Illinois Environmental Protection Agency

Bureau of Land • 1021 North Grand Avenue East • P.O. Box 19276 • Springfield • Illinois • 62794-9276

ILLINOIS EPA RCRA CORRECTIVE ACTION CERTIFICATION

This certification must accompany any document submitted to Illinois EPA in accordance with the corrective action requirements set forth in a facility's RCRA permit. The original and two copies of all documents submitted must be provided.

1.0 Facility Identification

Name: WRB Refining LP Wood River Refinery
County: Madison
Street Address: 900 South Central Avenue
Site No. (IEPA): 1191150002
City: Roxana
Site No. (USEPA): ILD080012305

2.0 Owner Information

Name: WRB Refining LP
Mail Address: 2331 City West Blvd
City: Houston
State: TX Zip Code: 77042
Contact Name: Eric Petersen
Contact Title: Program Manager
Phone: 618-255-3190

3.0 Operator Information

Name: Equilon Enterprises LLC dba SOPUS
Mail Address: 17 Junction Drive, PMB #399
City: Glen Carbon
State: IL Zip Code: 62034
Contact Name: Kevin Dyer
Contact Title: Senior Principal Program Manager
Phone: 618-288-7237

4.0 Type of Submission (check applicable item and provide requested information, as applicable)

☐ RFI Phase I Workplan/Report
☐ RFI Phase II Workplan/Report
☐ CMP Report;
☑ Other (describe): Comprehensive soil & groundwater sampling & analysis rpt

IEPA Permit Log No. B-43R
Date of Last IEPA Letter on Project: Jan 18, 2017
Log No. of Last IEPA Letter on Project: B-43R-CA-59, -60, -69

Does this submittal include groundwater information: ☑ Yes ☐ No

Date of Submittal: Apr 21, 2017

5.0 Description of Submittal: (briefly describe what is being submitted and its purpose)

Response to Agency 1/18/1 comments letter with requested comprehensive soil and groundwater sampling and analysis report. Required copies submitted separately to Amy Boley and Gina Search.

6.0 Documents Submitted (identify all documents in submittal, including cover letter; give dates of all documents)

Response to Agency Comments Provided in January 18, 2017 Letter (cover letter), RCRA Corrective Action Certification form, Comprehensive Soil and Groundwater Sampling and Analysis Report

7.0 Certification Statement

(This statement is part of the overall certification being provided by the owner/operator, professional and laboratory in Items 7.1, 7.2 and 7.3 below). The activities described in the subject submittals have been carried out in accordance with procedures approved by Illinois EPA. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

7.1 Owner/Operator Certification

(Must be completed for all submittals. Certification and signature requirements are set forth in 35 IAC 702.126.) All submittals pertaining to the corrective action requirements set forth in a RCRA Permit must be signed by the person designated below (or by a duly authorized representative of that person):

1. For a Corporation, by a principal executive officer of at least the level of vice president.
2. For a Partnership or Sole Proprietorship, by a general partner or the proprietor, respectively.
3. For a Governmental Entity, by either a principal executive officer or a ranking elected official.

A person is a duly authorized representative only if:

1. the authorization is made in writing by a person described above; and
2. the written authorization is provided with this submittal (a copy of a previously submitted authorization can be used).

Owner Signature: _____ Date: 4/21/2017

Title: Refinery Manager

Operator Signature: _____ Date: 4/21/17

Title: Senior Principal Program Manager

7.2 Professional Certification (if necessary)

Work carried out in this submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. No one is relieved from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44 (h))

Professional's Signature: _____ Date: 4/20/17

Professional's Name Robert B. Billman

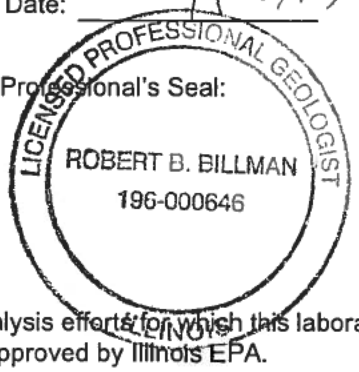
Address 1001 Highlands Plaza Dr West, Suite 300

City St. Louis

State MO Zip Code 63110

Phone 314-429-0100

Professional's Seal:



7.3 Laboratory Certification (if necessary)

The sample collection, handling, preservation, preparation and analysis efforts for which this laboratory was responsible were carried out in accordance with procedures approved by Illinois EPA.

Name of Laboratory Not Applicable

_____ Date: _____

Signature of Laboratory Responsible Officer

Mailing Address of Laboratory

Address _____

City _____

State _____ Zip Code _____

_____

Name and Title of Laboratory Responsible Officer

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April 21, 2017

Ms. Joyce L. Munie, PE
Manager, Permit Section
Illinois Environmental Protection Agency
Bureau of Land
1021 North Grand Avenue East
Springfield, Illinois 62794

Response to Agency Comments Provided in January 18, 2017 Letter and Comprehensive Soil and Groundwater Sampling and Analysis Report
Equilon Enterprises LLC dba Shell Oil Products US
WRB Refining LP Wood River Refinery
Roxana, Illinois
1191150002 -- Madison County
ILD080012305
Log No. B-43R-CA-59, -60, -69

Dear Ms. Munie:

AECOM Technical Services, Inc. (AECOM), on behalf of Shell Oil Products US (SOPUS), is submitting this response to the comments the Illinois Environmental Protection Agency (IEPA) provided in the letter to SOPUS and WRB Refining LP Wood River Refinery (WRR) dated January 18, 2017. IEPA comments are provided below in *italics* and the SOPUS responses are provided below each comment in blue font. Comments from the IEPA discussed the following deliverables:

1. An April 30, 2013 submittal regarding a groundwater profiling effort conducted to the south, east, and west of monitoring well T-7 for delineating the extent of contamination in the vicinity of that well.

2. A September 12, 2013 submittal regarding the results of an investigation effort carried out at the Public Works Yard located at the southwest corner of Chaffer Avenue and Eighth Street in the Village of Roxana (Village).

Also enclosed with this response to comments is the *Comprehensive Soil and Groundwater Sampling and Analysis Report* (Report) for the Village of Roxana (Village) Public Works Yard, and the northwest portion of the WRR Main Property as requested by Comment 4 of the January 18, 2017 letter.

Response to Comments

IEPA Comment 1.

1. *Illinois EPA does not agree with the conclusions reached in the September 12, 2013 submittal that no further investigation is needed in the Public Works Yard to characterize the soil contamination present there.*

SOPUS Response

SOPUS is submitting the comment-specific responses provided below. In addition to the detailed responses below, we would also like to present the following facts and documents in support of our position:

- The Public Works Yard has been part of a remedial effort with a soil vapor extraction system since December 2012
- The groundwater in and around the Public Works Yard is being addressed by the Corrective Action Program, including high volume pumping associated with the groundwater production system, under the RCRA Hazardous Waste Management Post-Closure Permit (Permit).
- A detailed analysis of the available groundwater data was performed and presented in the *Proposed Groundwater Management Zone* (GMZ) submittal (dated May 9, 2016), which showed stabilized and/or declining groundwater concentration trends.

These, when taken in their totality, support SOPUS' position is that the Public Works area has been adequately characterized.

IEPA Comment 1.a.

a. *Comparing soil analytical results only to remediation objectives for the commercial/industrial or construction worker soil inhalation/ingestion exposure routes is not sufficient to adequately evaluate the soil contamination at this location – the migration to groundwater exposure route must also be considered.*

SOPUS Response

The comment is acknowledged. Soil data presented in the enclosed Report were screened against the Tier 1 Exposure Route Specific Values for Soil Remediation Objectives for Industrial/Commercial and Construction Worker inhalation and ingestion pathways, as well as the Class 1 soil component of groundwater ingestion exposure route values (35 Illinois Administrative Code [IAC] Section 742, Appendix B, Table B). Refer to the enclosed Report for further information and results.

IEPA Comment 1.b.

b. *No information was provided to justify the southern boundary of the soil contamination as shown in Figure 1 of the submittal. For example, high levels of benzene were detected in the subsurface at GP-17, but no additional soil samples were collected south of that location. Similarly, high levels of benzene were detected in the subsurface at GP-18 but no additional samples were collected south of that location.*

SOPUS Response

Additional soil data have been collected since the September 12, 2013 subject submittal. Using these data, in combination with other previously collected data, has enabled delineation of the extent of soil contamination. Soil sampling locations where analytical exceedances were observed are bounded by other soil sampling locations that do not exhibit exceedances. The sampling locations south of the Public Works Yard indicate areas where access was possible. Going immediately south from the Public Works

yard, creates challenges due to railroad tracks, changes in property ownership and access, and, above and below ground pipelines and utilities. Refer to **Section 3** and **Figure 8** of the enclosed Report for further discussion and information.

IEPA Comment 1.c.

> c. *A photoionization detector (PID) is only a screening tool which measures the qualitative amount of volatile organic compounds present in vapors and is not sufficient for determining the horizontal extent of soil contamination with*[in] *the Public Works Yard.*

SOPUS Response

The comment is acknowledged. The following sampling strategy and lines of evidence were used to determine the extent of soil contamination in the Public Works Yard.

- A PID was used as a screening tool to select soil samples to be sent for laboratory analyses. A low reading or the absence of a reading was taken as indication of little or no impact. Soil samples from zones exhibiting the highest PID headspace reading within a borehole are typically sent for laboratory analysis. For reference, the Interstate Technology Regulatory Council (ITRC)[1] recommends using a PID or flame ionization detector (FID) reading of greater than about 500 parts per million (ppm) as an indicator of petroleum impacts for vapor intrusion screening.
- SUDAN IV® field tests were also conducted as a screening measure. A "white" response of the provided expanded polystyrene (EPS) bead indicates petroleum products present at concentrations of less than about 500 ppm, while a "pink" or "red" response of the provided EPS bead indicates petroleum products present at concentrations of between about 500 ppm and 2,500 ppm[2].
- The amount of soil recovered must be representative of formation material and of sufficient volume to collect an analytical sample, if desired based on the above screening or other observations.
- Soil samples for laboratory analysis were collected based on the above screening tools and visual field observations (e.g., the yellow staining of gloves and sample liners caused by soil).

These data were collectively used to estimate the extent of impact, as noted in the September 12, 2013 subject submittal. Though all lines of evidence were considered, the enclosed Report focuses on analytical results (refer to **Figure 8**).

IEPA Comment 1.d.

> d. *The detection of soil contamination thought to be related to kerosene along the southern boundary of the Public Works Yard indicates that the northern extent of this contamination must be determined and, if necessary, the western and eastern extent of the contamination.*

SOPUS Response

Based on a review of boring logs, noted field observations and LNAPL observations, it appears the extent of soil contamination thought to be related to kerosene along the southern boundary of the Public Works Yard is generally located in/around GP-17, GP-18 and P-58. Refer to **Section 3** and **Figure 8** of the enclosed Report for more information.

[1] Interstate Technology & Regulatory Council (ITRC), 2014. *Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation, and Management*. PVI-1. Washington, D.C.: ITRC, PVI Team. www.itrcweb.org/PetroleumVI-Guidance.
[2] *OilScreenSoil (Sudan IV)® Product Catalogue*. www.cheiron-resources.com/oss-sudanivtphtester.php.

IEPA Comment 1. e.

e. *The first sentence in the last paragraph on Page 3 of this submittal states, "The yellow staining…caused by kerosene referenced above was not observed during any previous drilling in the surrounding area." However, the document entitled, "WRMC North Property Benzene Study, Wood River Manufacturing Complex, Wood River, Illinois", dated January 1991, estimates the extent of product, including kerosene, extends to the western fenceline of the North and Main Properties. Thus kerosene contamination must have* [been] *detected by Shell in the area surrounding the Public Works Yard at some time.*

SOPUS Response

The data collected in the 1991 report referenced in the IEPA letter is 26 years old and not representative of current conditions. The kerosene contamination discussed in the January 1991 report was based on observations and analytical samples of light non-aqueous phase liquid (LNAPL) observed in selected WRR groundwater monitoring wells (including P-57, P-58, P-66, P-73, P-75, and T-7) between 4th Quarter 1988 (4Q88) and 4th Quarter 1990 (4Q90). During that timeframe, typical LNAPL thicknesses in these monitoring wells were observed to be between 1 and approximately 3 feet and groundwater elevations were on the order of about 393 feet (1988 North American Vertical Datum [NAVD]). Current LNAPL thicknesses within the same monitoring wells were observed to be less than 0.75 feet (based on 1st Quarter 2017 (1Q17) gauging data), and current groundwater elevations within this area are on the order of about 404 feet (1988 NAVD datum). Due to this more recent rise in groundwater elevation, many of the monitoring well screens at the facility are currently submerged; however, many of the well screens listed in the January 1991 report are still open (providing more realistic LNAPL observations), and these wells show no measured LNAPL thickness. This shows that the groundwater pumping system and oil recovery system are reducing the amount of LNAPL present. Refer to **Section 3** of the enclosed report for more information.

The January 1991 report mentions the "presence of Jet A fuel (based on product analysis) in the southwest corner of the North Property is attributable to a previous release, discovered in 1989". However, there is no mention of a kerosene release in the January 1991 report. Jet A fuel is kerosene-based and, as such, is virtually indistinguishable from kerosene. It may have been supplemented with additional levels of components such as benzene, toluene, cyclohexane, trimethylbenzene or naphthalene in order to burn more cleanly and efficiently.

IEPA Comment 1. f.

f. *The 1991 document referenced in Item 1.c.* [1.e.] *above indicates that a release of kerosene was known to have occurred within the refinery. This release likely came from the pipeline mentioned in the first full paragraph on Page 3 of the subject submittal.*

SOPUS Response

Based on new information from Phillips 66 (P66), it appears that the 6-inch kerosene pipeline mentioned in the first full paragraph of the September 12, 2013 submittal is erroneous (a misinterpreted gridline or property line incorrectly identified as a pipeline). The 6-inch kerosene line, in actuality, runs from the WRR old loading area northward, along and within the West Fenceline of the North Property. Refer to **Section 2** and **Figure 2** of the enclosed Report for more information.

IEPA Comment 1.g.

g. *No information was provided to demonstrate that the soil vapor extraction system being operated by Shell Oil Products US is addressing the naphthalene contamination at the Public Works Yard. In addition, no information was provided demonstrating the groundwater remediation system being operated by Shell Oil Products US depression system is reducing the soil contamination discussed above.*

SOPUS Response

In the *TACO Tier 3 Demonstration (Parts 1 and 2)*, submitted to IEPA and dated April 6, 2017, naphthalene is considered to be a constituent of potential concern in the soil to be conservative; however, detections are sporadic, and screening criteria exceedances are limited. Naphthalene has a relatively low volatility compared to other petroleum hydrocarbons.

The table below compares benzene and naphthalene concentrations in soil from sampling locations GP-15 (performed in December 2012) and VMP-14 (replacement performed in February 2017). These two points are located approximately 15 feet apart and in the southwest corner of the Public Works Yard.

	Depth (ft bgs)	Benzene (mg/kg)	Naphthalene (mg/kg)
GP-15 (Dec. 2012)	19 – 21	63.7	0.823 J
	29 – 30	0.126	ND
VMP-14 (Feb. 2017)	19 – 21	0.012 J	ND
	29 - 30	0.013 J	ND

J = Result is estimated
ND = Non-detect

The data presented in the above table shows that the SVE system is effective at removing impact associated with both benzene and naphthalene as observed when comparing the results from 2012 with those obtained during 2017.

The objective of the groundwater remediation program is to hydraulically contain and remediate groundwater. It is not designed to, nor is it capable of, remediating soil in the unsaturated zone. Soil impacts, if present, have been addressed by the SVE system of which a Tier 3 shut down request has been submitted to the IEPA. The following lines of evidence demonstrate that the groundwater remediation system is effective:

(i) The *Proposed Groundwater Management Zone* (GMZ) submittal (dated May 9, 2016) presented a detailed analysis showing stabilized and/or declining groundwater concentration trends.

(ii) Groundwater potentiometric maps developed quarterly and submitted semi-annually indicate hydraulic capture. Contamination in the dissolved phase, including naphthalene, is captured as a result of the continuation of groundwater pumping.

IEPA Comment 1.a. thru 1.g. (concluding comment)

Given all of the above, Shell Oil Products US must propose additional investigation efforts to fully characterize the soil contamination present within the Public Works Yard.

SOPUS Response

No additional soil investigation efforts are proposed at this time. As noted in response to Comment 1.b. above additional data have been collected since the September 12, 2013 subject submittal. Upon evaluation of the available data, the delineation of soil contamination at the Public Works Yard has been achieved. Refer to **Section 3.3** and **Figure 8** of the enclosed Report for further discussion and information.

IEPA Comment 2.

2. *Based on a review of Submittals No. 1 and 2 above, the Illinois EPA cannot agree that step out locations beyond GWP-29 and GWP-32 are impractical due to limited access and obstructions. The extent of groundwater contamination exceeding 35 Ill. Adm. Code, Part 620, Class I Groundwater*

Quality Standards, requires further delineation. Step out locations beyond GWP-29 and GWP-32 must be proposed in the submittal required by Item 4 below.

SOPUS Response

A *Proposed Groundwater Management Zone (GMZ),* dated May 19, 2016, was submitted to IEPA, and provided a comprehensive look at available groundwater data. This GMZ provides the approximate extent of groundwater impact based on wells with data exceeding the Class I groundwater screening criteria. A response from IEPA on this GMZ is pending as of the date of this submittal. No step out groundwater investigation is proposed at this time based upon the information presented in the GMZ. Assessment within the dissolved phase hydrocarbon plume may be performed in the future. The extent of groundwater contamination will be evaluated during each 5-year review of the GMZ, once approved and implemented. Refer to **Section 4,** and **Figures 9** and **10** of the enclosed Report and the May 19, 2016 *Proposed GMZ* submittal for further discussion and information.

IEPA Comment 3.a.

3. *SOPUS must combine the soil and groundwater investigation data from the Public Works Yard with the data collected to date for delineation beyond GWP-24, into one report. This information must be included in the submitted required by Item 4 below; this requirement is based on the following:*

    a. *The close proximity of investigations conducted at the Public Works Yard and profiling activities at and beyond GWP-24, plus the presence of benzene and naphthalene in both areas, indicates the plume(s) may be connected. Groundwater data also shows analytes besides benzene and naphthalene exceed the Class I GQSs.*

SOPUS Response

The presence of benzene and naphthalene at the Public Works Yard and in the vicinity of GWP-24 is acknowledged. However, both areas are part of the proposed GMZ and are within the area of hydraulic capture resulting from the WRR high volume pumping. While reviewing the data and compiling the enclosed Report, analytical detections, not just benzene and naphthalene, were considered and presented. Benzene, however, appears to be the main constituent of potential concern due to its prevalence in groundwater samples and its relative toxicity. The delineation footprints discussed in the Report are based on the combination of the various petroleum hydrocarbons observed. Refer to **Section 4** and **Figure 9** of the enclosed Report for further discussion and information.

IEPA Comment 3.b.

    b. *Submittal No. 2 identifies groundwater contamination and high PID readings within borings from profiling locations. It does not appear SOPUS followed their approved plan as the depths where soil samples were collected does not necessarily correlate to the highest PID readings in the borings. SOPUS must address this matter.*

SOPUS Response

The *GWP-24 Delineation Work Plan*, dated June 12, 2012, stated that a "soil sample will be collected from the soil interval exhibiting the highest headspace (photoionization detector (PID)) reading…" During the groundwater profiling field activities performed under this Work Plan (GWP-29 through GWP-32), soil samples were generally collected in conjunction with the highest observed PID headspace readings, with two exceptions:

- At GWP-29, the highest observed PID reading (1,288 ppm) was at about 9 feet below ground surface (bgs), which was within the air-knife portion of this borehole. Air-knifing is a safety practice required by SOPUS and P66 to prevent injuries to field workers, asset damage, and potential releases to the environment by avoiding damage to underground pipelines and utilities. An analytical sample was collected at about 11 feet bgs (PID 846.6 ppm). Laboratory

analytical samples are not typically collected within the air-knife portion of a borehole as these are grab samples (disturbed) and would not likely yield accurate results for volatile constituents. Therefore, the sample was collected at the top of the direct push dual tube sampling portion of this borehole. Both of these depths were within the same soil strata interval (loose, moist, brownish gray, fine grained sand).

- At GWP-32, the highest observed PID reading (2,243 ppm) was at about 11 feet bgs, which was at the top of the direct push dual tube sampling portion of this borehole. The recovery for this sampling interval (10 to 12 feet bgs) was poor and did not yield enough material to collect an analytical sample (loose, fine grained sand). The next highest PID reading (554.2 ppm) was observed at about 17 feet bgs, which had better recovery and is where an analytical sample was collected.

IEPA Comment 3.c. and d.

c. *The document entitled "WRMC North Property Benzene Study, Wood River Manufacturing Complex, Wood River, Illinois", dated January 1991, estimates the extent of product, including kerosene, extending to the western fenceline of the North and Main Properties. Thus, the information in this document could be very valuable when combined with the current data available today to provide a more complete understanding of the subsurface.*

d. *Investigation and monitoring efforts have been on-going in this area for at least thirty years and the information from these past efforts will be invaluable in fully understanding the current conditions within the area.*

SOPUS Response

The comment is acknowledged; however, SOPUS disagrees. Significant, subsequent assessments have been conducted since 1991, which we deem more reliable and representative of current conditions. Data collected in more recent investigations were used to develop this response to Agency comments and the enclosed Report as older data would not be as representative of the ongoing remediation efforts (e.g., groundwater production system and SVE System).

IEPA Comment 4.

4. *Within ninety days of the receipt of this letter, Shell Oil Products US must submit a document to Illinois EPA for review and approval which compiles all available information (including geology, hydrogeology, and soil/groundwater investigation results) regarding an area which includes the Public Works yard and extends south and southwest* [southeast] *on the Main Property of the Wood River Refinery beyond Well T-7. In addition, this submittal must contain the proposed investigation efforts required by Items 1 and 2 above.*

SOPUS Response

The IEPA's January 18, 2017 letter was received by SOPUS on January 23, 2017. This response to Agency comments letter and the requested enclosed Report are being submitted within 90 days of this date. This letter and enclosed Report covers the requested area and compiles the available information.

If you have any questions concerning this response or report, please contact Kevin Dyer, SOPUS Senior Principal Program Manager, at (618) 288-7237 or kevin.dyer@shell.com, or Bob Billman, AECOM, at (314) 743-4108 or bob.billman@aecom.com.

Sincerely,

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encl: Comprehensive Soil and Groundwater Sampling Report
RCRA Corrective Action Certification Form

cc: Kevin Dyer, SOPUS
Eric Petersen, P66
Amy Boley, IEPA
Gina Search, IEPA
Project File
Repositories (Roxana Public L brary, Roxana Village Hall, website)

AECOM

Comprehensive Soil and Groundwater Sampling and Analysis Report

Response to Illinois EPA 1/18/17 Letter

Prepared for:
Equilon Enterprises LLC dba Shell Oil Products US
Roxana, Illinois

Project Number: 60527968.1.22.001
April 2017

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Appendices

Appendix A Boring Logs

1 Introduction

AECOM Technical Services, Inc. (AECOM) is submitting this report on behalf of Equilon Enterprises LLC d/b/a Shell Oil Products US (SOPUS) as requested by the Illinois Environmental Protection Agency's (IEPA's) letter dated January 18, 2017 (Comment 4). This comprehensive soil and groundwater sampling and analysis report encompasses the Village of Roxana (Village) Public Works Yard and portions of the WRB Refining, LP (WRB) Wood River Refinery (WRR) Main and North Properties, as requested by Comments 3 and 4 of IEPA's January 18, 2017 letter. This combination of soil and groundwater data is based on the close proximity of investigations conducted and serves to comprehensively present the soil and groundwater data from past and on-going efforts in the this area. The goal of this report is to comprehensively present the available information from the Public Works Yard (in the vicinity of GP-17 and GP-18) and the northwestern portion of the Main Property (in the vicinity of GWP-24) with respect to delineation. **Figure 1** shows the approximate extent/location of these areas.

The IEPA provided their response and comments regarding the September 12, 2013 *Response to Public Work Yard Soil Sampling Agency Comments Provided in July 9, 2013 Letter* (URS, 2013c) in a letter dated January 18, 2017 (IEPA, 2017 – Comment 1).

The IEPA also provided their response and comments regarding the *Groundwater Profile Delineation Report*, dated April 30, 2013 (URS, 2013b), in their letter dated January 18, 2017 (IEPA, 2017 – Comment 2).

The soil and groundwater investigation data from the Public Works Yard is being combined with the data collected to date for delineation beyond GWP-24 into one report (subject submittals of the IEPA January 18, 2017 letter). Also incorporated into this comprehensive soil and groundwater sampling and analysis report are additional soil and groundwater data available prior to and since the 2013 subject submittals referenced above. A summary of the soil and groundwater sampling events incorporated is presented below:

- Direct push soil sampling activities were performed at two locations within the Public Works Yard Area in May 2008 (GP-7(II) and GP-12(II)).
- Direct push soil sampling activities were performed at five locations immediately northwest of the Rand Avenue and Route 111 intersection in August-September 2009 and June 2010 (GP-1 through GP-5).
- Groundwater profiling activities were performed at seven locations immediately northwest of the Rand Avenue and Route 111 intersection in August-September 2009, June 2010, and October 2012 (GP-1 through GP-5, GWP-21).
- Direct push soil sampling activities were performed at three locations along the west fenceline on the WRR North Property in March 2011 (GP-17a through GP-19a).
- Direct push soil sampling activities were performed at five locations inside, along the southern boundary of and in areas surrounding the Public Works Yard in the Village in December 2012 and January 2013 (GP-14 through GP-18).
- Soil sampling was performed during various groundwater monitoring well, vapor monitoring point (VMP), and soil vapor extraction (SVE) well installation efforts over the years.

- Groundwater profiling activities were also performed at various locations on WRR West and Main Properties in September-October 2010 and March 2013 (GWP-24, GWP-27, and GWP-29 through GWP-32).

- Direct push soil sampling has been performed prior to groundwater sampling at several groundwater profile locations on WRR Main and West Properties over the years (GWP-24, GWP-27, and GWP-29 through GWP-32).

- Quarterly groundwater sampling is performed for the Roxana Interim Groundwater Monitoring Program, and began in 4th Quarter 2010 (4Q10).

- Routine (currently semi-annual) groundwater sampling is performed for the WRR Corrective Action Program.

This information is combined into one comprehensive report due to the close proximity of investigations conduction at the Public Works Yard and on Main Property at and beyond GWP-24 (**Figure 1**). Information from past investigation and monitoring efforts is also being reviewed and considered in an effort to have a more comprehensive understanding of the subsurface. The following facts and documents are also being considered and incorporated in support of our position:

- The Roxana Public Works Yard has been part of remedial efforts with a soil vapor extraction system since December 2012.

- The groundwater in and around the Public Works Yard and northwest portion of the WRR Main Property is being addressed by the Corrective Action Program, including high volume pumping associated with the groundwater production system, under the Resource Conservation and Recovery Act (RCRA) Hazardous Waste Management Post-Closure Permit (Permit).

- A detailed analysis of the available groundwater data was performed and presented in the *Proposed Groundwater Management Zone* (GMZ) submittal (dated May 9, 2016), which showed stabilized and/or declining groundwater concentration trends.

Figure 3 shows the comprehensive set of soil investigation locations, and **Figure 6** shows the comprehensive set of groundwater sampling locations.

2 Description of Roxana Public Works Yard and Northwestern Portion of WRR Main Property

The overall general facility description, geology and hydrogeology for the area are discussed in this section, as outlined in the IEPA *Information Which Should be Provided in Soil Sampling/Analysis Reports Associated with RCRA Remediation Projects* guidance.

2.1 Facility

Wood River Refinery

The Wood River Refinery was operated by SOPUS and subsequent owners until ownership changed to ConocoPhillips (COP) effective June 1, 2000. Phillips 66 (P66) is now the operator of the WRB WRR. SOPUS retains its pre-sale environmental liabilities at the facility, remains as a co-operator of certain assets at the facility, and is working with the assistance of P66 personnel on several environmental projects and programs.

The WRR is a petroleum refinery that is located at 900 South Central Avenue in Roxana, Illinois. The refinery occupies approximately 1,800 acres in Wood River Township, Madison County, Illinois. The Combined Area for this report is focused on the following areas of the WRR.

- North Property – This area contains storage tanks and most of the current and past waste management areas. A process water field, called “North Property Wells,” is also located in this area. The northern undeveloped acreage of this property is leased out as farmland.
- Main Property – This area contains the main refinery process units, maintenance shops, and administrative buildings.

The property is zoned industrial. The future use of the property will continue to be industrial. Nearby properties include residential/commercial or recreational areas, undeveloped areas, agricultural areas, and institutional areas (schools).

Water Production Wells

A corrective action program (CAP) for the Main and North Properties of the WRR has been in place since 1989 to mitigate potential impact on human health and the environment. The CAP includes continued pumping and treatment of groundwater from a network of 18 water production wells, located on Main and North Properties, to maintain an inward gradient. This groundwater pumping creates a broad cone of depression (capture zone) that extends into portions of the Village, with horizontal gradients directed inward toward the interior of the North Property, preventing off-site contaminant migration. P66 operates these wells with a combined minimum groundwater pumping rate of 3,000 gallons per minute (gpm), which became effective after an August 2011 Permit modification, and was incorporated into the April 2, 2013 revised Permit (Condition IV(F)(2)(a) of the RCRA Hazardous Waste Management Post-Closure Permit (Permit)). The rate fluctuates above the minimum required pumping rate based on P66’s cooling water demand and their need for process water at any given time. Not all wells are required to maintain the minimum groundwater pumping rate of 3000 gpm. Due to variable pumping needs and periodic maintenance, not all wells operate continuously or are available continuously. The cone of depression is monitored by quarterly groundwater level measurements collected in monitoring wells on the WRR property, along with wells located within the Village. Groundwater elevations are subsequently depicted on potentiometric surface contour maps and submitted to the IEPA on a semi-annual basis. SOPUS (as the permittee) continues to work with P66 to monitor performance of the entire groundwater system and is

kept apprised of wellhead and valve repairs, well screen cleanings, pump/motor replacement, etc. IEPA is notified weekly of the groundwater depression well status.

Oil Recovery Wells

The cone of depression created by the pumping centers causes light non-aqueous phase liquid (LNAPL) to migrate towards and accumulate at or near the water production wells. Sixteen (16) recovery wells equipped with submersible total fluids pumps have been installed adjacent to most of the groundwater production wells to remove LNAPL, where present, from the uppermost aquifer. Recovered fluids are transferred through aboveground, heat-traced and insulated piping into Tank F-67 where the water and LNAPL are gravity separated. The recovered LNAPL is reprocessed in the Distilling Unit; separated water is pumped into the benzene National Emission Standards for Hazardous Air Pollutants (NESHAP) header for treatment in the National Pollutant Discharge Elimination System (NPDES) permitted Waste Water Treatment Plant (WWTP). Normal maintenance activities such as routine screen cleanings, pump repairs, electrical repairs, etc. are conducted on oil recovery wells as needed. SOPUS (as the permittee) continues to work with P66 to monitor performance of the entire oil recovery system and is kept apprised of wellhead and piping repairs, electrical issues, pump/motor replacement, etc. IEPA is notified weekly of the oil recovery well status.

LNAPL is also observed within certain water production wells during routine gauging events. This LNAPL is periodically pumped from the water production wells via a vacuum truck and added to Tank F-21. LNAPL is also typically manually removed during quarterly groundwater gauging events at monitoring wells where LNAPL is measured in sufficient quantities (typically greater than 0.1 feet thick). If present, field crews use dedicated or disposable bailers to manually remove LNAPL from the groundwater monitoring wells.

Village of Roxana

The Village of Roxana has a population of approximately 1,500 people. A small residential portion of the Village, west of the WRR North Property West Fenceline, has been the subject of soil, soil vapor, and groundwater investigations. SOPUS has been conducting these investigations in the area generally bounded by the alley north of 1st Street, the Roxana Public Works Yard, Illinois Route 111, and the West Fenceline of the WRR since about 2006.

SOPUS has been investigating and delineating soil vapor through the installation, development and sampling of vapor monitoring ports (VMPs) throughout the Village and WRR. Quarterly soil vapor sampling and reporting has been performed since 3rd Quarter 2010 (3Q10) and has been modified accordingly throughout the program based on requirements/comments/approvals from the IEPA.

SOPUS has been investigating and delineating groundwater through the installation, development and sampling of groundwater monitoring wells throughout the Village and WRR. Quarterly groundwater gauging and sampling has been performed in the Village since 4Q10 and has been modified accordingly throughout the program based on requirements/comments/approvals from the IEPA.

A former 6-inch benzene line, trending east-west, is located in the railroad right-of-way just south of the Public Works Yard. Historic pipeline information previously compiled indicated a former kerosene line, trending east-west, located along the southern edge of the Public Works Yard. Based on new information from P66, it appears that this previously presented 6-inch kerosene line is an erroneous line (a misinterpreted gridline or property line incorrectly identified as a pipeline). The 6-inch kerosene line actually runs from the WRR old loading rack area northward, along and within the West Fenceline of the North Property. **Figure 2** presents the correct pipeline information within vicinity of the Roxana Public Works Yard and northwest portion of the WRR Main Property.

A soil vapor extraction (SVE) system was designed and constructed along the West Fenceline of the WRR North Property and within the Public Works Yard to address hydrocarbon vapors in the Village. The West Fenceline portion of the SVE system began operating on January 31, 2012; additional wells have been added since that time. The Public Works Yard portion of the SVE system came online December 6, 2012. The current system consists of 45 SVE wells; six of which are located in the Public Works Yard.

2.2 Geology

The site is located approximately 1.5 miles east of the Mississippi River within the floodplain in an area known as the American Bottoms. The surface topography is generally flat. Surface elevations range from approximately 425 to 448 feet (relative to 1988 North American Vertical Datum (NAVD)). The ground surface in the WRR, where not developed with structures, is primarily covered with coarse gravel and paved roadways. The northern and eastern, undeveloped acreage of the WRR is primarily grass covered. The results of various deep borings on WRR properties have shown the bedrock to range from 119 to as much as 170 feet below ground surface (bgs).

The ground surface in the Village, where not developed with structures, is primarily grass covered with paved (chip-and-seal, asphalt, etc.) alleys and streets. The subsurface stratigraphy at the site has been investigated by completing over 140 investigative borings throughout the Village and WRR.

Subsurface stratigraphy in the area generally consists of the following materials, from the ground surface down:

- Fill – The fill consists mainly of clay with varying amounts of gravel, cinders, brick, etc. The fill typically extends from the ground surface to approximately 6 feet bgs.
- Clay/Silt – The clay is primarily a low to medium plastic, silty clay. Where present, the clay generally extends from the base of the fill to as deep as approximately 25 feet bgs.
- Sand – The sand is primarily of fine to medium grained, which coarsens with depth and is mixed with gravels at depth. At shallower depth, silty and clay lenses may be present in localized areas. The sand begins at the base of the clay (or base of the fill if the clay is not present) and extends to the bedrock surface.

Within the sand layer, discontinuous lower permeability lenses of clay with some silt and sandy silt are occasionally present. These lenses vary in thickness from approximately one inch to a few feet and do not appear to be laterally or vertically extensive or continuous throughout the area. Locations used to create geologic cross-sections are shown on **Figure 3**. Geologic cross-sections depicting typical subsurface conditions in the vicinity of the Roxana Public Works Yard and northwestern portion of the WRR Main Property are provided on **Figure 4** and **Figure 5**.

2.3 Hydrogeology

The sands and gravels in the unconsolidated valley fill of the American Bottoms Aquifer are relatively permeable and contain significant amounts of groundwater. The depth to groundwater within the aquifer is typically measured at approximately 25 to 40 feet bgs, resulting in a 15 to 30 feet thick vadose (unsaturated) zone within the unconsolidated deposits. This groundwater system is hydraulically connected to the Mississippi River. The bedrock underlying the unconsolidated valley fill has a much lower permeability and contains limited amounts of groundwater.

Groundwater at the site and surrounding area is recharged by precipitation and surface water infiltration from bodies of water within the vicinity. The current average precipitation in the Roxana and Wood River, Illinois area is 40.96 inches per year[1]. Though the groundwater is hydraulically connected to the Mississippi River, given the distance (approximately 1.5 miles) from the river, water level fluctuations due to river rise take longer to occur, and the magnitude of the fluctuations are muted in comparison to observations at locations closer to the river. In addition, high volume pumping of groundwater, associated with the groundwater production system at the WRR facility, is a significant controlling factor on groundwater levels and flow direction at the facility and in the vicinity of the Roxana Public Works Yard and northwestern portion of the WRR Main Property.

[1] https://rainfall.weatherdb.com

Water levels have been measured quarterly since about 1989 in many groundwater monitoring wells on the WRR Properties. Quarterly water level contour maps have been prepared to summarize this data. The typical current elevation of groundwater within the groundwater monitoring wells located throughout the area is approximately elevation 400 to 405 feet relative to 1988 NAVD. In general, water levels have risen since approximately 2007, until approximately 2011, when groundwater elevations began to decline. Groundwater elevations declined from 2011 to 2014 and began increasing again through the 1st Quarter 2017 (1Q17). Due to this rise in groundwater elevation, most of the groundwater monitoring well screens have been submerged during many quarterly events performed over the last nine to ten years.

The water level contours show the effects of the individual pumping centers and the cumulative effects on the local configuration of the water table. As shown in **Figure 7**, the pumping centers have created an aggregate cone of depression that extends into portions of the Village, with horizontal gradients directed inward toward the interior of the North Property. Based on the observed pattern of the water table, groundwater flow beneath the facility and Village is towards several cones of depression located at the pumping centers. **Figure 7** presents the 1Q17 groundwater contours for the Village and WRR sites.

Groundwater in the area has been classified as Class I (Potable Resource Groundwater) by IEPA (Permit Condition IV(C)(3)). The groundwater beneath and near the WRR is not used for drinking water. The area is supplied with municipal water by the Village of Roxana. The Village water supply wells are located approximately two miles south of the refinery. In 2008, the Village enacted an ordinance which prohibits the installation and use of private potable water supply wells in a portion of the village (Ordinance No. 867). This ordinance was acknowledged by the IEPA in Comment 12 of their August 5, 2010 comment letter (IEPA, 2010a).

3 Soil Sampling and Analysis

Since 2008, a substantial number of soil samples have been collected at the Roxana and WRR sites to characterize the nature and extent of petroleum hydrocarbon impact within the soil. The samples have been collected in connection with several site investigations as well as routine monitoring programs. This section presents the sampling and analysis information related to soil in the vicinity of the Roxana Public Works Yard.

3.1 General Soil Investigation Activities

URS Corporation (URS), now AECOM, on behalf of SOPUS, has conducted and reported soil investigation activities and results from several various investigative efforts in the vicinity of the Roxana Public Works Yard between 2008 and today.

Pre-Field and Pre-Drilling Activities

Prior to the start of any drilling work, locations were typically marked in the field and a utility locate was arranged using Illinois' Joint Utility Locating Information for Excavators (JULIE) service. In recent years, Roberts Environmental Drilling, Inc. (REDI) of Millstadt, Illinois, the commonly contracted drilling subcontractor, also performed private utility locating services using ground penetrating radar (GPR) at each location. Borehole clearance via an air-vacuum system (air-knife) was then used to clear each location with respect to underground utility lines or other obstructions. Air-knifing is a safety practice required by SOPUS and P66 to prevent injuries to field workers, asset damage, and potential releases to the environment by avoiding damage to underground pipelines and utilities. Locations were typically cleared to a depth of approximately 10 feet bgs. Visual observations were typically made during borehole clearance activities by advancing a hand auger prior to air-knifing to collect grab samples to classify the soil and screen the soil headspace.

Drilling and Sampling Activities

During soil investigation activities, soils below the air-knife portion of the borehole are typically continuously sampled and logged. Recovered soil samples are typically screened via visual observation and headspace screening using a photoionization detector (PID) for organic vapors. On occasion, field screening of soil samples was also performed using Sudan IV® test kits in order to determine the residual hydrocarbons in the soil. Typically, up to two or three soil samples were collected from each boring for laboratory analysis of constituents of potential concern, most commonly volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs), including polynuclear aromatic hydrocarbons (PAHs)[2]. These analytical samples were typically collected from the upper portion of the borehole or sand unit, the soil interval exhibiting the highest PID headspace readings, and/or just above the apparent water table or bottom of the borehole, as long as the amount of soil recovered was representative of the formation material and of sufficient volume to collect an analytical sample[3].

Upon completion of soil sampling activities, borings were either backfilled with bentonite grout and ground surface returned to surrounding conditions, or a long term feature (i.e., monitoring well, VMP or SVE well) was installed. Reusable equipment (e.g., soil samplers, drill rods/augers, etc.) underwent

[2] Laboratory analytical samples are not typically collected within the air-knife portion of a borehole, regardless of PID headspace readings or observations, as these are grab samples and would not likely yield accurate results for volatile constituents.
[3] Soil sampling logic may have varied depending on the depth of the borehole and the objective of the sampling effort. Refer to the investigation specific work plans/scopes of works/reports for additional and more specific information.

decontamination procedures between sampling locations to maintain sample integrity and to minimize cross contamination between sampling locations. Any excess soil and decontamination fluids were collected, characterized, managed, and disposed of properly according to applicable state and federal regulations.

Sampling Handling, Laboratory Analysis, and Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) protocols were implemented to ensure that the data were of sufficient quality to meet the investigation and monitoring objectives. For soil samples, QA/QC protocols included collection of equipment blanks (EBs), duplicates (DUPs), and matrix spike/matrix spike duplicate (MS/MSD) samples, which were submitted to the laboratory for analysis. A completed sample label was attached to each sample container (for parent samples and QA/QC samples). The labels included the project name and number, sample identification, initials of the sampler(s), sampling location, required analysis, date and time of sample collection, and preservative used (if any). Upon collection and labeling, soil sample containers were immediately placed inside an iced cooler and packed in such a way as to help prevent breakage and maintain inside temperature at or below approximately 4^{o}C, when required.

Field personnel recorded the sample identification, sample description/location, required analysis, date and time of sample collection, type and matrix of sample, number of sample containers, preservative use (if applicable), analysis requested, comments (if any), and sampler signature/date/time with permanent ink on the chain-of-custody (COC) form. Prior to shipment of soil samples, coolers were sealed between the lid and sides of the cooler with a custody seal, and then shipped to an analytical laboratory via overnight courier. Trip Blanks were included with each shipment of soil samples planned for VOC analysis.

AECOM worked with laboratories to attain reporting limits for compounds that have screening criteria so that, to the extent possible, the reporting limits were less than the screening criteria. In some cases, this necessitated reporting results between the method detection limit (MDL) and reporting limit (RL). Although results reported in this range are “J”-flagged as estimated concentrations by the laboratory, these data may be beneficial in cases where analytes would otherwise be reported as non-detect at RLs above screening levels.

Laboratory data were provided in electronic format, and analytical data were independently reviewed and qualified by AECOM. One hundred percent of the data were subjected to a data quality review. Evaluation of the data followed procedures outlined in the USEPA National Functional Guidelines for Superfund Organic Methods Data Review (USEPA, 2016). Specific criteria reviewed included sample receipt condition and holding times, method blanks, surrogate spike recoveries, laboratory control samples, results reported from dilutions, and field duplicate results. The laboratory assigned data qualifiers on the basis of their quality control or to indicate sample analysis information (e.g., dilutions). Data qualifiers were also added by AECOM, as appropriate, and are included on the data tables and laboratory result pages. Laboratory reports are stored in the project files and were provided as part of the previous reports submitted to IEPA, as required.

3.2 Soil Results

Investigative work in the vicinity of the Roxana Public Works Yard, performed since about 2008, was reviewed and evaluated to characterize soil contamination present (IEPA, 2017 – Comment 1). The lithology, PID headspace screening results, SUDAN IV® screening results and soil analytical results were reviewed from various drilling and sampling locations in and around the Public Works Yard. **Figure 3** shows these boring locations.

Analytical results from subsurface soil samples were screened against the Tiered Approach to Corrective Action Objectives (TACO) Tier 1 Soil Remediation Objectives for Industrial/Commercial Properties for the Industrial/Commercial and Construction Worker ingestion and inhalation exposure pathways, as well as

the soil component of the groundwater ingestion exposure pathway[4]. Results for the following petroleum hydrocarbons exceeded one or more of these screening criteria:

Benzene	Ethylbenzene
Benzo(a)anthracene	Naphthalene
Benzo(a)pyrene	Xylenes, total
Dibenzo(a,h)anthracene	

Of these, benzene detections were the results found to most commonly have exceedances for the ingestion, inhalation, or soil to groundwater exposure pathways. A tabular summary of the soil analytical detections along with the screening criteria comparison results reviewed for this report are presented in **Table 1a** (VOCs) and **Table 1b** (SVOCs). The soil analytical exceedances are depicted on **Figure 8**.

Kerosene Discussion

The *WRMC North Property Benzene Study, Wood River Manufacturing Complex, Wood River, Illinois* Report, dated January 1991 (ES, 1991, a 26 year old study), was also reviewed with respect to kerosene contamination. The kerosene contamination discussed within the January 1991 report was based upon measurements and analytical samples of LNAPL observed within selected WRR monitoring wells (including P-57, P-58, P-66, P-73, P-75, and T-7) between 4th Quarter 1988 (4Q88) and 4th Quarter 1990 (4Q90). During that timeframe, typical LNAPL thicknesses within the wells listed above were observed to be between 1 and approximately 3 feet, and groundwater elevations were on the order of about 393 feet (1988 NAVD datum). Current LNAPL thicknesses within the same wells were observed to be less than 0.75 feet (based on 1Q17 gauging data) and current groundwater elevations within the Combined Area are on the order of about 404 feet (1988 NAVD datum). Due to this rise in groundwater elevation, many of the monitoring well screens are currently submerged; however, many of the well screens listed in the January 1991 report are still open (providing more realistic LNAPL observations), and these wells show no measured LNAPL thickness. This January 1991 report mentions that the "*presence of Jet A fuel (based on product analysis) in the southwest corner of the North Property is attributable to a previous release, discovered in 1989.*" However, there is no mention of kerosene release in this 1991 report. Jet A fuel is kerosene-based and, as such, is virtually indistinguishable from kerosene. It may have been supplemented with additional levels of components such as benzene, toluene, cyclohexane, trimethylbenzene or naphthalene in order to burn more cleanly and efficiently.

Significant, subsequent assessments have been conducted since 1991, which provide more reliable data and are more representative of current conditions. Data collected in more recent investigations were used to develop this report as older data would not be as representative of the ongoing remediation efforts (e.g., groundwater production system and SVE System).

Available boring logs for locations shown on **Figure 3** and **Figure 6** were reviewed to help address the extent of soil contamination. No observations of free product or staining were recorded on any borings logs for these locations, except SVE-27. During drilling and sampling activities at GP-17 and GP-18 in the southeast portion of the Public Works Yard, yellow staining of acetate sample liners, zipper bags and nitrile gloves was observed after coming into contact with soil at 13 to 17 feet bgs (GP-17) and at 37 to 43 feet bgs (GP-18). The yellow staining of acetate sample liners, zipper bags and nitrile gloves caused by kerosene contamination was not observed during any drilling work in the vicinity of the Roxana Public Works Yard performed before or since GP-17 and GP-18 were completed. The boring log for SVE-27 (located just north of GP-18) indicated hydrocarbon odor and staining (but not yellow staining) in the soils at depths of about 12 to 16 feet bgs, which is consistent with the depth of the naphthalene concentrations

[4] 35 IAC 742 Appendix B Table B

observed in GP-17. A few sporadic instances of "hydrocarbon odor" were noted on some other boring logs performed in the WRR. **Appendix A** contains copies of the available boring logs within area.

A comprehensive review of the soil data indicated that impacted soil existed beneath limited areas in proximity of the Public Works Yard prior to operation of the SVE system. The data indicate that the impacted shallow soil vapor originated from hydrocarbon-impacted low permeability soils at intermediate depths (less than 20 feet bgs) in the vadose zone which were volatilizing and moving upward through the soil column. Elevated concentrations in soil at depth (greater than 20 feet bgs) were a result of fluctuations in groundwater elevation within the dissolved phase plume[5].

3.3 Soil Contamination Delineation Discussion

Several soil investigative borings have been completed since about 2008. Analytical exceedances observed at soil sampling locations in and around the Public Works Yard area have been bounded by other soil sampling locations that do not exhibit exceedances of the screening criteria for the ingestion, inhalation or soil component of groundwater ingestion exposure pathways. A review of the observations and results from these investigation efforts indicates that the soil contamination observed within the Public Works Yard has been delineated.

The sampling locations south of the Public Works Yard indicate areas where access was possible. Going immediately south from the Public Works Yard creates challenges due to railroad tracks, changes in property ownership and access, and above and below ground pipelines and utilities. Based on the locations of analytical (primarily benzene) exceedances (**Figure 8**), boring log reviews, and noted field observations and screenings during the investigative efforts discussed above, the soil contamination within the Public Works Yard appears to be primarily along the southern portion of the Public Works Yard, with the exception of a very small soil component of groundwater ingestion pathway exceedance observed at SVE-22, and is generally bounded by the following locations:

TO THE NORTH	TO THE WEST	TO THE SOUTH	TO THE EAST
GP-4	MW-23	MW-13	SVE-36
VMP-55	GP-3	GWP-27	GWP-29
SVE-24	P-114R	VMP-14	
SVE-26		VMP-15	
MW-7		MW-6A thru D	
SVE-21		MW-14	
SVE-27			

Based on a review of boring logs, noted field observations and LNAPL observations, it appears the extent of soil contamination thought to be related to kerosene along the southern boundary of the Public Works Yard is generally located in/around GP-17, GP-18 and P-58.

Two Environmental Land Use Controls (ELUCs) for the Main and North Properties were approved by IEPA in two separate letters, both dated September 12, 2013 (IEPA, 2013c and 2013d), to place certain restrictions on future activities within the Main and North Properties. These ELUCs were filed with Madison County Illinois, and the executed copies were submitted to IEPA with a submittal dated October 28, 2013 (URS, 2013d). These executed ELUCs were approved and accepted by IEPA in two separate letters, both dated January 29, 2014 (IEPA, 2014a and 2014b). These ELUCs restrict land use to

[5] Refer to the *TACO Tier 3 Demonstration (Parts 1 and 2)* submittal, dated April 7, 2017, for additional information and details.

industrial/commercial and any work within these parcels is governed by the WRR's safe work practices, procedures and applicable environmental regulations.

4 Groundwater Sampling and Analysis

Since 1989 in the WRR and since 2008 in the Village, a substantial number of groundwater samples have been collected to characterize the nature and extent of dissolved phase petroleum hydrocarbons. The samples have been collected in connection with several site investigations as well as routine monitoring programs. This section presents the sampling and analysis information related to groundwater in the northwestern portion of the WRR Main Property.

4.1 General Groundwater Investigation Activities

Groundwater investigation activities and results from several various efforts have been conducted and reported between 2008 and today for the Village, and since at least 1989 for the WRR. The Roxana Interim Groundwater Monitoring Program began in 4Q10 and currently consists of 66 groundwater monitoring wells, 48 of which are included in the quarterly sampling program. The WRR Groundwater Monitoring Program, in its current form, currently consists of 132 groundwater monitoring wells, 47 of which are included in the semi-annual sampling program. In addition, groundwater samples have periodically been collected from additional Roxana and WRR monitoring wells. Groundwater profiling activities were performed at seven locations immediately northwest of the Rand Avenue and Route 111 intersection, and were also performed at various locations on WRR West and Main Properties.

Routine Groundwater Sampling

Groundwater samples have been collected on a regular basis (quarterly or semi-annually) since the early 1990s at the WRR. Since October 2010, groundwater samples have been collected on a quarterly basis in the Village. Since 2010, groundwater samples have been analyzed for VOCs via USEPA Method 8260; for SVOCs via USEPA Method 8270; and PAHs via USEPA 8270 low level (LL) in accordance with corrective action correspondence from IEPA and the Permit. Data for both groundwater sampling programs have been summarized and submitted to the IEPA in previous reports.

A comprehensive quarterly groundwater monitoring well gauging event is conducted at the beginning of each quarter before sampling activities begin. The Roxana Program gauging event is conducted in conjunction with the WRR Program gauging event to evaluate groundwater flow direction and identify possible LNAPL at the sites. Weekly and monthly gauging data are collected from a subset of the Roxana Program monitoring wells to assess the absence or presence of LNAPL.

For the WRR Program, most of the monitoring wells are purged and sampled using a dedicated stainless steel QED Environmental Systems, Inc. (QED) Well Wizard® groundwater sampling pump (Well Wizard) and dedicated bonded polyethylene tubing. The dedicated pump intake is positioned near the midpoint of the well screen and the pump is operated using a QED MP50 Micropurge Controller/Compressor. WRR Program monitoring wells without dedicated pumps are purged and sampled using a Proactive Stainless Steel Monsoon Pump (Monsoon), controller and designated[6] polyethylene tubing. Prior to purging any well, the depth to water is measured and recorded. Purging of each well continues until a minimum of three well volumes of water is removed from the monitoring well. Water quality parameters are then measured, as required by the Permit. Some groundwater monitoring wells in the WRR Program are not sampled due to the presence of LNAPL.

[6] All tubing is designated to a specific groundwater monitoring well and is placed in individual closed plastic bags for storage at a central location between sampling events

For the Roxana Program, monitoring wells are purged and sampled using a Monsoon, controller and designated polyethylene tubing. The pump intake is positioned near the midpoint of the upper 10-foot portion of the well screen. Prior to purging any well, the depth to water is measured and recorded. The tubing from the sample pump is connected to a flow-through cell and pumping is performed at a low flow rate (typically ≤ 400 mL/minute) to minimize drawdown of the water level within the monitoring well. During purging, water quality parameters are measured and recorded. Purging continues until a minimum of three flow-through cell volumes of water are removed and the groundwater quality parameters stabilize, or a maximum purge time of two hours is reach. Some groundwater monitoring wells in the Roxana Program are not sampled due to slow recharge, lack of water, or the presence of LNAPL.

For monitoring wells that are sampled as part of both the WRR and Roxana Programs, low-flow sampling methods, which are used in the Roxana Program, are utilized as described above.

Groundwater Profile Sampling

Groundwater profiling (GWP) was conducted at selected locations, typically after soil sampling activities. GWP samples were typically collected near the top of the groundwater table and at a depth of approximately 8 feet below the first sample. GWP was performed using a new section of polyethylene tubing for each sample, equipped with a ball and check valve system connected through a Waterra pump to a flow-through cell. The groundwater was purged and monitored, and purging continued until water quality parameters stabilized over three flow-through cell volumes or for a maximum purge time of one to two hours was reached[7].

Upon completion of GWP sampling activities, borings were backfilled with bentonite grout and ground surface returned to surrounding conditions. Reusable equipment (e.g., pumps, check valves, drill rods, etc.) underwent decontamination procedures between sampling locations to maintain sample integrity and to minimize cross contamination between sampling locations. Any excess soil and/or decontamination fluids were collected, characterized, managed, and disposed of properly according to applicable state and federal regulations.

Sampling Handling, Laboratory Analysis, and Quality Assurance/Quality Control

Whether sampling as part of a routine program or performing GWP sampling, groundwater samples were collected for laboratory analysis of VOCs and SVOCs, including PAHs. QA/QC protocols were implemented to ensure that the data are of sufficient quality to meet the investigation and monitoring objectives. For groundwater samples, QA/QC protocols included collection of EBs, DUPs, and MS/MSD samples, which were submitted to the laboratory for analysis. A completed sample label was attached to each sample container. The labels included the project name and number, sample identification, initials of the sampler(s), sampling location, required analysis, date and time of sample collection, and preservative used (if any). Upon collection and labeling, soil sample containers were immediately placed inside an iced cooler and packed in such a way as to help prevent breakage and maintain inside temperature at or below approximately 4^{o}C, when required.

Field personnel recorded the sample identification, sample description/location, required analysis, date and time of sample collection, type and matrix of sample, number of sample containers, preservative use (if applicable), analysis requested, comments (if any), and sampler signature/date/time with permanent ink on the COC form. Prior to shipment of soil samples, coolers were sealed between the lid and sides of the cooler with a custody seal, and then shipped to an analytical laboratory via overnight courier. Trip Blanks were included with each shipment of soil samples planned for VOC analysis.

[7] Groundwater profile sampling logic and details may have varied depending on the objective of the sampling effort. Refer to the investigation specific work plans/scopes of works/reports for additional and more specific information.

AECOM worked with laboratories to attain reporting limits for compounds that have screening criteria so that, to the extent possible, the reporting limits were less than the screening criteria. In some cases, this necessitated reporting results between the method detection limit (MDL) and reporting limit (RL). Although results reported in this range are "J"-flagged as estimated concentrations by the laboratory, these data may be beneficial in cases where analytes would otherwise be reported as non-detect at RLs above screening levels.

Laboratory data were provided in electronic format, and analytical data were independently reviewed and qualified by AECOM. One hundred percent of the data were subjected to a data quality review. Evaluation of the data followed procedures outlined in the USEPA National Functional Guidelines for Superfund Organic Methods Data Review (USEPA, 2016). Specific criteria reviewed included sample receipt condition and holding times, method blanks, surrogate spike recoveries, laboratory control samples, results reported from dilutions, and field duplicate results. The laboratory assigned data qualifiers on the basis of their quality control or to indicate sample analysis information (e.g., dilutions). Data qualifiers were also added by AECOM, as appropriate, and are included on the data tables and laboratory result pages. Laboratory reports are stored in the project files and were provided as part of the previous reports submitted to IEPA, as required.

4.2 Groundwater Results

Investigative work, performed since about 2008 in the Village and since about 1989 in the WRR, was reviewed and evaluated to characterize the extent of groundwater impact related to the previous GWP-24 location and the LNAPL historically observed in monitoring well T-7 (IEPA, 2017 – Comment 2). The groundwater analytical results were reviewed from various wells and sampling events in and around the Main Property. For monitoring wells which are part of the routine groundwater monitoring programs, the focus was on data from samples collected over the past year, i.e., between the 2nd Quarter 2016 (2Q16) and 1Q17. **Figure 6** shows these sampling locations.

Analytical results from groundwater samples were screened against the Illinois Groundwater Quality Standards (GQSs) for Class I: Potable Resource Groundwater[8], and the Tiered Approach to Corrective Action Objectives (TACO) Tier 1 Class I Groundwater Ingestion exposure pathway[9]. Results for the following petroleum hydrocarbons exceeded the screening criteria in groundwater samples in the vicinity of the Public Works Yard and northwestern portion of the WRR Main Property:

Benzene	Methyl tert-butyl ether
Benzo(a)anthracene	Napthalene
bis(2-Ethylhexyl)phthalate	Pentachlorophenol
Ethylbenzene	Phenol
2-Methylnaphthalene	Toluene

Of these, benzene is the main constituent of potential concern due to its prevalence in groundwater samples collected and its relative toxicity. In the majority of instances, any groundwater sample that exhibited an exceedance of any organic constituent, also exhibited an exceedance for benzene. A tabular summary of the groundwater analytical detections along with the screening criteria comparison results reviewed for this report are presented in **Table 2a** (VOCs) and **Table 2b** (SVOCs). The groundwater analytical exceedances are depicted on **Figure 9**.

[8] 35 IAC 620.410
[9] 35 IAC 742 Appendix B Table E

AECOM, on behalf of SOPUS, conducts quarterly gauging activities required by the Permit at the WRR. The 1Q17 comprehensive gauging event was conducted on January 16 and 17, 2017. The groundwater contour map for the 1Q17 comprehensive gauging event, which shows groundwater elevations and flow conditions, is presented in **Figure 7**. Groundwater elevations remain elevated and were observed to be above most of the groundwater monitoring well screenings during the 1Q17 gauging event. The groundwater production wells continue to operate at or above the combined pumping rate of 3,000 gpm required by the Permit. The groundwater contours show that groundwater flow beneath the facility and Village is toward several cones of depression located at the pumping centers.

4.3 Groundwater Contamination Delineation Discussion

Several rounds of routine groundwater sampling have been completed since 2008 and before. Analytical exceedances observed at sampling locations in and around the northwest portion of the Main Property have been bounded by other groundwater samples which do not exceed the Class 1 groundwater screening criteria. A review of the observations and results from these sampling efforts indicates that the groundwater contamination observed within the vicinity of the northwest portion of the WRR Main Property has been characterized.

Groundwater contours are used to monitor control of groundwater flow beneath the WRR and eastern portions of the Village. **Figure 7** presents the groundwater contour map for the 1Q17 comprehensive gauging event. This map depicts groundwater control along the boundaries of the WRR, as required by the Permit. Based on the observed pattern of the water table, groundwater flow beneath the facility and Village is toward several cones of depression located at the pumping centers. The contaminants in the dissolved phase plume, therefore, would be captured as a result of the continuation of groundwater pumping.

AECOM, on behalf of SOPUS, submitted a *Proposed Groundwater Management Zone* (GMZ) to IEPA on May 19, 2016 (AECOM, 2016s). This GMZ provided a comprehensive look at available groundwater data and provides the approximate extent of groundwater impact based on wells with data exceeding Class 1 groundwater screening criteria. A response to the proposed GMZ is pending as of the date of this report. The proposed GMZ presents a detailed analysis showing stabilized and/or declining groundwater concentration trends, and states:

> *"For the refinery, the estimated extent of LNAPL and dissolved phase hydrocarbon impact is within the Main and North Properties. In the vertical direction, the proposed GMZ extends to the base of the aquifer (bedrock) at a variable depth between approximately 100 to 140 feet* [bgs]*. Based on the locations of existing groundwater monitoring wells, the proposed GMZ boundaries are the Main and North Property boundaries, except in the northernmost area of the North Property where groundwater monitoring wells that exhibited exceedances in one or more constituents during 2015 define the boundary. In the Study Area* [Village of Roxana], *the proposed GMZ boundary is represented by the extent of impact as shown."*

Groundwater contamination is present in the vicinity of the Public Works Yard and the northwestern portion of the WRR Main Property; however, both areas are part of the proposed GMZ and are within the area of hydraulic capture resulting from the high volume pumping associated with the WRR groundwater production system.

Figure 10 presents the horizontal extent of the proposed GMZ and the approximate extent of impact based on wells with data exceeding the Class I groundwater screening criteria. **Figure 9** presents the analytical (primarily benzene) exceedances observed in the vicinity of the northwest portion of the WRR Main Property. Routine groundwater sampling efforts performed since the submittal of the *Proposed GMZ* confirm the extents shown on **Figure 10**.

The Village enacted an ordinance which prohibits the installation and use of private potable water supply wells. This institutional control eliminates groundwater consumption and groundwater dermal contact as potential exposure pathways. The ordinance was adopted on June 2, 2008 (Ordinance No. 867). This ordinance was acknowledged by the IEPA in Comment 12 of their August 5, 2010 comment letter (IEPA, 2010a).

5 Conclusions

Based on the restriction of land use within the Main and North Properties to industrial/commercial outlined by the ELUCs, the fact that any work performed within the Main and North Properties is governed by WRR's safe work practices, procedures and applicable environmental regulations; and the above discussions (**Section 3.3**) of soil contamination delineations at the Public Works Yard, no additional soil investigation efforts are proposed at this time.

Based on the groundwater gauging information, the adopted groundwater ordinance for the Village, and the above discussions (**Section 4.3**) of delineation of the groundwater contamination previously provided in the proposed GMZ, no additional groundwater investigation efforts are proposed at this time. Delineation within the dissolved phase hydrocarbon plume may be performed in the future. The extent of groundwater contamination will be evaluated during each 5-year review of the GMZ, once approved and implemented.

6 Limitations

SOPUS shall have the right to make and retain copies of and use all Work Product provided. However, such use shall be limited to the particular Site and project for which the Work Product is provided. SOPUS and its agents may release the Work Product to third parties at its sole risk and discretion. This report is based on data, site conditions, and other information that is generally applicable as of the date of this report, and the conclusions and recommendations herein are therefore applicable only to that time frame and to the report in its entirety.

Data may have been provided to AECOM by SOPUS or a third party and used in preparing this report. AECOM has relied on this information as furnished, and is neither responsible for, nor has confirmed the accuracy of this information.

7 References

35 IAC 620, Subpart B, Section 210. *Class I Potable Resource Groundwater*.

35 IAC 620, Subpart D, Section 410. *Groundwater Quality Standards for Class 1: Potable Resource Groundwater*.

35 IAC 742, Tiered Approach to Corrective Action Objectives. Appendix B. *Table B – Tier 1 Soil Remediation Objectives for Industrial/Commercial Properties.*

35 IAC 742, Tiered Approach to Corrective Action Objectives. Appendix B. *Table E – Tier 1 Groundwater Remediation Objectives for the Groundwater Component of the Groundwater Ingestion Route*.

AECOM, 2015 (AECOM, 2015); *Demonstration to Verify the Extent of Groundwater Contamination Has Been Delineated Roxana, Illinois.* Prepared for SOPUS; dated April 16, 2015.

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Tables

SEE LAST PAGE OF TABLE FOR NOTES

TABLE 1a
Soil Sampling VOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	1,2,4-Trimethylbenzene (mg/kg)	1,3,5-Trimethylbenzene (mg/kg)	2-Butanone (mg/kg)	2-Hexanone (Methyl N-Butyl Ketone) (mg/kg)	4-Chlorotoluene (mg/kg)	Acetone (mg/kg)	Acrylonitrile (mg/kg)	Benzene (mg/Kg)	Bromomethane (mg/kg)	Carbon disulfide (mg/kg)	Chlorobenzene (mg/kg)	Chloroform (mg/kg)	Chloromethane (mg/kg)	Cymene (p-Isopropyltoluene) (mg/kg)	Ethylbenzene (mg/Kg)	Isopropylbenzene (Cumene) (mg/kg)	Methyl tert-Butyl Ether (MTBE) (mg/kg)	n-Butylbenzene (mg/kg)	n-Propylbenzene (mg/kg)	sec-Butylbenzene (mg/kg)	tert-Butylbenzene (mg/kg)	Toluene (mg/Kg)	Vinyl acetate (mg/kg)	m,p-Xylenes (mg/kg)	o-Xylenes (mg/kg)	Xylenes (total) (mg/Kg)
LOWEST I/C OR CW SCREENING/EXCEEDANCE				--	--	--	--	--	100,000	--	1.6	--	9.0	1.3	0.54	--	--	58	--	140	--	--	--	--	42	10	5.9	6.5	5.6
SOIL TO GROUNDWATER SCREENING/EXCEEDANCE				--	--	--	--	--	25	--	0.03	--	32	1	0.6	--	--	13	--	0.32	--	--	--	--	12	170	200	190	150
GP-1	GP-1-22.5	22.5 ft	9/2/2009	< 0.004	< 0.004	< 0.043		< 0.004	< 0.019		< 0.004	< 0.004	< 0.043	< 0.004	< 0.004	< 0.009	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	**0.001 J**	**0.002 J**	< 0.004	< 0.043	< 0.009	< 0.004	
GP-1	GP-1-31	31 ft	9/2/2009	< 0.004	< 0.004	< 0.045		< 0.004	< 0.09		< 0.004	< 0.004	< 0.045	< 0.004	< 0.004	< 0.009	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.045	< 0.009	< 0.004	
GP-1	GP-1-31D	31 ft	9/2/2009	< 0.004	< 0.004	< 0.041		< 0.004	< 0.082		< 0.004	< 0.004	< 0.041	< 0.004	< 0.004	< 0.008	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.041	< 0.008	< 0.004	
GP-2	GP-2-17	17 ft	8/31/2009	< 0.005	< 0.005	< 0.052		< 0.005	< 0.104		< 0.005	< 0.005	< 0.052	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.052	< 0.01	< 0.005	
GP-2	GP-2-23.5	23.5 ft	8/31/2009	< 0.005	< 0.005	< 0.052		< 0.005	< 0.104		< 0.005	< 0.005	< 0.052	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.052	< 0.01	< 0.005	
GP-2	GP-2-23.5D	23.5 ft	8/31/2009	< 0.004	< 0.004	< 0.045		< 0.004	< 0.09		< 0.004	< 0.004	< 0.045	< 0.004	< 0.004	< 0.009	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.045	< 0.009	< 0.004	
GP-3	GP-3-17	17 ft	6/9/2010	< 0.005	< 0.005	< 0.016		< 0.005	< 0.105		< 0.005	< 0.005	< 0.055	< 0.005	< 0.005	< 0.011	< 0.005	< 0.005	< 0.005	**0.013**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.055	< 0.011	< 0.005	
GP-3	GP-3-24	24 ft	6/9/2010	< 0.005	< 0.005	< 0.049		< 0.005	< 0.097		**0.007**	< 0.005	< 0.049	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.049	< 0.01	< 0.005	
GP-4	GP-4-11	11 ft	8/31/2009	**0.011**	0.003 J	< 0.088		< 0.009	< 0.176		**0.002 J**	< 0.009	< 0.088	< 0.009	< 0.009	< 0.018	< 0.009	**0.002 J**	< 0.009	**0.005 J**	< 0.009	**0.003 J**	< 0.009	**0.005 J**	< 0.009	< 0.088	**0.005 J**	**0.002 J**	
GP-4	GP-4-22.5	22.5 ft	8/31/2009	< 0.005	< 0.005	< 0.047		< 0.005	< 0.094		< 0.005	< 0.005	< 0.047	< 0.005	< 0.005	< 0.009	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.047	< 0.009	< 0.005	
GP-4	GP-4-33	33 ft	8/31/2009	**0.002 J**	< 0.005	< 0.051		< 0.005	< 0.102		**0.003 J**	< 0.005	< 0.051	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.051	< 0.01	< 0.005	
GP-5	GP-5-10	10 ft	6/9/2010	< 0.006	< 0.006	< 0.063		< 0.006	< 0.117		< 0.006	< 0.006	< 0.063	< 0.006	< 0.006	< 0.013	< 0.006	< 0.006	< 0.006	**0.002 J**	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.063	< 0.013	< 0.006	
GP-5	GP-5-19	19 ft	6/9/2010	< 0.005	< 0.005	< 0.051		< 0.005	< 0.101		< 0.005	< 0.005	< 0.051	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	**0.003 J**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.051	< 0.01	< 0.005	
GP-5	GP-5-27	27 ft	6/9/2010	**0.002 J J**	**0.002 J J**	< 0.038		< 0.004	< 0.077		**0.034 J**	< 0.004	< 0.038	< 0.004	< 0.004	< 0.008	**0.006 J**	**0.002 J J**	**0.036 J**	**0.032 J**	**0.046 J**	**0.071 J**	**0.029 J**	**0.012 J**	**0.002 J J**	< 0.038	**0.005 J J**	**0.001 J J**	
GP-5	GP-5-27D	27 ft	6/9/2010	**0.014 J**	**0.021 J**	< 0.047		< 0.005	< 0.094		**0.186 J**	< 0.005	< 0.047	< 0.005	< 0.005	< 0.009	**0.029 J**	**0.012 J**	**0.207 J J**	**0.126 J**	**0.17 J**	**0.439 D J**	**0.105 J**	**0.044 J**	**0.009 J**	< 0.047	**0.031 J**	**0.01 J**	
GP-7(II)	GP-7(II)-03	3 ft	5/15/2008	< 0.00501	< 0.00501	< 0.0501	< 0.0501	< 0.00501	< 0.1		< 0.00501	< 0.00501	< 0.0501	< 0.00501	< 0.00501	< 0.01	< 0.00501	< 0.00501	< 0.00501	< 0.00501	< 0.00501	< 0.00501	< 0.00501	< 0.00501	< 0.00501		< 0.01	< 0.00501	
GP-7(II)	GP-7(II)-19	19 ft	5/19/2008	< 0.005	< 0.005	< 0.053	< 0.053	< 0.005	< 0.106		**0.344 E J**	< 0.005	< 0.053	< 0.005	< 0.005	< 0.011	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.00115 J**		< 0.011	< 0.005	
GP-7(II)	GP-7(II)-19-Dup	19 ft	5/19/2008	< 0.005	< 0.005	< 0.051	< 0.051	< 0.005	< 0.102		**0.795 E J**	< 0.005	< 0.051	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.00109 J**		< 0.01	< 0.005	
GP-12(II)	GP-12(II)-04	4 ft	5/15/2008	< 0.00498	< 0.00498	< 0.0498	< 0.0498	< 0.00498	< 0.0996		< 0.00498	< 0.00498	< 0.0498	< 0.00498	< 0.00498	< 0.00996	< 0.00498	< 0.00498	< 0.00498	< 0.00498	< 0.00498	< 0.00498	< 0.00498	< 0.00498	< 0.00498		< 0.00996	< 0.00498	
GP-12(II)	GP-12(II)-17	17 ft	5/22/2008	< 0.00549	< 0.00549	< 0.0549	< 0.0549	< 0.00549	< 0.11		< 0.00549	< 0.00549	< 0.0549	< 0.00549	< 0.00549	< 0.011	< 0.00549	**0.00132 J**	< 0.00549	< 0.00549	< 0.00549	< 0.00549	< 0.00549	< 0.00549	**0.00206 J**		< 0.011	< 0.00549	
GP-12(II)	GP-12(II)-17-Dup	17 ft	5/22/2008	< 0.0055	< 0.0055	< 0.055	< 0.055	< 0.0055	< 0.0323		< 0.0055	< 0.0055	< 0.055	< 0.0055	< 0.0055	< 0.011	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0055	**0.00116 J**		< 0.011	< 0.0055	
GP-14	GP-14-13	13 ft	12/18/2012	< 0.0058	< 0.0058	< 0.0058	< 0.0058	< 0.0058	< 0.0058 UJ	< 0.029	**0.00049 J**	< 0.0023	< 0.0058	< 0.0023	< 0.0023	< 0.0058	< 0.0058	< 0.0023	< 0.0058	< 0.0023	< 0.0058	< 0.0058	< 0.0058	< 0.0058	< 0.0058	< 0.0058	< 0.0023	< 0.0023	< 0.0023
GP-15	GP-15-19	19 ft	12/18/2012	**4.28**	**2.73**	< 1.2 UJ	< 1.2	< 1.2	< 1.2 UJ	< 6.2	**63.7**	< 0.5	< 1.2	< 0.5	< 0.5	< 1.2	**1.79**	**0.669**	**1.13 J**	< 0.5	**1.58**	**0.548 J**	**1.41**	< 1.2	**0.283 J**	< 1.2	**1.36**	**0.294 J**	**1.66**
GP-15	GP-15-29	29 ft	12/18/2012	**0.00065 J**	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0055 UJ	< 0.028	**0.126**	< 0.0022	< 0.0055	< 0.0022	< 0.0022	< 0.0055	< 0.0055	**0.00064 J**	< 0.0055	< 0.0022	< 0.0055	< 0.0055	< 0.0055	< 0.0055	**0.00099 J**	< 0.0055	**0.0012 J**	**0.00039 J**	**0.0016 J**
GP-16	GP-16-23	23 ft	1/3/2013	< 0.0065	< 0.0065	< 0.0065	< 0.0065	< 0.0065	< 0.0065	< 0.032	**0.0458**	< 0.0026	< 0.0065	< 0.0026	< 0.0026	< 0.0065	< 0.0065	**0.0022 J**	< 0.0065	< 0.0026	< 0.0065	< 0.0065	< 0.0065	< 0.0065	**0.0028 J**	< 0.0065	< 0.0026	< 0.0026	**0.00078 J**
GP-17	GP-17-15	15 ft	1/7/2013	**16.3**	**3**	< 2.7 UJ	< 2.7 UJ	< 2.7	< 2.7 UJ	< 14	**154 J**	< 1.1	< 2.7	< 1.1	< 1.1	< 2.7	**0.415 J**	**1.69**	**0.269 J**	< 1.1	**3.01**	**1.74 J**	**0.323 J**	< 2.7	< 2.7	< 2.7	**4.44**	**2.84**	**7.28**
GP-17	GP-17-15-DUP	15 ft	1/7/2013	**25**	**4.96 J**	< 7 UJ	< 7 UJ	< 7	< 7 UJ	< 35	**391 J**	< 2.8	< 7	< 2.8	< 2.8	< 7	< 7	**3.04**	< 7	< 2.8	**4.67 J**	**2.69 J**	< 7	< 7	< 7	< 7	**7.57**	**4.76**	**12.3**
GP-17A	GP-17-12-13	12 - 13 ft	3/15/2011	< 6.1	< 6.1	< 6.1	< 6.1	< 6.1	< 6.1	< 6.1	< 0.61	< 2.4	< 6.1	< 2.4	< 2.4	< 6.1	< 6.1	< 2.4	**3.16 J J**	< 2.4	**3.51 J**	**2.94 J**	**1.96 J**	< 6.1	< 6.1	< 6.1	< 2.4	< 2.4	< 2.4
GP-17A	GP-17-23-24	23 - 24 ft	3/15/2011	< 2.6	**0.892 J**	< 2.6	< 2.6	< 2.6	< 2.6	< 2.6	< 0.26	< 1	< 2.6	< 1	< 1	< 2.6	**0.581 J**	< 1	**4 J**	< 1	**3.01**	**4.05**	**2.97**	< 2.6	< 2.6	< 2.6	**0.58 J**	< 1	**0.58 J**
GP-17A	GP-17-39-40	39 - 40 ft	3/15/2011	**3.74**	**0.901 J**	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	**0.695**	< 0.76	< 1.9	< 0.76	< 0.76	< 1.9	**0.252 J**	**3.53**	**0.586 J J**	< 0.76	**0.648 J**	**0.756 J**	**0.207 J**	< 1.9	< 1.9	< 1.9	**4.73**	**0.698 J**	**5.42**
GP-18	GP-18-21	21 ft	1/8/2013	< 1.8	< 1.8	< 1.8 UJ	< 1.8 UJ	< 1.8	< 1.8 UJ	< 9	**9.94**	< 0.72	< 1.8	< 0.72	< 0.72	< 1.8	< 1.8	< 0.72	< 1.8	< 0.72	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 0.72	< 0.72	< 0.72
GP-18A	GP-18-12-13	12 - 13 ft	3/16/2011	< 0.0052	< 0.0052	< 0.0052	< 0.0052	< 0.0052	< 0.0052	< 0.0052 UJ	**0.00044 J**	< 0.0021	< 0.0052	< 0.0021	< 0.0021	< 0.0052 UJ	< 0.0052	< 0.0021	< 0.0052	< 0.0021	< 0.0052	< 0.0052	< 0.0052	< 0.0052	< 0.0052	< 0.0052	< 0.0021	< 0.0021	**< 0.0021**
GP-18A	GP-18-29.5-30.5	29.5 - 30.5 ft	3/16/2011	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.2	< 0.78	< 2	< 0.78	< 0.78	< 2	**0.68 J**	< 0.78	< 2	< 0.78	**2.1**	< 2	**0.899 J**	< 2	< 2	< 2	< 0.78	< 0.78	< 0.78
GP-18A	GP-18-39-40	39 - 40 ft	3/16/2011	**0.0496 J**	**0.0457 J**	< 0.64	< 0.64	< 0.64	< 0.64	< 0.64	**2.42**	< 0.26	< 0.64	< 0.26	< 0.26	< 0.64	< 0.64	**0.13 J**	**0.0801 J J**	< 0.26	**0.274 J**	**0.16 J**	**0.0976 J**	**0.0368 J**	< 0.64	< 0.64	< 0.26	< 0.26	**0.0413 J**
GP-19A	GP-19-12-13	12 - 13 ft	3/17/2011	< 0.0065	< 0.0065	< 0.0065	< 0.0065	< 0.0065	< 0.0065	< 0.0065 UJ	**0.0303**	**0.0112**	**0.0025 J**	< 0.0026	< 0.0026	< 0.0065 UJ	< 0.0065	**0.0008 J**	< 0.0065	< 0.0026	< 0.0065	**0.00087 J**	**0.0018 J**	< 0.0065	**0.0036 J**	< 0.0065	**0.0017 J**	< 0.0026	**0.0017 J**
GP-19A	GP-19-27-28	27 - 28 ft	3/17/2011	< 0.0065	< 0.0065	< 0.0065	< 0.0065	< 0.0065	< 0.0183	< 0.0065 UJ	**0.0856**	< 0.0026	< 0.0065	< 0.0026	< 0.0026	< 0.0065 UJ	< 0.0065	**0.0031**	**0.0016 J**	< 0.0026	**0.012**	**0.0017 J**	**0.0025 J**	**0.0018 J**	**0.0029 J**	< 0.0065	**0.00088 J**	< 0.0026	**0.00088 J**
GP-19A	GP-19-39-40	39 - 40 ft	3/17/2011	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	**15.6**	< 0.89	< 2.2	< 0.89	< 0.89	< 2.2	< 2.2	< 0.89	**0.206 J J**	< 0.89	**0.807 J**	**0.145 J**	**0.377 J**	**0.339 J**	< 2.2	< 2.2	< 0.89	< 0.89	< 0.89
GWP-29	GWP-29-11	11 ft	3/12/2013	< 1.1	< 1.1	< 1.1 UJ	< 1.1 UJ	< 1.1	< 1.1 UJ	< 5.6	< 0.11	< 0.45	< 1.1	< 0.45	< 0.45	< 1.1	< 1.1	< 0.45	**0.553 J**	< 0.45	**0.544 J**	**0.808 J**	**0.35 J**	< 1.1	< 1.1	< 1.1	< 0.45	< 0.45	< 0.45
GWP-29	GWP-29-39	39 ft	3/12/2013	< 0.49	< 0.49	< 0.49 UJ	< 0.49 UJ	< 0.49	< 0.49 UJ	< 2.5	< 0.049	< 0.2	< 0.49	< 0.2	< 0.2	< 0.49	< 0.49	< 0.2	**1.03**	< 0.2	**1.2**	**2.62**	**0.902**	**0.161 J**	< 0.49	< 0.49	< 0.2	< 0.2	< 0.2
GWP-29	GWP-29-39-DUP	39 ft	3/12/2013	< 0.52	< 0.52	< 0.52 UJ	< 0.52 UJ	< 0.52	< 0.52 UJ	< 2.6	< 0.052	< 0.21	< 0.52	< 0.21	< 0.21	< 0.52	< 0.52	< 0.21	**1.35**	< 0.21	**1.42**	**3.45**	**1.18**	**0.172 J**	< 0.52	< 0.52	< 0.21	< 0.21	< 0.21
GWP-30	GWP-30-19	19 ft	3/11/2013	**0.0014 J**	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011 UJ	< 0.053	**0.0028**	< 0.0043	< 0.011	< 0.0043	< 0.0043	< 0.011	< 0.011	**0.0111**	< 0.011	< 0.0043	**0.00088 J**	< 0.011	**0.00093 J**	< 0.011	**0.0089 J**	< 0.011	< 0.0043	< 0.0043	< 0.0043
GWP-30	GWP-30-33	33 ft	3/11/2013	< 0.0052	< 0.0052	< 0.0052	< 0.0052	< 0.0052	< 0.0052 UJ	< 0.026	**0.00099**	< 0.0021	< 0.0052	**0.00067 J**	< 0.0021	< 0.0052	< 0.0052	**0.0021**	< 0.0052	< 0.0021	< 0.0052	< 0.0052	< 0.0052	< 0.0052	**0.0024 J**	< 0.0052	< 0.0021	< 0.0021	< 0.0021
GWP-31	GWP-31-21	21 ft	3/11/2013	**0.00059 J**	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.0061 UJ	< 0.03	**0.0019**	< 0.0024	< 0.0061	< 0.0024	< 0.0024	< 0.0061	< 0.0061	**0.0064**	< 0.0061	< 0.0024	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.0056 J**	< 0.0061	< 0.0024	< 0.0024	< 0.0024
GWP-31	GWP-31-31	31 ft	3/11/2013	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.0057 UJ	< 0.029	**0.0012**	< 0.0023	< 0.0057	< 0.0023	< 0.0023	< 0.0057	< 0.0057	**0.003**	< 0.0057	< 0.0023	< 0.0057	< 0.0057	< 0.0057	< 0.0057	**0.0035 J**	< 0.0057	< 0.0023	< 0.0023	< 0.0023
GWP-32	GWP-32-17	17 ft	3/12/2013	**10.5**	**3.16**	< 1 UJ	< 1 UJ	< 1	< 1 UJ	< 5	**1.07**	< 0.4	< 1	< 0.4	< 0.4	< 1	**2.86**	< 0.4	**9.66**	< 0.4	**4.2**	**4.88**	**2.32**	< 1	< 1	< 1	**1.66**	**0.241 J**	**1.9**
GWP-32	GWP-32-36	36 ft	3/12/2013	**195**	**42.5**	< 4.9 UJ	< 4.9 UJ	< 4.9	< 4.9 UJ	< 25	**1.82**	< 2	< 4.9	< 2	< 2	< 4.9	**15.8**	**40.2**	**22.6**	< 2	**39.9**	**56**	**22.8**	< 4.9	< 4.9	< 4.9	**26**	**2.24**	**28.2**
MW-03	B-3-06	6 ft	5/14/2008	< 0.005	< 0.005	< 0.05	< 0.05	< 0.005	< 0.1		< 0.005	< 0.005	< 0.05	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.01	< 0.005	
MW-03	B-3-33	33 ft	5/21/2008	< 0.00567	< 0.00567	< 0.0567	< 0.0567	< 0.00567	< 0.113		< 0.00567	< 0.00567	< 0.0567	< 0.00567	< 0.00567	< 0.0113	< 0.00567	< 0.00567	< 0.00567	< 0.00567	< 0.00567	< 0.00567	< 0.00567	< 0.00567	**0.00137 J J**		< 0.0113	< 0.00567	
MW-04	B-4-06	6 ft	5/15/2008	< 0.00479	< 0.00479	< 0.0479	< 0.0479	< 0.00479	< 0.0197		< 0.00479	< 0.00479	< 0.0479	< 0.00479	< 0.00479	< 0.00958	< 0.00479	< 0.00479	< 0.00479	< 0.00479	< 0.00479	< 0.00479	< 0.00479	< 0.00479	< 0.00479		< 0.00958	< 0.00479	
MW-04	B-4-35	35 ft	5/22/2008	< 0.00591	< 0.00591	< 0.0591	< 0.0591	< 0.00591	< 0.118		< 0.00591	< 0.00591	< 0.0591	< 0.00591	< 0.00591	< 0.0118	< 0.00591	< 0.00591	< 0.00591	< 0.00591	< 0.00591	< 0.00591	< 0.00591	< 0.00591	**0.00176 J**		< 0.0118	< 0.00591	
MW-05	B-5-04.5	4.5 ft	5/15/2008	< 0.00498	< 0.00498	< 0.0498	< 0.0498	< 0.00498	< 0.0996		< 0.00498	< 0.00498	< 0.0498	< 0.00498	< 0.00498	< 0.00996	< 0.00498	< 0.00498	< 0.00498	< 0.00498	< 0.00498	< 0.00498	< 0.00498	< 0.00498	< 0.00498		< 0.00996	< 0.00498	
MW-05	B-5-27	27 ft	5/21/2008	< 0.00533	< 0.00533	< 0.0533	< 0.0533	< 0.00533	< 0.107		< 0.00533	< 0.00533	< 0.0533	< 0.00533	< 0.00533	< 0.0107	< 0.00533	< 0.00533	< 0.00533	< 0.00533	< 0.00533	< 0.00533	< 0.00533	< 0.00533	< 0.00533		< 0.0107	< 0.00533	
MW-06	B-6-04	4 ft	5/15/2008	< 0.00391	< 0.00391	< 0.0391	< 0.0391	< 0.00391	< 0.0782		< 0.00391	< 0.00391	< 0.0391	< 0.00391	< 0.00391	< 0.00782	< 0.00391	< 0.00391	< 0.00391	< 0.00391	< 0.00391	< 0.00391	< 0.00391	< 0.00391	< 0.00391		< 0.00782	< 0.00391	
MW-06	B-6-23	23 ft	5/19/2008	< 0.005	< 0.005	< 0.051	< 0.051	< 0.005	< 0.103		< 0.005	< 0.005	< 0.051	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.01	< 0.005	
MW-14	P-130(40-42) 102411	40 - 42 ft	10/24/2011	**0.0012 J**	< 0.0064	< 0.0064	< 0.0064	< 0.0064	< 0.0315	< 0.0064	**0.0021**	< 0.0026	**0.0055 J**	< 0.0026	< 0.0026	< 0.0064	< 0.0064	**0.006**	< 0.0064	< 0.0026	< 0.0064	< 0.0064	< 0.0064	< 0.0064	**0.006 J**	< 0.0064 UJ	**0.0016 J**	**0.00074 J**	**0.0024 J**
MW-21	MW-21-21	21 ft	12/6/2012	< 0.57	< 0.57	< 0.57	< 0.57	< 0.57	< 0.57 UJ	< 2.9	< 0.057	< 0.23	< 0.57	< 0.23	< 0.23	< 0.57	< 0.57	< 0.23	< 0.57	< 0.23	**0.0915 J**	< 0.57	< 0.57	< 0.57	< 0.57	< 0.57	< 0.23	< 0.23	< 0.23
MW-21	MW-21-31	31 ft	12/6/2012	< 0.57	< 0.57	< 0.57	< 0.57	< 0.57	< 0.57 UJ	< 2.9	< 0.057	< 0.23	< 0.57	< 0.23	< 0.23	< 0.57	< 0.57	< 0.23	< 0.57	< 0.23	**0.116 J**	< 0.57	**0.06 J**	< 0.57	< 0.57	< 0.57	< 0.23	< 0.23	< 0.23

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TABLE 1a
Soil Sampling VOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	1,2,4-Trimethylbenzene (mg/kg)	1,3,5-Trimethylbenzene (mg/kg)	2-Butanone (mg/kg)	2-Hexanone (Methyl N-Butyl Ketone) (mg/kg)	4-Chlorotoluene (mg/kg)	Acetone (mg/kg)	Acrylonitrile (mg/kg)	Benzene (mg/Kg)	Bromomethane (mg/kg)	Carbon disulfide (mg/kg)	Chlorobenzene (mg/kg)	Chloroform (mg/kg)	Chloromethane (mg/kg)	Cymene (p-Isopropyltoluene) (mg/kg)	Ethylbenzene (mg/Kg)	Isopropylbenzene (Cumene) (mg/kg)	Methyl tert-Butyl Ether (MTBE) (mg/kg)	n-Butylbenzene (mg/kg)	n-Propylbenzene (mg/kg)	sec-Butylbenzene (mg/kg)	tert-Butylbenzene (mg/kg)	Toluene (mg/Kg)	Vinyl acetate (mg/kg)	m,p-Xylenes (mg/kg)	o-Xylenes (mg/kg)	Xylenes (total) (mg/Kg)
	LOWEST I/C OR CW SCREENING/EXCEEDANCE			--	--	--	--	--	100,000	--	1.6	--	9.0	1.3	0.54	--	--	58	--	140	--	--	--	--	42	10	5.9	6.5	5.6
	SOIL TO GROUNDWATER SCREENING/EXCEEDANCE			--	--	--	--	--	25	--	0.03	--	32	1	0.6	--	--	13	--	0.32	--	--	--	--	12	170	200	190	150
MW-21	MW-21-31-DUP	31 ft	12/6/2012	< 2	< 2	< 2	< 2	< 2	< 2 UJ	< 10	< 0.2	< 0.81	< 2	< 0.81	< 0.81	< 2	**0.731 J**	< 0.81	**0.718 J**	< 0.81	**2.12**	**1.34 J**	**1.27 J**	< 2	< 2	< 2	< 0.81	< 0.81	< 0.81
MW-21	MW-21-41	41 ft	12/6/2012	**0.00093 J**	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081 UJ	< 0.04	**0.282**	< 0.0032	< 0.0081	< 0.0032	< 0.0032	< 0.0081	**0.0017 J**	**0.0076**	**0.0186**	< 0.0032	**0.0041 J**	**0.0239**	**0.0058 J**	< 0.0081	**0.006 J**	< 0.0081	**0.0065**	< 0.0032	**0.0065**
MW-23	MW23-ROX-011915 (4-6)	4 - 6 ft	1/19/2015	**0.0165**	**0.0039 J**	< 0.016	< 0.016	< 0.0079	**0.0493**	< 0.039	< 0.00079	< 0.0032	**0.0053 J**	< 0.0032	< 0.0032	< 0.0079	**0.0035 J**	**0.0025 J**	**0.0022 J**	< 0.0032	**0.004 J**	**0.0023 J**	**0.002 J**	< 0.0079	**0.00046 J**	< 0.0079	**0.0028 J**	**0.0069**	**0.0097 J**
MW-23	DUP	4 - 6 ft	1/19/2015	**0.0302**	**0.0072**	< 0.014	< 0.014	< 0.0072	**0.0497**	< 0.036	**0.00059 J**	< 0.0029	**0.0037 J**	< 0.0029	< 0.0029	< 0.0072	**0.0064 J**	**0.004**	**0.0036 J**	< 0.0029	**0.0083**	**0.0044 J**	**0.0034 J**	**0.0006 J**	**0.0009 J**	< 0.0072	**0.006**	**0.0122**	**0.0181 J**
MW-25	MW25-082814(36'-38')	36 - 38 ft	8/28/2014	< 0.0057	< 0.0057	< 0.011	< 0.011	< 0.0057	< 0.011	< 0.029	**0.0102**	< 0.0023	< 0.0057	< 0.0023	< 0.0023	< 0.0057	< 0.0057	< 0.0023	< 0.0057	**0.00055 J**	< 0.0057	< 0.0057	< 0.0057	< 0.0057	**0.0012 J**	< 0.0057	< 0.0023	< 0.0023	< 0.0023
MW-26	MW26-082714 (38-40')	38 - 40 ft	8/27/2014	< 0.0055	< 0.0055	< 0.011	< 0.011	< 0.0055	< 0.011	< 0.028	**0.0011**	< 0.0022	< 0.0055	< 0.0022	< 0.0022	< 0.0055	< 0.0055	**0.00083 J**	< 0.0055	< 0.0022	< 0.0055	< 0.0055	< 0.0055	< 0.0055	**0.0017 J**	< 0.0055	< 0.0022	< 0.0022	**0.00033 J**
P-57	P57-20-120814	20 ft	12/8/2014	**0.0035 J**	< 0.0057	< 0.011	< 0.011	< 0.0057	< 0.011	< 0.028	**0.0014**	< 0.0023	< 0.0057	< 0.0023	< 0.0023	< 0.0057	**0.00035 J**	**0.0035**	**0.00072 J**	< 0.0023	**0.00064 J**	**0.00097 J**	< 0.0057	< 0.0057	**0.0022 J**	< 0.0057 UJ	**0.0027**	**0.00072 J**	**0.0034**
P-57	P57-40-120814	40 ft	12/8/2014	**0.101**	**0.0319**	< 0.011	< 0.011	< 0.0056	< 0.011	< 0.028	**0.0163**	< 0.0022	< 0.0056	< 0.0022	< 0.0022	< 0.0056	**0.0053 J**	**0.0693**	**0.0113**	< 0.0022	**0.0103**	**0.0154**	**0.0047 J**	< 0.0056	**0.0235**	< 0.0056 UJ	**0.0949**	**0.0293**	**0.124**
P-93C	P93C-40-120414	40 ft	12/4/2014	< 0.0058	< 0.0058	< 0.012	< 0.012	< 0.0058	< 0.012	< 0.029	**0.0044**	< 0.0023	< 0.0058	< 0.0023	< 0.0023	< 0.0058	< 0.0058	**0.0011 J**	< 0.0058	< 0.0023	< 0.0058	< 0.0058	< 0.0058	< 0.0058	**0.0013 J**	< 0.0058 UJ	< 0.0023	< 0.0023	**0.00047 J**
P-114R	P114-5-6-091415	5 - 6 ft	9/14/2015	< 0.0069	< 0.0069	**0.0067 J J**	< 0.014	< 0.0069	**0.0298 J**	< 0.035	**0.0012 J**	< 0.0028	**0.0034 J J**	< 0.0028	< 0.0028	**0.0058 J J**	< 0.0069	< 0.0028	**0.0037 J J**	< 0.0028	< 0.0069	**0.0038 J J**	**0.0096 J**	< 0.0069	**0.0006 J J**	< 0.0069	< 0.0028	< 0.0028	< 0.0028
P-114R	P114-5-6-091415-DUP	5 - 6 ft	9/14/2015	< 0.0067	< 0.0067	**0.0097 J J**	< 0.013	< 0.0067	**0.0395 J**	< 0.034	**0.0021 J**	< 0.0027	**0.0049 J J**	< 0.0027	< 0.0027	< 0.0067	< 0.0067	< 0.0027	**0.0228 J**	< 0.0027	< 0.0067	**0.0332 J**	**0.0537 J**	< 0.0067	< 0.0067	< 0.0067	< 0.0027	< 0.0027	< 0.0027
P-114R	P114-20-22-091515	20 - 22 ft	9/15/2015	< 0.0046	< 0.0046	< 0.0093	< 0.0093	< 0.0046	**0.0097**	< 0.023	< 0.00046	< 0.0019	< 0.0046	< 0.0019	< 0.0019	< 0.0046	< 0.0046	< 0.0019	< 0.0046	< 0.0019	< 0.0046	< 0.0046	< 0.0046	< 0.0046	< 0.0046	< 0.0046	< 0.0019	< 0.0019	< 0.0019
SVE-2	SVE-2-11-12	11 - 12 ft	3/2/2011	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.00048 J**	< 0.022	< 0.0061	**0.0016**	< 0.0024	< 0.0061	< 0.0024	< 0.0024	< 0.0061	< 0.0061	**0.0033**	< 0.0061	< 0.0024	< 0.0061	< 0.0061	< 0.0061	< 0.0061	**0.0044 J**	< 0.0061	< 0.0024	< 0.0024	< 0.0024
SVE-17	SVE17 (17.5-20)91511	17.5 - 20 ft	9/15/2011	**0.0127**	**0.0054 J**	< 0.0058	< 0.0058	< 0.0058	< 0.0372	< 0.0058	**0.0026**	< 0.0023	< 0.0058	< 0.0023	< 0.0023	< 0.0058	**0.0224**	< 0.0023	**0.0839**	< 0.0023	**0.107**	**0.107**	**0.0636**	**0.0038 J**	**0.0051 J**	< 0.0058	**0.00091 J**	< 0.0023	**0.00091 J**
SVE-18	SVE-18 (17.5-20)091511	17.5 - 20 ft	9/15/2011	**1.74**	**0.37 J**	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 0.12	< 0.46	< 1.2	< 0.46	< 0.46	< 1.2	**0.322 J**	**1.09**	**0.318 J**	< 0.46	**0.516 J**	**0.383 J**	**0.196 J**	< 1.2	**0.0817 J**	< 1.2	**1.91**	**0.197 J**	**2.11**
SVE-19	SVE-19 (15-17.5)091511	15 - 17.5 ft	9/15/2011	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.0326	< 0.0057	**0.0052**	< 0.0023	< 0.0057	< 0.0023	< 0.0023	< 0.0057	< 0.0057	< 0.0023	< 0.0057	< 0.0023	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.0023	< 0.0023	< 0.0023
SVE-20	SVE20 (25-27.5)092211	25 - 27.5 ft	9/22/2011	**0.00081 J**	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0046	< 0.0055	**0.0701**	< 0.0022	< 0.0055	< 0.0022	< 0.0022	< 0.0055	< 0.0055	< 0.0022	**0.00097 J**	< 0.0022	< 0.0055	**0.0015 J**	**0.0016 J**	**0.00088 J**	**0.0026 J**	< 0.0055	< 0.0022	< 0.0022	< 0.0022
SVE-21	SVE-21(30-32)-090811	30 - 32 ft	9/8/2011	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0055	**0.00038 J**	< 0.0022	< 0.0055	< 0.0022	< 0.0022	< 0.0055	< 0.0055	< 0.0022	< 0.0055	< 0.0022	< 0.0055	< 0.0055	< 0.0055	< 0.0055	**0.0024 J**	< 0.0055	< 0.0022	< 0.0022	< 0.0022
SVE-22	SVE-22(30-32)-090811	30 - 32 ft	9/8/2011	< 0.0062	< 0.0062	< 0.0062	< 0.0062	< 0.0062	< 0.0062	< 0.0062	**0.0303**	< 0.0025	< 0.0062	< 0.0025	< 0.0025	< 0.0062	< 0.0062	< 0.0025	< 0.0062	< 0.0025	< 0.0062	< 0.0062	< 0.0062	< 0.0062	**0.0032 J**	< 0.0062	< 0.0025	< 0.0025	< 0.0025
SVE-23	SVE-23(24-26)-090811	24 - 26 ft	9/8/2011	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.0053	**0.0042**	< 0.0021	< 0.0053	< 0.0021	< 0.0021	< 0.0053	< 0.0053	< 0.0021	< 0.0053	< 0.0021	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.0021	< 0.0021	< 0.0021
SVE-24	SVE-24(30-34)-090711	30 - 34 ft	9/7/2011	**0.451 J**	**0.2 J**	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	**55.6**	< 1.2	< 3.1	< 1.2	< 1.2	< 3.1	< 3.1	< 1.2	< 3.1	< 1.2	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	< 3.1	< 1.2	< 1.2	< 1.2
SVE-26	SVE-26(30-32)-090711	30 - 32 ft	9/7/2011	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	**29.3**	< 1	< 2.5	< 1	< 1	< 2.5	< 2.5	< 1	< 2.5	< 1	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 1	< 1	< 1
SVE-27	SVE-27(30-32)-090711	30 - 32 ft	9/7/2011	< 0.0054	< 0.0054	< 0.0054	< 0.0054	< 0.0054	< 0.0054	< 0.0054	**0.222**	< 0.0022	**0.0021 J**	< 0.0022	< 0.0022	< 0.0054	< 0.0054	< 0.0022	< 0.0054	< 0.0022	< 0.0054	< 0.0054	< 0.0054	< 0.0054	**0.0019 J**	< 0.0054	< 0.0022	< 0.0022	< 0.0022
VMP-14	VMP-14(5-5.5)	5 - 5.5	2/22/2017	<0.0043	<0.0043	**0.054 F1**	<0.021 F1	<0.0043	**0.22**	<0.017 F1	**0.0076**	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.021	<0.0043	<0.0043	<0.0086
VMP-14	VMP-14(11.5-12)	11.5 - 12	2/22/2017	<0.0047	<0.0047	**0.0079 J**	<0.024	<0.0047	**0.031**	<0.019	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.024	<0.0047	<0.0047	<0.0094
VMP-14	VMP-14(11.5-12)-DUP	11.5 - 12	2/22/2017	<0.0051	<0.0051	**0.013 J**	<0.025	<0.0051	**0.056**	<0.020	**0.0011 J**	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.025	<0.0051	<0.0051	<0.010
VMP-14	VMP-14(20-21)	20 - 21	2/23/2017	<0.0060	<0.0060	**0.013 J**	<0.030	<0.0060	**0.051**	<0.024	**0.0012 J**	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.030	<0.0060	<0.0060	<0.012
VMP-14	VMP-14(29-30)	29 - 30	2/23/2017	<0.0053	<0.0053	<0.026	<0.026	<0.0053	**0.020 J**	<0.021	**0.0031 J**	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.026	<0.0053	<0.0053	<0.011
VMP-15	VMP15-25.5-073114(24-28')	24 - 28 ft	7/31/2014	< 0.0055	< 0.0055	< 0.011	< 0.011	< 0.0055	< 0.011	< 0.028	**0.004**	< 0.0022	**0.00079 J**	< 0.0022	< 0.0022	< 0.0055	< 0.0055	< 0.0022	< 0.0055	< 0.0022	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0022	< 0.0022	< 0.0022
VMP-15	VMP15-29-073014(28-30')	28 - 30 ft	7/30/2014	< 0.0053	< 0.0053	< 0.011	< 0.011	< 0.0053	< 0.011	< 0.027	**0.0072**	< 0.0021	**0.0015 J**	< 0.0021	< 0.0021	< 0.0053	< 0.0053	< 0.0021	< 0.0053	< 0.0021	< 0.0053	< 0.0053	< 0.0053	< 0.0053	**0.00056 J**	< 0.0053	< 0.0021	< 0.0021	< 0.0021
VMP-15	VMP15-29-073014(28-30')DUP	28 - 30 ft	7/30/2014	< 0.0054	< 0.0054	< 0.011	< 0.011	< 0.0054	< 0.011	< 0.027	**0.0058**	< 0.0022	**0.0005 J**	< 0.0022	< 0.0022	< 0.0054	< 0.0054	< 0.0022	< 0.0054	< 0.0022	< 0.0054	< 0.0054	< 0.0054	< 0.0054	< 0.0054	< 0.0054	< 0.0022	< 0.0022	< 0.0022
VMP-39	VMP39 (9-10)091211	9 - 10 ft	9/12/2011	**11.1**	**2.74**	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	**3.2**	< 0.89	< 2.2	< 0.89	< 0.89	< 2.2	**1.39 J**	**28.4**	**4.05**	< 0.89	**4.13**	**8.64**	**1.72 J**	< 2.2	< 2.2	< 2.2 UJ	**14.9**	**1.13**	**16**
VMP-39	VMP39 (10-12.5)91511	10 - 12.5 ft	9/15/2011	**54.6**	**8.48**	< 6.3	< 6.3	< 6.3	< 6.3	< 6.3	< 0.63	< 2.5	< 6.3	< 2.5	< 2.5	< 6.3	**3.36 J**	**107**	**12.8**	< 2.5	**8.67**	**27**	**3.68 J**	< 6.3	< 6.3	< 6.3	**37.2**	< 2.5	**37.2**
VMP-39	VMP39 (20-22.5)91511	20 - 22.5 ft	9/15/2011	**1.11**	**0.225 J**	< 0.54	< 0.54	< 0.54	< 0.54	< 0.54	< 0.054	< 0.22	< 0.54	< 0.22	< 0.22	< 0.54	**0.0947 J**	**0.299**	**0.124 J**	< 0.22	**0.182 J**	**0.188 J**	**0.0682 J**	< 0.54	< 0.54	< 0.54	**0.267**	< 0.22	**0.267**
VMP-39	VMP39 (20-22.5)91511-DUP	20 - 22.5 ft	9/15/2011	**3.79**	**0.773**	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.062	< 0.25	< 0.62	< 0.25	< 0.25	< 0.62	**0.274 J**	**1.25**	**0.451 J**	< 0.25	**0.554 J**	**0.665**	**0.203 J**	< 0.62	< 0.62	< 0.62	**1.05**	< 0.25	**1.05**
VMP-39	VMP39 (30-31)91511	30 - 31 ft	9/15/2011	**40.8**	**9.58**	< 3	< 3	< 3	< 3	< 3	< 0.3	< 1.2	< 3	< 1.2	< 1.2	< 3	**2.56 J**	**26.7**	**6.05**	< 1.2	**5.45**	**9**	**2.01 J**	< 3	< 3	< 3	**13.5**	**1.08 J**	**14.5**
VMP-40	VMP40 (10-12.5)092611	10 - 12.5 ft	9/26/2011	**0.322 J**	**0.327 J**	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	**0.246 J**	< 1	< 2.5	< 1	< 1	< 2.5	**0.196 J**	< 1	**0.701 J**	< 1	< 2.5	**0.825 J**	**0.531 J**	< 2.5	< 2.5	< 2.5	< 1	< 1	< 1
VMP-40	VMP40 (10-12.5)092611-DUP	10 - 12.5 ft	9/26/2011	< 1.2	**0.196 J**	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	**0.0708 J**	< 0.48	< 1.2	< 0.48	< 0.48	< 1.2	**0.124 J**	< 0.48	**0.419 J**	< 0.48	**0.332 J**	**0.431 J**	**0.325 J**	< 1.2	< 1.2	< 1.2	< 0.48	< 0.48	< 0.48
VMP-40	VMP40 (20-22.5)092611	20 - 22.5 ft	9/26/2011	**0.0019 J**	< 0.0054	< 0.0054	< 0.0054	< 0.0054	< 0.0054	< 0.0054	**0.0095**	< 0.0022	< 0.0054	< 0.0022	< 0.0022	< 0.0054	< 0.0054	**0.0055**	**0.0029 J**	< 0.0022	**0.0134 J**	**0.0038 J**	**0.0025 J**	< 0.0054	**0.0057**	< 0.0054	**0.0024**	**0.0011 J**	**0.0035**
VMP-40	VMP40 (30-31.5)092611	30 - 31.5 ft	9/26/2011	< 0.0058	< 0.0058	< 0.0058	< 0.0058	< 0.0058	< 0.0058	< 0.0058	**0.0129**	< 0.0023	< 0.0058	< 0.0023	< 0.0023	< 0.0058	< 0.0058	**0.0036**	< 0.0058	< 0.0023	**0.0122**	**0.0018 J**	< 0.0058	< 0.0058	**0.0037 J**	< 0.0058	**0.0016 J**	**0.00065 J**	**0.0023**
VMP-53	VMP-53-15	15 ft	12/13/2012	< 0.0054	< 0.0054	< 0.0054	< 0.0054	< 0.0054	< 0.158 UJ	< 0.027	**0.0014**	< 0.0021	< 0.0054	< 0.0021	< 0.0021	< 0.0054	< 0.0054	**0.0022**	< 0.0054	< 0.0021	< 0.0054	< 0.0054	< 0.0054	< 0.0054	**0.0033 J**	< 0.0054	< 0.0021	< 0.0021	**0.00063 J**
VMP-53	VMP-53-27	27 ft	12/13/2012	< 0.0052	< 0.0052	< 0.0052	< 0.0052	< 0.0052	< 0.0773 UJ	< 0.026	**0.0007**	< 0.0021	< 0.0052	< 0.0021	< 0.0021	< 0.0052	< 0.0052	**0.0018 J**	< 0.0052	< 0.0021	< 0.0052	< 0.0052	< 0.0052	< 0.0052	**0.002 J**	< 0.0052	< 0.0021	< 0.0021	**0.00046 J**
VMP-53	VMP-53-31	31 ft	12/13/2012	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.026	**0.0012**	< 0.002	< 0.0051	< 0.002	< 0.002	< 0.0051	< 0.0051	**0.0019 J**	< 0.0051	< 0.002	< 0.0051	< 0.0051	< 0.0051	< 0.0051	**0.0027 J**	< 0.0051	< 0.002	< 0.002	**0.00071 J**
VMP-54	VMP-54-15	15 ft	12/14/2012	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.029	< 0.00057	< 0.0023	< 0.0057	< 0.0023	< 0.0023	< 0.0057	< 0.0057	< 0.0023	< 0.0057	< 0.0023	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.0023	< 0.0023	< 0.0023
VMP-54	VMP-54-15-DUP	15 ft	12/14/2012	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.028	< 0.00055	< 0.0022	< 0.0055	< 0.0022	< 0.0022	< 0.0055	< 0.0055	< 0.0022	< 0.0055	< 0.0022	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0055	< 0.0022	< 0.0022	< 0.0022
VMP-54	VMP-54-25	25 ft	12/14/2012	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.026	**0.00071**	< 0.0021	< 0.0053	< 0.0021	< 0.0021	< 0.0053	< 0.0053	**0.0013 J**	< 0.0053	< 0.0021	< 0.0053	< 0.0053	< 0.0053	< 0.0053	**0.0021 J**	< 0.0053	< 0.0021	< 0.0021	**0.00055 J**
VMP-54	VMP-54-31	31 ft	12/14/2012	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.027	**0.00074**	< 0.0021	< 0.0053	< 0.0021	< 0.0021	< 0.0053	< 0.0053	**0.0015 J**	< 0.0053	< 0.0021	< 0.0053	< 0.0053	< 0.0053	< 0.0053	**0.0021 J**	< 0.0053	< 0.0021	**0.00029 J**	**0.00083 J**
VMP-55	VMP-55-13	13 ft	12/17/2012	< 0.0052	< 0.0052	< 0.0052	< 0.0052	< 0.0052	< 0.0052 UJ	< 0.026	< 0.00052	< 0.0021	< 0.0052	< 0.0021	< 0.0021	< 0.0052	< 0.0052	< 0.0021	< 0.0052	**0.0272 J**	< 0.0052	< 0.0052	< 0.0052	< 0.0052	< 0.0052	< 0.0052	< 0.0021	< 0.0021	< 0.0021
VMP-55	VMP-55-25	25 ft	12/17/2012	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051 UJ	< 0.026	**0.0035**	< 0.0021	< 0.0051	< 0.0021	< 0.0021	< 0.0051	< 0.0051	< 0.0021	< 0.0051	< 0.0021	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0021	< 0.0021	< 0.0021

NOTES:

1) **Bold** value indicates constituent detected.

2) <### indicates constituent not detected above given reporting limit.

* = Laboratory control sample (LCS) or LCS duplicate outside acceptance limits

I/C = Industrial Commercial

CW = Construction Worker

J = Concentration is estimated.

UJ = Analyte not detected at estimated reporting limit.

E = Concentration exceeded upper equipment calibration limit

F1 = MS and/or MSD recovery outside acceptance limits

MS/MSD = Matrix Spike / Matrix Spike Duplicate

Exceedance of the lowest Industrial/Commercial or Construction Worker exposure pathway screening criteria

Exceedance of soil to groundwater exposure pathway screening criteria

Blank cell indicates analytical data not available.

SEE LAST PAGE OF TABLE FOR NOTES

TABLE 1b
Soil Sampling SVOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	1-Methylnaphthalene (mg/kg)	2-Methylnaphthalene (mg/kg)	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benzo(a)anthracene (mg/kg)	Benzo(a)pyrene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(g,h,i)perylene (mg/kg)	Benzo(k)fluoranthene (mg/kg)	Benzoic Acid (mg/kg)	Chrysene (1,2-Benzphenanthracene) (mg/kg)	Dibenzo(a,h)anthracene (mg/kg)	Dibenzofuran (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno(1,2,3-cd)pyrene (mg/kg)	Naphthalene (mg/kg)	Phenanthrene (mg/kg)	Phenol (mg/kg)	Pyrene (mg/kg)
LOWEST I/C OR GW SCREENING/EXCEEDANCE				--	--	120,000	--	610,000	8	0.8	8	--	78	--	780	0.8	--	82,000	82,000	8	1.8	--	61,000	61,000
SOIL TO GROUNDWATER SCREENING/EXCEEDANCE				--	--	570	--	12,000	2	8	5	--	49	--	160	2	--	4,300	560	14	12	--	100	4,200
GP-1	GP-1-22.5	22.5 ft	9/2/2009																					
GP-1	GP-1-31	31 ft	9/2/2009																					
GP-1	GP-1-31D	31 ft	9/2/2009																					
GP-2	GP-2-17	17 ft	8/31/2009																					
GP-2	GP-2-23.5	23.5 ft	8/31/2009																					
GP-2	GP-2-23.5D	23.5 ft	8/31/2009																					
GP-3	GP-3-17	17 ft	6/9/2010																					
GP-3	GP-3-24	24 ft	6/9/2010																					
GP-4	GP-4-11	11 ft	8/31/2009																					
GP-4	GP-4-22.5	22.5 ft	8/31/2009																					
GP-4	GP-4-33	33 ft	8/31/2009																					
GP-5	GP-5-10	10 ft	6/9/2010																					
GP-5	GP-5-19	19 ft	6/9/2010																					
GP-5	GP-5-27	27 ft	6/9/2010																					
GP-5	GP-5-27D	27 ft	6/9/2010																					
GP-7(II)	GP-7(II)-03	3 ft	5/15/2008																		< 0.01			
GP-7(II)	GP-7(II)-19	19 ft	5/19/2008																		< 0.011			
GP-7(II)	GP-7(II)-19-Dup	19 ft	5/19/2008																		< 0.01			
GP-12(II)	GP-12(II)-04	4 ft	5/15/2008																		< 0.00996			
GP-12(II)	GP-12(II)-17	17 ft	5/22/2008																		< 0.011			
GP-12(II)	GP-12(II)-17-Dup	17 ft	5/22/2008																		< 0.011			
GP-14	GP-14-13	13 ft	12/18/2012																		< 0.0058			
GP-15	GP-15-19	19 ft	12/18/2012																		**0.823 J**			
GP-15	GP-15-29	29 ft	12/18/2012																		< 0.0055			
GP-16	GP-16-23	23 ft	1/3/2013																		< 0.0065			
GP-17	GP-17-15	15 ft	1/7/2013																		**45.3**			
GP-17	GP-17-15-DUP	15 ft	1/7/2013																		**64.5**			
GP-17A	GP-17-12-13	12 - 13 ft	3/15/2011																					
GP-17A	GP-17-23-24	23 - 24 ft	3/15/2011																					
GP-17A	GP-17-39-40	39 - 40 ft	3/15/2011																					
GP-18	GP-18-21	21 ft	1/8/2013																		< 1.8			
GP-18A	GP-18-12-13	12 - 13 ft	3/16/2011																					
GP-18A	GP-18-29.5-30.5	29.5 - 30.5 ft	3/16/2011																					
GP-18A	GP-18-39-40	39 - 40 ft	3/16/2011																					
GP-19A	GP-19-12-13	12 - 13 ft	3/17/2011																					
GP-19A	GP-19-27-28	27 - 28 ft	3/17/2011																					
GP-19A	GP-19-39-40	39 - 40 ft	3/17/2011																					
GWP-29	GWP-29-11	11 ft	3/12/2013	**2.36**	**2.67**	**0.26**	**0.0579 J**	< 0.14	**0.102 J**	**0.0503 J**	**0.0349 J**	**0.0346 J**	**0.0173 J**	< 0.56	**0.128 J**	< 0.14	< 0.11	**0.108 J**	**0.459**	**0.0145 J**	< 1.1	**0.889**	< 0.28	**0.347**
GWP-29	GWP-29-39	39 ft	3/12/2013	**2.67**	**4.22**	**0.121**	**0.0393**	**0.0478**	**0.0055 J**	**0.0029 J**	**0.0032 J**	**0.0024 J**	**0.0018 J**	< 0.51	**0.009 J**	< 0.026	**0.2**	**0.0105 J**	**0.188 J**	**0.0016 J**	**1.19**	**0.412**	< 0.26	**0.0277**
GWP-29	GWP-29-39-DUP	39 ft	3/12/2013	**3.67**	**6.42**	**0.194**	**0.0654**	< 0.025	**0.0064 J**	**0.0038 J**	**0.0036 J**	**0.0024 J**	**0.0018 J**	< 0.5	**0.0095 J**	< 0.025	**0.322**	**0.0132 J**	**0.369 J**	**0.0015 J**	**1.59**	**0.556**	< 0.25	**0.0336**
GWP-30	GWP-30-19	19 ft	3/11/2013	< 0.012	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	**0.0038 J**	**0.0044 J**	**0.015 J**	**0.0046 J**	< 0.6	< 0.03	**0.0056 J**	< 0.12	< 0.03	< 0.03	**0.0081 J**	< 0.011	< 0.03	< 0.3	< 0.03
GWP-30	GWP-30-33	33 ft	3/11/2013	< 0.01	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	**0.0021 J**	**0.0027 J**	**0.0109 J**	**0.0022 J**	< 0.5	< 0.025	**0.0038 J**	< 0.1	< 0.025	< 0.025	**0.0056 J**	< 0.0052	< 0.025	< 0.25	< 0.025
GWP-31	GWP-31-21	21 ft	3/11/2013	< 0.011	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027	**0.0081 J**	**0.0097 J**	**0.0251 J**	**0.0091 J**	< 0.54	< 0.027	**0.0097 J**	< 0.11	< 0.027	< 0.027	**0.0135 J**	< 0.0061	< 0.027	< 0.27	< 0.027
GWP-31	GWP-31-31	31 ft	3/11/2013	< 0.01	< 0.025	< 0.025	< 0.025	< 0.025	**0.0081 J**	**0.0186 J**	**0.0228 J**	**0.036**	**0.0208 J**	< 0.51	**0.0081 J**	**0.0175 J**	< 0.1	< 0.025	< 0.025	**0.0207 J**	< 0.0057	< 0.025	< 0.25	< 0.025
GWP-32	GWP-32-17	17 ft	3/12/2013	**8.52**	**6.86**	**0.315**	< 0.14	< 0.14	< 0.14	**0.0248 J**	< 0.14	**0.0194 J**	< 0.14	< 0.55	**0.172**	< 0.14	< 0.11	< 0.14	**0.805**	< 0.14	< 1	**2.25**	< 0.27	**0.312**
GWP-32	GWP-32-36	36 ft	3/12/2013	**3.03**	**4.49**	**0.213**	< 0.027	**0.288**	**0.0192 J**	**0.0035 J**	< 0.027	**0.0028 J**	< 0.027	< 0.54	**0.0327**	< 0.027	**0.245**	< 0.027	**0.449**	< 0.027	**35.2**	**1.89**	< 0.27	**0.125**
MW-03	B-3-06	6 ft	5/14/2008																		< 0.01			
MW-03	B-3-33	33 ft	5/21/2008																		< 0.0113			
MW-04	B-4-06	6 ft	5/15/2008																		< 0.00958			
MW-04	B-4-35	35 ft	5/22/2008																		< 0.0118			
MW-05	B-5-04.5	4.5 ft	5/15/2008																		< 0.00996			

SEE LAST PAGE OF TABLE FOR NOTES

TABLE 1b
Soil Sampling SVOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	1-Methylnaphthalene (mg/kg)	2-Methylnaphthalene (mg/kg)	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benzo(a)anthracene (mg/kg)	Benzo(a)pyrene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(g,h,i)perylene (mg/kg)	Benzo(k)fluoranthene (mg/kg)	Benzoic Acid (mg/kg)	Chrysene (1,2-Benzphenanthracene) (mg/kg)	Dibenzo(a,h)anthracene (mg/kg)	Dibenzofuran (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno(1,2,3-cd)pyrene (mg/kg)	Naphthalene (mg/kg)	Phenanthrene (mg/kg)	Phenol (mg/kg)	Pyrene (mg/kg)
LOWEST I/C OR GW SCREENING EXCEEDANCE				--	--	120,000	--	610,000	8	0.8	8	--	78	--	780	0.8	--	82,000	82,000	8	1.8	--	61,000	61,000
SOIL TO GROUNDWATER SCREENING/EXCEEDANCE				--	--	570	--	12,000	2	8	5	--	49	--	160	2	--	4,300	560	14	12	--	100	4,200
MW-05	B-5-27	27 ft	5/21/2008																		< 0.0107			
MW-06	B-6-04	4 ft	5/15/2008																		< 0.00782			
MW-06	B-6-23	23 ft	5/19/2008																		< 0.01			
MW-14	P-130(40-42) 102411	40 - 42 ft	10/24/2011																		< 0.0064			
MW-21	MW-21-21	21 ft	12/6/2012																		**0.289 J**			
MW-21	MW-21-31	31 ft	12/6/2012																		< 0.57			
MW-21	MW-21-31-DUP	31 ft	12/6/2012																		**1.25 J**			
MW-21	MW-21-41	41 ft	12/6/2012																		**0.0076 J**			
MW-23	MW23-ROX-011915 (4-6)	4 - 6 ft	1/19/2015	**4.18**	**2.87**	**0.522**	**0.211**	**1.08**	**0.63**	**0.327**	**0.227**	**0.336**	**0.0663**	< 3.5	**1.13**	**0.147**	**0.844**	**0.388**	**2.12**	**0.121**	**0.0081**	**12.7**	< 1.8	**2.72**
MW-23	MW23-ROX-011915 (4-6)-DUP	4 - 6 ft	1/19/2015	**3.46**	**2.14**	**0.476**	**0.186**	**1.07**	**0.7**	**0.381**	**0.241**	**0.374**	**0.0777**	< 3.6	**1.19**	**0.165**	**0.736**	**0.398**	**1.93**	**0.138**	**0.0143**	**12.7**	< 1.8	**2.9**
MW-25	MW25-082814(36'-38')	36 - 38 ft	8/28/2014	< 0.011	< 0.011	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.56	< 0.0056	< 0.0056	< 0.11	< 0.0056	< 0.0056	< 0.0056	< 0.0057	< 0.0056	< 0.28	< 0.0056
MW-26	MW26-082714 (38-40')	38 - 40 ft	8/27/2014	< 0.011	< 0.011	< 0.0054	< 0.0054	< 0.0054	< 0.0054	< 0.0054	< 0.0054	< 0.0054	< 0.0054	< 0.54	< 0.0054	< 0.0054	< 0.11	< 0.0054	< 0.0054	< 0.0054	< 0.0055	< 0.0054	< 0.27	< 0.0054
P-57	P57-20-120814	20 ft	12/8/2014	< 0.1	< 0.1	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.51	< 0.0051	< 0.0051	< 0.1	< 0.0051	< 0.0051	< 0.0051	**0.0017 J**	< 0.0051	< 0.25	< 0.0051
P-57	P57-40-120814	40 ft	12/8/2014	**2.32**	**3.73**	**0.0867**	**0.0247**	**0.0544**	**0.0106**	**0.0025 J**	**0.0074**	**0.002 J**	< 0.0052	< 0.52	**0.0239**	< 0.0052	**0.138**	**0.0127**	**0.159**	< 0.0052	**0.0508**	**0.469**	< 0.26	**0.0436**
P-93C	P93C-40-120414	40 ft	12/4/2014	< 0.11	< 0.11	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.53	< 0.0053	< 0.0053	< 0.11	< 0.0053	< 0.0053	< 0.0053	< 0.0058	< 0.0053	< 0.27	< 0.0053
P-114R	P114-5-6-091415	5 - 6 ft	9/14/2015	**0.0754 J**	< 0.14	**0.0278**	**0.0058 J**	**0.0118**	**0.0109**	**0.0051 J**	**0.005 J**	**0.0038 J**	< 0.0069	< 0.69	**0.0301**	< 0.0069	< 0.14	**0.0066 J**	**0.0358**	< 0.0069	< 0.0069	**0.0117**	< 0.35	**0.0335**
P-114R	P114-5-6-091415-DUP	5 - 6 ft	9/14/2015	**0.0807 J**	< 0.14	**0.0256**	**0.0066 J**	**0.0101**	**0.0101**	**0.0055 J**	**0.005 J**	**0.0038 J**	< 0.0068	< 0.68	**0.0262**	< 0.0068	< 0.14	**0.0067 J**	**0.0294**	< 0.0068	< 0.0067	**0.0065 J**	< 0.34	**0.0279**
P-114R	P114-20-22-091515	20 - 22 ft	9/15/2015	< 0.1	< 0.1	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.5	< 0.005	< 0.005	< 0.1	< 0.005	< 0.005	< 0.005	< 0.0046	< 0.005	< 0.25	< 0.005
SVE-2	SVE-2-11-12	11 - 12 ft	3/2/2011																					
SVE-17	SVE17 (17.5-20)91511	17.5 - 20 ft	9/15/2011																		**0.231**			
SVE-18	SVE-18 (17.5-20)091511	17.5 - 20 ft	9/15/2011																		**3.91**			
SVE-19	SVE-19 (15-17.5)091511	15 - 17.5 ft	9/15/2011																		< 0.0057			
SVE-20	SVE20 (25-27.5)092211	25 - 27.5 ft	9/22/2011																		< 0.0055			
SVE-21	SVE-21(30-32)-090811	30 - 32 ft	9/8/2011																		< 0.0055			
SVE-22	SVE-22(30-32)-090811	30 - 32 ft	9/8/2011																		< 0.0062			
SVE-23	SVE-23(24-26)-090811	24 - 26 ft	9/8/2011																		< 0.0053			
SVE-24	SVE-24(30-34)-090711	30 - 34 ft	9/7/2011																		< 3.1			
SVE-26	SVE-26(30-32)-090711	30 - 32 ft	9/7/2011																		< 2.5			
SVE-27	SVE-27(30-32)-090711	30 - 32 ft	9/7/2011																		< 0.0054			
VMP-14	VMP-14(5-5.5)	5 - 5.5	2/22/2017	<0.076	<0.076	<0.076	<0.076 *	<0.076	<0.076	<0.076	<0.076	<0.076	<0.076	**0.44 J**	<0.076	<0.076	<0.38	<0.076	<0.076	<0.076	<0.076	<0.076	<0.38	<0.076
VMP-14	VMP-14(11.5-12)	11.5 - 12	2/22/2017	<0.072	<0.072	<0.072	<0.072 *	<0.072	**0.049 J**	<0.072	<0.072	<0.072	<0.072	<1.1	**0.069 J**	<0.072	<0.37	<0.072	<0.072	<0.072	<0.072	<0.072	<0.37	**0.047 J**
VMP-14	VMP-14(11.5-12)-DUP	11.5 - 12	2/22/2017	<0.076	<0.076	<0.076	<0.076 *	<0.076	<0.076	<0.076	<0.076	<0.076	<0.076	<1.2	<0.076	<0.076	<0.39	<0.076	<0.076	<0.076	<0.076	<0.076	<0.39	<0.076
VMP-14	VMP-14(20-21)	20 - 21	2/23/2017	<0.079	<0.079	<0.079	<0.079 *	<0.079	<0.079	<0.079	<0.079	<0.079	<0.079	<1.2	<0.079	<0.079	<0.40	<0.079	<0.079	<0.079	<0.079	<0.079	<0.40	<0.079
VMP-14	VMP-14(29-30)	29 - 30	2/23/2017	<0.014	<0.014	<0.014	<0.014 *	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<1.0	<0.014	<0.014	<0.35	<0.014	<0.014	<0.014	<0.014	<0.014	<0.35	<0.014
VMP-15	VMP15-25.5-073114(24-28')	24 - 28 ft	7/31/2014	< 0.011	< 0.011	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.0056	**0.0018 J**	< 0.0056	< 0.56	< 0.0056	< 0.0056	< 0.11	< 0.0056	< 0.0056	< 0.0056	< 0.0055	**0.0015 J**	< 0.28	< 0.0056
VMP-15	VMP15-29-073014(28-30')	28 - 30 ft	7/30/2014	< 0.01	< 0.01	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.52	< 0.0051	< 0.0051	< 0.1	< 0.0051	< 0.0051	**0.0014 J**	< 0.0053	< 0.0051	< 0.26	< 0.0051
VMP-15	VMP15-29-073014(28-30')DUP	28 - 30 ft	7/30/2014	< 0.01	< 0.01	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.51	< 0.0051	< 0.0051	< 0.1	< 0.0051	< 0.0051	< 0.0051	< 0.0054	< 0.0051	< 0.26	< 0.0051
VMP-39	VMP39 (9-10)091211	9 - 10 ft	9/12/2011																		**4.15**			
VMP-39	VMP39 (10-12.5)91511	10 - 12.5 ft	9/15/2011																		**17.8**			
VMP-39	VMP39 (20-22.5)91511	20 - 22.5 ft	9/15/2011																		**0.544**			
VMP-39	VMP39 (20-22.5)91511-DUP	20 - 22.5 ft	9/15/2011																		**1.14**			
VMP-39	VMP39 (30-31)91511	30 - 31 ft	9/15/2011																		**10.9**			
VMP-40	VMP40 (10-12.5)092611	10 - 12.5 ft	9/26/2011																		< 2.5			
VMP-40	VMP40 (10-12.5)092611-DUP	10 - 12.5 ft	9/26/2011																		< 1.2			
VMP-40	VMP40 (20-22.5)092611	20 - 22.5 ft	9/26/2011																		**0.0351**			
VMP-40	VMP40 (30-31.5)092611	30 - 31.5 ft	9/26/2011																		**0.0216**			
VMP-50	VMP-50-13	13 ft	12/11/2012																		< 0.0091			
VMP-50	VMP-50-21	21 ft	12/11/2012																		**15.4 J**			
VMP-50	VMP-50-21-DUP	21 ft	12/11/2012																		**15 J**			
VMP-50	VMP-50-29	29 ft	12/11/2012																		**0.0501**			

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TABLE 1b
Soil Sampling SVOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	1-Methylnaphthalene (mg/kg)	2-Methylnaphthalene (mg/kg)	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benzo(a)anthracene (mg/kg)	Benzo(a)pyrene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(g,h,i)perylene (mg/kg)	Benzo(k)fluoranthene (mg/kg)	Benzoic Acid (mg/kg)	Chrysene (1,2-Benzphenanthracene) (mg/kg)	Dibenzo(a,h)anthracene (mg/kg)	Dibenzofuran (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno(1,2,3-cd)pyrene (mg/kg)	Naphthalene (mg/kg)	Phenanthrene (mg/kg)	Phenol (mg/kg)	Pyrene (mg/kg)
LOWEST I/C OR CW SCREENING/EXCEEDANCE				--	--	120,000	--	610,000	8	0.8	8	--	78	--	780	0.8	--	82,000	82,000	8	1.8	--	61,000	61,000
SOIL TO GROUNDWATER SCREENING/EXCEEDANCE				--	--	570	--	12,000	2	8	5	--	49	--	160	2	--	4,300	560	14	12	--	100	4,200
VMP-53	VMP-53-15	15 ft	12/13/2012																		< 0.0054			
VMP-53	VMP-53-27	27 ft	12/13/2012																		< 0.0052			
VMP-53	VMP-53-31	31 ft	12/13/2012																		< 0.0051			
VMP-54	VMP-54-15	15 ft	12/14/2012																		< 0.0057			
VMP-54	VMP-54-15-DUP	15 ft	12/14/2012																		< 0.0055			
VMP-54	VMP-54-25	25 ft	12/14/2012																		< 0.0053			
VMP-54	VMP-54-31	31 ft	12/14/2012																		< 0.0053			
VMP-55	VMP-55-13	13 ft	12/17/2012																		< 0.0052			
VMP-55	VMP-55-25	25 ft	12/17/2012																		< 0.0051			

NOTES:

1) **Bold** value indicates constituent detected.

2) <### indicates constituent not detected above given reporting limit.

I/C = Industrial Commercial

CW = Construction Worker

J = Concentration is estimated.

F1 = MS and/or MSD recovery outside acceptance limits

MS/MSD = Matrix Spike / Matrix Spike Duplicate

* = Laboratory control sample (LCS) or LCS duplicate (LCSD) outside acceptance limits

	Exceedance of the lowest Industrial/Commercial or Construction Worker exposure pathway screening criteria
	Exceedance of soil to groundwater exposure pathway screening criteria
	Blank cell indicates analytical data not available.

SEE LAST PAGE OF TABLE FOR NOTES

Table 2a
Groundwater Sampling VOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	1,2,4-Trimethylbenzene (mg/L)	1,3,5-Trimethylbenzene (mg/L)	1,3-Dichloropropane (mg/L)	1,4-Dioxane (mg/L)	2-Butanone (mg/L)	Acetone (mg/L)	Benzene (mg/L)	Chlorobenzene (mg/L)	Cymene (p-Isopropyltoluene) (mg/L)	Ethylbenzene (mg/L)	Isopropylbenzene (Cumene) (mg/L)	Methyl tert-Butyl Ether (MTBE) (mg/L)	Naphthalene (mg/L)	n-Butylbenzene (mg/L)	n-Propylbenzene (mg/L)	sec-Butylbenzene (mg/L)	tert-Butylbenzene (mg/L)	Toluene (mg/L)	Trichloroethene (mg/L)	m,p-Xylenes (mg/L)	o-Xylenes (mg/L)	Xylenes (total) (mg/L)
CLASS 1 SCREENING CRITERIA (mg/L)							0.0077	4.2	6.3	0.005	0.1		0.7	0.7	0.07	0.14					1	0.005	10		10
GP-1	GP-1-34	34 ft	9/2/2009	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	
GP-1	GP-1-42	42 ft	9/2/2009	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.00192 J**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	
GP-3	GP-3-29.5	29.5 ft	6/9/2010	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	**0.00371 J**	< 0.005	< 0.005	< 0.005	**0.0918**	< 0.005	< 0.01	**0.00129 J**	**0.0891**	**0.0114**	**0.00107 J**	< 0.005	< 0.005	< 0.01	< 0.005	
GP-3	GP-3-29.5D	29.5 ft	6/9/2010	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	**0.00369 J**	< 0.005	< 0.005	< 0.005	**0.0916**	< 0.005	< 0.01	**0.00127 J**	**0.0886**	**0.0108**	**0.00113 J**	< 0.005	< 0.005	< 0.01	< 0.005	
GP-3	GP-3-37.5	37.5 ft	6/9/2010	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	
GP-4	GP-4-34	34 ft	9/1/2009	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	**0.0635**	< 0.005	< 0.005	< 0.005	**0.0166**	**0.00875**	< 0.005	< 0.005	**0.0061**	**0.00387 J**	**0.00838**	**0.00492 J**	< 0.005	**0.00649 J**	**0.00253 J**	
GP-4	GP-4-34D	34 ft	9/1/2009	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	**0.0669**	< 0.005	< 0.005	< 0.005	**0.0163**	**0.00928**	**0.001 J**	< 0.005	**0.00591**	**0.00386 J**	**0.00822**	**0.00512**	< 0.005	**0.00622 J**	**0.00241 J**	
GP-4	GP-4-42	42 ft	9/1/2009	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.00125 J**	**0.00176 J**	< 0.005	< 0.005	< 0.01	< 0.005	
GP-5	GP-5-31.5	31.5 ft	6/9/2010	**0.00115 J**	< 0.005	< 0.005		< 0.05	< 0.1	**0.0554**	< 0.005	< 0.005	< 0.005	**0.0256**	< 0.005	< 0.01	**0.00513**	**0.0381**	**0.00675**	**0.00426 J**	**0.00249 J**	< 0.005	**0.0145**	**0.00355 J**	
GP-5	GP-5-39.5	39.5 ft	6/9/2010	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	**0.00958**	< 0.005	< 0.005	< 0.005	**0.00323 J**	**0.00175 J**	< 0.01	**0.00346 J**	**0.00652**	**0.00966**	**0.0035 J**	< 0.005	< 0.005	< 0.01	< 0.005	
GP-9	GP-9-PZ-093010		9/30/2010	**0.722**	**0.196**	< 0.05		< 0.5	< 1.02	**10.2 D**	< 0.05	**0.0103 J**	**1.79**	**0.0656**	< 0.05		< 0.05	**0.109**	< 0.05	< 0.05	**1.28**	< 0.05	**4.77 D**	**2.35 D**	
GWP-21	GWP-21-34	34 ft	9/3/2009	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.00184 J**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	
GWP-21	GWP-21-42	42 ft	9/3/2009	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.0054**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	
GWP-21	GWP-21-42D	42 ft	9/3/2009	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.00537**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	
GWP-22	GWP-22-112	112 ft	9/29/2010	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.00152 J**	< 0.009	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	
GWP-22	GWP-22-61	61 ft	9/30/2010	< 0.005	< 0.005	< 0.005		< 0.05	< 0.0313	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.00338 J**	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	
GWP-22	GWP-22-81	81 ft	9/29/2010	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.00109 J**	**0.004 J**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	
GWP-23	GWP-23-37.5-Dup	37.5 ft	9/30/2010	< 0.005	< 0.005	< 0.005		< 0.05	< 0.0986	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	
GWP-23	GWP-23-37.5	37.5 ft	9/30/2010	< 0.005	< 0.005	< 0.005		< 0.05	< 0.102	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.003 J**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	
GWP-23	GWP-23-45.5	45.5 ft	10/1/2010	< 0.005	< 0.005	< 0.005		< 0.05	**0.0278 J**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	
GWP-24	GWP-24-44	44 ft	10/4/2010	**0.333**	< 0.05	< 0.05		< 0.5	**2.66**	**1.99 D**	< 0.05	**0.025 J**	< 0.05	**0.0629**	**0.0102 J**	< 0.833	**0.0521**	**0.131**	**0.0399 J**	< 0.05	< 0.05	< 0.05	< 0.1	< 0.05	
GWP-24	GWP-24-52	52 ft	10/4/2010	**0.732**	< 0.05	< 0.05		< 0.5	**1.82**	**2 D**	< 0.05	**0.0304 J**	**0.0486 J**	**0.0764**	< 0.05	**0.621 J J**	**0.0604**	**0.145**	**0.039 J**	< 0.05	< 0.05	< 0.05	**0.142**	< 0.05	
GWP-27	GWP-27-28.5	28.5 ft	10/29/2010	< 0.005	< 0.005	< 0.005		< 0.05	< 0.256	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00392 J	< 0.011	< 0.005	< 0.005	< 0.005	< 0.005	**0.00105 J**	< 0.005	< 0.01	< 0.005	
GWP-27	GWP-27-36.5	36.5 ft	10/29/2010	< 0.005	< 0.005	< 0.005		< 0.05	< 0.0371	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	
GWP-28	GWP-28-40-ROX-100912	40 ft	10/9/2012	< 0.005	< 0.005	< 0.005	< 0.025	< 0.005	< 0.005 UJ	< 0.0005	< 0.001	< 0.005	< 0.001	< 0.005	**0.0061**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
GWP-28	GWP-28-60-ROX-100912	60 ft	10/9/2012	< 0.005	< 0.005	< 0.005	< 0.025	< 0.005	< 0.005 UJ	< 0.0005	< 0.001	< 0.005	< 0.001	< 0.005	**0.0032**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
GWP-28	DUP	60 ft	10/9/2012	< 0.005	< 0.005	< 0.005	< 0.025	< 0.005	< 0.005 UJ	< 0.0005	< 0.001	< 0.005	< 0.001	< 0.005	**0.0032**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
GWP-28	GWP-28-80-ROX-101012	80 ft	10/10/2012	< 0.005	< 0.005	< 0.005	< 0.025	< 0.005	< 0.005 UJ	< 0.0005	< 0.001	< 0.005	< 0.001	< 0.005	**0.0012**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
GWP-29	GWP-29-42.5-031313	42.5 ft	3/13/2013	**0.683**	**0.0566 J**	< 0.5	< 2.5	< 0.5 UJ	< 0.5 UJ	**19.1**	< 0.1	< 0.5	**0.93**	**0.0994 J**	**1.63**	**1.27**	< 0.5	**0.149 J**	< 0.5	**0.119 J**	< 0.1	< 0.1	**1.98**	< 0.1	**1.98**
GWP-29	GWP-29-50.5-031313	50.5 ft	3/13/2013	**0.893**	**0.193 J**	**0.142 J**	< 2.5	< 0.5 UJ	< 0.5 UJ	**22.6**	< 0.1	< 0.5	**1.44**	**0.0938 J**	**1.35**	**1.25**	< 0.5	**0.147 J**	< 0.5	< 0.5	**10.9**	< 0.1	**3.7**	**1.23**	**4.92**
GWP-30	GWP-30-37.5-031213	37.5 ft	3/12/2013	< 0.005	< 0.005	< 0.005	< 0.025	< 0.005	< 0.005	< 0.0005	**0.0032**	< 0.005	< 0.001	< 0.005	< 0.001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
GWP-30	GWP-30-37.5-031213-DUP	37.5 ft	3/12/2013	< 0.005	< 0.005	< 0.005	< 0.025	< 0.005	< 0.005	< 0.0005	**0.0034**	< 0.005	< 0.001	< 0.005	< 0.001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
GWP-30	GWP-30-45.5-031213	45.5 ft	3/12/2013	< 0.005	< 0.005	< 0.005	< 0.025	< 0.005	< 0.005	< 0.0005	< 0.00091	< 0.005	< 0.001	< 0.005	< 0.001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
GWP-31	GWP-31-39.5-031213	39.5 ft	3/12/2013	< 0.005	< 0.005	< 0.005	< 0.025	< 0.005	< 0.005	< 0.0005	< 0.001	< 0.005	< 0.001	< 0.005	< 0.001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
GWP-31	GWP-31-45.5-031213	45.5 ft	3/12/2013	< 0.005	< 0.005	< 0.005	< 0.025	< 0.005	< 0.005	< 0.0005	< 0.001	< 0.005	< 0.001	< 0.005	< 0.001	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
GWP-32	GWP-32-40.5-031313	40.5 ft	3/13/2013	**1.15**	**0.21**	< 0.05	< 0.25	< 0.05 UJ	< 0.05 UJ	**0.581**	< 0.01	**0.0403 J**	**0.779**	**0.142**	< 0.01	**0.252**	**0.0407 J**	**0.26**	**0.0654**	< 0.05	**0.0299**	< 0.01	**0.492**	**0.23**	**0.721**
GWP-32	GWP-32-48.5-031313	48.5 ft	3/13/2013	**0.985**	**0.206**	< 0.05	< 0.25	< 0.05 UJ	< 0.05 UJ	**1.58**	< 0.01	**0.0281 J**	**0.788**	**0.108**	< 0.01	**0.436**	< 0.05	**0.195**	**0.036 J**	< 0.05	**0.191**	< 0.01	**1.07**	**0.384**	**1.45**
MW-03	MW3-ROX-010716		1/7/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.008**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-03	MW3-ROX-040616		4/6/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	**0.0031**	**0.014**	**0.0097**	< 0.001	< 0.001	< 0.001	**0.025**	< 0.001	**0.0007 J**	**0.039**	< 0.001	**0.1**	**0.006**	**0.11**
MW-03	MW3-ROX-070816		7/8/2016	< 0.001	**0.00062 J**	< 0.001	< 0.01	**0.0047 J**	**0.03**	**0.00042 J**	< 0.001	< 0.001	**0.0012**	**0.016**	**0.0054**	< 0.001	< 0.001	**0.034**	**0.00092 J**	**0.0011**	**0.014**	< 0.001	**0.076**	**0.0042 J**	**0.08**
MW-03	MW3-ROX100716		10/7/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	**0.0042**	**0.0036**	< 0.001	< 0.001	**0.0085**	< 0.001	< 0.001	**0.0025**	< 0.001	**0.0089**	**0.001 J**	**0.01**
MW-03	MW3-ROX-010617		1/6/2017	< 0.001	**0.00072 J**	< 0.001	< 0.0093	< 0.025	**0.015 J**	**0.0011**	< 0.001	< 0.001	**0.0035**	**0.019**	**0.0051**	< 0.001	**0.00078 J**	**0.045**	**0.0016**	**0.0013**	**0.039**	< 0.001	**0.12**	**0.0081**	**0.12**
MW-04	MW4-ROX-011316		1/13/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	**0.12**	< 0.001	< 0.001	**0.00066 J**	**0.0017**	**0.012**	< 0.001	< 0.001	**0.0021**	< 0.001	< 0.001	**0.0011**	< 0.001	**0.0047 J**	**0.0011 J**	**0.0058**
MW-04	MW4-ROX-041916		4/19/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	**0.0012**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	**0.00092 J**
MW-04	MW4-ROX-071416		7/14/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	**0.0008 J**	< 0.001	< 0.001	< 0.001	**0.00053 J**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	**0.0016 J**
MW-04	MW4-ROX-100616		10/6/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	**0.0011**	**0.0073**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	**0.0019 J**
MW-04	MW4-ROX-010917		1/9/2017	< 0.001	< 0.001	< 0.001	< 0.0097	< 0.025	< 0.025	**0.00039 J**	< 0.001	< 0.001	< 0.001	< 0.001	**0.0045**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-05	MW5-ROX-011416		1/14/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	**0.0017**	**0.01**	< 0.001	< 0.001	< 0.001	< 0.001	**0.0026**	< 0.001	< 0.001	< 0.005	< 0.005	**0.0018 J**
MW-05	MW5-ROX-040616		4/6/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	**0.0019**	**0.007**	< 0.001	< 0.001	< 0.001	< 0.001	**0.0016**	< 0.001	< 0.001	**0.0025 J**	< 0.005	**0.003 J**
MW-05	MW5-ROX-070816		7/8/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	**0.011 J**	< 0.001	< 0.001	< 0.001	< 0.001	**0.001**	**0.0084**	< 0.001	< 0.001	< 0.001	< 0.001	**0.003**	< 0.001	< 0.001	**0.0017 J**	< 0.005	**0.0021 J**
MW-05	MW5-ROX-101016		10/10/2016	< 0.001	< 0.001	< 0.001	**0.0015 J**	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	**0.0011**	**0.0079**	< 0.001	< 0.001	< 0.001	**0.00077 J**	**0.0044**	< 0.001	< 0.001	**0.0017 J**	**0.00077 J**	**0.0025 J**

SEE LAST PAGE OF TABLE FOR NOTES

Table 2a
Groundwater Sampling VOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	1,2,4-Trimethylbenzene (mg/L)	1,3,5-Trimethylbenzene (mg/L)	1,3-Dichloropropane (mg/L)	1,4-Dioxane (mg/L)	2-Butanone (mg/L)	Acetone (mg/L)	Benzene (mg/L)	Chlorobenzene (mg/L)	Cymene (p-Isopropyltoluene) (mg/L)	Ethylbenzene (mg/L)	Isopropylbenzene (Cumene) (mg/L)	Methyl tert-Butyl Ether (MTBE) (mg/L)	Naphthalene (mg/L)	n-Butylbenzene (mg/L)	n-Propylbenzene (mg/L)	sec-Butylbenzene (mg/L)	tert-Butylbenzene (mg/L)	Toluene (mg/L)	Trichloroethene (mg/L)	m,p-Xylenes (mg/L)	o-Xylenes (mg/L)	Xylenes (total) (mg/L)
CLASS 1 SCREENING CRITERIA (mg/L)							0.0077	4.2	6.3	0.005	0.1		0.7	0.7	0.07	0.14					1	0.005	10		10
MW-05	MW5-ROX-010617		1/6/2017	< 0.001	< 0.001	< 0.001	< 0.0093	< 0.025	< 0.025	**0.0011**	< 0.001	< 0.001	< 0.001	**0.0074**	**0.0014**	< 0.001	< 0.001	**0.00096 J**	0.0013	**0.0034**	**0.00076 J**	< 0.001	**0.0069**	**0.0016 J**	**0.0085 J**
MW-06	B6-061308		6/13/2008	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.00104 J**	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	
MW-06A	MW6A-ROX-011116		1/11/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0034**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-06A	MW6A-ROX-040716		4/7/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	**0.023 J**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0043**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-06A	MW6A-ROX-071116		7/11/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0036**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-06A	MW6A-ROX-101116		10/11/2016	< 0.001	< 0.001	< 0.001	< 0.01 UJ	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0027**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-06A	MW6A-ROX-011017		1/10/2017	< 0.001	< 0.001	< 0.001	< 0.0093	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0022**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-06B	MW6B-ROX-011116		1/11/2016	< 0.001	< 0.001	< 0.001	< 0.01	**0.005 J**	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0063**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-06B	MW6B-ROX-040716		4/7/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0029**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-06B	MW6B-ROX-071116		7/11/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0019**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-06B	MW6B-ROX-101116		10/11/2016	< 0.001	< 0.001	< 0.001	< 0.01 UJ	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-06B	MW6B-ROX-011017		1/10/2017	< 0.001	< 0.001	< 0.001	< 0.0093	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-06C	MW6C-ROX-010816		1/8/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-06C	MW6C-ROX-040716		4/7/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-06C	MW6C-ROX-071116		7/11/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-06C	MW6C-ROX-101016		10/10/2016	< 0.001	< 0.001	< 0.001	< 0.0095 UJ	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-06C	MW6C-ROX-011017		1/10/2017	< 0.001	< 0.001	< 0.001	< 0.0093	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-06D	MW6D-ROX-010816		1/8/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-06D	MW6D-ROX-010816-DUP		1/8/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-06D	MW6D-ROX-040716		4/7/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-06D	MW6D-ROX-040716-DUP		4/7/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-06D	MW6D-ROX-071116		7/11/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-06D	MW6D-ROX-071116-DUP		7/11/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-06D	MW6D-ROX-101016		10/10/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	**0.0041**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-06D	MW6D-ROX-101016-DUP		10/10/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	**0.0044**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-06D	MW6D-ROX-011017		1/10/2017	< 0.001	< 0.001	< 0.001	< 0.0093	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-06D	MW6D-ROX-011017-DUP		1/10/2017	< 0.001	< 0.001	< 0.001	< 0.0093	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-07	MW7-ROX-011416		1/14/2016	< 5	< 5	< 5	< 0.01	< 130	< 130	**740**	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 25	< 25	< 25
MW-07	MW7-ROX-011416-DUP		1/14/2016	< 5	< 5	< 5	< 0.01	< 130	< 130	**700**	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 25	< 25	< 25
MW-07	MW7-ROX-041916		4/19/2016	< 2	< 2	< 2	< 0.01	< 50	< 50	**1100**	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	< 10	< 10
MW-07	MW7-ROX-041916-DUP		4/19/2016	< 2	< 2	< 2	< 0.01	< 50	< 50	**1100**	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	< 10	< 10
MW-07	MW7-ROX-071416		7/14/2016	< 5	< 5	< 5	< 0.01	< 130	< 130	**670**	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 25	< 25	< 50
MW-07	MW7-ROX-071416-DUP		7/14/2016	< 5	< 5	< 5	< 0.01	< 130	< 130	**680**	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 25	< 25	< 50
MW-07	MW7-ROX-100616		10/6/2016	< 10	< 10	< 10	< 0.01	< 250	< 250	**910**	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 50	< 50	< 100
MW-07	MW7-ROX-100616-DUP		10/6/2016	< 10	< 10	< 10	< 0.01	< 250	< 250	**840**	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 50	< 50	< 100
MW-07	MW7-ROX-010917		1/9/2017	< 5	< 5	< 5	< 0.01	< 130	< 130	**950**	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 25	< 25	< 50
MW-08	MW8-ROX-011416		1/14/2016	< 2	< 2	< 2	< 0.01	< 50	< 50	**300**	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	< 10	< 10
MW-08	MW8-ROX-041916		4/19/2016	< 1	< 1	< 1	< 0.01	< 25	< 25	**480**	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 5	< 5	< 5
MW-08	MW8-ROX-071416		7/14/2016	< 2	< 2	< 2	< 0.01	< 50	< 50	**310**	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	< 10	< 20
MW-08	MW8-ROX-100616		10/6/2016	< 5	< 5	< 5	< 0.01	< 130	< 130	**630**	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 25	< 25	< 50
MW-08	MW8-ROX-010917		1/9/2017	< 2.5	< 2.5	< 2.5	< 0.0098	< 63	< 63	**410**	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 13	< 13	< 25
MW-13	MW13-ROX-010716		1/7/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	**0.019 J**	< 0.001	< 0.001	< 0.001	**0.0021**	**0.008**	**0.013**	< 0.001	< 0.001	**0.011**	< 0.001	< 0.001	**0.033**	< 0.001	**0.059**	**0.0038 J**	**0.063**
MW-13	MW13-ROX-040816		4/8/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0055**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-13	MW13-ROX-071116		7/11/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0064**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-13	MW13-ROX100716		10/7/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0076**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-13	MW13-ROX-010617		1/6/2017	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0067**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-14	MW-14-ROX-010816		1/8/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-14	MW14-ROX-041416		4/14/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	**0.001 J**
MW-14	MW14-ROX-071116		7/11/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-14	MW14-ROX-101416		10/14/2016	< 0.001	< 0.001	< 0.001	< 0.0095 UJ	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-14	MW14-ROX-011117		1/11/2017	< 0.001	< 0.001	< 0.001	< 0.0098	< 0.025	< 0.025	**0.0019**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01

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Table 2a
Groundwater Sampling VOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	1,2,4-Trimethylbenzene (mg/L)	1,3,5-Trimethylbenzene (mg/L)	1,3-Dichloropropane (mg/L)	1,4-Dioxane (mg/L)	2-Butanone (mg/L)	Acetone (mg/L)	Benzene (mg/L)	Chlorobenzene (mg/L)	Cymene (p-Isopropyltoluene) (mg/L)	Ethylbenzene (mg/L)	Isopropylbenzene (Cumene) (mg/L)	Methyl tert-Butyl Ether (MTBE) (mg/L)	Naphthalene (mg/L)	n-Butylbenzene (mg/L)	n-Propylbenzene (mg/L)	sec-Butylbenzene (mg/L)	tert-Butylbenzene (mg/L)	Toluene (mg/L)	Trichloroethene (mg/L)	m,p-Xylenes (mg/L)	o-Xylenes (mg/L)	Xylenes (total) (mg/L)
CLASS 1 SCREENING CRITERIA (mg/L)							0.0077	4.2	6.3	0.005	0.1		0.7	0.7	0.07	0.14					1	0.005	10		10
MW-21	MW21-ROX-040513		4/5/2013	**0.302**	**0.0939**	< 0.005	< 0.025	< 0.005	< 0.005 UJ	**368**	< 0.001	**0.0186**	**0.519 J**	**0.0834**	< 0.001	**0.175 J**	**0.0309**	**0.124**	**0.0246**	**0.0143**	**0.015**	< 0.001	**0.204**	**0.0034**	**0.207**
MW-21	MW21-ROX-040513-DUP		4/5/2013	**0.287**	**0.0903**	< 0.005	< 0.025	< 0.005	< 0.005 UJ	**364**	< 0.001	**0.0182**	**0.399**	**0.0812**	< 0.001	**0.132 J**	**0.0298**	**0.118**	**0.0239**	**0.0142**	**0.0144**	< 0.001	**0.196**	**0.0029**	**0.199**
MW-23	MW23-ROX-012615		1/26/2015	< 0.002	< 0.002	< 0.001	< 0.2	< 0.005	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0037**	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.001	< 0.003
MW-23	MW23-ROX-040815		4/8/2015	< 0.005	< 0.005	< 0.005	< 0.025	< 0.005	< 0.01	< 0.0005	< 0.001	< 0.005	< 0.001	< 0.005	**0.0039**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001
MW-23	MW23-ROX-071015-BP		7/10/2015	< 0.005	< 0.005	< 0.005	< 0.025	< 0.005	< 0.01	< 0.0005	< 0.001	< 0.005	< 0.001	< 0.005	< 0.001	**0.004 J**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.001	< 0.001	**0.00062 J**	< 0.001	**0.00062 J**
MW-23	MW-23-ROX-010716		1/7/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	**0.014 J**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-23	MW-23-ROX-040616		4/6/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-23	MW-23-ROX-070816		7/8/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-23	MW23-ROX-BP-100716		10/7/2016	< 0.001	< 0.001	< 0.001	< 0.0098	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.001**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-23	MW23-ROX-011017		1/10/2017	< 0.001	< 0.001	< 0.001	< 0.0096	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-25	MW25-ROX-011416		1/14/2016	< 0.02	< 0.02	< 0.02	< 0.01	< 0.5	< 0.5	**2.2**	< 0.02	< 0.02	< 0.02	< 0.02	**0.042**	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.1	< 0.1	< 0.1
MW-25	MW25-ROX-041916		4/19/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	**0.99**	< 0.001	< 0.001	< 0.001	< 0.001	**0.049**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	**0.00085 J**
MW-25	MW25-ROX-071816		7/18/2016	< 0.01	< 0.01	< 0.01	< 0.01 UJ	< 0.25	< 0.25	**1.2**	< 0.01	< 0.01	< 0.01	< 0.01	**0.025**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.05	< 0.1
MW-25	MW25-ROX-100616		10/6/2016	< 0.002	< 0.002	< 0.002	< 0.01	< 0.05	< 0.05	**0.37**	< 0.002	< 0.002	< 0.002	< 0.002	**0.039**	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.01	< 0.01	< 0.02
MW-25	MW25-ROX-011117		1/11/2017	< 0.001	< 0.001	< 0.001	< 0.0097	< 0.025	< 0.025	**0.28**	< 0.001	< 0.001	< 0.001	**0.00059 J**	**0.025**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-26	MW26-ROX-010716		1/7/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-26	MW26-ROX-040616		4/6/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
MW-26	MW26-ROX-071216		7/12/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-26	MW26-ROX-101016		10/10/2016	< 0.001	< 0.001	< 0.001	< 0.01 UJ	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
MW-26	MW26-ROX-010617		1/6/2017	< 0.001	< 0.001	< 0.001	< 0.0093	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
P-114	P114R-ROX-010716		1/7/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	**0.0004 J**	< 0.001	< 0.001	< 0.001	< 0.001	**0.00091 J**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
P-114	P114R-ROX-040816		4/8/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.00084 J**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
P-114	P114R-ROX-070816		7/8/2016	< 0.001	< 0.001	< 0.001	< 0.05	< 0.025	**0.017 J**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.00082 J**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
P-114R	P114R-ROX-100716		10/7/2016	< 0.001	< 0.001	< 0.001	< 0.0095	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
P-114R	P114R-ROX-010617		1/6/2017	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	**0.073**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.00098 J**	< 0.005	< 0.005	< 0.01
P-119	P119-100510		10/5/2010	< 0.005	< 0.005	< 0.005		< 0.05	< 0.1	**0.1**	< 0.005	< 0.005	< 0.005	< 0.005	**0.013**		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	
P-119	P119-WRR-041414		4/14/2014				< 0.4	< 0.025		< 0.001	< 0.001		< 0.001		**0.0052**	< 0.001						< 0.001	< 0.001	< 0.01	< 0.005	< 0.01
P-120	P120-WRR-042214		4/22/2014				< 0.4	< 0.025		< 0.001	< 0.001		< 0.001		< 0.001	< 0.001						< 0.001	< 0.001	< 0.01	< 0.005	< 0.01
P-57	P57-ROX-011216		1/12/2016	< 1	< 1	< 1	< 0.01	< 25	< 25	**160**	< 1	< 1	**0.55 J**	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 5	< 5	**0.83 J**
P-57	P57-ROX-041816		4/18/2016	< 0.25	< 0.25	< 0.25	< 0.01 UJ	< 6.3	< 6.3	**73**	< 0.25	< 0.25	**0.2 J**	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 1.3	< 1.3	< 1.3
P-57	P57-ROX-071316		7/13/2016	< 0.5	< 0.5	< 0.5	< 0.01	< 13	< 13	**70**	< 0.5	< 0.5	**0.57**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 2.5	< 5
P-57	P57-ROX-101816		10/18/2016	< 0.5	< 0.5	< 0.5	< 0.01	< 13	< 13	**71**	< 0.5	< 0.5	**0.3 J**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 2.5	< 5
P-57	P57-ROX-011617		1/16/2017	< 0.25	< 0.25	< 0.25	< 0.0098	< 6.3	< 6.3	**39**	< 0.25	< 0.25	**0.24 J**	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 1.3	< 1.3	< 2.5
P-58	P58-ROX-011316		1/13/2016	< 2	< 2	< 2	< 0.01	< 50	< 50	**510**	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	< 10	< 10
P-58	P58-ROX-041816		4/18/2016	< 1	< 1	< 1	< 0.01 UJ	< 25	< 25	**440**	< 1	< 1	**0.62 J**	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 5	< 5	< 5
P-58	P58-ROX-071516		7/15/2016	< 2	< 2	< 2	< 0.01	< 50	< 50	**250**	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	< 10	< 20
P-58	P58-ROX-101816		10/18/2016	< 2	< 2	< 2	< 0.0098	< 50	< 50	**340**	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	< 10	< 20
P-58	P58-ROX-011617		1/16/2017	< 1	< 1	< 1	< 0.0095	< 25	< 25	**260**	< 1	< 1	**0.98 J**	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 5	< 5	< 10
P-66	P-66-ROX-010816		1/8/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	**0.0013**	< 0.001	< 0.001	< 0.001	**0.085**	< 0.001	< 0.001	< 0.001	**0.083**	**0.01**	**0.0019**	**0.0012**	< 0.001	< 0.005	< 0.005	< 0.005
P-66	P66-ROX-041516		4/15/2016	**0.0017**	**0.00056 J**	< 0.001	< 0.01	< 0.025	**0.015 J**	**0.0044**	< 0.001	< 0.001	**0.0048**	**0.068**	< 0.001	**0.017**	**0.0052**	**0.075**	**0.0088**	**0.0026**	**0.00086 J**	< 0.001	**0.002 J**	**0.00077 J**	**0.0027 J**
P-66	P66-ROX-071116		7/11/2016	**0.006**	**0.00082 J**	< 0.001	< 0.01	< 0.025	< 0.025	**0.0037**	**0.00054 J**	< 0.001	**0.0075**	**0.083**	**0.017**	**0.026**	**0.0071**	**0.1**	**0.012**	**0.0028**	< 0.001	< 0.001	**0.0032 J**	**0.001 J**	**0.0042 J**
P-66	P66-ROX-101416		10/14/2016	**0.024**	**0.0014**	< 0.001	< 0.0095 UJ	**0.0049 J**	< 0.025	**0.0069**	< 0.001	< 0.001	**0.0091**	**0.071**	**0.022**	**0.067**	**0.004**	**0.095**	**0.0076**	**0.0038**	< 0.001	< 0.001	**0.0039 J**	**0.001 J**	**0.0049 J**
P-66	P66-ROX-011117		1/11/2017	**0.024**	**0.0012**	< 0.001	< 0.0097	< 0.025	< 0.025	**0.0058**	< 0.001	< 0.001	**0.0049**	**0.083**	**0.0052**	**0.051**	**0.0057**	**0.12**	**0.01**	**0.004**	**0.00087 J**	< 0.001	**0.0031 J**	**0.0013 J**	**0.0044 J**
P-73	P7303020601		3/2/2006	**0.928**	**0.155**	< 0.001		< 0.05	< 0.05	**22.4**	< 0.001	**0.0131**	**1.74**	**0.088**	**0.04**	**0.25**	< 0.001	**0.149**	**0.0237**	**0.056**	**8.5**	< 0.001			**4.53**
P-73	P73-061008		6/10/2008	**0.596 D**	**0.137**	< 0.005		< 0.05	< 0.1	**4 D**	**0.00312 J**	**0.0124**	**0.89 D**	**0.0497**	< 0.005	**0.145**	**0.0255**	**0.0809**	**0.0199**	**0.0478**	**1.37 D**	< 0.005	**1.76 D**	**0.52 D**	
P-75	P7503030601		3/3/2006	**0.0664**	**0.0146**	< 0.001		< 0.05	< 0.05	**2.78**	< 0.001	< 0.001	**0.0296**	**0.103**	**0.191**	**0.0286**	**0.03**	**0.156**	< 0.02	< 0.02	**0.0169**	< 0.001			**0.0393**
P-75	P75-061008		6/10/2008	< 0.0382	< 0.0108	< 0.01		< 0.1	< 0.2	**3.62 D**	< 0.01	**0.00398 J**	**0.0836**	**0.126**	**0.125**	**0.162**	**0.0268**	**0.0607**	**0.0241**	**0.00496 J**	**0.0464**	< 0.01	< 0.0345	< 0.00674	
P-82A	P82A-WRR-041216		4/12/2016				< 0.01	< 0.025		< 0.001	< 0.001		< 0.001		< 0.001	< 0.001						< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
P-82A	P82A-WRR-100616		10/6/2016							< 0.001			< 0.001			< 0.001						< 0.001		< 0.005	< 0.005	< 0.01
P-82B	P82B-WRR-041516		4/15/2016				< 0.01	< 0.025		< 0.001	< 0.001		< 0.001		< 0.001	< 0.001						< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
P-82B	P82B-WRR-100616		10/6/2016							< 0.001			< 0.001			< 0.001						< 0.001		< 0.005	< 0.005	< 0.01

Table 2a
Groundwater Sampling VOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	1,2,4-Trimethylbenzene (mg/L)	1,3,5-Trimethylbenzene (mg/L)	1,3-Dichloropropane (mg/L)	1,4-Dioxane (mg/L)	2-Butanone (mg/L)	Acetone (mg/L)	Benzene (mg/L)	Chlorobenzene (mg/L)	Cymene (p-Isopropyltoluene) (mg/L)	Ethylbenzene (mg/L)	Isopropylbenzene (Cumene) (mg/L)	Methyl tert-Butyl Ether (MTBE) (mg/L)	Naphthalene (mg/L)	n-Butylbenzene (mg/L)	n-Propylbenzene (mg/L)	sec-Butylbenzene (mg/L)	tert-Butylbenzene (mg/L)	Toluene (mg/L)	Trichloroethene (mg/L)	m,p-Xylenes (mg/L)	o-Xylenes (mg/L)	Xylenes (total) (mg/L)
CLASS 1 SCREENING CRITERIA (mg/L)							0.0077	4.2	6.3	0.005	0.1		0.7	0.7	0.07	0.14					1	0.005	10		10
P-82C	P82C-WRR-041216		4/12/2016				< 0.01	< 0.025		< 0.001	< 0.001		< 0.001		< 0.001	< 0.001					< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
P-82C	P82C-WRR-100616		10/6/2016							< 0.001			< 0.001			< 0.001					< 0.001		< 0.005	< 0.005	< 0.01
P-82D	P82D-WRR-041516		4/15/2016				< 0.01	< 0.025		< 0.001	< 0.001		< 0.001		< 0.001	< 0.001					< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
P-82D	P82D-WRR-100616		10/6/2016							**0.0041**			< 0.001			< 0.001					< 0.001		< 0.005	< 0.005	< 0.01
P-88A	P88A-WRR-041516		4/15/2016				< 0.01	< 0.025		< 0.001	< 0.001		< 0.001		< 0.001	< 0.001					< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
P-88A	P88A-WRR-100716		10/7/2016							< 0.001			< 0.001			< 0.001					< 0.001		< 0.005	< 0.005	< 0.01
P-88B	P88B-WRR-041516		4/15/2016				< 0.01	< 0.025		< 0.001	< 0.001		< 0.001		< 0.001	< 0.001					< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
P-88B	P88B-WRR-101016		10/10/2016							< 0.001			< 0.001			< 0.001					< 0.001		< 0.005	< 0.005	< 0.01
P-88C	P88C-WRR-041516		4/15/2016				< 0.01	< 0.025		< 0.001	< 0.001		< 0.001		< 0.001	< 0.001					< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
P-88C	P88C-WRR-041516-DUP		4/15/2016				< 0.01	< 0.025		< 0.001	< 0.001		< 0.001		< 0.001	< 0.001					< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
P-88C	P88C-WRR-100716		10/7/2016							< 0.001			< 0.001			< 0.001					< 0.001		< 0.005	< 0.005	< 0.01
P-88D	P88D-WRR-041516		4/15/2016				< 0.01	< 0.025		< 0.001	< 0.001		< 0.001		< 0.001	< 0.001					< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
P-88D	P88D-WRR-101016		10/10/2016							< 0.001			< 0.001			< 0.001					< 0.001		< 0.005	< 0.005	< 0.01
P-88D	P88D-WRR-101016-DUP		10/10/2016							< 0.001			< 0.001			< 0.001					< 0.001		< 0.005	< 0.005	< 0.01
P-93A	P-93A-ROX-011216		1/12/2016	< 2	< 2	< 2	< 0.01	< 50	< 50	**430**	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	< 10	< 10
P-93A	P-93A-ROX-011216-DUP		1/12/2016	< 2	< 2	< 2	< 0.01	< 50	< 50	**450**	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 10	< 10	< 10
P-93A	P93A-ROX-041916		4/19/2016	< 0.25	< 0.25	< 0.25	< 0.01	< 6.3	< 6.3	**66**	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 1.3	< 1.3	< 1.3
P-93A	P93A-ROX-041916-DUP		4/19/2016	< 0.25	< 0.25	< 0.25	< 0.01	< 6.3	< 6.3	**70**	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 1.3	< 1.3	< 1.3
P-93A	P93A-WRR-041916		4/19/2016				< 0.01	< 6.3		**74**	< 0.25		< 0.25		< 0.25	< 0.25					< 0.25	< 0.25	< 1.3	< 1.3	< 1.3
P-93A	P93A-WRR-041916-DUP		4/19/2016				< 0.01	< 6.3		**72**	< 0.25		< 0.25		< 0.25	< 0.25					< 0.25	< 0.25	< 1.3	< 1.3	< 1.3
P-93A	P93A-ROX-071316		7/13/2016	< 0.1	< 0.1	< 0.1	< 0.01	< 2.5	< 2.5	**18**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5	< 1
P-93A	P93A-ROX-071316-DUP		7/13/2016	< 0.1	< 0.1	< 0.1	< 0.01	< 2.5	< 2.5	**20**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5	< 1
P-93A	P93A-ROX-101816		10/18/2016	< 0.02	< 0.02	< 0.02	< 0.01	< 0.5	< 0.5	**2.6**	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.1	< 0.1	< 0.2
P-93A	P93A-ROX-101816-DUP		10/18/2016	< 0.02	< 0.02	< 0.02	< 0.01	< 0.5	< 0.5	**3.3**	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.1	< 0.1	< 0.2
P-93A	P93A-WRR-101816		10/18/2016							**2.6**			< 0.02			< 0.02					< 0.02		< 0.1	< 0.1	< 0.2
P-93A	P93A-WRR-101816-DUP		10/18/2016							**3.3**			< 0.02			< 0.02					< 0.02		< 0.1	< 0.1	< 0.2
P-93A	P93A-ROX-011217		1/12/2017	< 0.005	< 0.005	< 0.005	< 0.0098	< 0.13	< 0.13	**0.51**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.025	< 0.025	< 0.05
P-93A	P93A-ROX-011217-DUP		1/12/2017	< 0.005	< 0.005	< 0.005	< 0.011	< 0.13	< 0.13	**0.69**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.025	< 0.025	< 0.05
P-93B	P93B-ROX-011316		1/13/2016	< 1	< 1	< 1	< 0.01	< 25	< 25	**280**	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 5	< 5	< 5
P-93B	P93B-ROX-041916		4/19/2016	< 1	< 1	< 1	< 0.01	< 25	< 25	**240**	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 5	< 5	< 5
P-93B	P93B-WRR-041916		4/19/2016				< 0.01	< 25		**290**	< 1		< 1		< 1	< 1					< 1	< 1	< 5	< 5	< 5
P-93B	P93B-ROX-071516		7/15/2016	< 1	< 1	< 1	< 0.01	< 25	< 25	**100**	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 5	< 5	< 10
P-93B	P93B-ROX-101816		10/18/2016	< 0.5	< 0.5	< 0.5	< 0.01	< 13	< 13	**86**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 2.5	< 5
P-93B	P93B-WRR-101816		10/18/2016							**86**			< 0.5			< 0.5					< 0.5		< 2.5	< 2.5	< 5
P-93B	P93B-ROX-011017		1/10/2017	< 0.5	< 0.5	< 0.5	< 0.01	< 13	< 13	**87**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 2.5	< 5
P-93B	P93B-ROX-011017-DUP		1/10/2017	< 0.5	< 0.5	< 0.5	< 0.0098	< 13	< 13	**88**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 2.5	< 5
P-93C	P-93C-ROX-010816		1/8/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	**0.04**	< 0.001	< 0.001	< 0.001	< 0.001	**0.0021**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
P-93C	P93C-ROX-041816		4/18/2016	**0.0011**	< 0.001	< 0.001	< 0.01 UJ	< 0.025	< 0.025	**0.068**	< 0.001	< 0.001	**0.00085 J**	< 0.001	**0.00099 J**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	**0.00067 J**
P-93C	P93C-WRR-041816		4/18/2016				< 0.01 UJ	< 0.025		**0.068**	< 0.001		**0.00085 J**		**0.00099 J**	< 0.001					< 0.001	< 0.001	< 0.005	< 0.005	**0.00067 J**
P-93C	P93C-ROX-071216		7/12/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	**0.016 J**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0029**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
P-93C	P93C-ROX-101816		10/18/2016	< 0.001	< 0.001	< 0.001	< 0.0095	< 0.025	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.0026**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
P-93C	P93C-WRR-101816		10/18/2016							< 0.001			< 0.001			< 0.001					< 0.001		< 0.005	< 0.005	< 0.01
P-93C	P93C-ROX-011117		1/11/2017	< 0.001	< 0.001	< 0.001	< 0.0098	< 0.025	< 0.025	**0.00095 J**	< 0.001	< 0.001	< 0.001	< 0.001	**0.0054**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
P-93D	P93D-ROX-011316		1/13/2016	< 0.1	< 0.1	< 0.1	< 0.01	< 2.5	< 2.5	**14**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.5	< 0.5
P-93D	P93D-ROX-041916		4/19/2016	< 0.05	< 0.05	< 0.05	< 0.01	< 1.3	< 1.3	**9.5**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.25	< 0.25
P-93D	P93D-WRR-041916		4/19/2016				< 0.01	< 1.3		**9.5**	< 0.05		< 0.05		< 0.05	< 0.05					< 0.05	< 0.05	< 0.25	< 0.25	< 0.25
P-93D	P93D-ROX-071516		7/15/2016	< 0.001	< 0.001	< 0.001	< 0.01	< 0.025	< 0.025	**0.086**	< 0.001	< 0.001	< 0.001	< 0.001	**0.0017**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
P-93D	P93D-ROX-101716		10/17/2016	< 0.001	< 0.001	< 0.001	< 0.0095	< 0.025	< 0.025	**0.023**	< 0.001	< 0.001	< 0.001	< 0.001	**0.0026**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
P-93D	P93D-WRR-101716		10/17/2016							**0.027**			< 0.001			< 0.001					< 0.001		< 0.005	< 0.005	< 0.01
P-93D	P93D-ROX-011017		1/10/2017	< 0.001	< 0.001	< 0.001	< 0.0097	< 0.025	< 0.025	**0.14**	< 0.001	< 0.001	< 0.001	< 0.001	**0.0023**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
P-95	P95-WRR-041416		4/14/2016				< 0.01	< 0.025		< 0.001	< 0.001		< 0.001		< 0.001	< 0.001					< 0.001	< 0.001	< 0.005	< 0.005	< 0.005

Table 2a
Groundwater Sampling VOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	1,2,4-Trimethylbenzene (mg/L)	1,3,5-Trimethylbenzene (mg/L)	1,3-Dichloropropane (mg/L)	1,4-Dioxane (mg/L)	2-Butanone (mg/L)	Acetone (mg/L)	Benzene (mg/L)	Chlorobenzene (mg/L)	Cymene (p-Isopropyltoluene) (mg/L)	Ethylbenzene (mg/L)	Isopropylbenzene (Cumene) (mg/L)	Methyl tert-Butyl Ether (MTBE) (mg/L)	Naphthalene (mg/L)	n-Butylbenzene (mg/L)	n-Propylbenzene (mg/L)	sec-Butylbenzene (mg/L)	tert-Butylbenzene (mg/L)	Toluene (mg/L)	Trichloroethene (mg/L)	m,p-Xylenes (mg/L)	o-Xylenes (mg/L)	Xylenes (total) (mg/L)
CLASS 1 SCREENING CRITERIA (mg/L)							0.0077	4.2	6.3	0.005	0.1		0.7	0.7	0.07	0.14					1	0.005	10		10
P-95	P95-WRR-101016		10/10/2016							< 0.001			< 0.001			< 0.001					< 0.001		< 0.005	< 0.005	< 0.01
T-6	T-6-100410		10/4/2010	< 0.25	< 0.25	< 0.25		< 2.5	< 5	**142 D**	< 0.25	< 0.25	**0.19 J**	< 0.25	**0.0535 J**		< 0.25	< 0.25	< 0.25	< 0.25	**0.158 J**	< 0.25	**0.157 J**	< 0.25	
W-68	W-68-050916		5/9/2016	< 0.001	< 0.001	< 0.001		< 0.025	< 0.025	< 0.001	< 0.001	**0.26**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.005
W-68	W-68-070716		7/7/2016	< 0.001	< 0.001	< 0.001		< 0.025	< 0.025	< 0.001	< 0.001	**0.2**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
W-68	W-68-100416		10/4/2016	< 0.001	< 0.001	< 0.001		< 0.025	< 0.025	< 0.001	< 0.001	**0.021**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
W-69	W-69-051016		5/10/2016	**0.63**	**0.15**	< 0.025		< 0.63	< 0.63	**5.4**	< 0.025	**0.033**	**0.82**	**0.058**	< 0.025	**0.18**	**0.023 J**	**0.11**	**0.02 J**	< 0.025	**1.5**	< 0.025	**1.3**	**0.63**	**1.9**
W-69	W-69-070516		7/5/2016	< 0.1	< 0.1	< 0.1		< 2.5	< 2.5	**23**	< 0.1	< 0.1	**0.06 J**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	**0.22**	< 0.1	< 0.5	**0.081 J**	**0.22 J**
W-69	W-69-070516-DUP		7/5/2016	< 0.1	< 0.1	< 0.1		< 2.5	< 2.5	**21**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	**0.11**	< 0.1	< 0.5	< 0.5	< 1
W-69	W-69-100316		10/3/2016	**0.14**	< 0.02	< 0.02		< 0.5	< 0.5	**3.1**	< 0.02	< 0.02	**0.15**	**0.014 J**	< 0.02	**0.033**	< 0.02	**0.022**	< 0.02	< 0.02	< 0.02	< 0.02	**0.087 J**	**0.012 J**	**0.099 J**
W-72	W-72-051016		5/10/2016	< 0.01	< 0.01	< 0.01		< 0.25	< 0.25	**2.3**	< 0.01	< 0.01	< 0.01	**0.012**	< 0.01	< 0.01	< 0.01	**0.013**	< 0.01	< 0.01	**0.0087 J**	< 0.01	< 0.05	< 0.05	**0.016 J**
W-72	W-72-051016-DUP		5/10/2016	< 0.01	< 0.01	< 0.01		< 0.25	< 0.25	**2.6**	< 0.01	< 0.01	< 0.01	**0.0082 J**	< 0.01	< 0.01	< 0.01	**0.012**	< 0.01	< 0.01	**0.01**	< 0.01	< 0.05	< 0.05	**0.013 J**
W-72	W-72-070516		7/5/2016	< 0.01	< 0.01	< 0.01		< 0.25	< 0.25	**2.3**	< 0.01	< 0.01	< 0.01	**0.011**	< 0.01	< 0.01	< 0.01	**0.01**	< 0.01	< 0.01	**0.0088 J**	< 0.01	< 0.05	< 0.05	**0.016 J**
W-72	W-72-100316		10/3/2016	< 0.02	< 0.02	< 0.02		< 0.5	< 0.5	**2.6**	< 0.02	< 0.02	< 0.02	**0.014 J**	< 0.02	< 0.02	< 0.02	**0.017 J**	< 0.02	< 0.02	< 0.02	< 0.02	< 0.1	< 0.1	< 0.2
W-72	W-72-100316-DUP		10/3/2016	< 0.02	< 0.02	< 0.02		< 0.5	< 0.5	**2.5**	< 0.02	< 0.02	< 0.02	**0.013 J**	< 0.02	< 0.02	< 0.02	**0.016 J**	< 0.02	< 0.02	< 0.02	< 0.02	< 0.1	< 0.1	< 0.2
W-81	W-81-050916		5/9/2016	< 0.001	< 0.001	< 0.001		< 0.025	< 0.025	**0.057**	**0.0049**	< 0.001	**0.0013**	**0.0021**	< 0.001	< 0.001	< 0.001	**0.0037**	< 0.001	< 0.001	**0.0014**	< 0.001	**0.0032 J**	< 0.005	**0.0037 J**
W-81	W-81-070716		7/7/2016	< 0.001	< 0.001	< 0.001		< 0.025	< 0.025	**0.015**	**0.0042**	< 0.001	< 0.001	**0.0019**	< 0.001	< 0.001	< 0.001	**0.0028**	**0.00087 J**	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	**0.0016 J**
W-81	W-81-100316		10/3/2016	< 0.001	< 0.001	< 0.001		< 0.025	< 0.025	**0.05**	**0.0032**	< 0.001	< 0.001	**0.0012**	< 0.001	< 0.001	< 0.001	**0.0016**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.005	< 0.01
W-89	W-89-050916		5/9/2016	< 0.1	< 0.1	< 0.1		< 2.5	< 2.5	**20 F1**	< 0.1	< 0.1	**0.13**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	**0.33**	< 0.1	**0.23 J**	**0.06 J**	**0.29 J**
W-89	W-89-070516		7/5/2016	< 0.1	< 0.1	< 0.1		< 2.5	< 2.5	**14**	< 0.1	< 0.1	**0.068 J**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	**0.17**	< 0.1	< 0.5	< 0.5	< 1
W-89	W-89-100316		10/3/2016	< 0.1	< 0.1	< 0.1		< 2.5	< 2.5	**19**	< 0.1	< 0.1	**0.2**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	**0.43**	< 0.1	**0.38 J**	**0.11 J**	**0.49 J**

NOTES:

1) **Bold** value indicates constituent detected.

2) <### indicates constituent not detected above given reporting limit.

J = Concentration is estimated.

UJ = Analyte not detected at estimated reporting limit.

D = The result is from a diluted sample.

Exceedance of Class I groundwater screening criteria

Blank cell indicates analytical data not available.

SEE LAST PAGE OF TABLE FOR NOTES

Table 2b
Groundwater Sampling SVOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	1-Methylnaphthalene (mg/L)	2,4-Dimethylphenol (mg/L)	2-Methylnaphthalene (mg/L)	2-Methylphenol (o-Cresol) (mg/L)	2-Nitrophenol (mg/L)	3 & 4-Methylphenol (m & p-Cresol) (mg/L)	Acenaphthene (mg/L)	Acenaphthylene (mg/L)	Anthracene (mg/L)	Benzenethiol (mg/L)	Benzo(a)anthracene (mg/L)	Benzo(a)pyrene (mg/L)	Benzo(b)fluoranthene (mg/L)	Benzo(g,h,i)perylene (mg/L)	Benzo(k)fluoranthene (mg/L)	Benzoic Acid (mg/L)	bis(2-Chloroethoxy)methane (mg/L)
CLASS 1 SCREENING CRITERIA (mg/L)					0.14	0.028	0.35			0.42		2.1		0.00013	0.0002	0.00018		0.00017	28	
GP-1	GP-1-34	34 ft	9/2/2009		< 0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.031	< 0.01
GP-1	GP-1-42	42 ft	9/2/2009		< 0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.031	< 0.01
GP-3	GP-3-29.5	29.5 ft	6/9/2010		< 0.02	< 0.01	< 0.02	< 0.02	< 0.02	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.06	< 0.02
GP-3	GP-3-29.5D	29.5 ft	6/9/2010		< 0.02	< 0.01	< 0.02	< 0.02	< 0.02	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.06	< 0.02
GP-3	GP-3-37.5	37.5 ft	6/9/2010		< 0.02	< 0.01	< 0.02	< 0.02	< 0.02	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.06	< 0.02
GP-4	GP-4-34	34 ft	9/1/2009		< 0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.03	< 0.01
GP-4	GP-4-34D	34 ft	9/1/2009		< 0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.03	< 0.01
GP-4	GP-4-42	42 ft	9/1/2009		< 0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.03	< 0.01
GP-5	GP-5-31.5	31.5 ft	6/9/2010		< 0.02	**0.012**	< 0.02	< 0.02	< 0.02	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.06	< 0.02
GP-5	GP-5-39.5	39.5 ft	6/9/2010		< 0.02	**0.006 J**	< 0.02	< 0.02	< 0.02	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.06	< 0.02
GWP-21	GWP-21-34	34 ft	9/3/2009		< 0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.03	< 0.01
GWP-21	GWP-21-42	42 ft	9/3/2009		< 0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.03	< 0.01
GWP-21	GWP-21-42D	42 ft	9/3/2009		< 0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.03	< 0.01
GWP-22	GWP-22-112	112 ft	9/29/2010		< 0.009	< 0.009	< 0.009	< 0.009	< 0.009	< 0.009	< 0.009	< 0.009		< 0.009	< 0.009					
GWP-22	GWP-22-61	61 ft	9/30/2010		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01					
GWP-22	GWP-22-81	81 ft	9/29/2010		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01					
GWP-23	GWP-23-37.5-Dup	37.5 ft	9/30/2010		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01					
GWP-23	GWP-23-37.5	37.5 ft	9/30/2010		< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011		< 0.011	< 0.011					
GWP-23	GWP-23-45.5	45.5 ft	10/1/2010		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01					
GWP-24	GWP-24-44	44 ft	10/4/2010		< 0.833	**0.687 J**	< 0.833	< 0.833	< 0.833	< 0.833	< 0.833	< 0.833		< 0.833	< 0.833					
GWP-24	GWP-24-52	52 ft	10/4/2010		< 1.47	**2.49 J**	< 1.47	< 1.47	< 1.47	< 1.47	< 1.47	< 1.47		< 1.47	< 1.47					
GWP-27	GWP-27-28.5	28.5 ft	10/29/2010		< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011		< 0.011	< 0.011					
GWP-27	GWP-27-36.5	36.5 ft	10/29/2010		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.01					
GWP-28	GWP-28-40-ROX-100912	40 ft	10/9/2012	< 0.00021	< 0.011	< 0.00021	< 0.011	< 0.011	< 0.011	< 0.00011	< 0.00011	< 0.00011		< 0.000053	< 0.00011	< 0.000053	< 0.00011	< 0.00011	< 0.011	< 0.0053
GWP-28	GWP-28-60-ROX-100912	60 ft	10/9/2012	< 0.00022	< 0.011	< 0.00022	< 0.011	< 0.011	< 0.011	< 0.00011	< 0.00011	< 0.00011		< 0.000054	< 0.00011	< 0.000054	< 0.00011	< 0.00011	< 0.011	< 0.0054
GWP-28	DUP	60 ft	10/9/2012	< 0.00022	< 0.011	< 0.00022	< 0.011	< 0.011	< 0.011	< 0.00011	< 0.00011	< 0.00011		< 0.000056	< 0.00011	< 0.000056	< 0.00011	< 0.00011	< 0.011	< 0.0056
GWP-28	GWP-28-80-ROX-101012	80 ft	10/10/2012	< 0.00021	< 0.011	< 0.00021	< 0.011	< 0.011	< 0.011	< 0.00011	< 0.00011	< 0.00011		< 0.000053	< 0.00011	< 0.000053	< 0.00011	< 0.00011	< 0.011	< 0.0053
GWP-29	GWP-29-42.5-031313	42.5 ft	3/13/2013	**0.203**	**0.0095 J**	**0.296**	< 0.011	< 0.011	< 0.011	**0.0057 J**	**0.0012 J**	< 0.00011		< 0.000054	< 0.00011	< 0.000054	< 0.00011	< 0.00011	< 0.011	< 0.0054
GWP-29	GWP-29-50.5-031313	50.5 ft	3/13/2013	0.292 J	**0.0194**	**0.44 J**	**0.0189**	< 0.011	**0.0276**	**0.0107 J**	**0.0024 J**	< 0.00011		**0.00018 J**	**0.00011 J**	< 0.000054	**0.000071 J J**	< 0.00011	< 0.011	< 0.0054
GWP-30	GWP-30-37.5-031213	37.5 ft	3/12/2013	< 0.00022	< 0.011	< 0.00022	< 0.011	< 0.011	< 0.011	< 0.00011	< 0.00011	< 0.00011		< 0.000054	< 0.00011	< 0.000054	< 0.00011	< 0.00011	< 0.011	< 0.0054
GWP-30	GWP-30-37.5-031213-DUP	37.5 ft	3/12/2013	< 0.00022	< 0.011	< 0.00022	< 0.011	< 0.011	< 0.011	< 0.00011	< 0.00011	< 0.00011		< 0.000054	< 0.00011	< 0.000054	< 0.00011	< 0.00011	< 0.011	< 0.0054
GWP-30	GWP-30-45.5-031213	45.5 ft	3/12/2013	< 0.00021	< 0.011	< 0.00021	< 0.011	< 0.011	< 0.011	< 0.00011	< 0.00011	< 0.00011		< 0.000053	< 0.00011	< 0.000053	< 0.00011	< 0.00011	< 0.011	< 0.0053
GWP-31	GWP-31-39.5-031213	39.5 ft	3/12/2013	< 0.00022	< 0.011	< 0.00022	< 0.011	< 0.011	< 0.011	< 0.00011	< 0.00011	< 0.00011		< 0.000056	< 0.00011	< 0.000056	< 0.00011	< 0.00011	< 0.011	< 0.0056
GWP-31	GWP-31-45.5-031213	45.5 ft	3/12/2013	< 0.00022 UJ	< 0.011 UJ	< 0.00022 UJ	< 0.011 UJ	< 0.011 UJ	< 0.011 UJ	< 0.00011 UJ	< 0.00011 UJ	< 0.00011 UJ		< 0.000054 UJ	< 0.00011 UJ	< 0.000054 UJ	< 0.00011 UJ	< 0.00011 UJ	< 0.011 UJ	< 0.0054 UJ
GWP-32	GWP-32-40.5-031313	40.5 ft	3/13/2013	**0.0258**	**0.004 J**	**0.0339**	< 0.012	< 0.012	< 0.012	**0.00068**	< 0.00012	**0.00028**		**0.000042 J**	**0.000035 J**	< 0.000062	< 0.00012	< 0.00012	< 0.012	< 0.0062
GWP-32	GWP-32-48.5-031313	48.5 ft	3/13/2013	**0.0944 J**	**0.0099 J**	**0.145 J**	< 0.011	< 0.011	< 0.011	**0.0013 J**	< 0.00011	**0.00029 J**		< 0.000053	< 0.00011	< 0.000053	< 0.00011	< 0.00011	< 0.011	< 0.0053
MW-03	MW3-ROX-010716		1/7/2016	**0.00053**	< 0.01	**0.00045**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-03	MW3-ROX-040616		4/6/2016	**0.00082**	< 0.01	**0.00068**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-03	MW3-ROX-070816		7/8/2016	**0.00044**	< 0.01	**0.00029**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-03	MW3-ROX100716		10/7/2016	**0.00041**	< 0.01	**0.00022**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002 UJ	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-03	MW3-ROX-010617		1/6/2017	**0.0016**	< 0.0093	**0.00081**	< 0.0093	< 0.0093	< 0.019	< 0.00019	< 0.00019	< 0.00019	< 0.0093	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.028	< 0.0093
MW-04	MW4-ROX-011316		1/13/2016	**0.00028**	< 0.01	**0.0002**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002 UJ	< 0.0002	< 0.03	< 0.01
MW-04	MW4-ROX-041916		4/19/2016	**0.00015 J**	< 0.01	**0.000089 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-04	MW4-ROX-071416		7/14/2016	**0.00015 J**	< 0.01	**0.000069 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-04	MW4-ROX-100616		10/6/2016	**0.00016 J**	< 0.01	**0.000069 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002 UJ	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-04	MW4-ROX-010917		1/9/2017	**0.000066 J**	< 0.0097	< 0.00019	< 0.0097	< 0.0097	< 0.019	< 0.00019	< 0.00019	< 0.00019	< 0.0097	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.029	< 0.0097
MW-05	MW5-ROX-011416		1/14/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-05	MW5-ROX-040616		4/6/2016	**0.00034**	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-05	MW5-ROX-070816		7/8/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-05	MW5-ROX-101016		10/10/2016	**0.00012 J**	< 0.0098 UJ	**0.000041 J**	< 0.0098 UJ	< 0.0098 UJ	< 0.02 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0098 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.029 UJ	**0.00073 J**
MW-05	MW5-ROX-010617		1/6/2017	**0.00063**	< 0.0093	< 0.00019	< 0.0093	< 0.0093	< 0.019	< 0.00019	< 0.00019	< 0.00019	< 0.0093	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.028	< 0.0093

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Table 2b
Groundwater Sampling SVOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	1-Methylnaphthalene (mg/L)	2,4-Dimethylphenol (mg/L)	2-Methylnaphthalene (mg/L)	2-Methylphenol (o-Cresol) (mg/L)	2-Nitrophenol (mg/L)	3 & 4-Methylphenol (m & p-Cresol) (mg/L)	Acenaphthene (mg/L)	Acenaphthylene (mg/L)	Anthracene (mg/L)	Benzenethiol (mg/L)	Benzo(a)anthracene (mg/L)	Benzo(a)pyrene (mg/L)	Benzo(b)fluoranthene (mg/L)	Benzo(g,h,i)perylene (mg/L)	Benzo(k)fluoranthene (mg/L)	Benzoic Acid (mg/L)	bis(2-Chloroethoxy)methane (mg/L)
CLASS 1 SCREENING CRITERIA (mg/L)					0.14	0.028	0.35			0.42		2.1		0.00013	0.0002	0.00018		0.00017	28	
MW-06A	MW6A-ROX-011116		1/11/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	**0.00017 J**	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06A	MW6A-ROX-040716		4/7/2016	**0.000036 J**	< 0.01	**0.000047 J**	< 0.01	< 0.01	< 0.02	**0.00012 J**	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06A	MW6A-ROX-071116		7/11/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06A	MW6A-ROX-101116		10/11/2016	< 0.0002	< 0.01	< 0.0002	< 0.01 UJ	< 0.01	< 0.02 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06A	MW6A-ROX-011017		1/10/2017	< 0.00019	< 0.0093	< 0.00019	< 0.0093	< 0.0093	< 0.019	< 0.00019	< 0.00019	< 0.00019	< 0.0093	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.028	< 0.0093
MW-06B	MW6B-ROX-011116		1/11/2016	**0.000029 J**	< 0.01	**0.000067 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06B	MW6B-ROX-040716		4/7/2016	**0.000045 J**	< 0.01	**0.000088 J**	< 0.01	< 0.01	< 0.02	**0.00005 J**	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06B	MW6B-ROX-071116		7/11/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	**0.000054 J**	**0.000082 J**	**0.00014 J**	**0.000079 J**	**0.00013 J**	< 0.03	< 0.01
MW-06B	MW6B-ROX-101116		10/11/2016	**0.000038 J**	< 0.01	**0.00006 J**	< 0.01 UJ	< 0.01	< 0.02 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06B	MW6B-ROX-011017		1/10/2017	< 0.00019	< 0.0093	< 0.00019	< 0.0093	< 0.0093	< 0.019	< 0.00019	< 0.00019	< 0.00019	< 0.0093	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.028	< 0.0093
MW-06C	MW6C-ROX-010816		1/8/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06C	MW6C-ROX-040716		4/7/2016	**0.00003 J**	< 0.01	**0.000055 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06C	MW6C-ROX-071116		7/11/2016	**0.000043 J**	< 0.01	**0.000047 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06C	MW6C-ROX-101016		10/10/2016	**0.000049 J**	< 0.0095	**0.000077 J**	< 0.0095	< 0.0095	< 0.019 UJ	< 0.00019	< 0.00019	< 0.00019	< 0.0095 UJ	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.029	< 0.0095
MW-06C	MW6C-ROX-011017		1/10/2017	< 0.00019	< 0.0093	< 0.00019	< 0.0093	< 0.0093	< 0.019	< 0.00019	< 0.00019	< 0.00019	< 0.0093	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.028	< 0.0093
MW-06D	MW6D-ROX-010816		1/8/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06D	MW6D-ROX-010816-DUP		1/8/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06D	MW6D-ROX-040716		4/7/2016	**0.000051 J**	< 0.01	**0.0001 J**	< 0.01	< 0.01	< 0.02	**0.000058 J**	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06D	MW6D-ROX-040716-DUP		4/7/2016	**0.000034 J**	< 0.01	**0.000064 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06D	MW6D-ROX-071116		7/11/2016	**0.000045 J**	< 0.01	**0.000051 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06D	MW6D-ROX-071116-DUP		7/11/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-06D	MW6D-ROX-101016		10/10/2016	**0.000032 J**	< 0.0098 UJ	**0.000058 J**	< 0.0098 UJ	< 0.0098 UJ	< 0.02 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0098 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.029 UJ	< 0.01
MW-06D	MW6D-ROX-101016-DUP		10/10/2016	**0.000038 J**	< 0.0098 UJ	**0.000064 J**	< 0.0098 UJ	< 0.0098 UJ	< 0.02 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0098 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.029 UJ	< 0.01
MW-06D	MW6D-ROX-011017		1/10/2017	< 0.00019	< 0.0093	< 0.00019	< 0.0093	< 0.0093	< 0.019	< 0.00019	< 0.00019	< 0.00019	< 0.0093	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.028	< 0.0093
MW-06D	MW6D-ROX-011017-DUP		1/10/2017	< 0.00019	< 0.0093	< 0.00019	< 0.0093	< 0.0093	< 0.019	< 0.00019	< 0.00019	< 0.00019	< 0.0093	**0.000062 J**	**0.000057 J**	**0.00007 J**	**0.000075 J**	**0.000072 J**	< 0.028	< 0.0093
MW-07	MW7-ROX-011416		1/14/2016	**0.004**	**0.0035 J**	**0.0053**	< 0.01	< 0.01	**0.0017 J**	**0.00019 J**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	**0.018 J**	< 0.01
MW-07	MW7-ROX-011416-DUP		1/14/2016	**0.0048**	**0.0036 J**	**0.0061**	< 0.01	< 0.01	**0.002 J**	**0.00023**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	**0.022 J**	< 0.01
MW-07	MW7-ROX-041916		4/19/2016	**0.0034**	**0.0048 J**	**0.0051**	< 0.01	< 0.01	**0.0034 J**	**0.00024**	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	**0.031**	< 0.01
MW-07	MW7-ROX-041916-DUP		4/19/2016	**0.004**	**0.0042 J**	**0.0059**	< 0.01	< 0.01	**0.0026 J**	**0.00021**	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	**0.021 J**	< 0.01
MW-07	MW7-ROX-071416		7/14/2016	**0.004 J**	< 0.01	**0.005 J**	< 0.01	< 0.01	< 0.02	**0.00031**	**0.000058 J**	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-07	MW7-ROX-071416-DUP		7/14/2016	**0.0028 J**	< 0.01	**0.0034 J**	< 0.01	< 0.01	**0.0026 J**	**0.00023**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-07	MW7-ROX-100616		10/6/2016	**0.0031**	< 0.01	**0.0043**	**0.004 J**	< 0.01	**0.0049 J**	**0.00017 J**	< 0.0002 UJ	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-07	MW7-ROX-100616-DUP		10/6/2016	**0.0029**	**0.0038 J**	**0.0039**	**0.0044 J**	< 0.01	< 0.02	**0.00016 J**	< 0.0002 UJ	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-07	MW7-ROX-010917		1/9/2017	**0.002**	< 0.01	**0.003**	**0.0039 J**	< 0.01	**0.0044 J**	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-08	MW8-ROX-011416		1/14/2016	**0.015**	**0.008 J**	**0.007**	**0.0077 J**	< 0.01	**0.016 J**	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-08	MW8-ROX-041916		4/19/2016	**0.014**	**0.012**	**0.0063**	**0.0028 J**	< 0.01	**0.0036 J**	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-08	MW8-ROX-071416		7/14/2016	**0.0082**	< 0.01	**0.0038**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-08	MW8-ROX-100616		10/6/2016	**0.0098**	**0.0035 J**	**0.0028**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002 UJ	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-08	MW8-ROX-010917		1/9/2017	**0.015**	< 0.0098	**0.0038**	< 0.0098	< 0.0098	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.0098	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.029	< 0.0098
MW-13	MW13-ROX-010716		1/7/2016	**0.00021**	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-13	MW13-ROX-040816		4/8/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	**0.00015 J**	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-13	MW13-ROX-071116		7/11/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-13	MW13-ROX100716		10/7/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002 UJ	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-13	MW13-ROX-010617		1/6/2017	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-14	MW-14-ROX-010816		1/8/2016	**0.00013 J**	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	**0.00015 J**	< 0.0002	< 0.0002	< 0.01	< 0.0002	**0.000054 J**	**0.000046 J**	**0.000075 J**	**0.000048 J**	< 0.03	< 0.01
MW-14	MW14-ROX-041416		4/14/2016	**0.000084 J**	< 0.01	**0.00004 J**	< 0.01	< 0.01	< 0.02	**0.000074 J**	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-14	MW14-ROX-071116		7/11/2016	**0.000057 J**	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	**0.000059 J**	**0.00002 J**	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-14	MW14-ROX-101416		10/14/2016	**0.000095 J J**	< 0.0095 UJ	**0.000046 J J**	< 0.0095 UJ	< 0.0095 UJ	< 0.019 UJ	**0.000054 J** *	< 0.00019	< 0.00019	< 0.0095 UJ	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.029 UJ	< 0.0095 UJ
MW-14	MW14-ROX-011117		1/11/2017	< 0.0002	< 0.0098	< 0.0002	< 0.0098	< 0.0098	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.0098	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.029	< 0.0098
MW-23	MW-23-ROX-010716		1/7/2016	< 0.0002	< 0.01	**0.000022 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-23	MW-23-ROX-040616		4/6/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01

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Table 2b
Groundwater Sampling SVOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	1-Methylnaphthalene (mg/L)	2,4-Dimethylphenol (mg/L)	2-Methylnaphthalene (mg/L)	2-Methylphenol (o-Cresol) (mg/L)	2-Nitrophenol (mg/L)	3 & 4-Methylphenol (m & p-Cresol) (mg/L)	Acenaphthene (mg/L)	Acenaphthylene (mg/L)	Anthracene (mg/L)	Benzenethiol (mg/L)	Benzo(a)anthracene (mg/L)	Benzo(a)pyrene (mg/L)	Benzo(b)fluoranthene (mg/L)	Benzo(g,h,i)perylene (mg/L)	Benzo(k)fluoranthene (mg/L)	Benzoic Acid (mg/L)	bis(2-Chloroethoxy)methane (mg/L)
CLASS 1 SCREENING CRITERIA (mg/L)					0.14	0.028	0.35			0.42		2.1		0.00013	0.0002	0.00018		0.00017	28	
MW-23	MW-23-ROX-070816		7/8/2016	**0.000033 J**	< 0.01	**0.000039 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	**0.0091 J**	< 0.01
MW-23	MW23-ROX-BP-100716		10/7/2016	**0.00002 J**	< 0.0098	**0.000024 J**	< 0.0098	< 0.0098	< 0.02	< 0.0002	< 0.0002 UJ	< 0.0002	< 0.0098 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.029	< 0.0098
MW-23	MW23-ROX-011017		1/10/2017	< 0.00019	< 0.0096	< 0.00019	< 0.0096	< 0.0096	< 0.019	< 0.00019	< 0.00019	< 0.00019	< 0.0096	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	**0.0089 J**	< 0.0096
MW-25	MW25-ROX-011416		1/14/2016	**0.0004**	< 0.01	**0.00017 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-25	MW25-ROX-041916		4/19/2016	**0.00031**	< 0.01	**0.00015 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-25	MW25-ROX-071816		7/18/2016	**0.000067 J H J**	< 0.01 UJ	**0.000047 J H J**	< 0.01 UJ	< 0.01 UJ	< 0.02 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.01 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.03 UJ	< 0.01 UJ
MW-25	MW25-ROX-100616		10/6/2016	**0.00021**	< 0.01	**0.000049 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002 UJ	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-25	MW25-ROX-011117		1/11/2017	**0.00019**	< 0.0097	< 0.00019	< 0.0097	< 0.0097	< 0.019	< 0.00019	< 0.00019	< 0.00019	< 0.0097	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.029	< 0.0097
MW-26	MW26-ROX-010716		1/7/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-26	MW26-ROX-040616		4/6/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-26	MW26-ROX-071216		7/12/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-26	MW26-ROX-101016		10/10/2016	**0.0001 J**	< 0.01	**0.00016 J**	< 0.01	< 0.01	< 0.02 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
MW-26	MW26-ROX-010617		1/6/2017	< 0.00019	< 0.0093	< 0.00019	< 0.0093	< 0.0093	< 0.019	< 0.00019	< 0.00019	< 0.00019	< 0.0093	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.028	< 0.0093
P-114	P114R-ROX-010716		1/7/2016	**0.000081 J**	< 0.01	**0.000095 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-114	P114R-ROX-040816		4/8/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	**0.0088 J**	< 0.01
P-114	P114R-ROX-070816		7/8/2016	< 0.0002	< 0.05	< 0.0002	< 0.05	< 0.05	< 0.1	< 0.0002	< 0.0002	< 0.0002	< 0.05	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.15	< 0.05
P-114R	P114R-ROX-100716		10/7/2016	< 0.00019	< 0.0095	< 0.00019	< 0.0095	< 0.0095	< 0.019	< 0.00019	< 0.00019 UJ	< 0.00019	< 0.0095 UJ	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	**0.0098 J**	< 0.0095
P-114R	P114R-ROX-010617		1/6/2017	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-119	P119-WRR-041414		4/14/2014	< 0.00019	< 0.0095	< 0.00019	< 0.0095		< 0.019	< 0.00019		< 0.00019	< 0.0095 UJ	< 0.00019	< 0.00019	< 0.00019		< 0.00019		
P-120	P120-WRR-042214		4/22/2014	< 0.00019	< 0.0095	< 0.00019	< 0.0095		< 0.019	< 0.00019		< 0.00019	< 0.0095 UJ	< 0.00019	< 0.00019	< 0.00019		< 0.00019		
P-57	P57-ROX-011216		1/12/2016	**0.038**	< 0.01	**0.057**	< 0.01	< 0.01	< 0.02	**0.00046 J**	**0.00022 J**	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.03	< 0.01
P-57	P57-ROX-041816		4/18/2016	**0.019 H J**	< 0.01 UJ	**0.027 H J**	< 0.01 UJ	< 0.01 UJ	**0.0012 J H J**	**0.00028 H J**	< 0.0002 UJ	< 0.0002 UJ	< 0.01 UJ	**0.000041 J H J**	< 0.0002 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.03 UJ	< 0.01 UJ
P-57	P57-ROX-071316		7/13/2016	**0.026**	< 0.01	**0.036**	< 0.01	< 0.01	< 0.02	**0.00041 J**	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.03	< 0.01
P-57	P57-ROX-101816		10/18/2016	**0.027**	< 0.01	**0.037**	< 0.01	< 0.01	< 0.02	**0.00058**	**0.00013 J**	**0.000032 J**	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03 UJ	< 0.01
P-57	P57-ROX-011617		1/16/2017	**0.023**	< 0.0098	**0.03**	< 0.0098	< 0.0098	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.0098	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.029	< 0.0098
P-58	P58-ROX-011316		1/13/2016	**0.062**	< 0.01	**0.083**	< 0.01	< 0.01	**0.015 J**	**0.00069**	**0.00022**	**0.000067 J**	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002 UJ	< 0.0002	< 0.03	< 0.01
P-58	P58-ROX-041816		4/18/2016	**0.061 H J**	< 0.01 UJ	**0.077 H J**	< 0.01 UJ	< 0.01 UJ	**0.0035 J H J**	**0.00081 H J**	< 0.0002 UJ	< 0.0002 UJ	< 0.01 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.0002 UJ	**0.013 J H * J**	< 0.01 UJ
P-58	P58-ROX-071516		7/15/2016	**0.024**	< 0.01	**0.033**	< 0.01	< 0.01	< 0.02	**0.0003**	**0.00013 J**	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-58	P58-ROX-101816		10/18/2016	**0.042**	< 0.0098	**0.052**	< 0.0098	< 0.0098	**0.0034 J**	**0.00051 J**	**0.00021 J**	< 0.00098	< 0.0098	< 0.00098	< 0.00098	< 0.00098	< 0.00098	< 0.00098	< 0.029 UJ	< 0.0098
P-58	P58-ROX-011617		1/16/2017	**0.038**	< 0.0095	**0.045**	< 0.0095	< 0.0095	**0.0041 J**	< 0.00095	< 0.00095	< 0.00095	< 0.0095	< 0.00095	< 0.00095	< 0.00095	< 0.00095	< 0.00095	< 0.029	< 0.0095
P-66	P-66-ROX-010816		1/8/2016	**0.084 E J**	< 0.01	**0.01**	< 0.01	< 0.01	< 0.02	**0.00071**	**0.00022**	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-66	P66-ROX-041516		4/15/2016	**0.027**	< 0.01	**0.0099**	< 0.01	< 0.01	< 0.02	**0.00039**	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	**0.00004 J**	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-66	P66-ROX-071116		7/11/2016	**0.062**	< 0.01	**0.013**	< 0.01	< 0.01	< 0.02	**0.0006 J**	**0.00028 J**	< 0.001	< 0.01 UJ	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.03	< 0.01
P-66	P66-ROX-101416		10/14/2016	**0.056**	< 0.0095 UJ	**0.028**	< 0.0095 UJ	< 0.0095 UJ	< 0.019 UJ	**0.001 ***	< 0.00095	< 0.00095	< 0.0095 UJ	< 0.00095	< 0.00095	< 0.00095	< 0.00095	< 0.00095	0.019 J H J	< 0.0095 UJ
P-66	P66-ROX-011117		1/11/2017	**0.011**	< 0.0097	< 0.00097	< 0.0097	< 0.0097	< 0.019	< 0.00097	< 0.00097	< 0.00097	< 0.0097	< 0.00097	< 0.00097	< 0.00097	< 0.00097	< 0.00097	< 0.029	< 0.0097
P-82A	P82A-WRR-041216		4/12/2016	< 0.0002	< 0.01	< 0.0002	< 0.01		< 0.02	< 0.0002		< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002		< 0.0002		
P-82A	P82A-WRR-100616		10/6/2016			< 0.00019														
P-82B	P82B-WRR-041516		4/15/2016	< 0.0002	< 0.01	< 0.0002	< 0.01		< 0.02	< 0.0002		< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002		< 0.0002		
P-82B	P82B-WRR-100616		10/6/2016			< 0.00019														
P-82C	P82C-WRR-041216		4/12/2016	< 0.0002	< 0.01	< 0.0002	< 0.01		< 0.02	< 0.0002		< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002		< 0.0002		
P-82C	P82C-WRR-100616		10/6/2016			< 0.0002														
P-82D	P82D-WRR-041516		4/15/2016	< 0.0002	< 0.01	< 0.0002	< 0.01		< 0.02	< 0.0002		< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002		< 0.0002		
P-82D	P82D-WRR-100616		10/6/2016			< 0.0002														
P-88A	P88A-WRR-041516		4/15/2016	< 0.0002	< 0.01	< 0.0002	< 0.01		< 0.02	< 0.0002		< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002		< 0.0002		
P-88A	P88A-WRR-100716		10/7/2016			< 0.00019														
P-88B	P88B-WRR-041516		4/15/2016	< 0.0002	< 0.01	< 0.0002	< 0.01		< 0.02	< 0.0002		< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002		< 0.0002		
P-88B	P88B-WRR-101016		10/10/2016			< 0.00019														
P-88C	P88C-WRR-041516		4/15/2016	< 0.0002	< 0.01	< 0.0002	< 0.01		< 0.02	< 0.0002		< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002		< 0.0002		
P-88C	P88C-WRR-041516-DUP		4/15/2016	< 0.0002	< 0.01	< 0.0002	< 0.01		< 0.02	< 0.0002		< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002		< 0.0002		
P-88C	P88C-WRR-100716		10/7/2016			< 0.00019														
P-88D	P88D-WRR-041516		4/15/2016	< 0.0002	< 0.01	< 0.0002	< 0.01		< 0.02	< 0.0002		< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002		< 0.0002		

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Table 2b
Groundwater Sampling SVOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	1-Methylnaphthalene (mg/L)	2,4-Dimethylphenol (mg/L)	2-Methylnaphthalene (mg/L)	2-Methylphenol (o-Cresol) (mg/L)	2-Nitrophenol (mg/L)	3 & 4-Methylphenol (m & p-Cresol) (mg/L)	Acenaphthene (mg/L)	Acenaphthylene (mg/L)	Anthracene (mg/L)	Benzenethiol (mg/L)	Benzo(a)anthracene (mg/L)	Benzo(a)pyrene (mg/L)	Benzo(b)fluoranthene (mg/L)	Benzo(g,h,i)perylene (mg/L)	Benzo(k)fluoranthene (mg/L)	Benzoic Acid (mg/L)	bis(2-Chloroethoxy)methane (mg/L)
CLASS 1 SCREENING CRITERIA (mg/L)					0.14	0.028	0.35			0.42		2.1		0.00013	0.0002	0.00018		0.00017	28	
P-88D	P88D-WRR-101016		10/10/2016			< 0.00019														
P-88D	P88D-WRR-101016-DUP		10/10/2016			< 0.00019														
P-93A	P-93A-ROX-011216		1/12/2016	**0.0047 J**	< 0.01	**0.0018 J**	< 0.01	< 0.01	**0.002 J**	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-93A	P-93A-ROX-011216-DUP		1/12/2016	**0.0064 J**	< 0.01	**0.0031 J**	< 0.01	< 0.01	**0.003 J**	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	**0.01 J**	< 0.01
P-93A	P93A-ROX-041916		4/19/2016	**0.00051**	< 0.01	**0.00016 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-93A	P93A-ROX-041916-DUP		4/19/2016	**0.00062**	< 0.01	**0.00025**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-93A	P93A-WRR-041916		4/19/2016	**0.00084**	< 0.01	**0.0003**	< 0.01		< 0.02	< 0.0002		< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002		< 0.0002		
P-93A	P93A-WRR-041916-DUP		4/19/2016	**0.00056**	< 0.01	**0.00026**	< 0.01		< 0.02	< 0.0002		< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002		< 0.0002		
P-93A	P93A-ROX-071316		7/13/2016	**0.00022**	< 0.01	**0.0001 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-93A	P93A-ROX-071316-DUP		7/13/2016	**0.00025**	< 0.01	**0.00012 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-93A	P93A-ROX-101816		10/18/2016	**0.00014 J**	< 0.01	**0.000068 J**	< 0.01	**0.00067 J**	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-93A	P93A-ROX-101816-DUP		10/18/2016	**0.00018 J**	< 0.01	**0.000093 J**	< 0.01	**0.0017 J**	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-93A	P93A-WRR-101816		10/18/2016			**0.000068 J**														
P-93A	P93A-WRR-101816-DUP		10/18/2016			**0.000093 J**														
P-93A	P93A-ROX-011217		1/12/2017	**0.00013 J**	< 0.0098	**0.000095 J**	< 0.0098	< 0.0098	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.0098	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.029	< 0.0098
P-93A	P93A-ROX-011217-DUP		1/12/2017	**0.00015 J**	< 0.011	**0.0001 J**	< 0.011	< 0.011	< 0.021	< 0.00021	< 0.00021	< 0.00021	< 0.011	< 0.00021	< 0.00021	< 0.00021	< 0.00021	< 0.00021	< 0.032	< 0.011
P-93B	P93B-ROX-011316		1/13/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002 UJ	< 0.0002	< 0.03	< 0.01
P-93B	P93B-ROX-041916		4/19/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-93B	P93B-WRR-041916		4/19/2016	< 0.0002	< 0.01	< 0.0002	< 0.01		< 0.02	< 0.0002		< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002		< 0.0002		
P-93B	P93B-ROX-071516		7/15/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-93B	P93B-ROX-101816		10/18/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-93B	P93B-WRR-101816		10/18/2016			< 0.0002														
P-93B	P93B-ROX-011017		1/10/2017	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-93B	P93B-ROX-011017-DUP		1/10/2017	< 0.0002	< 0.0098	< 0.0002	< 0.0098	< 0.0098	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.0098	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.029	< 0.0098
P-93C	P-93C-ROX-010816		1/8/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-93C	P93C-ROX-041816		4/18/2016	**0.000089 J J**	< 0.01 UJ	**0.00013 J J**	< 0.01 UJ	< 0.01 UJ	< 0.02 UJ	< 0.0002 UJ	< 0.0002 UJ	**0.000025 J J**	< 0.01 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.03 UJ	< 0.01 UJ
P-93C	P93C-WRR-041816		4/18/2016	**0.000061 J J**	< 0.01 UJ	**0.000092 J J**	< 0.01 UJ		< 0.02 UJ	< 0.0002 UJ		**0.000021 J J**	< 0.01 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.0002 UJ		< 0.0002 UJ		
P-93C	P93C-ROX-071216		7/12/2016	**0.000055 J**	< 0.01	**0.000053 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	**0.00004 J**	< 0.0002	< 0.03	< 0.01
P-93C	P93C-ROX-101816		10/18/2016	**0.000048 J**	< 0.0095	**0.000063 J**	< 0.0095	< 0.0095	< 0.019	< 0.00019	< 0.00019	< 0.00019	< 0.0095	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.029	< 0.0095
P-93C	P93C-WRR-101816		10/18/2016			**0.000063 J**														
P-93C	P93C-ROX-011117		1/11/2017	< 0.0002	< 0.0098	< 0.0002	< 0.0098	< 0.0098	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.0098	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	**0.0089 J**	< 0.0098
P-93D	P93D-ROX-011316		1/13/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.0002	< 0.0002	< 0.0002 UJ	< 0.0002	< 0.03	< 0.01
P-93D	P93D-ROX-041916		4/19/2016	**0.000032 J**	< 0.01	**0.000036 J**	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-93D	P93D-WRR-041916		4/19/2016	< 0.0002	< 0.01	< 0.0002	< 0.01		< 0.02	< 0.0002		< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002		< 0.0002		
P-93D	P93D-ROX-071516		7/15/2016	< 0.0002	< 0.01	< 0.0002	< 0.01	< 0.01	< 0.02	< 0.0002	< 0.0002	< 0.0002	< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.03	< 0.01
P-93D	P93D-ROX-101716		10/17/2016	< 0.00019	< 0.0095	< 0.00019	< 0.0095	< 0.0095	< 0.019	< 0.00019	< 0.00019	< 0.00019	< 0.0095 UJ	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.029	< 0.0095
P-93D	P93D-WRR-101716		10/17/2016			< 0.00019														
P-93D	P93D-ROX-011017		1/10/2017	< 0.00019	< 0.0097	< 0.00019	< 0.0097	< 0.0097	< 0.019	< 0.00019	< 0.00019	< 0.00019	< 0.0097	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.029	< 0.0097
P-95	P95-WRR-041416		4/14/2016	< 0.0002	< 0.01	< 0.0002	< 0.01		< 0.02	< 0.0002			< 0.01 UJ	< 0.0002	< 0.0002	< 0.0002		< 0.0002		
P-95	P95-WRR-101016		10/10/2016			< 0.00019														

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Table 2b
Groundwater Sampling SVOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	bis(2-Ethylhexyl)phthalate (mg/L)	Chrysene (1,2-Benzphenanthracene) (mg/L)	Dibenzo(a,h)anthracene (mg/L)	Dibenzofuran (mg/L)	Diethyl phthalate (mg/L)	Di-n-butyl phthalate (mg/L)	Di-n-octyl phthalate (mg/L)	Fluoranthene (mg/L)	Fluorene (mg/L)	ndene (mg/L)	ndeno(1,2,3-cd)pyrene (mg/L)	Pentachlorophenol (mg/L)	Phenanthrene (mg/L)	Phenol (mg/L)	Pyrene (mg/L)
CLASS 1 SCREENING CRITERIA (mg/L)				0.006	0.012	0.0003		5.6	0.7	0.14	0.28	0.28		0.00043	0.001		0.1	0.21
GP-1	GP-1-34	34 ft	9/2/2009	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
GP-1	GP-1-42	42 ft	9/2/2009	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
GP-3	GP-3-29.5	29.5 ft	6/9/2010	< 0.01	< 0.01	< 0.01	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.02	< 0.01	< 0.02	< 0.01
GP-3	GP-3-29.5D	29.5 ft	6/9/2010	< 0.01	< 0.01	< 0.01	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.02	< 0.01	< 0.02	< 0.01
GP-3	GP-3-37.5	37.5 ft	6/9/2010	< 0.01	< 0.01	< 0.01	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.02	< 0.01	< 0.02	< 0.01
GP-4	GP-4-34	34 ft	9/1/2009	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
GP-4	GP-4-34D	34 ft	9/1/2009	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
GP-4	GP-4-42	42 ft	9/1/2009	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
GP-5	GP-5-31.5	31.5 ft	6/9/2010	< 0.01	< 0.01	< 0.01	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.02	< 0.01	< 0.02	< 0.01
GP-5	GP-5-39.5	39.5 ft	6/9/2010	< 0.01	< 0.01	< 0.01	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.02	< 0.01	< 0.02	< 0.01
GWP-21	GWP-21-34	34 ft	9/3/2009	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
GWP-21	GWP-21-42	42 ft	9/3/2009	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
GWP-21	GWP-21-42D	42 ft	9/3/2009	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.01	< 0.005	< 0.01	< 0.005
GWP-22	GWP-22-112	112 ft	9/29/2010															
GWP-22	GWP-22-61	61 ft	9/30/2010															
GWP-22	GWP-22-81	81 ft	9/29/2010															
GWP-23	GWP-23-37.5-Dup	37.5 ft	9/30/2010															
GWP-23	GWP-23-37.5	37.5 ft	9/30/2010															
GWP-23	GWP-23-45.5	45.5 ft	10/1/2010															
GWP-24	GWP-24-44	44 ft	10/4/2010															
GWP-24	GWP-24-52	52 ft	10/4/2010															
GWP-27	GWP-27-28.5	28.5 ft	10/29/2010															
GWP-27	GWP-27-36.5	36.5 ft	10/29/2010															
GWP-28	GWP-28-40-ROX-100912	40 ft	10/9/2012	< 0.0021 UJ	< 0.00011	< 0.00011	< 0.0021	< 0.0053	< 0.0053	< 0.0053	< 0.00011	< 0.00011		< 0.00011	< 0.011	< 0.000053	< 0.0053	< 0.00011
GWP-28	GWP-28-60-ROX-100912	60 ft	10/9/2012	< 0.0022 UJ	< 0.00011	< 0.00011	< 0.0022	< 0.0054	< 0.0054	< 0.0054	< 0.00011	< 0.00011		< 0.00011	< 0.011	< 0.000054	< 0.0054	< 0.00011
GWP-28	DUP	60 ft	10/9/2012	< 0.0022 UJ	< 0.00011	< 0.00011	< 0.0022	< 0.0056	< 0.0056	< 0.0056	< 0.00011	< 0.00011		< 0.00011	< 0.011	< 0.000056	< 0.0056	< 0.00011
GWP-28	GWP-28-80-ROX-101012	80 ft	10/10/2012	< 0.0021	< 0.00011	< 0.00011	< 0.0021	< 0.0053	< 0.0053	< 0.0053	< 0.00011	< 0.00011		< 0.00011	< 0.011	< 0.000053	< 0.0053 UJ	< 0.00011
GWP-29	GWP-29-42.5-031313	42.5 ft	3/13/2013	< 0.0022	< 0.00011	< 0.00011	**0.0047**	< 0.0054	< 0.0054	< 0.0054	< 0.00011	**0.0104 J**		< 0.00011	< 0.011	**0.007 J**	**0.064**	**0.00011 J**
GWP-29	GWP-29-50.5-031313	50.5 ft	3/13/2013	< 0.0022	0.0003 J	< 0.00011	**0.0145**	< 0.0054	< 0.0054	< 0.0054	**0.00038 J**	**0.0217 J**		< 0.00011	< 0.011	**0.0246 J**	**0.0606**	**0.0011 J**
GWP-30	GWP-30-37.5-031213	37.5 ft	3/12/2013	< 0.0022	< 0.00011	< 0.00011	< 0.0022	< 0.0054	< 0.0054	< 0.0054	< 0.00011	< 0.00011		< 0.00011	< 0.011	< 0.000054	< 0.0054 UJ	< 0.00011
GWP-30	GWP-30-37.5-031213-DUP	37.5 ft	3/12/2013	< 0.0022	< 0.00011	< 0.00011	< 0.0022	< 0.0054	< 0.0054	< 0.0054	< 0.00011	< 0.00011		< 0.00011	< 0.011	< 0.000054	< 0.0054 UJ	< 0.00011
GWP-30	GWP-30-45.5-031213	45.5 ft	3/12/2013	**0.00061 J**	< 0.00011	< 0.00011	< 0.0021	< 0.0053	< 0.0053	< 0.0053	< 0.00011	< 0.00011		< 0.00011	< 0.011	< 0.000053	< 0.0053 UJ	< 0.00011
GWP-31	GWP-31-39.5-031213	39.5 ft	3/12/2013	< 0.0022	< 0.00011	< 0.00011	< 0.0022	< 0.0056	< 0.0056	< 0.0056	< 0.00011	< 0.00011		< 0.00011	< 0.011	< 0.000056	< 0.0056 UJ	< 0.00011
GWP-31	GWP-31-45.5-031213	45.5 ft	3/12/2013	< 0.0022 UJ	< 0.00011 UJ	< 0.00011 UJ	< 0.0022 UJ	< 0.0054 UJ	< 0.0054 UJ	< 0.0054 UJ	< 0.00011 UJ	< 0.00011 UJ		< 0.00011 UJ	< 0.011 UJ	< 0.000054 UJ	< 0.0054 UJ	< 0.00011 UJ
GWP-32	GWP-32-40.5-031313	40.5 ft	3/13/2013	< 0.0025	< 0.00012	< 0.00012	< 0.0025	< 0.0062	< 0.0062	< 0.0062	**0.00009 J**	**0.0011**		< 0.00012	< 0.012	**0.0024**	< 0.0062	**0.00016**
GWP-32	GWP-32-48.5-031313	48.5 ft	3/13/2013	< 0.0021	< 0.00011	< 0.00011	**0.00052 J**	< 0.0053	< 0.0053	< 0.0053	**0.000039 J J**	**0.0019 J**		< 0.00011	< 0.011	**0.0025 J**	< 0.0053	**0.00011 J**
MW-03	MW3-ROX-010716		1/7/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-03	MW3-ROX-040616		4/6/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-03	MW3-ROX-070816		7/8/2016	< 0.01	< 0.0002	< 0.0002 UJ	< 0.01	< 0.01	< 0.01	< 0.0013	< 0.0002	< 0.0002	< 0.01	< 0.0002	**0.0018 J H**	< 0.0002	< 0.01	< 0.0002
MW-03	MW3-ROX100716		10/7/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-03	MW3-ROX-010617		1/6/2017	< 0.0093	< 0.00019	< 0.00019	< 0.0093	< 0.0093	< 0.0093	**0.00058 J**	< 0.00019	< 0.00019	< 0.0093	< 0.00019	< 0.019	< 0.00019	< 0.0093	< 0.00019
MW-04	MW4-ROX-011316		1/13/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-04	MW4-ROX-041916		4/19/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-04	MW4-ROX-071416		7/14/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.00072	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-04	MW4-ROX-100616		10/6/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-04	MW4-ROX-010917		1/9/2017	**0.013**	< 0.00019	< 0.00019	< 0.0097	< 0.0097	< 0.0097	**0.00064 J B**	< 0.00019	< 0.00019	< 0.0097	< 0.00019	< 0.019	< 0.00019	< 0.0097	< 0.00019
MW-05	MW5-ROX-011416		1/14/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-05	MW5-ROX-040616		4/6/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-05	MW5-ROX-070816		7/8/2016	< 0.01	< 0.0002	< 0.0002 UJ	< 0.01	< 0.01	< 0.01	< 0.001	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-05	MW5-ROX-101016		10/10/2016	< 0.0098	< 0.0002	< 0.0002	< 0.0098	< 0.0098 UJ	< 0.0098	< 0.0098	< 0.0002	< 0.0002	< 0.0098	< 0.0002	< 0.02 UJ	< 0.0002	< 0.0098 UJ	< 0.0002
MW-05	MW5-ROX-010617		1/6/2017	< 0.0093	< 0.00019	< 0.00019	< 0.0093	< 0.0093	< 0.0093	**0.00067 J**	< 0.00019	< 0.00019	< 0.0093	< 0.00019	< 0.019	< 0.00019	< 0.0093	< 0.00019

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Table 2b
Groundwater Sampling SVOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	bis(2-Ethylhexyl)phthalate (mg/L)	Chrysene (1,2-Benzphenanthracene) (mg/L)	Dibenzo(a,h)anthracene (mg/L)	Dibenzofuran (mg/L)	Diethyl phthalate (mg/L)	Di-n-butyl phthalate (mg/L)	Di-n-octyl phthalate (mg/L)	Fluoranthene (mg/L)	Fluorene (mg/L)	ndene (mg/L)	ndeno(1,2,3-cd)pyrene (mg/L)	Pentachlorophenol (mg/L)	Phenanthrene (mg/L)	Phenol (mg/L)	Pyrene (mg/L)
CLASS 1 SCREENING CRITERIA (mg/L)				0.006	0.012	0.0003		5.6	0.7	0.14	0.28	0.28		0.00043	0.001		0.1	0.21
MW-06A	MW6A-ROX-011116		1/11/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-06A	MW6A-ROX-040716		4/7/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	**0.00005 J**	< 0.01	< 0.0002
MW-06A	MW6A-ROX-071116		7/11/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	**0.00086 J**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-06A	MW6A-ROX-101116		10/11/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-06A	MW6A-ROX-011017		1/10/2017	< 0.0093	< 0.00019	< 0.00019	< 0.0093	< 0.0093	< 0.0093	**0.00066 J B**	< 0.00019	< 0.00019	< 0.0093	< 0.00019	< 0.019	< 0.00019	< 0.0093	< 0.00019
MW-06B	MW6B-ROX-011116		1/11/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-06B	MW6B-ROX-040716		4/7/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	**0.000079 J**	< 0.01	< 0.0002
MW-06B	MW6B-ROX-071116		7/11/2016	< 0.01	**0.00004 J**	**0.000069 J**	< 0.01	< 0.01	< 0.01	**0.00055 J**	< 0.0002	< 0.0002	< 0.01	**0.00011 J**	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-06B	MW6B-ROX-101116		10/11/2016	< 0.0028	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-06B	MW6B-ROX-011017		1/10/2017	**0.0025 J**	< 0.00019	< 0.00019	< 0.0093	< 0.0093	< 0.0093	**0.00051 J B**	< 0.00019	< 0.00019	< 0.0093	< 0.00019	< 0.019	< 0.00019	< 0.0093	< 0.00019
MW-06C	MW6C-ROX-010816		1/8/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-06C	MW6C-ROX-040716		4/7/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-06C	MW6C-ROX-071116		7/11/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	**0.00059 J**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-06C	MW6C-ROX-101016		10/10/2016	**0.0026 J**	< 0.00019	< 0.00019	< 0.0095	< 0.0095	< 0.0095	< 0.0095 UJ	< 0.00019	< 0.00019	< 0.0095	< 0.00019	< 0.019	< 0.00019	< 0.0095	< 0.00019
MW-06C	MW6C-ROX-011017		1/10/2017	< 0.0093	< 0.00019	< 0.00019	< 0.0093	< 0.0093	< 0.0093	**0.00049 J B**	< 0.00019	< 0.00019	< 0.0093	< 0.00019	< 0.019	< 0.00019	< 0.0093	< 0.00019
MW-06D	MW6D-ROX-010816		1/8/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-06D	MW6D-ROX-010816-DUP		1/8/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-06D	MW6D-ROX-040716		4/7/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	**0.00005 J**	< 0.01	< 0.0002	< 0.02	**0.0001 J**	< 0.01	< 0.0002
MW-06D	MW6D-ROX-040716-DUP		4/7/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	**0.000045 J**	< 0.01	< 0.0002
MW-06D	MW6D-ROX-071116		7/11/2016	**0.013**	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	**0.00079 J**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-06D	MW6D-ROX-071116-DUP		7/11/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	**0.00082 J**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-06D	MW6D-ROX-101016		10/10/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0098 UJ	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02 UJ	< 0.0002	< 0.0098 UJ	< 0.0002
MW-06D	MW6D-ROX-101016-DUP		10/10/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0098 UJ	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02 UJ	< 0.0002	< 0.0098 UJ	< 0.0002
MW-06D	MW6D-ROX-011017		1/10/2017	< 0.0093	< 0.00019	< 0.00019	< 0.0093	< 0.0093	< 0.0093	< 0.0093	< 0.00019	< 0.00019	< 0.0093	< 0.00019	< 0.019	< 0.00019	< 0.0093	< 0.00019
MW-06D	MW6D-ROX-011017-DUP		1/10/2017	< 0.0093	**0.000068 J**	**0.000086 J**	< 0.0093	< 0.0093	< 0.0093	**0.00075 J B**	< 0.00019	< 0.00019	< 0.0093	**0.00009 J**	< 0.019	< 0.00019	< 0.0093	< 0.00019
MW-07	MW7-ROX-011416		1/14/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	**0.0018 J**	< 0.0002	< 0.02	**0.00041**	**0.18**	< 0.0002
MW-07	MW7-ROX-011416-DUP		1/14/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	**0.0019 J**	< 0.0002	< 0.02	**0.00056**	**0.32**	< 0.0002
MW-07	MW7-ROX-041916		4/19/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	**0.0023 J**	< 0.0002	< 0.02	**0.00021**	**0.25**	< 0.0002
MW-07	MW7-ROX-041916-DUP		4/19/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	**0.0022 J**	< 0.0002	< 0.02	**0.00025**	**0.18**	< 0.0002
MW-07	MW7-ROX-071416		7/14/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.00075	< 0.0002	**0.00026**	< 0.01	< 0.0002	< 0.02	**0.00041**	**0.16**	< 0.0002
MW-07	MW7-ROX-071416-DUP		7/14/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	**0.00018 J**	**0.0014 J**	< 0.0002	< 0.02	**0.00031**	**0.19**	< 0.0002
MW-07	MW7-ROX-100616		10/6/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01 UJ	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.46**	< 0.0002
MW-07	MW7-ROX-100616-DUP		10/6/2016	**0.0023 J**	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	**0.00046 J**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.43**	< 0.0002
MW-07	MW7-ROX-010917		1/9/2017	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	**0.00049 J B**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	**0.00014 J**	**0.17**	< 0.0002
MW-08	MW8-ROX-011416		1/14/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	**0.0023 J**	< 0.0002	< 0.02	< 0.0002	**0.22**	< 0.0002
MW-08	MW8-ROX-041916		4/19/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	**0.00035**	**0.0019 J**	< 0.0002	< 0.02	**0.00013 J**	**0.27**	< 0.0002
MW-08	MW8-ROX-071416		7/14/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.00071	< 0.0002	**0.00024**	**0.0014 J**	< 0.0002	< 0.02	< 0.0002	**0.13**	< 0.0002
MW-08	MW8-ROX-100616		10/6/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01 UJ	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.29**	< 0.0002
MW-08	MW8-ROX-010917		1/9/2017	< 0.0098	< 0.0002	< 0.0002	< 0.0098	< 0.0098	**0.0083 J**	**0.00061 J B**	< 0.0002	< 0.0002	**0.0039 J**	< 0.0002	**0.0018 J**	< 0.0002	**0.22**	< 0.0002
MW-13	MW13-ROX-010716		1/7/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-13	MW13-ROX-040816		4/8/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-13	MW13-ROX-071116		7/11/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-13	MW13-ROX100716		10/7/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-13	MW13-ROX-010617		1/6/2017	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	**0.0005 J**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-14	MW-14-ROX-010816		1/8/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	**0.000095 J**	< 0.01	**0.000066 J**	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-14	MW14-ROX-041416		4/14/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	**0.000084 J**	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-14	MW14-ROX-071116		7/11/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	**0.00054 J J**	< 0.0002	**0.000029 J**	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-14	MW14-ROX-101416		10/14/2016	< 0.0095 UJ	< 0.00019	< 0.00019	< 0.0095 UJ	< 0.0095 UJ	< 0.0095 UJ	**0.00055 J H J**	< 0.00019	**0.00004 J** *	< 0.0095 UJ	< 0.00019	< 0.019 UJ	< 0.00019	< 0.0095 UJ	< 0.00019
MW-14	MW14-ROX-011117		1/11/2017	**0.0039 J**	< 0.0002	< 0.0002	< 0.0098	< 0.0098	< 0.0098	**0.0005 J**	< 0.0002	< 0.0002	< 0.0098	< 0.0002	< 0.02	< 0.0002	< 0.0098	< 0.0002
MW-23	MW-23-ROX-010716		1/7/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	**0.000027 J**
MW-23	MW-23-ROX-040616		4/6/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002

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Table 2b
Groundwater Sampling SVOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	bis(2-Ethylhexyl)phthalate (mg/L)	Chrysene (1,2-Benzphenanthracene) (mg/L)	Dibenzo(a,h)anthracene (mg/L)	Dibenzofuran (mg/L)	Diethyl phthalate (mg/L)	Di-n-butyl phthalate (mg/L)	Di-n-octyl phthalate (mg/L)	Fluoranthene (mg/L)	Fluorene (mg/L)	ndene (mg/L)	ndeno(1,2,3-cd)pyrene (mg/L)	Pentachlorophenol (mg/L)	Phenanthrene (mg/L)	Phenol (mg/L)	Pyrene (mg/L)
CLASS 1 SCREENING CRITERIA (mg/L)				0.006	0.012	0.0003		5.6	0.7	0.14	0.28	0.28		0.00043	0.001		0.1	0.21
MW-23	MW-23-ROX-070816		7/8/2016	**0.0024 J F1**	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.0015	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-23	MW23-ROX-BP-100716		10/7/2016	< 0.0098	< 0.0002	< 0.0002	< 0.0098	< 0.0098	< 0.0098	< 0.0098 UJ	< 0.0002	< 0.0002	< 0.0098	< 0.0002	< 0.02	< 0.0002	< 0.0098	< 0.0002
MW-23	MW23-ROX-011017		1/10/2017	< 0.0096	< 0.00019	< 0.00019	< 0.0096	< 0.0096	**0.004 J**	**0.00052 J B**	< 0.00019	< 0.00019	< 0.0096	< 0.00019	< 0.019	< 0.00019	< 0.0096	< 0.00019
MW-25	MW25-ROX-011416		1/14/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.049**	< 0.0002
MW-25	MW25-ROX-041916		4/19/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.031**	< 0.0002
MW-25	MW25-ROX-071816		7/18/2016	< 0.01 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.01 UJ	< 0.01 UJ	< 0.01 UJ	< 0.0023 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.01 UJ	< 0.0002 UJ	< 0.02 UJ	< 0.0002 UJ	**0.02 H J**	< 0.0002 UJ
MW-25	MW25-ROX-100616		10/6/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	**0.00064 J**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.0095 J**	< 0.0002
MW-25	MW25-ROX-011117		1/11/2017	**0.0034 J**	< 0.00019	< 0.00019	< 0.0097	< 0.0097	< 0.0097	**0.00046 J**	< 0.00019	< 0.00019	< 0.0097	< 0.00019	< 0.019	< 0.00019	< 0.0097	< 0.00019
MW-26	MW26-ROX-010716		1/7/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-26	MW26-ROX-040616		4/6/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-26	MW26-ROX-071216		7/12/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	**0.00058 J J**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-26	MW26-ROX-101016		10/10/2016	**0.0031 J**	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	**0.00051 J J**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
MW-26	MW26-ROX-010617		1/6/2017	< 0.0093	< 0.00019	< 0.00019	< 0.0093	< 0.0093	< 0.0093	**0.00042 J**	< 0.00019	< 0.00019	< 0.0093	< 0.00019	< 0.019	< 0.00019	< 0.0093	< 0.00019
P-114	P114R-ROX-010716		1/7/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
P-114	P114R-ROX-040816		4/8/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
P-114	P114R-ROX-070816		7/8/2016	< 0.05	< 0.0002	< 0.0002	< 0.05	< 0.05	< 0.05	< 0.05	< 0.0002	< 0.0002	< 0.05	< 0.0002	< 0.1	< 0.0002	< 0.05	< 0.0002
P-114R	P114R-ROX-100716		10/7/2016	**0.0025 J**	< 0.00019	< 0.00019	< 0.0095	< 0.0095	< 0.0095	< 0.0095	< 0.00019	< 0.00019	< 0.0095	< 0.00019	< 0.019	< 0.00019	< 0.0095	< 0.00019
P-114R	P114R-ROX-010617		1/6/2017	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	**0.00063 J**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
P-119	P119-WRR-041414		4/14/2014	< 0.0095	< 0.00019	< 0.00019		**0.00032**	< 0.0095		< 0.00019	< 0.00019	< 0.0095	< 0.00019		< 0.00019	< 0.0095	< 0.00019
P-120	P120-WRR-042214		4/22/2014	< 0.0095	< 0.00019	< 0.00019		< 0.0095	< 0.0095		< 0.00019	< 0.00019	< 0.0095	< 0.00019		< 0.00019	< 0.0095	< 0.00019
P-57	P57-ROX-011216		1/12/2016	< 0.01	< 0.001	< 0.001	**0.001 J**	< 0.01	< 0.01	< 0.01	< 0.001	**0.00089 J**	**0.0037 J**	< 0.001	< 0.02	**0.00071 J**	**0.21**	< 0.001
P-57	P57-ROX-041816		4/18/2016	< 0.01 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.01 UJ	< 0.01 UJ	< 0.01 UJ	< 0.01 UJ	< 0.0002 UJ	**0.00044 H J**	**0.0012 J H J**	< 0.0002 UJ	< 0.02 UJ	**0.00037 H J**	**0.42 H J**	< 0.0002 UJ
P-57	P57-ROX-071316		7/13/2016	**0.038**	< 0.001	< 0.001	< 0.01	< 0.01	< 0.01	< 0.00069	< 0.001	**0.00053 J**	< 0.01	< 0.001	< 0.02	**0.00053 J**	**0.73**	< 0.001
P-57	P57-ROX-101816		10/18/2016	< 0.01	< 0.0002	< 0.0002	**0.00054 J**	< 0.01 UJ	< 0.01	< 0.01	< 0.0002	**0.00064**	**0.0013 J**	< 0.0002	< 0.02	**0.00064**	**1.1**	< 0.0002
P-57	P57-ROX-011617		1/16/2017	< 0.0098	< 0.0002	< 0.0002	< 0.0098	< 0.0098	< 0.0098	< 0.0098	< 0.0002	**0.00045**	< 0.0098	< 0.0002	< 0.02	**0.00041**	**2.1**	< 0.0002
P-58	P58-ROX-011316		1/13/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	**0.000063 J**	**0.0012**	**0.0025 J**	< 0.0002	< 0.02	**0.00087**	**0.068**	**0.00017 J**
P-58	P58-ROX-041816		4/18/2016	< 0.01 UJ	**0.00015 J H J**	< 0.0002 UJ	**0.0018 J H J**	< 0.01 UJ	< 0.01 UJ	< 0.01 UJ	< 0.0002 UJ	**0.0012 H J**	**0.002 J H J**	< 0.0002 UJ	< 0.02 UJ	**0.001 H J**	**0.45 H J**	**0.00024 H J**
P-58	P58-ROX-071516		7/15/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	**0.004 J**	< 0.00098	< 0.0002	**0.00063**	**0.0013 J**	< 0.0002	0.002 J	**0.00032**	**0.21**	< 0.0002
P-58	P58-ROX-101816		10/18/2016	< 0.0098	< 0.00098	< 0.00098	**0.0014 J**	< 0.0098 UJ	< 0.0098	< 0.0098	< 0.00098	**0.00094 J**	**0.0014 J**	< 0.00098	< 0.02	**0.00087 J**	**0.6**	**0.00018 J**
P-58	P58-ROX-011617		1/16/2017	< 0.0095	< 0.00095	< 0.00095	**0.0015 J**	**0.0013 J**	< 0.0095	**0.00072 J**	< 0.00095	**0.00098**	**0.0015 J**	< 0.00095	< 0.019	**0.0008 J**	**0.33**	**0.00024 J**
P-66	P-66-ROX-010816		1/8/2016	< 0.01	< 0.0002	< 0.0002	**0.0012 J**	< 0.01	< 0.01	< 0.01	**0.000037 J**	**0.0012**	< 0.01	**0.000049 J**	< 0.02	**0.00055**	< 0.01	**0.000043 J**
P-66	P66-ROX-041516		4/15/2016	< 0.01	< 0.0002	< 0.0002	**0.0014 J**	< 0.01	< 0.01	< 0.01	**0.000042 J**	**0.00049**	< 0.01	< 0.0002	< 0.02	**0.00035**	< 0.01	**0.000054 J**
P-66	P66-ROX-071116		7/11/2016	< 0.01	< 0.001	< 0.001	< 0.01	**0.0019 J**	< 0.01	< 0.01	< 0.001	**0.00091 J**	< 0.01	< 0.001	< 0.02	**0.00054 J**	< 0.01	< 0.001
P-66	P66-ROX-101416		10/14/2016	< 0.0095 UJ	< 0.00095	< 0.00095	< 0.0095 UJ	< 0.0095 UJ	< 0.0095 UJ	< 0.0095 UJ	< 0.00095	**0.001 ***	**0.0028 J H J**	< 0.00095	< 0.019 UJ	< 0.00095	< 0.0095 UJ	**0.00011 J ***
P-66	P66-ROX-011117		1/11/2017	**0.0026 J**	< 0.00097	< 0.00097	< 0.0097	< 0.0097	< 0.0097	< 0.0097	< 0.00097	< 0.00097	**0.006 J**	< 0.00097	< 0.019	< 0.00097	< 0.0097	**0.00015 J**
P-82A	P82A-WRR-041216		4/12/2016	< 0.01	< 0.0002	< 0.0002		< 0.01	< 0.01		< 0.0002	< 0.0002	< 0.01	< 0.0002		< 0.0002	< 0.01	**0.000029 J**
P-82A	P82A-WRR-100616		10/6/2016														< 0.0095	
P-82B	P82B-WRR-041516		4/15/2016	< 0.01	< 0.0002	< 0.0002		< 0.01	< 0.01		< 0.0002	< 0.0002	< 0.01	< 0.0002		< 0.0002	< 0.01	< 0.0002
P-82B	P82B-WRR-100616		10/6/2016														< 0.0095	
P-82C	P82C-WRR-041216		4/12/2016	< 0.01	< 0.0002	< 0.0002		< 0.01	< 0.01		< 0.0002	< 0.0002	< 0.01	< 0.0002		< 0.0002	< 0.01	**0.000026 J**
P-82C	P82C-WRR-100616		10/6/2016														< 0.0098	
P-82D	P82D-WRR-041516		4/15/2016	**0.005 J**	< 0.0002	< 0.0002		< 0.01	< 0.01		< 0.0002	< 0.0002	< 0.01	< 0.0002		< 0.0002	< 0.01	< 0.0002
P-82D	P82D-WRR-100616		10/6/2016														< 0.0098	
P-88A	P88A-WRR-041516		4/15/2016	< 0.01	< 0.0002	< 0.0002		< 0.01	< 0.01		< 0.0002	< 0.0002	< 0.01	< 0.0002		< 0.0002	< 0.01	< 0.0002
P-88A	P88A-WRR-100716		10/7/2016														< 0.0095	
P-88B	P88B-WRR-041516		4/15/2016	< 0.01	< 0.0002	< 0.0002		< 0.01	< 0.01		< 0.0002	< 0.0002	< 0.01	< 0.0002		< 0.0002	< 0.01	< 0.0002
P-88B	P88B-WRR-101016		10/10/2016														< 0.0095	
P-88C	P88C-WRR-041516		4/15/2016	< 0.01	< 0.0002	< 0.0002		< 0.01	< 0.01		< 0.0002	< 0.0002	< 0.01	< 0.0002		< 0.0002	< 0.01	< 0.0002
P-88C	P88C-WRR-041516-DUP		4/15/2016	< 0.01	< 0.0002	< 0.0002		< 0.01	< 0.01		< 0.0002	< 0.0002	< 0.01	< 0.0002		< 0.0002	< 0.01	< 0.0002
P-88C	P88C-WRR-100716		10/7/2016														< 0.0095	
P-88D	P88D-WRR-041516		4/15/2016	< 0.01	< 0.0002	< 0.0002		< 0.01	< 0.01		< 0.0002	< 0.0002	< 0.01	< 0.0002		< 0.0002	< 0.01	< 0.0002

SEE LAST PAGE OF TABLE FOR NOTES

Table 2b
Groundwater Sampling SVOC Detections and Exceedances

Location	Sample ID	Depth	Sample Date	bis(2-Ethylhexyl)phthalate (mg/L)	Chrysene (1,2-Benzphenanthracene) (mg/L)	Dibenzo(a,h)anthracene (mg/L)	Dibenzofuran (mg/L)	Diethyl phthalate (mg/L)	Di-n-butyl phthalate (mg/L)	Di-n-octyl phthalate (mg/L)	Fluoranthene (mg/L)	Fluorene (mg/L)	ndene (mg/L)	ndeno(1,2,3-cd)pyrene (mg/L)	Pentachlorophenol (mg/L)	Phenanthrene (mg/L)	Phenol (mg/L)	Pyrene (mg/L)
CLASS 1 SCREENING CRITERIA (mg/L)				0.006	0.012	0.0003		5.6	0.7	0.14	0.28	0.28		0.00043	0.001		0.1	0.21
P-88D	P88D-WRR-101016		10/10/2016														< 0.0095	
P-88D	P88D-WRR-101016-DUP		10/10/2016														< 0.0095	
P-93A	P-93A-ROX-011216		1/12/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	**0.00011 J**	**0.24**	< 0.0002
P-93A	P-93A-ROX-011216-DUP		1/12/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	**0.00018 J**	< 0.01	< 0.0002	< 0.02	**0.00013 J**	**0.19**	< 0.0002
P-93A	P93A-ROX-041916		4/19/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	**0.000039 J**	**0.0061 J**	< 0.0002
P-93A	P93A-ROX-041916-DUP		4/19/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.0056 J**	< 0.0002
P-93A	P93A-WRR-041916		4/19/2016	< 0.01	< 0.0002	< 0.0002		< 0.01	< 0.01		< 0.0002	< 0.0002	< 0.01	< 0.0002		**0.000058 J**	**0.0069 J**	< 0.0002
P-93A	P93A-WRR-041916-DUP		4/19/2016	< 0.01	< 0.0002	< 0.0002		< 0.01	< 0.01		< 0.0002	**0.00027**	< 0.01	< 0.0002		**0.000039 J**	**0.0053 J**	< 0.0002
P-93A	P93A-ROX-071316		7/13/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.0012	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.0051 J**	< 0.0002
P-93A	P93A-ROX-071316-DUP		7/13/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	**0.00007 J**	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.0078 J**	< 0.0002
P-93A	P93A-ROX-101816		10/18/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01 UJ	< 0.01	**0.00093 J J**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.042**	< 0.0002
P-93A	P93A-ROX-101816-DUP		10/18/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01 UJ	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.051**	< 0.0002
P-93A	P93A-WRR-101816		10/18/2016														**0.042**	
P-93A	P93A-WRR-101816-DUP		10/18/2016														**0.051**	
P-93A	P93A-ROX-011217		1/12/2017	**0.0028 J**	< 0.0002	< 0.0002	< 0.0098	< 0.0098	< 0.0098	**0.0008 J B**	< 0.0002	< 0.0002	< 0.0098	< 0.0002	< 0.02	< 0.0002	< 0.0098	< 0.0002
P-93A	P93A-ROX-011217-DUP		1/12/2017	< 0.011	< 0.00021	< 0.00021	< 0.011	< 0.011	< 0.011	**0.0006 J B**	< 0.00021	< 0.00021	< 0.011	< 0.00021	< 0.021	< 0.00021	< 0.011	< 0.00021
P-93B	P93B-ROX-011316		1/13/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.071**	< 0.0002
P-93B	P93B-ROX-041916		4/19/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.21**	< 0.0002
P-93B	P93B-WRR-041916		4/19/2016	< 0.01	< 0.0002	< 0.0002		< 0.01	< 0.01		< 0.0002	< 0.0002	< 0.01	< 0.0002		< 0.0002	**0.2**	< 0.0002
P-93B	P93B-ROX-071516		7/15/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.0011	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.41**	< 0.0002
P-93B	P93B-ROX-101816		10/18/2016	**0.0024 J**	< 0.0002	< 0.0002	< 0.01	< 0.01 UJ	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.085**	< 0.0002
P-93B	P93B-WRR-101816		10/18/2016														**0.085**	
P-93B	P93B-ROX-011017		1/10/2017	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.35**	< 0.0002
P-93B	P93B-ROX-011017-DUP		1/10/2017	< 0.0098	< 0.0002	< 0.0002	< 0.0098	< 0.0098	< 0.0098	< 0.0098	< 0.0002	< 0.0002	< 0.0098	< 0.0002	< 0.02	< 0.0002	**0.17**	< 0.0002
P-93C	P-93C-ROX-010816		1/8/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
P-93C	P93C-ROX-041816		4/18/2016	< 0.01 UJ	< 0.0002 UJ	< 0.0002 UJ	< 0.01 UJ	< 0.01 UJ	< 0.01 UJ	< 0.01 UJ	**0.000023 J J**	< 0.0002 UJ	< 0.01 UJ	< 0.0002 UJ	< 0.02 UJ	< 0.0002 UJ	< 0.01 UJ	< 0.0002 UJ
P-93C	P93C-WRR-041816		4/18/2016	< 0.01 UJ	< 0.0002 UJ	< 0.0002 UJ		< 0.01 UJ	< 0.01 UJ		< 0.0002 UJ	**0.000053 J J**	< 0.01 UJ	< 0.0002 UJ		**0.000037 J J**	< 0.01 UJ	< 0.0002 UJ
P-93C	P93C-ROX-071216		7/12/2016	< 0.01	< 0.0002	**0.000048 J**	< 0.01	< 0.01	< 0.01	**0.00053 J J**	< 0.0002	< 0.0002	< 0.01	**0.000044 J**	< 0.02	< 0.0002	< 0.01	< 0.0002
P-93C	P93C-ROX-101816		10/18/2016	< 0.0095	< 0.00019	< 0.00019	< 0.0095	< 0.0095 UJ	< 0.0095	**0.00046 J**	< 0.00019	< 0.00019	< 0.0095	< 0.00019	< 0.019	< 0.00019	< 0.0095	< 0.00019
P-93C	P93C-WRR-101816		10/18/2016														< 0.0095	
P-93C	P93C-ROX-011117		1/11/2017	< 0.0098	< 0.0002	< 0.0002	< 0.0098	< 0.0098	< 0.0098	**0.00062 J**	< 0.0002	< 0.0002	< 0.0098	< 0.0002	< 0.02	< 0.0002	< 0.0098	< 0.0002
P-93D	P93D-ROX-011316		1/13/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.063**	< 0.0002
P-93D	P93D-ROX-041916		4/19/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	**0.00057 J**	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	**0.047**	< 0.0002
P-93D	P93D-WRR-041916		4/19/2016	< 0.01	< 0.0002	< 0.0002		< 0.01	< 0.01		< 0.0002	< 0.0002	< 0.01	< 0.0002		< 0.0002	**0.05 F1**	< 0.0002
P-93D	P93D-ROX-071516		7/15/2016	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0002	< 0.0002	< 0.01	< 0.0002	< 0.02	< 0.0002	< 0.01	< 0.0002
P-93D	P93D-ROX-101716		10/17/2016	< 0.0095	< 0.00019	< 0.00019	< 0.0095	< 0.0095	< 0.0095	< 0.0095 UJ	< 0.00019	< 0.00019	< 0.0095	< 0.00019	< 0.019	< 0.00019	< 0.0095	< 0.00019
P-93D	P93D-WRR-101716		10/17/2016														< 0.0095	
P-93D	P93D-ROX-011017		1/10/2017	< 0.0097	< 0.00019	< 0.00019	< 0.0097	< 0.0097	< 0.0097	**0.0005 J B**	< 0.00019	< 0.00019	< 0.0097	< 0.00019	< 0.019	< 0.00019	< 0.0097	< 0.00019
P-95	P95-WRR-041416		4/14/2016	< 0.01	< 0.0002	< 0.0002		< 0.01	< 0.01		< 0.0002	< 0.0002	< 0.01	< 0.0002			< 0.01	< 0.0002
P-95	P95-WRR-101016		10/10/2016														< 0.0095	

NOTES:

1) **Bold** value indicates constituent detected.

2) <### indicates constituent not detected above given reporting limit.

J = Concentration is estimated.

UJ = Analyte not detected at estimated reporting limit.

B = Target analyte or common lab contaminant was identified in the method blank indicating possible field or laboratory contamination

D = The result is from a diluted sample.

F1 = MS and/or MSD recovery outside acceptance limits

MS/MSD = Matrix Spike / Matrix Spike Duplicate

H = Sample prepared or analyzed beyond the specific holding time

* = Laboratory control sample (LCS) or LCS duplicate (LCSD) outside acceptance limits

Exceedance of Class I groundwater screening criteria

Blank cell indicates analytical data not available.

Figures

VILLAGE OF ROXANA

SIXTH ST

SEVENTH ST

EIGHTH ST

BP PROPERTY

PUBLIC WORKS YARD

RAND AVENUE

NORTH PROPERTY

APPROXIMATE LOCATION OF GP-17 AND GP-18

APPROXIMATE LOCATION OF GWP-24

WEST PROPERTY

HIGHWAY 111 (S. CENTRAL AVE)

MAIN OFFICE BUILDING

MAIN PROPERTY

COMPOUNDING

SOUTHWEST PROPERTY

VILLAGE OF SOUTH ROXANA

SOURCE:
MAP PROVIDED BY GOOGLE EARTH 2017.

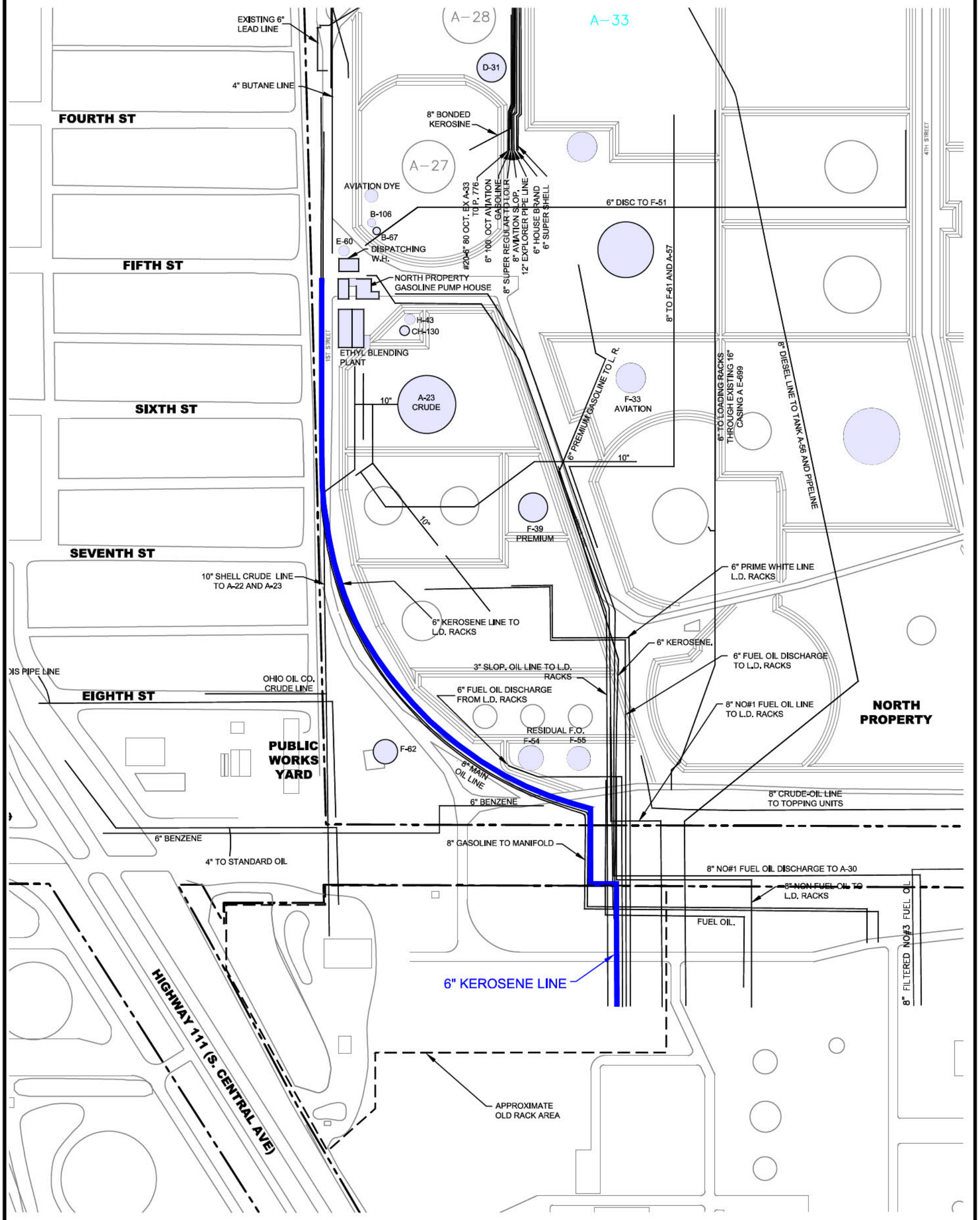
0 250 500
SCALE FEET

N

EQUILON ENTERPRISES LLC dba SHELL OIL PRODUCTS US WRB REFINING LP, WOOD RIVER REFINERY ROXANA, ILLINOIS		PROJECT NO. 60527968
AECOM		
DRN. BY: djd April 2017 DSGN. BY:wmp CHKD. BY:b3	Roxana Public Works Yard and Northwest Portion of WRR Main Property	FIG. NO. 1

File: \\IRVSTLOUIS\STLOUIS\PROJECTS\ENVIRONMENTAL\SHELL\60527968 WRR 2017\500 DELIVERABLES (DELIV)\RESPONSE TO 011817 LTR\FIGURES\FIG-1 INVESTIGATION AREA.DWG Last edited: APR. 19, 17 @ 12:55 p.m. by: wendy.pennington

File: \\URSSTLOUIS\STLOUIS\PROJECTS\ENVIRONMENTAL\SHELL\60527968 WRR 2017\500 DELIVERABLES (DELIV)\RESPONSE TO 011817 LTR\FIGURES\FIG-2 CORRECTED HISTORIC PIPELINES.DWG Last edited: APR. 19, 17 @ 12:56 p.m. by: wendy.pennington



LEGEND

HISTORIC PIPELINES, AND STRUCTURES

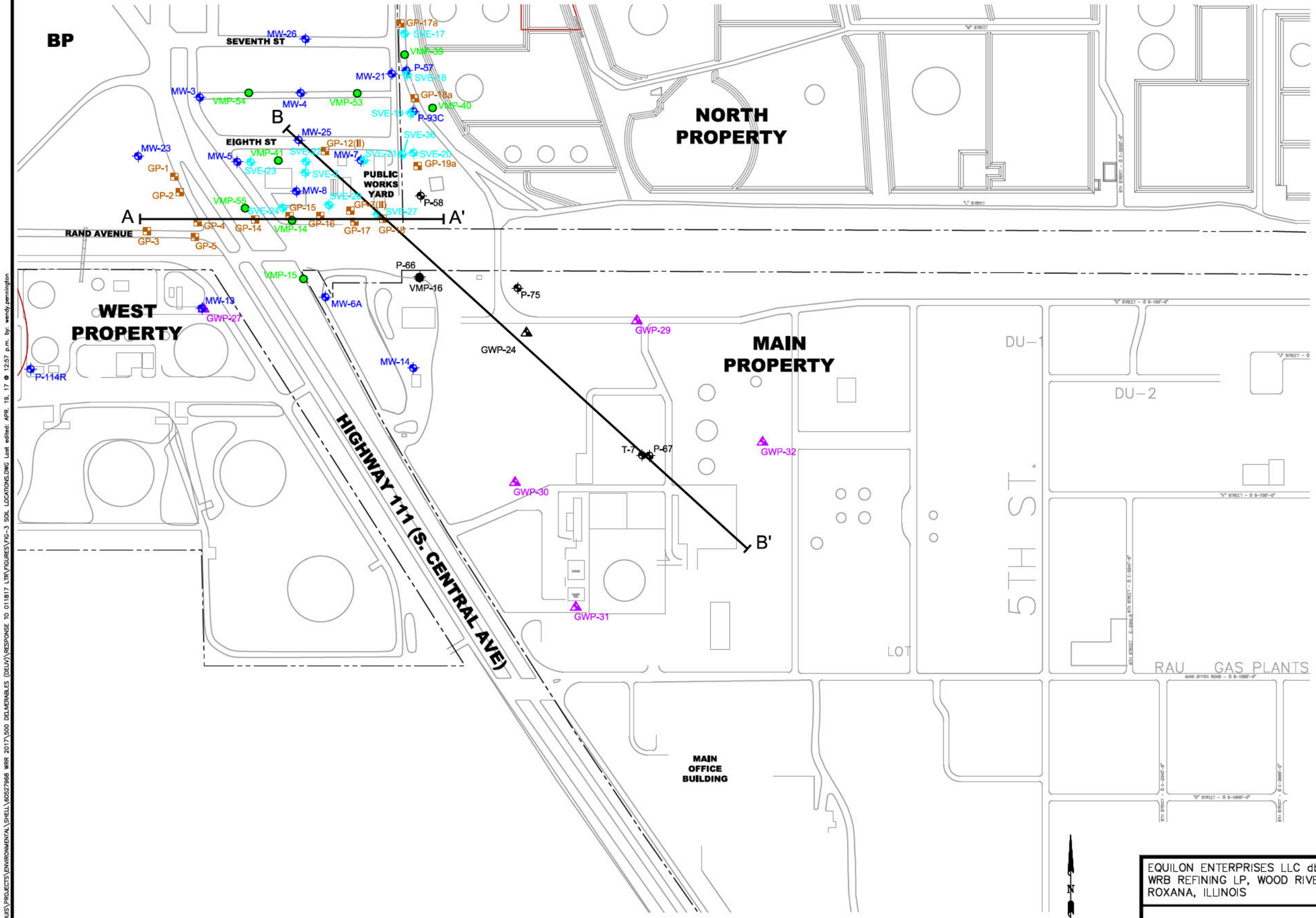
CORRECTED HISTORIC KEROSENE LINE LOCATION

N

0 200

SCALE FEET

EQUILON ENTERPRISES LLC dba SHELL OIL PRODUCTS US WRB REFINING LP, WOOD RIVER REFINERY ROXANA, ILLINOIS	PROJECT NO. 60527968
AECOM	
DRN. BY:wmp April 2017 DSGN. BY:djd CHKD. BY:b3	Roxana Public Works and WRR Main Property Areas FIG. NO. 2



LEGEND

- VAPOR MONITORING POINT (VMP) LOCATION
- GROUNDWATER MONITORING WELL LOCATION
- SOIL VAPOR EXTRACTION (SVE) WELL LOCATION
- GROUNDWATER PROFILE LOCATION
- DIRECT PUSH SOIL SAMPLE LOCATION
- CROSS SECTION TRANSECT

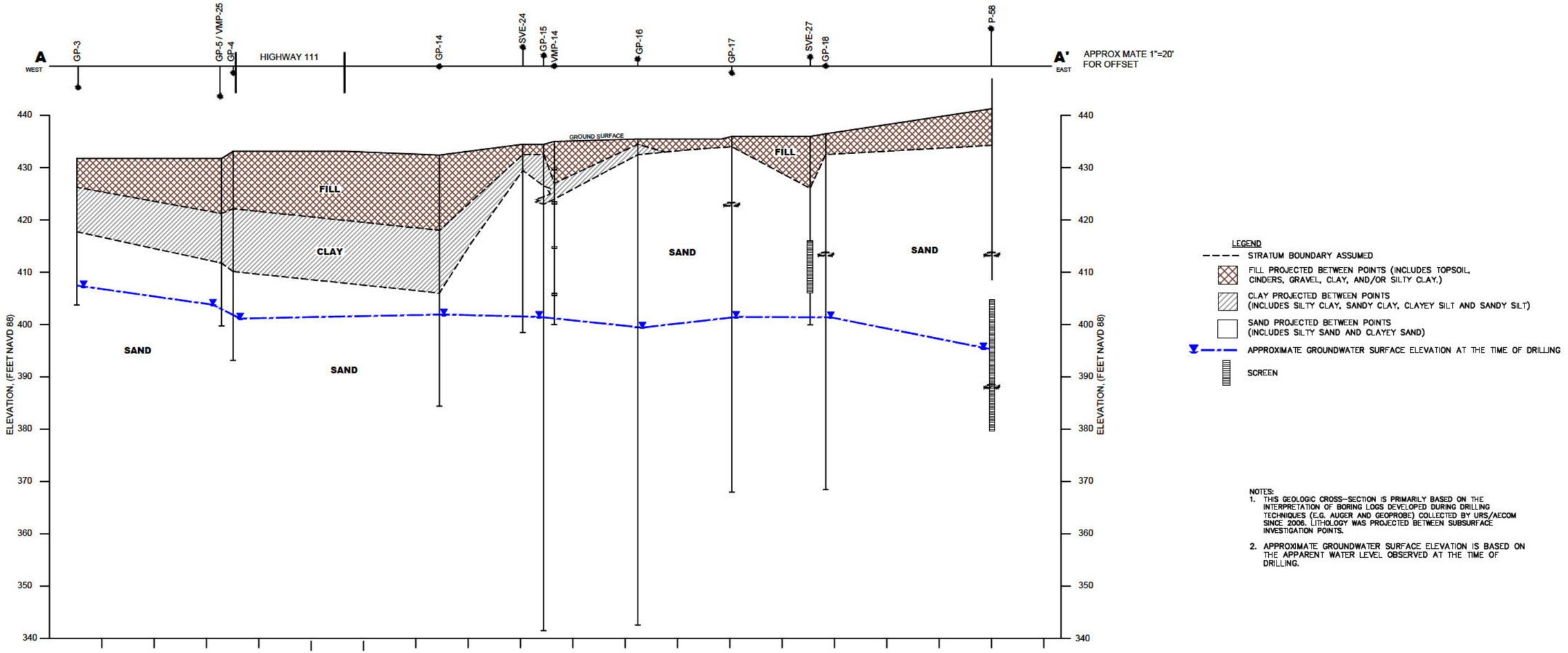
NOTES:

1. LOCATIONS SHOWN IN COLOR ON FIGURE ARE THOSE WHERE SOIL ANALYTICAL SAMPLES HAVE BEEN COLLECTED.
2. LOCATIONS SHOWN IN BLACK ON FIGURE ARE THOSE WHERE NO SOIL ANALYTICAL SAMPLES HAVE BEEN COLLECTED, HOWEVER THEIR BORING LOG WAS USED TO GENERATE CROSS SECTIONS.

SOURCE:
MAP PROVIDED BY GOOGLE EARTH 2017.

EQUILON ENTERPRISES LLC dba SHELL OIL PRODUCTS US WRB REFINING LP, WOOD RIVER REFINERY ROXANA, ILLINOIS	PROJECT NO. 60527968
AECOM	
DRN. BY:djd April 2017 DSGN. BY:wmp CHKD. BY:b3	**Comprehensive Soil Sampling Locations and Cross Section Locations** — FIG. NO. 3

File: \\ORSSTLOUIS\STLOUIS\PROJECTS\ENVIRONMENTAL\SHELL\60527968 WRR 2017\500 DELIVERABLES (DELIV)\RESPONSE TO 011817 LTR\FIGURES\FIG-3 SOIL LOCATIONS.DWG Last edited: APR. 19, 17 @ 12:57 p.m. by: wendy.pennington



LEGEND

- STRATUM BOUNDARY ASSUMED
- FILL PROJECTED BETWEEN POINTS (INCLUDES TOPSOIL, CINDERS, GRAVEL, CLAY, AND/OR SILTY CLAY.)
- CLAY PROJECTED BETWEEN POINTS (INCLUDES SILTY CLAY, SANDY CLAY, CLAYEY SILT AND SANDY SILT)
- SAND PROJECTED BETWEEN POINTS (INCLUDES SILTY SAND AND CLAYEY SAND)
- APPROXIMATE GROUNDWATER SURFACE ELEVATION AT THE TIME OF DRILLING
- SCREEN

NOTES:

1. THIS GEOLOGIC CROSS-SECTION IS PRIMARILY BASED ON THE INTERPRETATION OF BORING LOGS DEVELOPED DURING DRILLING TECHNIQUES (E.G. AUGER AND GEOPROBE) COLLECTED BY URS/AECOM SINCE 2006. LITHOLOGY WAS PROJECTED BETWEEN SUBSURFACE INVESTIGATION POINTS.
2. APPROXIMATE GROUNDWATER SURFACE ELEVATION IS BASED ON THE APPARENT WATER LEVEL OBSERVED AT THE TIME OF DRILLING.

0 10 20
VERTICAL SCALE FEET

0 50 100
HORIZONTAL SCALE FEET

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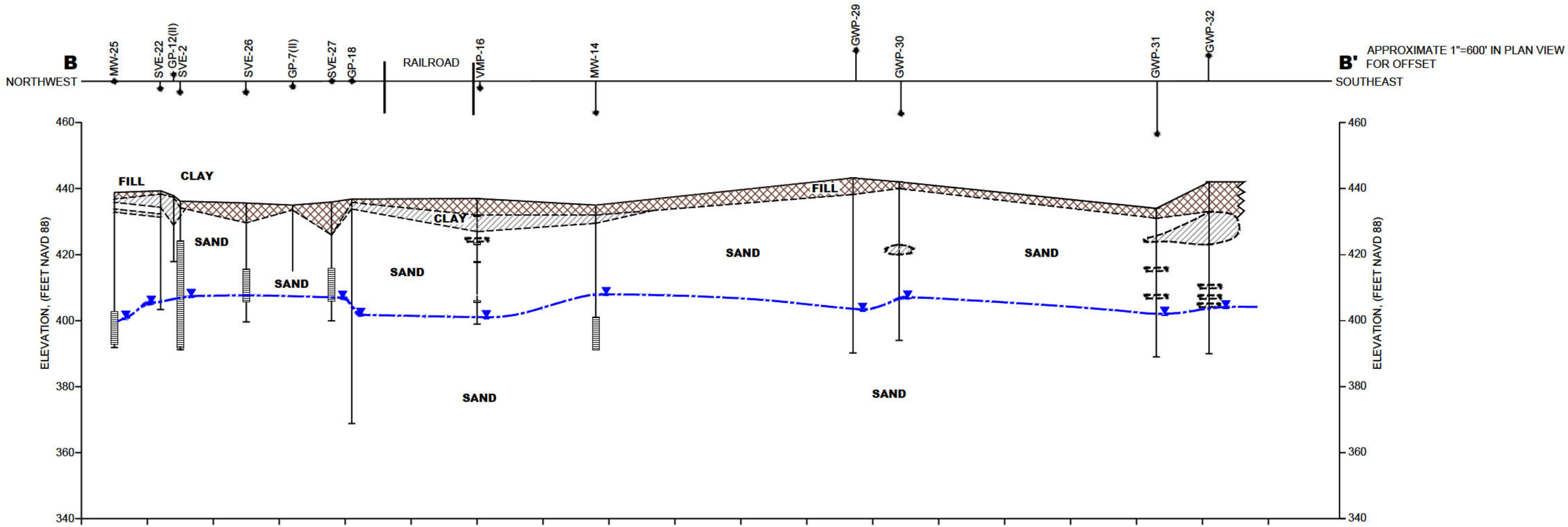
AECOM		
DRN. BY: djd April 2017 DSGN. BY: wmp CHKD. BY: b3	West – East Cross Section (A–A')	FIG. NO. 4

File: \\URSSTLOUIS\STLOUIS\PROJECTS\ENVIRONMENTAL\SHELL\60527968 WRR 2017\500 DELIVERABLES (DELIV)\RESPONSE TO 011817 LTR\FIGURES\FIG-4 WEST-EAST CROSS SECTION A-A.DWG Last edited: APR. 19, 17 @ 12:57 p.m. by: wendy.pennington



LEGEND

- STRATUM BOUNDARY ASSUMED
- FILL PROJECTED BETWEEN POINTS (INCLUDES TOPSOIL, CINDERS, GRAVEL, CLAY, AND/OR SILTY CLAY.)
- CLAY PROJECTED BETWEEN POINTS (INCLUDES SILTY CLAY, SANDY CLAY, CLAYEY SILT AND SANDY SILT)
- SAND PROJECTED BETWEEN POINTS (INCLUDES SILTY SAND AND CLAYEY SAND)
- APPROXIMATE GROUNDWATER SURFACE ELEVATION AT THE TIME OF DRILLING
- SCREEN

NOTES:

1. THIS GEOLOGIC CROSS-SECTION IS PRIMARILY BASED ON THE INTERPRETATION OF BORING LOGS DEVELOPED DURING DRILLING TECHNIQUES (E.G. AUGER AND GEOPROBE) COLLECTED BY URS/AECOM SINCE 2006. LITHOLOGY WAS PROJECTED BETWEEN SUBSURFACE INVESTIGATION POINTS.
2. APPROXIMATE GROUNDWATER SURFACE ELEVATION IS BASED ON THE APPARENT WATER LEVEL OBSERVED AT THE TIME OF DRILLING.

VERTICAL SCALE 0 15 30 FEET

HORIZONTAL SCALE 0 75 150 FEET

EQUILON ENTERPRISES LLC dba SHELL OIL PRODUCTS US
WRB REFINING LP, WOOD RIVER REFINERY
ROXANA, ILLINOIS

PROJECT NO. 60527968

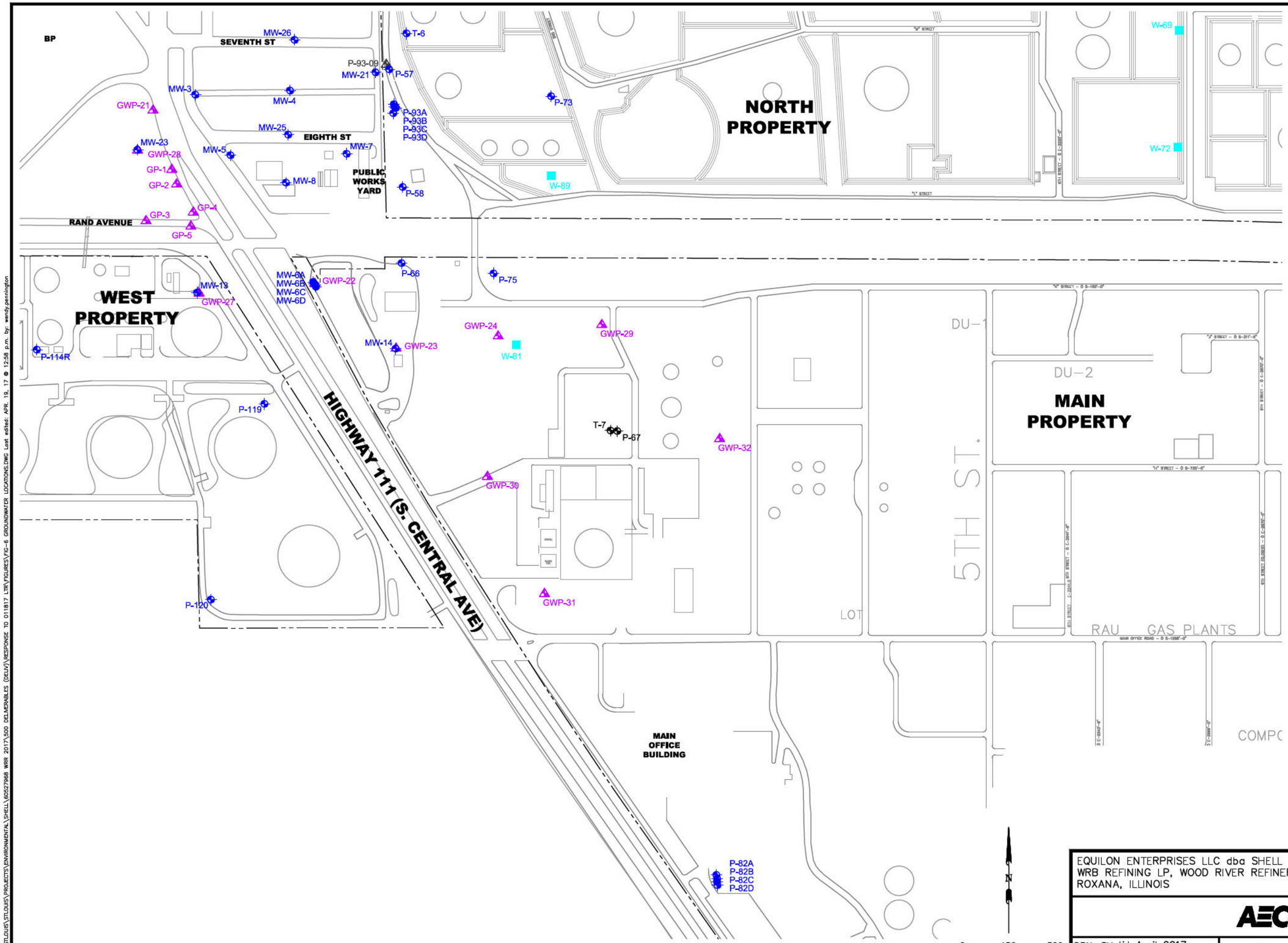
AECOM

DRN. BY: djd April 2017
DSGN. BY: wmp
CHKD. BY: bJ

Northwest – Southeast Cross Section (B–B')

FIG. NO. 5

File: \\URSSTLOUIS\STLOUIS\PROJECTS\ENVIRONMENTAL\SHELL\60527968 WRR 2017\500 DELIVERABLES (DELIV)\RESPONSE TO 011817 LTR\FIGURES\FIG-5 NORTHWEST-SOUTHEAST CROSS SECTION B-B.DWG Last edited: APR. 19, 17 @ 12:58 p.m. by: wendy.pennington



LEGEND

- GROUNDWATER MONITORING WELL LOCATION
- GROUNDWATER PROFILE SAMPLE LOCATION
- WATER PRODUCTION WELL LOCATION

SOURCE:
MAP PROVIDED BY GOOGLE EARTH 2017.

EQUILON ENTERPRISES LLC dba SHELL OIL PRODUCTS US WRB REFINING LP, WOOD RIVER REFINERY ROXANA, ILLINOIS	PROJECT NO. 60527968
AECOM	
DRN. BY:djd April 2017 DSGN. BY:wmp CHKD. BY:b3	**Comprehensive Groundwater Sampling Locations** — FIG. NO. 6

File: \\URSSTLOUIS\STLOUIS\PROJECTS\ENVIRONMENTAL\SHELL\60527968 WRR 2017\500 DELIVERABLES (DELIV)\RESPONSE TO 011817 LTR\FIGURES\FIG-6 GROUNDWATER LOCATIONS.DWG Last edited: APR. 19, 17 @ 12:58 p.m. by: wendy.pennington

NOTES:
1. WATER LEVELS WERE OBTAINED DURING THE FIRST QUARTER 2017 GAUGING EVENT ON JANUARY 16–17, 2017.

2. CONTOUR LINES PRIMARILY GENERATED BY SURFER VERSION 8 MODELING OF GROUNDWATER ELEVATIONS. SOME INTERPRETATION WAS DONE UTILIZING PROFESSIONAL JUDGEMENT AND CONTOUR LINES WERE MODIFIED BY HAND.

3. ELEVATIONS ARE RELATIVE TO THE 1988 NGS DATUM.

4. ELEVATIONS AND ADDITIONAL INFORMATION USED TO GENERATE THE CONTOUR LINES CAN BE FOUND IN THE ROXANA INTERIM GROUNDWATER MONITORING PROGRAM 1Q17 REPORT.

LEGEND

- GROUNDWATER MONITORING WELL LOCATION USED TO GENERATE GROUNDWATER CONTOURS
- GROUNDWATER MONITORING WELL LOCATION NOT USED TO GENERATE GROUNDWATER CONTOURS
- GROUNDWATER PIEZOMETER LOCATION USED TO GENERATE GROUNDWATER CONTOURS
- GROUNDWATER PIEZOMETER LOCATION NOT USED TO GENERATE GROUNDWATER CONTOURS
- WRR GROUNDWATER PRODUCTION WELL
- 407 GROUNDWATER SURFACE CONTOUR NAVD 88 (CONTOUR INTERVAL 0.5 FT.)
- GROUNDWATER GRADIENT

EQUILON ENTERPRISES LLC dba SHELL OIL PRODUCTS US
WRB REFIING LP, WOOD RIVER REFINERY
ROXANA, ILLINOIS

PROJECT NO. 60527968

AECOM

DRN. BY:djd April 2017
DSGN. BY:lar, wmp
CHKD. BY:b3

Refinery Potentiometric Map
First Quarter, January 16–17, 2017

FIG. NO. 7

File: \\URSSTLOUIS\STLOUIS\PROJECTS\ENVIRONMENTAL\SHELL\60527968 WRR 2017\500 DELIVERABLES (DELIV)\RESPONSE TO 011817 LTR\FIGURES\FIG–7 1Q17 GW CONTOURS (800 SCALE).DWG Last edited: APR. 19, 17 @ 12:59 p.m. by: wendy.pennington

Location	Depth (ft bgs)	Date	Benzene (mg/kg)
GP-17a	12 - 13	3/15/2011	<0.61
	23 - 24	3/15/2011	<0.26
	39 - 40	3/15/2011	0.695

Location	Depth (ft bgs)	Date	Benzene (mg/kg)	Ethylbenzene (mg/kg)	Naphthalene (mg/kg)	Xylenes, total (mg/kg)
VMP-39	9 - 10	9/12/2011	3.2	28.4	4.15	16
	10 - 12.5	9/15/2011	<0.63	107	17.8	37.2
	20 - 22.5	9/15/2011	<0.054 / <0.062	0.299 / 1.25	0.544 / 1.14	0.267 / 1.05
	30 - 31	9/15/2011	<0.3	26.7	10.9	14.5

Location	Depth (ft bgs)	Date	Naphthalene (mg/kg)
SVE-18	17.5 - 20	9/15/2011	3.91

Location	Depth (ft bgs)	Date	Benzene (mg/kg)
GP-18a	12 - 13	3/16/2011	0.00044 J
	29.5 - 30.5	3/16/2011	<0.2
	39 - 40	3/16/2011	2.42

Location	Depth (ft bgs)	Date	Benzene (mg/kg)
VMP-40	10 - 12.5	9/26/2011	0.246 J / 0.0708 J
	20 - 22.5	9/26/2011	0.0095
	30 - 31.5	9/26/2011	0.0129

Location	Depth (ft bgs)	Date	Benzene (mg/kg)
SVE-20	25 - 27.5	9/22/2011	0.0701

Location	Depth (ft bgs)	Date	Benzene (mg/kg)
SVE-22	30 - 32	9/8/2011	0.0303

Location	Depth (ft bgs)	Date	Benzene (mg/kg)
GP-19a	12 - 13	3/17/2011	0.0303
	27 - 28	3/17/2011	0.0856
	39 - 40	3/17/2011	15.6

Location	Depth (ft bgs)	Date	Benzene (mg/kg)
GP-18	21	1/8/2013	9.94

Location	Depth (ft bgs)	Date	Benzene (mg/kg)	Naphthalene (mg/kg)	Xylenes, total (mg/kg)
GP-17	15	1/7/2013	154 J / 391 J	45.3 / 64.5	7.28 / 12.3

Location	Depth (ft bgs)	Date	Benzene (mg/kg)
GP-5	10	6/9/2010	<0.006
	19	6/9/2010	<0.005
	27	6/9/2010	0.034 J / 0.186 J

Location	Depth (ft bgs)	Date	Benzene (mg/kg)
GP-15	19	12/18/2012	63.7
	29	12/18/2012	0.126

Location	Depth (ft bgs)	Date	Benzene (mg/kg)
GP-16	23	1/3/2013	0.0458

Location	Depth (ft bgs)	Date	Benzene (mg/kg)
GP-7(II)	3	5/15/2008	<0.00501
	19	5/19/2008	0.344 EJ / 0.795 EJ

Location	Depth (ft bgs)	Date	Benzene (mg/kg)	Ethylbenzene (mg/kg)	Naphthalene (mg/kg)	Xylenes, total (mg/kg)
GWP-32	17	3/12/2013	1.07	<0.4	<1	1.9
	36	3/12/2013	1.82	40.2	35.2	28.2

BP

SEVENTH ST

EIGHTH ST

RAND AVENUE

PUBLIC WORKS YARD

NORTH PROPERTY

WEST PROPERTY

MAIN PROPERTY

HIGHWAY 111 (S. CENTRAL AVE)

MW-26, MW-3, MW-4, MW-5, MW-6A, MW-7, MW-8, MW-13, MW-14, MW-21, MW-23, MW-25, MW-41, GWP-27, GWP-29, GWP-30, GWP-31, GWP-32, P-114R, P-57, P-93C, VMP-14, VMP-15, VMP-53, VMP-54, VMP-55, SVE-2, SVE-17, SVE-18, SVE-19, SVE-20, SVE-21, SVE-22, SVE-23, SVE-24, SVE-26, SVE-27, SVE-36, GP-1, GP-2, GP-3, GP-4, GP-5, GP-7(II), GP-12(II), GP-14, GP-15, GP-16, GP-17, GP-17a, GP-18, GP-18a, GP-19a

LEGEND

- SOIL SAMPLE LOCATION WHERE SCREENING EXCEEDANCE OBSERVED
- SOIL SAMPLE LOCATION WHERE NO SCREENING EXCEEDANCE OBSERVED
- GP-18 DENOTES DELINEATION OF SOIL EXCEEDANCES AT THE PUBLIC WORKS YARD

NOTES:

1. SOIL SAMPLES COLLECTED ABOVE THE APPARENT WATER TABLE FROM EACH LOCATION ARE SHOWN ON FIGURE.
2. LOCATIONS SHOWN IN BLACK INDICATE RESULTS FROM THAT LOCATION DO NOT EXCEED SCREENING CRITERIA.
3. LOCATIONS SHOWN IN COLOR INDICATE RESULTS FOR AT LEAST ONE DEAPTH AT THAT LOCATION EXCEEDED SCREENING CRITERIA.
4. SPIDER BOX CELLS HIGHLIGHTED IN YELLOW INDICATE RESULT EXCEEDS SCREENING CRITERIA.
5. SOIL SCREENING CRITERIA, FROM 35 ILLINOIS ADMINISTRATIVE CODE (IAC) 742 APPENDIX B TABLE B, ARE AS FOLLOWS:

	I/C - Ingestion	I/C - Inhalation	CW - Ingestion	CW - Inhalation	Soil to GW
Benzene	100	1.6	2,300	2.2	0.03
Benzo(a)pyrene	0.8	--	17	--	8
Benzo(a)anthracene	8	--	170	--	2
Dibenzo(a,h)anthracene	0.8	--	17	--	2
Ethylbenzene	200,000	400	20,000	58	13
Naphthalene	41,000	270	4,100	1.8	12
Xylenes, total	410,000	320	41,000	5.6	150

6. I/C – INDUSTRIAL COMMERCIAL
7. CW – CONSTRUCTION WORKER
8. SOIL TO GW = SOIL COMPONENT OF THE GROUNDWATER INGESTION PATHWAY
9. E = DATA EXCEEDED UPPER EQUIPMENT CALIBRATION LIMIT
10. J = CONCENTRATION IS ESTIMATED

SOURCE:
MAP PROVIDED BY GOOGLE EARTH 2017.

0 150 300
SCALE FEET

N

EQUILON ENTERPRISES LLC dba SHELL OIL PRODUCTS US
WRB REFINING LP, WOOD RIVER REFINERY
ROXANA, ILLINOIS

PROJECT NO. 60527968

AECOM

DRN. BY:djd April 2017
DSGN. BY:wmp
CHKD. BY:b3

Comprehensive Soil Sampling Analytical Exceedances

FIG. NO. 8

File: \\JOSSLOUIS\STLOUIS\PROJECTS\ENVIRONMENTAL\SHELL\60527968 WRR 2017\500 DELIVERABLES (DELIV)\RESPONSE TO 011817 LTR\FIGURES\FIG-8 SOIL EXCEEDANCES.DWG Last edited: APR. 19, 17 @ 1:00 p.m. by: wendy.pennington

Location	Quarter	Date	Benzene (mg/L)	Pentachlorophenol (mg/L)	Phenol (mg/L)
MW-8	2Q16	4/19/2016	480	<0.02	0.27
	3Q16	7/14/2016	310	<0.02	0.13
	4Q16	10/6/2016	630	<0.02	0.29
	1Q17	1/9/2017	410	0.0018 J	0.22

Location	Quarter	Date	Benzene (mg/L)	Phenol (mg/L)
MW-7	2Q16	4/19/2016	1100 / 1100	0.25 / 0.18
	3Q16	7/14/2016	670 / 680	0.16 / 0.19
	4Q16	10/6/2016	910 / 840	0.46 / 0.43
	1Q17	1/9/2017	950	0.17

Location	Quarter	Date	Benzene (mg/L)
T-6	4Q10	10/4/2010	142 D

Location	Quarter	Date	Benzene (mg/L)	bis(2-Ethylhexyl) phthalate (mg/L)	2-Methylnaphthalene (mg/L)	Phenol (mg/L)
P-57	2Q16	4/18/2016	73	0.62 J	0.077 H J	0.45 H J
	3Q16	7/13/2016	70	<2.0	0.033	0.21
	4Q16	10/18/2016	71	<2.0	0.052	0.6
	1Q17	1/16/2017	39	0.98 J	0.045	0.33

Location	Quarter	Date	Benzene (mg/L)	Naphthalene (mg/L)
MW-21	2Q13	4/5/2013	368 / 364	0.175 J / 0.132 J

Location	Quarter	Date	bis(2-Ethylhexyl) phthalate (mg/L)
MW-4	2Q16	4/19/2016	<0.01
	3Q16	7/14/2016	<0.01
	4Q16	10/6/2016	<0.01
	1Q17	1/9/2017	0.013

Location	Quarter	Date	Benzene (mg/L)	Ethylbenzene (mg/L)	Naphthalene (mg/L)	Toluene (mg/L)
W-69	2Q16	5/10/2016	5.4	0.82	0.18	1.5
	3Q16	7/5/2016	23 / 21	0.06 J / <0.1	<0.1 / <0.1	0.22 / 0.11
	4Q16	10/3/2016	3.1	0.15	0.033	<0.02

Location	Quarter	Date	Pentachlorophenol (mg/L)
MW-3	2Q16	4/6/2016	<0.02
	3Q16	7/8/2016	0.0018 J H
	4Q16	10/7/2016	<0.02
	1Q17	1/6/2017	<0.019

Location	Quarter	Date	Benzene (mg/L)
W-89	2Q16	5/9/2016	20 F1
	3Q16	7/5/2016	14
	4Q16	10/3/2016	19

Location	Quarter	Date	Benzene (mg/L)	Phenol (mg/L)
P-93A*	2Q16	4/19/2016	74 / 72	0.0069 J / 0.0053 J
	3Q16	7/13/2016	18 / 20	0.0051 J / 0.0078 J
	4Q16	10/18/2016	2.6 / 3.3	0.042 / 0.051
	1Q17	1/12/2017	0.51 / 0.69	<0.0098 / <0.011
P-93B*	2Q16	4/19/2016	290	0.21
	3Q16	7/15/2016	100	0.41
	4Q16	10/18/2016	86	0.085
	1Q17	1/10/2017	88	0.35
P-93C*	2Q16	4/18/2016	0.068	<0.01 UJ
	3Q16	7/12/2016	<0.001	<0.01
	4Q16	10/18/2016	<0.001	<0.0095
	1Q17	1/11/2017	0.00095 J	<0.0098
P-93D*	2Q16	4/19/2016	9.5	0.05 F1
	3Q16	7/15/2016	0.086	<0.01
	4Q16	10/17/2016	0.027	<0.0095
	1Q17	1/10/2017	0.14	<0.0097

Location	Quarter	Date	Benzene (mg/L)
W-72	2Q16	5/10/2016	2.3 / 2.6
	3Q16	7/5/2016	2.3
	4Q16	10/3/2016	2.6 / 2.5

Location	Quarter	Date	Benzene (mg/L)	Ethylbenzene (mg/L)	Naphthalene (mg/L)	Toluene (mg/L)
P-73	1Q06	3/2/2006	22.4	1.74	0.25	8.5
	2Q08	6/10/2008	4.0 D	0.89 D	0.145	1.37 D

Location	Quarter	Date	Benzene (mg/L)	MTBE (mg/L)	Naphthalene (mg/L)
P-75	1Q06	3/3/2006	2.78	0.191	0.0286
	2Q08	6/10/2008	3.62 D	0.125	0.162

Location	Depth (ft bgs)	Date	Benzene (mg/L)
GP-4	34	9/1/2009	0.0635 / 0.0669
	42	9/1/2009	<0.005

Location	Depth (ft bgs)	Date	Benzene (mg/L)
GP-5	31.5	6/9/2010	0.0554
	39.5	6/9/2010	0.00958

Location	Quarter	Date	Benzene (mg/L)	2-Methylnaphthalene (mg/L)
P-66	2Q16	4/15/2016	0.0044	0.0099
	3Q16	7/11/2016	0.0037	0.013
	4Q16	10/14/2016	0.0069	0.028
	1Q17	1/11/2017	0.0058	<0.00097

Location	Depth (ft bgs)	Date	Benzene (mg/L)	Benzo(a)anthracene (mg/L)	Ethylbenzene (mg/L)	2-Methylnaphthalene (mg/L)	MTBE (mg/L)	Naphthalene (mg/L)	Toluene (mg/L)
GWP-29	42.5	3/13/2013	19.1	<0.000054	0.93	0.296	1.63	1.27	<0.1
	50.5	3/13/2013	22.6	0.000018 J	1.44	0.44 J	1.35	1.25	10.9

Location	Depth (ft bgs)	Date	Benzene (mg/L)	Ethylbenzene (mg/L)	2-Methylnaphthalene (mg/L)	Naphthalene (mg/L)
GWP-32	40.5	3/13/2013	0.581	0.779	0.0339	0.252
	48.5	3/13/2013	1.58	0.788	0.145 J	0.436

Location	Quarter	Date	Benzene (mg/L)
P-119	4Q10	10/5/2010	0.1
	2Q14	4/14/2014	<0.001

Location	Quarter	Date	Benzene (mg/L)	Ethylbenzene (mg/L)	2-Methylnaphthalene (mg/L)	Phenol (mg/L)
P-58	2Q16	4/18/2016	440	0.62 J	0.077 HJ	0.45 HJ
	3Q16	7/15/2016	250	<2	0.033	0.21
	4Q16	10/18/2016	340	<2	0.052	0.6
	1Q17	1/16/2017	260	0.98 J	0.045	0.33

Location	Quarter	Date	Benzene (mg/L)
W-81	2Q16	5/9/2016	0.057
	3Q16	7/7/2016	0.015
	4Q16	10/3/2016	0.05

Location	Depth (ft bgs)	Date	Benzene (mg/L)	2-Methylnaphthalene (mg/L)	Naphthalene (mg/L)
GWP-24	44	10/4/2010	1.99 D	0.687 J	<0.833
	52	10/4/2010	2.0 D	2.49 J	0.621 J J

LEGEND

- GROUNDWATER MONITORING WELL LOCATION WHERE SCREENING EXCEEDANCE OBSERVED
- GROUNDWATER MONITORING WELL LOCATION WHERE NO SCREENING EXCEEDANCE OBSERVED
- GROUNDWATER PROFILE SAMPLE LOCATION WHERE SCREENING EXCEEDANCE OBSERVED
- GROUNDWATER PROFILE SAMPLE LOCATION WHERE NO SCREENING EXCEEDANCE OBSERVED
- WATER PRODUCTION WELL LOCATION WHERE SCREENING EXCEEDANCE OBSERVED
- WATER PRODUCTION WELL LOCATION WHERE NO SCREENING EXCEEDANCE OBSERVED
- APPROXIMATE EXTENT OF GROUNDWATER EXCEEDING CLASS I WATER QUALITY STANDARDS FOR ORGANIC PETROLEUM HYDROCARBON CONSTITUENTS FOR 2015 GROUNDWATER CONDITIONS

NOTES:

1. GROUNDWATER SAMPLES WERE COLLECTED FROM EACH LOCATION ARE SHOWN ON FIGURE.
2. LOCATIONS SHOWN IN BLACK INDICATE RESULTS DO NOT EXCEED SCREENING CRITERIA.
3. LOCATIONS SHOWN IN COLOR INDICATE RESULTS FOR AT LEAST ONE DEPTH OR AT LEAST ONE QUARTER BETWEEN 2Q16 AND 1Q17 EXCEEDED GROUNDWATER SCREENING CRITERIA.
4. SPIDER BOX CELLS HIGHLIGHTED IN YELLOW INDICATE RESULT EXCEEDS SCREENING CRITERIA.
5. FOR LOCATIONS SAMPLED AS PART OF THE ROUTINE GROUNDWATER PROGRAMS, THE ANALYTICAL RESULTS BETWEEN 2Q16 AND 1Q17 WERE CONSIDERED. FOR OTHER LOCATIONS (i.e. GROUNDWATER PROFILE OR PERIODIC SAMPLE LOCATIONS), ANY AVAILABLE GROUNDWATER DATA WERE CONSIDERED.
6. FOR FURTHER EXPLANATION REGARDING THE LINE DEPICTING THE APPROXIMATE EXTENT OF GROUNDWATER EXCEEDING CLASS I WATER QUALITY STANDARDS FOR ORGANIC PETROLEUM HYDROCARBON CONSTITUENTS FOR 2015 GROUNDWATER CONDITIONS, REFER TO THE "PROPOSED GROUNDWATER MANAGEMENT ZONE" DATED MAY 19, 2016 AND SUBMITTED BY AECOM ON BEHALF OF SOPUS.
7. * THE P-93A THROUGH D WELLS ARE SAMPLED AS PART OF BOTH THE ROXANA AND WRR GROUNDWATER PROGRAMS. FOR THESE WELLS, THE HIGHEST CONCENTRATIONS PER QUARTER REGARDLESS OF PROGRAM, ARE SHOWN ON THE SPIDER BOXES PRESENTED ON FIGURE.
8. CLASS 1 GROUNDWATER SCREENING CRITERIA, FROM 35 ILLINOIS ADMINISTRATIVE CODE (IAC) 620.410 AND 35 IAC 742 APPENDIX B TABLE E, ARE AS FOLLOWS:

Class 1 Screening Level (mg/L)	
Benzene	0.005
Benzo(a)anthracene	0.00013
Ethylbenzene	0.7
bis(2-Ethylhexyl)phthalate	0.006
2-Methylnaphthalene	0.028
MTBE	0.07
Naphthalene	0.14
Pentachlorophenol	0.001
Phenol	0.1
Toluene	1

DEFINITIONS:

D = RESULT IS FROM A DILUTED SAMPLE

F1 = MS AND/OR MSD RECOVERY OUTSIDE ACCEPTANCE LIMITS

H = SAMPLE PREPARED OR ANALYZED BEYOND THE SPECIFIC HOLDING TIME

J = CONCENTRATION IS ESTIMATE

SCALE 0 250 500 FEET

SOURCE:
MAP PROVIDED BY GOOGLE EARTH 2017.

EQUILON ENTERPRISES LLC dba SHELL OIL PRODUCTS US
WRB REFINING LP, WOOD RIVER REFINERY
ROXANA, ILLINOIS

PROJECT NO. 60527968

AECOM

DRN. BY:djd April 2017
DSGN. BY:wmp
CHKD. BY:b3

Comprehensive Groundwater Sampling Analytical Exceedances

FIG. NO. 9

File: \\JOBSTL\OUS\STL\OUS\PROJECTS\ENVIRONMENTAL\SHELL\60527968 WRR 2017\500 DELIVERABLES (DELIV)\RESPONSE TO 011817 LTR\FIGURES\FIG-9 GROUNDWATER EXCEEDANCES.DWG Last edited: APR. 19, 17 @ 1:02 p.m. by: wendy.pennington

LEGEND

- QUARTERLY GROUNDWATER GAUGING
- SEMI-ANNUAL GROUNDWATER SAMPLING AND QUARTERLY GAUGING
- ANNUAL GROUNDWATER SAMPLING AND QUARTERLY GAUGING
- WRR GROUNDWATER PRODUCTION WELL LOCATION
- WRR OIL RECOVERY WELL LOCATION
- PROPOSED GMZ BOUNDARY
- APPROXIMATE EXTENT OF WELLS EXCEEDING CLASS I WATER QUALITY STANDARDS FOR ORGANIC PETROLEUM HYDROCARBON CONSTITUENTS FOR CURRENT (2015) GROUNDWATER CONDITIONS

BP PROPERTY
NORTH PROPERTY
WEST PROPERTY
MAIN PROPERTY
WOOD RIVER REFINERY
SOLID WASTE DISPOSAL BASIN
SMITH LAKE
VILLAGE OF SOUTH ROXANA
ROUTE 143
M ST.
5TH ST.
9TH ST.
22ND ST.
CARDOX CO<B2> PLANT

SCALE 0 1000 FEET

SOURCE:
AECOM TECHNICAL SERVICES, INC., 2016 (AECOM, 2016); "PROPOSED GROUNDWATER MANAGEMENT ZONE" (GMZ). PREPARED FOR SOPUS, DATED MAY 19, 2016. FIGURE 13

EQUILON ENTERPRISES LLC dba SHELL OIL PRODUCTS US WRB REFINING LP, WOOD RIVER REFINERY ROXANA, ILLINOIS		PROJECT NO. 60527968
AECOM		
DRN. BY: djd April 2017 DSGN. BY: b3 CHKD. BY: wmp	Proposed GMZ and Extent of Groundwater Impact	FIG. NO. 10

file: P:\PROJECTS\ENVIRONMENTAL\SHELL\60527968 WRR 2017\500 DELIVERABLES (DELIV)\RESPONSE TO 011817 CMN REQUEST\FIG-10 PROPOSED GMZ (FIG 13)\MXD Last edited APR. 11, 17 @ 11:32 a.m. by: david.dejuire

Appendix A
Boring Logs

LOG OF BORING
B-3

Start Date: 5/14/08 Completion Date: 5/21/08
Coordinates: Northing:792218.77 Easting:2321690.48
Boring Location: Village of Roxana
Ground Elevation: 430.69

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
0						TOPSOIL	TOPSOIL	Boring advanced to a depth of 8' via hand auger, then continued with geoprobe
						FILL	Clayey FILL (FILL) with gravel and asphalt	
			0.0				Medium stiff, moist, brown, medium plastic CLAY (CL)	
							With sand	
			0.0			CL		
5							Becomes gray and brown mottled, sandy	
							Loose to medium dense, moist, brown, fine to medium grained SAND (SP)	(05/14/08) Sample B-3-06 collected for VOCs
							Becomes loose, tan, trace silt	
			0.9					
10	48	24						
			0.2					
							Silt grades out	
			1.3					
	48	32						
15			1.8			SP		
							Becomes medium dense	
			1.6					
	48	32					Becomes reddish brown	
			1.4					
20							Becomes tan	
			2.4					
	48	32						
			1.5					

Completion Depth: 48.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: 35.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
⧓ Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-3

Start Date: 5/14/08 Completion Date: 5/21/08
Coordinates: Northing:792218.77 Easting:2321690.48
Boring Location: Village of Roxana
Ground Elevation: 430.69

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	32	0.8 0.7				SAME: Medium dense, moist, tan, fine to medium grained SAND (SP)	
30	48	30	1.3 1.8					
35	48	34	2.7 1.6					1100 (05/21/08) Sample B-3-33 collected for VOCs
							▽ Becomes wet	
	48	36	1.8 2.3			SP	Becomes gray, medium grained Becomes dense, fine to medium grained	
40	48	36	2.7 1.5					
45	48	40	12.1 13.6					
							Bottom of boring at 48 ft bgs	

Completion Depth: 48.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: 35.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
⧓ Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-4

Start Date: 5/15/08 Completion Date: 5/22/08
Coordinates: Northing:792229.68 Easting:2321998.37
Boring Location: Village of Roxana
Ground Elevation: 441.86

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	USCS	DESCRIPTION	NOTES
				FILL	Asphalt, gravel base coarse FILL (FILL)	Boring advanced to a depth of 8' via hand auger, then continued with geoprobe
			0.0	CL	Medium stiff, moist, brownish gray, silty CLAY (CL)	
			0.0		Becomes brown, sandy, with small sand zones	
5			0.0	CH	Stiff, moist, brown and red, mottled, medium to high plastic CLAY (CH)	
					with sand	0945 (05/15/08) Sample B-4-06 collected for VOCs
			0.0	CL	Medium stiff, moist, brown with red mottled, low to medium plastic CLAY (CL)	
				SC	Loose to medium dense, moist, brown, clayey SAND (SC)	
					Loose, moist, orangish brown, fine to medium grained, SAND (SP)	
10	48	16	0.3			
					Becomes medium dense	
			1.2			
	48	30				
15			0.8			
				SP		
			0.8			
	48	32				
			1.2			
20					Becomes tan	
			1.2			
	48	32			Becomes dry	
			0.0			

Completion Depth: 58.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: 48.5 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
⧓ Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-4

Start Date: 5/15/08 Completion Date: 5/22/08
Coordinates: Northing:792229.68 Easting:2321998.37
Boring Location: Village of Roxana
Ground Elevation: 441.86

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	32	1.2				SAME: Medium dense, dry, tan, fine to medium grained, SAND (SP)	
			1.6					
			0.8					
30	48	32						
			1.7					Dark gray staining (4 inches)
			1.4					
	48	36					Becomes orangish brown	
35			2.1					0935 (05/22/08) Sample B-4-35 collected for VOCs
							Becomes tan	
	48	4				SP		
			1.5					
40							Becomes dense	
			0.8					
	48	32						Trace dark brown staining (varved layers)
			0.2				Trace silt (4 inches)	
45								
	48	4						
			0.9					
	48	48	9.5				Becomes moist ▽ Becomes silty Becomes wet, gray, medium grained	

Completion Depth: 58.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: 48.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
⧓ Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-4

Start Date: 5/15/08 Completion Date: 5/22/08
Coordinates: Northing:792229.68 Easting:2321998.37
Boring Location: Village of Roxana
Ground Elevation: 441.86

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
			18.7			SP	SAME: Dense, wet, gray, medium grained, SAND (SP)	
						SC	Medium dense, wet, gray, fine grained, clayey SAND (SC)	
			28.4				Dense, wet, gray, medium to fine grained SAND (SP)	
	48	48						
55						SP		
	24	0						Solid tip driven to 58' bgs due to recovery issues
							Bottom of boring at 58 ft bgs	
60								
65								
70								

Completion Depth: 58.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

Water Depth: 48.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
⧓ Geoprobe Dual-Tube Sampler

URS

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-5

Start Date: 5/15/08 Completion Date: 5/21/08
Coordinates: Northing:792023.99 Easting:2321801.86
Boring Location: Village of Roxana
Ground Elevation: 429.98

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
			0.0			FILL	Gravel and asphalt FILL (FILL)	Boring advanced to a depth of 6' via hand auger, then continued with geoprobe
			0.0				Gray, silty CLAY (FILL) Dark gray clayey GRAVEL (FILL) Brown, silty CLAY (FILL) Dark gray to black, clayey GRAVEL (FILL)	
5			0.0				Soft, wet, grayish brown, low plastic, silty CLAY (CL)	1345 (05/15/08) Sample B-5-04.5 collected for VOCs
	24	18	3.6				Becomes medium stiff, dark brown	
			2.6					
10	48	48				CL		
			1.8				Trace fine grained sand	
			2.3					
	48	48						
15			2.6				Becomes soft, grayish brown	
							Becomes sandy	
			1.8					
	48	48						
			2.3					
20							Medium dense, wet, brown, fine grained, clayey SAND (SC)	
			0.6			SC		
	48	48						
			1.8					
						SP	Medium dense, moist, tan, fine to medium grained, SAND (SP)	

Completion Depth: 48.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: 35.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
⧓ Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-5

Start Date: 5/15/08 Completion Date: 5/21/08
Coordinates: Northing:792023.99 Easting:2321801.86
Boring Location: Village of Roxana
Ground Elevation: 429.98

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	30	2.8 4.7				SAME: Medium dense, moist, tan, fine to medium grained, SAND (SP) Becomes dry to moist	0935 (05/21/08) Sample B-5-27 collected for VOCs
30	48	32	2.2 2.5				Becomes moist	
	48	36	3.3 4.2					
35							▽ Becomes wet	
	48	36	3.1 2.8			SP	Becomes dense, gray	
40	48	48	4.3 6.5					
45	48	42	14.5 19.2					
							Bottom of boring at 48 ft bgs	

Completion Depth: 48.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: 35.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
⊠ Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-6

Start Date: 5/15/08 Completion Date: 5/19/08
Coordinates: Northing:791610.47 Easting:2322074.96
Boring Location: Village of Roxana
Ground Elevation: 432.75

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	USCS	DESCRIPTION	NOTES
			0.0	FILL	Gravel (FILL)	Boring advanced to a depth of 6' via hand auger, then continued with geoprobe
			0.0		Dark gray and black, mottled, silty CLAY (FILL)	
			0.0		Becomes soft, moist, gray and brown	
5					Becomes gray, with brown	1250 (05/15/08) Sample B-6-04 collected for VOCs
					Black cinders and gravel (FILL), trace clay	
	24	24	0.5	CL	Soft, moist, dark gray, low plastic, silty CLAY (CL) Becomes medium stiff, dark brown	
			1.4		Becomes soft, brown	
			2.3			
10	48	30			Becomes dark brown	
			2.2		Becomes medium stiff	
			3.9			
	48	30			Becomes medium stiff to stiff, brown, with orange mottling	
15			4.3			
			3.9	SC	Dense, moist, brown, fine grained clayey SAND (SC)	
	48	30				
			3.4			
20						
			4.2	SP	Loose, moist, brownish gray, fine to medium grained SAND (SP), trace silt	
	48	36				
			4.7		Silt grades out	1205 (05/19/08) Sample B-6-23 collected for VOCs
					Becomes moist to dry	

Completion Depth: 50.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: 38 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
⧓ Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-6

Start Date: 5/15/08 Completion Date: 5/19/08
Coordinates: Northing:791610.47 Easting:2322074.96
Boring Location: Village of Roxana
Ground Elevation: 432.75

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	36	3.2 2.3				SAME: Loose, moist to dry, brownish gray, fine to medium grained SAND (SP)	
30	48	30	2.3 2.0					
	48	30	2.2 2.3				Becomes tan	
35								
	48	36	2.2 1.8			SP	Becomes medium dense, moist Becomes wet	
40	48	36	0.0 0.0					
45	48	30	0.0 0.0					
	24	0					Bottom of boring at 50 ft bgs	Solid tip driven to 50' bgs due to recovery issues

Completion Depth: 50.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: 38 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
⧓ Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
MW-6D

Start ng Date: 0/2 / 0
Comp et on Date: 0/26/ 0
Cas ng E evat on: 43 99
Ground E evat on: 432 54

Quadrangle
Sec:34 00
T:T5N
R:R9W
UTM (or State Plane) Coord
N: (X):79 594 4
E: (Y):232209 25

Depth In feet	Inches Dr ven	Inches Recovered	B ow Counts	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
5								Refer to log of boring B 6 in the Subsurface Investigation Report (dated January 21, 2009) for the lithology of the top 50'.	Borehole advanced to depth of 10' via air knife to clear utilities.
10									
15									
20									

Completion Depth: 114.00 Ft bgs
Project No.: 21562291
Project Name: Route 111/Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Driller Name: Pat Seymour
Drilling Method: HSA 4.25" ID
Drill Rig Type: CME 75
Logged by: N. Satam
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562291 00007 GPJ URSS LEV GD 12/22/10

LOG OF BORING
MW-6D

Depth In feet	Inches Dr ven	Inches Recovered	B ow Counts	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
30								Refer to log of boring B 6 in the Subsurface Investigation Report (dated January 21, 2009) for the lithology of the top 50'.	
35									
40									
45									

Start ng Date: 0/2 / 0
Comp et on Date: 0/26/ 0
Cas ng E evat on: 43 99
Ground E evat on: 432 54

Quadrangle
Sec:34 00
T:T5N
R:R9W
UTM (or State Plane) Coord
N: (X):79 594 4
E: (Y):232209 25

Completion Depth: 114.00 Ft bgs
Project No.: 21562291
Project Name: Route 111/Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Driller Name: Pat Seymour
Drilling Method: HSA 4.25" ID
Drill Rig Type: CME 75
Logged by: N. Satam
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

URS

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

USC based on field visual observations

Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

URS (ENV RON) LOG (EPA FORMA) 21562291 00007 GPJ URSS LEV GD 12/22/10

LOG OF BORING
MW-6D

Start ng Date: 0/2 / 0
Comp et on Date: 0/26/ 0
Cas ng E evat on: 43 99
Ground E evat on: 432 54

Quadrangle
Sec:34 00
T:T5N
R:R9W
UTM (or State Plane) Coord
N: (X):79 594 4
E: (Y):232209 25

Depth In feet	Inches Dr ven	Inches Recovered	B ow Counts	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
	24	24	1 3 3 6	0.1 0.0				Loose to medium dense, wet, brown, fine to medium grained SAND (SP)	
	24	24	2 3 4 5	0.5 0.7					
55	24	24	1 3 5 7	0.8 2.2					
	24	8	3 11 19 21	0.3 0.4				Becomes dense, trace black gravel	
	24	5	4 10 22 21	0.5 0.4					
60	24	8	9 14 23 27	0.3 0.3					
	21	21	13 14 18 28	0.7			SP		
	24	23	8 14 22 28	0.5 0.6				Becomes fine to coarse grained	
65	24	16	8 13 27 32	0.8 1.8				Trace gravel	
	24	6	7 19 48 34						
70	24	0	13 19 36 19						
	24	22	2 9 19 33						
	24	23	4 9	0.3					

Completion Depth: 114.00 Ft bgs
Project No.: 21562291
Project Name: Route 111/Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Driller Name: Pat Seymour
Drilling Method: HSA 4.25" ID
Drill Rig Type: CME 75
Logged by: N. Satam
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

USC based on field visual observations

URS

URS (ENV RON) LOG (EPA FORMA) 21562291 00007 GPJ URSS LEV GD 12/22/10

LOG OF BORING
MW-6D

Start ng Date: 0/2 / 0
Comp et on Date: 0/26/ 0
Cas ng E evat on: 43 99
Ground E evat on: 432 54

Quadrangle
Sec:34 00
T:T5N
R:R9W
UTM (or State Plane) Coord
N: (X):79 594 4
E: (Y):232209 25

Depth In feet	Inches Dr ven	Inches Recovered	B ow Counts	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
			16 26	0.4				Same: Dense, wet, brown, fine to coarse grained SAND (SP), trace gravel	
	24	1	10 16 16 24	0.2					
	24	0	9 15 21 36	0.2				Gravel grades out	
80	24	0	8 12 17 31						
	24	0	5 6 10 12						
	24	22	14 11 15 16	0.0 0.1 0.0				2" sandy silt seam Becomes medium dense, fine to medium grained	
85								Becomes medium to coarse grained	
	24	24	9 9 12 24	0.1 0.4 0.9			SP	Becomes loose Becomes fine to medium grained Becomes medium dense, medium to coarse grained	
	24	0	37 23 18 21						
90	24	0	3 9 12 14						
	24	22	14 12 21 24	0.9 1.3				Becomes fine to medium grained Becomes fine to coarse grained	
95	24	24	15 16 15 12	1.1 1.1				Becomes medium to coarse grained	
	24	24	8 15 26 25	1.4 1.3					
	24	24	31 19 18 23	1.4 1.3					

Completion Depth: 114.00 Ft bgs
Project No.: 21562291
Project Name: Route 111/Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Driller Name: Pat Seymour
Drilling Method: HSA 4.25" ID
Drill Rig Type: CME 75
Logged by: N. Satam
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562291 00007 GPJ URSS LEV GD 12/22/10

LOG OF BORING
MW-6D

Start ng Date: 0/2 / 0
Comp et on Date: 0/26/ 0
Cas ng E evat on: 43 99
Ground E evat on: 432 54

Quadrangle
Sec:34 00
T:T5N
R:R9W
UTM (or State Plane) Coord
N: (X):79 594 4
E: (Y):232209 25

Depth In feet	Inches Dr ven	Inches Recovered	B ow Counts	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
	24	0	10 13 17 15					Same: Medium dense, wet, brown, medium to coarse grained SAND (SP)	
	24	18	5 8 8 9					Becomes fine to coarse grained	
105	24	0	8 13 13 29				SP		
	24	24	12 9 12 19	1.1 1.3				Becomes dense, medium to coarse grained	
	24	18	5 7 14 17	1.8 1.8				Becomes fine to medium grained, trace coarse sand	
110	24	24	7 13 21 27	2.8 4.2			CL	Stiff, moist, dark gray, medium plastic CLAY, with trace medium to coarse sand	
	24	2	21 22 30 48						
115								Bottom of boring at 114' bgs This boring log also used for installation of adjacent wells MW 6B and MW 6C with screen intervals based on the ground surface at the time of drilling of 65' to 70' bgs and 80' to 85' bgs, respectively. Survey data of the existing ground surface shows the screen intervals from 64.05' to 69.05' bgs and 84.95' to 89.95' bgs, respectively.	Monitoring well installed. Screened interval based on the ground surface at the time of installation was 105' to 110' bgs. Survey data of the existing ground surface shows the screen interval from 104.72' to 109.72' bgs
120									

Completion Depth: 114.00 Ft bgs
Project No.: 21562291
Project Name: Route 111/Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Driller Name: Pat Seymour
Drilling Method: HSA 4.25" ID
Drill Rig Type: CME 75
Logged by: N. Satam
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562291 00007 GPJ URSS LEV GD 12/22/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
B-7

Completion Date: 7/9/09
Casing Elevation: 443.10
Ground Elevation: 443.46

Coordinates
Northing:792024.62
Easting:2322181.25

Depth In feet	Well Construction (MW-7)	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
								Not logged	Boring advanced to a depth of 5' via air knife to clear utilities, then continued with 4.25" HSA
5		24	18	0.4				Loose, moist, brown, fine to medium grained, SAND (SP)	
		24	12	0.3					
10		24	12	0.3					
		24	18	0.3				Becomes medium dense	
		24	18	0.2					
15		24	18	0.2			SP		
		24	20	0.2				1" sandy clay Becomes grayish brown	
20		24	22	0.1					
		24	20	0.1					
		24	18	0.1					

Completion Depth: 55.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: P. Seymour
Logged by: M. Corbett/W. Pennington

URS

Water Depth: 45 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
USC based on field visual observations

URS (ENVIRON) LOG+1 WELL 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
B-7

Completion Date: 7/9/09
Casing Elevation: 443.10
Ground Elevation: 443.46

Coordinates
Northing:792024.62
Easting:2322181.25

Depth In feet	Well Construction (MW-7)	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
		24	20	6.7				SAME: Medium dense, moist, grayish brown, fine to medium grained, SAND (SP)	
								1" clay	
		24	18	17.8					
30		24	20	19.2					
		24	20	84.7					
		24	15	376					
35		24	18.5	229					
		24	6	16.9			SP		Very hard drilling at 37'
		24	21	351				2" black bands	
40								Becomes gray	
		24	20.5	658				2" coal	
		24	16	2605				Becomes grayish brown	
45									▽
		24	20	9999				Becomes wet, medium grained, with fine grains	
								Becomes dense	
		24	0.5	4958				Becomes medium dense	
		24	14.5	3186				Becomes loose, gray, some coarse grains, trace gravel	

Completion Depth: 55.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: P. Seymour
Logged by: M. Corbett/W. Pennington

URS

Water Depth: 45 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
USC based on field visual observations

URS (ENVIRON) LOG+1 WELL 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
B-7

Completion Date: 7/9/09
Casing Elevation: 443.10
Ground Elevation: 443.46

Coordinates
Northing:792024.62
Easting:2322181.25

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	MW-7							Becomes medium dense	
		24	16	1015			SP	Becomes dense	End split spoon sampling at 53' bgs. Blind drill to 55' bgs
55								Bottom of boring at 55' bgs	Bottom of boring at 55' bgs at time of drilling. Monitoring well installed Screened interval based on the ground surface at the time of installation was 43' to 53' bgs (shown) Survey data of the existing ground surface shows the screen interval from 43.28' to 53.28' bgs
60									
65									
70									

Completion Depth: 55.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: P. Seymour
Logged by: M. Corbett/W. Pennington

URS

Water Depth: 45 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
USC based on field visual observations

URS (ENVIRON) LOG+1 WELL 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
B-8

Completion Date: 7/6/09
Casing Elevation: 434.11
Ground Elevation: 434.40

Coordinates
Northing:791930.86
Easting:2321984.79

Depth In feet	Well Construction (MW-8)	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
								Not logged	Boring advanced to a depth of 5' via air knife to clear utilities, then continued with 4.25" HSA
5		24	12	0.2				Loose to medium dense, moist, brown, fine to medium grained, SAND (SP)	
		24	24	0.2					
10		24	18	0.1					
		24	18	0.4				Becomes grayish brown	
		24	20	1.4					
15		24	12	22.1			SP		
		24	12	29.8					
20		24	16	112					
		24	20	75.0					
		24	18	271				Becomes medium dense to dense, gray, trace black banding	

Completion Depth: 44.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: P. Seymour
Logged by: W. Pennington/C. Smith

URS

Water Depth: 35 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
USC based on field visual observations

URS (ENVIRON) LOG+1 WELL 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
B-8

Completion Date: 7/6/09
Casing Elevation: 434.11
Ground Elevation: 434.40

Coordinates
Northing:791930.86
Easting:2321984.79

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	MW-8								
		24	18	729				SAME: Medium dense to dense, moist, gray, fine to medium grained, SAND (SP), trace black banding	
		24	20	1437					
30		24	20	1179					
		24	18	4002					
		24	20	3439			SP		
35		24	18	491				Becomes wet	▽
									End split spoon sampling at 37' bgs. Blind drill to 44' bgs
40									
45								Bottom of boring at 44' bgs	Bottom of boring at 44' bgs at time of drilling. Monitoring well installed Screened interval based on the ground surface at the time of installation was 33.5' to 43.5' bgs (shown) Survey data of the existing ground surface shows the screen interval from 33.50' to 43.60' bgs

Completion Depth: 44.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: P. Seymour
Logged by: W. Pennington/C. Smith

URS

Water Depth: 35 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
USC based on field visual observations

URS (ENVIRON) LOG+1 WELL 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING
MW-13

Start ng Date: 2/ / 0
Comp et on Date: 2/3/ 0
Cas ng E evat on: 430 27
Ground E evat on: 430 79

Quadrangle
Sec:34 00
T:T5N
R:R9W
UTM (or State Plane) Coord
N: (X):79 574 95
E: (Y):232 696 95

Depth In feet	Inches Dr ven	Inches Recovered	B ow Counts	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
							FILL	White crushed limestone gravel	Borehole advanced to depth of 10' via air knife to clear utilities. Soil cuttings from air knife were used to log the upper portion of the borehole.
							FILL	Soft, moist, dark gray, medium plastic, Silty CLAY (CL), with gravel With cinders, bricks, rocks	
5									
							CL	Soft, moist, dark gray, Silty CLAY (CL),	
10	24	15	0 1 2 3	11.9					
	24	15	1 3 4 4	20.6				Becomes medium stiff, with olive gray mottling	
15	24	24	2 2 3 5	2.7				Increasing silt	
	24	10	3 5 7 9	0.7			SC/SM	Medium dense, moist, dark gray, Clayey SAND (SC), to Silty SAND (SM)	
	24	15	4 4 6 8	2.5			SP	Loose to medium dense, moist, dark gray, poorly graded SAND (SP)	
20	24	12	5 6 8 7	258			SM	Medium dense, moist, brownish yellow, Silty SAND (SM)	Petroleum like odor
	24	20	0 0 1 4	5.1			ML	Very soft, moist, dark gray, Clayey SILT (ML) ▽	
			3 5				SP	Medium dense, wet, dark gray, poorly graded, medium grained SAND (SP)	

Completion Depth: 36.00 Ft bgs
Project No.: 21562291
Project Name: Route 111/Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Driller Name: Brian Schilling
Drilling Method: HSA 4.25" ID
Drill Rig Type: CME 55
Logged by: E. Fritsch
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 24 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562291 00007 GPJ URSS LEV GD 12/22/10

LOG OF BORING
MW-13

Start ng Date: 2/ / 0
Comp et on Date: 2/3/ 0
Cas ng E evat on: 430 27
Ground E evat on: 430 79

Quadrangle
Sec:34 00
T:T5N
R:R9W
UTM (or State Plane) Coord
N: (X):79 574 95
E: (Y):232 696 95

Depth In feet	Inches Dr ven	Inches Recovered	B ow Counts	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
	24	16	6 8	6.9				Same: Medium dense, wet, dark gray, poorly graded, medium grained SAND (SP)	
	24	18	8 10 11 13	2.6					
	24	18	1 5 15 18	10.1					
30	24	16	3 6 7 18	10.8			SP		
	24	12	6 11 15 30	2.7				Trace fine gravel	
35	12	12	20 50 > 50	0.1				Becomes dense to very dense, gravel grades out	
								Bottom of boring at 36' bgs	Monitoring well installed. Screened interval based on the ground surface at the time of installation was 25' to 35' bgs. Survey data of the existing ground surface shows the screen interval from 25.57' to 35.57' bgs
40									
45									

Completion Depth: 36.00 Ft bgs
Project No.: 21562291
Project Name: Route 111/Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Driller Name: Brian Schilling
Drilling Method: HSA 4.25" ID
Drill Rig Type: CME 55
Logged by: E. Fritsch
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 24 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562291 00007 GPJ URSS LEV GD 12/22/10

LOG OF BORING
MW-14

Start ng Date: 0/24/
Comp et on Date: 0/24/
Cas ng E evat on: 434 44
Ground E evat on: 434 96

Quadrangle
Sec: N/A
T: N/A
R: N/A
UTM (or State Plane) Coord
N: (X):79 393 40
E: (Y):2322340 00

Depth In feet	Inches Dr ven	Inches Recovered	B ow Counts	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
							ASPHALT	6" Asphalt	Boring advanced to a depth of 10' via air knife.
				10.4			FILL	Clay, sand, and <1" gravel (FILL) Large, clean gravel up to 1.5"	
				9.4					
				4.6			ML	Medium dense, moist, gray, Clayey SILT (ML)	
				3.7					
5				6.7			SC	Medium stiff, moist, gray, medium plastic, moist, CLAY, with fine grained Sand.	
				2.3				Moist, brown, fine grained, poorly graded, Silty SAND (SM)	
				2.3					
				2.6					
				2.0					
10	24	18	1 3 3 5	1.1					
	24	21	3 4 5 5	2.1					
15	24	18	3 5 6 7	3.8			SM		
	24	20	8 9 9 9	6.5				Becomes dark gray Becomes brown	
	24	20	2 6 7 10	4.0					
20	24	22	2 7 8 8	3.1					
	24	22	5 9 14 13	6.4					
			6						

Completion Depth: 44.0 Ft bgs
Project No.: 21562593
Project Name: Roxana Interim Groundwater Program
Drilling Contractor: Roberts Environmental Drilling, Inc.
Driller Name: P. Seymour
Drilling Method: Hollow Stem Auger
Drill Rig Type: CME 55
Logged by: R. Hart
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 27.5 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562593 00014 (ROXANA SVE NS ALL).GPJ URSS LEV GD 1/10/12

LOG OF BORING
MW-14

Start ng Date: 0/24/
Comp et on Date: 0/24/
Cas ng E evat on: 434 44
Ground E evat on: 434 96

Quadrangle
Sec: N/A
T: N/A
R: N/A
UTM (or State Plane) Coord
N: (X):79 393 40
E: (Y):2322340 00

Depth In feet	Inches Dr ven	Inches Recovered	B ow Counts	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
	24	21	6 8 8	6.3				SAME: Poorly graded, moist, brown, fine grained, Silty SAND (SM)	
	24	20	4 11 15 10	12.4				Becomes wet ▽	
	24	22	2 10 10 12	6.7					
30	24	12	2 3 8 13	5.4					
	24	21	1 10 12 12	7.1					
35	24	22	5 5 12 24	10.2				Dense, wet, dark gray to black, fine to medium grained, SAND (SP), with Silt	
	24	24	4 5 15 29	4.2				Becomes brown	
	24	24	7 10 30 32	7.4			SP		
40	24	24	2 5 15 31	13.8				Becomes fine grained, silty	
	24	22	3 5 23 31	5.6				Becomes medium grained	
								Bottom of boring at 44ft bgs	
45									

Completion Depth: 44.0 Ft bgs
Project No.: 21562593
Project Name: Roxana Interim Groundwater Program
Drilling Contractor: Roberts Environmental Drilling, Inc.
Driller Name: P. Seymour
Drilling Method: Hollow Stem Auger
Drill Rig Type: CME 55
Logged by: R. Hart
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 27.5 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562593 00014 (ROXANA SVE NS ALL) GPJ URSS LEV GD 1/10/12

LOG OF BORING
MW-21

Start ng Date: 2/6/ 2
Comp et on Date: 2/7/ 2
Cas ng E evat on: 443 8
Ground E evat on: 444 0

Quadrangle
Sec:34 (SE /4 - of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792288 33
E: (Y):2322275 06

Depth In feet	Inches Dr ven	Inches Recovered	B ow Counts	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
							ASPHALT	Asphalt cover	Air knifed to 10' bgs to clear utilities.
							ML	Moist, reddish brown, Clayey SILT (ML)	
							CL	Stiff, moist, reddish brown, Silty CLAY (CL)	
							SC	Moist, reddish brown, fine grained Clayey SAND (SC), trace silt	
5								Loose, moist, brown, fine to medium grained SAND (SP)	
10	36	30		0.2					
15	60	36		0.2			SP	Becomes moist to wet	
				43.5				1" gray and black low plastic clay seam Becomes moist	
20	60	40		49.0				Trace black banding (2")	
				63.4					Sample MW 21 21 for VOCs at 1155
				15.7					
				11.8					

Completion Depth: **52.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 41 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562850 15000 (ROXANA MW 2013) GPJ URSS LEV GD 2/6/13

LOG OF BORING
MW-21

Start ng Date: 2/6/ 2
Comp et on Date: 2/7/ 2
Cas ng E evat on: 443 8
Ground E evat on: 444 0

Quadrangle
Sec:34 (SE /4 - of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792288 33
E: (Y):2322275 06

Depth In feet	Inches Dr ven	Inches Recovered	B ow Counts	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
	60	44		182.3				Same: Loose, moist, brown, fine to medium grained SAND (SP)	
				282.3					
30	60	48		397.1				Trace black banding (3") 2" brown and gray low plastic clay seam	Sample MW 21 31 for VOCs at 1200
				14.0					
35	60	50		30.1			SP	Trace black banding (2")	
				4.7					
				1.4					
40	60	50		69.4				Becomes wet, gray ▽	Sample MW 21 41 for VOCs at 1205
				224.2					
45	60	52		511.5					
				3681					
				1779					Geoprobe sampling ended at 48 ft bgs due to rods getting locked up. Soil to 52 ft bgs logged via auger cuttings.

Completion Depth: **52.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 41 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic
- Splitspoon Sampler
- Hollow Stem Auger Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562850 15000 (ROXANA MW 2013) GPJ URSS LEV GD 2/6/13

LOG OF BORING
MW-21

Start ng Date: 2/6/ 2
Comp et on Date: 2/7/ 2
Cas ng E evat on: 443 8
Ground E evat on: 444 0

Quadrangle
Sec:34 (SE /4 - of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792288 33
E: (Y):2322275 06

Depth In feet	Inches Dr ven	Inches Recovered	B ow Counts	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
				1757			SP	Same: Loose, wet, gray, fine to medium grained SAND (SP)	
								Bottom of boring at 52 ft bgs	

55
60
65
70

Completion Depth: 52.0 Ft bgs
Project No.: 21562850.15000
Project Name: Roxana/WRR Well Drilling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push/HSA
Drill Rig Type: 8040 DT
Logged by: E. Arthur, W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

URS

Water Depth: 41 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger Soil samples not collected

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562850 15000 (ROXANA MW 2013) GPJ URSS LEV GD 2/6/13

LOG OF BORING AND WELL CONSTRUCTION DETAIL

MW-23

Starting Date: 1/19/15
Completion Date: 1/20/15
Casing Elevation: 431.41
Ground Elevation: 428.70

Quadrangle
Sec:34
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792004.5
E: (Y):2321442.8

Depth In feet	Inches Driven	Inches Recovered	PID/FID (ppm)	USCS	DESCRIPTION	NOTES
			2.9	FILL	Gravel and Topsoil (FILL)	
					Becomes loose, moist, black, coarse grained sand with gravel and cinders	
5			104.6		Soft, wet, black, medium plastic, Silty CLAY (CL), with organics	
			44.6		Becomes gray	
			7.6			
10	24	12	1.7	CL	Becomes medium stiff, moist	
	24	19	6.4		With brown mottling	
					Becomes soft	
15	24	22	48.5			
	24	24	6.2		Becomes wet, sandy	
	24	15	2.9			
20	24	9	0.2		Loose, moist, gray, fine to medium grained SAND (SP)	
	24	12	5.5		Grades to medium grained 0.5" thick clay seam	

Completion Depth: 36.5 Ft bgs
Project No.: 21563720
Project Name: Roxana MW-23 Installation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Driller Name: E. Wetzel
Drilling Method: Hollow-Stem Auger
Drill Rig Type: CME-75
Logged by: E. Arthur
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 29.2 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

AECOM

USC based on field visual observations

- Air Knife/Hand Auger
- Splitspoon Sampler
- HSA- No Soil Sample
- Geoprobe
- Concrete
- Cement/Bentonite Grout
- Bentonite Seal
- Filter Sand
- Screen

AECOM (EVIRON) LOG (EPA FORMAT)+1 WELL P:\RESOURCES\GINTDATA\GINT\PROJECTS\21563720 32000 ROXANA MW-23 INSTALLATION.GPJ P:\RESOURCES\GINTDATA\GINT\ENVIRONMENTAL\AECOM STL (ENVIRONMENTAL).GLB 2/5/15

LOG OF BORING AND WELL CONSTRUCTION DETAIL

MW-23

Starting Date: 1/19/15
Completion Date: 1/20/15
Casing Elevation: 431.41
Ground Elevation: 428.70

Quadrangle
Sec:34
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792004.5
E: (Y):2321442.8

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
		24	11	0.2				Same: Loose, moist, gray, medium grained SAND (SP)	
		24	13	0.1			SP		
		24	12	0.1				Becomes wet, fine grained ▽	
30		24	12	0.1				Grades to medium grained	
		24	20	1.0					
35		24	22	0.6					
								Bottom of boring at 36.5' bgs	
40									
45									

Completion Depth: 36.5 Ft bgs
Project No.: 21563720
Project Name: Roxana MW-23 Installation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Driller Name: E. Wetzel
Drilling Method: Hollow-Stem Auger
Drill Rig Type: CME-75
Logged by: E. Arthur
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 29.2 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

AECOM

USC based on field visual observations

- Air Knife/Hand Auger
- Splitspoon Sampler
- HSA- No Soil Sample
- Geoprobe
- Concrete
- Cement/Bentonite Grout
- Bentonite Seal
- Filter Sand
- Screen

AECOM (EVIRON) LOG (EPA FORMAT)+1 WELL P:\RESOURCES\GINTDATA\GINT\PROJECTS\21563720.32000 ROXANA MW-23 INSTALLATION.GPJ P:\RESOURCES\GINTDATA\GINT\ENVIRONMENTAL\AECOM STL (ENVIRONMENTAL).GLB 2/5/15

LOG OF BORING AND WELL CONSTRUCTION DETAIL

MW-25

Sta t ng Quadrangle
Date: 8/26/ 4 Sec:34
T:5N
Comp et on R:9W
Date: 8/29/ 4
Cas ng E evat on: 438 35 UTM (or State Plane) Coord
Ground E evat on: 438 86 N: (X):792086 69
E: (Y):232 99 75

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
							FILL	Asphalt (FILL)	Air knifed to 10' bgs to clear for utilities and obstructions.
							ML	Loose, moist, brown, very fine, Clayey SILT (ML)	
				20.0			SP	Loose, dry, brown, fine grained SAND (SP)	
5				14.8			ML	Loose, wet, brown, very fine, Clayey SILT (ML)	
				2.5			SP	Loose, dry, brown, fine grained SAND (SP), with clay	
				68.2				Grades to fine sand	
10		24	18	3.4					
		24	19	4.0				Grades to fine to medium grained sand	
15		24	16	4.9					
		24	18	4.8					
		24	18	5.0					
20		24	20	4.7					
		24	20	12.1					

Completion Depth: 47.0 Ft bgs
Project No.: 21562973
Project Name: Additional Characterization
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: J. Crank
Drilling Method: HSA
Drill Rig Type: CME 75
Logged by: E. Arthur
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 38 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger Soil samples not collected

URS

USC based on field visual observations

URS (EV RON) LOG (EPA FORMAT) +1 WELL P:\RESOURCES\GINT\DATA\GINT\PROJECTS\ROXANA (MW-25 THRU 28) ADDITIONAL CHARACTERIZATION 2014.GPJ P:\RESOURCES\GINTDATA\GINT\ENVIRONMENTAL\URSSTLEV.GLB 11/6/14

LOG OF BORING AND WELL CONSTRUCTION DETAIL

MW-25

Sta t ng Date: 8/26/ 4
Comp et on Date: 8/29/ 4
Cas ng E evat on: 438 35
Ground E evat on: 438 86

Quadrangle
Sec:34
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792086 69
E: (Y):232 99 75

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
		24	16	6.7				Same: Loose, dry, brown, fine to medium grained SAND (SP)	
		24	19	12.5				Becomes gray	
		24	20	12.7				Becomes light brown	
30		24	18	13.0					
		24	20	9.5					
35		24	19	7.3					
		24	18	51			SP	Grades to medium to coarse grained	
		24	14	890				Becomes wet, coarse grained ▽	
40		24	6	308				Becomes gray	
		24	12	111					
45		24	24	2985					
								Bottom of boring at 47' bgs	

Completion Depth: **47.0 Ft bgs**
Project No.: **21562973**
Project Name: **Additional Characterization**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **J. Crank**
Drilling Method: **HSA**
Drill Rig Type: **CME 75**
Logged by: **E. Arthur**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 38 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger Soil samples not collected

URS

USC based on field visual observations

URS (EV RON) LOG (EPA FORMAT) +1 WELL P:\RESOURCES\GINT\DATA\GINT\PROJECTS\ROXANA (MW-25 THRU 28) ADDITIONAL CHARACTERIZATION 2014.GPJ P:\RESOURCES\G NT\DATA\G NT\ENVIRONMENTAL\URSSTLEV.GLB 11/6/14

LOG OF BORING AND WELL CONSTRUCTION DETAIL

MW-26

Sta t ng Quadrangle
Date: 8/25/ 4 Sec:34
T:5N
Comp et on R:9W
Date: 8/28/ 4
Cas ng E evat on: 44 02 UTM (or State Plane) Coord
Ground E evat on: 44 29 N: (X):792393 52
E: (Y):23220 2 55

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
							FILL	Asphalt (FILL)	Air knifed to 10' bgs to clear for utilities and obstructions.
				2.0			CL	Soft, dry, reddish brown, low plastic, Silty Sandy CLAY CL)	
5				6.5				Loose, dry, brown, fine grained SAND (SP), trace clay	
				6.9				Clay grades out	
				6.3					
10		24	14	1.3					
		24	14	1.3					
15		24	16	2.0			SP	Grades to fine to medium grained	
		24	17	2.0					
		24	20	3.6					
20		24	20	4.3					
		24	12	4.9					

Completion Depth: **49.0 Ft bgs**
Project No.: **21562973**
Project Name: **Additional Characterization**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **J. Crank**
Drilling Method: **HSA**
Drill Rig Type: **CME 75**
Logged by: **E. Arthur**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 40.5 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger Soil samples not collected

URS

USC based on field visual observations

URS (EV RON) LOG (EPA FORMAT) +1 WELL P:\RESOURCES\GINT\DATA\GINT\PROJECTS\ROXANA (MW-25 THRU 28) ADDITIONAL CHARACTERIZATION 2014.GPJ P:\RESOURCES\G NT\DATA\G NT\ENVIRONMENTAL\URSSTLEV.GLB 11/6/14

LOG OF BORING AND WELL CONSTRUCTION DETAIL

MW-26

Sta t ng Date: 8/25/ 4
Comp et on Date: 8/28/ 4
Cas ng E evat on: 44 02
Ground E evat on: 44 29

Quadrangle
Sec:34
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792393 52
E: (Y):23220 2 55

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
		24	18	6.4				Same: Loose, dry, brown, fine to medium grained SAND (SP)	
		24	18	5.3					
		24	19	5.9					
30		24	20	2.9				Becomes gray	
		24	18	5.2				Grades to medium grained	
								Becomes orange brown	
								Becomes gray	
35		24	20	5.0				Becomes fine grained, with silt	
		24	18	8.5			SP	Becomes light brown, medium grained	
		24	13	25.0				Becomes moist, brown	
40		24	18	3.0				Becomes wet ▽	
		24	23	2.3					
45		24	23	2.0					
		24	10	3.0					
								Bottom of boring at 49' bgs	

Completion Depth: **49.0 Ft bgs**
Project No.: **21562973**
Project Name: **Additional Characterization**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **J. Crank**
Drilling Method: **HSA**
Drill Rig Type: **CME 75**
Logged by: **E. Arthur**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 40.5 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic
- Splitspoon Sampler
- Hollow Stem Auger Soil samples not collected

URS

USC based on field visual observations

URS (EV RON) LOG (EPA FORMAT) +1 WELL P:\RESOURCES\GINT\DATA\GINT\PROJECTS\ROXANA (MW-25 THRU 28) ADDITIONAL CHARACTERIZATION 2014.GPJ P:\RESOURCES\G NT\DATA\G NT\ENVIRONMENTAL\URSSTLEV.GLB 11/6/14

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-7

Completion Date: 8/10/09
Casing Elevation:
Ground Elevation: 493.63

Coordinates
Northing:792370.64
Easting:2322259.85

Depth In feet	VMP Construction: VMP-7-5	VMP-7-13.5	VMP-7-29.5	VMP-7-38	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
										CL	Silty CLAY (CL) Becomes sandy	Boring advanced to a depth of 5' via air knife to clear utilities, then continued with 4.25" HSA
5					24	17	3.3			SP	Loose, moist, brown, fine grained, SAND (SP), with silt	
					24	17	4.7					
10					24	19	7.1					
					24	24	3.4 4.7			CL	Very soft, moist, brown, low plastic, Sandy CLAY (CL)	
					24	24	5.8			SP	Loose, moist, light brown, fine grained, SAND (SP), trace silt and clay	
15					24	19	4.0				Clay grades out	
					24	20	8.1					
					24	19	13.6				Becomes fine to medium grained	
20										SC	Loose, moist, gray, Clayey SAND (SC)	
					24	20	3.1			SP	Loose, moist, light gray, fine to medium grained, SAND (SP), trace silt 2" clay Becomes medium dense, fined grained	
					24	19	50.1					

Completion Depth: 45.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: B. Schilling
Logged by: M. Corbett

URS

Water Depth: 43 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner

Unified Soil Classification based on field visual observations.

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-7

Completion Date: 8/10/09
Casing Elevation:
Ground Elevation: 493.63

Coordinates
Northing:792370.64
Easting:2322259.85

Depth In feet	VMP Construction: VMP-7-5	VMP-7-13.5	VMP-7-29.5	VMP-7-38	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
					24	19	4.8				Becomes light grayish brown	
					24	19	3.9					
30					24	20	78.8					
					24	20	31.2					
					24	18	54.7				Trace black staining Becomes fine to medium grained	
35					24	20	32.8			SP	Becomes fine grained	
					24	18	98.5				Becomes light gray Trace black banding	
40					24	24	114					
					24	18	76.0					
					24	16	27.0 53.4				▽ Becomes wet	
45											Becomes brownish gray, fine to medium grained, trace coarse sand Bottom of boring at 45' bgs	

Completion Depth: 45.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: B. Schilling
Logged by: M. Corbett

URS

Water Depth: 43 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner

Unified Soil Classification based on field visual observations.

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-8

Completion Date: 8/12/09
Casing Elevation:
Ground Elevation: 441.65

Coordinates
Northing:792230.50
Easting:2321996.05

Depth In feet	VMP Construction: VMP-8-5	VMP-8-9.5	VMP-8-23.5	VMP-8-35.5	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
										CL	Soft, moist, brown, low plastic, Silty CLAY (CL)	Boring advanced to a depth of 5' via air knife to clear utilities, then continued with 4.25" HSA
5					24	12	1.1				Becomes sandy, some silt	
					24	14	2.1			SP	Loose, moist, brown, fine grained, SAND (SP), some silt 2" sandy clay	
10					24	20	2.0					
					24	18	2.4					
					24	19	3.3					
15					24	20	3.8				Trace silt	
					24	20	3.0					
					24	17	2.6					
20					24	20	2.7				Trace medium grains	
					24	22	2.4					

Completion Depth: 43.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: E. Wetzel
Logged by: M. Corbett

URS

Water Depth: 40.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner

Unified Soil Classification based on field visual observations.

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-8

Completion Date: 8/12/09
Casing Elevation:
Ground Elevation: 441.65
Coordinates Northing:792230.50 Easting:2321996.05

Depth In feet	VMP Construction: VMP-8-5	VMP-8-9.5	VMP-8-23.5	VMP-8-35.5	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
					24	18	4.0				Same: Loose, moist, brown, fine grained, SAND (SP), trace medium grains, trace silt	
					24	19	1.2					
30					24	20	2.8				Trace dark brown banding	
					24	22	2.4				Becomes fine to medium grained	
					24	20	2.7			SP		
35					24	24	2.0					
					24	22	2.0				Becomes very moist	
40					24	18	2.6				▽ Becomes wet	
					24	18	0.7				Becomes brownish gray, fine grained Becomes medium grained, with fine grains	
											Bottom of boring at 43' bgs	
45												

Completion Depth: 43.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: E. Wetzel
Logged by: M. Corbett

Water Depth: 40.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner

Unified Soil Classification based on field visual observations.

URS

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-9

Completion Date: 8/11/09
Casing Elevation:
Ground Elevation: 444.23
Coordinates Northing:792229.76 Easting:2322257.58

Depth In feet	VMP Construction: VMP-9-5	VMP-9-11.5	VMP-9-25.5	VMP-9-38.5	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
										CL	Silty CLAY (CL)	Boring advanced to a depth of 5' via air knife to clear utilities, then continued with 4.25" HSA
5					24	17	2.3			SP	Loose, moist, brown, fine to medium grained, SAND (SP), with silt	
					24	18	1.7					
10					24	19	1.8					
					24	16	2.4				Becomes light brown	
					24	18	2.3				Trace clay 0.5" gray clay	
15					24	13	6.2				Becomes light brownish gray	
					24	18	9.4				Trace clay	
20					24	18	4.4					
					24	18	4.1				1" gray clay	
					24	19	7.5				Trace clay layers	

Completion Depth: 45.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: E. Wetzel
Logged by: M. Corbett

URS

Water Depth: 43.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner

Unified Soil Classification based on field visual observations.

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-9

Completion Date: 8/11/09
Casing Elevation:
Ground Elevation: 444.23
Coordinates Northing:792229.76 Easting:2322257.58

Depth In feet	VMP Construction: VMP-9-5	VMP-9-11.5	VMP-9-25.5	VMP-9-38.5	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
					24	20	7.5				Same: Loose, moist, light brownish gray, fine to medium grained, SAND (SP), with silt, trace clay Becomes dark gray	
					24	19	16.8				Becomes light brownish gray	
30					24	22	21.2				Becomes medium dense, very moist, light gray, fine grained, trace clay, silt grades out	
					24	21	11.9					
					24	22	15.6				Becomes moist, light grayish brown, medium grained, trace coarse grains, clay grades out	
35					24	24	22.4			SP	Becomes gray	
					24	21	6.4				Becomes grayish brown, fine to medium grained, trace silt	
40					24	24	48.6				Trace black banding	
					24	20	13.6				Becomes very moist, silt grades out	
					24	24	38.9				▽ Becomes dense, wet, medium grained, trace fine grains	
45											Bottom of boring at 45' bgs	

Completion Depth: 45.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: E. Wetzel
Logged by: M. Corbett

URS

Water Depth: 43.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner
Unified Soil Classification based on field visual observations.

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL

VMP-9

Sta t ng
Date: 4/ 6/ 5
Comp et on
Date: 4/ 6/ 5
Cas ng E evat on: 444 20
Ground E evat on: 444 20 NAVD 88

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792229 76
E: (Y):2322257 58

Depth In feet	Well Construction: VMP-9-5	VMP-9-11 5	VMP-9-25 5	VMP-9-38 5	Inches Dr ven	Inches Recovered	PID/FID (ppm)	Graph c	Samp er Symbo	USCS	DESCR PT ON	NOTES
0										CL	Silty CLAY (CL)	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" HSA. Split spoon samples collected from 23 to 27 feet and 36 to 40 feet below ground surface. Original boring log used to supplement soil not logged during re installation.
5											Loose, moist, brown, fine to medium grained, SAND (SP), with silt	
10											Becomes light brown	
15										SP	Trace clay 0.5" gray clay Becomes light brownish gray	
											Trace clay	
20											1" gray clay	
											Trace clay layers	

Completion Depth: **45.0 Ft bgs**
Project No.: **21563720.18000**
Project Name: **Roxana Vapor Monitoring Point Replacement**
Drilling Contractor: **Roberts Environmental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Hollow Stem Auger**
Drill Rig Type: **Geoprobe 8040DT**
Logged by: **M. Miller**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife
Hand Auger
Sonic
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

URS

USC based on field visual observations

URS (EV RON) LOG (EPA FORMA) +4 WELLS P:\RESOURCES\GN DA AIG N \PROJEC S\21563720 04002 ROXANA SVE SYS EM - VMP RE NS ALL GPJ P:\RESOURCES\GN DA AIG N \ENV RONMEN AL\AECOM S L (ENV RONMEN AL) GLB 7/9/15

LOG OF BORING AND WELL CONSTRUCTION DETAIL

VMP-9

Sta t ng
Date: 4/ 6/ 5
Comp et on
Date: 4/ 6/ 5
Cas ng E evat on: 444 20
Ground E evat on: 444 20 NAVD 88

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792229 76
E: (Y):2322257 58

Depth In feet	Well Construction: VMP-9-5	Well Construction: VMP-9-11 5	Well Construction: VMP-9-25 5	Well Construction: VMP-9-38 5	Inches Dr ven	Inches Recovered	PID/FID (ppm)	Graph c	Samp er Symbo	USCS	DESCR PT ON	NOTES
30											Same: Loose, moist, light brownish gray, fine to medium grained, SAND (SP), with silt, trace clay	
											Becomes dark gray	
											Becomes light brownish gray	
											Becomes medium dense, very moist, light gray, fine grained, trace clay, silt grades out	
											Becomes moist, light grayish brown, medium grained, trace coarse grains, clay grades out	
35										SP	Becomes gray	
											Becomes grayish brown, fine to medium grained, trace silt	
40											Trace black banding	
											Becomes very moist, silt grades out	
											Becomes dense, wet, medium grained, trace fine grains	
45											Bottom of boring at 45' bgs	

Completion Depth: **45.0 Ft bgs**
Project No.: **21563720.18000**
Project Name: **Roxana Vapor Monitoring Point Replacement**
Drilling Contractor: **Roberts Environmental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Hollow Stem Auger**
Drill Rig Type: **Geoprobe 8040DT**
Logged by: **M. Miller**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife
Hand Auger
Sonic
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

URS

USC based on field visual observations

URS (EV RON) LOG (EPA FORMA) +4 WELLS P:\RESOURCES\GN DA AIG\N \PROJEC S\21563720 04002 ROXANA SVE SYS EM - VMP RE NS ALL GPJ P:\RESOURCES\GN DA AIG\N \ENV RONMEN AL\AECOM S L (ENV RONMEN AL) GLB 7/9/15

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-11

Completion Date: 7/10/09
Casing Elevation:
Ground Elevation: 443.46

Coordinates
Northing:792019.42
Easting:2322153.40

Depth In feet	VMP Construction: VMP-11-5	VMP-11-8	VMP-11-29	VMP-11-38	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
											Not logged	Boring advanced to a depth of 5' via air knife to clear utilities, then continued with 4.25" HSA
5					24	5	0.0			CL	Medium stiff, moist, light brown, low plastic, CLAY (CL)	
					24	15	0.1				Loose, moist to dry, light brown, fine grained, SAND (SP)	
10					24	16	0.0				Becomes moist	
					24	16.5	0.0				Becomes medium dense	
					24	17.5	0.0					
15					24	15	0.0			SP	0.5" clay 2" clayey sand	
					24	19	0.0				With silt	
20					24	19.5	0.0				Trace silt	
					24	18	0.0					
					24	17.5	6.0					

Completion Depth: 45.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: P. Seymour
Logged by: M. Corbett/M. Miller

URS

Water Depth: 43 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner

Unified Soil Classification based on field visual observations.

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-11

Completion Date: 7/10/09
Casing Elevation:
Ground Elevation: 443.46

Coordinates
Northing:792019.42
Easting:2322153.40

Depth In feet	VMP Construction: VMP-11-5	VMP-11-8	VMP-11-29	VMP-11-38	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
					24	19	0.0			SP	Same: Medium dense, moist, light brown, fine grained, SAND (SP), trace silt	
					24	20	256			SC	Loose, moist to dry, brown, fine to medium grained, Clayey SAND (SC)	
30					24	20	127				Loose, moist to dry, light brown, fine to medium grained, SAND (SP)	
					24	17	426				Becomes medium dense	
					24	20	687				Becomes gray	
35					24	20	594			SP	Trace silt, 6" dark gray staining	
					24	20	605					
40					24	20	428					
					24	20	261					
					24	13	4103				▽ Becomes wet	
45											Bottom of boring at 45'	

Completion Depth: 45.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: P. Seymour
Logged by: M. Corbett/M. Miller

URS

Water Depth: 43 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner
Unified Soil Classification based on field visual observations.

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-12

Completion Date: 7/24/09
Casing Elevation:
Ground Elevation: 444.46

Coordinates
Northing:792002.74
Easting:2322353.25

Depth In feet	VMP Construction: VMP-12-5	VMP-12-11.5	VMP-12-25	VMP-12-39	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
										FILL	Gray, silt, with sand, trace gravel, FILL (FILL)	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" HSA
										CL	Gray, Silty CLAY (CL), some gravel	
10					24	12	124			SP-SC	Becomes soft, moist, low plastic, sandy, silt grades out Loose, moist, fine grained, SAND (SP) with clay to clayey SAND (SC)	
					24	21	315			SP	Loose to medium dense, moist, gray, fine to medium grained, SAND (SP)	Petroleum - like odor.
15					24	24	439				Becomes grayish brown	
					24	17	639					
					24	19	653					
20					24	21	342				1" clay	
					24	24	375					Strong petroleum - like odor.

Completion Depth: 46.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger
Rig Type: CME-75
Drilled by: B. Schilling
Logged by: W. Pennington

URS

Water Depth: 44 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Unified Soil Classification based on field visual observations.

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-12

Completion Date: 7/24/09
Casing Elevation:
Ground Elevation: 444.46

Coordinates
Northing:792002.74
Easting:2322353.25

Depth In feet	VMP Construction: VMP-12-5	VMP-12-11.5	VMP-12-25	VMP-12-39	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
					24	18	880				Same: Loose to medium dense, moist, grayish brown, fine to medium grained, SAND (SP)	
					24	22	606					
					24	20	94.0					
30					24	20	673					Petroleum - like odor.
					24	20	504				Becomes medium to coarse grained, some fine grained	
35					24	20	96.0			SP		
					24	20	275					
					24	22	416					
40					24	21	4458					Very strong petroleum - like odor.
					24	22	4335					
45					24	22	4142				4" gray and black coarse sand with cinders ▽ Becomes wet	
											Botttom of boring at 46 bgs	

Completion Depth: 46.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: B. Schilling
Logged by: W. Pennington

Water Depth: 44 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner
Unified Soil Classification based on field visual observations.

URS

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-14

Completion Date: 7/14/09
Casing Elevation:
Ground Elevation: 434.94
Coordinates Northing:791842.10 Easting:2321971.92

Depth In feet	VMP Construction: VMP-14-5	VMP-14-11.5	VMP-14-20	VMP-14-29	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
											Not logged	Boring advanced to a depth of 5' via air knife to clear utilities, then continued with 4.25" HSA
5					24	24	0.0			FILL	Soft, moist, brown, silty clay, FILL (FILL)	
					24	21	0.0 0.4				Soft, moist, gray and brown, low plastic, Silty CLAY (CL), mottled	
10					24	24	51.1			CL	Becomes soft to medium stiff, gray, with sand, silt grades out	
					24	24	1093				Medium dense, moist, black to brownish gray, fine to medium grained, SAND (SP), trace clay	Strong petroleum - like odor
					24	22	1290				Clay grades out	
15					24	22	4589					
					24	22	9999			SP	Becomes grayish brown	
20					24	20	9999					
					24	20	9999					
					24	20	9999				Becomes fine grained	

Completion Depth: 35.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: E. Wetzel
Logged by: W. Pennington

URS

Water Depth: 34 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner

Unified Soil Classification based on field visual observations.

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-14

Completion Date: 7/14/09
Casing Elevation:
Ground Elevation: 434.94

Coordinates
Northing:791842.10
Easting:2321971.92

Depth In feet	VMP Construction: VMP-14-5	VMP-14-11.5	VMP-14-20	VMP-14-29	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
30					24	22	9999				Becomes reddish brown	
					24	19	9999					
					24	20	279			SP		
					24	22	2692					
35					24	24	9580				Becomes wet ▽	
											Bottom of boring at 35' bgs	
40												
45												

Completion Depth: 35.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: E. Wetzel
Logged by: W. Pennington

URS

Water Depth: 34 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner

Unified Soil Classification based on field visual observations.

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-14-20

Page Of

Start Date: 2/22/17
Completion Date: 2/24/17
Casing Elevation: Not Installed
Ground Elevation: 434.96

Coord nates
Northing: 791849.40
Easting: 2321968.30

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	B ow Counts	PID/FID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
									0' 20' not logged	Boring advanced to a depth of 10 ft. bgs via air knife and hand auger to clear utilities. Boring then advanced to 20' bgs utilizing hollow stem augers and utilizing split spoons 20 21 ft. bgs.
20		12	12	3/4				SP	Loose, moist, tan, fine to medium grained, poorly graded SAND (SP)	Screen set at 20 20.5 ft. bgs
									Bottom of boring at 21' bgs	

Completion Depth: 21.0 ft bgs
Project No.: 60527968.1.04.100
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling Inc.
Drilling method: See Notes column for info Rig Type: Geoprobe 8040
Drilled by: P. Seymour
Logged by: R. Hart

Water Depth: NE ft., After ATD hrs.
Water Depth: ft., After hrs.

- Water level at time of drilling
- Water level after drilling
- ATD At time of drilling
- Splitspoon Sampler
- Hollow Stem Auger
- Soil samples not collected
- Geoprobe
- Air Knife
- Hand Auger
- Sonic

USC based on field visual observations

AECOM

AECOM (ENV RON) LOG W/ BLOWCOUN S+1 WELL P:\RESOURCES\G N DA AIG N \PROJEC S\VMP-14-29 (NS ALLA ON 2017) GPJ P:\RESOURCES\G N DA AIG N \ENV RONMEN AL\AECOM S L (ENV RONMEN AL) GLB 4/4/17

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-14-29

Start Date: 2/22/17
Completion Date: 2/24/17
Casing Elevation: Not Installed
Ground Elevation: 434.81

Coord nates
Northing: 791849.70
Easting: 2321974.30

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	B ow Counts	PID/FID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
					0.8				Sand and gravel (FILL) Soft, brown, moist to dry, silty clay, trace fine sand	Boring advanced to a depth of 12 ft. bgs via air knife and hand auger to clear utilities. Boring then advanced to 30 ft bgs utilizing hollow stem augers and split spoons.
					0.6					
					1.8				Soft, moist, gray and brown, low plastic. silty clay	
					0.7			FILL	Soft, moist, brown silty clay, with fine gravel	
5				N/A	0.6					Analytical sample collected at 5 5.5 ft.
					0.7					
					0.7					
					0.7				Soft, moist, reddish brown, low plastic Silty CLAY (CL), with fine sand	
					0.5			CL		
10					0.5					
					0.7				Loose, moist, red brown, fine to medium grained, poorly graded SAND (SP)	
		24	24	2/3 3/5	6.7 12.3 18.2					Analytical sample collected at 11.5 12 ft.
		24	22	3/3 4/5	31.2 54.6					
15		24	24	3/3 4/5	60.3 58.6			SP	Becomes fined grained	
		24	24	2/3 3/5	53.3					
20		24	24	3/3 3/4	51.3 45.4 47.7					Analytical sample collected at 20 21 ft.
		24	21	2/3 3/3	40.3 32.6				Becomes less red, more light tan	
				2/3						

Completion Depth: 30.0 ft bgs
Project No.: 60527968.1.04.100
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling Inc.
Drilling method: See Notes column for info Rig Type: Geoprobe 8040
Drilled by: P. Seymour
Logged by: M. Miller/R. Hart

Water Depth: NE ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

- Water level at time of drilling
- Water level after drilling
- ATD At time of drilling
- Splitspoon Sampler
- Hollow Stem Auger
- Soil samples not collected
- Geoprobe
- Air Knife
- Hand Auger
- Sonic

USC based on field visual observations

AECOM

AECOM (ENV RON) LOG W/ BLOWCOUN S+1 WELL P:\RESOURCES\GIN DA AIG N \PROJEC S\VMP-14-29 (NS ALLA ON 2017) GPJ P:\RESOURCESIG N DA AIG N \ENV RONMEN AL\AECOM S L (ENV RONMEN AL) GLB 4/4/17

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-14-29

Start Date: 2/22/17
Completion Date: 2/24/17
Casing Elevation: Not Installed
Ground Elevation: 434.81

Coord nates
Northing: 791849.70
Easting: 2321974.30

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	B ow Counts	PID/FID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
		24	24	3/3	30.4 31.1			SP	Loose, brown, moist, fine grained, poorly graded SAND (SP)	
		24	24	2/3 3/6	24.3					
		24	24	3/3 4/5	20.2 18.7					
30									Bottom of boring at 30' bgs	Analytical sample collected at 29 30 ft. Screen set at 29 29.5 ft. bgs
35										
40										
45										

Completion Depth: 30.0 ft bgs
Project No.: 60527968.1.04.100
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling Inc.
Drilling method: See Notes column for info Rig Type: Geoprobe 8040
Drilled by: P. Seymour
Logged by: M. Miller/R. Hart

Water Depth: NE ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

- Water level at time of drilling
- Water level after drilling
- ATD At time of drilling
- Splitspoon Sampler
- Hollow Stem Auger
- Soil samples not collected
- Geoprobe
- Air Knife
- Hand Auger
- Sonic

USC based on field visual observations

AECOM

AECOM (ENV RON) LOG W/ BLOWCOUN S+1 WELL P:\RESOURCES\G N DA AIG N \PROJEC S\VMP-14-29 (NS ALLA ON 2017) GPJ P:\RESOURCESIG N DA AIG N \ENV RONMEN AL\AECOM S L (ENV RONMEN AL) GLB 4/4/17

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-15

Completion Date: 7/20/09
Casing Elevation:
Ground Elevation: 433.46

Coordinates
Northing:791664.43
Easting:2322006.54

Depth In feet	VMP Construction: VMP-15-5	VMP-15-21.5	VMP-15-25.5	VMP-15-29	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
											Not logged	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" HSA
10					24	3	0.3			CL	Medium dense, moist to wet, gray, medium plastic, CLAY (CL)	
					24	24	0.6					
15					24	23	1.0				Trace brown mottling	
					24	24	4.1					
					24	20	5.6					
20					24	24	12.2					
					24	24	9.5			SP-SC	Medium dense, moist, gray, fine grained, SAND (SP) with clay to clayey SAND (SC)	Petroleum - like odor

Completion Depth: 36.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: B. Schilling
Logged by: W. Pennington

Water Depth: 34 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner

Unified Soil Classification based on field visual observations.

URS

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-15

Completion Date: 7/20/09
Casing Elevation:
Ground Elevation: 433.46

Coordinates
Northing:791664.43
Easting:2322006.54

Depth In feet	VMP Construction: VMP-15-5	VMP-15-21.5	VMP-15-25.5	VMP-15-29	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
					24	14	33.4				Loose to medium dense, moist, grayish brown, fine to medium grained, SAND (SP)	
					24	18	20.2					
					24	24	26.5				Some coarse grains	
30					24	22	55.9			SP	Becomes reddish brown	
					24	18	56.5					
35					24	16					Becomes wet, grayish brown, medium to coarse grained ▽	
											Bottom of boring at 36'	
40												
45												

Completion Depth: 36.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: B. Schilling
Logged by: W. Pennington

URS

Water Depth: 34 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner
Unified Soil Classification based on field visual observations.

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-15-29

Start Date: 7/28/14
Completion Date: 7/30/14
Casing Elevation: Not Installed
Ground Elevation: 433.38

Coord nates
Northing: 791655.30
Easting: 2322007.05

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	B ow Counts	PID/FID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
	VMP 5 25 VMP 5 29									
					3.4			ASPHALT	Asphalt and topsoil (FILL)	Borholes air knifed to 10' bgs to clear for potential utilities and obstructions.
					3.4			FILL	Topsoil (FILL)	Two vapor monitoring points set at 25.5' bgs and 29' bgs in adjacent soil borings VMP 15 25.5 and VMP 15 29. Only VMP 15 29 was logged for lithology.
5					1.5				Moist, dark brown, very fine Clayey SILT (ML) with black organic material, trace gravel	
					3.0			ML	Becomes dark gray, gravel grades out	10" diameter surface casing set to 10' bgs due to the proximity of the boring to an underground natural gas line.
					3.0					
10		24	16		6.4				Stiff, dry, dark gray, low plastic, Silty CLAY (CL)	
		24	21	1 2 3 5	6.3					
15		24	22	1 3 3 5	7.7			CL	Becomes gray with brown mottling, increasing amount of silt	
		24	24	1 3 4 4	4.4					
		24	24	1 2 3 4	12.1					
20		24	24	1 1 1 2	8.0				Loose, moist, dark gray, fine Clayey SAND (SC)	
		24	22	1 2 1 2	10.0			SC		
				2						

Completion Depth: 30.0 ft bgs
Project No.: 21562973
Project Name: VMP Maintenance
Drilling Contractor: Roberts Environmental Drilling Inc.
Drilling method: HSA Rig Type: CME 75
Drilled by: J. Crank
Logged by: E. Arthur

URS

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.

- ▽ Water level at time of drilling
- ▼ Water level after drilling
- ATD At time of drilling
- Splitspoon Sampler
- Hollow Stem Auger
- Soil samples not collected
- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic

USC based on field visual observations

URS (ENV RON) LOG W/ BLOWCOUN S+2 WELLS P \RESOURCES\G N DA AIG N \PROJEC S\ROXANA 4 H S VMP-15-29 EX ENS ON (2014).GPJ P \RESOURCES\G N DA AIG N \ENV RONMEN AL\URSS LEV GLB 10/10/14

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-15-29

Start Date: 7/28/14
Completion Date: 7/30/14
Casing Elevation: Not Installed
Ground Elevation: 433.38

Coord nates
Northing: 791655.30
Easting: 2322007.05

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	B ow Counts	PID/FID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
	VMP 5 25 VMP 5 29	24	18	4 6 8	12.0			CL	Soft, moist, gray, low plastic CLAY (CL)	
								SP	Loose, moist, gray, medium grained SAND (SP)	
								CL	Soft, moist, gray, low plastic, Silty CLAY (CL)	
		24	12	8 11 11 13	4.5				Loose, moist, gray, coarse grained SAND (SP) Becomes medium grained	
								SP		
		24	18	3 4 6 9	11.1				Becomes brown	
30									Bottom of boring at 30' bgs	Augers and split spoon advanced to 30' bgs
35										
40										
45										

Completion Depth: 30.0 ft bgs
Project No.: 21562973
Project Name: VMP Maintenance
Drilling Contractor: Roberts Environmental Drilling Inc.
Drilling method: HSA Rig Type: CME 75
Drilled by: J. Crank
Logged by: E. Arthur

URS

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.

- ▽ Water level at time of drilling
- ▼ Water level after drilling
- ATD At time of drilling
- Splitspoon Sampler
- Hollow Stem Auger
- Soil samples not collected
- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic

USC based on field visual observations

URS (ENV RON) LOG W/ BLOWCOUN S+2 WELLS P:\RESOURCES\G N DA AIG N \PROJEC S\ROXANA 4 H S VMP-15-29 EX ENS ON (2014).GPJ P:\RESOURCES\G N DA AIG N \ENV RONMEN AL\URSS LEV GLB 10/10/14

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-16

Completion Date: 7/22/09
Casing Elevation:
Ground Elevation: 436.95

Coordinates
Northing:791667.47
Easting:232236.35

Depth In feet	VMP Construction: VMP-16-5	VMP-16-13.5	VMP-16-19	VMP-16-31	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
										FILL	Asphalt and gravel, FILL (FILL)	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" HSA
											Becomes gray, silty sand, some gravel	
5										CL	Gray, Silty CLAY (CL), trace gravel	
10					24	17	1473			SP	Medium dense, moist, gray, fine grained, SAND (SP)	
					24	19	469			CL	Medium stiff, moist, gray, low plastic, Silty CLAY (CL)	
15					9	8	30.3				Medium dense, moist, grayish brown, fine grained, SAND (SP), trace black banding	
					24	19	875					
20					24	20	1042			SP	Becomes fine to medium grained	
					24	21	29.3					
					24	24	73.4					

Completion Depth: 38.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: B. Schilling
Logged by: M. Corbett

URS

Water Depth: 36 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner

Unified Soil Classification based on field visual observations.

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-16

Completion Date: 7/22/09
Casing Elevation:
Ground Elevation: 436.95

Coordinates
Northing:791667.47
Easting:232236.35

Depth In feet	VMP Construction: VMP-16-5	VMP-16-13.5	VMP-16-19	VMP-16-31	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
					24	19	29.9				Same: Medium dense, moist, grayish brown, fine to medium grained, SAND (SP)	
					24	21	39.6					
					24	21	27.8					
30					24	18	59.1			SP		
					24	18	1810				Becomes medium grained, trace gravel	
35					24	18	1876				Becomes dense, fine to medium grained	
					24	19.5	1472				Becomes medium dense, wet, medium grained	
											Bottom of boring at 38' bgs	
40												
45												

Completion Depth: 38.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hollow Stem Auger Rig Type: CME-75
Drilled by: B. Schilling
Logged by: M. Corbett

URS

Water Depth: 36 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
3" Clear Acetate Liner
Unified Soil Classification based on field visual observations.

URS (ENVIRON) LOG+4 WELLS 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-24

Completion Date: 1/6/11
Casing Elevation:
Ground Elevation: 441.53

Coordinates
Northing:792370.37
Easting:2322016.99

Depth In feet	Construction: VMP-24-5	Construction: VMP-24-10	Construction: VMP-24-22	Construction: VMP-24-34	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
										ASPHAL	Asphalt	Boring advanced to a depth of 10' via air knife to clear utlities, then continued with 4.25" HSA
										FILL	Medium stiff, moist, red brown, CLAY (FILL)	
5											Loose, moist, brown, silty SAND (SM)	
										SM	Loose, moist, brown, silty SAND (SM)	
10					24	12	0.0				Loose, moist to dry, light brown, fine grained SAND (SP)	
					24	16	0.0					
					24	18	0.0				Becomes medium dense	
15					24	20	5.0			SP		
					24	20	2.8					
20					24	24	2.9				Becomes dense, red brown	
					24	22	0.0					
					24	22	0.0				Becomes fine to medium grained	

Completion Depth: **38.00 Ft bgs**
Project No.: **21562593**
Project Name: **Roxana Supplemental Investigation**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Drilling method: **HSA/Splitspoon** Rig Type: **CME 45**
Drilled by:
Logged by: **M. Miller**

Water Depth: 35 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

- ▽ Water level at time of drilling
- ▼ Water level after drilling
- ATD - At time of drilling
- Splitspoon Sampler
- Hollow Stem Auger- Soil samples not collected
- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Roto-Sonic

USC based on field visual observations

URS

URS (ENVIRON) LOG+4 WELLS_21562593 (VMP-20 THRU 25).GPJ URSSTLEV.GDT 4/29/11

LOG OF BORING AND WELL CONSTRUCTION DETAIL VMP-24

Completion Date: 1/6/11
Casing Elevation:
Ground Elevation: 441.53

Coordinates
Northing:792370.37
Easting:2322016.99

Depth In feet	Construction: VMP-24-5	Construction: VMP-24-10	Construction: VMP-24-22	Construction: VMP-24-34	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
											Dense, moist to dry, red brown, fine to medium grained SAND (SP)	
					24	24	1.8					
					24	24	2.4				Becomes medium dense	
30					24	20	6.0			SP	Becomes loose	
					24	24	5.1				With black and tan banding	
35					24	22	1.8				Becomes wet, gray, fine grained ▽	
					24	23					Becomes brown, fine to medium grained	
											Bottom of boring at 38' bgs	
40												
45												

Completion Depth: 38.00 Ft bgs
Project No.: 21562593
Project Name: Roxana Supplemental Investigation
Drilling Contractor: Roberts Environmental Drilling Inc.
Drilling method: HSA/Splitspoon
Rig Type: CME 45
Drilled by:
Logged by: M. Miller

Water Depth: 35 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
Splitspoon Sampler
Hollow Stem Auger-
Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Roto-Sonic

USC based on field visual observations

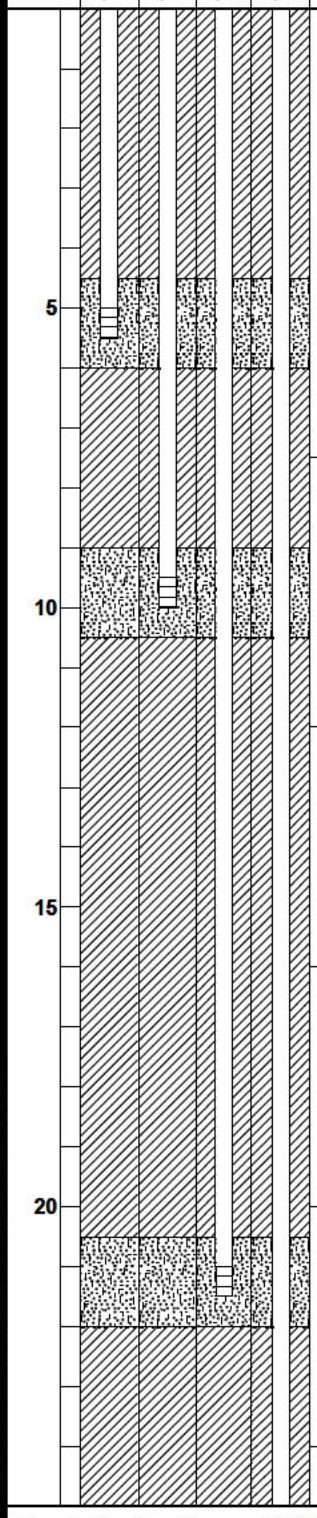
URS

URS (ENVIRON) LOG+4 WELLS_21562593 (VMP-20 THRU 25).GPJ URSSTLEV.GDT 4/29/11

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-25

Completion Date: 3/11/11
Casing Elevation:
Ground Elevation: 431.77

Coordinates
Northing:791791.90
Easting:2321676.00



Inches Driven	Inches Recovered	PID (ppm)	USCS	DESCRIPTION	NOTES
			ASPHAL	Asphalt	Boring advanced to a depth of 7.5' bgs via air knife to clear utilities.
			FILL	Baserock (FILL)	
			FILL	Loose, wet, gray SAND (FILL)	
54	26	1.2			
		1.6	CL	Soft, moist, gray with brown mottles, low plastic CLAY (CL)	
48	46	0.4			
		1.4		Becomes medium stiff	
48	48	0.4			
		1.3		Brown mottles grade out	
48	36	9.5	SP	Loose, moist, gray, fine to medium grained SAND (SP), trace to with clay	
		15.6		Becomes medium dense to dense, brownish gray, trace small clay seams (< 1/4" thick)	
				3" clay seam (smaller clay seams grade out)	

Completion Depth: 32.00 Ft bgs
Project No.: 21562593
Project Name: Roxana Supplemental Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Geoprobe (Direct Push Dual Tube) Rig Type: 7000 VTR
Drilled by:
Logged by: W. Pennington

Water Depth: 28 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
Splitspoon Sampler
Hollow Stem Auger-
Soil samples not collected
Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Roto-Sonic

USC based on field visual observations

URS

URS (ENVIRON) LOG+4 WELLS_21562593 (VMP-20 THRU 25).GPJ URSSTLEV.GDT 4/29/11

LOG OF BORING AND WELL CONSTRUCTION DETAIL VMP-25

Completion Date: 3/11/11
Casing Elevation:
Ground Elevation: 431.77

Coordinates
Northing:791791.90
Easting:2321676.00

Depth In feet	Construction: VMP-25-5	Construction: VMP-25-95	Construction: VMP-25-21	Construction: VMP-25-31	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
30					48	39	15.2 1075			SP	Becomes medium to coarse grained Same: Medium dense to dense, moist, brownish gray, medium to coarse grained SAND (SP) 1" clay seam ▽ Becomes wet	
					48	47	988 247					
											Bottom of boring at 32' bgs	
35												
40												
45												

Completion Depth: 32.00 Ft bgs
Project No.: 21562593
Project Name: Roxana Supplemental Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Geoprobe (Direct Push Dual Tube) Rig Type: 7000 VTR
Drilled by:
Logged by: W. Pennington

URS

Water Depth: 28 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
Splitspoon Sampler
Hollow Stem Auger-
Soil samples not collected
Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Roto-Sonic

USC based on field visual observations

URS (ENVIRON) LOG+4 WELLS_21562593 (VMP-20 THRU 25).GPJ URSSTLEV.GDT 4/29/11

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-39

Completion Date: 9/15/11
Casing Elevation: Not Surveyed
Ground Elevation: 445.06

Coord nates
North ng:792346.25
East ng:2322314.14

Depth In feet	Construction (- 0 / -20 / -30)	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
								Loose gravel	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" dual tube probe.
				31.2				Loose, dry, black CLAY	
				110.9					
				50.3				Medium stiff, dry, to moist, black CLAY	
				75.6					
5				912.4				Loose, moist, black, dry to oist, sandy CLAY	
				353.3					
				901.7				Medium stiff, dry to moist, black CLAY	
				724.4				Loose, moist, black, sandy CLAY	
				800.3					
				836.3					
10		60		922.6			SP	Loose, moist, light brown, fine grained, poorly graded SAND (SP)	Hydrocarbon odor
				893.6					
15		60		848.7					
				866.2			ML	Very soft, wet, gray, Sandy SILT (ML) ▽	
20		60		418.5			SP	Loose, moist, light brown, fine grained, poorly graded SAND (SP)	
				988.7					

Completion Depth: 31.5 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe
Rig Type: AMS Power-probe
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: 18.5 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Sonic

USC based on field visual observations

URS (ENV RON) LOG + 3 WELLS 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 7/30/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-39

Completion Date: 9/15/11
Casing Elevation: Not Surveyed
Ground Elevation: 445.06

Coord nates
North ng:792346.25
East ng:2322314.14

Depth In feet	Construction	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
	- 0 -20 -30								
		60		334.1			SP	SAME: Loose, moist, light brown, fine grained, poorly graded SAND (SP)	Hydrocarbon odor
				851.7			CL	Medium stiff, olive brown, low plastic, Silty CLAY (CL)	Hydrocarbon odor
30		12		930.4			SP	Loose, moist, light brown, fine grained, poorly graded SAND (SP), with interbedded clay Bottom of Boring at 31' bgs	Hydrocarbon odor
35									
40									
45									

Completion Depth: 31.5 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe
Rig Type: AMS Power-probe
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

Water Depth: 18.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic

USC based on field visual observations

URS

URS (ENV RON) LOG + 3 WELLS 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 7/30/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-40

Completion Date: 9/26/11
Casing Elevation: Not Surveyed
Ground Elevation: 444.74

Coord nates
North ng:792184.44
East ng:2322398.65

Depth In feet	Construction (- 0 / -20 / -30)	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
				68.5				Asphalt	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" dual tube probe.
				131.6				Loose, dry to moist, black, gravely CLAY	
				740.6					
				954.8				Loose, moist, black gray, sandy CLAY	
5				938.6					
				718.1					
				750.6					
				778.2					
				904.1					
10				896.2					
		60	40	398.6				Loose, dry, light brown, fine grained, poorly graded SAND (SP)	Hydrocarbon odor
				624.4					
15		60	40	616.0			SP		
				689.8					
20		60	46	141.2					
				34.0			CL	Soft, dry, light gray CLAY (CL)	
							SP	Loose, dry, light brown, fine grained, poorly graded SAND (SP)	Hydrocarbon odor

Completion Depth: 31.5 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe
Rig Type: AMS Power-probe
Drilled by: P. Seymour/E. Wetzel
Logged by: L. Rathnow

URS

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Sonic

USC based on field visual observations

URS (ENV RON) LOG + 3 WELLS 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 7/30/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
VMP-40

Completion Date: 9/26/11
Casing Elevation: Not Surveyed
Ground Elevation: 444.74

Coord nates
North ng:792184.44
East ng:2322398.65

Depth In feet	Construction (- 0 / -20 / -30)	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
30		60	48	32.7			SP	SAME: Loose, dry, light brown, fine grained, poorly graded SAND (SP) Becomes fine to medium grained	Hydrocarbon odor
				35.0					
		18	18	16.2				Bottom of Boring at 31.5' bgs	
35									
40									
45									

Completion Depth: 31.5 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe
Rig Type: AMS Power-probe
Drilled by: P. Seymour/E. Wetzel
Logged by: L. Rathnow

URS

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected
Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Sonic
USC based on field visual observations

URS (ENV RON) LOG + 3 WELLS 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 7/30/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL

VMP-53 Page Of 2

Start ng Date: 2/ 3/ 2
Comp et on Date: 2/ 3/ 2
Cas ng E evat on: Not Insta ed
Ground E evat on: 443 55

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792228 78
E: (Y):2322 69 96

Depth In feet	Construction: VMP-53-30	Construction: VMP-53-20	Construction: VMP-53-10	Construction: VMP-53-5	Inches Dr ven	Inches Recovered	PID (ppm)	Graph c	Samp er Symbo	USCS	DESCR PT ON	NOTES
										ASPHALT	Asphalt and gravel	Air knifed to 10' bgs to clear utilities.
										FILL	Moist, brown Clayey SILT (FILL), trace gravel	
										SP	Loose, moist, light brown, fine to meduim grained SAND (SP)	
5											Becomes brown	
											Becomes with clay	
10					36	36	0.6 0.7				Clay grades out	
15					60	52	0.4 0.7					Sampled VMP-53-15 for VOC at 1325
20					60	48	0.4 0.8 0.7					
							0.7					

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, J. Staetter**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EV RON) LOG (EPA FORMA) +4 WELLS 21562850 15000 (ROXANA VMP 2013).GPJ URSS_LEV.GD 3/1/13

LOG OF BORING AND WELL CONSTRUCTION DETAIL

VMP-53

Start ng Date: 2/ 3/ 2
Comp et on Date: 2/ 3/ 2
Cas ng E evat on: Not Insta ed
Ground E evat on: 443 55

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792228 78
E: (Y):2322 69 96

Depth In feet	Construction: VMP-53-30	Construction: VMP-53-20	Construction: VMP-53-10	Construction: VMP-53-5	Inches Dr ven	Inches Recovered	PID (ppm)	Graph c	Samp er Symbo	USCS	DESCR PT ON	NOTES
					60	48	1.0			SP	Same: Loose, moist, brown, fine to meduim grained SAND (SP)	Sampled VMP-53-27 for VOC at 1340
					36	30	0.6					
30							0.8			CL	Medium stiff, moist, brown, low plastic CLAY (CL)	
											Bottom of boring at 31 ft. bgs	Sampled VMP-53-31 for VOC at 1345
35												
40												
45												

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, J. Staetter**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EV RON) LOG (EPA FORMA) +4 WELLS 21562850 15000 (ROXANA VMP 2013).GPJ URSS_LEV.GD 3/1/13

LOG OF BORING AND WELL CONSTRUCTION DETAIL

VMP-54 Page Of 2

Start ng Date: 2/ 4/ 2
Comp et on Date: 2/ 4/ 2
Cas ng E evat on: Not Insta ed
Ground E evat on: 433 65

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792230 4
E: (Y):232 840 44

Depth In feet	Construction: VMP-54-30	Construction: VMP-54-20	Construction: VMP-54-10	Construction: VMP-54-5	Inches Dr ven	Inches Recovered	PID (ppm)	Graph c	Samp er Symbo	USCS	DESCR PT ON	NOTES
										ASPHALT	Asphalt and gravel	Air knifed to 10' bgs to clear utilities.
5											Meduim dense, moist, brown, fine to meduim grained SAND (SP)	
											Becomes medium grained	
10					36	36	0.6 1.2			SP		
15					60	44	1.8 1.3					Sampled VMP-54-15 for VOC at 0911
20					60	42	1.7 0.7 0.9				Becomes medium to coarse grained Trace black banding for 3"	
							1.3					

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EV RON) LOG (EPA FORMA) +4 WELLS 21562850 15000 (ROXANA VMP 2013).GPJ URSS_LEV.GD 3/1/13

LOG OF BORING AND WELL CONSTRUCTION DETAIL

VMP-54

Start ng Date: 2/ 4/ 2
Comp et on Date: 2/ 4/ 2
Cas ng E evat on: Not Insta ed
Ground E evat on: 433 65

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792230 4
E: (Y):232 840 44

Depth In feet	Construction: VMP-54-30	Construction: VMP-54-20	Construction: VMP-54-10	Construction: VMP-54-5	Inches Dr ven	Inches Recovered	PID (ppm)	Graph c	Samp er Symbo	USCS	DESCR PT ON	NOTES
30					60	48	1.1			SP	Same: Medium dense, moist, brown, medium to coarse grained SAND (SP)	Sampled VMP-54-25 for VOC at 0920
					36	30	0.9 1.0					
											Bottom of boring at 31 ft. bgs	Sampled VMP-54-31 for VOC at 0926
35												
40												
45												

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EV RON) LOG (EPA FORMA) +4 WELLS 21562850 15000 (ROXANA VMP 2013).GPJ URSS_LEV.GD 3/1/13

LOG OF BORING AND WELL CONSTRUCTION DETAIL

VMP-55 Page Of 2

Start ng Date: 2/ 7/ 2
Comp et on Date: 2/ 7/ 2
Cas ng E evat on: Not Insta ed
Ground E evat on: 430 55

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 879 4
E: (Y):232 828 60

Depth In feet	Construction: VMP-55-30	Construction: VMP-55-20	Construction: VMP-55-10	Construction: VMP-55-5	Inches Dr ven	Inches Recovered	PID (ppm)	Graph c	Samp er Symbo	USCS	DESCR PT ON	NOTES
0							0.0			TOPSOIL	Topsoil	Air knifed to 10' bgs to clear utilities.
							0.0				Sand and gravel, asphalt rubble (FILL)	
							0.2					
							0.3					
5							74.9					
							66.2					
							58.4			FILL	Becomes stiff, moist, dark gray clay, some sand and gravel asphalt	
							33.1					
							48.2					
10					36	36	0.0					
							0.1					
					60	60	0.0				Stiff, moist, gray, low plastic CLAY (CL), with brown mottles	Sampled VMP-55-13 for VOC at 1310
15							0.0			CL		
					60	60	0.0					
							0.0					
20							0.0				Becomes sandy	
							1.0					
							2.1			SP	Loose, moist, brown, medium grained SAND (SP) 2" clay seam	

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **W. Pennington, J. Staetter**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 28 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EV RON) LOG (EPA FORMA) +4 WELLS 21562850 15000 (ROXANA VMP 2013).GPJ URSS_LEV.GD 3/1/13

LOG OF BORING AND WELL CONSTRUCTION DETAIL

VMP-55

Start ng Date: 2/ 7/ 2
Comp et on Date: 2/ 7/ 2
Cas ng E evat on: Not Insta ed
Ground E evat on: 430 55

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 879 4
E: (Y):232 828 60

Depth In feet	Construction: VMP-55-30	Construction: VMP-55-20	Construction: VMP-55-10	Construction: VMP-55-5	Inches Dr ven	Inches Recovered	PID (ppm)	Graph c	Samp er Symbo	USCS	DESCR PT ON	NOTES
30					60	42	0.2			SP	Same: Loose, moist, brown, medium grained SAND (SP) 0.5" clay seam	Sampled VMP-55-25 for VOC at 1315
					36	26	32.1 128.9				Becomes wet ▽ Bottom of boring at 31 ft. bgs	Sampled VMP-55-31 for VOC at 1320
35												
40												
45												

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **W. Pennington, J. Staetter**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 28 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EV RON) LOG (EPA FORMA) +4 WELLS 21562850 15000 (ROXANA VMP 2013).GPJ URSS_LEV.GD 3/1/13

LOG OF BORING
GP-1

Completion Date: 9/2/09
Casing Elevation:
Ground Elevation: 433.07

Coordinates
Northing:791975.34
Easting:2321614.60

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
							Gravelly silt, FILL (FILL)	Boring advanced to a depth of 5' via hand auger to clear utilities, then continued with direct push dual tube
							Becomes medium stiff, moist, brown, low plastic, silty clay, trace sand and gravel	
5						FILL		
	36	21	3.8				With gravel	
							Becomes dark brown, silty gravel	
			6.1					
10	48	41					Becomes wet, clayey	
			2.4				Medium stiff, moist, gray, medium plastic, CLAY (CL)	
			3.7					
	48	48					Trace iron staining	
15			4.3				Becomes stiff	
						CL	Becomes brown and light gray	
			5.1					
	48	48						
			4.9					
20								
			5.5				Becomes soft, moist to very moist, gray, low plastic, sandy	
	48	37						
			4.9					Sampled GP-1-22.5 for VOC at 0950
							Medium dense, moist, grayish brown, fine to medium grained, SAND (SP), trace clay	Collected Sudan kit at 23.5'
						SP		

Completion Depth: 40.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Geoprobe (Direct Push Dual Tube)
Logged by: M. Corbett

Water Depth: 32 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
3" Clear Acetate Liner
USC based on field visual observations

URS

URS (ENVIRON) LOG 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING
GP-1

Completion Date: 9/2/09
Casing Elevation:
Ground Elevation: 433.07

Coordinates
Northing:791975.34
Easting:2321614.60

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	39	6.9			SP	Same: Medium dense, moist, grayish brown, fine to medium grained, SAND (SP), trace clay	
						SC	Loose, moist, gray, low plastic, Clayey SAND (SC)	
			7.9				Medium dense, moist, grayish brown, fine to medium grained, SAND (SP), trace clay	Collected Sudan kit at 27'
							Becomes light brown	
30	48	33	5.1					
			5.3					Sampled GP-1-31 and GP-1-31D for VOC at 0940
							▽ Becomes wet, trace gravel	Collected Sudan kit at 31.5'
	48	40	9.2			SP		Collected Sudan kit at 33'
35			6.3				Becomes medium grained, clay grades out	
	48	40	6.0				Becomes fine to medium grained	
			7.1				Becomes brownish gray Coal seam Becomes light brown, trace gravel	
40							Bottom of boring at 40' bgs	
45								

Completion Depth: 40.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Geoprobe (Direct Push Dual Tube)
Logged by: M. Corbett

URS

Water Depth: 32 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
USC based on field visual observations

URS (ENVIRON) LOG 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING
GP-2

Completion Date: 8/31/09
Casing Elevation:
Ground Elevation: 432.47

Coordinates
Northing:791928.10
Easting:2321630.26

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
5						FILL	Soft to medium stiff, moist, brown, silty clay, trace sand and gravel, FILL (FILL)	Boring advanced to a depth of 5' via hand auger to clear utilities, then continued with direct push dual tube
	36	26	2.8 2.7				Becomes medium dense sandy gravel, trace silt	
10	48	27	3.7 3.2				Becomes wet	
						CH	Soft, moist, gray, high plastic, CLAY (CH)	
	48	46	3.7				Becomes medium stiff	
15			4.0				Becomes stiff	
	48	44.5	7.8 5.1					Collected Sudan kit at 17' Sampled GP-2-17 for VOC at 1630
						CL	Soft, moist, brownish gray, low plastic, Silty CLAY (CL),	
20							Becomes sandy	
	48	29	7.5 5.2			SP	Medium dense, moist, brownish gray, fine to medium grained, SAND (SP)	
						CL	Medium stiff, gray, medium plastic, CLAY (CL) Becomes sandy	
						SP	Medium dense, moist, brownish gray fine to medium grained, SAND (SP), trace silt	Hydrocarbon staining Collected Sudan kit at 23.5' Sampled GP-2-23.5 for VOCs at 1650

Completion Depth: 40.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Geoprobe (Direct Push Dual Tube)
Logged by: M. Corbett

URS

Water Depth: 32 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
USC based on field visual observations

URS (ENVIRON) LOG 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING
GP-2

Completion Date: 8/31/09
Casing Elevation:
Ground Elevation: 432.47

Coordinates
Northing:791928.10
Easting:2321630.26

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	39	4.3 3.3				Same: Medium dense, moist, brownish gray fine to medium grained, SAND (SP), trace silt Becomes brownish gray	
30	48	39	3.8 4.0				Becomes light brown ▽ Becomes wet	
35	48	41	5.0 7.7				Becomes brownish gray, medium to coarse grained Becomes dense, light brown, fine to medium grained	Collected Sudan kit at 35'
40	48	48	4.6 4.5				Becomes brownish gray Becomes light brown	
							Bottom of boring at 40' bgs	
45								

Completion Depth: 40.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Geoprobe (Direct Push Dual Tube)
Logged by: M. Corbett

URS

Water Depth: 32 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
USC based on field visual observations

URS (ENVIRON) LOG 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING
GP-3

Completion Date: 6/9/10
Casing Elevation:
Ground Elevation:

Coordinates
Northing: N/A
Easting: N/A

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	USCS	DESCRIPTION	NOTES
				ASPHALT	Asphalt	Boring advanced to a depth of 7' bgs via air knife to clear utilities.
				FILL	Baserock (FILL)	
					Sandy fill (FILL)	
5						
				CL	Medium stiff, moist, dark gray with brown mottles, low plastic CLAY (CL)	
	60	44	0.2			
10			1.1		Becomes with silt	
	48	34	1.3			
				SC	Loose to medium dense, moist, gray, fine grained, Clayey SAND (SC)	
15			1.2	SP	Medium dense, moist, gray, medium to coarse grained SAND (SP)	
					2" clay seam	
	48	48	0.5		Becomes wet	
			1.1		Becomes moist	Sampled GP-3-17 for VOC at 1335
20						
	48	38	3.8		3" clay seam	
			5.7		Becomes brownish gray	Sampled GP-3-24 for VOC at 1340
					Becomes wet ▽	

Completion Depth: 28.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Supplemental Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Geoprobe (Direct Push Dual Tube)
Logged by: W. Pennington

Water Depth: 24.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
USC based on field visual observations

URS

URS (ENVIRON) LOG 21562289.00011.GPJ URSSTLEV.GDT 8/12/10

LOG OF BORING
GP-3

Completion Date: 6/9/10
Casing Elevation:
Ground Elevation:

Coordinates
Northing: N/A
Easting: N/A

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	48	4.9 10.3			SP	Same: Medium dense, wet, brownish gray, medium to coarse grained SAND (SP)	
							Bottom of boring at 28' bgs	
30								
35								
40								
45								

Completion Depth: 28.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Supplemental Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Geoprobe (Direct Push Dual Tube)
Logged by: W. Pennington

Water Depth: 24.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
USC based on field visual observations

URS

URS (ENVIRON) LOG 21562289.00011.GPJ URSSTLEV.GDT 8/12/10

LOG OF BORING
GP-4

Completion Date: 8/3/09
Casing Elevation:
Ground Elevation: 433.13

Coordinates
Northing:791837.03
Easting:2321684.23

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
			1.1			FILL	Loose, moist, brown, silty sand, with gravel, FILL (FILL)	Boring advanced to a depth of 5' via hand auger to clear utilities, then continued with direct push dual tube
5	36	18	1.2					
10	48	14	18.0				Becomes wet	
						CL	Soft, moist, low plastic, Sandy CLAY (CL)	Collected Sudan kit at 11' Sampled GP-4-11 for VOC at 1205
	48	48	3.0				Becomes medium stiff to stiff, gray, medium plastic, sand grades out	
15			2.7					
	48	45	3.0				Becomes brownish gray	
			4.0				Becomes sandy	
20	48	39	3.1				Becomes soft, brown	
			3.1				Becomes, wet, gray, low plastic	Sampled GP-4-22.5 for VOC at 1215
						SP	Medium dense, moist, brownish gray, fine to medum grained, SAND (SP), trace silt	Black staining, petroleum - like odor Collected Sudan kit at 23.5'

Completion Depth: 41.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Geoprobe (Direct Push Dual Tube)
Logged by: M. Corbett

URS

Water Depth: 32 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
◧ Splitspoon Sampler
◧ Hollow Stem Auger-Soil samples not collected
☒ Geoprobe Macro Sampler
◧ Air Knife/Hand Auger Sampler
▩ Air Rotary
■ 3" Clear Acetate Liner
USC based on field visual observations

URS (ENVIRON) LOG 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING
GP-4

Completion Date: 8/3/09
Casing Elevation:
Ground Elevation: 433.13

Coordinates
Northing:791837.03
Easting:2321684.23

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	39	3.7 3.8				Same: Medium dense, moist, brownish gray, fine to medum grained, SAND (SP), trace silt 2" soft, moist, gray, clay 3" soft, moist, gray, clay Becomes light brown	
30	48	40	4.3 4.0				1" soft, moist, gray, clay, trace gravel ▽ Becomes wet	
35	48	41	27.1 20.1					Collected Sudan kit at 33' Sampled GP-4-33 for VOC at 1225
	48	48	9.4 12.1				2" moist, gray, medium plastic, clay Trace coal seams	
40							Bottom of boring at 40' bgs	
45								

Completion Depth: 41.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Dissolved Phase Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Geoprobe (Direct Push Dual Tube)
Logged by: M. Corbett

URS

Water Depth: 32 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
USC based on field visual observations

URS (ENVIRON).LOG 21562289.00010.GPJ URSSTLEV.GDT 1/19/10

LOG OF BORING
GP-5

Completion Date: 6/9/10
Casing Elevation:
Ground Elevation:

Coordinates
Northing: N/A
Easting: N/A

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
						ASPHALT	Asphalt	Boring advanced to a depth of 7.5' bgs via air knife to clear utilities.
						FILL	Baserock (FILL)	
							Loose, wet, gray SAND (FILL)	
5						FILL		
	54	26	1.2					
10			1.6				Soft, moist, gray with brown mottles, low plastic CLAY (CL)	Sampled GP-5-10 for VOC at 0855
	48	46	0.4					
15			1.4			CL	Becomes medium stiff	
	48	48	0.4					
			1.3				Brown mottles grade out	Sampled GP-5-19 for VOC at 0900
20							Loose, moist, gray, fine to medium grained SAND (SP), trace to with clay	
	48	36	9.5					
			15.6			SP	Becomes medium dense to dense, brownish gray, trace small clay seams (< 1/4" thick)	
							3" clay seam (smaller clay seams grade out)	
							Becomes medium to coarse grained	

Completion Depth: 32.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Supplemental Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Geoprobe (Direct Push Dual Tube)
Logged by: W. Pennington

Water Depth: 28 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

- ▽ Water level at time of drilling
- ▼ Water level after drilling
- ATD - At time of drilling
- Splitspoon Sampler
- Hollow Stem Auger- Soil samples not collected
- Geoprobe Macro Sampler
- Air Knife/Hand Auger Sampler
- Air Rotary
- 3" Clear Acetate Liner

USC based on field visual observations

URS

URS (ENVIRON) LOG 21562289.00011.GPJ URSSTLEV.GDT 8/12/10

LOG OF BORING
GP-5

Completion Date: 6/9/10
Casing Elevation:
Ground Elevation:

Coordinates
Northing: N/A
Easting: N/A

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	39	15.2 1075			SP	Same: Medium dense to dense, moist, brownish gray, medium to coarse grained SAND (SP) 1" clay seam ▽ Becomes wet	Sampled GP-5-27 and GP-5-27D for VOC at 0905
30	48	47	988 247				Bottom of boring at 32' bgs	
35								
40								
45								

Completion Depth: 32.00 Ft bgs
Project No.: 21562289
Project Name: Roxana Supplemental Investigation
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Geoprobe (Direct Push Dual Tube)
Logged by: W. Pennington

Water Depth: 28 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe Macro Sampler
Air Knife/Hand Auger Sampler
Air Rotary
3" Clear Acetate Liner
USC based on field visual observations

URS

URS (ENVIRON) LOG 21562289.00011.GPJ URSSTLEV.GDT 8/12/10

LOG OF BORING
GP-7(II)

Start Date: 5/15/08 Completion Date: 5/19/08
Coordinates: Northing: N/A Easting: N/A
Boring Location: Village of Roxana
Ground Elevation: N/A

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	USCS	DESCRIPTION	NOTES
			0.0	FILL	Gravel with sand FILL (FILL) (2 inches) Asphalt with base coarse (FILL) (4 inches) Black gravel and cinders FILL (FILL) with clay	Boring advanced to a depth of 8' via hand auger, then continued with geoprobe
			0.0		Loose, moist, brown, fine to medium grained SAND (SP)	
5			0.0			1115 (05/15/08) Sample GP-7(II)-03 collected for VOCs
	48	30	0.7	SP	Becomes tan, trace clay	
10			118			
	48	36	537		Becomes gray	
15			293			
	48	36	403		Becomes dry, tan	
			541			1635 (05/19/08) Sample GP-7(II)-19 and GP-12(II)-19-DUP collected for VOCs
20					Bottom of boring at 20 ft bgs	

Completion Depth: 20.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
ATD - At time of drilling

- Water level ATD
- Water level after drilling
- Air Knife / Hand Auger Sampler
- Hollow Stem Auger - Soil sampling not performed
- Split Spoon Sampler
- Geoprobe - Soil sampling not performed
- Geoprobe Dual-Tube Sampler

Unified Soil Classification based on field visual observations.

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
GP-12(II)

Start Date: 5/15/08 Completion Date: 5/22/08
Coordinates: Northing: N/A Easting: N/A
Boring Location: Village of Roxana
Ground Elevation: N/A

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	USCS	DESCRIPTION	NOTES
				TOPSOIL	TOPSOIL	Boring advanced to a depth of 5' via hand auger, then continued with geoprobe
					Soft, moist, brown, low plastic, silty CLAY (CL)	
				CL	Medium stiff, moist, brown, low to medium plastic CLAY (CL)	
5					Trace small roots	1025 (05/15/08) Sample GP-12(II)-04 collected for VOCs
					Medium stiff, moist, red brown, low plastic, silty CLAY (CL)	
	36	24	0.8	SC/CL	Soft, wet, brown, sandy CLAY to clayey SAND (CL/SC)	
					Trace silt	
			1.2		Loose, moist to dry, tan, fine grained SAND (SP), trace silt	
10	48	24				
			0.7		Silt grades out	
			1.8			
	48	32		SP		
15			1.5			
			2.3			1425 (05/22/08) Sample GP-12(II)-17 and GP-12(II)-17-DUP collected for VOCs
	48	32				
			1.9			
20					Bottom of boring at 20 ft bgs	

Completion Depth: 20.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
Hollow Stem Auger - Soil sampling not performed
Split Spoon Sampler
Geoprobe - Soil sampling not performed
Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
GP-17

Completion Date: 3/15/11
Casing Elevation: Not Installed
Ground Elevation: N/A

Coordinates
Northing: N/A
Easting: N/A

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
						FILL	Gravel (FILL)	Air knife completed to 10' bgs to clear utilities
			57.9				Becomes wet, brown, with silt	
			800			FILL	Grayish black silty clay, with fine sand	
5			185					
			391					
			229				Medium dense, wet, grayish brown, fine grained, poorly graded SAND (SP)	
			271					
			191			SP		
10	24	22	225				Becomes brown	
						SM	Wet, brown, Silty SAND (SM)	
			380				Medium dense, moist, brown fine grained, poorly graded, SAND (SP)	
	48	36						
15			687				Becomes dense	
			716					
	48	32				SP		
			1293					
20			1196					
	48	33						
			1274					
						CL	Stiff, wet, light brown, Silty CLAY (CL)	

Completion Depth: 40.0 Ft bgs
Project No.: 21562593.00014
Project Name: Roxana SVE Pilot Test
Drilling Contractor: Roberts Environmental Drilling Inc.
Drilling method: Direct Push
Logged by: N. Satam

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Roto Sonic

USC based on field visual observations

URS

URS (ENV RON) LOG 21562593 00014 ROXANA SVE GPJ URSS LEV GD 5/18/11

LOG OF BORING
GP-17

Completion Date: 3/15/11
Casing Elevation: Not Installed
Ground Elevation: N/A

Coordinates
Northing: N/A
Easting: N/A

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sample Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	35	16.5 32			CL	Same: Stiff, wet, light brown, Silty CLAY (CL)	
							Medium dense, moist, light brown, fine grained, poorly graded SAND (SP) 1" Silt seam 1" Clay seam	
30	48	36	5.9 5.7					
	48	36	3.5 4.0			SP		
35	48	36	8.3 79				Becomes very dense, gray, with black banding	
40							Bottom of boring at 40' bgs	
45								

Completion Depth: 40.0 Ft bgs
Project No.: 21562593.00014
Project Name: Roxana SVE Pilot Test
Drilling Contractor: Roberts Environmental Drilling Inc.
Drilling method: Direct Push
Logged by: N. Satam

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected
Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Roto Sonic
USC based on field visual observations

URS

URS (ENV RON) LOG 21562593 00014 ROXANA SVE GPJ URSS LEV GD 5/18/11

LOG OF BORING
GP-18

Completion Date: 3/16/11
Casing Elevation: Not Installed
Ground Elevation: N/A

Coordinates
Northing: N/A
Easting: N/A

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sample Graphic	Symbol	USCS	DESCRIPTION	NOTES
						FILL	Gravel (FILL)	Air knife completed to 10' bgs to clear utilities
			19.3			CL	Moist, dark brown, medium plastic, CLAY (CL) with silt, trace sand	
			10.9					
			14.0					
			15.0					
5			4.4			SP	Moist, light brown, fine grained, poorly graded SAND (SP), with silty clay Becomes silty	
			10.2					
			6.4					
			2.5				With light brown mottles	
			1.1					
10	48	1	8.5			CL	Soft, wet, brown, Silty CLAY (CL)	
			21			SP	Medium dense, moist, brown, fine grained, poorly graded SAND (SP)	
	48	18						
15			26					
			18				Becomes gray	
	48	35	10				Trace black banding	
							Becomes brown	
20			11.0					
	48	30						
			14.0					

Completion Depth: 44.0 Ft bgs
Project No.: 21562593.00014
Project Name: Roxana SVE Pilot Test
Drilling Contractor: Roberts Environmental Drilling Inc.
Drilling method: Direct Push
Logged by: N. Satam

Water Depth: 40 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

- Water level at time of drilling
- Water level after drilling
- ATD At time of drilling
- Splitspoon Sampler
- Hollow Stem Auger
- Soil samples not collected
- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Roto Sonic

USC based on field visual observations

URS

URS (ENV RON) LOG 21562593 00014 ROXANA SVE GPJ URSS LEV GD 5/18/11

LOG OF BORING
GP-18

Completion Date: 3/16/11
Casing Elevation: Not Installed
Ground Elevation: N/A

Coordinates
Northing: N/A
Easting: N/A

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sample Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	32	18.2 25			SP	Same: Medium dense, moist, brown, fine grained, poorly graded SAND (SP)	
30	48	46	1450 46			SP CL	Becomes gray Soft, moist, gray, medium, plastic, CLAY (CL), with banding	
35	48	36	21 72			SP	Medium dense, moist, light brown, fine grained, poorly graded SAND (SP)	
40	48	39	42 96			SP	Black banding ▽	
	48	38	1450 3650			SP	Becomes very dense, wet, black Becomes medium grained	
45							Bottom of boring at 44' bgs	

Completion Depth: 44.0 Ft bgs
Project No.: 21562593.00014
Project Name: Roxana SVE Pilot Test
Drilling Contractor: Roberts Environmental Drilling Inc.
Drilling method: Direct Push
Logged by: N. Satam

Water Depth: 40 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected
Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Roto Sonic
USC based on field visual observations

URS

URS (ENV RON) LOG 21562593 00014 ROXANA SVE GPJ URSS LEV GD 5/18/11

LOG OF BORING
GP-19

Completion Date: 3/17/11
Casing Elevation: Not Installed
Ground Elevation: N/A

Coordinates
Northing: N/A
Easting: N/A

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	USCS	DESCRIPTION	NOTES
				ASPHALT	Asphalt	Air knife completed to 10' bgs to clear utilities
				FILL	Gravel (FILL)	
			8.2	SM	Moist, dark brown to gray SAND (SM)	
5			18.6			
			28.9			
			6.2		Becomes wet	
			10.9		Becomes greenish/gray	
			20.4		With light brown mottling	
10	24	1	5.3	SP	Medium dense, wet, brown, fine grained, poorly graded SAND (SP), with silt	
			14.5		Becomes light brown, silt grades out	
	48	36				
15			10.5			
			5.6			
	48	35				
			4.0			
20			7.3			
	48	37				
			9.0			

Completion Depth: 44.0 Ft bgs
Project No.: 21562593.00014
Project Name: Roxana SVE Pilot Test
Drilling Contractor: Roberts Environmental Drilling Inc.
Drilling method: Direct Push
Logged by: N. Satam

Water Depth: 40 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
Splitspoon Sampler
Hollow Stem Auger-
Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Roto-Sonic

USC based on field visual observations

URS

URS (ENV RON) LOG_21562593.00014 ROXANA SVE.GPJ URSSTLEV.GDT 5/23/11

LOG OF BORING
GP-19

Completion Date: 3/17/11
Casing Elevation: Not Installed
Ground Elevation: N/A

Coordinates
Northing: N/A
Easting: N/A

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	34	15 33				Same: Medium dense, wet, brown, fine grained, poorly graded Silty SAND (SP)	
30	48	33	14 34					
35	48	34	4.2 4.6			SP		
	48	34	3.2 6.4					
40	48	36	1475 1650				▽ Becomes very dense, medium grained Black staining	
45							Bottom of boring at 44' bgs	

Completion Depth: 44.0 Ft bgs
Project No.: 21562593.00014
Project Name: Roxana SVE Pilot Test
Drilling Contractor: Roberts Environmental Drilling Inc.
Drilling method: Direct Push
Logged by: N. Satam

Water Depth: 40 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
Splitspoon Sampler
Hollow Stem Auger-
Soil samples not collected
Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Roto-Sonic
USC based on field visual observations

URS

URS (ENV RON) LOG_21562593.00014 ROXANA SVE.GPJ URSSTLEV.GDT 5/23/11

LOG OF BORING
GP-14

Start ng Date: 2/ 8/ 2
Comp et on Date: 2/ 8/ 2
Cas ng E evat on: Not Insta ed
Ground E evat on: 432 60

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 845 34
E: (Y):232 859 6

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
							TOPSOIL	Topsoil	Air knifed to 11' bgs to clear utilities.
							FILL	Asphalt rubble (FILL)	
5								With sand and gravel	
10				55.9					
	24	24		4.5 7.5				Stiff, moist, dark gray CLAY (FILL)	Sampled GP-14-13 for VOC at 0935
15	60	58		0.5 0.6			CL	Stiff, moist, gray, low plastic CLAY (CL), with brown mottles	
20	60	55		0.3 0.2 0.2				Becomes dark brown, mottles grade out	
								Becomes sandy	

Completion Depth: 48.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: E. Arthur, W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 30.5 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GP-14

Start ng Date: 2/ 8/ 2
Comp et on Date: 2/ 8/ 2
Cas ng E evat on: Not Insta ed
Ground E evat on: 432 60

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 845 34
E: (Y):232 859 6

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	60	48		142.8				Same: Stiff, moist, dark brown, low plastic, Sandy CLAY (CL)	
				133.5				Medium dense, moist, brown and gray, fine to medium grained SAND (SP)	
								2.5" gray clay seam	Sudan field screening at 27 ft (white)
				154.2				Becomes brown	
30	60	50		576				Becomes wet, medium to coarse grained ▽	Sudan field screening at 29 ft (white)
				1,157					Sudan field screening at 33 ft (pink) Sampled GP 14-33 for VOC at 0940
35	60	58		891			SP		Sudan field screening at 35 ft (white)
				617					
				846				Becomes gray brown	Sudan field screening at 39 ft (pink)
40	60	51		100.3					Sample GP 14-39 for VOC at 1005
				20.7					
45	60	59		24.0					Sudan field screening at 45 ft (white) Sampled GP-14-45 for VOC at 0945
				23.7					
								Bottom of boring at 48 ft. bgs	

Completion Depth: 48.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: E. Arthur, W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 30.5 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GP-15

Start ng Date: 2/ 8/ 2
Comp et on Date: 2/2 / 2
Cas ng E evat on: Not Insta ed
Ground E evat on: 434 80

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 855 66
E: (Y):232 964 39

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
							FILL	Sand and gravel (FILL)	Air knifed to 10' bgs to clear utilities.
								Clayey SAND (FILL)	
							CL	Soft, moist, brown Silty CLAY (CL)	
5							ML	Moist, dark gray Clayey SILT (ML)	Hydrocarbon odor 3-10 ft.
							SP	Moist, dark gray, fine grained SAND (SP)	
10							CL	Soft to medium stiff, moist, dark gray with brown, low plastic CLAY (CL), with sand	
	36	36		677				Becomes sandy	
				2,232				Medium dense, moist, gray, fine to medium grained SAND (SP)	
									Sudan field screening at 13 ft (red)
15	60	42		2,881					
				1,647			SP	Becomes brown, medium to coarse grained	
				8,027					Sudan field screening at 19 ft (red) Sampled GP-15-19 for VOC at 1235
20	60	48		4,622					Sudan field screening at 21 ft (red)
				245.4					Sudan field screening at 23 ft (white)

Completion Depth: 93.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: E. Arthur, W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 33 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GP-15

Start ng Date: 2/ 8/ 2
Comp et on Date: 2/2 / 2
Cas ng E evat on: Not Insta ed
Ground E evat on: 434 80

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 855 66
E: (Y):232 964 39

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	60	48		2,561				Same: Medium dense, moist, brown, medium to coarse grained SAND (SP)	Sudan field screening at 25 ft (red)
				102.9					
				56.0					Sudan field screening at 29 ft (white)
30	60	48		1,360					Sampled GP-15-29 for VOC at 1240
				1,192				▽ Becomes wet	
35	60	52		1,051					
				15,000+			SP		Sudan field screening at 37 ft (red)
									Sampled GP-15-37 for VOC at 1230
				15,000+				Becomes medium dense to dense	
40	60	60		7,661					
				10,691					
45	60	52		15,000+					
				15,000+					Sudan field screening at 47 ft (white)
				1,654					Sampled GP-15-47 for VOC at 1410

Completion Depth: 93.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: E. Arthur, W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 33 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GP-15

Start ng Date: 2/ 8/ 2
Comp et on Date: 2/2 / 2
Cas ng E evat on: Not Insta ed
Ground E evat on: 434 80

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 855 66
E: (Y):232 964 39

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	60	54		4,220 337.7				Same: Medium dense to dense, wet, brown, medium to coarse grained SAND (SP)	
55	60	50		1,124 398.3					Sudan field screening at 55 ft (red) Sampled GP-15-55 for VOC at 1415
60	60	42		3,658 1,994			SP		
65	60	46		1,593 1,275 19.6					Sampling to 68 ft bgs performed on 12/18/12. Sampling below 68 ft bgs performed on 12/21/12. Sudan field screening at 69 ft (white)
70	60	50		233.1 78.0 132.6					Sudan field screening at 74 ft (white) Sampled GP-15-74 for VOC at 0950

Completion Depth: 93.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: E. Arthur, W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 33 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GP-15

Start ng Date: 2/ 8/ 2
Comp et on Date: 2/2 / 2
Cas ng E evat on: Not Insta ed
Ground E evat on: 434 80

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 855 66
E: (Y):232 964 39

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	60	54		132.6 46.3				Same: Medium dense to dense, wet, brown, medium to coarse grained SAND (SP)	
80	60	48		82.0 143.6 48.0				Becomes coarse grained, trace coarse gravel	
85	60	50		4.1 3.8			SP		
90	60	50		18.0 4.1 3.3					Sudan field screening at 89 ft (white) Sampled GP-15-89 for VOC at 1055
95								Bottom of boring at 93 ft bgs	

Completion Depth: 93.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: E. Arthur, W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 33 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GP-16

Start ng Date: /3/ 3
Comp et on Date: /7/ 3
Cas ng E evat on: Not Insta ed
Ground E evat on: 435 60

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 856 28
E: (Y):2322057 92

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
							FILL	Sand and gravel (FILL	Air knifed to 10' bgs to clear utilities.
							CL	Soft, dry to moist, light brown to brown, Silty CLAY (CL)	
5								Loose to medium dense, moist, light brown, SAND (SP)	
10	36	36		0.4 0.7				Becomes moist, brown	
15	60	48		0.8 0.9			SP	2" gray, low plastic clay seam	
20	60	50		6.1 6.3 11.6				Becomes medium grained	Sampled GP-16-23 for VOC at 1035

Completion Depth: 93.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: E. Arthur, W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 36 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GP-16

Start ng Date: /3/ 3
Comp et on Date: /7/ 3
Cas ng E evat on: Not Insta ed
Ground E evat on: 435 60

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 856 28
E: (Y):2322057 92

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	60	54		7.3				Same: Loose to medium dense, moist, brown, medium grained SAND (SP)	
				35.8					
				38.7					
30	60	56		58.3				Becomes medium to coarse grained	
				69.3					
				12.7					
35	60	50						▽ Becomes wet	
				822.1			SP		Sudan field screening at 37 ft (white)
				6,421					
40	60	58		15,000+					Sudan field screening at 41 ft (white)
				15,000+					Sampled GP-16-42 for VOC at 1255
									Sudan field screening at 43 ft (white)
45	60	42		1,232					
				3,054					
				1,002					

Completion Depth: 93.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: E. Arthur, W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 36 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GP-16

Start ng Date: /3/ 3
Comp et on Date: /7/ 3
Cas ng E evat on: Not Insta ed
Ground E evat on: 435 60

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 856 28
E: (Y):2322057 92

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	60	60		5,146				Same: Loose to medium dense, wet, brown, medium to coarse grained SAND (SP)	Sudan field screening at 51 ft (white)
				1,023					Sample GP-16-51 for VOC at 1430
55	60	36		892.3					
				1,299					Sudan field screening at 57 ft (white)
				1,098					Sampled GP-16-57 for VOC at 1530
60	60	48		1,150					
				413.2			SP		
65	60	52		1,037					Sudan field screening at 65 ft (white)
				751					
				1,288					
70	60	36		602.0					
				561.4					

Completion Depth: 93.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: E. Arthur, W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 36 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GP-16

Start ng Date: /3/ 3
Comp et on Date: /7/ 3
Cas ng E evat on: Not Insta ed
Ground E evat on: 435 60

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 856 28
E: (Y):2322057 92

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	60	39		927.2				Same: Loose to medium dense, wet, brown, medium to coarse grained SAND (SP)	
				1,574					Sampling to 78 ft bgs performed on 1/3/13. Sampling below 78 ft bgs performed on 1/7/13. Sudan field screening at 77 ft (white) Sample GP-16-77 for VOC at 1605
80	60	30		15.0				Becomes loose, coarse grained, with coarse gravel	Large piece of gravel in sample liner
				10.8					Sudan field screening at 81 ft (white)
85	60	30		6.2			SP		
				12.0					
90	60	48		15.3					Sampled GP-16-91 for VOc at 1015
				13.0					
95								Bottom of boring at 93 ft bgs	

Completion Depth: 93.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: E. Arthur, W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 36 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GP-17

Start ng Date: /7/ 3
Comp et on Date: /7/ 3
Cas ng E evat on: Not Insta ed
Ground E evat on: 436 00

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 838 03
E: (Y):2322 6 08

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
				4.4			FILL	Dark brown Sand and Gravel with asphalt [FILL]	Air knifed to 10' bgs to clear utilities.
				0.5					
				0.6			SP	Loose to medium dense, moist, brown, fine to medium grained SAND (SP)	
				0.4					
				0.8					
5				0.3					
				0.7					
				0.5					
				0.3					
				2.3					
10	36	36		1.0					
				413.3			CL	Soft, moist, gray, low plastic, Sandy CLAY (CL)	Yellow/green staining of acetate sample liners, zipper bags and nitrile gloves observed (13 to 17 ft bgs).
							SP	Medium dense, moist, brownish gray, fine to medium grained SAND (SP)	
15	60	54		13,261					Sudan field screening at 15 ft (red) Sampled GP-17-15 for VOC at 1325 (Dup)
				9,457					
				570.2					
20	60	48		1,570				Becomes gray	Sudan field screening at 21 ft (pink)
				95.5					

Completion Depth: 68.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 35 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GP-17

Start ng Date: /7/ 3
Comp et on Date: /7/ 3
Cas ng E evat on: Not Insta ed
Ground E evat on: 436 00

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 838 03
E: (Y):2322 6 08

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	60	54		41.8				Same: Medium dense, moist, grayish brown, fine to medium grained SAND (SP)	
				10.1					
				5.9					
30	60	54		6.9					Sudan field screening at 31 ft (white)
				4.9					
								Becomes medium grained	
35	60	48		29.3				Becomes wet ▽	
				85.2			SP		
				252.7				Becomes brown, medium to coarse grained	
40	60	60		713.7					
				12,610					Sudan field screening at 43 ft (red)
45	60	60		15,000+					Sudan field screening at 45 ft (white) Sampled GP-17-45 for VOC at 1355
				7,620					
				323.4					

Completion Depth: 68.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 35 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GP-17

Start ng Date: /7/ 3
Comp et on Date: /7/ 3
Cas ng E evat on: Not Insta ed
Ground E evat on: 436 00

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 838 03
E: (Y):2322 6 08

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	60	54		322.9				Same: Medium dense, wet, brown, medium to coarse grained SAND (SP)	
				67.1					
55	60	57		504.6					
				5,086					Sudan field screening at 57 ft (white) Sampled GP-17-57 for VOC at 1420
				90.5			SP		
60	60	52		582.2					Sudan field screening at 61 (white)
				537.7					
								Becomes coarse grained, trace coarse gravel	
65	60	48		264.4					Sampled GP-17-65 for VOC at 1435
				209.5					
								Bottom of boring at 68 ft bgs	
70									

Completion Depth: 68.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 35 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GP-18

Start ng Date: /8/ 3
Comp et on Date: /8/ 3
Cas ng E evat on: Not Insta ed
Ground E evat on: 436 80

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 846 8
E: (Y):2322247 67

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
				0.7			FILL	Sand, Gravel, and Silt [FILL]	Air knifed to 10' bgs to clear utilities.
				0.6			ML	Soft, moist, brown SILT (ML), some clay, with organics	
				0.7					
				1.0				Loose to medium dense, moist, brown, fine to medium grained SAND (SP)	
				0.2					
5				0.2					
				0.1					
				0.1					
				0.7					
				1.2					
10									
	36	36		2.1					
				1.5			SP		
15				2.3					
	60	42							
				2.8					
				2.0					
20									
	60	42		5.4					Sudan field screening at 21 ft (white) Sampled GP-18-21 for VOC at 0930
							CL	Soft, moist, gray, low plastic CLAY (CL)	
				2.8			SP	Loose to medium dense, moist, gray, medium grained SAND (SP)	

Completion Depth: 68.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 35 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GP-18

Start ng Date: /8/ 3
Comp et on Date: /8/ 3
Cas ng E evat on: Not Insta ed
Ground E evat on: 436 80

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 846 8
E: (Y):2322247 67

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	60	48		68.6				Same: Loose to medium dense, moist, gray, medium grained SAND (SP) 2" black banding	
				364.0					
				421.3					
30	60	45		611.7					
				15,000+				Becomes dense, grayish brown	
									Sudan field screening at 33 ft (red)
35	60	51		15,000+				▽ Becomes wet	
				15,000+			SP		Yellow/green staining of acetate sample liners, zipper bags and nitrile gloves observed (37 to 43 ft bgs)
				15,000+				Becomes fine to medium grained	Sudan field screening at 37 ft (red) Sampled GP-18-37 for VOC at 1010
40	60	58		15,000+					
				15,000+					
								Becomes medium dense	Sudan field screening at 43 ft (red)
45	60	44		15,000+					
				15,000+					
				52.3					

Completion Depth: 68.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 35 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GP-18

Start ng Date: /8/ 3
Comp et on Date: /8/ 3
Cas ng E evat on: Not Insta ed
Ground E evat on: 436 80

Quadrangle
Sec:34 (SE /4 of NE /4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):79 846 8
E: (Y):2322247 67

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	60	54		523.7 5,474				Same: Medium dense, wet, grayish brown, fine to medium grained SAND (SP)	Sudan field screening at 53 ft (white) Sampled GP-18-53 for VOC at 1325
55	60	48		1,971 4,317					
				340.4			SP	Becomes coarse grained	
60	60	44		414.3 463.5				Becomes with coarse gravel	
65	60	30		65.8 17.3					Sudan field screening at (white) Sampled GP-18-63 for VOC at 1405
								Bottom of boring at 68 ft bgs	
70									

Completion Depth: 68.0 Ft bgs
Project No.: 21562850.15000
Project Name: Public Works Soil Sampling
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: P. Seymour
Drilling Method: Direct Push
Drill Rig Type: 8040 DT
Logged by: W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 35 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (ENVIRON) LOG (EPA FORMAT) 21562850.15000 (ROXANA GP 2013).GPJ URSSTLEV.GDT 2/15/13

LOG OF BORING
GWP-29

Starting Date: 3/12/13
Completion Date: 3/12/13
Casing Elevation: Not Installed
Ground Elevation: 443.20

Quadrangle
Sec:35 (NW 1/4 of SW 1/4)
T:5 N
R:9 W
UTM (or State Plane) Coord
N: (X):791472.60
E: (Y):2323007.80

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sample Graphic	Symbol	USCS	DESCRIPTION	NOTES
							GRAVEL	Gravel	Air knifed to 10' bgs to clear utilities.
				524.2					
				941.1			FILL	Dark gray, sandy CLAY, with gravel (FILL)	
5				957.8					
				920.0			SC	Loose, moist, brownish gray, fine grained Clayey SAND (SC)	
				819.9					
				1140					
				1288				Loose, moist, brownish gray, fine grained SAND (SP)	
				1075					
10	24	24		846.6				Becomes gray, fine to medium grained	Sample GWP 29 11 for VOC and SVOC at 1435
				5.5					
	48	25							
15				11.2					
							SP	Becomes gray, fine grained	
				21.1					
	48	30							
				21.6					
20								Becomes brown, fine to medium grained	
				46.7					
	48	32							
				11.3					
								Becomes gray	

Completion Depth: 53.0 Ft bgs
Project No.: 21562851.04000
Project Name: WRR GWP Delineation
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: E. Wetzel
Drilling Method: Direct Push
Drill Rig Type: 6620 DT
Logged by: W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 40 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562851 04000 (GWPS) GPJ URSS LEV GD 3/21/13

LOG OF BORING
GWP-29

Starting Date: 3/12/13
Completion Date: 3/12/13
Casing Elevation: Not Installed
Ground Elevation: 443.20

Quadrangle
Sec:35 (NW 1/4 of SW 1/4)
T:5 N
R:9 W
UTM (or State Plane) Coord
N: (X):791472.60
E: (Y):2323007.80

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sample Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	36		514.3 440.9				Same: Loose, moist, gray, fine to medium grained SAND (SP)	
30	48	34		315.1 20.4				Becomes brown, medium grained Becomes gray, fine grained	
35	48	40		735.1 458.3				Becomes brown, medium grained	
	48	36		326.9 517.9			SP		
40	48	36		515.5 771.2				▽ Becomes wet	Sample GWP 29 39 for VOC and SVOC at 1445
45	48	36		706.0 619.8				Becomes coarse grained	
				293.0					

Completion Depth: 53.0 Ft bgs
Project No.: 21562851.04000
Project Name: WRR GWP Delineation
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: E. Wetzel
Drilling Method: Direct Push
Drill Rig Type: 6620 DT
Logged by: W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

URS

Water Depth: 40 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger Soil samples not collected

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562851 04000 (GWPS) GPJ URSS LEV GD 3/21/13

LOG OF BORING
GWP-29

Starting Date: 3/12/13
Completion Date: 3/12/13
Casing Elevation: Not Installed
Ground Elevation: 443.20

Quadrangle
Sec:35 (NW 1/4 of SW 1/4)
T:5 N
R:9 W
UTM (or State Plane) Coord
N: (X):791472.60
E: (Y):2323007.80

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sample Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	47		887.1			SP	Same: Loose, wet, brown, coarse grained SAND (SP)	
	12	11							
55								Bottom of boring at 53' bgs	Temporary 1" diameter piezometer pipe set at 53' bgs (with 5' screen) for groundwater profiling. Temporary 1" diameter piezometer pipe set at 45' bgs (with 10' screen) for groundwater profiling.
60									
65									
70									

Completion Depth: 53.0 Ft bgs
Project No.: 21562851.04000
Project Name: WRR GWP Delineation
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: E. Wetzel
Drilling Method: Direct Push
Drill Rig Type: 6620 DT
Logged by: W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 40 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562851 04000 (GWPS) GPJ URSS LEV GD 3/21/13

LOG OF BORING
GWP-30

Starting Date: 3/11/13
Completion Date: 3/11/13
Casing Elevation: Not Installed
Ground Elevation: 436.50

Quadrangle
Sec:35 (NW 1/4 of SW 1/4)
T:5 N
R:9 W
UTM (or State Plane) Coord
N: (X):790980.80
E: (Y):2322637.30

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sample Graphic	Symbol	USCS	DESCRIPTION	NOTES
							TOPSOIL	Topsoil and gravel	Air knifed to 10' bgs to clear utilities.
				0.4			FILL	Sandy FILL	
				0.2					
				0.2				Loose to medium dense, dry to moist, brown, fine grained SAND (SP)	
				0.1					
5				0.2					
				0.2					
				0.1					
				0.0					
				0.0					
				0.0					
10	24	12		1.1			SP	Becomes moist, fine to medium grained	
				1.2					
	48	32							
15				0.9					
				1.2					
	48	30							
				4.1					
20							ML	Soft, moist, gray, SILT (ML), with fine sand	Sample GWP 30 19 for VOC and SVOC at 1245
				2.2					
	48	30							
				0.8				Loose to medium dense, moist, brown, medium grained SAND (SP)	
							SP		

Completion Depth: 48.0 Ft bgs
Project No.: 21562851.04000
Project Name: WRR GWP Delineation
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: E. Wetzel
Drilling Method: Direct Push
Drill Rig Type: 6620 DT
Logged by: W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 35 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562851 04000 (GWPS) GPJ URSS LEV GD 3/21/13

LOG OF BORING
GWP-30

Starting Date: 3/11/13
Completion Date: 3/11/13
Casing Elevation: Not Installed
Ground Elevation: 436.50

Quadrangle
Sec:35 (NW 1/4 of SW 1/4)
T:5 N
R:9 W
UTM (or State Plane) Coord
N: (X):790980.80
E: (Y):2322637.30

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sample Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	31		0.6 0.6				Same: Loose to medium dense, moist, brown, medium grained SAND (SP)	
30	48	33		0.5 1.8				Becomes medium dense, coarse grained	
35	48	32		2.0 3.6				Becomes wet	Sample GWP 30 33 for VOC and SVOC at 1305
	48	41		2.9 3.5			SP	Becomes dense	
40	48	48		2.5 2.3				Trace black banding for 1"	
45	48	48		0.6 2.4					Temporary 1" diameter piezometer pipe set at 48' bgs (with 5' screen) for groundwater profiling. Temporary 1" diameter piezometer pipe also set at 40' bgs (with 10' screen) for groundwater profiling
								Bottom of boring at 48' bgs	

Completion Depth: 48.0 Ft bgs
Project No.: 21562851.04000
Project Name: WRR GWP Delineation
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: E. Wetzel
Drilling Method: Direct Push
Drill Rig Type: 6620 DT
Logged by: W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 35 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic
- Splitspoon Sampler
- Hollow Stem Auger Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562851 04000 (GWPS) GPJ URSS LEV GD 3/21/13

LOG OF BORING
GWP-31

Starting Date: 3/11/13
Completion Date: 3/11/13
Casing Elevation: Not Installed
Ground Elevation: 434.80

Quadrangle
Sec:35 (NW 1/4 of SW 1/4)
T:5 N
R:9 W
UTM (or State Plane) Coord
N: (X):790601.70
E: (Y):2322822.00

Depth In feet	Inches Dr ven	Inches Recovered	B ow Counts	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
							ASPHALT	Asphalt and Gravel	Air knifed to 10' bgs to clear utilities.
				0.1			FILL	Brown, medium grained Sand (FILL), with gravel	
				0.2					
				0.3				Becomes gray	
				0.3			SP	Loose to medium dense, moist, brown, fine to medium grained SAND (SP)	
5				0.2					
				0.2					
				0.2					
				0.3					
				0.5			CL	Soft to medium stiff, moist, gray, low plastic CLAY (CL)	
10				0.5					
	24	12		0.2			SC	Medium stiff, moist, gray to brown, Clayey SAND (SC)	
				0.3			SP	Loose to medium dense, dry to moist, gray, fine grained SAND (SP)	
	48	34							
15				0.5					
				0.3					
	48	38					CL	Soft to medium stiff, moist, gray with brown, low plastic CLAY (CL), trace sand seams	
				0.4				Medium dense, moist, gray and brown, fine grained SAND (SP)	
20				0.5					
	48	42					SP		Sample GWP 31 21 for VOC and SVOC at 0945
				0.5				Becomes brown, medium grained	

Completion Depth: 45.0 Ft bgs
Project No.: 21562851.04000
Project Name: WRR GWP Delineation
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: E. Wetzel
Drilling Method: Direct Push
Drill Rig Type: 6620 DT
Logged by: W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 32 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562851 04000 (GWPS) GPJ URSS LEV GD 3/21/13

LOG OF BORING
GWP-31

Starting Date: 3/11/13
Completion Date: 3/11/13
Casing Elevation: Not Installed
Ground Elevation: 434.80

Quadrangle
Sec:35 (NW 1/4 of SW 1/4)
T:5 N
R:9 W
UTM (or State Plane) Coord
N: (X):790601.70
E: (Y):2322822.00

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	42		0.6			SP	Same: Medium dense, moist, brown, medium grained SAND (SP)	
				0.8			CL	Soft, moist, brown, low plastic CLAY (CL)	
								Medium dense, moist, brown, medium grained SAND (SP)	
30	48	34		0.5					
				0.5					Sample GWP 31 31 for VOC and SVOC at 0955
								▽ Becomes wet, trace black banding (2")	
	48	34		0.4					
35				0.5					
							SP	Becomes medium to coarse grained	
	48	41		0.3					
				0.3					
40									
	48	47		0.5					
				0.4					
	12	12							
45								Bottom of boring at 45' bgs	Temporary 1" diameter piezometer pipe set at 45' bgs (with 5' screen) for groundwater profiling. Temporary 1" diameter piezometer pipe also set at 37' bgs (with 10' screen) for groundwater profiling.

Completion Depth: **45.0 Ft bgs**
Project No.: **21562851.04000**
Project Name: **WRR GWP Delineation**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **E. Wetzel**
Drilling Method: **Direct Push**
Drill Rig Type: **6620 DT**
Logged by: **W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 32 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562851 04000 (GWPS) GPJ URSS LEV GD 3/21/13

LOG OF BORING
GWP-32

Starting Date: 3/12/13
Completion Date: 3/12/13
Casing Elevation: Not Installed
Ground Elevation: 442.00

Quadrangle
Sec:35 (NW 1/4 of SW 1/4)
T:5 N
R:9 W
UTM (or State Plane) Coord
N: (X):791103.20
E: (Y):2323389.80

Depth In feet	Inches Dr ven	Inches Recovered	B ow Counts	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
							GRAVEL	Gravel	Air knifed to 10' bgs to clear utilities.
				14.8					
				762.1				Dark gray Sandy CLAY, with gravel (FILL)	
5				825.3					
				688.5			FILL	Loose, moist, brownish gray, fine grained Clayey SAND (FILL)	
				358.7					
				421.1					
				1122					
				1024				Loose, moist, brownish gray, fine grained SAND (SP)	
10	24	15		2243					
				394.4			SP		
	48	31							
15				498.8					
				554.2				Medium dense, moist, grayish brown, Sandy SILT (ML)	Sample GWP 32 17 for VOC and SVOC at 1240
	48	36					ML		
				294.1				Loose to medium, dense, dry to moist, brown, fine to medium grained SAND (SP)	
20				8.9					
	48	34					SP		
				196.1					

Completion Depth: 52.0 Ft bgs
Project No.: 21562851.04000
Project Name: WRR GWP Delineation
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: E. Wetzel
Drilling Method: Direct Push
Drill Rig Type: 6620 DT
Logged by: W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 38 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger
Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562851 04000 (GWPS) GPJ URSS LEV GD 3/21/13

LOG OF BORING
GWP-32

Starting Date: 3/12/13
Completion Date: 3/12/13
Casing Elevation: Not Installed
Ground Elevation: 442.00

Quadrangle
Sec:35 (NW 1/4 of SW 1/4)
T:5 N
R:9 W
UTM (or State Plane) Coord
N: (X):791103.20
E: (Y):2323389.80

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sample Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	46		395.8			SP	Same: Loose to medium, dense, dry to moist, brown, fine to medium grained SAND (SP)	
				6.4			SC/CS	Soft to medium stiff, wet, gray Sandy CLAY to Clayey SAND (SC/CS)	
								Medium dense, moist, grayish brown, fine grained SAND (SP)	
	48	38		2.3			SP		
30				2.4				Becomes medium grained	
							CL	Medium dense, moist, gray, low plastic, Silty CLAY (CL)	
				5.0			SP	Medium dense, moist, brown, medium grained SAND (SP)	
	48	36							
35				12.1			CL	Medium stiff, moist, brownish gray, low plastic CLAY (CL)	
							SP	Medium dense, moist to wet, brown, fine grained SAND (SP)	Sample GWP 32 36 for VOC and SVOC at 1250
				21.4			CL	Medium stiff, moist, gray, low plastic, CALY (CL)	
	48	48						Medium dense, moist, gray, fine grained SAND (SP) ▽	
				12.9				Becomes wet	
40								Becomes fine to medium grained	
				57.9				Becomes fine grained	
	48	48							
				27.5			SP		
45				3.9					
	48	48						Becomes brown, medium grained	
				130.0					
				627.9					

Completion Depth: 52.0 Ft bgs
Project No.: 21562851.04000
Project Name: WRR GWP Delineation
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: E. Wetzel
Drilling Method: Direct Push
Drill Rig Type: 6620 DT
Logged by: W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 38 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic
- Splitspoon Sampler
- Hollow Stem Auger Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562851 04000 (GWPS) GPJ URSS LEV GD 3/21/13

LOG OF BORING
GWP-32

Starting Date: 3/12/13
Completion Date: 3/12/13
Casing Elevation: Not Installed
Ground Elevation: 442.00

Quadrangle
Sec:35 (NW 1/4 of SW 1/4)
T:5 N
R:9 W
UTM (or State Plane) Coord
N: (X):791103.20
E: (Y):2323389.80

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	48		485.1			SP	Same: Medium dense, moist, brown, medium grained SAND (SP)	
55								Bottom of boring at 52' bgs	Temporary 1" diameter piezometer pipe set at 51' bgs (with 5' screen) for groundwater profiling. Temporary 1" diameter piezometer pipe also set at 43' bgs (with 10' screen) for groundwater profiling.
60									
65									
70									

Completion Depth: 52.0 Ft bgs
Project No.: 21562851.04000
Project Name: WRR GWP Delineation
Drilling Contractor: Roberts Environmental Drilling Inc.
Driller Name: E. Wetzel
Drilling Method: Direct Push
Drill Rig Type: 6620 DT
Logged by: W. Pennington
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 38 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger Soil samples not collected

URS

USC based on field visual observations

URS (ENV RON) LOG (EPA FORMA) 21562851 04000 (GWPS) GPJ URSS LEV GD 3/21/13

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-2

Completion Date: 3/2/11
Casing Elevation: 436.38
Ground Elevation: 436.21

Coord nates
North ng:791987.40
East ng:2322012.00

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
							TOPSOIL	Topsoil	Air knife completed to 10' bgs to clear utilities. Boring not logged during air knife.
							FILL	Silty clay (FILL), trace roots	
							SM	Loose, moist, brown, Silty SAND (SM)	
5							SP	Loose, moist, brown, fine grained, poorly graded SAND (SP), with silt	
10		120	120	0.8				Becomes dense, moist to dry, light brown, fine to medium grained, silt grades out	
				1.8					
15				2.4					
				2.5					
				2.8					
20		120	120	3.8					
				3.6					

Boring Depth: 45.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Boart Longyear
Drilling method: Roto Sonic
Rig Type: Roto Sonic
Drilled by: K. Smith
Logged by: M. Miller

URS

Water Depth: 30.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic

USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-2

Completion Date: 3/2/11
Casing Elevation: 436.38
Ground Elevation: 436.21

Coord nates
North ng:791987.40
East ng:2322012.00

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
				2.8				SAME: Dense, moist to dry, light brown, fine to medium grained, poorly graded SAND (SP)	
				3.2					
				4.1					
30								▽ Becomes wet	
		60	60	536.9				Becomes gray brown, trace silt	
				528.4					
				147.01				Becomes brown, silt grades out	
35							SP	Becomes wet, medium grained	
				1500+					
40		120	60						
				1500+					
				1500+					
45								Bottom of boring at 45' bgs	

Boring Depth: 45.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Boart Longyear
Drilling method: Roto Sonic Rig Type: Roto Sonic
Drilled by: K. Smith
Logged by: M. Miller

Water Depth: 30.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger- Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic

USC based on field visual observations

URS

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-17

Page Of

Completion Date: 10/5/11
Casing Elevation: Not Surveyed
Ground Elevation: 444.42

Coord nates
North ng:792410.10
East ng:2322314.00

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
							GP	Loose GRAVEL	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" HSA. Lithology logged by geoprobe boring. Well installed by overdrilling geoprobe boring.
				901.7				Soft, dry to moist, black, Gravelly CLAY (CL)	
				922.8				Gravel grades out	
				998.1			CL		
5				876.8					
				405.0				Loose, dry to moist, brown, fine grained SAND (SP)	
				304.8					
				354.2					
				311.1			SP		
10								Becomes moist, light gray to brown, fine to medium grained	Hydrocarbon odor
				325					
		60							
							ML	Soft, wet, gray, Clayey SILT (ML)	
				291				Loose, moist, light gray to brown, fine to medium grained SAND (SP)	
15									
				1134			SP		
		60							
				448					
20								Bottom of boring at 20' bgs	

Boring Depth: 20.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA
Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-18

Page Of

Completion Date: 10/4/11
Casing Elevation: Not Surveyed
Ground Elevation: 444.93

Coord nates
North ng:792285.20
East ng:2322321.00

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
							GP	Loose Gravel	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" HSA. Lithology logged by geoprobe boring. Well installed by overdrilling geoprobe boring.
				7.6				Soft, dry, black, Gravelly CLAY (CL)	
				22.5					
				16.5				Medium stiff, dry to moist, black CLAY (CL)	
				251.6			CL	Becomes soft	
5				274.1					
				362.3				Loose, moist to dry, black, fine grained, Sandy CLAY (CL)	
				350.2					
				370.6				Loose, brown, moist to dry, fine grained, poorly graded SAND (SP)	
				97.5					
10								Becomes moist, light brown, fine to medium grained	Hydrocarbon odor
		60		506.5					
							SP		
				768.4					
15									
		60		607.2					
				876.6			CL	Soft, moist, dark gray, Silty CLAY (CL)	Hydrocarbon odor
20							SP	Loose, moist, light brown, fine to medium grained, poorly graded SAND (SP)	
								Bottom of boring at 20' bgs	

Boring Depth: 20.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
Water level at time of drilling
Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-19

Page Of

Completion Date: 9/26/11
Casing Elevation: Not Surveyed
Ground Elevation: 444.44

Coord nates
North ng:792168.00
East ng:2322333.00

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
							GP	Loose GRAVEL	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" HSA. Lithology logged by geoprobe boring. Well installed by overdrilling geoprobe boring.
				15.4			CL	Soft, dry, black CLAY (CL)	
				11.4					
				5.1				Becomes dry to moist, Sandy	
				0.5			SP	Loose, dry to moist, brown, fine grained SAND (SP)	
5				2.3				Medium stiff, dry to moist, brownish gray, fine grained, Sandy CLAY (CL)	
				1.5					
				0.9			CL		
				1.4					
				0.3					
10		60		1.7			SP	Loose, moist, light brown to gray, fine to medium grained, poorly graded SAND(SP)	
				10.6				▽	
15		60		21.7			SM	Loose to medium dense, wet, dark gray to black, fine to medium grained, Silty SAND (SM)	Hydrocarbon odor
				24.3					
20								Bottom of boring at 20' bgs	

Boring Depth: 20.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: 15 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic

USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-20

Completion Date: 9/29/11
Casing Elevation: Not Surveyed
Ground Elevation: 444.67

Coord nates
North ng:492047.60
East ng:2322341.00

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID (ppm)	Sample Graphic	Symbol	USCS	DESCRIPTION	NOTES
							GP	Loose GRAVEL	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" HSA. Lithology logged by geoprobe boring. Well installed by overdrilling geoprobe boring.
				4.0				Loose, dry, black, CLAY (CL)	
				35.7				Becomes loose to stiff, moist to wet	
				16.6				Becomes loose, blackish gray, Sandy	
5				33.4			CL		
				13.8					
				9.3					
				9.8					
				2.0					
10		60	41	29.2			SP	Loose to medium dense, moist, black to grayish brown, fine to medium grained, poorly graded SAND (SP)	Hydrocarbon odor and staining
				253.6					
15		60	46	351.3				Becomes loose, light brown to grayish brown, fine grained	Hydrocatbon odor
				57.3					
20		60	48	921.7				Becomes light brown 3" stiff silt lens	
				1348					

Boring Depth: 35.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: 3 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic

USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-20

Completion Date: 9/29/11
Casing Elevation: Not Surveyed
Ground Elevation: 444.67

Coordinates
North ng:492047.60
East ng:2322341.00

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID (ppm)	Sample Graphic	Symbol	USCS	DESCRIPTION	NOTES
30		60		634.7			SP	Loose, moist, light brown, fine grained, poorly graded SAND (SP)	
				196.4				Coarsening with depth	
		60		113.7				Becomes medium grained	Hydrocarbon odor and staining
				140.7				With thin clay lamillae	
35								Bottom of boring at 35' bgs	
40									
45									

Boring Depth: 35.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: 3 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic

USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-21

Completion Date: 10/10/11
Casing Elevation: Not Surveyed
Ground Elevation: 443.29

Coord nates
North ng:792024.80
East ng:2322190.00

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
							TOPSOIL	TOPSOIL	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" HSA. Lithology logged by geoprobe boring. Well installed by overdrilling geoprobe boring.
				0.5				Dense, dry, brown SILT (ML)	
				1.3				Becomes Sandy	
				2.5			ML		
				1.1					
5				0.9				Dense, dry, brown, fine grained, poorly graded SAND (SP)	
				0.5					
				0.7					
				1.5					
				0.7					
10		24		0.2				Becomes moist, light brown to brown	
		48		0.4					
15				0.3			SP		
		48		0.3				Becomes loose, red to black	
				0.5					
20		48		0.1			SP	Becomes light brown to brown	
				0.2				3" Silty lens	

Boring Depth: 36.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-21

Completion Date: 10/10/11
Casing Elevation: Not Surveyed
Ground Elevation: 443.29

Coord nates
North ng:792024.80
East ng:2322190.00

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
30		48		0.6				SAME: Loose, moist, light brown to brown, fine grained, poorly graded SAND (SP)	
				1.3					
		48		0.7			SP		
				0.8					
35		48		0.5					
				0.4					
								Bottom of boring at 36' bgs	
40									
45									

Boring Depth: **36.0 ft bgs**
Project No.: **21562593**
Project Name: **Roxana SVE System**
Drilling Contractor: **Roberts Environmental Drilling, Inc.**
Drilling method: **Dual-tube Geoprobe/6 1/4" HSA** Rig Type: **CME-75**
Drilled by: **P. Seymour/E. Wetzel**
Logged by: **S. Wrightson**

URS

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling

Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic

USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-22

Completion Date: 10/11/11
Casing Elevation: Not Surveyed
Ground Elevation: 439.37

Coord nates
North ng:792020.50
East ng:2322014.00

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID (ppm)	Sample Graphic	Symbol	USCS	DESCRIPTION	NOTES
							TOPSOIL	TOPSOIL	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" HSA. Lithology logged by geoprobe boring. Well installed by overdrilling geoprobe boring.
				0.3			ML	Stiff, dry, light brown, Sandy SILT (ML)	
				0.4					
				0.4				Becomes brown	
				1.1					
5				0.5			SP	Dense, dry, light brown SAND (SP)	
				0.6					
				0.5			SM	Dense, dry, light brown, Silty SAND (SM)	
				0.3			SP	Dense, dry, light brown, medium grained, poorly graded SAND (SP)	
				0.2					
10		24		0.0				Becomes loose, moist, brown	
		48		0.1					
15				0.2				Becomes fine to medium grained	
		48		0.6					
				0.9					
20		48		0.9					
				0.5					

Boring Depth: 36.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: 34 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

- ▽ Water level at time of drilling
- ▼ Water level after drilling
- ATD At time of drilling
- Splitspoon Sampler
- Hollow Stem Auger-Soil samples not collected
- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic

USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-22

Completion Date: 10/11/11
Casing Elevation: Not Surveyed
Ground Elevation: 439.37

Coord nates
North ng:792020.50
East ng:2322014.00

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
		48		0.3 0.8				SAME: Loose, moist, brown, fine grained, poorly graded SAND (SP) 3" laminated organic material	
30		48		1.0 15.4			SP		
		48		9853 15000				Becomes fine to medium grained Becomes wet, light brown to gray ▽	
35								Bottom of boring at 36' bgs	
40									
45									

Boring Depth: 36.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: 34 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic

USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-23

Completion Date: 10/11/11
Casing Elevation: Not Surveyed
Ground Elevation: 430.75

Coord nates
North ng:792019.70
East ng:2321846.00

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
							GP	Loose GRAVEL	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" HSA. Lithology logged by geoprobe boring. Well installed by overdrilling geoprobe boring.
				0.4				Soft, dry, brown, Gravelly CLAY (CL)	
				0.5					
				0.8				Becomes dry to moist, dark brown, gravel grades out	
				0.3					
5				0.2			CL	Becomes medium stiff, brown	
				0.3				Becomes Gravelly	
				0.6				Gravel grades out	
				0.3				Becomes Sandy	
				0.4				Loose, dry, brown, medium grained, Gravelly SAND (SP)	
10				0.0				Loose, moist, light brown, fine to medium grained, poorly graded SAND (SP)	
				0.0					
15				0.1			SP		
				0.0					
				0.0					
20				0.0					
				0.0				Thin laminations black organic material	

Boring Depth: 36.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: 26 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

- ▽ Water level at time of drilling
- ▼ Water level after drilling
- ATD At time of drilling
- Splitspoon Sampler
- Hollow Stem Auger-Soil samples not collected
- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic

USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-23

Completion Date: 10/11/11
Casing Elevation: Not Surveyed
Ground Elevation: 430.75

Coord nates
North ng:792019.70
East ng:2321846.00

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
30				0.0 0.4 0.2			SP	Loose, moist, light brown, medium grained, poorly graded, SAND (SP) ▽ Becomes wet	
35				0.0 0.2 0.7					
								Bottom of boring at 36' bgs	
40									
45									

Boring Depth: 36.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: 26 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic

USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-24

Completion Date: 10/12/11
Casing Elevation: Not Surveyed
Ground Elevation: 434.22

Coord nates
North ng:791880.60
East ng:2321944.00

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
				0.2			FILL	Dry dense gray, Sandy Gravel (FILL)	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" HSA. Lithology logged by geoprobe boring. Well installed by overdrilling geoprobe boring.
				0.2				Loose, dry to moist, brown, medium grained Sand (FILL)	
				0.2			SC	Loose, dry, dark brown, Clayey SAND (SC)	
				0.1					
5				0.2			SP	Loose, moist to wet, brown, fine grained, poorly graded SAND (SP), with silt	
				0.5				Becomes dark brown	
				0.4					
				2.6				Becomes brown	
				12.3					
10		24		82.1				Becomes moist, gray to brown, fine to medium grained Silt grades out	Hydrocarbon odor
		48		12.3					
15									
		48		35.7				Becomes gray to dark gray, thinly laminated	
20		48		0.0				Becomes wet, brown to gray	

Boring Depth: 36.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: 20 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

- ▽ Water level at time of drilling
- ▼ Water level after drilling
- ATD At time of drilling
- Splitspoon Sampler
- Hollow Stem Auger-Soil samples not collected
- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic

USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-24

Completion Date: 10/12/11
Casing Elevation: Not Surveyed
Ground Elevation: 434.22

Coord nates
North ng:791880.60
East ng:2321944.00

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
30		48		296				Loose, wet, brown to gray, fine to medium grained, poorly graded SAND (SP)	Hydrocarbon odor
		48		2500					
35		48		2027					
								Bottom of boring at 36' bgs	
40									
45									

Boring Depth: 36.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: 20 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic

USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-26

Completion Date: 10/12/11
Casing Elevation: Not Surveyed
Ground Elevation: 435.60

Coord nates
North ng:791889.40
East ng:2322084.00

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
5				0.7			FILL	GRAVEL (FILL)	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" HSA. Lithology logged by geoprobe boring. Well installed by overdrilling geoprobe boring.
				0.6				Loose, dry to moist, brown, fine grained SAND (FILL)	
				0.2				Hard, dry, brown CLAY (FILL)	
				0.4				Loose, dry to moist, brown, medium grained SAND (FILL)	
				0.5				Loose, dry, brown, Clayey SAND (FILL)	
				0.5			SP	Loose, dry, brown, medium grained SAND (SP)	
				0.5					
				0.5			SC	Loose, dry to moist, brown, clayey SAND (SC)	
				0.2			SP	Loose, dry, light gray, medium grained, poorly graded SAND (SP)	
10		60		0.7					
				0.9					
15		60		44.6					
				8.6					
				12.2					
20		60		2.3					
				9.3					

Boring Depth: 36.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: 29 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

- Water level at time of drilling
- Water level after drilling
- ATD At time of drilling
- Splitspoon Sampler
- Hollow Stem Auger- Soil samples not collected
- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic

USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-26

Completion Date: 10/12/11
Casing Elevation: Not Surveyed
Ground Elevation: 435.60

Coord nates
North ng:791889.40
East ng:2322084.00

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
30		60		28.6 32.4 239				Loose, dry, light gray to black, fine grained, poorly graded SAND (SP) ▽ Becomes wet, gray to black	
		60		942 2614 55.2			SP		Hydrocarbon odor
35		12						Bottom of boring at 36' bgs	
40									
45									

Boring Depth: 36.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: 29 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic

USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-27

Completion Date: 10/11/11
Casing Elevation: Not Surveyed
Ground Elevation: 435.93

Coord nates
North ng:791860.10
East ng:2322231.00

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
5				0.7 0.9 1.0 0.8 0.7 0.5 0.3 0.4 0.4			FILL	Loose, dry, brown, medium grained SAND (FILL)	Boring advanced to a depth of 10' via air knife to clear utilities, then continued with 4.25" HSA. Lithology logged by geoprobe boring. Well installed by overdrilling geoprobe boring.
10		24		1.8			SP	Loose, light brown to gray, fine to medium grained, poorly graded SAND (SP)	
15		48		113 5.3			SM	Loose, moist, dark gray, fine grained, poorly graded, Silty SAND (SM)	hydrocarbon odor and staining hydrocarbon odor
20		48		7.6 22.4				Loose, dry, dark gray, fine grained, poorly graded SAND (SP)	
		48		21.2 55.3				Becomes medium grained	

Boring Depth: 36.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA
Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: 29 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

- Water level at time of drilling
- Water level after drilling
- ATD At time of drilling
- Splitspoon Sampler
- Hollow Stem Auger-Soil samples not collected
- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic

USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

LOG OF BORING AND WELL CONSTRUCTION DETAIL
SVE-27

Completion Date: 10/11/11
Casing Elevation: Not Surveyed
Ground Elevation: 435.93

Coord nates
North ng:791860.10
East ng:2322231.00

Depth In feet	We Construct on	Inches Dr ven	Inches Recovered	PID (ppm)	Samp er Graph c	Symbo	USCS	DESCRIPTION	NOTES
30		48		72.2				SAME: Loose, dry, dark gray, medium grained , poorly graded SAND (SP)	hydrocarbon odor
				25.7				▽	
		48		320.7			SP	Becomes wet, fine grained	
35		48		6000					
				1196					
								Bottom of boring at 36' bgs	
40									
45									

Boring Depth: 36.0 ft bgs
Project No.: 21562593
Project Name: Roxana SVE System
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Dual-tube Geoprobe/6 1/4" HSA Rig Type: CME-75
Drilled by: P. Seymour/E. Wetzel
Logged by: S. Wrightson

URS

Water Depth: 29 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

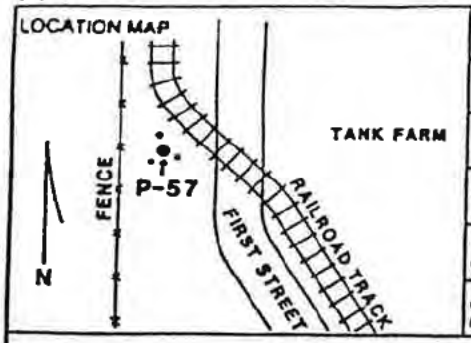
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected
Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic

USC based on field visual observations

URS (ENV RON) LOG + 1 WELL 21562593 ROXANA SVE SYS EM - FALL 2011 GPJ URSS LEV GD 8/2/12

SHELL OIL COMPANY — WELL LOG

LOCATION MAP



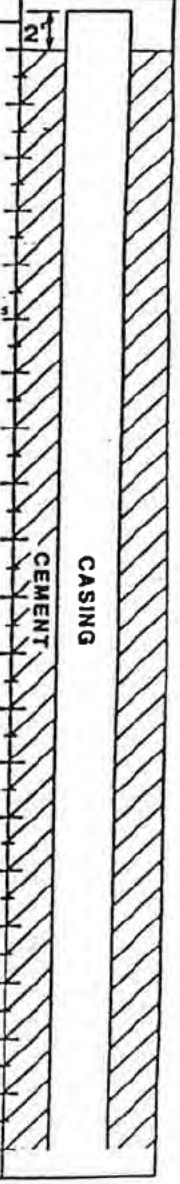
WELL NUMBER: P-57	LOCATION: North Property West Fence Line
DATE: 4-1-89	WEATHER: Sunny, 40's
LOGGED BY: J. Pawlik	DRILLED BY: Mathes Drilling
DRILLING METHOD: 4 1/4" Hollow-Stem Auger	SAMPLING METHOD: 18" Split Spoon
GRAVEL PACK: 63.5' to 36.5' (27') MB40 sand	SEAL: 36.5' to 34.5' (2') Bentonite; 34.5' to 0' (34.5') cement

CASING: TYPE Schedule 40 PVC; DIAMETER 2"; LENGTH 38.5'; HOLE DIA 8 1/4"

SCREEN: TYPE Schedule 40 PVC; SLOT 0.01"; DIAMETER 2"; LENGTH 25'; TOTAL DEPTH 63.5'

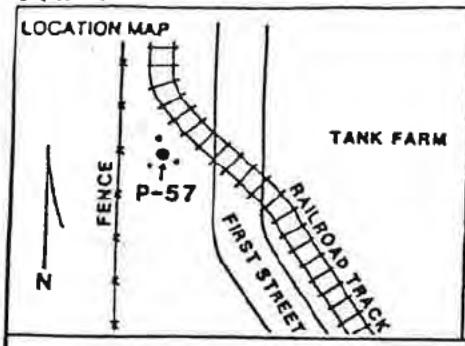
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist		soft	plas	1	1.5	4	1.00'	1	0.00'-0.85' CLAY, brown-orange, black streaks.
moist	v. well		v. loose			5		3	0.00'-1.00' SAND, tan, very fine-grained, subangular grains silty.
moist		soft	plas	2	399	9	1.40'	2	0.00'-0.20' CLAY, dark gray.
								2	0.20'-1.40' SAND, tan, fine grained.
moist	well	loose		3	588	4	1.20'	1	0.00'-1.20' SAND, tan to light brown, fine-grained, subangular to subrounded grains, slight hydrocarbon odor.
								2	
								3	
moist	well	loose		4	635	9	1.04'	3	0.00'-0.85' SAND, tan, fine-grained, subangular to subrounded grains.
moist		soft	plas					4	
								3	

WELL COMPLETION



S-12784 (1-85)

LOCATION MAP



SHELL OIL COMPANY — WELL LOG

PAGE 2 OF 3

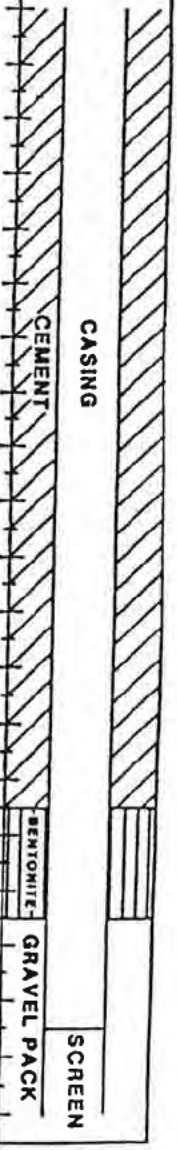
WELL NUMBER ▶ P-57		LOCATION ▶ North Property West Fence Line	
DATE ▶ 4-1-89		WEATHER ▶ Sunny, 40's	
LOGGED BY ▶ J. Pavlik		DRILLED BY ▶ Mathes Drilling	
DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger		SAMPLING METHOD ▶ 18" Split Spoon	
GRAVEL PACK ▶ 63.5' to 36.5' (27') M340 sand		SEAL ▶ 36.5' to 34.5' (2') Bentonite; 34.5' to 0' (34.5') cement	
CASING ▶ TYPE Schedule 40 PVC		DIAMETER 2"	LENGTH 38.5'
SCREEN ▶ TYPE Schedule 40 PVC	SLOT 0.01"	DIAMETER 2"	LENGTH 25'

HOLE DIA 8 1/4"

TOTAL DEPTH 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	well	loose		5	174	4 1.25' 5	2 3 4		0.00'-1.25' SAND,tan,fine-grained,subrounded grains, black laminations throughout.
moist		soft	plas	6	367	9 1.50'	1		0.00'-1.08' CLAY,mottled olive green & orange.
moist	well	loose					5		1.08'-1.34' SAND,brown,medium grained,subrounded grains.
moist		soft	plas				3		1.34'-1.50' CLAY,brown.
moist	poor	loose		7	441	4 1.25' 5	3 8 9		0.00'-1.25' SAND,tan,fine-to medium grained,subrounded grains.
wet	poor	loose		8	681	9 1.50'	3		0.00'-0.45' SAND,brown to olive green,medium-to fine-grained,subrounded grains,hyrdocarbon odor.
moist		soft	plas				9		0.45'-0.60' CLAY,dark olive.
damp	well	loose				40	10		0.60'-1.50' SAND,orange-brown,fine-grained,subrounded grains.

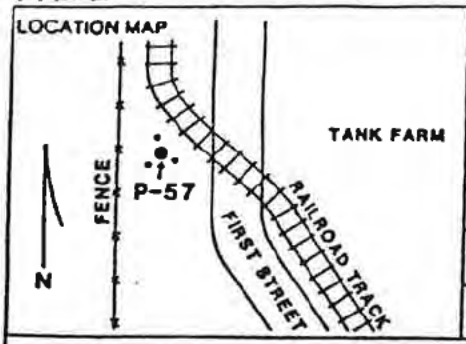
WELL COMPLETION



SHELL OIL COMPANY — WELL LOG

PAGE 3 OF 4

LOCATION MAP



WELL NUMBER ▶ P-57	LOCATION ▶ North Property West Fence Line
DATE ▶ 4-1-89	WEATHER ▶ Sunny. 40's
LOGGED BY ▶ J. Pavlik	DRILLED BY ▶ Mathes Drilling
DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger	SAMPLING METHOD ▶ 18" Split Spoon
GRAVEL PACK ▶ 63.5' to 36.5' (27') #840 sand	SEAL ▶ 36.5' to 34.5' (2') Bentonite 34.5' to 0' (34.5') cement
CASING ▶ TYPE Schedule 40 PVC — DIAMETER 2" — LENGTH 38.5'	HOLE DIA 8 1/4"
SCREEN ▶ TYPE Schedule 40 PVC — SLOT 0.01" — DIAMETER 2" — LENGTH 25'	TOTAL DEPTH 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
						40			
						1			
						2			
						3			
moist	mod.	loose				4	1.50'	3	0.00'-0.70' SAND,gray,fine-grained,subangular grains, hydrocarbon odor.
moist	mod.	loose	9	1041				7	
						5		8	0.70'-1.50' SAND,brown,medium-grained,trace fine-gravel, subangular to subrounded grains,hydrcarbon odor.
						6			
						7			
						8			
moist	mod.	med.	10	828		9	1.50'	8	
						50		10	0.00'-1.50' SAND,brown,fine-to medium-grained,trace of fine-gravel,subangular to subrounded grains, hydrocarbon odor.
						1		24	
						2			
						3			
sat.	mod.	med.	11	630		4	1.50'	7	0.00'-1.40' SAND,dark brown,medium-grained,subrounded grains,hydrocarbon odor.
sat.	mod.	med.						15	
						5		26	1.40'-1.50' SAND,black,medium-grained,trace of fine-gravel,subrounded grains,hydrocarbon odor.
						6			
						7			
						8			
sat.	poor	loose	12	729		9	1.50'	3	0.00'-1.50' SAND,brown,medium-grained,trace fine-gravel, subrounded to rounded grains,hydrocarbon odor.
						60		9	
								11	

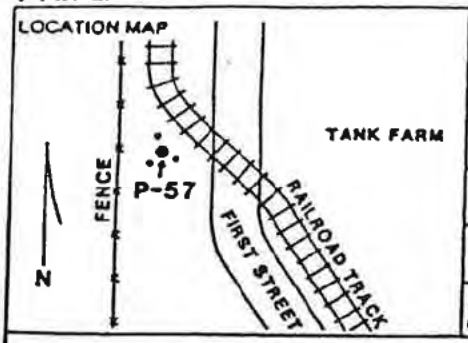
WELL COMPLETION

GRAVEL PACK

SCREEN

S-12786 (1-85)

LOCATION MAP



SHELL OIL COMPANY — WELL LOG

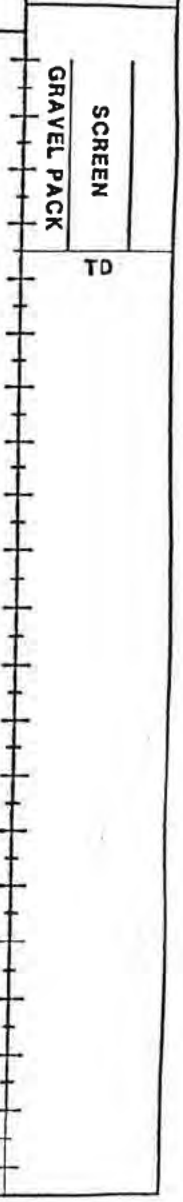
WELL NUMBER	P-57	LOCATION	North Property West Fence
DATE	4-1-89	WEATHER	Sunny, 40's
LOGGED BY	J. Paulik	DRILLED BY	Mathes Drilling
DRILLING METHOD	4 1/4" Hollow Stem Auger	SAMPLING METHOD	18" Split Spoon
GRAVEL PACK	63.5' to 36.5' (27') MB40 sand	SEAL	36.5' to 34.5' (2') Bentonite 34.5' to 0' (34.5') cement
CASING TYPE	Schedule 40 PVC	DIAMETER 2"	LENGTH 38.5'
SCREEN TYPE	Schedule 40 PVC	SLOT 0.01" DIAMETER 2"	LENGTH 25'

HOLE DIA 8 1/4"

TOTAL DEPTH 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
sat.	poor	v. loose		13	695	4	1.50'	2 1 2	0.00'-1.50' SAND,dark gray,medium-to coarse-grained, rounded to subrounded grains,traces of angular fine-gravel,hydrocarbon odor.

WELL COMPLETION



LOG OF BORING AND WELL CONSTRUCTION DETAIL

P-57 (replacement)

Sta t ng Quadrangle
Date: 2/6/ 4 Sec:35
T:5N
R:9W
Comp et on
Date: 2/8/ 4
Cas ng E evat on: 446 96 UTM (or State Plane) Coord
Ground E evat on: 445 00 N: (X):792297 86
E: (Y):23223 9 47

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
							FILL	Gravel [FILL]	Airknife to 10 ft bgs to clear utilities and other underground obstructions.
							ASPHALT	ASPHALT with gravel	
				1.1			FILL	Medium stiff, moist, brown, Sandy CLAY [FILL]	
				1.5				Medium dense, moist, brown, Clayey SAND [FILL]	
5				23.7				Loose, moist, brown, fine grained SAND (SP), trace clay	
				109.3				Clay grades out	
10								Becomes fine to medium gravel	
				43.5					
				41.3					
15		120	108				SP		
				24.2					
				63.1				Trace clay	
				4.0				Clay grades out	
20									
		120	120	20.4					
				4.4					

Completion Depth: 54.0 Ft bgs
Project No.: 21563721
Project Name: WRR Well Replacement
Drilling Contractor: Cascade Drilling LP
Driller Name: Dale Duscher
Drilling Method: Sonic
Drill Rig Type: Sonic
Logged by: M. Miller
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 44 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Air Knife
Sonic
Concrete
Cement/Bentonite Grout
Bentonite Seal
Filter Sand
Screen
Filter Sand No Screen

AECOM

USC based on field visual observations

AECOM (EV RON) LOG (EPA FORMA)+1 WELL P:\RESOURCES\G N DA AIG N \PROJEC S\21563721 WRR WELL REPLACEMEN GPJ P:\RESOURCES\G N DA AIG N \ENV RONMEN ALU\RSS LEV GLB 1/9/15

LOG OF BORING AND WELL CONSTRUCTION DETAIL

P-57 (replacement)

Sta t ng Quadrangle
Date: 2/6/ 4 Sec:35
T:5N
Comp et on R:9W
Date: 2/8/ 4
Cas ng E evat on: 446 96 UTM (or State Plane) Coord
Ground E evat on: 445 00 N: (X):792297 86
E: (Y):23223 9 47

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
				4.3				SAME: Loose, moist, brown, fine grained SAND (SP), trace clay	
				4.8					
				4.9					
30									
				39.1				Trace clay	
				637.5				Clay grades out	
35		120	108						
				18.4			SP		
				109.7					
				1049				Becomes gray brown	
40								Trace clay	
								Becomes wet	
				69.5				Becomes moist	
				310.3				Becomes wet	
45		120	96						
				296.7					
				376.9					
				1479					

Completion Depth: 54.0 Ft bgs
Project No.: 21563721
Project Name: WRR Well Replacement
Drilling Contractor: Cascade Drilling LP
Driller Name: Dale Duscher
Drilling Method: Sonic
Drill Rig Type: Sonic
Logged by: M. Miller
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 44 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Air Knife
Sonic
Concrete
Cement/Bentonite Grout
Bentonite Seal
Filter Sand
Screen
Filter Sand No Screen

AECOM

USC based on field visual observations

AECOM (EV RON) LOG (EPA FORMA)+1 WELL P:\RESOURCES\G N DA AIG N \PROJEC S\21563721 WRR WELL REPLACEMEN GPJ P:\RESOURCES\G N DA AIG N \ENV RONMEN ALI\URSS LEV GLB 1/9/15

LOG OF BORING AND WELL CONSTRUCTION DETAIL

P-57 (replacement)

Sta t ng Date: 2/6/ 4
Comp et on Date: 2/8/ 4
Cas ng E evat on: 446 96
Ground E evat on: 445 00
Quadrangle
Sec:35
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792297 86
E: (Y):23223 9 47

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
		48	48	663.4 1785			SP	SAME: Loose, wet, gray brown, fine to medium grained SAND (SP), trace clay	Monitoring well installed ~10 feet north of original well locaiton.
55								Bottom of boring at 54 ft. bgs	
60									
65									
70									

Completion Depth: 54.0 Ft bgs
Project No.: 21563721
Project Name: WRR Well Replacement
Drilling Contractor: Cascade Drilling LP
Driller Name: Dale Duscher
Drilling Method: Sonic
Drill Rig Type: Sonic
Logged by: M. Miller
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 44 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Air Knife
Sonic
Concrete
Cement/Bentonite Grout
Bentonite Seal
Filter Sand
Screen
Filter Sand No Screen

AECOM

USC based on field visual observations

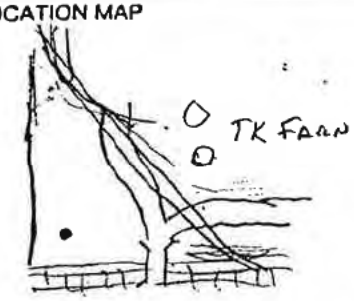
AECOM (EV RON) LOG (EPA FORMA)+1 WELL P:\RESOURCES\G N DA AIG N \PROJEC S\21563721 WRR WELL REPLACEMEN GPJ P:\RESOURCES\G N DA AIG N \ENV RONMEN ALI\URSS LEV GLB 1/9/15

S-12788 (1-85)

SHELL OIL COMPANY — WELL LOG

PAGE 1 OF 4

LOCATION MAP



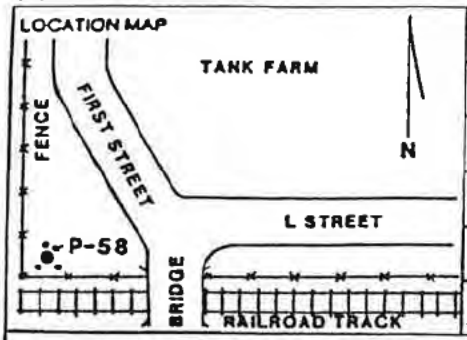
ELEVATION ▶

WELL NUMBER ▶	ES P-58 4	LOCATION ▶	NORTH PROP. SO. CORNER
DATE ▶	3-30-89	WEATHER ▶	CLOUDY, RAINING, 50s
LOGGED BY ▶	JP	DRILLED BY ▶	MATHES
DRILLING METHOD ▶	8" Hollow Stem Auger	SAMPLING METHOD ▶	18" SPLIT SPOON
GRAVEL PACK ▶	63.5'-36.5' = 27'	SEAL ▶	36.5-34.5 = 2' 34.5-0 = 34.5'

CASING ▶ TYPE S-40 PVC DIAMETER 2" LENGTH 38.5' HOLE DIA 8"

SCREEN ▶ TYPE S-40 PVC SLOT 0.01" DIAMETER 2" LENGTH 25' TOTAL DEPTH 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
					0			
					1			
					2			
					3			
Moist		Soft	Plastic	1	4	1.5	1 3 3	0 → 0.6 – Light brown clay 0.6 → 1.5 – Olive green clay, black streaking
moist		Soft	Plastic	15.3	5			
					6			
					7			
					8			
moist	very well	Loose		2	9	1.0	3 4 4	0 – 0.4 – brown vfg sd. slightly silty 0.4 – 0.6 – Olive clay + silty 0.6 – 1.0 – tan, vfg sd
moist	med.		Plastic	10.8	10			
moist	very well	Loose						
					1			
					2			
					3			
Moist	very well	Loose		3	4	0.97	5 5 7	0 – 0.7 – Tan sand, vfg, black streaking throughout 0.7 – 0.97 – tan sand, vfg, some streaking
moist	very well	Loose		50.4	5			
					6			
					7			
					8			
moist	well	Loose		4	9	1.15	5 7 7	0 – 1.15 – tan sand, medium grain, subangular → subrounded
				9.1				



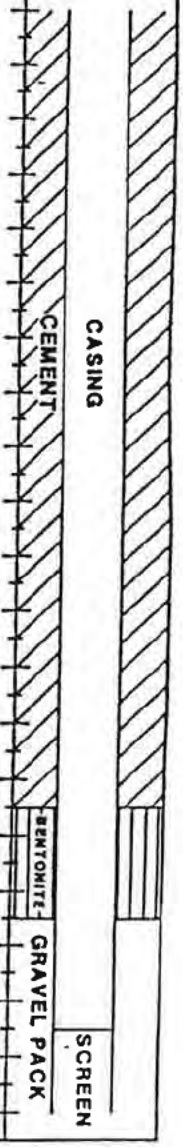
SHELL OIL COMPANY — WELL LOG

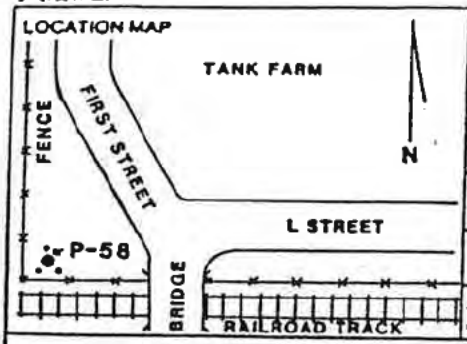
WELL NUMBER ▶ P-5R	LOCATION ▶ North Property Southwest Corner
DATE ▶ 1-30-89	WEATHER ▶ Cloudy, Raining 50's
LOGGED BY ▶ J. Pawlik	DRILLED BY ▶ Mathes Drilling
DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger	SAMPLING METHOD ▶ 18" Split Spoon
GRAVEL PACK ▶ 61.5' to 16.5' (27') #840 sand	SEAL 36.5' to 34.5' (2') Bentonite 34.5' to 0' (34.5') cement

CASING ▶ TYPE Schedule 40 PVC DIAMETER 2" LENGTH 38.5' HOLE DIA 8 1/4"

SCREEN ▶ TYPE Schedule 40 PVC SLOT 0.01" DIAMETER 2" LENGTH 25' TOTAL DEPTH 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	well	loose		5	24.8	4	1.50'	7	0.00'-0.30' SAND,tan,medium-grained,subangular to subrounded grains,contains black streaks.
moist	well	med.						11	
						5		11	0.30'-1.50' SAND,tan,medium-grained,subangular to subrounded grains.
moist	v. well	v. soft med.	sl plas	6	71.1	9	1.25'	1	0.00'-0.80' CLAY,mottled light brown & olive.
								11	0.80'-1.25' SAND,tan,very fine-grained,organic material showing bedding plane laminations.
						30		11	
moist	v. well	med.		7	18.6	4	1.50	4	0.00'-0.50' SAND,dark brown,very fine-grained.
moist	well	med.						9	
						5		12	0.50'-1.50' SAND,dark brown,medium-grained,subangular to grains.
moist	well	loose		8	232	9	1.00'	5	0.00'-0.20' SAND,olive,medium-grained,subangular to subrounded grains.
moist	well	med.						11	
						40		11	0.20'-1.00' SAND,dark brown,medium-grained,subangular to subrounded grains.





SHELL OIL COMPANY — WELL LOG

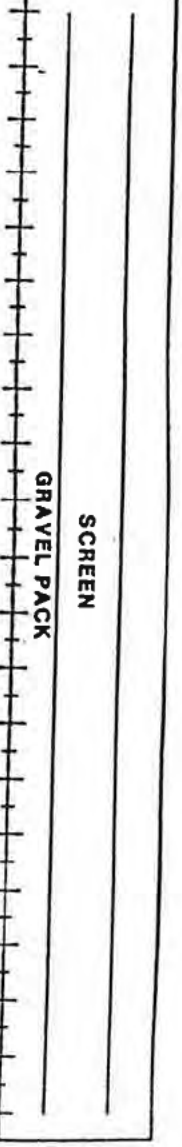
WELL NUMBER: P-58	LOCATION: North Property Southwest Corner
DATE: 1-30-89	WEATHER: Cloudy, Raining, 50's
LOGGED BY: J. Pawlik	DRILLED BY: Mathes Drilling
DRILLING METHOD: 4 1/4" Hollow-Stem Auger	SAMPLING METHOD: 18" Split Spoon
GRAVEL PACK: 60' to 16.5' (27') MB40 sand	SEAL: 16.5' to 14.5' (2') Bentonite; 14.5' to 0' (14.5') cement

CASING: TYPE Schedule 40 PVC; DIAMETER 2"; LENGTH 38.5'; HOLE DIA 8 1/4"

SCREEN: TYPE Schedule 40 PVC; SLOT 0.01"; DIAMETER 2"; LENGTH 25'; TOTAL DEPTH 63.5'

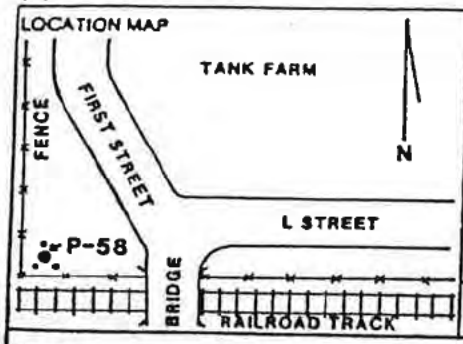
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	poor	med.		9	725	4	1.50'	5 16 18	0.00'-1.50' SAND,dark brown,medium-to coarse-grained, subangular to subrounded grains,trace of fine-gravel,hydrocarbon odor.
wet	poor	med.		10	989	9	1.25'	12 21	0.00'-0.20' SAND,dark brown,medium-to coarse-grained, subangular to subrounded grains,trace of fine-gravel,gas odor.
wet	well	med.				60		25	0.20'-1.25' SAND,dark brown,medium-grained,subangular to subrounded grains,gas odor.
sat.	poor	loose		11	120	4	1.5'	6 3	0.00'-1.25' SAND,dark brown,medium-to coarse grained, subrounded grains,trace of angular,fine-gravel,gas odor.
wet		med.	plas			5		5	1.25'-1.50' CLAY,dark green.
sat.	poor	loose				8		4	0.00'-0.55' SAND,dark brown,medium-to fine-grained, subrounded grains.
sat.	well	loose		12	45.7	9	1.5'	6	0.55'-1.00' SAND,dark brown,very fine-grained,silty.
sat.	well	loose				60		10	1.00'-1.50' SAND,dark brown,very fine-grained, silty, laminated with thin beds of organic materials

WELL COMPLETION



S-12788 (1-85)

LOCATION MAP



SHELL OIL COMPANY — WELL LOG

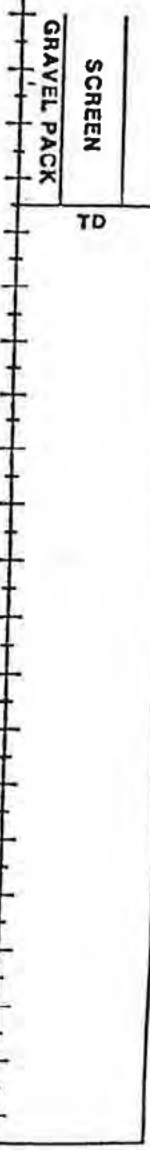
WELL NUMBER ▶ P-58	LOCATION ▶ North Property Southwest Corner
DATE ▶ 3-30-89	WEATHER ▶ Cloudy, Raining, 50's
LOGGED BY ▶ J. Pavlik	DRILLED BY ▶ Mathes Drilling
DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger	SAMPLING METHOD ▶ 18" Split Spoon
GRAVEL PACK ▶ 63.5 to 16.5 (27') MB40 sand	SEAL ▶ 16.5' to 14.5' (2') Bentonite 14.5' to 0' (14.5') cement

CASING ▶ TYPE Schedule 40 PVC DIAMETER 2" LENGTH 38.5' HOLE DIA 8 1/4"

SCREEN ▶ TYPE Schedule 40 PVC SLOT 0.01" DIAMETER 2" LENGTH 25' TOTAL DEPTH 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
sat.	poor	med.		13	51.3	4	1.5'	5 13 18	0.00'-1.50' SAND, dark brown, medium-to coarse-grained, subrounded grains.

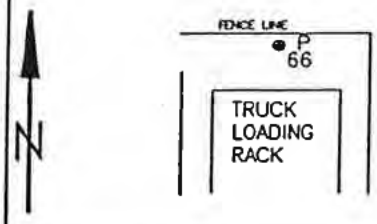
WELL COMPLETION



T.O.W. 437.46

377.46 - 402.46

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

PAGE 1 OF 3

WELL NUMBER ▶ P-66	LOCATION ▶ LOADING RACK
DATE ▶ 9-27-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP. 60'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 6.25" HSA	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 60'-33'(27') WB-40 Sd	SEAL ▶ 33'-31' BENTONITE 31'-0' GROUT

CASING ▶ TYPE SCHEDULE-40 PVC DIAMETER 2" LENGTH 35' HOLE DIA. 8"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 2" LENGTH 25' TOTAL DEPTH 60'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	mod	vloose		1	7.6	0-4	1.50	0, 0, 0, 0	0.0'-1.50' Sand, very fine-grained, gray, very silty. * Split-spoon pushed for 3'-5' sample.
moist	mod	vloose		2	7.3	8-9	1.55	1, 1, 1, 1	0.0'-1.02' Sand, very fine-grained, gray, very silty.
moist	mod	vloose							1.02'-1.55' Sand, fine-grained, tan, black laminations.
wet	mod	loose		3	3.6	13-14	0.75	4, 8, 10, 11	0.0'-0.25' Sand, very fine-grained, tan, very silty.
moist	mod	loose							0.25'-0.75' Sand, very fine-grained, gray, black laminations.
moist	mod	loose		4	2.1	18-19	1.40	3, 6, 6, 10	0.0'-1.40' Sand, fine and medium-grained, tan.

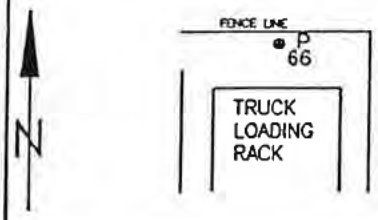
WELL COMPLETION

FLUSH MOUNT

35-60'

EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

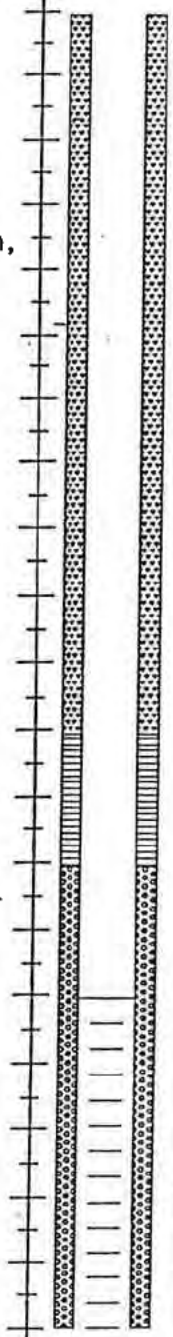
WELL NUMBER ▶ P-66	LOCATION ▶ LOADING RACK
DATE ▶ 9-27-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP.60'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 6.25" HSA	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 60'-33'(27') WB-40 Sd	SEAL ▶ 33'-31' BENTONITE 31'-0' GROUT

CASING ▶ TYPE SCHEDULE-40 PVC DIAMETER 2" LENGTH 35' HOLE DIA. 8"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 2" LENGTH 25' TOTAL DEPTH 60'

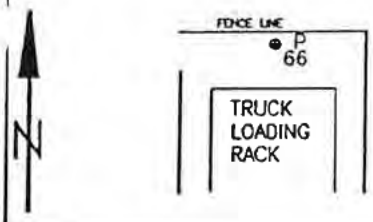
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	vwell	loose		5	21.3	20-23	1.54	2, 4, 8, 9	0.0'-1.54' Sand, medium-grained, tan, hydrocarbon odor.
moist	mod	loose		6	38.9	25-28	1.45	4, 8, 10, 12	0.0'-1.45' Sand, fine and medium-grained, tan, hydrocarbon odor.
moist	mod	mdense		7	350	30-33	1.75	6, 16, 25, 33	0.0'-1.75' Sand, medium and coarse-grained, tan, trace of fine gravel, hydrocarbon odor.
moist	mod	mdense		8	335	35-38	1.21	5, 10, 12, 14	0.0'-1.21' Sand, fine and medium-grained, tan, hydrocarbon odor.

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

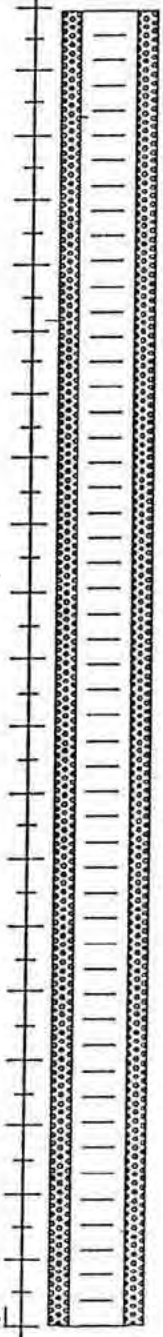
WELL NUMBER ▶ P-66	LOCATION ▶ LOADING RACK
DATE ▶ 9-27-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP.60'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 6.25" HSA	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 60'-33'(27') WB-40 Sd	SEAL ▶ 33'-31' BENTONITE 31'-0' GROUT

CASING ▶ TYPE SCHEDULE-40 PVC DIAMETER 2" LENGTH 35' HOLE DIA. 8"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 2" LENGTH 25' TOTAL DEPTH 60'

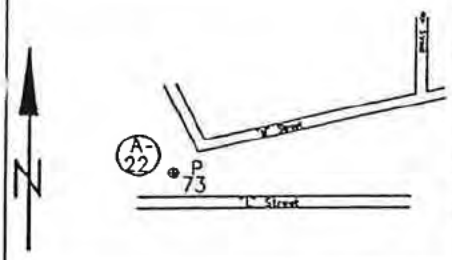
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
wet	mod	mdense		9	141	40-43	1.81'	5 13 18 24	0.0'-1.81' Sand, medium and coarse-grained, tan, trace of fine gravel, hydrocarbon odor.
sat	mod	mdense		10	233	43-48	1.78'	6 12 18 24	0.0'-1.78' Sand, fine and medium-grained, tan, some coarse-grained, trace of fine gravel, hydrocarbon odor.
sat	mod	mdense		11	107	48-53	2.0'	3 9 12 17	0.0'-2.0' Sand, medium and coarse-grained, tan, hydrocarbon odor.
sat	mod	mdense		12	112	53-58	0.70'	6 9 12 17	0.0'-0.10' Coal, black. 0.10'-0.25' Sand, medium and coarse-grained, tan.
sat	mod	mdense				58-60			0.25'-0.70' Sand, coarse-grained, tan, some fine and coarse gravel

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

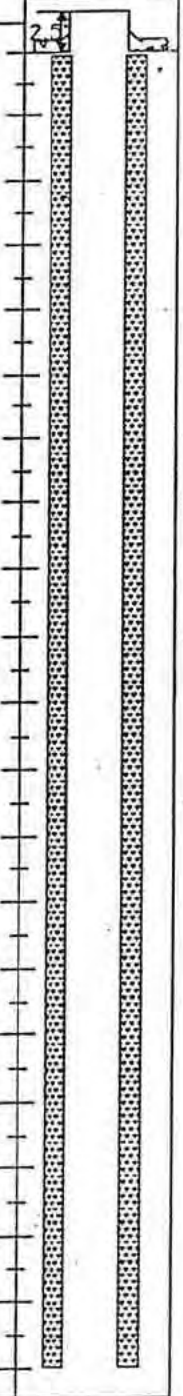
WELL NUMBER ▶ P-73	LOCATION ▶ TANK A-22
DATE ▶ 10-7-89	WEATHER ▶ CLEAR, WINDY TEMP. 50'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25" HSA	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 65'-38'(27') WB-40 Sd	SEAL ▶ 38'-36' BENTONITE 36'-0' GROUT

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 4" LENGTH 40' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 65'

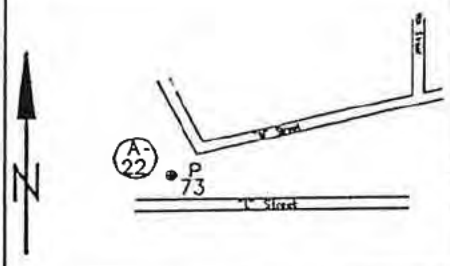
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist		soft	plastic	1	4.2	3-4	1.30	0 0 0 0	0.0'-1.30' Clay, green, very silty. * Split-spoon pushed for 3'-5' sample.
wet	well	loose		2	4.2	8-9	1.80	3 3 3 5	0.0'-1.80' Sand, very fine-grained, dark brown grading to black, very silty, hydrocarbon odor.
moist	well	loose		3	2.5	13-14	1.80'	3 5 5 6	0.0'-1.80' Sand, very fine-grained, tan, black mottled, very silty, hydrocarbon odor.
moist	mod	loose		4	3.1	18-19	1.42'	4 4 6 7	0.0'-1.42' Sand, very fine-grained, some fine-grained, tan, hydrocarbon odor.

WELL COMPLETION



EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

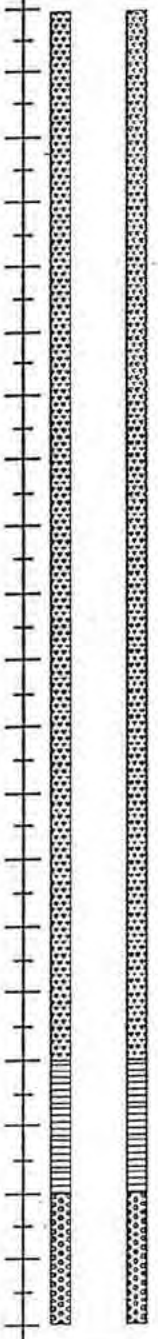
WELL NUMBER ▶ P-73	LOCATION ▶ TANK A-22
DATE ▶ 10-7-89	WEATHER ▶ CLEAR, WINDY TEMP. 50'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25" HSA	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 65'-38'(27') WB-40 Sd	SEAL ▶ 38'-36' BENTONITE 36'-0' GROUT

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 4" LENGTH 40' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 65'

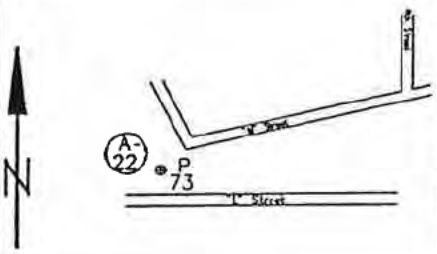
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	mod	loose		5	7.0	24	1.69	4 4 3 3	0.0'-1.69' Sand, very fine and fine-grained, tan, trace of medium-grained.
moist	mod	loose		6	8.4	29	1.37	3 6 7 9	0.0'-1.37' Sand, fine and medium-grained, tan.
moist	mod	loose		7	1.5	34	1.39	3 7 9 10	0.0'-1.39' Sand, medium and coarse-grained, tan.
moist	mod	mdense		8	310	39	1.55	4 8 12 17	0.0'-1.55' Sand, medium and coarse-grained, tan, hydrocarbon odor.

WELL COMPLETION



EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

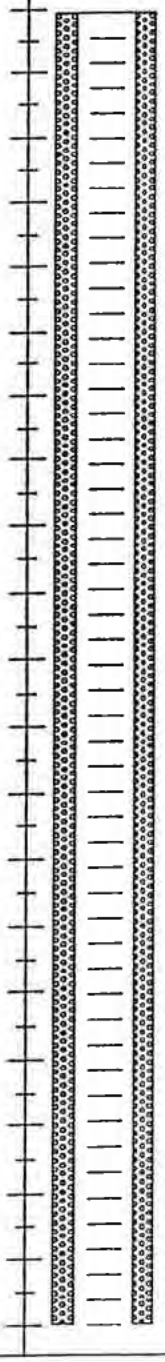
WELL NUMBER ▶ P-73	LOCATION ▶ TANK A-22
DATE ▶ 10-7-89	WEATHER ▶ CLEAR, WINDY TEMP. 50'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25" HSA	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 65'-38'(27') WB-40 Sd	SEAL ▶ 38'-36' BENTONITE 36'-0' GROUT

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 4" LENGTH 40' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 65'

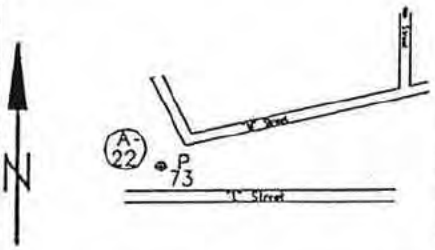
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
						40			
						41			
						42			
						43			
moist	mod	mdense		9	364	44	1.31'	6 16 20 22	0.0'-1.31' Sand, fine and medium-grained, tan, hydrocarbon odor.
						45			
						46			
						47			
						48			
wet	mod	mdense		10	317	49	2.0'	4 10 17 19	0.0'-2.0' Sand, fine and medium-grained, some coarse-grained, tan, hydrocarbon odor.
						50			
						51			
						52			
						53			
sat	mod	mdense		11	238	54	2.0'	1 6 16 27	0.0'-2.0' Sand, medium and coarse-grained, trace of fine-grained, tan, hydrocarbon odor.
						55			
						56			
						57			
						58			
sat	mod	loose		12	221	59	2.0	1 1 7 9	0.0'-2.0' Sand, medium and coarse-grained, tan, trace of fine gravel.
						60			

WELL COMPLETION



EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

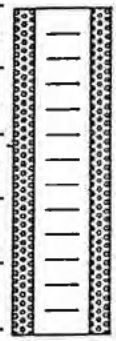
WELL NUMBER ▶ P-73	LOCATION ▶ TANK A-22
DATE ▶ 10-7-89	WEATHER ▶ CLEAR, WINDY TEMP. 50'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25" HSA	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 65'-38'(27') WB-40 Sd	SEAL ▶ 38'-36' BENTONITE 36'-0' GROUT

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 4" LENGTH 40' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 65'

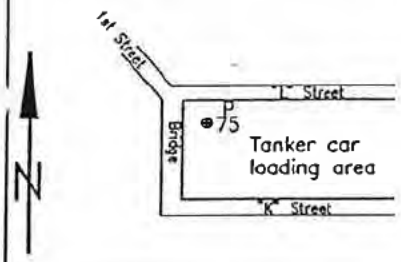
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
						60			
						61			
						62			
						63			
sat	mod	loose		13	296	64	2.0'	1 6 17	0.0'-1.90' Sand, medium and coarse-grained, tan, hydrocarbon odor.
sat	poor	ndense				65		27	1.90'-2.0' Sand, coarse-grained, tan, and fine gravel, some coarse gravel.
						66			
						67			
						68			
						69			
						70			
						71			
						72			
						73			
						74			
						75			
						76			
						77			
						78			
						79			
						80			

WELL COMPLETION



EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

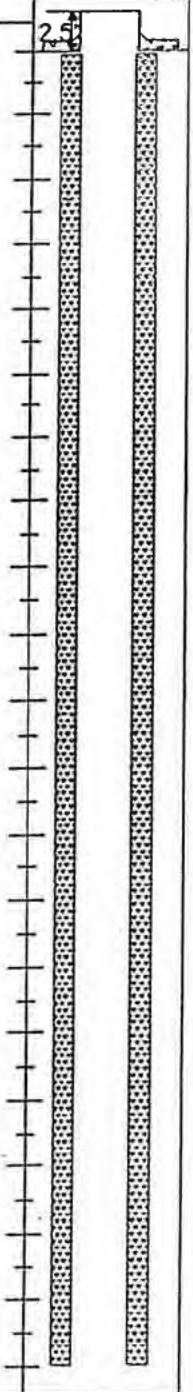
WELL NUMBER ▶ P-75	LOCATION ▶ TK CAR LOADING RACK
DATE ▶ 10-10-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP. 60'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25'	SAMPLING METHOD ▶ 1.50' SPLIT-SPOON
GRAVEL PACK ▶ 66'-39'(27') WB-40 Sd	SEAL ▶ 39'-37' BENTONITE 37'-0' GROUT

CASING ▶ TYPE SCHEDULE-40 PVC DIAMETER 4" LENGTH 41' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 66'

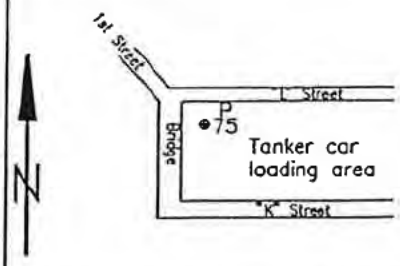
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist		soft	plastic	1	124	5	0.95'	2, 3, 4	0.0'-0.95' Clay, green, black laminations, very silty.
moist	well	loose		2	523	10	0.73	3, 9, 3	0.0'-0.73' Sand, very fine-grained, tan, slightly silty, hydrocarbon odor.
moist	mod	loose		3	705	14	0.88	3, 5, 9	0.0'-0.88' Sand, very fine-grained, little fine-grained, tan, hydrocarbon odor.
wet	mod	loose		4	517	19	0.88'	2, 7, 12	0.0'-0.88' Sand, very fine and fine-grained, tan, hydrocarbon odor.

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

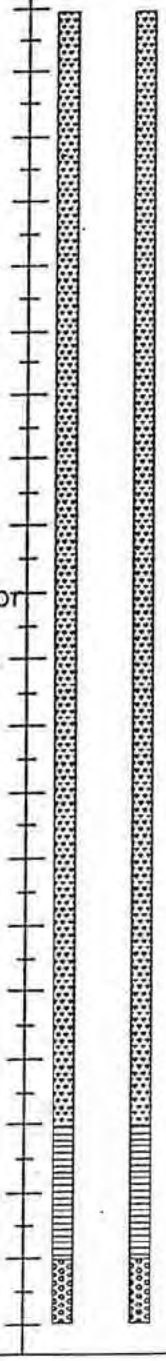
WELL NUMBER ▶ P-75	LOCATION ▶ TANK CAR LOADING RACK
DATE ▶ 10-10-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP. 60'S
LOGGED BY ▶ J.PAWLIK.	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25'	SAMPLING METHOD ▶ 1.50' SPLIT-SPOON
GRAVEL PACK ▶ 66'-39'(27') WB-40 Sd	SEAL ▶ 39'-37' BENTONITE 37'-0' GROUT

CASING ▶ TYPE SCHEDULE-40 PVC DIAMETER 4" LENGTH 41' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 66'

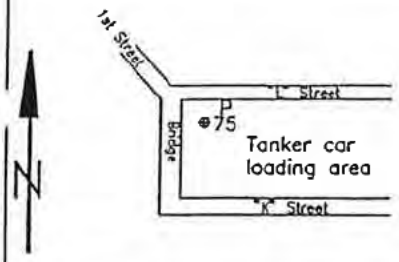
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
						20			
						21			
						22			
moist	mod	mdense		5	612	23	0.91	3 15 19	0.0'-0.91' Sand, very fine and fine-grained, tan, trace of medium- grained.
						24			
						25			
						26			
moist	mod	loose		6	624	27	1.11	5 9 17	0.0'-1.11' Sand, very fine and fine-grained, trace of medium-grained, black laminations throughout, hydrocarbon odor
						28			
						29			
						30			
moist	well	loose				31		7	0.0'-0.20' Sand, very fine and fine-grained, tan.
moist	mod	mdense		7	913	32	1.12	12 16	0.20'-1.12' Sand, fine and medium-grained, some coarse, tan, trace of fine gravel, hydrocarbon odor.
						33			
						34			
						35			
moist	mod	mdense		8	989	36	1.18	9 19 26	0.0'-1.18' Sand, medium and coarse-grained, trace of fine and coarse gravel, hydrocarbon odor.
						37			
						38			
						39			
						40			

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

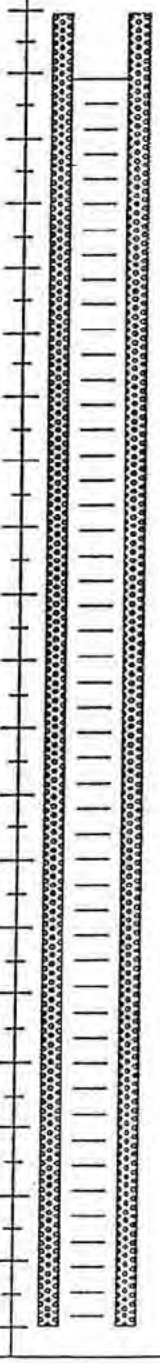
WELL NUMBER ▶ P-75	LOCATION ▶ TANK CAR LOADING RACK
DATE ▶ 10-10-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP. 60'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25'	SAMPLING METHOD ▶ 1.50' SPLIT-SPOON
GRAVEL PACK ▶ 66'-39'(27') WB-40 Sd	SEAL ▶ 39'-37' BENTONITE 37'-0' GROUT

CASING ▶ TYPE SCHEDULE-40 PVC DIAMETER 4" LENGTH 41' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 66'

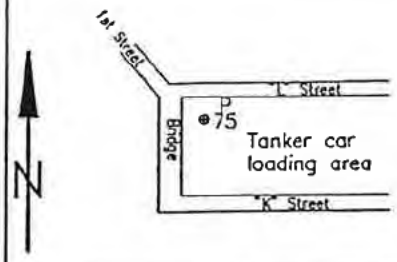
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	mod	ndense		9	1079	40-42	1.31	7, 19, 34	0.0'-1.31' Sand, medium and coarse-grained, tan, trace of fine and coarse gravel, hydrocarbon odor.
wet	mod	ndense		10	416	45-46	1.11	5, 15, 36	0.0.'-1.11' Sand, medium and coarse-grained, tan, trace of fine and coarse gravel, hydrocarbon odor.
sat	mod	ndense		11	613	50-51	1.5'	9, 19, 27	0.0'-1.50' Sand, medium and coarse-grained, tan, hydrocarbon odor.
sat	mod	ndense		12	775	54-55	1.18	3, 19, 25	0.0'-1.18' Sand, medium and coarse-grained, tan, trace of fine-gravel, hydrocarbon odor.
st	mod	ndense		13	465	59-60	1.5'	5, 15, 27	0.0'-1.50' Sand, medium and coarse-grained, tan, trace of fine and coarse gravel, hydrocarbon odor.

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

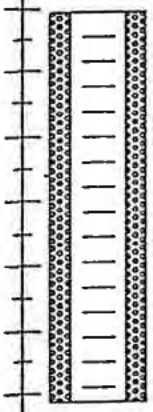
WELL NUMBER ▶ P-75	LOCATION ▶ TANK CAR LOADING RACK
DATE ▶ 10-10-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP. 60'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25'	SAMPLING METHOD ▶ 1.50' SPLIT-SPOON
GRAVEL PACK ▶ 66'-39'(27') WB-40 Sd	SEAL ▶ 39'-37' BENTONITE 37'-0' GROUT

CASING ▶ TYPE SCHEDULE-40 PVC DIAMETER 4" LENGTH 41' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 66'

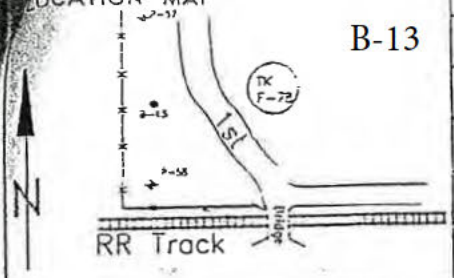
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
sat	mod	mdense		14	-	60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	0.0'	3 5 4	0.0'-1.5' No recovery. Well was overdrilled to 70', sample was not taken due to heaving sands, final depth of well was 66 feet.

WELL COMPLETION



EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

LOCATION MAP



B-13

SHELL OIL COMPANY

WELL NUMBER ▶ WELL P-93		LOCATION ▶ 1st STREET, NO. PROPERTY	
DATE ▶ 3-11-91-3-22-91		WEATHER ▶ CLOUDY, WINDY TEMP 50'S	
LOGGED BY ▶ J. PAWLIK		DRILLED BY ▶ MATHES	
DRILLING METHOD ▶ MUD ROTARY 7 7/8" TRI-CONE		SAMPLING METHOD ▶ 2.0' SPLIT-SPOON ON JARS	
GRAVEL PACK ▶ NONE		SEAL ▶ GROUT TO SURFACE	

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 8" LENGTH 60'

HOLE 12" TO 60 DIA. 60'-TO:77.5'

SCREEN ▶ TYPE NA SLOT NA DIAMETER NA LENGTH NA

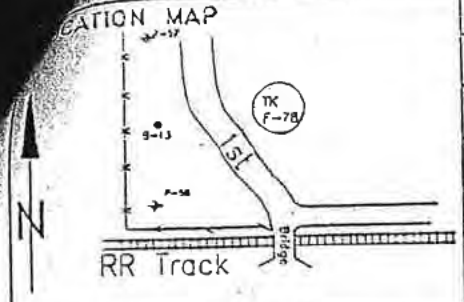
TOTAL DEPTH 136'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
						0			*Lithology descriptions from 0'-6' are from spud auger cuttings.
moist		soft	plas	1	-	1	2.0'		0.00'-2.00' Limestone gravel and clay.
moist		soft	plas	2	5.3	2 3	2.0'		2.00'-4.00' CLAY, black, some very fine-grained sand and silt.
damp	well	loose		3	8.6	4 5	2.0'		4.00'-6.00' SAND, tan, very fine-grained and silt.
moist	well	loose		4	3.0	6 7	2.0'		0.00'-2.00' SILT, tan to brown, some clay.
moist	well	loose		5	3.0	8 9	1.03		0.00'-1.03' SAND, black to gray to tan, very fine-grained and fine-grained, little silt.
moist	well	loose		6	9.1	10 11	1.0'		0.00'-1.00' SAND, gray to tan, very fine-grained and fine-grained, little silt.
moist	well	loose		7	11	12 13	0.99		0.00'-0.99' SAND, tan, fine-grained, some very fine-grained, trace of silt.
moist	well	loose		8	7	14 15	1.12		0.00'-1.12' SAND, tan, fine-grained, some very fine-grained, trace of silt.
moist	vwell	loose		9	16	16 17	1.14		0.00'-1.14' SAND, tan, fine-grained, little very fine-grained, trace of silt.
moist	well	loose		10	12	18 19	1.21		0.00'-1.21' SAND, tan to black, fine-grained, some very fine-grained, little silt.
						20			

WELL COMPLETION

EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY — PAGE 2 OF 2

WELL NUMBER ▶ WELL P-93	LOCATION ▶ 1st STREET, NO. PROPERTY
DATE ▶ 3-11-91-3-22-91	WEATHER ▶ CLOUDY, WINDY TEMP 50'S
LOGGED BY ▶ J. PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ MUD ROTARY 7 7/8" TRI-CONE	SAMPLING METHOD ▶ 2.0" SPLIT-SPOON ON JARS
GRAVEL PACK ▶ NONE	SEAL ▶ GROUT TO SURFACE

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 8" LENGTH 60'

HOLE 12" TO 60' DIA.-60'-TD:7 7/8"

SCREEN ▶ TYPE NA SLOT NA DIAMETER NA LENGTH NA

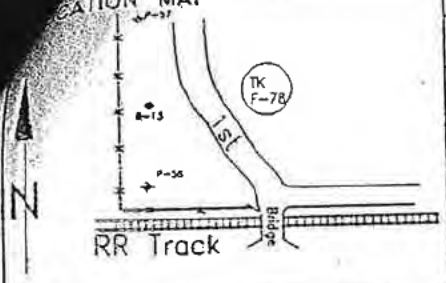
TOTAL DEPTH 136'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	well	loose		11	2	20-21	1.30		0.00'-1.30' SAND, tan, fine-grained, some very fine-grained, little silt.
moist	well	loose		12	28	22-23	0.93		0.00'-0.93' SAND, tan, black laminated, fine-grained, some very fine-grained, little silt.
moist	mod	loose		13	9	24-25	0.92		0.00'-0.92' SAND, tan, fine-grained, little very fine-grained, trace of medium-grained and silt.
moist	mod	loose		14	27	26-27	0.87		0.00'-0.87' SAND, tan, fine-grained, some medium-grained, little very fine-grained.
moist	mod	loose		15	2	28-29	0.92		0.00'-0.92' SAND, tan, fine-grained, some medium-grained, little very fine-grained.
moist	mod	loose		16	30	30-31	1.13		0.00'-1.13' SAND, tan, fine and medium-grained, little very fine-grained.
moist	mod	loose				32			0.00'-0.15' SAND, tan, fine and medium-grained, little very fine-grained.
moist	mod	loose		17	9	33	1.12		0.15'-1.12' SAND, tan, medium-grained, some fine-grained, trace of coarse-grained.
moist	mod	loose		18	19	34-35	0.92		0.00'-0.92' SAND, tan, medium and fine-grained, little very fine-grained.
moist	mod	loose		19	4	36-37	0.91		0.00'-0.91' SAND, tan, medium-grained, some coarse-grained, trace of fine-grained.
moist	mod	loose		20	30	38-39	0.95		0.00'-0.95' SAND, tan, medium-grained, some fine-grained, little coarse-grained.
						40			

WELL COMPLETION

EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY

WELL NUMBER ▶ WELL P-93		LOCATION ▶ 1st STREET, NO. PROPERTY	
DATE ▶ 3-11-91-3-22-91		WEATHER ▶ CLOUDY, WINDY TEMP 50'S	
LOGGED BY ▶ J. PAWLIK		DRILLED BY ▶ MATHES	
DRILLING METHOD ▶ MUD ROTARY 7 7/8" TRI-CONE		SAMPLING METHOD ▶ 2.0' SPLIT-SPOON CORE BARS	
GRAVEL PACK ▶ NONE		SEAL ▶ GROUT TO SURFACE	

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 8" LENGTH 60'

HOLE DIA. 30'-70.77/2

SCREEN ▶ TYPE NA SLOT NA DIAMETER NA LENGTH NA

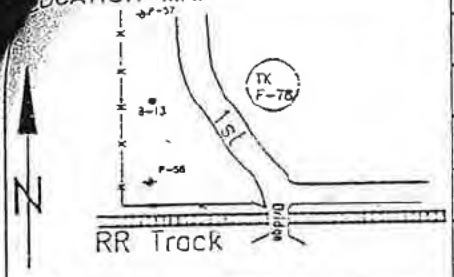
TOTAL DEPTH : 36'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	mod	loose		21	26	40-41	0.85		0.00'-0.85' SAND, tan, medium and coarse-grained, little fine-grained, trace of fine-gravel.
moist	mod	loose		22	19	42-43	0.72		0.00'-0.72' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of fine-gravel.
moist	mod	loose		23	271	44-45	0.95		0.00'-0.95' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of fine and coarse-gravel.
moist	mod	loose		24	538	46-47	0.83'		0.00'-0.83' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of fine-gravel.
moist	mod	loose		25	631	48-49	0.91		0.00'-0.91' SAND, tan, coarse-grained, some medium-grained., little fine-grained.
sat	mod	loose		26	1165	50-51	0.97'		0.00'-0.97' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of fine-gravel.
sat	mod	loose		27	398	52-53	0.85		0.00'-0.85' SAND, tan, medium and coarse-grained, little fine-grained.
sat	mod	loose		28	634	54-55	0.74'		0.00'-0.74' SAND, tan, medium and coarse-grained, little fine-grained.
sat	mod	loose		29	315	56-57	0.76		0.00'-0.76' SAND, tan, medium and coarse-grained, little fine-grained.
sat	mod	loose		30	332	58-59	0.8		0.00'-0.81' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of silt.
						60			

WELL COMPLETION

EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY

PAGE 1 OF 2

WELL NUMBER ▶ WELL P-93 LOCATION ▶ 1st STREET, NO. PROPERTY

DATE ▶ 3-11-91-3-22-91 WEATHER ▶ CLOUDY, WINDY TEMP 50'S

LOGGED BY ▶ J. PAWLIK DRILLED BY ▶ MATHES

DRILLING METHOD ▶ MUD ROTARY 7 7/8" TRI-CONE SAMPLING METHOD ▶ 2.0' SPLIT-SPOON CORE BARS

GRAVEL PACK ▶ NONE SEAL ▶ GROUT TO SURFACE

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 8" LENGTH 60'

HOLE: 2' TO 60' DIA. 60'-0' 7 7/8"

SCREEN ▶ TYPE NA SLOT NA DIAMETER NA LENGTH NA

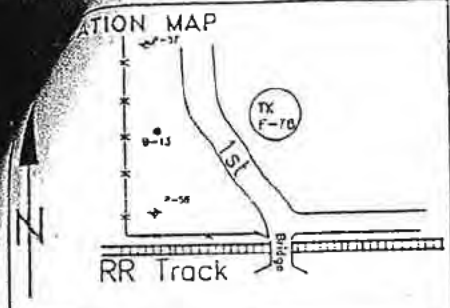
TOTAL DEPTH 136'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
-	-	-	-	31	-	60-62	-		No sample, grout only.
sat	mod	loose		32	7.1	62-64	0.72		0.00'-0.72' SAND, tan, medium-grained, some coarse-grained, little fine-grained.
sat	mod	loose		33	53	64-66	0.90		0.00'-0.90' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of coal.
sat	mod	loose		34	16	66-68	0.59'		0.00'-0.59' SAND, tan, medium-grained, some coarse-grained, little fine-grained.
sat	mod	loose		35	15	68-70	1.0'		0.00'-1.00' SAND, tan, medium-grained, some coarse-grained, little fine-grained.
sat	mod	loose		36	707	70-72	0.85'		0.00'-0.85' SAND, tan, medium-grained, some very fine-grained, scattered coal.
sat	well	vloose		37	42	72-74	0.77'		0.00'-0.77' SAND, tan, fine-grained, some very fine-grained, trace of silt.
sat	well	loose		38	78	74-76	0.76		0.00'-0.76' SAND, tan, fine-grained, some very fine-grained, trace of silt.
sat	mod	loose		39	35	76-78	0.90		0.00'-0.90' SAND, tan, coarse-grained, some medium-grained, little fine-gravel, chert.
sat	mod	loose		40	2.2	78-80	0.90'		0.00'-0.90' SAND, tan, coarse-grained, some medium-grained, little fine-grained and fine-gravel, chert.

WELL COMPLETION

EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

ATION MAP



SHELL OIL COMPANY

WELL NUMBER ▶ WELL P-93	LOCATION ▶ 1st STREET, NO. PROPERTY
DATE ▶ 3-11-91–3-22-91	WEATHER ▶ CLOUDY, WINDY TEMP 50'S
LOGGED BY ▶ J. PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ MUD ROTARY 7 7/8" TRI-CONE	SAMPLING METHOD ▶ 2.5" SPLIT-SPOON ON JARS
GRAVEL PACK ▶ NONE	SEAL ▶ GROUT TO SURFACE

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 8" LENGTH 60'

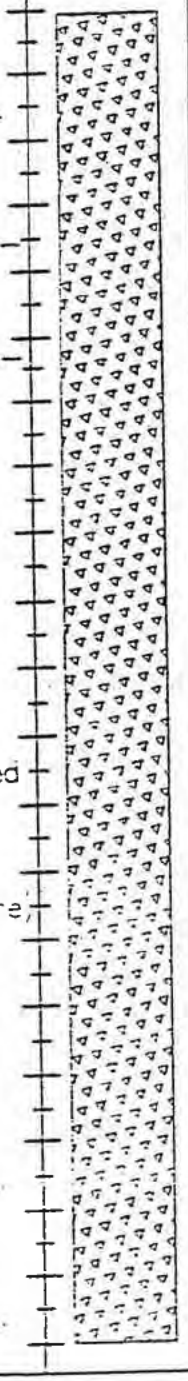
HOLE DIA. 12" TO 60' – 10.77/8"

SCREEN ▶ TYPE NA SLOT NA DIAMETER NA LENGTH NA

TOTAL DEPTH 136'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
sat	mod	loose		41	12	80–81	0.91		0.00'–0.91' SAND, tan, coarse-grained, little medium-grained, some fine-gravel (chert,quartz,rhyolite).
wet		soft	plas			82			0.00'–0.28' CLAY, tan.
sat	mod	loose		42	9.7	83	0.97		0.28'–0.97' SAND, tan, coarse-grained, little medium-grained, some fine-gravel (chert,quartz,rhyolite).
sat	mod	loose		43	3.4	84–85	0.76		0.28'–0.76' SAND, tan, coarse-grained, little medium-grained, some fine-gravel (chert,quartz,rhyolite).
sat	mod	loose		44	6.0	86–87	0.98		0.00'–0.98' SAND, tan, coarse-grained, little fine-gravel and medium-grained sand.
sat	mod	loose		45	3.4	88–89	0.81		0.00'–0.81' SAND, tan, coarse-grained, little fine-gravel and medium-grained sand.
sat	mod	loose		46	6.0	90–91	0.83		0.00'–0.83' SAND, tan, medium-grained, little fine-grained, trace of fine-gravel and very fine-grained sand.
sat	wet	loose		47	4.1	92–93	1.02		0.00'–1.02' SAND, tan, coarse-grained, little medium-grained, trace of fine-gravel (quartz and limestone).
sat	mod	loose		48	4.3	94–95	0.55		0.00'–0.55' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of fine-gravel.
sat	mod	loose		49	5.3	96–97	0.93		0.00'–0.93' SAND, tan, coarse-grained, little medium-grained, trace of fine-grained and fine-grave
sat	mod	loose		50	12	98–99	0.94		0.00'–0.94' SAND, tan, coarse-grained, little medium-grained, trace of fine-grained and fine-grave
						100			

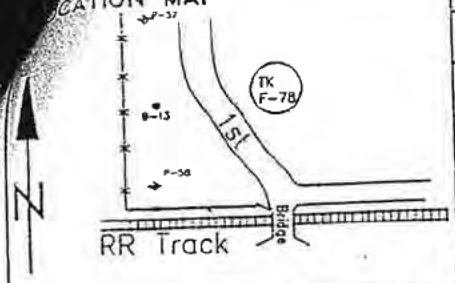
WELL COMPLETION



EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

SHELL OIL COMPANY

LOCATION MAP



WELL NUMBER ▶ WELL P-93	LOCATION ▶ 1st STREET, NO. PROPERTY
DATE ▶ 3-11-91-3-22-91	WEATHER ▶ CLOUDY, WINDY TEMP 50'S
LOGGED BY ▶ J. PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ MUD ROTARY 7 7/8" TRI-CONE	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON ON JARS
GRAVEL PACK ▶ NONE	SEAL ▶ GROUT TO SURFACE

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 8" LENGTH 60'

HOLE DIA. 12" TO 60' 10.77/8

SCREEN ▶ TYPE NA SLOT NA DIAMETER NA LENGTH NA

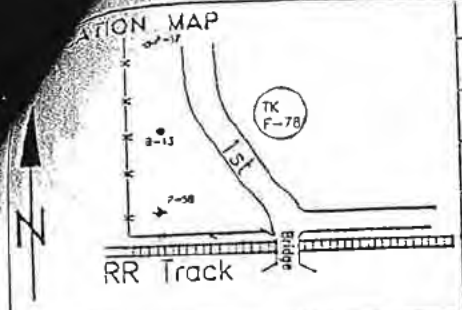
TOTAL DEPTH 136'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
sat	mod	loose		51	14	100 10	0.80		0.00'–0.80' SAND, tan, coarse-grained, some medium-grained, little fine-grained.
sat	poor	loose		52	14	102 103	0.87		0.00'–0.87' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert,quartz,limestone).
sat	poor	loose		53	9	104 105	0.62'		0.00'–0.62' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert,quartz,).
sat	poor	loose		54	12	106 107	0.83		0.00'–0.83' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert,quartz,).
sat	poor	loose		55	8	108 109	0.88		0.00'–0.88' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert,quartz,limestone).
sat	poor	loose		56	9.7	110 111	0.83		0.00'–0.83' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert,quartz,limestone).
sat	poor	loose		57	7.2	112 113	0.63'		0.00'–0.25' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert,quartz,limestone).
sat	mod	loose				114			0.25'–0.63' SAND, tan, coarse-grained, some medium-grained, little fine-grained.
sat	poor	loose		58	9.7	115	0.81		0.00'–0.81' SAND, tan, coarse-grained and fine-gravel, little medium-grained, trace of coarse-gravel.
sat	mod	loose		59	4.1	116 117	0.83		0.00'–0.83' SAND, tan, coarse-grained, some medium-grained, trace of fine-gravel(quartz,chert,mafic igneous).
sat	mod	loose		60	6.6	118 119	0.90		0.00'–0.90' SAND, tan, coarse-grained, some medium-grained, trace of fine-gravel(quartz, chert, mafic igneous).
						120			

WELL COMPLETION

EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

SHELL OIL COMPANY



WELL NUMBER ▶ WELL P-93		LOCATION ▶ 1st STREET, NO. PROPERTY	
DATE ▶ 3-11-91-3-22-91		WEATHER ▶ CLOUDY, WINDY TEMP 50'S	
LOGGED BY ▶ J. PAWLIK		DRILLED BY ▶ MATHES	
DRILLING METHOD ▶ MUD ROTARY 7 7/8" TRI-CONE		SAMPLING METHOD ▶ 2.0' SPLIT-SPOON ON 1APS	
GRAVEL PACK ▶ NONE		SEAL ▶ GROUT TO SURFACE	

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 8" LENGTH 60' HOLE DIA. 12" TO 60' - 7 7/8"

SCREEN ▶ TYPE NA SLOT NA DIAMETER NA LENGTH NA TOTAL DEPTH 136'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
sat	mod	loose				120			0.00'–0.05' SAND, tan, coarse-grained, some medium-grained, little fine-grained.
wet		salt	plas	61	2.2	121	0.92		0.05'–0.18' CLAY, brown, little silt.
sat	well	dense							0.18'–0.42' SAND, tan, fine-grained, some very fine-grained, little silt.
sat	mod	loose				122			0.42'–0.92' SAND, tan, coarse-grained, little medium-grained and fine-gravel.
sat	mod	loose		62	7.8	123	1.04		0.00'–1.04' SAND, tan, medium-grained, some coarse-grained, little fine-grained, trace of silt.
						124			
sat	well	loose		63	2.4	125	0.50		0.00'–0.50' SAND, tan, medium-grained, little fine-grained and coarse-grained.
						126			
damp		vplas	vstiff	64	1.5	127	1.15		0.00'–0.25' CLAY, gray to dark gray, little very fine-grained sand.
dry		hard	ehard						0.25'–1.15' SHALE, gray, trace of silt.
dry		hard	ehard			128			*Hard drilling at 127.5'.
				65	2.2	129	1.05		0.00'–1.05' SHALE, gray, trace of silt.
						130			
				NS		131			*Hard drilling from 130'–137.75', mud returns show gray to white limestone. Gray to blue clay from 134'.
						132			
				NS		133			
						134			
dry		hard	ehard	66	1.1	135	0.53		0.00'–0.55' SHALE, good fissility, gray to blue, very calcareous, trace of limestone.
						136			
dry		hard	ehard	67	0.8	137	0.45		0.00'–0.38' SHALE, good fissility, gray to blue, very calcareous, trace of limestone.
dry		hard	ehard			138			0.38'–0.45' LIMESTONE, brown.
						139			Final boring depth =136', last interval sampled = 136'–138'.
						140			

WELL COMPLETION

EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

LOG OF BORING AND WELL CONSTRUCTION DETAIL

P-93C (replacement)

Sta t ng Date: 2/4/ 4
Comp et on Date: 2/4/ 4
Cas ng E evat on: 446 28
Ground E evat on: 444 50

Quadrangle
Sec:35
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792 77 50
E: (Y):2322335 96

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
				1.0			FILL	Gravel [FILL] Loose, moist, dry, dark brown, silty SAND [FILL]	Airknife to 10 ft bgs to clear utilities and other underground obstructions.
				1.5					
5				1.2			SM	Loose, moist, brown, fine grained silty SAND (SM)	
				1.5					
10								Trace fine gravel	
				2.7			SP	Loose, moist, light brown, fine to medium grained SAND (SP)	
				1.5					
15		120	96	1.8					
				1.2					
				1.8					
20									
		120	108	1.2					
				1.0					

Completion Depth: 96.0 Ft bgs
Project No.: 21563721
Project Name: WRR Well Replacement
Drilling Contractor: Cascade Drilling LP
Driller Name: Dale Duscher
Drilling Method: Sonic
Drill Rig Type: Sonic
Logged by: M. Miller
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 50 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

- ▽ Water level at time of drilling
- ▼ Water level after drilling
- ATD - At time of drilling
- NE - None Encountered
- NA - Not Applicable

- Air Knife
- Sonic
- Concrete
- Cement/Bentonite Grout
- Bentonite Seal
- Filter Sand
- Screen
- Filter Sand No Screen

AECOM

USC based on field visual observations

AECOM (EV RON) LOG (EPA FORMA)+1 WELL P:\RESOURCES\G N DA AIG N \PROJEC S\21563721 WRR WELL REPLACEMEN GPJ P:\RESOURCES\G N DA AIG N \ENV RONMEN ALU\RSS LEV GLB 1/9/15

LOG OF BORING AND WELL CONSTRUCTION DETAIL

P-93C (replacement)

Sta t ng Date: 2/4/ 4
Comp et on Date: 2/4/ 4
Cas ng E evat on: 446 28
Ground E evat on: 444 50

Quadrangle
Sec:35
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792 77 50
E: (Y):2322335 96

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
30				0.6				SAME: Loose, moist, light brown, fine to medium grained SAND (SP)	
				1.1					
				0.9					
				1.5					
				0.9				6 inch Clayey layer	
35		120	108	1.8			SP		
				1.8					
				1.9					
40				13.4				Becomes medium dense to dense, brown, medium grained Trace fine gravel	
				42.0				Gravel grades out	
45		120	108	170.8					
				1564					Strong hydrocarbon odor
				2654				Becomes brownish gray	

Completion Depth: 96.0 Ft bgs
Project No.: 21563721
Project Name: WRR Well Replacement
Drilling Contractor: Cascade Drilling LP
Driller Name: Dale Duscher
Drilling Method: Sonic
Drill Rig Type: Sonic
Logged by: M. Miller
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 50 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Air Knife
Sonic
Concrete
Cement/Bentonite Grout
Bentonite Seal
Filter Sand
Screen
Filter Sand No Screen

AECOM

USC based on field visual observations

AECOM (EV RON) LOG (EPA FORMA)+1 WELL P:\RESOURCES\G N DA AIG N \PROJEC S\21563721 WRR WELL REPLACEMEN GPJ P:\RESOURCES\G N DA AIG N \ENV RONMEN ALU\RSS LEV GLB 1/9/15

LOG OF BORING AND WELL CONSTRUCTION DETAIL

P-93C (replacement)

Sta t ng Quadrangle
Date: 2/4/ 4 Sec:35
T:5N
Comp et on R:9W
Date: 2/4/ 4
Cas ng E evat on: 446 28 UTM (or State Plane) Coord
Ground E evat on: 444 50 N: (X):792 77 50
E: (Y):2322335 96

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
55		120	108	189.0				SAME: Loose, moist, brownish gray, fine to medium grained SAND (SP) Becomes wet	
				648.7					
				3447					
				6333					
60				4374					
				1611			SP		
				2815					
65		120	108	9588					
				7737					
				4003					
70				551.0					
		120	108	559.9					

Completion Depth: 96.0 Ft bgs
Project No.: 21563721
Project Name: WRR Well Replacement
Drilling Contractor: Cascade Drilling LP
Driller Name: Dale Duscher
Drilling Method: Sonic
Drill Rig Type: Sonic
Logged by: M. Miller
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD 080 012 305

Water Depth: 50 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Air Knife
Sonic
Concrete
Cement/Bentonite Grout
Bentonite Seal
Filter Sand
Screen
Filter Sand No Screen

AECOM

USC based on field visual observations

AECOM (EV RON) LOG (EPA FORMA)+1 WELL P:\RESOURCES\G N DA AIG N \PROJEC S\21563721 WRR WELL REPLACEMEN GPJ P:\RESOURCES\G N DA AIG N \ENV RONMEN ALI\URSS LEV GLB 1/9/15

LOG OF BORING AND WELL CONSTRUCTION DETAIL

P-93C (replacement)

Sta t ng Quadrangle
Date: 2/4/ 4 Sec:35
T:5N
R:9W
Comp et on
Date: 2/4/ 4
Cas ng E evat on: 446 28 UTM (or State Plane) Coord
Ground E evat on: 444 50 N: (X):792 77 50
E: (Y):2322335 96

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
80				339.8				SAME: Loose, wet, brownish gray, fine to medium grained SAND (SP)	
				559.3				Becomes medium to course grained	
				238.7					
				111.5					
				150.6					
85							SP		
				37.4					
		180	180	2.1					
90				3.5					
				1.7					
				3.0				Trace fine to medium gravel	
95								Bottom of boring at 95.5 ft.	

Monitoring well P 93C installed ~7 feet northeast of original well locaiton. This boring log was also used for installaionn of replacement monitoring well P 93A, which is ~7 feet east of this boring and ~6 feet north of its original well location.

Completion Depth: **96.0 Ft bgs**
Project No.: **21563721**
Project Name: **WRR Well Replacement**
Drilling Contractor: **Cascade Drilling LP**
Driller Name: **Dale Duscher**
Drilling Method: **Sonic**
Drill Rig Type: **Sonic**
Logged by: **M. Miller**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 50 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

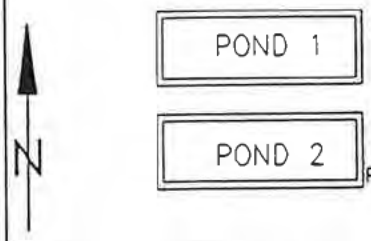
Air Knife
Sonic
Concrete
Cement/Bentonite Grout
Bentonite Seal
Filter Sand
Screen
Filter Sand No Screen

AECOM

USC based on field visual observations

AECOM (EV RON) LOG (EPA FORMA)+1 WELL P \RESOURCES\G N DA AIG N \PROJEC S\21563721 WRR WELL REPLACEMEN GPJ P \RESOURCES\G N DA AIG N \ENV RONMEN ALURSS LEV GLB 1/9/15

LOCATION MAP



SHELL OIL COMPANY

PAGE 1 OF 3

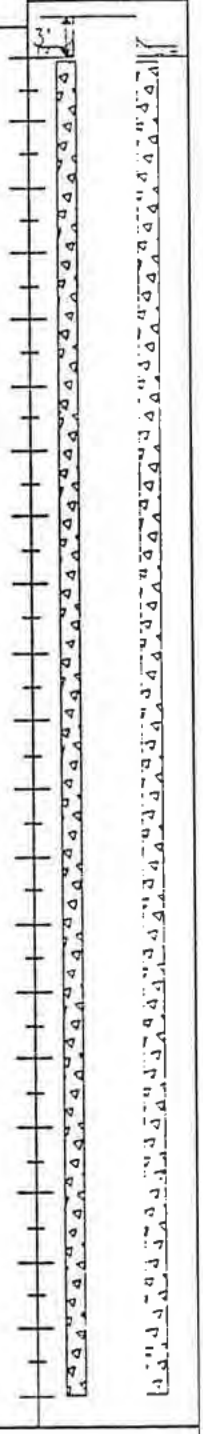
WELL NUMBER ▶ P-114	LOCATION ▶ E.SIDE POND 2
DATE ▶ 6-29-91	WEATHER ▶ PARTLY CLOUDY TEMP. 90'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 4.25" HOLLOW-STEM AUGER	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 50'-28' WB-40 SAND	SEAL ▶ 28'-26' BENTONITE

CASING ▶ TYPE STAINLESS STEEL 304 DIAMETER 2" LENGTH 30' HOLE DIA. 8.5"

SCREEN ▶ TYPE SS SLOT 0.01" DIAMETER 2" LENGTH 20' TOTAL DEPTH 30'

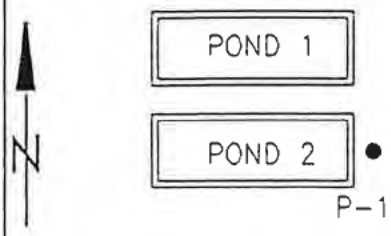
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
						0			0.00'-4.00' GRAVEL, limestone, black clay, red brick.
wet		stiff	plas	1	0.0	4	1.80	2 2 3 4	0.00'-0.32' CLAY and GRAVEL, black. 0.32'-1.80' CLAY, black to dark gray.
moist		stiff	plas	2	0.0	6	1.30	2 2 4 5	0.00'-1.30' CLAY, black to dark gray.
moist		stiff	plas	3	0.0	8	2.00	2 2 4 5	0.00'-2.00' CLAY, gray to light gray, light orange mottling.
moist		stiff	plas	4	0.0	10	1.42'	2 3 5 7	0.00'-1.42' CLAY, gray to light gray, light orange mottling.
moist		stiff	plas	5	0.0	12	2.00	2 2 2 4	0.00'-1.25' CLAY, gray to light gray, light orange mottling. 1.25'-2.00' SILT, dark gray, little clay.
moist	well	loose		6	0.0	14	1.32	2 2 2 5	0.00'-1.32' SILT, dark gray, little clay, trace of very fine-grain sand.
moist	well	loose		7	9.0	16	1.15	5 13 12 12	0.00'-0.15' SILT, dark gray, little clay, little very fine-grain sand. 0.15'-1.15' SAND, tan, very fine and fine-grain, trace of medium-grain.
moist	mod	loose		8	0.0	18	1.21	5 8 10 16	0.00'-1.21' SAND, tan, fine-grain, some very fine-grain, little medium-grain.
						20			

WELL COMPLETION



EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY

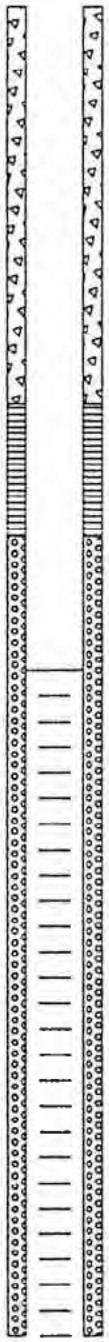
WELL NUMBER ▶ P-114		LOCATION ▶ E.SIDE POND 2	
DATE ▶ 6-29-91		WEATHER ▶ PARTLY CLOUDY TEMP 90'S	
LOGGED BY ▶ J.PAWLIK		DRILLED BY ▶ MATHES	
DRILLING METHOD ▶ 4.25" HOLLOW-STEM AUGER		SAMPLING METHOD ▶ 2.0' SPLIT-SPOON	
GRAVEL PACK ▶ 50'-28' WB-40 SAND		SEAL ▶ 28'-26' BENTONITE	

CASING ▶ TYPE STAINLESS STEEL 304 DIAMETER 2" LENGTH 30' HOLE DIA. 8.5"

SCREEN ▶ TYPE SS SLOT 0.01" DIAMETER 2" LENGTH 20' TOTAL DEPTH 50'

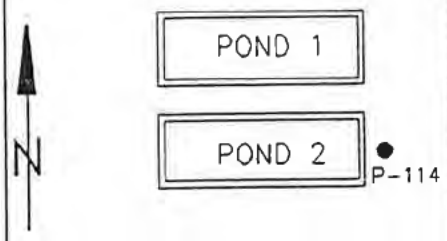
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	mod	loose		9	0.0	20-21	2.0'	4, 10, 13, 17	0.00'-2.00' SAND, tan, fine and medium-grain, some very fine-grain, trace of coarse-grain.
moist	mod	loose		10	0.0	22-23	1.36	6, 12, 16, 16	0.00'-1.36' SAND, tan, fine and medium-grain, some very fine-grain, trace of coarse-grain.
moist	mod	loose		11	0.0	24-25	1.54	3, 7, 15, 21	0.00'-1.54' SAND, tan, fine and medium-grain, some very fine-grain.
moist	well	loose		12	0.0	26-27	1.58	8, 15, 17, 19	0.00'-1.58' SAND, tan, medium-grain, some fine-grain, little very fine-grain.
moist	well	loose		13	0.0	28-29	1.42'	5, 10, 13, 15	0.00'-0.70' SAND, tan, medium-grain, some fine-grain, little very fine-grain.
moist	well	loose							0.70'-1.42' SAND, tan, very fine and fine-grain, trace of medium-grain.
moist	well	loose		14	0.0	30-31	1.42'	5, 10, 13, 15	0.00'-0.68' SAND, tan, very fine and fine-grain, trace of medium-grain.
moist	well	loose							0.68'-1.42' SAND, tan, medium-grain, some fine-grain, little very fine-grain.
moist	well	loose		15	0.0	32-33	2.0'	5, 9, 11, 12	0.68'-1.21' SAND, tan, medium-grain, some fine-grain, little very fine-grain.
moist	poor	loose							1.21'-2.00' SAND, tan, medium and coarse-grain, some fine-grain, little very fine-grain.
sat	poor	loose		16	0.0	34-35	▼ 1.67	3, 7, 11, 18	1.21'-1.67' SAND, tan, medium and coarse-grain, some fine-grain, little very fine-grain and fine gravel.
sat	poor	loose		17	0.0	36-37	0.92	9, 13, 18, 27	0.00'-0.92' SAND, tan, medium-grain, some fine-grain, little coarse and very fine-grain.
sat	poor	loose		18	0.0	38-39	1.06	8, 13, 20, 26	0.00'-1.06' SAND, tan, medium-grain, some fine-grain, little coarse and very fine-grain.
						40			

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY

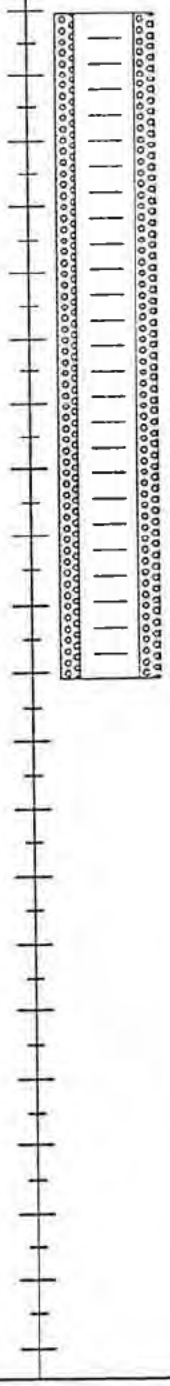
WELL NUMBER ▶ P-114	LOCATION ▶ E.SIDE POND 1
DATE ▶ 6-29-91	WEATHER ▶ PARTLY CLOUDY TEMP 90'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 4.25" HOLLOW-STEM AUGER	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 50'-28' WB-40 SAND	SEAL ▶ 28'-26' BENTONITE

CASING ▶ TYPE STAINLESS STEEL 304 DIAMETER 2" LENGTH 30' HOLE DIA. 8.5"

SCREEN ▶ TYPE SS SLOT 0.01" DIAMETER 2" LENGTH 20' TOTAL DEPTH 50'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
sat	poor	loose		19	0.0	40-42	1.21	7, 10, 19, 22	0.00'-1.21' SAND, tan, medium-grain, some fine-grain, little coarse and very fine-grain, trace of fine gravel.
sat	poor	loose		20	0.0	42-44	1.08	6, 11, 16, 21	0.00'-1.08' SAND, tan, medium-grain, some fine-grain, little coarse-grain, trace of fine gravel and coal.
sat	poor	loose		21	0.0	44-46	1.21	5, 9, 17, 21	0.00'-1.21' SAND, tan, medium-grain, some fine-grain, little very fine-grain, trace of fine gravel.
sat	poor	loose		22	0.0	46-48	1.21	5, 7, 14, 21	0.00'-1.21' SAND, tan, medium-grain, some fine-grain, little very fine-grain, trace of fine gravel.
sat	mod	loose		23	0.0	48-50	1.31	5, 9, 17, 25	0.00'-1.31' SAND, tan, fine and medium-grain, little very fine-grain, trace of coarse-grain.

WELL COMPLETION



EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

LOG OF BORING AND WELL CONSTRUCTION DETAIL

P-114R

Starting Date: 9/14/15
Completion Date: 9/15/15
Casing Elevation: 429.26
Ground Elevation: 429.58

Quadrangle
Sec:34
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):791384.5
E: (Y):2321181.1

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sample Graphic	Symbol	USCS	DESCRIPTION	NOTES
		12	12	4.9				Brown, silt and clay mixed with coarse gravel and sand, dry (FILL)	Airknifed to 10 feet below ground surface to clear for utilities and other underground obstructions.
		12	12	69.0					
		12	12	9.2			FILL	Black, silt and clay with fine coarse gravel and sand, wet (FILL)	
		12	12	70.8					
		12	12	350					
5		12	12	586			CL	Soft, moist, dark gray, medium plastic, CLAY (CL), trace fine black sand	
		12	12	489.3				Medium stiff, dark gray and brown, high plastic, CLAY (CH), with silt	
		12	12	380			CH		
		12	12	392					
		12	12	167.1					
10		36	36	67.5				Stiff, gray, medium plastic, Silty CLAY (CL), trace brown and orange mottles	
				11.4			CL	Becomes soft	
		60	60	8.8				Loose, dry to moist, light brown and orange, fine to medium grained, poorly graded SAND (SP), trace black	
15				5.5					
				9.0				1" medium stiff, moist, gray, low plastic, silt and clay seam	
20		60	48	3.3			SP	2" medium stiff, moist, gray, low plastic, silt and clay seam Trace coarse sand and fine gravel	
				22.2				Becomes moist, coarse sand and fine gravel grades out Becomes dry to moist	

Completion Depth: **34.0 Ft bgs**
Project No.: **60400249**
Project Name: **WRR - Monitoring Well Installation**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **Pat Seymour**
Drilling Method: **Geoprobe (direct push)**
Drill Rig Type: **8040 DT**
Logged by: **Brian Smith, Sam Fisher**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD080012305**

AECOM

Water Depth: 25.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

USC based on field visual observations

Air Knife/Hand Auger
Splitspoon Sampler
HSA No Soil Sample
Geoprobe
Concrete
Cement/Bentonite Grout
Bentonite Seal
Filter Sand
Screen

AECOM (EVIRON) LOG (EPA FORMAT)+1 WELL P:\RESOURCES\GINTDATA\GINT\PROJECTS\21563721.02009 (WRR-MONITORING WELL INSTALLATION P-114 REPLACEMENT).GPJ P:\RESOURCES\GINTDATA\GINT\ENVIRONMENTAL\AECOM STL (ENVIRONME

LOG OF BORING AND WELL CONSTRUCTION DETAIL

P-114R

Starting Date: 9/14/15
Completion Date: 9/15/15
Casing Elevation: 429.26
Ground Elevation: 429.58

Quadrangle
Sec:34
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):791384.5
E: (Y):2321181.1

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sample Graphic	Symbol	USCS	DESCRIPTION	NOTES
30		60	60	8.3			SP	Loose, wet, light brown and orange, fine to medium grained, poorly graded SAND (SP), trace black ▽	
				9.8					
		60	60	8.8					
				9.6					
				8.2					
35								Bottom of boring at 34' bgs	
40									
45									

Completion Depth: 34.0 Ft bgs
Project No.: 60400249
Project Name: WRR - Monitoring Well Installation
Drilling Contractor: Roberts Enviromental Drilling, Inc.
Driller Name: Pat Seymour
Drilling Method: Geoprobe (direct push)
Drill Rig Type: 8040 DT
Logged by: Brian Smith, Sam Fisher
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

AECOM

Water Depth: 25.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD At time of drilling
NE None Encountered
NA Not Applicable

USC based on field visual observations

Air Knife/Hand Auger
Splitspoon Sampler
HSA No Soil Sample
Geoprobe
Concrete
Cement/Bentonite Grout
Bentonite Seal
Filter Sand
Screen

AECOM (EVIRON) LOG (EPA FORMAT)+1 WELL P:\RESOURCES\GINTDATA\GINT\PROJECTS\21563721.02009 (WRR-MONITORING WELL INSTALLATION P-114 REPLACEMENT).GPJ P:\RESOURCES\GINTDATA\GINT\ENVIRONMENTAL\AECOM STL (ENVIRONME

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