED ALGONQUIN GENERATOR CONSTRUCTION AREA" PREPARED ON BEHALF OF THE PROVIDENCE GAS COMPANY. PLANS PROVIDED BY NATIONAL GRID.
  - SITE PLANS PROVIDED BY VHB IN THE RIDEM-SUBMITTED NOVEMBER 2002 "REMEDIAL ACTION CLOSURE REPORT" PREPARED ON BEHALF OF THE NEW ENGLAND GAS COMPANY. PLANS PROVIDED BY NATIONAL GRID.
  - SITE PLANS PROVIDED BY VHB IN THE RIDEM-SUBMITTED APRIL 2003 "SITE INVESTIGATION REPORT" PREPARED ON BEHALF OF THE NEW ENGLAND GAS COMPANY. PLANS PROVIDED BY NATIONAL GRID.
  - SITE PLANS PROVIDED BY VHB IN THE RIDEM-SUBMITTED JANUARY 26, 2009 "OXIDE BOX INVESTIGATION TECHNICAL MEMORANDUM" PREPARED ON BEHALF OF NATIONAL GRID. PLANS PROVIDED BY NATIONAL GRID.
  - FIGURE 3 "EXPLORATION LOCATION PLAN" PREPARED BY GZA GEOENVIRONMENTAL, INC. (GZA) ON BEHALF OF CHICAGO BRIDGE AND IRON (CB&I) IN JULY 2005. PLANS PROVIDED BY NATIONAL GRID.
  - 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.
  - FIGURE 2 "EXPLORATION LOCATION PLAN," DATED SEPTEMBER 18, 2015, BY WEIDLINGER ASSOCIATES, INC. (WEI) ON BEHALF OF KIEWIT CORPORATION (KIEWIT). PLAN PROVIDED BY NATIONAL GRID.
  - FIGURE 2 "EXPLORATION LOCATION PLAN," DATED MARCH 22, 2016, BY GOLDER ASSOCIATES, INC. PREPARED FOR CHI ENGINEERING AND PROVIDED BY NATIONAL GRID.
  - ON-SITE INVESTIGATIONS AND SURVEYS BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2016.
- THE LOCATION OF THE EXPLORATIONS AND MONITORING WELLS AT THE SITE WERE APPROXIMATELY DETERMINED 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.
- 5) HORIZONTAL DATUM IS BASED ON NAD 1983 FROM BASE MAPPING PROVIDED BY VHB.
- 6) VERTICAL DATUM IS BASED ON NAVD 1988 FROM BASE MAPPING PROVIDED BY VHB.
- 7) APPROXIMATE HISTORICAL STRUCTURE/EQUIPMENT LOCATIONS AND DATES WERE OBTAINED FROM THE FOLLOWING SOURCES:
  - CERTIFIED SANBORN MAPS DATED: 1950, 1956, 1972, 1977 AND 1982
  - AERIAL ORTHOPHOTOGRAPHIC IMAGES OBTAINED FROM RIGIS: 1939, 1951, 1962, 1972, 1976, 1981, 1988, 1992, 1995, 1997, 2002, 2008
  - SITE PLANS PROVIDED BY RESOURCE CONTROLS ASSOCIATES (RCA) IN THE RIDEM-SUBMITTED JULY 5, 1994 "SITE CHARACTERIZATION PLAN" PREPARED ON BEHALF OF THE PROVIDENCE GAS COMPANY. PLANS PROVIDED BY NATIONAL GRID.
  - HISTORIC SITE PLAN "GENERAL PLAN OF WORKS, PROVIDENCE GAS COMPANY, SASSAFRAS POINT PLANT, PROVIDENCE, RHODE ISLAND." UNDATED. PLANS PROVIDED BY NATIONAL GRID.
- 10) THE SITE HAS BEEN THE LOCATION OF NUMEROUS REMEDIAL ACTIONS. THIS PLAN SET DOES NOT PRESENT THE LOCATIONS OF ANY CONFIRMATORY SAMPLES THAT HAVE BEEN COLLECTED AT THE SITE. THIS PLAN SET MAY INCLUDE LOCATIONS THAT HAVE BEEN FULLY EXCAVATED AND THE PRESENTED EXPLORATIONS MAY NOT BE TRUE TO CURRENT CONDITIONS.
- 11) THIS PLAN SET DOES NOT PRESENT THE LOCATIONS OF SAMPLES THAT WERE COLLECTED FOR GEOTECHNICAL PURPOSES ONLY. THIS INCLUDES CONE PENETROMETER TESTING SAMPLES AND TEST PITS CONDUCTED WITH NO SOIL DESCRIPTIONS OR ENVIRONMENTAL SAMPLES COLLECTED. HOWEVER, THE LOCATIONS OF KNOWN GEOTECHNICAL BORINGS (PRESENTED ON PLANS PROVIDED BY NATIONAL GRID) ARE SHOWN.

THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY NATIONAL GRID OR TH NATIONAL GRID'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATIO IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPO WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND NATIONAL GRID, ANY TRANSFER, REUSE, MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT GZA AND NATIONAL GRID, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OLI A BILITY TO GZA AND NATIONAL GRID

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

#### **EXPLORATION LOCATION PLAN**

PREPARED BY:		PREPARED FOR:						
GZA Geo Enginee	Environmental, Inc. rs and Scientists ww.gza.com	nationalgrid						
PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: SDN	DRAWING					
DESIGNED BY: SDN	DRAWN BY: LDT	SCALE: AS NOTED	່ວ					
DATE:	PROJECT NO.	REVISION NO.	] 3					
MAY, 2017	33554.60	0	SHEET NO. 3 OF 7					







AREAS OF REMEDIATION

SAND, APPROXIMATELY 4-6 INCHES OF LOAM AND HYDROSEED AREAS CAPPED WITH APPROXIMATELY 2 FEET OF STONE DUST AREAS CAPPED WITH APPROXIMATELY 18-20 INCHES OF CLEAN

SAND AND APPROXIMATELY 4-6 INCHES OF CRUSHED STONE

AREAS REMEDIATED BY ESS, CLEAN SAND AND CRUSHED STONE CAP

AREAS CAPPED WITH GEOTEXTILE AND APPROXIMATELY 24 INCHES OF RIP RAP

AREAS WHERE REMEDIAL ACTIONS HAVE BEEN CONDUCTED

### AREAS EQUIVALENT TO AN ENGINEERED CAP

BUILDING/STRUCTURE

PAVED AREAS

CONTAINMENT DIKE

CONCRETE PAD



KEY PLAN: SCALE: 1"=800'

#### LEGEND:

	PROPERTY LINE
<u> </u>	INTERIOR PROPERTY LINE
	200 FOOT CRMC SETBACK
	PROJECT WORK SITE
	STRAP AREA (LIMITS OF SOIL AND GROUNDWATER DISTURBANCE)
· · ·	EDGE OF WATER
o	STEEL POST
<del>-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x</del>	FENCE
	RAILROAD TRACKS
1010	EXISTING CONTOUR (MAJOR 10 FOOT INTERVAL)
11	EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)

#### **GENERAL NOTES:**

- 1) EXISTING CONDITIONS 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
  - ON-SITE INVESTIGATIONS AND SURVEYS BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2016.
- 2) PROPERTY LINES AND LOT INFORMATION ESTABLISHED FROM INFORMATION PROVIDED ON A DRAWING 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.
- 3) HORIZONTAL DATUM IS BASED ON NAD 1983 FROM BASE MAPPING PROVIDED BY VHB.
- 4) VERTICAL DATUM IS BASED ON NAVD 1988 FROM BASE MAPPING PROVIDED BY VHB.

SCALE IN FEET 1" = 50'

THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY NATIONAL GRID OR THE NATIONAL GRID'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND NATIONAL GRID. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND NATIONAL GRID, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OF L I A B I L I T Y T O G Z A A N D N A T I O N A L G R I D

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

#### **COMPLETED REMEDIAL ACTIVITIES**

PREPARED BY:		PREPARED FOR:						
GZA Geo Enginee w	DEnvironmental, Inc. Prs and Scientists ww.gza.com	nation	al <b>grid</b>					
PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: SDN	DRAWING					
DESIGNED BY: SDN	DRAWN BY: LDT	SCALE: AS NOTED	1					
DATE:	PROJECT NO.	REVISION NO.	4					
MAY, 2017	33554.60	0	SHEET NO. 4 OF 7					



#### **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.
- VERTICAL DATUM IS BASED ON NAVD 1988 FROM BASE MAPPING PROVIDED BY VHB.
- SELECT PRESENTED SITE UTILITIES WERE TAKEN FROM HISTORIC 4) 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.
- ON-SITE INVESTIGATIONS AND SURVEYS BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2016.
- SITE BOUNDARIES ARE APPROXIMATE.
- CONTRACTOR TO INSTALL CONSTRUCTION ENTRANCES PROXIMATE TO HAUL ROADS AND AS NEEDED.



















LEGEND:

**KEY PLAN:** 

SCALE: 1"=800'

EXISTING BUILDING ----- EXISTING CONTOUR (MAJOR 5 FOOT INTERVAL)

EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)

EXISTING PAVEMENT

EASEMENT AREA

UTILITY POLE

LIGHT POLE HYDRANT

PROPERTY LINES

PROJECT WORK SITE

STRAP AREA (LIMITS OF SOIL AND GROUNDWATER DISTURBANCE)

PROPOSED PERMANENT PAVEMENT

PROPOSED CONTOUR (MAJOR 5 FOOT INTERVAL) PROPOSED CONTOUR (MINOR 1 FOOT INTERVAL) PROPOSED CRUSHED STONE

PROPOSED CONCRETE

PROPOSED SAND FILTER

CATCH BASIN FRAME AND GRATE

CATCH BASIN TO BE PROTECTED WITH SILT SACK

PROPOSED RIP RAP CAP

THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY NATIONAL GRID OR THE NATIONAL GRID'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND NATIONAL GRID. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND NATIONAL GRID, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND NATIONAL GRID.

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

**EROSION AND SEDIMENTATION CONTROL PLAN** 

PREPARED BY:		PREPARED FOR:						
GZA Geo Enginee	Environmental, Inc. rs and Scientists ww.gza.com	nation	al <b>grid</b>					
PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: SDN	DRAWING					
DESIGNED BY: SDN	DRAWN BY: LDT	SCALE: AS NOTED	5					
DATE:	PROJECT NO.	REVISION NO.	) J					
MAY, 2017	33554.60	0	SHEET NO. 5 OF 7					



#### **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
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  - 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.
- VERTICAL DATUM IS BASED ON NAVD 1988 FROM BASE MAPPING PROVIDED BY VHB.
- SELECT PRESENTED SITE UTILITIES WERE TAKEN FROM HISTORIC 4) 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.
- ON-SITE INVESTIGATIONS AND SURVEYS BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2016.
- 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'

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 $\bigcirc$  $\geq$  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

THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY NATIONAL GRID OR THE NATIONAL GRID'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA AND NATIONAL GRID. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA AND NATIONAL GRID, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA AND NATIONAL GRID.

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

#### **PROPOSED FINAL CONDITIONS PLAN**

PREPARED BY:		PREPARED FOR:			
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		national <b>grid</b>			
PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: SDN	DRAWING		
DESIGNED BY: SDN	DRAWN BY: LDT	SCALE: AS NOTED	6		
DATE:	PROJECT NO.	REVISION NO.	0		
MAY, 2017	33554.60	0	SHEET NO. 6 OF 7		
CONCRETE CAP DETAIL NOT TO SCALE











ASPHALT CAP DETAIL

(NEW PAVING)

NOT TO SCALE

# — FINISH GRADE AT LEAST 12" OF EXISTING SOIL SUBGRADE NON-WOVEN GEOTEXTILE RIP RAP CAP DETAIL (WITH NON-WOVEN GEOTEXTILE) NOT TO SCALE

AT LEAST 18" OF CLEAN IMPORTED C-33 SAND 8 OUNCE - NON-WOVEN GEOTEXTILE NON-WOVEN 40 MIL LLDPE GEOTEXTILE AT LEAST 12" OF 3/8" PEASTONE \_\_\_\_\_ LINER 8 OUNCE 6" COMPACTED SUBGRADE - NON-WOVEN LLDPE LINER GEOTEXTILE SYSTEM

SAND FILTER DETAIL NOT TO SCALE

SECTION - LLDPE LINER SYSTEM DETAIL NOT TO SCALE

# NOTES:

- 1. SOIL REUSE (CALLED OUT AS EXISTING SOIL SUBGRADE IN THE DETAILS) SHALL BE SUBJECT TO GEOTECHNICAL SUITABILITY (AS DETERMINED BY THE CONTRACTOR) AS WELL AS OBSERVED ENVIRONMENTAL IMPACT (AS DETERMINED BY OWNER AS DESCRIBED IN STRAP).
- 2. CAPS OTHER THAN WHAT IS SHOWN HERE ARE SUBJECT TO APPROVAL BY OWNER AND RIDEM.
- 3. IMPORTED FILL MUST BE CERTIFIED AND/OR TESTED AND IS SUBJECT TO APPROVAL BY OWNER AS DESCRIBED IN STRAP.



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

#### **CAPPING CROSS SECTIONS**

### PREPARED BY:

**GZ**\)

DATE:

GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com DESIGNED BY: SDN DRAWN BY: LDT PROJECT NO. 33554.60 MAY, 2017





APPENDIX A

LIMITATIONS

#### LIMITATIONS

- 1. This Short Term Response Action Plan (STRAP) 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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## APPENDIX B

BORING AND TEST PIT LOGS



Description         Data Stription         Description											
DEPTH	OGATIO Casing Blows per foot	N OF BORINS Sample Depths From- To	3 Type of Sample	E Fror	llows per 0 n Somple n	6" er To	Moisture Density or	Sirata Change	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hard- ness, Drilling time, seams and etc.	No	SIL
12 - 12 - 12 - 12 - 12 - 12 - 12 - 12 -	4 5 6 7	0'-2'	D	6	7	7	Moist medium dense		Gray-brown SILT & fine sand, cinder, ash, fuel odor noted, FILL	1	A CAR IN CALL
	7 2 1 2	51-71	D	3 2	1	1	Moist soft		Black, ashes, cinders, coal, FILL	2	
10		101-121	D	7 2	3	2	Wet soft		" & some organic silt	3	
	1 - 2 - 1 - 2	15'-15' 16'-17'	D	2	3		] :	16'0"	Gray-brown ORGANIC SILT	4	+++++++++++++++++++++++++++++++++++++++
Sections         Sections         Const fails         Const fails <thconst fails<="" th=""> <thc< td=""></thc<></thconst>											
	3 _4 _2 _1			3			medium stiff	25*0"			
	13 10 26 28	25'-27'	D	3	3	4		28*0"	Gray-brown ORGANIC SILT, some fine sand, trace fine gravel	6	
30	36 18 23 21	30'-32'	D	18 20	20	14	Wet dense	z	Gray medium to fine SAND, little fine to medium gravel & silt	7	
-	18 19 24 28 26	351-371	D	20 15		20		34'0"	Brown fine SAND, some fine gravel, little silt	8	2
40	21 17							38.0.	Brown medium to fine running		

PR RE	OJECT NA	иле IT TO					LOCATION.	0J. NO	DFFSET	0	CALCUMPTON ACC
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Al	. GRO	UND WATER OBS	SERVATIC	DNS 15	ې موان در در		CASING	SAMPLE	R CTRE BAR START ACCO AD	1 <u>. 1</u>	「「「「「「「」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」
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	24			13	1.000	1.1.1.1	dense	1.99	집 : 성명했는지 2016년 1923년		2
	29						35.10	N 6 6	-lost water @45'	1.234 B 4	10
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	12	45'-4/		16	10	11	wet		SAND trace fine gravel	92	14
	22		-			Sec. 1	dense		one, truco rate graver		1
EO	29	<u>,</u>			1		· · · · · ·	-		1	2
50	25	50'-51'	D	7	11			51'0"		101	" Equal
× 1	20	51-52	D	12	12		Wet			1041	į.
	20	territor and the second se	-			1 - 1 - 200 	very		Casu SILT trace alon		-
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	26	55'-57'	D	8	7	10		- 2		11 2	100
	28			LU			1.2.2				-
	30						and the second	COLOU			
60	35	601-621	D	10	30	93	Wet	60.0.	Grav fine SAND & silt	122	2
1	41		_	17			very	2	layers		
	31						dense				-
- 8	30										
	42	651-671	D	8	10	18	Wet			13 2	5
	33			1/			wense				
	29						1				-
70	44	701-721	a	7	a	12		-	<i>20</i>	14 0	
	41	- <i>m</i> = <i>n</i>		19			1		3		-
	40	1			·			73'0"			-
	62		1				Wet				
	72	75'-77'	D	23	31	30	very		Gray fine SAND, little silt	152	2
	90 107	<u> </u>		38			aense				
	109						1				
80	133			1	Les and A		L;		Gray running fine to med. SA	100	
So D=1 UP TP UT	Imple Typ Dry C=C = Undistur = Test Pit = Undistur	ored W=Washed bed Piston A=Auger V=V bed Thinwall	d 'ane Test		Proportio trace little some	01010 01010 101020 201035	ed   + % Cohes % 0- % 10- % 30-	40 lb Wt.x 3 ionless Der 10 Loo 30 Med.D 50 Den	10"fall on 2"O.D. Sampler Insity Cohesive Consistency Ise O-4 Soft 30 + Hard Rock Iense 4-8 M/Stift Samp Ise 8-15 Stiff	SUMMA Boring Coring lies NO	

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	OCATIO	N OF BORING	3:		-						1.1.1.1.1
DEPTH	Casing Blows per fact	Sample Depths From- To	Type of Sample	Fron O-6	lows per ( n Sample	5" r To 1 12-18	Moisture Density or	Strato Chonge	SOIL IDEN Remarks includ soil etc. Rock-o ness, Drilling tin	ITIFICATION de color, grodation, Type of color, type, condition, hard- ne, segms and etc	SA
10.0	72	80"-82"	D	11	13	20	wet	Liev.	Gray runni	ng fine to medium	162
	70 92 135	-		29			very dense		SALD		
	77 77 65	851-871	D	8 15	8	9	wet medium dense		Gray fine	SAND & silt	1724
90	78 86 108	90'-92'	D	5 15	8	8			Gray fine	SAND, little silt	1824
	164 120 144	95'-97'	D	6	5	6					
				14			wet				1249
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AJ	9' Casing	0fler1 90. 0fler	4Hou Hou	rs rs	Rods - Type Size I. P. Hammer Hammer	"AW" WI. Foll	24" 	SAMPLER 	CORE BAR START 7/27/71 COMPLETE 7/27/71 TOTAL HRS. BORING FOREMAN BIT INSPECTOR SOILS ENGR	. <u>.</u>	A
] ;]	OCATIO	N OF BORING	TT. and								
HILDO	Blows per foot	Depths From-To	of	From 0-6	Somple	r To 1 12-18	Density or Consist.	Strata Chonge Elev.	Remarks include color, grodation, Type of soil etc. Rock-color, type, condition, hard- ness, Drilling time, seams and etc.	No.	SAN P
	4	0'-2'	D	6	7	7	Moist		Brown fine SAND & fine	1	21
1.1	6	a de la companya de l La companya de la comp		_6			medium dense		gravel, trace cinders FILL		
	7		-				5.00	18.02	Brown-gray fine SAND &		
	-6	51-71	D	7	9	6	тория 24 Г.		fine gravel, trace brick FILL (fuel odor noted)	2	24
9	11					2					T
10	9	and a strange			-	-		10*		1	T.
	7	10'-12'	D	8	8	5	Wet		gravel (fuel odor noted)	: 3	24
	11	the second			4		dense		FILL .	-	-
	10		-				Line and	15"		-	
	2	15'-17'	D	1	_2	3	wet	1 e 1	shells & fine sand	4	1
	1	a egen ie	-			1	stiff	5 D.	3	-	+
20	2	201-221	D		2	1	Ket		- 22v.	-	1
8	4	20 -22		2			soft	м		2	Ľ
9 9 9 5	4							1			+
	4	251-271	- p	1	1	2		. *	<u>~</u>	6	22
	7		-	ī				1.1.1			1
	8							R.			1
30	8	301-221	D	2	2	7	Wet V-stiff		Gray ORGANIC SILT, some fine to medium sand	7	01
ε	13			16			Moist	31.6.	Gray fine to medium SAED,	É	T
	21		-				H.dense	34"	some fine gravel & org.silt		1
	39	351-371	D	8	15	15	Wet		Gray medium to coarse	8	10
	21			14			dense		running SAED		T
	18		1					38.	Gr-Br. fine to coarse SAND	1	1
40	CPOLIND		901	L		USED	21	CASING	THEN ascoled	1	1
S	ample Ty	DE D		1	Proporti	ons Us	ed Cobe	GASING: 1401b Wt.x 3	30 <sup>°</sup> toll on 2 <sup>°</sup> O.D. Sampler		MA

BE SA	PORT SEN MPLES S GRO	IT TO ENT TO JND WATER OBS	ERVATIO					0J. NO, R JOB NO. SAMPLE	R CORE BAR START Sape as	<u>10</u> 00
AI -	inme as	#1_ otter 'ofter	Hou Hou	rs Irs	Type Size] D. Hominer Hommer	Wt. Fall	Sa 	me <u>as</u> #	1 COMPLETE TOTAL HRS. BORING FOREMAN INSPECTOR SOILS ENGR.	
	OCATIO	N OF BORING	<u>.</u>	a di si di	s <u>eren</u> ter		Carlin A.	<u></u>		
нтязо	Cosing Biows per	Sample Depths From- To	Type of Somple	Bl or From	owsper( Sample	r To 1 12-18	Moisture Density or Consist	Strata Chonge Elev	SOL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hard- ness, Drilling time, seams and etc.	SA No. F
1.71	20	40"-42"	D	11	13	1.2	Wet		Gray-brown fine to coarse	9 2
	#21	aline pitcher i and	-	.1.0	و بالجديد م		dense	1.6	SAND, some fine gravel,	11
	24		18	14				44'	LIACE STIL	A SOLUTION
	30	451 471		0	10	12	Vot M.	1.5	Running SAND (last sample)	
	36	45 -47		14	10	12	dense		Kulming DAND (10st sample)	-
	51		-	1		1.1				
50	49		1.601		1.1	1		-	Gray fine to coarse SAND,	
	38	50'-52'	D	9	1.8	12	- "	1	some fine gravel, trace sil	30
	33		Ale 1	1.1	1.8	No.	1.1	- 31 S	요즘 영화가 가지 않	1
	46	a second and a second as	-	-			Wet		전문 사람이 있는 것이 같아.	
	36	551-571	D	16	31	50	very	· • . 1		11
	41		-	33	1997	1	dense			1.10
	56						1			
60	-61	60'-62'	D	7	12	14	medium			122
18	33			15			dense			
	49	Winstein im					1	64'		
	3.9	6.1.6.1		10	10	10	-		C AND	
	45	05'-6/'		18	12	18	dense	67'	Gray-brown running SAND	13
	58									
70	48		-			- C	Wet		Gray-medium to fine SAND	
	42	70'-72'	D	10	20	18	very		& fine gravel, trace silt	14
2.5	60		-	21		-	dense	73'	54 (	
5	47		-				-		F	
	47	75'-77'	D	5	8	10	Wet		Gray medium to coarse SAND	152
•	38			15			dense		some fine gravel (running)	
	40									
80	53		J		1	1.055	L			
S D: UI T	GROUND ample Ty Dry C=C P=Undistu P=Test Pit	SURFACE TO pe fored W=Washer bed Piston A=Auger V=V	d /one Test		Proporti trace little some	USED ons Us 0 to 10 10 to 20 20 to 35	ed Cohes % Cohes % 0	LASING: 4015 Wt.x. 5000 Loc -10 Loc -30 Med. D	IHEN       30"fall on 2"O.D. Sampler       nsity     Cohesive Consistency       ose     0-4       0-4     Soft       0ense     4-8       M/Stiff	SUMMA Boring Coring

FIE S/	PORTISE MPLES S GRO	IT TO	RVAT	entero ONS				R JOB NO	077567
At At	5 abi <u>e a</u> . 61	±#1 offer _ offer	Ho Ho	urs	Type Size I.D. Hommei	r Wt.	Same a	5AMPLE 5 # <u>1</u>	R CORE BAR START <u>Some as 11</u> COMPLETE COMPLETE TOTAL HRS BIT INSPECTOR
	LOCATIO	N OF BORING			Homme	r Poll			SOILS ENGR.
BTH	Casing Blows per	Sámple Depths	Type	B B B C From	lows per n Somple	6" 21 To	Moisture Density	Strate .	SOIL IDENTIFICATION Remorks include color, gradation, Type of
O.	foot		Sompl	0-6	1 6-12	1.12-18	Consist.	Elev	ness, Drilling time, seams and etc. No. Pen
	<u>54</u> 57 78	8085.	<u>р</u>	21	14	22	Wet dense	82'	Gray medium to coarse SAND 16 24 some fine gravel (running)
	<u>105</u> 90	0=1:021							
	81 02	05 -07		21	. 10	15	dense		Gray fine SAND, little 17 24 silt (running sand)
90	$\frac{111}{121}$						Net	89'	Gray brown fine to adding
		90 <b>'-</b> 92'	b.	9 29	16	24	very dense		SAND, trace silt
		051 06161	0.2.2	10	10.5		Wet		
in the second		<u></u>		1.2	10	- Lil-	dense	96'6"	Bottom of boring 96'6"
100									
			n** 3007	lena vt	es us on opp	ed n ens			
			-78 L	nd s	emple:				
-								in yr	
	2						14		
ŀ								1.1	
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F					-			• * * =	
				_				×.	
	GROUND S	SURFACE TO	]			ISED			
Son D=D UP= TP=	nple Type Iry C=Col Undisturb Test Pit	red W=Washed ed Piston A=Auger V=Van	e Test	P tr tř	roportion ace ( Itle I(	Dio 10 %	Cohesio Cohesio O-10 10-3	Olb Wt.x 30 nless Dens D Loos O Med Dei	0"foll on 2"O.D. Sampler ily Cohesive Consistency e O-4 Soft 30 + Hord Soft Coring nse 4-8 M/Stiff

PR RE SA	OJECT-N PORT SEI MPLES S	Tan in toi ENT toi	k Sit bove "	8				Ptov 10J na IR JOB NO.	tine a str tine a str tine a str offset surf ele	v	8.
AJ AI	CRO 12" Casing V Mole o	000 WATER ODS 	ERYATIK Hot 4Hot	DNS Jrs Jurs	Rods - Type Size I D Homme Homme	"AW** r W1. r Fall	CASING	SAMPLE S/S 1 3/0 _1400 _30"	R.         CORE BAR         START         7/26/7	1 1 <u>D'A</u> odrey	fe
<u> </u>	OCATIO	N OF BORING			3					<u></u>	10.1
DEPTH	Cosing Blows per foot	Sample Depths From– To	Type of Scmple	BI or From	ows per	6" er To	Moisture Density or	Strata Change	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hard- ness, Drilling time, spans and etc.	f No	SA Ti
	1	0'-2'	D	4	5	4	Moist loose	E, ICV.	Black COAL & ash - FILL	1	2
	_3			1011 A.							1
	1	51-71	D	3	3	2		adan B Martin	Brown fine SAND & coal FILL (fuel odor noted)	2	12
10	3_4										
	1	10*+12*		3	<u> </u>		Wet loose		Brown fine SAND & fine gravel FILL (fuel odor noted)	3	2++
	1 14 1	15'-17'	D		2	2	Wet	15'0"	Black ORGANIC SILT some	-	
	1	•••		3			medium stiff	<u>18'0"</u>	fine sand, trace fine	4	ľ
20	4	20'-22'	D	2	2	3	Wet		Dark gray ORGANIC SILT &	5	
	4 5 14			5	-		soft	23"	fine sand	-	t
	18 18 17	251-271	D	4 12	5	8	Wet medium dense		Gray medium to coarse SAND some fine to medium gravel little organic silt	6	2
30	21 19 12						Wet	i i		-	F
	9 11 12	30'-32'	D	6 4	4	3	Loose	31'		7	2
	17 13 13	351-271	D		2	2	Wet	-	Dark gray ORGANIC SILT,		E
	14			3			stiff		LIACE BNEILB		
40	17 20 GROUND	SURFACE TO	70'			USED	23 "0	CASING:	THEN S/S to 721		_
Sor D: D UP:	nple Type Iry C=Co Undisturb	red W=Woshed ed Piston		F T	Proportie race ttle	ons Use 0 10 10 9 10 10 20 9	d la la Cohesi Cohesi	40lb Wt, x 3 onless Den 10 Loos	0"fall on 2"O.D. Sampler sity Cohesive Consistency Earth se 0-4 Soft 30 + Hard Rock	SUMN Borine Corin	1AI 9 .

PRO REJ SAJ	DUEGT NA PORT SEN WPLES SI	ME IT TO ENT TO						00. NO	OFFSET	Ein
A1	GRON Ance AS	JND WATER OBS _ <b>#1</b> after after	ERVATIO Hou Hou	INS IS Irs	Type Size I D. Hammer Hammer	W1 Foll	CASING Same	SAMPLE ca #1	R CORE BAR START Same BI COMPLETE TOTAL HRS. BIT INSPECTOR SOILS ENGR	
HLL	Cosing Blows per	N OF BORING Sample Depths	Type of	Bk	ows per é Somple	5" r T 0	Maisture Density or	Strata Chonge	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hard-	SA I
ð	1001 26	40*-42*	Dumple D	0-6 2	6-12 3	3 3	Consist. Wet	Elev	Dark gray ORGANIC SILT	No. 9
	25 34 47 34 57 29 28	451-471	D	20 	15	12	V <u>-stiff</u> Wet dense	428	trace shells Brown medium to fine SAND	10
50	35 39 21 32 39	501-521	<u>n</u>	18 14	'n	15	Wet redium dense	49*	Brown fine to coarse SAND, some fine to medium gravel & silt	11
	41 48 40 34 49	551-571	D	7	12	13	Wet medium dense		Brown fine to coarse SAID, some fine to medium gravel little silt	12
60	42 47 56 64 43	60'-62'	D	19 24	28	30	Wet very dense	<u>59</u> "	Gray-brown fine to coarse SAND, some fiedium to fine gravel & silt	13
5	39 48 39 49	651-671	D	11 22	22	24	Wet dense	a 67 •	Brown medium to oparse running SAND, little fine gravel	14
70	52 71	70'-72'	D	11 20	17	20		691 721	6 fine gravel Gray-brown fine to coarse SAND, little silt, trace fine gravel	15
75									Bottom of boring 72'	
	GROUND	SURFACE TO	70			USED	23	CASING:	THEN \$/\$ to 72	

PROJECT NAME       LECONTION       LECONTION       LECONTION       OFFSET         SAMPLES SENT TO       above       PROJ NO.       71-297       SUFF FLEV.       9.00         GROUND WATER OBSERVATIONS       Rods-"AW"       CASING       SAMPLER       CORE BAR       START       7/26/71       Time         AI												
At _	GROUND WATER OBSERVATIONS         6! - 7!         ofter 1/6 Hours         OCATION OF BORING:         OCATION OF BORING:         Casing Sample of Prom - To Sample From - To Sample O-6         36       0" - 2."       D       12         36       0" - 2."       D       12         31       6       12       11       6         17       -       -       4       1         12       -       -       6       1         12       -       -       6       1         1       -       -       1       -       1         12       -       -       1       -       1         1       -       -       1       -       1         1       -       -       1       -       1         1       -       -       1       -       1         1       -       -       1       -       1       -         12       -       -       1       -       1       -       1       -       1       -       1       1       - <t< th=""><th><b>Rod s -</b> Type Size I. D. Hammer Hammer</th><th>"AW" Wt. Fall</th><th>CASING 23<sup>™</sup> 300# 24"</th><th>SAMPLER 5/S 1 3/8' 140# 30''</th><th>CORE BAR.</th><th>START 7/26/71 COMPLETE 7/28/71 TOTAL HRS. BORING FOREMAN A.C INSPECTOR J. ADD SOILS ENGR. D. ADD</th><th></th><th></th></t<>	<b>Rod s -</b> Type Size I. D. Hammer Hammer	"AW" Wt. Fall	CASING 23 <sup>™</sup> 300# 24"	SAMPLER 5/S 1 3/8' 140# 30''	CORE BAR.	START 7/26/71 COMPLETE 7/28/71 TOTAL HRS. BORING FOREMAN A.C INSPECTOR J. ADD SOILS ENGR. D. ADD					
i	OCATIO	American Drilling & Boring Co., Inc. Now WATER STRIET       EAST PROVIDENCE, R. 1       SetEr       1 or 3. Date         Trox. Gas Ca-Haley & Aldrich TAME       LAST PROVIDENCE, R. 1       Date       Date										
DEPTH	Casing Blows per	Sample Depths From- To	Type of Sample	Bio on From	Somple	5" r <u>Fc</u> 1 i2-18	Moisture Density or Consist	Strata Change Elev.	SOIL IDEN Remarks includ soil etc. Rock- ness, Drilling tir	ITIFICATION de color, gradation, Type of color, type, condition, hard- ne, seams and efc.	No	S
	36 21 21	0"-2"	D	12 6	9	9	Dry medium dense		Brown fine brick, FIL	SHEET1 OF DATE		
	17 12 9 7	51-71	D	64	6	7		7*0"		SHEETOF BALLOF BALL		
10	1 1 1 6	10'-12'	D	1	1	1	Wet		Gray ORGAN odor noted	NIC SILT, fuel W/FILL	3	Constant of the
	1 1 12 14							12*	0.000041	17.0 CT1T		New Contraction
	6 2 2	15'-17'	D	2				18'0"	Gray OKGAr		4	S. M. L. S. M.
20	19 19 13 20 21	20"-22"	D	12 13	13	18	Wet dense		Gray media & fine to little sil	nm to coarse SAND medium gravel, Lt	5	1 1 1 1 1
	19 17 16 14	25'-27'	D	10 12	10	11	Wet medium dense	28*0*	#1 2	<sup>H</sup> trace silt	6	
30	20 20 13 24	301-321	D	8	12	14	Wet very stiff		Gray-brow	n SILT	7	
	32 42 43 27	351-371	D	8	17	21	Wet		@ 35" beč	omes gray	8	
40	41 47 60 63			20			_hard	38"0"	Gray-brow	n SILT	E	

то		Americ: 100 WA	an L ter s	TREET	ng ð E	AST PR	ING UO OVIDENC	I <b>., INC.</b> Ie, r. i.			DATE	B	. C
PRO REI SAI	DJECT NA PORT SEN	МЕ ₩Т ТО ENT TO					LOCATION	OJ. NO			SURF. ELEV.		9
	GRO	UND WATER OFSE	RVATIC	NS		<u>. (1997) (1917)</u> 	CASING	SAMPLER	CORE BAR.		<u>Date</u>	<u>۲</u>	m
At _6	<u></u>	ofter	L Hau Hau	rs Irs	Type Size I.D. Hommer Hommer	WI. Foll	9 ame at	. 01	BIT	START COMPLETE TOTAL HRS. BORING FORE INSPECTOR _ SOILS ENGR.	<u>same</u> MAN	88	1
L	OCATIO	N OF BORING	1									Edical Edical	
DEPTH	Cosing Blows per	Sample Depths From-To	Type of Sampie	BI or From	ows per n Sample	6" er To	Moisture Density or	Strata Change	SOIL IDEN Remarks inclus soil etc. Rock-r ness, Drilling tir	NTIFICATION de color, gradat color, type, cond me, seams and e	ion, Type of ition, hord-	No:	SAI Te
	31	40"-42"	D	10	19	23	Noist	Clev.	Gray SILT			9	2
	46 65 77			24			hard						
	76 55 66	451-471	D	14 30	16	18						10	12:
50	104 138 158					10	mater	9				11	1-10
	_128_	5052.		14			very stiff			36 g 4 j 2			
		551-571	D	10	9	20	Moist hard					12	2
60		60*-62*	D	8	10	12	н		n de la Leta	net de Tat		13	2
										*			
4		65*-66*6"	D	18	35	44	н					14	1
70							]						
		70*-72*	D	20	37	50						15	
		75'-77'	D	20	27	22	н			4		16	12
				26	·			7810"				F	+
80		<u> </u>							TILL- grag	y fine SAN tle fine g	D, some ravel		1
Sc D= UF	GROUND ample Ty Dry C=C = Undistu	SURFACE TO pe Cored W=Washed rbed Piston			Proport trace little	USED ions Us O to IO IO to 20	ed % Cohe	"CASING: 1401b Wt.x 3 sionless Der )-10 Loo	THEN O''fall on 2''O.D. Insity Cohesive Se O-4	Sampler Consistency Soft 30 +	Hard Rock	SUM Bori Cori	M/ ng ng

TQ PR REI	OJECT NA	ME	<u>es 1</u>				ADDRESS LOCATION	0J. NO		UI OF	E E STA.	0	
SA	MPLES S	ENT TO		al a la factor			ou	IR JOB NO.			Dote	1	im
At	GRO	UND WATER OBSE	RVATIO	INS rs	Туре		CASING	SAMPLEI 28 <u>88 1</u>	R CORE BAR.	START L	Lame as	1	
A1		_ ofter	Hou	rs	Size I. D. Hammer Hammer	W1. Fall		20	BIT	BORING FOREM	AN		
÷ į	OCATIO	N OF BORING	<u></u>					ang Statesta					15
EPTH	Casing Blows	Sample Depths	Type of	Bloon	ows per ( Sample	3" Ir To	Moisture Density	Strata Change	SOIL IDEN Remarks inclusion soil etc. Rock-	NTIFICATION de color, gradatio color, type, conditi	n, Type of on, hard-	S	SA
B	foot	From- To	Sample	0-6	6-12	12-18	Consist.	Elev	ness, Drilling tu	me, seams and etc		No.	F
		80"-81"6"	D-	32	130	28	Moist		silt lite	fine SAND,	some	17	1
23		81*6"-83*	D	62	68	75	dense	83 '0"	ocat, act	the this gro		18	1
				-	-		- A		Bottom of	boring 83'0	)••		+
85	1.1		D-	deno	tes us	ed		14 X J			1 M G	1.50	T
			440	f Ut	on s;	ioon :	sempler		- + 2 -	1. N. 1			╀
2.3							1 a 1				1	and the	t
323	-					in the second		250 40			a straight		+
000 HIN	1								0.28.1				T
No. 1	11.1						1 1	1.1		÷		-	+
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141			1	1	in the second	-	-	1.3		× *	e - Shat	-	t
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	5						-						+
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							-		*				+
-	GROUND	SURFACE TO	J		-	USED		"CASING:	THEN		- 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10		
C	omole Ty	pe		1	Proporti	ions Us	sed	14015 Wt.x.	30" fall on 2"O.D.	Sompler		SUM	M/

TOWN PRESS - EAST PROY.

Terror A

	A Contractor		ю1 0_ах.	n. xx	Rods Type	-"AW"	CASING	SAMPL)	ER CORE BAR START 7/28/7		
Ał -		ofter	Hou	irs	Homme Homme	r Wt r Fall	300# 24°	$\frac{1}{30}$	0 UTAL HAS 40# BORING FOREMAN <u>Go</u> NSPECTOR SOLS ENGR	1728	
Dect of	LOCATIC	N OF BORING	j:	- Series	<u>.</u>	di yanak				S.	0.20
DEPTH	Cosing Biows per foot	Somple Depths From- To	Type of Sample	Bi or From	ows per	6" er <u>To</u>	Moisture Density or	Strata Change	SOIL IDENTIFICATION Remorks include color, gradation, Type of soil etc. Rock-color, type, condition, hord- ness, Drilling time, seems and etc.		e s
1	9	0"-2"	D	12	6	4	Dry	Ciev.	Gray fine to medium SALD,	1	-
11	12	an inclusion (inclusion) (inclusion) and a straight (inclusion)	<u>(* 1987)</u> 1. j.	4	Constantin Constanting State		loose	2'	gravel_6_coal Fill		1000
1	11									1	
-	_10	51-71	D	40	19	15	dense	1.	Brown fine to medium SAND	-	3
			-	21					FILL	2	*
		1.0013	-	211	a tarta					1	-
10	1	10"-12"	D	3	3	5	Wet	10'	Grav fine SAID & et 1	3	
	5			3			1008e	1. A. 1.	some fine to medium gravel	2	2
	- <u>14</u> 6					1		122	PILL .	منبينا	
	7	Other 10         Diff. Boxxx         Podge 'AW' Type         SAME SIS         Corpe same SIS         Statt         I/10/11           other         Hours         Stel D         24"         SIS         Complexes         Diff. If I/20/71           other         Hours         Stel D         24"         SIS         Diff. If I/20/71           other         Hours         Biomage for On Sompler         24"         SUS         Diff. If I/20/71           ON OF BORING         Hours         Storpler         Misture         Storpler         Sole Ence.         Sole Ence.									
	5	Burger         Trobe Trobe         Burger         Burger         District         Burger         Burger <thb< td=""></thb<>									
	6		-	1.22	a series a			8 P.1	동물이 그렇다 것 이야가 잘 줄을		1.5
20	5							20			-
	11 20	20*-22*	D	4	4	3	Wet M.sriff		Gray ORGANIC SILT, little	5	-
-	27							23'	build & TIME BIGVEL		1
	<u> </u>						-			1	_
	14	25'-27	D	12	14	21	Hoist		Gray-brown fine to medium	6	
	35	1		19			dense		SAND & gravel, some silt	100	+
8.0	28			_		-					1
30	14	30'-32'	D.	40	24	14	к		Grav-brown fine to modium	-	-
	40			20					SAMD, some silt & fine	Ľ	1
	12								gravel		+
	20	261 271									1
	34	33-37-		20		28			Lost sample	-	f
	_52	371 221611		22	10	/:0	Had at	3/16"		-	t
	-14	31 -33.0.	1 1	رد	40	40	120181		Gray-brown SILT, little	8	₽

SA AJ	MPLES S GRC Same al	ENT TO ULD WATER OB L #1 ofter	SERVATIC	DNS rs	, Type Sizel D		CASING Sar	JR JOB NO SAMPLE 0 <b>45 /21</b>	TR CORE BAN START Same	EV <u>mm</u> b ns <u>#1</u>
At		- ofter	Hou	urs .	Hommer Hommer	WI. Foll		an an Angelan An Angelan An Angelan	BIT BORING FOREMAN	
i i	OCATIO	N OF BORING	3	14 14 Aug						
DEPTH	Casing Blows per	Sample Depths From- To	Type of Somple	Bli on From	ows per Somple	6" u To:	Moisture Density or	Strata Change	SOL IDENTIFICATION Remorks include color, gradation, Type soil etc. Rock-color, type, condition, hdr ness Dulling time, scenar, and etc.	d-
<del>ata</del>	32	40"-42"	D	14	23	25	Moist	Liey.	Gray SILT, trace fine san	id 9 1
	54 78		1.00	33	1000		hard			
143	83				1317.74	-	如常			
	73	45 - 47	D	14	33	29		di tend	Grey SILT	to a
			-	38	_	263				
								1.14		
50		501-521	D	7	8	8	Moist			11 22
	i i i i i i i i i i i i i i i i i i i	- initia	4	7			sfiff	전독급		
	17. I.			13923				10 - 1		1000
20		551-571	D	13	18	22	Moist	1. 1.		12 22
8.84				27		12	hard	1.1		
							1			1
00		601-621	D	13	14	20	1- ···			13 24
				23			1			
				-			Moist			
1		651-671	D	5	11	13	very	1. × *		14 24
				12			STITT	h		
70								1 - C		
Ĩ		70"-72"	D	12	14	13	"			15 24
				15		+	1	1	-	
		~						l.		
F		75"-77"	D	12	14	20	Moist			16 24
ţ				- 31			aaro		f af	
80										

REF	PORT SEN	T TO	<u></u>				Pr Ou	IR JOB NO	SURF ELEV	2012-01 201-10	T THE
A: 8	GROI ama am	INC WATER OBS	ERVATIO	NS 's	Туре		CASING	SAMPLEI IIIIG <u>ab 1</u>	R CORE BAR START SAME AS	\$ <u>1</u>	明らいたの
A1		ofter	Hou	rs	Size I D. Hommer Hammer	Wt. Fall		i <u></u> i <u></u> isi	BORING FOREMAN		「公一」と思い
」   毛	Cosing Blows	N OF BORING Sample Deoths	Type of	Blo	ows per 6 Somple	5" 7	Moisture	Strata	SOIL IDENTIFICATION Remarks include color, gradation, Type of	s	
DEP	per foot	From - To	Sompie	From C-6	6-12	1 :2-18	or Consist.	Elev.	soil etc. Rock-color, type, condition, noro- ness, Drilling time, seams and etc.	No	
		801-821	D	7 26		14	Moist hard		Gray SILT, trace fine send	17	
			-				1	85'	CAPO	12	ţ
		85*-87*	D	<u>152</u> 60	83	70	Hoist very dense		Gray fine to medium SAND, some silt & fine to medium gravel TILL	10	
90		901-921	D	30	2.9	28	•		Gray fine to medium SAND,	19	-
				.23	2		1		gravel TILL		
		951-974	Ď	40	24	14	Hoist		Lost sample TILL	-	
		971-991	. D	32	31	27	H	99"		20	-
100						-	-	1.1	Bottom of boring 29'	-	-
З. I.						1	-	1		-	
90								2		F	-
										-	1
				-			-				-
					8 <sup>22</sup> 19					-	2
Ì							1				1
							-				-
							1				-
1							-				1
							-			-	-
	-		_				-		5		_
-		1				1	1				

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PLES S	ENT TO					ou	R JOB NO	71-297 SURF. ELEV	1	8.50*	
GRC 9'8" C&8. 10' Casin	UND WATER OBS after 1/ @40' after1/2 g out	ERVATIC /4_Hou 2_Hou	NS rs rs	Rođ Typę Size I. Hamm Hamm	<b>B-AW</b> D: her Wt. her Fall	CASING 2-1/2' 300# 24''	SAMPL S/S 1-3/8 140# 30"	ER CORE BAR. START 7/26 COMPLETE 7/27 TOTAL HRS. BORING FOREMAN _ INSPECTOR SOILS ENGR, A	/71 /71 W.M.	anco 48	
CATIO	N OF BORING			-		1. 1	ne hantour				
Casing Blows	Sample Depths	Type	Bi	ows per ( Sample	5 r	Moisture Density	Strata	SOIL IDENTIFICATION Remarks include color, gradation, Type of		SAMPL	E .
per foot	From - To	Somple	From 0-6	6-12	To   12-18	or Consist:	Elev.	ness, Drilling time, seams and etc.	No.	Pen	Rec.
3	0'-2'	D	14	12	12	dry		Brown SILT and coal-ash -	1	24"	21"
25			19			dense		FILL, some fine sand	1		
21		n de la la									q
31	51- 71	D	29	28	18	dry	ANDERTA	-lost sample @ 5' -pushing cobble- lost sample @ 7'		24"	0"
12	21 01	- 0	14	0	0	dense				2/11	011
$\frac{12}{11}$	1 - 9		5	3	0	≥ Çilin ka			-	24	0
14	101-121	b	7	8	5	moist		and the second and the second second	2	2611	2011
16	10 714		11	-	0.1482	dense			-	64	20
22				1			13'-0"	and a second	-		-
5								Dark gray OEGANIC SUT	-		
5	15'-17'	D	2	7	9	a trad		Some fine to coarse sand	3	24"	21"
6								아이 가슴다 그런 옷이들이?			
8		1					20"-0"	4 4 <sup>4</sup>			
7	20"-22"	D	2	4	4	1. n		Brown fine to medium SAND.	4	24"	21"
9 13		0.00	1	the star		ŝekoj"		Little organic silt	-	-	
13							S. 1997				
17	25'-27"	D	6	8	8			나는 것은 한소 사람은 책	5	24"	20"
19		1	10			20.1					
24_			а.								
22	30'-32'	n	ŕ	10	13	11	30"-0"	Brown fineto cosreo SAND	6	26.11	72"
28	50 Jk	- P	15					Some silt, little fine to			- ford
27	1. S	<u> </u>						coarse gravel			
23		-	10	10	10	moist		4 ±25			
20	35'-37'		10	12	18	dense			7_	24"	20''
25					20	_					
24	1										
OUND le Ty C=C Indistui est Pit	GURFACE TO pe Cored W=Washed rbed Piston t A=Auger V=V	78 J Jone Test		Propo trace little some	USED tions O to I IO to 2 20 to 3	23 " Jsed 0% C 20% 55% C	CASING: 1401b W Cohesionless -, 0-10 10-30 Me -30-50	THEN S/S to 80' t.x 30" fall on 2"O.D. Sampler Density Cohesive Consistency Loose 0-4 Soft 30 + Hard d. Dense 4-8 M/Stiff Dense 8-15 Stiff	Earth Rock ( Sampl	SUMMAF Boring S Coring	BY: 30'

100000			8.80	ne as	1 <u>1</u>		ADDRESS			LINE & STA.		A LAN	
0	JECT NA	ME	<b>花香冬</b> 花 201				LOCATION			OFFSET'	40,89	瀏師驚	漫画的
P	ORT SEN	IT TO		and the second s	1.51.57			0.J. NO R JOB NO		SURF. ELEV.			
H Star	FLLS S		AND ROAL				<u> </u>		「「「「「「「「「「「」」」」」)」) 「「「「「「「「」」」」」」)」」)」」)」」)」」)」」)」」)」」)」」)」	Dote		Time	
	GRO	UND WATER OBS	ERVATIO	NS			CASING	SAMPL	ER CORE BAR.	START			9.m
2 N	$\frac{1}{(p^{-1})^{n-1}}$	after	Hour	5	Туре				an statistics in the	COMPLETE		All and	<u>0.17</u>
1		attor	How		Size I.I	).	A CALLER		PIT	BORING FOREMAN			
		uner-	valit	E AVINE	Hamm	er Fall	iten Northern (1996) - All			SOILS ENGR.	The sign		1. 184
1	CATIO	N OF BORING									15 C/14	анын Т. 1999	giales.
NT IS IS	Casing	Sample	Type	Bic	ws per 6	n 	Moisture	Strata	SOIL IDENTIF	ICATION		CANDI	- -
以内にた	Blows	Depths	of	on	Sample	0	Density	Change	soil etc. Rock-colo	olor, gradation, type of , type, condition, hard-		SAMPL	<b>G</b>
	foot	From-To	Sample	0-6	6-12	12-18	Consist,	Elev,	ness, Drilling time,	seams and etc.	No.	Pen	Rec.
in the	28	40'-42	D	11	15	19	dence	an a	Brown fine t	o coarse SAND,	8	24"	21"
Con logo	37	19 - 18 - 18 - 18 - 18 - 18 - 18 - 18 -	- Carlo	19					Some Silt, 1	1 crie rine to	1 2 6 1		
100	44	Constant and the		1000					SOUTOC Bread		-		
	43				1.	1000 4	moist	1.01-00	e partico	성의 연구를 통합할	9	24"	1911
	<u>35</u> 58	45'-47	D	63	14	31	dense	40 00			-		
-	60								Brown SILT a	nd fine sand,		a	
5012 F	53					8		a succession of	Dome Time Br	41.5 20. Sel		and the second	
10	37	50'-52'	D	23	23	30	<b>.</b>				10	24"	20"
1000	41		-	32	No.	1977 - 1 1977 - 1				병원 수 있는 것	0.9.13		-
	62	in the second se	-		-						1		
	09					1. 2.		55'-0"			-	0/11	0.11
	66	55'-57'	D	17	21	23	moist	571-00	Gray SILT, t	race fine sand	11	24	21
	92			20		<u>it er es</u>	Membe	1-0-0-	the second second second second				
	88							15 45	Cum Elen Si	ND little silt		= 0.2	
ŀ	90	601-621	D	3	4	8	medium		(Sand running	up casing 9"	12	24"	23'
	52	50 - 62		13	0.00	1	dense	ium (Sand runn se 2 60' sam					
ļ	58				1000		-		동생은 것이 없다.			1	
ł	72										-		
ſ	69	65'-67'	D	7	18	18	moist		Gray medium	to fine SAND	13	24"	22
ŀ	88		-	25		-	dense		(Sand runnin	g up casing			
t	161						20.0		2 7 HC 05	samp rej			
ł	185	201 251	n	0	16	110	-		-		14	24"	23
ŀ	48	10*-12*		28	10	1.5	A	72'-0"		and the second second second second second	1		
I	465		-	Y			moiet						
ł	278	74'-76'	Dżá	48	67	31	very		SAND. some	ilt and fine	15	24"	
Ì			_	44			dense		gravel, ceme	ented TILL			
	_		200	der		used	end						
ļ			A	lod r	ample	F						- (II)	011
1		78-80		35	37	48/	65 21	80'-0	THEN LOST	oring 80'-0"	ck	124"	10"
1	GROUND	SURFACE TO	/		Propo	rtions	Used	I4016 V	Vt.x 30" fall on 2"0.0	Sampler	Earth		RY:
2	Dry C=	Cored W=Washe	ed		little	0 to	10%	0-10	Loose O-4	Soft 30 + Hard	Rock	Coring	
	= Test Pi	it A=Auger V='	Vone Tesi		some	2010	35%	10-30 M 30-50	ed. Dense 4-8 Dense 8-1	M/Stiff 5 Stiff	Samp	NO	P O
T	=Undistu	arbed Thinwall	Ì,		and	35 to	50%	50 + Ve	ry Dense   15-7	O V-Stiff H	ULE	NUS	D=Z.

O Hale PROJECT NA EPORT SEN SAMPLES SI	y & Aldrich ME Tank Sit IT TO above ENT TO "	n, Inc ce (Pr	• • •	Gas C	<u>)</u>	ODRESS - OCATION - PRC	Provid J. NO JOB NO	age, Mass, ence, R.I, 2663 71-396	LINE & STA OFFSET SURF. ÉLEV Dote	8.7 <u>Time</u>
GROU 18 <sup>s</sup> Casir	und water obse 	RVATION	vs s R s I s	ods-" Type Size I.D. Hommer Hommer	AW" 4 Wt. Fall	CASING " & BX 300# 24"	SAMPLER <u>S/S</u> <u>1 3/8"</u> <u>140#</u> <u>30"</u>	CORE BAR.	START <u>10/14/71</u> COMPLETE <u>10/15/71</u> TOTAL HRS. BORING FOREMAN <u>R.</u> INSPECTOR <u>SOILS ENGR.</u>	Faria
LOCATIO	N OF BORING				-	Sasatra	s Point			us nikgi (s.7.s.)
Casing Blows per foot	Sample Depths From-To	Type of Sample	Blo on From 0-6	ws per 6 Sampler 7 6-12	o 12-18	Moisture Density or Consist.	Strata Chonge Elev.	SOIL IDEN Remarks includ soil etc. Rock-o ness, Drilling tir	ITIFICATION de color, gradation, Type of color, type, condition, hard- ne, seams and etc.	SAMPLI No. Pen I
10 12 14 18 30 18 17 16 16								Miscellane	OUS FILL	
10 15 3 4 5 6	10'-12'	D	62	5	3	Moist medium stiff	10'	Gray SILT FILL	& fine SAND,	1 241
15 <u>6</u> 7 8 9	15'-17'	D	5 7	3	2	Noist stiff	20'	Gray ORGAN fine sand fine grave	NIC SILT, some seams, trace of el	2 24
20 10 9 14 18 24 25 26 17 20 22 24	20 <sup>1</sup> -22 <sup>1</sup>	D	6 8 13 14	7	7	Moist medium dense		Dark gray SAND, som gravel, 1	medium to fine e fine to medium ittle silt	3 24
30 23 21 30 36 38	30*-32*	D	12	14	13	Moist medium dense	m m	Brown sil SAND, lit	ty coarse to fine tle fine gravel	5 24
35 42 32 48 54	35'-37'	U	12 6	10	8	Moist stiff	35' 37'6'	Brown SIL sand	T, trace of fine	0 24
40	37'6"-39	'()' D	34	21	19	Noist dense		some medi little si	um to fine gravel, tt	7 24"

 $\mathcal{E}_{i}^{-1}$ 

TO		8				—	ADDRESS			HOLE NO.	44	0	_
PRO	JECT NA	ME					LOCATION			OFFSET _			
SAN	IPLES SE	ENT TO					00	R JOB NO.	71-396	SURF. ELE	V		
-	GROF	IND WATER OBSE	RVATIO	NS	1		CASING			Dote	T	me	
÷	onoe	ofter	Hour		-		CHOING			START	-		- 0
•					iype SizeID.		27			TOTAL HRS.	-		- P 
t —	2 3	after	Hou	rs	Hammer	Wt.			BIT	INSPECTOR			_
-	1				Hommer	Fall				SOILS ENGR.			-
L	OCATIO	N OF BORING:			-	-110-22		1					
E	Casing	Sample Depths	Type of	Blo	ows per 6 Sample	5'' r	Moisture	Strata	SOIL IDEI Remarks inclu	NTIFICATION de color, gradation, Type	of	SAMPL	_E
	per	From- To	Somple	From	6-12	To	Or	Change	soil etc. Rock- ness, Drilling ti	color, type, condition, hard me, seams and etc.	No.	Pen	R
-	1001	(Washed &	Drov	BX	to 7:	12 10	Consist.						
t		Ausanos					1		0	- An Edma SAND		<u> </u>	-
ł							-		some fine	gravel, little			
15							Moist		silt		-		_
		45'-47'	D	7	16	15	dense				8	24.	2
ł				11			1			*			-
							÷.	501	The second se		-	-	t
50		50"-52"	D	13	15	16	Hoist		Brown SIL	& fine to coars	e 9	24'	1
				14		-	very		SAND, trac	ce of medium grav	'e1	-	┝
						1							F
55		551-571		10	14	15			2		10	24	12
	- (	11-11		15	1.4	12							T
							-	6					╀
60			1				1					1	Ļ
		60'-62'	D	23	22	15	Moist		Brown SIL	I & fine Sand,	11	24"	+1
				10					gravel				T
							-	65'			_	+	t
65		65'-67'	D	22	27	30	Moist		Gray medi	um to fine SAND,	12	24'	12
				30		-	dense		gravel, 1	ittle silt.			t
				-		-			sandy TIL	L			-
70		70'-72'	D	22	22	30					13	24	Ť
				30		-	7					-	+
		72'-74'	D	20	33	37	-	74			_ 10	24	12
75				41			-		Bottom of	Boring 74'0"	-	+-	+
				-									1
			_			-						-	+
						-	-						1
	GROUND	SURFACE TO			-	USED		CASING:		Consilion 1	C111	IMAD	v.
S D:	Dry C=	ype Cored W=Washe	d		Proport trace	nons U Otoli	0% Coh	14015 Wt.x esionless D	SU follon 2 0.0 ensity   Cohesive	Consistency	Earth Boi	ing _	1.6
U	P= Undisti	urbed Piston			little	10 to 2	0%	D-10 Lo	ose O-4	Soft 30 + Hard	TOCK COR	ing	

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to Pro Rep Sam	Hal JECT NA ORT SEN	ley & Aldri ME Tank Si TTO abov ENTTO "	ch, I te (P e	nc. rov.	Gas (	20.)	ADDRESS - _OCATION - PRC OUR	Camb <b>ti</b> Provid J. NO JOB NO	dge, Mass. ence, R.I. 2663 71-396	HOLE NO LINE & STA. OFFSET SURF. ELEV.	9,2 Time
41 41	GROU 8'3" Casing	JND WATER OBSI ofter ofter	ERVATION	NS 5 rs	<b>Rods-'</b> Type Size I.D. Hammer Hammer	<b>'AW''</b> W1. Fall	2½" 3007 24"	SAMPLER S/S 1 3/8" 140# 30"	CORE BAR.	START 10/14/71 COMPLETE 10/15/71 TOTAL HRS. BORING FOREMANA INSPECTOR SOILS ENGR	Gomes
L	OCATIO	N OF BORING	t				Sasafi	as Poir	nt		T
DEPTH	Cosing Blows per foot	Sample Depths From- To	Type of Sample	Ble on From 0-6	ows per 6 Sample	5" 10 112-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDEN Remorks inclu soil etc. Rock- ness, Drilling ti	NTIFICATION de color, gradation, Type of color, type, condition, hard- me, seams ond etc.	SAMPLE No. Pen R
5		0'-2' 5'-7'	D D D	2 1 4 1	2	1	Moist loose		Gray brown SAND, FILL	fine to medium	2 24" 1
10	4 13 14	10'-12'	۵ در	68	5	7	Moist medium dense	10"	Brown fine trace of a odor noted	to coarse SAND, ilt, FILL (oil a)	3 24
15	10 11 10 12 17	15'-17'	D	8 14	8	13	Noist dense	16'	Brown fine silt and f	SAND, trace of fine gravel (011	4 24" 1
20	20 28 15 20 23	20'-22'	D	16 19	10	15	- - -			1) a	5 24"
25	27 32 20 33 40	25'-27'	D	12 19	12	18	- "				6 241
30	135 35 54 68 75	30'-32'	D	84 23	26	20	Moist dense	29.0.	Gray brow SAND and to medium	n fine to coarse Silt, little fine gravel, TILL	7 24'
35	60 37 45 43 40	35'-37'	D	21	24	20	Moist very dense				8 241
40	39				1		1	CASING:	THEN		
S D: UI T	GROUND omple T Dry C= P=Undist P=Test P	ype Cored W=Washi urbed Piston Yit A=Auger V=	ed Vane Tes	1	Proport trace little some	05ED ions U 0 Io10 10 Io20 20103	sed 0% Cohe 0% Cohe 0% Cohe	1401b Wt.x sionless Di 0-10 Lo 0-30 Mcd.	30" foll on 2"O.D ensity Cohesive ose O-4 Dense 4-0 ense 8-1	A Sampler Consistency Soft 30 + Hard Soft Soft Soft Soft Soft	SUMMARY:

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to PRI REI	DJECT NA	ME IT TO ENT TO	·				ADDRESS LOCATION	ROJ. NO	71-396		HOLE NO LINE & STA. OFFSET SURF. ELEV.	
1	GRO	UND WATER OBS	ERVATIO	NS		21	CASING	SAMPLE	R CORE BAR	START	Date	Time
t		ofler	Houi	s	Type Size I.D.					COMPLETE	3	
1_		ofter	Hou	rs	Hammei Hamme	r Wt. Foll	مارىيىتى مەربىيە		BIT	BORING FOR	EMAN	
l	OCATIO	N OF BORING	:				_					
	Casing Blows per	Sample Depths From– To	Type of Somple	BI or From	ows per Sample	6" er <u>To</u>	Moisture Density or	Strata Change	SOIL IDE Remarks inclu soil etc. Rock- ness, Drilling ti	NTIFICATION de color, grade color, type, cor me, seams and	ation, Type of adition, hord- d etc.	SAMPL
_	foot	401-421	D	22	21	20	Moist	Elev.	Gray brown	fine to	coarse	9 24"
	35 50			21			dense		SAND and S to medium	ilt, litt gravel, T	le fine ILL	
	85 58		-									
	55	45'-47'	D	22	26	28	Moist					10 24"
	60 62		-	30		-	dense				9	
	54							Ĩ.				
)	50	50'-52'	D	24	32	42						11 24"
		1	<u>-52' D 24 32 42</u> 36		]	52'	Bottom of	Boring 5	2'0"			
				i	İ.							
,												
							-					
			-				-					
			-	1	1						14	
						-	-					
							1					
						-	4					
							1					
							4					
							1					
				-			-					
				1			1					
							-					
				1			1					
					1		-					
					1	1	1					
	CROUND				J		1	"CASING:				
S	ample Ty	DE D			Proport	lions U	sed Cob	1401b Wt.x	30" fall on 2"0 D	Sampler Consistency	For	SUMMARY
มะ ม	∶Ury C≐( 2≁ Hodietu	vorea W=Washe	d		troce	OtoIC	70	0-10 L		Soft 30	+ Hard Roc	k Coring

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	Haley	100 WA	TER STI	REET	E۸	ST PR	OVIDENCE	R. L. Cambri	idge, Mass.		HOLE NO.	50-A		
PRC	JECT NA	ME Tank Sit	te (Pr	ov.	Gas C	0,)	OCATION -	Provid	dence, R.L.		OFFSET			
REP	ORT SEN	TTO above					PRO	J. NO	71-396		SURF. ELEV.	8.	9	
SAN	APLES SE	INT TO									Date	Tir	ne	
	GROU	IND WATER OBS	ERVATION	VS F	kods-"	AW"	CASING	SAMPLER	CORE BAR.	START	9/29/71			0.0 p.0
At	00	ofter	Hours	s	Туре		2211	$\frac{S/S}{1 3/8'}$		COMPLETE	<u>9/30//1</u> S.			- p.n
At _		ofter	Hour	s	Size I.D. Hommer	Wt.	300#	140#	BIT	BORING FOR	REMANA.	Gome	S	
		10-0000000000			Hammer	Fall	24"	_30"		SOILS ENGR			110	
L	OCATIO	N OF BORING	:	(			Sasefr	as Poin	t					
F	Casing	Sample	Type	Ble	ows per 6	5" r	Moisture	Strata	SOIL IDEN Remarks includ	NTIFICATION de color grade	ation, Type of	S	AMPI	_E
Щ. Д	Blows per	Depths From- To	Somple	From		To	or	Change	soil etc. Rock-	color, type, cor me, seams and	ndition, hard- d etc.	No.	Pen	Red
	foot		-	0-6	1 <u>6-12</u>	12-18	Consist.	Elev.	Black COAL	CINDERS	. FILL	1	12"	12
	5	1'-2'	D	10	6		Koist		Brown fine	to mediu	Im SALD	1A	12"	12
	10						medium		and Silt,	trace of	fine			-
	15						dense		to coarse	graver, ri				
5	4	5'-6'6"	D	6	6	5	Wet					2	18'	10
	9						medium		-	*			_	
	3						dense		<ul> <li></li> </ul>					-
10	8	101 101		10.	11-311		4		No Recove	rv		-	24	0
	3	1012		4=	12"					- ,				
Ļ	2	12'-14'	<u>.</u> D	8	9_	8	] "					3	2.4	19
	4			5				15"						
15	2	15'6"-17'	D	3	2	2	Wet		Gray brown	ORGANIC	SILT,	4	18'	114
	4						soft	18'	trace of c	brown pea			-	E
	20							_				-		F
20	24	201-221	D	20=	1211	-	-		Missed San	rop le		-	24	10
	12			22=	12"		1					_		L
	12	-	_				Wet		Gray fine	to coars	e SAND,		1	T
25	11				1		nedium		some silt,	, little	fine to	-	24	10.9
125	11	25'-27'	D	4	8	8	dense	271	medium gra	avel		13	24	120
	14		-	1	1							_		1
1	16		-	İ			Nedet		Brown STL	T little	Verv	-	-	+
30	24	201-321	D	111	14	24	hard		fine sand	.,	very	6	24	11
	35			13										-
	47							33.						t
135	70											-	101	1117
1.2	30	35'-37'	D	33	26	22	Moist		Gray brown	n fine to avel with	COATSE	1	24	
	58		-	124	-		dense		silt	dvel with	JOHC			T
	88												-	-
40	69			1				CASING:	THEN			_	J	
1	iomple T	ype		1	- Propor	tions U	sed	14016 W1.x	30" fall on 2"0 D	. Sampler		SUM	MAR	¥. 62
D	Dry C=	Cored W=Wash	ed		trace	0 to 10	1% Cohe	)-IO Lo	ose 0-4	Soft 3	0 + Hord Ros	k Cori	ng _	10
40 0 0 1 1	69 GROUND iomple T Dry C= P=Undish P=Test P	SURFACE TO ype Cored W=Washe urbed Piston it A=Auger V= urbed Themcell	ed Vane Tes	1	Propor trace little some	USED tions U O to IC IO to 20 20103 35 to 5	sed         Cohe           0%         Cohe           0%         Cohe           5%         30           5%         30	CASING: 1401b Wt.x isionless De 0-10 Lo 0-30 Med. 0-50 Ded 0-4 Verv	THEN 30" fall on 2" O D ensity   Cohesive pose   O - 4 Dense   4 - 8 ense   45 - 3 Dense   45 - 3 Dense   45 - 3	), Sampler 2 Consistency 3 M/Stiff 5 Stiff 50 V-Stiff	50 + Hord Ros Sar HOLI	SI In E k C	UIM Jori ori 25	UMMAR Joring oring 25 NO 50

TO PROJECT N REPORT SE SAMPLES S	1	h <u>r</u> i ::::::	oeg tire	ti. Ger	- 00	ADDRESS	OJ. NO.	<u> </u>	NE A STA FSET IRF. ELEV Dote	20 jn 20 Time,	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
At	ofter	RVATIC Hou: Hou	NS rs	Type Size I.D. Hammer Hammer	WI. Folle		SAMPLEI	R CORE BAR START	<u>- 9/201</u> 77 - 2011-1777 AN		0000
LOCATIC Cosing Blows per	N OF BORING: Sample Depths From-To	Type of Somple	BI or From	ows per 6 Somple	5" r Fo	Moisture Density or	Strata Change	SOIL IDENTIFICATION Remarks include color, gradation soil etc. Rock-color, type, condition ness, Drilling time, seams and etc	n, Type of on, hard-	SAMP	
30 35 58 84	40'-42'	<b>D</b>	27	28	26	Moist very dense		Gray brown fine to co SAND & Gravel with so silt	arse	8 24	1
45 <u>69</u> 24 28 45	45'-47'	D	20 28	30	24			10 - El Stade - S Licer d'El SALL Licer de l'El	49	9 24	11
50 126 95 253 200	- <u>5019</u> "	- D	-48	110/3	0			$ \begin{split} & \sum_{l = 0 \\ l \neq 0 \\ l $		10 9"	15. 18 N
55 61	55' 5"-57' 6	a D	49	66	-49	140¥ 0 <b>.</b>		$= \frac{\log C_{\rm ext}}{\log 2 \sqrt{2}} + \frac{\log C_{\rm ext}}{\log 2} + \frac{\log C_{\rm ext}$	20	11 24	
50	60'-61'6" 61'6"-62'	D D	49 92	43	68	140# 0.	E, <u>61'6''</u>	Gray medium to fine S	AND, 1	12 13 2A 6"	
55						-	-	little silt & gravel Bottom of Boring 62'0	,		
						-		5			

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	APLES SE	INT TO Taken	at 5	116				R JOB NO	/1-44/	Dote	Tir	ne	
At	GROU <u>8*-9</u> 1	ofter	- Hours	5	Type R Size I. D.	0DS - '' 4	CASING AW" <u>H-2½</u> "	SAMPLER <u>S/S</u> <u>1 3/8'</u> <u>1/0</u> #	CORE BAR.	START 1 <u>1/8/71</u> COMPLETE 1 <u>1/15/71</u> TOTAL HRS. BORING FOREMAN <u>GO</u>			-
A1	2	_ ofter	Hour	s	Hommer Hammer	Wt. Foll	<u>_24"</u>	<u></u>	. BIT	INSPECTOR SOILS ENGR			
	OCATION	N OF BORING:	Turn	Die		<u>, 11</u>	Maistura	1			1		=
DEPTH	Casing Blows per foot	Depths From- To	of Sample	on From 0-6	Somple Somple	r To 1 12-18	Density or Consist.	Strata Change Elev.	Remarks inclusion soil etc. Rock- ness, Drilling til	de color, gradation, Type o color, type, condition, hard- ne, seams and etc.	F No.	AMP Pen	ר ק
									Probed For 0'-5'	Utilities From			-
								51					-
	12 17 19	5'-6'6"	D	4	5	5	Moist Loose	•	Black Cind	ers		18	
	$\frac{21}{\frac{14}{19}}$	10'-11'6'	1 <u>D</u>	12	10	8			Fill		2	18	174
	27 25 17												
	<u>17</u> <u>10</u> 5	15'-16'6	<sup>r</sup> D		3	3	- 11 II 	16'6	No Rec.				-
	7	16'6"-18	D	3	2	2			Tube 2 <sup>H</sup> St	nelby- 23" Rec.		138	51
	18 26	011 021		10	0	9	1	20'6	' Tried Fist Penetratic	con 21'-23', No			-
	26 24	2123.		7	0				Fine Med. Silt	Gravel, Sand, Tra	1C 4	24	
	$\begin{array}{r} 41 \\ 38 \\ 19 \end{array}$	251-2616	6'D	18	3	3	-	27*	Sandy Silt		G	12.0	
	$\frac{18}{12}$	30'-32'		<u> </u>			-		Shelby Mis	ssed		-	
	$\begin{array}{r} 27\\ 31\\ 38\end{array}$	321-341	ગાર	HED			-		No. Rec.				-
	30	351-3616	<sup>r</sup> D	1	1	2		-	Soft Gr.	Organic Silt	7	11	100 B
		381-3913					4		Piston 16	"Rec.			-

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	PRO	DJECT NA	ME T TO						0J. NO	71-442		LINE & STA., OFFSET SURF. ELEV.			
,	SAF	WPLES SE						100	K 00B 110.			Dote	<u>Yi</u>	me	-
		GROU	IND WATER OBSEI		NS		5	CASING	SAMPLE	R CORE BAR.	START	-			- 6
	AI		_ after	Hou	5	Туре				-	COMPLETE		-		- À
	At _		ofter	Hou	rs	Size I.D. Hommer	Wt.	••••••		BIT	BORING FOR	EMAN			_
						Hammer	Fall				SOILS ENGR	•			_
	L	OCATION	OF BORING:												
	т	Casing	Sample	Туре	BI	ows per 6	5	Moisture	Strota	SOIL IDEN		tion Type of	s	AMPI	LE
	EPT	Blows per	Depths From - To	of Sample	or From	i Sample	r To	Density or	Change	soil etc. Rock-	color, type, con	dition, hard-		0	6
		foot			0-6	6-12	12-18	Consist.	Elev,	ness, Drilling fir	ne, seams and		NO.	Pen	R
			39'6"-41'	0	3_	4	4	Soft		Gr. Organi Fibers	e Silt, T	r. reat	8	10	-
								Inorac		10000					
				110				-	4.61	all Diaton	<b>3</b> <sup>11</sup> 200				-
			431-45	<u>– 62</u>	5	9	8	Moist	45	Med. Gr. S	ilt Sand,	Trace	9	131	1.
-								Soft		Med. Sand,	Tr. Org.				-
								Mad	481	Silty Sand	Vellow	Grav			-
								Dense		Mottled C1	ay Lenses	oruy			L
- 8			50'-51'6'	p	8	1.0	13	-					10	1.0.	1
160															t
10	d							-	ł						
				17	1.2	17	112	-					11	13	1
ISII	g		31-30-0												
								-							┝
					<u> </u>	1	-	1					-	-	
			601-6116	D	16	12	14	-					12	18'	1
								1							T
						1		]			£				Į.,
			151 6616	(	1 20	24	20	-					13	118'	17
						1 24			6716						
								líoist	07.0	Compact Gr	. Silty,	Fine			+
								M.D.		Sand					1 m
			70'-71'6	D	13	20	14	]					14	1.6	1
															E
								1							1
		17	751-7616	י n	16	14	14	-					15	15	1
		24						]							
		30							78'	TET Dimes	ne Sand 6	a 80'			+
		7/				-		Noist nied.D.		Med. Comp.	Gr. Find	e Sand		-	1
		GROUND	SURFACE TO	tern term			USED	(4.5-73)41-07-07-07-07-07-07-07-07-07-07-07-07-07-	CASING:	THEN		PRODUCT DE LA COLUMN			-
	S	ample Typ	be			Proporti	ions Us	sed   Cobe	1401b Wt.x	30" foll on 2"O.D.	Sompler Consistency	Eart	SUMI h Borir	MARY	<b>ŕ</b> :
	U=	Dry C=C	orea W=Washed			troce	01010	70 0016		0.4	Coft 70	L Road Roal	Cori	,	

	REF	PORT SEN	T TO						0 J. NO R JOB NO	71-442		SURF. ELEV.		
Γ		GROU	IND WATER OBSE	RVATIO	NS			CASING	SAMPLEF	R CORE BAR.		Date	<u>Tir</u>	ne
	At		ofter	Hou	s	Туре				-	COMPLETE			
		•				Size I.D.					TOTAL HRS. BORING FORE	MAN		
	A1		ofter	Hou	rs	Hommer Hommer	Wt. Fall			- BIT	INSPECTOR			
	L	OCATION	OF BORING:											
Ī	Ŧ	Cosing	Somple	Type	BI	ows per 6	)" 7	Moisture	Strata	SOIL IDEN	ITIFICATION	ion. Type of	S	AMF
	EP1	per	From - To	Somple	From	1 Odinpie	0	or	Change	soil etc. Rock-	color, type, cond	lition, hard-	No	Pon
-		foot			0-6	1 6-12	12-18	Consist.	Elev.	ness, orning to			16	241
		38	80'-82'	ע	6		1.2	Moist		Med. Comp.	Gr. fine	Sand	10	24
		- 32			A.14			m.D.			<i></i>			
- 1		62						1						
		48						-						
		38	851-871	D	6	6	1	4					1/	20
		<u>47</u>			0			1		1				
		53						1						
		69						]					10	
		60	901-91'6	D	6	8	10	4					10	10
		<u>υδ</u> 140				1		4	1	1		*		
1		160						1		1		8		
		1.91								1			-17	1777
		32	95'-97'	U U	5	5	<u> 3</u>	-					1.7	24
45d		68			2			1						1
		96						]						<u> </u>
			1001 100			1.0	111	-					20	26
		126	100'-102	1.12	19	1.1.	15	-					2.0	2
		140			1 24			1	103'					
		151						1		Comp. Gr.	Sand Trace	e Silt		
	6	163	*****					4					27	2%
		04	7.05*-107	$\frac{D}{1}$	+20	1 18	20	-		· · · ·			4.4	1.14
		50 84			1.4					2 ::ST ::				
	=	03			ļ			_			6			
		107.				-		-	E		2		00	57.
- (		70	110'-112	D D	12	1.2	8	-					44	24
		04	315'-117	D	20	20	21	1	117'	No Rec.				
		112		1	24			]		Bottom of	Boring at	117'		
		00		-				-		1			-	
							1	1					-	
										1				
				Imon	Junior		1	-				erunarra 1000 - 11-00000		
	 C	GROUND	SURFACE TO	5-0	145	Properti	USED	1151-231	CASING:		Campler	1	SUM	ΛΔR

TO PR RE SA	OJECT NA PORT SEN MPLES SE	ME Providen T TO T TO	ich, ce Ga aboy at S	inc. Inc. Inc. Inc. Inc. Inc.			ADDRESS	Cambr Provid	1dge, Mass. dence, R.I. 71-442	LINE & STA	7.	.1'			
	GROI	IND WATER ORSE	RVATIC	NS I						Dote	Date Time				
A1		_ ofter_1	E Hou	rs	Туре В	lods-"	casing 'AW''	SAMPLE S/S	R CORE BAR.	START <u>11/8/71</u> COMPLETE <u>11/12/7</u>	1 -				
	20 9	Cassing		· 1	Size I.D.	H4	BWF	1 3/	8"	TOTAL HRS.					
A!		- offer	Hou	rs	Homme Homme	r Wt. r Foll	<u>24"</u>	30	BIT	INSPECTOR <u>R.</u> Uarn Soils ENGR.	UIN		<u>~</u>		
l	OCATION	OF BORING:											-		
HLL	Cosing Blows	Sample Depths	Type of	BI	ows per Sample	6" er	Moisture Density	Strata	SOIL IDEN Remorks includ	TIFICATION e color, gradation, Type o	f	SAM	٦LE		
ö	foot	From-To	Somple	0-6	6-12	10	or Consist.	Elev.	ness, Drilling tim	ne, seams and etc.	No	. Per	1 F		
	4								Black Ash &	Fine Sand, Fill			T		
11	12						{				1	+	╀		
	16	entre an tracante											+		
	<u>20</u> 12	51-6161			9	19	4				-		1		
	14	5 10 0									1	8	╀		
	16							1					T		
	<u>16</u> 13								~			+	╞		
	10	10'-12'6	D	1;	3						2	30	16		
	14			2	3		-	*				_	F		
	15			- 4		1	H- Flush Casing	1			-	-	+		
	17			10									L		
	10	15'-1/'	<u>_</u>	4	8						3	24	1		
	8							17'6'	}		-	-	t		
	6	191-2016	<u> </u>	1	1	1			Gray Org. S	Silt		10	Ļ		
	12			~		<u> </u>		1				110	ť		
	16	21'-22'8	UP							UP-	1	20	1		
	<u>16</u>	231-2616	D	)	2	2					5	1811	1		
		a strain fairs and a strain strain fairs and								Duplicate	- 3	118	Ĺ		
	20	261_281	IIP							רדנו	2	104	10		
	10	20 -20	01				1			UĽ	2	24	ľ		
	20	281-2916	D	PUS	1		1	201			6	18	1		
	12	31'-33'	UP			¦		30'		UP	3	24	-		
	11						BW-			~~			Ē		
	13	331-3416	<u>n</u>	PUS	: I		Flush				7	128	12		
	14						Jasing				-		t		
	12					-						-	Γ		
ł	10												-		
	_3							39'6					F		
	GROUND S	SURFACE TO	301				L		Gray Fine	to Ned. Sand	1	1	L		
So D=1 UP	mple Type Dry C=Co = Undisturb	red W=Washed ed Piston			Proportio race ittle	01010 010109 101020	d l Cohesi % O-	AOID WLX 3 onless Den 10 Loos	O"foll on 2"O.D. S sily   Cohesive Co se   O-4	smpler phsistency Soft 30 + Hard Roci	SUM h Born c Cori	MARY	1		

GROUND WATER OBSERVATIONS     CASING SAMPLER CORE DAR.       GROUND WATER OBSERVATIONS       CASING SAMPLER CORE DAR.       AI	TO PROJECT NAME REPORT SENT TO SAMPLES SENT TO							ADDRESS LOCATION		LINE & STA OFFSET SURE FLEV					
GROUND WATER OBSERVATIONS         CASING         SAMPLER         CORE BAR         START         START           AI	SAN	APLES SE	NT TO					100	R JOB NO.	71-442	[]	Dote			
At       ofter       Hours       Type       Owner       Type       Owner       Own		GROU	ND WATER OBSE	RVATIO	NS			CASING	SAMPLER	CORE BAR.	START				0
A1       ofter       Hours       Size 10. Hommer Foil       Thom mer With       Image: Construct of the construction of the const	u	-	ofter	Hou	rs	Туре	·		(*).		COMPLETE		_		- P
Al       offer       Houmer Wi, Houmer Wi, Houmer Foll       Out Street of the sector of the sect						Size I.D.					TOTAL HRS.	MAN			-
LOCATION OF BORING:         E       Cosing Poet       Somple Tom - To       Type of Somple $from - To       Blows per 6'or 0^{-6} [ 6-i2   2-i8       MoistureDensityor0^{-6} [ 6-i2   2-i8       StrotoDensityor0^{-6} [ 6-i2   2-i8       StrotoDensityOr 0^{-6} [ 6-i2   2-i8       StrotoDensityOr 0^{-6} [ 6-i2   2-i8       StrotoDensityOr 0^{-6} [ 6-i2   2-i8       Stroto DensityOr 0^{-6} [ 6-i2   2-i8       Stroto Density Densi$	\t		_ ofter	Нои	irs	Hommer Hommer	Wt. Foll			- BIT	INSPECTOR				
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	L	OCATION	OF BORING:												_
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	τĪ	Casing	Sample	Туре	Blo	ows per 6	5	Moisture	Strota	SOIL IDEN		line Tunc of	s	АМР	LE
C       foot       Fine to Mark to Serve 0.6       G-12       12-18       Consist.       Elex.       ness. Dulling time, seems and elc.       NN         12 $40^{+}-41^{+}6^{+}$ D       4       5       5       42'       Gray Fine to Med. Sand       8         6		Blows per	Depths From- To	or Somple	From	Sumple	Го	Density or	Chonge	soit etc. Rock-	color, type, conc	tition, hard-			Г
12 $A0^{1}-41^{1}6^{9}$ D $4$ $5$ $5$ $42^{1}$ Gray Fine to Med. Sand $8$ 8 $42^{1}$ Gray Silt       Gray Silt $6$ $9$ 6 $1$ $1$ $1$ $1$ $1$ $9$ $6$ $1$ $1$ $1$ $1$ $1$ $1$ $9$ $6$ $6$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $9$ $10$ $1$		foot	11001-10	Sumple	0-6	6-12	12-18	Consist.	Elev.	ness, Drilling tir	ne, seoms ond	etc.	No.	Pen	R
13       42'         8       6         6       6         6       6         10       1         10       1         11       1         10       1         11       1         10       1         11       1         11       1         12       1         13       1         11       1         11       1         11       1         12       1         13       1         14       1         15       1         16       1         17       1         18       1         19       1         10       1         11       1         12       1         13       1         14       1         15       1         16       1         17       1         18       1         19       10         11       10         12       10         12		12	401-41'6'	D	4	5	5	1	1 101	Gray Fine	to Med. Sa	and	8	18'	1
$\frac{8}{6}$ $\frac{1}{10}$ $\frac{1}{11}$ $\frac{1}{10}$ $\frac{1}{11}$ $\frac{1}{10}$ $\frac{50^{1}}{50^{1}}$ $\frac{9}{9}$ $\frac{10}{10}$ $\frac{1}{10}$ $\frac{50^{1}}{50^{1}}$ $\frac{50^{1}}{50^{1}}$ $\frac{9}{10}$ $\frac{11}{10}$ $\frac{1}{10}$ $\frac{50^{1}}{50^{1}}$ $\frac{50^{1}}{50^{1}}$ $\frac{9}{10}$ $\frac{11}{10}$ $\frac{1}{10}$ $\frac{50^{1}}{50^{1}}$ $\frac{50^{1}}{50^{1}}$ $\frac{9}{10}$ $\frac{11}{10}$ $\frac{1}{10}$ $\frac{50^{1}}{51^{1}}$ $\frac{50^{1}}{51^{1}}$ $\frac{9}{10^{1}}$ $\frac{31}{35}$ $\frac{53^{1}-55^{1}}{9^{1}}$ $\frac{9}{11^{1}}$ $\frac{50^{1}}{10^{1}}$ $\frac{9}{11^{1}}$ $\frac{23}{20}$ $\frac{9}{11^{1}}$ $\frac{59^{1}}{10^{1}}$ $\frac{9}{11^{1}}$ $\frac{9}{10^{1}}$ $\frac{1}{4}$ $\frac{59^{1}}{10^{1}}$ $\frac{59^{1}}{10^{1}}$ $\frac{59^{1}}{10^{1}}$ $\frac{9}{10^{1}}$ $\frac{1}{4}$ $\frac{1}{10^{1}}$ <td>ł</td> <td>13</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>42'</td> <td>Crean Silt</td> <td></td> <td></td> <td></td> <td></td> <td>-</td>	ł	13							42'	Crean Silt					-
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	ł	8						N		Giay Dill					F
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W       60'-61'6' D       1       1       2         a B	_ [	T						J		Brown Peat	y Silt, T	race			L
a B       BN       BN         s W/       Flush         h F       Gray Brown Peaty Silt, 67'         1       65'-66'6' D       1         2       30         30       Gray Fine to Coarse Sand, Sorg         16       75'-76'6' D       8		W	60*-61*6	"D	1	1	2	-		Fine to Me	d. Sand		12	16.	11
S. W/       FI.USH         h F       Gray Brown Peaty Silt, 67'         1       65'-66'6' D       2       3         6       Gray Brown Peaty Silt, 67'       1         10       70'       Gray Brown Peaty Silt, 67'         12       70'       Black Org. Silt         13       70'       Black Org. Silt         11       19       73'         21       70'       73'         27       Gray Fine to Coarse Sand, Sorg         30       Starfe's file       Fine Gravel, Trace Silt								BW					-		-
1       65'-66'6' D       2       2       3         4       6       6       6       6       6         10       10       10       10       10       10         13       70'       70'       8       8       70'         21       70'-71'6' D       10       10       11       Black Org. Silt       1         19       73'       73'       73'       6       73'       6       73'         27       30       10       10       11       73'       73'       73'         16       75'-76'6' D       8       8       7       73'       73'       73'		$\frac{S}{h}$ F		1	-			FLUSH		- 0					t
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A     Co 70° Rush Ras Bite Ordy       6     10       13     70°       21     70°-71°6° D       19     10       21     70°       21     70°       21     73°       30     6       16     75°-76°6° D       8     8       16     75°-76°6° D		_1	65'-66'6	1 D	11	2	13	4	×	Gray Brown	h Wee Lit	it, 0/*	13	1.8	1
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13     70'       21     70'-71'6' D       19     10       21     73'       21     73'       27     Gray Fine to Coarse Sond, Soft       30     Fine Gravel, Trace Silt		10						1							
21     70'-71'6' D     10     11     Black Org. Silt     1       19     73'     73'       21     73'     Gray Fine to Coarse Sand, Sorw       30     Fine Gravel, Trace Silt		13	CARLENA TO PARAMETER				J		70'				-		1
13     73'       21     73'       27     Gray Fine to Coarse Sond, Sofrag       30     Fine Gravel, Trace Silt		21	701-7116	f D	10	10	11	-		Black Org.	, Silt		14	10	1
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GROUND SURFACE TO USED "CASING: THEN	-	GROUND	SURFACE TO			0	USED .		CASING:	THEN			C	110	-
Sample type         Proportions Used         1401b Wt x 30 fall on 2 0.0. Sampler         SU           D=Dry         C=Cated         W=Washed         Frace         Otation/         Cohesionless         Density 1 Cohesive Consistency         Earth Bc	50	Imple Typ	ored W=Woshed			troporti troco	Otolo	ed o/ Cohe	1401bW1x3 sionless Dei	50 fallon 2 0 D. nsity   Cohesive	Sompler Consistency	Earth	1 Borin	KANY K	1

to Pro Ref Sav	DJECT NAM PORT SENT	ME T TO NT TO				í	ADDRESS	OJ. NO R JOB NO	71-442	LINE & STA OFFSET SURF. ELEV			
tA tA	GROUI	ND WATER OBSEI	RVATION Hour Hour	vs s s	Type Size I.D. Hommer	W1.	CASING	Samplei	R CORE BAR. 	START COMPLETE TOTAL HRS. BORING FOREMAN INSPECTOR			o.m - p.m. ç.m. _ p.m. 
	0017101				Hommer	Foll				SULS ENGR.		2000	
DEPTH	Casing Blows per	Sample Depths From-To	Type of Somple	BI or From	lows per 6 Somplei	5" 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Moisture Density or	Stroto Change	SOIL IDEN Remarks inclu- soil etc. Rock- ness, Drilling til	NTIFICATION de color, grodation, Type o color, type, condition, hard- me, seams and etc.	No.	AMP Pen	LE Rec.
	17 17 19 23 24 27 19	<u>80'-81'6'</u> 85'-86'6'	D	8 8 9	8	10		Elev.	Gray Fine Trace Silt	to Coarse Sand, , Fine Gravel	16	1{ 	"12" "10"
	24 29 20 24 34 29	201-921		22 15	16 16			921	Sand Ran B	ack 5' in Pipe	18	241	<u>811</u>
	30 32 41 3? 39 43 52	951-971		12 11	11_9				Gray Fine	Sand, Some Silt	19	24,1	12771
	27 29 30	1001-102	D	9 11	10		- - -	103'		20 5 PD (5-1)	20		16"
	<u>41</u> <u>42</u> <u>47</u> <u>33</u> <u>41</u> <u>44</u>	105'-107	D	12 14	11 16				Gray fine	eanu, irace siit	21	24	1 <u>21</u>
	40 71 63 05 103	110'-112	D D	7 8 12 12	8 8 11 14			112'	Missed Sam Went Back Sampled-Sa in Casing	nple at 110'tol12' Down Hole For and, Ran Back 11'	22	24	12"
	27 31 50 49	115'-117	<u>D</u>	1.2	13				Gray Fine	to Coarse Sand	23	-2	10_
S D: UI T U	GROUND GROUND ampte Typ Dry C=C P=Undistur P=Test Pit T=Undistur	SURFACE TO ored W=Woshed bed Piston A=Auger V=Vo rbed Thinwoll	J		Proporti trace little some and	USED ons Us 0 to 10 10 to 20 20 to 35 35 to 55	5% Colie % Colie % ( % ( 5% 30 0% 50	I           CASING:           1401b W1.x           isionless           0-10           1.2           0-30           Med.1           0-50           0-4           Very [	THEN 30"foll on 2"O.D. ansity Cohesive oose O-4 Dense 4-8 ense 8-15 Dense 15-30	Sampler Consistency Soft 30 + Hard Ro M/Stift Stift O V-Stiff 62	SUM th Born ck Corin mples E NC	ν.ΔR NG NG	<u>Y</u> :

TO PRO REP	DJECT NA	ME r to					ADDRESS	OJ. NO	71-442		LINE & STA.			
	GROU	ND WATER OBSEI	RVATIO	NS			CASING	SAMPLEI	R CORE BAR	1	Dote	Ţi	me	
- 14	2	_ ofter	Hour	s	Type Size LD				-	START COMPLETE TOTAL HR	s.			
AI	*	ofter	Нор	rs	Hommer Hommer	Wt. Fall			- BIT	BORING FOI INSPECTOR SOILS ENGI	REMAN			
L	OCATION	OF BORING:						-						
EPTH	Cosing Blows per	Sample Depths From- To	Type of Somple	Bio on From	ows per ( Sample	6" r To	Moisture Density or	Strata Change	SOIL IDE Remarks inclu soil etc. Rock-	NTIFICATION de color, grad color, type, co	otion, Type of ndition, hord-	S	AMP	
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So D: I UP	imple Typ Dry C÷C '= Undistur	e bied w≃weshed bed Piston			Proporti trace	U to IU	ed Cohe	14015 Wt.x3 signtess De 1-10 Log	30" fall on 2"O.D. naity   Cohesive	Sampler Consistency Soft 30	Earth Hard Rock	SUMN Borin Corin	1AR) 9	<u>r</u> :

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GROUND WATER OBSERVATIONS Al9!         Rods-"AW"         CASING BW         SAMPLER         OORE BAR. START         J1/172 Complete BIT         Complete Complete Size 1.0         START         J1/27 Complete BIT         Complete Complete Size 1.0         START         J1/27 Complete BIT         Complete Complete Size 1.0         START         J1/27 Complete BIT         Complete Complete Size 1.0         START         J1/27 Complete BIT         Complete Complete Size 1.0         Complete Size 1.0         START         J1/27 Complete BIT         Complete Size 1.0         START         J1/27 Complete BIT         Complete Size 1.0         START         J1/27 Complete Size 1.0         Complete Size 1.0         START         J1/27 Complete BIT         Complete Size 1.0         START         J1/27 Complete Size 1.0         Complete Size 1.0         START         J1/27 Complete Size 1.0         Complete Size 1.0         Complete Size 1.0         START         J1/27 Complete Size 1.0         Complete Size 1.0         START         J1/27	SA	MPLES SE	ENT TO	11				OUI	R JOB NO		_ SURF. ELEV.	6	./
LOCATION OF BORING:           E         Cosing Depths         Sample Depths         Blow sper 6' of foot         Moisture Denity Cosist.         Strata Denity Cosist.         Strata Change Elew         Soli. IDENTIFICATION Remarks include color, gradation, Type of solit etc. Rock-color, type, condition, Nard- ness, Drilling time, seems and etc.         Nucl Nucl Nucl Solit etc. Rock-color, type, condition, Nard- ress, Drilling time, seems and etc.         Nucl Nucl Nucl Solit etc. Rock-color, type, condition, Nard- ress, Drilling time, seems and etc.         Nucl Nucl Nucl Solit etc. Rock-color, type, condition, Nard- ress, Drilling time, seems and etc.         Nucl Nucl Nucl Solit etc. Rock-color, type, condition, Nard- ress, Drilling time, seems and etc.         Nucl Nucl Nucl Solit etc. Rock-color, type, condition, Nard- ress, Drilling time, seems and etc.         Nucl Nucl Nucl Solit etc. Rock-color, type, condition, Nard- ress, Drilling time, seems and etc.         Nucl Nucl Nucl Solit etc. Rock-color, type, condition, Nard- ress, Drilling time, seems and etc.         Nucl Nucl Solit etc. Rock-color, type, condition, Nard- ress, Drilling time, seems and etc.         Nucl Nucl Solit etc. Rock-color, type, condition, Nard- ress, Drilling time, seems and etc.         Nucl Nucl Solit etc. Rock-color, type, condition, Nard- ress, Drilling time, seems and etc.         Nucl Nucl Solit etc. Rock-color, type, condition, Nard- ress, Drilling time, seems and etc.         Nucl Nucl Solit etc. Rock-color, type, condition, Nard- ress, Drilling time, seems and etc.         Nucl Solit etc. Rock-color, type, condition, Nard- ress, Drilling time, seems and etc.           4         10'-11'6' D         1         1         Nucl S	At _	GROU 9' 1:00 1 20' Cas	IND WATER OBSE 	RVATIO Hour Hou	NS 's rs	<b>Rods -</b> Type Size I.D. Hommer Hommer	"AW" Wt. 30 Fall	CASING BW 2½" 00# 14 14	SAMPLER <u>\$/\$</u> <u>1_3/8''</u> 0# 30''	CORE BAR. COMPLET TOTAL H BORING F BIT SOILS EN	<u>Dore</u> 1/ <u>3/72</u> re <u>1/3/72</u> irs. oreman <u>Quag</u> R 	iar	0
E         Cosing Blows         Sample Depths From - To         Type Somple From - To         Blows per 6' on Sample From - To         Moisture on Sample Consist         Strata Density Consist         Strata Change         Strata Result color gradiation, Type of soil etc. Face-color, Type, condition, hard to soil etc. Face-color, Type, condition, hard to condition, hard to condition, hard to soil to condition, hard to soil to condition, hard to condition, ha		LOCATION	V OF BORING:										
2       foot       11001 10       05 [ 6-12 12-18] Consist.       Elev.       ness.priming time, seams and efc.       NK         4	EPTH	Cosing Blows per	Sample Depths From- To	Type of	Bl on From	ows per 6 Somple	5" T	Moisture Density or	Strata Change	SOIL IDENTIFICATIO Remarks include color, gro soil etc. Rock-color, type,	N adation, Type of condition, hard-	S	Ā
4	Ļ	foot			0-6	6-12	12-18	Consist.	Elev.	ness, Drilling Time, sedms		NO.	ť
7       9       9         8       10       10         10       10       10         10       10       10         8       10       12         4       10'-11'6" D 4 1 2       Vet         5       13'-14' D 1 2       Wet         3       13'-14' D 1 2       Wet         4       15'-16'6" D 1 1       Wet         5       7       10         4       15'-16'6" D 1       1         5       17'-19' Push 2' Shebly       Soft 17'         5       17'-19' Push 2' Shebly       Gray Fine to Coarse SAND, 4         7       20' Met       Black Gray Org. Silt & Fine to         13       20'-21'6" D 9       5         14       10       10         16       11       25'         9       25'-26'6" D 7       5         14       10       13         12       11       12         30'-31'6" D 13       13         13       13       13         22       13       13         30'-31'6" D 13       13         13       13       12         30'-31'6" D 13 <td< td=""><td></td><td>4 6 6</td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td>Cinders, Fill</td><td>Siit, Grave</td><td></td><td>ļ</td></td<>		4 6 6		-						Cinders, Fill	Siit, Grave		ļ
10       10       10         8       10'-11'6'' D       4       1         6       10'-11'6'' D       4       2         4       12'-13' D       2       13'         3       13'-14' D       1       2         4       15'-16'6'' D       1       1         5       15'-16'6'' D       1       1         5       17'-19' Push 2'' Shebly       Soft       17'         5       17'-19' Push 2'' Shebly       Soft       20'         7       20'       20'       Hed. Gravel         8       20'-21'6'' D       9       5         14       20'       20'       Hed. Gravel         8       20'-21'6'' D       9       5         14       20'       20'       Black Gray Fine to Coarse SAND, Some Fine to Coarse Oily SAND, Some Fine to Coarse Gravel, & org. Silt         9       25'-26'6'' D       7       5       Wet         13       20'       25'       Black Gray Oily Fine to Coarse SAND, Some Fine to Coarse Gravel, & org. Silt         9       25'-26'6'' D       7       5       Wet         14       10'       13       13       12'         20       20'		7 9 8						9 <b>9</b> 0					ł
3       4       10'-11'6"       D       4       1       2       Vet       13'       12'       12'         3       13'-14'       D       1       2       Wet       15'       Black FEAT & Oily Fine S and 2       2         3       13'-16'6"       D       1       1       Wet       Black Gray Org. SILT       3         5       5       5       5       5       5       17'       5       6       17'         5       17'-19'       Push 2" Shebly       7       Gray Fine to Coarse SAND, 5       5         7       13       20'       Met       Black Gravel       Black Gravel       10         8       20'-21'6"       D       9       5       Wet       01y SAND, Some Fine to Coarse       5         14       10       10       10       11       11       12       11       12       11       12       11       12       12       11       11       12       12       12       11       11       12       12       12       12       12       13       12       12       12       13       13       12       12       12       12       12       12		10 10				1		].					-
3       12'-13'       D       2       1       13' </td <td></td> <td>6 4</td> <td>10'-11'6"</td> <td>D</td> <td>4</td> <td>1</td> <td>2</td> <td>Wet</td> <td></td> <td>ž e</td> <td></td> <td>1</td> <td>F</td>		6 4	10'-11'6"	D	4	1	2	Wet		ž e		1	F
3       13 <sup>1</sup> -14 <sup>1</sup> D       1       2       Wet       Black PEAT & Oily Fine Sand 2         4       15 <sup>1</sup> -16 <sup>6</sup> 6 <sup>10</sup> D       1       1       1       Wet       Black Gray Org. SILT       3         5       17 <sup>1</sup> -19 <sup>10</sup> Push 2 <sup>n</sup> Shebly       Gray Fine to Coarse SAND, 4       Some Org. Silt & Fine to       4         7       13       20 <sup>1</sup> Met       Black Gray Org. SILT       3         8       20 <sup>1</sup> -21 <sup>16</sup> 6 <sup>10</sup> 9       5       Wet       Black Gray Fine to Coarse SAND, 4         13       20 <sup>1</sup> M.D.       Some Org. Silt & Fine to       Coarse Gravel       5         14       20 <sup>1</sup> M.D.       Some Fine to Coarse SAND, 5       5         9       25 <sup>1</sup> -26 <sup>16</sup> 6 <sup>10</sup> 7       5       Wet       Black Gray Oily Fine to Coarse SAND, 5         13       25 <sup>1</sup> 25 <sup>1</sup> 5       Wet       Coarse Gravel, & org. Silt       5         9       25 <sup>1</sup> -26 <sup>16</sup> 6 <sup>10</sup> 7       5       Wet       Some Coarse SAND, Some Fine to Coarse Gravel, Org. Silt       5         20       13       13       12       Wet       31 <sup>16</sup> <sup>10</sup> 7         30 <sup>1</sup> -31 <sup>1</sup> 6 <sup>10</sup> 13       13       12 <td< td=""><td></td><td>4</td><td>12'-13'</td><td>D</td><td>2</td><td>1</td><td></td><td>1111</td><td>13'</td><td></td><td></td><td>2</td><td>ţ</td></td<>		4	12'-13'	D	2	1		1111	13'			2	ţ
4       15'-16'6'' D       1       1       1       Wet       Black Gray Org. SILT       3         5       17'-19' Push 2'' Shebly       Gray Fine to Coarse SAND,       4         7       20'       Med. Gravel       Some Org. Silt & Fine to       4         8       20'-21'6'' D       9       5       8       Wet       Black Gray Fine to Coarse SAND,       4         8       20'-21'6'' D       9       5       8       Wet       Black Gray Fine to Coarse       5         14       10       10       10       11       11       11       11       11         19       25'-26'6'' D       7       5       5       Wet       Black Gray Oily Fine to       11       12         10       13       12       25'       12       12       14       14       14       14       14       14       14       16       16       16       16       16       16       16       16       17''       17''       17''       16'''       17'''       17''''       17'''''''       17''''''''''''''''''''''''''''''''''''		3	13"-14"		1	2		Wet Loose	15'	Black PEAT & Uily	r fine Sand	24	t
5       17'-19'       Push 2* Shebly       Gray Fine to Coarse SAND, 4         7       20'       Some Org. Silt & Fine to         13       20'-21'6"       D       9       5       8       Wet       Black Gray Fine to Coarse       5         14       10       9       5       8       Wet       Black Gray Fine to Coarse       5         14       10       10       11       12       13       14       14       14       14       14       14       14       14       14       14       14       14       14       14       15       15       15       Wet       15       16       17       13       13       12       13       13       12       13       16       16       16       16       16       16       16       16       16       17       16       17       16       17       16       17		4	15'-16'6"	D	1	1	1	Wet Soft	17'	Black Gray Org. S	ILT	3	ł
8       20'-21'6"       0       9       5       8       Wet       Black Gray Fine to Coarse       5         14       16       10       11       12       Black Gray Oily SAND, Some Fine to Coarse       5         19       25'-26'6"       0       7       5       5       Wet       Black Gray Oily Fine to Coarse       5         14       25'       25'       25'       8       8       8       8       8       8       8       14       14       14       14       14       25'       14       14       14       15       14       14       16       17       17       17       18       19       10		5 7 13	17'-19'	Pu	sh 2	" Shet	1y		201	Gray Fine to Coan Some Org. Silt & Med. Gravel	rse SAND, Fine to	4	
10       10       25'         9       25'-26'6" D       7       5       5         14       10       10       25'         9       25'-26'6" D       7       5       5         14       10       10       10       10         14       10       10       10       10       10         14       10       10       10       10       10       10         20       16       13       13       12       Wet       Black Gravel, Org. Silt       Possible Fill         22       13       13       12       Wet       31'6"       7         30'-31'6" D       13       13       12       Wet       31'6"       7         Bottom of Boring at 31'6"       NOTE: 17'-19' Push Shelby       Sand & Gravel in Tube Put       10         10       10       10       10       10       10       10         10       13       12       10       10       10       10       10         11       13       12       10       10       10       10       10       10         10       13       13       12       10		8 14	20'-21'6'	' D	9	5	8	Wet M.D.		Black Gray Fine ( 0ily SAND, Some I	co Coarse	5	Ī
9       25'-26'6" D       7       5       5       Wet       Black Gray Oily Fine to       6         14       14       14       16       16       16       16       16       16       16       16       16       16       16       16       16       16       17       10       13       13       12       N.D.       10       13       13       12       N.D.       11       13       13       12       Wet       31'6"       11       7       11       12       7         22       2       13       13       12       Wet       31'6"       13'6"       7         30'-31'6"       13       13       12       Wet       31'6"       8       8       8       13'6"       7         30'-31'6"       13       13       12       Wet       31'6"       8       8       13'6"       7         30'-31'6"       13       13       12       Wet       31'6"       8       8       13'6"       7         30'-31'6"       13       13       12       9       8       13'6"       14'6"       15'6"       15'6"       15'6"       15'6"       15'6"       15'6"<		16 19 13						1	251	Coarse Gravel, a	org. Slit		ļ
20         M.D.           22         M.D.           30'-31'6"         D           13         13           12         Wet           31'6"         Bottom of Boring at 31'6"           NOTE:         17'-19' Push Shelby           Sand & Gravel in Tube Put           in Jar(S-4)		9 14 16	25'-26'6'		7	5	5	Loose		Black Gray Oily I Coarse SAND, Some Coarse Gravel, On	Fine to Fine to g. Silt		$\frac{1}{1}$
Bottom of Boring at 31'6" NOTE: 17'-19' Push Shelby Sand & Gravel in Tube Put in Jar(S-4)		20 22	30'-31'6'	D	13	13	12	M.D. Wet	31'6"	rossidie riii		7	
										Bottom of Boring NOTE: 17'-19' Pur Sand & Gravel in in Jar(S-4)	at 31'6" sh Shelby Tube Put		
GROWIND SURFACE TO USED "CASING: THEN		GROUND						,	CASING	THEN			ł
TC	Hal	100 WA ey & Aldric MF_Provider	TER S h, In nce (	TREET	E Co.	AST PI		E, R. I. Cambr Provi	idge, Mass. dence, R.I.	DATE 12/ HOLE NO.	29/	71	
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RE	PORT SEN	ТТО	above	•			PR	OJ. NO	71-508		6.1	6	
SA	MPLES SI			_			[00	R JOB NO.	/1-508	Date	Ti	me	_
AI 1	GROI	JND WATER OBSE	RVATIC	NS rs	Rods	- "AW"	CASING	SAMPLE S/S	R CORE BAR. START	<u>12/29/</u> 12/30/	71		а.п _ р.п а.п
A1 _		_ ofter	Hou	irs	Size I.D. Hammer Hammer	r Wt. r Foll	BW 300∉ 24''	<u>1 3/</u> <u>140</u> # 30"	8" TOTAL HRS BORING FOR INSPECTOR SOILS ENGR	5. REMAN <u>Go</u>	mes		
L	OCATIO	V OF BORING:			-							_	
DEPTH	Cosing Blows per foot	Sample Depths From- To	Type of Sample	Bl or From 0-6	ows per Somple	6" er <u>To</u> 1 12-18	Moisture Density or Consist.	Strata Chonge Elev.	SOIL IDENTIFICATION Remarks include color, grado soil etc. Rock-color, type, cor ness, Drilling time, seams and	ation, Type of adition, hard- l etc.	S No.	AMP Pen	LE Rec
	1 2 5						-		Probed to 5' No Sa Required	mples			
	9						1	51					
	4 4 12	51-616"	D	2	3	1	Soft	g1	Dark Brown Fine to SAND, Trace Fine Gr	Coars e avel,	1	18'	7"
	19 11 5	10'-11'6"	D	12	23	11	Moist		Gray Fine Silty SAN Fine Gravel, (Fuel C Fill	D, Little Mor Noted	2	18'	10'
	8 8 6						M.D.	14"					
	2 7 7	15"-16"6"	D	4	3	3	Moist Soft		Fine Gravel, Fill	D, Trace	3	18'	11"
	6						-	20'					
		20 6"-22"	ुम रम					22"	Org. S-1 20'6"-22'6 24"-Rec 100%	" Pressed	SHI	LBY	<b>2</b> 농
	2	<u> </u>					1	24'6"	22 0 -24 0 MISSEU				
	1 1 1	24.627						271	S-2 24'6"-27' 100%	Rec.		_	
	2								Org. Silt (Gray)				
	1 7	30'-31'6"	D	1	1	2	Moist	2. 	1		4	18'	-
	9 6 6						Soft		24				
	<u>17</u> <u>14</u> <u>15</u>	351-371						35*	S-3 35'-37' 100% Re	с.			
	15 13 14												
So D=1 UP TP UT	GROUND Imple Typ Dry C=Cc = Undisturb = Test Pit = Undisturb	SURFACE TO e pred W=Washed bed Piston A=Auger V=Van bed Thinwall	ne Test		Proportio trace little some and	USED _ ons Use 0 to 10% 10 to 20% 20 to 35% 35 to 50	" d	CASING: 40 lb W1.x 3 ionless Den 10 Loo 30 Med. Du 50 Den + Very De	THEN O"foll on 2"O.D. Sampler Isity Cohesive Consistency se O-4 Soft 30 ense 4-8 M/Stiff se 8-15 Stiff ense 15-30 V-Stiff	+ Hard Bamp HOLE	SUMM Boring Coring les NO.	ARY 66	6"

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2 <sup>3</sup>		Americ	an l	Drill	ing 8	k Bor	ing Co	., Inc.			SHEET 2		_ 0F	2
	923	100 WA	TER S	TREET	E	AST P	ROVIDENC	E, R. I.	2		DATE	1		
T	)			· · · · · ·			ADDRESS				HOLE NO.	1		
Pf	ROJECT N	AME					LOCATION				LINE & STA		-	
RE	WORT SE						PR	OJ. NO	71 600		CHPE FLEN			
5/	WIPLES S						[ OU	R JOB NO.	/1-508		SURF. ELEV.	-		
	GRO	UND WATER OBSE	RVATIC	ONS			CASING	SAMPLE	R CORE BAR.	0716-	Date	<u>1</u> 1	me	0.m
At_		ofter	Hou	rs	Туре			2		COMPLETE				– p.m. g.m.
1.5	525				Size I.D.					TOTAL HRS		_		_ p.m.
At_		- ofter	Hou	irs	Homme	r Wt.			- BIT	BORING FOR	EMAN			
					Hamme	r Foll			-	SOILS ENGR				
	LOCATIO	N OF BORING:			-									
Ξ	Casing	Sample	Type	8	iows per	6"	Moisture	Strata	SOIL IDEN	TIFICATION		S		IF
E E	per	From- To	or Somolo	From	n sample n	То	Density or	Chonge	Remarks includ soil etc. Rock-d	te color, grada color, type, con	tion, Type of dition.hard-			
	foot			0-6	6-12	12-18	Consist.	Elev.	ness, Drilling tin	ne, seams and	etc.	No.	Pen	Rec.
	17	40 -41 6"	D	1	1	3	Moist		Gray Org.	SILT		5	18'	9"
	14						Soft		2.43					
	15										×			
	13			. 25					Pressed 212	" Shebly	9" Rec.			
	50	46"-46"9"						46'8"	Put Sample	in Jar		6	9"	9"
	28	46'9"-48"	" D	4	6	6	Moist	100	Black Silt	y Med. to	Fine	7	101	
	26				3		V.D.	49"	Sand, wood	Fibrous			10	
	40	FOL FILM							Gray Brown	Fine to (	Coarse			
	75	<u> 201-21.0.</u>	0	_16	31	26	40 -	-	SAND, Fine	to Med. (	Gravel,	8	18'	9111
	53								LITTIE Silf	Ľ				
э.	43										N			
	40 57	551-5616		16	12	10						_	1.01	1.1.1
	31	<u> </u>		10								9	18,	11"
2	27													
	26							1		2		_		
	60	60"-61'6"	D	26	21	19					< ><	10	1.01	14.11
	40								-	- 14	ł	10	10	
	45			_					2003					
	36									8 II.	.			
		651-6616"	D	18	15	16		66161	<i></i>			11	18	·
								00 0	Bottom of F	oring at	66'6"	_		
							÷	-10 - 11				-	-	
					_				ा २०११ - १९२१ - १९	n netter og som som som som som som som som som som	. I			
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Ì				***				*				-	+	
F				_					3 - K				-+	-
So	nple Type	NURFACE IO		1 1	nono tin	USED	"C	ASING:	THEN					
D=0	Dry C=Co	red W=Washed			roce	01010%	Cohesic	onless Den	sity   Cohesive Co	ompler onsistency	Eorth 1	Borina	ARY:	
UP	Undisturb	ed Piston	• T	l li	ittle I	01020%	0-1	O Loos	e 0-4	Soft 30+	Hard Rock C	oring		
UT	= Undisturb	ed Thinwall	C 1851		ome 2 and 7	:010359 15 to 500	30-	Dens	e 8-15	Stiff		:5		-
							01 004	very De	ise   15-30	v-Stiff	INVLE	NU.		1

		America	an D	rilli	ng &	Bor	ing Co	., Inc.	Ϋ́		SHEET	31/	. OF.	3
		100 WA	IEK SI	REET	E,	AST PR	OVIDENC	E, R. I.			HOLENO	7	2	
TC	) <u>Hal</u>	ey & Aldric	h,_I	nc.		I	ADDRESS	Can	bridge, Mas	<del>.</del>	LINE & STA			
PR	OJECT NA	ME Providen	ice_G	as C	0		LOCATION	Pro	vidence, K	· · · · · · · · · · · · · · · · · · ·	OFESET			
RE	PORT SEN	TTOab	ove	-	·		PR	OJ. NO	71 600			7	5	
SA	MPLES SE	ENT TO					00	R JOB NO.	71-508		SURF. ELEV.		• •	
Γ	GROL	IND WATER OBSE	RVATIO	NS	Pode	HAWH	CASING	SAMPLER	R CORE BAR.	START	Dote 12/31/71	TI	me	0.m
At_	12'	gr ofter	Hou	rs	Туре	- 74				COMPLETE	1/4/72			0.m.
At_		_ ofter	Hou	rs	Size I.D. Hommer	Wt.	300#	<u> </u>		BORING FOR	EMAN GO	arn	um	
H	OCATIO				Hommer	Fall	24**			SOILS ENGR				_
		V OF BURING		-			г							_
Ξ	Casing	Sample	Type	BI	ows per (	5	Moisture	Strata	SOIL IDEN	TIFICATION	tion Tune of	S		LE
Å.	per	Depins From To	Comolo	From	i oumple	То	Density	Change	soil etc. Rock-o	color, type, cor	dition, hord-			
•	foot	F10m- 10	Southe	0-6	6-12	1 12-18	Consist.	Elev.	ness, Drilling tin	ne, seams and	letc.	No.	Pen	Rec.
-	13								No Sample	ra 51				
	10						1		no campre					
	26	*****												
	22													
1.1	46			14 C 1			1							
	66	51-616"	D	2	2	1	Moist		Dark Gray I	ine to C	oarse	1	18"	12"
	53						Loose		SAND & Gray	vel. Ashe	s. Cinder	3		
	31						]		(011 Soaked	I). Fill	-,			
	19													
	17					·						1		
	29	10'-11'6"	D	4	4	7	]","					2	18'	9"
	31													
	30										5			
1	27						4							
	30													
	10	15'-16'6"	D	3	3	2						3	18'	10"
	28						4							
	28						1	18'6"						
	10								Grav Org.	SILT				
		201-2116	D	14	5	4	Maint		( No Rec. I	J/S/S)	0			
	8	20 -21 0		14			Torse	2" 5-1	221 - 2416	- 30" P	Tess Rec			-
	8				1		roose	2 U-1	26"	- 50 1	Leas wee.			
	10			-		1	1		20					
	0						1							
	14							3" U.P	-1 25' -2	7" - 24"	Press	-		
	23								Rec. 215"					
	20						1		Gray Org. S	SILT				
1	14	27'-28'6"	D	1	1	2	Moist				<u></u>	4	18'	18"
	_16	2-1-1-1					Soft							
	32	3						3" U.P	-2 31' - 3	33' - 24"	Press			
	35								Rec. 24"					
	46	221 2/10/1					{						101	101
	29	35-34'6"	<u>n</u> 1	ress			1			21 S	¥.	2	10	10
								50 g (	- 8 A B	, n. e	5 X	$\rightarrow$		
	- 32							ă.						
							1					{		
	40	381-401						211 0_2	381 _ 401	- 2/1 Dan	an 1007			
	27	50 -40		-				2 3-2	20 - 40 ·	- 4-4 116				
-	GROUND			-				CACINO:	TUEN					
C.		A			Pronorti	USEU _	d l	ADING:	0"4-11		l a	CI 11 41	ADV	- I
D:	Dry C=Co	red W=Washed			trace	Otalos	Cohes	onless Den	isity   Cohesive (	consistency	Earth	Borin	- 90	j•
UF	-Undisturb	bed Piston			little	101020	% 0.	10 Loo:	se 0-4	Soft 30	+ Hard Rock	Corin	9	
TF	P=Test Pit	A=Auger V=Var	ne Test		some	201035	% 10-	30 Med. D	ense 4-8	M/Stiff	Somp	les _	_15	i
1 U1	r=Undisturi	bed Thinwall			and	35 to 50	% 50	+ Verv De	se 8-15 ense 15-30	Stiff V-Stiff	HOLE	NO.		
50		e e e					- 15 - 15	,	10 00		-	-		

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TO							ADDRESS			INF & CTA		
PR	OJECT NA	ME					LOCATION			DECET		
RE	PORT SEN	T TO					PR	0J. NO	71.500			-
SA	MPLES SE	INT TO					[ 00	R JOB NO	/1-508	Date	Th	-
	GROU	IND WATER OBSE	RVATIO	NS			CASING	SAMPLEF	CORE BAR.	START	<u></u>	m
At _		_ ofter	Hou	rs	Type		2					_
Δ+		after	Нол	, e	Size I.D.	18/4				BORING FOREMAN		_
- 10					Hammer	wr. Fall			- BII	INSPECTOR		_
l		N OF BORING:										
F	Cosing	Sample	Type	BI	ows per 6	5"	Moisture	Strata	SOIL IDEN		S	A
E	per	Depths From- To	Somole	From	- Sumple	То	Density or	Change	soit etc. Rock-	color, type, condition, hard-		Г
	foot		Sumple	0-6	6-12	12-18	Consist.	Elev.	ness, Drilling tir	me, seams and etc.	No.	F
	23	40"-41"5"	D	Pro	85		Moist		Gray Org.	SILT & Shells	6	Ľ
01	27		· · · · ·				Soft					-
42	23											$\vdash$
	78						1					F
	108	451-471	UP	#3			]	3"	Pressed 24	" From 45 -47		Γ
	124							47'	100% Rec.			F
4"	134	47'-48'6"	D	2	5	5	Moist		Dark Gray	Peaty Org. SILT,	17	F
	130						Stiff		Trace, Fine	SAND		F
	Red	50'-51'6"	D	5	8	8 1	oist V.				8	E
	Wash	52"-53"					Stiff	S-3	Press From	52'-53' No Rec.		
	18	521 5/1/4		10	24	20	Malak	531	Crew Fine	to Compo SAMD L	-	H
	22	537-54.0		10	24	29	M.D.		Fine to Ca	arse Gravel. Some		H
	9				1				Silt	aloc olatoly odd		F
	11						- 24					Γ
之"	13											L
	13							59'	0. RL			┝
	13	60'-61'6"	D	9	11	13	Moist		Gray Fine	to Coarse SAND,	10	h
	16						M.D.		Silt	ie olavel, alace		Γ
25"	19	2 11 - 12 - 12 - 12 - 12 - 12 - 12 - 12						- 1 <sup>12</sup>				L
	23	641-651	n	2	1		Nedet	64	0		+	4
		04 -05					Loose	651	Trace Fine	Gravel		F
	6	65'-66'	D	1	1		Moist		Dark Grav	Org. SILT, Trace	11A	Γ
	5						Soft	68'	Peat			F
	5								Gray Fine	to Med. SAND, &		H
		691-711	D	10	1.2	10	Motor		Silt, Trac	e Finecto Coarse	12	F
	35						Dense		Gravel	a 2		F
	36											L
	38							74'			+	$\vdash$
	42	741-7516"	D	9	6	4	Molet		Gray Fine	to Coarse SAND,&	13	h
*	33						Loose		SIIC, SOME	I FINE EO MEG.	1	F
	39						]		SLUTUA			
	39								-			L
	45	79"-81"		24	24	21/2	6		No Rec.			
c.	GROUND	SURFACE TO		1	Pronort	USED _		CASING:	THEN	Campion I	CI IL IL	_
D=	Dry C=C	ored W=Washed		1	trace	0 to 10	Cohes	ionless Den	sity   Cohesive	Consistency Eart	h Borine	<u>1/1</u> 9
115	P= Undistur	bed Piston			little	101020		-10 Loos	se 0-4	Soft 30 + Hard Rock	Corin	g

to Pr Re	OJECT NA	ME T TO					ADDRESS	OJ. NO			LINE & STA.	
SA	MPLES SE	INT TO					<b> </b> ou	R JOB NO	/1-	508	SURF. ELEV.	T
	GROU	IND WATER OBS	RVATIC	NS			CASING	SAMPLEF	R CORE BAR.	START	0010	-
At		ofter	Hou	5	Туре					COMPLETE		
A.	* *	alter	Hou	_	Size I.D.					BORING FOR	EMAN	
A)	÷				Hammer	wr. Foll			- BII	INSPECTOR . SOILS ENGR		
L	OCATIO	N OF BORING	:									
Ŧ	Cosing	Sample	Туре	BI	ows per 6	5"	Moisture	Strala	SOIL IDEN	TIFICATION	tion Tuno of	
EPT	Blows per	Depths From- To	of Sample	From		To	Density or	Change	soil etc. Rock-	color, type, con	dition, hord-	
-	foot			0-6	1_6-12	12-18	Consist.	Elev.	Gray Fina	to Coaree	SAND	140.
	33						N.D.		& Silt, Sc	me Fine t	o Coarse	
	39	81 -83	D	20	23	26/2	48		Grave1			14
	32						1					_
		85*-87*					1					Ē
							-		Grav Fine	to Coarse	SAND.	-
		87"-90"	D	19	38	30	<u>                                     </u>	90'	& Gravel,	Little Si	lt	1:
				40	38	37	-		Bottom of	Boring at	. 90 •	
							1				ă.	
		- 11 - 11					4		183			
						-	-			2.465		<b>—</b>
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*			1				1		51 1 8			F
			-	-				r - 5	*	N 8 - H	a	E
- 14							]		2			
			1				1	- 100 		÷ .		F
_							1					
SI D= UI	GROUND ample Typ Dry C=C 2= Undistur	SURFACE TO _			Proportio	USED ons Us 0 to 10	ied % Cohe:	CASING: 1401b W1.x3 sionless Der	THEN 50" foll on 2"O.D. nsity Cohesive 0-4	Sampler Consistency Soft 30	+ Hard Roci	

TO	Haley	& Aldrich,	Ince	Gas	Co.		ADDRESS	CAMBRI Provid	LDGE, Mass. lence, R.I.	LINE & STA		
RE	PORT SEN	TTOat	ove				PF	20J. NO		OFFSET		7
SA	MPLES SE	ENT TO		-			ol	IR JOB NO.	71-508	SURF. ELEV		1
	GROU	IND WATER OBSE	RVATIC	NS	Rod	5 - "AW	HCASING	SAMPLE	R CORE BAR.	<u>Dore</u>	1	10
At_	18"	ofter0	Hou	rs	Туре			s/s		DMPLETE 12/29/71		
	12/31/	/1 - 9:00			Size I.D.		BW	1 3/	8" TO	DTAL HRS.		2
AI _		- ofter	Нои	rs	Hommer Hommer	r Wt. r Folt	24"	30"	BIT IN	SPECTOR Var DILS ENGR	num	
l		OF BORING										-
Ŧ	Cosing	Sample Depths	Type	BI	lows per ( Somple	6" 97	Moisture	Strala	SOIL IDENTIF	TICATION		s/
DEP	per	From- To	Somple	From	3	То	or	Change	soil etc. Rock-colo	r, type, condition, hard-		٦
	foot		-	0-6	6-12	12-18	Consist.	Elev.	ness, Drining nine,	Secons and etc.		-
	8				+		1		GRAVEL(Fill)	o Coarse SARD &	-	+
	11						]					1
	8						{					-
	7						1					+
	10						1		l.			1
	12						1				-	4
	16								F:			1
	18											]
	14						{				-	+
	-5						1					
	7	TEL TELCH		E			Loose	15'6"				4
	4	15'6"-16"	<u>a ''s</u>	5	2	2	Wet		Gray Org. SI	LT, Trace Shell		+
	2	17 - 19	Pre	SS 7	" She	lby	1		Trace Fine SA	AND	UT-	
	2	19-21-	Pro	SS 2	" She	blv					ETT -	
	3	21'-22'6"	D	4	2	2	Wet				2	-
	4						Soft		×			
	8											
	9											1
	7				<u> </u>						-	-
	5				1							1
	_4				-							1
	7	30*6"-22*	54 p.	0.55	24 51	ebly		30*	Grav Fine to	Coarse SAND		+
	12	3216"-34"	in Pi	ess	2" Sh	ably	- <b>1</b>		Trace Silt,	Little Fine	-	1
	12								Gravel, Litt	le Silt		+
	13	34'6"-36'	D	6	9	8	Wet				3	t
	14					ĺ	M.D.			2		1
									-	2		4
	21						Wet	391	Grav Org. Si	lt. Trace Wood	-	ł
	23	40'-41'6"	D	2.	3	4	Loose		Nixed With T	he Sand	4	1
	GROUND	SURFACE TO				USED _		CASING:	THEN		Venere	
I Sa	mple Typ	e		i	Proportio	ons Use	d j	4010 W1.x 3	O fall on 2 O.D. Som	pler	SUM	Ň

TO PROJECT N REPORT SE SAMPLES	IAME ENT TO SENT TO				/		ROJ. NO IR JOB NO	71-508	UINE & STA.	Ŷir		
GR 11	OUND WATER OBSE	RVATIOI Hour Hour	NS rs rs	Type Size I.D. Hammer Hammer	W1. Foll		SAMPLER	CORE BAR. COMPLE TOTAL BIT SOILS EI	  HRS. FOREMAN OR NGR	1		
LOCATI Cosing Blows per	ON OF BORING: Sample Depths From- To	Type of Somple	Blo on From	ows per 6 Somple	5" r To	Moisture Density or	Strota Change	SOIL IDENTIFICATIO Remarks include color, gi soil etc. Rock-color, type, ness, Drilling time, seams	DN radation, Type of , condition, hard- , and etc.	S/ No.	AMP Pen	LE
16 20 26 30 34 29 30	421-4319"	Pre	5 S 2	" She	b1y_		42*	Gray Org. SILT, 1 Wood, Mixed with Gray Fine to Coa Little Fine to M Trace Silt	Fibrous, TR. F-C SAND rse SAND, ed. Gravel,	UT-1	21'	
36 40 41 16 26 33 42 44 26 24 30	50°-51°6''	D	7	8	10	Wet M.D.	46	Gray Erown Fine SAND, Some Silt, To Coarse Gravel Note: Tube Take 43'9", Sand & Gr Rec. in Jar	to Coarse Little Find , n at 42 <sup>¶</sup> - avel, Put	5	18	
33 34 22 26 30 32	601-6116"	<u>d</u>	17	9	10	Wet M.D.		Gray Brown Fine SAND, Some Fine Gravel, Little S	to Coarse to Coarse ilt	6	13	
35 22 759 79 93	651-66161	<u>D</u>	12	10	7			Note: 65 <sup>†</sup> -66 <sup>†</sup> 6" on Second Attemp	Recovery t	7	18	
	70'-71'6"		16		10		71'6"	Bottom of Boring	; at 7116"	8		

Sec. and

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- 40 M T

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		En	St gine	one & V ering (	Web Corj	oster porati	Dn	BORING LOG		Borin J.O. 0 Sheet	g SWBL-1 5885.20 1 of 2
Site	: Fiel	ds F	oint	, Provide	ence,	RI		Logge	d by: R	.T. DeC	onto
Clie	nt: A	gon	quin	LNG, L	nc.		_	Date S	Start - Fi	nish: 1	L/09/95 - 11/09/9
Coo	rdinat	es:	N 65	4.42	V 7 6	V 950.5	3	Groun	d Elevai	tion: 9	.704 ft
Gro	undwa tractor	ier i		n: ican Dril	n / Ning	[		Depth to Bedrock: 10tal			52 It
Met	hods:				mig			Casing Used: None	pe. Ch	IE-75	
Сот	Drilli Sampl Drilli iments	ng ing ng R : (	Soil: Soil: lock: <b>Frou</b>	4.25" h Standar None ndwater	ollov rd sp dep	w-stem plit-spo th as no	augers on samp oted dur	ler driven using a CME automatic SP1	[ hamm	ler	
	<b>b</b>	10			SPT	1.000			_		
Elev (ft)	(ft)	San	npie	Blows	N	Symbol					
		Гуре	No.	ROD				Sample Descri	ption		
9.7	 - -					SP-SM	Posthole FILL: G 2 1/2 <sup>-</sup> (so	o 4'. ravelly sand, mostly fine, 10-20% subangular to su me coke), 5-10% nonplastic fines, moist, dark bro	ubrounded own, hydr	gravel to ocarbon o	lor.
5 -	- 5 -	S	1	2-3-2-2 (17.0°)	5	SP-SM	S-1: Sans some blac	i, fine to medium, mostly fine, 5-15% slightly plat k staining, saturated with oil.	stic fines i	n pockets,	light olive,
		s	2	3-4-8-15 (20.0")	12	SP-SM	S-2: Sano pockets), hydrocarb	l, fine to medium, mostly medium, 5-10% slightly medium dense, mottled (light olive and black), sat on odor.	plastic fin urated wit	nes (mainly h oil, stroi	y in 1-2" ng
		s	3	5-6-11-12 (18.0")	17	SP-SM	S-3: Simi	lar to S-2, except 1 shell.			
0 -	10-	s	4	5-7-8-9 (22.0")	15	SP-SM	S-4: Grav to rounded black mot	relly sand, coarse to fine, mostly medium to fine, I gravel to 1", 5-10% nonplastic fines, medium de ling, hydrocarbon odor.	10-20% su nse, wet,	ibrounded light olive	with
		s	5	4-6-8-8- (17.0⁼)	14	SP	S-5: Sand 1 1/4°, <	, poorly graded, coarse to fine, mostly medium to 10% nonplastic fines, medium dense, wet, olive g	fine, 5-15 ray, slight	5% subrou hydrocart	nded gravel to oon odor.
-5 -	15 -	S	6	0-1-2-1 (9.0*)	3	SP OL	S-6A (Top S-6B (Bot brownish )	4°): Similar to S-5. 5°): Organic silt, moderately plastic, 5-10% fine gray, hydrocarbon odor.	to medius	m sand, so	ft, moist,
	-	S	7	0-1-1-1	2	OL	S-7: Simi	ar to S-6B, except pockets of dark gray, medium	to fine san	id.	
-10	20 -	U	1	PUSH (19.0")		OL	U-1: Org	nic silt, slightly plastic, 5-10% fine to medium same	nd, moist,	dark olive	, shells.
	-	S	8	0-1-1-1 (18.0*)	2	OL	S-8: Orga to soft, mo	nic silt, slightly plastic, 5-15% coarse to fine sand ist, brownish gray, trace organic fibers.	, mostly fi	ine sand, v	ery soft
Leger	nd/No	tes				2					
• Dat	um is	NC	SVD	1929.				· Sample Type	e:		
·¥	indica	ites	grou	ndwater 1	level			S = Start U	ndard sp	lit-spoor	1
• 📕	indica ws =	tes ]	locati nber	on of sar	nple recu	s. ired to	drive ?"	O.D. sample spoon	aisturbed	i tube	
010	E	б" с	or dis	tance sho	wīt i	using 1	10 pound	hammer falling 30".			
•()	= inc	hes	of s	ample rec	over	ry.	•				
	overy	= {	7 го	ck core re	cov	ery.					
· KQI · SPT	א = ע N =	Star	ndar	uity Desi	gnat tion	ion. Test re-	istance	o driving, blows/ft.			
	•••				-	100010	-Granice I	· ·······			
USC	C = U	nifi	ed So	oil Classi	ficat	ion sys	em.		Appro	vea	Date

		En	Sto gine	one & V ering C	Net Corp	oster porati	on	BORIN	G LOG	J.O. 058 Sheet 2	str BL- 85.20 of 2
Site	Fiel	ds P	oint,	Provide	nce,	RI			Logged	by: R.T. DeCo	nto
Elev (ft)	depth (ft)	San	nple No.	Blows or Recovery	SPT N V	USC Symbol		Sa	umple Descrip	tion	
-15 -	25 -	s	9	WOR-1- 2-1	3	OL	S-9: Orga shell fragr	nic silt, moderately plastic, < nents, flat piece of shale.	5% fine sand, soft, m	noist, dark grayish b	prown, trace
-20 -	30 -	s	10	(20.0°) 20-17-7- 10 (10.0°)	24	SP-SM	Driller not S-10: San fines, med	ed change in strata between at d, medium to fine, mostly fine ium dense, wet, light gray, ye	28'-29'. c, <5% subrounded g llow brown staining.	gravel to 3/8", 5-10	% slightly pla
-25 =	- - 35 -	S	11	5-6-7-8 (15.0°)	13	ML	S-11: Silt. brown mot	, slightly plastic, <10% fine s ttling.	and, stiff, moist to we	et, tan with occasior	al yellow
-30 -		U	2	PUSH (16.0")		ML	U-2: Simi	lar to S-11.			
-35 —	- - 45 - -	S	13	(16.0°) 4.4.4.5 (14.0°)	8	ML	S-12: Silt, wet, mediu	slightly plastic, 10-15% fine s m gray, light grayish green in	and (mostly in 1-3" lo more sandy lenses.	enses), medium stiff	to stiff.
-40	- 50 - -	S	14	4-4-5-6	9	ML	S-14: Simi	lar to S-13. BOTTOM OF BORING A	T 52 FEET		
45 -	- 55 - -										
.50 -	- 60 - -								:#1		
Note:	1 See S	heet		r Boring						Approved	Date

87 B	2	-	Fne	Sto	ne & V	Veb	ster	)n	BORING	LOG	Boring J.O. 058	SWBL-2 85.20
2	1000 - 1000 1000 - 1000	. j.		, me	ering C	.or p					Sheet 1	of 3
	Site: Clier Coor Grou Cont	Field nt: Alg rdinate undwat tractor	ls Po gond s: N ler D : Ai	oint, quin N 529 Depth meri	Provide LNG, Ir 9.20 :: can Dril	nce, ic. W 10 fi ling	<b>RI</b> 7 882.84	D	Depth to Bedrock: Driller: <b>R. Leger</b>	Logged by Date Start Ground El Total Dept Rig Type:	r: R.T. Decont - Finish: 10/2 evation: 10.3 th Drilled: CME-75	to 14/95 - 10/24/95 154 ft 72 ft
	Meth	hods: Drillin Sampli Drillin iments	ing S ing S ig R : G	Soil: Soil: ock: Frow	4.25" ho Standar None ndwater	ollov d sp dept	v-stem lit-spoo h as no	augers on samp oted duri	Casing Used: None ler driven using a CME a ing drilling.	automatic SPT ha	ummer	
×	Elev (fl)	Depth (ft)	Sam Гуре	No.	Blows or Recovery RQD	SPT N V	USC Symbol		Sar	nple Description	on	16 16
	10.4	0-						Fill: San fines, dry	dy gravel, well graded, gravel to 7, black, hydrocarbon odor.	2°. 20-30% fine to co	Darse sand, <10%	nonplastic
			s	1	10-12-14- 8	26	GW	S-1: No	recovery			-
	5 -	5 -	s	2	4-5-5-9	10	SM	S-2: Silty to slightly	y sand. <5% fine gravel, fine to y plastic fines, loose to medium d	coarse sand, mostly fi lense, damp, brown.	ine, 25-35% nomp	lestic -
		5	s	3	8-5-3-4	8	SM	S-3: Sim	illar to S-2, except 5-10% fine gr	avel, loose, mottled (li	ight and dark brow	/n).
		-	Š		2-1-3-5 (18.0*)	4	SM SP-SM	10-20% r mottling. S-4B (Bo	nonplastic to slightly plastic fines.	subrounded gravel to 1	amp, tan with ora	stly line, nge rse sand mostly
	0 -	-	S	5	2-3-2-3	5	SP-SM	fine, 10-1 S-5: Gra to fine, 5-	15% nonplastic fines, very loose velly sand, 15-20% slightly roun -10% nonplastic fines, loose, we	to loose, wet, motiled ided, fine gravel, coars 1, gray.	(gray and light bro ie to fine sand, mo	own). stly medium
		-	S	6	4-4-7-7		SP-SM	S-6: San medium o	d. widely graded, coarse to fine. dense, wet, gray.	mostly medium to find	e, S-10% nonplast	ic fines,
	-5 -	15-	5		(14.0*)	,	SM	s-7: Silly wet, med	y sand, mostly line, < 5% line g ium gray; pockets of organic silt	ravel to coarse sand, 2 , moderately plastic, d	o-30% nonplastic ark gray, hydrocai	tines, loose, roon odor.
		-	5	0	(20.07)	ľ.	OL SW-SM	5-10% no moderate S-8B (Bo	p 14 ): Sand, <3 % rounded, ii onplastic fines, loose, wet, brown ly plastic, dark gray. 4. 6"): Organic Silt, slightly to n	ne gravel, coarse to la 1. slight hydrocarbon o noderately plastic, <5	ne sand, mostly m odor; pockets of or 7: fine gravel, 5-1	ganic silt, – 0% coarse to –
	-10 =	20-	s	10	(18.0°) 3-3-1-1	4	sw-sm	fine sand S-9: Gra fine sand	, medium gray. velly sand, widely graded, 10-15 , 5-15% nonplastic fines, medium	% rounded to subangu n. dense, wet, brownis	ular gravel to 1-1/4 sh gray, slight hyd	l", coarse to rocarbon odor.
8	Lege	end/No	otes		(8.0*)			S-10: Si	milar to S-9, except very loose to	loose.		-
	• Di • ] • ]	atum is Zindia indic ows =	ates	GVE gro loca mber	0 1929. undwater tion of sa of blows	ieve Impi s req	el. es. uired to	o drive 2	• O.D. sample spoon	Sample Type: S = Standa	ard split-spoon	_
	• ( • Re	) = i cover QD =	$6^{*}$ nche y = Roc	ordi sof %n :kQu	istance sh sample re ock core : nality Des	iown cove reco signa	using ery. very. ition.	140 pour	nd hammer falling 30".			
	- SH - U: + ii	T N = SC = ndicate	= Sta Unii 125 US	anda fied s e of	rd Penetr Soil Class 300 pour	ation sifica id ha	n Test m ition sy immer.	esistance stem.	to driving, blows/ft.	A	DRB	Date 04/05/96

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New R

			Sto	ne & V	Veb	ster			_	-	5			B	oring	SWBL-2
-	]	Engi	nee	ering C	orp	oratio	<b>n</b> -			BOF	RING			J. SI	0. <b>05885</b> heet 2 of	f 3
Site:	Field	ls Poi	int,	Provide	nce,	RI		_		1		I	logged by	y: <b>R.T</b>	. Deconto	ł
Elev (ft)	depth (ft)	Samp Fype	No.	Blows or Recovery RQD	SPT N V I U c	USC Symbol					Sai	mple D	escript	ion		2+1
-15 =	25 -	s	11	17-18-17- 15	35	SW-SM	S-11: Gi wet. brow	navelly s vnish gr	and, wi ay; 2° r	idely gra rounded	ded, 15-7 piece of ,	20% round gravel in s	ed fine gra poon tip.	vel, 5-15	% nonplastic	: fines. dense.
-20 -	30 -	S	12	17-21-22- 19	43	б₩-бМ	S-12: Sa nonplasti	ndy grav c fines, o	vel, wid dense, v	dely grad wet, mot	icd, subr liled (dari	ounded to t k gray and	max 1 1/4* tan).	, 15-25 <b>%</b>	6 coarse lo fi	nc sand, 5-10%
-25 -	35 -	S	13	19-23-15- 12 (13.0°)	38	GW-GM ML	S-13A (T coarse to organic o S-13B (B sandy gr	op 7"): fine san dor; trai lot. 6"): avel, sin	Sandy nd, mosi nsitions Silt, no nilar to	gravel, tly coars quickly onplastic S-13A.	widely gr ise to med to silt. :, <5% r	raded, rour ium. 5-109 medium to	nded to sub & nonplasti fine sand, o	rounded c fines, d dense, lig	to 1 1/2" ma dense, wet. b ght brown; p	x., 20-30% lack, ockets of
-30 -	40 -	s	14	34-24-21- 14	45		S-14: N	o recove	:ry₊							
		s	15	7-8-8-15	16	sw-gw	S-15: G nonplasi	ravelly s c fines,	and, we medium	ell grade n dense,	:d, 30-40 wet. grm	<b>% rounded</b> y brown, h	gravel to 1 ydrocarbor	1 1/4", co n odor.	oarse to fine.	. <57
-35 -	45 -	S	16	4-5-11-17 (14.0°)	16	SP SW-SM	S-16A (1 dense, d. S-16B (E coarse sa	Top 6*): ark gray lot. 8*): ind. 10-1	Sand, Grave 15% no	coarse to Ily sand, onplastic	o fine, m , widely g fines, me	ostly media graded, 20- edium dens	um 10 fine, 25% round e, wet, dar	<5% no led grave k gray.	onplastic fine	s, medium to
-40 -	50 -	S	17	8-12-11- 12 (20.0*)	23	SP-SM ML	S-17A (1 dense, d S-17B (1 2° sand	Fop 9"): ark gray Bot. 11") parting.	Sand, : Sill,	coarse t nonplasi	o fine, m ic, <5%	ostly media fine to me	um 10 fine, dium sand.	5-15% n . medium	oonplastic fin 9 dense, wet,	es, medium light brown;
-45 -	55 -	s	18	8-11-9-20 (18.0°)	20	SP ML	S-18A ( fines, m S-18B (I (graphite	Fop 10") edium de Bot. 8"); e shale).	): Sand ense, w Silt, n	l, poorly ret. olive conplasti	graded. gray. c, dense.	coarse to l' light brow	inc. mostly n, in conta	medium	to fine, <5 lack silty gra	% nonplastic ∨el
-50 -	60 -	s	19	15-18-23- 24 (17.0°)	4]	sw-sw GW-GN	S-19A ( dense, w S-19B (l coarse to	Top []*) /et, olive Bot 6*): o fine sam	): Grav e gray Sandy nd. 5-1	velly san gravel. 0% nonj	d, widely widely gr plastic fin	raded, li raded, subr nes, dense,	0-20% line ounded to wet, dark o	gravel, : rounded i plive gray	5-15% nonpl to 1 1/2" ma	Lastic fines, x., 35-45%
Not	e: See	Shee	: 1 f	or Borin	g Su	mmary	and Leg	end In	format	tion				Approv	ved B	Date 04/05/96

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		Eng	Sto ine	one & V ering C	Veb lorp	ster	n			в	OR	IN	GL	OG				Boring J.O. 05 Sheet 3	885 885	SWB .20	L~2
Site:	Field	ls Po	int.	Provide	nce,	RI								L	ogged	d by	: R.	T. Deco	nto		
Elev (ft)	depth (ft)	Sam Type	ple No.	Blows or Recovery RQD	SPT N V 1 u e	USC Symbol	ě,					Sa	атр	le D	escri	pti	on				
	64																				
55 -		S	20	3-5-6-14 (16.0°)	11	GW-GM SP	S-20A (T fine sand S-20B (B sand, <5 Note: Bl	ορ 8*) οι. 8*) 5% ποι οw co	): Sin ): Sa nplas sunts :	milar to ind, uni itic fine: may no	iform, s, loo s be r	B. exc fine, f se, wel eliable	epi 10- 5-10% , medi due io	subrow subrow sum gra wash	unded f ay, hyd at top c	plasti line g irocai of sai	ravel roon- mple.	es; grades i I., <5% me odor.	nio i diun	niform. n to coa	rsc
60 <b>-</b>	70 -	s	21	9-11-15- 12 (18.0")	26	SP ML	S-21A (T fines, me S-21B (B	'op 8") dium d ot. 10' E	): Sa dense (*): S BOTT	ind, poo 5, wet, o Silt, nor TOM O	orly g dark j nplasti IF BO	raded, gray; g ic, 5-1( RING	coarse rades i )% fine AT 72	to fine into fin e sand. FEET	e. most ter sand . mediu	ily m I with Im de	ediun h grav ense,	n to fine, < vel at bottor wet, gray.	: 5 % m 2*	nonpla:	ыс
65 —	75 -											5a.									
70 –	80 -					а															
-75	85 -								\$?												
80 -	90 -																				
85 -	95 -																	s. ,			
- 90	100-																				
Note						L		and L	nfo-	metic		A				4	Аррі	roved		Date	

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		Eng	Sto ine	one & V ering C	Veb orp	ster oratio	BORING LO	DG	Boring J.O. 0588 Sheet 1	SWBL-3 5.20 of 3			
Site: Clier	Field	s Po	int, uin	Provide	nce,	RÍ		Logged I Date Star	by: R.T. DeCont	3/95 - 11/03/95			
Cooi	dinate	s: N	1 613	3.45	W	868.4		Ground	Elevation: 9.9	5 ft			
Grou	indwat	ter D	epth		7 ft	2	Depth to Bedrock:	Total De	pth Drilled:	72 ft			
Cont	ractor	: Aj	neri	can Dril	ling		Driller: R. Leger	Rig Type	: CME-75				
Meth	ods:						Casing Used: None						
1	Drillin Sampli Drillin	ing S ing S ig Ra	Soil: Soil: Sock:	4.25" he Standar None	d sp	v-stem lit-spo	ugers a sampler driven using a CME autor	natic SPT 1	hammer				
Com	ments	: G	row	ndwater	dept	th as no	ed during drilling. WOR = Weight	of Rods.					
lev	Depth	Sam	pie	Blows	SPT	USC							
( <b>î</b> t)	(ft)	Гуре	No.	Recovery		Symbol	Sample	e Descript	tion				
9.9	0 -	1					Augered through asphalt to 2'.						
		s	1	3-3-4-4	7	SP-SM	-1A (Top 12"): Gravelly sand, 10-20% suban and, mostly medium to fine, 5-10% nonplastic eddish brown), damp, strong hydrocarbon odo	y gular to subrou fines. loose, d r.	unded fine gravel, fin lamp, mottled dark br	e to coarse own and			
				(24.0*)			- i B (Bot 8"): Sand, 5-10% fine gravel, mostly noist, dark grav.	y fine sand, 5-	10% nonplastic fines:	loose,			
5 -	5 -	s	2	2-3-4-5 (24.0°)	7	SP-SM	s-1b (but o ): Sand, 5-10% the gravel, mostly the sand, 5-10% nonplastic lines; loose, moist, dark gray. S-2A (Top 8"): Similar to S-1A. S-2B (Bot. 16"): Similar to S-1B, except hydrocarbon odor.						
	14	s	3	2-4-2-2 (15.0*)	6	SM	i-3: Silty sand, 5-10% gravel to 1°, mostly fin sonplastic to slightly plastic fines, loose, wet, d	e sand, <5% : ark gray, hydr	medium to coarse san ocarbon odor.	d. 10-20%			
	-	s	4	WOR/12* -1-1 (5.0*)	1	SM	-4: Similar to S-3, strong hydrocarbon odor; s	ample very oil	ly.				
	- 10	S	5	WOR-]- ]-] (24.0")	2	SM-ML	5-5: Silty sand, 5-10% subrounded fine gravel, sonplastic fines, very loose, wet, light olive. hy	, coarse to fine drocarbon odo	sand, mostly fine, 35 or.	-45%			
		S	6	WOR/24* (24.0*)	0	SP-SM	i-6: Sand, 5-10% fine gravel, coarse to fine sa ines, very loose, wet, brown gray.	nd, mostly me	dium to fine, 5-10% (	nonplastic			
5 -	- 15	S	7	WOR-1- 2-2 (4.0*)	3	SM-ML	-7: Similar to S-5.						
	1	s	8	WOR-2-	5	SW-SM	-8A (Top 18"): Gravelly sand, widely graded,	. 20-30% subr	ounded gravel to 1 1/-	4", fine to			
				(24.0°)		ML	-8B (Bot. 6"): Silt, slightly plastic, <5% fine	, onve gray. To medium sar	nd, medium stiff, wet,	, dark			
		S	9	WOR-1- 2-2	3	SW-SM OL	live. S-9A (Top 6"): Similar to S-8A, except 10-209	6 fine gravel. v	very loose, hydrocarb	on odor.			
10 -	20-	s	10	(18.0°) 3-6-8-11	14	SM	-9B (Bot. 12"): Organic silt, slightly to moder vet, dark olive, shell fragments.	ately plastic, «	<5% fine to medium	send, soft,			
				(9.07)			-10: Silty sand, 5-15% subrounded gravel to lightly plastic fines, medium dense, wet, olive	1-1/4", coarse gray, trace she	to fine sand mostly fi ills:	ne, 20-30%			
Æge	nd/No	otes											
Da V	rum is 7 india	i N(	jVD orov	) 1929. Indwater	leve	4	- Sa	ample Type:	dard split-spoor				
	indic	ates	local	tion of sa	mple	es.	14) 	U = Undi	isturbed tube				
Blo	ows =	nun	aber	of blows	req	uired to	inve 2" O.D. sample spoon						
	<u>، – : –</u>	6" (	or di	stance sh	own	using	0 pound hammer falling 30".			C.			
Re	י = ח cover	/ =	% ro	semple re	recove	verv.							
R	2D =	Rocl	c Qu	ality Des	igna	tion.							
· SP	T N =	= Sta	ndar	d Penetra	ation	Test re	istance to driving, blows/ft.			E			
						A			10 pproved	Date			

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			Eng	Sto	ne & V ering C	Veb: orp	ster oratio	n		BORIN	G LOG	5	Boring S J.O. 05885. Sheet 2 of	WBL-3 20 3
	Site:	Field	is Po	oint.	Provide	nce,	RI				Logged	by: I	R.T. DeConto	
I	Elev (A)	depth (ft)	Sam Гуре	ple No.	Blows or Recovery RQD	SPT N V	USC Symbol			5	Sample Descrip	tion		
ſ			s	11	3-8-3-11 (9.0*)	11	SW-SM	S-11: G fines, me	ravelly sand, w dium dense, w	widely graded, wet, medium gr	15-25% subrounded gra ay, strong hydrocarbon	odor.	1 1/4", 5-15% no	nplastic -
	-15 -	25 -	s	12	7-8-11-12 (13.0°)	19	OL SW-SM	S-12A (1 S-12B (E fines, me	fop 4"): Simil lot. 9"): Grav edium dense, v	lar to S-9B, exc elly sand, wide wet, mottled (m	ept 5-15% medium to ( ly graded, 25-35% subj edium gray and light br	ine sa rounde rown.)	nd, very stiff. ed gravel 5-10% n	onplastic _
		33	s	13	8-6-8-11 (13.0*)	14	GW	<ul> <li>S-125 (Bot. 12"): Gravelly said: which graded, 25% throunded gravel to 1 1/2", 30-40% fine to coarse sand, 5-10% nonplastic fines (mainly in lenses), medium dense, wet, gray.</li> <li>S-14A (Top 4"): Sand, poorly graded, &lt;5% fine gravel, fine to coarse sand mostly medium. &lt;5% nonplastic fines, brown gray.</li> <li>S-14B (Bot. 12"): Gravelly sand, widely graded, 15-25% subrounded to subangular gravel to 1 1/8", fine to coarse sand, 5-10% nonplastic fines (mainly in lenses), very dense, wet, medium olive, hydrocarbon odor and slight ammonia odor.</li> </ul>						0% line to -
	-20 -	30 -	s	14	18-26-28- 13 (16.0°)	54	SP SW	S-14A ( nonplast S-14B (E 1/8°, fin olive, hy	Fop 4"): Sand ic fines, brown Bot. 12"): Gra we to coarse san vdrocarbon odd	l, poorly graded n gray, ivelly sand, wid nd, 5-10% non or and slight an	l, <5% fine gravel, fin lely graded, 15-25% su plastic fine's (mainly in l amonia odor,	e lo ci brouni enses)	oarse sand mostly ded to subangular 1, very dense, wet,	medium. <5% gnavel to 1 medium
	-25 -	35	- -	15	13-10-13- 17 (22.0°)	23	SP-SM ML	S-15A ( coarse si gray; po S-15B (1 wet. ligh	Fop 8"): Grav and, mostly fu ckets of slight Bot. 14"): Silt ht brown.	velly sand, 10-2 ne to medium, 1 ly plastic silt. L nonplastic to	0% subangular to subro 5-15% slightly plastic fi slightly plastic, 5-10%	oundeo nes. n line sa	i gravel 10 l 1/4°, nedium dense, wet nd, medium dense	fine 10 , olive -
•	-30 -	- 40	s	16	7-6-8-15 (19.0°)	14	SP ML	S-16A ( fine, me S-16B (1 brown),	Top 5°) Sand dium dense, w Bot. 14°): Sin slight odor.	. poorly graded vet. brown gray nilar to S-15B.	, <10% gravel to 1°, c except fine sand in inter	:oarse rbeds.	to fine sand, most mottled (tan and I	ly medium to ight
	-35 -	45	- - -	17	8-11-10- 15	21	SP-SM ML	S-17A ( 5-15% ( plastic s S-17B ( stiff, we	Top 5"): Sand nonplastic line ilt. Bot. 13"): Sil at, light gray o	d, <5% subroi s. medium den t. slightly plassi live and dark g	inded fine gravel, coars ie, wel, gray brown; po c, 5-10% fine sand inte ray olive bands.	e to fi ckets rbedd	ne sand, mostly m of nonplastic to sli ed with silt, very	edium 10 fine,
	-40	50	- - - -	18	10-9-6-11 (16.0*)	15	SP-SM ML	S-18A ( S-18B (	Top 2"): Sim Bot. 14"): Sir	ilar to S-17A. milar to S-17B,	except 5-15% fine sand	l, inte	rbedded with silt.	
	-45	- 55		19	6-8-12-13 (17.0*)	3 20	ML SP ML	S-19A interbec S-19B medium S-19C	(Top 7*): Sim Ided with silt. Mid. 3*): San h dense, wet. 1 (Bot. 7*): Sim	hilar 10 S-17B, ( nd, poorly grad light brown gra nilar to S-19A.	xcept slightly plastic to ed, fine to coarse, most y.	nonpi ly me	lastic, 5-15% fine dium, <5% nonpl	sand astic fines,
	-50	- 60	- s	20	19-18-25 30 (24.0*)	- 43	ML-SM	S-20: dense, gray.	Interlayered Sa wet, olive gra	andy silt and Si y; and Silty sar	ity sand: Sandy silt, no d, uniform, fine, 25-40	nplasi % nor	ic, 25-45% fine sa plastic fines, light	nd. olive
	Not	e: See	e She	et 1	for Borin	ig Su	immary	and Le	gend Inform	nation		A	DRB	Date 04/05/96

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Site	Field	ls Po	int,	Provide	nce,	RI			Logg	ed by: R.T.	DeConto
Elev (ft)	depth (ft) '	Sam Гуре	ple No.	Blows or Recovery RQD	SPT N V I U e	USC Symbol		S	ample Descr	ription	
-55 -	65 -	s	21	40-28-32- 30	60	ML	S-21: Sandy silt, medium to coarse	slightly plastic, 10-15 sand, hard, wet, mot	% subangular grøv led (dark and ligh	vel to 1°, 30–40 t olive gray).	1% fine sand, <
-60 -	- - 70 -	S	22	19-21-24- 27	45	SM	S-22: Silty sand, wet, gray.	uniform, fine, 30-409	6 slightly plastic f	ines (mostly in )	layers), dense.
							BO	TTOM OF BORING	AT 72 FEET		
-65 -	- 75 -							2	3		
-70	- 80 -		5								
-75	- 85 -										
-80	90 -										
-85	- 95 -						1			ю	
-90	- 100-	-									

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1 de 1		-	Er	S	Ston	ne & W ring Co	ebs	ter oratio	n		BORI	NG LO	G	Boring S J.O. 05885.2 Sheet 1 of	WBL-4 20 2
(-)	Site: Clier Coor Grou	Fiel nt: A rdinat undwa	lds l lgoi tes: ater	Poi nqu N De	nt, I in I 522. epth:	Providen "NG, Inc .83	ce, l :. W	RI 637.45		Depth to	Bedrock:		Logged by Date Start Ground El Total Dept	: R.T. DeConto - Finish: 10/23/5 evation: 10.97 th Drilled: 52	95 - 10/23/95 ft ft
	Cont	tracto	<b>)r:</b>	Ал	neric	an Drilli	ng			Driller:	R. Leger		Rig Type:	CME-75	
	Meth	nods: Drill Samp Drill	ing oling ing ts:	Se g Se Ro Gr	oil: oil: ck:	4.25" ho Standard None dwater o	llow J spi Jept	-stem a lit-spoo h as no	augers on samp ted dur	Casing U ler driven ing drillin	Used: None using a Cl ng. WOR :	e ME autom = Weight o	atic SPT ha	ummer	
	Elev (ft)	Depti (ft)	h S	amp ype	No.	Blows or Recovery RQD		USC Symbol				Sample	Descripti	on	
	11.0 10 -		-						Augered	through FIL	L (subangular	10 subrounde	d gravel to 2")	to 2°.	-
	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$						SM	S-1: Fill S-2: Silt	l (gravel). Iv sand, 10-1	5% fine grave	l, coarse to fi	ne sand, mosti	y fine, 25-35% slightl	- -	
a constant	5 -	5	1	s	3	(14.0°) 5-4-3-5	7	SM	plastic fit S-3: Sin	nes, loose, d	amp, dark bro except 5-10%	ine subangul	ar to subround	ed gravel, moist, light	brown.
No. 54			-	s	4	(12.0 ) 2-2-2-4 (3.0*)	4		5-1: No	sample desc	ription record	ed.			* -
	0	10	-0  -	s s	5 6	WOR-1- 2-5 (8.0") 3-4-3-5	3 7	SP-SM	S-5: Gri mostly n S-6: No	avelly sand, ( nedium to fin o description	25-35% subro ie. 5-15% slig recorded.	winded to suba htly plastic fin	ingular gravel ( nes, very loose	io 1°, coarse io fine si , saturated soupy, ligh	ind,
	-5		- 5- -	s s	7	3-3-4-5 (24.0°) 2-1-2-4 (18.0°)	7	SP-SM ML ML	S-7A (T medium S-7B (B fine sand S-8: Sin	'op14"): Gra to fine, 5-10 ot 10"): San d, loose, wet milar to S-7B	ivelly sand, 10 0% nonplastic idy silt, nonpla i, gray, trace s 3, except very	)-20% coarse ( fines, loose, v istic. <5% fin hells. loose.	to fine gravel, wet, brown. ne gravel, <5	coarse to fine sand, m % medium to coarse s	nosily = and. 20-35 % = -
	-10	2	20-	s	9	1-2-6-13 (14.0")	8	sw.sm	1 S-9: Gi 5-107 1	ravelly sand. nonplastic fin	widely graded res, loose, we	d. 20-25 % rou I, dark gray. h	inded gravel to sydrocarbon od	)   1/2", coarse to fine lor.	sand, -
( )	Leg • [] • • • • • • • • • • • • •	gend Datun Vin Slows	/No n is ndica dica s = = in	tes Nates ates nui 6°	GVI s gro loca mber or d s of	0 1929. undwates ation of s r of blow istance sl sample r	r lev amp s rei howi	el. les. quired t a using very.	to drive 140 pot	2" O.D. s	ample spoo er falling 3(	n 0 <sup>−</sup> .	imple Type: S = Stand U = Undi	dard split-spoon isturbed tube	5
	<ul> <li>( ) = inches of sample recovery.</li> <li>Recovery = % rock core recovery.</li> <li>RQD = Rock Quality Designation.</li> <li>SPT N = Standard Penetration Test resistant</li> <li>USC = Unified Soil Classification system.</li> <li>* indicates use of 300 pound hammer.</li> </ul>								resistano ystem.	ce to drivi	ng, blows/f	i.		Approved DRB	Date 04/05/96

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5		Eng	Sto ine	one & V ering C	Veb Corp	ster oratio	n .					BC	ORI	NG	LO	G			Bor J.O. Sheet	ing 0588:	SWE 5.20	8L-4	
Site:	Field	is Po	int,	Provide	nce,	RI				1						Log	ged b	y: R	. <b>T.</b> D	eCont	0		t
Elev (ft)	depth (ft)	Samı Гуре	ple No.	Blows or Recovery RQD	SPT N V a I u c	USC Symbol								Sar	nple	Des	cript	ion					
																							1
-15 -	25 -	s	10	5-6-8-12	14	SW-SM	S-10: Gr medium o	ðrav der	velly nse,	wet,	id, wi I, dar	ridely rk gra	grade ay, hyd	d, 15-2 Irocarb	5% su on odo	bround or.	ed fine	grave	1. 10-11	5% nonį	plastic f	ines.	
-20 -	30 -	s	11	7-8-10-14 (24.0*)	18	SP	S-11: Sa medium (	iand der	d, po nse,	xorly wet	/ grad i. dar	ded. rk gra	fine to 19, slig	coarse ht hyd	, mosti rocarbo	ly medi on odor	ium lo f	line. •	< 10% 1	nomplast	ic fines.		
-25 -	35 -	s	12	11-12-19- 19 (24.0°)	31	SP GW-GM	S-12A (T nonplastic S-12B (B coarse sa	Top tic f Bot. and	p 18" fines 1. 6") 1, 20	"): { i, me ): Si )-30 {	Sand ediun andy % sli	l, poc m der grav ightly	orly gra nse, we vel, wie v plastie	ided. 1. med dely gr 2 fines	< 5 % c ium gr aded to (most)	oarse s ay. oll/4" y in len	and, max., ' max., ises). de	ostiy f subro ense, v	ine to n sunded, wet, gri	nedium 25-35 % Ny.	sand, < E fine to	c 5 %	
-30 -	40 -	s	13	7-10-11- 15 (24.0°)	21	SP ML	S-13A (T dense, w S-13B (B brown.	Top Vel, Bol.	p 8") , graj 1. 16'	): Si iy. "): \$	and. Silt.	роог попр	rly grad plastic 1	led, m o sligh	ostły m ily pla:	edium Ric, me	to fine, :dium d	, <59 lense.	F nonpl wet, lig	astic fin ght gray	ish	ium	
-35 -	45 -	s	14	8-10-11- 13 (18.0°)	21	SP ML	S-14A (T S-14B (B	Top Bot.	p 6") 1. 12"	): Si *): :	imila Simil	ar lo i lar lo	S-13A S-13E	8, exce	pt <5%	% medi	um lo f	line sa	nd <sub>si</sub> n				
-40 -	50 -	s	15	5-10-15- 28 (18.0")	25	SP SP-SM	S-15A (T S-15B (M S-15C (B fine, 15-:	Top Mid Bot -20	р4*) d.4* i.10 )%-п	): Si '): S  *):  onpl	imila Simil Grav Iastic	ar to : lar to velly : fine:	S-12A S-14B sand, s, med	15-25 Я ium de	subro	unded et, tan '	fine gra with iro	ivel, c onoxid	oarse lo le staini	o fine sa ng.	ind, mo	uly	
-45 -	55 -								E	вот	TOM	M OF	BORI	NG AT	r 52 FI	EET							
	60 -																	8					
-50 -																		A ===			Data		ر میں
Note	e: See	Sheet	1 f	or Boring	g Su	mmary :	and Lege	gen	nd Ir	nfor	rmal	tion						Appi P	RB		0	4/05	/96

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		RESC	URCE (	ONTROLS			TEST BOR	NG L06	
PI	ROJECT:		Providence (	Gas Company			BORING NO.	RCA-4	
Р	ROJECT NO .:		A2000				PAGE I OF I		
L	OCATION:	:	642 Allens A	venue, Providence	R.I.		DATE STARTED:	9/7/94	
D			American Di	nilling, Inc.			DATE FINISHED:	9/7/94	
D	RILLED BY:		Jim Campbe	U			SURFACE ELEVATION:		
~" W	ISPECTED BY:		Daniel Lanie	7					
	GR	OUNDW	ATER OBSERV	ATIONS				CASING	
	DEPTH	्र इन्	ABILIZATION		1		TYPE:	0000	Split Spoon
				N/A	1		SIZE I.D.:		1-3/8*
							HAMMER WI .: HAMMER FALL:		140 lbs. 30 in.
DEPTH	DEPTH		SAMPLE DA		WELL	CHANGE	LITHOLOGY		DATA
(FT.)	(FT.)	a	RECOV.	6 INCHES	DATA	(FT.)	(DESCRIPTION OF MATERIAL	\$) 	PID - 10.2 eV
	FROM - TO						COBISE GRAVEL, DIGK AN	a debris	(mqq)
	2	SS-1	NA	GRAB			dry, black, fine SAND, some medium sau	nd ( 611)	45.5
) ;									
5'	4-6	SS-1	55%	4-7-7-10			oily, black medium SAND and CLINKE	R	225
	68	C.22	100%	13-17-17-18		5.5 7	damp, brown, fine SAND, little medium : oily black medium SAND and CLINKE	uend R	690
	0-0	00*2	10070	12-11-14	TX.	· ·			
ICT	8-10	SS-3	10%	2-2-2-3			saturated, black, oily, med. SAND, some	coarse	1,690
	10-12	SS-4	20%		3		saturated, black, fine SAND, some silt		801
	12-14	55-5	70%	10-4-3-4			saturated, oily, black, med. SAND, little :	fine	1,292
15'	14-16	SS-6	40%	1-2-2-3	TANK		saturated, black, med. SAND, trace sin		108
	16-18	SS-7	45%	4-2-2-1			SAME, trace coarse sand		
	18-20	SS-8	100%	1-1-1-1		18.5	BA: SAME		591
20'					1433		8B: dark gray, CLAYEY, SILT		129
	20-22	SS-9	100%	weight of	化法公		interbedded with CLAYEY, SILT		492
	27.74	55.10	100%	hammer	N.41				
		00 10	10074	1.22.1	1		dark, gray, CLAYEY, SILT		205
25'	24-26	SS-11	100%	0-1-2-1			SAME, trace medium to finesand		
					A State of the		au smear in spoon	<b>(*)</b>	
					1		Bottom of exploration at 26		
7.01		- 0					26' to 16' Grout		
GENERAL S	EMADE .		10'0 0201 -	AL EEG CANAD		l	L	~	
GENERAL	connos:		8-1/2" borch	ole					
			2"-10" standy	nipe		16			
			#2 silica san threaded bot	d pack tom plug with \$* e	ump				

Destroyfed AS OF Sept 2002 LASS

### EOIPROV0003859

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#### RESOURCE CONTROL ASSOCIATES, INC.

Borelogs RCA-4

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		RESC	OURCE (	ONTROLS			TEST BORI	NG 106	
PR	OJECT:		Providence (	Gas Company			BORING NO.	RCA-5	
PF	OJECT NO .:		A2000				PAGE I OF I		
10	CATION:		642 Allens A	venue, Providenc	c, R.I.		DATE STARTED:	9/7/94	
D	RILLING CO.:		American Di	rilling, Inc.			DATE FINISHED:	9/7/94	
D	RILLED BY:		Jim Campbe	N .			SURFACE ELEVATION:		
IN	SPECTED BY:		Daniel Lanie	:1					
	GR	OUNDW	ATER OBSER	ATIONS				12	
1	DEPTH	्र			٦		TYPE:	CASING	SAMPLER Split Spoon
1					t		SIZE I.D.:		1-3/8"
	0						HAMMER WT.: HAMMER FALL:		140 lbs. 30 in.
	SAMPLING		SAMPLE D	ATA	1	STRATA			FIELD TEST
DEPTH (FT.)	DEPTH (FT.) FROM - TO	ID	PERCENT RECOV.	8LOWS PER 6 INCHES		CHANGE (FT.)	LITHOLOGY (DESCRIPTION OF MATERIALS GRAVEL and DEBRIS	>	PID - 10.2 eV (ppm)
		S-1	NA	GRAB			dry, black, medium to find SAND.	•	
	4	3.1		0100	BI		trace brick (fill)		16
	4-6	SS-1	40%	3-4-5-3	Jac art 15	5	dry, black medium to fine SAND and ash fill		18
2	6-8	SS-2	25%	4-3-3-3	- M21 228 (6)		moist, brown, medium to fine SAND		
1		-	208/	15.13			trace coarse sand		19
	8-10	55-3	20%	3-3-4-3			SAME silt		70
10'	10-12	SS-4	35%	1-2-1-16			samurated, medium to fine SAND and SIL	r	120
	12-14	SS-5	<5%	3-7-6-3			SAME, with trace gravel		147
1									77
15'	.14-16	SS-6	100%	5-5-4-4		15	black, only, his with CLINKER		440
	16-18	SS-7	100%	4-2-3-3	1				
	18.70	8.22	100%	1-1-7-1	- Erest	17.5	dark olive, CLAYEY SILT		125
	10-20	0.0-0	100 //	1-1-2-1	- Contraction	1			
2.0'							Bottom of exploration at 20'		
3		-			-				
1									
25'									
					1				
1					-				
	-	-			1				
30'		L			1				
SENERAL A	REMARKS:		10° 0.020"-si 8-1/2" borch 2'-10" stand	lot EFG screen pipe d pack			241		
			#2 SUICE SEN	a pack tom nius with 8" i	umo		920		

#### EOIPROV0003860

7/1/96

#### RESOURCE CONTROL ASSOCIATES, INC.

Borelogs RCA-5

**RESOURCE CONTROLS** TEST BORING LOG PROJECT: Providence Gas Company BORING NO. RCA-14 PROJECT NO .: A2000 PAGE I OF I LOCATION: 642 Allens Avenue, Providence, R.I. DATE STARTED: 9/12/94 DRILLING CO .: American Drilling, Inc. DATE FINISHED: 9/12/94 DRILLED BY: Jim Campbell SURFACE ELEVATION: INSPECTED BY: Daniel Lanier GROUNDWATER OBSERVATIONS CASING SAMPLER DEPTH STABILIZATION TIME TYPE: Split Spoon N/A SIZE I.D.: 1-3/8" HAMMER WT .: 140 lbs. HAMMER FALL: 30 in. SAMPLING SAMPLE DATA STRATA FIELD TEST DEPTH DEPTH PERCENT BLOWS PER CHANGE WELL LITHOLOGY DATA Ð (FT.) (FT.) RECOV. 6 INCHES DATA (DESCRIPTION OF MATERIALS) (FT.) PID - 10.2 eV FROM - TO GRASS (ppm) 0-1 GRAB S-1 NA dry, dark brown, medium to fine SAND (fill) 9.6 2-4 SS-1 80% 3-3-5-6 damp, brown, fine SAND, trace silt 13,1 5' **SS-2** 4-6 75% 4-3-5-5 moist, olive, fine SAND, trace silt petroleuom 194 6-8 SS-3 85% 4-3-5-6 SAME, little silt 199 -----8-10 SS-4 90% 2-3-5-5 SUILS RAILES HER PARTY PARTY SAME, saturated (thin-wall brass liner) 10, 10-12 \$\$-5 90% 2-5-6-6 SAME 28.4 12-14 **SS-6** 90% 2-3-6-7 SAME 28.7 15' 14-16 **SS-7** 65% SAME 3-3-4-4 71.1 16-18 **SS-8** 90% 6-6-5-5 SAME 24.2 18-20 SS-9 100% 3-6-11-10 A: black, medium SAND and fine SAND 234 20' B: olive, medium SAND and fine SAND 306 20-22 SS-10 70% 4-4-6-9 SAME 270 22.24 SS-11 90% 6-11-12-17 SAME 147 25' Bottom of exploration at 24" 24' to 15' Grout 30' GENERAL REMARKS: 10' 0.020"-slot EFG screen 8-1/2° borehole HSA / boring #2 silica sand pack 2'-10" standpipe

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RESOURCE CONTROL ASSOCIATES, INC.

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	6	RE	SOURCEC	DNTROLS			TEST BORING LO	6
ף ר ני ס ס	ROJECT: ROJECT NO.: DCATION: RULLING CO.: RULLED BY: ISPECTED BY:		Providence Gas A2000 048 642 Allens Aven American Drillin Rick Leger Daniet Lanier	Company 1887, Providence, R.J 198, Inc.	L		BORING NO. RCA-20 PAGE I OF I DATE STARTED: 10/18/95 DATE FINISHED: 10/18/95 SURFACE ELEVATION:	
				ME VA	]	F=F-1	CASING TYPE: SIZE I.D.: HAMMER WT.: HAMMER FALL:	SAMPLER Split Spoon 1-3/8" x 24" 140 Ibs. 30 in.
DEPTH (FT.)	DEPTH (FT.) FROM - 10	ID ID	PERCENIT RECOV.	BLOWS PER 6 INCHES		STRATA CHANGE (FT.)	UTHOLOGY (DESCRIPTION OF MATERIALS)	RELD TEST DATA PID - 102 eV
5	2' 2'-4' 4'-6'	\$-1 \$\$-1 \$\$-2	50%	Gnab 3-4 4-4 3-4	oral Maria		gravel, bricks, wood, debris black, dry, coarse to med. SAND (511) black, dry, coarse fill with coke, brick, fly ash	12.9 3.9
10'	6'-8' 8'-10'	55-3 55-4	50% 45%	5-7 1-1 1-1 2-3	A second to sec	= <u>5.5</u> '	moist, olive, med. to fine SAND, trace coarse saturated, black, oily fill, with med. SAND coal, cinders, petroleours odor	19.7
15'	10'-12'	SS-5 SS-6		3-5 8-12 5-6 8-8	lin. Second	13.5'	sat, black, coarse granular FILL, perro odor cat, black, coarse SAND, cinders, coke and ash, oily SAME black, oily medium SAND, little coarse sand	283
	16'-18'	SS-8 SS-9		2-4 4-5 2-1 2-2 1-1		15 <sup>.</sup> 16.5'	SAME black modium sand and olive SILT (interbedded) A: black, oily, sand FiLL with coke, ash, etc. B: olive SILT date alive SILT	116
20'				1-2			Bottom of exploration at 20' Grout at 20' to 14'	91.5
25'							13.5 to 3.5° 0.020°-slot EFG screen (2") Filter pack 13' to 2.5' 3.5' to 42.5' solid EFG riser Bentonite seal 2.5' to 2.0' Standpipe	
NERAL REA	WRKS:							

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RESOURCE CONTROL ASSOCIATES, INC.

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		RES	OURCE	CONTROLS			TEST BORING LO	6
	ROJECT		Providence	: Gas Company			BORING NO. RCA-21	
1	ROJECT NO .:		A2000 048	L			PAGE I OF I	
1	OCATION:		642 Aliens	Avenue, Providence	, R.I.		DATE STARTED: 10/30/95	1
1	ORILLING CO.	:	American J	Drilling, Inc.			DATE FINISHED: 10/30/95	i
	PRILLED BY:		Rick Leger				SURFACE ELEVATION:	
1	NSPECTED BY	•	Daniel Lan	ier				
	Gf	ROUNDV	VATER OBSER	RVATIONS				
	OCETH	T			Î		CASING	SAMPLER
	DEFIN		ABILIZATIO	N/A			TYPE: SZELD:	Split Spoon
					6		HAMMER WT .:	1-3/8" x 24" 140 lbs.
	SAMPLING		SAMPLE D	ATA	-	STRATA	HAMMER FALL:	30 in.
epth etj	DEPTH	ID	PERCENT	BLOWS PER	WELL	CHANGE	LITHOLOGY	DATA
	FROM - TO		recov.	6 INCHES	Ê	(+1.)	(DESCRIPTION OF MATERIALS)	PID - 10.2 eV
	2'	S-1		Gab	13		Gravel & Debris	
				Giao	示法			58.6
	4.6	SS-1	0%	3.2	-		No received and a second second	
				7-5	and a		moist, olive, coarse to med. SAND, linle gravel	142
	6-8	SS-2	45%	5-4	143157		wet, black, fine SAND, trace silt; petroleourn	218
	8'-10'	SS-3		44	1		saturated, olive fine SAND, trace medium	182
	10'-12'	SS-4	45%	8-7	177 J		sand, coarse sand; petroleoum odor	
	178.1.4		40%	5-8	1.0		yellow petroleoum product	303
	12-14	22-2	25%	8-8	and a		olive, silty, coarse to medium SAND, little gravel	203
	14'-16'	\$\$-6		3-4	liee		olive, coarse to medium SAND, little silt,	103
	16-18	SS-7	50%	2-2		17.5	gravel olive, fine SAND and SILT with dark wellow	
	191.301		45%	3-3			petroleoum; black bedding plane	. 110
	16-20	22-2	100%	2-1		18.5	A: black fine SAND, trace silt, oily B: olive SILT, trace fine sand, organic monter	91.7
						10.5	b. ouve Sibit, date line sand, organic maner	
					ł		Bottom of exploration at 20'	
							14' to 4' 0.020"-slot 2" EFG screen	
							15' to 3' filter pack 3' to 2' bentonite seal	
							4' to +2.5' solid EFG riser	
							Standpipe	
								and the second second second second second second second second second second second second second second second

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**RESOURCE CONTROLS** TEST BORING LOG PROJECT: Providence Gas Company BORING NO. RCA-2IRI PROJECT NO .: A2000 048 PAGE I OF 1 LOCATION: 642 Allens Avenue, Providence, R.I. DATE STARTED: 10/18/95 DRILLING CO .: American Drilling, Inc. DATE FINISHED: 10/18/95 DRILLED BY: Rick Leger SURFACE ELEVATION: -" INSPECTED BY: Daniel Lanier GROUNDWATER OBSERVATIONS CASING SAMPLER DEPTH STABILIZATION TIME TYPE: Split Spoon N/A SIZE I.D.: 1-3/8" x 24" HAMMER WT .: 140 lbs. HAMMER FALL: SAMPLING 30 in. SAMPLE DATA STRATA DEPTH FIELD TEST DEPTH PERCENT BLOWS PER WELL CHANGE LITHOLOGY (FT.) DATA (FT.) ID RECOV. 6 INCHES DATA (FT.) (DESCRIPTION OF MATERIALS) FROM - TO PID - 10.2 eV (ppm) Gravel \$-1 \$\$-1 2 Grab dry, tan, med. SAND, little coarse sand (fill) 2'-4' 4.5 dry, coarse FILL with brick, ash, gravel 60% 7-7 S' 4-6 SS-2 8-7 SAME, moist 25% 2 54 (brick plug) 6'-8' SS-3 3-3 0% 2-3 poor recovery, wet (brick plug) 8-10 SS-4 6-3 10' 15% 3-4 SAME, saturated, brick plug 10-12 SS-5 <10% 9-50/0 10,5 saturated, black, medium SAND steel plates (2) in basket of spoon refusal at 10,5" 15' NO WELL INSTALLED RCA-21 relocated 10/30/95, to north 20 25' 30' GENERAL REMARKS:

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RESOURCE CONTROL ASSOCIATES, INC.

Borelogs RCA-21R1

Nell Destroles As of 11/2001. **RESOURCE CONTROLS** TEST BORING LOG PROJECT: Providence Gas Company BORING NO. RCA-23 / SWBL-1 PROJECT NO .: A2000 PAGE 1 OF 2 LOCATION: 642 Allens Avenue, Providence, R.I. DATE STARTED: 10/9/95 DRILLING CO .: American Drilling Inc. DATE FINISHED: 10/10/05 DRILLED BY: Rick Lever SURFACE ELEVATION: INSPECTED BY: Daniel Lanier GROUNDWATER OBSERVATIONS CASING SAMPLER DEPTH STABILIZATION TIME TYPE Split Spoon SIZE LD .: 3-3/4" 1-3/8" x 24" HAMMER WT .: 300 lbs. 140 lbs. HAMMER FALL: 30 in. 30" SAMPLINC SAMPLE DATA CASING STRATA RELD TEST DEPTH DEPTH PEACENT BLOWS PER BLOWS PER WELL CHANGE LITHOLOGY DATA (FT.) FROM - 70 (FT.) ID RECOV. 6 INCHES FOOT DATA (FT.) (DESCRIPTION OF MATERIALS) PID - 10.2 eV (ppm) SAND/SAND-blasting material 1'-2' S-1 NA GRAB 3 ą . 5 4'-6' SS-1 95% 2-3 black, oily fine SAND, trace coarse sand 76.8 ÷ 7 2-2 OR A COMPANY 6'-8' SS-2 95% 3-4 tursted, black, fine SAND, some medium 66.9 1-15 and, lenses of olive silt, medium sand \$-10 SS-3 95% black, medium SAND and SILT, little coarse 5-6 76.9 10' 11-12 and, petroleum odor 10-12 55-4 100% 5-6 11 dark gray, medium SAND and fine SAND, little 51.7 11-12 coarse sand, petroleum odor 12-14 \$5-5 100% 4-6 SAME, trace coarse sand 64.7 8-8 15' 14'-16 \$5-6 30% 0-1 live-gray, medium to fine SAND, little silt 65.8 2-1 15.5 16-18 SS-7 100% 0-1 dark olive SILT, trace clay, shelis, sand 33.2 1-1 19.21 20' ST-1 Shelby Tube SAME 21'-23' \$5-8 50% 0-1 SAME. trace plant fibers 4.6 1-1 25' 25-27 \$5.9 100% 0-1 SAME 2.5 2.1 Drive - and - wash initiated 28.5 silty medium SAND (from wash) 30-32 30' SS-10 25% 20-17 alive, medium to fine SAND, little silt, 7.8 7-10 race coarse sand 33 33'-35' SS-11 80% 5-6 live SILT, trace clay 7.6 35' 38'-40' ST-2 Shelby Tube SAME 40' GENERAL REMARKS type of baring : HAS/D&W

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RESOURCE CONTROL ASSOCIATES, INC.

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			ULIV	UNILLUAIN	VLS			TESTBOR	H6 L06	
P	ROJECT:		Providence	Gas Company				BORING NO.	RCA-23 / 5	WBL-I
P	ROJECT NO.	:	A2000					PAGE 2 OF	2	
L	OCATION:		642 Allens	Avenue, Providenc	e, R.L.			DATE STARTED;	10/9/95	
C	WILLING CO	.:	American I	Drilling Inc.				DATE FINISHED:	10/10/95	
D	RILLED BY:		Rick Leger					SURFACE ELEVATION:	1010,77	2)
tP	SPECTED B	ł:	Daniel Lani	ier						
<b>6</b>		G	ROUNDWAT	ER OBSERVATIONS			a l'aytratio			
		-			ĩ			1	CASING	SAMPL FR
	DEPTH	1 51	ABILIZATIO	N TIME				TYPE:		Split Spoon
			1.1.1.1.1.1.1.1		l.			HAMMER WT.:	3-3/4°	1-3/8" x 24"
	SAMPLING	1	SAMPLE D	174	CIONIE		1	HAMMER FALL:	30 in.	30 in.
сертн	DEPTH		PERCENT	BLOWS PER	BLOWS PER	WELL	CHANGE	LITHOLOGY		
(FT.)	(FT.) FROM - TO	b	RECOV.	6 INCHES	FOOT	DATA	(гт.)	(DESCRIPTION OF MATERIALS)	Į	PID - 10.2
	40-42	SS-12	60%	13-7				GRASS Olive SILT		(ppm)
		-		5-6						1.9
		-	-							
5'	45'-47	\$5-13	55%	4				gray SILT, trace fine sand		14.4
t				4-3				1		
F									0	
ot										
	50-52	SS-14	70%	4-4					1	
ł				5-6						14.1
. İ								Bottom of exploration at 52'	-	
5								Well installed adjacent (RCA-23)		
t					1999-1997-1997-1997-1997-1997-1997-1997				5	
H										
									1	
-										
	1100	-							1	
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BRILLING LOG PROJECT: **Providence Gas** BORING NO. **RCA-39** PROJECT NO .: A2000 PAGE I OF 1 LOCATION: 642 Aliens Avenue DATE STARTED: 5/3/96 RESOURCE Providence, RI DATE FINISHED: 5/3/96 CONTROL DRILLING CO .: American Drilling SURFACE ELEVATION: Unknown ASSOCIATES, INC. DRILLED BY: Chris Stamos INSPECTED BY: Brian Koch GROUNDWATER OBSERVATIONS CASING SAMPLER TYPE: HSA 3-3/4" Split Spoon DEPTH STABILIZATION TIME SIZE I.D .: 1-1/4" 6 HAMMER WT .: 140 lbs. HAMMER FALL: 30 in. SAMPLING SAMPLE DATA STRATA FIELD TEST DEPTH DEPTH PERCENT BLOWS PER WELL CHANGE LITHOLOGY DATA (FT.) (FT.) Ю RECOV. 6 INCHES DATA (ም) (DESCRIPTION OF MATERIALS) PID - 10.2 eV FROM - TO (nom) 고가 도가 5' 4'-6' SS-I 35% 8-4-5-6 Dry, brown, fine-med. SAND, little gravel, trace silt 6.9 -6'-8' SS-2 50% 3-2-2-2 Wet, brown-olive, fine SAND, little silt, trace gravel 8.3 Ebraisiliation of which 8-10 SS-3 35% 2-2-1-1 8'-9' Same as 5S-2 70,7 10 9-10 Green fine-medium SAND, little silt, trace clay and gravel 10-12 **SS-4** 30% 5-2-2-1 Wet olive fine-coarse SAND, little silt,trace gravel 73.8 (Petroleum odor) 12-14 SS-5 80% WOR-WOR-1-1 Wet olive gray fine SAND, some silt, trace gravel -120.0 strong petroleum odor - petrol sheen 15' 14-16 SS-6 Wet olive fine SAND, some silt, trace gravel and clay 100% 1-1-1-3 13.0 (so odor) 16-18 SS-7 100% 1-1-2-2 Same as SS-6 20 18-20 SS-8 100% ŝ 3-3-3-4 18'-19' Same as SS-6 8 20' Wet charcoal gray orange SILT, some gravel, trace clay Bottom of exploration at 20' 19-20 25' •• Well Construction: 2" diameter SCH 80 High Density Polyethylene (HDP) 0.020" Slot Screen Screen - 13'-3' 30' # 1 Sand Pack - 13'-2' Bentonite - 2'-1' # 1 Sand Pack - 1'-0.5' Concrete to grade 35' 40 GENERAL REMARKS:

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#### RESOURCE CONTROL ASSOCIATES, INC.

Borelogs RCA-39

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	344	PRC	DJECT:	Provide	nce Gas		BORING NO. RCA-40	
C		PRC	JECT NO .:	A2000			PAGE I OF 1	
		1.00	CATION:	642 Alle	ens Avenue		DATE STARTED: 5/3/96	
r n N	TEAL			Provide	nce, RI		DATE FINISHED: \$/3/96	
6 <u>92.</u> 38 1.((Arii		DRJ	LUNG CO.	America	n Drilling		SURFACE ELEVATION: Unknown	
(330.01)	([63, ]862	DRI	LLED BY:	Chris St	Amos		(7)	
		1115	PECTED BY	: Daniel I	anier			
	GR	DUNDWA	TER OBSERV	ATIONS			CASING TYPE- HSA	SAMPLER Salit Sacar
	DEPTH	5	TABILIZAT	ON TIME	1		SIZE LD.: 3-3/4"	3-1/4"
	6		10		]		HAMMER WT.: HAMMER FALL:	140 lbs. 30 in.
	SAMPLING		SAMPLE C	ATA		STRATA		RELD TE
NEPTH (FT.)	DEPTH (FT.)	ID	PERCENT RECOV.	8LOWS PER 6 INCHES	DATA	(FT.)	DESCRIPTION OF MATERIALS	PID - 10.2
	FROM - TO	-			ALL DESCRIPTION	0000	coarse SAND/GRAVEL	(mog)
						0.8'-3.0'	Dark, gray, SAND/GRAVEL 61	-
- 8					14575956			58.1
5	4'-6'	SS-1	60%	2-3-3-2			Moist, black, SAND fill with slag and trace brick	
15	6'-8'	SS-2	20%	2-2-3-2			Saturated, black, SLAG, little sand	133.0
	8'-10'	\$\$-3	20%	3-5-6-7			Same as SS-2 with dark yellow petroleum	174.0
10	10'-12'	SS-4	15%	2-1-1-1			Black slag and sand, trace brick, petroleum odor	179.0
2	12'-14'	SS-5		1-3-3-3			No recovery	
15'	14'-16'	SS-6	0.6	2-2-2-3	1111 In-1		Black, coarse, sand and slag	
-	16'-18'	SS-7	0.85	4-7-9-9			Black, coarse-medium, SILTY SAND, trace shells, lenses of Same as SS-6 with asphaltic odor	98.4
1	18'-20'	SS-8	0.8	5-8-9-13			Same as SS-7	102
20'					1		Bostom of exploration at 20'	
13					1			
25'	1				1		Well Construction: 2° diameter SCH 80 High Density Polyethylene (HDP)	
1					1		0.020" Slot Screen	
							Sereen - 14'-4'	-
30'							# 1 Sand Pack - 14'-3' Bentonite - 3'-7"	
					1		#   Sand Pack - 1'-0.5'	
l.					{		HDPE nser - 4'-2' Bentonite plug - 18'-14'	
35							Concrete to grade	
					1			
					1			
40					1			

RESOURCE CONTROL ASSOCIATES, INC.

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Berelogs RCA-40

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CESOURCE ONTROL SSOCIATES, INC.		PRC PRC LOX DRI DRI	DJECT: DJECT NO.: CATION: LUNG CO.: LLED BY: PECTED BY	Providen A2000 642 Aller Providen Rick Leg 7: Dan Leni	ce Gas as Avenue ce, Rl a Drilling yer ier		BORING NO. PAGE I OF DATE STARTED: DATE FINISHED: SURFACE ELEVATION:	RCA-B-11 3 3/1/96 3/1/96 Uakaowa	
	GRC DEPTH	SUNDWA	TER OBSERV	ion time			TYPE: SIZE I.D.: HAMMER WT.: HAMMER FALL:	CASING HSA 3-3/4°	SAMPLER Split Spoon 1-1/4" 140 Ibs. 30 in.
DEPTH (FT.)	SAMPLING DEPTH (FT.) FROM - TO	ю	SAMPLE D PERCENT RECOV.	IATA BLOWS PER 6 INCHES	WELL DATA	STRATA CHANGE (FT.)	LITHOLOGY (DESCRIPTION OF MATERIALS) Rubble		FIELD TEST DATA PID - 10.2 eV (ppm)
	0-1'	SS-1	85%	7-7-14-29		1,5	Dry, green-gray, coarse seady fill		18,5
61	3.5-5.5	SS-2	20%	16-28-32-9			Same as SS-1		269.0
	5.5-7.5	SS-3	25%	6-4-4-4		5	Damp, olive mod. SAND, petroleum odor		232.0
	7.5-9.5	SS-4	10%	7-7-7-7		-	Moist, olive, fine SAND, hule med. sand, trac yellow petroleum	æ dark	214.0
10"						9,5	Same, sat., some gravel, dark yellow petroleus	0	
							Bottom of exploration at 9.5'		
15'									
20									
								3	
30'									
35'									
							20		
404	0				1				

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RESOURCE CONTROL ASSOCIATES, INC.

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Borelogs RCA-B11



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## **RESOURCE CONTROLS TEST PIT LOG**

CONTRO ASSOCIATES IN	L r.	Project: Providence Gas	Company		Location: 642 Allens Avenue, Providence, Rh	ode Island	ETP-13	
Test pit dimensions: Face of Test Pit			logged.		Date excavated:	Project No	: Sheet No.	
d'x 15'x 4'(T)			Composite 2/21/96		A2000	1 of 2		
Depth to water:			Excavated by:				Logged by:	
Depin to wa	not	encountered		EU (Zec	co, Inc.)	000	sc	
Surface elev	ation:		Surface cond	itions:				
11.13'			N			Elevation	PID Readings (ppm)	
DEPTH	PTH Sample Description					(feet)		
(feet)	No.	5						
	@	this test pit loca	tion is the sou	th end jun	ction of separating tank			
	@	found lots of sm	all steel pipes	(<1" dia.)	) at 2 to 3' deep			
	@	trapped water a	nd oily liquids	approxir	nately 100 gallons) started			
		coming from the	e west side of	separating	; tank			
			t with any Q to 1	Cli ataal ai	ine turned 00 degree angle from			
	e e	at a north of tes	concreting to	k towards	north at annrovimately 3 5'			
	1	deep	separating ta	ik towards	notur at approximatory 5.5			
		ueep			and the second second		3	
2	S-1	damp (with tran	ned water), br	own/tan.	med. SAND		19.4	
4	6	excavation is st	onned at appro	oximately	4' deep due to trapped			
		water in the test	pit.					
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	]							
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	1							
	1						Summary	
	1						Depth:	
	4						No. of Samples:	
	4						1 soil sample	
	4						1	
	4				EAIDEAT	0004167	Test Pit No.	
	-				EOIPROV	0004167	ETP-13	





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## **RESOURCE CONTROLS TEST PIT LOG**

RESOURC	E						
CONTRO	L	Project:			Location:		Test Pit No.
ASSOCIATES, INC. Providence G		Providence Gas	Company		642 Allens Avenue, Providence, Rhod	e Island	ETP-10
Test pit dim	ensions:	Face of Test Pit	logged:		Date excavated:	Project No	Sheet Mar
5' x 12' x	7.5' (D)		Composite		2/27/96	A 2000	Sheet No.:
Depth to wa	ater:		oomposito	Excavate	d hv		T on and have
		N/A	e	ID (Tecci	o Inc.)	180 1	Logged by:
Surface eler	ation.		Surface cond	itione:	0, mc.)		CAIM
	10 40	p		100113.		Therester	
DEPTH	Sampla	r	L	Daga	-intian	- Lievation	PID Readings
(feet)	No			Desci	npuon	(reet)	(ppm)
2'	S-1	mall aphbles	OFFER CD AVE	T and day	k hanna anana CANTO anana		100.0
	5-1	madium cond (n	otroloum ada	and, dar	k brown coarse SAND, some	- 1	180.0
2!		det licht hanne	en oleum odor	1. 0.121		-	
1 61	6.2	dry, light brown	, coarse to me	dium SAN	D	늬	
7 0	0-2	dry, coarse GRA	VEL and, dar	K Drown C	barse SAND, some medium sand	-	235.0
/-8	0-5	oily saturated, d	ark brown/bla	ck, coarse	to medium SAND	_	362.0
1.5		Note: Observe	d oily water po	ouring from	n what appears to be a stress		
		crack in foundat	ion wall of ho	lder tank b	ase pad. Backfilled the pit to		
		prevent release					
		Note: Not sure	if groundwater	was interest	cepted.		
						7	
					-		
		. Тор	layer above he	older tank	pad:	1 1	
1"-4"		solidified slurry	mix cap	÷		1 1	
4"-6"		dry, brown medi	um to fine SA	ND		1	
			40.921				
					the second second second second second second second second second second second second second second second se	- 1	
			5 - 0 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2		and the second sec		
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	1	* :					
	1						<b>191</b>
						1 1	
	[	11. 1				1	
	Г					1 1	Summary
-	F					1 17	Depth: 7.5
	h					1 5	No. of Samples:
	t				No. Contraction of the second se	1 ľ	3 soil samples
	ł			10	FOIPDOTT	a.	a non neerbrea
	H				201FR070004	179 7	lest Pit No
	ŀ						ETD.10
						Lances in the	A. 1 4 - 1 /



PROPERTY 201-1 (Carrie Share) 225 1 (Paddad) (Addam) a lac. Groups Mass 01471 To Only PHONE TOLL (REE 1-400-225 538)



# **RESOURCE CONTROLS TEST PIT LOG**

ASSOCIATES, INC.		Project: Providence Geo Communication		Location:	Test Pit No.		
Test pit dimensions		Frovidence Gas Company		642 Allens Avenue, Providence, R	hode Island	ETP-20	
$10' \times 7' \times 6' (D)$		Face of Test Pit logged:		Date excavated:	Project No.	Sheet No	
Depth to w		1	Composite	1-	2/28/96	A2000	1 of
vepar to w	alci .	5 5' to 6'		Excavate	d by:		Logged by:
urface ele	vation.	5.5 10 0	Curferen and	JP (Zecco	, Inc.)		SC
under the	9 06		Surface cond	itions:			
DEPTH	Sample	r		-		Elevation	PID Reading
(feet)	No			Descr	iption	(feet)	(ppm)
0-6"	110.	fill small stor	on of asks	1			
6"-1'	1	dry red coore	es of coke, grav	el stones, d	ry, black, coarse SAND		
1'-2'		dry block and	CAND OI CHIS	hed brick			
2'-4 5'	e 1	(at 2 5 days) d	rse SAND (hil)	, small ston	es of coke, gravel stones		
2-4,5	5-1	(at 2.5 deep) d	amp, black/gray	, coarse SA	ND, gravel stones (coke),		132.0
		sugat peroteu	n odor				
1 5' 6'	6.2	Interna					
4.3-0	5-2	(at 5.5' deep) s	aturated, light to	o dark gray,	medium to fine SAND and		203.0
		GRAVEL ston	es, slight petrole	eum odor.			
	_						
	@	groundwater is	encountered at	approximat	tely 5.5' to 6'		
	@	approximately	1 to 2" steel pip	e is encoun	tered at 4' deep on south side		
		of the test pit					
	@	After groundwa	ater is encounter	red, waited	for a while to recharge and		
		collected groun	dwater sample	from bucke	t. groundwater looks like		
		gray/green colo	r, probably shee	en or a sma	Il layer of product (hard to		
		predict). Colle	ct the groundwa	ter sample	from backhoe bucket for		
		TPH analysis.				-	
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					and the second second second second second second second second second second second second second second second	- 1	
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		eti	0		and the second second second second second second second second second second second second second second second		
	F		- 12 IN - 14 - 14 - 14 - 14 - 14 - 14 - 14 - 1				Summary
	-	and a start of a second second				De	pth:
	-	·····	-			N	o. of Samples:
	F						2 soil samples
	L						liquid sample
	L			1	FOIDDON	Tes	t Pit No
						104191	





## **RESOURCE CONTROLS TEST PIT LOG**

LVAIKU	L	Project:			Location:	and a second second	Test Pit No.
ASSOCIATES, INC. Provi		Providence Gas	Company		642 Allens Avenue, Providence, Rhod	Island	ETP-21
Test pit dimensions: Face of		Face of Test Pit	logged:		Date excavated:	Project No	Sheet No
13' x 5' >	<u>k 8' (D)</u>		Composite		2/28/96	A2000	1 of 2
Depth to wa	ater:			Excavated	by:	2	Logged by:
		8'		JP (Zecco,	Inc.)		SC
Surface elev	vation:		Surface cond	litions:		1	
	10.66	1				Elevation	PID Reading
DEPTH	Sample			Descri	ption	(feet)	(ppm)
(feet)	No.	1			_		
0-1'		dry/damp, black	tan, coarse S	AND (fill)			
1-2'		dry/damp, red,	coarse SAND o	of crushed b	rick		
	1					1	
2-3'	S-1	(at 3' deep) dry/	damp, black, c	coarse SANI	D (breeze)	-	5.3
3-4'	1	dry/damp, brow	n. medium to f	fine SAND			
4-8'		dry/damp, brow	n. medium to	coarse SAN	D. clean, some fine sand		
				COLLEGE DI LA			
5.51	5.2	(at 5 5' deen)			and the second second second second second second second second second second second second second second second	-	59
8.0'	6.2	(at 8.0' deep)			A design of the second s	- 1	5.8
<u>a.u</u>	5-5	(at 0.0 deep)					7.0
		at north and of	h	11 dage From	d Chan 11 Abiala and and	- 1	e:
	l e	at norm end of a	he lest pit, at 1	1 deep, tour	d o to 1 mick concrete	-	
		circular base pro	obably an edge	e or me pave	a rea (like a curb)		
	· @	groundwater is	encountered at	t 8' deep		- 1	
	@	soils for the whi	ole test pit are	clean and no	petroleum odor	4 1	
	@	at 8' deep, appro	oximately 5 to	6' south from	n the north end of the test pit	4 1	
	· · ·	found approxim	ately 24" clay	pipe, the pip	be is broken due to backhoe	1 1	
		excavation and	the pipe contai	ined 1 to 2"	of clean damp soil, no product		
		or water			the second second second second second second second second second second second second second second second s	4	
	@	at 6' deep, appro	oximately 9 to	10' south fro	om the north end of the test		
		pit, found appro	ximately 8" to	> 10" cast iro	n pipe, the pipe is broken due		
		to backhoe exca	vation and clea	ear water (or	clean water) started		
		coming from the	e pipe into the	test pit		1	
		×				7	
						7	
	1					1 1	<u>s</u>
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		the state of the s				- 1	
		(*)				4 1	
						4 1	
					in the second second second second second second second second second second second second second second second	4 1	Summary
						1 6	Depth:
						1 1	No. of Samples:
			0.000				3 soil samples
						1	
						o. [	Fest Pit No.
					EOIPROV00041	.03	ETP.21




# **RESOURCE CONTROLS TEST PIT LOG**

. U N I K U Ssociates, inc	L	Project: Providence Gas	Company		Location: 642 Allens Avenue Providence	Rhode Jeland	Test Pit No.
lest nit dime	nsions.	Face of Test Pit	t logged.		Date excavated	, KIIOGE ISIAIIQ	EIP-31
4'x10'x10	.5' (D)		inggou.		5/1/96	A2000	Sheet No
Depth to wat	er:	1		Excavated	by:	A2000	I OI 2
		7.5'		Mike (Cy	n Environmental., Inc)		SC
urface eleva	ation:		Surface cond	itions:			
	9.73'		proved-to the period of the		2	Elevation	PID Reading
DEPTH	Sample			Descr	iption	(feet)	(DDD)
(feet)	No.				-		41-7
0-1		fill, dry, black,	coarse-medium	n SAND, ti	mber beds of railroad track		
1-2	S-1	(at 2' deep) dry,	olive/tan, med	iium SANI	), some gravel		1.4
	1						
2-4	<b>S-2</b>	(at 4' deep) dry,	olive/tan, med	lium SANE	), some gravel		1.4
					and the second second second second second second second second second second second second second second second		
4-6	S-3	(at 6' deep) dam	p, tan/light gra	iy, medium	SAND		2.8
		( . 0 ( 1 )					
0-8	5-4	(at 8.5' deep) we	et, medium gra	y; medium	to coarse SAND		25.7
	0	Q 5 at 10 51 days					
	æ	5-5 at 10.5 dee	p				13.5
	0	moundustan in		7 6 3			
	Ш.	groundwater is e	encountered at	7.5 deep			
	ര	a 10" diameter s	teel nine at an	aroy 6' dea	mmn anat to what is found		
	•	in the test nitloc	ated 3' north o	frailroad tr	and a set to west is found		
		in are test price	alou 5 horar 0.	I Tainoau n	ack		
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	-						Summary
	ł					(Ľ	Depth: 10
	ŀ						No. of Samples:
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	ł				EOIPROV	0004204	est Pit No.





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# **RESOURCE CONTROLS TEST PIT LOG**

VELAAVEI	• ,					
CONTRO	L	Project:		Location:		Test Pit No.
ASSOCIATES, INC		Providence Gas	Company	642, Allens Avenue, Providence, Rh	ode Island	ETP-35
Test pit dime	ensions:	Face of Test Pit	logged:	Date excavated:	Project No	Sheet No.:
6'x12'x1(	0' (D)			5/1/96	A2000	1 of 2
Depth to wat	er:			Excavated by:		Logged by:
		6.5'		Mike (Cyn Environmental., Inc)	8	
Surface eleva	ation:		Surface cond	litions:		
	9 51'				Elevation	PID Readings
DEPTH	Samola	1		Description	(feat)	(nom)
(feet)	Ma			Description		(ppm)
	INO.	h la ala (ha anna ala		d harring and the CANTE and an and		
		black/brown, dr	y, clinkers an	a breeze, coarse SAIND, some graver	{	
1'-3'	S-1	(at 2' deep) dry,	brown/red, c	oarse SAND (crushed rock or oxide waste?)		89.5
				and the second second second second second second second second second second second second second second second		
3'-4'	S-2	(at 4' deep) dry,	light gray, co	barse SAND, some medium sand, lots of gravel		94.20
				· · · · · · · · · · · · · · · · · · ·		
4'-6'	S-3	(at 6' deep) sam	e as S-2 with	petroleum odor		220.0
6'-8.5'	S-4	(at 8.5' deep) we	et, tan/light gr	ay coarse SAND, some medium sand		171.0
		trace gravel, pet	roleum odor			
10'	S_5	same as S-A			-1	169.0
	0-5	Same as 5-4				
	0	aroundurator in	n countered a	t 6 5' dam		
	w	groundwater is e	encountereu a	u o.5 deep		
	~					1
- International	a	waited for 15 to	20 minutes I	or groundwater to recharge. Yellow/green color		
		sheen is found.	However, no	product was encountered		
				and here an only and the second second second second second second second second second second second second se		
			- III.S. <del>T</del> U			
		35.7				
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						Summary
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				EUIPKOVUU	14411	I EST PIT NO.
					8	ETP-35



PRODUCT TOL 1 I Single Shares 205-1 (Patient) (ARTHER) - Inc. Groun Mars 11471 To Order PHONE TOLL FREE 1 800 725 6180

and MANNAGE



# **RESOURCE CONTROLS TEST PIT LOG**

ISSOCIATES, IN	ic	Providence Gas	Company		642, Allens Avenue, Providence, Rho	de Island	Test Pit No.
Fest pit dim 5'x10'x8	ensions:	Face of Test Pit	logged:		Date excavated:	Project No	.: Sheet No
Depth to wa	ter:			Excavate	d by:	A2000	1 of 2
1	Unknown	due to trapped w	ater	Mike (C	vi Environmental Inc)	а. С	Logged by:
Surface elev	/ation:		Surface cond	litions:	,		SC
	9.33'					Florentia	DID D II
DEPTH	Sample			Desc	ription	- Lievation	PID Reading
(feet)	No.					(leet)	(ppm)
0'-0.5'	1. C	dry, fill, brown,	coarse-mediu	m SAND			
0.5'-1.5'		dry, dark black o	coarse SAND	and gravel	of breeze and coke	- 1	
1.5'-3.5'	ii (	dry, black, GRA	VEL (breeze	and big ch	unks of clinker)	-	
				M		- 1	
	@	at 3.5'-4' deep, th	rapped water	started com	ing into the test pit	- 1	.*:
						-	
	@	at 3.5' deep a sm	all layer of re	d colored o	coarse SAND (crushed brick or	-	
		oxide waste) is f	ound, and tra	oped water	started coming into the nit below	-	
		this layer			the process of the pr	-	
		-	······		and the second second second second second second second second second second second second second second second	-	
	@	S-1 at 3.5'-4' dee	D		······································	-	0
	Ŭ	the second second second second	<b>E</b>			- 1	19.7
3.5'-5'		black, wet, GRA	VEL (and big	chunks of	clinker) petroleum odor	- 1	
				, on on or	childen), peutoledini odot	4	
5'-5.5'	S-2	black, wet, coars	e SAND and	GRAVEL	petroleum odor	- 1	
	1			0101120,	peutoreuni eder	-	308.0
5.5'-6'		black, wet, media	um-coarse SA	ND, some	gravel petroleum odor	-	
	ľ				graves, peuvicum odor	- 1	
6'-7.5'	S-3	(at 7.5' deep) bla	ck/tan, fine S	AND and S	II.T. strong petroleum odor	- 1	045.00
	[						245.00
1.5'-8.5'	S-4	(at 8.5' deep) blad	ck saturated, a	a mixture o	f tarry sludge with fine SAND		202.0
		and SILT, trace g	ravel, strong	petroleum	odor	- 1	302.0
	ſ					- 1	
		5			and the second second second second second		
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					and the second second second second second second second second second second second second second second second			
	////				Site: Providence Gas Company	Boring No.: A67		
		5			642 Allens Avenue, Providence, RI	Date: 2/25/00		
1.1	1111				ESS Job No: P151-002	Within 100' of Water: No		
272 W	est Exc	hange Stre	et, Suite	∋ <u>1</u> 01	Driller.: Environmental Drilling, Inc. Instrument: Thermo Environm			
					· · · · · · · · · · · · · · · · · · ·	Instruments, Inc., Model 580B OV		
Prov	idence,	Rhode Isla	and 029	903	Well Diameter: N/A	Boring Depth: 10.0'		
(401) 4	421-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 4.5'		
Sec. 1					Sample Method: 4' Acetate Sampler	Logged By: Daryll Issa		
	Sample	Recovery/						
Depth (intervals)	Depth (feet)	Penetration (in.)	Sample Time	PID (ppm)	Materiais Des (size, grade, colo	cription r, moisture)		
A 	0-2	24/24	0930	0.0	(0-8") F/M brown sand with LI gravel; damp; no odor. ( damp; no odor. (12-24") F/M brown sand with SO grave	8-12") F/M light brown sand with TR gravel; el; dry; no odor.		
В	2-4	48/48		0.0	(24-46") F/M brown sand and gravel; damp; no odor. (4	16-54") F/M tan sand with TR gravel; damp; no		
					odor; red staining at 54". (54-72") F/M gray/black staine	ed sand with SO gravel with SO M/large ,dull and		
					sniny black cinders ; wet; heavy petroleum odor.	4-		
C	4-6		0945	18.0				
				· · · ·	· · · · · · · · · · · · · · · · · · ·			
			( – 1					
D	6-8	48/48		5.0	(72-106") F/brown/black/gray stained sand silt and cinc	der asb: damp: beaw odor (106-120") F/M		
	1.0	8			brown/dark brown sand and silt; saturated with water; lig	ght odor.		
	11 I.							
F	8-10			0.0				
-				0.0				
			1					
E	10-12							
,	10-12							
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G	12-14							
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DI	ROPORT	IONS LISED		Int	BREVIATIONS Well Construction			
r.	NOF OR I		- a - x	12		DEPTHINTERVALS		
71		21	0-10%	F		A = 0.24 in. $G = 144-168$ in.		
11		N .	10-20%	C C		C = 48-72 in $I = 100-192$ In.		
S	OME (SO	)	20-35%	F/	M = FINE TO MEDIUM	D = 72-96 in. $J = 216-240$ in.		
A	ND	12	35-50%	F/	C = FINE TO COARSE	E = 96-120 in K = 240-264 in.		
				INA.	C = MEDILIM TO COARSE	E = 120.144 in $L = 264.298$ in		

	1110				Site: Providence Gas Company	Boring No : B02		
				- 27 -	642 Allens Avenue Providence Pl	Dotning 100		
54 I I	////	IIIn IIIn		£ 12	ESS Job No: P151 002			
272 \	est Evo	hanne Stre	ot Suite	101	Driller: Environmental Drilling Inc	Within 100 of Water. No		
212 00		nange Stre	er, Suite	5 101		Instrument: Thermo Environment. Instruments, Inc., Model 580B OV		
Prov	idence,	Rhode Isla	and 029	03	Well Diameter: N/A	Boring Depth: 6.0'		
(401) 4	121-039	)8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 5.5'		
1 N.	51	a 14 - 14		e n "	Sample Method: 4' Acetate Sampler	Logged By: Jason Wiggin		
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration	Sample Time	PID (ppm)	Materials Des	cription		
A	0-2	24/24	0830	1.4	(0-24") F/M brown sand with SO grav/black silt and lare	r, moisture)		
					to 24 y this of other said with SO gray/black sitt and larg	e sized gravel biroughout the interval.		
2.5	2.0			Ś				
В	2-4	40/48	0845	4.2	(32-48") F/M brown sand with LI gravel; TR silt; moist gr	ravel sized black cinders. (48-72") gray-black		
e d'he	2		- I		sandy silt; petroleum odor; LI gravel sized black cinders	. Wet at 66".		
		* e2=				Y2		
С	4-6	40/48		115				
5	- N.C.					19 S S		
629		ŝ	a .					
Ð	6-8							
9 T 24 1		· · ·		120.5				
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	8.10					e A esti		
<b>E</b>	0-10	×	•	121		C * 1 * 1		
		7.8.1		2 -		n, 20 / 2		
			š	<u>.</u>	N			
F	10-12	- 12 - 12 - 12 - 12 - 12 - 12 - 12 - 12			2 <sup>10</sup> 2 <sup>10</sup> 2 2			
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		8	1					
G	12-14		91 - 181 j		12 <sup>*</sup>			
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	Comment	<u>s:</u>						
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PF	ROPORT	IONS USED		AB	BREVIATIONS Well Construction	DEPTH INTERVALS		
	a 8	* ÷						
<sup>o</sup> TE		R)	0-10%	M	= MEDIUM	B = 24-48 in $H = 168-192$ in		
- Lr	TTLE (LI)	· 1	10-20%	C =	COARSE	C = 48-72 in. $I = 192-216$ in.		
SC	DME (SÓ	) *	20-35%	F/N	I = FINE TO MEDIUM	D = 72-96 in. J = 216-240 in.		
AN	4D		35-50%	F/C		E = 96-120 in K = 240-264 in.		
				101/0	- MEDIUM TO COARSE	F = 120-144 in. L = 264-288 in.		

	////				Site: Providence Gas Company	Borir	ng No.: B03	
					642 Allens Avenue, Providence	, RI Date	: 1/27/00	
100	1111				ESS Job No: P151-002	With	in 100' of Water:	No
2 W	est Excl	nange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instr	ument: Thermo B uments Inc. Mo	Environmental
Prov	idence	Rhode Isla	nd 029	03 -	Well Diameter: N/A	Borir	a Denth: 60'	
(401)	421-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe	Dent	th to Water: 5	0'
(101)	121 000	0 1 GA (10	.,	0.01	Sample Method: 4' Acetate Sampler		red By: Darvil	lssa
Depth	Sample Depth	Recovery/ Penetration	Sample	PID	Materi	ials Description	n	
(intervals)	(feet)	(in.)	Time	(ppm)	(size, gra	de, color, moisti	ure)	
A	0-2	24/24	0915	0.0	(0-24") F/M brown sand with SO gravel through no odor.	rout the interval	and SO white concre	ete/gravel dust; dry
В	2-4	40/48	0920	9.4	(32-58") F/M brown/dark brown sand with Ll gra interval; dry; petroleum odor. (58-72") F/black/c very heavy petroleum odor.	avel and SO blac dark brown stain	ck/gray stained sand led sand and silt; sat	throughout the urated with water;;
С	4-6	40/48		164				
			- e - j					2
D	6-8							
			F _ (					
							2	
F	8-10				-			
F	10-12							
				-				
1 Suite 1								
G	12-14							× 9
	· · ·							
					2			
	Comment	s:						
Lā	ocated ne	ar SE corner (	of MHA					
								3 .
Р	ROPORT	IONS USED		A	BBREVIATIONS Well Construction	n	DEPTH I	NTERVALS
- C				F	= FINE N/A		A = 0-24 in.	G = 144-168 in
т	RACE (TR	()	0-10%	М	= MEDIUM	43	B = 24-48 in.	H = 168-192 in
ĻI	TTLE (LI)	×1	10-20%	c	= COARSE		C = 48-72 in.	l = 192-216 in.
S	OME (SO	)	20-35%	F/			D = 72-96 in.	J = 216-240 in.
A	NU		35-50%	F/			E = 90-120 IR	n = 240-204 IN

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n	1117				Site: Providence Cos Company	Device Nov Bod
					Sile. Flovidence Gas Company	Boring No.: B04
					642 Allens Avenue, Providence, RI	Date: 1/27/00
070.14				101	ESS JOD NO: P151-002	Within 100' of Water: No
272 W	est Exc	hange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environment. Instruments, Inc., Model 580B OVM
Prov	idence,	Rhode Isla	ind 029	03	Well Diameter: N/A	Boring Depth: 6.0'
(401) 4	421-039	98 Fax (40	1) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 5.8'
				9	Sample Method: 4' Acetate Sampler	Logged By: Jason Wiggins
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration	Sample	PID (ppm)	Materials Des	scription
A	0-2	24/24	0930	0.6	(0-12") F/M brown sand LI gravel and TR silt (12.24)	") F/M block ach with SO cieders and U
				0.0	porous cinders.	) Frid black ash with SO cinders and Li orange
в	2-4	45/48	0950	18.0	(27-42") F/C Br/orange sand with SO gravel sized blac	k cinders and TR silt, dry. (42-66") gray silty
e i			±.	145	sand, (66-72") F black sand with black petroleum staining	ng; wet; petroleum odor.
С	4-6			35	- · · · · · · · · · · · · · · · · · · ·	
		a				
D	6-8					
					8	
		· · · .				*
E	8-10				-	
F	10-12					
					1.25	10 - 200 - 201 - 2
G	12-14					ť
5	12-14	φ.				
	1.121			-		
<u>(</u>	Comment	<u>s</u> :				
					1 ° '	
		8	e)			
PF	ROPORTI	ONS USED		AB	BREVIATIONS Well Construction	DEPTH INTERVALS
				F =	FINE N/A	A = 0-24 in. G = 144-168 in.
TR		.)	0-10%	M	= MEDIUM	B = 24-48 in. H = 168-192 in.
			10-20%			C = 48-72 in. l = 192-216 in.
- AN	NME (30) 10		20-35%		C = FINE TO COARSE	D = 72-96 in. $J = 216-240$ in. E = 96-120 in $K = 240-264$ in
				M/0	C = MEDIUM TO COARSE	F = 120-144 in. $L = 264-288$ in.

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				1. T.	Site: Providence Gas (	Company	Boring	J No.: B05		
					642 Allens Avenu	ue, Providence, RI	Date:	1/27/00		
					ESS Job No: P151-002		Within	100' of Water:	No	
. We	est Excl	nange Stree	et, Suite	101	Driller .: Environmental Drilling, Inc.			Instrument: Thermo Environmental		
ä,		J	- C.,				Instru	ments, Inc., Moc	lel 580B OVM	
Provi	dence.	Rhode Isla	nd 029	03	Well Diameter: N/A		Boring	g Depth: 8:0'		
(401) 4	21-039	8 Fax (40	1) 421-5	5731	Drilling Method: Geopre	obe	Depth	to Water: 4.8	3'	
(101)					Sample Method: 4' Ace	tate Sampler	Logge	ed By: Daryll Is	ssa	
	Sample	Recovery/			1/			1		
Depth	Depth	Penetration	Sample	PID		Materials Des	scription	·a)		
(intervals)	(feet)	(in.)	Time	(ppm)	10 00m 5#4 hours and the	(size, grade, cold	or, moistur	e) 24") M/ black cinder	ash with SO Jarne	
A	0-2	24/24	1000	1.5	black cinders, dry, LI petrole	um odor.	0001. (20-	24 ) Wr black Grider	ash with 50 large	
8	2-4	46/48	1020	2.8	(28-33") F/light brown sand a	and loose black cinder ash	; dry; no c	dor. (33-50") F/C or	ange/brown sand	
	2.4				with SO large dull, black cinc	lers and porous black cind	ers and c	inder ash; dry; faint p	oetroleum odor.	
8					(50-72") F gray stained sand	with Li gravel; saturated v	vith water;	, neavy per oleum oc	101.	
·	4-6			29.0						
C	4-0	° a.		20.0						
- 0	6-8				1 I I I I I I I I I I I I I I I I I I I					
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	-				-			8		
E	8-10				0 X			× .	e -	
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F	10-12	1			1					
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xil.						×				
G	12-14									
			1		1 C C C C C C C C C C C C C C C C C C C			24		
		1								
	Commer	nts:								
P	ROPOR	TIONS USED		A	BBREVIATIONS	Well Construction			TERVALO	
				F	= FINE	(+1.5-3.0') PVC Solid Ris 8.0') PVC Screen O	er (3.0- ne inch	A = 0-24 in.	G = 144-168 in	
ļ .		-01	0-10%	× 1.		sump at o.v	2	B = 24-48 in.	H = 168-192 in	
1	ITTLE (1	n) =  )	10-10%		= COARSE			C = 48-72 in.	l = 192-216 in.	
l s	OME (SO	., O)	20-35%	6 F	/M = FINE TO MEDIUM			D = 72-96 in.	J = 216-240 in. K = 240-264 in	
A	ND		35-50%	6 F	VC = FINE TO COARSE			F = 120-144 in.	L = 264-288 in.	

	_			_			1			
					Site: Providence Ga	s Company	Borin	ng No.: B06		
					642 Allens Ave	nue, Providence, RI	I Date	: 1/27/00		
					ESS Job No: P151-0	02	With	Within 100' of Water: No		
272 W	est Exc	hange Stre	et, Suite	e 101	Driller.: Environment	al Drilling, Inc.	Instr	Instrument: Thermo Environment		
							Instr	uments, Inc., M	odel 580B OV	
Prov	idence,	Rhode Isla	and 029	03 -	Well Diameter: N/A	¥	Borir	ng Depth: 6.0'	6.1	
(401) 4	121-039	8 Fax (40	1) 421-	5731	Drilling Method: Geop	probe	Dept	th to Water:	1.0'	
×	6 L		·		Sample Method: 4' A	cetate Sampler	Logo	ed By: Jasor	Wiggin	
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (mgg)	a	Materials (size, crade, c	Description	n ure)		
A	0-2	24/24	1015	2.5	(0-20") F/M brown sand w	ith TR gravel and silt. (20	)-24") black	cinders/ash.		
			. 5				a ×			
В	2-4	47/48	1040	2.4	(25-48") F/C black cinder/a	sh with LI porous cinders	s. (46-48") o	rganic, fibrous mate	erial; dry. (48-72") F/C	
		× ×			gray sand; LI silt; wet.					
- C	4-6			14.0	1					
		<				(4)	<u> </u>			
	6-8			+			- P.			
U	0-0									
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E	8-10		- 1			2				
					a					
						2-			2	
F	10-12							37		
								8		
G	12-14				1	*).	8		$\mathbf{U}$	
a					30				с – Ц	
	Commen	s:								
1.2				$\langle e \rangle$				*		
	- Si									
PI	ROPORT	IONS USED		A	BREVIATIONS	Well Construction		DEPTH	INTERVALS	
TF L1	RACE (TF	٢)	0-10% 10-20%	F M C	= FINE = MEDIUM = COARSE	N/A		A = 0-24 in. B = 24-48 in. C = 48-72 in.	G = 144-168 in. H = 168-192 in. I = 192-216 in.	
S	DME (SO	)	20-35%	F/	M = FINE TO MEDIUM			D = 72-96 in.	J = 216-240 in.	
AI	AD.		33-30%	M	C = MEDIUM TO COARSE	*		F = 120-144 in.	L = 264-288 in.	

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8.5	////				Site: Providence Gas	Company	Bori	ng No.: <b>B07</b>	
					642 Allens Aver	nue, Provide	nce, RI Date	e: 1/27/00	
					ESS Job No: P151-00	12	With	in 100' of Water:	Yes
2 W	est Exc	hange Stre	et, Suite	e 101	Driller.: Environmenta	al Drilling, Inc	c. Instr Instr	rument: Thermo I	Environmental
Prov	idence	Rhode Isla	and 029	03	Well Diameter: N/A		Bori	na Depth: 10.0'	
(401)	121-039	18 Fax (40	1) 421-	5731	Drilling Method: Geon	rohe	Den	th to Water: 5	31
(401)	1211000		1) 721-	0701	Sample Method: 4' Ac	etate Samol	er Log	and By: Dapy!	
	Famala	Beegwand				etate Sampi		geo by. Daryn	1858
Depth (intervals)	Depth (feet)	Penetration (in.)	Sample Time	PID (ppm)		M (size	aterials Descriptio , grade, color, moist	n ure)	
A	0-2	24/24	1100	0.0	(0-3") F/M brown sand with	SO gravel; dry	no odor. (3-10") F/	loose black cinder as	h and M/large black
		-			cinders; dry; no odor. (10-24	4") F/C brown s	and with LI gravel.		
В,	2-4	45/48		0.7	(27-40") F brown sand with sand; dry; no odor. (45-72") petroleum; wet at 69";sheer	TR black cinder F gray stained/ observed; hea	r ash and SO grave brown sand with Ti avy petroleum odor.	; dry; no odor. (40-4; R silt and TR gravel; ;	5") F orange/yellow saturated with
			N						
С	4-6		1115	16.5					
		1						× -41	
D	6-8	28/48		7.2	(92-97") F gray sand with TI	R silt with water	heavy petroleum o	dor. (97-120") F brow	wn stained sand with
	<u> </u>		22 72		LI silt; saturated with water;	heavy petroleu	m odor.		
		i i							
E	8-10			7.2					
					*				
	10.12						0		and the second second second
	10-12								7
New .			4						* *
G	12-14	2		1					
							N	a.	
					1.2				**
	Comment	e.							
-	Sommern	2.							
	2)				×. 1				
PF	ROPORTI	ONS USED		AE	BREVIATIONS	Well Construe	ction	DEPTH IN	ITERVALS
					FINE	N/A		A = 0.24 in	G = 144-168 in
TE		5)	0-10%	Г	= MEDIUM	IVA		B = 24-48 in.	H = 168-192 in
LĽ			10-20%	IC -	= COARSE			C = 48-72 in.	l = 192-216 in.
SC	DME (SO)	)	20-35%	F/N	A = FINE TO MEDIUM			D = 72-96 in.	J = 216-240 in.
AN	1D		35-50%	F/C	C = FINE TO COARSE			E = 96-120 in	K = 240-264 in.
				M/0	C = MEDIUM TO COARSE		×	F = 120-144 in.	L = 264-288 in.

				_		
					Site: Providence Gas Company	Boring No.: B08
					642 Allens Avenue, Providence, RI	Date: 1/27/00
	100				ESS Job No: P151-002	Within 100' of Water: Yes
272 W	est Exci	hange Stre	et, Suite	101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environment.
· ·						Instruments, Inc., Model 580B OVN
Prov	idence,	Rhode Isla	and 029	03	Well Diameter: N/A	Boring Depth: 10.0'
(401) 4	421-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 8.5'
、 <i>'</i>			Ĺ		Sample Method: 4' Acetate Sampler	Logged By: Jason Wiggin
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (ppm)	Materials De (size, grade, co	escription
- A	0-2	24/24	1110	0.0	(0-6") F/C brown sand; TR gravel; TR silt; dry. (6-24")	) F/C black cinder ash.
11						
В	2-4	40/48	0	0.4	(32-35") F/C black cinder ash. (35-48") F/C yellow-bro	own sand; LI gravel; TR silt; dry. (48-72") F/C
387					yellow-brown sand; LI gravel; TR silt; TR porous cinde	ers, TR black ash; dry
		- 1				× 12 //
С	4-6		1125	1.4	1	
		×			**	
		-				
D	6-8	22/48		1.4	(96-100") F/C brown sand: LI gravel: TR silt. (100-103	") M/C black cinder ash. (103-120") orav-dark orav
					silt and sand; black staining; wet.	,
s - 3						
	8-10		25		4	
<b>-</b>	0-10					
A LE	1					
	10.10					
F	10-12					
						4
G	12-14					
_	Commen	<u>s:</u>				
34						
		8				
P	ROPORT	IONS USED		A	BBREVIATIONS Well Construction	DEPTH INTERVALS
				F	= FINE N/A	A = 0-24 in. G = 144-168 in.
T	RACE (TP	र)	0-10%	M	= MEDIUM	B = 24-48 in. $H = 168-192$ in.
LI	TTLE (LI)	- 20	10-20%	C		C = 48-72 in. l = 192-216 in.
S	UME (SO	)	20-35%	· F/		U = 72.90 In. $J = 210.240$ In. E = 96.120 in $K = 240.264$ in
A			30-00%	M	C = MEDIUM TO COARSE	F = 120-144 in. $L = 264-288$ in.

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	////		-		Site: Providence Gas Company	Boring No.: B09		
					642 Allens Avenue, Providence, RI	Date: 1/27/00		
	////				ESS Job No: P151-002	Within 100' of Water: Yes Instrument: Thermo Environmental instruments Inc. Model 580B OVM		
2 W	est Exc	hange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.			
Prov	idence,	Rhode Isla	and 029	03	Well Diameter: N/A	Boring Depth: 6.0'		
(401) 4	121-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 3.5'		
· /			'		Sample Method: 4' Acetate Sampler	Logged By: Darvil Issa		
Depth	Sample Depth	Recovery/ Penetration	Sample	PID	Materials De	escription		
intervals)	(feet)	(in.)	Time	(ppm)	(size, grade, co	lor, moisture)		
A	0-2	24/24	1130	0.0	(0-18") F/M brown sand with SO black sand, LI grave dry; light petroleum odor. (18-24") F/M brown/reddish no odor.	I, LI silt and LI small/M, shiny/dull black cinders; stained cinders and cinder ash with LI gravel; dry		
Β.	2-4	43/48	1148	1.4	(29-43") F/M brown/orange sand with small/M black ci odor. (43-72") F black/gray stained sand with LI grave petroleum odor.	inders and black cinder ash; TR gravel; damp; fai I and SO silt and SO black cinders; wet; heavy		
С	4-6			4.8				
			<u>a</u>		7	<*		
D	6-8				and the second second second second second second second second second second second second second second second			
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E	8-10							
		1						
F	10-12							
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G	12-14							
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				к х				
PF	ROPORTI	ONS USED		AB	BREVIATIONS Well Construction	DEPTH INTERVALS		
	ACE (TR TLE (LI) ME (SO)	)	0-10% 10-20% 20-35% 35-50%	F = M : C = F/N F/C	FINE N/A = MEDIUM = COARSE A = FINE TO MEDIUM C = FINE TO COARSE	A = 0-24 in.G = 144-168 inB = 24-48 in.H = 168-192 inC = 48-72 in.I = 192-216 in.D = 72-96 in.J = 216-240 in.E = 96-120 inK = 240-264 in.		

					Site: Providence Gas	Company	Boring No.: B10			
					642 Allens Aver	nue, Providence, RI	Date: 1/27/00			
<i>1</i> 2					ESS Job No: P151-00	2	Within 100' of Water:	No		
272 W	est Excl	nange Stree	et, Suite	9 101	Driller.: Environmenta	I Drilling, Inc.	Instrument: Thermo I Instruments, Inc., Mo	Environment. del 580B OVM		
Prov	idence.	Rhode Isla	nd 029	03	Well Diameter: N/A		Boring Depth: 6.0'			
(401) 4	421-039	8 Fax (40	1) 421-5	5731	Drilling Method: Geoprobe		Depth to Water: 5	.0'		
(		34. 1	,		Sample Method: 4' Ac	Sample Method: 4' Acetate Sampler I ogged By: Jason Wingin				
Depth	Sample Depth	Recovery/ Penetration	Sample	PID	Materials Description					
(intervals)	(feet)	(in.)	Time	(ppm)		(size, grade, cold	or, moisture)			
A	0-2	24/24	1150	1.0	(0-12') F/M brown/light brown sand; TR gravel; TR slit. (12-24') F/C black cinder ash; SO cind porous cinders.					
8	2-4	47/48	1215	4.2	(25-48") F/C black cinder as	sh; SO gravel size cinders;	LI porous cinders; dry. (48-5:	5") F/C black cinder		
					ash; 50 gravel size cinders	, Li porous cinders, dry. (oc	-12 ) F brownigray saild, Sc	sin, wet.		
					*					
С	4-6			37.0	]					
8										
D	6-8						8			
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E	8-10	- 1 - 1				10 C				
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F	10-12									
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	12.14							C		
G	12-14				(8) #1					
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2	Commen	<u>us:</u>								
					11					
Р	ROPORT	IONS USED		A	BBREVIATIONS	Well Construction	DEPTHI	NTERVALS		
				F	= FINE	N/A	A = 0-24 in.	G = 144-168 in.		
T	RACE (TI	२)	0-10%	м	= MEDIUM		B = 24-48 in.	H = 168-192 in.		
L	ITTLE (U		10-20%	C			C = 48-72 in. D = 72-96 in	J = 192-216 IR. J = 216-240 in		
S ∆	OME (SC	)	20-35%		C = FINE TO MEDIUM		E = 96-120 in	K = 240-264 in.		
AND 35-50% F/				м	/C = MEDIUM TO COARSE		F = 120-144 in.	L = 264-288 in.		

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r	1110				Site: Providence Gas Company	Boring No : B11	
					642 Allens Avenue Providence PI	Date: 1/27/00	
					ESS Job No: B151 002	Within 100' of Matoria Nie	
2 14/	ant Evo	hence Stra	at Cuite	101	ESS JOD NO. P131-002	Within 100 of Water: No	
	estexc	nange Stre	et, Suite	9 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM	
Prov	idence,	Rhode Isla	and 029	03	Well Diameter: N/A	Boring Depth: 6.0'	
(401) 4	21-039	8 Fax (40	1) 421-8	5731	Drilling Method: Geoprobe	Depth to Water: 4.0'	
					Sample Method: 4' Acetate Sampler	Logged By: Daryll Issa	
Depth (intervals)	Sample Recovery/ Depth Depth Penetration Sample PID Intervale) (feet) (in ). Time (nom)				Materials Description		
A	0-2	24/24	1330	2.8	(0-3") gravel and grav stained/green soil: wet from s	now: light sweet odor. (3-19") E/M brown sand and	
				2.10	silt; gray/black with TR cinders; damp; no odor. (19-2 odor.	24") F dense cinder ash and black cinders; dry; no	
В	2-4	45/48	1345	11.3	(27-45") black/orange cinders with SO cinder ash an F black stained sand with LI silt and SO black cinder gray/brown stain sand with TR silt; saturated with wa	d LI gravel and TR silt at 27"; dry; no odor. (45-59 ash and black cinders; wet; heavy odor. (59-72") F iter; heavy petroleum odor.	
C	4-6			28.0			
	1						
D	6-8						
5			2				
					6		
	9.40		I^				
5	0-10						
08				2			
	10.10	*					
. F	10-12					(a)	
Yes		*				* *	
G	12-14						
					54 E	1 A A	
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	a 1.						
PR	OPORTI	ONS USED		AE	BREVIATIONS Well Construction	DEPTH INTERVALS	
		3		F =	= FINE N/A	A = 0.24 in. $G = 144.168$ in	
TR	ACE (TR	:)	0-10%	M	= MEDIUM	$B = 24-48 \text{ in.} \qquad H = 168-192 \text{ in.}$	
LIT	TLE (LI)		10-20%	C =	= COARSE	C = 48-72 in. l = 192-216 in.	
SC	ME (SO)		20-35%	F/N	M = FINE TO MEDIUM	D = 72-96 in. J = 216-240 in. $J = 216-240$ in.	
			55-50 %	M	C = MEDIUM TO COARSE	F = 120-144 in. $K = 240-264$ ln.	

	////		1		Site: Providence Gas	Company	Boring No.: B12				
					642 Allens Ave	nue. Providence. RI	Date: 1/27/00				
		1111 1111			ESS Job No: P151-00	2	Within 100' of Water: No				
272 W	est Exc	hange Stre	et, Suite	9 101	Driller.: Environmenta	al Drilling, Inc.	Instrument: Thermo Environmen.				
Prov	idence.	Rhode Isla	and 029	03	Well Diameter: N/A		Boring Depth: 6.0'				
(401) 4	121-039	8 Fax (40	1) 421-	5731	Drilling Method: Geop	robe	Depth to Water: 5.0'				
( ) = / )					Sample Method: 4' Ac	etate Sampler	Logged By: Darvil Issa				
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (ppm)		Materials Description					
A	0-2	24/24	1415	1.4	(0-2") asphalt. (2-24") F/M brown sand with SO gravel and LI black stained sand in the 4-8" interva no odor.						
8	2-4	38/48	-	4.2	(34-51") F/M brown sand an LI black cinders; wet at 60";	nd gravel; dry; no odor. (51- heavy petroleum odor.	-72") F gray/brown stained sand with SO silt and				
С	4-6		1430	46.8							
			- ×			2)	α				
D	6-8										
						3	a				
E	8-10					3					
			.e.								
F	10-12					4					
G	12-14			2	2		C				
			i								
- n	Comment	<u>s</u> :		4							
PI	ROPORT	IONS USED		A	BREVIATIONS	Well Construction	DEPTH INTERVALS				
TRACE (TR) 0-10% M   LITTLE (LI) 10-20% C   SOME (SO) 20-35% F/I   AND 35-50% F/I			F : M C F/I F/I	= FINE = MEDIUM = COARSE M = FINE TO MEDIUM C = FINE TO COARSE C = MEDIUM TO COARSE	N/A	A = 0.24 in. $G = 144-168$ in. $B = 24-48$ in. $H = 168-192$ in. $C = 48-72$ in. $I = 192-216$ in. $D = 72-96$ in. $J = 216-240$ in. $E = 96-120$ in. $K = 240-264$ in. $E = 120-144$ in $I = 264-288$ in.					

					Site: Providence Gas Company	Boring No.: B13		
	////				642 Allens Avenue, Providence, RI	Date: 1/27/00		
					ESS Job No: P151-002	Within 100' of Water: No		
2 We	est Exc	hange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM		
Prov	idence:	Rhode Isla	ind 029	03	Well Diameter: N/A	Boring Depth: 6.0'		
(401) 4	21-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe Depth to Water: 4.5'			
			.,	5101	Sample Method: 4' Acetate Sampler	Logged By: Daryll Issa		
	Sample	Recovery		-	Campie Method: 17 Adetate Campier	Logged by. Daryinissa		
Depth (intervals)	Depth (feet)	Penetration (in.)	Sample Time	PID (ppm)	Materials De (size, grade, colo	scription or, moisture)		
A	0-2	24/24	1445	2.8	(0-17") F/M dark brown/brown sand with SO gravel and TR silt; dry; no odor. (17-24") F br and gravel with TR silt; dry; light petroleum odor.			
B	2-4	44/48	1450	17.2	(28-48") F/M gray/brown stained sand and gravel; dry; silt; wet at 54"; heavy petroleum odor.	no odor. (48-72") F gray/brown stained sand an		
С	4-6			156.0				
		+2				A		
0	6-8							
0	0-0	•	1 I I					
<i>c</i>	9.10		_	_				
	0-10			8	•			
۴	10-12					8 · · · · · · · · · · · · · · · · · · ·		
	×	2				8		
	) = (			· · · · ·	(e)			
G	12-14							
	- 6 <b>4</b> 6			÷	2 C	NO 100		
					2 I I I I I I I I I I I I I I I I I I I			
(	Comment	<u>s</u> :			4 .			
8 5			8					
PF	ROPORT	IONS USED		A	BREVIATIONS Well Construction	DEPTH INTERVALS		
				F :	= FINE N/A	A = 0-24 in. G = 144-168 ir		
TF	ACE (TF	र)	0-10%	M	= MEDIUM	B = 24-48 in. H = 168-192 ir		
LI	TTLE (LI)	- ×	10-20%	C	= COARSE	C = 48-72 in. I = 192-216 in.		
SC	DME (SO	)	20-35%	F/I	M = FINE TO MEDIUM	$D = 72.96 \text{ in.} \qquad J = 216.240 \text{ in}$ $F = 96.120 \text{ in} \qquad K = 240.264 \text{ in}$		
Ar			10-20%	M/	C = MEDIUM TO COARSE	F = 120-120 in. $L = 264-288$ in		

	1110			9 . Y .	Site: Providence Can Company	
					642 Allong Avenue Dravid	Boring No.: B14
1.5 ° °	1110	IIII			ESS Job No. D454 000	, RI Date: 1/27/00
272 W	est Evo	hange Stre	ot Suit	- 101	ESS JOB NO: P151-002	Within 100' of Water: No
		anange Sue	et, Suit	eiui	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environment
Prov	idenica	Rhodo Iele	and 020	202	W. I. C.	Instruments, Inc., Model 580B OV
(401)	100100			503	Well Diameter: N/A	Boring Depth: 6.0'
(401)	+21-038	ю гах (40	JT) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 5.4'
	10	1	<u> </u>		Sample Method: 4' Acetate Sampler	Logged By: Jason Wiggin
Depth (intervals)	Depth (feet)	Penetration (in.)	Sample Time	PID (ppm)	Materi (size, arg)	als Description
A	0-2	24/24	1445	2.8	(0-6") F/M dark brown sand: TR gravel and TR	silt moist (6-14") E group with block sind
5 T T R	1 x 1		( a series of the series of th		cinder ash. (14-24") F/M brown sand; TR gravel	and TR porous cinders.
2	4 B	100 M		- X - 1		
В	2-4	38/48	1510	0.0	(34-48") F/M brown sand: I I silt/oravel: TP pore	us sindara da 140 cm sur
a seco	1.1	4 <sup>6</sup> -	l <sup>ine</sup> a e i	2	TR porous cinders; dry. (65-72") gray, sandy silt	; wet
15 E	100 A	÷	5	( <sup>10</sup> III )		
С	4-6			0.0		
8	146C			0.0		
5	11		- x - V			승규는 집 같은 것이 같이 많이 많이 많이 많이 많이 많이 많이 많이 많이 많이 많이 많이 많이
D	6.8			V		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	0-0			5 F. F.		
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			1.0		24 Cg 1 C C C C C C C C C C C C C C C C C	
W E	8-10					
		1.0	-	80 <sup>32</sup>	Kara a sa sa sa sa sa sa sa sa sa sa sa sa	
		8		2.5.1		- * <sup>*</sup>
х, <b>Р</b>	10-12		3			
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2 6					Nor a series and series and series and series and series and series and series and series and series and series	
G	12-14				2 C	
	м <sup>-</sup> рс	2.0		8 A A		
×	(8)	-		- 1		
C	omments					
	<u>orranterite</u>					
	3	· .			· · · · · · · · · · · · · · · · · · ·	<u>^</u> ×
						· · · · · · · · · · · · · · · · · · ·
PR	OPORTIC	ONS LISED		lace	PERMATIONS	2.1
	- on the		6	ABI	SREVIATIONS Well Construction	DEPTH INTERVALS
TRA	ACE (TP)	ан на С	0.10%	F =	FINE N/A	A = 0-24 in. G = 144-168 in
		a 3 <sup>a</sup> 3,	10-10%	M =		B = 24-48 in. H = 168-192 in.
SO	ME (SO)	-	20-35%	F/M		C = 48-72 in. I = 192-216 in.
AND	כ י	5	35-50%	F/C	= FINE TO COARSE	U = 72-96 in. $J = 216-240$ in. E = 96-120 in K = 240-264 in.
			12	M/C	= MEDIUM TO COARSE	F = 120-144 in. $L = 264-288$ in

	100				Site: Providence Gas Company	Roring No : B17			
					642 Allone Avenue Bravidance Bl	Data: 1/21/00			
					642 Aliens Avenue, Providence, Ri				
· · · · ·					ESS JOD NO: P151-002	Within 100' of Water: Yes			
4 V	Vest Exc	hange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental			
		* V				Instruments, Inc., Model 580B OVM			
Pro	vidence,	Rhode Isla	and 029	903	Well Diameter: N/A	Boring Depth: 6.0'			
(401)	421-039	98 Fax (40	1) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 4.0'			
					Sample Method: 4' Acetate Sampler	Logged By: Daryll Issa			
2	Sample	Recovery/							
Uepth	Depth (feet)	Penetration	Sample	PID (ppm)	Materials Des	cription			
A	0-2	24/24	1215	0.0	(0-5") E/C brown/gray sand with SO TR stained sand w	(th SO amyel: device eder (5.18")			
		2-112-1	1210	0.0	(0-5) F/C brown/gray sand with SO TR stained sand with SO gravel; dry; no odor. (5-18") small/M/large, shiny/dull black cinders with SO cinder ash; dry; no odor. (18-24") F/M brown sand and black cinder ash with TR oracle1 day as a dor.				
		7							
В	2-4	32/48		0.0	(40-45") black cinder ash with SO gravel and SO small	cinders. (45-58") F light brown/tan sand with LI			
1				081	gravel; wet; no odor. (58-68") F light brown/tan sand wi	th LI gravel; wet; no odor. (68-72") F gray			
		1			stained sand with Li singraver, wet, petroleum odor.				
С	4-6	32/48	1230	0.0					
		· · ·	1			8.2			
D	6-8		-						
1	12 1								
	9.10								
1 -	0-10			î		e			
		+			3	1			
F	10-12				•				
<b></b>			. 1			8			
f									
G	12-14				5.				
-	Comment	ts:	l						
						· · · · · · · · · · · · · · · · · · ·			
P	ROPORT	IONS USED		AE	BREVIATIONS Well Construction	DEPTH INTERVALS			
		147		F		A = 0.24 in $G = 144.168$ in			
Т	RACE (TF	र)	0-10%	M	= MEDIUM	B = 24-48 in, $H = 168-192$ in.			
L	ITTLE (LI)		10-20%	C ·	COARSE	C = 48-72 in. l = 192-216 in.			
S	OME (SO	)	20-35%	F/N		D = 72-96 in. J = 216-240 in.			
			33-50%		C = MEDIUM TO COARSE	E = 90-120 in $K = 240-264$ in. F = 120-144 in. L = 264-288 in.			

lia

	////				Site: Providence Gas Company	Boring No.: B20				
					642 Allens Avenue, Providence, RI	Date: 1/31/00				
100	111/				ESS Job No: P151-002	Within 100' of Water: Yes				
_ W	est Exc	hange Stre	et. Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental				
	58 in 11				3,	Instruments, Inc., Model 580B OVM				
Prov	idence,	Rhode Isla	and 029	903	Well Diameter: N/A	Boring Depth: 6.0'				
(401) 4	121-039	98 Fax (40	1) 421-	5731	Drilling Method: Geoprobe Depth to Water: 2.5'					
					Sample Method: 4' Acetate Sampler	Logged By: Daryll Issa				
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (ppm)	Materials Des (size, grade, colo	scription r. moisture)				
A	0-2	24/24	1240	0.0	(0-4") brown topsoil. (4-24") black/orange cinder with S	O shiny and dull black cinders; dry; no odor.				
				- <u>)</u>						
В	2-4	40/48		0.0	(32-42") black cinder ash with SO black stained sand; wet; no odor. (42-53") F brown/gray sand wit silt and TR gravel; wet; no odor. (53-72") F gray stained sand with TR silt and TR gravel; wet; heav petroleum odor; sheen present.					
с	4-6		1250	0.0						
D	6-8					and the second second second second second second second second second second second second second second second				
		1								
E	8-10									
		â	5	÷	a K					
F	10-12									
7).: (+ - / <sup>*</sup>		2 <sup>0</sup> - 1	8							
G	12-14			4	*					
			ų.	8.0						
	Comment	s:								

PROPORTIO	NS USED	ABBREVIATIONS	Well Construction	DEPTHI	NTERVALS
TRACE (TR) LITTLE (LI) SOME (SO) AND	0-10% 10-20% 20-35% 35-50%	F = FINE M = MEDIUM C = COARSE F/M = FINE TO MEDIUM F/C = FINE TO COARSE M/C = MEDIUM TO COAR	N/A RSE	A = 0-24 in. B = 24-48 in. C = 48-72 in. D = 72-96 in. E = 96-120 in F = 120-144 in.	G = 144-168 in. H = 168-192 in. I = 192-216 in. J = 216-240 in. K = 240-264 in. L = 264-288 in.

	////			1.)A	Site: Providence Gas Company	Boring No.: B19			
			100	1.58	642 Allens Avenue, Providence, RI	Date: 1/27/00 Within 100' of Water: No			
1 1921	1111		10,000	88 (j	ESS Job No: P151-002				
272 W	est Exc	hange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmen			
Prov	idence	Rhode Isla	and 020	203	Wall Diamotor: N/A	Instruments, Inc., Model 580B OVIC			
(401)	121-030	141000 1318 18 Fay (40	110 023	5721	Delling Mothed: Conserve	Boring Depth: 6.0'			
(+01)-	72.1-00.0		/1) 421-	5751	Drilling Method: Geoprobe	Depth to Water: 4.0'			
	Samala	Defeured	-	- Sugar	Sample Method: 4' Acetate Sampler	Logged By: Jason Wiggin			
Depth (intervals)	Depth (feet)	Penetration	Sample Time	PID (ppm)	Materials Description (size, grade, color, moisture)				
A	0-2	24/24	1420	1.4	(0-24") F/C brown/dark brown sand; LI gravel; TR silt; T	TR porous cinders: TR cinder ash.			
			4	- 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10					
В	2-4	36/48	1435	0.0	(36-48") F/C brown sand; LI gravel; TR slit: TR pprous of	inders and cinder ash: doy, (48-72) E/C brown			
· 2 · 2	ম জন্ম	10 10		s = 1	sand; LI gravel; TR silt, TR porous cinders; TR cinder an	nd ash; moist/wet.			
		- X.,	8						
С	4-6			0.0		-2 \$2 4			
10									
1 8 9		1.00		3.9		a X 81			
. D	6-8					e 1 2			
6 (RC) -	1.1.1								
- 11 A 1	8	a	<i>R</i> .	18					
F	8-10		S						
· •	0-10		) I	-					
(c) (C)	1			1					
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с. С. 2. 1	10-12				8 0 U N				
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G	12-14		*						
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$\approx$ 0	⊗ = X				4				
<u>c</u>	Comments	5:				1 10 10 10 10 10 10 10 10 10 10 10 10 10			
				3					
	a°, i	4				8			
· PR	OPORTI	ONS USED	2	AB	BREVIATIONS Well Construction	DEPTH INTERVALS			
	64 C			F =	FINE N/A	A = 0.24 in $G = 144.168$ in			
TR	ACE (TR	)	0-10%	M =	MEDIUM	B = 24-48 in. $H = 168-192$ in.			
LIT	ILE (U)		10-20%	C =		C = 48-72 in. I = 192-216 in.			
AN	D		20-30% 35-50%	F/M	= FINE TO MEDIUM = FINE TO COARSE	D = 72-96 in. J = 216-240 in.			
				M/C	= MEDIUM TO COARSE	E = 90-120 In K = 240-264 in. E = 120-144 in L = 264 288 in			

					Site: Providence Gas Company	Boring No.: B21		
	////				642 Allens Avenue, Providence, RI	Date: 1/31/00		
					ESS Job No: P151-002	Within 100' of Water: Yes		
272 We	est Excl	hange Stre	et, Suite	9 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environment.		
Prov	idence.	Rhode Isla	nd 029	03	Well Diameter: N/A	Boring Depth: 6.0'		
(401) 4	121-039	8 Fax (40	1) 421-4	5731	Drilling Method: Geoprobe	Depth to Water: 5.3'		
(401)4	21 000	0 , ux (+0	1) 74 1.1	5101	Sample Method: 4' Acetate Sampler	I orged By: Daryl Issa		
	Sample	Recovery			Campie Method: 4 / Metale Campier	Logged by. Daryn 133a		
Depth (intervals)	Depth (feet)	Penetration (in.)	Sample Time	PID (ppm)	Materials Description (size, grade, color, moisture)			
A	0-2	24/24	1300	0.0	(0-10") F/M gray/brown sand and gravel; dry; no odor. dry; no odor. (11-24") M/large black cinder ash and blac	(10-11*) F/C light brown sand with SO gravel; :k/dark cinder ash; dry; no odor.		
В	2-4	41/48	71	0.0	(31-42") F/C black stained sand and cinder ash with SC 50") F brown/dark brown sand; damp; odor present. (50 wet; heavy odor.	) gravel and SO brick cinders; wet; no odor. (42- )-72") F gray/brown stained sand with TR gravel;		
С	4-6		1315	0.0	1	×		
						6		
D	6-8			-				
	1.1							
E	8-10				-			
		, , , , , , , , , , , , , , , , , , ,						
F	10-12							
- 2								
G	12-14							
	Comment	e.						
	Comment	₩.	,					
PF	ROPORT	IONS USED		A	BBREVIATIONS Well Construction	DEPTH INTERVALS		
FROFORTIONS USED   F     TRACE (TR)   0-10%   M     LITTLE (LI)   10-20%   C     SOME (SO)   20-35%   F/     AND   35-50%   F/					= FINE N/A = MEDIUM = COARSE M = FINE TO MEDIUM C = FINE TO COARSE C = MEDIUM TO COARSE			

	////				Site: Providence Gas	Company	Boring	J No.: B22	
					642 Allens Aven	ue, Providence, Rl	Date:	1/31/00	
					ESS Job No: P151-002	2	Within	100' of Water:	Yes
) _ 2 We	est Excl	nange Stree	et, Suite	e 101 =	Driller.: Environmenta	I Drilling, Inc.	Instru	ment: Thermo Environmental ments, Inc., Model 580B OVM	
Provi	idence	Rhode Isla	nd 029	03	Well Diameter: N/A		Boring	Depth: 6.0'	
(401) 4	21.030	8 Eav (40	11 421-4	5731	Drilling Method: Geopr	obe	Depth	to Water: 5.0	5'
(401) 4	21-033	0 1 ax (40	1) 721-5	5101	Sample Method: 4' Acetate Sampler Logged By: Daryll Issa				ssa
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (pgm)	Materials Description (size, grade, color, moisture)				
A	0-2	24/24	1330	0.0	(0-3") F/M brown sand and (11-24") M/large black cinde	gravel; dry; no odor. (3-11*) rs with SO F brown/dark bro	F/M brow own sand	wn sand with SO gra I; dry; no odor.	ivel; dry; no odor.
						d black stadens dag an ada	- 140 60	=) E/C light brown an	ind with TR gravel.
В	2-4	33/48		0.0	(39-49") black cinder ash an damp; no odor. (68-72") F b	a black cinders; dry; no odo lack sand with TR silt and TI	r. (49-66 R gravel;	wet; no odor.	ing with the graves,
С	4-6	33/48	1340	0.0			1.1		
									5
D	6-8	47/48	-	0.0	(73-90") F/C brown sand; Tf sand; LI silt; black staining;	R silt. (90-92*) F/M brown sa petroleum odor.	and and b	llack coal ash. (92-1	20") F/M brown
E	8-10			0.0					
-	10-12								
Yes I				s - 4		8			• •
G	12-14								
	Commen	ts:							
			3			227		e.	¥1
P	ROPORT	IONS USED		IA	BBREVIATIONS	Well Construction		DEPTH IN	ITERVALS
				F	= FINE	(+.75'-4.0') PVC Solid Rise 9.0') PVC Screen C sump at 9.0'	er (4.0- )ne inch	A = 0-24 in.	G = 144-168 in.
TRACE (TR) 0-10% M   LITTLE (LI) 10-20% C   SOME (SO) 20-35% F   AND 35-50% F					= MEDIUM = COARSE /M = FINE TO MEDIUM /C = FINE TO COARSE /C = MEDIUM TO COARSE			B = 24-48 in. C = 48-72 in. D = 72-96 in. E = 96-120 in F = 120-144 in.	H = 168-192 in. I = 192-216 in. J = 216-240 in. K = 240-264 in. L = 264-288 in.

	The state					the second second second second second second second second second second second second second second second s		
	////				Site: Providence Gas Company	Boring No.: B23		
					642 Allens Avenue, Providence, R	Date: 1/31/00		
			8 · ·		ESS Job No: P151-002	Within 100' of Water: Yes		
272 W	est Excl	hange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environment.		
				2	11	Instruments, Inc., Model 580B OVN		
Prov	idence,	Rhode Isla	ind 029	03	Well Diameter: N/A	Boring Depth: 6.0'		
(401) 4	21-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 5.0'		
					ample Method: 4' Acetate Sampler Logged By: Daryll Issa			
	Sample	Recovery/						
Depth (intervals)	Depth (feet)	Penetration (in.)	Sample Time	PID (ppm)	Materials Description (size, grade, color, moisture)			
A	0-2	24/24	1355	0.0	(3-6") F/M gray/brown sand and gravel; dry; no od	or. (6-24") F/C light brown sand and gravel; dry; no		
В	2-4	38/48		0.0	(34-56") F/M brown sand with SO gravel; dry; no or	dor. (56-61") F dark brown sand with LI silt and TR		
			1 - R		Igravel; wet; no odor. (61-65') black cinders and cir	ider ash; wet; no odor. (65-72") F brown sand and silt;		
			а.					
С	4-6		1410	0.0	1			
			-					
D	6-8			_				
					P			
C		-						
E	8-10				1			
					•			
F	10-12							
					2 · · · · · · · · · · · · · · · · · · ·	<i>∾</i> a tig		
(134) (134)								
G	12-14				-			
6					· · ·			
ar -								
	Commen	ls:						
-	<u>e en ingli</u>	<b>-</b> ' M	~		187 11			
					8			
	*							
PI	ROPORT	IONS USED		A	BBREVIATIONS Well Construction	DEPTH INTERVALS		
				F	= FINE N/A	A = 0.24 in $G = 144-168$ in		
TF		र)	0-10%	м	= MEDIUM	B = 24-48 in. $H = 168-192$ in.		
Lľ	TTLE (U)		10-20%	c	= COARSE	C = 48-72 in. l = 192-216 in.		
S	OME (SO	)	20-35%	E/		D = 72-96 in. $J = 216-240$ in.		
AND 35-50% F/			30-50%	F/ M	C = MEDIUM TO COARSE	F = 120-124 in. $L = 264-288$ in.		

	////				Site: Providence Gas Company	Boring No.: B24
					642 Allens Avenue, Providence, RI	Date: 2/1/00
	1110				ESS Job No: P151-002	Within 100' of Water: Yes
W	est Exc	hange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Prov	idence,	Rhode Isla	ind 029	03	Well Diameter: N/A	Boring Depth: 10.0'
(401) 4	121-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 8.4'
<b>,</b>			je gil		Sample Method: 4' Acetate Sampler	Logged By: Jason Wiggin
Depth	Sample Depth	Recovery/ Penetration	Sample	PID	Materials De	scription
ntervais)	(reet)	(in.)	1 Ime	(ppm)	(Size, grade, cold	or, moisture)
A	0-2	24/24	0940	0.0	dark brown sand; Li silt; TR cinders.	F/M brown/tan sand; TR slit dry. (22-24") F/M
В	2-4	45/48		0.0	(27-29") F/C gray sand; TR silt; dry. (29-34") F brown s F/M brown sand. (38-43") F/M brown sand; TR silt; TR 48") F/C black coal ash; LI F/M brown sand; dry.	sand; Ll silt; dry. (34-38") F/C black coal ash; Ll R cinders at 40"; TR yellow ash at 42"; dry. (43-
С	4-6			0.0		
					(c	
D	6-8	38/48	1010	0.0	(82-88") F/M black sand; LI silt; dry. (88-91") F/C tan sa silt; TR cinders; moist. (93-101") F brown sand; SO sil wet. (118-120") petroleum stain/odor, TR coal/ash; wet	and; SO silt; dry. (91-93") F dark brown sand; S t; moist. (101-118") F brown/gray sand and silt; t.
	0.40	·				
E	8-10			0.0		
·		z	1			
F	10-12			8		
2	81 .		1			a 6
10 m						
a di	12-14					
0	12-14	. v 13				- 
	Commen	ts'			L	
-	a arrantati	<b>2</b> 78				
		с 1 п.				
PF	ROPORT	IONS USED		A	BBREVIATIONS Well Construction	DEPTH INTERVALS

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	111				Ritar Brouidance Cas Com		Device No + D25			
					Gale Providence Gas Comp	any	Date: 2/1/00			
					642 Allens Avenue, P	rovidence, Rl				
					ESS Job No: P151-002	Within 100' of Water: Yes				
272 W	est Exc	hange Stre	et, Suite	€ 101 <u></u>	Driller.: Environmental Drilli	ng, Inc.	Instrument: Thermo Environmente, Instruments, Inc., Model 580B OVM			
Prov	idence,	Rhode Isla	and 029	03	Well Diameter: N/A		Boring Depth: 10.0'			
(401) 4	421-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe		Depth to Water: 9.0'			
		ā.	·		Sample Method: 4' Acetate :	Sampler	Logged By: Jason Wiggin			
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (ppm)		Materials Description				
Α	0-2	24/24	1020	0.0	(0-24") F/C brown sand and gravel	; TR silt; TR brick fr	agments at 7"; TR coal and ash throughout			
				а.	sample; dry.	2	. A			
В	2-4	38/48		0.0	(34-72") F/M brown sand and F/M b	lack coal ash/coal	fragments: TR silt: TR porous cinders: dry			
		×								
С	4-6		1040	0.0	1					
							2			
	1 8									
D	6-8	24/48	1	0.0	(96-100") F/M brown/black sand: LI	silt: moist. (100-10)	2") E/M tan sand: TR silt: moist. (102-107") E/M			
					brown/black sand; LI silt; TR porous	cinders; moist. (10	07-120") F/C brown sand, LI silt; TR gravel;			
	1				stained gray from 117-120" with per	roleum odor, wet				
E	8-10			5.0	4					
-	0-10			5.0	21 10					
	-									
F	10-12					(*)				
	1 1	3								
	l						r			
G	12-14					· · · · ·				
							8			
	- e									
	Comment	s:								
-		_								
			8 8							
					2		2			
PI	ROPORT	IONS USED		IAI	BREVIATIONS Well C	onstruction	DEPTH INTERVALS			
	2.		0				A = 0.24 in $G = 144.168$ in			
ТР		2)	0-10%	Г	= FIRE N/A		B = 24-48 in. $B = 168-192$ in.			
Lľ		·/	10-20%	c	= COARSE		C = 48-72 in. $I = 192-216$ in.			
S	OME (SO	)	20-35%	F/	M = FINE TO MEDIUM		D = 72-96 in. J = 216-240 in.			
A	ND		35-50%	F/	C = FINE TO COARSE		E = 96-120 in K = 240-264 in.			
N					C = MEDIUM TO COARSE		F = 120-144 in. $L = 264-288$ in.			

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	////	1		ale i	Site: Providence Gas Company	Boring No.: B26
- 1 174 					642 Allens Avenue, Providence, RI	Date: 2/3/00
0			Chi card	- 10 L	ESS Job No: P151-002	Within 100' of Water: Yes
2 We	est Excl	hange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Provi	idence	Rhode Isla	and 029	03	Well Diameter: N/A	Boring Depth: 10.0'
-(401) 4	21-039	8 Fax (40	1 421-	5731	Drilling Method: Geoprobe	Depth to Water: 9.5'
-(+01) -	21-000		1) 421		Sample Method: 4' Acetate Sampler	Logged By: Jason Wiggin
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (ppm)	Materials Des (size, grade, colo	scription r, moisture)
A	0-2	24/24	0950	0.0	(0-24") F/M brown sand and F cinder ash; LI C cinders	; TR F gravel; TR silt; brick fragments at 22".
	1	2 8 8 9 8 90 9 8 9	т., 4 	đ sj		
В	2-4	32/48		0.0	(40-45") F black cinder ash; TR F brown sand; TR grav fragments; dry. (49-54") black F ash; TR F brown sand; C gravel sized cinders; dry. (61-72") F/C black ash and	el; dry. (45-49") F/M brown sand; LI silt; LI brick ; TR gravel; dry. (54-61") F/C tan/yellow ash and F gravel sized cinders; SO brick; dry.
C	4-6		1005	0.0		지 않는 것 같은 것 같은 것 같은 것 같은 것 같은 것 같이 많이 많이 했다.
			97 17 8 1			
D	6-8	33/48		0.0	(87-92") F/C black cinder ash and F gravel sized cinder	rs; SO brick; dry. (92-94") F/M black ash and
관감					black cinders. (94-97") F/C brown sand; LI silt; dry. (97- cinders; wet.	-120") C black sand F gravel sized cinders/porou
E	8-10			0.0	i da j s	an" - 0
			i k TR			
(	10-12		19 19 10			
مستقلب	5 2					일 같은 이 같은 것 같은 것 같이 많은 것이 없다.
G	12-14	0		2		
ыл - Э.		(0) /	( <b>*</b> )5	1×		
× 3 <sup>4</sup>	<u>Commen</u>	<u>ts</u> :	-	° a R		
						1
P	ROPORT	IONS USED		A	BBREVIATIONS Well Construction	DEPTH INTERVALS
TI LI S( AI	RACE (TI TTLE (LI) OME (SC	R) ) ))	0-10% 10-20% 20-35% 35-50%	F M C F/ F/	= FINE N/A = MEDIUM = COARSE M = FINE TO MEDIUM C = FINE TO COARSE	$\begin{array}{llllllllllllllllllllllllllllllllllll$

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	////				Site: Providence Gas Company	Boring No.: B27
				2 E 4	642 Allens Avenue, Providence, RI	Date: 2/22/00
					ESS Job No: P151-002	Within 100' of Water: No
272 W	est Exc	hange Stre	et, Suite	∋ 101 ∈	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmon
1.12	2 . I					Instruments Inc. Model 580B OV/M
Prov	idence,	Rhode Isla	and 029	903	Well Diameter: N/A	Boring Depth: 0.0'
(401) 4	421-039	8 Fax (40	1) 421-	5731 "	Drilling Method: Geoprope	Dopth to Water 5.5
° = ≤			2) 51	1.1.1	Sample Method: 4' Acetate Sampler	Deptil to Water. 5.5
	Sample	Recovery/	1		Complet Method: + / tectate Gamplet	Logged by Nicole Murry
Depth intervals)	Depth (feet) -	Penetration (in.)	Sample Time	PID (ppm)	Materials De (size, grade, colo	scription or. moisture)
А	0-2	18/24	1504	0.0	(6-8") gravel. (8-24") M/C loose orange/brown sand wi	ith small/M rounded stones.
		R	л <sup>с</sup>			2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
В	2-4	48/48	1	0.0	(24-60") F/M brown silby sand with small/M rounded at	(CO. COD. C.)
_ 14 <sup></sup>	1,1,1	1.36	Sec. 1	1.000	black, wet cinder ash; cinder ash stone and porous cind	ders. (00-09') F brown silty sand; wet. (69-72")
				et a Rijt		
С	4-6		1525	0.0		
e 🌷		18 J. J.	1525	0.0	્રિંગ પ્રત્ય ગાળવા ગાળવા ગાળવા છે.	
		. C P	S . 1		ಕ್ರಾ ಕಿಲ್ಲೇಕ್ಸ್	
D	6-8	10/48		0.0	(110 1123) Israe stores (110 1003) 534	2 <sup>11</sup> 3 8
- A 1		10,40	1 100	0.0	(110-112 ) large stone. (112-120") F/M orange/brown s	illy sand with M-large rounded stone; wet.
н (			≦			
E	8 10			0.0	2 2 1 4 X	
1	0-10			0.0	್ಷ ಪ್ರತಿಗಳಿಗೆ	
1						· · · · · · · · · · · · · · · · · · ·
	10.10			-	3 (A. 1997)	
	10-12	-	- S.	-		y I
	59.1			× . 7	10 <sup>10</sup>	×
й	E					
G	12-14	3		1 C - 1		
	9	а – о	·			
1.1	I		- 31			
C	Comments	:				
Ve	ry LI sam	ple due to low	recovery	and refu	sal at 9'.	12 × 1 × 21
-	(•)	s			<u>n na k</u> ri ta k	
PR	OPORTIC	ONS USED		AB	BREVIATIONS Well Construction	DEPTH INTERVALS
	*	2, 80	2 <sup>2</sup>	F =	FINE N/A	
TR	ACE (TR)	<u>a</u>	0-10%	м =	MEDIUM	B = 24-48 in. $H = 168-102$ in
LIT .	TLE (LI)	P	10-20%	C =	COARSE	C = 48-72 in. l = 192-216 in.
50 _AN	™⊏ (SU) D	(62	20-35%	F/M		D = 72-96 in. J = 216-240 in.
	-	×	00-00 %	MC	= MEDIUM TO COARSE	E = 96-120 in K = 240-264 in.

L = 264-288 in.

	////			2	Site: Providence Gas Company	Boring No.: B28
				1. 100	642 Allens Avenue, Providence, RI	Date: 2/23/00
0	////			2C Y	ESS Job No: P151-002	Within 100' of Water: No
2 We	est Excl	nange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Prov	idence.	Rhode Isla	nd 029	03	Well Diameter: N/A	Boring Depth: 10.0'
(401) 4	21-039	8 Eax (40	1) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 9.5'
(-01)-	21 000	0 1 0 1 0	.,		Sample Method: 4' Acetate Sampler	Logaed By: Nicole Murry
Depth ntervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (ppm)	Materials Des (size, grade, color	cription r, moisture)
A	0-2	24/24	1050	25.0	(0-20") F/C light brown/orange sand; loose with small/M brown sand; dry; petroleum odor.	I rounded stones throughout; dry; (21-24") M/
В	2-4	48/48	м ()	0.0	(24-32") F/M brown sand with small/M/C gravel. (32-72"	) very F brown/orange silty sand.
202 - 26 <sup>6</sup>	2 <del>2</del> 6, 89					
С	4-6			0.0		· '' '' '
0 0				3		g esta y ya
		22				12 <u>a</u> a a' t
D	6-8	48/48		0.0	(72-96") very F brown/orange silty sand. (96-110") F bla chips. (110-120") M brown sand mixed with coal bits; M wet at 116".	ck cinder ash; brick; concrete with LI black wo I black cinder ash and black cinder ash stone;
E	8-10		1125	0.0		
्रि			4. 5.			
		(A.	8 . j. j.		. 30 M. M. M.	- 10a
F	10-12	и во в и _л I ман		e Re <sup>la</sup> r Relation		
G	12-14					
gees G	- <u>S</u>	≥ ≥:				
÷.,					8	
	Comment	s:				5. (
8			(2)			- 1 <u>1</u>
	2	5		240		್ಕ ಸ್ಥಾ <sup>ತಿಕರ</sup> ್ ಸ
6			- 1 - E	202 (2.1		
PF	ROPORT	ONS USED	с ж	AE	BREVIATIONS Well Construction	DEPTH INTERVALS
TF LI SC AM	RACE (TR FTLE (LI) DME (SO)	)	0-10% 10-20% 20-35% 35-50%	F M C F/N F/C	= FINE N/A = MEDIUM = COARSE M = FINE TO MEDIUM C = FINE TO COARSE	A = 0.24 in. $G = 144-168$ in $B = 24-48$ in. $H = 168-192$ in $C = 48-72$ in. $I = 192-216$ in. $D = 72-96$ in. $J = 216-240$ in $E = 96-120$ in. $K = 240-264$ in

3	////		-		Site: Providence Gas Company	Boring No.: B35			
- P				× .	642 Allens Avenue, Providence, RI	Date: 2/22/00 Within 100' of Water: No			
4 8 °	11110-1111				ESS Job No: P151-002				
272 W	est Exc	hange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmen.			
Prov	idence	Rhode lela	nd 020	202	Wall Dismotory N/A	Instruments, Inc., Model 580B OVM			
(401)	121 020			5774	Weil Diameter: N/A	Boring Depth: 14.0'			
(401)*	+21-039	o rax(40	1) 421-	5/31	Drilling Method: Geoprobe	Depth to Water: 13.5'			
-	Comola	Deserve (	1		Sample Method: 4' Acetate Sampler Logged By: Nicole Murry				
Depth (intervals)	Depth (feet)	Penetration (in.)	Sample Time	PID (ppm)	Materials Des (size, grade, colo	scription or, moisture)			
A	0-2	24/24	1435	0.0	(0-4") asphalt. (4-24") F/M brown/orange sand with sm	all/large rounded stones throughout; soft.			
В	2-4	48/48		0.0	(24-72") F/M loose brown silty sand; with small/M round	ted stones			
	5		:	18 <sup>1</sup> .					
С	4-6		- 2	0.0		u Neurr an ana ana an an an an an an an an an a			
		·`							
	6.0	49/49							
8	0-0	40/40	ه ۲ ( م	0.0	(72-80°) F/M brown silty sand; dense. (80-88°) red brick ash; cinder ash stone and porous cinders (black and red and small rounded stones.	with M brown sand. (88-98") M/C black cinder d). (98-120") F brown silty sand; SO red brick			
E	- 8-10		1445	0.0					
		ĸ	ai 5			a i se si se si se si se si se si se si se si se si se si se si se si se si se si se si se si se si se si se si			
ne F Sera	10-12	30/48	187	0.0	(136-140") C black cinder ash with brick. (140-168") F/N small/M rounded stones from 140-150"; wet at 164".	V brown silty sand with coal bits from 140-146*			
G	12-14	30/48		0.0	4	(			
- ×	14-17	50/70	1	0.0					
		e) 	a II	) 17	e e e e				
	Comments	<u>.</u>		÷					
80 									
			4			2 A A			
PR	OPORTI	ONS USED		AB	BREVIATIONS Well Construction	DEPTH INTERVALS			
TR LIT SO AN	ACE (TR) TLE (LI) ME (SO) D	)	0-10% 10-20% 20-35% 35-50%	F = M = C = F/M F/C	FINE N/A MEDIUM COARSE I = FINE TO MEDIUM = FINE TO COARSE	A = 0.24 in. $G = 144-168$ in. $B = 24-48$ in. $H = 168-192$ in. $C = 48-72$ in. $I = 192-216$ in. $D = 72-96$ in. $J = 216-240$ in. $E = 96-120$ in. $K = 240-264$ in.			

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11. ja	1110			41 D.	Site: Providence	ce Gas Compa	ny	Boring	No.: B36		
0				1.21	642 Allens Avenue, Providence, RI ESS Job No: P151-002			Date: 2/22/00			
£	1111							Within	Within 100' of Water: No		
,2 W	est Excl	nange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.				Instrument: Thermo Environmental		
Prov	idence.	Rhode Isla	and 029	03	Well Diameter:	N/A		Boring	Depth: 10.0'	2 <sup>-2</sup> 2	
(401) 4	21-039	8 Fax (40	1) 421-	5731	Drilling Method:	Geoprobe	1	Depth	to Water: 5	.0'	
		:58	ં તે ર		Sample Method	: 4' Acetate Sa	mpler 1	Logge	d By: Nicole	Murry	
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sampie Time	PID (ppm)	9 1. 185 M		Materials Des (size, grade, colo	scription or, moisture	e)	19. <sup>12</sup> . 19	
A	0-2	24/24	1345	0.0	(0-3") large gravel. sand mixed with co	(3-8") M light brow al; brick; large jagg	vn/yellow sand wi ged gravel and cir	th small ro nder ash (b	unded stones. (8-2 black) throughout in	24") F/M black/brow hterval.	
8	2-4	44/48		0.0	(28-32") dense brow concrete and white bits of red brick. (42 with large bits of red	wn and black M sa concrete powder v 2-43") M orange sa d brick. (50-60") pc	nd with large brid with F light brown and. (43–45") large porly sorted M bro	c bits; large sand. (38- gray ston wn sand w	e amount of cinder 42") M brown sand e; solid. (45-50") M vith large rounded	ash at 31". (32-38" d; dense with large d brown sand; dens stone; SO cinder as	
С	4-6		1355	0.0	(black) at 55". (60-7	2") F/M brown silty	y sand with SO sr	nall rounde	ed stones; wet.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
e San		2		14			i s		2 4 4 2 1 1 1	8. 1 K I	
D	6-8	24/48	. N	0.0	(96-120") F/M brow	n silty sand; wet.		V	3	e a S	
	3.1	6		÷.,	ж. т.					- 16 - L	
E	8-10			0.0						2 <sup>1</sup> 6 8	
- 210		а, т.	100	5 5	16.		ц <sup>с</sup>	19 N N			
5. 1			-					× .	Se 8 1		
7	10-12	4				10	1.1	1	ā	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
New York		5	(A.)	2	323 15			· • ·	а а ва нез		
G	12-14			1				141	÷ .	- 14 - 14 - 14 - 14 - 14 - 14 - 14 - 14	
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(	Comment	<u>s</u> :					1. X 2.		5.51	5 M.C.	
	2 2			2 - 2 - 2 - 2	4 - 20 8				с. С	2 a 2 a	
PF	ROPORT	ONS USED		AE	BREVIATIONS	Well Cor	nstruction		DEPTH IN	TERVALS	
TF LI <sup>*</sup> SC AN	RACE (TF ITLE (LI) DME (SO	s)	0-10% 10-20% 20-35% 35-50%	F M C F/I F/0	= FINE = MEDIUM = COARSE M = FINE TO MEDIU C = FINE TO COARS	N/A IM SE			A = 0-24 in. B = 24-48 in. C = 48-72 in. D = 72-96 in. E = 96-120 in	G = 144-168 in. H = 168-192 in. I = 192-216 in. J = 216-240 in. K = 240-264 in.	

	////				Site: Providence Gas Company	Boring No.: B42		
					642 Allens Avenue, Providence, RI	Date: 2/22/00		
0	///////////////////////////////////////				ESS Job No: P151-002	Within 100' of Water: No		
j2 ₩	est Exc	hange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental		
Prov	idence,	Rhode Isla	nd 029	03	Well Diameter: N/A	Boring Depth: 10.0'		
(401) 4	121-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 8.5'		
		``	,	, e e'	Sample Method: 4' Acetate Sampler	Logged By: Nicole Murry		
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (ppm)	Materials Des (size grade colo	scription		
A	0-2	24/24	1210	0.0	(0-3") large gravel. (3-20") F/C black cinder ash mixed M brown sand.	with C black sand. (20-24") concrete bits with S		
в	2-4	36/48	4	0.0	(36-72") F/C black cinder ash with M/C coal bits and cir cinders/cinder ash; stone; concrete at 72".	nder ash; loose red and white porous		
	10		1005					
C	4-6	4-1 1	1225	0.0				
П	6-8	24/48	- and	0.0	(96-100°) E/C black cinder ash with M/C coal bits and c	inder ash: pliable red and white porous		
	a. 	я 8			cinders/cinder ash. (100-120") F/M silty brown sand; we	et at 100".		
E	8-10			0.0				
	1.6		~					
F	10-12	F.		* *				
alling a								
G	12-14					2 A A A A A A A A A A A A A A A A A A A		
	2	e <sup>16</sup>			ТГ — — — — — — — — — — — — — — — — — — —			
(	Comment	<u>s</u> :						
					and the second second second second second second second second second second second second second second second			
	2		×					
PF	OPORTI	ONS USED	_	AE	BREVIATIONS Well Construction	DEPTH INTERVALS		
TR LIT SC AN	IACE (TR ITLE (LI) DME (SO) ID	k) )	0-10% 10-20% 20-35% 35-50%	F = M F/I F/I	= FINE N/A = MEDIUM = COARSE M = FINE TO MEDIUM C = FINE TO COARSE C = MEDIUM TO COARSE	A = 0.24 in. $G = 144-168$ in. $B = 24-48$ in. $H = 168-192$ in. $C = 48-72$ in. $I = 192-216$ in. $D = 72-96$ in. $J = 216-240$ in. $E = 96-120$ in $K = 240-264$ in. $F = 120-144$ in. $L = 264-288$ in.		

		38 X.			1					
					Site: Providence Gas	s Company	Bori	ng No.: B43		
					642 Allens Ave	nue, Providence, RI	Date	Date: 2/22/00		
					ESS Job No: P151-002			Within 100' of Water: No		
272 W	est Exc	hange Stre	et, Suite	e 101	Driller.: Environment	al Drilling, Inc.	Instr Instr	ument: Thermo uments, Inc., Mo	Environment odel 580B OVM	
Prov	idence,	Rhode Isla	and 029	03	Well Diameter: N/A		Borir	na Depth: 6.0'		
(401) 4	121-039	8 Fax (40	1) 421-	5731	Drilling Method: Geop	probe	Dept	h to Water: 5	.75'	
					Sample Method: 4' A	cetate Sampler	Logo	ed By: Darvll	lssa	
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (ppm)	×	Materials (	Description	1 (re)		
A	0-2	24/24	0930	0.0	(0-24") F/M dark brown/br no odor:	own sand and gravel with	SO small/N	M black cinders and	SO cinder ash; dry;	
В	2-4	48/48	2	0.0	(24-28") F brown sand with brick (pulverized); dry; no c sand with SO gravel; damp water: no odor	Ll gravel; dry; no odor. (2 dor. (39-50") F brown sai ; no odor. (68-72") F light	28-39") F/N nd and grav t brown san	l brown sand with So vel; dry; no odor. (50 d with SO silt; TR gr	D gravel and TR red -68") F/M light brown avel; saturated with	
С	4-6		0945	0.0						
									i.	
D	6-8						57			
			-				84 1			
E.	8-10			L.						
F	10-12		-			2	-	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
			ж А						· - · · ·	
G	12-14							г а	C	
	Commen	<u>s</u> :	1		e					
		5								
PF	ROPORT	IONS USED		AE	BREVIATIONS	Well Construction		DEPTH I	NTERVALS	
TRACE (TR)   0-10%   M     LITTLE (LI)   10-20%   C =     SOME (SO)   20-35%   F/I     AND   35-50%   F/I			F = M C = F/M F/0	= FINE = MEDIUM = COARSE M = FINE TO MEDIUM C = FINE TO COARSE C = MEDIUM TO COARSE	N/A		A = 0.24 in. B = 24.48 in. C = 48.72 in. D = 72.96 in. E = 96.120 in F = 120.144 in	G = 144-168 in. H = 168-192 in. I = 192-216 in. J = 216-240 in. K = 240-264 in. L = 264-288 in		

				_					
	////				Site: Providence Gas Company	Boring No.: B44			
					642 Allens Avenue, Providence, RI	Date: 2/22/00			
	1111				ESS Job No: P151-002	Within 100' of Water: No			
2 W	est Excl	hange Stree	et, Suite	101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental			
37 D		Dhede Jale		02	Mall Diamator: N/A	Resing Depth: 10.0'			
Prov		Rhode Isla	na -029	03	Dillion Mathedi Canaraha	Death to Waters 0.5			
(401) 4	421-039	8 Fax (40	1) 421-:	5731	Drilling Method: Geoprope	Depth to water: 9.5			
					Sample Method: 4' Acetate Sampler	Logged By: Daryil Issa			
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (ppm)	Materials Des (size, grade, colo	Materials Description (size, grade, color, moisture)			
A	0-2	19/24	1000	0.0	(5-9") F/M pulverized stone/gravel with SO light brown 24") F/M brown/dark brown sand with SO gravel with S stone (not brick) at 16-18"; dry; no odor.	F/M sand; wet from surficial snow; no odor. (9- O small black cinders and SO pulverized red			
в	2-4	28/48		0.0	(44-72") F/M brown sand and pulverized red brick and	gravel; dry; no odor.			
	1.0				-				
C	4-6			0.0					
D	6-8	38/48		0.0	(82-93") pulverized red brick with SO F/M dark sand an yellow brick and gravel; damp; no odor. (98-115") black 120") F black/gray silt and sand; wet; no odor.	d SO gravel; dry; no odor. (93-98") pulverized cinder ash with TR gravel; damp; no odor. (115-			
E	8-10		1020	0.0					
F	10-12								
Sea 1					8				
G	12-14				1				
		· ·	_		821				
	Commen	ts:							
						× .*			
P	ROPORT	IONS USED		A	BBREVIATIONS Well Construction	DEPTH INTERVALS			
TI LI S A	TRACE (TR)   0-10%   M     LITTLE (LI)   10-20%   C     SOME (SO)   20-35%   F/I     AND   35-50%   F/I			F M C F/	= FINE N/A = MEDIUM = COARSE M = FINE TO MEDIUM C = FINE TO COARSE C = MEDIUM TO COARSE	A = 0-24 in.G = 144-168 in.B = 24-48 in.H = 168-192 in.C = 48-72 in.I = 192-216 in.D = 72-96 in.J = 216-240 in.E = 96-120 inK = 240-264 in.E = 120-144 in.I = 264-288 in			

E)
					Ritar Davidarus Or C			
					Site: Providence Gas Company	Boring No.: B45		
					642 Allens Avenue, Providence, RI	Date: 2/22/00		
					ESS Job No: P151-002	Within 100' of Water: No		
272 W	est Exc	hange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmen. Instruments, Inc., Model 580B OVN		
Prov	idence,	Rhode Isla	and 029	903	Well Diameter: N/A	Boring Depth: 6.0'		
(401) 4	121-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe Depth to Water: 5.5'			
	0				Sample Method: 4' Acetate Sampler Logged By: Daryll Issa			
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (ppm)	Materials Description (size, grade, color, moisture)			
A	0-2	16/24	1025	0.0	(10-14") gravel. (14-24") F/C brown sand with SO grav	el; damp; no odor. 🗝		
B 2-4 43/48 0.0					(29-39") F/C light brown sand and Ll large gravel; damp silt and SO gravel; damp; no odor. (45-72") F/M brown/ SO gravel with a white, putty like substance; wet at 67";	o; no odor. (39-45") F dark brown sand with SO dark brown sand with SO pulverized brick and ; no odor.		
С	4-6		1100	0.0	1			
aj								
D	6-8					and the second second second second second second second second second second second second second second second		
		• L *						
E	8-10	¥)						
F	10-12					a contraction of the second second second second second second second second second second second second second		
-	10 12			4	2			
G	12-14		×					
	Comment	s:			land a second second second second second second second second second second second second second second second	and a second second second second second second second second second second second second second second second		
					*			
PF	ROPORT	ONS USED		AE	BREVIATIONS Well Construction	DEPTH INTERVALS		
TF LiT SC AN	RACE (TF ITLE (LI) DME (SO)	;) )	0-10% 10-20% 20-35% 35-50%	F = M C = F/N F/0 M/	= FINE N/A = MEDIUM = COARSE M = FINE TO MEDIUM C = FINE TO COARSE C = MEDIUM TO COARSE	A = 0-24 in.G = 144-168 in.B = 24-48 in.H = 168-192 in.C = 48-72 in.I = 192-216 in.D = 72-96 in.J = 216-240 in.E = 96-120 inK = 240-264 in.F = 120-144 in.L = 264-288 in.		

						and the second se	and the second second second second second second second second second second second second second second second
	////				Site: Providence	Gas Company	Boring No.: B46
					642 Allens A	Avenue, Providence, RI	Date: 2/18/00
	1110				ESS Job No: P15	-002	Within 100' of Water: No
- W	est Excl	hange Stre	et, Suite	e 101	Driller.: Environm	ental Drilling, Inc.	Instrument: Thermo Environmental
		<b>.</b> .				A	Instruments, Inc., Model 580B OVM
Prov	vidence.	Rhode Isla	nd 029	03	Well Diameter: N/	A	Boring Depth: 6.0'
(401)	421-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe Depth to Water: (see below)		
( /					Sample Method: 4	'Acetate Sampler	Logged By: Daryll Issa
	Sample	Recovery/					
Depth	Depth	Penetration	Sample	PID		Materials De	escription
(intervals)	(feet)	(in.)	Time	(ppm)		(size, grade, co	lor, moisture)
A	0-2	22/24	1300	0.0	(2-6") F/C light brown	sand; wet; no odor. (6-10") F/C gravel: wet: no odor	brown sand with SO gravel; wet; no odor. (23-24")
					Diowit Saild Will CO		
		=					
В	2-4	23/48		0.0	(49-57") F/C light brow	n sand with LI gravel; wet; no c	dor. (57-64") F/M brown sand with SO gravel; wet;
					no odor. (64-72") pulve	nzed red brick with SO F/M bro	own sand and TR gravel; wet; no odor
С	4-6		1315	0.0			
	1.5	· · · · ·			25 HOLE	81 W	
					1		т
n	6-8						
				8			
	0.40						
	0-10						
		8	1 1				
F	10-12			<sup>2</sup>		9 	
							7.
and a							
G	12-14				100	* * * * *	
× *	1						
	Commen	ts:			1		
, <sup>2</sup> D	ue to sno	w and rain, ur	able to de	etermine	water table.		
73			15				
×.	12						
F	ROPORT	IONS USED		A	BREVIATIONS	Well Construction	DEPTH INTERVALS
					- EINE	N/A	A = 0.24 in $G = 144.168$ in
т		۲)	0-10%			DVA	B = 24-48 in. $H = 168-192$ in.
Ľ		<b>Y</b> (a) (i)	10-20%	C	= COARSE		C = 48-72 in. 1 = 192-216 in.
s	OME (SO	)	20-35%	F/	M = FINE TO MEDIUM		D = 72-96 in. J = 216-240 in.
A	ND		35-50%	F/	C = FINE TO COARSE		E = 96-120 in K = 240-264 in.

M/C = MEDIUM TO COARSE

K = 240-264 in. L = 264-288 in.

E = 96-120 in.. F = 120-144 in.

	////			a n	Site: Providence Gas Company Boring No.: B55
					642 Allens Avenue, Providence, RI Date: 3/2/00
	2	e. 1		1.0	ESS Job No: P151-002 Within 100' of Water: No
272 W	est Exc	hange Stre	et, Suit	e 101	Driller.: Environmental Drilling, Inc. Instrument: Thermo Environment.
Prov	idence,	Rhode Isla	and 029	903	Well Diameter: N/A Boring Depth: 6.0'
(401) 4	421-039	8 Fax (40	)1) 421-	5731	Drilling Method: Geoprobe
8	~ *		1.10		Sample Method: 4' Acetate Sampler
	Sample	Recovery/	1		Logged by. Daryinissa
Depth (intervals)	Depth (feet)	Penetration (in.)	Sample Time	PID (ppm)	Materials Description (size, grade, color, moisture)
A	0-2	24/24	1205	0.0	(0-4") black/dark brown topsoil and gravel; damp; no odor. (4-24") F/M brown sand; dry; no odor.
*** ***		9 M		-	
в	2-4	14/48	1.50	0.0	(58-63") F/M brown/dark brown sand with SO gravel; damp; no odor. (63-72") F/M dark brown sand with
о в <sup>В</sup> "	1 A	< * * · · · ·		*	SO gravel; wet; no odor,
2 p.*	- I	2 o	- I (		
С	4-6	14/48	1225	0.0	
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D	6-8			_	
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E	8-10				ing the second second second second second second second second second second second second second second second
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			94,05	3	
F	10-12			<u>.</u>	P
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G	12-14				
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	OBCOTI			1.00	
PR	OPORTI	UNS USED	2*	AB	BREVIATIONS Well Construction DEPTH INTERVALS
TR LIT SO AN	ACE (TR TLE (LI) ME (SO) D		0-10% 10-20% 20-35% 35-50%	F = M = C = F/M F/C M/C	FINE         N/A         A = 0-24 in.         G = 144-168 in. $MEDIUM$ B = 24-48 in.         H = 168-192 in.           COARSE         C = 48-72 in.         I = 192-216 in.           I = FINE TO MEDIUM         D = 72-96 in.         J = 216-240 in.           E = MEDIUM TO COARSE         E = 96-120 in         K = 240-264 in.

	////			3	Site: Providence Gas Company	Boring No.: B56
ta t				2	642 Allens Avenue, Providence, RI	Date: 2/18/00
$\cap$				1000	ESS Job No: P151-002	Within 100' of Water: No
'2 We	est Exc	hange Stre	et, Suit	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental
Provi	dence	Rhode Isla	and 029	500	Well Diameter: N/A	Boring Depth: 6.0'
(401) 4	21-030	1000 1312 18 Eav (40	1) 421-	5731	Drilling Method: Capprobe	
(+01) +	21-000	,	1) 72 1-	.5751	Somela Mathadi d'Apatata Samalar   Lagard D. D.	
	Samala	Recoverd			Sample Method, 4 Acetate Sampler	Logged By. Daryii issa
Depth (intervals)	Depth (feet)	Penetration (in.)	Sample Time	PID (ppm)	Materials Des (size, grade, colo	cription r, moisture)
Α	0-2	20/24	0910	0.0	(4-6") topsoil/gravel. (6-24") F/M brown/dark brown san	d with SO pulverized red brick and TR small
1 N.	nr 2 -	- ×	1.16	2 문 -	black cinders and TR yellow brick; dry; no odor.	a ta în lê tra a la comp
		లో లై		10 A		
54 - 19 -	- s = <sup>5</sup> 8	, taki be,	4	No.	Note: This interval was sampled on 2/18/00.	
В	2-4	22/48	- 143 - 1	0.0	(30-55") pulverized red brick with SO brown sand, TR g	ravel, and SO coal/ash; dry; no odor. (55-60")
		100 A.		2.5	pulverized concrete. (60-72") wood chips; wet no odor.	
		8		- 1 S	Note: This interval was sampled on 3/2/00.	
С	4-6		1038	0.0	A 8	
	24 <u>-</u> 9		-			
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D	6-8		-	0		
		-		1 a a 7		
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E	8-10					а — N — К
×	<u>.</u>	1 -	5	5 8		
- 1		n e fi	51	اهي ۾ ا		
-	10-12					
	10-12	~~~	· 6	÷	a ser a ser ser ser ser ser ser ser ser ser ser	
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	12			- 85	2	
	10 11				C - 42	- A 118 - A g - A
G	12-14	× 1				Sec
G	12-14	х эл Е		ах.		

	PROPORTIONS U	SED	ABBREVIATIONS	Well Construction		DEPTH INTERVALS	
	1 - S		F = FINE	N/A	*	A = 0-24 in.	G = 144-168 in.
5	TRACE (TR)	0-10%	M = MEDIUM	2.8		B = 24-48 in.	H = 168-192 in.
	LITTLE (LI)	10-20%	C = COARSE		5	C = 48-72 in.	l = 192-216 in.
8	SOME (SO)	20-35%	F/M = FINE TO MEDIUM		A.	D = 72-96 in.	J = 216-240 in.
5.1	AND	35-50%	F/C = FINE TO COARSE	S 2 1		E = 96-120 in	K = 240-264 in.
		0.8	M/C = MEDIUM TO COARSE			F = 120-144 in.	L = 264-288 in.

				1.1	Site: Providence Gas Company	Boring No.: B62
			51	6 ·	642 Allens Avenue, Providence, RI	Date: 2/16/00
C					ESS Job No: P151-002	Within 100' of Water: No
2 W	est Exc	hange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Prov	idence.	Rhode Isla	and 029	03	Well Diameter: N/A	Boring Depth: 6.0'
(401) 4	121-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 3.8'
(101)			1	1. 360	Sample Method: 4' Acetate Sampler	Logged By: Darvll Issa
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (ppm)	Materials D (size, grade, co	lescription plor, moisture)
A	0-2	24/24	1515	0.0	(0-8") F/C light brown/brown sand and gravel; damp, damp; no odor. (20-24") F/M brown sand with LI grav	no odor. (8-20") F/C light brown sand and ğravel; el; damp; no odor.
B	2-4	48/48	1530	0.0	(24-31") F/M brown/dark brown sand and gravel. (31- no odor. (39-72") E brown silt with TR sand: saturate	39") F brown/dark brown sand with LI gravel; dry; d with water at 44": no odor.
		e <sup>111</sup> ac <sup>11</sup>				1
C	4-6			0.0	- * - · · · · · · · · · · · · · · · · ·	
U	-+-0		<b>1</b> 0 - 10	0.0		5 K
		~ ~	1 - I			
_ D	6-8	N	з	ar e <sup>6</sup>	14	
			16 	n je		
F	8-10					
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		-	<sup>а</sup> а	× .	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
-	10-12			-		
	2		2			
G	12-14					
		r a	а <sup>н</sup> "	22	* a 7 a se	a a
	Comment	s:	<u>к</u>			s
<sup>.</sup> .	8					
¥3) °° a	- 10 - 10 - 10			÷		
PI	ROPORT	IONS USED		A	BBREVIATIONS Well Construction	DEPTH INTERVALS
TF LI' SC AM	RACE (TF TTLE (LI) DME (SO ND	R)	0-10% 10-20% 20-35% 35-50%	F M C F/	= FINE N/A = MEDIUM = COARSE M = FINE TO MEDIUM C = FINE TO COARSE /C = MEDIUM TO COARSE	A = $0-24$ in.G = $144-168$ in.B = $24-48$ in.H = $168-192$ in.C = $48-72$ in.I = $192-216$ in.D = $72-96$ in.J = $216-240$ in.E = $96-120$ inK = $240-264$ in.F = $120-144$ in.L = $264-288$ in.

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			-		Site: Providence Gas Company	Boring No.: B64	
				5 6	642 Allens Avenue, Providence, RI	Date: 2/18/00	
		N N		°a 🏑	ESS Job No: P151-002	Within 100' of Water: No	
272 W	est Exc	hange Stre	et, Suit	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environment	
Prov	idence,	Rhode Isla	and 029	903	Well Diameter: N/A	Boring Depth: 6.0'	
(401) 4	121-039	98 Fax (40	1) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 5.8'	
		5. 18			Sample Method: 4' Acetate Sampler	Logged By: Nicole Murry	
Depth (intervals)	Sample .Depth (feet)	Recovery/ Penetration (In.)	Sample Time	PiD (ppm)	Materials Description (size, grade, color, moisture)		
A	0-2	24/24	0825	0.0	(0-6") M light brown sand with large gravel and SO sma brown sand mixed with SO small rounded gravel; very P brick.	all rounded stone. (6-24") poorly sorted M/C dark black cinder ash throughout the interval; SO	
В	2-4	36/48	0840	0.0	(36-60") poorly sorted M/C brown sand with silt mixed w cinder ash band at (38"); large stone at (44"). (60-66") F silt. (68-72") F brown silty sand; saturation at 70".	ith small/M rounded gravel; coal bits at (40"); brown silty sand. (66-68") very F brown/orange	
С	4-6					• • • • • •	
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D	6-8						
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E	8-10				· · · · · · · · · · · · · · · · · · ·		
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F	10-12						
з .	8	2		a s			
G	12-14					ing and a first state of the second state of t	
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c	omments	2			1		
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	PROPORTIONS USED	-	ABBREVIATIONS	Well Construction	DEPTH INTERVALS
*	TRACE (TR) LITTLE (LI) SOME (SO) AND	0-10% 10-20% 20-35% 35-50%	F = FINE M = MEDIUM C = COARSE F/M = FINE TO MEDIUM F/C = FINE TO COARSE M/C = MEDIUM TO COARSE	N/A	A = 0.24 in. $G = 144.168$ in. $B = 24.48$ in. $H = 168.192$ in. $C = 48.72$ in. $I = 192.216$ in. $D = 72.96$ in. $J = 216.240$ in. $E = 96.120$ in $K = 240.264$ in. $F = 120.144$ in. $L = 262.284$ in.

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-	1111				Site: Providence Gas Company	Boring No.: B65	
			5		642 Allens Avenue, Providence, RI	Date: 2/18/00	
	////	Internet	- 13 C	1(e - 1) - 22)	ESS Job No: P151-002	Within 100' of Water: No	
72 We	est Excl	nange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental	
Provi	dence	Rhode Isla	and 029	903	Well Diameter: N/A	Boring Depth: 6.0'	
(401) 4	21-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 4.3'	
(101)	2. 000	с , сл ( , с		- 24° - 44	Sample Method: 4' Acetate Sampler	Logged By: Daryll Issa	
Depth (intervals)	Sample Depth (feet)	Récovery/ Penetration (in.)	Sample Time	PID (ppm)	Materials Description (size, grade, color, moisture)		
A	0-2	24/24	0840	0.0	(0-2") topsoil with SO gravel; dry; no odor. (2-6") F/M li black cinders; dry; no odor. (5-20") F/M brown/dark bro dry; no odor. (20-24") F/M dense black cinder ash with	ight brown sand with SO gravel and SO small/M wn/black sand and gravel with SO black cinders; SO black cinders; dry; no odor.	
В	2-4	48/48	0858	0.0	(24-26") F/M brown sand and small/M black cinders; d	ry; no odor. (26-48") F/M brown sand and gravel	
	1 N H	affer su	ಿ ಎಲ್ಟ್	111	dry; no odor. (48-72") F/M brown sand with SO silt and	SO gravel; saturated; no odor.	
	* - E	5 e e		4			
С	4-6			0.0			
-	- a			10 N	N 8 80 1		
3	25	(4) 1 - 5	5	4 <u>1</u>		1911	
D	6-8	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			2 D D		
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E	8-10	(a)	-				
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24	10-12						
<u> </u>		N 184	18	2 X 2 2			
مستعص	H						
G	12-14	-17 K		÷	8 X <sup>30</sup> (6 Z (0)		
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	Commen	<u>s</u> .	<sup>5</sup> 8			24 X	
		·	5 (A) 8		e <sup>N</sup> e	· · · · · · · · · · · · · · · · · · ·	
í	1.7	- 1918 H		а — у			
PI	ROPORT	IONS USED	1.201	A	BBREVIATIONS Well Construction	DEPTHINTERVALS	
TF LI S(	RACE (TF TTLE (LI) OME (SO	र) )	0-10% 10-20% 20-35%	F M C F/i	= FINE N/A = MEDIUM = COARSE M = FINE TO MEDIUM C = FINE TO COARSE	A = 0-24 in. $G = 144-168$ in. $B = 24-48$ in. $H = 168-192$ in. $C = 48-72$ in. $I = 192-216$ in. $D = 72-96$ in. $J = 216-240$ in. $E = 96-120$ in. $K = 240-264$ in.	

	////				Site: Providence Gas Company	Boring No.: B66	
					642 Allens Avenue, Providence, RI	Date: 2/18/00	
				* 8	ESS Job No: P151-002	Within 100' of Water: No	
. 2 W	est Excl	nange Stre	et. Suite	101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental	
	8, 1,					Instruments, Inc., Model 580B OVM	
Prov	idence,	Rhode Isla	nd 029	03	Well Diameter: N/A	Boring Depth: 6.0'	
(401) 4	421-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 6.0'	
90 G 1		*	<		Sample Method: 4' Acetate Sampler	Logged By: Nicole Murry	
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (ppm)	Materials Description (size, grade, color, moisture)		
<b>A</b>	0-2	14/24	0900	-0.0	(10-14") M brown sand with M/large gravel; SO brick, c concrete and concrete powder with SO light brown sand	inder ash and cinder ash stone. (14-24") 1.	
8	2-4	12/48		0.0	(60-64") F/M light brown/gray silty sand mixed with coal cinders. (64-66") concrete and concrete powder with F/M F brown silty sand; SO small rounded stone at 68"; satu	bits, cinder ash stone, and SO orange porous A gray sand and silty sand. (66-72") dense very ration at 70".	
C	4-6		0915	0.0		이 좀 좀 물 걸 한 것 같아.	
0	4.0	ж Т					
D	6-8		11				
2.77	1		° ; 3	2			
	- 14 <sup>1</sup> 13	an i		2			
E	8-10					· 등 3의 · · · · · · · · · · · · · · · · · ·	
1.1	2	1 ° .			108 0 1 <sup>11</sup>		
- 7 B	- E - 3	0		2			
7	10-12			1.5			
1. A	- 54	3					
G	12-14						
a		* 8 <sub>0</sub>				e de la construcción de la construcción de la construcción de la construcción de la construcción de la constru La construcción de la construcción d	
	Comment	s:					
् स्टम्	1		a nit a				
PI	ROPORT	IONS USED		A	BREVIATIONS Well Construction	DEPTH INTERVALS	
TF LI S(	RACE (TF TTLE (LI) OME (SO	8)	0-10% 10-20% 20-35%	F M C	= FINE N/A = MEDIUM = COARSE M = FINE TO MEDIUM		
A	ND	, ,	35-50%	F/C	C = FINE TO COARSE C = MEDIUM TO COARSE	E = 96-120 in K = 240-264 in. F = 120-144 in. L = 264-288 in.	

						· · · · · · · · · · · · · · · · · · ·	
	1110				Site: Providence Gas Company	Boring No.: D38	
				Δ <sub>E</sub> i	642 Allens Avenue, Providence, RI	Date: 12/3/99	
0.	////				ESS Job No: P151-002	Within 100' of Water: No	
/2 W	est Exc	hange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental	
$T_{2}^{-1}$		a _ e			· · · · · · · · · · · · · · · · · · ·	Instruments, Inc., Model 580B OVM	
Prov	vidence,	Rhode Isla	nd 029	903	Well Diameter: N/A	Boring Depth: 10.0'	
(401)	421-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe	Depth to Water: 7.5'	
			5ac	20 B	Sample Method: 4' Acetate Sampler	Logged By: Daryll Issa	
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (ppm)	Materials Des (size, grade, color	cription r, moisture)	
A	0-2	24/24	0920	0.0	(0-24") F/M brown sand with TR gravel and LI black san	nd; dry; no odor.	
ar fi	- 4-1 - 4-1		1.57	βα α in P			
В	2-4	32/48		0.0	(40-72") F/M brown sand and gravel; dry; no odor.		
S-1-2	** s		2 2 1 2 2 1	80 - f.) 5 1.,			
С	4-6		1 <sup>927</sup>	0.0			
	22 e	2 1			5 X 4 X 4		
D	6-8	36/48	0935	0.0	(84-90") F/M brown sand with TR gravel; dry; no odor. (s silt; wet; no odor.	90-120") F/C brown sand with TR gravel and Ll	
300 G			i e				
e E	8-10	F 1		0.0			
- * .	(e el ji	din 1				in in in in in in in in in in in in in i	
F	10-12						
G .	¥.					ар эх ан таймар ал таймар ал таймар ал таймар ал таймар	
G	12-14					gin That is done a done a	
	-		Ĩ.	2 S			
	Comment	s:					
200	Connioli	<b>-</b> .					
	-	л. Д		<b>.</b>		42. E 2.	
PI	ROPORT	ONS USED	- 6 - 6	AE	BREVIATIONS Well Construction	DEPTH INTERVALS	
TF Li SC At	RACE (TF TTLE (LI) OME (SO) ND	() - )	0-10% 10-20% 20-35% 35-50%	F = M F/N F/N M/	= FINE = MEDIUM = COARSE M = FINE TO MEDIUM C = FINE TO COARSE C = MEDIUM TO COARSE		

			2	2	Site: Providence Gas Company	Boring No.: D57		
1.2.2.2.2				* x 8	642 Allens Avenue, Providence, RI	Date: 12/8/99		
2 R - 2	18	N 13		3.	ESS Job No: P151-002	Within 100' of Water: No		
272 W	est Exc	hange Stre	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmenta Instruments, Inc., Model 580B OVM		
Prov	idence,	Rhode Isla	and 029	903	Well Diameter: N/A	Boring Depth: 10.0'		
(401) 4	421-039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprobe Depth to Water: 3.5'			
	ас. 	- 1 N	83	5	Sample Method: 4' Acetate Sampler Logged By: Daryll Issa			
Depth (intervals)	Sample Depth (feet)	Recovery/ Penetration (in.)	Sample Time	PID (ppm)	Materials Dese (size, grade, color	Materials Description (size, grade, color, moisture)		
Α	0-2	20/24	1220	5.2	(4-10") concrete; dry. (10-24") F/M brown sand with LI g	gravel; dry; no odor.		
			19 17 1					
Β.	2-4	48/48	1240	2.6	(24-42") F/M brown/gray sand and gravel with TR silt dr	y; no odor. (42-72") F/M silt - uniform; saturated		
8	< 1	1.1		.स. ीष	with water; no odor.			
a. 2		×	-	3.397		12		
С	4-6	5 - 2		2.6				
		4- 5		્ય		* <u>,                                   </u>		
a 8		a		1				
D .	6-8	48/48		2.6	(72-120") F/M silt - uniform; saturated with water; no odo	ir. San an		
		- 12 gra	2 °					
		P.5		*! 		**		
E	8-10			2.6				
-07 <sub>10</sub>		e" (, "	8	8				
÷	- 6							
F	10-12		0.40					
				- e				
		к						
G	12-14	7	а а					
÷ *	112			3)				
		×			5 12 S S	ay mana an an an an an an an an an an an an		
(	Comment	s:						
	3	_		G.	(a) 2 (t 2 (t 3 (t 4 (t 4 (t 4 (t 4 (t 4 (t 4 (t 4			
	S 11	· · · · ·		2 X	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	· · · · ·		
					- A &			
PF	ROPORT	ONS USED	· · ·	AE	BREVIATIONS Well Construction	DEPTH INTERVALS		
				F	FINE	A = 0.24 in $G = 144.168$ in		
TF	ACE (TR	.)	0-10%	M	= MEDIUM	B = 24-48 in. H = 168-192 in.		
LĽ	FTLE (LI)		10-20%	C	COARSE	C = 48-72 in. I = 192-216 in.		
SC AN	ME (SO)	5.	20-35%	F/N	A = FINE TO MEDIUM	D = 72-96 in. $J = 216-240$ in.		
	2.01		33-30%	M/	C = MEDIUM TO COARSE	F = 120-144 in $I = 264-288$ in		

2 West Exchange Street, Suite 101       ESS Job No: P151-002       Within 100 of Water         Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731       Driller.: Environmental Drilling, Inc.       Instruments, Inc., Mt         Berning Depth (intervals)       Sample (efect)       Recovery/ (in.)       Well Diameter: N/A       Boring Depth: 10.0°         Depth (intervals)       Sample (feet)       Recovery/ (in.)       PID Time       PID (ppm)       Materials Description (size, grade, color, moisture)         A       0-2       19/24       1455       20.1       (5-12") concrete and asphalt. (12-24") F/M brown sand with TR gravel; dry; no odor.         B       2-4       25/48       1.3       (47-72") F/M brown/gray sand with SO gravel; dry; no odor.         C       4-6       1.3       (47-72") F/M brown/black stained sand and gravel ; sheen visible on entire interval water; heavy odor.	. No
Providence, Rhode Island 02903 (401) 421-0398 Fax (401) 421-5731       Well Diameter: N/A       Boring Depth: 10.0°         Depth (intervals)       Sample Depth (feet)       Recovery/ (in.)       PID Time       Differentiation       Differentiation       Sample (ppm)       Materials Description (size, grade, color, moisture)       Daryli         A       0-2       19/24       1455       20.1       (5-12") concrete and asphalt. (12-24") F/M brown sand with TR gravel; dry; no odor.         B       2-4       25/48       1.3       (47-72") F/M brown/gray sand with SO gravel; dry; no odor.         C       4-6       1.3       (47-72") F/M brown/black stained sand and gravel ; sheen visible on entire interval water; heavy odor.	Environmental
Providence, Rindle Island 02303       Wein bitmitter unit       Depti full       Depti to Water:       C         (401) 421-0398       Fax (401) 421-5731       Drilling Method: Geoprobe       Depth to Water:       C         Depth (intervals)       Recovery/ (feet)       Sample (in.)       PiD Time       PiD (ppm)       Materials Description (size, grade, color, moisture)       Daryli         A       0-2       19/24       1455       20.1       (5-12") concrete and asphalt. (12-24") F/M brown sand with TR gravel; dry; no odor.         B       2-4       25/48       1.3       (47-72") F/M brown/gray sand with SO gravel; dry; no odor.         C       4-6       1.3       (82-120") F/M brown/black stained sand and gravel ; sheen visible on entire interval water; heavy odor.	
C       4-6       1.3       (40-1) 42 1-0398       Pax (40-1) 42 1-0313       Diming integrated. Coopress       Despine       Logged By:       Daryli         Depth (intervals)       Depth (feet)       Penetration (in.)       Sample Time       PID (ppm)       Materials Description (size, grade, color, moisture)       Logged By:       Daryli         A       0-2       19/24       1455       20.1       (5-12°) concrete and asphalt. (12-24°) F/M brown sand with TR gravel; dry; no odo         B       2-4       25/48       1.3       (47-72°) F/M brown/gray sand with SO gravel; dry; no odor.         C       4-6       1.3       (47-72°) F/M brown/gray sand with SO gravel; dry; no odor.         D       6-8       38/48       1505       82       (82-120°) F/M brown/black stained sand and gravel ; sheen visible on entire interval water; heavy odor.	5.8'
Depth (intervals)       Sample Depth (feet)       Recovery/ Penetration (in.)       PID (ppm)       Materials Description (size, grade, color, moisture)         A       0-2       19/24       1455       20.1       (5-12") concrete and asphalt. (12-24") F/M brown sand with TR gravel; dry; no odo         B       2-4       25/48       1.3       (47-72") F/M brown/gray sand with SO gravel; dry; no odor.         C       4-6       1.3       (47-72") F/M brown/gray sand with SO gravel; dry; no odor.         D       6-8       38/48       1505       82       (82-120") F/M brown/black stained sand and gravel ; sheen visible on entire interval water; heavy odor.	Issa
A       0-2       19/24       1455       20.1       (5-12") concrete and asphalt. (12-24") F/M brown sand with TR gravel; dry; no odd         B       2-4       25/48       1.3       (47-72") F/M brown/gray sand with SO gravel; dry; no odor.         C       4-6       1.3       (47-72") F/M brown/gray sand with SO gravel; dry; no odor.         D       6-8       38/48       1505       82       (82-120") F/M brown/black stained sand and gravel ; sheen visible on entire interval water; heavy odor.	
B       2-4       25/48       1.3       (47-72") F/M brown/gray sand with SO gravel; dry; no odor.         C       4-6       1.3       (47-72") F/M brown/gray sand with SO gravel; dry; no odor.         D       6-8       38/48       1505       82       (82-120") F/M brown/black stained sand and gravel ; sheen visible on entire interva water; heavy odor.	r.
C       4-6       .       1.3         D       6-8       38/48       1505       82       (82-120") F/M brown/black stained sand and gravel ; sheen visible on entire interval water; heavy odor.	
C       4-6       1.3         D       6-8       38/48       1505       82       (82-120") F/M brown/black stained sand and gravel ; sheen visible on entire interval water; heavy odor.	10
C       4-6       1.3         D       6-8       38/48       1505       82       (82-120") F/M brown/black stained sand and gravel ; sheen visible on entire interval water; heavy odor.	1 8 A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A
D 6-8 38/48 1505 82 (82-120") F/M brown/black stained sand and gravel ; sheen visible on entire interva water; heavy odor.	
D 6-8 38/48 1505 82 (82-120") F/M brown/black stained sand and gravel ; sheen visible on entire interva water; heavy odor.	
D 6-8 38/48 1505 82 (82-120") F/M brown/black stained sand and gravel ; sheen visible on entire interva water; heavy odor.	
water; heavy odor.	il; saturated with
	6 ×
E 8-10 69	v 3-
10-12	
G 12-14	
Comments:	14 I.
	. · · · ·
	INTERVALS
PROPORTIONS USED ABBREVIATIONS Weil Construction	G = 144 - 168 in
F = FINE  R = 24-48 in.	H = 168-192 in.
TRACE (1R) $0-10\%$ $M = MEDIUM C = 48-72$ in.	l = 192-216 in.
SOME (SO) 20-35% F/M = FINE TO MEDIUM D = 72-96 in.	and the second second second second second second second second second second second second second second second
AND 35-50% $ F/C = FINE TO COARSE$ $ E = 96-120 \text{ in.}$	J = 216-240 in. K = 240-264 in

1.12				- -	Site: Providence Gas Company	Boring No.: D59
ka na sa sa				The se	642 Allens Avenue, Providence, RI	Date: 12/8/99
f a s ata	////			문 노 권	ESS Job No: P151-002	Within 100' of Water: No
272 We	est Excl	hange Stree	et, Suite	e 101	Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental
Prov	idence	Rhode Isla	nd 029	03	Well Diameter: N/A	Boring Denth: 10.0'
(401) 4	21_039	8 Fax (40	1) 421-	5731	Drilling Method: Geoprope	Denth to Water: not determined
(401)4	21-000	9 T UX (40	1, 44, 1	gand".	Sample Method: 4' Acetate Sampler	I ogged By: Daryll Issa
Depth	Sample Depth	Recovery/ Penetration	Sample	PID	Materials Desi	cription
(intervals)	(feet)	(in.)	Time	(ppm)	(size, grade, color	', moisture)
A	0-2	24/24	1515	0.0	(U-6") concrete dust. (6-24") F/M brown sand and grave	i; wet at 18"; no odor.
.В	2-4	31/48	-	0.0	(41-72") F/M brown sand and large gravel; wet no odor.	
5 st	×	s	1.1	1.1		
8 a 👘 🖓	- 19 I	8 0	8	1 × 1	the second second second second second second second second second second second second second second second s	
C	4-6		1520	3.9		
ų į	2.9.4			. e. P	Anni i Alais Alais I a	
D	6-8	30/48		1.3		
, E	8-10		1.2	1.3		
5	× 8	8	1			
ુ ચંચ્	2.1	0		- 11	a na tenza tanà jere i Si	
F	10-12			1.		
$= \frac{a}{2e^{2}}$	*	5 X	-			
G	12-14	11 12			na shi shi shi ka n	
1. A.	2.	8 °		5 700		
	Commen	ts:	-		8 1	
-			Υ.		ay na shi shi shi shi shi shi shi shi shi shi	1 1 1 1 1 1
	¥80 _	×				2 0 0 0 0 0 0 8 2 10 0 0 0 0
P	ROPORT	IONS USED		A	BBREVIATIONS Well Construction	DEPTH INTERVALS
TF LI SC At	RACE (TF TTLE (LI) OME (SO ND	र) )	0-10% 10-20% 20-35% 35-50%	F M C F/ F/	= FINE = MEDIUM = COARSE M = FINE TO MEDIUM C = FINE TO COARSE C = MEDIUM TO COARSE	

			5.			Site: Providence Gas/Algonquin Gas	Well / Boring No.: RHB-1	
	272 West	Exchange	e Street, S	Suite 101		Job No: P151-000.1	Ground Elevation:	
2	Provide (401) 421	nce, Rhoo -0398 Fa	de Island ax (401) 4	02903 21-5731		Drilling Co.: Envirotech	ESS Inspector: Erik A. Jo	ohnstone
le	thod: Hollo	w Stem Ar	uaer			Well Diameter: NA	Instrument:	
Sample	Method:	Split spor	on			Water Level: NA	Well / Boring Depth: 10	,
Date:	9/3/98					Logged By: Erik A. Johnstone	Checked by:	
Sample No.	Recovery/ Penetration (in Inches)	Blow Counts	Headspace (ppm)	Depth (feet)	Soil Log	Materials Description (size, grade, color, moisture)		
0-1				- - - - - -		Concrete.		() PVC Riser
1-3	16"	8	7.1-7.7	4		F to M sand (13") grey-green; some cobbles. 13"-16" F to M sand; black.		
3-5	16*	32 37 25 29	4.0-4.6	6		Grey/brown M sand; some cobbles; some dark staining; no odor.		( ) PVC Screen
5-7	15"	40 26 21 25	18.1			Grey/green medium sand; some cobbles; no odor.		
7-9	10"	5 63 30 32	9.2-9.7	- - - - - -		Grey/brown medium sand; some cobbles. Yellow/grey M to coarse sand; wet; slight odor,		
9-10	12"	48 60	57.4	12		Grey/brown medium sand; wet; slight odor.		
Commer	nts							<u> </u>
Well Loc	ation							
-	PROPOR	TIONS US	SED			ABBREVIATIONS		
	TRACE (T LITTLE (L SOME (Se	rr₌) .l_) 0_)	0-10% 10-20% 20-35%			F = FINE M = MEDIUM C = COARSE F/M = FINE TO MEDIUM F/C = FINE TO COARSE		
1	AND	~	35-50%			WIG = MEDIUM TO COARSE		

			5	5	<b>7</b> .	Site: Providence Gas/Algonquin Gas	Well / Boring No.: RHB-	2	
	272 West	Exchange	e Street, S	Suite 101		Job No: P151-000.1	Ground Elevation:		
	Provide (401) 421	nce, Rhod -0398 Fi	de Island ax (401) 4	02903 21-5731		Drilling Co.: Envirotech	ESS Inspector: Erik A	. Johnston	ie
Drill Met	thod: Hollov	v Stem A	uger			Well Diameter: NA	Instrument:		
Sample	Method:	Split spo	on			Water Level: NA	Well / Boring Depth: 9'		
Date:	9/3/98					Logged By: Erik A. Johnstone	Checked by:		
Sample No.	Recovery/ Penetration (in inches)	Blow Counts	Headspace (ppm)	Depth (feet)	Soil Log	Materials Description (size, grade, color, moisture)			
0-1				2		Concrete.			()PVC Riser
1-3	6"	3 4 3 3	2	4		F to M brown sand; no odor.			
3-5	3"	3 5 3 3	1	6		M brown sand; no odor.			( ) PVC Screen
5-7	3"	3 3 4 3	43	8		M/C brown sand; wet petroleum staining wet; petroleum odor.			
7-9	6"	5 6	186	- - - - 10		M/C Brown sand; wet petroleum staining and odor.			
									•
<u>Commer</u> 9/4/98 P <u>Well Loc</u>	nts ID readings ation	in office	GK						
	PROPOR	TIONS U	SED			ABBREVIATIONS			
	TRACE (1	(R.)	0-10%	j.		F = FINE			
	LITTLE (L	L)	10-20%			M = MEDIUM C = COARSE		ter i	
	SOME (D	) )	20-3504			F/M = FINE TO MEDIUM F/C = FINE TO COARSE		<b>V</b>	
		- ,	20-0070			M/C = MEDIUM TO COARSE			
	AND		35-50%						

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r	////			11	1					
			5	5		Site: Providence Gas/Algonquin Gas	Well / Boring No.: RHE	3-3		
	272 West	Exchang	e Street, S	Suite 101		Job No: P151-000.1	Ground Elevation:		á	1
	Provide (401) 421	nce, Rho -0398 F	de Island ax (401) 4	02903 21-5731		Drilling Co.: Envirotech	ESS Inspector: Erik	A. John	stone	•
,vle	thod: Hollow	w Stem A	uger			Well Diameter: NA	Instrument:			
Sample	Method:	Split spo	on			Water Level: NA	Well / Boring Depth: 9'			
Date:	9/3/98					Logged By: Erik A. Johnstone	Checked by:			
Sample No.	Recovery/ Penetration (in inches)	Blow Counts	Headspace (ppm)	Depth (feet)	Soll Log	Materials Description (size, grade, color, moisture)				2
0-1				- - - 2		Concrete.	*			()PVC Riser
1-3	11"	4 4 6	3.8			F/M brown sand; some cobbles; slight odor,				
3-5	13"	5 10 15 16	4.3	- - - - - - -		M/C brown/grey sand; some cobbles.				( ) PVC Screen
5-7	6"	36 42 75 29	4.6			M/C brown/grey sand; some cobbles; wet; no odor.				
7-9	13"	22 16 71 80	180	- - - - - -		F/M brown/grey sand,wet; petroleum odor,				
Commer 9/4/98 P Well Loc	nts ID readings cation	in office	GK				ĩ			
	PROPOR	TIONS U	SED			ABBREVIATIONS			-	
	TRACE (1	"R_) 1.)	0-10%			F = FINE M = MEDIUM C = COARSE F/M = FINE TO MEDIUM				
	SOME (S	0.)	20-35%			F/C = FINE TO COARSE M/C = MEDIUM TO COARSE				
	AND		35-50%							_

	272 Wes Provide	t Exchangence, Rho	Sillinge Street, S	Suite 101 02903		Site: Providence Gas/Algonquin Gas Job No: P151-000.1	Well / Boring No.: Ground Elevation:	RHB-4		
	(401) 42	1-0398 F	ax (401) 4	21-5731		Drilling Co.: Envirotech	ESS Inspector:	Erik A. Joh	nnstone	
Drill Met	ihod: Hollo	w Stem /	Auger			Well Diameter: NA	Instrument:	_		
Sample	Method:	Split spo	oon		-	Water Level: NA	Well / Boring Dept	n: 10.5	5'	
Sample No.	Recovery/ Penetration (in inches)	Blow Counts	Headspace (ppm)	Depth (feet)	Soli Log	Materials Description (size, grade, color, moisture)	Checked by.			
0-2	NA	NA	NA	2		Concrete.	-			( ) PVC Riser
2-4	9"	4 4 8 11	*	- - - - - - - - - - - - - - - - - - -		Fine grey sand; little cobbles; slight odor.				
4-6	3*	4 4 8 11	*	6		Fine grey sand; and cobbles; slight odor. Not enough recovery for a sample.				( ) PVC Screen
6-8	3"	5 9 9 8				Fine grey sand; little cobbles; wet.				
8-10	8**	13 13 11 7	-	- - - - - - -		0"-5": F/M grey sand; wet; slight odor. 5"-8": M/C grey/yellow sand and cobbles; stronger odor.				
10-10.5	5*	19	-	- - - - 12		Medium grey sand; wet; some staining and slight odor,			<i>,</i>	
Commen	ation									
	PROPOR	TIONS U	SED	Т		ABBREVIATIONS				
	TRACE ( LITTLE (L SOME (S AND	(rr) I) O)	0-10% 10-20% 20-35% 35-50%			F = FINE M = MEDIUM C = COARSE F/M = FINE TO MEDIUM F/C = FINE TO COARSE M/C = MEDIUM TO COARSE				

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			5	15		Site: Providence Gas/Algonquin Gas	Well / Boring No.: RH	B-5	
	272 Wes	t Exchan	e Street,	Suite 101		Job No: P151-000.1	Ground Elevation:		
	Provid	ence, Rh	ode Island	02903		Drilling Co · Envirotech	ESS Inspector: Eril	k A. Johnste	one
- Me	ethod: Hollo	w Stem	Auger			Well Diameter: NA	Instrument:		
Sample	e Method:	Split sp	oon			Water Level: NA	Well / Boring Depth:	10'	
Date:	9/4/98	3				Logged By: Erik A. Johnstone	Checked by:		
Sample No.	Recovery/ Penetration (in inches)	Blow Counts	Headspace (ppm)	Depth (feet)	Soll Log	Materials Description (size, grade, color, moisture)			
0-2	NA	NA	NA			Concrete.			( ) PVC Riser
2-4	5"	5 7 9 10				Medium grey/brown sand; some cobbles; slight petroleum odor.		*	
4-6	6"	4 5 3 8	•			Medium grey sand; little cobbles; moist; moderate odor.			( ) PVC Screen
) 	3"	7 6 5 5	-			Medium grey sand; little cobbles; moist; moderate odor; not enough recovery for a sample.			
8-10	8**	8 11	•			Coarse grey/yellow sand and cobbles; moderale odor; last two inches of the sample interval have a heavier odor and some staining.			
				12					
Comme	ents cation				2				
	PROPOR	RTIONS	JSED		_	ABBREVIATIONS	1		
	TRACE	(TR.)	0-10%			F = FINE			
		11)	10-20%			M = MEDIUM C = COARSE		11 . A.	
I		201	00.05%			F/M = FINE TO MEDIUM		<b>_</b>	
	SUME (S	50.)	20-35%			M/C = MEDIUM TO COARSE			=
Î.	AND		35-50%					_	

				1.1.1.1.1				
			5			Site: Providence Gas/Algonquin Gas; Allens Avenue	Well / Boring No.: RH	B-6
	272 Wes	st Exchan	de Street.	Suite 101		Job No: P151-000.1	Ground Elevation:	
	Provid (401) 42	ence, Rh 1-0398	ode Island Fax (401) 4	02903		Drilling Co · Envirotech	ESS Inspector: Eril	
Drill M	ethod: Holle	ow Stem	Auger	210101		Well Diameter: NA	Instrument:	A. Johnstone
Sample	e Method;	Split sp	oon			Water Level: NA	Well / Boring Depth:	Q'
Date:	9/4/98	3				Logged By: Erik A. Johnstone	Checked by:	
Sample No.	Recovery/ Penetration (in inches)	low Counts	Headspace (ppm)	Jepth (feet)	Soll Log	Materials Description (size, grade, color, moisture)		
0-1	NA	NA		5		Concrete		
				2				( ) PVC Riser
1-3	11"	7 10 11 10	•	4		Medium grey/brown sand and cobbles; moist; moderate odor.		
3-5	15"	9 15 25 47		6		F/M grey sand cobbles; moist; moderate odor.		( ) PVC Screen
5-7	9.5"	25 26 22 18				F/M grey/yellow sand; some cobbles; slight odor.		
7-9	7*	8 13 12 16				F/M grey sand; little cobbles; wet; moderate odor.		
Comme	nts		-lu	14		L		1 \/ 1
<u>Well Lo</u>	<u>cation</u>							
	PROPOR	RTIONS L	ISED			ABBREVIATIONS	1	
	TRACE (	TR.)	0-10%			F = FINE		90 (A)
	LITTLE (I	_l.)	10-20%			M = MEDIUM C = COARSE		월, 고학 
	SOME (S	iO.)	20-35%			F/M = FINE TO MEDIUM F/C = FINE TO COARSE		<b>+</b>
	AND		35-50%			M/C = MEDIUM TO COARSE		
	_							

		ente de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de La contra de la contr		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	2	3-97		
		Test Plt Excavation Log		
	Client	Providence Gas Company	Test Pit No.	B07
13	Site Name	Allens Avenue Remediation Project	Date	9/5/00
avironmental Science Services, Inc. 👘 🔲 🖻	Site Address	642 Allens Avenue, Providence, Rhode Islan	nd Observed By	Daryll Issa
72 West Exchange Street, Suite 101	Job Number	P151-002	Checked By	Gary Kaufman
nvironmental Scientists, Engineers, and Planners	Contractor	Tantara Corporation	Test Pit Depth	10.5 feet
1	Excavator Reach	12 feet	Groundwater Depth	Damp at 10.5 feet
		Test Pit Description		34
Fine/medium brown sand with som	ne gravel, dry, no c	odor.	2 B B	Γ <u>, 11</u> γ <sup>H, 8</sup> (Σ00), 31 <sup>Ω</sup>
Fine/ medium brown sand with sor	me black cinder/as	h and some red brick, gravel, dry, no odor.	the state in	a tag sa si
52" Fine/medium light brown sand with	some gravel, dry	faint petroleum odor, no PID above backgrour	nd.	
	fino/modium brow	in and dark brown sand, day, petroleum odor, n	o PID above backgroup	d S
Pinemedium gray sand with some	nine/mediatri brow	n and dark brown saild, dry, perioledin odor, n	OF ID 200VE Dackgroun	u.
26 Fine/medium gray sand with trace	gravel, damp at 12	20°, petroleum odor present, no PID above bac	kground.	
			and the second s	
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	+	6 <sup>2</sup>	5 	-
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- X <sup>2</sup>	14		8	, jê k
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	6 P.		×	)¥
11 17 18 <u>1</u>			1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
			3 1	
		1. S		
marks:			4 <sup>17</sup>	in ji vez
damo at 10.5 feet Test oit was ended due t	to sides caving in.	2 2 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1		т н <u>н</u>
			·	28. <sup>26</sup>
- <u>-</u>		ಷ್ಟ್ ಕೊರ್ತನ ತಿ	s <sup>5*</sup>	1. S. S. S. S. S. S. S. S. S. S. S. S. S.
1				100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100
ation/Sketch:		÷	·	а <sup>к</sup> а д. а.,
st pit is located within 100 feet of the river, adj	acent to Boring BC	17. See Figure 2 in SIR.	4	್ಷ ಜಿತ್ರಾಗ್ ತಿ
- /41			1. A. A. A.	
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	5	e <sup>11 2</sup> 3 4	a (f. 1998) 1	× 5
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		: :		j's apprenticampiere t alle

555	Client	Providence Gas Company	Test Plt No.	B09	5.1
	Site Name	Allens Avenue Remediation Project	Date	9/5/00	
Environmental Science Services, Inc.	Sile Address	642 Allens Avenue, Providence, Rhode Island	Observed By	Dao/IL Issa	14.1
Providence, Rhode Island 02903 (401) 421-0398	Job Number	P151-002	Checked By	Gaor Kaufman	<u>, 100</u>
Environmental Scientists, Engineers, and Planners	Contractor	Tantara Corporation	Test Pit Depth	10 feet	
	Excavator Reach	12 feet	Groundwater Depth	6 feet	
		Test Pit Description		1	5.
3" Fine/medium brown sand with som	e gravel, dry, no o	dor.		8 	
10" Fine/medium black sand with black	cinders/ash, dry,	no odor.	. * *	at the second	
-36" Fine light brown sand, dry, no odor	· 2 ·	Se		a 25 - 1 <sup>2</sup>	
-48" Fine/medium gray to olive gray san	d with trace grave		an <sup>16</sup> 1 2 3		
-72° Fine/medium gray sand with trace					ų.
1201 Find modified gray sand with trace (	gravel, damp, petro	bleum odor, PID=48.0 ppm.		2.0	*
-120 Fine/medium gray sand with trace g	gravel, wet, petrole	um odor, PID=48.0 ppm.		e. a <sup>364</sup> e	<sup>17</sup> ж
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140 1 101 F 501	: 3				4
54		#			
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16 <sup>1</sup>		N	а 16) – 15	4 N	
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2.7 E a			81	P.	
C			X		
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		14 	×		
			10 A	5	14
		26 U. 31 20			
24 (2) (2)		5 X t			
and a second second second second second second second second second second second second second second second	54			<u> </u>	- K
IG1 ND.			48 o *		
undwater entered hole at approximately 72". W	as able to excavat	e to 120" prior to hole filling with water.	2 ×		
		-12 - 21	g <sup>17</sup> 2, -		
10 M	5 o	4 192 20 N		÷(	
tion/Sketch:					
in 100 feet of the river, adjacent to BOO. See 5	inura 2 in SID			¥1	8 8
	iguie z ili Siri.	· · · · · · · · · · · · · · · · · · ·	N 10		
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5.8.1 (i				x _ <sup>N</sup> N	8
	25				8 <sup>70</sup> - <sup>10</sup>
	2				

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			Soil	Porinc			PROJECT	Report	of Boring No.	VHB-17
			5011 1	Johne	,	New E	ngland Gas Company		Well ID:	NA
0			керо	rt		Provi	idence, Rhode Island	Job Number:	71274	Sheet 1 of 1
1 <u>0</u>	Drilling C	ompany:	Subsurface	e Drilling at	nd Remedia	ation	Boring Location:	SM	/ corner, by fend	e near RCA 14
	Driller:		Jim Goldth	waite / Jos	h Downing		Elevation:	NA	Datum:	NA
	Inspector		Keith Sulliv	/an / Adam	Rosenblatt		Start Date:	1/17/2002	End Date:	1/17/2002
	The boring	gs were dril	led by hollo	w-stem au	ger. Unless	otherwise	noted, the soil samples we	re collected u	ising a 2' split-s	poon driven with a 140-
	lb, hamme	er falling 30	"						1	
	Depth (ft)	PID Reading	Sample No.	Pen/Rec	Blows/6"		SAMPLE DESCRIPTION			Boring Photo
						Auger cutt SAND, tra	ings - Light brown, loose, fi ce gravel, moist, no sheen c	ne to coarse or odor.		
	0 - 5	ND	S1	NA	NA					
	5 - 6	118	S2	NA	NA	Auger cutt trace grave odor.	ings - Light gray, fine SAND el, moist to wet, very strong	, trace silt, chemical		
					1					
0									Bottom of exploratio	n 6' below grade.
				5965						
								5		
	GRANUL	AR SOILS	COHESIV	E SOILS	PROPO	RTIONS	Notes			
	0-4	V. Loose	<2	V. Soft	Little	10 - 20%	grainsize. Actual changes	present a gra may be gradu	ipnical depiction	or changes in soli type and
-	4 - 10	Loose	2-4	Soft	Some	20 - 35%	2) Bedrock was not encoun	tered.		
	10 - 30 30 - 50	M. Dense Dense	4-8 8-15	M. Sunt Stiff	And	35 - 50%	<ol> <li>Water levels may fluctua</li> <li>All soil samples were so</li> </ol>	te due to oce reened in the	an tides, seasor field for VOCs u	, and precipitation rates. sing a ThermoEnvironmental
$\smile$	>50	V. Dense	15 - 30	V. Sliff			Instruments model 580B 10	.eV photoioni	ization detector	(PID).
	1		>30	Hard						

C

	;	Soil Boring Report		- i.,	PROJECT New England Gas Company 642 Allens Avenue	Report of Bor	Ing No. MHA-1 Vell ID: VHB-21
willing Company		historian Environmental Drilling			Providence, Rhode Island	Job Number: 71274	Sheet 1 of 1
mang Company.	3	bullarad	_			Elevation: NA	Datum: NA
inector:		Taude Masso / Chris Maarollai				Start Date: 1/30/2002	d Date: 1/28/2003
hadaaa waxa a	dument hur					Start Date: 1/20/2003 En	UDate. 1/20/2003
a portings were a	uvanceu by a	a nowow stern auger, oness otherwise	e noteo, tre	e son sampe	s were conlected using a two-root spin-spoon driven with a 140 lo, nammer rating 30 inches.		
Depth (ft.)	PID Reating	Sample No	Pen/Rac (in.)	Blows/6 In_	SAMPLE DESCRIPTION	Boring	Photo
					Auger to approximately six inches below grade because surficial solt was frozen.	Training and the second	-
0 - 2	NA	S-1	24/12	41/120/52	Gray, light brown, fine to medium sand and silt with gravel, dry frozen.		3.1
2 - 4	3.7	S-2	24/24	29/19/26/11	Gray, fine to med. sand and silt, with gravel.		11.59/00
	++				Dark gray to gray, fine to medium sand with gravel; moist with odor.	Para a series a series a	
4 - 6	744	S-3	24/6	4/4/6/6		1	
			$\vdash$		Gray, fine to med. sand with gravel; wet with odor.		
6 - 8	NA	S-4	24/18	8/10/11/11		A second second	
							al (al 2 - 1997) Al 2 Anni anni aitea
			1		Dark gray, fine sand and silt with gravel; wet with odor.	and and an annual	
8-10	NA	5-0	24/12	10/11/10/10		States and Annual and	-
10 - 12	1200	S-6	24/2	3/6/3/2	Gray to brown, medium to coarse sand with gravel; wet with strong odor,		
12 - 14	NA	S-7	24/12	1/1/1/1	Black and gray, fine to coarse sand; wet with odor.	A State of the second sec	
				l	Set 2 inch monitoring well with standpipe at 16 ft. below grade with 10 ft, of screen.		in a pin

Bottom of exploration 16 It, below grade.

GRANULAR SOIL DENSIT	S BLOWS/FT	COHESIVE SOILS BLOWE/	FT DENSITY	PROP	ORTIONS	NOTES
0 - 4	V-Loose	<2	V. Soft	Tinca	0 - 10%	1) Soil stratification lines represent a graphical depiction of changes in soil type and grainsize. Actual changes may be gradual.
4 - 10	Loose	2 - 4	Soft	Little	1D - 20%	2) Bedrock was not encountered
10 - 30	M Dense	4 - 8	MSHI	Some	20 - 35%	<ol> <li>Water levels may fluctuate due to ocean tides, season, and precipitation rates.</li> </ol>
30 - 50	Danae	8 - 15	SUII	And	35 - 50%	4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10 eV photoionization detector (PID).
>50	V Danse	15 - 30	V Stiff			5) AFS = Auger Flight Sample
		>30	Hard			6) NSR = No Sample Recovered

# NG

# **VHB** Monitoring Well Diagram

Project Name: New England Gas	Project No.	71274	Date:	29-Jan-03
Location: 642 Allens Ave	Contractor:	Subsurface Drilling	Well No.	VHB-23
Providence, RI	Scientist:	C. Masse/C. Mazzolini	GW Depth:	Approx. 8 Feet



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GZA G	GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS					PROJECT KeySpan LNG Terminal			REPORT OF BORING NO.		
GEOT	ECH/GE	AL BORING	LOG	ISULIANIS	Pr	ovidence, Rhode Isl	land		FILE	NO.	32784
DODINO									Сли	U DI	LINNA
FOREM	ANI	Tom Paquette	a John Mederios	-		GROUND	RING LOCATION	+1/1	See Expl	TIM	n Location Plan
GZA EN	Э.	Joanne Kissir	nger				DATE START	A/19/0A			
							BATEOTAR	4/10/04	- DAIL	LIND	4/13/04
A 2" SPL	IT SPOON	DRIVEN USIN	e noted, sam Ig a 140 lb. Han	PLER CONSISTS	OF 0 IN	DATE	TIME	GROUNI WATER	CASING	38	STABILIZATION TIME
CASING	UNLESS	OTHERWISE	NOTED, CASIN	G DRIVEN USING	A 300 lb						
HAMME	R FALLING	24 IN.	OTUED							_	
DEPTH	CASING	<u>,</u>	OTHER:				SAMPLE DE	SCRIPTION			CTDATINA
	BLOWS	NO	PEN//REC	DEPTH (FT)	BLOWS/6"		BURMISTER CL	LASSIFICATION		ĸ	DESCRIPTION
		S-1	18/10	0-1.5	3-8	Medium dense, bro	own. fine to mediu	Im SAND, trace f	ine		GRANULAR
					60/6"	Gravel, trace Silt					FUL
							Refusal	at +1 5'			
						1	, torusur	411.0			
5											
-											
									1		
10 -											
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Ĩ =											
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-											
G	RANULAR	SOILS	COHESI	IVE SOILS	REMARKS:						
0-4			BLOWS/F	VERV SOFT	1. Obstruction er	ncountered, Reloca	ited hole 5' away.				
4-10	v Erk	DOSE	2-4	SOFT							
10-30	MÉDIL	M DENSE	4-8	M. STIFF							
30-50	D	ENSE	8-15	STIFF							
>50	VER	DENSE	15-30	V. STIFF							
NOTEO	_	0.07515151	>30	HARD							
NOTES;		1) STRATIFIC		PRESENT APPR			SOIL TYPES, TRA	ANSITIONS MAY	BE GRADUAL.		
		MAY OCCUR		FACTORS THAN	JE AT TIMES AN		IONS STATED, F		UF GROUNDWAT	ER	
GZA										в	ORING NO GZ-7 (A)

GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS					PROJECT KeySpan LNG Terminal Providence, Rhode Island			REPORT OF BORING NO. SHEET			GZ-7 (B)
GEOT	ECHNIC	AL BORING	LOG						СНК	D BY	DMA
BORIN	3 CO.	Guild			_	BOR	ING LOCATION		See Expl	oratio	n Location Plan
FOREN	IAN	Tom Paquette	e, John Mederios		-	GROUND S	URFACE ELEV.	±14'	. DA	TUM	MLLW
GZA EN	1G.	Joanne Kissi	ngər				DATE START	4/19/04	DATE	END	4/19/04
SAMPL A 2" SP	er: Unles Lit spoon	SS OTHERWIS	E NOTED, SAMI IG A 140 Ib. HAN	PLER CONSISTS	OF 0 IN	DATE	TIME	GROUNI WATER	WATER READING	GS	STABILIZATION TIME
CASING	3: UNLESS	OTHERWISE	NOTED, CASING	G DRIVEN USING	A 300 lb						
HAMME		3 24 IN.									
DEPT	CASING	Ť –	S/	AMPLE		l	SAMPLE DE	SCRIPTION		R	STRATUM
	BLOWS	NO	PEN/./REC	DEPTH (FT)	BLOWS/6"		BURMISTER CL	ASSIFICATION		ĸ	DESCRIPTION
	Р	S-1	24/18	0-2	7-7	Medium dense, orar	nge, fine to medi	um SAND, little f	ine Gravel,		
	Р				8-8	trace Silt					
	Р	S-2	24/18	2-4	13-9	(Top 15"): Medium	dense, tan, fine t	o medium SANE	), little fine		
	Р				11-9	Gravel, trace Silt					GRANULAR
5	Р	S-3	24/8	4-6	10-9	(Bottom 3"): Loose,	dark brown, fine	to medium SAN	D, some		FILL
					8-13	Silt, trace fine Grave	əl				
		S-4	18/12	6-7.5	11-13	S-3: Medium dense	, orange-brown,	fine to coarse S/	ND, some	1	
					56/6"	Silt				2	
						S-4: Very dense, br	own and orange,	, fine to coarse S	AND,		
10						some Silt, trace fine	Gravel (wet)				
							Refusal	at ±7.5'			
15											
20						1					
25											
1											
									5		
30											
(	GRANULAR	SOILS	COHESI	VE SOILS	REMARKS:						
B	LOWS/FT D	ENSITY	BLOWS/F	T DENSITY	1. Obstruction er	ncountered at ±7.5', p	oipe broke. Sam	ole S-4 was colle	cted and the hole r	eloca	ted again 5' away.
0-4	VER'	Y LOOSE	<2	VERY SOFT	2. Groundwater e	encountered at ±6'.					
4-10	MEDU		2-4	SOFT							
30-50		ENSE	4-0 8-15	STIFF							
>50	VER	DENSE	15-30	V. STIFF							
			>30	HARD							
NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE						DARY BETWEEN S	OIL TYPES, TRA	ANSITIONS MAY	BE GRADUAL.		
		2) WATER LE		HAVE BEEN MAL	DE AT TIMES AN		ONS STATED, FI		OF GROUNDWAT	ER	
GZA			DOL TO OTHER	THOTORO THAN	I TOUSE FRESE		-NOUREMENTS	WERE MADE		F	ORING NO. GZ-7 (B)

GZA GEOENVIRONMENTAL INC. 140 BROADWAY PROVIDENCE, RHODE ISLAND					PROJECT Kerstern LNG Terminal			REPORT OF BORING NO. GZ-7 (C)			GZ-7 (C)
GEOT	ECH/GF	OHYDROLO	GICAL CON	SULTANTS		KeySpan LNG Terminal		SHEET			1 of 5
GEOT	ECHNIC	AL BORING	LOG			rendence, railoge island			CHK	D BY	
BODING		Guild				PODIN	CLOCATION		See Durl		
FOREMA	AN	Tom Paquette	. John Mederios			GROUND SUF	REACE ELEV.	+14'	DA	TUM	MILW
GZA EN	Э.	Joanne Kissin	ger		-		DATE START	4/19/04	DATE	END	) <u>4/24/04</u>
A 2" SPL	IT SPOON	DRIVEN USIN	E NOTED, SAMF IG A 140 Ib. HAM	PLER CONSISTS	0 IN	DATE	TIME	GROUND WATER	WATER READING	GS	STABILIZATION TIME
CASING	UNLESS	OTHERWISE	NOTED, CASING	G DRIVEN USING	6 A 300 lb	4/24/04		±11'			
HAMMEI	RFALLING	6 24 IN.									
CASING	SIZE:	5" / 4"	OTHER:							-	
DEPTH	BLOWS	NO	PEN//REC	DEPTH (FT)	BLOWSIS"		SAMPLE DE	ASSIFICATION		R	STRATUM
	e		TENINEO	Der mit ig	BEOTICIO		INNIO TEN OL	AdditioAtton		⊢^	DESCRIPTION
					-						1
	8					-					
	<u>S</u>					4					
	P					-					
5 -	Р					-				1	
	S	-				-				2	
	s										
	s	S-5	24/2	8-10	4-1	Loose, gray, fine to coa	arse (-) SAND,	little Silt (wet)			GRANULAR
	s				3-5					4	FILL
10	s										
	S										
	s										
	S										
	S	S-6	24/0	14-16	19-18	NO RECOVERY					
15	s				15-14						
	s	S-7	24/4	16-18	PUSH	Loose, black, fine to me	edium SAND,	trace Silt (wet)			
	s							. ,		5	
	s					1					+19'
	78	S-8	24/6	19-21	20-8	Medium dense, dark bi	mwn FIBROU	SWOOD trace	medium		
20	68				5-5	Sand (wet)		0 11000, 4400	in caran	ii.	
-	33										
	32									6	
	46					1				0	
	40	8.04	24/0	24.08	15.0						
		0-9/	24/0	24-20	10-3	NO RECOVERT					ORGANIC
		0.00	0445	01.00	1-2						SILT
		2-9B	24/15	24-26	PUSH	very soft, gray, Organic	c SIL I, trace C	rganics, Fibers,	Shells	7	
						1				8	
				<b>67.5</b>							
20	-	UP-1	24/0	27-29		UNDISTURBED PISTO	UN SAMPLE (1	NU RECOVERY			
29 -		0.431									
		S-10A	24/0	29-31	2-4	NO RECOVERY					
					2-2						
		S-10B	24/20	29-31	PUSH	Very soft, gray, Organic	SILT, trace O	rganics, Wood fi	bers	9	
			001/50	VERCUR	DEMARKO					_	
BI	OWS/FT D	ENSITY	BLOWS		L Casing spun	(s) of pushed (p)					
0-4	VER	Y LOOSE	<2	VERY SOFT	2. Samples S-1	through S-4 collected in	boring GZ-7 (B	B).			
4-10	L	OOSE	2-4	SOFT	3. Rollerbit from	0-8'. (Rollerbit through	concrete from	1.5' to ±3'). Pet	roleum type odors :	5-8' v	while rollerbit. Spin casing to 8
10-30 MEDIUM DENSE 4-8 M. STIFF 4. Rollerbit a					4. Rollerbit ahea	ad to 14'. Rollerbit throu	gh obstruction	10-12.8'	Install 4" casing.		
30-50	D	ENSE	8-15	STIFF	5. Rollerbit ahea	ad to 19'.		5	3" spoon used to	o coll	ect sample S-10B
>50	VER	Y DENSE	15-30	V. STIFF	6. Rollerbit ahea	ad to 24' (wood encounte	ered to 22.5')				
NOTES	_	1) STRATIFIC			COXIMATE BOUN	NDARY RETWEEN SOL		ANSITIONS MAN	BEGRADUAL		
		2) WATER LEY	EL READINGS	HAVE BEEN MA	DE AT TIMES AN	ND UNDER CONDITION	IS STATED, F	LUCTUATIONS	OF GROUNDWAT	ER	
		MAY OCCUR	DUE TO OTHER	FACTORS THAI	N THOSE PRESE	ENT AT THE TIME MEA	SUREMENTS	WERE MADE			
GZA											BORING NO. GZ-7(C)

GZA G	EOENVI	RONMENT	AL INC.		PROJECT REPORT OF BOR			RING NO GZ-7 (C)		
140 BF	Roadwa	Y, PROVIC	DENCE, RHO	DE ISLAND		KeySpan LNG Terminal	SHE	EET,	2 of 5	
CEOT	FOLLOF			OLIH TAMTO		Providence, Rhode Island	FILEN	NO.	32784	
GEOR	ECH/GEC	DHIDROLO	JGICAL CON	ISULTANTS			СНКО	BY.	DMA	
DEPTH	CASING		S/	AMPLE		SAMPLE DESC	RIPTION	R	STRATUM	
	BLOWS	NO	PEN//REC	DEPTH (FT)	BLOWS/6*	BURMISTER CLAS	SIFICATION	к	DESCRIPTION	
30										
		UP-2	24/8	31-33		Undisturbed Piston Sample				
						1		10		
			1	-		1			OPCANIC	
						1			ORGANIC	
	-					-			SILT	
35 -		S-11	24/19	34-36	2-1	Very soft, gray, ORGANIC SILT, trace F	ibers			
					1/12"	-		11		
						1				
10		S.12	24/12	20.44	WODIAR		manine Ohelle Filters			
- "			24/13	35-41	WOR/IB	Very soit, gray, ORGANIC SILT, date O	rganics, Snells, Fibers			
					1					
						4		12		
						4				
45		S-13	24/5	44-46	1-3	Medium stiff, gray, ORGANIC SILT, trace	e Organics, Shells,			
					2-2	Fibers				
						1		13		
						-		-	±47'	
						4				
50 _		S-14	24/5	49-51	6-10	(Top 4'): Loose, gray, fine (+) to medium	n SAND, some Silt			
					13-14	(Bottom 1"): Loose, brown, fine (+) to cos	arse (-) SAND,			
						little Silt				
								14		
						1				
55		0.46	24/6	54.50	00.45		0.11			
- 50		3-15	24/6	54-56	23-15	Dense, brown, fine to coarse (-) SAND, s	some Silt			
					15-15					
		_					1	15	OUTWASH	
									DEPOSITS	
60		S-16	24/10	59-61	23-27	Dense, gray, fine to coarse (-) SAND, sor	me Silt, trace fine Gravel			
					20-22					
					10 11					
							1	16		
65		S-17	24/12	64-66	13-12	Medium dense, gray, fine to medium SAN	ND, trace Silt			
					8-14					
						S-18: (Top 2') Medium dense, grav. coars	se SAND and fine Gravel.			
						little fine to medium Sand trace Silt				
		S 18	24/10	60.74	27.46	(Patters 1010) Madium danas anti Frank	CAND			
70		0-10	24/10	03-11	2/-10	too com to j. Medium dense, gray, fine to	o medium SAND,			
10		8011.9	001150		12-8	trace Silt		1		
G BI	OWS/ET DE			T DENOITY	10 Pallachitet	h C at bec				
0-4	VEPV	LOOSE	<2	VERY SOFT	11. Rollerbit abs	ad to 30				
4-10	LC	OSE	2-4	SOFT	12 Rollerbit and	ad to 44'.				
10-30	MEDIU	MDENSE	4-8	M. STIFF	13. Drill ahead t	o 49'.				
30-50	DE	NSE	8-15	STIFF	14. Drill ahead t	o 54'. Revert drilling mud introduced to +5	54'. (Casing at 54')			
>50	VERY	DENSE	15-30	V. STIFF	15. Drill ahead t	o 59', Collect S-16. Drive casing to 59'.				
			>30	HARD	16. Drill ahead t	o 64'. 4-21-04 drive casing to 64'.				
NOTES:		) STRATIFIC	ATION LINES RE	EPRESENT APP	ROXIMATE BOU	NDARY BETWEEN SOIL TYPES, TRANS	ITIONS MAY BE GRADUAL.			
	:	2) WATER LEY	VEL READINGS	HAVE BEEN MA	DE AT TIMES AN	D UNDER CONDITIONS STATED, FLUC	TUATIONS OF GROUNDWATER	R		
and the second		MAY OCCUR	DUE TO OTHER	FACTORS THAP	N THOSE PRESE	INT AT THE TIME MEASUREMENTS WE	REMADE	-		
GZA								в	ORING NO. GZ-7 (C)	

GZA GEOENVIRONMENTAL INC.						PROJECT	NO GZ+7 (C)		
140 BI	ROADWA	Y, PROVIE	DENCE, RHO	DE ISLAND		KeySpan LNG Terminal	SHE	ET3 of 5	
GEOT	ECH/GE	OHYDROL	OGICAL CON	ISULTANTS		Providence, Knode Island	PLET CHKD	NO. 32784 BY DMA	
DEPTH	CASING		S	AMPLE		SAMPLE DESC	RIPTION	R STRATUM	
	BLOWS	NO	PEN/,/REC	DEPTH (FT)	BLOWS/6*	BURMISTER CLAS	SIFICATION	K DESCRIPTIO	N
75		S-19	24/18	74-76	10-13	Dense, gray, fine to medium SAND, trace	e fine Gravel, trace		
					19-19	Silt			
						]			
						1			
80		S-20	24/14	79-81	16-13	Medium dense, gray, fine to medium SA	ND. trace Silt		
10					15-14	1			
						1			
						1			
						1			
85						1			
- <sup>10</sup>		6.21	24/16	05.07	20.47		- O'll	47	
		3-21	24/10	00-07	20-17	Dense, gray, fine to coarse (-) SAND, tra	ce Slit	17	
					16-18	-			
						1		OUTWASH	
						•		DEPOSITS	
90 -		S-22	24/20	89-91	20-15	Dense, gray, fine to medium SAND, trace	e Silt		
					20-18	4			
						4			
						4			
						-			
<sup>95</sup> -	ć	S-23	24/6	94-96	25-28	Very dense, gray, fine to medium SAND,	trace fine Gravel,		
					26-18	trace Silt			
6						4			
						]			
100		S-24	24/18	99-101	17-20	Dense, gray, fine to medium SAND, little	Silt		
					21-20				
						1			
105		S-25	24/19	104-106	14-12	Medium dense, gray, fine to medium SAN	ID, little Silt		
					12-15				
						1			
						1			
110		S-26	24/20	109-111	18_19	Danse, gray, fine to modium SAND and S	т		
110		010	24/20	103-111	29.97	Dense, gray, line to medium SAND and S	NL 1		
					20-37				
		0.07							
×		5-27	24/12	114-116	19-18	Dense, gray, fine to coarse (-) SAND and	SILT, trace fine Gravel		
115		SOIL S	COLLES		17-17 DEMADKS				
BL	OWS/FT DE	ENSITY	BLOWS/F	T DENSITY	17. Drill ahead	o 85'. Cobble encountered at 84'.			
0-4	VERY	LOOSE	<2	VERY SOFT					
4-10	LO	OSE	2-4	SOFT					
10-30	MEDIU	M DENSE	4-8	M. STIFF					
30-50	DE	NSE	8-15	STIFF					
>50	VERY	DENSE	15-30 >30	V. STIFF					
NOTES:		1) STRATIFIC	ATION LINES RE	EPRESENT APP	ROXIMATE BOUI	VDARY BETWEEN SOIL TYPES, TRANSI	TIONS MAY BE GRADUAL		
	2	2) WATER LE	VEL READINGS	HAVE BEEN MA	DE AT TIMES AN	D UNDER CONDITIONS STATED, FLUC	TUATIONS OF GROUNDWATER	२	
		MAY OCCUR	DUE TO OTHER	FACTORS THAP	V THOSE PRESE	INT AT THE TIME MEASUREMENTS WE	REMADE		
GZA								BORING NO. GZ-7 (C)	

GZA G	EOENVI	RONMENT	AL INC.		PROJECT REPORT C			DF BORING NO: GZ+7 (C)		
140 BF	ROADWA	Y, PROVIC	ENCE, RHO	DE ISLAND		KeySpan LNG Terminal	SH FN B	IEET	4 of 5	
GEOT	ECH/GEC	DHYDROLO	OGICAL CON	ISULTANTS		Providence, Rhode Island	гісе СНКІ	DBY	32/69	
DEPTH	CASING		S	AMPLE		SAMPLE DESC	RIPTION	R	STRATUM	
	BLOWS	NO	PEN/./REC	DEPTH (FT)	BLOWS/6"	BURMISTER CLAS	SIFICATION	ĸ	DESCRIPTION	
120		S-28	24/12	119-121	19-27	Very dense, gray, fine to coarse (-) SAN	D, some Silt			
					28-24	1				
					-	1				
						° ≥ €				
						-				
						-				
125 -		S-29	24/20	124-126	23-17	Dense, gray, fine to coarse (-) SAND, litt	le Silt, trace fine			
					17-16	Gravel				
						-				
						1				
						1				
130		S-30	24/12	129-131	23-21	(Top 9"): Dense, gray, fine to coarse (-)	SAND, some Silt			
					17-19	(Bottom 3"): Dense, gray, fine SAND an	d SILT			
								18	GLACIAL	
									ти	
135		S-31	24/12	134-136	35-31	Very dense, grav, fine to coarse (-) SANI	D some Silt	19		
					29-33	····, -·····, g···,				
					20 00	1				
						1				
	_					1				
		0.00				1				
140 -		S-32	24/18	139-141	33-17	Dense, gray, fine to coarse (-) SAND, so	me Silt			
					23-22	-				
						4				
						4				
						-				
145 -		S-33	24/12	144-146	67-71	Very dense, gray, fine to coarse SAND, s	some Silt			
					64-30	-				
								21		
150		S-34	24/20	149-151	12-8	Medium dense, gray, fine SAND, little Sil	t	22		
					12-26					
								23		
1										
155		S-35	24/24	154-156	27-32	Very dense, gray, fine SAND, little Silt		24		
-					26-29					
						1				
						1				
						1				
G	RANULAR	SOILS	COHESI	IVE SOILS	REMARKS:					
BL	OWS/FT D	ENSITY	BLOWS/F	T DENSITY	18 Hole collaps	sed (Bottom ±35') (Casing at ±64).				
0-4	VERY	LOOSE	<2	VERY SOFT	19. ±2" lens fine	e sand and silt				
4-10	LC	NOSE	2-4	SOFT	20. After sample	e S-33 spin casing from 64' to 145'				
30-50		ENSE	4-8 8-15	STIFF	21. Two hours of	iown ume (ng repairs). annroximately 3 feet of cobbles, then each	ng installed to +1.49			
>50	VERY	DENSE	15-30	V. STIFF	23. 0.5 hours do	whether will be be be completed with the cash	ny malaneu (U ±1437			
			>30	HARD	24. Drill ahead o	collapsed, install casing to ±154'.		_		
NOTES:		1) STRATIFIC	ATION LINES RE	EPRESENT APP	ROXIMATE BOUI	NDARY BETWEEN SOIL TYPES, TRANS	ITIONS MAY BE GRADUAL.			
		2) WATER LE	VEL READINGS	HAVE BEEN MA	DE AT TIMES AN	DUNDER CONDITIONS STATED, FLUC	TUATIONS OF GROUNDWATE	ĒR		
GZA		WAT OCCUR	DUE TO UTHER	FACIURS IHAI	N THUSE PRESE	INTAT THE TIME MEASUREMENTS WE	KE MADE	ſ	BORING NO GZ-7 (C)	

GZA G			AL INC.			REPORT OF BORING N	ORT OF BORING NO. GZ-7 (C)		
		a, i novic	LINCE, MIC	DEISLAND		Providence, Rhode Island	FILEN	NO.	32784
GEOT	ECH/GE	OHYDROL	DGICAL CON	ISULTANTS			СНКО	BY	DMA
DEPTH	CASING		S	AMPLE		SAMPLE DESC	RIPTION	R	STRATUM
	BLOWS	NO	PEN//REC	DEPTH (FT)	BLOWS/6"	BURMISTER CLAS	SSIFICATION	к	DESCRIPTION
160		S-36	24/20	159-161	46-47	Very dense, gray, fine SAND, and Silt		25	
					58-65				
						1			
	()				1				
				-		1			
105		0.37	614	404 404 5	400/4				
160 -		5-37	6/4	164-164.5	100/4"	(Top 2'): Very dense, gray, fine to medi	ium SAND and SILT		
					23/2"	(Bottom 2'): Very dense, gray weathere	ed SHALE		
1					<b> </b>	-		26	GLACIAL
						-			TILL
					<u> </u>	÷			
170		S-38	0/0	169-169	50/0"	Refusal with spoon		27	
		C-1	60/8	169-174	min/ft_	Gray, fine GRAVEL			
				RQD = 0 %	5				
					3	1			
					3	1			
4.75						1			
1/5 -					4	1			
					3			28	
						End of Exploratio	on at ±174'		
				ļ		-			
						-			1
180									
					0	1			
						1			
185						1			
-						1		- 1	
						1			
						-		- 1	
						4			
						4			
190						4		- 1	
						1			
						ļ			
						]			
195									
						1	1		
						1			
						1			
						1			
		****						-1	
200		8011.0	00115-		DEMADING				
		SUILS	BLOWSE		REMARKS:	install pasing to ±150			
0-4	VER	LOOSE	<2	VERY SOFT	26. Drill ahead f	from ±159' to ±164'. Casing installed to +1	164'. Replace pressure dauge		
4-10	LC	DOSE	2-4	SOFT	27. Install casin	g to ±169'.	Hobiero biosonic gauge		
10-30	MEDIL	M DENSE	4-8	M. STIFF	28. Casing to ±	173'.			
30-50	D	ENSE	8-15	STIFF					
>50	VERY	/ DENSE	15-30	V. STIFF					
			>30	HARD				-	
NOTES:		1) STRATIFIC	ATION LINES RI	EPRESENT APPR	ROXIMATE BOUI	NDARY BETWEEN SOIL TYPES, TRANS	SITIONS MAY BE GRADUAL.	-	
		2) WATER LE		HAVE BEEN MA		NU UNDER CONDITIONS STATED, FLUC	UTUATIONS OF GROUNDWATER	ĸ	
GZA					. ALGOLI NEGL			E	JORING NO. GZ-7 (C)

GZA G 140 BF GEOT	GZA GEOENVIRONMENTAL INC. 140 BROADWAY, PROVIDENCE, RHODE ISLAND GEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOC				PROJECT KeySpan LNG Terminal Providence, Rhode Island			REPORT OF BORING NO GZ-7 (I SHIEET 1 of 1 FILE NO 32784			GZ-7 (D)
GEOT	ECHNIC	AL BORING	LOG						СНК	D BY	DMA
BORING	CO.	Guild			-	BOI	RING LOCATION		See Expl	oratio	on Location Plan
FOREM	N	Tom Paquette	, John Mederios		-	GROUND	SURFACE ELEV.	±14'	DA	TUN	fMLLW
GZA EN	Э.	Joanne Kissin	iger		-		DATE START	4/27/04	DATE	END	04/27/04
SAMPLE A 2" SPL	R: UNLES	S OTHERWIS DRIVEN USIN	E NOTED, SAMI IG A 140 Ib. HAN	PLER CONSISTS	OF DIN	DATE	TIME	GROUNI WATER	OWATER READING	38	STABILIZATION TIME
CASING	UNLESS	OTHERWISE	NOTED, CASING	3 DRIVEN USING	A 300 lb					_	
HAMME	RFALLING	24 IN.									
DEDTU	SIZE:	5"	OTHER:						l		07047144
DEFIN	BLOWS	NO	PEN//REC		BLOWS/6"	1	BURMISTER CI			ĸ	DESCRIPTION
-					DEGMON	The objective of thi	is baring is to drill		. + 771 +-		
								to approximately	1 127 10	1	U.31 FILL
						collect two undistu	rbed samples. Sp	poon samples no	t needed,		±1.4 OBSTRUCTION
						Obstructions encou	untered where not	ted		2	FILL
						-					±3,7' OBSTRUCTION
5 -						1				3	±4.5' FILL
						1					
	l									4	±7' OBSTRUCTION
											FILL
						]					
10						1					CONCRETE
						1					OBSTRUCTION
						1					
	-					1					12.3
						1				5	
										6	WOOD OBSTRUCTION
15 _						{	End of Explor	ration at ±14'			
1 (						ļ			-		
	-										
										ł.	
20											
						1					
						1					
						1			n.		
					_	1					
25			-			1					
- "	1										
30 -											
ľ .	_										
1										_ []	
G	RANULAR	SOILS	COHES	IVE SOILS	REMARKS:						
BL	OWS/FT D	ENSITY	BLOWS/F	T DENSITY	1. Through five	obstructions encoun	tered.				
0-4	VER	Y LOOSE	<2	VERY SOFT	6. Casing drive	shoe left in hole. Ca	asing shoe broke (	36" wrench.			
4-10	MEDU		2-4 1_8	SOF F	<ol> <li>Hole was relo</li> </ol>	cated approximately	y 10' away.				
30-50	D	ENSE	8-15	STIFF							
>50	VER	/ DENSE	15-30	V STIFF							
			>30	HARD							
NOTES:		1) STRATIFIC	ATION LINES RE	EPRESENT APPR	OXIMATE BOUN	NDARY BETWEEN	SOIL TYPES, TR	ANSITIONS MA	Y BE GRADUAL		
		2) WATER LE	VEL READINGS	HAVE BEEN MAI	DE AT TIMES AN	ND UNDER CONDIT	IONS STATED, F	LUCTUATIONS	OF GROUNDWAT	ER	
675		MAY OCCUR	DUE TO OTHER	R FACTORS THAN	THOSE PRESE	ENT AT THE TIME N	EASUREMENTS	S WERE MADE		T	7225
OLA											BURING NO. GZ-7 (D)

GZA GEOENVIRONMENTAL INC.					PROJECT			REPORT OF BORING NO. GZ-7 (E)			GZ-7 (E)
GEOTI		NY, PROVID	ENCE, RHO	SHI TANTS	Providence, Rhode Island						1 of 1 92784
GEOTI	ECHNIC	AL BORING	LOG	SOLIMNIS	F1	rovidence, knode island			СНК	D BY	52784 DMA
DODING						Грорина				anna 20	
FOREMA	NI	Tom Paquette	John Mederios		•	GROUND SUR	FACE FLEV	+14'	DA	TUM	MIIW
GZA EN	3	Joanne Kissin	ger		-		ATESTART	4/28/04	DATE	FND	4/28/04
		bourne russin	gei		•			4/20/04	BATE		4/20/04
SAMPLE A 2" SPL	R: UNLES	S OTHERWIS DRIVEN USIN	E NOTED, SAMF IG A 140 Ib. HAM	PLER CONSISTS	OF DIN	DATE	TIME	GROUNE	WATER READING	3S	STABILIZATION TIME
CASING	UNLESS	OTHERWISE	NOTED, CASING	DRIVEN USING	A 300 lb					_	
HAMME	R FALLING	24 IN.								_	
CASING	SIZE:	5"	OTHER:			ļ		CODIDTION			OTDATIN
DEPTH	BLOWS	NO	PEN//REC		BLOWS/6*	BU	SAMPLE DE	ASSIFICATION		ĸ	DESCRIPTION
			TERMED	Der my m	DEGITIGIO	The objective of this be	ving is to drill	to approvimately	27 <sup>1</sup> depth		BEGGIN HON
								to approximately			
							eu samples.				
						Spoon samples not nee	eded				
	<u> </u>					-					
5 -						-					
	<u> </u>	<u> </u>				-					
						4					
				-		4					
10			· · · · · · · · · · · · · · · · · · ·								
		_									
	l										
			1								
45						1					
15 -						-					
						-					
						-					
	<u> </u>					-					
20											
						1					
25						1					
1						1					
	<u> </u>					1					
		105.4	0.400	07.00					-		
		UP-1	24/23	27-29		UNDISTURBED PISTO	IN SAMPLE (	JF ORGANIC SI	-1		
						-					
30 -		UP-2	24/22	29-31		UNDISTURBED PISTO	ON SAMPLE (	OF ORGANIC SI	л		
	<u> </u>					4	End of Explor	ation at ±31'			
						4					
0	RANULAF	SOILS	COHES	IVE SOILS	REMARKS:						
BL	OWS/FT [	ENSITY	BLOWS/F	TDENSITY							
0-4	VER	Y LOOSE	<2	VERY SOFT							
4-10			2-4	SUF I							
30-50	INICUI F	ENSE	8-15	STIFF							
>50	VER	Y DENSE	15-30	V. STIFF							
			>30	HARD							
NOTES:		1) STRATIFIC	ATION LINES R	EPRESENT APPI	ROXIMATE BOU	NDARY BETWEEN SOIL	L TYPES, TR	ANSITIONS MA	Y BE GRADUAL.		
		2) WATER LE	VEL READINGS	HAVE BEEN MA	DE AT TIMES AN	ND UNDER CONDITION	IS STATED, F	FLUCTUATIONS	OF GROUNDWA	ER	
		MAY OCCUR	DUE TO OTHER	R FACTORS THAI	N THOSE PRESE	ENT AT THE TIME MEAS	SUREMENTS	SWERE MADE			
GZA										B	URING NO. GZ-7 (E)

40 BR SEOTE	GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND 3EOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG					PROJECT Keyspan LNG Facility Providence, Rhode Island			ORT OF BORING SH FILE CHKI	NO. IEET NO. D BY	GZ-203 (OW) 1 of 3 32784.01 AH
IORING	CO.	New Hampshi	ire Boring			BOF	RING LOCATION		See Explo	oratio	n Location Plan
OREMA	N	Charlie O'Dor	inel			GROUND S	URFACE ELEV.	18 fi	DA	TUM	MLLW
GZA ENG	;	Daniel Oaks					DATE START	03/30/05	DATE	END	04/01/05
SAMPLE	R: UNLES	S OTHERWIS DRIVEN USIN	E NOTED, SAMI IG A 140 lb. HAN	PLER CONSISTS	OF D IN	DATE	TIME	GROUND	VATER READING	GS	STABILIZATION TIME
CASING:	UNLESS	OTHERWISE	NOTED, CASIN	G DRIVEN USING	A 300 lb	03/30/05	10:30 am	12.97	14'		40 (Tidal) minutes
HAMMER	RFALLING	24 IN				05/20/05		15.05	Well		51 Days
ASING	SIZE:	4"	OTHER:					1		-	
DEPTH	CASING				DI ONICICI	-	SAMPLE DE	SCRIPTION		R	STRATUM
	BLOWS	NU	PEN//REC	DEPTH(FT)	BLUWS/6		BURMISTER CL	ASSIFICATION		L.	DESCRIPTION
<b>.</b>		S-1	24/12	0-2	7-9	Medium dense, br	own, fine to coars	e SAND, little fine	to coarse		
			-		8-8	Gravel, trace Silt					
		S-2	24/20	2-4	13-15	Dense, brown, fine	e to coarse SAND	, little fine to coars	e Gravel,		
1					22-21	Irace Silt				6.5	FILL
a		S-3	24/10	4-6	13-14	Medium dense, br	own/tan, fine to co	barse SAND, little	fine lo		
1					12-13	coarse Gravel, tra	ce Silt				
		S-4a	24/20	6-8	22-31	S-4a: (lop 14") Ve	ry dense, brown, f	ine to coarse SAN	ID, little (+)	1	
		S-4b			38-42	fine to coarse Gra	avel, trace Silt. tra	ce brick		2	
		Q.5	24/12	8.10	19_11	S-4h: (holtom 6")	Very dense black	/brown_fine_to_cor	ITSE SAND		
10		0-0	24/12	0-10	10-11	little free to	Crouch Ret- D.1				
J <sup>10</sup> _					12-10	little line to coarse	Gravel, inthe Brick	k, trace (+) Asn, tr	ace Sin		
		S-6	24/10	10-12	8-6	S-5: Medium den	se, brown, fine lo	coarse SAND, littl	e fine to		
1					7-6	coarse Gravel, tra	ce Silt				
		S-7	24/12	12-14	6-4	S-6: Medium den	se, brown, fine SA	ND some Silt, tra	ce brick (FILL)		
					5-6	S-7: Loose, brow	n, fine lo coarse S	AND, some Silt, I	ace fine		
5		S-8	21/2	14-15.75	7-4	Gravel, trace (+) E	Brick				
1					15-104/3"	S-8: Medium dens	se, Gravel (2" Bou	lder Chip) in tip of	spoon		
				ī		]					±17'
		S-9	24/10	17-19	17-19	Dense, gray, fine	to coarse SAND. I	ittle fine to coarse	e Gravel.	3	
1					18-15	trace (+) Silt (Petr	n Odor)				
1	-	S-10a	24/12	19-21	6-5	S-10A: (top 9") M	edium dense ara	v SILT trace (_) fir	e Sand		
0 -		C 405	24/12	13-21	0.44	C 10D: (bo) 3")	tadium danaa ara				CAND
ï	-	5-100			9-11	S-10B. (DOI. 3 ) N	nedium dense, gra	iy, ine to coarse a	AND, IIIIe		SAND
		S-11	24/12	21-23	19-18	Silt, trace Shells (	Petro odor)				
					20-19	S-11: Dense, gra	y, fine to coarse S	AND, little Sill, litt	e fine		
		S-12	24/10	23-25	6-17	to coarse Gravel				4	
25 🛁					19-22	S-12: Dense, gra	y, fine to medium	SAND, trace (+) S	ilt, trace (-)		
1		S-13	24/12	25-27	14-15	fine to coarse Gra	ivel				
					18-16	S-13: Dense, gra	y, fine to medium	SAND, little Silt			
ĩ											±28'
ļ.											
50		S-14	24/20	29-31	6-2	Soft, gray, organie	c SILT, trace (-) fir	e Sand			ORGANIC
а П					2-2		9				SILT
		UP-1	24/10	31-33	push	NO RECOVERY					
d)	-										
		10.0	24/24	22.25	puch	Grev oroccio C'	т				
		UF-Z	24/24	00-00	pusii	Grey, organic SIL					
	RANINA	R SOILS	COHES	IVE SOILS	REMARKS					-	
BL	OWS/FT I	DENSITY	BLOWS/	TDENSITY	1. Approximat	ely 6" of running sa	nds between 6-8'				
0-4	VEF	RYLOOSE	<2	VERY SOFT	2 Rollerbit be	tween 6-8' possible	ash in wash wate	r.			
4-10	I	OOSE	2-4	SOFT	3 Rollerbit 15	75 to 17' (sample 1	5-17) possible bo	ulder cuttings in w	ash water		
10-30	MED	UM DENSE	4-8	M_STIFF	4. Began use	of bentonite (mud) i	n casing at 23' bel	ow ground surface	2		
30-50	I	DENSE	8-15	STIFF							
>50	VEF	RY DENSE	15-30	V STIFF							
JOTE C.		1) STRATIE		HAKD			N SOIL TYPES				
,01E0.		2) WATER LI	EVEL READING	S HAVE BEEN M	ADE AT TIMES	AND UNDER CON	DITIONS STATED	, FLUCTUATION	S OF GROUNDW	ATE	R
Ĩ		MAY OCCUP	R DUE TO OTHE	R FACTORS TH	N THOSE PRE	SENT AT THE TIM	E MEASUREMEN	ITS WERE MADE			
GZA											BORING NO. GZ-203

GZA GEOENVIRONMENTAL INC.				DE ISLAND	Carlo Balante Astro Reference	PROJECT Keysoan LNG Facility	REPORT OF BORING NO. GZ-203 (OW) SHEET 2 of 3			
						Providence, Rhode Island	FILE NO		32784.01	
GEOTECH/GEOHYDROLOGICAL CONSULTANTS							СНК	D BY	AH	
EPTH	CASING		S/	MPLE				R	STRATUM	
	BLOWS	NU	PEN/./REC	DEPTH (FT)	BLOWS/6"	BURMISTER CLAS		ĸ		
35 -		S-16A	24/20	30-37	2-3	S-15A: (top 16") Medium dense, gray,			LOG EI	
		S-15B			11-21	S-15B: (bottom 4") Medium dense, gra	ay, fine to coarse GRAVEL,		±30,5	
						some fine to coarse Sand, little (+) Org	anic Siit			
						1				
15		C 464	24/48	20.44	4.47		a fine to modium SAND			
<b>'</b> -		S-16B			4-17	S-TOA. (top 6 ) Dense, gray SIL1, son	le line to medium SAND,		CAND	
		3-100			17-19	S 16B: (bottom 9") Donce growton fi	no to coarse SAND little Silt		UAND	
						trace (+) fine to coarse Gravel	le to coalse ontro, intre ont,			
45		S-17	24/8	44-46	11-11	Medium dense, brown, fine to coarse S	SAND trace (-) Silt trace			
		0.11	240	4440	13-14	(-) fine Gravel	, 100 ( ) on, 1000			
					10-14					
						1				
			· · · · · ·							
50		S-18	24/10	49-51	15-9	Medium dense, brown/gray, fine to coa	arse SAND, some (+)			
1					8-8	fine to coarse Gravel trace (+) Silt				
5		S-19	24/12	54-56	14-23	Dense, brown/gray, fine to coarse SAN	ID, some (+) fine to coarse			
					27-24	Gravel, trace (+) Silt	, , , , , , , , , , , , , , , , , , , ,			
						1				
	Ĩ.					1				
30		S-20	24/12	59-61	19-27	Very dense, brown/gray/tan, fine to coa	arse SAND, little (-) fine			
-					34-23	to coarse Gravel, trace (+) Silt				
						1				
						]				
د.		S-21	24/6	64-66	21-26	Very dense, gray, fine to coarse SAND	), some fine to coarse			
		26-21 Gravel (E		Gravel (Boulder Chlp), little Silt						
						]				
3		S-22	24/9	69-71	63-39	Very dense, gray/tan, fine to coarse G	RAVEL and fine to coarse			
					37-58	Sand, little (+) Silt	~	5.		
							3			
75										
GRANULAR SOILS COHESIVE SOILS			REMARKS:	-						
BI	UWS/FT D	LOOSE	BLOWS/	VERY SOFT	<ol> <li>Casing at 6</li> </ol>	u.				
4-10	L	DOSE	2-4	SOFT						
0-30	MEDIU	IM DENSE	4-8	M. STIFF						
2-50	Di	ENSE	8-15	STIFF						
>50	VERY	DENSE	15-30	V. STIFF						
DTES:		1) STRATIFI	CATION LINES I	REPRESENT APP	ROXIMATE BO	UNDARY BETWEEN SOIL TYPES, TR	ANSITIONS MAY BE GRADUAL			
		2) WATER L	EVEL READING	S HAVE BEEN M	ADE AT TIMES	AND UNDER CONDITIONS STATED, F	LUCTUATIONS OF GROUNDW	/ATE	R	
MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE										

BORING NO. GZ-203

GZA GEOENVIRONMENTAL INC.						PROJECT	REPORT OF BORING NO.		GZ-203 (OW)	
40 BROADWAT, PROVIDENCE, RHODE ISLAND				JE ISLAND	P	rovidence, Rhode Island	SHEET FILE NO.		32784.01	
GEOTE	CH/GEO	HYDROLO	GICAL CON	SULTANTS			CHK	BY	AH	
)EPTH	CASING	SING SAMPLE			SAMPLE DESCRIPTION			STRATUM		
_	BLOWS	NO	PEN//REC	DEPTH (FT)	BLOWS/6*	BURMISTER CLAS	SIFICATION	К	DESCRIPTION	
									SILT	
5 —		S-23A	24/14	74-76	19-18	S-23A: (top 11") Very dense, gray SIL				
		S-23B			24-23	S-23B: (bottom 3") Very dense, gray a	SILT, some fine to medium	6		
		·				Sand				
<b>CO</b>		6.24	24/14	70.84	9.16			7		
. –		<u> </u>			24-19			11		
					24-10					
						1				
85		S-25	24/15	84-86	27-24	Dense, gray SILT, little (+) fine Sand,	little (+) fine to coarse			
					24-19	Gravel	1			
0		S-26	14/3	89-91	35-73	Very dense, gray SILT and fine Sand,	little (+) fine Gravel			
					103/2"				±89'	
			·			-				
95 –		S-27	24/14	94-96	28-34	Very dense, gray, fine to medium SAN		SAND		
					38-31	-				
						-				
						-			±98'	
00		0.00	04/49	00.404	E1 40	Manudanan aray fina ta madium SAN				
100		5-20	24/10	99-101	52.48	Gravel trace (+) Silt			TUI	
					00~40	Giavel, trace (+) Sit			1166	
						1				
						1				
05		S-29	11/10	104-106	105-120/5"	Very dense, gray, fine to coarse SANE	), some (+) Silt, little (+)	8		
						fine to coarse Gravel (TILL)		. 9		
						End of Explorati	on at ±105'	11		
						4				
110										
GRANULAR SOILS COHESIVE SOILS BLOWS/ET DENSITY BLOWS/ET DENSITY					REMARKS: 6. Casing advanced to 60', then sample S-23 taken (74-76')					
0-4 VERY LOOSE <2 VERY SOFT			<ol> <li>Doiling deviation to op, then doing to 20 tation (14 10).</li> <li>Driller reported 5" cave-in Casing advanced from 60' to 74' then cleaned out to 79' prior to collecting sample S-24.</li> </ol>							
4-10	LC	OOSE	2-4	SOFT	8. Proceeding	open-hole from 74' to end of exploration				
0-30	MEDIU		4-8 8-15	M. STIFF 9. Groundwater monitoring well installed; cuttings and boring collapse from 105' to 20', so					ened from 10' to 20', pipe to 1' above ground	
>50	VER	DENSE	15-30	V. STIFF	surface and cer	nented.	ango nom o-o , capped on with s	Unter	Pipe to T above ground	
-			>30	HARD						
OTES:		1) STRATIFIC	CATION LINES F			UNDARY BETWEEN SOIL TYPES, TR	ANSITIONS MAY BE GRADUAL		D	
		MAY OCCUR	EVEL READING	R FACTORS TH	N THOSE PRES	SENT AT THE TIME MEASUREMENTS	WERE MADE		· · · · · · · · · · · · · · · · · · ·	
~ZA	BORING NO. GZ-203 (OW)									

SZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLAND JEOTECH/GEOHYDROLOGICAL CONSULTANTS GEOTECHNICAL BORING LOG					PROJECT Keyspan LNG Facility Providence, Rhode Island			REPORT OF BORING NO. SHEET FILE NO. CHKD BY			GZ-204 1 of 1 32784.01 AH
ORING CO. New Hampshire Boring				BORING LOCATION See Exp		ration	Location Plan				
OREMAN Charlie O'Donnel			6 ()	GROUND SURFACE ELEV.		14 ft	DA <sup>-</sup>	гим	MLLW		
GZA ENG. Matthew Page							DATE START	4/12/05	DATE	END	4/12/05
AMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF .2" SPLIT SPOON DRIVEN USING A 140 Ib. HAMMER FALLING 30 IN					OF 0 IN	DATE	TIME	GROUND WATER	WATER READING	ŝS	STABILIZATION TIME
CASING	UNLESS	OTHERWISE	NOTED, CASIN	G DRIVEN USING	5 A 300 lb					-	
	R FALLING	24 IN.	OTHER							-	
DEPTH CASING SAMPLE							SAMPLE DE	SCRIPTION		R	STRATUM
	BLOWS	NO	PEN/./REC	DEPTH (FT)	BLOWS/6"		BURMISTER CL	ASSIFICATION		к	DESCRIPTION
	Р	S-1	24/14	0-2	5-11	Medium dense, bro	own, fine to coars	e SAND, little fir	ne to coarse		
	P				11-13	Gravel trace (+) S	ilt				C
		6.2	24/42	2.4	0.17	Dones brown fine	to coorco SAND	little fine to cor			EUL
	P	3-2	24/12	2-4	8-17	Dense, Drown, sine	U CUAISE OMNU		1.50		T ILL
	P		·		24-21	Gravel, trace (+) S	at			1	
1		S-3	24/12	4-6	10-15	Dense, brown, flne	to coarse SAND	), little fine to coa	irse	2	
					18-29	Gravel, trace Silt, t	trace Brick				
		S-4	24/10	6-8	10-5	Loose, brown, fine	to coarse SAND	, trace (+) fine to	o coarse		
			ļ		4-5	Gravel, trace Silt					
							End of Explo	pration at ±8'		3	
10											
_						1					
						1					
						1					
						-					
15											
						I					
						1					
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	<u> </u>					-					
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25						1					
0						1					
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		1				4					
0						4					
										6	<u>.</u>
						]					
						1					
		-				1					
		L SOILS	COHES	IVE SOILS	REMARKS	L					
RI	OWS/FT I	DENSITY	BLOWS/	T DENSITY	1. Casing to 4	then S-3 collected					
0-4 VERY LOOSE <2 VERY SOFT 2. Obstruction :						at ±5,5'.					
4-10	L	OOSE	2-4	SOFT	3. Obstruction	encountered.					
10-30	MEDI	UM DENSE	4-8	M. STIFF							
30-50	0	DENSE	8-15	STIFF							
>50	VER	Y DENSE	15-30	V, STIFF							
_			>30	HARD							
OTES:		1) STRATIFIC	CATION LINES	REPRESENT APP	PROXIMATE BC	UNDARY BETWE	EN SOIL TYPES,	TRANSITIONS	MAY BE GRADUA	۱L.	50
		2) WATER L		S HAVE BEEN M		AND UNDER CON		NTS WEDE MAA	UNS OF GROUND	vvA F	ER
374		WAT UCCUR	DOE TO UTHE	R FAULURS IH	IN THUSE PRE	JOCINI AL THE TIM	IL WEASUREME	NI O WERE MA			BORING NO. GZ-204
AZA G 10 BF EOTI	EOENVII ROADWA ECH/GEC	RONMENTA Y, PROVIDI HYDROLO	AL INC. ENCE, RHOE GICAL CONS	DE ISLAND SULTANTS	Pr	PROJECT Keyspan LNG Facil ovidence, Rhode Is	lity	REP	ORT OF BORING SHI FILE	NO. EET NO.	GZ-204A (OW) 1 of 2 32784.01
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GEOTI	EGHINIG/	IL BORING	LOG			ALC: NOT STREET	Nev Open Strain		CRINE	ю	AL
ORING	CO.	New Hampsh	ire Boring			CROUND S		14.8	See Explo	ratio	MILW
		Des Oska			<u>.</u>	GROUND	DATE START	04/40/05			04/12/05
GZA EN	G.	Dan Oaks			•		DATE START	04/12/05	. DATE E		04/12/05
AMPLE 2" SPL	R: UNLES	S OTHERWIS	E NOTED, SAM	PLER CONSISTS	3 OF 30 IN	DATE	TIME	GROUND WATER	WATER READING CASING	SS	STABILIZATION TIME
CASING	: UNLESS	OTHERWISE	NOTED, CASIN	G DRIVEN USIN	G A 300 lb	05/20/05		11.40	Well		38 Days
AMME	R FALLING	24 IN.	071150								
FPTH	CASING	5"/4"	OTHER:	MPLE			SAMPLE DE	SCRIPTION		R	STRATUM
	BLOWS	NO	PEN/./REC	DEPTH (FT)	BLOWS/6"		BURMISTER CL	ASSIFICATION		к	DESCRIPTION
	s										
	S					see boring GZ-20	4 for 0' to 8'				
	s					1				2	
	s					1					
	P										
-						1					
											10'
			0.4/0	0.40	40.40						20 10
	5	5-1	24/8	8-10	10-12	Medium dense, bi	rown SILT, some t	ine to coarse 5a	and		SILI
10	11				8-3						±10 <sup>°</sup>
	28	S-2A	24/24	10-12	15-16	S-2A: (top 12") D	Dense, brown, fine	to coarse SAND	), little (+) fine		SAND
	24	S-2B			15-8	to coarse Gravel,	trace Silt (Petro C	odor)			±11.5′
	28					S-2B: (bottorn 12)	") Dense, brown S	SILT, trace fine t	o coarse	3	
	35					Sand					
്ം	30	S-3	24/8	14-16	15-15	Medium dense, bi	rown SILT, trace fi	ine to coarse Sa	nd, trace		SILT
	33				12-7	fine Gravel					
	21									4	
	25					4					±17.5'
	23					4					
£ _	27	S-4	24/10	19-21	8-6	Medium dense, g	ray, fine to coarse	SAND, little fine	to coarse		
	18				5-4	Gravel, trace (+)	Silt				
	18					4					SAND
	21										
	24					1				5	
25	17	S-5A	24/12	24-26	5-15	S-5A: (top 10") D	ense, gray, fine to	coarse SAND,	ittle fine to		
	42	S-5B			35-10	coarse Gravel, tra	ace Silt			- 1	
	38					S-5B: (bottom 2")	) Dense, black/gra	ay, fine to mediu	m SAND,		
	46					trace (+) Silt					
	53					1					
£	41	S-6	24/12	29-31	13-8	Medlum dense, b	lack/gray, fine to n	nedium SAND, t	race Silt	6	
	42				12-12	-					
	39					-					
	41										
	40										
(	GRANULAR	SOILS	COHES	IVE SOILS	REMARKS:		07.45				
BI		Y LOOSE	BLOWS/F	VERV SOLT	1. GZ-104A lo	cated 5' South from	h GZ-104. I' then pushed to P	' then S-1 taker	0 (8-10')		
4-10	L	00SE	2-4	SOFT	3. Casing drive	en to 14'. Washed I	to 14', then S-3 (14	4-16') taken.	, <u>1</u> 0 J.		
D-30 MEDIUM DENSE 4-8 M. STIFF 4. Casing dr						en to 19', washed to	o 19', then S-4 (19	-21') taken.			
)-50 DENSE 8-15 STIFF 5. Casing driv						en lo 24', washed t	o 24', then S-6 (24	-26') taken.			
>50	VER	Y DENSE	15-30	V. STIFF	6. Casing drive	en to 29', wash to 2	29', then S-6 (29-3	1') taken.			
TES							EN SOIL TYPES	TRANSITIONS		NL.	
J.LU.		2) WATER LI	EVEL READING	S HAVE BEEN M	ADE AT TIMES	AND UNDER CON	IDITIONS STATE	D, FLUCTUATIO	ONS OF GROUND	WAT	ER
		MAY OCCUF	DUE TO OTHE	R FACTORS TH	AN THOSE PRE	SENT AT THE TIN	ME MEASUREMEI	NTS WERE MA	DE		
374											DODING NO CZ 2044/0140

GZA G	GZA GEOENVIRONMENTAL INC. 40 BROADWAY, PROVIDENCE, RHODE ISLANI GEOTECH/GEOHYDROLOGICAL CONSULTANTS					PROJECT Keysnan LNG Facility	REPORT OF BORING	NO.	GZ-204A (OW)
10.51		1,1100112	LIVEL, MIL		F	Providence, Rhode Island	FILE	NO.	32784.01
GEOTE	CH/GEC	HYDROLC	GICAL CON	SULTANTS		Homes and the state	СНКЕ	BY.	AH
EPTH	CASING		S/	AMPLE		SAMPLE DESC	RIPTION	R	STRATUM
, <u> </u>	BLOWS	NO	PEN/./REC	DEPTH (FT)	BLOWS/6"	BURMISTER CLAS	SIFICATION	к	DESCRIPTION
35 _	53	S-7	24/12	34-36	9-17	Dense, gray/black, fine SAND, some Si	lt	7	
Św – j	68				20-18				SAND
	80								±37'
	79							8	
	98								
· -	94	S-8	24/10	39-41	59-56	Very dense, gray, fine to coarse SAND,	, some fine to coarse		
	122			-	55-40	Gravel, little Silt			
	128					-			SAND
	98					•			and
	95					-			GRAVEL
<sup>45</sup> –	75	S-9	24/11	44-46	40-46	Very dense, gray, fine to coarse SAND	, some (+) fine to coarse	9	
	108				106-78	Gravel, some Silt			
	112					-			
	118					-			
50	100	0.40	04/44	40.54				10	
50 -		5-10	24/14	49-51	50-01	Very dense, gray, tine to coarse SAND	, some (+) line to coarse	10	
					52-45	Gravel, some Silt	on at +51	11	
	_						on at 151		
						-			
	-					-			
° -						1			
						1			
						1			
						1			
60						1			
						1			
						1			
<b>U</b> 3						1			
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)									
						]			
75									
G	RANULAR	SOILS	COHES	SIVE SOILS	REMARKS:				
BL 0-4	UWS/FT D	YLOOSE	BLOWS/	VERY SOFT	<ol> <li>Casing drive</li> <li>Casing drive</li> </ol>	en to 34', washed to 34', then S-7 (34-36' en to 39' washed to 39' then S-8 (39-41')	) taken.		
4-10	L	OOSE	2-4	SOFT	9. Casing drive	en to 44', washed to 44' then S-9 (44-46')	taken.		
0-30	MEDIL	JM DENSE	4-8	M. STIFF	10. Casing driv	ven to 49', washed to 49', then to S-10 (4	9-51') taken		
2-50	D	ENSE	8-15	STIFF	11. Groundwat	er monitoring well installed; screened fro	om 16-4', riser from 5' to 0, guard	pipe	to +2.8'. Filter sand from 16-4'.
>50	VER	Y DENSE	15-30 >30	V. STIFF HARD	Bentonite seal	rrom 4' to 3', drill cuttings from 3' to 0'. C	apped off with guard pipe and co	emen	
DTES:		1) STRATIFIC	CATION LINES I	REPRESENT APP	ROXIMATE BO	UNDARY BETWEEN SOIL TYPES, TRA	NSITIONS MAY BE GRADUAL		
		2) WATER LI	EVEL READING	S HAVE BEEN M	ADE AT TIMES /	AND UNDER CONDITIONS STATED, F	LUCTUATIONS OF GROUNDW	ATE	R
		MAY OCCUF	DUE TO OTHE	R FACTORS TH	N THOSE PRES	SENT AT THE TIME MEASUREMENTS	WERE MADE		DODING NO C7 1014 (010)

GZA GI 10 BR EOTE GEOTE	OADWA CH/GEC CHNICA	RONMENTA Y, PROVIDI HYDROLO L BORING	AL INC. ENCE, RHOE GICAL CONS LOG	DE ISLAND SULTANTS	Pro-	PROJECT Keyspan LNG Facility Providence, Rhode Island BORING LOCATIO			ORT OF BORING SH FILE CHKI	NO. EET NO. BY	GZ-205 1 of 2 32784.01 AH
	CO. N	New Hampshi Charlie O'Don	re Boring nel		-	GROUND S	RING LOCATION	14	See Explo	ratio	MLLW
GZA ENG	G.	Daniel E. Oak	s				DATE START	04/11/05	DATE	END	04/11/05
AMPLEI 2" SPL	R: UNLES	S OTHERWIS DRIVEN USIN	E NOTED, SAM IG A 140 Ib. HAI	IPLER CONSISTS MMER FALLING 3	6 OF 30 IN	DATE	TIME	GROUND	WATER READING	S	STABILIZATION TIME
CASING:	UNLESS	OTHERWISE	NOTED, CASIN	IG DRIVEN USING	G A 300 lb						
HAMMER	FALLING	24 IN.	OTUED.							-	
EPTH	CASING	4	SA	AMPLE			SAMPLE DE	SCRIPTION		R	STRATUM
	BLOWS	NO	PEN/./REC	DEPTH (FT)	BLOWS/6"	l	BURMISTER CL	ASSIFICATION		к	DESCRIPTION
	Р	S-1	24/6	0-2	5-6	Medlum dense, bi	rown, fine to coars	.T, some (-) fine		±1' FILL	
	Р				4-5	to coarse Gravel					
	Р	S-2	24/14	2-4	7-11	Medium dense, bi	rown SILT				
	Р				15-12						
-	P	S-3	24/20	4-6	6-8	Medium dense, bi	rown/gray SILT				SILT
	P				10-11						
	P	<u>5-4</u>	24/20	6-8	12-12	Medium dense, bi	rown/gray SIL1				
					12-13	1					
10		<b>S</b> .5	24/18	0.11	12.14	Medium dense, bi	roum/arov SILT tr	ace fine Sand		1	
-		3-5	24/10	<del>9-</del> 11	12-14	wedium dense, b	iowilgiay Sici, u			1	
					10-11	1					
						1					
						1					
j		S-6	24/18	14-16	13-11	Medium dense, b	rown SILT				
1744					9-8						
											±16.5'
						]					
)		S-7	24/14	19-21	11-11	Medium dense, b	lack, fine to mediu	um SAND, little (·	+) Silt		SAND
					13-12						
						4					
25 _		S-8	24/14	24-26	15-13	Medium dense, g	ray, fine to mediu	m SAND, trace S	Silt		
					16-18	(Petroleum Odor)					
						-					±26.5'
		<u> </u>	24/20	20.24	46.47	Danna grau/brau		no Sand			SILT
-		3-9	24/20	29-31	20.20	Dense, gray/brow	vn Sici, inde (-) in	ie odiku		<b>,</b>	SILT
					20-20					1	
						1					
						1					
					2 · · · · · · · · · · · · · · · · · · ·						
GRANULAR SOILS COHESIVE SOILS REMARKS:					REMARKS:						
BLOWS/FT DENSITY BLOWS/FT DENSITY 1. Casing pu 0-4 VERY LOOSE <2 VERY SOFT 2. Driller rep					1. Casing push	hed to 9' then S-5 t	aken 9-11. lifficulty boginning	at 32'			
4-10 LOOSE 2-4 SOFT					2. Drinei Tepoi	is greater urming u	introdity beginning	al 02.			
0-30 MEDIUM DENSE 4-8 M. STIFF											
0-50 DENSE 8-15 STIFF											
>50 VERY DENSE 15-30 V. STIFF >30 HARD											
DTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUI						UNDARY BETWE	EN SOIL TYPES	, TRANSITIONS	MAY BE GRADUA	۸Ļ.	
		2) WATER LE	EVEL READING	S HAVE BEEN M	ADE AT TIMES		IDITIONS STATE	D, FLUCTUATIO	ONS OF GROUND	WAT	ER
3ZA		MAY UCCUR	DUE TO OTHE	R FACTORS TH	NN THUSE PRE	SENTAT THE TIM	VIE MEASUREME	INTS WERE MA			BORING NO. GZ-205

GZA G 40 BF		ONMENT	AL INC. ENCE, RHOI	DE ISLAND		PROJECT Keyspan LNG Facility	REPORT OF BORING SH	NÓ. EET	GZ-205
GEOT	ECHIGEO	HYDROLO		SI II TANTS	P	rovidence, Rhode Island	FILE	NO.	32784.01
OLON	Lorvolo	TIDAOLU			INEX STOREMS				
DEPTH	BLOWS	NO	S/		BLOWS/6"	BURMISTER CLAS	RIPTION	ĸ	DESCRIPTION
25	BLOWD	S 10	24/12	34-36	23-20	Dance grow SILT trace (+) fine to coost	e Sand trace (-) fine Gavel	-	
		3-10	24/12	04-00	23-20	Dense, gray Sic I, trace (I) mie to coas			SH T
					21-21	-			SILT
						-			
									±37.5'
0		S-11	24/14	39-41	25-30	Very dense, brown SAND, some (-) fine	e to coarse Gravel,		
					32-30	trace (+) Silt			SAND
						1			
						1			
46		C 12	24/10	44.46	25.12	Von dansa brown fina ta coarse SAN	D trace (+) Silt		
		0-12	24/10	44-40	20-02	Very dense, brown, nile to coarse over	D, 11200 (* ) Ont		
					20-21	- 17			
						1			
						4			
						4			
50		S-13	24/0	49-51	61-68	NO RECOVERY			
					16-16			3	
						End of Explorate	on at ±51'		
5						]			
						]			
						1			
0						1			
						1			
60		•				1			
						1			
						-			
						4			
						4			
-3						4			
						4			
						4			
						4		1	
2									
						1			
						1			
76				-		1 >			
	GRANULAR	SOILS	COHES	IVE SOILS	REMARKS:			-	
BLOWS/FT DENSITY BLOWS/FT DENSITY					3, 50-51', spoo	n drive with 300lb hammer, Impression:	Pushing Cobble.		
0-4 VERY LOOSE <2 VERY SOFT									
4-10 LOOSE 2-4 SOFT									
0-30 MEDIUM DENSE 4-8 M. STIFF									
0-50 DENSE 8-15 STIFF >50 VERY DENSE 15-30 V. STIFF									
>30 VERT DENSE 1550 V. STIFF									
OTES		1) STRATIFI	CATION LINES I	REPRESENT APP	ROXIMATE BO	UNDARY BETWEEN SOIL TYPES, TRA	ANSITIONS MAY BE GRADUAL		
		2) WATER L	EVEL READING	S HAVE BEEN M	ADE AT TIMES /	AND UNDER CONDITIONS STATED, F	LUCTUATIONS OF GROUNDW	/ATE	R
		MAY OCCUP	R DUE TO OTHE	R FACTORS THA	N THOSE PRES	SENT AT THE TIME MEASUREMENTS	WERE MADE		

GEO	GEOENVI BROADWA TECH/GEO TECHNIC/	RONMENTA Y, PROVIDI DHYDROLO	AL INC. ENCE, RHOE GICAL CONS LOG	DE ISLAND SULTANTS	l Pr	PROJECT REPORT OF BORIN Keyspan LNG Facility S Providence, Rhode Island Fill CH			ORT OF BORING SH FILE CHKL	NO. EET NO.	GZ-213 1 of 2 32764.01 AH
ORIN	IG CO.	New Hampsh	ire Boring	and the second	Test in the second second	BOF	RING LOCATION		See Explo	ratio	n Location Plan
ORE	MAN	Charlie O'Don	inel		• /	GROUND	SURFACE ELEV.	12 ft	. DA	гим	MLLW
GZAE	NG.	Daniel E. Oak	s		. C		DATE START	04-28-05	DATE	END	04-29-05
AMP	LER: UNLES	SS OTHERWIS	E NOTED, SAM	IPLER CONSISTS MMER FALLING 3	S OF 30 IN	DATE	TIME	GROUNE	WATER READING	ŝS	STABILIZATION TIME
CASIN	IG: UNLESS	OTHERWISE	NOTED, CASIN	IG DRIVEN USIN	G A 300 lb	04-29-05	0730	4.31	49'		17 Hours
HAM	ER FALLING	5 24 IN.								_	
JEPT	H CASING	4 1100	SA SA	AMPLE			SAMPLE DE	SCRIPTION		R	STRATUM
	BLOWS	NO	PEN/./REC	DEPTH (FT)	BLOWS/6"		BURMISTER CL	ASSIFICATION		к	DESCRIPTION
	Р	S-1	24/12	0-2	3-5	Medium dense, bi	rown, fine to coars	se SAND, little fi	ne to coarse		
	Р				9-11	Gravel, trace (+)	Silt		1		
	20	S-2	24/14	2-4	10-13	Dense, brown, fin	e to coarse SAND	), little (+) fine to	coarse		
	24				21-19	Gravel, trace (+)	Silt				
	24	S-3	24/6	4-6	15-11	Medium dense, bi	rown, fine to coars	se SAND, little (+	) fine to	1	SAND
	33				11-14	coarse Gravel, tra	ace (+) Silt				(FILL)
	27	S-4	24/20	6-8	15-20	Dense, brown, fin	e to coarse SAND	), little fine to coa	arse Gravel,		
	26				21-27	trace (+) Silt					
	32	S-5	24/10	8-10	20-16	Dense, brown, fin	e to coarse SANE	coarse	2		
10	45				15-19	Gravel, trace (+)	Silt				
	24	S-6	24/12	10-12	16-11	Medium dense, b	rown, fine to coars				
	24				17-22	Gravel, trace (+)	Silt				
	22 S-7 24/14 12-14 30				12-14	Medium dense, g					
	- 30				12-15	to coarse Gravel,	trace Silt (Slightly	Petro Odor)			
5،	26	S-8	24/10	14-16	11-15	Dense, gray/brow	n, fine to coarse S	SAND, some (-)	fine to coarse	4	
	53				20-19	Gravel, trace (-) S	Silt (Petro Odor)				
	65	S-9	24/18	16-18	28-27	Dense, brown, fin	e to coarse SAND	D, some (-) fine to	o coarse		
	60				21-24	Gravel, trace (+)	Silt			6	
	30	S-10	24/10	18-20	13-17	Dense, gray, fine	to coarse SAND,	little (+) fine to c	oarse	5	
0	34				22-19	Gravel, trace (+)	Silt				
	40	S-11	24/16	20-22	20-18	Dense, brown, fin	e to coarse SANE	D, little (+) fine to	coarse		
	48				20-20	Gravel, trace (-) S	Silt				
	64	S-12	24/14	22-24	21-29	Very dense, brow	n, fine to coarse S	SAND, some (-)	fine to coarse	6	
	58				27-28	Gravel, little (-) Si	It				±24'
25	20	S-13	24/14	24-26	12-12	Medium dense, b	rown, fine to medi	ium SAND, trace	Silt, trace (-)	7	
	33				12-15	fine Gravel					
	67										
	61										SAND
-	59	0.44		00.04	7.5						
J	01	3-14	24/12	29-31	(-0 E 6	weatum dense, bi	iowivgray, fine to	coarse SAND, ti	ave (-) Silt	9	
	64				5-6						
	59										
	55		·								
-	GRANULAF	SOILS	COHES	IVE SOILS	REMARKS:						
BLOWS/FT DENSITY BLOWS/FT DENSITY 1. Casing pu					1. Casing push	ing pushed to 2' and driven to 4', cleared to 4' then S-3 (4-6') and S-4 (6-8') taken.					
0-4 VERY LOOSE <2 VERY SOFT 2. Casing dr 4-10 LOOSE 2-4 SOFT 3. Casing dr					2. Casing drive	ing driven to 8', cleaned to 8' then S-5 (8-10') taken.					
4-10 LOOSE 2-4 SOFT 3. Casing dri 0-30 MEDIUM DENSE 4-8 M. STIFF 4. Casing driv					to 10', cleaned to	10' then S-6 (10-1	12') and S-7 (12-	14') taken. 18') taken			
0-30 MEDIUM DENSE 4-8 M. STIFF 4. Casing driv 0-50 DENSE 8-15 STIFF 5. Casing driv					sing driven to 14', cleaned 14', then S-8 (14-16') and S-9 (16-18') taken. sing driven to 18', cleaned to 18' then S-10 (18-20') and S-11 (20-22') taken.						
<ul> <li>&gt;50 VERY DENSE</li> <li>15-30 V. STIFF</li> <li>6. Casing driver</li> </ul>						n to 22', cleaned to	o 22', then S-12 (2	22-24') taken.	. ,		
>30 HARD 7. Casing drive						n to 24', cleaned to	o to 24' then S-13	(24-26') taken.		_	
OTE	5:	2) WATER U		KEPRESENT APP S HAVE BEEN M	ADE AT TIMES	UNDARY BETWE	EN SUIL TYPES,	D. FLUCTUATIONS	MAY BE GRADUA	L. NAT	ER
		MAY OCCUR	DUE TO OTHE	R FACTORS TH	N THOSE PRE	SENT AT THE TIN	E MEASUREME	NTS WERE MAI	DE		
SZA											BORING NO. GZ-213

GZA G 40 BF		Y. PROVID	AL INC. ENCE, RHOI	DE ISLAND	Choese a	PROJECT Keyspan LNG Facility	REPORT OF BORING SH	NO. EET	GZ-213 2 of 2
					F	rovidence, Rhode Island	FILE	NO.	32784.01
GEOTE	ECH/GEC	HYDROLC	GICAL CON	SULTANTS	San San San San San San San San San San		СНК	BY	AH
DEPTH	CASING		SA	MPLE		SAMPLE DESC	RIPTION	R	STRATUM
<u> </u>	BLOWS	NO	PEN//REC	DEPTH (FT)	BLOWS/6"	BURMISTER CLAS	SIFICATION	ĸ	DESCRIPTION
35	35	S-15	24/12	34-36	4-4	Loose, brown, fine to medium SAND, tra	ace (-) Silt	9	
	31				5-7				
	39								SAND
	53					•			
	63								
0 -	57	S-16	24/7	39-41	11-7	S-16A: (top 5") Medium dense, brown/	red, fine to coarse SAND,	10	±40'
	59	S-16B		·	10-8	some (+) fine to coarse Gravel, trace Si	ilt		
	62					S-16B: (bottom 2") Medium dense, tan	/brown SILT, little (-) fine		SILI
	71					to coarse Sand			±42.5'
01	69								
<sup>*5</sup> –	56	S-17	24/12	44-46	15-13	Medium dense, brown, fine to coarse S	AND, little (+) fine to	11	
	55				10-11	coarse Gravel, trace (+) Silt			SAND
	68					•			
	114					-			
	113								
50		S-18	24/4	49-51	15-24	Dense, brown, fine to coarse SAND, so	ome (+) fine to coarse	12	
					26-17	Gravel, little (+) Silt			
						End of Exploration	on at ±51'		
						-			
						-			
5 -						4			
						-			
						-			
						-			
						-			,
60						-			
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05						-			
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0				/					
						3			_
						4			
						-			
						4			
75								L	
0	RANULAR	SOILS	COHES	IVE SOILS	REMARKS:	4- 001 - Is and to 001 these 0 44 (20 24)			
0-4	VER	Y LOOSE	<2	VERY SOFT	<ol> <li>Drive casing</li> <li>Drive casing</li> </ol>	) to 29, cleaned to 29' then S-14 (29-31') I to 34', cleaned to 34' then S-15 (34-36'	) taken.		
4-10	L	DOSE	2-4	SOFT	10. Drive casir	ng to 39', cleaned to 39', then S-16 (39-4'	1') taken		
0-30	MEDIL	IM DENSE	4-8	M. STIFF	11. Drive casir	ng to 44'. Cleaned to 44' then S-17 (44-46	6') taken.		
0-50	D	ENSE	8-15	STIFF	12. Drive casir	ng to 49', cleaned to 49' then S-18 (49-51	') taken.		
>50	VER	Y DENSE	15-30	V. STIFF					
OTES:		1) STRATIFIC	CATION LINES F	REPRESENT APP	ROXIMATE BO	UNDARY BETWEEN SOIL TYPES, TRA	NSITIONS MAY BE GRADUAL		
		2) WATER L	EVEL READING	S HAVE BEEN M	ADE AT TIMES	AND UNDER CONDITIONS STATED, FI	LUCTUATIONS OF GROUNDW	ATE	R
		MAY OCCUP	R DUE TO OTHE	R FACTORS TH	AN THOSE PRES	SENT AT THE TIME MEASUREMENTS	WERE MADE		
AZA								_	BORING NO. GZ-213

10 BR JEOTE GEOTE	OADWA CH/GEC CHNIC/	RONMENTA Y, PROVIDI OHYDROLO AL BORING	AL INC. ENCE, RHOD GICAL CONS LOG	DE ISLAND SULTANTS	l Pn	PROJECT Keyspan LNG Facility ovidence, Rhode Island		REP	ORT OF BORING SHI FILE CHKE	NO. EET NO. BY	GZ-214 1 of 2 32784.01 AH	
ORING	CO.	New Hampshi	re Boring			BORING L	OCATION		See Explo	ratio	n Location Plan	
OREMA	N	Charlie O'Don	nei			GROUND SURFA	CE ELEV.	12 ft	DAT	ГUM	MLLW	
GZA ENG	Э.	Daniel E. Oak	5			DA	TE START	04-29-05	DATE	IND	05-02-05	
AMPLE 2" SPL	R: UNLES	S OTHERWIS	E NOTED, SAM IG A 140 Ib. HAI	IPLER CONSISTS	3 OF 30 IN	DATE	TIME	GROUND WATER	WATER READING CASING	s	STABILIZATION TIME	
CASING:	UNLESS	OTHERWISE	NOTED, CASIN	IG DRIVEN USIN	G A 300 lb	05-02-05	0700	7.9'	33'		64 Hours	
<b>VAMMER</b>	RFALLING	24 IN.								_		
ASING	SIZE: CASING	4" HW	OTHER:	MPLE		s		SCRIPTION		R	STRATUM	
	BLOWS	NO	PEN//REC	DEPTH (FT)	BLOWS/6"	BURI	MISTER CL	ASSIFICATION		к	DESCRIPTION	
	Р	S-1	24/18	0-2	3-8	Medium dense, brown/ta	an, fine to co	oarse SAND, tra	ce (+) Silt			
	22				11-19							
	51	S-2	24/13	2-4	16-25	Dense, brown, fine to co	arse SAND	, trace (+) Silt, tr	ace (-) fine			
	49				22-25	Gravel					SAND	
	11	S-3A	24/18	4-6	9-15	S-3A: (top 9") Dense, br	own, fine to	medium SAND,	trace (+) Silt	1	(FILL)	
	32	S-3B			17-21	S-3B: (bottom 9") Dens	e, black, fin	e to coarse SAN	D, little (+) Silt,			
	37	S-4A	24/24	6-8	37-36	trace (-) fine Gravel, trac	ce (-) Wood	or)				
	70	S-4B			35-39	S-4A: (top 10") Very der	nse, brown,	SAND, trace (+) Silt				
1	32	S-5	24/16	8-10	76-45	S-4B: (Bottom 14") Very	/ dense, bla	ck, fine to coarse	e SAND, little	2		
10	25				31-45	fine Gravel, trace Silt (P	etro Odor)					
_	37	S-6	24/18	10-12	13-19	S-5: Very dense, black,	fine to coar	rse SAND, little \$	Silt, trace (+)	3		
	64				21-51	fine Gravel (Petro Odor)						
	46	S-7	24/16	12-14	30-28	S-6: Dense, black, fine	to coarse S	AND, little (-) Sil	t, trace fine	4		
. · · ·	46 S-7 24/16 12-14 45					Gravel (Petro Odor)						
10	45 37 S-8 24/16 14-16					S-7: Very dense, black/	red, fine to	coarse SAND, tr	ace (+) Silt,	5		
	<u>37 S-8 24/16 14-16</u>					trace Twig, trace Brick (	Petro Odor)	)				
	52	S-9	24/17	16-18	22-42	S-8: Very dense, black,	fine to coai	6				
	38				37-34	trace brick (Petro Odor)						
	52	S-10	24/10	18-20	13-20	S-9: Very dense, black,						
)	47				13-13	trace (-) fine Gravel (Pe	tro Odor an		±20'			
	26	S-11	24/14	20-22	13-21	S-10: Dense, black/gre	en, fine to c	oarse SAND, so	me (-) Silt,	8		
	24				24-19	trace (-) fine Gravel (Pe	tro Odor an	d Sheen)				
	51					S-11: Dense, gray, fine	to coarse S	SAND, little (-) Si	lt, trace (+)			
	43	S-12	24/5	23-25	18-19	fine to coarse Gravel				9		
25	42				18-14	S-12: Dense, gray, fine	to coarse S	AND, trace (+)	Silt, trace (-)		SAND	
	28					fine Gravel						
	28											
	37											
	43	S-13	24/6	28-30	15-10	Medium dense, brown/g	ray, fine to	coarse SAND, tr	ace fine Gravel,	10		
, _	45				14-12	trace (-) Silt						
3 - E	47											
	48	d										
	43					ļ						
	46	S-14	24/1	33-35	10-13	Medium dense, gray, co	arse GRAV	EL		11		
					11-13							
GRANULAR SOILS COHESIVE SOILS REMARKS:												
0-4 VERY LOOSE <2 VERY SOFT 2. Casing driver						en to 4', cleaned to 4' ther	n S-3 (4-6') a n S-5 (8-10'	and S-4 (6-8') tai ) taken (Hard Dr	ken. illina).			
4-10 LOOSE 2-4 SOFT 3. Washed aher						ead to 10', then advance (	casing to 10	, cleaned to 10'	then S-6 (10-12').			
0-30 MEDIUM DENSE 4-8 M. STIFF 4. Casing driver						isned anead to 10, then advance casing to 10, cleaned to 10 then 5-6 (10-12). sing driven to 12', cleaned to 12' then S-7 (12-14') taken.						
D-50 DENSE 8-15 STIFF 5 Casing driven						ng driven to 14', cleaned to 14' then S-8 (14-16') taken.						
>50 VERY DENSE 15-30 V. STIFF 6. Casing driven to >30 HARD 7 Casing driven to						en to 16', cleaned to 16' th en to 18', cleaned to 18' +	hen S-9 (16-	18') taken. 8-20') taken				
OTES:		1) STRATIFIC	CATION LINES F	REPRESENT APP	PROXIMATE BO	UNDARY BETWEEN SC	IL TYPES,	TRANSITIONS	MAY BE GRADUA	L.		
		2) WATER LE	EVEL READING	S HAVE BEEN M	ADE AT TIMES /	AND UNDER CONDITIO	NS STATE	D, FLUCTUATIO	NS OF GROUND	NAT	ER	
374		MAY OCCUR	DUE TO OTHE	R FACTORS TH	AN THOSE PRE	SENT AT THE TIME ME	ASUREMEN	NTS WERE MAI	DE		BORING NO. GZ-214	

BORING NO. GZ-214

GZA GI 40 BR	EOENVII OADWA	RONMENT/	AL INC. ENCE, RHOI	DE ISLAND		PROJECT Keyspan LNG Facility	REPORT OF BORING SHI	NO.	GZ-214 2 of 2
Distant in the				Part and a start	P	rovidence, Rhode Island	FILE	NO.	32784.01
GEOTE	CH/GEC	HYDROLO	GICAL CON	SULTANTS			СНКС	BY	AH
JEPTH	CASING		S/	AMPLE		SAMPLE DESCR	RIPTION	R	STRATUM
	BLOWS	NO	PEN/./REC	DEPTH (FT)	BLOWS/6"	BURMISTER CLASS	SIFICATION	К	DESCRIPTION
35 -	48								SAND
	47								±36'
	52								
	54								011 7
	58								SILT
, <sup>™</sup> −	34	S-15	24/16	39-41	9-7	Medium dense, brown SILT, some fine s	Sand	12	
	36				11-11				
<u>.</u>	39								
	46								
	51								
<sup>145</sup> —	42	S-16	24/18	44-46	13-10	Medium dense, gray SILT		13	
	47				13-10				
	40								
	43								
	50								
50 -		S-17	24/16	49-51	10-11	Medium dense, gray SILT		14	
2					11-11			_	
,			·			End of Exploration	on at ±51'		
1. I									
5 _								1	
£									
								Ĩ I	
3									
60 _									
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ບ5									
						]			
0									
						]			20
						]			1 M.
1						1			
						1			
75									
G	RANULAR	SOILS	COHES	IVE SOILS	REMARKS:				
BL	OWS/FT D	ENSITY	BLOWS/F	FT DENSITY	8. Casing drive	n to 20', cleaned to 20' then S-11 (20-22'	') taken.		
0-4	VER	LOOSE	<2	VERY SOFT	9. Casing drive	n to 23', cleaned to 23', then S-12 )23-25	5') taken.		
4-10	L		2-4 4_R	SOFT	10. Casing driv	en to 28', cleaned to 28', then S-13 (28-3 en to 33', cleaned to 33' then S-14 (23-3)	su') taken. 5') taken		
10-50	D	ENSE	8-15	STIFF	12. Casing driv	en to 34', cleaned to 39' then S-15 (39-4	1') taken.		
>50	VER	Y DENSE	15-30	V. STIFF	13. Casing driv	en to 44', cleaned to 44', then S-16 (44-4	16') taken.		
			>30	HARD	14. Casing driv	en to 49', cleaned to 49' then S-17 (49-5	1') taken.		
OTES:		1) STRATIFIC	CATION LINES F	REPRESENT APP	ROXIMATE BOU	JNDARY BETWEEN SOIL TYPES, TRA	NSITIONS MAY BE GRADUAL.		
		2) WATER LE		S HAVE BEEN M		IND UNDER CONDITIONS STATED, FL	UCTUATIONS OF GROUNDW	ATE	7
GZA			JUL TO UTIL		HOOL FREE	A THE TWE MENOULMENTS			BORING NO. GZ-214

<b>7ZA GI</b> 40 BR JEOTE GEOTE	EOENVII OADWA CH/GEC CHNICA	RONMENTA Y, PROVIDE HYDROLO L BORING	IL INC. ENCE, RHOE GICAL CONS LOG	DE ISLAND SULTANTS	l Pro	PROJECT Keyspan LNG Facil ovidence, Rhode Is	ity land	REPORT OF BORING NO.         GZ-215 (OW)           SHEET         1 of 2.           FILE NO.         32784.01           CHKD BY         AH			62-215 (OW) 1 of 2 32784.01 AH
ORING	CO.	New Hampshi	re Boring			BOR		42.8	See Explo	ratio	n Location Plan
GZA ENG		Joanne Kissin	ner/ Daniel E. O	aks		GROUND	DATE START	05-18-05	DATE 8		05-20-05
		SOTHERWIS	E NOTED SAM					GROUNE		s	
2" SPL	T SPOON	DRIVEN USIN	ig a 140 lb. Hai	MER FALLING	30 IN	DATE	TIME	WATER	CASING		STABILIZATION TIME
CASING:	UNLESS	OTHERWISE	NOTED, CASIN	G DRIVEN USIN	G A 300 lb	05-19-05	07:10	6.36'	19		16.5
	FALLING	24 IN. 4" HW	OTHER.							-	
JEPTH	CASING	1.00	SA	MPLE			SAMPLE DE	SCRIPTION		R	STRATUM
	BLOWS	NO	PEN/./REC	DEPTH (FT)	BLOWS/6"		BURMISTER CL	ASSIFICATION		к	DESCRIPTION
										1	±1'
r i											±2' CONCRETE RUBBLE
		S-1	24/7	2-4	4-9	Medium dense, da	ark brown, fine to a	medium SAND,	trace Silt,		
			0.4/4.4		8-9	trace Coal		0.1.1D		_	59.1
-	42	5-2	24/14	4-6	16-8	Medium dense, oi	ive, tine to coarse	SAND, SOME S	IIC.	2	FILL
	12	S-3	24/8	6.9	9-9	Loose olive fine (	to medium SAND	some Silt		2	
	5	3-3	24/0	0=0	3-7	Louae, Unve, IIIe I		, aone ont			
	17	S-4	24/7	8-10	11-6	Loose, olive, fine	to medium SAND	some Silt		4	
10	16				3-2						
_	4	S-5	24/4	10-12	5-2	Very loose, olive,	fine to medium SA	AND, some Silt,	trace fine	5	
	4				1-1	Gravel					
	2 S-6 24/4 12-14				5-1	Very loose, olive,	fine to medium S/	AND, some Silt		6	
	4				0-1						±14'
15	10 S-7 24/4 14-16				3-1	Very loose, gray-o	plive, fine to mediu	um SAND, some	Silt	7	
	10         S-7         24/4         14-16           8				1-5						
	11										
	9					-					16 SAND
	15										
0 —	50	S-8	24/6	19-21	13-12	Medium dense, gr	ray-olive, fine to co	8	_		
	26				6-10	fine Gravel					
	28				-						
	26					1					
25	30	S-9	24/3	24-26	18-13	Dense, grav, fine	to coarse SAND.	little fine Gravel.		9	
3 <del></del>	35				18-16	trace Silt	•				
	35										
	40					1					
	35										
, –	40	S-10A	24/14	29-31	8-6	S-10A: (top 6") M	edium dense, gray	y, fine to mediun	SAND,	10	±30'
	35	S-10B	1		8-10	some Silt					
	45					S-10B: Medium d	lense, brown SILT	_			SILT
	45										
	50										
G	RANULAR	SOILS	COHES	IVE SOILS	REMARKS:						
BL	OWS/FT D	ENSITY	BLOWS/F	TDENSITY	1. 0'-1' (PHD) F	Post Hole digger, R	Rollerbit concrete f	tom 1'-2'.			
0-4         VERY LOOSE         <2         VERY SOFT         2. Casing dr           4-10         LOOSE         2-4         SOFT         3. Casing dr					<ol> <li>Casing drive</li> <li>Casing drive</li> </ol>	en to 4', cleaned to an to 6', cleaned to	4' then S-2 (4-6') 1 6' then S-3 (6-8') 1	taken. taken.		8. (	casing driven to 19', cleaned to 19', n S-8 (19-21') taken.
0-30 MEDIUM DENSE 4-8 M. STIFF 4. Casing dri					4. Casing drive	en to 8', cleaned to	8', then S-4 (8-10'	) taken.		9. (	Casing driven to 24', cleaned to 24',
0-50 DENSE 8-15 STIFF 5. Casing dri					5. Casing drive	in to 10', cleaned to	o 10' then S-5 (10-	12') taken		ther	n S-9 (24-26') taken.
>50	VER	DENSE	15-30 >30	V. STIFF HARD	<ol> <li>Casing drive</li> <li>Casing drive</li> </ol>	en to 12', cleaned to en to 16', cleaned to	o 12', then S-6 (12	-14') taken 16') taken		10. ther	Casing driven to 29', cleaned to 29', S-10 (29-31') taken.
OTES:		1) STRATIFIC	ATION LINES F	REPRESENT APP	PROXIMATE BO	UNDARY BETWE	EN SOIL TYPES,	TRANSITIONS	MAY BE GRADUA	L	
		2) WATER LE	VEL READING	S HAVE BEEN M	ADE AT TIMES	AND UNDER CON	DITIONS STATE	D, FLUCTUATIO	ONS OF GROUND	WAT	ER
CZA		WAT OCCUR	JUE TO OTHE	R FAUTURS THA	AN THUSE PRE	SENTAL THE TIM	IE MEASUREMEI	NIS WERE MA			BORING NO. GZ-215

GZA G	SZA GEOENVIRONMENTAL INC. 49 BROADWAY, PROVIDENCE, RHODE ISLAN GEOTECH/GEOHYDROLOGICAL CONSULTANT					PROJECT Keyspan LNG Facility	REPORT OF BORING	NO.	GZ-215 2 of 2
Stin					P	rovidence, Rhode Island	FILE	NO.	32784.01
GEOTE	ECH/GEC	HYDROLO	GICAL CON	SULTANTS			CHKC	BY	AH
DEPTH	CASING		SA	MPLE		SAMPLE DESCR	RIPTION	R	STRATUM
	BLOWS	NO	PEN/./REC	DEPTH (FT)	BLOWS/6"	BURMISTER CLASS	SIFICATION	к	DESCRIPTION
35 -	60	S-11	24/2	34-36	10-9	Medium dense, brown SILT		11	
1	51				9-13				SILT
5	55								
	66								±37.5'
1	71								SAND
0	75	S-12A	24/14	39-41	10-13	S-12A: (top 7") Medium dense, gray/bro	wn, fine to coarse SAND,	12	±40'
1	101	S-12B	5		12-14	some (+) Silt, trace fine Gravel			
l.	92					S-12B: (bottom 7") Medium dense, brow	wn SILT		
	126								SILT
Ť.	135								
45	50	S-13	24/16	44-46	11-11	Medium dense, brown/gray SILT, trace	fine to medium SAND	13	
	63				15-20	(1" Lense), trace coarse Gravel (Boulde	r Fragment in Spoon Tlp)		
1	93								
	98								±47.5
	87								
50	63	S-14	24/13	49-51	13-9	Medlum dense, brown, fine SAND, som	e (+) Silt	14	
-	75				9-11		- ( )		
	61								SILTY
	76								SAND
	85								
6	106	S-15	24/18	54 58	15.15	Dense grov fine SAND some (+) Silt		15	
. –	100	5-15	24/10	54-50	21.24	Dense, gray, nile SAND, some (*) Sin			
	120				21-24				
	100								
	16/								
	4/								
- 60	42	5-16	24/18	59-61	18-19	Dense, gray, fine SANU, some (+) Silt		16	
	41				22-25				
	49								
	64								
	41								
υ5	67	S-17A	24/9	64-66	18-28	S-17A: (top 6") Very dense, gray, fine \$	SAND, some (+) Silt	17	±65'
	81	S-17B			35-47	S-17B: (bottom 3") Very dense, gray, fir	ne to coarse SAND, some		
	108					fine to coarse Gravel, little Silt			SAND
	117								
0		S-18	9/0	69-71	137-198/3*	NO RECOVERY		18	
								-	
						End of Exploration	n at ±69.9'		
75									
G	RANULAR	SOILS	COHES	IVE SOILS	REMARKS:			40	Casing driven to 60' alagned to 60'
0-4	VER	LOOSE	<2	VERY SOFT	11. Casing driv	en to 34', cleaned to 34' then S-11 (34-3) en to 39' cleaned to 39' then S-12 (39-4	o') taken. 1') taken	ther	S-18 (69-71') taken.
4-10	L	DOSE	2-4	SOFT	13. Casing driv	en to 44', cleaned to 44', then S-13 (44-4	16') taken.		. ,
0-30	MEDIL	JM DENSE	4-8	M, STIFF	14. Casing driv	en to 49', cleaned to 49' then S-14 (49-5	1') taken.		
0-50	D	ENSE	8-15	STIFF	15. Casing driv	en to 54', cleaned to 54', then S15 (54-5	6') taken.		
>50	VER'	Y DENSE	15-30	V. STIFF	16. Casing driv	en to 59', cleaned to 59' then S-16 (59-6	1') taken.		
OTES		1) STRATIFIC	CATION LINES F	REPRESENT APP	ROXIMATE BOI	JNDARY BETWEEN SOIL TYPES. TRA	NSITIONS MAY BE GRADUAL		
		2) WATER LE	EVEL READING	S HAVE BEEN M	ADE AT TIMES A	ND UNDER CONDITIONS STATED, FL	UCTUATIONS OF GROUNDW	ATE	R
		MAY OCCUR	DUE TO OTHE	R FACTORS THA	N THOSE PRES	ENT AT THE TIME MEASUREMENTS	WERE MADE		
SZA									BORING NO. GZ-215

CAG	EOENVI ROADWA ECH/GEO ECHNICA	RONMENTA Y, PROVIDI DHYDROLO AL BORING	AL INC. ENCE, RHOD GICAL CONS LOG	DE ISLAND SULTANTS	l Pro	PROJECT Keyspan LNG Facil ovidence, Rhode Is	ity land	REP	ORT OF BORING SH FILE CHKE	NO. EET NO. BY	GZ-216(OW) 1 of 2 32784-01 AH
ORING	CO.	New Hampshi	re Boring			BOF	RING LOCATION		See Explo	ratio	n Location Plan
OREM	٩N	Norm Stuttard				GROUND S	SURFACE ELEV.	13 ft	DAT	TUM	MLLW
GZA EN	G.	Danlel E. Oak	\$				DATE START	05/16/05	DATE	END	05/17/05
AMPLE 2" SPL	R: UNLES	S OTHERWIS	E NOTED, SAM IG A 140 lb. HAI	PLER CONSISTS	6 OF 60 IN	DATE	TIME	GROUND WATER	WATER READING	S	STABILIZATION TIME
CASING	UNLESS	OTHERWISE	NOTED, CASIN	IG DRIVEN USIN	3 A 300 lb	05-16-05	1700	8.29'	29'	_	30 Minutes
	R FALLING SIZE:	i 24 IN. 4" HW	OTHER:			5-20-05		8.36	vveli		4 Days
JEPTH	CASING		SA	MPLE			SAMPLE DE	SCRIPTION		R	STRATUM
	BLOWS	NO	PEN/JREC	DEPTH (FT)	BLOWS/6"		BURMISTER CL	ASSIFICATION		к	DESCRIPTION
	Р									1	
	Р									2	
	P										SAND
	Р	<u>S-1</u>	24/12	3-5	11-10	Medium dense, gr	ay, fine to coarse	SAND, little (+)	Silt, trace		(FILL)
-	Р				7-7	fine to coarse Gra	vel (Petro Odor)				
	7	S-2	24/5	5-7	10-7	Medium dense, gr	ay/brown, fine to	coarse SAND, se	ome (-)	3	
	17				6-7	Silt, little (-) fine to	coarse Gravel (P	etro Odor)			±7'
	22	S-3	24/14	7-9	11-8	Medium dense, gr	ray SILT, trace (+)	) fine to coarse S	and, trace (-)		SILT
	29				4-2	fine Gravel (Petro	Odor)				±9'
- 0	11	S-4	24/4	9-11	9-5	Loose, gray, fine t	to coarse SAND, s	some (+) Silt (Pe	tro Odor)	4	
	19				3-3						SAND
	22	S-5	24/10	11-13	5-4	Loose, gray, fine t	to medium SAND,	, some (+) Silt (P	etro Odor		(FILL)
	27				4-7	and Sheen)					
	9	S-6	24/1	13-15	7-4	Loose, gray, fine t	to coarse SAND, I	trace (+) Sllt (Pe	tro Odor)	5	
5 -	11				2-1						
	9	S-7	24/8	15-17	11-3	Loose, gray, fine t	to coarse SAND, s	some (+) Silt, littl	e fine to	6	
	16				3-1	coarse Gravel (Pe	etro Odor)				±17'
	12	S-8	24/16	17-19	7-3	Soft, gray Organi	ic SILT, trace (-) S	Shells (Petro Odd	я)	7	
	19				3-1						
) –	22	S-9	24/16	19-21	3-1	Soft, grayOrganic	SILT, trace (+) fir	ne to coarse San	d, trace (-) fine	8	ORGANIC SILT
	26				3-7	Gravel (Petro Odo	or)				
	28										
	52					•					
	55										±23.5'
	47	S-10	24/8	24-26	23-14	Medium dense, gi	ray, fine to coarse	SAND, some (+	) fine to coarse	9	
	40				11-9	Gravel, trace (+)	Silt (Petro Odor)				0.110
	44					1					SAND
	/3										(OUTWASH)
v	100	C 11	24/46	20.24	22.10	Danse grou fire	to cooree CANID	and fine to second	e Gravel	40	
8 in	122	0-11	24/10	28-31	18-22	trace (+) Sit (Det	to Cuarse SAIND,	and time to coars	GIAYEI,		
	139				10-23	adde (+) Sill (Pell					
	140		-			1					
	139					1					
	133										
	RANULAR	R SOILS	COHES	IVE SOILS	REMARKS:						
BLOWS/FT DENSITY BLOWS/FT DENSITY 1. Dug by h					1. Dug by hand	to clear utilities.					
0-4 VERY LOOSE <2 VERY SOFT 2. Concrete					2. Concrete en	acrete encountered at 1', cleared by KEYSPAN and used rollerbit through concrete to 3' (2' thick) then S-1 (3-5')					
4-10 LOOSE 2-4 SOFT taken. 0-30 MEDIUM DENSE 4-8 M. STIFF 3, Push 4" HV					Ish 4" HW casing to 5' cleaned to 5' then S-2 (5-7') and S-3 (7-9') taken						
0-30 MEDIUM DENSE 4-8 M. STIFF 3, Push 4" Hw 0-50 DENSE 8-15 STIFF 4. Casing drive					en to 8', cleaned to	9' then S-4 (9-11'	) and S-5 (11-13	) taken.			
>50	VER	Y DENSE	15-30	V. STIFF	5. Casing drive	en to 13', cleaned to	o 13' then S-16 (1	3-15'), possible (	oushing gravel.		
OTES		4) 070 1717	>30	HARD	6. Casing drive	en to 15', cleaned to	0 15' then S-7 (15	-17') taken.	MAY DE OCTOUR		
UTES:		2) WATER IF	EVEL READING	S HAVE BEEN M	ADE AT TIMES	AND UNDER CON	EN SUIL TYPES, IDITIONS STATE	D. FLUCTUATIONS	NS OF GROUND	.⊾. NAT	ER
		MAY OCCUR	DUE TO OTHE	R FACTORS TH	N THOSE PRE	SENT AT THE TIN	E MEASUREME	NTS WERE MAI	DE		
GZA											BORING NO. GZ-216(OW)

1

GZA G IO BR	EOENVIF OADWA	ONMENT	AL INC. ENCE, RHOI	DE ISLAND		PROJECT Keyspan LNG Facility	REPORT OF BORING	NO.	GZ-216(OW) 2 of 2
GEOTE	ECH/GEC	HYDROLC	GICAL CON	SULTANTS	P	rovidence, Rhode Island	FILE	NO.	32784.01 AH
EDTU	CASING	的情報管理	S/		The Real Property of the Party of the	SAMPLE DESCRIPTIO	N	R	STRATUM
Le m	BLOWS	NO	PEN/./REC	DEPTH (FT)	BLOWS/6"	BURMISTER CLASSIFICA	TION	ĸ	DESCRIPTION
35	50	S-12	24/12	34-36	13-13	Dense, brown SILT		11	
	65				18-20				
3	78								
	81								SILT
	84								
1	70	S-13	24/14	39-41	11-15	Dense, brown SILT		12	
	83				17-15				
	97							1	
	101								
	106								
*5	119	S-14	24/18	44-46	15-18	Dense, brown/gray SILT		13	
	136				25-26				
	140								
	159					1			
	198								
50		S-15	24/14	49-51	18-27	Very dense, gray SILT			
1					31-27			14	
						End of Exploration at ±5	51'		
8									
80									
ວບ							1		
				4					
142									
						4			
						4			
<u>75</u>									
G	RANULAR	SOILS	COHES	IVE SOILS	REMARKS:	- 4- 471 - decement (- 47) (b 0-0 (47 40) - 1	44 On		ll installed cornered from 451 to 51
0-4	VER	LOOSE	SLOWS/I	VERY SOFT	<ol> <li>Casing drive</li> <li>Casing drive</li> </ol>	in to 17', cleaned to 17' then S-8 (17-19') taken. In to 19', cleaned out to 19', then S-9 (19-21') ta	ten. riser from 5' to 0	er we )', au:	and pipe from 0' to (+) 3', filter
4-10	LC	OSE	2-4	SOFT	9. Casing drive	in to 24', cleaned to 24', then S-10 (24-26') take	n. sand from 16' to	4', b	entonite seal from 4' to 3',
)-30	MEDIU	M DENSE	4-8	M. STIFF	10. Casing drlv	en to 29', cleaned to 29' then S-11 (29-31') take	n. cuttings from 3 t	to 1'.	Capped off with cement from 1'
)-50	DI		8-15	STIFF	11. Casing driv	en to 34', cleaned to 34' then S-12 (34-36') take	n. to 0'.		
>50	VER	DENSE	15-30	V. STIFF	12. Casing driv	en to 39', cleaned to 39' then S-13 (39-41') take en to 44', cleaned to 44' then S-14 (44-46') take	n.		
DTES:		1) STRATIFIC	CATION LINES F	REPRESENT APP	ROXIMATE BOU	JNDARY BETWEEN SOIL TYPES, TRANSITIC	NS MAY BE GRADUAL.	_	
		2) WATER LI	EVEL READING	S HAVE BEEN M	ADE AT TIMES A	AND UNDER CONDITIONS STATED, FLUCTU	ATIONS OF GROUNDW	ATEF	र
		MAY OCCUR	DUE TO OTHE	R FACTORS THA	N THOSE PRES	SENT AT THE TIME MEASUREMENTS WERE	MADE	î	DODING NO OT SUSCERN
A									BORING NO. GZ-216(OW)

A0 BRO JEOTE GEOTE	CHNICA	RONMENTA Y, PROVIDE HYDROLO L BORING	IL INC. ENCE, RHOD GICAL CONS LOG	DE ISLAND SULTANTS	) A Pro	PROJECT Keyspan LNG Facil ovidence, Rhode Is	ity land	REP	ORT OF BORING I SHE FILE I CHKD	NO. ET NO. BY	GZ-217 1 of 2 32784.01 AH
ORING	co.	New Hampshi	re Boring	and the second second		BOF	RING LOCATION		See Explor	atior	n Location Plan
OREMA	N	Charlie O'Don	nel			GROUND S	SURFACE ELEV.	13 ft	DAT	UM.	MLLW
GZA ENG	i. <sub>8</sub>	Daniel E. Oak	8				DATE START	05-17-05	DATE E	ND.	05-18-05
AMPLER 2" SPLI	R: UNLES	S OTHERWIS DRIVEN USIN	E NOTED, SAM IG A 140 Ib. HAI	IPLER CONSISTS	OF 0 IN	DATE	TIME	GROUND WATER	WATER READING CASING	S	STABILIZATION TIME
CASING:	UNLESS	OTHERWISE	NOTED, CASIN	IG DRIVEN USING	6 A 300 lb	05-18-05	0730	9.62'			
'AMMER	FALLING	24 IN.	OTUED								
JEPTH	CASING	4" HVV	SA	MPLE			SAMPLE DE	SCRIPTION	1	R	STRATUM
	BLOWS	NO	PEN/./REC	DEPTH (FT)	BLOWS/6"		BURMISTER CL	ASSIFICATION		к	DESCRIPTION
	Р										
	P										
	Р	S-1	24/14	2-4	10-9	Medium dense, br	rown, fine to coars	e SAND, trace (	+) Silt,		FILL
	Р				8-8	trace (-) fine Grav	rel				
_	17	S-2	24/8	4-6	14-11	Medium dense, br	rown, fine to coars	se SAND, trace (	+) Silt,		
	15				10-9	trace (-) fine Grav	el				±6.25'
	3	S-3	24/3	6-6.25	50/3"	Very dense, brow	n, fine to coarse S	SAND, trace (+)	Silt, trace	1	±6.75' CONCRETE RUBBLE
	7				100/0"	(-) fine Gravel					±8.75'
2	7	S-4	24/7	6.75-8.75	3-1-1-1	S-4: Very Loose,	Gray/black, fine to	coarse SAND,	some (+) Silt,		±9' CONCRETE RUBBLE
10 -	10	S-5	24/8	9-11							
_	12	1			12-4	se, brown/black, fi	ine SAND and SI	LT,		FILL	
	15	S-6	24/6	11-13	18-16	trace fine Gravel,	trace Roots				3
	25				10-8	S-6: Medium den:	se, brown/black, fi	ine to medium S	AND, some		±13'
	22	S-7	24/3	13-15	14-7	(+) Silt, trace iron	Pipe, trace fine G	Gravel			ORGANIC SILT AND PEAT
<sup>15</sup> _	18				4-4	S-7A: (top 2") Stit	ff, gray Organic Sl	ILT, trace (+) find	e to coarse Sand		±15'
	12	S-8	24/6	15-17	5-2	S-7B: (bottom 1")	Stiff, black/gray S	SILT			
	9	í			2-1	and Fibrous Peat					000000
5	8					S-8: Soft, gray O	rganic SILT, trace	e (-) Wood, trace	(-) fine to medium		ORGANIC SILT
	9					Sand					
0 -	9	S-9	24/5	19-21	5-2	Soft, gray/black C	Organic SILT, trac	e (-) Peat, trace	(-) Shells		
	11				2-3	1					
	10					1					
	19					1					100 5
	22	0.40	0.4/0	04.00	40.40	Madium danage of	roy fine to course	SAND HHID ()	fine to		120.0
25 -	30	5-10	24/0	24+20	10-10	ecore Gravel lit	ilay, ille to coalse	5 OAND, IICle (-)			
	30				12-11	Coarse Graver, in	ue (-) On				SAND
8	40					1					
	30					1					
n	33	S-11	24/11	29-31	24-13	Dense, grav fine	to coarse SAND	some (-) fine to	coarse		
Ŭ -	40				17-18	Gravel, trace (+)	Silt				
	34					1					
	32										
	28										
G	RANULAR	SOILS	COHES	SIVE SOILS	REMARKS:						
BL	OWS/FT D	DENSITY	BLOWS/	FT DENSITY	1. Hand excav	rated 0-2' with Post	Hole Digger (PH	D).			
0-4 4-10	VER	Y LOOSE	<2 2-4	VERY SOFT	3. Casing pus	ppen nole, hed to 4', cleaned t	o 4', then S-2 (4-f	5') taken.			
10-30	MEDI	JM DENSE	4-8	M. STIFF	4. Casing drive	en to 6', cleaned to	6' then S-3 (6-8')	laken spoon ob:	structed. KEYSPAI	۱ re-	checked utility paths
10-50	D	ENSE	8-15	STIFF	and advised th	at slab may be pre	sent at 6.75' below	w ground surface	a.		
>50	VER	Y DENSE	15-30	V. STIFF							
OTES		1) STRATIFIC	CATION LINES	REPRESENT API	PROXIMATE BO	UNDARY BETWE	EN SOIL TYPES	, TRANSITIONS	MAY BE GRADUA	۱L.	
		2) WATER LI	EVEL READING	S HAVE BEEN M	ADE AT TIMES	AND UNDER COM	NDITIONS STATE	D, FLUCTUATI	ONS OF GROUND	WAT	rer
		MAY OCCUR	R DUE TO OTHE	ER FACTORS TH	AN THOSE PRE	SENT AT THE TH	ME MEASUREME	NTS WERE MA	DE		DODING NO. OT SIT
GZA											BURING NO. GZ-217

GZA GI 10 BR	eoenvir Oadwa'	ONMENTA Y, PROVID	AL ING. ENCE, RHOD	DE ISLAND		PROJECT REPORT OF BORING Keyspan LNG Facility SH	NO. EET	GZ-217 2 of 2
GEOTE	CH/GEO	HYDROLO	GICAL CON	SULTANTS	P	rovidence, Rhode Island FILE CHKE	NO. BY	32784.01 AH
ЕРТН	CASING		SA	MPLE		SAMPLE DESCRIPTION	R	STRATUM
	BLOWS	NO	PEN/./REC	DEPTH (FT)	BLOWS/6"	BURMISTER CLASSIFICATION	к	DESCRIPTION
35	30	S-12	24/10	34-36	14-11	Medium dense, brown and grey, fine to coarse SAND and		
	36				14-14	fine Gravel, Little Silt		SAND
	66							±37'
	78	í.						
	73							
are in	75	S-13	24/10	39-41	43-17	Dense olive SILT		
<i>"</i> –	102	0-10	2-1110	00 41	16-21			
	118			·	10-21			SILT
	400							U.E.I
	120							
	124				17.10			
<sup>45</sup> -	58	S-14	24/12	44-46	17-13	Medium dense, olive SIL I		
	65				15-15			
	55							
	72							
	60							
50 _		S-15	24/8	49-51	15-12	Medium dense, olive/gray SILT		
					13-17		_	
						End of Exploration at ±51'		
5		14						
5						6. S-4 Note: Spoon collected disturbed sample from 6.9' to 8.9'		
						and encountered obstruction again. Impression is presence		
						of concrete pipe with 2' ID and ±6" wall thickness. Keyspan LNG		
						representative was contacted prior to using rollerbit at 6.3' obstacle.		
60						Paul Bailey cleared area for presence of active utilities. Keyspan		
-						representative Paul Bailey contacted upon encountering obstacle		
						at +8 0' and made second inspection of area and authorized		
						astigued dillice, through what he suggested was an abandoned		
						pipe from a former area structure.		
<b>U</b> 0						7. Casing driven to 9' (experienced 2 bouncing blows at ±0.3		
						then only moderate effort to advance casing to 9'.		
						8. Casing driven to 11', cleaned to 11' then S-6 (11-13') taken	÷ .	
						Note: S-6 sample continued a fragment of iron (possible iron pipe)	1	
						-		
)						-		
						-		
						-		
						-		
						-		
75								
G	RANULAR	SOILS	COHES	IVE SOILS	REMARKS:	n to 191 alapped to 191 then P. 7 /42, 45% token		
0-4	VEP	LOOSE	<2	VERY SOFT	<ol> <li>Casing drive</li> <li>Casing drive</li> </ol>	rn to 15, creaned to 15 then S-7 (13-15) taken.		
4-10	L	DOSE	2-4	SOFT	11. Casing driv	ren to 19', cleaned to 19', then S-9 (19-21') taken.		
0-30	MEDIU	M DENSE	4-8	M. STIFF	12. Casing driv	ren to 24', cleaned to 24' then S-10 (24-26') taken.		
0-50	DI	ENSE	8-15	STIFF	13. Casing driv	ren lo 29', cleaned lo 29', then S-11 (29-31') taken		
>50	VERY	DENSE	15-30	VOSTIFF	14. Casing driv	ren to 34', cleaned to 34' then S-12 (34-36') taken		
	-				115. Casing insta	alled to 39°, cleaned then S-13 (39-41) taken.		
07E0.		2) WATER LE	EVEL READING	S HAVE BEEN M	ADE AT TIMES A	AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDW	ATE	R
		MAY OCCUR	DUE TO OTHE	R FACTORS THA	N THOSE PRES	SENT AT THE TIME MEASUREMENTS WERE MADE		
								BORING NO GZ-217

		TEST BORING LOG         GZA       National Grid       EXPLORATION NO.:       GZ-314D         GeoEnvironmental, Inc.       642 Allens Avenue       SHEET:       1 of 3         Providence, Rhode Island       PROJECT NO:       33554																	
G		GZA GeoEr Engineer	<b>viro</b> rs and	onm I Scie	ental, I	nc.	Pi	National 642 Allens A rovidence, Rh	Grid Avenu ode Is	e Ianc	1		E S F F	EXPLORATION SHEET: PROJECT NO: REVIEWED BY	NO.: 1 of 3 33554 7: MSK	GZ-3	814D		
Logg Drilli Fore	jed By ng Co man:	: MJB/S .: Geolo Dave	SN gic Shelo	don			Type of Rig: Rig Model: 0 Drilling Meth Vactor/Drive	Truck Mounte CME Iod: e & Wash	d Bori Grou Fina Date	ng L und I Bo Sta	.ocati Surfa ring [ rt - Fi	on: ce E Depti nish	See ilev. h (ft h: 5/	e Plan ( <b>ft.):</b> 11.13 . <b>):</b> 34 /27/2014 - 6/3/	/2014	н. v.	Datu NA Datu N/	IM: AD 83 IM: AVD 88	
Ham	mer T	ype: Saf	ety ⊢	lamm	ner		Sampler Typ	e: SS						Groundw	ater De	pth (f	t.)		
Ham	mer W	eight (lt	<b>5.)</b> : 1	40			Sampler O.D	<b>). (in.):</b> 2.0			6	Jate /4/14	1	11:00	wate 8	r Dept .99	n	<u>Stab.</u> 1 D	lime av
Auge	er or C	asing O	. <b>D</b> ./I.I	D. (in	):4		Rock Core S	size: N/A											- ,
Depth (ft)	No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows		Sample Dese Modified Bui	cription rmister		Remark	Field Test Data	Visual	Odor	(i) tit tit tit tit tit tit tit t	Elev.(ft.)	E	quip	ment In	stalled
-	S-1	0-2	N/A	N/A	(por o)	S-1 : Gray	brown (10YR, 5/2) Silt_dry_modera	) fine SAND, little		1	61.2	-		Rerushed STC	NE.9		-	-Stand	
1 2 3	S-2	2-4	N/A	N/A		Gravel, little S-2 : Black Gravel, little staining, m	(10YR, 2/1) fine t silt, trace Brick, oderate oil-like od	te oll-like odor to coarse SAND, trace Slag, oil-lik lor, moist	little e	1 2 3	108		Mod					Ріре	
4 _ - 5 _ -	S-3	4-6	N/A	N/A		S-3 : Black Gravel, little staining, m	(10YR, 2/1) fine t e Silt, trace Brick, oderate oil-like od	o coarse SAND, trace Slag, oil-lik lor, moist	little e		175		Mod						
6 6 7	S-4	6-8	24	8	15 16 15 9	S-4 : Dense medium SA oil-like odor	e, light gray (GLE` ND, some Grave r, wet	Y 1, 7/N) fine to I, trace Silt, slight		4	9		Slgt						
8  9	S-5	8-10	24	11	76 69	S-5 : Mediu fine to coar oil-like odor	um dense, very da se SAND and GR r, wet	ark brown (10YR, AVEL, little Silt, s	3/1) slight		26		Slgt	FILL					
10	S-6	10-12	24	6	4 4 WOH 1	S-6 : Loose to medium Brick, wet	e, dark grayish bro SAND, little Silt, ti	own (10YR, 4/2) f race Gravel, trace	ine e		3.6								
12  13	S-7	12-14	24	1	35 117	S-7 : Mediu and SILT, s	ım dense, black (' strong oil-like odor	10YR, 2/1) fine S r, oil-like staining,	AND wet		136		Strg					-PVC Riser Filter Sand	
14 	S-8	14-16	24	12	33 33	S-8 : Loose SAND, som oil-like stair	e, black (10YR, 2/ ne Silt, trace Grav ning, slight sheen,	1) fine to medium el, strong oil-like , wet	odor,		426								
REMARKS	1 - Th SPT v 2 - Th Detec detect 3 - 2" 4 - Wa	e upper alues ar e heads tor (PID) ion limit of crush ater table	6 fee e not pace equi of ap ed st e obs	t was of so ipped proxione p erved	s cleared licable for bil sample l with a 10 imately 0. present at d at 6 feet	using an ai the vacuu s was scre ).6 eV Lam 1 ppmv. N the surfac t bgs.	ir knife and soil m excavated p ened for Total p calibrated to /A-Not Applica e.	l vactor truck. ortion of the bo Volatile Orgar a 100 ppmv is ble, NM-Not M	Soil s oring. ic Coi sobuty easur	amp mpo red, l	unds e stan bgs-b	ere ( (TV( dard elow	Colle DCs I. N grc	ected from the ) using a mini D indicates re bund surface, \	sidewa Rae 30 ading b WOH-V	alls. T 00 Ph elow t Veight	herei otoio he in of H	fore, ble nization istrumei ammer	ows and
See lines readi other	Log Ke repres ngs ha facto	ey for ex sent app ave beer rs than t	plana roxim n ma hose	ation hate t de at pres	of sample boundarie the times ent at the	e descriptic s between s and unde times the	on, identification soil and bedro er the condition measurements	n procedures, ock types. Actu is stated. Fluc s were made.	and vi al trar tuatior	sual nsitio ns of	and o ons m f grou	odor ay b ndw	imp e gr ater	oacts. Stratifica adual. Water may occur du	ation level ue to	Exp	olora GZ-	ation N -314D	lo.:

		TEST BORING LOG         GZA       National Grid       EXPLORATION NO.:       GZ-314D         GeoEnvironmental, Inc.       642 Allens Avenue       SHEET:       2 of 3         Providence, Rhode Island       PROJECT NO:       33554																	
G		GZA GeoEi Engineer	<b>vir</b> ( rs and	onm I Scie	<b>ental, I</b> ntists	nc.		Pro	Nationa 642 Allens widence, R	al Grid S Avenu Rhode Is	e slan	d		E P F	XPLORATION N HEET: 2 ROJECT NO: 3 REVIEWED BY:	IO.: of 3 3554 MSK	GZ-314	D	
Depth (ft)	No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)		Sam Modi	ple Descr ified Burn	iption nister		Remark	Field Test Data	Visual	Odor	,(t) Bebth(tt) Gescription B G		Equi	pment Ins	talled
16 17	S-9	16-18	24	15	32 33	S-9 : 0 SAND, oil-like 7"-15" some ( wet	-7" Black (10 some Silt, tr staining, slig Black (10YR, Gravel, oil-like	YR, 2/1) fin ace Gravel ht sheen, w , 2/1) fine S e coating, s	ne to medium , strong oil-lik vet GAND and SIL strong oil-like	ke odor, _T, odor,		408 230		Strg Strg Strg	FILL				
18 _ 19 _	S-10	18-20	24	19	32 11	S-10 : some ( wet 3"-7" V SAND, oil-like	0-3" Black (1 Gravel, oil-like ery dark brov some Grave coating, wet	0YR, 2/1) fi e coating, s wn (10YR, 3 ଧ, little Silt,	ine SAND an strong oil-like 3/1) fine to cc strong oil-like	d SILT, odor, parse e odor,		142 190 18		Strg Strg Slgt	<u>19 -7</u>	,9			
20	S-11	20-22	24	0	WOH 1 1	7"-19" ' SILTY S-11 : '	Very dark gre CLAY, trace Very soft coh	enish gray Shells, sligi iesive soils,	r (GLEY 1, 4/s ht oil-like odo , no recovery	5GY) or, wet		NM							
22     -     S-12     22-24     24     20     3     2     S-12: Medium stiff, greenish gray (GLEY 5, 10Y) ORGANIC SILT, trace Shells, slight oil-like odor, wet     5     24														ite					
24 25	S-13	24-26	24	5	WOH	S-13 : ' ORGA wet	Very soft, gre NIC SILT, tra	enish gray ເce Shells, ເ	y (GLEY 5, 10 slight oil-like o	)Y) odor,		19		Slgt				<ul> <li>Filter</li> <li>Sand</li> </ul>	
26 _	S-14	26-28	24	15	WOH	S-14 : ' ORGA wet	Very soft, gre NIC SILT, tra	enish gray ice Shells, s	r (GLEY 5, 10 slight oil-like o	)Y) odor,		10		Slgt	ORGANIC SILT				
28 _	S-15	28-30	24	2	WOH	S-15 : ` ORGAI wet	Very soft, gre NIC SILT, tra	enish gray ice Shells, s	y (GLEY 5, 10 slight oil-like d	)Y) odor,		2.5		Slgt				—Well Screen	
30 _ 31 _	S-16	30-32	24	23	WOH	S-16 : ` 3/10Y) fibers, `	Very soft, ver ORGANIC S faint organic	ry dark gree MLT, trace s odor, wet	enish gray (G Shells, trace \	GLEY 1, Wood		2.3							
32 _	S-17	32-34	24	17	WOH	S-17 : ` 3/10Y) fibers, `	Very soft, vei ORGANIC S faint organic	ry dark gree SILT, trace S odor, wet	enish gray (G Shells, trace \	GLEY 1, Wood		1.4							
REMARKS	5 - A g PVC v annuli stand	groundw well scre us from 2 pipe.	ater r en at 22-34	nonit 34 fe feet	oring well bet bgs, 2 bgs; Ben	l of the " Diam tonite \$	following c eter, Sched Seals instal	onstructio dule 40, fl lled from	on was inst lush joint, t 22-23 feet	alled: 1 hreaded bgs. R	0 fe d PV ema	et of 2 'C Ris ining a	" Dia er ir annu	ame Istali ulus	ter, Schedule 40 led from 0-24 fee filled with filter s	), flush et bgs and.	i joint, tl ; Filter S Well pro	nreaded, 1 Sand place otected wit	0-slot ed in h a
lines read othe	repre ings h r facto	ey for ex sent app ave bee rs than t	piana roxim n mae hose	ation hate b de at prese	on sample boundarie the times ent at the	s betwo s and u times t	een soil an nder the c the measu	d bedrocl onditions rements v	k types. Ac stated. Flu were made	s, and vi tual trai uctuation	nsitions of the second	ons m of grou	ay b ndw	e gr ater	adual. Water lev may occur due	rel to	Explo G	ration N Z-314D	0.:

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:27 PM

		TEST BORING LOG       GZA     National Grid     EXPLORATION NO.:     GZ-314D       GeoEnvironmental, Inc     642 Allens Avenue     SHEET:     3 of 3       Dravidnesse Bhade Island     DRAVID FOR NO.:     23554													
G		GZA GeoEi Enginee	<b>nviro</b> rs and	o <b>nm</b> d Scie	ental, I	nc.		Nation 642 Alle Providence,	nal Grid ns Avenu , Rhode Is	e sland	d	I	E S F	EXPLORATION NO. SHEET: 3 of PROJECT NO: 3354 REVIEWED BY: MS	: GZ-314D 3 54 K
Depth (ft)	No.	Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)		Sample D Modified	escription Burmister		Remark	Field Test Data	Visual	Odor	Description Budget	Equipment Installed
34 _						End of	our location at 24 f	aat						ORGANIC SILT 34 -22.9	
35 _						End of	exploration at 34 h	eet.							
36															
37															
38 _															
39															
40															
41															
42 _															
43 _															
44															
45 _															
46															
47															
48 _															
49 49															
- 50															
See lines readi other	Log K repre ngs h facto	ey for ex sent app ave bee ors than t	kplana proxim n ma those	ation hate k de at prese	of sample ooundarie the times ent at the	e descr s betwo s and u times	iption, identifica een soil and be inder the condit the measureme	tion procedur drock types. / ions stated. F nts were mad	es, and v Actual trai Fluctuatio	isua nsitio ns o	l and o ons m of grou	odor ay b indw	imp e gr ater	pacts. Stratification adual. Water level may occur due to	Exploration No.: GZ-314D

	TEST BORING LOG         National Grid       National Grid       EXPLORATION NO.: GZ-314S         GeoEnvironmental, Inc.       642 Allens Avenue       SHEET: 1 of 2         Providence, Rhode Island       PROJECT NO: 33554       REVIEWED BY: MSK														
G		GZA GeoEi Enginee	<b>nvir</b> o rs and	onm 1 Scie	<b>ental, I</b> ntists	nc.	National 0 642 Allens A Providence, Rhe	Grid Wenue ode Islar	nd		E S F F	EXPLORATION NC SHEET: 1 o PROJECT NO: 33 REVIEWED BY: M	).: G2 554 SK	Z-314S	
Logg Drilli Fore	led By ng Co man:	: MJB/: .: Geolo Dave	SN ogic Sheld	don			Type of Rig: Truck Mounted Rig Model: CME Drilling Method: Vactor/Drive & Wash	Boring Ground Final B Date St	Locat I Surfa oring art - F	ion: ace E Dept ïnish	See ilev. h (ft h: 5/	e Plan ( <b>ft.):</b> 11.13 .): 19 /27/2014 - 6/3/201	4	H. Datu N/ V. Datu N	<b>im:</b> AD 83 <b>im:</b> AVD 88
Ham	mer Ty	ype: Sa	fety ⊦	lamm	ner		Sampler Type: SS					Groundwater	Depth	(ft.)	o
Ham Ham Auge	mer W mer Fa er or C	/eight (II all (in.): asing C	<b>b.):</b> 1 30 <b>).D./I.</b>	140 <b>D. (in</b>	):4		Sampler O.D. (in.): 2.0 Sampler Length (in.): 24 Rock Core Size: N/A		6	Date 5/4/14	4	11:05	9.05	eptn	1 Day
Depth (ft)	No.	Sample Depth (ft.)	e Pen. (in)	Rec. (in)	Blows (per 6 in.)		Sample Description Modified Burmister	Remark	Field Test Data	Visual	Odor	Description Description		Equip	ment Installed
1 2		0-19				: None/Ref	er to GZ-314D	1				RERUSHED STONE?			-Stand Pipe -PVC Riser
3     -       4     -       2     -														-Bentonite Seal	
4 - Filter Sand														Sand	
7	6 7														
8	- - - -											FILL			
9											Slgt				
10															
11 - - 12															-Well Screen
13 _											Strg				
- 14 -															
15 -															
REMARKS	1 - No 2 - A g PVC v annulu pipe.	samplii groundw vell scre us from	ng co vater r en at 3-19	mplet nonit 19 fe feet b	ted at this oring well eet bgs. 2 ogs; Bento	location. S of the follo Diameter onite Seals	See GZ-314D for sampling de wing construction was instal , Schedule 40, flush joint, thr installed from 2-3 feet bgs.	etails. Si led: 15 fe eaded P Remaini	ratum eet of 2 VC Ris ng anr	and 2" Dia ser ir nulus	imp ame Istal fille	acts descriptions i ter, Schedule 40, led from 0-4 feet b d with filter sand.	nferreo flush jo gs; Fil Well p	d from ( pint, thr ter Sar protecte	GZ-314D. eaded, 10-slot d placed in d with a stand
See lines readi other	Log Ke repres ngs ha factor	ey for ex sent app ave bee rs than t	kplana proxim n ma those	ation nate t de at prese	of sample boundarie the times ent at the	e descriptio s between s and unde times the r	n, identification procedures, soil and bedrock types. Actu r the conditions stated. Fluct measurements were made.	and visua al transit tuations	al and ions n of grou	odor nay b undw	imp e gr ater	pacts. Stratification adual. Water leve may occur due to	E	xplora GZ	ation No.: -314S

								TEST E	BORING	G LOO	G						
GZN	GZA GeoEn Engineen	<b>ivir</b> ( rs and	onm 1 Scier	ental, I	nc.			Na 642 / Provider	ational G Allens Av nce, Rhoo	rid /enue de Isla	and			E S F	EXPLORATION CHEET: PROJECT NO REVIEWED E	ON NC 2 o D: 33 3Y: M	).: GZ-314S f 2 554 SK
Depth (ft) No.	Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)		Sa M	ample De odified E	escriptior Burmister	1	Domot	Kemark	Field Test Data	Visual	Odor	Descripti	Elev.(ft.)	Equipment Installed
16 _														Strg			
17 _														Strg	FILL		
18														Strg Strg			
19					End of	exploratio	on at 19 fe	et						Slgt	19	-7.9	
20						exploidit											
21																	
22 _																	
23 _																	
24 _																	
25 _																	
26 _																	
27 _																	
28 _																	
29 _																	
Md 67177																	
58/2019; 1 1 31 - 1 - 1 58/2019;																	
32 - -																	
10 33 -																	
			1		1										1		1
See Log F lines representation readings l other facto	Key for exercise text app nave been been been been been been been be	plana proxim n mae hose	ation o nate b de at prese	of sample ooundarie the times ent at the	e descri s betwo s and u times t	iption, ic een soil inder the the mea	lentificat and bed e conditi suremer	ion proce lrock type ons state nts were	edures, ar es. Actua ed. Fluctu made.	nd visı I trans Iations	ual sitio s of	and c ns ma groui	odor ay b ndw	imp e gr ater	acts. Stratif adual. Wate may occur	catior r leve due to	Exploration No.: GZ-314S

		TEST BORING LOG         GZA GeoEnvironmental, Inc.       National Grid 642 Allens Avenue Providence, Rhode Island       EXPLORATION NO.: SHEET: 1 of 2 PROJECT NO: 33554																				
G		GZA GeoEr Engineer	<b>viro</b> rs and	onm 1 Scie	enta entists	al, I	nc.		6 Prov	National 42 Allens idence, Rh	Grid Avenu iode Is	ie sland	ł		E S P F	EXPLORATION SHEET: PROJECT NO: REVIEWED BY	NO. 1 of 3355 3355	: G 2 54 K	Z-315	D		
Logg Drilli Fore	led By ng Co man:	r: MJB/S .: Geolo Dave	SN gic Sheld	don				Type o Rig Mo Drilling Vacto	f Rig: Tru del: CMI J Method r/Drive &	uck Mounte E : Wash	ed Bori Gro Fina Date	ing L und al Bo e Sta	.ocati Surfa ring [ irt - Fi	on: ce E Dept nish	See lev. h (ft n: 5/	e Plan ( <b>ft.):</b> 10.17 . <b>):</b> 30 /28/2014 - 6/4/	2014		H. Da I V. Da	atum: NAD 8 atum: NAVD	3 88	
Ham	mer T	vpe: Sat	etv ⊦	lamn	ner			Sample	er Type:	SS						Groundw	ater D	Depth	1 (ft.)			
Ham Ham Auge	mer W mer F er or C	/eight (II all (in.): asing O	<b>5.)</b> : 1 30 . <b>D./I</b> .I	140 <b>D. (in</b>	ı):4			Sample Sample Rock C	er O.D. (in er Length Core Size	n.): 2.0 n (in.): 24 : N/A			6	Date /4/14	4	11:30	Wat	er De 8.99	epth	St	<u>ab. Time</u> 2 Hrs	<u>}</u>
Depth (ft)	No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blo (per	ows 6 in.)		Sample Modifie	e Descrip ed Burmi	otion ster		Remark	Field Test Data	Visual	Odor	(i) to Description	Elev.(ft.)		Equ	ipmen	t Installe	èd
1 2 3	S-1	2-4	N/A	N/A			S-1 : Grav little Grave S-2 : Black Silt, little G Brick, trace staining	brown (10) , little Silt, (10YR, 2/- avel, little coal, sligh	(R, /2) fine dry, slight o 1) fine to m (-) Ash, tra t oil-odor, i	to coarse S pil-like odor dedium SANI ce Slag, trac moist, oil-like	AND, D, little e	1 2 3	41 38		Slgt	Regrushed STC				Pip	ind ie	
4 4 5 5	3       -																					
6  7	S-4	6-8	24	8	6 3	4 4	S-4 : 0-5" \ SILT, trace 5"-8" Black some Silt, s wet	′ellow brow gravel, sliq (10YR, 2/' slight oil-lik	/n (10YR, 5 ght oil-like ( 1) fine to co e odor, bla	5/6 fine SAN odor, wet barse SAND, ck oil-like sta	D and iining,	4	102 106		Slgt							
8 - - 9 - -	S-5	8-10	24	8	3 2	2 3	S-5 : Loose some SIIt, wet, top 2"	e green gra noderate c strong oil-l	y (GLEY 1 il-like odor ike odor	, 10Y) fine S , slight shee	AND, 1,		186		Slgt	FILL				PV Ris	C ser	
10	S-6	10-12	24	5	3 2	2 2	S-6 : Loose 3/10Y) fine oil-like odo	e, very dark SAND, so , wet	c green gra me Silt, slig	ay (GLEY 1, ght sheen, st	rong		188		Strg							
12	S-7	12-14	24	11	2	1 2	S-7 : Very I 3/10Y) fine Silt, slight s	oose, very to medium heen, stro	dark greer SAND, so ng oil-like o	n gray (GLE) ome Gravel, s odor, wet	(1, some		152		Strg							
14 	S-8	14-16	24	13	4 3	3 4	S-8 : 0-7" \ fine to med slight shee coating (4"	/ery dark g ium SAND n, strong o -5")	reen gray ( , some Gra il-like odor,	(GLEY 1, 3/1 avel, some S wet, oil-like	0Y) ilt,		90 114									
REMARKS	1 - Th SPT v 2 - Th Detec detect 3 - 2" 4 - Wa	e upper values ar e heads tor (PID) tion limit Crushec ater table	6 fee pace ) equi of ap I ston e obs	t was appl of so ippec prox ie pre erve	s clea licabl oil sai d with imate esent d at 6	ared le for mple a 10 ely 0. t at th 6 feet	using an a the vacuu s was scre 0.6 eV Lam 1 ppmv. N ne surface t bgs.	r knife ar m excava ened for p calibra /A-Not A	nd soil va ated porti Total Vol ted to a 2 pplicable	ictor truck. on of the b latile Orga 100 ppmv i , NM-Not M	Soil s oring. nic Co sobut leasu	samp mpo ylene red,	oles w unds e stan bgs-b	ere ( (TV( dard elow	colle OCs I. NI / gro	ected from the ) using a mini D indicates re ound surface, \	sidev Rae 3 ading VOH-	valls. 000 belo -Weig	The Photo w the ght of	refore bioniza instru Hamr	, blows ; ition ments ner	and
See lines readi other	Log Ko represings h facto	ey for ex sent app ave beer rs than t	plana roxin n ma hose	ation nate l de at pres	of sa boun the ent a	ample darie times it the	e descriptions between s and under times the	on, identif soil and er the cor measure	ication pr bedrock nditions s ments we	rocedures, types. Acti tated. Fluc ere made.	and v ual tra ctuatio	isua nsitio ns o	l and o ons m f grou	odor ay b indw	imp e gr ater	oacts. Stratifica radual. Water r may occur du	ation level ue to	E	xplo G	oratio Z-31	n No.: 5D	

							TEST	BORING LO	C						
G		GZA GeoEr Engineer	<b>ivir</b> e rs and	o <b>nm</b> d Scie	<b>ental, I</b> ntists	nc.	l 642 Provide	National Grid 2 Allens Avenu ence, Rhode Is	ie slani	d		E S F	XPLORATION NO HEET: 2 of ROJECT NO: 335 REVIEWED BY: M	0.: GZ-315 f 2 i554 SK	D
Depth (ft)	No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows		Sample Description	on er	Remark	Field Test Data	Visual	Odor	Description Description	Equi	pment Installed
	S-9	16-18	24	7	2 3 4 7	7"-13" trace S oil-like S-9 : Lu SAND, odor, w brown	Black (10YR, 2/1) fine to coa Shells, trace Gravel, oil-like c odor, wet oose, black (1-YR, 2/1) fine little Gravel, oil-like coated, wet, from 4"-7" color changes (10YR, 3/4)	arse SAND, oating, strong to coarse strong oil-like to more yellow		6.6		Strg	FILL		
18  19	S-10	18-20	24	17	2 2 1 1	S-10 : ' 3/10Y) odor, w	Very soft, very dark green g ORGANIC SILT, trace Shel vet	ray (GLEY 1, ls, slight oil-like	5	26		Slgt	18 -7.8		<−Bentonite Seal
20	S-11	20-22	27	9	WOH	S-11 : ' 3/10Y) odor, w	Very soft, very dark green g ORGANIC SILT, trace Shel vet	ray (GLEY 1, ls, slight oil-like		20		Slgt			<ul> <li>Filter</li> <li>Sand</li> </ul>
22	S-12	22-24	24	22	WOH	S-12 : ' 3/10Y) odor, w	Very soft, very dark green g ORGANIC SILT, trace Shei vet	ray (GLEY 1, ls, slight oil-like		1.5		Slgt			
24  25 	S-13	24-26	24	24	WOH	S-13 : ` 3/10Y) odor, w	Very soft, very dark green g ORGANIC SILT, trace Shei vet	ray (GLEY 1, ls, slight oil-like		0.9		Slgt	ORGANIC SILT		Well Screen
26	S-14	26-28	24	24	WOH	S-14 : ` 4/10Y) Sand, 1	Very soft, very dark green g ORGANIC SILT, trace Shel trace Wood, wet	ray (GLEY 1, ls, trace fine		1.6					
28 29 30	S-15	28-30	24	24	WOH	S-15 : ' trace S	Very soft, dark green gray, ( Shells, 1/8" seam of fine San	DRGANIC SILT, d at 18", wet		ND			30 -19.8		
						End of	exploration at 30 feet.						-19.0		
31 32 33															
REMARKS	5 - A PVC annul stand	groundw well scre us from pipe.	ater r en at 19.5-	monit 30 fe	oring well eet bgs. 2 et bgs; Be	l of the " Diam entonite	following construction v leter, Schedule 40, flush e Seals installed from 18	vas installed: 1 i joint, threade 8-19.5 feet bgs	0 fe d PV s. Ro	et of 2 /C Ris emaini	" dia er in ing a	amei Istal	ter, schedule 40, fl led from 0-20 feet llus filled with filter	ush joint, th bgs; Filter S sand. Wel	readed, 10-slot Sand placed in I protected with a
See I lines readi other	Log K repre ngs h facto	ey for ex sent app ave bee rs than t	plana proxin n ma hose	ation hate b de at prese	of sample ooundarie the times ent at the	e descri s betwo s and u times f	iption, identification proc een soil and bedrock ty under the conditions sta the measurements were	cedures, and v pes. Actual tra ted. Fluctuatio e made.	isua nsitio ns c	l and o ons m f grou	odor ay b ndw	imp e gr ater	acts. Stratification adual. Water level may occur due to	Explo G	ration No.: Z-315D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:30 PM

				TES	ST PIT FIELD LOG				
GZA GEOE		., INC.	21		PROJECT		TEST PIT NO.:	TP-301	
550 BROAL	JWAT, FROVIDE	NCE, r	AI	CLIENT:	National Grid		FILE NO.:	33554	
GEOTECH	NICAL/GEOHYDF	ROLOG	SICAL	LOCATION:	642 Allens Avenue				
CONSULTA	ANTS				Providence, Rhode Island		DATE:	6/17/14	
GZA ENGIN	NEER: Sophia Na	rkiewio	cz CONTRACTOR:	EX Clean Harbors	CAVATION EQUIPMENT		DATUM:		N/A
	· Suppy 70s		OPERATOR:	Victor Delgado	MODEL	430E	GROUND ELEV .:		NM 0800
WEATHER	. Sunny 703		CAPACITY:		REACH:	15 feet	TIME COMPLETE	ED:	1600
								BOULDER	
DEPTH		PPM					EXCAV.	COUNT	REMARK
							EFFORT	QTY. CLASS	NO.
	0.0.5'	0	Gray 3/4" Crushed Stone, Dr	ry					
-1-	0.5'-1'	0	Gray (10YR, 5/2) fine to coar	rse SAND, little C	Gravel, trace Silt, Dry		E		
-2-	1.5'-5.5'	0	Dark brown (10YR, 3/2) fine	to coarse SAND	, little Gravel, little Silt, trace Co	oal, trace	E		1
			Wood, trace Brick, trace Met	tal, trace Slag, tra	ace construction debris				
-3-							Е		
-4-									
-5-									
-0-	- 	105	Plack (10VP 2/2) find to and		Croupl little Cobble trace Slag	traca			2
	5.5-15	195				, trace	_		2
-6-	-		Silt, trace wood, trace metal	, trace (+) Coal,	trace (+) Brick, moderate oil-like	e odor,	E		3
			trace blue staining, oil-like sta	aining					
-7-	_								
-8-	-								
-9-	_								
-10-									
-11-			$\bigtriangledown$						
			—						
-12-									
									4
-13-	13' +	ым	Grav (10YR 5/2) CLAYEY S	II T Wet			F		5
10							L		6
14									0
		l							L
ITEM/TITEO.							N/A=Not Applicab	le	
1	Poly layer observ	ved at	1.5 feet bgs and 5.5 feet bgs				NM=Not Measure	d	
2.	Pile/wood observ	ved at	7 feet bgs and 10 feet bgs.						
3.	PID reading arou	und hol	le around 6 ppm.						
4.	Water observed	at 11 f	eet bgs.						
5.	Oil seeping in fro	om the	south at the water table.						
6. T	Recovery well (1	2" diar	neter) set at 13.25 feet bgs-so	creened from 8 to	o 13 feet bgs.	PROP	ORTIONS	FXCAN	ATION
	10		BOULDER COL	JNT		US	SED	EFF	ORT
5						TRACE (TR)	0-10%		
		-	SIZE RANGE		J	LITTLE (LI)	10-20%	E	EASY
	( )		6"-18"	A	•	AND	35-50%	D	DIFFICULT
٩	NORTH		18"-36"	В			$\nabla$		
VOLUME=	50 CY		36" OR LARGER	С			i → 0	BSERVED GROUN	DWATER LEVEL

WEID	LINGE	R ASSOC	CIATES	, INC.	Project	Prov	vidence	e LNG		BORING NC	).	SE	3-01
///	27 WOR	MWOOD, S	NG ENGII SUITE 200	NEERS	Location	Prov	vidence	e, RI		Page No	1	of	2
	BOSTON Phone: (6	J, MA 02210 517) 250-410	)-1625 )0		Project No	2152	4028						
Client	Kiewit	,			GS Flev								
							-	N/A	ft.	# of SPT Sam	ples	13	
Contractor	Geologic				Boring Coordi	nates	-	N/A		Longth of Po	ak aara		£4
WAI Rep.	Shawn In	gram (Roi	1X)		EOUIPMENT	C/	SING	SAMPLER	CORE	Lengui oi Ko	CK COIE	-	п
DATE	Start	gruin (not	Finish		Туре	0.		Split Spoon	con	Total Depth	of Boring	71	ft.
DATE	6/3/	2015	6/3/20	15	Size I.D.		4"	2"		1	U		
Boring	See attach	ned plan			Hammer Wt.	I	Hyd.	Hyd		# of Shelby T	ubes	1	
Location	1	- Sa	mplo Inf	ormation	Hammer Fall	(0)							
Borehole		Denth	Dem	ormation	P1	ark	ata		C,		tion		
Depth (ft)	No.	(ft)	Pen (in)	Rec (in)	(RQD %)	Rem	Stra		50	ample Descrip	0001		
5	SS-1 SS-2	6-8 9-11	24	10 0	12/4/3/3 4/2/2/3		FILL	WIDELY GR to medium s petroleum oo No Recovery	ADED 5 and; ~ 1 dor. 7.	GAND WITH ( 5% fine grave	GRAVEL ( l; <5% fine	SP); ~8( s; gray;	0% fine
15	SS-3	14-16	24	2	5/3/2/1			NARROWLY sand and fin	Y GRAD es; gray;	ED GRAVEL	(GW); fine lor and she	gravel een.	; <5%
20	SS-4	19-21	24	28	woh(18")/2			SILT (ML); h	omogen	eous organic	silt; <10%	fine san	ıd; dark
	US-1	22-23	30	15	Push			gray. Shelby tube	undistur	rbed sample.			
25	SS-5	24-26	24	18	1/woh/1/1		<b>RGANIC SILT</b>	WIDELY GR (SW-SM); ~7 subangular f	ADED 5 0% fine ine grav	SAND WITH : to medium su rel; ~10% fines	SILT AND brounded s; dark gray	GRAV sand; ~ 7.	EL •20%
30	SS-6	29-31	24	12	2/13/12/7		0	WIDELY GR (SW-SM); ~7 subangular f	ADED 9 0% fine ine grav	SAND WITH st to medium su rel; ~10% fines	SILT AND brounded s; dark gray	GRAV sand; ~ 1.	EL •20%
35	SS-7	34-36	24	14	13/9/10/6		SILT	WIDELY GR (SW-SM); ~7 subangular f	ADED 9 0% fine ine grav	SAND WITH : to medium su rel; ~10% fines	SILT AND brounded ;; brown.	GRAV sand; ~	EL ·20%
40	SS-8	39-41	24	15	5/6/8/10			SILT (ML); h	omogen	eous silt; <5%	sand; bro	wn.	
Notes:	•		·		· 	PRC	JECT	Providence I	LNG			Boreh SE	ole No. 3-01

B.2 of 10

WEIDI	LINGER	ASSOC	IATES,	INC.	Project	Provi	dence l	LNG	BORING NC	).	SE	3-01		
	27 WOR	CONSULT. MWOOD, S	ING ENG SUITE 200	INEERS )		Б		DI	Page No.	2	of	2		
////	BOSTON	J, MA 02210	)-1625		Location	Provi	dence,	KI						
	Phone: (6	517) 250-410 Sai	nnle Inf	ormation	Project No.	21524 9	028							
epth (ft)		Depth	Pen		Blows per 6"	nark	rata	Sam	ple Descriptio	n				
Ď	No.	(ft)	(in)	Rec (in)	(RQD %)	Ren	St		1 1					
45  50	SS-9 SS-10	44-46 49-51	24 24	18 16	5/6/9/10 9/6/11/9			SILT (ML); homogeneous SILT (ML); homogeneous light gray.	silt; <5% fine silt; <5% fine	sand; light sand and f	gray. ine grav	vel;		
55	SS-11	54-56	24	18	5/7/10/9		WIDELY GRADED SAND (SW); fine to medium subrounded sand; >5% fines; light brown and light gray.							
60	SS-12	59-61	24	13	7/9/11/9			WIDELY GRADED SAND (SW); fine to medium subrounded sand; >5% fines; light brown and light gray.						
65   70	SS-13	69-71	24	20	8/8/12/10		WIDELY GRADED SAND (SW); ~80% fine to medium subrounded sand; ~15% fine gravel; >5% fines; light br							
								Botto	m of Boring, 7	1 feet				
75  80 85						PROI	БСТ				Borsh	ole No.		
								Providence LNG			SE	3-01		

B.3 of 10

WEID	LINGER	R ASSOC	CIATES	, INC.	Project	Prov	vidence	e LNG		BORING NO.		SB-02			
<del>///</del>	27 WOR	MWOOD, S	UITE 200	NEEKS	Location	Prov	vidence	e, RI		Page No	1	of	2		
	BOSTON Phone: (6	517) 250-410	)-1625 )0		Project No.	2152	24028								
Client	Kiewit	,			GS Elev.			NT / A	0		. 1	14			
Contractor	Geologic				Boring Coordi	inates	-	N/A N/A	It.	# 01 5F 1 5al	npies	14			
Driller	Dave				. 0		-	,		Length of Re	ock core	-	ft		
WAI Rep.	Shawn In	gram (Roı	1x)		EQUIPMENT	CA	ASING	SAMPLER	CORE						
DATE	Start		Finish		Туре			Split Spoon		Total Depth	of Boring	71	ft.		
D. '	6/2/	2015	6/2/20	15	Size I.D.		4"	2"	2"# of Shelby Tuber0						
Location	See attach	ied plan			Hammer Fall		nyu.	пуа		# of sheldy rubes					
D 1 1		Saı	mple Inf	ormation	-	iks	a								
Depth (ft)	No.	Depth (ft)	Pen (in)	Rec (in)	Blows per 6" (RQD %)	Remar	Strata	Sample Description							
	SS-1 SS-2 SS-3 SS-4 SS-5	6-8 9-11 14-16 19-21 24-26	24 24 24 24 24 24	9 4 5 7 8	9/6/6/4 3/3/3/4 2/woh/1/1 12/6/6/3 12/6/6/3		FILL	WIDELY GR medium to c gravel; brow NARROWLY subangular g NARROWLY ~60% fine su subrounded WIDELY GR (SW-SM); ~6 subangular g WIDELY GR fine to mediu	CADED S oarse su n. Y GRAD gravel; < Y GRAD bangula sand; gr CADED S 0% fine gravel; ~	5AND WITH brounded sat 2ED GRAVEL 5% fines; bro 2ED GRAVEL ar gravel; ~40 ay; petroleur 5AND WITH to medium sa 10% fines; da 5AND WITH ; ~25% fine s	GRAVEL ( nd; ~20% fi . (GP); mos . with and gra . with SA % fine to co n odor. . SILT AND and; ~30% f irk gray. . GRAVEL ( ubangular )	SW); ~ ne suba tly fine y. ND (Gl nurse, GRAV ine SW); ~ gravel;	80% angular P); 'EL 70% <5%		
30	SS-6	29-31	24	10	5/3/3/3			fines; dark g WIDELY GR sand; <5% fir	ray. ADED S nes and	SAND (SW); fine subangu	Mostly fine llar fine gra	to mec vel; gra	lium 1y.		
35	SS-7	34-36	24	18	3/1/woh/9		ORGANIC SILT	WIDELY GRADED SAND (SW) and SILT WITH S (ML); Mostly fine to medium sand; <5% fines; A s layer (4 inches) organic silt; dark gray.				ITH SA s; A sti	AND ratified		
40	SS-8	39-41	24	12	13/9/23/17		SAND	WIDELY GR to coarse sub >5% fines; br	ADED 9 proundee rown.	SAND WITH d sand; ~20%	GRAVEL; fine suban	~80% r gular g	nedium gravel;		
Notes:						PRC	DJECT	CT Providence LNG Borehole No. SB-02							

B.4 of 10

WEIDLINGER ASSOCIATES, INC. consulting engineers				Project	Provi	dence	LNG	BORING NC	).	SI	3-02	
	27 WORL	CONSULT	ING ENG	GINEERS	,				Page No	r	of	2
///	BOSTON	I, MA 02210	)-1625	,	Location	Provi	dence	, RI	1 age 110.	2		2
	Phone: (6	517) 250-410	00		Project No.	21524	028					
, th		Sai	mple Info	ormation		urks	ta					
Dep (ff	No.	Depth (ft)	Pen (in)	Rec (in)	Blows per 6" (RQD %)	Remê	Stra	Sam	ple Descriptio	n		
ag 45 45 50 55 60 65 70 1 1 1 1 1 1 1 1 1 1 1 1 1	No. SS-9 SS-10 SS-11 SS-12 SS-12 SS-13 SS-14	bepin (ft) 44-46 49-51 54-56 59-61 64-66 69-71	24 24 24 24 24 24 24 24 24 24	Rec (in) 10 10 10 8 12 12 12 12	9/7/7/7 9/7/7/7 6/6/8/7 8/7/8/7 3/3/7/7 13/16/17/16 12/15/18/18	Rem	SAND	<ul> <li>WIDELY GRADED SANE to coarse subrounded sand brown.</li> <li>WIDELY GRADED SANE to coarse subrounded sand gray and light brown.</li> <li>WIDELY GRADED SANE to coarse subrounded sand gray and light brown.</li> <li>WIDELY GRADED SANE medium subrounded sand brown.</li> <li>WIDELY GRADED SANE to coarse subrounded sand brown.</li> <li>WIDELY GRADED SANE to coarse subrounded sand brown.</li> <li>WIDELY GRADED SANE to coarse subrounded sand brown.</li> <li>WIDELY GRADED SANE to coarse subrounded sand brown.</li> </ul>	<ul> <li>) WITH GRAV</li> <li>) WITH GRAV</li> <li>) WITH GRAV</li> <li>) WITH GRAV</li> <li>) WITH GRAV</li> <li>) WITH GRAV</li> <li>) WITH GRAV</li> <li>) WITH GRAV</li> <li>) WITH GRAV</li> <li>) WITH GRAV</li> <li>) WITH GRAV</li> <li>) WITH GRAV</li> <li>) WITH GRAV</li> <li>) WITH GRAV</li> <li>) WITH GRAV</li> <li>) TH GRAV</li> <li>) WITH GRAV</li> </ul>	/EL (SW); ubangular /EL (SW); ubangular /EL (SW); ubangular /EL (SW); ubangular /EL (SW); ubangular /EL (SW);	~80% n gravel; ~80% n gravel; ~80% n gravel; ~80% fi gravel; ~80% n gravel; ~80% n	nedium light nedium light ine to dark nedium
75												
80												
85 Notes:						PR∩ī	Е <b>С</b> Т				Barah	ole No
110165.								Providence LNG			SI	3-02

B.5 of 10

WEID	LINGER	R ASSOC	CIATES	, INC.	Project	Prov	vidence	e LNG		BORING NO.		SI	3-04		
///	27 WORI	MWOOD, S	NG ENGII SUITE 200	NEERS	Location	Prov	vidence	∍.RI		Page No.	1	of	2		
<u> </u>	BOSTON Phone: (f	J, MA 0221( 517) 250-41(	)-1625 )()		Project No.	2152	24028	.,							
Client	Kiewit	<i>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</i>			GS Fley	2102	1020								
	Caalagia				Bening Coondi			N/A	ft.	# of SPT Samp	oles	10			
Contractor Driller	Dave				Boring Coordi	nates	-	N/A		Length of Roc	k core	_	ft		
WAI Rep.	Shawn In	gram (Rou	ıx)		EQUIPMENT	CA	ASING	SAMPLER	CORE	8			-		
DATE	Start	2015	Finish	15	Type Size LD		4.11	Split Spoon		Total Depth of	f Boring	51	ft.		
Boring	0/1/	2015	0/1/20	15	Hammer Wt.	I	Hyd.	Hyd		# of Shelby Tu	ıbes	2			
Location	See attact		mala Inf	ampation	Hammer Fall										
Borehole		Depth	Pen	ormation	Blows per 6"	larks	ata		S	ample Descript	ion				
Depth (ft)	No.	(ft)	(in)	Rec (in)	(RQD %)	Rem	Str								
5	SS-1	6-8	24	5	7/4/4/3		FILL	WIDELY GR medium to c gravel; gray.	ADED S oarse su	SAND WITH G brounded sand	GRAVEL ( 1; ~20% fi	SW); ~{ ne suba	80% angular		
10	SS-2	9-11	24	5	8/6/5/4			WIDELY GRADED SAND WITH SILT (SW-SM); ~80% fine to medium subrounded sand; ~20% fine subangular gravel; gray; petroleum odor.							
 15	SS-3	14-16	24	10	7/4/3/3			SILT WITH ( >5% fine sub	GRAVEI bangular	L (ML); medius gravel; dark gi	m plastici ray.	ty orga	unic silt;		
20	SS-4 US-1	19-21 21-23	24 30	11 24	3/1/2/1 Push			WIDELY GR to medium s Shelby tube	ADED S ubround undistur	DED SAND WITH SILT (SW-SM); ~50% fine rounded sand; ~50% organic silt; dark gray. disturbed sample.					
25 	SS-5	24-26	24	17	woh(12")/2/1		GANIC SILT	WIDELY GR to medium s	ADED 9 ubround	SAND WITH Sl led sand; ~50%	ILT (SW-S	6M); ~5 silt; daı	60% fine •k gray.		
30	SS-6	29-31	24	18	8/6/5/4 Push		OR	WIDELY GRADED SAND WITH SILT (SW-SM); ~50% fine to medium subrounded sand; ~50% organic silt; dark gray.							
35	SS-7	34-36	24	24	6/6/5/4			WIDELY GR fine to media gray.	ADED S um sand	SAND WITH G ; ~20% fine sub	GRAVEL ( pangular f	SW); ~{ ïine gra	80% vel;		
<b>40</b> Notes:	SS-8	39-41	24	24	1/2/3/9	PRC	JECT	SILT WITH SAND (ML); ~85% medium plasticity organ silt; ~15% fine sand; dark gray.				organic Iole No.			
							-	Providence I	LNG			SI	3-04		

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WEIDI	WEIDLINGER ASSOCIATES, INC. consulting engineers					Provi	dence l	LNG	BORING NC		SE	3-04
	27 WOR	CONSULT	ING ENG	INEERS	,				Daga Ma	2	of	2
///	BOSTON	J, MA 02210	)-1625		Location	Provi	dence ,	RI	1 age 100.	2	01	۷
	Phone: (6	617) 250-410	00		Project No.	21524	028					
th		Saı	nple Info	ormation	ľ	rks	ta					
Dep (ft)	No.	Depth (ft)	Pen (in)	Rec (in)	Blows per 6" (RQD %)	Rema	Stra	Samj	ple Descriptio	n		
45	SS-9 SS-10	44-46 49-51	24 24	14	24/18/16/14 23/12/13/13		SAND	WIDELY GRADED SAND medium subrounded sand and gray. WIDELY GRADED SAND medium subrounded sand and gray.	) WITH GRAV l; ~20% fine su ) WITH GRAV l; ~20% fine su	/EL (SW); ıbangular /EL (SW); ıbangular	~80% fi gravel; ~80% fi gravel;	ne to brown ne to brown
_								Bottor	m of Boring 5	l feet		
Notes:						PROJ	ECT	Providence LNG			Boreh	ole No.
											SE	3-04

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WEID	LINGER	R ASSOC	CIATES	, INC.	Project	Prov	vidence	e LNG		BORING NO.	SB-06						
	27 WOR	MWOOD, 9	NG ENGII 5UITE 200	NEERS	Location	Prov	ridona	, PI		Page No. 1	of	3					
<i>''//</i>	BOSTON	J, MA 0221	0-1625		Docation	0150		, NI									
	Phone: (6	517) 250-410	00		Project No.	2152	4028										
Client	Kiewit				GS Elev.				ft.	# of SPT Samples	19						
Contractor	Geologic				Boring Coordi	nates											
Driller	Ray and I	Dave					CIN IC		CODE	Length of Rock core		ft					
WAI Rep.	Shawn In Start	gram (Roi	ux) Finish		EQUIPMENT	CA	ASING	SAMPLER Split Spoon	CORE	Total Dopth of Boring	101	ft					
DATE	7/16	/2015	7/17/2	)15	Size I.D.		4"	2"		Total Depth of Dolling	101	11.					
Boring					Hammer Wt.	I	Hyd.	Hyd		# of Shelby Tubes	3						
Location		E a	mala Inf	amation	Hammer Fall												
Borehole		Domth	Dom	ormation	Player par 6"	arks	ata	Sample Description									
Depth (ft)	No.	(ft)	Pen (in)	Rec (in)	(RQD %)	Rem	Stra	Sample Description									
	SS-1	0-2	24	18	6/9/12/11			WIDELY GR	ADED 9	SAND WITH GRAVEL (	SW); ~8	30%					
_								medium to coarse subrounded sand; ~20% fine subangular gravel: light brown									
								8									
5																	
5	SS-2	4-6	24	15	5/3/3/2			WIDELY GR	ADED 9	SAND WITH GRAVEL (	SW); ~8	80%					
							. 1	medium to c	oarse su brown	ibrounded sand; ~20% fi	ne suba	ngular					
							FILI	5ru ei, 116ru	010111								
10	SS-3	9-10.5	18	8	6/4/5/78			WIDELY GRADED SAND WITH GRAVEL (SW); ~80%									
								medium to coarse subrounded sand; ~20% fine subangular									
								advancing spoon past 10.5 ft. concre									
45	SS-4	14-16	24	10	7/4/5/4			WIDELY GRADED SAND WITH GRAVEL (SW); ~80%									
15	_							medium to coarse subrounded sand; ~20% fine subangular gravel; black; petroleum odor.									
_								gravel; black; petroleum odor.									
20	SS-5	19-21	24	24	w.o.h			SILT (ML); ~90	0% orgar	nic silt; ~10% fine sand; dark	gray.						
	US-1	21-23	30	25	Push			Shalby tuba	Indicturb	od							
	001	21 25	50	20	1 4311			oneby tube. C	maistarb	eu							
25	US-2	24-26	30	23	Push			Shelby tube. L	Indisturb	ed							
							LT										
	US-3	27-29	30	25	Push		IC SI	Shelby tube. L	Indisturb	ed							
	SS-6	29-31	24	24	w.o.h		GAN	SILT (ML); ~9(	0% orgar	nic silt; ~10% fine sand; dark	gray.						
30		2,01		-1			OR(		U		0,						
_	SS-7	34-36	24	5	woh			SII T (MI.): ~90% organic silt: ~10% fine sand: shell									
35		0100		0				fragment clogged the spoon and impacted recovery; dark									
								gray.									
40								SILT (ML); ~9(	0% orqar	nic silt; ~10% fine sand; dark	gray.						
40	SS-8	39-41	24	24	w.o.h			, <i>,,</i> ,, ,									
Notes:						Providence LNG Boreh					ole No. -06						

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WEIDI	LINGER	ASSOC	IATES	, INC.	Project	Provi	dence	LNG	BORING NC		5	6B-06						
	27 WORN	CONSULTI MWOOD, S	ING ENC UITE 200	GINEERS )	Project No.	21524	028		Page No.	2	of	3						
77/	BOSTON	, MA 02210	-1625		Location	Provi	dence	RI		_		0						
	Phone: (6	017) 250-410	0 mmla Ir	formation	Location			,										
ft)		Denth	Pen		Blows per 6"	harks	ata	S	Sample Descrit	otion								
De	No.	(ft)	(in)	Rec (in)	(RQD %)	Ren	Str		ampie Beserin									
45	SS-9	44-46	24	24	w.o.h			SILT (ML); ~90% organic silt;	~10% fine sand	; dark gray	Ι.							
50	SS-10	49-51	24	24	w.o.h			SILT (ML); ~90% organic silt; ~10% fine sand; dark gray.										
55	SS-11	54-56	24	24	woh/woh/3/3			SILT (ML); ~90% organic silt; ~10% fine sand; dark gray.										
60	SS-12	59-61	24	24	woh/12/6/3		RGANIC SILT	59-60 - SILT (ML); ~90% organic silt; ~10% fine sand; dark gray. 60-60.5 - WIDELY GRADED SAND (SW); ~95% F to M sand; gray 60.5-61 - SILT (ML); ~90% organic silt; ~10% fine sand; dark gray.										
65 	SS-13	64-66	24	15	3/2/5/4		0	64-65 - WIDELY GRADED SAND (SW); ~95% F to C sand; gray 65-66 - SILT (ML); ~90% silt; ~10% fine sand; dark brown.										
70	SS-14	69-71	24	6	8/6/5/4			WIDELY GRADED SANI	D (SW); ~95% ]	F to C sar	nd; gray							
75 	SS-15	74-76	24	1	3/2/3/4			SILT (ML); ~90% organic silt; ~10% fine sand; dark gray.										
80	SS-16	80-81	24	24	woh/woh/3/4			70-80 - SILT (ML); ~95% o 80-81 - SILT (ML); ~95% o	organic silt; bla organic silt; dat	ck. rk gray.								
85 Notes:	SS-17	84-86	24	20	6/11/9/12	PROJ	CNPS ECT	WIDELY GRADED SANI	D (SW); ~95% ]	F to M sa	nd; gray Borehole	e No.						
								TIOVIDENCE LING			9	5B-06						

B.9 of 10

WEIDI	LINGER	IATES,	INC.	Project	Provi	dence l	LNG	BORING NO.	SB-06				
	27 WORI	CONSULTI MWOOD. S	NG ENG UITE 200	INEERS	Project No.	21524	028		Page No 3	of 3			
11/1	BOSTON	J, MA 02210	-1625		T TOJECT NO.	21524	1	DI	1 age 110	01			
	Phone: (6	617) 250-410	0		Location	Provi	aence,	KI					
oth t)		Sar	nple Inf	ormation	DI (II	arks	ata	C					
De <sub>l</sub> (f	No.	(ft)	Pen (in)	Rec (in)	(RQD %)	Rem	Stra	Samp.	le Description				
			( )		(~ )								
90	SS-18	89-91	24	0	7/7/12/7			No recovery					
50													
							Ŋ						
							SAN						
95													
_	55-19	99-101	24	18	9/9/14/22			WIDELY GRADED SANI	) (SW)∙ ~95% F I	o M sand: light			
100	55-17	<i>yy</i> -101	24	10	<i>)</i> / <i>)</i> /14/22			brown.	, 50,011	o wi suita, ligiti			
								BOTTOM OF BORING, 10	01 FT				
105													
105													
110													
115													
120													
125													
130													
Notes:	Notes:							PROJECT Borehole N					
						Providence LNG SB-06							

B.10 of 10

PROJECT: CHI LNG Bund Highwall PROJECT NUMBER: 154-6055 DRILLED DEPTH: 61.0 ft LOCATION: Liquefier Area

## RECORD OF BOREHOLE B-201 (KW-1)

DRILL METHOD: 4 inch Drive and Wash HAMMER TYPE: Auto DATE STARTED: 1/15/16 DATE COMPLETED: 1/18/16 COORDS: N: 260,792.90 E: 356,903.17 GS ELEVATION: 11.7 ft WEATHER: Cloudy TEMPERATURE: 34 deg F SHEET 1 of 3 INCLINATION: 90 DEPTH W.L.: 1.7 ft ELEVATION W.L.: 10.0 ft DATE W.L.: 1/18/2016 TIME W.L.: 08:00

		SOIL PROFILE							-	SA	MPLE INFORMATION	
DEPTH	ELEVATION	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	N	REC ATT	Sample Description	
0.0 \[\[\]	 	0.0 - 9.0ft Brown, fine to coarse SAND, some silt, trace gravel (FILL).			0.0	S1	SS	12-15-20-15	35	<u>1.1</u> 2.0	Top 4": Gray, moist, dense, fine SAND, little silt, (SM). Pp=1536psf Bottom 9": Reddish brown, moist, dense, fine to coarse SAND, little silt, trace gravel, (SM). PID=0.1ppm	
5.0	- - - - - - - - - - 5		SM		5.0	S2	SS	8-4-6-5	10	<u>0.8</u> 2.0	Dark brown, wet, loose, fine to coarse SAND, some silt, trace gravel, (SM). Slight hydrocarbon odor. PID=0.0ppm	
⊥ ⊥10.0		9.0 - 19.4ft Dark gray, silty fine to coarse SAND, trace to little gravel.			9.0	S3	SS	12-9-11-10	20	<u>0.3</u> 2.0	Dark gray, wet, medium dense, fine to coarse SAND, some silt, trace gravel, (SM). Strong hydrocarbon odor and visible sheen. PID=12.0ppm	
NH 2011.GDT 5/10/16			SM		14.0	S4	SS	10-4-1-1	5	<u>0.5</u> 2.0	Gray, wet, loose, silty SAND, trace gravel, (SM). Strong hydrocarbon odor and visible sheen. PID=3.0ppm Dark gray, wet, very loose, silty medium to coarse SAND, little fine to medium gravel, (SM). Strong hydrocarbon odor and visible sheen.	
VALL .GPJ GOLDER	5  				19.0	S5	SS	1-WOH- WOH-WOH	0	1.4 2.0	PID=1.5ppm Top 5": Gray, wet, loose, silty fine to coarse SAND, little gravel, (SM).	
AHOIH 20.0	- ) 	19.4 - 34.0ft Dark gray, organic SILT to organic silty fine SAND, trace shells.			21.0	S6	SS	9-4-2-2	6	<u>0.7</u> 2.0	Strong hydrocarbon odor. Bottom 3": Dark gray to black, loose, organic SILT, (OH). Pp=1000psf, Tv = 100 psf. Dark gray, wet, very loose, organic SILT, some shell fragments, (OH).	
OIL/RX CHI LN	10 		ОН		23.0	S7	VANE	WOP-WOP- WOP-WOP	0	<u>0.3</u> 2.0	Some gravels, (SM), PID=0.4ppm         V1: (21.5-22) Su = 133 psf, Remolded Su = 300 psf         V2: (22.5-23) Su = 250 psf, Remolded Su = 359 psf         Top 12": Dark gray, wet, medium dense, silty fine SAND, trace shell	
ECHNICAL SC	S8 SS 20-16-10-8 26 2.0 200 PID=0.1ppm											
	Fill (m	ade ground)	iCS Si	ilty Sar	nd (SM	) 💱	USC Orga with	<del>CS High Pla</del> anic silt or o shells (OH	isticity clay SH)		ੀ USCS Well-graded ਤੇ Sand (SW)	
003A MANCHEST J. J. D. J. J. J. J. J. J. J. J. J. J. J. J. J.	-W: Drive RILLING RILLER: RILL RIC	and Wash SH: Shelby Ti COMPANY: Geologic E C. O'Donnel G: CME - 45	ube arth E	SS/ Explora	ittings	PP: Pocket Penetrometer TV: Torvane LOGGED BY: SAD CHECKED BY: JDL DATE: 2/19/16						

PROJECT: CHI LNG Bund Highwall PROJECT NUMBER: 154-6055 DRILLED DEPTH: 61.0 ft LOCATION: Liquefier Area

RECORD OF BOREHOLE B-201 (KW-1)

DRILL METHOD: 4 inch Drive and Wash HAMMER TYPE: Auto DATE STARTED: 1/15/16 DATE COMPLETED: 1/18/16

COORDS: N: 260,792.90 E: 356,903.17 GS ELEVATION: 11.7 ft WEATHER: Cloudy TEMPERATURE: 34 deg F

SHEET 2 of 3 INCLINATION: 90 DEPTH W.L.: 1.7 ft ELEVATION W.L.: 10.0 ft DATE W.L.: 1/18/2016 TIME W.L.: 08:00

	SOIL PROFILE											MPLE INFORMATION	
	DEPTH ft	ELEVATION	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	N	REC ATT	Sample Description	
	25.0 _	- 				25.0	S9	SS	5-3-4-3	7	<u>2.0</u> 2.0	Top 6": Dark gray, wet, loose, silty fine to coarse SAND, trace fine gravel, trace shell fragments, (SM). Bottom 18": Dark gray, wet, medium stiff, organic SILT, trace fine gravel, trace shell fragments, (OH).	
	- - 30.0	_		ОН		29.0	S10	SS	4-2-12-100/2"	14	<u>0.9</u> 1.7	Dark gray, wet, medium dense, silty fine to coarse SAND, some shell fragments, trace fine gravel, (SM). PID=0.0ppm	
	-	20 											
	35.0	_	34.0 - 61.0ft Dark brown, fine to coarse SAND, trace gravel, trace silt, (Outwash).			34.0	S11	SS	18-22-20-23	42	<u>0.9</u> 2.0	Brown, wet, hard, SILT, little fine sand, trace shells, (ML). 1.5" thick seam of gravel. PID=0.0ppm	
16	-												
2011.GDT 5/10/	- 40.0 <sup></sup>	_				39.0	S12	SS	13-10-24-23	34	<u>0.8</u> 2.0	Dark brown, wet, dense, fine to coarse SAND, trace gravel, trace silt, (SW). PID=0.0ppm	
L.GPJ GOLDER NH													
BUND HIGHWAI	45.0	_				44.0	S13	SS	32-26-20-16	46	<u>0.6</u> 2.0	Dark brown, wet, dense, fine to coarse SAND, trace gravel, trace silt, (SP). PID=0.0ppm	
SOIL/RX CHI LNG	-												
DTECHNICAL	- 50.0	-	Log continued on next	page		49.0		ss	18-10-12-13	22	<u>0.0</u> 2.0	NO RECOVERY.	
ER NH GE	$\bigotimes$	Fill (m	ade ground)	SCS Si	lty Sar	nd (SM	) 💱	Org	anic silt or o shells (OH	clay SH)		이 USCS Well-graded 의 Sand (SW)	
003A MANCHEST	D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cuttings DRILLING COMPANY: Geologic Earth Exploration Inc. DRILLER: C. O'Donnel DRILL RIG: CME - 45											PP: Pocket Penetrometer TV: Torvane LOGGED BY: SAD CHECKED BY: JDL DATE: 2/19/16	

P P D	PROJECT: CHI LNG Bund Highwall PROJECT NUMBER: 154-6055 DRILLED DEPTH: 61.0 ft LOCATION: Liquefier Area       DRILL METHOD: 4 inch Drive and Wash HAMMER TYPE: Auto DATE STARTED: 1/15/16 DATE STARTED: 1/15/16       COORDS: N: 260,792.90       E: 356,903.17       INCLINATION: 90 DEPTH W.L.: 1.7 ft ELEVATION: 11.7 ft         SOIL PROFILE       SOIL PROFILE       SAMPLE INFORMATION       SAMPLE INFORMATION												
		SOIL PROFILE								SA	MPLE INFORMATION		
DEPTH	ELEVATION	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	Ν	REC ATT	Sample Description		
50.0				• • • • • • • • • • • • • • • • • •	e e		SS	18-10-12-13	22	<u>0.0</u> 2.0	· · ·		
55.C	40    		sw		54.0	S14	SS	24-17-19-22	36	<u>1.0</u> 2.0	Reddish brown, wet, dense, fine to coarse SAND, trace fine gravel, trace silt, (SW). PID=0.0ppm		
60.0					59.0	S15	SS	11-11-20-24	31	<u>2.0</u> 2.0	Upper 18": Orange to reddish brown, wet, dense, medium to coarse SAND, trace gravel, (SP). Bottorn 6": Gray, wet, dense, fine SAND, little silt, (SM).		
ESTER NH GEOTECHNICAL SOIL/RX CHI LNG BUND HIGHWALL .GPJ GOLDER NH 2011.GDT 5/10/16 모 🕅	Fill (m ₩: Drive	Notes: 1. Borehole backfilled with cut vade ground) US and Wash SH: Shelby Tu	ttings to CS S ube	ilty Sau	d surface		USC Org with Auger	CS High Pla anic silt or o shells (OH AUG: Au	isticity clay SH) uger CL		USCS Well-graded Sand (SW)		
ID ID ID ID ID ID ID ID ID ID ID ID ID I	RILLING RILLER: RILL RIG	COMPANY: Geologic E C. O'Donnel G: CME - 45	arth E	Explora	tion Inc	).	-			-	LOGGED BY: SAD CHECKED BY: JDL DATE: 2/19/16		

PROJECT: CHI LNG Bund Highwall PROJECT NUMBER: 154-6055 DRILLED DEPTH: 81.0 ft LOCATION: Liquefier Area

## RECORD OF BOREHOLE B-202 (KW-4)

DRILL METHOD: 4 inch Drive and Wash HAMMER TYPE: Auto DATE STARTED: 1/20/16 DATE COMPLETED: 1/21/16

COORDS: N: 260,939.76 E: 356,963.61 GS ELEVATION: 10.8 ft WEATHER: Clear, windy TEMPERATURE: 18-25 deg F

SHEET 1 of 4 INCLINATION: 90 DEPTH W.L.: 0.2 ft ELEVATION W.L.: 10.6 ft DATE W.L.: 1/21/2016 TIME W.L.: 07:30

											SAMPLE INFORMATION			
	DEPTH ft	ELEVATION ft	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	N	REC ATT	Sample Description		
	مِي 	10	0.0 - 19.0ft Dark grayish brown, fine to coarse SAND to silty fine to medium SAND, trace to little gravel (FILL).			0.0	S1	SS	10-10-25-21	35	<u>1.1</u> 2.0	Top 2": Gray, damp, dense, coarse GRAVEL, some fine sand, (GP). Middle 5": Brown, moist, dense, silty fine to medium SAND, trace asphalt, trace gravel, (SM). Bottom 6": Dark brown, moist, dense, fine to coarse SAND, trace asphalt, trace gravel, (SP) PID=0.1ppm		
	- 5.0 <sup></sup>	- 5				5.0	S2	SS	30-23-23-23	46	<u>1.0</u> 2.0	Dark grayish brown, moist, dense, medium to coarse SAND, some gravel, trace concrete (up to 1"), (SP). PID=0.5ppm		
		- 0		Dark grayish brown, wet, dense, fine to coarse SAND, little gravel, (SW). Slight hydrocarbon odor. PID=2.3ppm										
10/16												Dark gray, wet medium dense, silty fine to medium SAND, little gravel,		
5     5     15.0     54     SS     18-13-13-13     26     0.9       15.0     -5											(SM). Slight hydrocarbon odor. PID=32.5ppm			
UND HIGHWALL .GF	-20.0	-	19.0 - 69.0ft Dark brown to dark gray, organic SILT to fine to medium sandy CLAY, trace shells and wood fragments.			19.0	S5	SS	1-1-1-1	2	<u>1.3</u> 2.0	Dark brown, moist, soft, fine to medium sandy CLAY, (CH). Tv=300, 250, 360psf Pp=2000, 1700, 1500psf		
RX CHI LNG B	B     -     OH     21.0       B     -     OH     S6     VANE       1-1-1-1     2										<u>2.0</u> 2.0	Dark brown, wet, soft, fine to medium sandy CLAY, trace shell fragments, (CH), Tv=250, 200, 200psf Pp=1500, 1000, 1200psf V1: (21.5-22) Su = 550 psf; Remolded Su = 200 psf V2: (22.5-23) Su = 583 psf; Remolded Su = 416 psf		
ECHNICAL SOIL	-	-				23.0	S7	SS	1-1-1-2	2	<u>2.0</u> 2.0	Dark brown, wet, soft, fine to medium sandy CLAY, (CH). Tv=250, 200, 200psf Pp=1500, 1700, 2000psf		
OTE	25.0		Log continued on next	page CS Hi	igh Pla	sticitv								
STER NH GE	D+M	Fill (m /: Drive	ade ground)	ganic s h shel	silt or o Is (OH	slay SH)	Stem	San	d (SP)	Jaer Ci	I	PP: Pocket Penetrometer, TV: Torvane		
밝	יםם				volore	tion Inc			7.00. AL					
003A MANC	DRI DRI DRI	LLER:	C. O'Donnel 6: CME - 45	aitii E	-vhiola		LOGGED BY: SAD CHECKED BY: JDL DATE: 2/19/16							


PROJECT: CHI LNG Bund Highwall PROJECT NUMBER: 154-6055 DRILLED DEPTH: 81.0 ft LOCATION: Liquefier Area RECORD OF BOREHOLE B-202 (KW-4)

DRILL METHOD: 4 inch Drive and Wash HAMMER TYPE: Auto DATE STARTED: 1/20/16 DATE COMPLETED: 1/21/16 COORDS: N: 260,939.76 E: 356,963.61 GS ELEVATION: 10.8 ft WEATHER: Clear, windy TEMPERATURE: 18-25 deg F SHEET 3 of 4 INCLINATION: 90 DEPTH W.L.: 0.2 ft ELEVATION W.L.: 10.6 ft DATE W.L.: 1/21/2016 TIME W.L.: 07:30

		SOIL PROFILE							SA	MPLE INFORMATION	
DEPTH ft	ELEVATION	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	N	REC ATT	Sample Description
50.0						S12	SS	4-3-3-3	6	<u>2.0</u> 2.0	· · ·
	-										
	-				54.0						Dark gray, moist, soft, organic SILT, trace wood fragments, trace shell
55.0	_					S13	SS	2-2-2-3	4	2.0	fragments, (OH). Tv=350, 300, 400psf Pp=2500, 2500, 2500psf
										2.0	
										15	Dark gray, moist, very soft, organic SILT, trace wood fragments, trace roots, trace shell fragments, (OH). Tv=100, 250, 200psf Pp=2000, 1500, 1000psf
						S14	VANE	WOP-WOP-	0	2.0	V5: (56.5-57) Su = 1801 psf; Remolded Su = 995 psf V6: (57.5-58) Su = 2844 psf; Remolded Su = 1801 psf
	-				59.0						Dark gray, moist, medium stiff, organic SILT, trace wood fragments, trace
60.0	-		ОН			S15	ss	2-3-4-6	7	<u>2.0</u> 2.0	3500psf
	-50										
	_										
	-										
/10/16	-				64.0						Top 5": Dark gray, moist, stiff, organic SILT, trace wood fragments, trace
65.0	-					S16	ss	7-9-9-9	18	<u>1.7</u> 2.0	2000psf Middle 10.5": Dark gray, wet, loose, silty fine to coarse SAND, (SM).
5.1102											Bottom 3.5": Dark gray, moist, stiff, organic SILT, trace wood fragments, trace fine sand, (OH). Pp=3000, 2500, 3500psf
	_										
GPJ C	_										
MALL	-	69.0 - 81.0ft Dark gray, fine to coarse		TTE	69.0						Dark gray, wet, dense, fine to coarse SAND, trace gravel, trace silt, (SP).
E 70.0	_	SAND to silty fine to medium SAND, trace gravel				S17	ss	13-18-17-14	35	<u>0.7</u> 2.0	
BUND	-60	(outwash).									
LNG	_		0.0								
5			SP								
	-			74.0					0.0	NO RECOVERY. Piece of gravel in tip.	
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	_	Log continued on next	page		2.0						
	Fill (m	us ade ground)	CS Hi ganic								
		wit	h shel								
	N: Drive	and Wash SH: Shelby T	ube	PP: Pocket Penetrometer TV: Torvane							
	ILLING	COMPANY: Geologic E	arth E	xpiora	CHECKED BY: JDL						
DR	ILL RIC	G: CME - 45									DATE: 2/19/16 <b>CASSOCIATES</b>

F F C L	PROJECT PROJECT DRILLED I OCATION	: CHI LNG Bund Highwall NUMBER: 154-6055 DEPTH: 81.0 ft N: Liquefier Area	DRIL HAM DATI DATI	REC L METI MER T E STAF E COM	ORD: 4 YPE: Au TED: 1. PLETED	OF inch E uto /20/16 2: 1/21	Brive a	DREHO nd Wash	COOF GS EI WEAT TEMF	B-2 RDS: N LEVATI THER: PERATI	02 (KW-4)         SHEET 4 of 4           M: 260,939.76         E: 356,963.61         INCLINATION: 90           ION: 10.8 ft         DEPTH W.L.: 0.2 ft           Clear, windy         ELEVATION W.L.: 10.6 ft           JRE: 18-25 deg F         DATE W.L.: 1/21/2016		
		SOIL PROFILE								SA	MPLE INFORMATION		
DEPTH	ELEVATION	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	N	REC ATT	Sample Description		
75.	0						SS	14-17-14-12	31	<u>0.0</u> 2.0			
			SP		79.0	\$19	55	15 12 11 0	22	1.5	Dark gray, wet, medium dense, silty fine to medium SAND, trace gravel, (SM).		
80.	070					310	33	13-12-11-6	23	2.0			
	80.0												
	With shells (OHSH)       USCS Poorly-graded         W: Drive and Wash       SSA: Solid Stem Auger       AUG: Auger Cuttings       PP: Pocket Penetrometer TV: Torvane												
D D D	RILLING RILLER: RILL RI(	COMPANY: Geologic E C. O'Donnel G: CME - 45	arth E	xplora	ition Ind		LOGGED BY: SAD CHECKED BY: JDL DATE: 2/19/16						

003A MANCHESTER NH GEOTECHNICAL SOILRX CHI LNG BUND HIGHWALL .GPJ GOLDER NH 2011.GDT 5/10/16

PROJECT: CHI LNG Bund Highwall PROJECT NUMBER: 154-6055 DRILLED DEPTH: 91.0 ft LOCATION: Outside Liquefier Area

RECORD OF BOREHOLE B-203 (KW-6)

DRILL METHOD: 4 inch Drive and Wash HAMMER TYPE: Auto DATE STARTED: 1/25/16 DATE COMPLETED: 1/25/16

COORDS: N: 260,887.74 E: 356,815.54 GS ELEVATION: 9.9 ft WEATHER: Clear, windy TEMPERATURE: 25 deg F

SHEET 1 of 4 INCLINATION: 90 DEPTH W.L.: 4.1 ft ELEVATION W.L.: 5.8 ft DATE W.L.: 1/26/2016 TIME W.L.: 07:50

			SOIL PROFILE								SA	MPLE INFORMATION
	DEPTH ft	ELEVATION ft	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	N	REC ATT	Sample Description
	0.0	-	0.0 - 24.0ft Gray to black, fine to coarse SAND to sitly SAND, trace gravel (FILL).			0.0	S1	ss	18-18-15-17	33	<u>1.6</u> 2.0	Top 10": Grayish light brown, frozen, dense, fine to coarse SAND, trace gravel, trace slit (SW). Bottom 9": Dark brown, moist, dense, fine to medium SAND, little slit, (SM). N value may not be representative of in situ density/ consistency, due to frozen soil.
	- ⊻ - 5.0 <sup></sup>	- - 5 -				4.0	S2	SS	24-10-12-11	22	<u>0.9</u> 2.0	Top 5.5": Black, wet, medium dense, fine to medium SAND, trace gravel, trace silt, (SP). Bottom 5": Light gray, moist, medium dense, fine to medium SAND, trace gravel, (SP).
	-	-				9.0						
	⊻ 10.0 <sup>—</sup>	— o —				9.0		ss	11-8-6-13	14	<u>0.0</u> 2.0	NO RECOVERT.
1/16	-	_		SM								
2011.GDT 5/10	15.0	-5 -				14.0	S3	ss	22-10-6-4	16	<u>0.8</u> 2.0	Top 5": Light gray, moist, medium dense, sitty tine SAND, trace concrete, trace gravel, (SM). PID=74.6ppm Bottom 5": Dark gray to black, wet, medium dense, fine to coarse SAND, trace gravel, trace silt (SW). Strong hydrocarbon odor and visible sheen. PID=702ppm
ALL .GPJ GOLDER NH :	-	_				19.0						Black wet loose fine to coarse SAND some fine gravel (SW) Strong
BUND HIGHW/	20.0	10				13.0	S4	SS	11-4-3-3	7	<u>0.6</u> 2.0	hydrocarbon odor and visible sheen. PID=78.1ppm
AL SOIL/RX CHI LNG	-	-										
DTECHNICA	25.0	-15	24.0 - 54.0ft Dark gray, organic SILT, trace fine sand, trace shells. Log continued on next	OH page		24.0	S5	SS	9-2-2-2	4	<u>0.7</u> 2.0	Dark gray, moist, soft, organic SILT, trace fine sand, (OH). Tv=300, 200, 200psf Pp=2000, 1500, 1800psf V1: (24.5-25) Su = 995 psf, Remolded Su = 521 psf
TER NH GE(		Fill (m	ade ground)	ganic : h shel	silt or ( ls (OH	sucity clay SH)		] uso	CS Silty Sar	nd (SN	Л)	
HES-	D+W	/: Drive	and Wash SH: Shelby T	ube	SS	A: Solid S	Stem	Auger	AUG: AL	iger Ci	ittings	PP: Pocket Penetrometer TV: Torvane
003A MANC	DRI DRI DRI	DRILLING COMPANY: Geologic Earth Exploration Inc. DRILLER: C. O'Donnel DRILL RIG: CME - 45										LOGGED BY: SAD CHECKED BY: JDL DATE: 2/19/16

PROJECT: CHI LNG Bund Highwall PROJECT NUMBER: 154-6055 DRILLED DEPTH: 91.0 ft LOCATION: Outside Liquefier Area

RECORD OF BOREHOLE B-203 (KW-6)

DRILL METHOD: 4 inch Drive and Wash HAMMER TYPE: Auto DATE STARTED: 1/25/16 DATE COMPLETED: 1/25/16

COORDS: N: 260,887.74 E: 356,815.54 GS ELEVATION: 9.9 ft WEATHER: Clear, windy TEMPERATURE: 25 deg F

SHEET 2 of 4 INCLINATION: 90 DEPTH W.L.: 4.1 ft ELEVATION W.L.: 5.8 ft DATE W.L.: 1/26/2016 TIME W.L.: 07:50

SOIL PROFILE										SAMPLE INFORMATION			
-	DEPTH ft	ELEVATION ft	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	N	REC ATT	Sample Description	
	25.0	_					S5	SS	9-2-2-2	4	<u>0.7</u>	V2: (25.5-26) Su = 1043 psf; Remolded Su = NA	
	_					26.0	S6	VANE	WOP-WOP- WOP-WOP	0	<u>1.6</u> 2.0	Top 9 <sup>s</sup> : Dark gray, wet, very soft, organic SILT, little fine to coarse sand, trace gravel, (OH). Bottom 10 <sup>s</sup> : Dark gray, moist, very soft, organic SILT, trace fine sand, (OH).	
	30.0					29.0	S7	SS	1-1-3-2	4	<u>1.6</u> 2.0	Dark gray, moist, soft, organic SILT, trace fine sand, trace shell fragments, (OH). Tv=300, 300, 250psf Pp=2000, 1500, 1800psf	
	-					31.0	S8	VANE	WOP-WOP- WOP-WOP	0	<u>1.5</u> 2.0	Dark gray, wet, very soft, organic SILT, trace fine sand, trace shell fragments, (OH). Tv=100, 250, 150psf Pp=2000, 1000, 1500psf V3: (31.5-32) Su = 853 psf; Remolded Su = 758 psf V4: (32.5-33) Su = 1042 psf; Remolded Su = 664 psf	
	35.0					34.0	S9	SS	1-2-3-2	5	<u>0.5</u> 2.0	Dark gray, wet, medium stiff, organic SILT, trace fine to medium sand, trace shell fragments, (OH). Pp=1000, 1500, 1000psf	
Q	-			ОН									
011.GDT 5/10/1	40.0					39.0	S10	ss	1-1-1-2	2	<u>0.3</u> 2.0	Dark gray, wet, soft, organic SILT, some clay, trace fine sand, trace shell fragments, (OH). Pp=1000, 1000, 1000psf	
L.GPJ GOLDER NH 2	-												
<b>BUND HIGHWAL</b>	45.0					44.0	S11	SS	1-2-3-4	5	<u>1.4</u> 2.0	Dark gray, moist, medium stiff, organic SILT, trace fine sand, (OH). Tv=200, 150, 200psf Pp=1500, 1500, 1000psf	
- SOIL/RX CHI LNG B	-												
TECHNICAL	- 50.0		Log continued on next	page		49.0	S12	SS	7-11-11-11	22	<u>0.4</u> 2.0	Black, wet, medium dense, silty fine to medium SAND, some organics (wood fragments, roots), (SM). PID=9.0ppm	
ER NH GEO	$\bigotimes$	Fill (m	iade ground)	<del>CS H</del> i ganic s h shel	igh Pla silt or c Is (OH	sticity clay SH)		ງບຣດ	CS Silty Sar	nd (SN	Л)		
HEST	D+W	/: Drive	and Wash SH: Shelby T	ube	SSA	A: Solid S	Stem	Auger	AUG: Au	iger Ci	uttings	PP: Pocket Penetrometer TV: Torvane	
003A MANCI	DRI DRI DRI	LLING LLER: LL RIG	COMPANY: Geologic E C. O'Donnel G: CME - 45	arth E	xplora		LOGGED BY: SAD CHECKED BY: JDL DATE: 2/19/16						

PROJECT: CHI LNG Bund Highwall PROJECT NUMBER: 154-6055 DRILLED DEPTH: 91.0 ft LOCATION: Outside Liquefier Area RECORD OF BOREHOLE B-203 (KW-6)

 DRILL METHOD: 4 inch Drive and Wash
 C

 HAMMER TYPE: Auto
 C

 DATE STARTED: 1/25/16
 V

 DATE COMPLETED: 1/25/16
 T

COORDS: N: 260,887.74 E: 356,815.54 GS ELEVATION: 9.9 ft WEATHER: Clear, windy TEMPERATURE: 25 deg F SHEET 3 of 4 INCLINATION: 90 DEPTH W.L.: 4.1 ft ELEVATION W.L.: 5.8 ft DATE W.L.: 1/26/2016 TIME W.L.: 07:50

												SAMPLE INFORMATION			
	DEPTH ft	ELEVATION ft	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	Ν	REC ATT	Sample Description			
	50.0			-			S12	SS	7-11-11-11	22	<u>0.4</u> 2.0	· · ·			
	-	,		ОН											
	55.0	-45	54.0 - 91.0ft Gray, fine to coarse SAND to silty SAND, trace to some gravel, (Outwash).			54.0	S13	SS	22-26-32-40	58	<u>0.7</u> 2.0	Top 2.5": Dark gray, wet, very dense, fine to medium SAND, (SP). Middle 2.5": Dark gray, wet, very dense, GRAVEL, trace medium to coarse sand, (GP). Bottom 3": Dark brown, wet, very dense, GRAVEL, trace organics, trace fine to coarse sand, trace silt, (GP).			
	-														
	60.0					59.0	S14	SS	17-9-11-12	20	<u>0.3</u> 2.0	Brownish gray, wet, medium dense, fine to coarse SAND, some gravel, some silt, (SM).			
16	-														
2011.GDT 5/10/	65.0			SM		64.0	S15	SS	20-8-7-9	15	<u>0.6</u> 2.0	Gray, wet, medium dense, fine to coarse SAND, little gravel, trace silt, (SP).			
L.GPJ GOLDER NH	_	-													
<b>BUND HIGHWAL</b>	70.0	-60				69.0	S16	SS	14-14-6-4	20	<u>0.9</u> 2.0	Dark gray, moist, very stiff, medium to coarse sandy SILT, trace fine gravel, (ML).			
T SOIL/RX CHI LNG F	_	 													
TECHNICA	- 75.0		Log continued on next	page		74.0	S17	SS	27-17-17-18	34	<u>0.8</u> 2.0	Gray, wet, dense, fine to coarse SAND, little silt, trace gravel, (SM).			
ER NH GEO	$\bigotimes$	Fill (m	ade ground)	SCS Hi ganic s th shel	igh Pla silt or ( Is (OH	isticity clay ISH)		USC	CS Silty Sar	nd (SN	<b>/</b> I)				
EST	D+W	V: Drive	and Wash SH: Shelby T	ube	SS	A: Solid	Stem /	Auger	AUG: Au	iger Cu	ittings	PP: Pocket Penetrometer TV: Torvane			
003A MANCH.	DRILLING COMPANY: Geologic Earth Exploration Inc. DRILLER: C. O'Donnel DRILL RIG: CME - 45											Igs         PP: Pocket Penetrometer         TV: Torvane           LOGGED BY:         SAD           CHECKED BY:         JDL           DATE:         2/19/16			

	RECORD OF BOREHOLE PROJECT: CHI LNG Bund Highwall DRILL METHOD: 4 inch Drive and Wash COOI										B-2	03 (KW-6) SHEET 4 of 4
	PRO PRO DRI	JJECT JECT	: CHI LNG Bund Highwall NUMBER: 154-6055 DEPTH: 91.0 ft	HAMMER TYPE: Auto GS ELE DATE STARTED: 1/25/16 WEATH								4: 260,887.74 E: 356,815.54 INCLINA ION: 90 ION: 9.9 ft DEPTH W.L.: 4.1 ft Clear, windy ELEVATION W.L.: 5.8 ft
	LOC	OITAC	N: Outside Liquefier Area	DATI	E COMF	PLETED	: 1/25	6/16		TEMP	ERATI	URE: 25 dég F DATE W.L.: 1/26/2016 TIME W.L.: 07:50
_		z	SOIL PROFILE								SA	MPLE INFORMATION
		ELEVATIO ft	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	N	REC ATT	Sample Description
	75.0	_					S17	SS	27-17-17-18	34	<u>0.8</u> 2.0	
	_	_										
		_				79.0						Gray, wet, medium dense, silty fine to coarse SAND, some gravel, (SM).
	80.0	70					S18	SS	38-11-7-7	18	<u>0.6</u> 2.0	Driller noted possible cobbles.
	35.0 <sup></sup>											
	-	_										
5/10/16	_	_				89.0					0.5	Gray, wet, medium dense, fine to coarse SAND, some silt, little gravel, (SM).
H 2011.GDT	90.0		Boring completed at 91.0 ft				S19	SS	15-13-18-28	31	2.0	
GOLDER N			Notes: 1. Borehole backfilled with cu	ttings to	o ground	l surface	9.					
WALL .GPJ												
BUND HIGH												
RX CHI LNG												
NICAL SOIL/I												
SEOTECHI	<u></u>			CS Hi	gh Pla	sticity						
With shells (OHSH)												
03A MANCHEST.	D+W DRI DRI DRI	/: Drive LLING LLER: LL RI(	and Wash SH: Shelby Ti COMPANY: Geologic E C. O'Donnel G: CME - 45	ube arth E	SS/ Explora	uttings	PP: Pocket Penetrometer TV: Torvane LOGGED BY: SAD CHECKED BY: JDL DATE: 2/19/16 Golder					

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## RECORD OF BOREHOLE B-204 (KW-10)

PROJECT: CHI LNG Bund Highwall PROJECT NUMBER: 154-6055 DRILLED DEPTH: 101.0 ft LOCATION: Liquefier Area

DRILL METHOD: 4 inch Drive and Wash HAMMER TYPE: Auto DATE STARTED: 1/28/16 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51 GS ELEVATION: 9.6 ft WEATHER: Cloudy TEMPERATURE: 40 deg F

SHEET 1 of 5 INCLINATION: 90 DEPTH W.L.: 4.4 ft ELEVATION W.L.: 5.2 ft DATE W.L.: 1/28/2016 TIME W.L.: 07:30

			SOIL PROFILE								SA	MPLE INFORMATION
	DEPTH ft	ELEVATION ft	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	N	REC ATT	Sample Description
	0.0		0.0 - 14.0ft		×××	0.0						Brown, moist (frozen), medium dense, GRAVEL, some fine to coarse
	-	-	Grown to black, tine to coarse SAND, some to little gravel, some silt (FILL).				S1	SS	15-8-7-6	15	<u>1.1</u> 2.0	sand, some siit, (GM). N value may not be representative of in situ density/ consistency, due to frozen soil.
	Ţ	_										
	⊻ 5.0 <sup>—</sup>	5 				4.0	S2	SS	14-5-5-12	10	<u>0.4</u> 2.0	Black, wet, loose, fine to coarse SAND, little gravel, trace asphalt, some silt, (SP).
	-	-		SP								
	- 10.0	— o				9.0	S3	SS	9-8-8-11	16	<u>0.9</u> 2.0	Top 3": Brown, moist, medium dense, silty fine SAND, little gravel, (SM). Bottom 8": Black, wet, medium dense, fine to coarse SAND, some gravel, (SP). Strong hydrocarbon odor and visible sheen. PID=5.4ppm
16	-											
011.GDT 5/10/	15.0	— -5 -	14.0 - 55.5ft Dark brown, organic SILT, some to trace fine sand, trace shells, and wood fragments.			14.0	S4	ss	5-12-10-9	22	<u>1.3</u> 2.0	Top 4": Brown, wet, very stiff, organic SILT, trace fine sand, (OH). Bottom 11": Brownish gray, moist, fine to medium SAND, little gravel, trace wood fragments, (SP). Strong hydrocarbon odor and visible sheen. PID=12ppm
L.GPJ GOLDER NH 2	-	-										
ID HIGHWAL	20.0	-10		ОН		19.0	S5	VANE	WOH-1-1-1	2	<u>0.3</u> 2.0	Dark gray, wet, soft, organic SILT, little wood fragments, trace fine sand, (OH). Hydrocarbon odor. Tv=150, 200, 200psf Pp=1000, 1000, 1500psf V1: (19.5-20) Su = 711 psf; Remolded Su = 332 psf V2: (20.5-21) Su = 1138 psf; Remolded Su = 948 psf
L SOIL/RX CHI LNG BUN	-	-				22.0	S6	SS	WOP-WOP- WOP-WOP	0	<u>1.5</u> 2.0	Dark brown, wet, very soft, organic SILT, some fine sand, (OH). Strong "rotting egg" odor. Tv=250, 300, 250psf Pp=1500, 2000, 2000psf
DTECHNICA	25.0	-15	Log continued on next	page		24.0	S7	ss	4-3-4-4	7	<u>2.0</u> 2.0	Top 12": Dark brown, wet, medium stiff, organic SILT, little gravel, (OH). Bottom 12": Dark brown, moist, medium stiff, organic SILT, trace wood fragments, trace fine sand, (OH). Tv=250, 200, 250psf Pp=2000, 2000,
TER NH GEC	Fill (made ground) Fill (made ground) Organic silt or clay with shells (OHSH) D+W: Drive and Wash SH: Shelby Tube SSA: Solid Stem Auger AUG: Auger Cutting										M)	
HEST	D+W	/: Drive	and Wash SH: Shelby T	ube		A: Solid S	Stem /	Auger	AUG: AL	iger Ci	uttings	PP: Pocket Penetrometer TV: Torvane
003A MANC	DRI DRI DRI	LLING LLER: LL RIC	GOMPANY: Geologic E C. O'Donnel B: CME - 45	arth E	xplora		CHECKED BY: JDL DATE: 2/19/16					

## RECORD OF BOREHOLE B-204 (KW-10)

PROJECT: CHI LNG Bund Highwall PROJECT NUMBER: 154-6055 DRILLED DEPTH: 101.0 ft LOCATION: Liquefier Area DRILL METHOD: 4 inch Drive and Wash HAMMER TYPE: Auto DATE STARTED: 1/28/16 DATE COMPLETED: 1/29/16 COORDS: N: 261,006.13 E: 356,942.51 GS ELEVATION: 9.6 ft WEATHER: Cloudy TEMPERATURE: 40 deg F SHEET 2 of 5 INCLINATION: 90 DEPTH W.L.: 4.4 ft ELEVATION W.L.: 5.2 ft DATE W.L.: 1/28/2016 TIME W.L.: 07:30

		SOIL PROFILE									SA	MPLE INFORMATION
	DEPTH ft	ELEVATION ft	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	N	REC ATT	Sample Description
	25.0	_					S7	SS	4-3-4-4	7	<u>2.0</u> 2.0	2000psf
	- - 30.0	_ _ 				29.0	S8	SS	1-WOH-1-2	1	<u>1.5</u> 2.0	Dark brown, moist, very soft, organic SILT, trace shell fragments, trace fine sand, (OH). Tv=100, 150, 150psf Pp=1000, 1000, 1000psf
	_	-				31.0	S9	VANE	WOP-WOP- WOP-WOP	0	<u>1.6</u> 2.0	Dark gray, moist, very soft, organic SILT, some fine sand, trace wood fragments, (OH). Tv=100, 100, 100psf Pp=100, 100, 100psf V3: (31.5-32) Su = 1090 psf; Remolded Su = 568 psf V4: (32.5-33) Su = 1422 psf; Remolded Su = 1327 psf
		- 				33.0	S10	SS	2-2-2-2	4	<u>1.7</u> 2.0	Top 8": Dark brown, wet, soft, organic SILT, some fine to coarse sand, trace gravel, trace wood fragments, (OH). Tv= 100, 100, 100psf Pp=100, 100, 100psf Bottom 12": Dark gray, moist, soft, organic SILT, trace gravel, trace fine to medium sand, (OH). Tv=250, 200, 250psf Pp=2000, 2500, 2000psf
	-	_		ОН								
2011.GDT 5/10/16	40.0	30				39.0	S11	SS	7-8-9-10	17	<u>1.3</u> 2.0	Dark gray, moist, medium dense, silty fine to medium SAND, trace gravel, (SM). Hydrocarbon odor and visible sheen. PID=0.5ppm
ND HIGHWALL .GPJ GOLDER NH	- - 45.0	_ _ 										
ECHNICAL SOIL/RX CHI LNG BUN		_ _ 		tpage								
NH GEOTI	<u>50.0</u>	Fill (m	uade ground)	SCS H rganic th shel	i <del>gh Pla</del> silt or o Is (OH	sticity clay SH)		Juso	CS Silty Sar	nd (SI	M)	
STER	D+W	/: Drive	and Wash SH: Shelby	Гube	SS	A: Solid	Stem /	Auger	AUG: Au	uger Cu	uttings	PP: Pocket Penetrometer TV: Torvane
003A MANCHE	DRI DRI DRI	DRILLING COMPANY: Geologic Earth Exploration Inc. DRILLER: C. O'Donnel DRILL RIG: CME - 45										LOGGED BY: SAD CHECKED BY: JDL DATE: 2/19/16



PROJECT: CHI LNG Bund Highwall PROJECT NUMBER: 154-6055 DRILLED DEPTH: 101.0 ft LOCATION: Liquefier Area

RECORD OF BOREHOLE B-204 (KW-10) DRILL METHOD: 4 inch Drive and Wash HAMMER TYPE: Auto DATE STARTED: 1/28/16 DATE COMPLETED: 1/29/16

COORDS: N: 261,006.13 E: 356,942.51 GS ELEVATION: 9.6 ft WEATHER: Cloudy TEMPERATURE: 40 deg F

SHEET 4 of 5 INCLINATION: 90 DEPTH W.L.: 4.4 ft ELEVATION W.L.: 5.2 ft DATE W.L.: 1/28/2016 TIME W.L.: 07:30

		SOIL PROFILE									SAMPLE INFORMATION	
DEPTH	π ELEVATION ft	LITHOLOGY DESCRIP	TION US	S GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	N	REC ATT	Sample Description	
75.	0					S16	SS	20-14-13-12	27	<u>0.5</u> 2.0	· · ·	
	_											
					79.0	S17	SS	11-16-13-20	29	0.5	Gray, wet, medium dense, silty fine to coarse SAND, some gravel, (SM).	
00.										2.0		
	_											
					- 01.0	040		50/01				
85.	0 <sup>—</sup> -75				84.0	518	55	50/2"	<u> </u>	0.2	Dark gray, wet, very dense, GRAVEL, trace tine to coarse sand, (GP).	
			s	м								
16	-											
T 5/10/					89.0					0.2	Gray, wet, very stiff, fine to coarse sandy SILT, little gravel, (ML).	
2011.GD	0					S19	ss	19-15-15-13	30	2.0		
LDER NH	_											
.GPJ GO	_											
GHWALL												
IH 95. IH ONNB	0											
CHI LNG	_											
SOIL/RX												
ECHNICAL			n nevt no-		99.0	S20	SS	6-4-6-10	10	<u>0.0</u> 2.0	No recovery; resampled (recovery 0.5/2.0'). Gray, wet, loose, fine to coarse SAND, some gravel, trace silt, (SP).	
USCS High Plasticity       With Shells (OHSH)										V)		
d STER	+W: Driv	ve and Wash SH: She	elby Tube	S	, SA: Solid	Stem	Auger	AUG: Au	uger Cu	uttings	PP: Pocket Penetrometer TV: Torvane	
DRILLING COMPANY: Geologic Earth Exploration Inc.											LOGGED BY: SAD	
D 003A M D	RILLEF RILL R	R: C. O'Donnel IG: CME - 45					DATE: 2/19/16					

## RECORD OF BOREHOLE B-204 (KW-10)

PROJECT: CHI LNG Bund Highwall PROJECT NUMBER: 154-6055 DRILLED DEPTH: 101.0 ft LOCATION: Liquefier Area DRILL METHOD: 4 inch Drive and Wash HAMMER TYPE: Auto DATE STARTED: 1/28/16 DATE COMPLETED: 1/29/16 COORDS: N: 261,006.13 E: 356,942.51 GS ELEVATION: 9.6 ft WEATHER: Cloudy TEMPERATURE: 40 deg F SHEET 5 of 5 INCLINATION: 90 DEPTH W.L.: 4.4 ft ELEVATION W.L.: 5.2 ft DATE W.L.: 1/28/2016 TIME W.L.: 07:30

		SOIL PROFILE		SAMPLE INFORMATION								
DEPTH ft	ELEVATION ft	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	N	REC ATT	Sample Description	
100.0			SM			S20	SS	6-4-6-10	10	<u>0.0</u> 2.0		

Boring completed at 101.0 ft

Notes:

1. Borehole backfilled with cuttings to ground surface.

		h Plasticity			
Fill (made ground)	Organic si with shells	It or clay (OHSH)	Silty Sand (SM)		
D+W: Drive and Wash	SH: Shelby Tube	SSA: Solid Stem Auger	AUG: Auger Cuttings	PP: Pocket Penetrometer TV: Torv	/ane
DRILLING COMPANY DRILLER: C. O'Donne DRILL RIG: CME - 45	: Geologic Earth Ex 키	ploration Inc.		LOGGED BY: SAD CHECKED BY: JDL DATE: 2/19/16	Golder

PROJECT: CHI LNG Bund Highwall PROJECT NUMBER: 154-6055 DRILLED DEPTH: 51.0 ft LOCATION: Southwest Tank Area

RECORD OF BOREHOLE B-205 (PL-5)

DRILL METHOD: 4 inch Drive and Wash HAMMER TYPE: Auto DATE STARTED: 2/1/16 DATE COMPLETED: 2/1/16

COORDS: N: 260,902.81 E: 357,253.32 GS ELEVATION: 8.5 ft WEATHER: Partly Cloudy TEMPERATURE: 50 deg F

SHEET 1 of 3 INCLINATION: 90 DEPTH W.L.: 7.0 ft ELEVATION W.L.: 1.5 ft DATE W.L.: 2/1/2016 TIME W.L.: 1300

	SOIL PROFILE										SAMPLE INFORMATION			
	DEPTH ft	ELEVATION ft	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	N	REC ATT	Sample Description		
	0.0	_	0.0 - 19.0ft Light to dark brown, gravelly fine to coarse SAND to fine to coarse SAND, some gravel, trace to some silt, (FILL).			0.0	S1	SS	6-6-13-21	19	<u>1.3</u> 2.0	Light brown, dry, medium dense, fine to coarse SAND, some gravel, trace silt, (SW). PID = 0.1 ppm		
	-	- 5												
	5.0	_				4.0	S2	SS	12-16-16-21	32	<u>1.0</u> 2.0	Top 4": Brown, moist, dense, fine to coarse SAND, some gravel, trace silt, (SW). Bottom 8": Light brown, moist, dense, fine to medium SAND, some gravel, little silt, (SM). PID = 1.0 ppm 5.0-9.0 ft: Tight material - Difficult to drive casing		
	⊻ _ -	- 0										7.0 ft: Strong hydrocarbon odor coming from the borehole		
		_		SM		9.0	S3	SS	25-30-28-16	58	<u>1.3</u> 2.0	Dark brown, wet, very dense, gravelly fine to coarse SAND, some silt, (SM). Strong hydrocarbon odor. PID = 3.9 ppm		
16	-													
2011.GDT 5/10/		_				14.0	S4	SS	15-14-11-10	25	<u>1.1</u> 2.0	Dark brown, wet, medium dense, gravelly fine to coarse SAND, some silt, (SM). Slight hydrocarbon odor. PID = 3.7 ppm		
L.GPJ GOLDER NH	_	_ 												
BUND HIGHWAL	20.0	_	19.0 - 51.0ft Brown, silty fine to coarse SAND to SAND, some to trace gravel, some silt, (Outwash).			19.0	S5	SS	9-13-16-21	29	<u>0.8</u> 2.0	Light brown, wet, medium dense, gravelly fine to coarse SAND, trace silt, trace clay, (SP-SM). PID = 0.5 ppm (very windy)		
<b>DIL/RX CHI LNG</b>	-	_		SM										
DTECHNICAL SC	25.0	- 15	Log continued on next	page		24.0	S6	SS	21-19-18-16	37	<u>1.3</u> 2.0	Top 5": Dark brown, wet, dense, fine to coarse SAND, some gravel, some silt, (SM). Bottom 10": Brown, wet, dense, fine to coarse SAND, trace gravel, little		
R NH GE	$\bigotimes$	Fill (m	ade ground)	CS Si	ilty Sar	nd (SM	)							
<b>HESTE</b>	D+W	/: Drive	and Wash SH: Shelby Tr	ube	SS	A: Solid S	Stem /	Auger	AUG: AL	iger Ci	uttings	PP: Pocket Penetrometer TV: Torvane		
003A MANCH	DRI DRI DRI	LLING LLER: LL RIC	COMPANY: Geologic E C. O'Donnel 3: CME - 45	arth E	xplora	tion Inc						LOGGED BY: CEM CHECKED BY: JDL DATE: 3/3/16		

PROJECT: CHI LNG Bund Highwall PROJECT NUMBER: 154-6055 DRILLED DEPTH: 51.0 ft LOCATION: Southwest Tank Area

RECORD OF BOREHOLE B-205 (PL-5) DRILL METHOD: 4 inch Drive and Wash HAMMER TYPE: Auto DATE STARTED: 2/1/16 DATE COMPLETED: 2/1/16

COORDS: N: 260,902.81 E: 357,253.32 GS ELEVATION: 8.5 ft WEATHER: Partly Cloudy TEMPERATURE: 50 deg F

SHEET 2 of 3 INCLINATION: 90 DEPTH W.L.: 7.0 ft ELEVATION W.L.: 1.5 ft DATE W.L.: 2/1/2016 TIME W.L.: 1300

			SOIL PROFILE								SA	MPLE INFORMATION
-	DEPTH ft	ELEVATION ft	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	N	REC ATT	Sample Description
	25.0	-					S6	SS	21-19-18-16	37	<u>1.3</u> 2.0	silt, (SM). PID = 0.4 ppm (very windy)
	_ _ 30.0 <sup>_</sup> _	- - - - - - - - - - - -				29.0	S7	SS	6-7-7-7	14	<u>0.8</u> 2.0	Brown, wet, medium dense, fine to coarse SAND, some gravel, trace silt, trace clay, (SP-SM). PID = 0.5 ppm (windy)
	-	- - - - 				34.0						Brown, wet, medium dense, fine to coarse SAND, some gravel, some silt,
	35.0	-					S8	SS	5-6-5-6	11	<u>1.0</u> 2.0	trace clay, (SM). PID = 0.6 ppm
16	-	- - - - 		SM								36.0 ft: Driller adds drilling mud to maintain open hole
2011.GDT 5/10/	40.0					39.0	S9	SS	15-24-16-12	40	<u>0.6</u> 2.0	Brown, wet, dense, fine to coarse SAND, little gravel, little silt, little clay, (SM). Occasional 1/8" thick lenses of silt. PID = 0.7 ppm
LL .GPJ GOLDER NH :	-	- - - 										
BUND HIGHWA	45.0					44.0	S10	SS	10-8-12-16	20	<u>1.1</u> 2.0	Brown, wet, medium dense, silty fine to coarse SAND, little gravel, (SM). Alternating layers of sandy silt (3-4") and silty fine to coarse sand (2-3"). Gravel lense at 44'8". PID = 0.0 ppm
AL SOIL/RX CHI LNG	_											
DTECHNIC/	50.0	_	Log continued on next	page		49.0	S11	SS	15-10-11-12	21	<u>1.3</u> 2.0	Top 12": Brown, wet, medium dense, silty fine to medium SAND, trace gravel, trace clay, (SM). Bottom 4": Brown, wet, medium dense, fine sandy SILT, trace clay, (ML).
ER NH GEC	$\bigotimes$	Fill (m	nade ground)	CS Si	lty Sar	nd (SM	)					
ESTE	D+W	V: Drive	e and Wash SH: Shelby T	ube	SS	A: Solid	Stem /	Auger	AUG: Au	iger Ci	uttings	PP: Pocket Penetrometer TV: Torvane
003A MANCH	DRI DRI DRI	LLING LLER: LL RIG	COMPANY: Geologic E C. O'Donnel G: CME - 45	arth E	xplora	tion Inc						LOGGED BY: CEM CHECKED BY: JDL DATE: 3/3/16

## RECORD OF BOREHOLE B-205 (PL-5)

PROJECT: CHI LNG Bund Highwall PROJECT NUMBER: 154-6055 DRILLED DEPTH: 51.0 ft LOCATION: Southwest Tank Area

DRILL METHOD: 4 inch Drive and Wash HAMMER TYPE: Auto DATE STARTED: 2/1/16 DATE COMPLETED: 2/1/16

COORDS: N: 260,902.81 E: 357,253.32 GS ELEVATION: 8.5 ft WEATHER: Partly Cloudy TEMPERATURE: 50 deg F

SHEET 3 of 3 INCLINATION: 90 DEPTH W.L.: 7.0 ft ELEVATION W.L.: 1.5 ft DATE W.L.: 2/1/2016 TIME W.L.: 1300

		SOIL PROFILE								SA	AMPLE INFORMATION
DEPTH ft	ELEVATION ft	LITHOLOGY DESCRIPTION	USCS	GRAPHIC LOG	SAMPLE DEPTH	NUMBER	SAMPLE TYPE	BLOWS per 6 in	N	REC ATT	Sample Description
50.0			SM			S11	SS	15-10-11-12	21	<u>1.3</u> 2.0	PID = 0.0 ppm

Boring completed at 51.0 ft

Notes:

Borehole backfilled with cuttings to ground surface.
 Seismograph geophone was anchored to the LNG Tank foundation 24.5' away from the borehole. No vibrations detected.
 4" casing to 24' bgs - open hole below

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비						
NH GEC	Fill (made ground)	USCS Silty	y Sand (SM)			
ESTER	D+W: Drive and Wash	SH: Shelby Tube	SSA: Solid Stem Auger	AUG: Auger Cuttings	PP: Pocket Penetrometer TV: To	orvane
003A MANCHE	DRILLING COMPANY DRILLER: C. O'Donne DRILL RIG: CME - 45	: Geologic Earth Ex। ध	ploration Inc.		LOGGED BY: CEM CHECKED BY: JDL DATE: 3/3/16	Golder



## **APPENDIX C**

FIGURES PREPARED BY WEIDLINGER AND ASSOCIATES, INC. ON BEHALF OF KIEWIT ENGINEERING AND DESIGN COMPANY



88.24.12-REQ-001-RE-0004-001 - Packet 88.24.12-REQ-001-004 - Fields Point Liquefaction Project - 2013128 - Received: 09/18/2015

NOTES:

- 1. TEST BORINGS CONDUCTED FOR THIS STUDY LOCATED IN THE FIELD BASED ON SURVEY USING N.A.D. 83 RHODE ISLAND STATE PLANE GRID US SURVEY.
- 2. BASE PLAN PROVIDED BY KIEWIT.

В

LEGEND:

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- APPROX LOCATION AND DESIGNATION OF TEST BORINGS BY WAI IN 2015
- APPROX LOCATION AND DESIGNATION OF TEST BORINGS BY H&A IN 1971 & 1972

LOCATION AND ORIENTATION OF SUBSURFACE

FIGURE 2 : TEST BORING LOCATION PLAN

FIELDS POINT LIQUEFACTION PROJECT

- BORINGS BY SWEC IN 1995

- -╋-₿−##

PROFILE

NATIONAL GRID

PROVIDENCE, RHODE ISLAND





88.24.12-REQ-001-RE-0004-001 - Packet 88.24.12-REQ-001-004 - Fields Point Liquefaction Project - 2013128 - Received: 09/18/2015



ESTIMATED STRAP EMISSIONS



FIGURES



4	5	6
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(1) FEED GAS COALESCING FILTER/SEPARATOR SKID
                (5) BOOSTER COMPRESSOR OUTLET FILTER/COALESCER
                (7) FEED GAS BOOSTER COMPRESSOR INTERCOOLER & AFTERCOOLER
                 (17) NITROGEN 3-STAGE COMPRESSOR LUBE OIL COOLER
                 (19) NITROGEN 3-STAGE COMPRESSOR INTERCOOLER & AFTERCOOLER
                 (26) LIQUID NITROGEN STORAGE AND NITROGEN VAPORIZER
                 (31) NITROGEN COLD/WARM COMPANDER LUBE OIL SKID
                 (32) NITROGEN RECYCLE COOLER & COMPANDER AFTERCOOLER
                                    CONFIDENTIAL
THESE DRAWINGS ARE CONFIDENTIAL IN NATURE. ANY MISUSE OR UNAUTHORIZED DISTRIBUTION
OF THE DRAWINGS CONTAINED HEREIN WILL BE A VIOLATION OF THIS CONFIDENTIALITY
REQUIREMENT AND SUBJECT THE VIOLATOR TO LIABILITY. REVIEW OF THESE MATERIALS BY
RECIPIENT SHALL CONSTITUTE AN ACCEPTANCE OF THESE TERMS AND THE TERMS OF ANY UNDERLYING
CONFIDENTIALITY AGREEMENT WE MAY HAVE EXECUTED IN OBTAINING THIS INFORMATION FROM A
THIRD PARTY. IF THE RECIPIENT IS NOT IN AGREEMENT WITH THE OBLIGATION OF
           CONFIDENTIALITY THEN THE DRAWINGS SHALL BE RETURNED TO THE ORIGINATOR.
                                                 NATIONAL GRID LNG LLC
                                      FIELDS POINT LIQUEFACTION PROJECT
                                                             PLOT PLAN
                                                                                             1 OF 1
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CALCULATIONS

### APPENDIX D EXCAVATION EMISSIONS CALCULATIONS STRAP – Liquefaction Project Providence, Rhode Island

To estimate potential volatile emissions associated with planned construction activities at the 642 Allens Avenue Property ("the Site"), GZA GeoEnvironmental, Inc. (GZA) used the following modified versions of the equations given in Appendix D of "Air Emissions from the Treatment of Soils Contaminated with Petroleum Fuels and Other Substances" (Eklund 1997):

First, the total excavation emissions potential is calculated as a benchmark:

Total Excavation Emissions Potential:

 $E_{Potential} = C_{i,Soil} \times S_{v} \times \beta$ 

Where,

 $E_{Potential}$  = Total Mass of Component i in a given volume of soil in grams (g);  $C_{i,Soil}$  = Concentration of Component i in the Soil in micrograms of Component i per gram of Soil (ug/g);  $\beta$  = Typical Bulk Density in grams per cubic centimeter (g/cm<sup>3</sup>) (assumed to be 1.5 g/cm<sup>3</sup> – Eklund 1997); and  $S_v$  = Total Volume of Soil Moved in cubic meters (m<sup>3</sup>).

Average Total Emissions (detailed model):

If the Average Total Emissions calculated by this detailed model (Eklund 1997) exceeds the calculated Total Excavation Emissions Potential, the Total Excavation Emissions Potential will be used.

$$E = E_{PS} + E_{DIFF}$$

$$E_{PS} = \frac{P_i MW \ 10^6 E_a S_v ExC}{R T}$$

$$E_{DIFF} = \frac{(C)(10,000)(SA)(t_v)}{\left(\frac{E_a}{K_{eq}k_g}\right) + \left(\frac{\pi t}{D_e K_{eq}}\right)^{1/2}}$$

Where,

E = Total Emissions from Excavation of Soil in g;

 $E_{PS}$ = Total Emissions due to Soil Pore Space Gas in g;

 $E_{DIFF}$  = Total Emissions due to Diffusion in g;

 $P_i$  = Partial Pressure of Component i in millimeters of mercury (mm Hg)<sup>1</sup>;

*MW* = Molecular Weight in grams per mole (g/mol);

 $10^6$  = Conversion Factor of cm<sup>3</sup>/m<sup>3</sup>;

<sup>&</sup>lt;sup>1</sup> Note that because the impacts at the Site are primarily not separate phase, we have used the partial pressure as opposed to the vapor pressure of the pure component.

 $E_a$  = Air-Filled Porosity (0.35 for wet, or compacted soil; 0.55 for dry, uncompacted soil – Eklund (1997));

 $S_v$  = Total Volume of Soil Moved in m<sup>3</sup>;

ExC = Soil-Gas to Atmosphere Exchange Constant (0.10 for wet or high-clay content soils; 0.33 for dry, sandy soils from Eklund - 1997);

 $R = \text{Universal Gas Constant in mm-Hg*cm}^3/\text{mol}/\text{K}$  (62,361 mm-Hg\*cm $^3/\text{mol}/\text{K}$ );

T = Temperatures in K (assumed to be 15°C);

C = Mass Loading of Component i in soil in g/cm<sup>3</sup>;

10,000 = Conversion Factor of square centimeters per square meter (cm<sup>2</sup>/m<sup>2</sup>); and

SA = Total Emitting Surface Area in square meters (m<sup>2</sup>). GZA assumed the Total Emitting Surface Area to be the sides and bottom of the excavation and the sides and top of the stockpile.

 $D_e$  = Effective Diffusivity in Air in square centimeter per second (cm<sup>2</sup>/s);

 $K_{eq}$  = Equilibrium Coefficient;

 $t_v$  = Time the Volume of Soil Moved is emitting in seconds (s) (360 s – Eklund (1997));

 $k_g$  = Gas-Phase Mass Transfer Coefficient in centimeter per second (cm/s) (Default of 0.15 cm/s – Eklund (1997)); and

t = Time that the Instantaneous Emission Rate approximates the Average Emission Rate over the 360 second period that Emissions from Freshly Excavated Soil are assumed to be Significant in s (60 s – Eklund (1997)).

 $P_i$  is calculated by:

For this scenario, the partial pressure was estimated using Raoult's Law assuming the constituents are in a mixture with the other organic matter in the soil.

Raoult's Law:

 $P_i = P_i^* x_i$ 

Where,

 $P_i$  = Partial Pressure of the Component i in the Mixture;

 $P_i^*$  = Vapor Pressure of the pure Component i; and

 $x_i$  = Mole Fraction of the Component i in the Mixture (moles component/total moles).

$$x_i = \frac{10^{-6} C_{i,Mixture} MW_{Mixture}}{MW_i}$$

Where,

 $10^{-6}$  = Conversion Factor of kilogram per milligram (kg/mg);

*MW<sub>Mixture</sub>* = Molecular Weight of Mixture in g/mol (assumed to be 250 g/mol);

 $MW_i$  = Molecular Weight of Component i in g/mol; and

*C<sub>i,Mixture</sub>* = Concentration of Component i in the Mixture in milligrams of Component i per kilogram of Mixture (mg/kg).

$$C_{i,Mixture} = \frac{C_{i,Soil}}{TOC}$$

Where,

*C<sub>i,Mixture</sub>* = Concentration of Component i in the Mixture in milligrams of Component i per kilogram of Mixture (mg/kg);

 $C_{i,Soil}$  = Concentration of Component i in the Soil in micrograms of Component i per gram of Soil (ug/g); and

TOC = Fraction of Total Organic Carbon in the Soil (g/g). Because Site-specific TOC data was not available, the default value of 0.002 from the USEPA's Soil Screening Guidance: User's Guide (1996) was used to be conservative.

We've assumed a soil temperature of 15°C in our calculations. We have therefore utilized the Clausius-Clapeyron equation to calculate vapor pressures at 15°C from those in the literature (typically 25°C): Clausius-Clapeyron Equation:

$$\ln\left(\frac{P_1}{P_2}\right) = \left(\frac{\Delta H_{vap}}{R}\right) \left(\frac{1}{T_2} - \frac{1}{T_1}\right)$$

Where,

 $P_1$  = Vapor Pressure at a Known Point;

 $P_2$  = Vapor Pressure at a Given Point;

 $T_1$  = Temperature at a Known Point in Kelvin (K);

 $T_2$  = Temperature at a Given Point in K;

 $\Delta H_{vap}$  = Enthalpy of Vaporization of Component i in kilojoules per mole (kJ/mol); and

R = Universal Gas Constant in kilojoules per Kelvin per mole (8.314E-03 kJ/K/mol).

C (Mass Loading of Component i in soil in  $g/cm^3$ ) is calculated by:

Where,

 $10^{-6}$  = Conversion Factor of gram per microgram (g/ug);

 $C_{i,Soil}$  = Concentration of Component i in the Soil in micrograms of Component i per gram of Soil (ug/g); and  $\beta$  = Typical Bulk Density in g/m<sup>3</sup>; (assumed to be 1.5 g/m<sup>3</sup> – Eklund (1997)).

 $C = 10^{-6} C_{i,Soil} \beta$ 

 $K_{eq}$  is calculated by:

$$K_{eq} = \frac{P_i M W_i E_a}{R T C}$$

Where,

 $P_i$  = Partial Pressure of the Component i in the Mixture in mm Hg;

 $MW_i$  = Molecular Weight of Component i in g/mol;

 $E_a$  = Air-Filled Porosity (0.35 for wet, or compacted soil; 0.55 for dry, uncompacted soil – Eklund (1997));

R = Universal Gas Constant in mm-Hg\*cm<sup>3</sup>/mol/K (62,361 mm-Hg\*cm<sup>3</sup>/mol/K);

T = Temperatures in K (assumed to be 15°C);

C = Mass Loading of Component i in soil in g/cm<sup>3</sup>;

 $D_e$  is calculated by:

$$D_e = \frac{D_a \ (E_a)^{3.33}}{(E_T)^2}$$

Where,

 $D_a$  = Diffusivity in Air of Component i in cm<sup>2</sup>/s (Default of 0.1 was used when chemical-specific values could not be found.);

 $E_a$  = Air-Filled Porosity (0.35 for wet, or compacted soil; 0.55 for dry, uncompacted soil – Eklund (1997)); and

 $E_T$ = Total Porosity (0.35 for compacted soil; 0.55 for uncompacted soil – Eklund (1997)).

For impacted soils to be managed on-Site (e.g., if it is not directly loaded into a truck but is first stockpiled), an additional Total Emissions due to Soil Pore Space Gas factor will be included in the Average Total Emissions to account for the additional emissions during soil handling and stockpiling. As a conservative measure, for losses during management of materials, GZA will utilize the Total Emissions due to Soil Pore Space Gas that was calculated above for losses during excavation. This is conservative since the concentrations in the re-handled soil will be lower than in the soil during excavation.

### **References:**

Eklund, et al. 1997. Air Emissions from the Treatment of Soils Contaminated with Petroleum Fuels and Other Substances. Prepared for U.S. Environmental Protection Agency Office of Air and Radiation and Office of Research and Development Washington, D.C. EPA-600/R-97-116. October.

RIDEM. 2009. Air Pollution Control Regulation No. 9: Air Pollution Control Permits. December.

USEPA, 1996. Soil Screening Guidance: User's Guide. July.

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TABLES

	<b>RIDEM Industrial</b>					Sample Name:	RCA-4	RC	A-5	RC	A-21	RCA-40		ETP-19	9	ET	P-20	RCA-R10	В	08	B	17	B18	B19	B	20
	<b>Commercial Direct</b>		RIDEM Upper	A	Marinauna	Date Collected:	8 - 10 FT	10 - 12 FT	14 - 16 FT	4 - 6 FT	8 - 10 FT	April 1996		1996		19	96	1996	0 - 2 FT	4 -6 FT	0 - 2 FT	4 - 6 FT	4 -6 FT	2 - 4 FT	0 - 2 FT	4 - 6 FT
	Exposure Criteria	Critoria	Limit (UCL)	Average	Iviaximum	Sample Depth:	September 1994	Septem	ber 1994	Octob	er 1995	8 - 10 FT	2 FT	4-5 FT	7-8 FT	2-4.5 FT	4.5-6 FT	0-2 FT	1/27	/2000	1/31	/2000	1/27/2000	1/27/2000	1/31/	2000
	(I/C DEC)	Citteria				Units																				
Semi-Volatile Organic Compo	ounds (SVOCs)																									
Naphthalene	10,000	NE	10,000	43.94	377	mg/kg	172	ND	144	13.5	59.2	217	5.6	20.6	161	13	246	NA	0.51	NA	1.95	1.8	1.4	0.84	2.1	0.66
Volatile Organic Compounds	(VOCs)																									
Benzene	200	4.3	10,000	0.40	2.99	mg/kg	ND	ND	0.96	ND	ND	NA	NA	NA	NA	NA	NA	ND	0.6	0.455	0.7	0.55	0.6	0.454	0.8	0.5
Chloroform	940	NE	10,000	0.14	0.8	mg/kg	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	0.6	0.455	0.7	0.55	0.6	0.454	0.8	0.5
Ethylbenzene	10,000	62	10,000	6.23	97.3	mg/kg	35.4	0.47	13	ND	ND	NA	NA	NA	NA	NA	NA	ND	0.6	0.455	0.7	0.55	0.6	0.454	0.8	0.5
Isopropylbenzene	10,000	NE	10,000	1.02	37.1	mg/kg	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	0.6	0.455	0.7	0.55	0.6	0.454	0.8	0.5
Methylene Chloride	760	NE	10,000	0.52	28	mg/kg	28	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	0.007	0.6	0.455	0.7	0.55	0.6	0.454	0.8	0.5
Naphthalene	NE	NE	10,000	86.28	825	mg/kg	ND	ND	ND	18.6	383	NA	NA	NA	NA	NA	NA	ND	0.6	0.455	0.7	0.55	0.6	0.454	0.8	0.5
Styrene	190	64	10,000	1.17	77	mg/kg	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	0.6	0.455	0.7	0.55	0.6	0.454	0.8	0.5
Toulene	10,000	62	10,000	1.54	81	mg/kg	13.5	0.19	2.47	ND	ND	NA	NA	NA	NA	NA	NA	ND	0.6	0.455	0.7	0.55	0.6	0.454	0.8	0.5
Xylenes (Total)	10,000	NE	10,000	9.10	165	mg/kg	53.4	0.8	22.7	ND	ND	NA	NA	NA	NA	NA	NA	ND	0.6	0.455	0.7	0.55	0.6	0.454	0.8	0.5

#### Notes

#### Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards and subject to Note 2 below.

Table only indicates the compounds that were detected and have a RIDEM Minimum Quantity, other compounds were analyzed for, but not detected.

Table only shows explorations within the Liquefaction Area (cut areas only)

ND - Not Detected (Detection Limit Unknown)

NA - Not Analyzed NE - Not Established

Blue shading indicates compound was not detected - value shown is half the detection limit.

Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As

such, the final grades are unknown and as such the modified sampling depths are unknown.

Note 1. Exact sample depth is unknown, but is noted as being a subsurface sample (more than 2 feet bgs).

Note 2. Exact sample depth is unknown, but is noted as being a surface sample (less than 2 feet bgs).

Note 3. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below

the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil

data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

Orange shading indicates sample collected is a confirmatory sample.

	<b>RIDEM Industrial</b>		DIDENALIS			Sample Name:	E	21	B	22	B	23	В	24	В	25	B2	26	TP-1	TP-2	TP-4	TP-6	TP-8	TP-9	TP-19	TP-25
	<b>Commercial Direct</b>		RIDEIN Opper	Average	Maximum	Date Collected:	0 - 2 FT	4 - 6 FT	0 - 2 FT	4 - 6 FT	0 - 2 FT	4 - 6 FT	0 -2 FT	6 - 8 FT	0 -2 FT	4 - 6 FT	0-2 FT	4-6 FT	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
	Exposure Criteria	Criteria		Average	waximum	Sample Depth:	1/31	/2000	1/31	/2000	1/31	/2000	2/1/	2000	2/1/	2000	2/3/	2000	5/20/2002	5/20/2002	5/20/2002	5/20/2002	5/20/2002	5/20/2002	5/20/2002	5/20/2002
	(I/C DEC)	Citteria	Linit (OCL)			Units																				
Semi-Volatile Organic Compo	ounds (SVOCs)																									
Naphthalene	10,000	NE	10,000	43.94	377	mg/kg	4.3	1.2	0.44	1.65	1.7	1.75	1.75	1.3	0.5	2.5	1.8	0.36	ND	ND	ND	13.2	31.4	10.6	ND	ND
Volatile Organic Compounds	(VOCs)																									
Benzene	200	4.3	10,000	0.40	2.99	mg/kg	0.7	0.55	0.44	0.4	0.35	0.5	0.47	0.5	0.49	0.65	0.55	0.6	ND	ND	ND	ND	2.7	ND	ND	ND
Chloroform	940	NE	10,000	0.14	0.8	mg/kg	0.7	0.55	0.44	0.4	0.35	0.5	0.47	0.5	0.49	0.65	0.22	0.6	ND							
Ethylbenzene	10,000	62	10,000	6.23	97.3	mg/kg	0.7	0.55	0.44	0.4	0.35	0.5	0.47	0.5	0.49	0.65	0.55	0.6	1.65	0.38	0.2	1.15	22.5	1.85	ND	4.6
Isopropylbenzene	10,000	NE	10,000	1.02	37.1	mg/kg	0.7	0.55	0.44	0.4	0.35	0.5	0.47	0.5	0.49	0.65	0.55	0.6	ND	ND	ND	ND	4.1	ND	0.785	1.2
Methylene Chloride	760	NE	10,000	0.52	28	mg/kg	0.7	0.55	0.44	0.4	0.35	0.5	0.47	0.5	0.49	0.65	0.55	0.6	ND							
Naphthalene	NE	NE	10,000	86.28	825	mg/kg	0.7	3.3	0.44	0.4	0.35	0.5	0.47	0.45	0.49	0.65	0.57	0.6	51	9.71	3.97	23.7	779	123	4.06	25.2
Styrene	190	64	10,000	1.17	77	mg/kg	0.7	0.55	0.44	0.4	0.35	0.5	0.47	0.5	0.49	0.65	0.55	0.6	ND							
Toulene	10,000	62	10,000	1.54	81	mg/kg	0.7	0.55	0.44	0.4	0.35	0.5	0.47	0.5	0.49	0.65	0.55	0.6	ND	ND	ND	ND	3.7	ND	ND	ND
Xylenes (Total)	10,000	NE	10,000	9.10	165	mg/kg	0.7	0.55	0.44	0.4	0.35	0.5	0.47	0.5	0.49	0.65	0.55	0.6	3.95	0.9	1.2	1.09	61.9	2.95	ND	7.4

#### Notes

#### Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards and subject to Note 2 below.

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Table only shows explorations within the Liquefaction Area (cut areas only)

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NA - Not Analyzed NE - Not Established

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such, the final grades are unknown and as such the modified sampling depths are unknown.

Note 1. Exact sample depth is unknown, but is noted as being a subsurface sample (more than 2 feet bgs).

Note 2. Exact sample depth is unknown, but is noted as being a surface sample (less than 2 feet bgs).

Note 3. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below

the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil

data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

Orange shading indicates sample collected is a confirmatory sample.

	RIDEM Industrial	RIDEM GB	RIDEM Upper			Sample Name:	TP-26	TP-27	GZ-314D	GZ-315D	EXA3-1	EXA3-2	EXA3-3	EXA3-4	EXA3-5	EXA3-6	EXA3-7	EXA3-8	EXA3-9	EXA3-10	EXA3-11
	Exposure Criteria	Leachability Criteria	Concentration Limit (UCL)	Average	Maximum	Sample Depth:	5/20/2002	5/20/2002	05/27/2014	05/28/2014	6/25/2002	6/25/2002	6/25/2002	6/25/2002	6/25/2002	6/25/2002	6/26/2002	6/26/2002	6/26/2002	6/26/2002	6/24/1905
	(I/C DEC)					Units															
Semi-Volatile Organic Compo	ounds (SVOCs)																				
Naphthalene	10,000	NE	10,000	43.94	377	mg/kg	108	365	127	17.2	ND										
Volatile Organic Compounds	(VOCs)																				
Benzene	200	4.3	10,000	0.40	2.99	mg/kg	2.95	2.6	1.97	0.0477	ND	0.106									
Chloroform	940	NE	10,000	0.14	0.8	mg/kg	ND	ND	0.0112	0.0159	ND										
Ethylbenzene	10,000	62	10,000	6.23	97.3	mg/kg	37.6	97.3	5.98	0.01	ND	0.379	ND	0.56							
Isopropylbenzene	10,000	NE	10,000	1.02	37.1	mg/kg	ND	8.9	0.883	0.02095	ND	0.269	ND	ND							
Methylene Chloride	760	NE	10,000	0.52	28	mg/kg	ND	ND	0.0875	0.1045	ND										
Naphthalene	NE	NE	10,000	86.28	825	mg/kg	825	760	120	0.868	0.26	0.519	0.554	ND	ND	ND	ND	ND	6.15	0.705	16
Styrene	190	64	10,000	1.17	77	mg/kg	77	ND	0.0175	0.041	ND										
Toulene	10,000	62	10,000	1.54	81	mg/kg	81	ND	0.43	0.134	ND	0.198									
Xylenes (Total)	10,000	NE	10,000	9.10	165	mg/kg	165	107	2.67	0.139	ND	0.125	ND	ND	ND	ND	ND	ND	0.364	ND	1.69

#### Notes

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Table only shows explorations within the Liquefaction Area (cut areas only)

ND - Not Detected (Detection Limit Unknown)

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Note 1. Exact sample depth is unknown, but is noted as being a subsurface sample (more than 2 feet bgs).

Note 2. Exact sample depth is unknown, but is noted as being a surface sample (less than 2 feet bgs).

Note 3. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below

the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil

data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

Orange shading indicates sample collected is a confirmatory sample.

	<b>RIDEM Industrial</b>					Sample Name:	EXA3-12	EXA3-13	EXA3-14	EXA3-15	EXA3-16	EXA3-17	EXA3-18	EXA3-21A	EXA3-22	EXA3-23B	EXA3-24A	EXA3-25	EXA3-26	EXA3-27
	<b>Commercial Direct</b>	RIDEM GB	RIDEM Upper	Average	Maximum	Date Collected:	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
	Exposure Criteria	Criteria	Limit (UCL)	Average	waximum	Sample Depth:	6/24/1905	6/24/1905	6/24/1905	6/24/1905	6/24/1905	6/24/1905	6/24/1905	6/24/1905	6/24/1905	6/24/1905	6/24/1905	6/24/1905	6/24/1905	6/24/1905
	(I/C DEC)	Cinterna	Linine (OCL)			Units														
Semi-Volatile Organic Compo	unds (SVOCs)																			
Naphthalene	10,000	NE	10,000	43.94	377	mg/kg	ND	ND	ND	89.8	99	148	39.4	249	377	129	ND	78.8	67	218
Volatile Organic Compounds (	(VOCs)																			
Benzene	200	4.3	10,000	0.40	2.99	mg/kg	ND	ND	ND	ND	0.304	0.453	0.634	0.126	1.08	ND	ND	ND	ND	ND
Chloroform	940	NE	10,000	0.14	0.8	mg/kg	ND													
Ethylbenzene	10,000	62	10,000	6.23	97.3	mg/kg	0.104	2.38	2.13	56.9	2.72	12.8	6.07	10.3	6.27	0.646	76.9	13.6	11	ND
Isopropylbenzene	10,000	NE	10,000	1.02	37.1	mg/kg	ND	ND	ND	ND	1.24	2.59	1.69	1.72	1.37	0.363	37.1	1.26	ND	ND
Methylene Chloride	760	NE	10,000	0.52	28	mg/kg	ND													
Naphthalene	NE	NE	10,000	86.28	825	mg/kg	4.64	92.8	72.3	412	108	171	122	298	297	305	193	101	436	5.68
Styrene	190	64	10,000	1.17	77	mg/kg	ND													
Toulene	10,000	62	10,000	1.54	81	mg/kg	0.115	ND	ND	ND	ND	0.152	0.377	0.17	0.978	ND	ND	ND	ND	ND
Xylenes (Total)	10,000	NE	10,000	9.10	165	mg/kg	0.271	3.21	2.16	40.1	1.7	15.7	8.95	17.7	18.6	0.64	82.2	4.87	ND	ND

#### Notes

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Note 1. Exact sample depth is unknown, but is noted as being a subsurface sample (more than 2 feet bgs).

Note 2. Exact sample depth is unknown, but is noted as being a surface sample (less than 2 feet bgs).

Note 3. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below

the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil

data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

Orange shading indicates sample collected is a confirmatory sample.

	<b>RIDEM Industrial</b>					Sample Name:	EXA3-28	EXA3-29	EXA3-30	EXA3-31	EXA3-32	EXA3-33	EXAF-1	EXAF-2	EXAF-3	EXAF-4	EXAF-5	EXAF-6
	<b>Commercial Direct</b>	KIDEIVI GB	KIDEM Upper	Average	Mavimum	Date Collected:	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
	Exposure Criteria	Critorio	Limit (UCL)	Average	waximum	Sample Depth:	6/24/1905	6/24/1905	6/24/1905	6/24/1905	6/24/1905	6/24/1905	6/25/2002	6/25/2002	6/25/2002	6/25/2002	6/25/2002	6/25/2002
	(I/C DEC)	Criteria				Units												
Semi-Volatile Organic Compo	unds (SVOCs)																	
Naphthalene	10,000	NE	10,000	43.94	377	mg/kg	ND	151	72.3	ND								
Volatile Organic Compounds	(VOCs)																	
Benzene	200	4.3	10,000	0.40	2.99	mg/kg	2.99	0.198	ND	0.158	ND	0.91	ND	ND	0.669	ND	ND	ND
Chloroform	940	NE	10,000	0.14	0.8	mg/kg	ND											
Ethylbenzene	10,000	62	10,000	6.23	97.3	mg/kg	19.4	4.55	0.143	0.674	1.96	4.07	ND	ND	0.375	ND	ND	ND
Isopropylbenzene	10,000	NE	10,000	1.02	37.1	mg/kg	1.41	ND	ND	ND	ND	0.648	ND	ND	ND	ND	ND	ND
Methylene Chloride	760	NE	10,000	0.52	28	mg/kg	ND											
Naphthalene	NE	NE	10,000	86.28	825	mg/kg	369	53.8	7.26	8.53	61	183	ND	3.17	1.74	0.495	ND	ND
Styrene	190	64	10,000	1.17	77	mg/kg	ND											
Toulene	10,000	62	10,000	1.54	81	mg/kg	ND	ND	0.121	0.251	ND	0.369	ND	ND	0.235	ND	ND	ND
Xylenes (Total)	10,000	NE	10,000	9.10	165	mg/kg	26.8	3.38	0.345	1.36	4.13	6.08	ND	ND	0.478	ND	ND	ND

#### Notes

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Note 3. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below

the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil

data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

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	<b>RIDEM Industrial</b>					Sample Name:	RC	CA-5	R	CA-23	RC	A-39	RCA-R7	RCA-R10	RCA-R11	A	67	B04	B05	B06	В	07	В	08	B09	B10
	<b>Commercial Direct</b>	KIDEIVI GB	RIDEIVI Opper	Average	Maximum	Date Collected:	10 - 12 FT	14 - 16 FT	4 - 6 FT	14 - 16 FT	Apri	l 1996	1996	1996	1996	2/25	/2000	2 - 4 FT	2 - 4 FT	2 - 4 FT	0 - 2 FT	4 -6 FT	0 - 2 FT	4 -6 FT	2 - 4 FT	2 - 4 FT
	Exposure Criteria	Critoria		Average	IVIAXIIIUIII	Sample Depth:	Septem	ber 1994	Octo	ber 1995	8 - 10 FT	12 - 14 FT	0-2 FT	0-2 FT	0-2 FT	0-2 FT	4-6 FT	1/27/2000	1/27/2000	1/27/2000	1/27	/2000	1/27	/2000	1/27/2000	1/27/2000
	(I/C DEC)	Citteria				Units																				
Semi-Volatile Organic Compo	ounds (SVOCs)																									
Naphthalene	10,000	NE	10,000	6.44	370	mg/kg	ND	144	370	51.7	1	0.8	ND	NA	ND	1.8	16	220	0.55	1.75	1.7	NA	0.51	NA	NA	3.1
Volatile Organic Compounds	(VOCs)																									
Benzene	200	4.3	10,000	0.26	2.8	mg/kg	ND	0.96	ND	ND	ND	NA	ND	ND	ND	0.6	0.25	2.8	0.76	0.65	0.455	0.5	0.6	0.455	0.6	0.65
Chloroform	940	NE	10,000	0.16	1.7	mg/kg	ND	ND	ND	ND	ND	NA	ND	ND	ND	0.6	0.6	1.7	0.65	0.65	0.455	0.5	0.6	0.455	0.6	0.65
Ethylbenzene	10,000	62	10,000	0.27	13	mg/kg	0.47	13	ND	ND	ND	NA	ND	ND	ND	0.6	0.43	1.7	0.65	0.65	0.455	0.5	0.6	0.455	0.6	0.65
Isopropylbenzene	10,000	NE	10,000	0.17	1.7	mg/kg	ND	ND	ND	ND	ND	NA	ND	ND	ND	0.6	0.6	1.7	0.65	0.65	0.455	0.5	0.6	0.455	0.6	0.65
Methylene Chloride	760	NE	10,000	0.16	1.7	mg/kg	ND	ND	ND	ND	ND	NA	ND	0.007	ND	0.6	0.6	1.7	0.65	0.65	0.455	0.5	0.6	0.455	0.6	0.65
Naphthalene	NE	NE	10,000	6.53	500	mg/kg	ND	ND	500	133	ND	NA	0.034	ND	ND	0.6	11	300	0.65	0.65	0.455	0.71	0.6	0.455	0.6	0.65
Styrene	190	64	10,000	0.17	1.7	mg/kg	ND	ND	ND	ND	ND	NA	ND	ND	ND	0.6	0.6	1.7	0.65	0.65	0.455	0.5	0.6	0.455	0.6	0.65
Toulene	10,000	62	10,000	0.23	2.65	mg/kg	0.19	2.47	ND	ND	ND	NA	ND	ND	ND	0.6	0.4	1.7	0.41	0.65	0.455	0.5	0.6	0.455	0.6	0.65
Xylenes (Total)	10,000	NE	10,000	0.35	22.7	mg/kg	0.8	22.7	ND	ND	ND	NA	ND	ND	0.005	0.6	0.42	2.6	0.3	0.65	0.455	0.5	0.6	0.455	0.6	0.65

#### Notes

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the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil

data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

Orange shading indicates sample collected is a confirmatory sample.

	<b>RIDEM Industrial</b>					Sample Name:	B11	В	12	B18	B19	В	24	В	25	В	26	B2	.7	B	35	В	36	B	42	B	43	E	344	B
	<b>Commercial Direct</b>		Concentration	Average	Maximum	Date Collected:	2 - 4 FT	0 - 2 FT	4 -6 FT	4 -6 FT	2 - 4 FT	0 -2 FT	6 - 8 FT	0 -2 FT	4 - 6 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	8-10 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	8-10 FT	0 - 2 FT
	Exposure Criteria	Critorio	Limit (UCL)	Average	waximum	Sample Depth:	1/27/2000	1/27	/2000	1/27/2000	1/27/2000	2/1/	/2000	2/1	/2000	2/3/	2000	2/22/	2000	2/22/	/2000	2/22	/2000	2/22	/2000	2/22	/2000	2/22	2/2000	2/22,
	(I/C DEC)	Criteria				Units																								
Semi-Volatile Organic Compo	ounds (SVOCs)																													
Naphthalene	10,000	NE	10,000	6.44	370	mg/kg	0.8	1.7	150	1.4	0.84	1.75	1.3	0.5	2.5	1.8	0.36	1.95	1.8	1.7	0.38	1.9	1.8	1.6	1.3	1.8	1.85	0.4	0.66	1.7
Volatile Organic Compounds	(VOCs)																													
Benzene	200	4.3	10,000	0.26	2.8	mg/kg	0.41	0.29	0.69	0.6	0.454	0.47	0.5	0.49	0.65	0.55	0.6	0.55	0.55	0.45	0.7	0.65	0.5	0.65	1.2	0.55	0.7	0.7	0.9	0.55
Chloroform	940	NE	10,000	0.16	1.7	mg/kg	0.7	0.41	1.05	0.6	0.454	0.47	0.5	0.49	0.65	0.22	0.6	0.55	0.55	0.45	0.7	0.65	0.5	0.65	1.2	0.55	0.7	0.7	0.9	0.55
Ethylbenzene	10,000	62	10,000	0.27	13	mg/kg	0.7	0.41	2.1	0.6	0.454	0.47	0.5	0.49	0.65	0.55	0.6	0.55	0.55	0.45	0.7	0.65	0.5	0.65	1.2	0.55	0.7	0.7	0.9	0.55
Isopropylbenzene	10,000	NE	10,000	0.17	1.7	mg/kg	0.7	0.41	1.05	0.6	0.454	0.47	0.5	0.49	0.65	0.55	0.6	0.55	0.55	0.45	0.7	0.65	0.5	0.65	1.2	0.55	0.7	0.7	0.9	0.55
Methylene Chloride	760	NE	10,000	0.16	1.7	mg/kg	0.7	0.41	1.05	0.6	0.454	0.47	0.5	0.49	0.65	0.55	0.6	0.55	0.45	0.45	0.63	0.64	0.44	0.61	0.99	0.45	0.61	0.7	0.9	0.49
Naphthalene	NE	NE	10,000	6.53	500	mg/kg	3.8	0.41	34	0.6	0.454	0.47	0.45	0.49	0.65	0.57	0.6	0.55	0.55	0.45	0.7	0.65	0.5	0.65	1.2	0.55	0.7	0.7	0.9	0.55
Styrene	190	64	10,000	0.17	1.7	mg/kg	0.7	0.41	1.05	0.6	0.454	0.47	0.5	0.49	0.65	0.55	0.6	0.55	0.55	0.45	0.7	0.65	0.5	0.65	1.2	0.55	0.7	0.7	0.9	0.55
Toulene	10,000	62	10,000	0.23	2.65	mg/kg	0.7	0.22	1.05	0.6	0.454	0.47	0.5	0.49	0.65	0.55	0.6	0.55	0.55	0.45	0.7	0.65	0.5	0.65	1.2	0.55	0.7	0.7	0.9	0.55
Xylenes (Total)	10,000	NE	10,000	0.35	22.7	mg/kg	0.7	0.41	0.45	0.6	0.454	0.47	0.5	0.49	0.65	0.55	0.6	0.55	0.55	0.45	0.7	0.65	0.5	0.65	1.2	0.55	0.7	0.7	0.9	0.55

#### Notes

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Table only indicates the compounds that were detected and have a RIDEM Minimum Quantity, other compounds were analyzed for, but not detected.

Table only shows explorations within the Liquefaction Area (cut areas only)

ND - Not Detected (Detection Limit Unknown)

NA - Not Analyzed NE - Not Established

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Note 1. Exact sample depth is unknown, but is noted as being a subsurface sample (more than 2 feet bgs).

Note 2. Exact sample depth is unknown, but is noted as being a surface sample (less than 2 feet bgs).

Note 3. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below

the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil

data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

Orange shading indicates sample collected is a confirmatory sample.

	RIDEM Industrial Commercial Direct Exposure Criteria (I/C DEC)	RIDEM GB Leachability Criteria	RIDEM Upper Concentration Limit (UCL)	Average	Maximum	Sample Name:	45	В	B46		B47		B55		356	EXA3-7	EXA3-8	EXA3-9	EXA3-10	EXA3-34	EXA3-35	EXA3-36	EXA3-37
						Date Collected:	4 - 6 FT	0 - 2 FT	4 - 6 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	6/26/2002	6/26/2002	6/26/2002	6/26/2002	8/15/2002	8/15/2002	8/15/2002	8/15/2002
						Sample Depth:	/2000	2/18/2000		2/18/2000		3/2/2000		2/18/2000		Note 1	Note 1	Note 1	Note 1	Note 2	Note 2	Note 2	Note 2
						Units																	
Semi-Volatile Organic Comp																							
Naphthalene	10,000	NE	10,000	6.44	370	mg/kg	1.4	1.8	0.78	1.9	1.8	1.7	1.75	1.5	7.8	ND							
Volatile Organic Compounds																							
Benzene	200	4.3	10,000	0.26	2.8	mg/kg	0.6	0.455	0.8	0.6	0.48	0.415	0.55	0.6	0.65	ND							
Chloroform	940	NE	10,000	0.16	1.7	mg/kg	0.6	0.455	0.8	0.6	0.48	0.415	0.55	0.6	0.65	ND							
Ethylbenzene	10,000	62	10,000	0.27	13	mg/kg	0.6	0.455	0.8	0.6	0.48	0.415	0.55	0.6	0.65	ND	ND	0.379	ND	ND	ND	ND	ND
Isopropylbenzene	10,000	NE	10,000	0.17	1.7	mg/kg	0.6	0.455	0.8	0.6	0.48	0.415	0.55	0.6	0.65	ND	ND	0.269	ND	ND	ND	ND	ND
Methylene Chloride	760	NE	10,000	0.16	1.7	mg/kg	0.6	0.455	0.8	0.6	0.48	0.415	0.55	0.6	0.65	ND							
Naphthalene	NE	NE	10,000	6.53	500	mg/kg	0.6	0.455	0.8	0.6	0.48	0.415	0.55	0.6	2.8	ND	ND	6.15	0.705	ND	0.37	ND	ND
Styrene	190	64	10,000	0.17	1.7	mg/kg	0.6	0.455	0.8	0.6	0.48	0.415	0.55	0.6	0.65	ND							
Toulene	10,000	62	10,000	0.23	2.65	mg/kg	0.6	0.455	0.8	0.6	0.48	0.415	0.55	0.6	0.65	ND							
Xylenes (Total)	10,000	NE	10,000	0.35	22.7	mg/kg	0.6	0.455	0.8	0.6	0.48	0.415	0.55	0.6	0.65	ND	ND	0.364	ND	ND	ND	ND	ND

#### Notes

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Note 1. Exact sample depth is unknown, but is noted as being a subsurface sample (more than 2 feet bgs).

Note 2. Exact sample depth is unknown, but is noted as being a surface sample (less than 2 feet bgs).

Note 3. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below

the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil

data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

Orange shading indicates sample collected is a confirmatory sample.
	RIDEM Industrial Commercial Direct Exposure Criteria	RIDEM GB Leachability Criteria	RIDEM Upper Concentration Limit (UCL)	Average	Maximum	Sample Name: Date Collected: Sample Depth:	EXA3-38 8/15/2002 Note 2	EXA3-51 8/15/2002 Note 2	EXA3-52 8/15/2002 Note 2	EXA3-57 9/12/2002 Note 2	EXA3-58 9/12/2002 Note 2	EXA3-59 9/12/2002 Note 2	EXA3-60 9/12/2002 Note 2	EXA3-61 9/12/2002 Note 2	EXA3-62 9/12/2002 Note 2	EXA3-63 9/12/2002 Note 2	EXA3-64 9/12/2002 Note 2	EXA3-65 9/12/2002 Note 2	EXA3-66 9/12/2002 Note 2
	(I/C DEC)					Units													
Semi-Volatile Organic Compo	ounds (SVOCs)																		
Naphthalene	10,000	NE	10,000	6.44	370	mg/kg	ND												
Volatile Organic Compounds	(VOCs)																		
Benzene	200	4.3	10,000	0.26	2.8	mg/kg	ND												
Chloroform	940	NE	10,000	0.16	1.7	mg/kg	ND												
Ethylbenzene	10,000	62	10,000	0.27	13	mg/kg	ND												
Isopropylbenzene	10,000	NE	10,000	0.17	1.7	mg/kg	ND												
Methylene Chloride	760	NE	10,000	0.16	1.7	mg/kg	ND												
Naphthalene	NE	NE	10,000	6.53	500	mg/kg	ND	ND	0.139	0.0721	0.057	ND	0.141	0.0824	ND	ND	0.051	ND	ND
Styrene	190	64	10,000	0.17	1.7	mg/kg	ND												
Toulene	10,000	62	10,000	0.23	2.65	mg/kg	ND	0.0522	ND	ND	ND	ND	ND						
Xylenes (Total)	10,000	NE	10,000	0.35	22.7	mg/kg	ND	ND	ND	ND	ND	ND	NO	ND	ND	ND	ND	ND	ND

#### Notes

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Note 3. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below

the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil

data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

Orange shading indicates sample collected is a confirmatory sample.

	<b>RIDEM Industrial</b>					Sample Name:	EXA3-67	EXA3-68	EXAF-1	EXAF-2	EXAF-3	EXAF-4	EXAF-5	EXAF-6	EXA3-F8	EXA3-F9	EXA3-F10	EXA3-F11	EXA3-F12
	<b>Commercial Direct</b>		Concentration	Average	Maximum	Date Collected:	9/12/2002	9/12/2002	6/25/2002	6/25/2002	6/25/2002	6/25/2002	6/25/2002	37432	2002	2002	2002	2002	2002
	Exposure Criteria	Critoria		Average	IVIAXIIIIUIII	Sample Depth:	Note 2	Note 2	Note 1    ote 1	Note 1	Note 1	Note 1	Note 1						
	(I/C DEC)	Citteria				Units													
Semi-Volatile Organic Compo	ounds (SVOCs)																		
Naphthalene	10,000	NE	10,000	6.44	370	mg/kg	ND        D	ND	ND	ND	ND								
Volatile Organic Compounds	(VOCs)																		
Benzene	200	4.3	10,000	0.26	2.8	mg/kg	NO	ND	ND	ND	0.669	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	940	NE	10,000	0.16	1.7	mg/kg	ND        D	ND	ND	ND	ND								
Ethylbenzene	10,000	62	10,000	0.27	13	mg/kg	ND	ND	ND	ND	0.375	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	10,000	NE	10,000	0.17	1.7	mg/kg	ND        D	ND	ND	ND	ND								
Methylene Chloride	760	NE	10,000	0.16	1.7	mg/kg	ND        D	ND	ND	ND	ND								
Naphthalene	NE	NE	10,000	6.53	500	mg/kg	ND	0.0393	ND	3.17	1.74	0.495	ND	ND	ND	ND	ND	ND	ND
Styrene	190	64	10,000	0.17	1.7	mg/kg	ND        D	ND	ND	ND	ND								
Toulene	10,000	62	10,000	0.23	2.65	mg/kg	ND	ND	ND	ND	0.235	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (Total)	10,000	NE	10,000	0.35	22.7	mg/kg	ND	ND	ND	ND	0.478	ND	ND	ND	0.0946	ND	ND	ND	ND

#### Notes

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Table only shows explorations within the Liquefaction Area (cut areas only)

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Note 3. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below

the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil

data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

Orange shading indicates sample collected is a confirmatory sample.

	<b>RIDEM Industrial</b>					Sample Name:	EXA3-F13	EXA3-F14	EXA3-F15	EXA3-F16	EXA3-F17	EXA3-F18	EXA3-F19	EXA3-F20	EXA3-F21	EXA3-F22	EXA3-F23	EXA3-F24	EXA3-F25
	<b>Commercial Direct</b>	Loochobility	Concontration	Avorago	Maximum	Date Collected:	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
	Exposure Criteria	Critoria		Average	IVIAXIIIUIII	Sample Depth:	Note 1												
	(I/C DEC)	Citteria				Units													
Semi-Volatile Organic Compo	ounds (SVOCs)																		
Naphthalene	10,000	NE	10,000	6.44	370	mg/kg	ND												
Volatile Organic Compounds	(VOCs)																		
Benzene	200	4.3	10,000	0.26	2.8	mg/kg	0.0855	ND	ND	0.174	0.591	ND	ND	0.0708	ND	ND	ND	0.0918	ND
Chloroform	940	NE	10,000	0.16	1.7	mg/kg	ND												
Ethylbenzene	10,000	62	10,000	0.27	13	mg/kg	0.0658	ND											
Isopropylbenzene	10,000	NE	10,000	0.17	1.7	mg/kg	ND												
Methylene Chloride	760	NE	10,000	0.16	1.7	mg/kg	ND												
Naphthalene	NE	NE	10,000	6.53	500	mg/kg	ND												
Styrene	190	64	10,000	0.17	1.7	mg/kg	ND												
Toulene	10,000	62	10,000	0.23	2.65	mg/kg	ND	ND	ND	0.122	0.398	ND							
Xylenes (Total)	10,000	NE	10,000	0.35	22.7	mg/kg	0.27	ND	ND	0.291	0.381	ND	ND	ND	ND	ND	0.118	0.158	0.0778

#### Notes

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the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil

data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

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	<b>RIDEM Industrial</b>		<b>BIDEM Unnor</b>			Sample Name:	EXA3-F26	EXA3-F27	EXA3-F28	EXA3-F29	EXA3-F30	EXA3-F31	EXA3-F32	EXA3-F33	EXA3-F34	EXA3-F35	EXA3-F36	EXA3-F37
	<b>Commercial Direct</b>		KIDEW Opper	A	Marinerum	Date Collected:	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
	Exposure Criteria	Critorio	Limit (UCL)	Average	iviaximum	Sample Depth:	Note 1											
	(I/C DEC)	Criteria				Units												
Semi-Volatile Organic Compo	ounds (SVOCs)																	
Naphthalene	10,000	NE	10,000	6.44	370	mg/kg	ND											
Volatile Organic Compounds	(VOCs)																	
Benzene	200	4.3	10,000	0.26	2.8	mg/kg	0.0581	ND	0.25	1.09	1.79	2.35	ND	ND	ND	ND	0.149	ND
Chloroform	940	NE	10,000	0.16	1.7	mg/kg	ND											
Ethylbenzene	10,000	62	10,000	0.27	13	mg/kg	ND	ND	ND	0.0556	0.149	0.238	ND	ND	ND	ND	ND	ND
Isopropylbenzene	10,000	NE	10,000	0.17	1.7	mg/kg	ND											
Methylene Chloride	760	NE	10,000	0.16	1.7	mg/kg	ND											
Naphthalene	NE	NE	10,000	6.53	500	mg/kg	ND											
Styrene	190	64	10,000	0.17	1.7	mg/kg	ND											
Toulene	10,000	62	10,000	0.23	2.65	mg/kg	ND	ND	0.179	1.19	2.65	1.96	ND	ND	ND	ND	0.059	ND
Xylenes (Total)	10,000	NE	10,000	0.35	22.7	mg/kg	ND	0.1	0.238	0.55	1.51	1.18	ND	ND	ND	ND	ND	ND

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the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil

data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

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	<b>RIDEM Industrial</b>					Sample Name:	EXA3-F38	EXA3-F39	EXA3-F40	EXA3-F41	EXA3-F42	EXA3-F43	EXA3-F44	EXA3-F45	EXA3-F46	EXA3-F47	EXA3-F48	EXA3-F49
	<b>Commercial Direct</b>		KIDEW Opper	A	Marinerum	Date Collected:	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
	Exposure Criteria	Critorio	Limit (UCL)	Average	Iviaximum	Sample Depth:	Note 1											
	(I/C DEC)	Criteria	LIMIT (UCL)			Units												
Semi-Volatile Organic Comp	ounds (SVOCs)																	
Naphthalene	10,000	NE	10,000	6.44	370	mg/kg	ND											
Volatile Organic Compounds	s (VOCs)																	
Benzene	200	4.3	10,000	0.26	2.8	mg/kg	ND											
Chloroform	940	NE	10,000	0.16	1.7	mg/kg	ND											
Ethylbenzene	10,000	62	10,000	0.27	13	mg/kg	ND											
Isopropylbenzene	10,000	NE	10,000	0.17	1.7	mg/kg	ND											
Methylene Chloride	760	NE	10,000	0.16	1.7	mg/kg	ND											
Naphthalene	NE	NE	10,000	6.53	500	mg/kg	ND	ND	ND	0.11	0.0453	ND	0.0427	0.0793	ND	ND	ND	ND
Styrene	190	64	10,000	0.17	1.7	mg/kg	ND											
Toulene	10,000	62	10,000	0.23	2.65	mg/kg	ND	0.0471	ND	ND	ND	ND						
Xylenes (Total)	10,000	NE	10,000	0.35	22.7	mg/kg	ND											

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data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

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	<b>RIDEM Industrial</b>		<b>BIDEM Linner</b>			Sample Name:	EXA3-F50	EXA3-F51	EXA3-F52	EXA3-F53	EXA3-F54	EXA3-F55	EXA3-F56	EXA3-F57	EXA3-F58	EXA3-F59	EXA3-F60	EXA3-F61
	<b>Commercial Direct</b>		Kidelvi Opper	A	Marinerum	Date Collected:	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
	Exposure Criteria	Critorio	Concentration	Average	Iviaximum	Sample Depth:	Note 1											
	(I/C DEC)	Criteria				Units												
Semi-Volatile Organic Compo	unds (SVOCs)																	
Naphthalene	10,000	NE	10,000	6.44	370	mg/kg	ND	5.49	ND									
Volatile Organic Compounds (	(VOCs)																	
Benzene	200	4.3	10,000	0.26	2.8	mg/kg	ND	0.0724	ND	0.0797	ND							
Chloroform	940	NE	10,000	0.16	1.7	mg/kg	ND											
Ethylbenzene	10,000	62	10,000	0.27	13	mg/kg	ND											
Isopropylbenzene	10,000	NE	10,000	0.17	1.7	mg/kg	ND											
Methylene Chloride	760	NE	10,000	0.16	1.7	mg/kg	ND											
Naphthalene	NE	NE	10,000	6.53	500	mg/kg	ND	2.01	ND	4.69	ND							
Styrene	190	64	10,000	0.17	1.7	mg/kg	ND											
Toulene	10,000	62	10,000	0.23	2.65	mg/kg	ND											
Xylenes (Total)	10,000	NE	10,000	0.35	22.7	mg/kg	ND											

#### Notes

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data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

Orange shading indicates sample collected is a confirmatory sample.

	<b>RIDEM Industrial</b>	RIDEM GB	RIDEM Upper			Sample Name:	EXA3-F62	EXA3-F63	EXA3-F64	EXA3-F65	EXB20-9	EXB20-11	EXB20-13	EXB20-15	EXB20-16	EXB20-19	EXB20-20	EXB20-21	EXB20-22
	<b>Commercial Direct</b>	Leachability	Concentration		Maximum	Date Collected:	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
	Exposure Criteria	Criteria		Average	, maximum	Sample Depth:	Note 1	Note 1	Note 1	Note 1	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2
	(I/C DEC)	cintenta	Linine (OCL)			Units													
Semi-Volatile Organic Compo	ounds (SVOCs)																		
Naphthalene	10,000	NE	10,000	6.44	370	mg/kg	ND	ND	ND	ND	ND	ND	ND	1.57	ND	ND	ND	ND	ND
Volatile Organic Compounds	(VOCs)																		
Benzene	200	4.3	10,000	0.26	2.8	mg/kg	ND	ND	ND	0.0539	ND	0.23	0.089	0.087	ND	ND	ND	0.175	ND
Chloroform	940	NE	10,000	0.16	1.7	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	10,000	62	10,000	0.27	13	mg/kg	ND	ND	ND	ND	ND	ND	ND	0.043	ND	ND	ND	ND	ND
Isopropylbenzene	10,000	NE	10,000	0.17	1.7	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	760	NE	10,000	0.16	1.7	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	NE	NE	10,000	6.53	500	mg/kg	ND	ND	ND	0.106	0.072	0.211	0.082	1.92	0.1	0.0909	0.156	0.119	ND
Styrene	190	64	10,000	0.17	1.7	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toulene	10,000	62	10,000	0.23	2.65	mg/kg	ND	ND	ND	ND	ND	0.049	ND	ND	ND	ND	ND	0.0545	ND
Xylenes (Total)	10,000	NE	10,000	0.35	22.7	mg/kg	ND	ND	ND	ND	ND	0.1	ND						

#### Notes

#### Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards and subject to Note 2 below.

Table only indicates the compounds that were detected and have a RIDEM Minimum Quantity, other compounds were analyzed for, but not detected.

Table only shows explorations within the Liquefaction Area (cut areas only)

ND - Not Detected (Detection Limit Unknown)

NA - Not Analyzed NE - Not Established

Blue shading indicates compound was not detected - value shown is half the detection limit.

Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As

such, the final grades are unknown and as such the modified sampling depths are unknown.

Note 1. Exact sample depth is unknown, but is noted as being a subsurface sample (more than 2 feet bgs).

Note 2. Exact sample depth is unknown, but is noted as being a surface sample (less than 2 feet bgs).

Note 3. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below

the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil

data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

Orange shading indicates sample collected is a confirmatory sample.

	<b>RIDEM Industrial</b>					Sample Name:	EXB20-F1	EXB20-F2	EXB20-F3	EXB20-F4	EXB20-F5	EXB20-F6	EXB20-F7	EXB20-F8	EXB20-F9	EXB20-F10	EXB20-F11	EXB20-F12
	<b>Commercial Direct</b>		RIDEIN Opper	A	Mauimum	Date Collected:	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
	Exposure Criteria	Critoria	Limit (UCL)	Average	waximum	Sample Depth:	Note 2	Note 2	Note 2									
	(I/C DEC)	Citteria				Units												
Semi-Volatile Organic Compo	unds (SVOCs)																	
Naphthalene	10,000	NE	10,000	6.44	370	mg/kg	ND	0.548	ND	ND	6.28	4.64	ND	21.7	ND	ND	ND	ND
Volatile Organic Compounds	(VOCs)																	
Benzene	200	4.3	10,000	0.26	2.8	mg/kg	0.131	0.415	0.184	0.819	2.28	0.331	0.406	0.527	0.193	ND	0.0464	0.0812
Chloroform	940	NE	10,000	0.16	1.7	mg/kg	ND	ND	ND									
Ethylbenzene	10,000	62	10,000	0.27	13	mg/kg	ND	0.0882	0.049	0.273	0.346	0.152	0.123	0.769	ND	ND	ND	ND
Isopropylbenzene	10,000	NE	10,000	0.17	1.7	mg/kg	ND	0.228	ND	ND	ND	ND						
Methylene Chloride	760	NE	10,000	0.16	1.7	mg/kg	ND	ND	ND									
Naphthalene	NE	NE	10,000	6.53	500	mg/kg	0.151	2.32	0.11	1.25	2.39	7.15	0.122	43.4	1.48	0.116	0.166	0.115
Styrene	190	64	10,000	0.17	1.7	mg/kg	ND	ND	ND									
Toulene	10,000	62	10,000	0.23	2.65	mg/kg	0.0579	0.188	ND	ND	0.89	ND	ND	ND	ND	ND	0.119	0.0457
Xylenes (Total)	10,000	NE	10,000	0.35	22.7	mg/kg	ND	0.162	ND	0.252	0.995	0.113	ND	0.449	0.139	ND	ND	ND

#### Notes

#### Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards and subject to Note 2 below.

Table only indicates the compounds that were detected and have a RIDEM Minimum Quantity, other compounds were analyzed for, but not detected.

Table only shows explorations within the Liquefaction Area (cut areas only)

ND - Not Detected (Detection Limit Unknown)

NA - Not Analyzed NE - Not Established

Blue shading indicates compound was not detected - value shown is half the detection limit.

Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As

such, the final grades are unknown and as such the modified sampling depths are unknown.

Note 1. Exact sample depth is unknown, but is noted as being a subsurface sample (more than 2 feet bgs).

Note 2. Exact sample depth is unknown, but is noted as being a surface sample (less than 2 feet bgs).

Note 3. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below

the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil

data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

Orange shading indicates sample collected is a confirmatory sample.

	<b>RIDEM Industrial</b>					Sample Name:	EXB20-F13	EXB20-F14	EXB20-F15	EXB20-F16	EXB20-F17	EXB20-F18	EXB20-F19
	<b>Commercial Direct</b>		Concentration	Average	Maximum	Date Collected:	2002	2002	2002	2002	2002	2002	2002
	Exposure Criteria	Critoria		Average	IvidXIIIIuIII	Sample Depth:	Note 2						
	(I/C DEC)	Citteria				Units							
Semi-Volatile Organic Comp	ounds (SVOCs)												
Naphthalene	10,000	NE	10,000	6.44	370	mg/kg	ND	ND	,ND	ND	ND	ND	ND
Volatile Organic Compounds	s (VOCs)												
Benzene	200	4.3	10,000	0.26	2.8	mg/kg	ND	0.237	ND	0.0759	ND	ND	0.365
Chloroform	940	NE	10,000	0.16	1.7	mg/kg	ND						
Ethylbenzene	10,000	62	10,000	0.27	13	mg/kg	ND	0.0813	,ND	ND	ND	ND	0.0408
Isopropylbenzene	10,000	NE	10,000	0.17	1.7	mg/kg	ND						
Methylene Chloride	760	NE	10,000	0.16	1.7	mg/kg	ND						
Naphthalene	NE	NE	10,000	6.53	500	mg/kg	0.088	0.0533	0.179	0.0575	ND	ND	0.0872
Styrene	190	64	10,000	0.17	1.7	mg/kg	ND						
Toulene	10,000	62	10,000	0.23	2.65	mg/kg	ND	0.374	ND	ND	ND	ND	0.105
Xylenes (Total)	10,000	NE	10,000	0.35	22.7	mg/kg	ND	0.206	ND	ND	ND	ND	ND

#### Notes

#### Data is compared to RIDEM Method 1 Standards. Shaded results represent exceedances of standards and subject to Note 2 below.

Table only indicates the compounds that were detected and have a RIDEM Minimum Quantity, other compounds were analyzed for, but not detected.

Table only shows explorations within the Liquefaction Area (cut areas only)

ND - Not Detected (Detection Limit Unknown)

NA - Not Analyzed NE - Not Established

Blue shading indicates compound was not detected - value shown is half the detection limit.

Sample depths noted here are from original grade. This table presents data that has since been capped with an engineered soil cap. As

such, the final grades are unknown and as such the modified sampling depths are unknown.

Note 1. Exact sample depth is unknown, but is noted as being a subsurface sample (more than 2 feet bgs).

Note 2. Exact sample depth is unknown, but is noted as being a surface sample (less than 2 feet bgs).

Note 3. While the Direct Exposure and Leachability Criteria apply to the vadose zone, certain subsurface soil samples were collected below

the water table to define the nature and extent of impact. The data comparisons summarized in these tables compare all subsurface soil

data (vadose and saturated zone) to the I/C-DEC, GB Leachability criteria and Upper Concentration Limit (UCLs).

Orange shading indicates sample collected is a confirmatory sample.

# Table D-3STRAP Emissions PotentialsPile Installation - Cut AreaSTRAP - Liquefaction ProjectProvidence, Rhode Island

Site-Specific		
Volume of Soil - Excavation	410	(cy)
Volume of Soil Moved	410	(cy)
Volume of Soil Moved	309	(m <sup>3</sup>

Constants		
Typical Bulk Density	1.5	(g/cm <sup>3</sup> )

**Conversion Factors** 

Eklund 1997 Default

ft/m	3.3	
ft <sup>3</sup> /cy	27	
g/lb	454	
g/kg	1000	

Analyte	Average Measured Concentration in Soil (μg/g)	Maximum Measured Concentration in Soil (µg/g)	Total Excavation Emissions Potential <sup>1</sup> (Ib)	Total Excavation Emissions Potential <sup>2</sup> (lb)	RIDEM Annual Minimum Quantity (lb)
Benzene	0.40	2.99	0.40	3.05	10
Chloroform	0.14	0.8	0.14	0.82	20
Ethylbenzene	6.23	97.3	6.36	99.34	9000
Isopropylbenzene	1.02	37.1	1.04	37.88	1000
Methylene Chloride	0.52	28	0.53	28.59	200
Naphthalene	97.97	825	100.02	842.26	3
Styrene	1.17	77	1.20	78.61	3000
Toluene	1.54	81	1.57	82.69	1000
Xylenes (Total)	9.10	165	9.29	168.45	3000

Notes:

1. Total Excavation Emissions Potential based on Average Measured Concentration in Soil.

2. Total Excavation Emissions Potential based on Maximum Measured Concentration in Soil.

3. Only detected analytes with Rhode Island Department of Environmental Management (RIDEM) minimum quanitity values are shown.

4. Naphthalene concentrations presented in this model are the maximum of napthalene analyzed as a VOC or as a PAH

5. cm = centimeter; m = meter; g = gram;  $\mu$ g = microgram; ft = feet, lb = pound; kg = kilogram; cy = cubic yard.

6. Yellow Highlighting indicates model inputs.

7. Orange Highlighting indicates the calculated Total Excavation Emissions Potential exceeds the RIDEM Minimum Quantity.

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# Table D-4STRAP Emissions PotentialsUtility Installation - Cut AreaSTRAP - Liquefaction ProjectProvidence, Rhode Island

ft/m

ft<sup>3</sup>/cy

g/lb g/kg

Site-Specific		
Volume of Soil - Excavation	2,578	(cy)
Volume of Soil Moved	2,578	(cy)
Volume of Soil Moved	1,937	(m³)

Constar	nts	
Typical Bulk Density	1.5	(g/cm <sup>3</sup> )

3.3

27 454

1000

**Conversion Factors** 

Eklund 1997 Default

Analyte	Average Measured Concentration in Soil (μg/g)	Maximum Measured Concentration in Soil (µg/g)	Total Excavation Emissions Potential <sup>1</sup> (Ib)	Total Excavation Emissions Potential <sup>2</sup> (lb)	RIDEM Annual Minimum Quantity (lb)
Benzene	0.26	2.8	1.65	17.92	10
Chloroform	0.16	1.7	1.05	10.88	20
Ethylbenzene	0.27	13	1.74	83.20	9000
Isopropylbenzene	0.17	1.7	1.08	10.88	1000
Methylene Chloride	0.16	1.7	1.03	10.88	200
Naphthalene	8.19	500	52.40	3199.89	3
Styrene	0.17	1.7	1.06	10.88	3000
Toluene	0.23	2.65	1.48	16.96	1000
Xylenes (Total)	0.35	22.7	2.27	145.28	3000

Notes:

1. Total Excavation Emissions Potential based on Average Measured Concentration in Soil.

2. Total Excavation Emissions Potential based on Maximum Measured Concentration in Soil.

3. Only detected analytes with Rhode Island Department of Environmental Management (RIDEM) minimum quanitity values are shown.

4. Naphthalene concentrations presented in this model are the maximum of napthalene analyzed as a VOC or as a PAH

5. cm = centimeter; m = meter; g = gram;  $\mu$ g = microgram; ft = feet, lb = pound; kg = kilogram; cy = cubic yard.

6. Yellow Highlighting indicates model inputs.

7. Orange Highlighting indicates the calculated Total Excavation Emissions Potential exceeds the RIDEM Minimum Quantity.

### Table D-5 Total STRAP Emissions Potentials STRAP - Liquefaction Project Providence, Rhode Island

Analyte	Pile Driving Installation Emissions Potential <sup>1</sup> (lb)	Pile Driving Installation Emissions Potential <sup>2</sup> (Ib)	Utility Installation Emissions Potential <sup>1</sup> (Ib)	Utility Installation Emissions Potential <sup>2</sup> (lb)	Total Excavation Emissions Potential <sup>1</sup> (Ib)	Total Excavation Emissions Potential <sup>2</sup> (Ib)	RIDEM Annual Minimum Quantity (lb)
Benzene	0.40	3.05	1.65	17.92	2.05	20.97	10
Chloroform	0.14	0.82	1.05	10.88	1.19	11.70	20.00
Ethylbenzene	6.36	99.34	1.74	83.20	8.09	182.53	9000
Isopropylbenzene	1.04	37.88	1.08	10.88	2.12	48.76	1000
Methylene Chloride	0.53	28.59	1.03	10.88	1.57	39.47	200.00
Naphthalene	100.02	842.26	52.40	3199.89	152.43	4042.15	3
Styrene	1.20	78.61	1.06	10.88	2.26	89.49	3000
Toluene	1.57	82.69	1.48	16.96	3.05	99.65	1000
Xylenes (Total)	9.29	168.45	2.27	145.28	11.56	313.73	3000

Notes:

1. Emissions Potential based on Average Measured Concentration in Soil.

2. Emissions Potential based on Maximum Measured Concentration in Soil.

3. Only detected analytes with Rhode Island Department of Environmental Management (RIDEM) minimum quanitity values are shown.

4. lb = pound; ND = Non-Detect.

5. Orange Highlighting indicates the calculated Total Excavation Emissions Potential exceeds the RIDEM Minimum Quantity.

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### Table D-6Predicted STRAP EmissionsPile Installation - Cut AreaSTRAP - Liquefaction ProjectProvidence, Rhode Island

241 (ft<sup>2</sup>)

46.0 (ft)

284 (m<sup>2</sup>) 284 (m<sup>2</sup>)

569 (m<sup>2</sup>)

410 (cy)

308 (m<sup>3</sup>)

Constants			
Typical Bulk Density	1.5	(g/cm <sup>3</sup> )	Eklund 1997 Default
R	8.21E-05	(m <sup>3</sup> *atm/K/mol)	
R	8.31E-03	(kJ/K/mol)	
R	62,361	(mm Hg*cm <sup>3</sup> /mol/K)	
Soil Gas to Atmosphere			
Exchange Constant (Dry,			
uncompacted Soils)	0.33	(%/100)	Eklund 1997 Default
Air-Filled Porosity (Dry,			
uncompacted Soils)	0.55		Eklund 1997 Default
Iotal Porosity (Uncompacted Soils)	0.55		Eklund 1997 Default
Gas-Phase Mass Transfer Coefficient	0.15	cm/s	Eklund 1997 Default
Time since Start of			
Excavation of Soil of Interest	60	S	Eklund 1997 Default
Time Period Excavated Soil			
are Emitting Contaminants	0.1	(hr)	Eklund 1997 Default
TOC of Soil	0.002	(g OC/g soil)	USEPA 1996 Default

Assumption		
Assumed Average MW of		
NAPL	250	(g/mol)
Assumed NAPL Temperature	15	(°C)

Analyte	Average Measured Concentration in Soil (ug/g)	Partial Pressure <sup>1</sup> (atm)	Equilibrium Coefficient	Effective Diffusivity in Air (cm <sup>2</sup> /s)	Total Excavation Emissions Potential <sup>2</sup> (lb)	Total Excavation Emissions (Ib)	RIDEM Annual Minimum Quantity (Ib)
Benzene	0.40	1.22E-04	3.73E-01	4.21E-02	4.04E-01	0.12	10
Naphthalene	97.97	5.31E-06	1.08E-04	2.66E-02	9.98E+01	0.023	3

**Initial Estimate** 

Average Pile Installation Area

Average Excavation Average

**Excavation Surface Area** 

**Emitting Surface Area** 

Volume of Soil Moved

Volume of Soil Moved

Pile Surface Area

Depth

Notes:

1. The Partial Pressure was calculated using Raoult's Law.

2. If the calculated Total Excavation Emissions exceeds the Total Excavation Emissions Potential, the Total Excavation Emissions Potential was used as the Total Excavation Emissions.

3. Only detected analytes with RIDEM minimum quanitity values are shown with Total Excavation Emissions Potentials above RIDEM minimum quantities.

4. Concentration units are in ug/g, which is equal to ppm and mg/kg.

5. MW = molecular weight; atm = atmosphere; kJ = kilojoules; mol = moles; NAPL = non-aqueous phase liquid; ppm = parts per million; mm Hg = millimeter mercury; cm = centimeter; m = meter; g = gram; ug = microgram; ft = feet, lb = pound; s = second; yr = year; hr = hour; < = less than the reporting limit; TOC = total organic carbon.

6. Yellow Highlighting indicates model inputs.

7. Purple Highlighting indicates the Total Excavation Emissions exceeds the Rhode Island Department of Environmental Management (RIDEM) Minimum Quantity.

### File No. 03.00033554.60 5/5/2017

# Table D-7Predicted STRAP EmissionsUtility Installation - Cut AreaSTRAP - Liquefaction ProjectProvidence, Rhode Island

Constants			
Typical Bulk Density	1.5	(g/cm <sup>3</sup> )	Eklund 1997 Default
R	8.21E-05	(m <sup>3</sup> *atm/K/mol)	
R	8.31E-03	(kJ/K/mol)	
R	62,361	(mm Hg*cm <sup>3</sup> /mol/K)	
Soil Gas to Atmosphere Exchange Constant (Dry,			
uncompacted Soils)	0.33	(%/100)	Eklund 1997 Default
Air-Filled Porosity (Dry, uncompacted Soils)	0.55		Eklund 1997 Default
Total Porosity (Uncompacted Soils)	0.55		Eklund 1997 Default
Gas-Phase Mass Transfer Coefficient	0.15	cm/s	Eklund 1997 Default
Time since Start of Excavation of Soil of Interest	60	S	Eklund 1997 Default
Time Period Excavated Soil are Emitting Contaminants	0.1	(hr)	Eklund 1997 Default
TOC of Soil	0.002	(g OC/g soil)	USEPA 1996 Default

Initial Estima	te	
Average Regrading Surface		
Area	13,921	(ft <sup>2</sup> )
Average Excavation Average		
Depth	5.0	(ft)
Excavation Surface Area	1,495	(m <sup>2</sup> )
Pile Surface Area	1,495	(m²)
Emitting Surface Area	2,990	(m²)
Volume of Soil Moved	2,578	(cy)
Volume of Soil Moved	1,937	(m <sup>3</sup> )

Assumptions				
Assumed Average MW of				
NAPL	250	(g/mol)		
Assumed NAPL Temperature	15	(°C)		

Analyte	Average Measured Concentration in Soil (ug/g)	Partial Pressure <sup>1</sup> (atm)	Equilibrium Coefficient	Effective Diffusivity in Air (cm <sup>2</sup> /s)	Total Excavation Emissions Potential <sup>2</sup> (lb)	Total Excavation Emissions (Ib)	RIDEM Annual Minimum Quantity (Ib)
Benzene	0.26	7.94E-05	3.73E-01	4.21E-02	1.65E+00	0.48	10
Naphthalene	8.19	4.44E-07	1.08E-04	2.66E-02	5.24E+01	0.011	3

Notes:

1. The Partial Pressure was calculated using Raoult's Law.

2. If the calculated Total Excavation Emissions exceeds the Total Excavation Emissions Potential, the Total Excavation Emissions Potential was used as the Total Excavation Emissions.

3. Only detected analytes with RIDEM minimum quantitity values are shown with Total Excavation Emissions Potentials above RIDEM minimum quantities.

4. Concentration units are in ug/g, which is equal to ppm and mg/kg.

5. MW = molecular weight; atm = atmosphere; kJ = kilojoules; mol = moles; NAPL = non-aqueous phase liquid; ppm = parts per million; mm Hg = millimeter mercury; cm = centimeter; m = meter; g = gram; ug = microgram; ft = feet, lb = pound; s = second; yr = year; hr = hour; < = less than the reporting limit; TOC = total organic carbon.

6. Yellow Highlighting indicates model inputs.

7. Purple Highlighting indicates the Total Excavation Emissions exceeds the Rhode Island Department of Environmental Management (RIDEM) Minimum Quantity.

### Table D-8 Total Predicted STRAP Emissions STRAP - Liquefaction Project Providence, Rhode Island

Analyte	Pile Driving Emissions (lb)	Utility Installation Emissions (lb)	Total Excavation Emissions (lb)	RIDEM Annual Minimum Quantity (Ib)
Benzene	0.122	0.483	0.61	10
Naphthalene	0.023	0.011	0.03	3

Notes:

1. Only detected analytes with Total Excavation Emissions Potentials above RIDEM minimum quanitity values are shown. 2. lb = pound; ND = Non-Detect.

3. Purple Highlighting indicates the Total Excavation Emissions exceeds the Rhode Island Department of Environmental Management (RIDEM) Minimum Quantity.