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From: Gerald, Walter <WALTER.GERALD@aecom.com>
Sent: Friday, June 23, 2017 11:27 AM
To: Walker, Adelaide
Cc: Alexander, Leslee (Greenville); Kanistha.Coombs@utas.utc.com; Bill Penn
Subject: Delavan Site Groundwater Delineation Report

Hi Addie,
Please see the link below to download a .pdf copy of the Groundwater Delineation Report for the Delavan Spray Technologies Site, located in Bamberg, South Carolina. A printed hard copy of the report is being placed in the mail to you. For your convenience, we are also including a copy of the report on Compact Disk (CD).

Upon review, if you have any questions or need additional information, please feel free to contact me.
Regards,
Walter

Walter C. Gerald, PG
Manager - Earth Sciences Mid-Southeast
Design and Consulting Services Group
D +1-864-234-8925
M +1-864-313-4722
walter.gerald@aecom.com

AECOM
10 Patewood Drive
Building 6, Suite 500
Greenville, SC 29615, USA
T +1-864-234-3000
aecom.com

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AECOM Environment

Prepared for:
United Technologies Corp.
Hartford, Connecticut

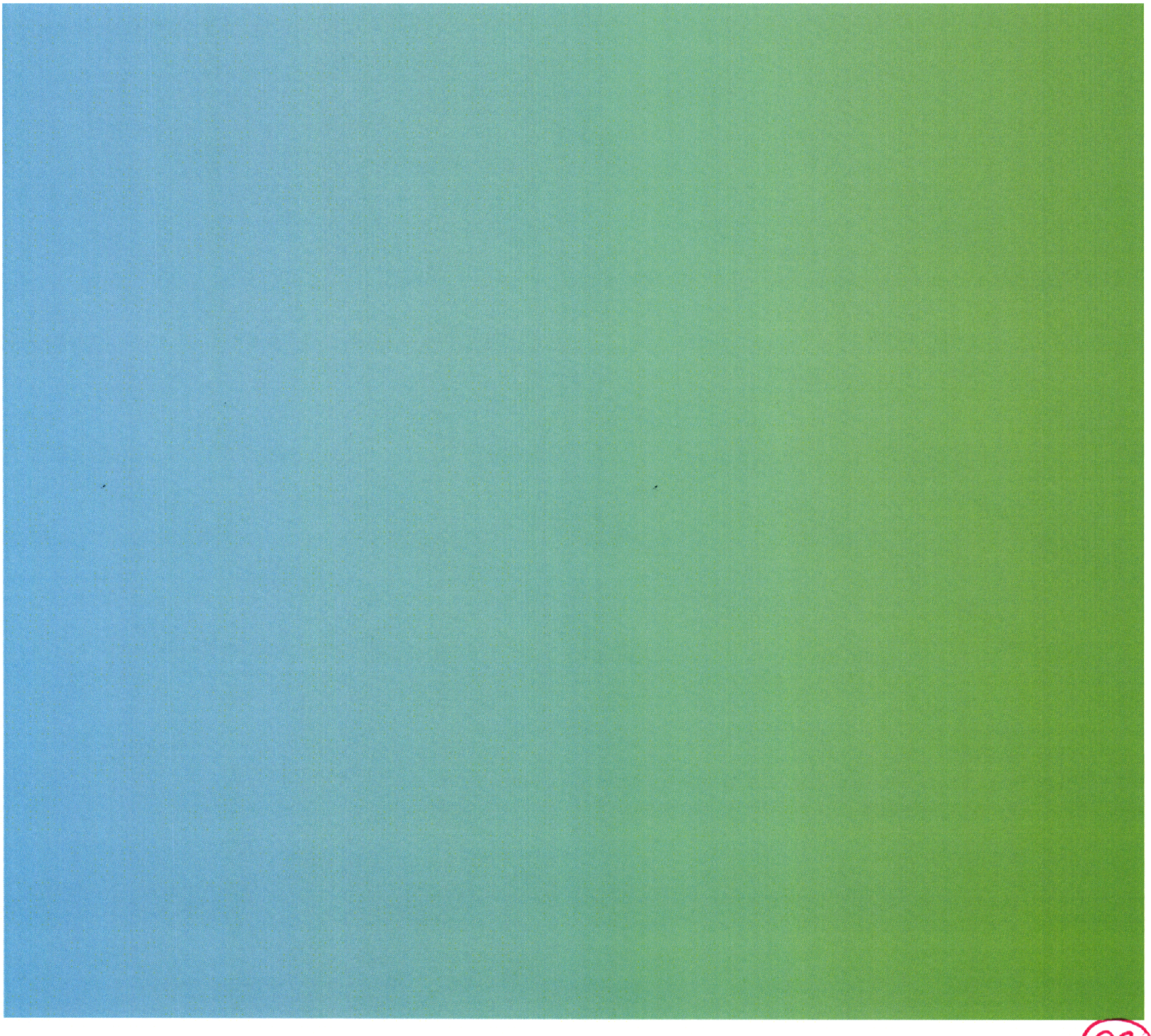
Prepared by:
AECOM Technical Services, Inc.
Greenville, SC

Groundwater Delineation Report

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SITE ASSESSMENT, REMEDIATION & REVITALIZATION

United Technologies Corporation
Delavan Spray Technologies Site
Bamberg, South Carolina
VCC 13-4762-RP
June 2017

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AECOM
10 Patewood Drive
Bldg. 6, Suite 500
Greenville, South Carolina 29615
www.aecom.com

864 234 3000 tel
864 234 3069 fax

June 23, 2017

Ms. Addie Walker, Project Manager
SC Department of Health and Environmental Control
Bureau of Land and Waste Management
2600 Bull Street
Columbia, SC 29201

Re: Groundwater Delineation Report
Delavan Spray Technologies Site
Bamberg, South Carolina
SCDHEC VCC Number 13-4762-RP
SCDHEC File Number 51778
AECOM Project Number 60314964

Dear Ms. Walker:

On behalf of United Technologies Corporation Aerospace Systems (UTAS), AECOM is providing you one (1) hard copy and one (1) electronic copy of the Groundwater Delineation Report for the Delavan Spray Technologies Site. This report presents the results from the implementation of the Groundwater Delineation Work Plan. The work plan was approved by SCDHEC in correspondence dated October 31, 2016 and subsequently revised on December 8, 2016.

If you have any questions or require further information, please feel free to contact me.

Sincerely,
AECOM Technical Services, Inc.

Walter C. Gerald

Walter C. Gerald, P.G.
Project Manager
864-234-8925
walter.gerald@aecom.com

cc: Mr. Bill Penn – United Technologies Corporation
Ms. Kanistha Coombs – UTAS
Project File 60314964

Groundwater Delineation Report

United Technologies Corporation
Delavan Spray Technologies Site
4334 Main Highway
US Highway 301 South
Bamberg, South Carolina

VCC 13-4762-RP

Prepared by:

AECOM Technical Services, Inc.
10 Patewood Drive
Building 6, Suite 500
Greenville, South Carolina

June 15, 2017

GROUNDWATER DELINEATION REPORT

UNITED TECHNOLOGIES CORPORATION (UTC)
DELAVAN SPRAY TECHNOLOGIES SITE
BAMBERG, SOUTH CAROLINA

RESPONSIBILITY PARTY VOLUNTARY CLEANUP CONTRACT NUMBER 13-4762

The undersigned certify that they have reviewed the attached document and that the document is in material compliance with the guidelines and requirements of the State of South Carolina and the South Carolina Department of Health and Environmental Control (SCDHEC) and specifically, requirements under the SCDHEC Voluntary Cleanup Contract (VCC). The data presentations contained herein are consistent with generally accepted practices in the environmental profession.

Prepared by:

Leslee J. Alexander, PG
South Carolina PG No. 2433
AECOM Project Hydrogeologist

June 23, 2017
Date

Reviewed by:

Walter C. Gerald, PG
South Carolina PG No. 146
AECOM Project Manager

June 23, 2017
Date

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1.0 INTRODUCTION

The Delavan Spray Technologies Site (the "Site") is located at 4334 Main Highway (US Highway 301 South) in the town of Bamberg, South Carolina (Figure 1). Previous assessments have documented chlorinated volatile organic compounds (VOCs) in soil and groundwater related to their historic use at the facility. Additional Site background and history were reported in detail in Section 2.0 of the *RI Report* (AECOM, July 2014).

In 2014 a Remedial Investigation (RI) was completed at the Site to assess soils, surface water, groundwater and vapor intrusion pathways. As part of the RI, a Baseline Risk Assessment (BRA) was performed to evaluate potential risks to human and ecological receptors.

No additional VOC source areas were identified in soil as a result of the RI. However, following their review of the RI report, SCDHEC requested additional soil assessment to delineate VOC impacts in the vicinity of the northern former degreaser and additional monitoring wells to delineate VOC impacts in the shallow and deeper (limestone) aquifers. The additional assessment activities were incorporated into the Post RI Work Plan (AECOM, 2015), which was implemented in late November 2015. The analytical results were presented in the Post RI Report (AECOM, 2016) and provided further delineation of VOCs in soil and groundwater at the Site.

Following the Post RI Report, SCDHEC requested a "work plan for delineation of the shallow and deep groundwater plumes." The *Groundwater Delineation Work Plan*, which included groundwater screening with temporary wells and permanent monitoring well installation, was submitted to SCDHEC on September 13, 2016. The work plan was approved by SCDHEC in correspondence dated October 31, 2016.

This report documents the activities and results of the groundwater delineation, which was implemented between March 27, 2017 and May 10, 2017.

1.1 Report Organization

This report documents the activities completed as part of the groundwater delineation and presents the results. The report is organized into five sections. Section 1 presents an introduction and overview of the project. The field and analytical methods used to generate the environmental quality data are outlined in Section 2. Section 3 discusses the environmental quality data and results of the field investigation. A summary and conclusions that may be drawn from the data is presented in Section 4. Pertinent references cited in the report are presented in Section 5.

2.0 GROUNDWATER DELINEATION ACTIVITIES

Field data acquisition methodologies were designed to be in general accordance with the United States Environmental Protection Agency (USEPA) Region 4 Science and Ecosystem Support Division (SESD) Field Branches Quality System and Technical Procedures document (http://www.epa.gov/region4/sesd/fbqstp/) (most recent version). Field activities were conducted in accordance with the *Groundwater Delineation Work Plan* (AECOM, September 2016; revised December 2016).

2.1 Pre-Investigation Activities

The borings for groundwater screening were located off-Site on the John T. Kinsey Property to the west of the Site and on the H. Bamberg IV Property to the south-southwest of the Site (Figure 2). An updated access agreement was obtained from the property owners prior to initiating delineation activities. While discussing the access agreement with Mr. Kinsey, he mentioned to the AECOM Project Manager that there was still a water supply well on his property. The location and status of the former water supply well were confirmed. The well is not currently in use and does not have a pump in it.

After obtaining off-Site property access and prior to conducting intrusive sampling activities, GEL Geophysics, LLC, a private utility locator from Charleston, South Carolina, was contracted to verify that the proposed sampling locations were not located in the immediate vicinity of potential private subsurface utilities.

Prior to mobilization, a monitoring well permit application was submitted to SCDHEC in the work plan (AECOM, September 2016). Monitoring well approval letters were issued by SCDHEC for the installation of the test borings for groundwater screening, installation of the shallow aquifer monitoring wells and installation of the deeper aquifer monitoring wells. The respective monitoring well approval letters are included in Appendix A.

2.2 Groundwater Delineation

Field activities were completed between March 27, 2017 and May 10, 2017. Nine shallow aquifer groundwater screening borings were proposed for installation on the Kinsey Property. One boring location, DPT-GW-9S, had to be moved further west because the proposed location is being used for storage by the property owner (Figure 3). Ten deeper limestone aquifer locations were proposed for installation on the Bamberg Property. One location, DPT-GW-3D, could not be installed because the area is wet/swampy and inaccessible to the drilling equipment.

Details regarding the field activities related to the groundwater delineation are presented in the subsections below. Field documentation is included in Appendix B. Soil boring details are summarized in Table 1.

Groundwater Screening

For shallow groundwater screening borings, a South Carolina licensed driller from SAEDACCO, Inc., used a direct push technology (DPT) track-mounted Geoprobe® 7822 to advance each boring to the target depth. The Geoprobe was equipped with dual-tube system consisting of a 2.25-inch macro-core with a 1.25-inch core for soil sampling. An AECOM geologist screened the soil for headspace using a photo-ionization detector (PID) and logged the lithology on Test Boring Reports (Appendix B). Once the boring reached the target depth of approximately 20 feet below ground surface (bgs) and there was sufficient water to collect a groundwater sample, a 4-foot long screen sampler was emplaced and groundwater was purged using a peristaltic pump.

Deeper limestone groundwater screening borings were installed by a South Carolina licensed driller from SAEDACCO, Inc. Most borings were installed using a direct push technology (DPT) track-mounted Geoprobe® 8140LS sonic rig. A Deidrich D50 hollow-stem auger rig with split-spoons was utilized to install DPT-GW-1D, -2D, and -4D when the sonic rig was down for repairs. The sonic rig used 6-inch diameter outer casing and a 4-inch diameter inner core barrel. Soil borings were screened for headspace using a PID and logged for lithology on Test Boring Reports (Appendix B). One to two groundwater grab samples were collected from each boring based on PID results. Groundwater screening samples were collected using a 5-foot long stainless steel screen with an inflatable packer made up to 2-inch steel threaded pipe. The assembly was inserted through the 6-inch sonic casing to the target sampling depth. The 5-foot long stainless steel screen was then pushed to target depth based on the evaluation of the sonic core. The packer assembly was then inflated with an air compressor to hydraulically seal off the sample depth interval. The water level was measured and a temporary well volume was calculated. A submersible pump was used to purge the groundwater.

Groundwater geochemical parameters (pH, temperature, specific conductance, dissolved oxygen, oxidation reduction potential, and turbidity) were measured during purging using a YSI-556 water quality meter. The groundwater samples were collected when pH, temperature, and specific conductance had stabilized to within 10 percent (0.2 standard units [s.u.] for pH) and were similar to nearby wells also completed within the limestone aquifer unit.

Groundwater screening samples were stored on ice under chain-of-custody procedures. Samples were transported to the analytical laboratory by a courier and submitted for analysis of tetrachloroethene (PCE) with a 24-hour turn-around time. Shealy Environmental Services, Inc., a SCDEC-certified laboratory located in West Columbia, South Carolina, analyzed the samples. Groundwater screening sample analytical data are included in Appendix C. Groundwater quality indicator parameters from the screening

samples are summarized in Table 2. The analytical results for PCE from the screening samples are summarized in Table 3.

Soil cuttings and drilling fluids were containerized in 55-gallon drums and stored at a designated location on-Site as investigation-derived waste (IDW) as described in Section 2.4 below. Borings and/or temporary wells installed for groundwater screening were abandoned by forced injection grouting from total depth to land surface with a neat bentonite/cement grout mixture.

Monitoring Well Installation

Per the *Groundwater Delineation Work Plan* (AECOM, September 2016; revised December 2016), up to two shallow aquifer monitoring wells were planned for the Kinsey Property and two to three deeper aquifer monitoring wells were planned for the Bamberg Property. An additional shallow monitoring well was added on the Kinsey Property based on screening sample results. Monitoring well locations were selected based on the PID results and PCE results, which are graphically summarized and presented on Table 4. These results were communicated with SCDHEC throughout the field activities and monitoring well locations were approved by SCDHEC prior to monitoring well installation. Monitoring well locations are shown on Figure 4.

Shallow aquifer monitoring wells were installed using hollow-stem auger techniques. The target for the shallow wells in the work plan was approximately 20 feet bgs, but the shallow aquifer monitoring wells (MW-27 through MW-29) were installed to approximately 29 feet bgs based on screening results and the occurrence of groundwater during drilling.

Deeper aquifer monitoring wells were installed using a Geoprobe® 8140LS sonic rig. The target depth for deeper aquifer monitoring wells in the work plan was approximately 50 feet, but the deeper aquifer monitoring wells (MW-30D though MW-32DR) were installed to approximately 60 feet bgs based on PID readings and groundwater screening results for PCE.

All monitoring wells were installed through the center of the sonic core barrel or hollow stem auger and were constructed of 2-inch diameter Schedule 40 polyvinylchloride (PVC) casing with a 10 foot, 0.010-inch machine slotted PVC screen. Filter sand was placed into the annular space of each well to approximately two-feet above the top of the well screens. A pelletized bentonite clay seal approximately 2 feet thick was placed in the annular space above the filter sand and hydrated with potable water, as necessary. As the filter sand and bentonite clay were added, the core barrels or augers were pulled from the borehole to ensure the annulus was completely filled. Depths to sand and bentonite were monitored with a weighted tape measure as the installation progressed. A neat cement-bentonite grout was then injected from above the bentonite seal to land surface via a tremie pipe as the core barrel or auger was pulled.

The surface completions for the shallow (Type I) and deep (Type II) monitoring wells consisted of an 8-inch diameter cast-iron vault with a bolt down lid. Each vault was set flush-mounted into a two-foot-by-two-foot square pad of high strength concrete, which served as a surface seal. Monitoring well construction details are summarized in Table 5. Monitoring well construction diagrams and SCDHEC Water Well Records are included in Appendix B.

The well screen in monitoring well MW-32D was found to be damaged during well development and groundwater sampling activities. Monitoring well MW-32D was abandoned using the procedures described below and monitoring well MW-32DR was installed using sonic technology as a replacement for MW-32D. After it was found to be damaged during well development activities, MW-32D was abandoned by forced injection grouting from total depth to land surface with a non-shrink neat bentonite/cement grout. The surface completion was removed and disposed as construction debris by SAEDACCO, Inc. The documentation for abandonment of MW-32D is included with SCDHEC Water Well Records in Appendix B.

Well Development

Upon installation, the groundwater monitoring wells were developed so that they produced representative groundwater samples. The monitoring wells were developed by AECOM personnel by surging and purging with an electric submersible pump. Groundwater indicator parameters (e.g. temperature, specific conductivity, dissolved oxygen [DO], pH, oxygen reduction potential [ORP] and turbidity) were measured using a YSI 556 water quality meter and recorded on AECOM Monitoring Well Development Logs included in Appendix B. Development of monitoring wells continued until parameters had stabilized and turbidity of the water was reduced as much as possible.

Purge water from well development was containerized in 55-gallon drums and stored at a designated location on-Site as IDW, as described in Section 2.4.

After groundwater sampling of MW-32D on April 13, 2017, the AECOM technician noticed that the measured well total depth was less than reported during installation of the well. AECOM personnel attempted to redevelop the well on April 14, 2017, but were unsuccessful in removing any material from the bottom of the well. Sand grains on the well development pump indicated that either the filter pack sand had inadvertently entered the well during installation, or the well screen was damaged during installation. AECOM personnel returned on April 27, 2017 with an air lift pump to try to remove the sand from the well. During these activities, additional sand came into the well, confirming that the well screen was damaged during installation. Monitoring well MW-32D was subsequently on May 8, 2017 and replaced with monitoring well MW-32DR, located approximately 15 feet from the initial MW-32D well location.

Surveying

Following well installation, the top of casing and land surface elevations and the horizontal locations of the new wells were surveyed by an AECOM surveyor licensed in South Carolina. Horizontal locations were reported in South Carolina State Plane Coordinates referenced to the NAD-83 to the nearest 0.01 foot. Ground surface elevations and well top of casing elevations were referenced to the NAVD-88 to the nearest 0.01 foot. The survey information is included in Tables 1 and 5 and was used to develop the location maps included as Figures 3 and 4.

Water Level Measurements

The depth to water from the surveyed top of casing measuring point from the six newly installed monitoring wells and all existing monitoring wells was measured during semi-annual groundwater sampling activities on April 12 and 13, 2017. An electric water level indicator was used to collect water level measurements in general accordance with the USEPA Region 4 SESD Groundwater Level and Well Depth Measurement Operating Procedure (USEPA, January 2013). Depth to water was corrected to groundwater elevations to provide an evaluation of groundwater occurrence and flow directions across the Site and the results are discussed in Section 3.1.

Groundwater Sampling

As part of the groundwater delineation activities, groundwater samples were collected from the newly installed monitoring wells during the spring 2017 semi-annual groundwater monitoring event, which was conducted between April 10, 2017 and April 13, 2017. Groundwater samples were collected using low flow/low stress sampling methods in accordance with the EPA's Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures (EPA/540/S-95/504 dated April 1996) and as described in Appendix B of the *RI Work Plan* (Hart & Hickman, August 2013). Groundwater sampling was completed using a peristaltic pump and flow-through cell for field parameter measurement. Sample bottles were placed in an ice-filled cooler, maintained under chain-of-custody protocol, and shipped to the analytical laboratory using Federal Express.

The samples from the newly installed monitoring well were analyzed for VOCs by USEPA Method 8260B, methane, ethane, and ethene by USEPA Method RSK 147, chloride, nitrate, nitrite, and sulfate by USEPA Method 9056, and total organic carbon by USEPA Method 5310. All groundwater samples were analyzed by SGS Accutest, Inc., a South Carolina-certified laboratory located in Orlando, Florida. Field measurements of DO, pH, conductivity, temperature, and ORP were collected from the sampled monitoring wells using a flow through cell and recorded on Field Data Logs for Groundwater Sampling. These records are included in Appendix A of the *Spring 2017 Semi-Annual Groundwater Monitoring Report* (AECOM, June 2017a), which is being submitted to SCDHEC under separate cover concurrently with this report.

As discussed in Section 3.2, groundwater quality data from the new monitoring wells was used in conjunction with data collected from the existing wells during the spring 2017 semi-annual monitoring event to evaluate the occurrence and distribution of chlorinated VOCs in the two aquifer units beneath the Site.

2.3 Slug Testing

Slug tests were performed in the newly installed shallow monitoring wells MW-27, MW-28, and MW-29 and newly installed deeper monitoring wells MW-30D, MW-31D, and MW-32DR in order to evaluate hydrologic properties of the aquifers beneath the Site. Slug tests were conducted using falling head and rising head tests. Falling head tests were conducted by quickly inserting a decontaminated, solid PVC cylinder (aka, "slug") into the well, observing an instantaneous rise in the water level, and monitoring the water level as it declined downward toward the static level. Rising head tests were conducted by quickly removing the slug from a well and monitoring the water level as it rose up toward the static level.

Prior to initiating the test, the static water level in the well was measured with an electronic water level meter and recorded. A decontaminated pressure transducer was then lowered at least 8 to10 feet below the static water level or within one foot of the bottom of the well. The static water level was again measured and recorded and the measurement was repeated until water level equilibrium was verified (i.e., two equal readings taken at least five minutes apart). The slug was then attached to clean, new synthetic rope. The falling head test was initiated by instantaneously lowering the cylinder into the well, resulting in an immediate water level rise. The data logger was activated to measure the declining (falling) water levels. When the water level had returned to static conditions, the rising head slug test was conducted. For the rising head test, the data logger was activated as the cylinder was instantaneously removed from the well (resulting in an immediate water level decline) and the rising water levels were measured. Water levels were monitored until they were within 10 percent of their original static level.

Multiple tests were conducted on each well to ensure a representative test result. Due to the fast response to the slug insertion and removal in the deeper aquifer monitoring wells, extra tests were conducted on these wells in order to assure that sufficient data were captured to quantify the response. The results of the slug testing are discussed in Section 3.3 of this Report.

2.4 Investigation-Derived Waste Management

IDW consisting of decontamination water, well development/purge water, and soil cuttings from drilling activities was containerized in 55-gallon steel drums, labeled, and temporarily staged on-Site until receipt of characterization analysis. Details regarding the drum contents, date filled, and date sampled were recorded on the IDW Management form included in Appendix B.

For characterization and disposal purposes, one composite sample was collected from the drums of IDW soil from each off-Site property and submitted to SGS Accutest, Inc. for analysis of Toxicity Characteristic Leaching Procedure (TCLP) VOCs (USEPA Method 8260B), TCLP semi-volatile organic compounds (SVOCs; USEPA Method 8270D), and TCLP priority pollutant metals (USEPA Methods 6010C and 7470B). One composite sample from the drums of aqueous IDW from each off-Site property was collected for analysis of VOCs (USEPA Method 8260B), SVOCs (USEPA Method 8270D), and priority pollutant metals (USEPA Methods 6010C and 7470B) by SGS Accutest, Inc. Drums of well development/purge water were characterized using sampling results from the monitoring wells.

Once received, the characterization and monitoring well sampling data was provided to the Environment, Health, and Safety (EH&S) contact at the UTC Delavan Spray Technologies Facility for use in IDW profiling and subsequent disposal by the Facility. The IDW characterization results are discussed in Section 3.4 below.

3.0 INVESTIGATION RESULTS

Results of environmental and hydrogeologic testing are presented in the subsections below. Analytical data are summarized in Tables 3, 6, 8 and 9. Analytical data and data validation reports for groundwater screening and IDW samples are presented in Appendix C. Analytical data from the groundwater monitoring wells can be found in Appendix B of the *Spring 2017 Semi-Annual Groundwater Monitoring Report* (AECOM, June 2017a). Hydrogeologic test results are summarized in Table 7 and presented in Appendix D.

3.1 Potentiometric Maps

The potentiometric maps for the shallow aquifer and deeper limestone aquifer groundwater are discussed briefly below. For a more detailed discussion, please see the *Spring 2017 Semi-Annual Groundwater Monitoring Report* (AECOM, June 2017a), which is being submitted to SCDHEC under separate cover.

Figure 5 illustrates the potentiometric map for the shallow aquifer from the *Spring 2017 Semi-Annual Groundwater Monitoring Report* (AECOM, June 2017a). The three newly installed wells on the Kinsey property to the west of the Site indicate the presence of an isolated groundwater high at MW-27. Future measurements will be needed to determine if this high is an anomaly or a persistent feature. However, data from the new wells are consistent with findings from prior investigations conducted at the Site, which indicate that the primary horizontal groundwater flow direction is toward the west, toward Halfmoon Branch.

The deeper aquifer potentiometric map from the *Spring 2017 Semi-Annual Groundwater Monitoring Report* (AECOM, June 2017a) is included as Figure 6. As shown by the equal potential lines, the groundwater elevations in the newly installed wells indicate that the horizontal groundwater flow direction is to the south-southwest, which is consistent with regional topography, drainage and findings from prior investigations conducted at the Site.

3.2 Groundwater Quality

Groundwater Screening Samples

PCE results from the groundwater screening samples are summarized on Table 3.

With the exception of the groundwater sample from 25 feet to 29 feet bgs at GW-DPT-7S (0.72 J micrograms per liter [(µg/L]) and 25 feet to 29 feet bgs at GW-DPT-9S (10 µg/L), the PCE in shallow aquifer screening samples on the Kinsey Property were below the method detection limit. The locations of GW-DPT-4S and GW-DPT-2S were converted to shallow monitoring wells MW-27 and MW-28, respectively, to help define the groundwater flow in the shallow aquifer immediately west of the Site.

Since the location of GW-DPT-9S had the highest detected concentration of PCE in the screening samples and the only detected concentration that exceed the maximum contaminant level (MCL) for PCE in groundwater (5 µg/L), it was converted to shallow monitoring well MW-29.

Detected PCE concentrations exceeded the MCL for PCE in all deeper limestone aquifer screening samples. PCE results in deeper aquifer screening samples ranged from 15 µg/L in GW-DPT-2D-50 (collected from 45 feet to 50 feet bgs) to 210 µg/L in GW-DPT-6D-61 (collected from 56 feet to 61 feet bgs). The locations of GW-DPT-10D and GW-DPT-6D were converted to deeper aquifer monitoring wells MW-30D and MW-31D, respectively, to help delineate the plume along the western boundary of the investigation area. The location of GW-DPT-2D, was converted to MW-32D (and, subsequently, to MW-32DR) to provide additional delineation along the margins of the plume to the south adjacent to the powerline right-of-way.

Groundwater Monitoring Well Samples

Following installation and development, groundwater samples from monitoring wells MW-27 through MW-29 and MW-30D through MW-32D were analyzed for VOCs and monitored natural attenuation (MNA) parameters (i.e., methane, ethane, ethane, chloride, nitrate, nitrite, sulfate, and total organic carbon). Groundwater sampling results for new groundwater monitoring wells are presented in Table 6 and analytical data packages are presented in Appendix B of the *Spring 2017 Semi-Annual Groundwater Monitoring Report* (AECOM, June 2017a). The results are discussed briefly below. For a complete discussion of the sampling results, please see the *Spring 2017 Semi-Annual Groundwater Monitoring Report* (AECOM, June 2017a).

PCE was the only detected VOC in the newly installed shallow monitoring wells. PCE was detected at concentrations below the MCL in shallow monitoring wells MW-27 (1 µg/L) and MW-28 (0.24 J µg/L - estimated). These wells define the western limit of the on-Site plume of PCE in shallow groundwater (Figure 7). The detected concentration of PCE in MW-29 (5.4 µg/L) was just above the MCL (5 µg/L). The detected concentration appears to be an isolated area and may represent the remnants of mass that has disconnected from the main body of the plume. Additional sampling will be performed during semi-annual monitoring to evaluate its persistence. Shallow monitoring wells MW-15 and MW-16 continue to confirm the westward limits of the PCE plume in the shallow aquifer as the results from these wells continued to be non-detect for PCE during the spring 2017 semi-annual groundwater monitoring (Figure 7 and AECOM, June 2017a).

In the deeper limestone aquifer monitoring wells MW-30D through MW-31D, eight VOCs (1,1-dichloroethene [1,1-DCE], 4-methyl-2-pentanone [MIBK], bromodichloromethane, chloroform, cis-1,2-dichloroethene [cis-1,2-DCE], ethylbenzene, PCE, trichloroethene [TCE], and xylene) were detected. As illustrated in Figure 8, the detected concentrations of PCE in newly installed monitoring wells MW-30D (75.2 µg/L), MW-31D (89.2 µg/L), and MW-32D (25 µg/L) exceeded the MCL for PCE (5 µg/L). None of

the other detected compounds exceeded their respective MCLs in the deeper aquifer monitoring wells. MW-30D and MW-31D appear to be in the core of the dilute PCE plume as it moves off-Site to the southwest in deeper groundwater. The location of monitoring well MW-32D appears to be outside of the centerline of the plume and helps to delineate the occurrence of PCE on the southern edge of the plume near the powerline right-of-way.

Assessment Quality Control Samples

For groundwater screening samples collected from the soil borings for analysis of PCE, trip blanks were collected to verify that no contaminants were introduced during transport that may affect the sample results. No other quality control (QC) samples were collected for the screening samples. Data packages were reviewed for completeness but data validation was not necessary to be performed on the screening samples.

In accordance with Appendix B of the *RI Work Plan* (Hart & Hickman, August 2013) and Section 2.9 of the *Groundwater Delineation Work Plan* (AECOM, September 2016; revised December 2016), QC samples for groundwater samples from the monitoring wells included trip blanks, field duplicates, and matrix spike/matrix spike duplicates. QC sample results for groundwater are presented in Table 5 of the *Spring 2017 Semi-Annual Groundwater Monitoring Report* (AECOM, June 2017a).

The data validation process did not result in the rejection of any data. Therefore, the data associated with this event should be considered compliant and adequate for its intended use.

3.3 Hydrogeologic Properties

Slug test data were analyzed using Aqtesolv® version 4.5 – Professional (Duffield, 2007), a commercially available software package, and the methods of Bouwer and Rice (1976), Bouwer (1989) and Springer and Gelhar (1991). The Bouwer and Rice technique is valid for water table or confined aquifers with partially- or fully-penetrating wells and was used for all shallow wells where slug tests were conducted at the Site. The Springer and Gelhar solution extends the Bouwer and Rice method to include inertial effects in the test well and accounts for oscillatory water-level response sometimes observed in aquifers of high hydraulic conductivity. Since the deeper aquifer monitoring wells exhibited an oscillatory response, the Springer and Gelhar solution was used to analyze slug tests from these wells. The Bouwer and Rice method was also used to analyze slug tests from select deeper aquifer monitoring wells where sufficient data were available.

In certain situations, the data from the wells exhibit what is known as the “double straight-line effect” in response to a slug test. Graphs of slug test data exhibiting this effect are concave-up, and the multiple “straight-line” portions of the graph can lead to erroneous matching. Butler (1998) recommends matching to a normalized head (i.e., displacement at any given time divided by the initial displacement) range of

0.20 to 0.30 to increase the reliability of matching when using Bouwer and Rice. This correction is incorporated in the Aqtesolv® software package and was utilized for the analyses included in Appendix D and summarized in Table 7. The recommended head range is distinguished by horizontal dotted lines on the graphs in Appendix D and was utilized as a guide for wells exhibiting the "double straight-line effect".

The Bouwer and Rice solution was only considered valid in deeper aquifer monitoring wells if sufficient data existed in the normalized head range recommended by Butler. Other results for Bouwer and Rice are discarded from the summary statistics in Table 7. Results that were discarded from the slug tests statistics are explained in the comments on Table 7.

The estimated horizontal hydraulic conductivity values for the newly installed shallow monitoring wells ranged from 0.215 feet per day (ft/day) in MW-28 to 0.701 ft/day in MW-29, with a geometric mean of 0.355 ft/day. The estimated horizontal hydraulic conductivity values for the newly installed deeper aquifer monitoring wells ranged from 10.7 ft/day in MW-31D to 161 ft/day in MW-30D, with a geometric mean of 63.5 ft/day. These values are similar to those previously estimated for shallow and deeper aquifer wells in the Site vicinity.

3.4 Investigation-Derived Waste

Results for the solid and aqueous IDW samples are presented in Tables 8 and 9, respectively, along with the associated USEPA Maximum Concentration of Contaminants for the Toxicity Characteristic (40CFR§261.24 Toxicity Characteristic, 2007). Although several compounds were detected in the IDW samples, none of the concentrations exceeded the maximum value for toxicity characteristic. Therefore, based on the analytical testing, the IDW was not characteristically hazardous for disposal purposes.

Waste profiling and disposal is being coordinated by the local EH&S contact at the Delavan Facility.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions can be made from the data collected during this investigation:

- The horizontal hydraulic conductivity in the shallow aquifer estimated from slug tests was 0.215 ft/day to 0.701 ft/day, with a geometric mean of 0.355 ft /day. This is comparable to previous slug test results from the shallow aquifer which yielded a geometric mean hydraulic conductivity of 0.350 ft/day (AECOM, May 2016).
- The horizontal hydraulic conductivity in the deeper aquifer estimated from slug tests was 10.7 ft/day to 161 ft/day, with a geometric mean of 63.5 ft /day. This is comparable to previous slug test results from the deeper aquifer which yielded a geometric mean hydraulic conductivity of 47.8 ft/day (AECOM, May 2016).
- Newly installed shallow monitoring wells MW-27 and MW-28 had detected PCE concentrations below the MCL (5 µg/L) and delineate PCE plume in the shallow aquifer on the west edge of the Site.
- The detected concentration of PCE in newly installed shallow monitoring well MW-29 (5.4 µg/L) exceeds the MCL for PCE (5 µg/L). This concentration appears be isolated and may represent remnants of mass that has disconnected from the main body of the plume. Additional sampling during semi-annual monitoring events is needed to further evaluate PCE occurrence in this well.
- Newly installed monitoring wells MW-30D through MW-32D confirmed the presence of PCE above the MCL in the deeper limestone aquifer to the western boundary of the investigation area. Deeper aquifer monitoring wells MW-30D and MW-31D appear to be in the core of the dilute PCE plume as it moves off-Site to the southwest in deeper groundwater. The location of monitoring well MW-32D appears to be outside of the centerline of the plume and helps to delineate it on the southern edge of the plume near the powerline right-of-way. Additional sampling during semi-annual monitoring events is needed to further evaluate PCE trends in these off-Site monitoring wells.

Based on the data collected to date and the results of this investigation, it is recommended that semi-annual groundwater monitoring continue for the Site. AECOM proposes to add sampling for VOCs in wells MW-27 through MW-29 and MW-30D, MW-31D, and MW-32DR to the currently approved sampling plan for 2017. The next event is currently scheduled for October 2017.

Further delineation results have confirmed that PCE is migrating off-Site in the deeper aquifer to the southwest. Additional delineation is needed to the south and southwest to define the extents of the plume.

The existing data from the RI confirm the presence of VOCs, especially PCE, in subsurface soil samples (AECOM, 2014). Furthermore, concentrations of PCE, and, in some cases, TCE, cis-1,2-DCE, 1,1-DCE and methylene chloride, exceeded their respective MCL-based SSL in one or more subsurface soil

samples collected during the RI and post RI. Groundwater concentrations of PCE are highest beneath the Delavan Facility in the immediate vicinity of former PCE degreasers, and analytical data indicate that these suspected “source areas” are contributing to the on-going groundwater plume beneath the Site.

As recommended by AECOM in the *Post Remedial Investigation Report* (AECOM, May 2016) and approved by SCDHEC in correspondence dated October 31, 2016, UTC and AECOM are in the process of completing a Focused Feasibility Study (FFS) Report (AECOM, June 2017b). The FFS will evaluate remedial alternatives to treat the residual VOC source areas beneath the manufacturing building. While AECOM and UTC acknowledge that is premature to complete a feasibility study for the entire Site before the plume is completely delineated, the FFS is designed to provide the framework to begin the addressing residual source areas while the delineation is being completed. Pending SCDHEC review and approval of the *FFS Report*, AECOM and UTC will begin development of a pilot study work plan to test the ability of one or more remedial technologies to act as interim measures to mitigate the on-going shallow groundwater plume of VOCs on-Site and deeper aquifer migration of VOCs off-Site.

5.0 REFERENCES

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SCDHEC, April 4, 2017. Correspondence regarding Status Report and Monitoring Well Installation Request dated April 3, 2017, Goodrich Delavan Spray Technology Site, Bamberg County, VCC #13-4762-RP, File #51778 (Former Site ID ##02211).

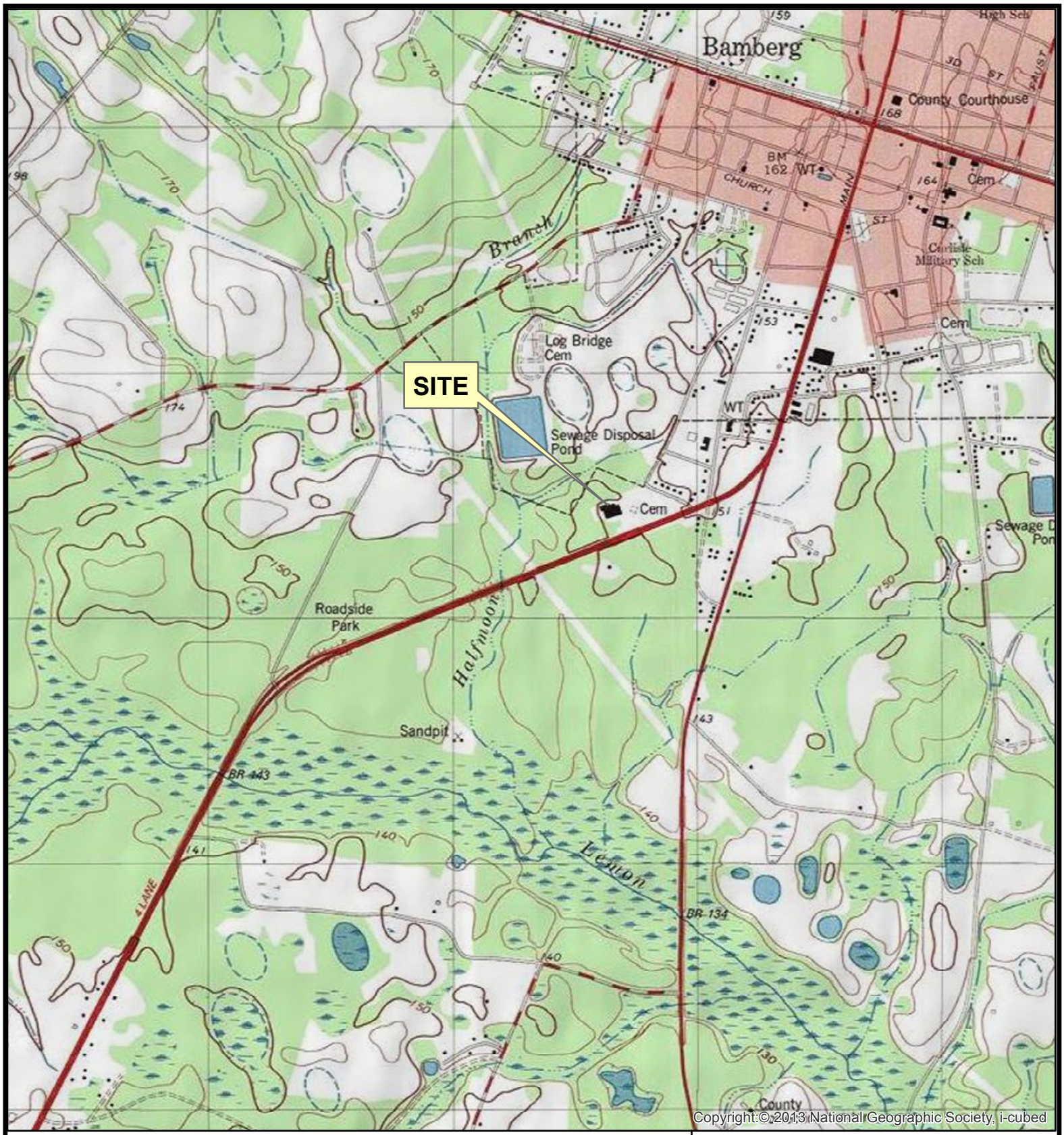
SCDHEC, April 10, 2017. Correspondence regarding Status Report and Monitoring Well Installation Request dated April 10, 2017, Goodrich Delavan Spray Technology Site, Bamberg County, VCC #13-4762-RP, File #51778 (Former Site ID ##02211).

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USEPA, January 2013. *USEPA Region 4 SESD Groundwater Level and Well Depth Measurement Operating Procedure*.

FIGURES



N

0 500 1,000 2,000 3,000 4,000
Feet

U.S.G.S. QUADRANGLE MAP

BAMBERG, SC 1979 (PHOTO REVISED 1987)

QUADRANGLE
7.5 MINUTE SERIES (TOPOGRAPHIC)

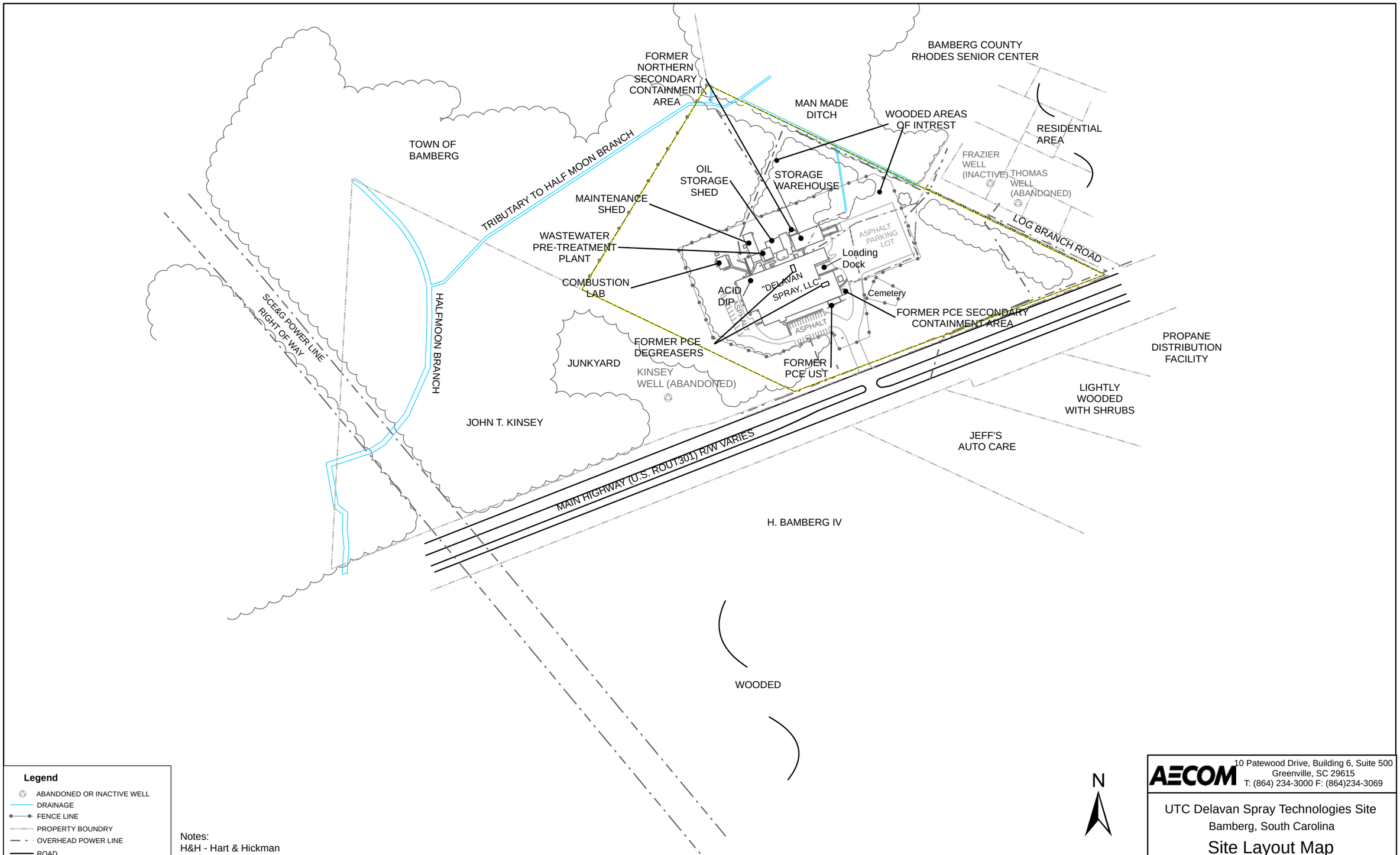
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Greenville, SC 29615
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UTC Delavan Spray Technologies Site
Bamberg, South Carolina

Site Location Map

Project No.	Prepared by	Date	
60314964	K. Clark	June 2017	Figure 1

Path: L:\Projects\60314964\900-CAD-GIS\920 GIS-Graphics\Maps\June 2017\Figure 1 Site Location Map.mxd



Legend

- ABANDONED OR INACTIVE WELL
- DRAINAGE
- FENCE LINE
- PROPERTY BOUNDRY
- OVERHEAD POWER LINE
- ROAD
- SANITARY SEWER LINE
- STORM DRAIN
- SUBJECT PROPERTY BOUNDRY

Notes:
H&H - Hart & Hickman
RI - Remedial Investigation
1. Base map obtained from surveys prepared by Edisto Engineers & Surveyors, Inc. (dated 6/3/2011 and 4/14/2014) and from Work Plan maps provided by H&H (August 2013).

N

0 250 500 750 Feet

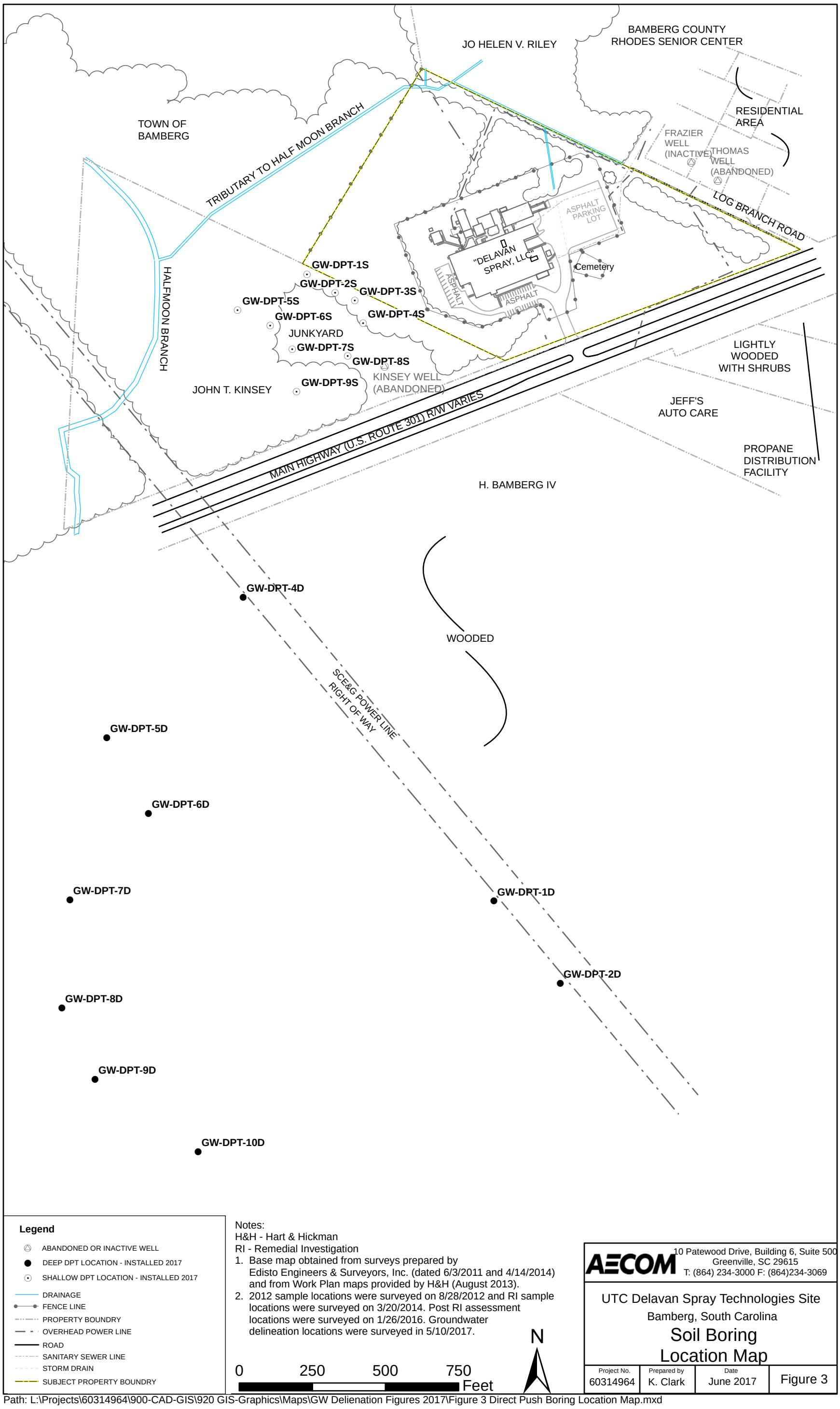
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Site Layout Map

Project No.	Prepared by	Date	
60314964	K. Clark	June 2017	Figure 2

Path: L:\Projects\60314964\900-CAD-GIS\920 GIS-Graphics\Maps\GW Delienation Figures\Figure 2 Site Layout.mxd



Legend

- ABANDONED OR INACTIVE WELL
- DEEP DPT LOCATION - INSTALLED 2017
- SHALLOW DPT LOCATION - INSTALLED 2017
- DRAINAGE
- FENCE LINE
- PROPERTY BOUNDRY
- OVERHEAD POWER LINE
- ROAD
- SANITARY SEWER LINE
- STORM DRAIN
- SUBJECT PROPERTY BOUNDRY

Notes:
H&H - Hart & Hickman
RI - Remedial Investigation

1. Base map obtained from surveys prepared by Edisto Engineers & Surveyors, Inc. (dated 6/3/2011 and 4/14/2014) and from Work Plan maps provided by H&H (August 2013).
2. 2012 sample locations were surveyed on 8/28/2012 and RI sample locations were surveyed on 3/20/2014. Post RI assessment locations were surveyed on 1/26/2016. Groundwater delineation locations were surveyed in 5/10/2017.

0 250 500 750 Feet

N

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UTC Delavan Spray Technologies Site
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Soil Boring Location Map

Project No.	Prepared by	Date	
60314964	K. Clark	June 2017	Figure 3

Path: L:\Projects\60314964\900-CAD-GIS\920 GIS-Graphics\Maps\GW Delienation Figures 2017\Figure 3 Direct Push Boring Location Map.mxd

JO HELEN V. RILEY

BAMBERG COUNTY
RHODES SENIOR CENTER

RESIDENTIAL
AREA

TOWN OF
BAMBERG

TRIBUTARY TO HALF MOON BRANCH

FRAZIER
WELL
(INACTIVE)

THOMAS
WELL
(ABANDONED)

LOG BRANCH ROAD

ASPHALT
PARKING
LOT

"DELAVAN
SPRAY, LLC"

Cemetery

ASPHALT

ASPHALT

HALFMOON BRANCH

MW-28

MW-27

JUNKYARD

KINSEY
WELL (ABANDONED)

LIGHTLY
WOODED
WITH SHRUBS

JOHN T. KINSEY

MW-29

JEFF'S
AUTO CARE

MAIN HIGHWAY (U.S. ROUTE 301) R/W VARIES

PROPANE
DISTRIBUTION
FACILITY

H. BAMBERG IV

SCE&G POWER LINE
RIGHT OF WAY

WOODED

MW-31D

MW32D

MW32DR

MW-30D

Legend

- ABANDONED OR INACTIVE WELL
- DEEP WELL - INSTALLED 2017
- SHALLOW WELL - INSTALLED 2017
- DRAINAGE
- FENCE LINE
- PROPERTY BOUNDRY
- OVERHEAD POWER LINE
- ROAD
- SANITARY SEWER LINE
- STORM DRAIN
- SUBJECT PROPERTY BOUNDRY

Notes:
H&H - Hart & Hickman
RI - Remedial Investigation

1. Base map obtained from surveys prepared by Edisto Engineers & Surveyors, Inc. (dated 6/3/2011 and 4/14/2014) and from Work Plan maps provided by H&H (August 2013).
2. 2012 sample locations were surveyed on 8/28/2012 and RI sample locations were surveyed on 3/20/2014. Post RI assessment locations were surveyed on 1/26/2016. Groundwater delineation locations were surveyed on 5/10/2017

0 250 500 750 Feet

N

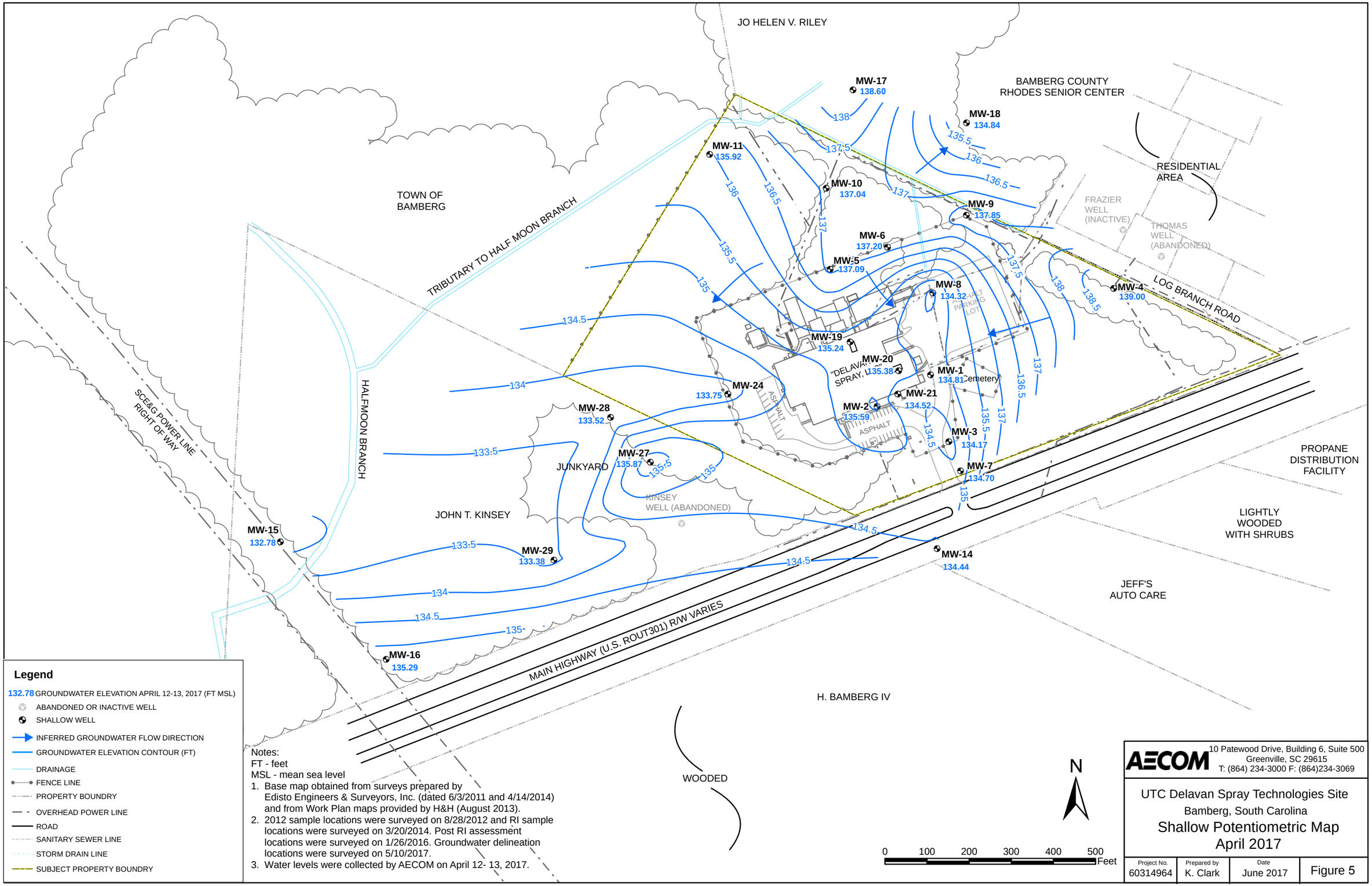
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UTC Delavan Spray Technologies Site
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Monitoring Well Location Map

Project No.	Prepared by	Date	
60314964	K. Clark	June 2017	Figure 4

Path: L:\Projects\60314964\900-CAD-GIS\920 GIS-Graphics\Maps\GW Delienation Figures 2017\Figure 4 Monitoring Well Location Map.mxd



Legend

- 132.78 GROUNDWATER ELEVATION APRIL 12-13, 2017 (FT MSL)
- ABANDONED OR INACTIVE WELL
- SHALLOW WELL
- INFERRED GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR (FT)
- DRAINAGE
- FENCE LINE
- PROPERTY BOUNDRY
- OVERHEAD POWER LINE
- ROAD
- SANITARY SEWER LINE
- STORM DRAIN LINE
- SUBJECT PROPERTY BOUNDRY

Notes:
FT - feet
MSL - mean sea level

1. Base map obtained from surveys prepared by Edisto Engineers & Surveyors, Inc. (dated 6/3/2011 and 4/14/2014) and from Work Plan maps provided by H&H (August 2013).
2. 2012 sample locations were surveyed on 8/28/2012 and RI sample locations were surveyed on 3/20/2014. Post RI assessment locations were surveyed on 1/26/2016. Groundwater delineation locations were surveyed on 5/10/2017.
3. Water levels were collected by AECOM on April 12- 13, 2017.

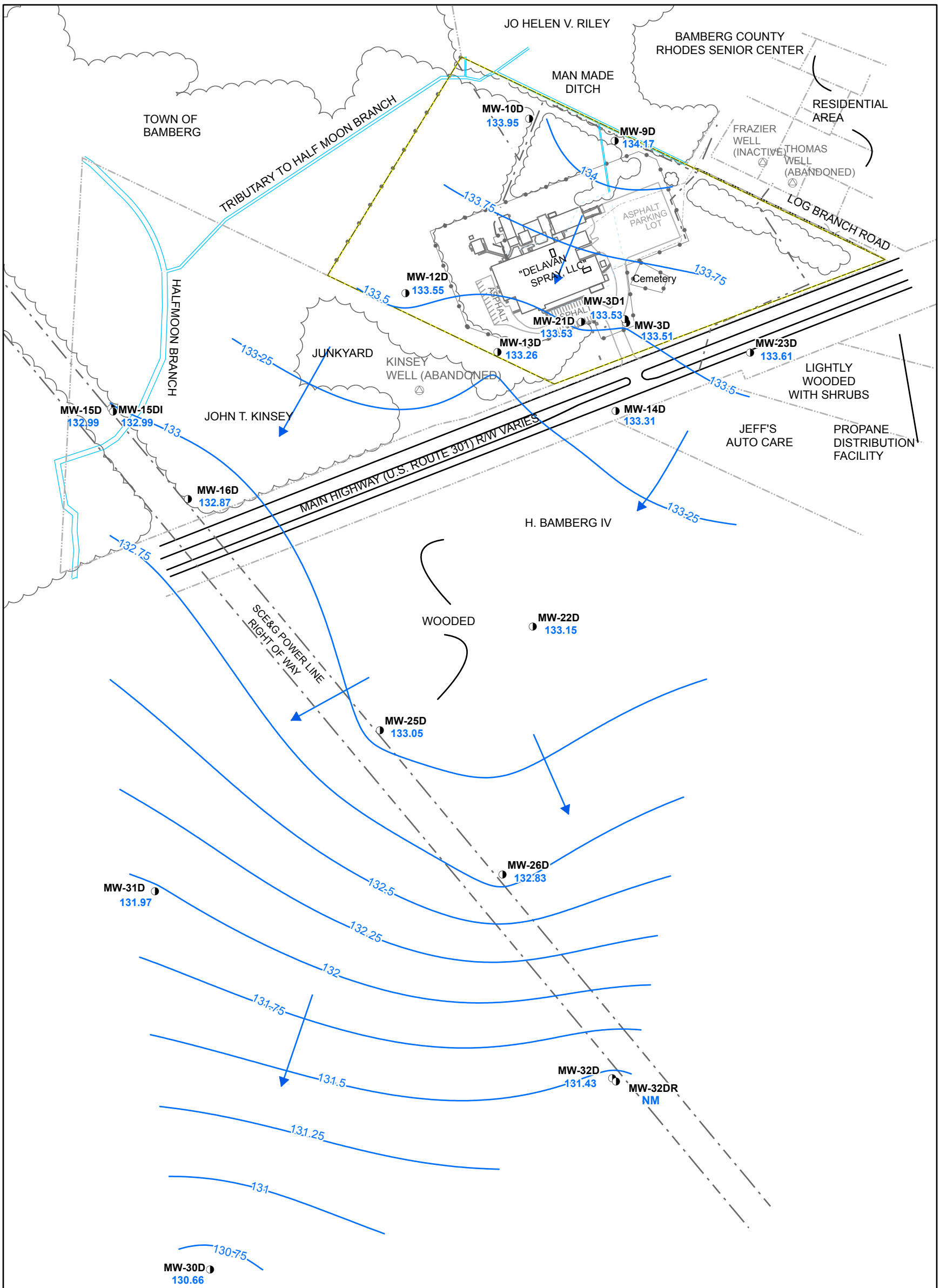
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Greenville, SC 29615
T: (864) 234-3000 F: (864)234-3069

UTC Delavan Spray Technologies Site
Bamberg, South Carolina

Shallow Potentiometric Map
April 2017

Project No.	Prepared by	Date	
60314964	K. Clark	June 2017	Figure 5

Path: L:\Projects\60314964\900-CAD-GIS\920 GIS-Graphics\Maps\June 2017\Figure 3 ShallowPot.mxd



Legend

- 130.66 GROUNDWATER ELEVATION APRIL12-13, 2017 (FT MSL)
- ABANDONED OR INACTIVE WELL
- DEEP WELL
- INFERRED GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR (FT) (DASHED WHERE INFERRED)
- DRAINAGE
- FENCE LINE
- PROPERTY BOUNDRY
- OVERHEAD POWER LINE
- ROAD
- SANITARY SEWER LINE
- STORM DRAIN LINE
- SUBJECT PROPERTY BOUNDRY

Notes:
H&H - Hart & Hickman
RI - Remedial Investigation
NM - Not Measured

1. Base map obtained from surveys prepared by Edisto Engineers & Surveyors, Inc. (dated 6/3/2011 and 4/14/2014) and from Work Plan maps provided by H&H (August 2013).
2. 2012 sample locations were surveyed on 8/28/2012 and RI sample locations were surveyed on 3/20/2014. Post RI assessment locations were surveyed on 1/26/2016. Groundwater delineation locations were surveyed on 5/10/2017.
3. Water levels were collected by AECOM on April 12-13, 2017
4. MW-32DR was not measured because it was not installed at the time of the event.

0 250 500 750 Feet

N

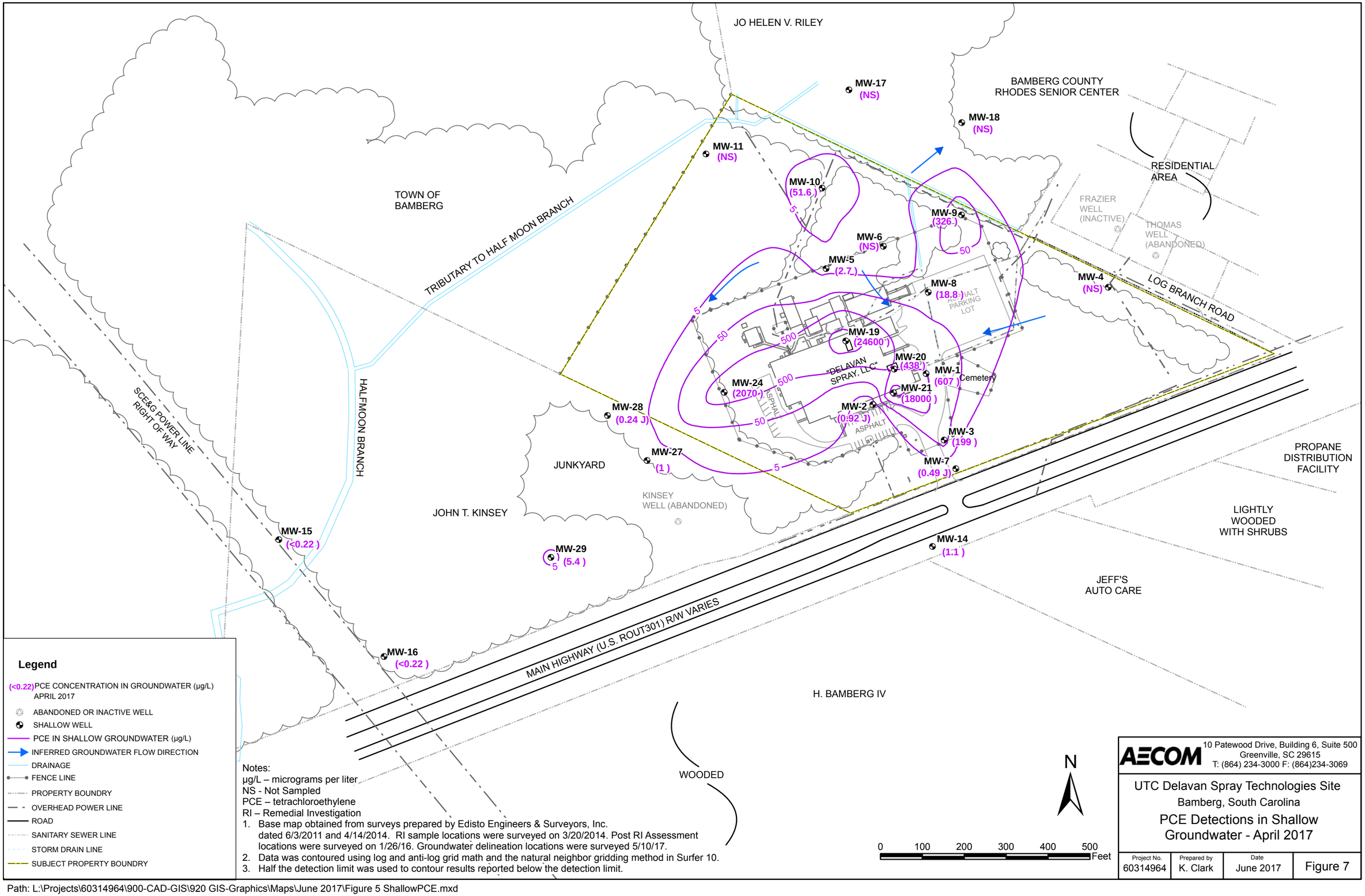
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UTC Delavan Spray Technologies Site
Bamberg, South Carolina

Deep Potentiometric Map April 2017

Project No.	Prepared by	Date	
60314964	K. Clark	June 2017	Figure 6

Path: L:\Projects\60314964\900-CAD-GIS\920 GIS-Graphics\Maps\June 2017\Figure 4 Deep Pot.mxd



Legend

- (<0.22) PCE CONCENTRATION IN GROUNDWATER (µg/L) APRIL 2017
- ABANDONED OR INACTIVE WELL
- SHALLOW WELL
- PCE IN SHALLOW GROUNDWATER (µg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- DRAINAGE
- FENCE LINE
- PROPERTY BOUNDRY
- OVERHEAD POWER LINE
- ROAD
- SANITARY SEWER LINE
- STORM DRAIN LINE
- SUBJECT PROPERTY BOUNDRY

Notes:
µg/L – micrograms per liter
NS - Not Sampled
PCE – tetrachloroethylene
RI – Remedial Investigation

1. Base map obtained from surveys prepared by Edisto Engineers & Surveyors, Inc. dated 6/3/2011 and 4/14/2014. RI sample locations were surveyed on 3/20/2014. Post RI Assessment locations were surveyed on 1/26/16. Groundwater delineation locations were surveyed 5/10/17.
2. Data was contoured using log and anti-log grid math and the natural neighbor gridding method in Surfer 10.
3. Half the detection limit was used to contour results reported below the detection limit.

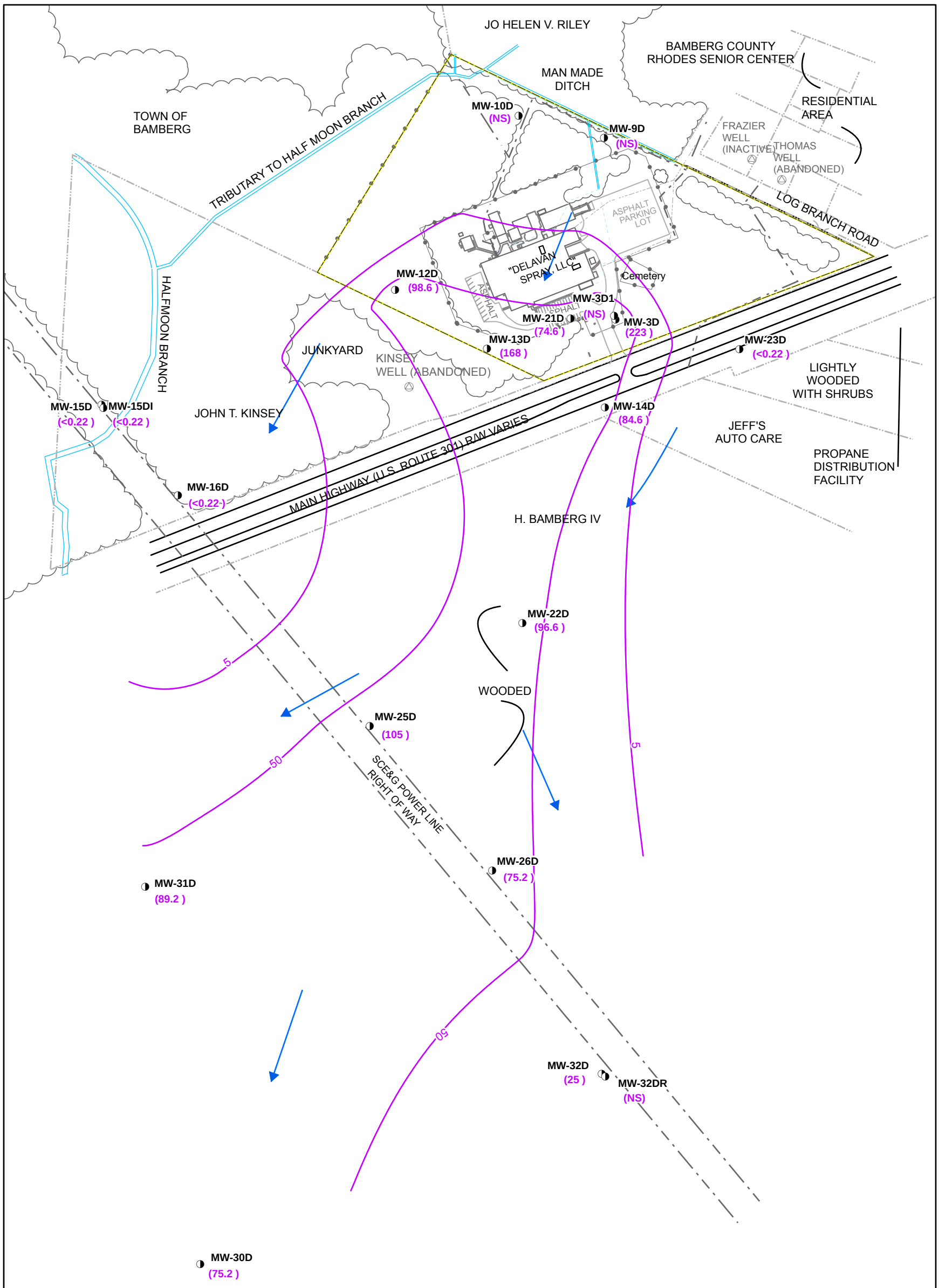
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Greenville, SC 29615
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UTC Delavan Spray Technologies Site
Bamberg, South Carolina

PCE Detections in Shallow Groundwater - April 2017

Project No.	Prepared by	Date	
60314964	K. Clark	June 2017	Figure 7

Path: L:\Projects\60314964\900-CAD-GIS\920 GIS-Graphics\Maps\June 2017\Figure 5 ShallowPCE.mxd



Legend

- (<0.22) PCE CONCENTRATION IN GROUNDWATER (µg/L) APRIL 2017
- ABANDONED OR INACTIVE WELL
- DEEP WELL
- PCE IN SHALLOW GROUNDWATER (µg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- DRAINAGE
- FENCE LINE
- PROPERTY BOUNDRY
- OVERHEAD POWER LINE
- ROAD
- SANITARY SEWER LINE
- STORM DRAIN LINE
- SUBJECT PROPERTY BOUNDRY

Notes:
FT – feet
MSL – mean sea level
NS - Not Sampled
PCE – tetrachloroethylene

1. Base map obtained from surveys prepared by Edisto Engineers & Surveyors, Inc. dated 6/3/2011 and 4/14/2014. RI sample locations were surveyed on 3/20/2014. Post RI assessment locations were surveyed on 1/26/2016. Groundwater delineation locations were surveyed on 5/10/17.
2. Data was contoured using log and anti-log grid math and the natural neighbor gridding method in Surfer 10.
3. Half the detection limit was used to contour results reported below the detection limit.

0 250 500 750 Feet

N

AECOM
10 Patewood Drive, Building 6, Suite 500
Greenville, SC 29615
T: (864) 234-3000 F: (864)234-3069

UTC Delavan Spray Technologies Site
Bamberg, South Carolina

PCE Detections in Deeper Groundwater - April 2017

Project No.	Prepared by	Date	Figure 8
60314964	K. Clark	June 2017	

Path: L:\Projects\60314964\900-CAD-GIS\920 GIS-Graphics\Maps\June 2017\Figure 9 DeepPCE.mxd

TABLES

Table 1
Soil Boring Information
UTC Delavan Spray Technologies Site
Bamberg, South Carolina
AECOM Project No. 60314964

Boring ID	Northing	Easting	GS Elevation (ft MSL)	Date Installed	Company	Installation Type	Total Depth (ft BGS)	Comments
GW-DPT-1S	527340.334	1985112.522	146.17	3/28/2017	AECOM	DPT - Geoprobe 7822	29	
GW-DPT-2S	527276.593	1985208.679	146.35	3/28/2017	AECOM	DPT - Geoprobe 7822	29	Boring converted to MW-28
GW-DPT-3S	527251.179	1985275.474	147.05	3/27/2017	AECOM	DPT - Geoprobe 7822	34	
GW-DPT-4S	527172.285	1985304.001	145.93	3/27/2017	AECOM	DPT - Geoprobe 7822	29	Boring converted to MW-27
GW-DPT-5S	527216.994	1984874.958	139.14	3/29/2017	AECOM	DPT - Geoprobe 7822	19	
GW-DPT-6S	527165.176	1984986.576	140.84	3/29/2017	AECOM	DPT - Geoprobe 7822	24	
GW-DPT-7S	527084.174	1985061.881	141.68	3/28/2017	AECOM	DPT - Geoprobe 7822	29	
GW-DPT-8S	527060.534	1985251.285	144.87	3/28/2017	AECOM	DPT - Geoprobe 7822	19	
GW-DPT-9S	526938.968	1985076.529	141.03	3/30/2017	AECOM	DPT - Geoprobe 7822	29	Boring converted to MW-29
GW-DPT-1D	525197.787	1985751.395	141.79	4/4/2017	AECOM	Hollow Stem Auger/Split Spoon - Deidrich D50	60	
GW-DPT-2D	524916.428	1985977.933	139.14	4/6/2017	AECOM	Hollow Stem Auger/Split Spoon - Deidrich D50	64	Boring converted to MW-32D
GW-DPT-3D	--	--	--	--	--	--	--	Not installed - the area was inaccessible
GW-DPT-4D	526235.84	1984894.393	140.08	4/3/2017	AECOM	DPT - Geoprobe 7822 and Hollow Stem Auger/Split Spoon - Deidrich D50	60	
GW-DPT-5D	525756.062	1984428.048	143.11	3/28/2017	AECOM	Rotosonic -Geoprobe 8140LS	57	
GW-DPT-6D	525497.576	1984570.296	141.39	3/28/2017	AECOM	Rotosonic -Geoprobe 8140LS	62	Boring converted to MW-31D
GW-DPT-7D	525201.99	1984301.811	141.14	3/29/2017	AECOM	Rotosonic -Geoprobe 8140LS	62	
GW-DPT-8D	524832.484	1984274.255	137.73	3/29/2017	AECOM	Rotosonic -Geoprobe 8140LS	62	
GW-DPT-9D	524588.274	1984388.135	136.21	3/30/2017	AECOM	Rotosonic -Geoprobe 8140LS	67	
GW-DPT-10D	524341.407	1984740.261	135.9	3/31/2017	AECOM	Rotosonic -Geoprobe 8140LS	57	Boring converted to MW-30D

Notes:
ft bgs - feet below ground surface
ft msl - feet mean sea level
GS Elevation - ground surface elevation
Horizontal coordinates are referenced to the State Plane Coordinate System and the North American Datum of 1983 (NAD 83).
Vertical locations are referenced to the North American Vertical Datum of 1988 (NAVD 88).

Table 2
Groundwater Quality Indicator Parameters for Screening Samples
UTC Delavan Spray Technologies Site
Bamberg, South Carolina
AECOM Project No. 60314964

Well	pH (S.U.)	Conductivity (mS/cm)	Temperature (^{o}C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)
GW-DPT-1S-29	7.15	0.196	19.76	641.50	2.51	39.3
GW-DPT-2S-29	7.23	0.232	19.57	661.00	2.44	82.1
GW-DPT-3S-34	3.30	0.018	20.25	112.00	4.12	346.8
GW-DPT-4S-24	2.22	0.300	20.46	>1100	4.13	206.1
GW-DPT-5S-19	2.93	0.040	19.19	691.40	0.42	-34.8
GW-DPT-6S-24	5.20	0.119	19.35	653.70	1.72	126.7
GW-DPT-7S-29	6.93	0.258	21.96	>1100	1.16	32.4
GW-DPT-8S-19	2.34	0.033	21.02	1.36	0.48	231.2
GW-DPT-9S-29	6.28	0.179	21.08	>1100	2.20	126.4
GW-DPT-1D-45	7.49	0.261	22.11	>1100	2.51	89.3
GW-DPT-1D-60	7.18	0.390	20.59	>1100	0.50	-130.2
GW-DPT-2D-50	6.72	0.421	19.19	616.80	0.22	35.1
GW-DPT-2D-64	7.39	0.401	21.63	>1100	0.47	-43.7
GW-DPT-4D-60	7.36	0.238	18.94	604.70	5.03	60.1
GW-DPT-5D-52	6.89	0.251	19.18	80.53	3.39	68.1
GW-DPT-6D-61	7.19	0.247	19.51	>1100	3.84	-42.4
GW-DPT-7D-62	7.54	0.245	18.91	854.60	5.12	182.4
GW-DPT-8D-62	7.62	0.241	19.85	>1100	3.79	-35.8
GW-DPT-9D-47	6.45	0.234	20.20	684.80	3.23	88.7
GW-DPT-9D-60	7.66	0.204	20.65	918.50	3.20	45.7
GW-DPT-10D-47	7.60	0.270	19.27	521.40	NS	85.4
GW-DPT-10D-56	7.71	0.267	20.53	>1100	4.97	-41.0

Notes:
^{o}C - degrees Celsius
mg/L - milligrams per liter
mS/cm - milliSiemens per centimeter
mV - millivolts
ORP - oxidation-reduction potential
NS - not sampled
NTUs - Nephelometric Turbidity Units
S.U. - standard units

Table 3
Analytical Results for Groundwater Screening Samples - PCE
UTC Delavan Spray Technologies Site
Bamberg, South Carolina
AECOM Project No. 60314964

Sample ID	Sample Depth Interval (ft bls)	Date Collected	Laboratory Sample ID	Tetrachloroethene (MCL = 5 µg/L)		
Shallow Aquifer Borings						
GW-DPT-1S-29	25 - 29	03/28/17	SC28050-004	<	1	
GW-DPT-2S-29	25 - 29	03/28/17	SC28050-003	<	1	
GW-DPT-3S-34	30 - 34	03/27/17	SC28050-002	<	1	
GW-DPT-4S-24	20 - 24	03/27/17	SC28050-001	<	1	
GW-DPT-5S-19	15 -19	03/29/17	SC29040-004	<	1	
GW-DPT-6S-24	20 - 24	03/29/17	SC29040-003	<	1	
GW-DPT-7S-29	25 - 29	03/28/17	SC29040-002		**0.72**	**J//**
GW-DPT-8S-19	15 - 19	03/28/17	SC29040-001	<	1	
GW-DPT-9S-29	25 - 29	03/30/17	SC30040-002		**10**	
Limestone Aquifer Borings						
GW-DPT-1D-45	40 - 45	04/04/17	SD05072-001		**9.8**	
GW-DPT-1D-60	55 - 60	04/05/17	SD05072-002		**59**	
GW-DPT-2D-50	45 - 50	04/06/17	SD06052-001		**15**	
GW-DPT-2D-64	59 - 64	04/06/17	SD06052-002		**47**	
GW-DPT-4D-60	55 - 60	04/04/17	SD04050-001		**20**	**//y**
GW-DPT-5D-52	46 - 52	03/28/17	SC28050-005		**61**	
GW-DPT-6D-61	56 - 61	03/28/17	SC29041-001		**210**	
GW-DPT-7D-62	57 - 62	03/29/17	SC29041-002		**73**	
GW-DPT-8D-62	57 - 62	03/29/17	SC30040-001		**130**	
GW-DPT-9D-47	42 - 47	03/30/17	SC31062-001		**140**	
GW-DPT-9D-60	56 - 60	03/30/17	SC31062-002		**99**	
GW-DPT-10D-47	42 - 47	03/31/17	SC31062-003		**120**	
GW-DPT-10D-56	51 - 56	03/31/17	SC31062-004		**120**	

Notes:

MCL - Maximum Contaminant Level (USEPA, April 2012).

bls - below land surface

ft - feet

All samples analyzed by USEPA Method 8260B and reported in micrograms per liter (µg/L).

Bold font indicates the analyte was detected.

Bold font and shading indicates the concentration exceeds the MCL.

Data Qualifiers:

"/" Separates the laboratory added data qualifiers from the validation data qualifiers. The laboratory added data qualifiers precede the first "/". The result qualifiers follow the first "/", and the analysis qualifiers follow the second "/". The result qualifiers are a product of the data validation process, and the analysis qualifier defines the type of QC excursion.

Laboratory Data Qualifiers

J - Estimated result less than the practical quantitation limit and greater than or equal to the method detection limit.

Result Data Qualifiers

No Result data qualifiers were added as a result of the validation process.

Analysis Data Qualifiers

y - Cooler temperature greater than 4 degrees Celsius, but less than 10 degrees Celsius.

Table 4
Summary of PID and PCE Results for Groundwater Screening Samples
Delavan Spray Technologies Site
Bamberg, South Carolina

DEPTH IN FEET	Organic Vapor Screening (ppm)									DEPTH IN FEET
	Tier 1 Borings				Tier 2 Borings					
	DPT-1S	DPT-2S (MW-28)	DPT-3S	DPT-4S (MW-27)	DPT-5S	DPT-6S	DPT-7S	DPT-8S	DPT-9S (MW-29)	
5.0				0.2				0.1	0.0	5.0
				0.1						
								0.0	0.1	
				0.2						
				0				0.2		
10.0				0.4	0.6			0.7		10.0
									0.3	
		0.1		0.7						
			2.6		0.8			0.6		
	0.7					0.0				
15.0		0.3	0.4							15.0
				0.5	1.6				0.9	
	0.5					0.2		3.4		
		0.1	1.7	0.9	2.1					
20.0	0.9				EOB = 19 ft	0.6	1.3	EOB = 19 ft	0.1	20.0
		0	0.8	18.4						
									0.3	
	0.4	1.1		8.1		0.8	0.9			
			0.2	6.1						
25.0	0.5					EOB = 24 ft	1.0		0.8	25.0
		0.7	0.8	2.5						
	0.6						1.6		2.1	
		2.1	0.3	3						
30.0	EOB = 29 ft	EOB = 29 ft		EOB = 29 ft			EOB = 29 ft		EOB = 29 ft	30.0
			1.1							
			1.3							
35.0			EOB = 34 ft							35.0
	Groundwater Screening Results (µg/L)									
	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	0.72 J	< 0.40	10	

See Page 3 of 3 for applicable notes.

Table 4
Summary of PID and PCE Results for Groundwater Screening Samples
Delavan Spray Technologies Site
Bamberg, South Carolina

DEPTH IN FEET	Organic Vapor Screening (ppm)									DEPTH IN FEET
	Powerline ROW			Logging Road						
	DPT-1D	DPT-2D (MW-32D)	DPT-4D	DPT-5D	DPT-6D (MW-31D)	DPT-7D	DPT-8D	DPT-9D	DPT-10D (MW-30D)	
0			0							
	0.1	0.0								
	0.4	0.1	0.3		0.9	0.0		0.0		
5				0.0	1.0				0.4	5
	0.2	0.0	0.1	0.0			0.0			
				0.0	0.0	0.0	0.0			
	0.0	0.2					0.0			
			0.4	0.0						
10	0.3	0.1				0.0		1.2	0.6	10
								0.0		
	0.1	0.3	0.6							
				0.0		0.0				
	0.4	0.2	0.8	0.0						
15				3.4		0.0		0.0		15
	0.7	0.4	0.5	0.8	0.0	0.0				
				0.2	0.0	0.0				
	0.5	0.3		0.0					0.5	
			0.6	0.0						
20	0.8	0.3	1	0.0		0.0		0.0	0.6	20
				0.0						
	0.7	0.1	0.8							
									1	
	0.6	0.1	0.3	0.2		0.0		1.8		
25						0.0			1.7	25
	0.6	0.5	0.9	2.6	0.0	0.2				
				0.1	0.0	0.4		2.0		
	0.9	0.3							1.2	
			0.7							
30	0.8	0.2					0.0			30
			0.4	0.1			0.0	1.7		
	0.5	0.4					0.0			
			0.7							
	0.3	0.6		0			0.1			
35								2.0		35
	0.4	0.7	0.6	2.1		0.0				
				0.0	1.0	0.0	0.2			
	0.9	1.0		0.0					1.1	
			0.1	0.0						
40	0.8	0.9		0.0				2.2	1.9	40
			0.5	0.0						
	0.9	1.3	0.6	0.0	0.0					
				0.0					2.3	
	0.7		0.5	0.0		0.0	0.0			
45		1.4		0.1	0.1	0.0		2.4		45
	1.0		0.4	0.0		0.0			2.6	
				2.0	0.2	1.4	0.1			
	0.8	1.5				0.4				
			0.6			0.8		1.5	2.8	
50	0.9	1.7	0.8	0.0						50
		1.3		0.0				1.1		
	0.6			0.0					2.6	
		1.5		0.0	0.0			0.6		
	0.3			0.0	0.0					
55		1.5		0.2	0.6		0.4		2.8	55
	0.5			0.1	1.2	0.8	0.8			
		1.4		0.4	1.3		1.2		2.9	
	0.9			EOB = 57 ft					EOB	
		1.2	2.0						= 57 ft	
60	0.8							0.3		60
	EOB = 60 ft	1	EOB = 60 ft					0.1		
					EOB = 62 ft	EOB = 62 ft	EOB = 62 ft			
		0.8								
65		EOB = 64 ft						0.1		65
								EOB = 67 ft		
70										70
	Groundwater Screening Results (µg/L)									
Upper	9.8	15	--	--	--	--	--	140	120	Upper
Lower	59	47	20	61	210	73	130	99	120	Lower

Table 4
Summary of PID and PCE Results for Groundwater Screening Samples
Delavan Spray Technologies Site
Bamberg, South Carolina

Notes:

No Recovery Interval

GW Sample Interval

Shallow Sand/Clay Aquifer Unit

Limestone Aquifer Unit

Cemented Sandstone Unit

Monitoring Well Screened Interval

Reported Void in Limestone

EOB End of Boring (Total Exploration Depth)
ppm - parts per million
ROW - Right of Way
µg/L - micrograms per liter

Table 5
New Monitoring Well Construction Details
UTC Delavan Spray Technologies Site
Bamberg, South Carolina
AECOM Project No. 60314964

Well Number	Northing[1]	Easting[1]	Date Installed	Installed By	Equipment	Ground Surface Elevation[2] (ft MSL)	Top of Casing Elevation[2] (ft MSL)	Stick-up Height (ft)	Well Diameter (Inches)	Casing Type	Total Depth (ft bgs)	Classification	Surface Casing Depth (ft bgs)	Screen Interval (ft bgs)
MW-27	527170.791	1985303.579	3/31/2017	AECOM	Geoprobe 7822-HSA	145.93	145.78	-0.15	2	PVC	29	Shallow	NA	19-29
MW-28	527277.921	1985209.244	3/31/2017	AECOM	Geoprobe 7822-HSA	146.35	146.12	-0.23	2	PVC	29	Shallow	NA	19-29
MW-29	526939.419	1985074.632	4/7/2017	AECOM	Diedrich D50-HSA	141.03	140.55	-0.48	2	PVC	29	Shallow	NA	19-29
MW-30D	524342.129	1984738.757	4/12/2017	AECOM	Geoprobe 8140LS (Sonic)	135.9	136.01	0.11	2	PVC	60	Deep	NA[3]	50-60
MW-31D	525496.612	1984570.761	4/12/2017	AECOM	Geoprobe 8140LS (Sonic)	141.39	141.39	0	2	PVC	60	Deep	NA[3]	50-60
MW-32D	524916.359	1985977.481	4/13/2017; Abandoned 5/8/17	AECOM	Geoprobe 8140LS (Sonic)	139.14	138.92	-0.22	2	PVC	60	Deep	NA[3]	50-60
MW-32DR	524925.355	1985966.152	5/8/2017	AECOM	Geoprobe 8140LS (Sonic)	139.2	138.88	-0.32	2	PVC	60	Deep	NA[3]	50-60

Notes:

bgs - below ground surface

ft - feet

ft MSL - feet above mean sea level

NA - not applicable

[1] - Horizontal coordinates are referenced to the State Plane Coordinate System and the North American Datum of 1983 (NAD 83).

[2] - Vertical locations are referenced to the North American Vertical Datum of 1988 (NAVD 88).

[3] - The outer geoprobe casing was used as a temporary surface casing during advancement of the borehole and well installation.

Table 6
Analytical Results for Groundwater Samples
UTC Delavan Spray Technologies Site
Bamberg, South Carolina
AECOM Project No. 60314964

Sample ID		MW-27		MW-28		MW-29	
Laboratory ID	USEPA	FA42997-30		FA42997-32		FA42997-34	
Date Collected	MCL	4/12/2017		4/12/2017		4/12/2017	
Volatile Organic Compounds by USEPA Method 8260 (µg/L)							
1,1,1-Trichloroethane	200	< 0.25		< 0.25		< 0.25	
1,1,2,2-Tetrachloroethane	—	< 0.3		< 0.3		< 0.3	
1,1,2-Trichloroethane	5	< 0.47		< 0.47		< 0.47	
1,1-Dichloroethane	—	< 0.34		< 0.34		< 0.34	
1,1-Dichloroethylene	7	< 0.32		< 0.32		< 0.32	
1,2-Dichloroethane	5	< 0.31		< 0.31		< 0.31	
1,2-Dichloropropane	5	< 0.43		< 0.43		< 0.43	
2-Butanone (MEK)	—	< 2		< 2		< 2	
2-Hexanone	—	< 2		< 2		< 2	
4-Methyl-2-pentanone (MIBK)	—	< 1		< 1		< 1	
Acetone	—	< 10		< 10		< 10	
Benzene	5	< 0.31		< 0.31		< 0.31	
Bromodichloromethane	80 [1]	< 0.24		< 0.24		< 0.24	
Bromoform	80 [1]	< 0.41		< 0.41		< 0.41	
Carbon Disulfide	—	< 0.53		< 0.53		< 0.53	
Carbon Tetrachloride	5	< 0.36		< 0.36		< 0.36	
Chlorobenzene	100	< 0.2		< 0.2		< 0.2	
Chloroethane	—	< 0.67		< 0.67		< 0.67	
Chloroform	80 [1]	< 0.3		< 0.3		< 0.3	
cis-1,2-Dichloroethylene	70	< 0.28		< 0.28		< 0.28	
cis-1,3-Dichloropropene	—	< 0.29		< 0.29		< 0.29	
Dibromochloromethane	80 [1]	< 0.28		< 0.28		< 0.28	
Ethylbenzene	700	< 0.36		< 0.36		< 0.36	
Methyl Bromide	—	< 0.59		< 0.59		< 0.59	
Methyl Chloride	—	< 0.5		< 0.5		< 0.5	
Methylene Chloride	5	< 2		< 2		< 2	
Styrene	100	< 0.22		< 0.22		< 0.22	
Tetrachloroethylene	5	**1**		**0.24**	***J//***	**5.4**	
Toluene	1000	< 0.3		< 0.3		< 0.3	
trans-1,2-Dichloroethylene	100	< 0.22		< 0.22		< 0.22	
trans-1,3-Dichloropropene	—	< 0.21		< 0.21		< 0.21	
Trichloroethylene	5	< 0.35		< 0.35		< 0.35	
Vinyl Chloride	2	< 0.41		< 0.41		< 0.41	
Xylene (total)	10000	< 0.72		< 0.72		< 0.72	
Water Quality Parameters by USEPA Method 9056 (mg/L)							
Chloride	250 [2]	**1.9**	***J//***	**8.4**		**5.7**	
Nitrogen, Nitrate	10	**1.7**		**1**		**0.65**	
Nitrogen, Nitrite	1	< 0.05		< 0.05		< 0.05	
Sulfate	250 [2]	< 0.6		**12**		**1.8**	***J//***
Ethane, Ethene, and Methane by USEPA Method RSK 147 (µg/L)							
Ethane	—	< 0.32		< 0.32		< 0.32	
Ethene	—	< 0.43		< 0.43		< 0.43	
Methane	—	**0.43**	***J//***	**0.42**	***J//***	**0.17**	***J//***
Total Organic Carbon by USEPA Method 5310 (mg/L)							
Total Organic Carbon	—	< 0.23		**0.72**	***J//***	**0.36**	***J//***

Table 6
Analytical Results for Groundwater Samples
UTC Delavan Spray Technologies Site
Bamberg, South Carolina
AECOM Project No. 60314964

Sample ID		MW-30D		MW-31D		MW-32D	
Laboratory ID	USEPA	FA43039-1		FA43039-2		FA43039-3	
Date Collected	MCL	4/13/2017		4/13/2017		4/13/2017	
Volatile Organic Compounds by USEPA Method 8260 (µg/L)							
1,1,1-Trichloroethane	200	< 0.25		< 0.25		< 0.25	
1,1,2,2-Tetrachloroethane	—	< 0.3		< 0.3		< 0.3	
1,1,2-Trichloroethane	5	< 0.47		< 0.47		< 0.47	
1,1-Dichloroethane	—	< 0.34		< 0.34		< 0.34	
1,1-Dichloroethylene	7	**2.3**		**3.1**		**0.63**	**J//**
1,2-Dichloroethane	5	< 0.31		< 0.31		< 0.31	
1,2-Dichloropropane	5	< 0.43		< 0.43		< 0.43	
2-Butanone (MEK)	—	< 2		< 2		< 2	
2-Hexanone	—	< 2		< 2		< 2	
4-Methyl-2-pentanone (MIBK)	—	< 1		**8.5**		**3.5**	**J//**
Acetone	—	< 10		< 10		< 10	
Benzene	5	< 0.31		< 0.31		< 0.31	
Bromodichloromethane	80 [1]	< 0.24		**0.82**	**J//**	**0.27**	**J//**
Bromoform	80 [1]	< 0.41		< 0.41		< 0.41	
Carbon Disulfide	—	< 0.53		< 0.53		< 0.53	
Carbon Tetrachloride	5	< 0.36		< 0.36		< 0.36	
Chlorobenzene	100	< 0.2		< 0.2		< 0.2	
Chloroethane	—	< 0.67		< 0.67		< 0.67	
Chloroform	80 [1]	**0.41**	**J//**	**1.8**		**0.79**	**J//**
cis-1,2-Dichloroethylene	70	**0.64**	**J//**	< 0.28		< 0.28	
cis-1,3-Dichloropropene	—	< 0.29		< 0.29		< 0.29	
Dibromochloromethane	80 [1]	< 0.28		< 0.28		< 0.28	
Ethylbenzene	700	< 0.36		**0.55**	**J//**	< 0.36	
Methyl Bromide	—	< 0.59		< 0.59		< 0.59	
Methyl Chloride	—	< 0.5		< 0.5		< 0.5	
Methylene Chloride	5	< 2		< 2		< 2	
Styrene	100	< 0.22		< 0.22		< 0.22	
Tetrachloroethylene	5	**75.2**		**89.2**		**25**	
Toluene	1000	< 0.3		< 0.3		< 0.3	
trans-1,2-Dichloroethylene	100	< 0.22		< 0.22		< 0.22	
trans-1,3-Dichloropropene	—	< 0.21		< 0.21		< 0.21	
Trichloroethylene	5	**0.87**	**J//**	**0.41**	**J//**	**0.36**	**J//**
Vinyl Chloride	2	< 0.41		< 0.41		< 0.41	
Xylene (total)	10000	< 0.72		**2.6**	**J//**	**1.2**	**J//**
Water Quality Parameters by USEPA Method 9056 (mg/L)							
Chloride	250 [2]	**9.6**		**8.4**		**9.8**	
Nitrogen, Nitrate	10	**0.85**		**1.1**		**0.93**	
Nitrogen, Nitrite	1	**0.09**	**J//**	< 0.05		< 0.05	
Sulfate	250 [2]	**4.9**		**5.7**		**7.4**	
Ethane, Ethene, and Methane by USEPA Method RSK 147 (µg/L)							
Ethane	—	**0.61**	**J//**	< 0.32		< 0.32	
Ethene	—	**0.44**	**J//**	< 0.43		< 0.43	
Methane	—	**1.4**		**0.7**		**0.68**	
Total Organic Carbon by USEPA Method 5310 (mg/L)							
Total Organic Carbon	—	**0.52**	**J//**	**0.53**	**J//**	**1.4**	

Notes:

NA - Not Analyzed

µg/L - micrograms per liter (parts per billion)

USEPA MCL - United States Environmental Protection Agency Maximum Contaminant Level (April, 2012).

[1] 1998 Final Rule for Disinfectants and Disinfection By-products. The total for trihalomethanes (THM) is 80 ug/L.

[2] Secondary Standard.

— - Indicates No Standard (for screening criteria).

Bold font and shading indicate the concentration is detected.

Bold outline indicates the concentration exceeds the MCL.

South Carolina Department of Health and Environmental Control (SCDHEC) R.61-68 Water Classifications and Standards (June 27, 2014) were also identified for the list of detected chemicals in groundwater. In each case, however, they were the same values as the USEPA MCLs.

J - Estimated concentration above the method detection limit and below the reporting limit

Table 7
Summary of Slug Test Results
Delavan Spray Technologies Site
Bamberg, South Carolina
AECOM Project No. 60314964

Well ID	Test Name	Horizontal Hydraulic Conductivity		Comments
		Bouwer & Rice Results (ft/day)	Springer-Gelhar Result (ft/day)	
MW-27	MW27-in1	0.319	NA	
MW-27	MW27-in2	0.286	NA	
MW-27	MW27-out1	0.263	NA	
MW-27	MW27-out2	0.281	NA	
MW-28	MW28-in1	0.215	NA	
MW-28	MW28-in2	0.215	NA	
MW-28	MW28-out1	0.301	NA	
MW-28	MW28-out2	0.244	NA	
MW-29	MW29-in1	0.701	NA	
MW-29	MW29-out1	0.596	NA	
		Minimum	**0.215**	
		Maximum	**0.701**	
		MW-27 Geometric Mean	**0.286**	
		MW-28 Geometric Mean	**0.241**	
		MW-29 Geometric Mean	**0.646**	
		Shallow Well Geometric Mean	**0.355**	

Table 7
Summary of Slug Test Results
Delavan Spray Technologies Site
Bamberg, South Carolina
AECOM Project No. 60314964

Well ID	Test Name	Horizontal Hydraulic Conductivity		Comments
		Bouwer & Rice Results (ft/day)	Springer-Gelhar Result (ft/day)	
MW-30D	MW30D-in1	~~68.86~~	122.6	Will not use B&R result - insufficient data in the "recommended" fit range
MW-30D	MW30D-in2	76.48	72.67	
MW-30D	MW30D-in3	~~51.98~~	103.7	Will not use B&R result - insufficient data in the "recommended" fit range
MW-30D	MW30D-in4	~~84.42~~	124.1	Will not use B&R result - insufficient data in the "recommended" fit range
MW-30D	MW30D-in5	~~63.73~~	107.3	Will not use B&R result - insufficient data in the "recommended" fit range
MW-30D	MW30D-out1	~~68.38~~	76.39	Will not use B&R result - insufficient data in the "recommended" fit range
MW-30D	MW30D-out2	~~65.05~~	161.3	Will not use B&R result - insufficient data in the "recommended" fit range
MW-30D	MW30D-out3	~~39.46~~	72.22	Will not use B&R result - insufficient data in the "recommended" fit range
MW-30D	MW30D-out5	85.67	131.6	
MW-31D	MW31D-in1	25.97	26.43	
MW-31D	MW31D-in2	12.83	12.66	
MW-31D	MW31D-in3	11.88	10.77	
MW-31D	MW31D-out1	25.76	23.99	
MW-31D	MW31D-out2	23.62	21.23	
MW-31D	MW31D-out3	24.77	21.87	
MW-32DR	MW32DR-in1	~~50.20~~	75.34	Will not use B&R result - insufficient data in the "recommended" fit range
MW-32DR	MW32DR-in2	~~75.94~~	~~75.83~~	Not a good test. Data insufficient for a reliable fit
MW-32DR	MW32DR-in3	62.7	61.4	
MW-32DR	MW32DR-in4	51.2	50.33	
MW-32DR	MW32DR-out1	41.39	39.00	
MW-32DR	MW32DR-out2	69.78	52.62	
MW-32DR	MW32DR-out3	79.5	50.75	
MW-32DR	MW32DR-out4	84.53	51.09	
		Minimum	**10.77**	
		Maximum	**161.3**	
		MW-30D Geometric Mean	**101.0**	
		MW-31D Geometric Mean	**19.13**	
		MW-32DR Geometric Mean	**57.62**	
		Deeper Wells Geometric Mean	**63.52**	

Notes:
NA - Not applicable
Data with a strike-through was not used for calculation of the means.

Table 8
Analytical Results for Soil Investigation-Derived Waste Samples
UTC Delavan Spray Technologies Site
Bamberg, South Carolina
AECOM Project No. 60314964

Sample ID Laboratory ID Date Collected	Screening Criteria	IDW-1-BAMBERG FA42740-2 04/04/17		IDW-1-KINSEY FA42740-1 04/04/17	
VOCs by USEPA Method 8260 (µg/L)					
1,1-Dichloroethylene	700	< 3.2		< 3.2	
1,2-Dichloroethane	500	< 3.1		< 3.1	
1,4-Dichlorobenzene	7500	< 2.6		< 2.6	
2-Butanone (MEK)	200000	< 20		< 20	
Benzene	500	< 3.1		< 3.1	
Carbon Tetrachloride	500	< 3.6		< 3.6	
Chlorobenzene	100000	< 2		**2.7**	**J//**
Chloroform	6000	< 3		**3.6**	**J//**
Tetrachloroethylene	700	**6.3**	**J//**	< 2.2	
Trichloroethylene	500	< 3.5		< 3.5	
Vinyl Chloride	200	< 4.1		< 4.1	
SVOCs by USEPA Method 8270 (µg/L)					
1,4-Dichlorobenzene	7500	< 5		< 5	
2,4,5-Trichlorophenol	400000	< 7.4		< 7.4	
2,4,6-Trichlorophenol	2000	< 7.5		< 7.5	
2,4-Dinitrotoluene	130	< 8.1		< 8.1	
2-Methylphenol	200000	< 5.6		< 5.6	
3&4-Methylphenol	200000	< 9.8		< 9.8	
Hexachlorobenzene	130	< 6.9		< 6.9	
Hexachlorobutadiene	500	< 5		< 5	
Hexachloroethane	3000	< 10		< 10	
Nitrobenzene	2000	< 9.3		< 9.3	
Pentachlorophenol	100000	< 50		< 50	
Pyridine	5000	< 20		< 20	
Metals by USEPA Method 6010 (µg/L)					
Antimony	NS	< 10		< 10	
Arsenic	5000	< 10		< 10	
Beryllium	NS	< 2		< 2	
Cadmium	1000	< 2		< 2	
Chromium	5000	< 10		< 10	
Copper	NS	< 10		**10**	**J//**
Lead	5000	< 10	/M/D	< 10	
Nickel	NS	< 4		**10**	**J//**
Selenium	1000	< 20		< 20	
Silver	5000	< 7		< 7	
Thallium	NS	< 10		< 10	
Zinc	NS	< 100		< 100	
Mercury by USEPA Method 7470 (µg/L)					
Mercury	200	< 0.5	/M/D	**0.63**	**J//**

Notes:

Screening Criteria are the Toxicity Characteristic Leaching Procedure Regulatory Levels (USEPA, October 2014).

µg/L - micrograms per liter.

NS - No Standard

Bold font indicates a detected concentration.

Data Qualifiers:

"/" Separates the laboratory added data qualifiers from the validation data qualifiers. The laboratory added data qualifiers precede the first "/". The result qualifiers follow the first "/", and the analysis qualifiers follow the second "/". The result qualifiers are a product of the data validation process, and the analysis qualifier defines the type of QC excursion.

Laboratory Data Qualifiers

J - Estimated result less than the practical quantitation limit and greater than or equal to the method detection limit

Result Data Qualifiers

M - A matrix effect was present.

Analysis Data Qualifiers

D - Percent difference of matrix spike duplicate exceeded the established criteria.

Table 9
Analytical Results for Aqueous Investigation-Derived Waste Samples
UTC Delavan Spray Technologies Site
Bamberg, South Carolina
AECOM Project No. 60314964

Sample ID Laboratory ID Date Collected	Screening Criteria	IDW BAMBERG FA42947-1 04/10/17		IDW KINSEY FA42947-2 04/10/17	
VOCs by USEPA Method 8260 (µg/L)					
1,1,1-Trichloroethane	NS	< 0.25		< 0.25	
1,1,2,2-Tetrachloroethane	NS	< 0.3		< 0.3	
1,1,2-Trichloroethane	NS	< 0.47		< 0.47	
1,1-Dichloroethane	NS	< 0.34		< 0.34	
1,1-Dichloroethylene	700	**0.36**	***J//***	< 0.32	
1,2-Dichloroethane	500	< 0.31		< 0.31	
1,2-Dichloropropane	NS	< 0.43		< 0.43	
2-Butanone (MEK)	200000	< 2		< 2	
2-Hexanone	NS	< 2		< 2	
4-Methyl-2-pentanone (MIBK)	NS	< 1		< 1	
Acetone	NS	< 10		< 10	
Benzene	500	< 0.31		< 0.31	
Bromodichloromethane	NS	**0.62**	***J//***	< 0.24	
Bromoform	NS	< 0.41		< 0.41	
Carbon Disulfide	NS	< 0.53		**38**	
Carbon Tetrachloride	500	< 0.36		< 0.36	
Chlorobenzene	100000	< 0.2		< 0.2	
Chloroethane	NS	< 0.67		< 0.67	
Chloroform	6000	**2.4**		< 0.3	
cis-1,2-Dichloroethylene	NS	< 0.28		< 0.28	
cis-1,3-Dichloropropene	NS	< 0.29		< 0.29	
Dibromochloromethane	NS	< 0.28		< 0.28	
Ethylbenzene	NS	< 0.36		< 0.36	
Methyl Bromide	NS	< 0.59		< 0.59	
Methyl Chloride	NS	< 0.5		< 0.5	
Methylene Chloride	NS	< 2		< 2	
Styrene	NS	< 0.22		< 0.22	
Tetrachloroethylene	700	**18.6**		**0.65**	***J//***
Toluene	NS	< 0.3		< 0.3	
trans-1,2-Dichloroethylene	NS	< 0.22		< 0.22	
trans-1,3-Dichloropropene	NS	< 0.21		< 0.21	
Trichloroethylene	500	< 0.35		< 0.35	
Vinyl Chloride	200	< 0.41		< 0.41	
Xylene (total)	NS	< 0.72		< 0.72	
SVOCs by USEPA Method 8270 (µg/L)					
1,2,4-Trichlorobenzene	NS	< 1.1		< 1	
1,2-Dichlorobenzene	NS	< 0.5		< 0.48	
1,3-Dichlorobenzene	NS	< 0.5		< 0.48	
1,4-Dichlorobenzene	7500	< 0.5		< 0.48	
2,4,5-Trichlorophenol	400000	< 0.74		< 0.7	
2,4,6-Trichlorophenol	2000	< 0.75		< 0.72	
2,4-Dichlorophenol	NS	< 0.84		< 0.8	
2,4-Dimethylphenol	NS	< 0.74		< 0.7	
2,4-Dinitrophenol	NS	< 5		< 4.8	
2,4-Dinitrotoluene	130	< 0.81		< 0.77	
2,6-Dinitrotoluene	NS	< 0.71		< 0.68	
2-Chloronaphthalene	NS	< 0.5		< 0.48	
2-Chlorophenol	NS	< 0.63		< 0.6	
2-Methylnaphthalene	NS	< 0.6		< 0.57	
2-Methylphenol	200000	< 0.56		< 0.53	
2-Nitroaniline	NS	< 1.8		< 1.7	
2-Nitrophenol	NS	< 0.85		< 0.81	
3&4-Methylphenol	200000	< 0.98		< 0.93	
3,3'-Dichlorobenzidine	NS	< 0.64		< 0.61	
3-Nitroaniline	NS	< 0.88		< 0.84	
4,6-Dinitro-o-cresol	NS	< 2		< 1.9	
4-Bromophenyl Phenyl Ether	NS	< 0.85		< 0.81	
4-Chloro-3-methyl Phenol	NS	< 0.59		< 0.56	
4-Chloroaniline	NS	< 0.63		< 0.6	
4-Chlorophenyl Phenyl Ether	NS	< 0.54		< 0.51	
4-Nitroaniline	NS	< 1.2		< 1.1	
4-Nitrophenol	NS	< 5		< 4.8	
Acenaphthene	NS	< 0.63		< 0.6	
Acenaphthylene	NS	< 0.64		< 0.61	
Anthracene	NS	< 0.8		< 0.76	
Benzo(a)anthracene	NS	< 0.76		< 0.72	
Benzo(a)pyrene	NS	< 0.78		< 0.75	

Table 9
Analytical Results for Aqueous Investigation-Derived Waste Samples
UTC Delavan Spray Technologies Site
Bamberg, South Carolina
AECOM Project No. 60314964

Sample ID Laboratory ID Date Collected	Screening Criteria	IDW BAMBERG FA42947-1 04/10/17		IDW KINSEY FA42947-2 04/10/17	
SVOCs by USEPA Method 8270 (µg/L)					
Benzo(b)fluoranthene	NS	< 0.78		< 0.74	
Benzo(g,h,i)perylene	NS	< 0.82		< 0.78	
Benzo(k)fluoranthene	NS	< 0.86		< 0.82	
Benzoic Acid	NS	< 10	/R/c	< 9.5	/R/c
Benzyl Alcohol	NS	< 0.61		< 0.58	
bis(2-Chloroethoxy)methane	NS	< 0.81		< 0.77	
bis(2-Chloroethyl)ether	NS	< 0.73		< 0.7	
bis(2-Chloroisopropyl)ether	NS	< 0.76		< 0.72	
bis(2-Ethylhexyl)phthalate	NS	< 1		< 0.95	
Butyl Benzyl Phthalate	NS	< 1		< 0.95	
Carbazole	NS	< 0.6		< 0.57	
Chrysene	NS	< 0.85		< 0.81	
Di-n-butyl Phthalate	NS	< 1		< 0.95	
Di-n-octyl Phthalate	NS	< 1		< 0.95	
Dibenzo(a,h)anthracene	NS	< 0.8		< 0.77	
Dibenzofuran	NS	< 0.6		< 0.57	
Diethyl Phthalate	NS	< 1		< 0.95	
Dimethyl Phthalate	NS	< 1		< 0.95	
Fluoranthene	NS	< 0.55		< 0.53	
Fluorene	NS	< 0.7		< 0.67	
Hexachlorobenzene	130	< 0.69		< 0.66	
Hexachlorobutadiene	500	< 0.5		< 0.48	
Hexachlorocyclopentadiene	NS	< 1.8		< 1.7	
Hexachloroethane	3000	< 1.6		< 1.6	
Indeno(1,2,3-cd)pyrene	NS	< 0.71		< 0.68	
Isophorone	NS	< 0.78		< 0.74	
N-Nitrosodi-n-propylamine	NS	< 0.67		< 0.64	
N-Nitrosodiphenylamine	NS	< 0.81		< 0.77	
Naphthalene	NS	< 0.5		< 0.48	
Nitrobenzene	2000	< 0.93		< 0.89	
Pentachlorophenol	100000	< 5		< 4.8	
Phenanthrene	NS	< 0.86		< 0.82	
Phenol	NS	< 0.5	/R/c	< 0.48	/R/c
Pyrene	NS	< 0.68		< 0.65	
Metals by USEPA Method 6010 (µg/L)					
Antimony	NS	< 1		< 1	
Arsenic	5000	< 1.3		< 1.3	
Beryllium	NS	< 0.2		**4.2**	
Cadmium	1000	< 0.2		**2.2**	**J//**
Chromium	5000	**8.3**	**J//**	**65.7**	
Copper	NS	**2.8**	**J//**	**5.4**	**J//**
Lead	5000	< 1.1		**8.1**	
Nickel	NS	**1.8**	**J//**	**20.4**	**J//**
Selenium	1000	< 2.9		< 2.9	
Silver	5000	< 0.7		< 0.7	
Thallium	NS	< 1.4		**1.7**	**J//**
Zinc	NS	**29.4**		**230**	
Mercury by USEPA Method 7470 (µg/L)					
Mercury	200	**0.07**	**J//**	**0.11**	**J//**

Notes:

Screening Criteria are the Toxicity Characteristic Leaching Procedure Regulatory Levels (USEPA, October 2014).

NS - No Standard

Bold font indicates a detected concentration.

Data Qualifiers:

"/" Separates the laboratory added data qualifiers from the validation data qualifiers. The laboratory added data qualifiers precede the first "/". The result qualifiers follow the first "/" and the analysis qualifiers follow the second "/". The result qualifiers are a product of the data validation process, and the analysis qualifier defines the type of QC excursion.

Laboratory Data Qualifiers

J - Estimated result less than the practical quantitation limit and greater than or equal to the method detection limit

Result Data Qualifiers

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Analysis Data Qualifiers

c - Laboratory control recovery below the established criteria.

APPENDIX A

MONITORING WELL APPROVAL LETTERS

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RECEIVED
NOV 04 2016

October 31, 2016

Ms. Kanistha C. Coombs
UTC AEROSPACE SYSTEMS
EH&S Generalist, Sr. Analyst
P.O. Box 969, 4334 Main Highway
Bamberg, SC 29003

Re: Groundwater Delineation Work Plan dated September 13, 2016
Goodrich Delavan Spray Technology Site
Bamberg County
VCC #13-4762-RP
File #51778 (Former Site ID #02211)

Dear Ms. Coombs:

The Department has reviewed the referenced work plan and offers the following comments:

1. The proposal to field screen the groundwater prior to locating the permanent monitoring wells is approved. Other field screening methods such as Color-Tec™ with the proper QA/QC may be worth considering for this site as it may save time and/or money.

2. Please include a discussion of the abandonment procedures for the temporary field screening wells and submit replacement pages including this discussion for the work plan, on or before December 15, 2016.

3. The proposal to perform a pilot study for source area remediation while completing the delineation of the groundwater plumes is approved. Please submit a work plan for a pilot study, to my attention, on or before January 15, 2017.

4. The assessment report including the field screening data and a proposal for the permanent well installations should be submitted, to my attention, on or before January 15, 2017. The Department understands that this work is based on UTAS obtaining off-site access and an extension for this submission may be necessary.

Attached is your copy of the Temporary Monitoring Well Installation Approval. The original has been sent to your consultant, Mr. Walter Gerald, P.G., of AECOM per the referenced workplan. Please feel free to contact me at (803)898-0722 or at walkeras@dhec.sc.gov with any questions or comments. Please reference File #51778 on all future correspondence.

Sincerely,

Addie Walker, Project Manager
State Remediation Section
Bureau of Land and Waste Management

CC: Mr. R. Gary Stewart, BLWM
Mr. Russell Berry, Director, Low Country EQC Region
Mr. Bill Penn, United Technologies Corporation, EH&S Remediation Group, 9 Farm Springs Road, - MS101, Farmington CT 06032
Mr. Walter Gerald, P.G., AECOM, 10 Patewood Drive, Bldg. VI, Suite 500, Greenville, SC, 29615
File #51778

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Monitoring Well Installation Approval

Approval is hereby granted to:	AECOM
(on behalf of):	United Technologies Corporation Aerospace Systems (UTAS)
Facility:	Delavan Spray Technologies Site
Site Identification:	#51778
County:	Bamberg

This approval is for up to 20 temporary wells. These wells are to be installed per the correspondence from Walter Gerald, P.G., AECOM, dated September 13, 2016. These wells are to be installed following all of the applicable requirements of R.61-71.

Please note that R.61-71 requires the following:

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.

2. A Water Well Record Form or other form provided or approved by the Department shall be completed and submitted to the Department within 30 days after well completion or abandonment unless another schedule has been approved by the Department. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f

3. All analytical data and water levels obtained from each monitoring well shall be submitted to the Department within 30 days of receipt of laboratory results unless another schedule has been approved by the Department as required by R.61-71.H.1.d.

4. Well construction and sampling derived waste including but not limited to drill cuttings, drilling fluids, and development/purge water should be managed properly and in compliance with applicable requirements. If containerized, each vessel should be clearly labeled with regards to contents, source, and date of activity.

5. Monitoring wells are to yield groundwater samples representative of the zone monitored per R.61-71 H.1.c of the South Carolina Well Standards and Regulations (e.g. low flow sampling techniques are recommended for samples to be analyzed for metals to reduce induced turbidity).

6. If any of the information provided to the Department changes, **Addie Walker (803) 898-0722** shall be notified a minimum of twenty-four hours prior to well construction as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina Well Standards and Regulations, dated April 26, 2002.

Date of Issuance: **October 31, 2016** **Approval #: MW-10879**

Addie Walker, Project Manager
State Remediation Section
Bureau of Land and Waste Management

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April 4, 2017

Ms. Kanistha C. Coombs
UTC AEROSPACE SYSTEMS
EH&S Generalist, Sr. Analyst
P.O. Box 969, 4334 Main Highway
Bamberg, SC 29003

Re: Status Report and Monitoring Well Installation Request dated April 3, 2017
Goodrich Delavan Spray Technology Site
Bamberg County
VCC #13-4762-RP
File #51778 (Former Site ID #02211)

Dear Ms. Coombs:

The Department has reviewed and approves the referenced request. Attached is your copy of the Monitoring Well Installation Approval for the installation of three permanent, shallow groundwater monitoring wells. The original has been sent to your consultant, Walter Gerald, P.G., of AECOM. The data from these new wells should be included in the next monitoring report to be submitted on or before June 15, 2017. Please feel free to contact me at (803)898-0722 or at walkeras@dhec.sc.gov with any questions or comments. Please reference File #51778 on all future correspondence.

Sincerely,

Addie Walker, Project Manager
State Voluntary Cleanup Section
Bureau of Land and Waste Management

CC: Mr. Lucas Berresford, BLWM
Mr. Russell Berry, Director, Low Country EQC BEHS Office
Mr. Bill Penn, United Technologies Corporation, EH&S Remediation Group, 9 Farm Springs Road, - MS101, Farmington CT 06032
Mr. Walter Gerald, P.G., AECOM, 10 Patewood Drive, Bldg. VI, Suite 500, Greenville, SC, 29615
File #51778

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Monitoring Well Installation Approval

Approval is hereby granted to:	AECOM
(on behalf of):	**UTC**
Facility:	**Delavan Spray Site**
Site Identification:	#02211
County:	Bamberg

This approval is for the installation of three (3) 2" permanent groundwater wells per the plans and specifications submitted by Walter Gerald, P.G., of AECOM on April 3, 2017. The wells are to be installed following all of the applicable requirements of R.61-71.

Please note that R.61-71 requires the following:

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.

2. A Water Well Record Form or other form provided or approved by the Department shall be completed and submitted to the Department within 30 days after well completion or abandonment unless another schedule has been approved by the Department. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f

3. All analytical data and water levels obtained from each monitoring well shall be submitted to the Department within 30 days of receipt of laboratory results unless another schedule has been approved by the Department as required by R.61-71.H.1.d.

4. All temporary monitoring wells shall be abandoned within 10 days of borehole completion using appropriate methods as required by R.61-71.H.4.c.

5. If any of the information provided to the Department changes, the **Addie Walker (803) 898-0722** shall be notified a minimum of twenty-four hours prior to well construction as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina Well Standards and Regulations, dated April 26, 2002.

Date of Issuance: April 4, 2017 **Approval #: MW-11050**

Addie Walker, Project Manager

State Voluntary Cleanup Section

Bureau of Land and Waste Management

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April 11, 2017

Ms. Kanistha C. Coombs
UTC AEROSPACE SYSTEMS
EH&S Generalist, Sr. Analyst
P.O. Box 969, 4334 Main Highway
Bamberg, SC 29003

Re: Status Report and Monitoring Well Installation Request dated April 10, 2017
Goodrich Delavan Spray Technology Site
Bamberg County
VCC #13-4762-RP
File #51778 (Former Site ID #02211)

Dear Ms. Coombs:

The Department has reviewed and approves the referenced request. Attached is your copy of the Monitoring Well Installation Approval for the installation of three, permanent, deep groundwater monitoring wells. The original has been sent to your consultant, Walter Gerald, P.G., of AECOM. The data from these new wells should be included in the next monitoring report to be submitted on or before June 15, 2017. A technical memorandum containing all the field screening data, wells logs etc. should be submitted on or before June 15, 2017 also. Please feel free to contact me at (803)898-0722 or at walkeras@dhec.sc.gov with any questions or comments. Please reference File #51778 on all future correspondence.

Sincerely,

Addie Walker

Addie Walker, Project Manager
State Voluntary Cleanup Section
Bureau of Land and Waste Management

CC: Mr. Lucas Berresford, BLWM
Mr. Russell Berry, Director, Low Country EQC BEHS Office
Mr. Bill Penn, United Technologies Corporation, EH&S Remediation Group, 9 Farm Springs Road, - MS101, Farmington CT 06032
Mr. Walter Gerald, P.G., AECOM, 10 Patewood Drive, Bldg. VI, Suite 500, Greenville, SC, 29615
File #51778

dhec
Healthy People. Healthy Communities.

Monitoring Well Installation Approval

Approval is hereby granted to:	AECOM
(on behalf of):	**UTC**
Facility:	**Delavan Spray Site**
Site Identification:	#02211
County:	Bamberg

This approval is for the installation of three (3) 2" deep, permanent groundwater wells per the plans and specifications submitted by Walter Gerald, P.G., of AECOM on April 10, 2017. The wells are to be installed following all of the applicable requirements of R.61-71.

Please note that R.61-71 requires the following:

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.

2. A Water Well Record Form or other form provided or approved by the Department shall be completed and submitted to the Department within 30 days after well completion or abandonment unless another schedule has been approved by the Department. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f

3. All analytical data and water levels obtained from each monitoring well shall be submitted to the Department within 30 days of receipt of laboratory results unless another schedule has been approved by the Department as required by R.61-71.H.1.d.

4. All temporary monitoring wells shall be abandoned within 10 days of borehole completion using appropriate methods as required by R.61-71.H.4.c.

5. If any of the information provided to the Department changes, the **Addie Walker (803) 898-0722** shall be notified a minimum of twenty-four hours prior to well construction as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina Well Standards and Regulations, dated April 26, 2002.

Date of Issuance: April 11, 2017 **Approval #: MW-11057**

Addie Walker, Project Manager

State Voluntary Cleanup Section

Bureau of Land and Waste Management

APPENDIX B

FIELD DOCUMENTATION

- Calibration Records
- Daily Safety Meeting Logs
- Drill Rig Inspection Checklists
- Test Boring Reports
- Water Well Records
- Monitoring Well Construction Details
- Monitoring Well Development Logs
- Field Data Logs for Groundwater Sampling
- Chain of Custody Forms
- IDW Management Form
- Logbooks

Photo / Flame-Ionization Detector Calibration Certificate

AECOM

Cal Standard

	Lot #	Expiration	Post-Cal Reading	Acceptable Range
PID Isobutylene 100 ppm	HAP-248-100	8-2019	101	98 - 102
FID Methane 100 ppm		N/A		98 - 102

	Pump Flow mL/min	Acceptable Range
	300	350 - 450

Model MiniRAE 2lc **S/N** 110 - 015043

Lamp 10.6

Project Name: UTC

Project #: 60314964.16

Calibrated By: Eric Olson

Date of Calibration: 3-24-17

Signed: Eric Olson

Photo / Flame-Ionization Detector Calibration Certificate

AECOM

Cal Standard

	Lot #	Expiration	Post-Cal Reading	Acceptable Range
PID Isobutylene 100 ppm	HAJ-245-100	8-2019	99.9	98 - 102
FID Methane 100 ppm		N/A		98 - 102

	Pump Flow mL/min	Acceptable Range
	375	350 - 450

Model MINI RAE 2K
Lamp 10.6
S/N 110-011510

Project Name: UTC

Project #: 60314964.16

Calibrated By: Eric Olson

Date of Calibration: 3-24-17

Signed: [signature]

YSI 556 MPS / Water Quality Calibration Certificate

AECOM

Cal Standard — Temp, LAB, C : 20.26 — Temp, FIELD, C :

	Lot #	Expiration	Post-Cal, LAB	Post-Cal, FIELD	Acceptable Range
Conductivity 1413 UMHO/CM @ 25C	7507209	7/16	1.278		(+/- .5%)
PH 4.00 @ 25C	4662304	2/18	4.01		(+/- 0.2 units)
PH 7.01 @ 25C	760163	2/15	7.00		(+/- 0.2 units)
PH 10.01 @ 25C	7603017	3/18	10.05		(+/- 0.2 units)
ORP ZOBELLS 231.0 MV @ 25C	7603533	7/16	237.5		(+/- 20 MV)

Dissolved Oxygen (Saturated Air)	Temp, C	% Saturation	mg/L	Acceptable Range
Post-Cal, LAB	20.45	101.9	9.18	(+/- 2%) / (+/- 2%)
Post-Cal, FIELD				

New DO Membrane — ○ Yes ⊗ No

Do Cap Color — ○ Black ◉ Blue ○ Yellow

Model 556 **S/N** 05I101253 **Cable** 16K05

Calibration referenced to the temperature of the calibration standards.

Turbidity	Lot #	Expiration	Post-Cal, LAB	Post-Cal, FIELD	Acceptable Range
.02 NTU	60601	JUN-18	0.02		(.0196 to .0204)
10 NTU	61243	DEC-18	9.99		(9.8 to 10.2)
1000 NTU	60603	JUN-18	999.2		(970 to 1031)

Model Micro TPW **S/N** 20071199

Calibrated By Eric Olson — Date of Calibration 3-24-17

Project Name UTC — Project number 60314964.16

Signed : Eric Olson

REV-5, 1/12/2012 EKO

YSI 556 MPS / Water Quality Calibration Certificate

AECOM

Cal Standard — Temp, LAB, C : 20.44 | Temp, FIELD, C :

	Lot #	Expiration	Post-Cal, LAB	Post-Cal, FIELD	Acceptable Range
Conductivity 1413 UMHO/CM @ 25C	7507209	7/16	1.278		(+/- .5%)
PH 4.00 @ 25C	4662304	2/18	4.00		(+/- 0.2 units)
PH 7.01 @ 25C	760163	2/15	7.01		(+/- 0.2 units)
PH 10.01 @ 25C	7603017	3/18	10.04		(+/- 0.2 units)
ORP ZOBELLS 231.0 MV @ 25C	7603533	7/16	237.5		(+/- 20 MV)

Dissolved Oxygen (Saturated Air)	Temp, C	% Saturation	mg/L	Acceptable Range
Post-Cal, LAB	20.56	101.9	9.14	(+/- 2%) / (+/- 2%)
Post-Cal, FIELD				

New DO Membrane: ○ Yes ⊘ No

Do Cap Color: ○ Black ◉ Blue ○ Yellow

Model 556 **S/N** 05C1520AV **Cable** 15L15

Calibration referenced to the temperature of the calibration standards.

Turbidity	Lot #	Expiration	Post-Cal, LAB	Post-Cal, FIELD	Acceptable Range
.02 NTU	50401	APR-17	0.02		(.0196 to .0204)
10 NTU	61243	Dec-18	9.97		(9.8 to 10.2)
1000 NTU	50403	APR-17	1002		(970 to 1031)

Model Micro TPW **S/N** 20070302G

Calibrated By Eric Olson Date of Calibration 3-24-17

Project Name UTC Project number 60314964.16

Signed : Eric Olson

REV-5, 1/12/2012 EKO

AECOM

FIELD INSTRUMENT CALIBRATION LOG

CABLE 16K05

Project Name: UTC Delavan Groundwater Delineation
Project Number: 60314964.16
Calibrated By: Ron Paulling
Signature: R Paulling

YSI 556 SN: 085 101 253
Turbidity Meter Model/SN: 200911199
Additional Equipment SN:
Date: 8/27/2017 (Mon.)

~138.00%
109.2% (Stabilized)

Operation Notes:
1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.
2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.
3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

Table 1: Calibration Values At Various Temperatures

Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237.50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

Table 2: Atmospheric Pressure / Altitude Table

Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

Table 3: DO % Saturation Vs. Temperature

Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10.084	20	9.092	25	8.263	30	7.559	35	6.950
16	9.870	21	8.915	26	8.113	31	7.430	36	6.837
17	9.665	22	8.743	27	7.968	32	7.305	37	6.727
18	9.467	23	8.578	28	7.827	33	7.183	38	6.620
19	9.276	24	8.418	29	7.691	34	7.065	39	6.515

YSI 556 Calibration

Parameter	Before Calibration	After Calibration	Time	Units
Barametric Pressure	~~785~~ 785.3	786.3	1325	mmHg
Temperature (Saturated Air)	20.18	20.76	1325	C
Temperature (Calibration Solution)	(7) 22.67 / (4) 22.91 / (2) 21.3	(7) 22.68 / (4) 22.96 / (10) 21.84	1325	C
DO	8.89	8.65	1325	mg/L
pH 7	7.19	7.01	1307	SU
pH 4	4.22	4.04	1310	SU
pH 10	10.09	10.03	1314	SU
Specific Conductance	0.059	1.411	1319	mS/cm
ORP	137.8	237.9	1323	mV

MicroTPW Calibration

Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted:	Yes	No
Turbidity CAL		(circle one)	

1000	993.2 ✓			
10	10.1 ✓			
0.02	0.02 ✓			
PID Mini RAE 2000		Fresh Air 0.0		Acetylene 100 ppm / 99.2 ✓
11D-011510				

AECOM

FIELD INSTRUMENT CALIBRATION LOG

CABLE 16K05

Project Name: UTC Delavan Groundwater Delineation
Project Number: 60314964.16
Calibrated By: Ryan Pauling
Signature: Ryan Pauling

YSI 556 SN: 08510 1253
Turbidity Meter Model/SN: 200711199
Additional Equipment SN:
Date: 3/28/2017 (Tues.)

Operation Notes:
1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.
2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.
3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

139.00%
121.9% (Stabilized)

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

Table 1: Calibration Values At Various Temperatures

Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237.50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

Table 2: Atmospheric Pressure / Altitude Table

Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

Table 3: DO % Saturation Vs. Temperature

Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10.084	20	9.092	25	8.263	30	7.559	35	6.950
16	9.870	21	8.915	26	8.113	31	7.430	36	6.837
17	9.665	22	8.743	27	7.968	32	7.305	37	6.727
18	9.467	23	8.578	28	7.827	33	7.183	38	6.620
19	9.276	24	8.418	29	7.691	34	7.065	39	6.515

YSI 556 Calibration

Parameter	Before Calibration	After Calibration	Time (0727)	Units
Barametric Pressure	783.1	783.1	~~0700~~	mmHg
Temperature (Saturated Air)	18.37	20.74	0706	C
Temperature (Calibration Solution)	22.03	20.57	0709	C
DO	PP ~~20.5~~ 8.72	8.56	0721	mg/L
pH 7	6.82	7.01	0711	SU
pH 4	6.02	3.93	0715	SU
pH 10	3.81	10.05	0719	SU
Specific Conductance	0.012	1.401	0722	mS/cm
ORP	357.9	236.5	0725	mV

MicroTPW Calibration

Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted: (Yes) No (circle one)
Turbidity CAL	

Standard	CAL Result			
1000	1100	✓		
10.0	10.12	✓		
0.02	0.00	✓		
PID Mini RAE SN 110-01510	2000	Fresh Air 0.0		100 ppm Acetylene 99.8 ✓

AECOM

FIELD INSTRUMENT CALIBRATION LOG

CABLE 16K05

Project Name: UTC Delavan Groundwater Delineation
Project Number: 60314964.16
Calibrated By:
Signature:

YSI 556 SN: 08510 1253
Turbidity Meter Model/SN: 2007 11199
Additional Equipment SN:
Date: 3/29/2017 (Wed.)

Operation Notes:
1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.
2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.
3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

initial 169.2%
stabilized @

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

Table 1: Calibration Values At Various Temperatures

Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237.50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

Table 2: Atmospheric Pressure / Altitude Table

Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

Table 3: DO % Saturation Vs. Temperature

Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10.084	20	9.092	25	8.263	30	7.559	35	6.950
16	9.870	21	8.915	26	8.113	31	7.430	36	6.837
17	9.665	22	8.743	27	7.968	32	7.305	37	6.727
18	9.467	23	8.578	28	7.827	33	7.183	38	6.620
19	9.276	24	8.418	29	7.691	34	7.065	39	6.515

YSI 556 Calibration

Parameter	Before Calibration	After Calibration	Time	Units
Barametric Pressure	784.0	784.2	0802	mmHg
Temperature (Saturated Air)	19.60	16.07	0800	C
Temperature (Calibration Solution)	20.58	20.59	0733	C
DO	9.23	8.17	0736	mg/L
pH 7	6.80	7.03	0740	SU
pH 4	5.95	3.99	0745	SU
pH 10	5.07	9.96	0748	SU
Specific Conductance	1.341	1.412	0752	mS/cm
ORP	285.1	236.2	0755	mV

MicroTPW Calibration

Calibrations performed 0.02, 10, and 1,000 NTU
Turbidity CAL

Calibrations accepted: (Yes) No (circle one)

Standard	CAL Result			
1000	989.1	✓		
10	9.09	✓		
0.02	0.02	✓		
PID Mini RAE 2000 SN 110-011510		Fresh Air 0.0		100 ppm Acetylene ✓ 99.9

AECOM

FIELD INSTRUMENT CALIBRATION LOG

Project Name: UTC Delavan Groundwater Delineation
Project Number: 60314964.16
Calibrated By: Lisa Petty
Signature: Charles R. Petty III

YSI 556 SN: 08510253
Turbidity Meter Model/SN:
Additional Equipment SN:
Date: 3/31/17

Operation Notes:
1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.
2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.
3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

Table 1: Calibration Values At Various Temperatures

Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237.50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

Table 2: Atmospheric Pressure / Altitude Table

Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

Table 3: DO % Saturation Vs. Temperature

Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10.084	20	9.092	25	8.263	30	7.559	35	6.950
16	9.870	21	8.915	26	8.113	31	7.430	36	6.837
17	9.665	22	8.743	27	7.968	32	7.305	37	6.727
18	9.467	23	8.578	28	7.827	33	7.183	38	6.620
19	9.276	24	8.418	29	7.691	34	7.065	39	6.515

YSI 556 Calibration

Parameter	Before Calibration	After Calibration	Time	Units
Barametric Pressure	758.9		0850	mmHg
Temperature (Saturated Air)	22.07	19.89	0850	C
Temperature (Calibration Solution)	21.95	21.97		C
DO	7.64	8.76		mg/L
pH 7	6.90	7.00	0903	SU
pH 4	3.95	4.00		SU
pH 10	10.12	10.02	0906	SU
Specific Conductance	1.253	1.416		mS/cm
ORP	237.5	237.5	0908	mV

MicroTPW Calibration

Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted:	Yes No (circle one)

1,000	[redacted]968.1			
10.0	10.22			
0.02	0.36			
PID MiniRae 2000				

AECOM

FIELD INSTRUMENT CALIBRATION LOG

Project Name: UTC Delavan Groundwater Delineation
Project Number: 60314964.16
Calibrated By: Daniel Good
Signature: Daniel Good

YSI 556 SN: 05C1520
Turbidity Meter Model/SN: 2007030 2C
Additional Equipment SN:
Date: 3-27-17

Operation Notes:
1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.
2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.
3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

Table 1: Calibration Values At Various Temperatures

Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237.50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

Table 2: Atmospheric Pressure / Altitude Table

Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

Table 3: DO % Saturation Vs. Temperature

Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10.084	20	9.092	25	8.263	30	7.559	35	6.950
16	9.870	21	8.915	26	8.113	31	7.430	36	6.837
17	9.665	22	8.743	27	7.968	32	7.305	37	6.727
18	9.467	23	8.578	28	7.827	33	7.183	38	6.620
19	9.276	24	8.418	29	7.691	34	7.065	39	6.515

YSI 556 Calibration

Parameter	Before Calibration	After Calibration	Time	Units
Barametric Pressure	787.3		1331	mmHg
Temperature (Saturated Air)	20.82	20.89	1350	C
Temperature (Calibration Solution)	21.66	20.99	1350	C
DO	13.65	8.98 2	1335	mg/L
pH 7	6.61	7.02	1337	SU
pH 4	3.81	4.00	1339	SU
pH 10	9.45	10.05	1342	SU
Specific Conductance	1.313	1.278	1344	mS/cm
ORP	244.6	237.5	1347	mV

MicroTPW Calibration

Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted:	(Yes)	No
		(circle one)	

AECOM

FIELD INSTRUMENT CALIBRATION LOG

Project Name: UTC Delavan Groundwater Delineation
Project Number: 60314964.16
Calibrated By: Daniel Good
Signature: Daniel Good

YSI 556 SN: 05L1520
Turbidity Meter Model/SN: 2007030 2L
Additional Equipment SN:
Date: 3-28-17

Operation Notes:
1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.
2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.
3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

Table 1: Calibration Values At Various Temperatures

Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237.50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

Table 2: Atmospheric Pressure / Altitude Table

Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

Table 3: DO % Saturation Vs. Temperature

Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10.084	20	9.092	25	8.263	30	7.559	35	6.950
16	9.870	21	8.915	26	8.113	31	7.430	36	6.837
17	9.665	22	8.743	27	7.968	32	7.305	37	6.727
18	9.467	23	8.578	28	7.827	33	7.183	38	6.620
19	9.276	24	8.418	29	7.691	34	7.065	39	6.515

YSI 556 Calibration

Parameter	Before Calibration	After Calibration	Time	Units
Barametric Pressure	782.9		0700	mmHg
Temperature (Saturated Air)	17.26	17.19	0719	C
Temperature (Calibration Solution)	20.84	20.89	0717	C
DO	13.14	9.~~27~~26	0706	mg/L
pH 7	7.10	7.02	0714	SU
pH 4	3.61	4.0	0715	SU
pH 10	9.86	10.05	0717	SU
Specific Conductance	~~12~~7936~~2~~	1278	0709	mS/cm
ORP	242.1	237.5	0711	mV

MicroTPW Calibration

Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted:	Yes (circle one)	No

AECOM

FIELD INSTRUMENT CALIBRATION LOG

Project Name: UTC Delavan Groundwater Delineation
Project Number: 60314964.16
Calibrated By: Daniel Good
Signature: Daniel Good

YSI 556 SN: 05C1520
Turbidity Meter Model/SN: 2007 03022
Additional Equipment SN:
Date: 3-29-17

Operation Notes:
1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.
2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.
3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

Table 1: Calibration Values At Various Temperatures

Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237.50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

Table 2: Atmospheric Pressure / Altitude Table

Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

Table 3: DO % Saturation Vs. Temperature

Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10.084	20	9.092	25	8.263	30	7.559	35	6.950
16	9.870	21	8.915	26	8.113	31	7.430	36	6.837
17	9.665	22	8.743	27	7.968	32	7.305	37	6.727
18	9.467	23	8.578	28	7.827	33	7.183	38	6.620
19	9.276	24	8.418	29	7.691	34	7.065	39	6.515

YSI 556 Calibration

Parameter	Before Calibration	After Calibration	Time	Units
Barametric Pressure	756.0		0645	mmHg
Temperature (Saturated Air)	14.81	14.96	0647	C
Temperature (Calibration Solution)	18.20	18.13	0649	C
DO	6.88	9.09	0701	mg/L
pH 7	6.63	7.04	0649	SU
pH 4	3.81	4.00	0652	SU
pH 10	9.15	10.10	0654	SU
Specific Conductance	1,254	1,147	0658	mS/cm
ORP	231.7	244.2	0701	mV

MicroTPW Calibration

Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted: (Yes) No (circle one)

AECOM

FIELD INSTRUMENT CALIBRATION LOG

Project Name: UTC Delavan Groundwater Delineation
Project Number: 60314964.16
Calibrated By: Daniel Gonyo
Signature: Daniel Gonyo

YSI 556 SN: 05C1520
Turbidity Meter Model/SN: 2007-03026
Additional Equipment SN:
Date: 3-30-17

Operation Notes:
1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.
2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.
3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

Table 1: Calibration Values At Various Temperatures

Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237.50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

Table 2: Atmospheric Pressure / Altitude Table

Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

Table 3: DO % Saturation Vs. Temperature

Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10.084	20	9.092	25	8.263	30	7.559	35	6.950
16	9.870	21	8.915	26	8.113	31	7.430	36	6.837
17	9.665	22	8.743	27	7.968	32	7.305	37	6.727
18	9.467	23	8.578	28	7.827	33	7.183	38	6.620
19	9.276	24	8.418	29	7.691	34	7.065	39	6.515

YSI 556 Calibration

Parameter	Before Calibration	After Calibration	Time	Units
Barametric Pressure	757		1206	mmHg
Temperature (Saturated Air)	25.25	25.31	1206	C
Temperature (Calibration Solution)	21.03	21.07	1208	C
DO	9.98	8.26	1207	mg/L
pH 7	6.77	7.02	1208	SU
pH 4	3.82	4.00	1210	SU
pH 10	9.85	10.05	1212	SU
Specific Conductance	1.554	1.413	1213	mS/cm
ORP	221.1	236.0	1215	mV

MicroTPW Calibration

Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted:	Yes	No
		(circle one)	

AECOM

FIELD INSTRUMENT CALIBRATION LOG

Project Name: UTC Delavan Groundwater Delineation
Project Number: 60314964.16
Calibrated By: Daniel Good
Signature: Daniel Good

YSI 556 SN: 08J 101253
Turbidity Meter Model/SN: 2007 11199
Additional Equipment SN:
Date: 5-30-17

Operation Notes:
1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.
2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.
3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

Table 1: Calibration Values At Various Temperatures

Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237.50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

Table 2: Atmospheric Pressure / Altitude Table

Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

Table 3: DO % Saturation Vs. Temperature

Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10.084	20	9.092	25	8.263	30	7.559	35	6.950
16	9.870	21	8.915	26	8.113	31	7.430	36	6.837
17	9.665	22	8.743	27	7.968	32	7.305	37	6.727
18	9.467	23	8.578	28	7.827	33	7.183	38	6.620
19	9.276	24	8.418	29	7.691	34	7.065	39	6.515

YSI 556 Calibration

Parameter	Before Calibration	After Calibration	0810 Time	Units
Barametric Pressure	765		~~0811~~	mmHg
Temperature (Saturated Air)	21.84	21.87	0813	c
Temperature (Calibration Solution)	22.33	22.61	0815	c
DO	10.75	8.91	0816	mg/L
pH 7	6.72	7.02	0818	SU
pH 4	4.27	4.00	0820	SU
pH 10	10.38	10.10	0821	SU
Specific Conductance	12.93	12.78	0823	mS/cm
ORP	234.0	237.5	0825	mV

MicroTPW Calibration

Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted:	(Yes)	No
✓ ✓ ✓		(circle one)	

AECOM

FIELD INSTRUMENT CALIBRATION LOG

Project Name: UTC Delavan Groundwater Delineation
Project Number: 60314964.16
Calibrated By: David Good
Signature: David G.D

YSI 556 SN: 05C1520
Turbidity Meter Model/SN: 20070326
Additional Equipment SN:
Date: 4-3-17

Operation Notes:
1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.
2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.
3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

Table 1: Calibration Values At Various Temperatures

Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237.50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

Table 2: Atmospheric Pressure / Altitude Table

Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

Table 3: DO % Saturation Vs. Temperature

Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10.084	20	9.092	25	8.263	30	7.559	35	6.950
16	9.870	21	8.915	26	8.113	31	7.430	36	6.837
17	9.665	22	8.743	27	7.968	32	7.305	37	6.727
18	9.467	23	8.578	28	7.827	33	7.183	38	6.620
19	9.276	24	8.418	29	7.691	34	7.065	39	6.515

YSI 556 Calibration

Parameter	Before Calibration	After Calibration	Time	Units
Barametric Pressure	762	[redacted]	1117	mmHg
Temperature (Saturated Air)	24.94	25.61	1128	c
Temperature (Calibration Solution)	22.39	22.54	1144	c
DO	13.60	8.25	1130	mg/L
pH 7	6.96	7.01	1138	SU
pH 4	3.95	4.00	1141	SU
pH 10	10.07	10.01	1144	SU
Specific Conductance	1.244	1.413	1131	mS/cm
ORP	228.1	230.8	1134	mV

MicroTPW Calibration

Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted:	Yes (circle one)	No

AECOM

FIELD INSTRUMENT CALIBRATION LOG

Project Name: UTC Delavan Groundwater Delineation
Project Number: 60314964.16
Calibrated By: Daniel Good
Signature: Daniel Good

YSI 556 SN: 05C1520
Turbidity Meter Model/SN: 2007 03026
Additional Equipment SN:
Date: 4-4-17

Operation Notes:
1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.
2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.
3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

Table 1: Calibration Values At Various Temperatures

Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237.50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

Table 2: Atmospheric Pressure / Altitude Table

Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
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Table 3: DO % Saturation Vs. Temperature

Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10.084	20	9.092	25	8.263	30	7.559	35	6.950
16	9.870	21	8.915	26	8.113	31	7.430	36	6.837
17	9.665	22	8.743	27	7.968	32	7.305	37	6.727
18	9.467	23	8.578	28	7.827	33	7.183	38	6.620
19	9.276	24	8.418	29	7.691	34	7.065	39	6.515

YSI 556 Calibration

Parameter	Before Calibration	After Calibration	Time	Units
Barametric Pressure	755.3		0702	mmHg
Temperature (Saturated Air)	19.17	19.22	0720	C
Temperature (Calibration Solution)	19.95	19.74	0720	C
DO	12.22	9.28	0706	mg/L
pH 7	7.19	7.02	0709	SU
pH 4	4.08	4.00	0710	SU
pH 10	10.25	10.05	0712	SU
Specific Conductance	1291	1277	0715	mS/cm
ORP	232.9	237.5	0717	mV

MicroTPW Calibration

Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted:	(Yes)	No
		(circle one)	

AECOM

FIELD INSTRUMENT CALIBRATION LOG

Project Name: UTC Delavan Groundwater Delineation
Project Number: 60314964.16
Calibrated By: Daniel Good
Signature: Daniel Good

YSI 556 SN: 05C1520
Turbidity Meter Model/SN: 20070302C
Additional Equipment SN:
Date: 4-5-17

Operation Notes:
1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.
2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.
3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

Table 1: Calibration Values At Various Temperatures

Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237.50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

Table 2: Atmospheric Pressure / Altitude Table

Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

Table 3: DO % Saturation Vs. Temperature

Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10.084	20	9.092	25	8.263	30	7.559	35	6.950
16	9.870	21	8.915	26	8.113	31	7.430	36	6.837
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18	9.467	23	8.578	28	7.827	33	7.183	38	6.620
19	9.276	24	8.418	29	7.691	34	7.065	39	6.515

YSI 556 Calibration

Parameter	Before Calibration	After Calibration	Time	Units
Barametric Pressure	758.5		0650	mmHg
Temperature (Saturated Air)	17.66	17.91	0710	C
Temperature (Calibration Solution)	18.99	18.87	0710	C
DO	15.46	9.42	0655	mg/L
pH 7	7.16	7.02	0657	SU
pH 4	3.62	4.01	0659	SU
pH 10	9.91	10.05	0702	SU
Specific Conductance	1.398	1.278	0705	mS/cm
ORP	243.7	237.5	0707	mV

MicroTPW Calibration

Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted:	Yes (circle one)	No

AECOM

FIELD INSTRUMENT CALIBRATION LOG

Project Name: UTC Delavan Groundwater Delineation
Project Number: 60314964.16
Calibrated By: Doug Lyon
Signature:

YSI 556 SN: 05C 1520
Turbidity Meter Model/SN: 200703026
Additional Equipment SN:
Date: 4-6-17

Operation Notes:
1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.
2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.
3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

Table 1: Calibration Values At Various Temperatures

Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
~~15~~	4.00	7.04	10.10	1147.00	244.00
(20)	4.00	7.02	10.05	1278.00	237.50
~~25~~	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

Table 2: Atmospheric Pressure / Altitude Table

Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
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Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
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16	9.870	21	8.915	26	8.113	31	7.430	36	6.837
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18	9.467	23	8.578	28	7.827	33	7.183	38	6.620
(19)	9.276	24	8.418	29	7.691	34	7.065	39	6.515

YSI 556 Calibration

Parameter	Before Calibration	After Calibration	Time	Units
Barametric Pressure	760.4		0700	mmHg
Temperature (Saturated Air)	18.98	19.15	0700	C
Temperature (Calibration Solution)	21.83	21.60	0711	C
DO	13.68	9.27	0710	mg/L
pH 7	7.09	7.02	0701	SU
pH 4	4.11	4.00	0702	SU
pH 10	10.22	10.05	0704	SU
Specific Conductance	1.303	1.278	0706	mS/cm
ORP	277.4	237.5	0708	mV

MicroTPW Calibration

Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted: (Yes) No (circle one)

AECOM

FIELD INSTRUMENT CALIBRATION LOG

Project Name: UTC Delavan Groundwater Delineation
Project Number: 60314964.16
Calibrated By: Daniel Good
Signature:

YSI 556 SN: 05161520
Turbidity Meter Model/SN: 20170302C
Additional Equipment SN:
Date: 4-10-17

Operation Notes:
1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.
2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.
3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

Table 1: Calibration Values At Various Temperatures

Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237.50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

Table 2: Atmospheric Pressure / Altitude Table

Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

Table 3: DO % Saturation Vs. Temperature

Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10.084	20	9.092	25	8.263	30	7.559	35	6.950
16	9.870	21	8.915	26	8.113	31	7.430	36	6.837
17	9.665	22	8.743	27	7.968	32	7.305	37	6.727
18	9.467	23	8.578	28	7.827	33	7.183	38	6.620
19	9.276	24	8.418	29	7.691	34	7.065	39	6.515

YSI 556 Calibration

Parameter	Before Calibration	After Calibration	Time	Units
Barametric Pressure	757		1744	mmHg
Temperature (Saturated Air)	31.30	29.13	1757	C
Temperature (Calibration Solution)	24.77	25.31	1757	C
DO	6.21	7.430	1745	mg/L
pH 7	7.25	6.99	1747	SU
pH 4	4.07	4.00	1749	SU
pH 10	9.92	9.96	1751	SU
Specific Conductance	1491	1545	1753	mS/cm
ORP	224.2	224.5	1755	mV

MicroTPW Calibration

Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted:	Yes	No
		(circle one)	

AECOM

FIELD INSTRUMENT CALIBRATION LOG

Project Name:	UTC - Delavan	YSI 556 SN:	05H 1116
Project Number:	60344400.6	Turbidity Meter Model/SN:	261103384
Calibrated By:	Daniel Good	Additional Equipment SN:	
Signature:		Date:	5/9/2017

Operation Notes:
1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.
2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.
3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

Table 1: Calibration Values At Various Temperatures

Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237.50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

Table 2: Atmospheric Pressure / Altitude Table

Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

Table 3: DO % Saturation Vs. Temperature

Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10.084	20	9.092	25	8.263	30	7.559	35	6.950
16	9.870	21	8.915	26	8.113	31	7.430	36	6.837
17	9.665	22	8.743	27	7.968	32	7.305	37	6.727
18	9.467	23	8.578	28	7.827	33	7.183	38	6.620
19	9.276	24	8.418	29	7.691	34	7.065	39	6.515

YSI 556 Calibration

Parameter	Before Calibration	After Calibration	Time	Units
Barametric Pressure	782.1		0702	mmHg
Temperature (Saturated Air)	21.75	21.88	0702	c
Temperature (Calibration Solution)	23.86	23.89	0705	c
DO	9.42	8.42	0702	mg/L
pH 7	6.98	7.01	0705	SU
pH 4	4.02	4.00	0707	SU
pH 10	9.88	10.01	0710	SU
Specific Conductance	1.391	1.413	0713	mS/cm
ORP	235.0	231.00	0716	mV

MicroTPW Calibration

Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted: (Yes) No (circle one)

AECOM

Americas

Task Hazard Assessment

S3AM-209-FM6

Customer UTC	**Permit No.**
Location Bamberg Tract - GW Screening	**Job No.**
Description of Task Sonic Drilling	**Date** 3/27/2017 (Mon.)

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Soil Boring	Rotating Equipment caught in/crushed or struck by	10	Situational Awareness Stay clear of equipment Wear proper PPE for task (hard hat, safety glasses, gloves steel toed boots)	2	RP
Drum Handling	Crushed by, pinched	4	Stay aware - Proper PPE	2	RP
Heavily wooded Area	Biological Hazards (ticks, snakes)	4	Pay attention, stay clear report ticks	1	RP
			Highest Risk Index	2	

Review and attach to Tailgate Meeting as required. Number and attach additional pages if necessary.

Worker/Visitor acknowledgement and review of this content on back of this document.

Risk Matrix on Reverse

Originator Ron Pawling (Print Name) _____ (Signature)

Supervisor Ron Pawling (Print Name) _____ (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

3/27/2017 (Mon.)

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

Joel Carrillo
Stefan Smith
Steven Farris

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
3 – Occasional	15	12	9	6	3
2 – Remote	10	8	6	4	2
1 - Improbable	5	4	3	2	1

Risk Rating (Probability x Severity)	Risk Acceptance Authority
1 to 4 (Low)	Risk is tolerable, manage at local level
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>$250K to $1M USD	Onsite impact requiring remediation	Media intervention
Major	Lost/Restricted Work	> $10K to $250K USD	Release at/above reportable limit	Owner intervention
Moderate	Medical Treatment	> $1K to $10K USD	Release below reportable limit	Community or local attention
Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area: UTC Front Parking Lot

Emergency Contact #: 911

Emergency Radio Channel:

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) Ron Paulling

Signature

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer UTC	**Permit No.**
Location Bamberg, SC	**Job No.** 60314964
Description of Task Drilling / MW Install	**Date** 3-27-17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Highway / Road work	Traffic, pedestrians	8	See S3NA-306-PR1 (SOP)	4	
Manual Lifting	Strain, crushing, Property damage	4	See S3NA-014-PR1 (SOP)	2	
Housekeeping, Worksite	Slips, trips, falls, clutter	3	See S3NA-013-PR1 (SOP)	1	
Drilling / Boring	Heavy equipment, utilities	8	See S3NA-321-PR1 (SOP)	4	
Electrical lines Overhead	Fallen lines, lightning, live wire	8	See S3NA-322 PR1 (SOP)	3	
Underground Utilities	Hitting Communication, gas, water, etc.	8	See S3NA-331-PR1 (SOP)	3	
Hearing Conservation	Loud equipment, hearing loss	8	See S3NA-118-PR1 (SOP)	4	
Heat Stress Prevention	Dehydration, heat stress/stroke	9	See S3NA-113-PR1 (SOP)	2	
Respiratory Protection	Dust, cement, exhaust, etc	6	See S3NA-123-PR1 (SOP)	2	
Spill Response	Fuel / Hydraulic leaks	4	See S3NA-520-PR1 (SOP)	2	
			(All SOP's have hard copies on site)		
			Highest Risk Index	4	

Review and attach to Tailgate Meeting as required. Number and attach additional pages if necessary.

Worker/Visitor acknowledgement and review of this content on back of this document

Risk Matrix on Reverse

Originator Daniel Good (Print Name) — Daniel Good (Signature)

Supervisor SAME (Print Name) — (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print)	SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

Daniel Good	Daniel Good
SCOTT T. SMITH	SCOTT SMITH
WALTER E. GERACI	WALTER GERACI
Byron J Biddy's	Byron J Biddy's
STEFAN SMITH	STEFAN SMITH
STEVEN FARRIS	STEVEN FARRIS
Joel Carrillo	Joel Carrillo
Kyle Bergamaschi	Kyle Bergamaschi
Ron Paulling	Ron Paulling

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
3 – Occasional	15	12	9	6	3
2 – Remote	10	8	6	4	2
1 - Improbable	5	4	3	2	1

Risk Rating (Probability x Severity)	Risk Acceptance Authority
1 to 4 (Low)	Risk is tolerable, manage at local level
6 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>$250K to $1M USD	Onsite impact requiring remediation	Media intervention
Major	Lost/Restricted Work	> $10K to $250K USD	Release at/above reportable limit	Owner intervention
Moderate	Medical Treatment	> $1K to $10K USD	Release below reportable limit	Community or local attention
Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

VISITOR SIGN ON

NAME (Please Print)	SIGNATURE	TIME

Task Hazard Assessment Follow-Up/Review.

First Break	Initial

Lunch Break	Initial

Second Break	Initial

Emergency Meeting / Assembly Area: Plant Parking Lot

Emergency Contact #: 911

Emergency Radio Channel:

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name): Aaron Byrd

Signature:

803 383 0071 (K)

803) 707 2195

AECOM

Americas

Task Hazard Assessment

S3AM-209-FM6

Customer UTC	Permit No.
Location Bamburg Tract - GW Screening	Job No. 60314964.16
Description of Task Sonic Drilling	Date 03/28/2017 (Tues.)

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Soil Borings with Sonic Drill Rig	Heavy Equipment / Rotating machinery - caught in / crushed / or struck by	10	Situational Awareness, Stay Clear of equipment THINK about what you are about to do Proper PPE (hard hat, safety glasses, steel toed boot, gloves appropriate for task (i.e nitrile and protective textured	2	RP
Drum Handling	Crushed by, Pinched	4	Same as above	1	RP
Heavily wooded area	Biological Hazards (ticks, snakes - alot of caterpillars and mosquitos	4	Pay attention, give wide berth / stay clear - report ticks	1	RP
			Highest Risk Index	2	

Review and attach to Tailgate Meeting as required. Number and attach additional pages if necessary.

Worker/Visitor acknowledgement and review of this content on back of this document.

Risk Matrix on Reverse

Originator Ron Paulling (Print Name) — Signature

Supervisor Ron Paulling (Print Name) — Signature

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

3/28/2017 (Tues.)

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

STEFAN SMOOT
JOEL CARRILLO
STEVEN FARELIS

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
3 – Occasional	15	12	9	6	3
2 – Remote	10	8	6	4	2
1 - Improbable	5	4	3	2	1

Risk Rating (Probability x Severity)	Risk Acceptance Authority
1 to 4 (Low)	Risk is tolerable, manage at local level
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>$250K to $1M USD	Onsite impact requiring remediation	Media intervention
Major	Lost/Restricted Work	> $10K to $250K USD	Release at/above reportable limit	Owner intervention
Moderate	Medical Treatment	> $1K to $10K USD	Release below reportable limit	Community or local attention
Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area
UTC Front Parking Lot

Emergency Contact #
911

Emergency Radio Channel

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name)

Signature

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer VTC	Permit No.
Location Bamberg, SC	Job No. 60314964
Description of Task Drilling / MW Install	Date 3-28-17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Highway / Road work	Traffic, pedestrians	8	See S3NA-306-PR1 (SOP)	4	
Manual Lifting	Strain, crushing, Property damage	4	See S3NA-014-PR1 (SOP)	2	
Housekeeping. Worksite	Slips, trips, falls, clutter	3	See S3NA-013-PR1 (SOP)	1	
Drilling / Boring	Heavy equipment, utilities	8	See S3NA-321-PR1 (SOP)	4	
Electrical lines Overhead	Fallen lines, lightning, live wire	8	See S3NA-322 PR1 (SOP)	3	
Underground Utilities	Hitting Communication, gas, water, etc.	8	See S3NA-331-PR1 (SOP)	3	
Hearing Conservation	Loud equipment, hearing loss	8	See S3NA-118-PR1 (SOP)	4	
Heat Stress Prevention	Dehydration, heat stress/stroke	9	See S3NA-113-PR1 (SOP)	2	
Respiratory Protection	Dust, cement, exhaust, etc	6	See S3NA-123-PR1 (SOP)	2	
Spill Response	Fuel / Hydraulic leaks	4	See S3NA-520-PR1 (SOP)	2	
			(All SOP's have hard copies on site)		
K			Highest Risk Index	4	

Review and attach to Tailgate Meeting as required. Number and attach additional pages if necessary.

Worker/Visitor acknowledgement and review of this content on back of this document.

Risk Matrix on Reverse

Originator Daniel Good (Print Name) — Daniel Good (Signature)

Supervisor SAME (Print Name) — (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

Bruce Bishop
Kyle Borgemeister

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
3 – Occasional	15	12	9	6	3
2 – Remote	10	8	6	4	2
1 - Improbable	6	4	3	2	1

Risk Rating (Probability x Severity)	Risk Acceptance Authority
1 to 4 (Low)	Risk is tolerable, manage at local level
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Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>$250K to $1M USD	Onsite impact requiring remediation	Media intervention
Major	Lost/Restricted Work	> $10K to $250K USD	Release at/above reportable limit	Owner intervention
Moderate	Medical Treatment	> $1K to $10K USD	Release below reportable limit	Community or local attention
Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area

Plant Parking Lot

Emergency Contact #

603 707 2195 / 911

Emergency Radio Channel

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name)

Signature

AECOM

Americas

Task Hazard Assessment

S3AM-209-FM6

Customer UTC	Permit No.
Location Delavan Bamberg Tract	Job No. 60314964.116
Description of Task Sonic Drilling - Groundwater Screening	Date 03/29/2017

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Soil Boring w/ Sonic Drill Rig	Heavy Equipment - Rotating machinery crushed by, struck by, or caught in	10	Situational Awareness Stay clear of equipment THINK about what you are about to do Proper PPE (hard hat, safety glass, steel toed boots, gloves appropriate for task	2	RP
Drum Handling	Crushed by, pinched	4	Same as above	1	RP
Heavily wooded area	Biological Hazards (ie ticks, snakes)	4	Pay attention, stay clear report ticks	1	RP
				Highest Risk Index	

Review and attach to Tailgate Meeting as required. Number and attach additional pages if necessary.

Worker/Visitor acknowledgement and review of this content on back of this document.

Risk Matrix on Reverse

Originator Ron Paulling (Print Name) _____ (Signature)

Supervisor Ron Paulling (Print Name) _____ (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

3/29/2017 (Wed.)

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

Joel Carrillo
STEVEN FARRIS
STEFAN SMITH

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
3 – Occasional	15	12	9	6	3
2 – Remote	10	8	6	4	2
1 - Improbable	5	4	3	2	1

Risk Rating (Probability x Severity)	Risk Acceptance Authority
1 to 4 (Low)	Risk is tolerable, manage at local level
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>$250K to $1M USD	Onsite impact requiring remediation	Media intervention
Major	Lost/Restricted Work	> $10K to $250K USD	Release at/above reportable limit	Owner intervention
Moderate	Medical Treatment	> $1K to $10K USD	Release below reportable limit	Community or local attention
Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area

Front Parking Lot of CRTC

Emergency Contact #

911

Emergency Radio Channel

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) Ron Pawling

Signature

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer	UTC	**Permit No.**	
Location	Bamberg, SC	**Job No.**	60314964
Description of Task	Drilling 1 MW Install	**Date**	3-29-17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Highway / Road work	Traffic, pedestrians	8	See S3NA-306-PR1 (SOP)	4	
Manual Lifting	Strain, crushing, Property damage	4	See S3NA-014-PR1 (SOP)	2	
Housekeeping. Worksite	Slips, trips, falls, clutter	3	See S3NA-013-PR1 (SOP)	1	
Drilling / Boring	Heavy equipment, utilities	8	See S3NA-321-PR1 (SOP)	4	
Electrical lines Overhead	Fallen lines, lightning, live wire	8	See S3NA-322 PR1 (SOP)	3	
Underground Utilities	Hitting Communication, gas, water, etc.	8	See S3NA-331-PR1 (SOP)	3	
Hearing Conservation	Loud equipment, hearing loss	8	See S3NA-118-PR1 (SOP)	4	
Heat Stress Prevention	Dehydration, heat stress/stroke	9	See S3NA-113-PR1 (SOP)	2	
Respiratory Protection	Dust, cement, exhaust, etc	6	See S3NA-123-PR1 (SOP)	2	
Spill Response	Fuel / Hydraulic leaks	4	See S3NA-520-PR1 (SOP)	2	
			(All SOP's have hard copies onsite)		
			Highest Risk Index	4	

Review and attach to Tailgate Meeting as required. Number and attach additional pages if necessary.

Worker/Visitor acknowledgement and review of this content on back of this document

Risk Matrix on Reverse

Originator Daniel Good (Print Name) — Daniel Good (Signature)

Supervisor SAME (Print Name) — (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

Brian BigDaddyBilla B 9/2
Kyle Borgemaster Kyle Borgemaster

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
3 – Occasional	15	12	9	6	3
2 – Remote	10	8	6	4	2
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Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
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Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area

Plant Parking Lot

Emergency Contact #

911 / 803 707 2195

Emergency Radio Channel

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) David Boor

Signature

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer UTC	**Permit No.**
Location Bamberg, SC	**Job No.** 60314964.16
Description of Task Drilling / MW Install	**Date** 3-30-17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Highway / Road work	Traffic, pedestrians	8	See S3NA-306-PR1 (SOP)	4	
Manual Lifting	Strain, crushing, Property damage	4	See S3NA-014-PR1 (SOP)	2	
Housekeeping. Worksite	Slips, trips, falls, clutter	3	See S3NA-013-PR1 (SOP)	1	
Drilling / Boring	Heavy equipment, utilities	8	See S3NA-321-PR1 (SOP)	4	
Electrical lines Overhead	Fallen lines, lightning, live wire	8	See S3NA-322 PR1 (SOP)	3	
Underground Utilities	Hitting Communication, gas, water, etc.	8	See S3NA-331-PR1 (SOP)	3	
Hearing Conservation	Loud equipment, hearing loss	8	See S3NA-118-PR1 (SOP)	4	
Heat Stress Prevention	Dehydration, heat stress/stroke	9	See S3NA-113-PR1 (SOP)	2	
Respiratory Protection	Dust, cement, exhaust, etc	6	See S3NA-123-PR1 (SOP)	2	
Spill Response	Fuel / Hydraulic leaks	4	See S3NA-520-PR1 (SOP)	2	
			(All SOP's have hard copies on site)		
			Highest Risk Index	4	

Review and attach to Tailgate Meeting as required. Number and attach additional pages if necessary.

Worker/Visitor acknowledgement and review of this content on back of this document.

Risk Matrix on Reverse

Originator Daniel Good (Print Name) — Daniel Good (Signature)

Supervisor SAME (Print Name) — (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print)	SIGNATURE
Kyle Bergenmeister	
Brian Buddy	
STEVEN FARRIS	
Joel Carrillo	
STEFAN SMITH	
Chuck Suddeth	

I participated in the development and understand the content of this Task Hazard Assessment.

VISITOR SIGN ON

NAME (Please Print)	SIGNATURE	TIME

AECOM

Americas

Task Hazard Assessment

S3AM-209-FM6

Customer UTC	Permit No.
Location Delavan Bamberg Tract	Job No. 60314964.16
Description of Task Sonic Drilling - Groundwater Screening	Date 03/31/17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Soil Boring w/sonic drill rig	Heavy equipment - Rotating machinery, crushed by, struck by, or caught in. slips, trips, and falls	10	situational awareness. stay clear of equipment. THINK about what you are about to do	2	CKS
Drum Handling	crushed by, pinched, slips, trips, falls	4	same as above	1	CKS
Heavily wooded area	Biological hazards (ie ticks, snakes)	4	Pay attention, stay clear, report ticks	1	CKS
			Highest Risk Index		

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Worker/Visitor acknowledgement and review of this content on back of this document.

	Print Name	Signature
Originator	Chuck Suddeth	Charles K. Suddeth
Supervisor	~~Charles K. Suddeth~~ Chuck Suddeth	Charles K. Suddeth

Risk Matrix on Reverse

THIS FORM IS TO BE KEPT ON JOB SITE.

3/31/17 (Fri)

AECOM

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

STEFAN SMITA
STEVEN FARRIS
Joel Carrillo

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
3 – Occasional	15	12	9	6	3
2 – Remote	10	8	6	4	2
1 - Improbable	5	4	3	2	1

Risk Rating (Probability x Severity)	Risk Acceptance Authority
1 to 4 (Low)	Risk is tolerable, manage at local level
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>$250K to $1M USD	Onsite impact requiring remediation	Media intervention
Major	Lost/Restricted Work	> $10K to $250K USD	Release at/above reportable limit	Owner intervention
Moderate	Medical Treatment	> $1K to $10K USD	Release below reportable limit	Community or local attention
Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

First Break	Initial

Lunch Break	Initial

Second Break	Initial

Emergency Meeting / Assembly Area

Front parking lot of UTC

Emergency Contact #

911

Emergency Radio Channel

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) Chuck Suddeth

Signature Charles K Suddeth

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer	UTC	Job No. ~~Permit No.~~	60314964.16
Location	Bamberg, SC	~~Job No.~~	
Description of Task	Drilling / MW Install	**Date**	3-31-17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Highway / Road work	Traffic, pedestrians	8	See S3NA-306-PR1 (SOP)	4	
Manual Lifting	Strain, crushing, Property damage	4	See S3NA-014-PR1 (SOP)	2	
Housekeeping. Worksite	Slips, trips, falls, clutter	3	See S3NA-013-PR1 (SOP)	1	
Drilling / Boring	Heavy equipment, utilities	8	See S3NA-321-PR1 (SOP)	4	
Electrical lines Overhead	Fallen lines, lightning, live wire	8	See S3NA-322 PR1 (SOP)	3	
Underground Utilities	Hitting Communication, gas, water, etc.	8	See S3NA-331-PR1 (SOP)	3	
Hearing Conservation	Loud equipment, hearing loss	8	See S3NA-118-PR1 (SOP)	4	
Heat Stress Prevention	Dehydration, heat stress/stroke	9	See S3NA-113-PR1 (SOP)	2	
Respiratory Protection	Dust, cement, exhaust, etc	6	See S3NA-123-PR1 (SOP)	2	
Spill Response	Fuel / Hydraulic leaks	4	See S3NA-520-PR1 (SOP)	2	
			(All SOP's have hard copies on site)		
				Highest Risk Index	4

Review and attach to Tailgate Meeting as required. Number and attach additional pages if necessary.

Worker/Visitor acknowledgement and review of this content on back of this document

Risk Matrix on Reverse

Originator Daniel Good (Print Name) — Daniel Good (Signature)

Supervisor SAME (Print Name) — (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

Kyle Bogenrieder — Kyle Bogenrieder
Brian J Bielefeld — B JB

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
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Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

First Break Initial

Lunch Break Initial

Second Break Initial

Emergency Meeting / Assembly Area

Plant Parking lot

Emergency Contact #

911 / 803 707 2195

Emergency Radio Channel

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) Daniel Good

Signature Daniel Good

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer UTC	Permit No.
Location Bamberg, SC	Job No. 60314964.16
Description of Task Drilling / MW Install	Date 4-3-17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Highway / Road work	Traffic, pedestrians	8	See S3NA-306-PR1 (SOP)	4	
Manual Lifting	Strain, crushing, Property damage	4	See S3NA-014-PR1 (SOP)	2	
Housekeeping, Worksite	Slips, trips, falls, clutter	3	See S3NA-013-PR1 (SOP)	1	
Drilling / Boring	Heavy equipment, utilities	8	See S3NA-321-PR1 (SOP)	4	
Electrical lines Overhead	Fallen lines, lightning, live wire	8	See S3NA-322 PR1 (SOP)	3	
Underground Utilities	Hitting Communication, gas, water, etc.	8	See S3NA-331-PR1 (SOP)	3	
Hearing Conservation	Loud equipment, hearing loss	8	See S3NA-118-PR1 (SOP)	4	
Heat Stress Prevention	Dehydration, heat stress/stroke	9	See S3NA-113-PR1 (SOP)	2	
Respiratory Protection	Dust, cement, exhaust, etc	6	See S3NA-123-PR1 (SOP)	2	
Spill Response	Fuel / Hydraulic leaks	4	See S3NA-520-PR1 (SOP)	2	
			(All SOP's have hard copies onsite)		
			Highest Risk Index	4	

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Worker/Visitor acknowledgement and review of this content on back of this document.

Risk Matrix on Reverse

Originator: Daniel Good (Print Name) — Daniel Good (Signature)

Supervisor: SAME (Print Name) — (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

STEFAN SMITH
BRIAN J BIBBY
JOEL CARRILLO

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
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Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area

Plant Parking Lot

Emergency Contact #

911 / 403 707 2195

Emergency Radio Channel

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name)

Signature

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer UTC	Permit No.
Location UTC Delavan, Bamberg SC	Job No. 60314964
Description of Task Drilling / MW Install	Date 4-4-12

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Highway / Road work	Traffic, pedestrians	8	See S3NA-306-PR1 (SOP)	4	
Manual Lifting	Strain, crushing, Property damage	4	See S3NA-014-PR1 (SOP)	2	
Housekeeping, Worksite	Slips, trips, falls, clutter	3	See S3NA-013-PR1 (SOP)	1	
Drilling / Boring	Heavy equipment, utilities	8	See S3NA-321-PR1 (SOP)	4	
Electrical lines Overhead	Fallen lines, lightning, live wire	8	See S3NA-322 PR1 (SOP)	3	
Underground Utilities	Hitting Communication, gas, water, etc.	8	See S3NA-331-PR1 (SOP)	3	
Hearing Conservation	Loud equipment, hearing loss	8	See S3NA-118-PR1 (SOP)	4	
Heat Stress Prevention	Dehydration, heat stress/stroke	9	See S3NA-113-PR1 (SOP)	2	
Respiratory Protection	Dust, cement, exhaust, etc	6	See S3NA-123-PR1 (SOP)	2	
Spill Response	Fuel / Hydraulic leaks	4	See S3NA-520-PR1 (SOP)	2	
			(All SOP's have hard copies onsite)		
			Highest Risk Index	4	

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Worker/Visitor acknowledgement and review of this content on back of this document.

Risk Matrix on Reverse

Originator Daniel Good (Print Name) Daniel Good (Signature)

Supervisor SAME (Print Name) (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

Bryan J Bielby
Joel Carrillo
Stephen Smythe

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
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Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area

Plant Parking Lot

Emergency Contact #

911 803 707 2195

Emergency Radio Channel

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) Daniel Good

Signature Daniel Good

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer UTC	**Permit No.**
Location Bamberg / SC	**Job No.** 60314964
Description of Task Drilling / MW Install	**Date** 4-5-17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Highway / Road work	Traffic, pedestrians	8	See S3NA-306-PR1 (SOP)	4	
Manual Lifting	Strain, crushing, Property damage	4	See S3NA-014-PR1 (SOP)	2	
Housekeeping, Worksite	Slips, trips, falls, clutter	3	See S3NA-013-PR1 (SOP)	1	
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Spill Response	Fuel / Hydraulic leaks	4	See S3NA-520-PR1 (SOP)	2	
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			Highest Risk Index	4	

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Worker/Visitor acknowledgement and review of this content on back of this document.

Risk Matrix on Reverse

Originator Daniel Good (Print Name) — Daniel Good (Signature)

Supervisor SAME (Print Name) — (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

Brian Bedaly
Joe Carril
Stefan Smith

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
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Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area

Plant Parking Lot

Emergency Contact #

911 803 707 2195

Emergency Radio Channel

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) Daniel Good

Signature Daniel Good

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer UTC	Permit No.
Location Bamberg, SC	Job No. 60314964
Description of Task Drilling / MW Install	Date 4-6-17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Highway / Road work	Traffic, pedestrians	8	See S3NA-306-PR1 (SOP)	4	
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Worker/Visitor acknowledgement and review of this content on back of this document.

Risk Matrix on Reverse

Originator Daniel Good (Print Name) Daniel Good (Signature)

Supervisor SAME (Print Name) (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

Stefan Swan
Joel Carrillo
Brian Bibbs

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
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Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area

Plant Parking Lot

Emergency Contact #

911 803 707 2195

Emergency Radio Channel

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) Daniel Good

Signature Dan O Good

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer UTC	~~Permit No.~~ 60314964.16 Job #
Location Bamberg, SC	~~Job No.~~
Description of Task MW Install / Drilling	Date 4-7-17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (Initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Highway / Road work	Traffic, pedestrians	8	See S3NA-306-PR1 (SOP)	4	
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Worker/Visitor acknowledgement and review of this content on back of this document

Risk Matrix on Reverse

Originator Daniel Good (Print Name) Daniel Good (Signature)

Supervisor SAME (Print Name) _____ (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

STEFAN SMITH
Joel Carrillo
Brian Bigelow Pabbigi

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
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5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>$250K to $1M USD	Onsite impact requiring remediation	Media intervention
Major	Lost/Restricted Work	> $10K to $250K USD	Release at/above reportable limit	Owner intervention
Moderate	Medical Treatment	> $1K to $10K USD	Release below reportable limit	Community or local attention
Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area

Plant Parking Lot

Emergency Contact #

911 803 707 2195

Emergency Radio Channel

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) Daniel Good

Signature Daniel Good

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer UTC	Permit No.
Location Bamberg, SC	Job No. 603 14964.16
Description of Task Drilling / MW Install	Date 4-10-17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Highway / Road work	Traffic, pedestrians	8	See S3NA-306-PR1 (SOP)	4	
Manual Lifting	Strain, crushing, Property damage	4	See S3NA-014-PR1 (SOP)	2	
Housekeeping, Worksite	Slips, trips, falls, clutter	3	See S3NA-013-PR1 (SOP)	1	
Drilling / Boring	Heavy equipment, utilities	8	See S3NA-321-PR1 (SOP)	4	
Electrical lines Overhead	Fallen lines, lightning, live wire	8	See S3NA-322 PR1 (SOP)	3	
Underground Utilities	Hitting Communication, gas, water, etc.	8	See S3NA-331-PR1 (SOP)	3	
Hearing Conservation	Loud equipment, hearing loss	8	See S3NA-118-PR1 (SOP)	4	
Heat Stress Prevention	Dehydration, heat stress/stroke	9	See S3NA-113-PR1 (SOP)	2	
Respiratory Protection	Dust, cement, exhaust, etc	6	See S3NA-123-PR1 (SOP)	2	
Spill Response	Fuel / Hydraulic leaks	4	See S3NA-520-PR1 (SOP)	2	
			(All SOP's have hard copies on site)		
			Highest Risk Index	4	

Review and attach to Tailgate Meeting as required. Number and attach additional pages if necessary.

Worker/Visitor acknowledgement and review of this content on back of this document.

Risk Matrix on Reverse

Originator Daniel Good (Print Name) — Daniel Good (Signature)

Supervisor SAME (Print Name) — (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

Brent J Bickley
Joel Garrick
Steven Smoak

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
3 – Occasional	15	12	9	6	3
2 – Remote	10	8	6	4	2
1 - Improbable	5	4	3	2	1

Risk Rating (Probability x Severity)	Risk Acceptance Authority
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>$250K to $1M USD	Onsite impact requiring remediation	Media intervention
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Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area: Plant Parking Lot

Emergency Contact #: 911 803 707 2195

Emergency Radio Channel:

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) Daniel Good

Signature Daniel Good

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer UTC	Permit No.
Location Bamberg, SC	Job No. 60314964.16
Description of Task Drilling / MW Install	Date 4-11-17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Highway / Road work	Traffic, pedestrians	8	See S3NA-306-PR1 (SOP)	4	
Manual Lifting	Strain, crushing, Property damage	4	See S3NA-014-PR1 (SOP)	2	
Housekeeping, Worksite	Slips, trips, falls, clutter	3	See S3NA-013-PR1 (SOP)	1	
Drilling / Boring	Heavy equipment, utilities	8	See S3NA-321-PR1 (SOP)	4	
Electrical lines Overhead	Fallen lines, lightning, live wire	8	See S3NA-322 PR1 (SOP)	3	
Underground Utilities	Hitting Communication, gas, water, etc.	8	See S3NA-331-PR1 (SOP)	3	
Hearing Conservation	Loud equipment, hearing loss	8	See S3NA-118-PR1 (SOP)	4	
Heat Stress Prevention	Dehydration, heat stress/stroke	9	See S3NA-113-PR1 (SOP)	2	
Respiratory Protection	Dust, cement, exhaust, etc	6	See S3NA-123-PR1 (SOP)	2	
Spill Response	Fuel / Hydraulic leaks	4	See S3NA-520-PR1 (SOP)	2	
			(All SOP's have hard copies onsite)		
			Highest Risk Index	4	

Review and attach to Tailgate Meeting as required. Number and attach additional pages if necessary.

Worker/Visitor acknowledgement and review of this content on back of this document.

Risk Matrix on Reverse

Originator Daniel Good (Print Name) — Daniel Good (Signature)

Supervisor SAME (Print Name) — (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

STEFAN SMITH
Brian J Bibbs
Joel Carrillo

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
3 – Occasional	15	12	9	6	3
2 – Remote	10	8	6	4	2
1 - Improbable	5	4	3	2	1

Risk Rating (Probability x Severity)	Risk Acceptance Authority
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>$250K to $1M USD	Onsite impact requiring remediation	Media intervention
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Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

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Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area

Plant Parking Lot

Emergency Contact #

911 / 803 707 2195

Emergency Radio Channel

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) Daniel Good

Signature Daniel Good

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer UTC	Permit No.
Location Bamberg, SC	Job No. 603 14964.16
Description of Task Drilling / MW Install	Date 4-12-17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Highway / Road work	Traffic, pedestrians	8	See S3NA-306-PR1 (SOP)	4	
Manual Lifting	Strain, crushing, Property damage	4	See S3NA-014-PR1 (SOP)	2	
Housekeeping, Worksite	Slips, trips, falls, clutter	3	See S3NA-013-PR1 (SOP)	1	
Drilling / Boring	Heavy equipment, utilities	8	See S3NA-321-PR1 (SOP)	4	
Electrical lines Overhead	Fallen lines, lightning, live wire	9	See S3NA-322 PR1 (SOP)	3	
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Hearing Conservation	Loud equipment, hearing loss	8	See S3NA-118-PR1 (SOP)	4	
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Respiratory Protection	Dust, cement, exhaust, etc	6	See S3NA-123-PR1 (SOP)	2	
Spill Response	Fuel / Hydraulic leaks	4	See S3NA-520-PR1 (SOP)	2	
			(All SOP's have hard copies onsite)		
			Highest Risk Index	4	

Review and attach to Tailgate Meeting as required. Number and attach additional pages if necessary.

Worker/Visitor acknowledgement and review of this content on back of this document.

Originator Daniel Good (Print Name) Daniel Good (Signature)

Supervisor SAME (Print Name) (Signature)

Risk Matrix on Reverse

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

Jacob Carrillo
Brandon Bickley

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
3 – Occasional	15	12	9	6	3
2 – Remote	10	8	6	4	2
1 - Improbable	5	4	3	2	1

Risk Rating (Probability x Severity)	Risk Acceptance Authority
1 to 4 (Low)	Risk is tolerable, manage at local level
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
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Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

First Break Initial

Lunch Break Initial

Second Break Initial

Emergency Meeting / Assembly Area

Plant Parking Lot

Emergency Contact #

911 / 803 707 2195

Emergency Radio Channel

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) Daniel Good

Signature Daniel Good

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer UTC	**Permit No.**
Location Bamberg SC	**Job No.** 603 14964
Description of Task Drilling / MW Install	**Date** 4-13-17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Highway / Road work	Traffic, pedestrians	8	See S3NA-306-PR1 (SOP)	4	
Manual Lifting	Strain, crushing, Property damage	4	See S3NA-014-PR1 (SOP)	2	
Housekeeping. Worksite	Slips, trips, falls, clutter	3	See S3NA-013-PR1 (SOP)	1	
Drilling / Boring	Heavy equipment, utilities	8	See S3NA-321-PR1 (SOP)	4	
Electrical lines Overhead	Fallen lines, lightning, live wire	8	See S3NA-322 PR1 (SOP)	3	
Underground Utilities	Hitting Communication, gas, water, etc.	8	See S3NA-331-PR1 (SOP)	3	
Hearing Conservation	Loud equipment, hearing loss	8	See S3NA-118-PR1 (SOP)	4	
Heat Stress Prevention	Dehydration, heat stress/stroke	9	See S3NA-113-PR1 (SOP)	2	
Respiratory Protection	Dust, cement, exhaust, etc	6	See S3NA-123-PR1 (SOP)	2	
Spill Response	Fuel / Hydraulic leaks	4	See S3NA-520-PR1 (SOP)	2	
			(All SOP's have hard copies onsite)		
			Highest Risk Index	4	

Review and attach to Tailgate Meeting as required. Number and attach additional pages if necessary.

Worker/Visitor acknowledgement and review of this content on back of this document.

Risk Matrix on Reverse

Originator Daniel Good (Print Name) — Daniel Good (Signature)

Supervisor SAME (Print Name) — (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

Stefan Smith
Brian Biddle
Joel Carrillo

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 – Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
3 – Occasional	15	12	9	6	3
2 – Remote	10	8	6	4	2
1 - Improbable	5	4	3	2	1

Risk Rating (Probability x Severity)	Risk Acceptance Authority
1 to 4 (Low)	Risk is tolerable, manage at local level
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>$250K to $1M USD	Onsite impact requiring remediation	Media intervention
Major	Lost/Restricted Work	> $10K to $250K USD	Release at/above reportable limit	Owner intervention
Moderate	Medical Treatment	> $1K to $10K USD	Release below reportable limit	Community or local attention
Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area: Plant Parking Lot

Emergency Contact #: 911 / 803 707 2195

Emergency Radio Channel:

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) Daniel Good

Signature

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer UTC - Delavan	Permit No.
Location Powerline ROW - Bamberg Property	Job No. 60314964.0
Description of Task MW Install / Borehole abandonment	Date 5-8-17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Highway / Road work	Traffic, pedestrians	8	See S3NA-306-PR1 (SOP)	4	
Manual Lifting	Strain, crushing, Property damage	4	See S3NA-014-PR1 (SOP)	2	
Housekeeping, Worksite	Slips, trips, falls, clutter	3	See S3NA-013-PR1 (SOP)	1	
Drilling / Boring	Heavy equipment, utilities	8	See S3NA-321-PR1 (SOP)	4	
Electrical lines Overhead	Fallen lines, lightning, live wire	8	See S3NA-322 PR1 (SOP)	3	
Underground Utilities	Hitting Communication, gas, water, etc.	8	See S3NA-331-PR1 (SOP)	3	
Hearing Conservation	Loud equipment, hearing loss	8	See S3NA-118-PR1 (SOP)	4	
Heat Stress Prevention	Dehydration, heat stress/stroke	9	See S3NA-113-PR1 (SOP)	2	
Respiratory Protection	Dust, cement, exhaust, etc	6	See S3NA-123-PR1 (SOP)	2	
Spill Response	Fuel / Hydraulic leaks	4	See S3NA-520-PR1 (SOP)	2	
			(All SOP's have hard copies on site)		
			Highest Risk Index	4	

Review and attach to Tailgate Meeting as required. Number and attach additional pages if necessary.

Worker/Visitor acknowledgement and review of this content on back of this document.

Risk Matrix on Reverse

Originator Daniel Good (Print Name) Daniel Good (Signature)

Supervisor _____ (Print Name) _____ (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

Brent J Bidelspach
Joel Garrick
Steven Smith

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	
3 – Occasional	15	12	9	6	
2 – Remote	10	8	6		
1 - Improbable	5				

Risk Rating (Probability x Severity)	Risk Acceptance Authority
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity - Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent Impairment, Long term injury/illness	>$250K to $1M USD	Onsite impact requiring remediation	Media intervention
Major	Lost/Restricted Work	> $10K to $250K USD	Release at/above reportable limit	Owner intervention
Moderate	Medical Treatment	> $1K to $10K USD	Release below reportable limit	Community or local attention
Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area

Plant Parking Lot

Emergency Contact #

911 803 707 2195

Emergency Radio Channel

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) Daniel Good

Signature Daniel Good

AECOM

Americas

Task Hazard Assessment

S3NA-209-FM6

Customer UTC	Permit No.
Location UTC - Delavan, Bamberg, SC	Job No. 603149604
Description of Task Well Development	Date 5-9-17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Well Development	Hand Safety	9	See SOP S3AM-334-PRI	2	
"	Manual lifting	6	See SOP S3AM-014-PRI	2	
"	Hazardous Weather	9	See SOP S3AM-333-ATT 7	3	
"	Biological Hazards	4	See SOP S3AM-313-PRI	2	
"	Slips, Trips, Falls	6	House keeping, awareness, proper footwear	3	
"	Fitness for duty	12	See SOP S3AM-008-PRI	4	
"	First aid	N/A	See ~~SOPS3~~ SOP S3AM-012-PRI	N/A	
"	Heat Stress	9	See SOP S3AM-113-PRI	2	
			All SOP's have Hard Copies		
			onsite		
			Highest Risk Index		

Review and attach to Tailgate Meeting as required. Number and attach additional pages if necessary.

Worker/Visitor acknowledgement and review of this content on back of this document.

Risk Matrix on Reverse

Originator: Daniel Good (Print Name) — Daniel Good (Signature)

Supervisor: Same (Print Name) — Same (Signature)

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print) SIGNATURE

I participated in the development and understand the content of this Task Hazard Assessment.

Daniel Good Daniel Good

VISITOR SIGN ON

NAME (Please Print) SIGNATURE TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
3 – Occasional	15	12	9	6	3
2 – Remote	10	8	6	4	2
1 - Improbable	5	4	3	2	1

Risk Rating (Probability x Severity)	Risk Acceptance Authority
1 to 4 (Low)	Risk is tolerable, manage at local level
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
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Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area

Main parking lot at UTC plant

Emergency Contact #

Wes Smoak (803) 707-2195 or 911

Emergency Radio Channel

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) Daniel Good

Signature Daniel Good

AECOM

Americas

Task Hazard Assessment

S3AM-209-FM6

Customer UTC	Permit No.
Location Delavan Spray Technology Site, Bamberg, SC	Job No. 60314964.16
Description of Task surveying & slug testing	Date 5/10/17

Basic Task Steps (explain how the task will be carried out)	Hazards (identify all hazards and potential hazards)	Risk (initial)	Precautions (describe how that hazard will be controlled)	Risk (final)	Initials
Site Walk	biological hazards, heat stress uneven ground, slips, trips, falls,	6	Stay hydrated, wear sunscreen, stay in shade if possible look before you step, steady pace, stay aware	2	LA
Collect survey data	same as above, ergonomics	6	same as above, use proper lifting techniques,	2	LA
Collect water level measurements	same as for site walk, ergonomics	6	same as above for site walk, use proper bending techniques	2	LA
perform slug tests	biological hazards	6	take care opening wells, scan area before entering	2	LA
	heat stress	6	check on each other, stay hydrated, stay in shade when possible	2	LA
	ergonomics	4	use proper lifting & bending techniques	2	LA
			Highest Risk Index		

Review and attach to Tailgate Meeting as required. Number and attach additional pages if necessary.

Worker/Visitor acknowledgement and review of this content on back of this document.

	Print Name	Signature
Originator	Leslee Alexander	Leslee J Alexander
Site Supervisor	Leslee Alexander	Leslee J Alexander

Risk Matrix on Reverse

THIS FORM IS TO BE KEPT ON JOB SITE.

AECOM

WORKER SIGN ON

NAME (Please Print)	SIGNATURE
I participated in the development and understand the content of this Task Hazard Assessment.	
LESLEE ALEXANDER	Leslee Alexander
Chuck Suddeth	Charles K. Suddeth
JASON FORSBERG	Jason Forsberg

VISITOR SIGN ON

NAME (Please Print)	SIGNATURE	TIME

Risk Rating Matrix

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
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Risk Rating (Probability x Severity)	Risk Acceptance Authority
1 to 4 (Low)	Risk is tolerable, manage at local level
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>$250K to $1M USD	Onsite impact requiring remediation	Media intervention
Major	Lost/Restricted Work	> $10K to $250K USD	Release at/above reportable limit	Owner intervention
Moderate	Medical Treatment	> $1K to $10K USD	Release below reportable limit	Community or local attention
Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Task Hazard Assessment Follow-Up/Review.

	Initial
First Break	
Lunch Break	
Second Break	

Emergency Meeting / Assembly Area

Bamberg property entrance near Hwy 301

Emergency Contact #

911

Emergency Radio Channel

NA – use cell phones

Area is safe and housekeeping completed at the end of task/shift.

Supervisor (print name) LESLEE ALEXANDER

Signature Leslee Alexander

AECOM

Pre-job Americas pp

~~Daily~~ Drilling, Boring & Direct-Push Equipment Inspection

S3AM-321-FM1

Site / Project Name: UTC Delavan / 2017 GW Delineation 60314964.16

Rig Inspector (Name/Company): Ron Paulling/AECOM

RIG INFORMATION: CONDUCTED Pre-job on 3/27/2017

Rig Type: ~~Sonic~~ Rotary/Auger Drilling Rig ☑ Direct Push Type (DPT) ☐

Owner	SEADACCO	VIN#	
Year/Make	2011 / Geoprobe	Mileage	NA
Model	8140 LS	Drill Hrs	4,807

INSTRUCTIONS: Each shift shall inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

Emergency Equipment / Devices / Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☑ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer, alarms and other devices (e.g. positive air shut-off valve) tested and in operable condition. All workers familiar with location and operation of devices. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☑ Pass ☐ Fail ☐ N/A
First aid kit adequate and on equipment / readily available.	☐ Pass ☐ Fail ☐ N/A
Absorbent materials on equipment / readily available (spill response).	☐ Pass ☐ Fail ☐ N/A
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☑ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☑ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☑ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☑ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☑ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☑ Pass ☐ Fail ☐ N/A
Pulleys and Cable Winches	
Pulleys are not bent, cracked, or broken.	☐ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☐ Pass ☐ Fail ☐ N/A
Motor is mounted in correct location and tightly secured to drill rig.	☑ Pass ☐ Fail ☐ N/A
Winch capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☑ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☑ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☑ Pass ☐ Fail ☐ N/A
Flights / Augers / Reamers SONIC 6" / 4" CASING	
Flights / Augers / Reamers are not bent, cracked, or broken. NOTE: Flights / Augers /	☒ Pass ☐ Fail ☐ N/A

Reamers failing inspection must be removed from jobsite.	
Flights are blunt to prevent the risks of cuts.	☐ Pass ☐ Fail ☑ N/A
Auger keys are not bent, cracked/fractured, excessively worn, or otherwise damaged.	☐ Pass ☐ Fail ☑ N/A
Auger bolt holes and threads are not damaged.	☐ Pass ☐ Fail ☑ N/A
Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☐ Pass ☐ Fail ☑ N/A
Augers / Reamers lying flat on the ground (avoid stacking).	☐ Pass ☐ Fail ☑ N/A
Augers / Reamers over 50lbs (22.7kg) moved mechanically. (Avoid manual lifting).	☐ Pass ☐ Fail ☑ N/A
Drill String	
Appropriate break out tool(s) available.	☑ Pass ☐ Fail ☐ N/A
Rod box and power vice operating smoothly and freely.	
Drill string are not bent and do not have any cracks/fractures.	☐ Pass ☐ Fail ☑ N/A
Drill string connections (e.g. pins, threads, couplers) are of the proper type, are not bent, have no cracks/fractures, and are not excessively worn.	☐ Pass ☐ Fail ☑ N/A
Swivel connectors (for trailing horizontal drill stem) lubricated and freely rotating.	☐ Pass ☐ Fail ☑ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☑ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) in place.	☑ Pass ☐ Fail ☐ N/A
No moving of drill rig or maintenance/repairs while mast is in vertical position.	☑ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☐ Pass ☐ Fail ☑ N/A
Hammer connections are secure.	☐ Pass ☐ Fail ☑ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☑ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☑ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☑ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☑ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☑ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☑ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices (straps, not chains) inspected before using and are in proper working order. NOTE: Damaged units are labeled and removed from jobsite.	☑ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☑ Pass ☐ Fail ☐ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☑ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☑ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☑ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☑ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☐ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☑ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent	☑ Pass ☐ Fail ☐ N/A

Ladders	
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass ☐ Fail ☑ N/A
Ladders and platforms not to be used for tool storage- keep ladders and operator platforms clear during drilling.	☑ Pass ☐ Fail ☐ N/A
Tires / Tracks	
Tires / Tracks on rig are not excessively worn and free of any debris or foreign material.	☑ Pass ☐ Fail ☐ N/A
General	
General condition – exterior (no structural damage, no loose bolts, platform tidy, etc.)	Good
General condition – interior (cab clean, tidy)	NA
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☑ Pass ☐ Fail ☐ N/A
Rig is of appropriate size to meet job requirements.	☑ Pass ☐ Fail ☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☐ Pass ☑ Fail ☐ N/A
Exhaust	
Exhaust system is free from defect and routes engine exhaust away from drill rig workers.	☑ Pass ☐ Fail ☐ N/A
Fuels	
Fuel stored in an approved and properly labeled container.	☑ Pass ☐ Fail ☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☑ Pass ☐ Fail ☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☑ Pass ☐ Fail ☐ N/A
Exclusion/Work Zones	
The exclusion/work zone is centered over the borehole (and if applicable, bore exit point) and the radius equal to or greater than the height of the mast (measured from ground level).	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone is clear of tripping hazards. As much as practicable	☐ Pass ☑ Fail ☐ N/A
The exclusion/work zone communicated to concurrent/adjacent operations to prevent overlap of work zones or line of fire.	☐ Pass ☑ Fail ☐ N/A
Subsurface Utilities / Installations and Overhead Obstructions	
Subsurface utilities / installations have been confirmed as identified and cleared through site observation and review of the completed *S3AM-331-FM1 Underground Utilities & Subsurface Installation Clearance Checklist.*	☑ Pass ☐ Fail ☐ N/A
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the Minimum Approach Distance (MAD).	☑ Pass ☐ Fail ☐ N/A Will Keep Rig away from Power Lines
Rig Repairs	
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☑ Pass ☐ Fail ☐ N/A
Specialized PPE	
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☐ Pass ☐ Fail ☑ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☑ Pass ☐ Fail ☐ N/A

Comments:
Inspection conducted prior to work beginning for this project; not performed DAILY.

Signature of Inspector: Ron Paulling Date: 3/27/17

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Americas

Daily Drilling, Boring & Direct-Push Equipment Inspection

S3NA-321-FM1

Site / Project Name: UTC Delavan (60314964.16) Rig Inspector (Name/Company): Kyle Borgemeister / SAEDACCO

RIG INFORMATION:

Rig Type	Rotary/Auger Drilling Rig ☐		Direct Push Type (DPT) ☒
Owner	SAEDACCO	VIN#	
Year/Make	Geoprobe	Mileage	
Model	Geoprobe 7822	Drill Hrs	

INSTRUCTIONS: Each shift shall inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

Emergency Equipment / Devices / Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☑ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer, alarms and other devices (e.g. positive air shut-off valve) tested and in operable condition. All workers familiar with location and operation of devices. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☑ Pass ☐ Fail ☐ N/A
First aid kit adequate and on equipment / readily available.	☑ Pass ☐ Fail ☐ N/A
Absorbent materials on equipment / readily available (spill response).	☑ Pass ☐ Fail ☐ N/A
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☑ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☑ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☑ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☑ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☑ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☑ Pass ☐ Fail ☐ N/A
Pulleys and Cable Winches	
Pulleys are not bent, cracked, or broken.	☑ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☑ Pass ☐ Fail ☐ N/A
Motor is mounted in correct location and tightly secured to drill rig.	☑ Pass ☐ Fail ☐ N/A
Winch capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☑ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☑ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☑ Pass ☐ Fail ☐ N/A
Flights / Augers / Reamers	
Flights / Augers / Reamers are not bent, cracked, or broken. NOTE: Flights / Augers / Reamers failing inspection must be removed from jobsite.	☑ Pass ☐ Fail ☐ N/A

Flights are blunt to prevent the risks of cuts.	☑ Pass ☐ Fail ☐ N/A
Auger keys are not bent, cracked/fractured, excessively worn, or otherwise damaged.	☑ Pass ☐ Fail ☐ N/A
Auger bolt holes and threads are not damaged.	☑ Pass ☐ Fail ☐ N/A
Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers lying flat on the ground (avoid stacking).	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers over 50lbs (22.7kg) moved mechanically. (Avoid manual lifting).	☑ Pass ☐ Fail ☐ N/A
Drill String	
Appropriate break out tool(s) available.	☑ Pass ☐ Fail ☐ N/A
Rod box and power vice operating smoothly and freely.	
Drill string are not bent and do not have any cracks/fractures.	☑ Pass ☐ Fail ☐ N/A
Drill string connections (e.g. pins, threads, couplers) are of the proper type, are not bent, have no cracks/fractures, and are not excessively worn.	☑ Pass ☐ Fail ☐ N/A
Swivel connectors (for trailing horizontal drill stem) lubricated and freely rotating.	☑ Pass ☐ Fail ☐ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☑ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) in place.	☑ Pass ☐ Fail ☐ N/A
No moving of drill rig or maintenance/repairs while mast is in vertical position.	☑ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☑ Pass ☐ Fail ☐ N/A
Hammer connections are secure.	☑ Pass ☐ Fail ☐ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☑ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☑ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☑ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☑ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☑ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☑ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices (straps, not chains) inspected before using and are in proper working order. NOTE: Damaged units are labeled and removed from jobsite.	☑ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☑ Pass ☐ Fail ☐ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☑ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☑ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☐ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☑ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☑ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☑ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent whipping in the event of a failure.	☑ Pass ☐ Fail ☐ N/A

Ladders	
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass ☐ Fail ☑ N/A
Ladders and platforms not to be used for tool storage- keep ladders and operator platforms clear during drilling.	☐ Pass ☐ Fail ☑ N/A
Tires / Tracks	
Tires / Tracks on rig are not excessively worn and free of any debris or foreign material.	☑ Pass ☐ Fail ☐ N/A
General	
General condition – exterior (no structural damage, no loose bolts, platform tidy, etc.)	
General condition – interior (cab clean, tidy)	
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☑ Pass ☐ Fail ☐ N/A
Rig is of appropriate size to meet job requirements.	☑ Pass ☐ Fail ☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☑ Pass ☐ Fail ☐ N/A
Exhaust	
Exhaust system is free from defect and routes engine exhaust away from drill rig workers.	☑ Pass ☐ Fail ☐ N/A
Fuels	
Fuel stored in an approved and properly labeled container.	☑ Pass ☐ Fail ☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☑ Pass ☐ Fail ☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☑ Pass ☐ Fail ☐ N/A
Exclusion/Work Zones	
The exclusion/work zone is centered over the borehole (and if applicable, bore exit point) and the radius equal to or greater than the height of the mast (measured from ground level).	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone is clear of tripping hazards.	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone communicated to concurrent/adjacent operations to prevent overlap of work zones or line of fire.	☑ Pass ☐ Fail ☐ N/A
Subsurface Utilities / Installations and Overhead Obstructions	
Subsurface utilities / installations have been confirmed as identified and cleared through site observation and review of the completed *S3NA-331-FM1 Underground Utilities & Subsurface Installation Clearance Checklist.*	☑ Pass ☐ Fail ☐ N/A
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the Minimum Approach Distance (MAD).	☑ Pass ☐ Fail ☐ N/A
Rig Repairs	
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☑ Pass ☐ Fail ☐ N/A
Specialized PPE	
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☑ Pass ☐ Fail ☐ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☑ Pass ☐ Fail ☐ N/A

Comments:

Signature of Inspector: [signature] Date: 3/21/17

AECOM

Americas

Daily Drilling, Boring & Direct-Push Equipment Inspection

S3NA-321-FM1

Site / Project Name UTC Delavan (60314964.16) Rig Inspector (Name/Company) Kyle Borgemeister / SAEDACCO

RIG INFORMATION:

Rig Type	Rotary/Auger Drilling Rig ☐		Direct Push Type (DPT) ☒
Owner	SAEDACCO	VIN#	
Year/Make	Geoprobe	Mileage	
Model	7822	Drill Hrs	

INSTRUCTIONS: Each shift shall inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

Emergency Equipment / Devices / Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☑ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer, alarms and other devices (e.g. positive air shut-off valve) tested and in operable condition. All workers familiar with location and operation of devices. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☑ Pass ☐ Fail ☐ N/A
First aid kit adequate and on equipment / readily available.	☑ Pass ☐ Fail ☐ N/A
Absorbent materials on equipment / readily available (spill response).	☑ Pass ☐ Fail ☐ N/A
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☑ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☑ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☑ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☑ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☑ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☑ Pass ☐ Fail ☐ N/A
Pulleys and Cable Winches	
Pulleys are not bent, cracked, or broken.	☑ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☑ Pass ☐ Fail ☐ N/A
Motor is mounted in correct location and tightly secured to drill rig.	☑ Pass ☐ Fail ☐ N/A
Winch capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☑ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☑ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☑ Pass ☐ Fail ☐ N/A
Flights / Augers / Reamers	
Flights / Augers / Reamers are not bent, cracked, or broken. NOTE: Flights / Augers / Reamers failing inspection must be removed from jobsite.	☑ Pass ☐ Fail ☐ N/A

Flights are blunt to prevent the risks of cuts.	☑ Pass ☐ Fail ☐ N/A
Auger keys are not bent, cracked/fractured, excessively worn, or otherwise damaged.	☑ Pass ☐ Fail ☐ N/A
Auger bolt holes and threads are not damaged.	☑ Pass ☐ Fail ☐ N/A
Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers lying flat on the ground (avoid stacking).	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers over 50lbs (22.7kg) moved mechanically. (Avoid manual lifting).	☑ Pass ☐ Fail ☐ N/A
Drill String	
Appropriate break out tool(s) available.	☑ Pass ☐ Fail ☐ N/A
Rod box and power vice operating smoothly and freely.	
Drill string are not bent and do not have any cracks/fractures.	☑ Pass ☐ Fail ☐ N/A
Drill string connections (e.g. pins, threads, couplers) are of the proper type, are not bent, have no cracks/fractures, and are not excessively worn.	☑ Pass ☐ Fail ☐ N/A
Swivel connectors (for trailing horizontal drill stem) lubricated and freely rotating.	☑ Pass ☐ Fail ☐ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☑ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) in place.	☑ Pass ☐ Fail ☐ N/A
No moving of drill rig or maintenance/repairs while mast is in vertical position.	☑ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☑ Pass ☐ Fail ☐ N/A
Hammer connections are secure.	☑ Pass ☐ Fail ☐ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☑ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☑ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☑ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☑ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☑ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☑ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices (straps, not chains) inspected before using and are in proper working order. NOTE: Damaged units are labeled and removed from jobsite.	☑ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☑ Pass ☐ Fail ☐ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☑ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☑ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☑ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☑ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☑ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☑ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent whipping in the event of a failure.	☑ Pass ☐ Fail ☐ N/A

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Ladders	
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass ☐ Fail ☑ N/A
Ladders and platforms not to be used for tool storage- keep ladders and operator platforms clear during drilling.	☐ Pass ☐ Fail ☑ N/A
Tires / Tracks	
Tires / Tracks on rig are not excessively worn and free of any debris or foreign material.	☑ Pass ☐ Fail ☐ N/A
General	
General condition – exterior (no structural damage, no loose bolts, platform tidy, etc.)	
General condition – interior (cab clean, tidy)	
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☑ Pass ☐ Fail ☐ N/A
Rig is of appropriate size to meet job requirements.	☑ Pass ☐ Fail ☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☑ Pass ☐ Fail ☐ N/A
Exhaust	
Exhaust system is free from defect and routes engine exhaust away from drill rig workers.	☑ Pass ☐ Fail ☐ N/A
Fuels	
Fuel stored in an approved and properly labeled container.	☑ Pass ☐ Fail ☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☑ Pass ☐ Fail ☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☑ Pass ☐ Fail ☐ N/A
Exclusion/Work Zones	
The exclusion/work zone is centered over the borehole (and if applicable, bore exit point) and the radius equal to or greater than the height of the mast (measured from ground level).	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone is clear of tripping hazards.	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone communicated to concurrent/adjacent operations to prevent overlap of work zones or line of fire.	☑ Pass ☐ Fail ☐ N/A
Subsurface Utilities / Installations and Overhead Obstructions	
Subsurface utilities / installations have been confirmed as identified and cleared through site observation and review of the completed *S3NA-331-FM1 Underground Utilities & Subsurface Installation Clearance Checklist.*	☑ Pass ☐ Fail ☐ N/A
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the Minimum Approach Distance (MAD).	☑ Pass ☐ Fail ☐ N/A
Rig Repairs	
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☑ Pass ☐ Fail ☐ N/A
Specialized PPE	
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☑ Pass ☐ Fail ☐ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☑ Pass ☐ Fail ☐ N/A

Comments:

Signature of Inspector: [signature] Date: 3/28/17

AECOM

Americas

Daily Drilling, Boring & Direct-Push Equipment Inspection

S3NA-321-FM1

Site / Project Name: UTC Delavan (60314964.16) Rig Inspector (Name/Company): Kyle Burgemeister / SAEDACCO

RIG INFORMATION:

Rig Type	Rotary/Auger Drilling Rig ☐		Direct Push Type (DPT) ☒
Owner	SAEDACCO	VIN#	
Year/Make	Geoprobe	Mileage	
Model	7822	Drill Hrs	

INSTRUCTIONS: Each shift shall inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

Emergency Equipment / Devices / Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☑ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer, alarms and other devices (e.g. positive air shut-off valve) tested and in operable condition. All workers familiar with location and operation of devices. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☑ Pass ☐ Fail ☐ N/A
First aid kit adequate and on equipment / readily available.	☑ Pass ☐ Fail ☐ N/A
Absorbent materials on equipment / readily available (spill response).	☑ Pass ☐ Fail ☐ N/A
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☑ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☑ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☑ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☑ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☑ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☑ Pass ☐ Fail ☐ N/A
Pulleys and Cable Winches	
Pulleys are not bent, cracked, or broken.	☑ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☑ Pass ☐ Fail ☐ N/A
Motor is mounted in correct location and tightly secured to drill rig.	☑ Pass ☐ Fail ☐ N/A
Winch capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☑ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☑ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☑ Pass ☐ Fail ☐ N/A
Flights / Augers / Reamers	
Flights / Augers / Reamers are not bent, cracked, or broken. NOTE: Flights / Augers / Reamers failing inspection must be removed from jobsite.	☑ Pass ☐ Fail ☐ N/A

Flights are blunt to prevent the risks of cuts.	☑ Pass ☐ Fail ☐ N/A
Auger keys are not bent, cracked/fractured, excessively worn, or otherwise damaged.	☑ Pass ☐ Fail ☐ N/A
Auger bolt holes and threads are not damaged.	☑ Pass ☐ Fail ☐ N/A
Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers lying flat on the ground (avoid stacking).	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers over 50lbs (22.7kg) moved mechanically. (Avoid manual lifting).	☑ Pass ☐ Fail ☐ N/A
Drill String	
Appropriate break out tool(s) available.	☑ Pass ☐ Fail ☐ N/A
Rod box and power vice operating smoothly and freely.	
Drill string are not bent and do not have any cracks/fractures.	☑ Pass ☐ Fail ☐ N/A
Drill string connections (e.g. pins, threads, couplers) are of the proper type, are not bent, have no cracks/fractures, and are not excessively worn.	☑ Pass ☐ Fail ☐ N/A
Swivel connectors (for trailing horizontal drill stem) lubricated and freely rotating.	☑ Pass ☐ Fail ☐ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☑ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) in place.	☑ Pass ☐ Fail ☐ N/A
No moving of drill rig or maintenance/repairs while mast is in vertical position.	☑ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☑ Pass ☐ Fail ☐ N/A
Hammer connections are secure.	☑ Pass ☐ Fail ☐ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☑ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☑ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☑ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☑ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☑ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☑ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices (straps, not chains) inspected before using and are in proper working order. NOTE: Damaged units are labeled and removed from jobsite.	☑ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☑ Pass ☐ Fail ☐ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☑ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☑ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☑ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☑ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☑ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☑ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent whipping in the event of a failure.	☑ Pass ☐ Fail ☐ N/A

Ladders	
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass ☐ Fail ☑ N/A
Ladders and platforms not to be used for tool storage- keep ladders and operator platforms clear during drilling.	☐ Pass ☐ Fail ☑ N/A
Tires / Tracks	
Tires / Tracks on rig are not excessively worn and free of any debris or foreign material.	☑ Pass ☐ Fail ☐ N/A
General	
General condition – exterior (no structural damage, no loose bolts, platform tidy, etc.)	
General condition – interior (cab clean, tidy)	
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☑ Pass ☐ Fail ☐ N/A
Rig is of appropriate size to meet job requirements.	☑ Pass ☐ Fail ☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☑ Pass ☐ Fail ☐ N/A
Exhaust	
Exhaust system is free from defect and routes engine exhaust away from drill rig workers.	☑ Pass ☐ Fail ☐ N/A
Fuels	
Fuel stored in an approved and properly labeled container.	☑ Pass ☐ Fail ☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☑ Pass ☐ Fail ☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☑ Pass ☐ Fail ☐ N/A
Exclusion/Work Zones	
The exclusion/work zone is centered over the borehole (and if applicable, bore exit point) and the radius equal to or greater than the height of the mast (measured from ground level).	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone is clear of tripping hazards.	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone communicated to concurrent/adjacent operations to prevent overlap of work zones or line of fire.	☑ Pass ☐ Fail ☐ N/A
Subsurface Utilities / Installations and Overhead Obstructions	
Subsurface utilities / installations have been confirmed as identified and cleared through site observation and review of the completed *S3NA-331-FM1 Underground Utilities & Subsurface Installation Clearance Checklist.*	☑ Pass ☐ Fail ☐ N/A
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the Minimum Approach Distance (MAD).	☑ Pass ☐ Fail ☐ N/A
Rig Repairs	
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☑ Pass ☐ Fail ☐ N/A
Specialized PPE	
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☑ Pass ☐ Fail ☐ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☑ Pass ☐ Fail ☐ N/A

Comments:

Signature of Inspector: [signature] Date: 3/29/17

AECOM

Americas

Daily Drilling, Boring & Direct-Push Equipment Inspection

S3NA-321-FM1

Site / Project Name: UTC Delavan Rig Inspector (Name/Company): Kyle Borgemeister / SAEDAcco

RIG INFORMATION:

Rig Type: Rotary/Auger Drilling Rig ☐ Direct Push Type (DPT) ☒

Owner: SAEDAcco VIN#:

Year/Make: Geoprobe Mileage:

Model: 7822 Drill Hrs:

INSTRUCTIONS: Each shift shall inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

Emergency Equipment / Devices / Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☑ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer, alarms and other devices (e.g. positive air shut-off valve) tested and in operable condition. All workers familiar with location and operation of devices. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☑ Pass ☐ Fail ☐ N/A
First aid kit adequate and on equipment / readily available.	☑ Pass ☐ Fail ☐ N/A
Absorbent materials on equipment / readily available (spill response).	☑ Pass ☐ Fail ☐ N/A
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☑ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☑ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☑ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☑ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☑ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☑ Pass ☐ Fail ☐ N/A
Pulleys and Cable Winches	
Pulleys are not bent, cracked, or broken.	☑ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☑ Pass ☐ Fail ☐ N/A
Motor is mounted in correct location and tightly secured to drill rig.	☑ Pass ☐ Fail ☐ N/A
Winch capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☑ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☑ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☑ Pass ☐ Fail ☐ N/A
Flights / Augers / Reamers	
Flights / Augers / Reamers are not bent, cracked, or broken. NOTE: Flights / Augers / Reamers failing inspection must be removed from jobsite.	☑ Pass ☐ Fail ☐ N/A

Flights are blunt to prevent the risks of cuts.	☑ Pass ☐ Fail ☐ N/A
Auger keys are not bent, cracked/fractured, excessively worn, or otherwise damaged.	☑ Pass ☐ Fail ☐ N/A
Auger bolt holes and threads are not damaged.	☑ Pass ☐ Fail ☐ N/A
Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers lying flat on the ground (avoid stacking).	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers over 50lbs (22.7kg) moved mechanically. (Avoid manual lifting).	☑ Pass ☐ Fail ☐ N/A
Drill String	
Appropriate break out tool(s) available.	☑ Pass ☐ Fail ☐ N/A
Rod box and power vice operating smoothly and freely.	
Drill string are not bent and do not have any cracks/fractures.	☑ Pass ☐ Fail ☐ N/A
Drill string connections (e.g. pins, threads, couplers) are of the proper type, are not bent, have no cracks/fractures, and are not excessively worn.	☑ Pass ☐ Fail ☐ N/A
Swivel connectors (for trailing horizontal drill stem) lubricated and freely rotating.	☑ Pass ☐ Fail ☐ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☑ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) in place.	☑ Pass ☐ Fail ☐ N/A
No moving of drill rig or maintenance/repairs while mast is in vertical position.	☑ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☑ Pass ☐ Fail ☐ N/A
Hammer connections are secure.	☑ Pass ☐ Fail ☐ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☑ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☑ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☑ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☑ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☑ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☑ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices (straps, not chains) inspected before using and are in proper working order. NOTE: Damaged units are labeled and removed from jobsite.	☑ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☑ Pass ☐ Fail ☐ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☑ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☑ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☑ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☑ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☑ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☑ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent whipping in the event of a failure.	☑ Pass ☐ Fail ☐ N/A

Ladders	
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass ☐ Fail ☑ N/A
Ladders and platforms not to be used for tool storage- keep ladders and operator platforms clear during drilling.	☐ Pass ☐ Fail ☑ N/A
Tires / Tracks	
Tires / Tracks on rig are not excessively worn and free of any debris or foreign material.	☑ Pass ☐ Fail ☐ N/A
General	
General condition – exterior (no structural damage, no loose bolts, platform tidy, etc.)	
General condition – interior (cab clean, tidy)	
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☑ Pass ☐ Fail ☐ N/A
Rig is of appropriate size to meet job requirements.	☑ Pass ☐ Fail ☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☑ Pass ☐ Fail ☐ N/A
Exhaust	
Exhaust system is free from defect and routes engine exhaust away from drill rig workers.	☑ Pass ☐ Fail ☐ N/A
Fuels	
Fuel stored in an approved and properly labeled container.	☑ Pass ☐ Fail ☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☑ Pass ☐ Fail ☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☑ Pass ☐ Fail ☐ N/A
Exclusion/Work Zones	
The exclusion/work zone is centered over the borehole (and if applicable, bore exit point) and the radius equal to or greater than the height of the mast (measured from ground level).	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone is clear of tripping hazards.	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone communicated to concurrent/adjacent operations to prevent overlap of work zones or line of fire.	☑ Pass ☐ Fail ☐ N/A
Subsurface Utilities / Installations and Overhead Obstructions	
Subsurface utilities / installations have been confirmed as identified and cleared through site observation and review of the completed *S3NA-331-FM1 Underground Utilities & Subsurface Installation Clearance Checklist.*	☑ Pass ☐ Fail ☐ N/A
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the Minimum Approach Distance (MAD).	☑ Pass ☐ Fail ☐ N/A
Rig Repairs	
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☑ Pass ☐ Fail ☐ N/A
Specialized PPE	
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☑ Pass ☐ Fail ☐ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☑ Pass ☐ Fail ☐ N/A

Comments:

Signature of Inspector: Kyle Bourgeault Date: 3/30/17

AECOM

Americas

Daily Drilling, Boring & Direct-Push Equipment Inspection

S3NA-321-FM1

Site / Project Name UTC Delavan Rig Inspector (Name/Company) Kyle Borgemeister / SAEDACCO

RIG INFORMATION:

Rig Type Rotary/Auger Drilling Rig ☐ Direct Push Type (DPT) ☒

Owner SAEDACCO VIN#

Year/Make GEOPROBE Mileage

Model 7822 Drill Hrs

INSTRUCTIONS: Each shift shall inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

Emergency Equipment / Devices / Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☑ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer, alarms and other devices (e.g. positive air shut-off valve) tested and in operable condition. All workers familiar with location and operation of devices. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☑ Pass ☐ Fail ☐ N/A
First aid kit adequate and on equipment / readily available.	☑ Pass ☐ Fail ☐ N/A
Absorbent materials on equipment / readily available (spill response).	☑ Pass ☐ Fail ☐ N/A
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☑ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☑ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☑ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☑ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☑ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☑ Pass ☐ Fail ☐ N/A
Pulleys and Cable Winches	
Pulleys are not bent, cracked, or broken.	☑ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☑ Pass ☐ Fail ☐ N/A
Motor is mounted in correct location and tightly secured to drill rig.	☑ Pass ☐ Fail ☐ N/A
Winch capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☑ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☑ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☑ Pass ☐ Fail ☐ N/A
Flights / Augers / Reamers	
Flights / Augers / Reamers are not bent, cracked, or broken. NOTE: Flights / Augers / Reamers failing inspection must be removed from jobsite.	☑ Pass ☐ Fail ☐ N/A

Flights are blunt to prevent the risks of cuts.	☑ Pass ☐ Fail ☐ N/A
Auger keys are not bent, cracked/fractured, excessively worn, or otherwise damaged.	☑ Pass ☐ Fail ☐ N/A
Auger bolt holes and threads are not damaged.	☑ Pass ☐ Fail ☐ N/A
Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers lying flat on the ground (avoid stacking).	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers over 50lbs (22.7kg) moved mechanically. (Avoid manual lifting).	☑ Pass ☐ Fail ☐ N/A
Drill String	
Appropriate break out tool(s) available.	☑ Pass ☐ Fail ☐ N/A
Rod box and power vice operating smoothly and freely.	
Drill string are not bent and do not have any cracks/fractures.	☑ Pass ☐ Fail ☐ N/A
Drill string connections (e.g. pins, threads, couplers) are of the proper type, are not bent, have no cracks/fractures, and are not excessively worn.	☑ Pass ☐ Fail ☐ N/A
Swivel connectors (for trailing horizontal drill stem) lubricated and freely rotating.	☑ Pass ☐ Fail ☐ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☑ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) in place.	☑ Pass ☐ Fail ☐ N/A
No moving of drill rig or maintenance/repairs while mast is in vertical position.	☑ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☑ Pass ☐ Fail ☐ N/A
Hammer connections are secure.	☑ Pass ☐ Fail ☐ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☑ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☑ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☑ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☑ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☑ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☑ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices (straps, not chains) inspected before using and are in proper working order. NOTE: Damaged units are labeled and removed from jobsite.	☑ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☑ Pass ☐ Fail ☐ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☑ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☑ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☑ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☑ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☑ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☑ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent whipping in the event of a failure.	☐ Pass ☐ Fail ☐ N/A

Ladders	
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass ☐ Fail ☑ N/A
Ladders and platforms not to be used for tool storage- keep ladders and operator platforms clear during drilling.	☐ Pass ☐ Fail ☑ N/A
Tires / Tracks	
Tires / Tracks on rig are not excessively worn and free of any debris or foreign material.	☑ Pass ☐ Fail ☐ N/A
General	
General condition – exterior (no structural damage, no loose bolts, platform tidy, etc.)	
General condition – interior (cab clean, tidy)	
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☑ Pass ☐ Fail ☐ N/A
Rig is of appropriate size to meet job requirements.	☑ Pass ☐ Fail ☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☑ Pass ☐ Fail ☐ N/A
Exhaust	
Exhaust system is free from defect and routes engine exhaust away from drill rig workers.	☑ Pass ☐ Fail ☐ N/A
Fuels	
Fuel stored in an approved and properly labeled container.	☑ Pass ☐ Fail ☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☑ Pass ☐ Fail ☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☑ Pass ☐ Fail ☐ N/A
Exclusion/Work Zones	
The exclusion/work zone is centered over the borehole (and if applicable, bore exit point) and the radius equal to or greater than the height of the mast (measured from ground level).	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone is clear of tripping hazards.	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone communicated to concurrent/adjacent operations to prevent overlap of work zones or line of fire.	☑ Pass ☐ Fail ☐ N/A
Subsurface Utilities / Installations and Overhead Obstructions	
Subsurface utilities / installations have been confirmed as identified and cleared through site observation and review of the completed *S3NA-331-FM1 Underground Utilities & Subsurface Installation Clearance Checklist.*	☑ Pass ☐ Fail ☐ N/A
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the Minimum Approach Distance (MAD).	☑ Pass ☐ Fail ☐ N/A
Rig Repairs	
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☑ Pass ☐ Fail ☐ N/A
Specialized PPE	
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☑ Pass ☐ Fail ☐ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☑ Pass ☐ Fail ☐ N/A

Comments:

Signature of Inspector: [signature] Date: 3/31/17

AECOM

Americas

Daily Drilling, Boring & Direct-Push Equipment Inspection

S3AM-321-FM1

Site / Project Name: UTC Delavan / 2017 GW Delineation 60314964.16

Rig Inspector (Name/Company): Stefan Smith / SAEDACCO

RIG INFORMATION:

Rig Type: Rotary/Auger Drilling Rig ☑ Direct Push Type (DPT) ☐

Owner: SAEDACCO VIN#: 177

Year/Make: 1999 Dedrick Mileage:

Model: D-50 Drill Hrs: 3973

INSTRUCTIONS: Each shift shall inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

Emergency Equipment / Devices / Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☑ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer, alarms and other devices (e.g. positive air shut-off valve) tested and in operable condition. All workers familiar with location and operation of devices. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☑ Pass ☐ Fail ☐ N/A
First aid kit adequate and on equipment / readily available.	☑ Pass ☐ Fail ☐ N/A
Absorbent materials on equipment / readily available (spill response).	☑ Pass ☐ Fail ☐ N/A
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☑ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☑ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☑ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☑ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☑ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☑ Pass ☐ Fail ☐ N/A
Pulleys and Cable Winches	
Pulleys are not bent, cracked, or broken.	☑ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☑ Pass ☐ Fail ☐ N/A
Motor is mounted in correct location and tightly secured to drill rig.	☑ Pass ☐ Fail ☐ N/A
Winch capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☑ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☑ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☑ Pass ☐ Fail ☐ N/A
Flights / Augers / Reamers	
Flights / Augers / Reamers are not bent, cracked, or broken. NOTE: Flights / Augers /	☑ Pass ☐ Fail ☐ N/A

Reamers failing inspection must be removed from jobsite.	
Flights are blunt to prevent the risks of cuts.	☑ Pass ☐ Fail ☐ N/A
Auger keys are not bent, cracked/fractured, excessively worn, or otherwise damaged.	☑ Pass ☐ Fail ☐ N/A
Auger bolt holes and threads are not damaged.	☑ Pass ☐ Fail ☐ N/A
Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers lying flat on the ground (avoid stacking).	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers over 50lbs (22.7kg) moved mechanically. (Avoid manual lifting).	☑ Pass ☐ Fail ☐ N/A
Drill String	
Appropriate break out tool(s) available.	☐ Pass ☐ Fail ☑ N/A
Rod box and power vice operating smoothly and freely.	
Drill string are not bent and do not have any cracks/fractures.	☐ Pass ☐ Fail ☑ N/A
Drill string connections (e.g. pins, threads, couplers) are of the proper type, are not bent, have no cracks/fractures, and are not excessively worn.	☑ Pass ☐ Fail ☐ N/A
Swivel connectors (for trailing horizontal drill stem) lubricated and freely rotating.	☐ Pass ☐ Fail ☑ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☑ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) in place.	☑ Pass ☐ Fail ☐ N/A
No moving of drill rig or maintenance/repairs while mast is in vertical position.	☑ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☑ Pass ☐ Fail ☐ N/A
Hammer connections are secure.	☑ Pass ☐ Fail ☐ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☑ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☑ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☑ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☑ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☑ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☑ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices (straps, not chains) inspected before using and are in proper working order. NOTE: Damaged units are labeled and removed from jobsite.	☑ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☑ Pass ☐ Fail ☐ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☑ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☑ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☑ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☑ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☑ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☑ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent	☑ Pass ☐ Fail ☐ N/A

Ladders	
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass ☐ Fail ☑ N/A
Ladders and platforms not to be used for tool storage- keep ladders and operator platforms clear during drilling.	☐ Pass ☐ Fail ☑ N/A
Tires / Tracks	
Tires / Tracks on rig are not excessively worn and free of any debris or foreign material.	☑ Pass ☐ Fail ☐ N/A
General	
General condition – exterior (no structural damage, no loose bolts, platform tidy, etc.)	
General condition – interior (cab clean, tidy)	
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☑ Pass ☐ Fail ☐ N/A
Rig is of appropriate size to meet job requirements.	☑ Pass ☐ Fail ☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☑ Pass ☐ Fail ☐ N/A
Exhaust	
Exhaust system is free from defect and routes engine exhaust away from drill rig workers.	☑ Pass ☐ Fail ☐ N/A
Fuels	
Fuel stored in an approved and properly labeled container.	☑ Pass ☐ Fail ☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☑ Pass ☐ Fail ☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☑ Pass ☐ Fail ☐ N/A
Exclusion/Work Zones	
The exclusion/work zone is centered over the borehole (and if applicable, bore exit point) and the radius equal to or greater than the height of the mast (measured from ground level).	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone is clear of tripping hazards.	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone communicated to concurrent/adjacent operations to prevent overlap of work zones or line of fire.	☑ Pass ☐ Fail ☐ N/A
Subsurface Utilities / Installations and Overhead Obstructions	
Subsurface utilities / installations have been confirmed as identified and cleared through site observation and review of the completed *S3AM-331-FM1 Underground Utilities & Subsurface Installation Clearance Checklist.*	☑ Pass ☐ Fail ☐ N/A
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the Minimum Approach Distance (MAD).	☑ Pass ☐ Fail ☐ N/A
Rig Repairs	
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☑ Pass ☐ Fail ☐ N/A
Specialized PPE	
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☐ Pass ☐ Fail ☑ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☑ Pass ☐ Fail ☐ N/A

Comments:

Signature of Inspector: Stefan Smart Date: 4-3-17

AECOM

Americas

Daily Drilling, Boring & Direct-Push Equipment Inspection

S3AM-321-FM1

Site / Project Name: UTC Delavan / 2017 GW Delineation 60314964.16

Rig Inspector (Name/Company):

RIG INFORMATION:

Rig Type: Rotary/Auger Drilling Rig ☐ Direct Push Type (DPT) ☐

Owner: SAEDACCO

VIN#: 177

Year/Make: 1999 DEDRICH

Mileage:

Model: D50

Drill Hrs: 3979

INSTRUCTIONS: Each shift shall inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

Emergency Equipment / Devices / Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☑ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer, alarms and other devices (e.g. positive air shut-off valve) tested and in operable condition. All workers familiar with location and operation of devices. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☑ Pass ☐ Fail ☐ N/A
First aid kit adequate and on equipment / readily available.	☑ Pass ☐ Fail ☐ N/A
Absorbent materials on equipment / readily available (spill response).	☑ Pass ☐ Fail ☐ N/A
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☑ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☑ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☑ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☑ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☑ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☑ Pass ☐ Fail ☐ N/A
Pulleys and Cable Winches	
Pulleys are not bent, cracked, or broken.	☑ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☑ Pass ☐ Fail ☐ N/A
Motor is mounted in correct location and tightly secured to drill rig.	☑ Pass ☐ Fail ☐ N/A
Winch capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☑ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☑ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☑ Pass ☐ Fail ☐ N/A
Flights / Augers / Reamers	
Flights / Augers / Reamers are not bent, cracked, or broken. NOTE: Flights / Augers /	☑ Pass ☐ Fail ☐ N/A

Reamers failing inspection must be removed from jobsite.	
Flights are blunt to prevent the risks of cuts.	☑ Pass ☐ Fail ☐ N/A
Auger keys are not bent, cracked/fractured, excessively worn, or otherwise damaged.	☑ Pass ☐ Fail ☐ N/A
Auger bolt holes and threads are not damaged.	☑ Pass ☐ Fail ☐ N/A
Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers lying flat on the ground (avoid stacking).	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers over 50lbs (22.7kg) moved mechanically. (Avoid manual lifting).	☑ Pass ☐ Fail ☐ N/A
Drill String	
Appropriate break out tool(s) available.	☑ Pass ☐ Fail ☐ N/A
Rod box and power vice operating smoothly and freely.	
Drill string are not bent and do not have any cracks/fractures.	☑ Pass ☐ Fail ☐ N/A
Drill string connections (e.g. pins, threads, couplers) are of the proper type, are not bent, have no cracks/fractures, and are not excessively worn.	☑ Pass ☐ Fail ☐ N/A
Swivel connectors (for trailing horizontal drill stem) lubricated and freely rotating.	☑ Pass ☐ Fail ☐ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☑ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) in place.	☑ Pass ☐ Fail ☐ N/A
No moving of drill rig or maintenance/repairs while mast is in vertical position.	☑ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☑ Pass ☐ Fail ☐ N/A
Hammer connections are secure.	☑ Pass ☐ Fail ☐ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☑ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☑ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☑ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☑ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☑ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☑ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices (straps, not chains) inspected before using and are in proper working order. NOTE: Damaged units are labeled and removed from jobsite.	☑ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☑ Pass ☐ Fail ☐ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☑ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☑ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☑ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☑ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☑ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☑ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent	☑ Pass ☐ Fail ☐ N/A

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Ladders	
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass ☐ Fail ☑ N/A
Ladders and platforms not to be used for tool storage- keep ladders and operator platforms clear during drilling.	☐ Pass ☐ Fail ☑ N/A
Tires / Tracks	
Tires / Tracks on rig are not excessively worn and free of any debris or foreign material.	☑ Pass ☐ Fail ☐ N/A
General	
General condition – exterior (no structural damage, no loose bolts, platform tidy, etc.)	
General condition – interior (cab clean, tidy)	
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☑ Pass ☐ Fail ☐ N/A
Rig is of appropriate size to meet job requirements.	☑ Pass ☐ Fail ☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☑ Pass ☐ Fail ☐ N/A
Exhaust	
Exhaust system is free from defect and routes engine exhaust away from drill rig workers.	☑ Pass ☐ Fail ☐ N/A
Fuels	
Fuel stored in an approved and properly labeled container.	☑ Pass ☐ Fail ☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☑ Pass ☐ Fail ☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☑ Pass ☐ Fail ☐ N/A
Exclusion/Work Zones	
The exclusion/work zone is centered over the borehole (and if applicable, bore exit point) and the radius equal to or greater than the height of the mast (measured from ground level).	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone is clear of tripping hazards.	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone communicated to concurrent/adjacent operations to prevent overlap of work zones or line of fire.	☑ Pass ☐ Fail ☐ N/A
Subsurface Utilities / Installations and Overhead Obstructions	
Subsurface utilities / installations have been confirmed as identified and cleared through site observation and review of the completed *S3AM-331-FM1 Underground Utilities & Subsurface Installation Clearance Checklist.*	☑ Pass ☐ Fail ☐ N/A
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the Minimum Approach Distance (MAD).	☑ Pass ☐ Fail ☐ N/A
Rig Repairs	
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☑ Pass ☐ Fail ☐ N/A
Specialized PPE	
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☐ Pass ☐ Fail ☑ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☑ Pass ☐ Fail ☐ N/A

Comments:

Signature of Inspector: Stefan Smart Date: 4-4-17

AECOM

Americas

Daily Drilling, Boring & Direct-Push Equipment Inspection

S3AM-321-FM1

Site / Project Name: UTC Delavan / 2017 GW Delineation 60314964.16

Rig Inspector (Name/Company): Stefan Smith / SAEDACO

RIG INFORMATION:

Rig Type: Rotary/Auger Drilling Rig ☑ Direct Push Type (DPT) ☐

Owner: SAEDACO

VIN#: 177

Year/Make: 1979 Dedrick

Mileage:

Model: D-50

Drill Hrs: 3990

INSTRUCTIONS: Each shift shall inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

Emergency Equipment / Devices / Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☑ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer, alarms and other devices (e.g. positive air shut-off valve) tested and in operable condition. All workers familiar with location and operation of devices. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☑ Pass ☐ Fail ☐ N/A
First aid kit adequate and on equipment / readily available.	☑ Pass ☐ Fail ☐ N/A
Absorbent materials on equipment / readily available (spill response).	☑ Pass ☐ Fail ☐ N/A
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☑ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☑ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☑ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☑ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☑ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☑ Pass ☐ Fail ☐ N/A
Pulleys and Cable Winches	
Pulleys are not bent, cracked, or broken.	☑ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☑ Pass ☐ Fail ☐ N/A
Motor is mounted in correct location and tightly secured to drill rig.	☑ Pass ☐ Fail ☐ N/A
Winch capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☑ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☑ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☑ Pass ☐ Fail ☐ N/A
Flights / Augers / Reamers	
Flights / Augers / Reamers are not bent, cracked, or broken. NOTE: Flights / Augers /	☑ Pass ☐ Fail ☐ N/A

Reamers failing inspection must be removed from jobsite.	
Flights are blunt to prevent the risks of cuts.	☑ Pass ☐ Fail ☐ N/A
Auger keys are not bent, cracked/fractured, excessively worn, or otherwise damaged.	☑ Pass ☐ Fail ☐ N/A
Auger bolt holes and threads are not damaged.	☑ Pass ☐ Fail ☐ N/A
Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers lying flat on the ground (avoid stacking).	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers over 50lbs (22.7kg) moved mechanically. (Avoid manual lifting).	☑ Pass ☐ Fail ☐ N/A
Drill String	
Appropriate break out tool(s) available.	☑ Pass ☐ Fail ☐ N/A
Rod box and power vice operating smoothly and freely.	
Drill string are not bent and do not have any cracks/fractures.	☑ Pass ☐ Fail ☐ N/A
Drill string connections (e.g. pins, threads, couplers) are of the proper type, are not bent, have no cracks/fractures, and are not excessively worn.	☑ Pass ☐ Fail ☐ N/A
Swivel connectors (for trailing horizontal drill stem) lubricated and freely rotating.	☑ Pass ☐ Fail ☐ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☑ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) in place.	☑ Pass ☐ Fail ☐ N/A
No moving of drill rig or maintenance/repairs while mast is in vertical position.	☑ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☑ Pass ☐ Fail ☐ N/A
Hammer connections are secure.	☑ Pass ☐ Fail ☐ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☑ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☑ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☑ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☑ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☑ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☑ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices (straps, not chains) inspected before using and are in proper working order. NOTE: Damaged units are labeled and removed from jobsite.	☑ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☑ Pass ☐ Fail ☐ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☑ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☑ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☑ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☑ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☑ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☑ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent	☑ Pass ☐ Fail ☐ N/A

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Ladders	
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass ☐ Fail ☑ N/A
Ladders and platforms not to be used for tool storage- keep ladders and operator platforms clear during drilling.	☐ Pass ☐ Fail ☑ N/A
Tires / Tracks	
Tires / Tracks on rig are not excessively worn and free of any debris or foreign material.	☑ Pass ☐ Fail ☐ N/A
General	
General condition – exterior (no structural damage, no loose bolts, platform tidy, etc.)	
General condition – interior (cab clean, tidy)	
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☑ Pass ☐ Fail ☐ N/A
Rig is of appropriate size to meet job requirements.	☑ Pass ☐ Fail ☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☑ Pass ☐ Fail ☐ N/A
Exhaust	
Exhaust system is free from defect and routes engine exhaust away from drill rig workers.	☑ Pass ☐ Fail ☐ N/A
Fuels	
Fuel stored in an approved and properly labeled container.	☑ Pass ☐ Fail ☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☑ Pass ☐ Fail ☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☑ Pass ☐ Fail ☐ N/A
Exclusion/Work Zones	
The exclusion/work zone is centered over the borehole (and if applicable, bore exit point) and the radius equal to or greater than the height of the mast (measured from ground level).	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone is clear of tripping hazards.	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone communicated to concurrent/adjacent operations to prevent overlap of work zones or line of fire.	☑ Pass ☐ Fail ☐ N/A
Subsurface Utilities / Installations and Overhead Obstructions	
Subsurface utilities / installations have been confirmed as identified and cleared through site observation and review of the completed *S3AM-331-FM1 Underground Utilities & Subsurface Installation Clearance Checklist.*	☑ Pass ☐ Fail ☐ N/A
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the Minimum Approach Distance (MAD).	☑ Pass ☐ Fail ☐ N/A
Rig Repairs	
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☑ Pass ☐ Fail ☐ N/A
Specialized PPE	
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☐ Pass ☐ Fail ☑ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☑ Pass ☐ Fail ☐ N/A

Comments:

Signature of Inspector: Stefan Smid Date: 4-5-17

AECOM

Americas

Daily Drilling, Boring & Direct-Push Equipment Inspection

S3AM-321-FM1

Site / Project Name: UTC Delavan / 2017 GW Delineation 60314964.16

Rig Inspector (Name/Company): Stefan Smith / SAEDACO

RIG INFORMATION:

Rig Type: Rotary/Auger Drilling Rig ☐ Direct Push Type (DPT) ☐

Owner: SAEDACO

VIN#: 177

Year/Make: Dadrich 1999

Mileage:

Model: D-50

Drill Hrs: 3985

INSTRUCTIONS: Each shift shall inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

Emergency Equipment / Devices / Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☑ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer, alarms and other devices (e.g. positive air shut-off valve) tested and in operable condition. All workers familiar with location and operation of devices. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☑ Pass ☐ Fail ☐ N/A
First aid kit adequate and on equipment / readily available.	☑ Pass ☐ Fail ☐ N/A
Absorbent materials on equipment / readily available (spill response).	☑ Pass ☐ Fail ☐ N/A
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☑ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☑ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☑ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☑ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☑ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☑ Pass ☐ Fail ☐ N/A
Pulleys and Cable Winches	
Pulleys are not bent, cracked, or broken.	☑ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☑ Pass ☐ Fail ☐ N/A
Motor is mounted in correct location and tightly secured to drill rig.	☑ Pass ☐ Fail ☐ N/A
Winch capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☑ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☑ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☑ Pass ☐ Fail ☐ N/A
Flights / Augers / Reamers	
Flights / Augers / Reamers are not bent, cracked, or broken. NOTE: Flights / Augers /	☑ Pass ☐ Fail ☐ N/A

Reamers failing inspection must be removed from jobsite.	
Flights are blunt to prevent the risks of cuts.	☑ Pass ☐ Fail ☐ N/A
Auger keys are not bent, cracked/fractured, excessively worn, or otherwise damaged.	☑ Pass ☐ Fail ☐ N/A
Auger bolt holes and threads are not damaged.	☑ Pass ☐ Fail ☐ N/A
Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers lying flat on the ground (avoid stacking).	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers over 50lbs (22.7kg) moved mechanically. (Avoid manual lifting).	☑ Pass ☐ Fail ☐ N/A
Drill String	
Appropriate break out tool(s) available.	☑ Pass ☐ Fail ☐ N/A
Rod box and power vice operating smoothly and freely.	
Drill string are not bent and do not have any cracks/fractures.	☑ Pass ☐ Fail ☐ N/A
Drill string connections (e.g. pins, threads, couplers) are of the proper type, are not bent, have no cracks/fractures, and are not excessively worn.	☑ Pass ☐ Fail ☐ N/A
Swivel connectors (for trailing horizontal drill stem) lubricated and freely rotating.	☑ Pass ☐ Fail ☐ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☑ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) in place.	☑ Pass ☐ Fail ☐ N/A
No moving of drill rig or maintenance/repairs while mast is in vertical position.	☑ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☑ Pass ☐ Fail ☐ N/A
Hammer connections are secure.	☑ Pass ☐ Fail ☐ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☑ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☑ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☑ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☑ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☑ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☑ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices (straps, not chains) inspected before using and are in proper working order. NOTE: Damaged units are labeled and removed from jobsite.	☑ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☑ Pass ☐ Fail ☐ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☑ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☑ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☑ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☑ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☑ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☑ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent	☑ Pass ☐ Fail ☐ N/A

Ladders	
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass ☐ Fail ☑ N/A
Ladders and platforms not to be used for tool storage- keep ladders and operator platforms clear during drilling.	☐ Pass ☐ Fail ☑ N/A
Tires / Tracks	
Tires / Tracks on rig are not excessively worn and free of any debris or foreign material.	☑ Pass ☐ Fail ☐ N/A
General	
General condition – exterior (no structural damage, no loose bolts, platform tidy, etc.)	
General condition – interior (cab clean, tidy)	
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☑ Pass ☐ Fail ☐ N/A
Rig is of appropriate size to meet job requirements.	☑ Pass ☐ Fail ☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☑ Pass ☐ Fail ☐ N/A
Exhaust	
Exhaust system is free from defect and routes engine exhaust away from drill rig workers.	☑ Pass ☐ Fail ☐ N/A
Fuels	
Fuel stored in an approved and properly labeled container.	☑ Pass ☐ Fail ☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☑ Pass ☐ Fail ☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☑ Pass ☐ Fail ☐ N/A
Exclusion/Work Zones	
The exclusion/work zone is centered over the borehole (and if applicable, bore exit point) and the radius equal to or greater than the height of the mast (measured from ground level).	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone is clear of tripping hazards.	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone communicated to concurrent/adjacent operations to prevent overlap of work zones or line of fire.	☑ Pass ☐ Fail ☐ N/A
Subsurface Utilities / Installations and Overhead Obstructions	
Subsurface utilities / installations have been confirmed as identified and cleared through site observation and review of the completed *S3AM-331-FM1 Underground Utilities & Subsurface Installation Clearance Checklist.*	☑ Pass ☐ Fail ☐ N/A
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the Minimum Approach Distance (MAD).	☑ Pass ☐ Fail ☐ N/A
Rig Repairs	
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☑ Pass ☐ Fail ☐ N/A
Specialized PPE	
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☐ Pass ☐ Fail ☑ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☑ Pass ☐ Fail ☐ N/A

Comments:

Signature of Inspector: Stefan Smart Date: 4-6-17

AECOM

Americas

Daily Drilling, Boring & Direct-Push Equipment Inspection

S3AM-321-FM1

Site / Project Name: UTC Delavan / 2017 GW Delineation 60314964.16

Rig Inspector (Name/Company): Stefan Smith SAE DACCO

RIG INFORMATION:

Rig Type: Rotary/Auger Drilling Rig ☒ Direct Push Type (DPT) ☐

Owner: SAEDACCO VIN#: 177

Year/Make: 1999 Desrich Mileage:

Model: D-50 Drill Hrs: 3987

INSTRUCTIONS: Each shift shall inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

Emergency Equipment / Devices / Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☑ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer, alarms and other devices (e.g. positive air shut-off valve) tested and in operable condition. All workers familiar with location and operation of devices. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☑ Pass ☐ Fail ☐ N/A
First aid kit adequate and on equipment / readily available.	☑ Pass ☐ Fail ☐ N/A
Absorbent materials on equipment / readily available (spill response).	☑ Pass ☐ Fail ☐ N/A
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☑ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☑ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☑ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☑ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☑ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☑ Pass ☐ Fail ☐ N/A
Pulleys and Cable Winches	
Pulleys are not bent, cracked, or broken.	☑ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☑ Pass ☐ Fail ☐ N/A
Motor is mounted in correct location and tightly secured to drill rig.	☑ Pass ☐ Fail ☐ N/A
Winch capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☑ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☑ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☑ Pass ☐ Fail ☐ N/A
Flights / Augers / Reamers	
Flights / Augers / Reamers are not bent, cracked, or broken. NOTE: Flights / Augers /	☑ Pass ☐ Fail ☐ N/A

Reamers failing inspection must be removed from jobsite.	
Flights are blunt to prevent the risks of cuts.	☑ Pass ☐ Fail ☐ N/A
Auger keys are not bent, cracked/fractured, excessively worn, or otherwise damaged.	☑ Pass ☐ Fail ☐ N/A
Auger bolt holes and threads are not damaged.	☑ Pass ☐ Fail ☐ N/A
Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers lying flat on the ground (avoid stacking).	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers over 50lbs (22.7kg) moved mechanically. (Avoid manual lifting).	☑ Pass ☐ Fail ☐ N/A
Drill String	
Appropriate break out tool(s) available.	☑ Pass ☐ Fail ☐ N/A
Rod box and power vice operating smoothly and freely.	
Drill string are not bent and do not have any cracks/fractures.	☑ Pass ☐ Fail ☐ N/A
Drill string connections (e.g. pins, threads, couplers) are of the proper type, are not bent, have no cracks/fractures, and are not excessively worn.	☑ Pass ☐ Fail ☐ N/A
Swivel connectors (for trailing horizontal drill stem) lubricated and freely rotating.	☑ Pass ☐ Fail ☐ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☑ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) in place.	☑ Pass ☐ Fail ☐ N/A
No moving of drill rig or maintenance/repairs while mast is in vertical position.	☑ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☑ Pass ☐ Fail ☐ N/A
Hammer connections are secure.	☑ Pass ☐ Fail ☐ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☑ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☑ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☑ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☑ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☑ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☑ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices (straps, not chains) inspected before using and are in proper working order. NOTE: Damaged units are labeled and removed from jobsite.	☑ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☑ Pass ☐ Fail ☐ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☑ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☑ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☑ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☑ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☑ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☑ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent	☑ Pass ☐ Fail ☐ N/A

Ladders	
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass ☐ Fail ☑ N/A
Ladders and platforms not to be used for tool storage- keep ladders and operator platforms clear during drilling.	☐ Pass ☐ Fail ☑ N/A
Tires / Tracks	
Tires / Tracks on rig are not excessively worn and free of any debris or foreign material.	☑ Pass ☐ Fail ☐ N/A
General	
General condition – exterior (no structural damage, no loose bolts, platform tidy, etc.)	
General condition – interior (cab clean, tidy)	
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☑ Pass ☐ Fail ☐ N/A
Rig is of appropriate size to meet job requirements.	☑ Pass ☐ Fail ☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☑ Pass ☐ Fail ☐ N/A
Exhaust	
Exhaust system is free from defect and routes engine exhaust away from drill rig workers.	☑ Pass ☐ Fail ☐ N/A
Fuels	
Fuel stored in an approved and properly labeled container.	☑ Pass ☐ Fail ☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☑ Pass ☐ Fail ☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☑ Pass ☐ Fail ☐ N/A
Exclusion/Work Zones	
The exclusion/work zone is centered over the borehole (and if applicable, bore exit point) and the radius equal to or greater than the height of the mast (measured from ground level).	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone is clear of tripping hazards.	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone communicated to concurrent/adjacent operations to prevent overlap of work zones or line of fire.	☑ Pass ☐ Fail ☐ N/A
Subsurface Utilities / Installations and Overhead Obstructions	
Subsurface utilities / installations have been confirmed as identified and cleared through site observation and review of the completed *S3AM-331-FM1 Underground Utilities & Subsurface Installation Clearance Checklist.*	☑ Pass ☐ Fail ☐ N/A
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the Minimum Approach Distance (MAD).	☑ Pass ☐ Fail ☐ N/A
Rig Repairs	
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☑ Pass ☐ Fail ☐ N/A
Specialized PPE	
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☐ Pass ☐ Fail ☑ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☑ Pass ☐ Fail ☐ N/A

Comments:

Signature of Inspector: Alistair Smith Date: 4-7-17

AECOM

Americas

Daily Drilling, Boring & Direct-Push Equipment Inspection

S3AM-321-FM1

Site / Project Name: UTC Delavan / 2017 GW Delineation 60314964.16

Rig Inspector (Name/Company): STEFAN SMITH / SAEDACCO

RIG INFORMATION:

Rig Type: Rotary/Auger Drilling Rig ☐ Sonic ☑ Direct Push Type (DPT) ☐

Owner: SAEDACCO

VIN#: 21235LS8140

Year/Make:

Mileage: N/A

Model: 8140

Drill Hrs: 4905

INSTRUCTIONS: Each shift shall inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

Emergency Equipment / Devices / Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☑ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer, alarms and other devices (e.g. positive air shut-off valve) tested and in operable condition. All workers familiar with location and operation of devices. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☑ Pass ☐ Fail ☐ N/A
First aid kit adequate and on equipment / readily available.	☑ Pass ☐ Fail ☐ N/A
Absorbent materials on equipment / readily available (spill response).	☑ Pass ☐ Fail ☐ N/A
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☑ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☑ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☑ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☑ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☑ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☑ Pass ☐ Fail ☐ N/A
Pulleys and Cable Winches	
Pulleys are not bent, cracked, or broken.	☑ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☑ Pass ☐ Fail ☐ N/A
Motor is mounted in correct location and tightly secured to drill rig.	☑ Pass ☐ Fail ☐ N/A
Winch capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☑ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☑ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☑ Pass ☐ Fail ☐ N/A
Flights / Augers / Reamers	
Flights / Augers / Reamers are not bent, cracked, or broken. NOTE: Flights / Augers /	☐ Pass ☐ Fail ☑ N/A

Reamers failing inspection must be removed from jobsite.	
Flights are blunt to prevent the risks of cuts.	☐ Pass ☐ Fail ☑ N/A
Auger keys are not bent, cracked/fractured, excessively worn, or otherwise damaged.	☐ Pass ☐ Fail ☑ N/A
Auger bolt holes and threads are not damaged.	☐ Pass ☐ Fail ☑ N/A
Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☐ Pass ☐ Fail ☑ N/A
Augers / Reamers lying flat on the ground (avoid stacking).	☐ Pass ☐ Fail ☑ N/A
Augers / Reamers over 50lbs (22.7kg) moved mechanically. (Avoid manual lifting).	☐ Pass ☐ Fail ☑ N/A
Drill String	
Appropriate break out tool(s) available.	☑ Pass ☐ Fail ☐ N/A
Rod box and power vice operating smoothly and freely.	
Drill string are not bent and do not have any cracks/fractures.	☑ Pass ☐ Fail ☐ N/A
Drill string connections (e.g. pins, threads, couplers) are of the proper type, are not bent, have no cracks/fractures, and are not excessively worn.	☑ Pass ☐ Fail ☐ N/A
Swivel connectors (for trailing horizontal drill stem) lubricated and freely rotating.	☐ Pass ☐ Fail ☑ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☑ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) in place.	☑ Pass ☐ Fail ☐ N/A
No moving of drill rig or maintenance/repairs while mast is in vertical position.	☑ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☐ Pass ☐ Fail ☑ N/A
Hammer connections are secure.	☐ Pass ☐ Fail ☑ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☑ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☑ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☑ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☑ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☑ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☑ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices (straps, not chains) inspected before using and are in proper working order. NOTE: Damaged units are labeled and removed from jobsite.	☑ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☐ Pass ☐ Fail ☑ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☑ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☑ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☑ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☑ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☑ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☑ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent	☑ Pass ☐ Fail ☐ N/A

Ladders			
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass	☐ Fail	☑ N/A
Ladders and platforms not to be used for tool storage- keep ladders and operator platforms clear during drilling.	☐ Pass	☐ Fail	☑ N/A
Tires / Tracks			
Tires / Tracks on rig are not excessively worn and free of any debris or foreign material.	☑ Pass	☐ Fail	☐ N/A
General			
General condition – exterior (no structural damage, no loose bolts, platform tidy, etc.)			
General condition – interior (cab clean, tidy)			
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☑ Pass	☐ Fail	☐ N/A
Rig is of appropriate size to meet job requirements.	☑ Pass	☐ Fail	☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☑ Pass	☐ Fail	☐ N/A
Exhaust			
Exhaust system is free from defect and routes engine exhaust away from drill rig workers.	☑ Pass	☐ Fail	☐ N/A
Fuels			
Fuel stored in an approved and properly labeled container.	☑ Pass	☐ Fail	☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☑ Pass	☐ Fail	☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☑ Pass	☐ Fail	☐ N/A
Exclusion/Work Zones			
The exclusion/work zone is centered over the borehole (and if applicable, bore exit point) and the radius equal to or greater than the height of the mast (measured from ground level).	☑ Pass	☐ Fail	☐ N/A
The exclusion/work zone is clear of tripping hazards.	☑ Pass	☐ Fail	☐ N/A
The exclusion/work zone communicated to concurrent/adjacent operations to prevent overlap of work zones or line of fire.	☑ Pass	☐ Fail	☐ N/A
Subsurface Utilities / Installations and Overhead Obstructions			
Subsurface utilities / installations have been confirmed as identified and cleared through site observation and review of the completed *S3AM-331-FM1 Underground Utilities & Subsurface Installation Clearance Checklist.*	☑ Pass	☐ Fail	☐ N/A
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the Minimum Approach Distance (MAD).	☑ Pass	☐ Fail	☐ N/A
Rig Repairs			
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☑ Pass	☐ Fail	☐ N/A
Specialized PPE			
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☐ Pass	☐ Fail	☑ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☑ Pass	☐ Fail	☐ N/A

Comments:

Signature of Inspector: Alafa Smail Date: 4-10-17

AECOM

Americas

Daily Drilling, Boring & Direct-Push Equipment Inspection

S3AM-321-FM1

Site / Project Name: UTC Delavan / 2017 GW Delineation 60314964.16

Rig Inspector (Name/Company): Stefan Smith SAEDACCO

RIG INFORMATION:

Rig Type: Rotary/Auger Drilling Rig ☐ Direct Push Type (DPT) ☐

Owner: SAEDACCO

VIN#: 2112351581407

Year/Make: 2011 Geoprobe

Mileage:

Model: 8140LS

Drill Hrs: 4907

INSTRUCTIONS: Each shift shall inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

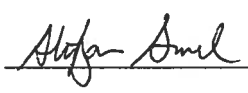
Emergency Equipment / Devices / Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☑ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer, alarms and other devices (e.g. positive air shut-off valve) tested and in operable condition. All workers familiar with location and operation of devices. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☑ Pass ☐ Fail ☐ N/A
First aid kit adequate and on equipment / readily available.	☑ Pass ☐ Fail ☐ N/A
Absorbent materials on equipment / readily available (spill response).	☑ Pass ☐ Fail ☐ N/A
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☑ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☑ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☑ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☑ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☑ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☑ Pass ☐ Fail ☐ N/A
Pulleys and Cable Winches	
Pulleys are not bent, cracked, or broken.	☑ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☑ Pass ☐ Fail ☐ N/A
Motor is mounted in correct location and tightly secured to drill rig.	☑ Pass ☐ Fail ☐ N/A
Winch capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☑ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☑ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☑ Pass ☐ Fail ☐ N/A
Flights / Augers / Reamers	
Flights / Augers / Reamers are not bent, cracked, or broken. NOTE: Flights / Augers /	☑ Pass ☐ Fail ☐ N/A

Reamers failing inspection must be removed from jobsite.	
Flights are blunt to prevent the risks of cuts.	☑ Pass ☐ Fail ☐ N/A
Auger keys are not bent, cracked/fractured, excessively worn, or otherwise damaged.	☑ Pass ☐ Fail ☐ N/A
Auger bolt holes and threads are not damaged.	☑ Pass ☐ Fail ☐ N/A
Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers lying flat on the ground (avoid stacking).	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers over 50lbs (22.7kg) moved mechanically. (Avoid manual lifting).	☑ Pass ☐ Fail ☐ N/A
Drill String	
Appropriate break out tool(s) available.	☑ Pass ☐ Fail ☐ N/A
Rod box and power vice operating smoothly and freely.	
Drill string are not bent and do not have any cracks/fractures.	☑ Pass ☐ Fail ☐ N/A
Drill string connections (e.g. pins, threads, couplers) are of the proper type, are not bent, have no cracks/fractures, and are not excessively worn.	☑ Pass ☐ Fail ☐ N/A
Swivel connectors (for trailing horizontal drill stem) lubricated and freely rotating.	☑ Pass ☐ Fail ☐ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☑ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) in place.	☑ Pass ☐ Fail ☐ N/A
No moving of drill rig or maintenance/repairs while mast is in vertical position.	☑ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☑ Pass ☐ Fail ☐ N/A
Hammer connections are secure.	☑ Pass ☐ Fail ☐ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☑ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☑ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☑ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☑ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☑ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☑ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices (straps, not chains) inspected before using and are in proper working order. NOTE: Damaged units are labeled and removed from jobsite.	☑ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☑ Pass ☐ Fail ☐ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☑ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☑ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☑ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☑ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☑ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☑ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent	☑ Pass ☐ Fail ☐ N/A

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Ladders	
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass ☐ Fail ☑ N/A
Ladders and platforms not to be used for tool storage- keep ladders and operator platforms clear during drilling.	☐ Pass ☐ Fail ☑ N/A
Tires / Tracks	
Tires / Tracks on rig are not excessively worn and free of any debris or foreign material.	☑ Pass ☐ Fail ☐ N/A
General	
General condition – exterior (no structural damage, no loose bolts, platform tidy, etc.)	
General condition – interior (cab clean, tidy)	
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☑ Pass ☐ Fail ☐ N/A
Rig is of appropriate size to meet job requirements.	☑ Pass ☐ Fail ☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☑ Pass ☐ Fail ☐ N/A
Exhaust	
Exhaust system is free from defect and routes engine exhaust away from drill rig workers.	☑ Pass ☐ Fail ☐ N/A
Fuels	
Fuel stored in an approved and properly labeled container.	☑ Pass ☐ Fail ☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☑ Pass ☐ Fail ☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☑ Pass ☐ Fail ☐ N/A
Exclusion/Work Zones	
The exclusion/work zone is centered over the borehole (and if applicable, bore exit point) and the radius equal to or greater than the height of the mast (measured from ground level).	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone is clear of tripping hazards.	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone communicated to concurrent/adjacent operations to prevent overlap of work zones or line of fire.	☑ Pass ☐ Fail ☐ N/A
Subsurface Utilities / Installations and Overhead Obstructions	
Subsurface utilities / installations have been confirmed as identified and cleared through site observation and review of the completed *S3AM-331-FM1 Underground Utilities & Subsurface Installation Clearance Checklist.*	☑ Pass ☐ Fail ☐ N/A
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the Minimum Approach Distance (MAD).	☑ Pass ☐ Fail ☐ N/A
Rig Repairs	
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☑ Pass ☐ Fail ☐ N/A
Specialized PPE	
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☐ Pass ☐ Fail ☑ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☑ Pass ☐ Fail ☐ N/A

Comments:

Signature of Inspector:  Date: 4-11-17

AECOM

Americas

Daily Drilling, Boring & Direct-Push Equipment Inspection

S3AM-321-FM1

Site / Project Name: UTC Delavan / 2017 GW Delineation 60314964.16

Rig Inspector (Name/Company): Stefan Smith / SAEDACCO

RIG INFORMATION:

Rig Type: Rotary/Auger Drilling Rig ☐ Direct Push Type (DPT) ☐

Owner: SAEDACCO VIN#: 211235 LS 8140

Year/Make: Mileage:

Model: 8140LS Drill Hrs: 4912

INSTRUCTIONS: Each shift shall inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

Emergency Equipment / Devices / Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☑ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer, alarms and other devices (e.g. positive air shut-off valve) tested and in operable condition. All workers familiar with location and operation of devices. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☑ Pass ☐ Fail ☐ N/A
First aid kit adequate and on equipment / readily available.	☑ Pass ☐ Fail ☐ N/A
Absorbent materials on equipment / readily available (spill response).	☑ Pass ☐ Fail ☐ N/A
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☑ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☑ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☑ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☑ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☑ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☑ Pass ☐ Fail ☐ N/A
Pulleys and Cable Winches	
Pulleys are not bent, cracked, or broken.	☑ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☑ Pass ☐ Fail ☐ N/A
Motor is mounted in correct location and tightly secured to drill rig.	☑ Pass ☐ Fail ☐ N/A
Winch capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☑ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☑ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☑ Pass ☐ Fail ☐ N/A
Flights / Augers / Reamers	
Flights / Augers / Reamers are not bent, cracked, or broken. NOTE: Flights / Augers /	☑ Pass ☐ Fail ☐ N/A

Reamers failing inspection must be removed from jobsite.	
Flights are blunt to prevent the risks of cuts.	☑ Pass ☐ Fail ☐ N/A
Auger keys are not bent, cracked/fractured, excessively worn, or otherwise damaged.	☑ Pass ☐ Fail ☐ N/A
Auger bolt holes and threads are not damaged.	☑ Pass ☐ Fail ☐ N/A
Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers lying flat on the ground (avoid stacking).	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers over 50lbs (22.7kg) moved mechanically. (Avoid manual lifting).	☑ Pass ☐ Fail ☐ N/A
Drill String	
Appropriate break out tool(s) available.	☑ Pass ☐ Fail ☐ N/A
Rod box and power vice operating smoothly and freely.	
Drill string are not bent and do not have any cracks/fractures.	☑ Pass ☐ Fail ☐ N/A
Drill string connections (e.g. pins, threads, couplers) are of the proper type, are not bent, have no cracks/fractures, and are not excessively worn.	☑ Pass ☐ Fail ☐ N/A
Swivel connectors (for trailing horizontal drill stem) lubricated and freely rotating.	☑ Pass ☐ Fail ☐ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☑ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) in place.	☑ Pass ☐ Fail ☐ N/A
No moving of drill rig or maintenance/repairs while mast is in vertical position.	☑ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☑ Pass ☐ Fail ☐ N/A
Hammer connections are secure.	☑ Pass ☐ Fail ☐ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☑ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☑ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☑ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☑ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☑ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☑ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices (straps, not chains) inspected before using and are in proper working order. NOTE: Damaged units are labeled and removed from jobsite.	☑ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☑ Pass ☐ Fail ☐ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☑ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☑ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☑ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☑ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☑ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☑ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent	☑ Pass ☐ Fail ☐ N/A

Ladders	
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass ☐ Fail ☑ N/A
Ladders and platforms not to be used for tool storage- keep ladders and operator platforms clear during drilling.	☐ Pass ☐ Fail ☑ N/A
Tires / Tracks	
Tires / Tracks on rig are not excessively worn and free of any debris or foreign material.	☑ Pass ☐ Fail ☐ N/A
General	
General condition – exterior (no structural damage, no loose bolts, platform tidy, etc.)	
General condition – interior (cab clean, tidy)	
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☑ Pass ☐ Fail ☐ N/A
Rig is of appropriate size to meet job requirements.	☑ Pass ☐ Fail ☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☑ Pass ☐ Fail ☐ N/A
Exhaust	
Exhaust system is free from defect and routes engine exhaust away from drill rig workers.	☑ Pass ☐ Fail ☐ N/A
Fuels	
Fuel stored in an approved and properly labeled container.	☑ Pass ☐ Fail ☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☑ Pass ☐ Fail ☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☑ Pass ☐ Fail ☐ N/A
Exclusion/Work Zones	
The exclusion/work zone is centered over the borehole (and if applicable, bore exit point) and the radius equal to or greater than the height of the mast (measured from ground level).	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone is clear of tripping hazards.	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone communicated to concurrent/adjacent operations to prevent overlap of work zones or line of fire.	☑ Pass ☐ Fail ☐ N/A
Subsurface Utilities / Installations and Overhead Obstructions	
Subsurface utilities / installations have been confirmed as identified and cleared through site observation and review of the completed *S3AM-331-FM1 Underground Utilities & Subsurface Installation Clearance Checklist.*	☑ Pass ☐ Fail ☐ N/A
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the Minimum Approach Distance (MAD).	☑ Pass ☐ Fail ☐ N/A
Rig Repairs	
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☑ Pass ☐ Fail ☐ N/A
Specialized PPE	
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☐ Pass ☐ Fail ☑ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☑ Pass ☐ Fail ☐ N/A

Comments:

Signature of Inspector: Stefan Smart Date: 4-12-17

AECOM

Americas

Daily Drilling, Boring & Direct-Push Equipment Inspection

S3AM-321-FM1

Site / Project Name: UTC Delavan / 2017 GW Delineation 60314964.16

Rig Inspector (Name/Company): Stefan Smith / SAE/AECOM

RIG INFORMATION:

Rig Type: Rotary/Auger Drilling Rig ☐ Direct Push Type (DPT) ☐

Owner: SAE/AECOM VIN#: 2112 35 LS 8140

Year/Make: 2011 Geoprobe Mileage:

Model: 8140 LS Drill Hrs: 4917

INSTRUCTIONS: Each shift shall inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

Emergency Equipment / Devices / Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☑ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer, alarms and other devices (e.g. positive air shut-off valve) tested and in operable condition. All workers familiar with location and operation of devices. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☑ Pass ☐ Fail ☐ N/A
First aid kit adequate and on equipment / readily available.	☑ Pass ☐ Fail ☐ N/A
Absorbent materials on equipment / readily available (spill response).	☑ Pass ☐ Fail ☐ N/A
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☑ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☑ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☑ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☑ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☑ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☑ Pass ☐ Fail ☐ N/A
Pulleys and Cable Winches	
Pulleys are not bent, cracked, or broken.	☑ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☑ Pass ☐ Fail ☐ N/A
Motor is mounted in correct location and tightly secured to drill rig.	☑ Pass ☐ Fail ☐ N/A
Winch capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☑ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☑ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☑ Pass ☐ Fail ☐ N/A
Flights / Augers / Reamers	
Flights / Augers / Reamers are not bent, cracked, or broken. NOTE: Flights / Augers /	☑ Pass ☐ Fail ☐ N/A

Reamers failing inspection must be removed from jobsite.	
Flights are blunt to prevent the risks of cuts.	☑ Pass ☐ Fail ☐ N/A
Auger keys are not bent, cracked/fractured, excessively worn, or otherwise damaged.	☑ Pass ☐ Fail ☐ N/A
Auger bolt holes and threads are not damaged.	☑ Pass ☐ Fail ☐ N/A
Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers lying flat on the ground (avoid stacking).	☑ Pass ☐ Fail ☐ N/A
Augers / Reamers over 50lbs (22.7kg) moved mechanically. (Avoid manual lifting).	☑ Pass ☐ Fail ☐ N/A
Drill String	
Appropriate break out tool(s) available.	☑ Pass ☐ Fail ☐ N/A
Rod box and power vice operating smoothly and freely.	
Drill string are not bent and do not have any cracks/fractures.	☑ Pass ☐ Fail ☐ N/A
Drill string connections (e.g. pins, threads, couplers) are of the proper type, are not bent, have no cracks/fractures, and are not excessively worn.	☑ Pass ☐ Fail ☐ N/A
Swivel connectors (for trailing horizontal drill stem) lubricated and freely rotating.	☑ Pass ☐ Fail ☐ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☑ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) in place.	☑ Pass ☐ Fail ☐ N/A
No moving of drill rig or maintenance/repairs while mast is in vertical position.	☑ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☑ Pass ☐ Fail ☐ N/A
Hammer connections are secure.	☑ Pass ☐ Fail ☐ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☑ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☑ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☑ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☑ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☑ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☑ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices (straps, not chains) inspected before using and are in proper working order. NOTE: Damaged units are labeled and removed from jobsite.	☑ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☑ Pass ☐ Fail ☐ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☑ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☑ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☑ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☑ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☑ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☑ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent	☑ Pass ☐ Fail ☐ N/A

Ladders	
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass ☐ Fail ☑ N/A
Ladders and platforms not to be used for tool storage- keep ladders and operator platforms clear during drilling.	☐ Pass ☐ Fail ☑ N/A
Tires / Tracks	
Tires / Tracks on rig are not excessively worn and free of any debris or foreign material.	☑ Pass ☐ Fail ☐ N/A
General	
General condition – exterior (no structural damage, no loose bolts, platform tidy, etc.)	
General condition – interior (cab clean, tidy)	
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☑ Pass ☐ Fail ☐ N/A
Rig is of appropriate size to meet job requirements.	☑ Pass ☐ Fail ☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☑ Pass ☐ Fail ☐ N/A
Exhaust	
Exhaust system is free from defect and routes engine exhaust away from drill rig workers.	☑ Pass ☐ Fail ☐ N/A
Fuels	
Fuel stored in an approved and properly labeled container.	☑ Pass ☐ Fail ☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☑ Pass ☐ Fail ☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☑ Pass ☐ Fail ☐ N/A
Exclusion/Work Zones	
The exclusion/work zone is centered over the borehole (and if applicable, bore exit point) and the radius equal to or greater than the height of the mast (measured from ground level).	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone is clear of tripping hazards.	☑ Pass ☐ Fail ☐ N/A
The exclusion/work zone communicated to concurrent/adjacent operations to prevent overlap of work zones or line of fire.	☑ Pass ☐ Fail ☐ N/A
Subsurface Utilities / Installations and Overhead Obstructions	
Subsurface utilities / installations have been confirmed as identified and cleared through site observation and review of the completed *S3AM-331-FM1 Underground Utilities & Subsurface Installation Clearance Checklist.*	☑ Pass ☐ Fail ☐ N/A
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the Minimum Approach Distance (MAD).	☑ Pass ☐ Fail ☐ N/A
Rig Repairs	
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☑ Pass ☐ Fail ☐ N/A
Specialized PPE	
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☐ Pass ☐ Fail ☑ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☑ Pass ☐ Fail ☐ N/A

Comments:

Signature of Inspector: Stefan Smart Date: 4-14-17

AECOM

Test Boring Report

BORING NO. GW DPT 1S
PAGE 1 OF 3

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: Geoprobe 7822

PROJECT NO: 60314964.16
LOCATION: Kinsey Property
ELEVATION:
DATE START: 3-28-17
DATE FINISH: 3-28-17
DRILLER: Kyle Borgemeister
PREPARED BY: Daniel Good

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	MC	Dual Tube	MC
					SIZE ID	2.25"	1.25"	
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
		~70% Rec		SAND (SP) Loose, dry, dark gray (5YR 4/1) mostly fine sand, few silt, non-plastic, no odor.
2.5				CLAYEY SAND (SC) Loose, dry, reddish yellow (5YR 7/8) mostly fine to medium sand, some clay, low plasticity, no odor
5.0		~85% Rec		as above
7.5				FAT CLAY (CH) Loose, moist, reddish yellow, (7.5YR 8/6) mostly clay, trace fine sand, medium plasticity, no odor
10.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW OPT 15

PAGE 2 OF 3

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0		95% Rec		FAT CLAY (CH) Loose, moist, reddish yellow (7.5YR 8/6) mostly clay, trace fine sand, medium plasticity, no odor
12.5				
15.0	0.7	95% Rec		LEAN CLAY WITH SAND (CL) Loose, moist, yellowish red (5YR 5/8) mostly clay, few fine sand, low plasticity, no odor
17.5	0.5			
20.0	0.9	90% Rec.		FAT CLAY (CH) loose, moist, yellowish red (5YR 5/8) mostly clay, trace fine sand, medium plasticity, no odor
22.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW-DPT-1S

PAGE 3 OF 3

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5				as above
				CLAYEY SAND (SC)
	0.8			Loose, yellowish brown (10YR 5/8) mostly fine sand, little clay, few silt, non-plastic, no odor.
25.0				
27.5				
	0.6			
30.0				End of Boring
32.5				
35.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM Test Boring Report

BORING NO. GWDPT 2S
PAGE 1 OF 3

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: Geoprobe 7822

PROJECT NO: 60314964.16
LOCATION: Kinsey Property
ELEVATION:
DATE START: 3-28-17
DATE FINISH: 3-28-17
DRILLER: Kyle Borgemeister
PREPARED BY: Daniel Good

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	MC	Dual Tube	MC
					SIZE ID	2¼"	1¼"	2¼"
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
		70% Rec		POORLY GRADED SAND (SP) Dry, loose, dark gray (5YR 4/1) mostly fine sand, few silt, non-plastic, no odor.
2.5				POORLY GRADED SAND WITH CLAY (SP-SC) Dry, loose, reddish yellow (7.5YR 6/8) mostly fine sand, little clay, non-plastic
5.0		90% Rec		POORLY GRADED SAND WITH SILT (SP-SM) Dry, loose, reddish yellow (7.5YR 6/8) mottled with red (2.5YR 4/8) mostly fine ~~silt~~ sand, little silt
7.5				POORLY GRADED SAND WITH SILT (SP-SM) as above
10.0				

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

Test Boring Report

BORING NO. GW DPT 2S

PAGE 2 OF 3

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0		80% Rec		WELL GRADED SAND (SW) moist, loose, light brown (7.5YR 6/4) mostly fine to medium sand, few silt, few clay, non-plastic, no odor.
12.5				
15.0	0.3	100% Rec		FAT CLAY (CH) moist, loose, reddish yellow (5YR 6/8) mostly clay, few fine sand, medium plasticity
17.5	0.1			
20.0	0.0	100% Rec		FAT CLAY (CH) moist, loose, yellowish red (5YR 5/8) mostly clay, trace fine sand, medium plasticity
22.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW DPT 25
PAGE 3 OF 3

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5				SAND WITH SILT (SP-SM)
				Wet, loose, dark gray, (7.5YR 4/1) mostly fine sand, little silt,
	1.1			few clay, non-plastic, runny, no odor
25.0				
		85%		
		Rec		WELL GRADED SAND (SW)
	0.7			Wet, loose, brownish yellow (10YR 6/8) mostly fine to medium sand,
				few silt, few clay.
27.5				
	2.1			End of Boring
30.0				
32.5				
35.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM Test Boring Report

BORING NO. GWDPT 3S
PAGE 1 OF 3

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: GeoProbe 7822

PROJECT NO: 60314964.16
LOCATION: Kinsey Property
ELEVATION:
DATE START: 3-27-17
DATE FINISH: 3-27-17
DRILLER: Kyle Borgemeister
PREPARED BY: Daniel Good

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	MC	Dual Tube	MC
					SIZE ID	2 1/4"	1 1/4"	2 1/4"
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
		50% Rec		POORLY GRADED SAND (SP) Dry, loose, gray (5YR 5/1), mostly fine sand, few silt, non-plastic
2.5				CLAYEY SAND (SC) Dry, loose, reddish yellow (5YR 6/6) mostly fine sand, some clay non-plastic, no odor.
5.0		60% Rec		SILTY SAND (SM) Dry, tight, red (2.5YR 5/6) mostly fine to medium sand some silt, non-plastic, no odor.
7.5				
10.0				

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

Test Boring Report

BORING NO. GW DPT 35
PAGE 2 OF 3

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0		80% Rec		WELL GRADED SAND (SW) Dry, tight, red (10R 5/8) mostly fine to medium sand few silt, few clay, non-plastic, no odor.
12.5	2.6			moisture at 13'
15.0	0.4	90% Rec		FAT CLAY WITH SAND (CH) moist, tight, yellowish red (7.5YR 6/7) mostly clay, little fine sand, non-plastic, no odor FAT CLAY (CH) moist, tight, yellowish red (7.5YR 6/8) mostly clay, few fine sand, medium plasticity, no odor.
17.5	1.7			
20.0	0.8	40% Rec		SANDY FAT CLAY (CH) wet, tight, yellowish brown (10YR 6/8), mostly clay, some sand, low plasticity, no odor
22.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW DPT 3S
PAGE 3 OF 3

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5				
	0.2			
				FAT CLAY (CH)
				Wet, loose, yellowish brown (10YR 5/8), mostly clay, few fine sand, medium plasticity, no odor.
25.0		80%		
	0.8	Rec		
27.5				
	0.3			
				WELL GRADED SAND WITH CLAY (SW-SC)
				Loose, wet, yellowish brown (10YR 5/6) mostly fine to medium sand little clay, non-plastic no odor
30.0				
	1.1	60%		
		Rec		
32.5				
	1.3			CLAYEY SAND (SC)
				loose, wet, strong brown (7.5YR 5/6) mostly fine to medium sand, some clay, non-plastic, no odor
35.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW DPT 5S
PAGE 1 OF 3 DL

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: Geoprobe 7822

PROJECT NO: 60314964.16
LOCATION: Kinsey Property
ELEVATION:
DATE START: 3-27-17
DATE FINISH: 3-27-17
DRILLER: Kyle Borgemeister
PREPARED BY: Daniel Good

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	MC	Dual Tube	MC
					SIZE ID	2 1/4"	1 1/4"	2 1/4"
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
				POORLY GRADED SAND WITH SILT (SP-SM) loose, dry, brown (7.5YR 5/2), mostly fine sand, little silt, non-plastic, no odor
	0.2			
2.5	0.1			WELL GRADED SAND (SW) loose, dry, reddish yellow (7.5YR 6/8) mostly fine to medium sand, few silt, non-plastic, no odor
5.0	0.2			CLAYEY SAND (SC) loose, dry, light reddish brown (5YR 6/4), mostly fine sand, some clay, non-plastic, no odor
7.5	0.0			CLAYEY SAND (SC) as above
10.0				

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

Test Boring Report

BORING NO. GW OPT 45
PAGE 2 OF 3

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0				SANDY CLAY (CH) Tight, dry, light reddish brown (5YR 6/4) mostly clay, some sand, low plasticity, no odor.
	0.4			
12.5	0.7			CLAYEY SAND (SC) Tight, moist, gray (5YR 6/1) mottled with reddish yellow (5YR 6/8) mostly medium sand, some clay, non-plastic, no odor.
15.0	0.5			CLAYEY SAND (SC) as above, grades to light brown (7.5YR 6/3)
17.5	0.9			saturated at ~18' SILTY SAND (SM) Loose, wet, yellowish red (5YR 5/6) mostly fine to medium sand, some silt, few clay
20.0	18.4			
	8.1			
22.5				

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

Test Boring Report

BORING NO. GW DPT 4S
PAGE 3 OF 3

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5	6.1			SILTY SAND (SM) Loose, wet, reddish yellow (7.5YR 7/8) mostly fine to medium sand, some silt, non-plastic, no odor
25.0	2.5			
27.5	3.0			SILTY SAND (SM) as above.
30.0				End of Boring
32.5				
35.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW DPT 5S
PAGE 1 OF 2

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: GeoProbe 7822

PROJECT NO: 60314964.16
LOCATION: Kinsey Property
ELEVATION:
DATE START: 3-29-17
DATE FINISH: 3-29-17
DRILLER: Kyle Borgemeister
PREPARED BY: Daniel Good

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	MC	Dual Tube	MC
					SIZE ID	2 1/4"	1 1/4"	2 1/4"
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
		40% Rec		POORLY GRADED SAND (SP) dry, loose, dark brown
2.5				CLAYEY SAND (SC) moist, dark reddish gray (5YR 5/2) mostly fine sand, some clay, non-plastic, no odor
5.0		70% Rec		WELL GRADED SAND (SW) moist, loose, gray (5YR 6/1) mostly fine to medium sand few silt, non-plastic, no odor
7.5				
10.0				

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

Test Boring Report

BORING NO. GW DPT 55

PAGE 2 OF 2

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0		75% Rec		FAT CLAY (CH) moist, stiff, light gray (5YR 7/1) mostly clay, few silt, trace fine sand, medium plasticity, no odor
12.5				
15.0		50% Rec		WELL GRADED SAND WITH CLAY (SW-SC) wet, loose, reddish yellow (7.5YR 6/8) mostly fine to medium sand, little clay, few silt
17.5				
20.0				End of Boring
22.5				

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

Test Boring Report

BORING NO. GW DPT 65
PAGE 1 OF 3

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: Geoprobe 7822

PROJECT NO: 60314964.16
LOCATION: Kinsey Property
ELEVATION:
DATE START: 3-29-17
DATE FINISH: 3-29-17
DRILLER: Kyle Borgemeister
PREPARED BY: Daniel Good

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	MC	Dual Tube	MC
					SIZE ID	2 1/4"	1 1/4"	2 1/4"
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
		0% Rec		0-4'- core sleeve split open and sample was lost
2.5				
5.0		90% Rec		CLAYEY SAND (SC) Dry, stiff, red (2.5YR 5/8) mottled with white (2.5YR 8/1) mostly fine to medium sand, some clay
7.5				SANDY CLAY (CH) moist, stiff, white (2.5YR 8/1) mottled with red (2.5YR 5/8) mostly clay, some fine to medium sand, medium plasticity
10.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW DPT 65
PAGE 2 OF 3

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0				FAT CLAY (CH) moist, stiff, reddish yellow (7.5 YR 7/8) mostly clay, trace fine sand, medium plasticity, no odor
12.5				
15.0	0.0			FAT CLAY (CH) as above
17.5	0.2			
20.0	0.6			POORLY GRADED SAND (SP) Wet, loose, strong brown (7.5YR 4/6) mostly fine sand, few silt, few clay
22.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW OPT 6S
PAGE 3 OF 3

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5				POORLY GRADED SAND (SP)
	0.8			wet, loose, strong brown (7.5YR 4/6) mostly fine sand, few silt, few clay, non-plastic, no odor
				End of Boring
25.0				
27.5				
30.0				
32.5				
35.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW DPT 75
PAGE 1 OF 3

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: Geoprobe 7822

PROJECT NO: 60314964.16
LOCATION: Kinsey Property
ELEVATION:
DATE START: 3-28-17
DATE FINISH: 3-28-17
DRILLER: Kyle Borgemeister
PREPARED BY: Daniel Good

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	MC		MC
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
		Rec 40%		SAND (SP) dry, loose, brown, fine sand, few silt, non-plastic, no odor
2.5				
5.0		Rec 75%		POORLY GRADED SAND (SP) dry, loose, light brown (7.5 YR 6/3) mostly fine sand, few silt, non-plastic, no odor
7.5				CLAYEY SAND (SC) dry, stiff, gray (7.5 YR 6/1) mottled with red (2.5 YR 5/8) mostly fine sand, some clay, low plasticity
10.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW DPT 7S

PAGE 2 OF 3

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0		80% Rec		FAT CLAY (CH) moist, loose, reddish yellow (7.5 YR 7/8) mostly clay, trace fine sand, medium plasticity, no odor
12.5				
				FAT CLAY (CH) as above
15.0		95% Rec		
17.5				FAT CLAY (CH) as above
	1.3	75% Rec		CLAYEY SAND (SC) moist, loose, reddish yellow (7.5 YR 6/8) mostly fine sand, some clay non-plastic, no odor
20.0				
22.5				

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

Test Boring Report

BORING NO. GW DPT 7S
PAGE 3 OF 3

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5				
	0.9			~~SAND~~ POORLY GRADED SAND (SP) wet, loose, dark brown (7.5YR 3/2) mostly fine sand, few clay, non-plastic, no odor
	1.0			
25.0				
27.5				CLAYEY ~~SAND~~ (SC) loose, wet, Strong brown (7.5 YR 4/6) mostly fine sand, some clay, non-plastic, no odor
	1.6			
				End of Boring
30.0				
32.5				
35.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM Test Boring Report

BORING NO. GW DPT 8S
PAGE 1 OF 2

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: Geoprobe 7822

PROJECT NO: 60314964.16
LOCATION: Kinsey Property
ELEVATION:
DATE START: 3-28-17
DATE FINISH: 3-28-17
DRILLER: Kyle Borgemeister
PREPARED BY: Daniel Good

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	MC	Dual Tube	MC
					SIZE ID	2 1/4"	1 1/4"	2 1/4"
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
				WELL GRADED SAND WITH GRAVEL (SW) brown, mostly fine to medium sand, some fine gravel at surface (0-1') non-plastic, no odor
2.5	0.1			
				CLAYEY SAND (SC) dry, loose, light gray (7.5 YR 7/1) mottled with reddish yellow (7.5 YR 6/8) mostly fine sand, some clay, non-plastic, no odor.
5.0	0.0			
7.5				
10.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW DPT 8S
PAGE 2 OF 2

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0	0.7			SANDY CLAY (CH)
			8	moist, stiff, strong brown (7.5YR 5/6) mostly clay, some ~~fine~~ fine sand, low plasticity, no odor
12.5	0.6			
15.0	1.9			~~SAND~~ WELL GRADED SAND
				~~Saturated~~, loose, pink (5YR 7/4) mostly fine to medium sand, few silt, few clay
17.5	3.4			
				End of Boring
20.0				
22.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM Test Boring Report

BORING NO. GWDPT 95
PAGE 1 OF 3

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: Geoprobe 7822

PROJECT NO: 60314964.16
LOCATION: Kinsey Property
ELEVATION:
DATE START: 3-30-17
DATE FINISH: 3-30-17
DRILLER: Kyle Borgemeister
PREPARED BY: Daniel Good

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	MC	Dual Tube	MC
					SIZE ID	2 1/4"	1 1/4"	2 1/4"
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
				POORLY GRADED SAND (SP)
				Dry, loose, light brown (7.5YR 6/3) mostly fine sand, few silt
				non-plastic, no odor
	0.0	Rec 50%		
2.5				
				2.6 POORLY GRADED SAND WITH CLAY
				Dry, loose gray (7.5YR 5/1) mottled with red (2.5YR 5/8)
				mostly fine sand, little clay, non-plastic, no odor
5.0				
	0.1	Rec 70%		
7.5				
10.0				

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

Test Boring Report

BORING NO. GW OPT 95
PAGE 2 OF 3

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0		90% Rec		FAT CLAY (CH) moist, loose, reddish yellow (7.5 YR 7/8) mostly clay, trace fine sand, medium plasticity, no odor.
	0.3			
12.5				FAT CLAY (CH) as above
15.0		80% Rec		
	0.9			
17.5				FAT CLAY (CH) as above
		85% Rec		CLAYEY SAND (SC) moist, loose, reddish yellow (7.5 YR 6/8) mostly fine sand, some clay, non-plastic, no odor
20.0	0.1			
22.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW DPT 9S

PAGE 3 OF 3

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5				WELL GRADED SAND WITH CLAY (SW-SC) moist, loose, dark brown (7.5YR 3/2) mostly fine to medium sand little clay, few silt
25.0		70% Rec		POORLY GRADED SAND (SP) wet, loose, strong brown (7.5 YR 4/6) mostly fine sand, few silt, few clay, non-plastic, no odor
27.5				
				End of Boring
30.0				
32.5				
35.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GWOPT 1D
PAGE 1 OF 5

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: Diedrich D50

PROJECT NO: 60314964.16
LOCATION: Pwr Line ROW
ELEVATION:
DATE START: 4-4-17
DATE FINISH: 4-4-17
DRILLER: Stefan Smith
PREPARED BY: Daniel Bradt

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	HSA	SS	
					SIZE ID	4"	2"	
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
		60%		POORLY GRADED SAND (SP)
	0.1			~~mostly~~ dry, loose, mostly fine sand, few silt, Dark grayish brown (10YR 4/2) non-plastic, no odor
2.5	0.4	~100%		grades to yellowish brown (10YR 5/4)
				CLAYEY SAND (SC)
	0.2	~90%		dry, loose, yellowish brown (10YR 5/4) mostly fine sand, some clay, low plasticity, no odor
5.0				
	0.0	~90%		
7.5				
	0.3	~100%		as above, decreasing clay
10.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUTERED
UR	NOT READ
NR	NO RECOVRY

AECOM

Test Boring Report

BORING NO. GW OPT 10

PAGE 2 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0				
	0.1			as above
				POORLY GRADED SAND WITH CLAY (SP-SC)
12.5				moist, loose, reddish yellow (5YR 6/8) mostly fine sand little clay, non-plastic, no odor, mottled with white
	0.4			
	0.7			
15.0				
	0.5			as above
17.5				
				FAT CLAY (CH)
	0.8			moist, loose, light red (10R 6/6) with thin white bands mostly clay, trace fine sand, high plasticity, no odor
20.0				
	0.7			
22.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GWDPT ID

PAGE 3 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5	0.6	~100%		FAT CLAY as above, increasing red bands, decreasing white bands
25.0	0.6	~85%		
27.5	0.9	~90%		
	0.8	~80%		WELL GRADED SAND WITH SILT (SW-SM) wet, loose, strong brown (7.5YR 4/6) mostly fine to medium sand, little silt, few clay, non-plastic, no odor
30.0	0.5	~50%		LIMESTONE (SW) ~~Pale 6~~ fine sand to fine gravel, well graded, wet, loose, pale brown (10YR 8/3) some small shell fragments, some cemented stones
32.5	0.3	~50%		
35.0	0.4	~40%		as above

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW DPT 1D

PAGE 4 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
35.0				LIME STONE
				as above, increasing shells
	0.9	~50%		
37.5				
	0.8	~80%		
40.0				
	0.9	~60%		
				LIMESTONE
				as above, some white (10YR 8/1) sections, increasing cemented stones, abundant shells
42.5	0.7	~50%		
45.0	1.0	~50%		- some red iron oxide staining (horizontal bands) 45'-47'
	0.8	~50		
47.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GWDPT 10

PAGE 5 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
47.5				LIMESTONE (GW) mostly cemented shells in gravel sized chunks, some fine to coarse grained sand, no odor, saturated
	0.9	~50%		
50.0				
	0.6	~60%		
52.5	0.3	~70%		as above
	0.5	~30%		
55.0				
	0.9	~40%		
57.5				LIMESTONE (SM) - whole section loosely cemented fine sand to fine gravel
	0.8	~40%		
60				End of Boring

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM Test Boring Report

BORING NO. GW DPT 2D
PAGE 1 OF 6

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: Deidrich D50

PROJECT NO: 60314964.16
LOCATION: Bamberg Property
ELEVATION:
DATE START: 4-5-17
DATE FINISH: 4-6-17
DRILLER: Stefan Smith
PREPARED BY: Daniel Good

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	HSA	SS	
					SIZE ID	4"	2"	
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
		~80% Rec		0-1' Organic-rich topsoil POORLY GRADED SAND (SP) Dry, loose, light brown (10YR 6/4) mostly fine sand, few clay, non-plastic, no odor
	0.0			
2.5	0.1	~90% Rec		POORLY GRADED SAND WITH CLAY (SP-SC) Moist, loose, very pale brown (10YR 7/3) mostly fine sand, little clay, non-plastic, no odor.
5.0	0.0	~80% Rec		
		~90% Rec		CLAYEY SAND (SC) moist, loose, light gray (10YR, 7/2) mostly fine sand, some clay, low plasticity, no odor
7.5	0.2			
				WELL GRADED SAND WITH SILT (SW-SM) moist, loose, reddish yellow (7.5YR 6/6), mostly fine to medium grained, little silt, non-plastic, no odor
	0.1	~90% Rec		
10.0				

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

Test Boring Report

BORING NO. GW DPT 2D

PAGE 2 OF 6

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0		80% Rec		SANDY FAT CLAY (CH) moist, loose, light gray (10YR 7/2) mostly clay, some fine grained sand, no odor, medium plasticity
	0.3			
12.5		80% Rec		as above, some red mottling
	0.2			
		70% Rec		
15.0	0.4			
		70% Rec		POORLY GRADED SAND (SP) moist, loose, pinkish white (2.5 YR 8/2) mostly fine to medium sand, few silt, few clay
17.5	0.3			
		75% Rec		as above, saturated
20.0	0.3			
	0.1	80% Rec		WELL GRADED SAND WITH SILT (SP) Wet, loose, light red (2.5 YR 6/6) mostly fine to medium sand little silt
22.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW-DPT-20

PAGE 3 OF 6

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5	0.1	80% Rec		as above
25.0	0.5	90% Rec		SANDY FAT CLAY (CH) Wet, loose, pale red (10R 6/4), mostly clay, some fine sand, medium plasticity, no odor
27.5	0.3	80% Rec		CLAYEY SAND (SC) Wet, loose pale red (10R 6/4) mostly fine sand, some clay, low plasticity, no odor.
30.0	0.2	70% Rec		CLAYEY SAND (SC) Wet, loose, reddish yellow (5YR 7/8) mostly fine to medium sand
32.5	0.4	75% Rec		SANDY CLAY (CH) Wet, loose, white (10R 8/1) with red banding, mostly clay Some fine sand, medium plasticity, no odor
35.0	0.6	60% Rec		
	0.7	65% Rec		FAT CLAY WITH SAND (CH) Wet, loose, reddish yellow (5YR 6/6) mostly clay, little fine sand, medium plasticity, no odor.

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW OPT 20
PAGE 4 OF 6

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
35.0				CLAYEY SAND (SC) Wet, loose, pale red (10R 6/4), mostly fine sand, some clay, low plasticity, no odor.
	1.0	60% Rec		
37.5				SILTY SAND (SM) Loose, wet, yellowish brown (10YR 5/6) mostly fine sand, some silt, non-plastic, no odor.
	0.9	50% Rec		SILTY SAND (SM) Loose, wet, pale olive (5Y 6/3) mostly fine sand, some silt, non-plastic, thin horizontal bands, much like saprolite.
40.0	1.3	~50% Rec		LIMESTONE (SW) Loose, wet, very pale brown (10YR 8/4) well graded sand/Gravel
42.5		0% Rec		No recovery 42'-44'
↑ 1-5-17 -6-17 ↓				LIMESTONE (SW) Loose, wet, very pale brown (10YR 8/4) mostly fine to coarse sand few gravel (cemented shells
45.0	1.4			
	1.5			as above
47.5				

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

Test Boring Report

BORING NO. GW OPT 2D
PAGE 5 OF 6

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
47.5				
	1.7			as above
50.0	1.3			LIMESTONE (SW) Loose, wet, yellow (10YR 8/6) fine to coarse sand, some shell fragments
52.5	1.5			LIMESTONE (SW) Loose, wet, white (10YR 8/1) fine sand to gravel sized particles, fewer shells
1.5	~~1.4~~	DB		
55.0	1.4			as above
57.5	1.2			
60				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW DPT 20

PAGE 6 OF 6

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
60.0	1.0			LIME STONE (SW) Partially cemented, wet, white (10YR 8/1) mottled with yellow (10YR 8/6) fine sand to gravel sized chunks, some shell fragments
62.5	0.8			
65.0				End of Boring
67.5				
70.0				
72.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM Test Boring Report

BORING NO. GW DPT 41
PAGE 1 OF 5

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: GEOPROBE 7822 / Diedrich D50

PROJECT NO: 60314964.16
LOCATION: Powerline ROW, Dambag Property
ELEVATION:
DATE START: 3-29-17
DATE FINISH: 4-3-17
DRILLER: Stefan Smith
PREPARED BY: Daniel Good

GROUND WATER		DEPTH TO:			CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	Dual tube	MC
					SIZE ID	2 1/4"	1 1/4"	2 1/4"
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
				POORLY GRADED SAND (SP)
				moist, loose, light yellowish brown (10YR 6/4) mostly fine sand,
	0.0			few silt, non-plastic, no odor
		~50% Rec		
2.5				
	0.3			WELL GRADED SAND WITH CLAY (SW-SC)
				light, moist, yellowish red (5YR 5/6) and gray (5YR 5/1) mostly
5.0				fine to medium sand, little clay, low plasticity, no odor
	0.1			
	~~0.1~~	~70% Rec		
7.5				decreasing clay content with depth
	0.4			
				WELL GRADED SAND (SW)
				loose, moist, yellowish red (5YR 5/6) and gray (5YR 5/1) mostly
10.0				fine to medium sand, non-plastic, no odor

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW DPT 40

PAGE 2 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0				
	0.6	~85% Rec		as above
12.5				
	0.8			
				WELL GRADED SAND WITH SILT (SW-SM)
				loose, wet, reddish yellow (7.5YR 7/8) mottled with pinkish white (7.5YR 8/2) mostly fine to medium sand, little silt, few clay non-plastic, no odor
15.0				
	0.5	~90% Rec		
17.5				
	0.6			
				FAT CLAY (CH)
				loose, moist, light reddish brown (2.5YR 7/4) mostly clay, trace fine sand, high plasticity, no odor
	1.0			
20.0		~90% Rec		
	0.8			
22.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW DPT 41D
PAGE 3 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5				(CLAYEY SAND (SC))
	0.3			loose, wet, ~~mostly~~ Brownish yellow (10 YR 6/8) mostly fine sand some clay, low plasticity, no odor
				Loose, wet, light brownish gray, (10 YR 6/2) mostly fine sand, few silt, few shell fragments, Non-plastic, no odor
25.0	0.9	~80% Rec		
27.5	0.7			(LIMESTONE (SW))
				wet, loose, very pale brown (10 YR 8/3) fine sand to medium gravel sized particles, few large shell fragments
30.0	0.4	~70% Rec		
32.5	0.7			ovs above
35.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW OPT 4D

PAGE 4 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
35.0				LIMESTONE (SW)
	0.6			as above
		~40% Rec		
37.5				
	0.1			
				LIMESTONE (SW)
40.0		~30% Rec		wet, loose, very pale brown (10YR 8/4) mostly fine to coarse sand, few gravel, non-plastic, no odor
	0.5			
MC↑ SS↓		Refusal		
		~50% Rec		
42.5	0.6			
				Increasing cementation with depth
	0.5	~75% Rec		
45.0				
				LIMESTONE (SW)
	0.4	~60% Rec		wet, loose, very pale brown (10YR 8/4) mostly fine to coarse sand, abundant shell fragments, few pieces of cemented gravel
47.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW DPT 4D

PAGE 5 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
47.5				
	0.6			as above
	0.8			
50.0				
		V		VOID
52.5		O		
		I		
		D		
55.0				
57.5				
		~50% Rec		LIMESTONE (SW)
		~~2.0~~		~~very~~ wet, loose, very pale brown (10YR 8/4) and white (10YR 8/1) mostly fine to coarse sand, few gravel, some shell fragments
	20			
		HSA		End of Boring
60				

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM Test Boring Report

BORING NO. GW-DPT-5D
PAGE 1 OF 5

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: Geoprobe 8140 LS Trackmounted Sonic Rig

PROJECT NO: 60314964.16
LOCATION NW Bamburg Tract
ELEVATION:
DATE START 3/27/2017
DATE FINISH 3/28/2017
DRILLER: Stephan Smith
PREPARED BY: Ron Paulino

SCCWD# B1943

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	SS		SS
3/27	WD	8.0	57.0	57.0	SIZE ID	6"		4"
					HAMMER WT	—	—	—
					HAMMER FALL	—	—	—

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
0			0	Grassed surface - logging road - heavily wooded area
1.0				Topsoil - Brownish black (5YR 2/1) moist, mostly fine sand, some silt, little medium sand, few roots
2.0				
2.5				
3.0				
4.0				
5.0	0.0	30% Recov.		CLAYEY SAND (SC) Dark yellowish orange (10YR 6/6), moist, mostly fine sand, some lean inorganic clay with mod. plasticity
6.0	0.0			
7.0	0.0	4.5'	7	SANDY FAT CLAY (CH) V. stiff, moist, moderate red (5R 4/6) with light gray (N7) mottling, mostly highly plastic inorganic clay, some fine sand.
7.5				
8.0	0.0	8.0		WELL GRADED SAND (SW) Loose, wet, yellowish brown (10YR 5/6), mostly fine to med. sand, little silt, homogeneous.
9.0				
10.0			10 17	

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

GW-DPT-5D

AECOM

Test Boring Report

BORING NO. GW-DPT-5D

PAGE 2 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0			7 to	WELL GRADED SAND (SW) Similar to above.
12.5	0.0			fining downward
14	0.0			
15.0	3.4	85% Rec		
16.0	0.8			
		16.3'		CLAYEY SILT (MH) Pale yellowish orange (10 YR 8/6), moist, mostly highly plastic clayey silt, massive.
17.0	0.2		17	
17.5				
18	0.0			
19	0.0			
20.0	0.0			Similar to above, except grading to moderate reddish brown (10 R 4/6) mottling
21	0.0			
		90% Rec		
22.5			to 27	

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

GW-DPT-5D

AECOM

Test Boring Report

BORING NO. GW-DPT-5D

PAGE 3 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5			17 to	
24	0.2			CLAYEY SAND (SC) Med. dense, wet, moderate brown, mostly med. sand, some lean inorganic clay, little silt and fine sand.
25.0				
	2.6			coarsening downward
26				
	0.1		27	
27.5				CLAYEY SAND (SC)
28				Similar to above, except becoming moderate olive brown (5Y 4/4) and dark yellowish orange (10YR 6/6) bedding.
29				
30.0		90% REC		
	0.1			
31				SHARP CONTACT
			31.5'	
				LIMESTONE white (N9) to grayish yellow (5Y 8/4) ~~fine~~ PP mostly fine to cs sand, large fragments of fossils and shell fragments in a cemented matrix; saturated
32.5				
33	0.0			
35.0	2.1		to 37	

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

GW-DPT-5D

AECOM

Test Boring Report

BORING NO. GW-DPT-5D
PAGE 4 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
35.0	2.1 ~~0.0~~			
36				
37	0.0		37	LIMESTONE
37.5				Similar to above, white to pale yellow, fine to cs grained shell fragments and fossils in cemented matrix, wet.
38	0.0			
39	0.0			4" ∅ core barrel cut through limestone making series of ~3½" ∅ discs
40.0	0.0			
41	0.0	80% REC		
42	0.0			
42.5				
43	0.0			
44	0.0			
45.0	0.1			
46	0.0			
47	2.0		47	1610 Drillers to get more water, used 200 gallons — limestone drank it
47.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

GW-DPT-5D

AECOM

Test Boring Report

BORING NO. GW-DPT-5D

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DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
47.5			47	LIMESTONE
				Similar to above, except becoming white
49				
	0.0	75% Rec		03/28/2017 - 0800 Pulled 6" Ø casing back to 47' inserted 5' screen, inflated packer and began to collect groundwater screening sample from 47'-52'
50.0				
	0.0			
51				
	0.0			
52				
52.5				
	0.0			
53				
	0.0			
54				
	0.2			
55.0				
	0.1			
56				
	0.4		57	
57				BORING TERMINATED @ 57'
57.5				
60				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

GW-DPT-5D

AECOM Test Boring Report

BORING NO. GW-DPT-6D
PAGE 1 OF 5

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: Geoprobe 8140 LS Track-mounted Sonic

PROJECT NO: 60314964.16
LOCATION NW Bamberg Tract
ELEVATION:
DATE START 3/28/2017
DATE FINISH 3/28/2017
DRILLER: Stephan Smith
PREPARED BY: (B.1943) Ron Pawling

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	SS		SS
3-28	WD	8.5	57'	61	SIZE ID	6"		4"
					HAMMER WT	—	—	—
					HAMMER FALL	—	—	—

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
0			0	Grassed Surface in wooded area
				SILTY SAND (SM)
1				Topsoil, loose, moist, dusky brown, mostly fine sand, some silt, little med sand, few roots.
2				POORLY GRADED SAND (SP)
2.5				Loose, moist, light brown (5YR 6/4), mostly
3		50%		medium sand, some fine sand, and silt,
	0.9	REC		homogeneous
4			4.4'	
				SILT (ML) Very stiff, moist-dry, grayish
5.0	1.0			orange (10YR 7/4) with moderate brown
				and very light gray (N8) bedding, mostly
6				highly plastic silt, little fine sand, trace
				roots.
7	0.0		7	
				Grading to
7.5				
8				
			8.5'	
				CLAYEY SAND (SC) Med. dense, wet, very
9		90%		light gray (N8) with dark yellowish ~~brown~~ orange PP
		REC		(10YR 6/6) horizontal bedding, mostly medium
10.0				sand, little fine sand, and lean inorganic clay.

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD					GW-DPT-6D	

AECOM

Test Boring Report

BORING NO. GW-DPT-6D

PAGE 2 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0			9 to	CLAYEY SAND (SC)
11				Similar to above.
12				
12.5		90%		
13		REC		
14				
15.0				
16	0.0	16.2'		SANDY FAT CLAY (CH) Soft, moist,
17	0.0		17	very light gray (N8) with moderate reddish orange (10R 6/6) mottling, mostly highly plastic inorganic clay, little fine sand.
17.5				
18				
19				
20.0		90% REC		
21				
22				
22.5			to 27	

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

GW-DPT-6D

AECOM

Test Boring Report

BORING NO. GW-DPT-6D

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DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5			17	SANDY FAT CLAY (CH)
23			to	similar to above, except becoming very soft and pale yellowish orange (10 YR 8/6)
24				Grading to
25.0				
		25.5		SILT (MH) Soft, moist, dark yellowish brown (10 YR 4/2), mostly elastic silt, few fine sand.
26	0.0			
27	0.0		27	
27.5		27.5		WELL GRADED SAND (SW) Loose, wet, moderate olive brown (5 Y 4/4) with dark yellowish orange (10 YR 6/6) bedding, mostly med. sand, some fine sand, little silt, saprolite
				SHARP CONTACT
30.0		30'		LIMESTONE Pale yellow (5 Y 8/2) fine to coarse grained sand and shell fragments in cemented matrix with fossils, few fine gravel size fragments
		80% REC		
32.5				
			to	
			37	
35.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW-DPT-6D

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DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
35.0			37 to	LIMESTONE
				Similar to above.
36				
	1.0		37	
37				LIMESTONE
37.5				Similar to above, except becoming
38				more white (N9), appears to be
39				coming more competent with depth
40.0				
41				
		80%		
	0.0			
42		REC		
42.5				
43				
44				
	0.1			
45.0				
46				
	0.2		47	
47				
47.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

GW-DPT-6D

AECOM

Test Boring Report

BORING NO. GW-DPT-6D

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DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
47.5			47	
48			to	LIMESTONE
				similar to above
49				Based on PID readings, instructed
				drill crew to advance 4" core
50.0				barrel 5' to 57' to 62' and
				collect groundwater sample from
51				that interval.
52		70%		
52.5		REC		
	0.0			
53				
	0.0			
54				
	0.6			
55.0				
	1.2			
56				
	1.3		57	
57				NO RECOVERY 57'-62'
57.5				
58				
		0%		
59		REC		DPT sampler could only be advanced to 61' – sample interval was 56'-61'
60			62	BORING TERMINATED @ 62'

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

GW-DPT-6D

AECOM Test Boring Report

BORING NO. GW-DPT-7D
PAGE 1 OF 5

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: Geoprobe 8140LS Track Sonic Rig

PROJECT NO: 60314964.16
LOCATION N. Central Bamberg Tract
ELEVATION:
DATE START 3/29/2017
DATE FINISH 3/29/2017
DRILLER: Stephen Smith (B1943)
PREPARED BY: Ron Paulling

GROUND WATER		DEPTH TO:			CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	Soil	Sonic
					SIZE ID	6"	4"
					HAMMER WT		
					HAMMER FALL		

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
0			0	Grassed Surface in wooded area SILTY SAND (SM) Topsoil Brownish black, moist, mostly fine sand, some silt, little med. sand and fibrous roots and leaves.
1				Grading to SILTY SAND (SM) Dense, moist, light brown (5YR 5/6), mostly fine sand, some silt, few med. sand, homogeneous, non-plastic.
2				
2.5				
3				
4	0.0	40% REC		Grading to
5.0				
6				
7	0.0		7	
7.5				Bearing wet @ 7.5'
8				CLAYEY SAND (SC) Med. dense, moist, very light gray (N8) with dk. yellowish orange (10YR 6/6) horizontal bedding, mostly fine sand, little medium sand, and lean inorganic clay, moderate plasticity.
9		90% REC		
10.0	0.0		to 17	

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW-DPT-7D

PAGE 2 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0			7	CLAYEY SAND (SC)
			to	Similar to above, except wet @ 9.5'
11				
				Grading to
12				
12.5				
13	0.0	90% REC		
14				
		14.5		
15.0	0.0			SANDY FAT CLAY (CH) Hard, moist, very light gray (N8), mostly highly plastic inorganic clay, little med. sand and fine sand, massive
16	0.0			
17	0.0		17	
17.5				
18		18'		WELL GRADED SAND WITH GRAVEL (SW)
			to	Loose, wet, mostly fine to cs. sand, few fine well rounded gravel. White (N9) homogeneous
19				
20.0	0.0			
		90% REC		
21				
22				
22.5			27	

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW-DPT-7D

PAGE 3 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5			17	WELL GRADED SAND (SW)
23			to	Similar to above, except no fine gravel, few lean inorganic clay lenses 1/16" to 1" thick.
24	0.0			
25.0	0.0			
26	0.2			WELL GRADED SAND (SW)
27	0.4		27	Similar to above, except getting pale yellowish orange (10YR 8/6) horizontal bedding.
27.5				
30.0		RP 40% 30% REC POOR RECOVERY		WELL GRADED SAND (SW) Similar to above
32.5				~3" moderate reddish orange (10R 6/6) plastic clay in core
			34'	SILT (MH) soft, moist, dk. yellowish brown (10YR 4/2), mostly highly elastic silt, little fine sand.
			to	
35.0			37	

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

GW-DPT-7D
BORING NO.
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DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
35.0		35'		WELL GRADED SAND (SW) Loose, wet, moderate olive brown (5Y 4/4) dk. yellowish orange (10YR 6/6) bedding, mostly fine to med. sand, little silt with saprolitic texture
36	0.0			SHARP CONTACT
		36.5'		LIMESTONE
37	0.0		37	Pale yellow (5Y 8/2) fine to cs grained sand subangular sand and shell fragments
37.5				
38				
39				
40.0				
41				
		50% REC		
42				
42.5				
43				
44	0.0			LIMESTONE
				Pale yellow (5Y 8/2), wet fine to coarse grand sand and shell fragments in cemented matrix
45.0	0.0			
46	0.0			
47	1.4		47	Instructed drillers to collect water sample from 47'-52'
47.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

GW-DPT-7D

AECOM

Test Boring Report

BORING NO. GW-DPT-7D

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DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
47.5				
48	0.4		47 to	Drill crew cored to 52' w/ 4" and ran 6" casing to 54' and pulled back to 47' formation came up in casing, could not advance packer and groundwater sampler past 46', crew will try to blow formation out of casing, crew could not get sampler to target depth, cored and down and got one at next core 57'-62'
49	0.8			
50.0				
51				
52				
52.5				
53				
54				
55.0				
56				
57	0.8		57	Collected groundwater screen sample from 57'-62'
57.5				
58				
59				
60				BORING TERMINATED @ 62'

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

GW-DPT-7D

AECOM Test Boring Report

BORING NO. GW-DPT-8D
PAGE 1 OF 5

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: Geoprobe 8140 LS Track Sonic Rig

PROJECT NO: 60314964.16
LOCATION W Central Bamberg Tract
ELEVATION:
DATE START 3/29/2017
DATE FINISH 3/29/2017
DRILLER: Stefan Smith
PREPARED BY: Ron Pauling

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	Sonic		Sonic
					SIZE ID	6"		4"
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
0			0	Grassed area in heavily wooded area SILTY SAND (SM) Topsoil - Light brownish gray, moist, mostly fine sand, some silt, little med. sand and roots.
1				
2		60%		Grading to SILTY SAND (SM) Loose, moist, yellowish gray (5Y 7/2), mostly fine sand, some silt, little medium sand - homogeneous non-plastic
2.5		REC		
3				
4				
5.0				
4	0.0	5.8'		
7	0.0		7	CLAYEY SAND (SC) Dense, moist, dark yellowish orange (10YR6/6) mostly fine sand, some lean inorganic clay moderate plasticity, little med. sand and silt becoming moderate brown (5YR 4/4)
7.5				
8	0.0			
9				wet @ 9.0'
10.0			10 17	

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD					GW-DPT-8D	

AECOM

Test Boring Report

BORING NO. GW-DPT-8D

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DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0			7	CLAYEY SAND (SC)
11			to	Similar to above, except becoming wet @ 9.0' and very light gray (N8) with dark yellowish orange (10YR 6/6) horizontal bedding
12				
12.5		90% Rec		
13				Grading to
14				
		14.7'		
15.0				SANDY FAT CLAY (CH)
16				Very stiff, moist, very light gray (N8) with grayish orange pink (5YR 7/2) mottling mostly highly plastic clay, little mica and fine sand.
17			17	
17.5				SANDY FAT CLAY (CH)
18				Similar to above, except becoming moderate yellowish brown (10YR 5/4) massive.
19				
20.0		90%		
21		Rec		
22				
22.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

GW-DPT-8D

AECOM

Test Boring Report

BORING NO. GW-DPT-8D

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DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5			17	
23			to	
		90% REC		
24				
			24.7	SILT (MH) soft, moist, dk. yellowish brown (10YR4/2) mostly elastic silt, little fine sand
25.0				
26				LIMESTONE light greenish gray, wet, shell hash and fossils
		26'		
		26.4'		
27			27	SILT (MH)
				Similar to above:
27.5				
28			28	
		TRANSITIONAL ZONE interbedded strata		WELL GRADED SAND (SW) coarse, wet, moderate olive brown (5YR 4/4) with dk. yellowish orange bedding (10YR 6/6) mostly mid sand, some fine sand, little silt, saprolitic texture
29			28.8'	
	0.0			LIMESTONE
30.0				Light greenish gray (5GY 8/1) wet, mostly fine to cs sand and shell fragments
31	0.0			
	0.0			
32				fewer shell fragments with depth
32.5				
33		100% REC		
34	0.1		to	
			37	
35.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

GW-DPT-8D

AECOM

Test Boring Report

BORING NO. GW-DPT-8D

PAGE 4 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
35.0				
36				
37	0.2		37	LIMESTONE Pale yellow (5Y 8/2) fine to coarse grained sand and shell fragments
37.5				
38				
39				
40.0				
41		100% REC		
42				
42.5				
43				
44	0.0			LIMESTONE Similar to above, becoming more competent shells and fossils in cemented matrix.
45.0				
46				
47	0.1		47	
47.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW-DPT-8D

PAGE 5 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
47.5			47	LIMESTONE
48				White (N9), wet, mostly fine to cs grained sand and shells in cemented matrix.
			to	
50.0				
		100%		
		REC		
52.5				
55.0	0.4			
56	0.8			
			51	
57	1.2			Instructed drillers to get groundwater sample 57'-62'
57.5				
				Boring terminated at 62 ft bgs
60				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW-DPT-9D
PAGE 1 OF 6

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: Geoprobe 8140 LS Sonic Rig

PROJECT NO: 60314964.16
LOCATION NW Bamberg Tract
ELEVATION:
DATE START 3/30/17
DATE FINISH 3/30/17
DRILLER: S. Smith
PREPARED BY: C. Suddeth

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	Sonic		Sonic
					SIZE ID	6"		4"
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
1				SAND (SW), yellowish brown 10YR 5/4, fine to medium grained, well graded, damp
2			0-7	SAND (SW), yellowish red 5YR 5/8 to yellowish brown 10YR 5/8, fine to medium grained, little clay, damp
2.5				
3	0.0			
4				No recovery 3.5'-7'
5.0				
6				
7				
7.5				SAND (SW), brownish yellow 10YR 6/8 to very pale brown 10YR 8/2, fine to coarse grained, few clay, well graded, moist
8			7-17	
9				SAND (SW), light red 10R 6/6 to very pale brown 10YR 8/2, as above
10.0	1.2			

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

Test Boring Report

BORING NO. CW-DPT-9D
PAGE 2 OF 6

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0	0.0			INTERBEDDED SAND AND CLAY, Brownish yellow 10YR 6/8 fine to coarse grained saturated sands (SW); soft clay (CH)
11				
12			7-17	
12.5				SILTY CLAY (CL) red 2.5YR 5/8 to brownish yellow 10YR 6/8 soft, medium plasticity, moist.
13				
14				
14.5	0.0			No recovery 14.5'-17'
15.0				
16				
17				
17.5				SILTY CLAY (CH), red 2.5YR 5/8 to dark grayish brown 10YR 4/2, soft, high plasticity, moist to wet
18			17-27	
19				
20.0	0.0			SILTY SAND (SM), dark yellowish brown 10YR 4/6, fine to coarse grained, some silt, few clay, well graded, saturated
21				CLAYEY SAND (SC), yellowish brown 10YR 5/6, fine grained, few silt, well graded, saturated
22				
22.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW-DPT-9D

PAGE 3 OF 6

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5			17-27	CLAYEY SAND (SC), yellowish brown 10YR 5/6, fine grained, few silt, well graded, saturated
23	1.8			No recovery 23'-27'
24				
25.0				
26				
27	2.0			LIMESTONE (SW), pale yellow 2.5Y 8/3, fine to coarse grained, some gravel to cobble size cemented zones, sand and shells, well graded, saturated
27.5			27-37	
28				SAND AND SHELLS, pale yellow 2.5Y 8/4 to olive, 5Y 5/3, medium grained to cobble size sand, shells, and limestone, well graded, saturated.
29				
30.0				
31	1.7			LIMESTONE (SW), pale yellow 2.5Y 8/4, fine to coarse grained, some gravel to cobble size cemented zones, well graded, saturated
32				
32.5				
33				
34				
35.0	2.0			

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW-DPT-9D
PAGE 4 OF 6

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
35.0				No recovery 35'-37'
36				
37			37-47	LIMESTONE, (GW), pale yellow 2.5Y 8/2, fine to coarse grained, sand and shells, some gravel to cobble size cemented zones, well graded, saturated
37.5				
38				
39				
40.0	2.2			
41				
42				LIMESTONE (GW), as above
42.5				
43				
44				
45.0	2.4			
46				No recovery 45'-47'
47		GW-DPT-9D-47 42'-47'	47-57	
47.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW-DPT-9D
PAGE 5 OF 6

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
47.5			47-57	LIMESTONE (SW), white 2.5 Y 8/1, fine to coarse grained, some gravel to cobble size cemented zones, shells, well graded, saturated.
48				
49	1.5			
50.0	1.1			LIMESTONE (SW), white 2.5 Y 8/1, as above with more competent zones.
51				
52				
52.5				
53	0.6			No recovery 53'-57'
54				
55.0				
56				
57				
57.5			57-67	LIMESTONE (SW), white 2.5 Y 8/1, medium to coarse grained sand and shells, some gravel to cobble size cemented zones, well graded, saturated.
58				
59				
60	0.3	GW-DPT-9D-60 56'-60'		

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

Test Boring Report

BORING NO. SW-DPT-9D

PAGE 6 OF 6

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
60.0	0.1		57-67	LIMESTONE (SW), white 2.5 Y 8/1, medium to coarse grained sand and shells, some gravel to cobble size cemented zones, well graded, saturated
61				
62				
62.5				
63				
64				SAND AND SANDSTONE (SW), white 2.5 Y 8/1, fine to coarse grained sand with mostly gravel to cobble size cemented zones, well graded, saturated
65.0	0.1			
66				
67				
67.5				Boring terminated at 67 ft
70.0				
72.5				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW-DPT-10D
PAGE 1 OF 5

PROJECT: UTC Delavan Spray Technologies Site
CLIENT: UTC
CONTRACTOR: SAEDACCO
EQUIPMENT: Geoprobe 8140 LS Sonic Rig

PROJECT NO: 60314964.16
LOCATION NW Bamberg Tract
ELEVATION:
DATE START 3/31/17
DATE FINISH 3/31/17
DRILLER: S. Smith
PREPARED BY: C. Sudderth

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	Sonic		Sonic
					SIZE ID	6"		4"
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
1			0-7	SAND (SP) light yellowish brown 10YR 6/4, fine grained, poorly graded, damp.
2				
2.5				
3				
4				CLAYEY SAND (SC), yellowish brown 10YR 5/8 to yellowish red 5YR 5/8, fine to medium grained, little clay, well graded, damp.
5.0	0.4			
6				No recovery 5'-7'
7				
7.5			7-17	CLAY (CL), light gray 2.5Y 7/2 to brownish yellow 10YR 6/8, stiff, moderate plasticity, moist
8				
9				
10.0	0.6			

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW-DPT-10D

PAGE 2 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
10.0			7-17	CLAY (CL), light gray 2.5 Y 7/2 to brownish yellow 10YR 6/8, stiff, moderate plasticity, moist
11				No recovery 11-17'
12				
12.5				
13				
14				
15.0				
16				
17				
17.5			17-27	CLAY (CH) Olive brown 2.5 Y 4/4, soft, high plasticity, few silt, moist
18	0.5			
19				SAND (SW), pale yellow 2.5 Y 8/3, fine to medium grained, some cemented, well graded, saturated, calcareous
20.0	0.6			
21				SILT (ML), light yellowish brown 2.5 Y 6/4, soft, low plasticity, saturated
22				SAND (SW), pale yellow 2.5 Y 8/3, fine to coarse grained, some cemented, well graded, saturated, calcareous
22.5	1.0			

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW-DPT-10D
PAGE 3 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
22.5			17-27	SAND (SW), pale yellow 2.5Y 8/3, fine to coarse grained, some cemented, calcarous, well graded, saturated.
23				
24				
25.0	1.7			
26				No recovery 25.5'-27'
27			27-37	SAND AND SHELLS (SW), pale olive 5Y 6/3, fine to coarse grained, well graded, saturated, Limestone locked in bit
27.5				
28	1.2			
29				LIMESTONE (SW), pale yellow 2.5Y 7/3, fine to coarse grained sand and shell fragments, some gravel to cobble size cemented zones, well graded, saturated
30.0				No recovery 29'-37', but likely limestone
31				
32				
32.5				
33				
34				
35.0				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW-OPT-10D
PAGE 4 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
35.0				No recovery 29'-37'
36				
37				
37.5			37-47	LIMESTONE, pale yellow 5Y 8/3, fine to coarse grained sand and shells, some gravel to cobble size cemented zones, well graded, saturated
38	1.1			
39				
40.0	1.9			LIMESTONE, pale yellow 5Y 8/3, as above
41				
42				
42.5				
43	2.3			
44				
45.0				
46	2.6			LIMESTONE, (GW) white 2.5 Y 8/1, fine to coarse grained sand and shells, some gravel to cobble size cemented zones, well graded, saturated
47		GW-OPT-10D-47 42'-47'		
47.5			47-57	

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. GW-DPT-10D
PAGE 5 OF 5

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLE INFIORMATION	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
47.5			47-57	LIMESTONE (SW), white 2.5 Y 8/1, medium to coarse grained, sand and shells, some gravel to cobble size cemented zones, becoming more competent, well graded, saturated
48	2.8			
49				
50.0				
51				
52				
52.5	2.6			
53				LIMESTONE (SW), as above
54	2.8			
55.0				
56	2.9	GW-DPT-10D-56 51'-56'		
57				Boring terminated at 57 ft
57.5				
60				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

	SAMPLER ID.
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

	NOTES
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg Zip: 29003
Latitude: 33.276784 Longitude: 81.051533

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-1S

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 29 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/28/2017
N/A ft. Date Completed: 3/28/2017

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Screen Point Sampler Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From 0 ft. to 29 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☒
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Kyle Borgemeister **CERT. NO.:** 2205
Address: (Print) SAEDACCO 9088 Northfield Drive Fort Mill, SC 29707
Level: A B C (D) (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Kyle Borgemeister Date: 3/28/2017
Well Driller

If D Level Driller, provide supervising driller's name:
Richy Lemire

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg Zip: 29003
Latitude: 33.276784 Longitude: 81.051533

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-2S

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 29 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/28/2017
N/A ft. Date Completed: 3/28/2017

10. CASING: ☐ Threaded ☐ Welded
Diam.: _____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/(Below)
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Screen Point Sampler Diam.: _____
Slot/Gauge: _____ Length: _____
Set Between: _____ ft. and _____ ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 29 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☒ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☒
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe_____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Kyle Borgemeister **CERT. NO.:** 2205
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A B C (D) (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Kyle Borgemeister Date: 3/28/2017
Well Driller

If D Level Driller, provide supervising driller's name:
Richy Lemire

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg Zip: 29003
Latitude: 33.276784 Longitude: 81.051533

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-3S

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 34 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/27/2017
N/A ft. Date Completed: 3/27/2017

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Screen Point Sampler Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From 0 ft. to 34 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☒
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Kyle Borgemeister **CERT. NO.:** 2205
Address: (Print) SAEDACCO 9088 Northfield Drive Fort Mill, SC 29707
Level: A B C (D) (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Kyle Borgemeister Date: 3/27/2017
Well Driller

If D Level Driller, provide supervising driller's name:
Richy Lemire

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg Zip: 29003
Latitude: 33.276784 Longitude: 81.051533

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-4S

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 29 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/27/2017
N/A ft. Date Completed: 3/27/2017

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Screen Point Sampler Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From 0 ft. to 29 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☒
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Kyle Borgemeister **CERT. NO.:** 2205
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A B C (D) (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Kyle Borgemeister Date: 3/27/2017
Well Driller

If D Level Driller, provide supervising driller's name:
Richy Lemire

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg Zip: 29003
Latitude: 33.276784 Longitude: 81.051533

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-5S

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 19 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/29/2017
N/A ft. Date Completed: 3/29/2017

10. CASING: ☐ Threaded ☐ Welded
Diam.: _____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/(Below)
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Screen Point Sampler Diam.: _____
Slot/Gauge: _____ Length: _____
Set Between: _____ ft. and _____ ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 19 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft.____ direction
Type _____
Well Disinfected ☐ Yes ☒ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☒
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe_____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Kyle Borgemeister **CERT. NO.:** 2205
Address: (Print) SAEDACCO 9088 Northfield Drive Fort Mill, SC 29707
Level: A B C (D) (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Kyle Borgemeister Date: 3/29/2017
Well Driller

If D Level Driller, provide supervising driller's name:
Richy Lemire

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg Zip: 29003
Latitude: 33.276784 Longitude: 81.051533

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-6S

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 24 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/29/17
N/A ft. Date Completed: 3/29/17

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Screen Point Sampler Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From 0 ft. to 24 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☒
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Kyle Borgemeister **CERT. NO.:** 2205
Address: (Print) SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A B C (D) (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Kyle Borgemeister Date: 4/19/2017
Well Driller

If D Level Driller, provide supervising driller's name:
Richy Lemire

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg Zip: 29003
Latitude: 33.276784 Longitude: 81.051533

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-7S

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 29 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/28/2017
N/A ft. Date Completed: 3/28/2017

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Screen Point Sampler Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From 0 ft. to 29 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☒
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Kyle Borgemeister **CERT. NO.:** 2205
Address: (Print) SAEDACCO 9088 Northfield Drive Fort Mill, SC 29707
Level: A B C (D) (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Kyle Borgemeister (Well Driller) Date: 3/28/2017

If D Level Driller, provide supervising driller's name:
Richy Lemire

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg Zip: 29003
Latitude: 33.276784 Longitude: 81.051533

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-8S

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 19 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/28/2017
N/A ft. Date Completed: 3/28/2017

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Screen Point Sampler Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From 0 ft. to 19 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☒
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Kyle Borgemeister **CERT. NO.:** 2205
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A B C (D) (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Kyle Borgemeister Date: 3/28/2017
Well Driller

If D Level Driller, provide supervising driller's name:
Richy Lemire

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg Zip: 29003
Latitude: 33.276784 Longitude: 81.051533

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-9S

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 29 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/30/17
N/A ft. Date Completed: 3/30/17

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Screen Point Sampler Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From 0 ft. to 29 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☒
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Kyle Borgemeister **CERT. NO.:** 2205
Address: (Print) SAEDACCO 9088 Northfield Drive Fort Mill, SC 29707
Level: A B C (D) (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Kyle Borgemeister Date: 3/30/2017
Well Driller

If D Level Driller, provide supervising driller's name:
Richy Lemire

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg, SC Zip: 29003
Latitude: 33.276861 Longitude: 81.046691

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-1D

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 60 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/3/17
N/A ft. Date Completed: 4/4/17

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Packer test Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From 0 ft. to 60 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☒
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Stefan Smith **CERT. NO.:** 1943
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A (B) C D (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Stefan J Smith Date: 4/19/2017
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg, SC Zip: 29003
Latitude: 33.276509 Longitude: 81.045781

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-2D

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 64 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/5/2017
N/A ft. Date Completed: 4/5/2017

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Packer test Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From 0 ft. to 64 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☒
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Stefan Smith **CERT. NO.:** 1943
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A (B) C D (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Stefan J Smith Date: 4/5/2017
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg, SC Zip: 29003
Latitude: 33.276509 Longitude: 81.045781

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-4D

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 60 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/3/17
N/A ft. Date Completed: 4/4/17

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Packer test Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From ____ ft. to ____ ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☒
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Stefan Smith **CERT. NO.:** 1943
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A (B) C D (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Stefan J Smith Date: 4/19/2017
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg, SC Zip: 29003
Latitude: 33.2784313 Longitude: 81.0509507

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-5D

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 52 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 52 ft. Date Started: 3/27/17 Date Completed: 3/28/17

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Packer test Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From ____ ft. to ____ ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☐
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Stefan Smith **CERT. NO.:** 1943
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A (B) C D (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Stefan J Smith Date: 4/19/2017
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg, SC Zip: 29003
Latitude: 33.276509 Longitude: 81.045781

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-6D

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 62 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/28/2017
N/A ft. Date Completed: 3/28/2017

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Packer test Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From 0 ft. to 62 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☒
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Stefan Smith **CERT. NO.:** 1943
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A (B) C D (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Stefan J Smith Date: 3/28/2017
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg, SC Zip: 29003
Latitude: 33.276509 Longitude: 81.045781

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-7D

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 62 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/29/2017
N/A ft. Date Completed: 3/29/2017

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Packer test Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From 0 ft. to 62 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☒
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Stefan Smith **CERT. NO.:** 1943
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A (B) C D (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Stefan J Smith Date: 3/29/2017
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg, SC Zip: 29003
Latitude: 33.275751 Longitude: 81.051458

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-8D

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 62 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/29/17
N/A ft. Date Completed: 3/29/17

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Packer test Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From 0 ft. to 62 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☒
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Stefan Smith **CERT. NO.:** 1943
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A (B) C D (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Stefan J Smith Date: 3/29/2017
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg, SC Zip: 29003
Latitude: 33.275244 Longitude: 81.051180

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-9D

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 60 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/30/17
N/A ft. Date Completed: 3/30/17

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Packer test Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From ____ ft. to ____ ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☒
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Stefan Smith **CERT. NO.:** 1943
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A (B) C D (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Stefan J Smith Date: 4/19/2017
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg, SC Zip: 29003
Latitude: 33.275751 Longitude: 81.051458

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** GW-DPT-10D

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 57 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Temporary well for grab samples

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-10879

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/31/17
N/A ft. Date Completed: 3/31/17

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/(Below)
Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: Packer test Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☒ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From 0 ft. to 57 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☒ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☒
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Stefan Smith **CERT. NO.:** 1943
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A (B) C D (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Stefan J Smith Date: 3/31/2017
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg Zip: 29003
Latitude: 33.276104 Longitude: 81.045907

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** MW-27

4. ABANDONMENT: ☐ Yes ☒ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: 2 foot bentonite seal from 15 to 17 feet

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-11050

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☒ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/30/3017
N/A ft. Date Completed: 3/30/2017

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
.25 in. to 19 ft. depth
_____ in. to _____ ft. depth
Height: Above/(Below)
Surface .25 ft.
Weight 40 lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: PVC Diam.: 2
Slot/Gauge: 010 Length: 10
Set Between: 19 ft. and 29 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 17 ft. to 29 ft.
Effective size 2 Uniformity Coefficient Sand

16. WELL GROUTED? ☒ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☒ Bentonite/Cement ☐ Other _____
Depth: From 1 ft. to 15 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☒ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☒
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe_____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Kyle Borgemeister **CERT. NO.:** 2205
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A B C (D) (circle one)
Telephone No.: (803) 548-2180 Fax No.: (803) 548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Kyle Borgemeister Date: 3/30/2017
Well Driller

If D Level Driller, provide supervising driller's name:
Richy Lemire

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg Zip: 29003
Latitude: 33.276104 Longitude: 81.045907

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** MW-28

4. ABANDONMENT: ☐ Yes ☒ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: 2 foot bentonite seal from 15 to 17 feet

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-11050

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☒ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 3/31/3017
N/A ft. Date Completed: 3/31/2017

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
.25 in. to 19 ft. depth
_____ in. to _____ ft. depth
Height: Above/(Below)
Surface .25 ft.
Weight 40 lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: PVC Diam.: 2
Slot/Gauge: 010 Length: 10
Set Between: 19 ft. and 29 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 17 ft. to 29 ft.
Effective size 2 Uniformity Coefficient Sand

16. WELL GROUTED? ☒ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☒ Bentonite/Cement ☐ Other _____
Depth: From 1 ft. to 15 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☒ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☒
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe_____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Kyle Borgemeister **CERT. NO.:** 2205
Address: (Print) SAEDACCO 9088 Northfield Drive Fort Mill, SC 29707
Level: A B C (D) (circle one)
Telephone No.: (803) 548-2180 Fax No.: (803) 548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Kyle Borgemeister Date: 3/31/2017
Well Driller

If D Level Driller, provide supervising driller's name:
Richy Lemire

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg Zip: 29003
Latitude: 33.276104 Longitude: 81.045907

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** MW-29

4. ABANDONMENT: ☐ Yes ☒ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: 2 foot bentonite seal from 15 to 17 feet

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-11050

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☒ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/7/2017
N/A ft. Date Completed: 4/7/2017

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
.25 in. to 19 ft. depth
_____ in. to _____ ft. depth
Height: Above/(Below)
Surface .25 ft.
Weight 40 lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: PVC Diam.: 2
Slot/Gauge: 010 Length: 10
Set Between: 19 ft. and 29 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 17 ft. to 29 ft.
Effective size 2 Uniformity Coefficient Sand

16. WELL GROUTED? ☒ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☒ Bentonite/Cement ☐ Other _____
Depth: From 1 ft. to 15 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☒ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☒
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe_____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Stefan Smith **CERT. NO.:** 1943
Address: (Print) SAEDACCO 9088 Northfield Drive Fort Mill, SC 29707
Level: A (B) C D (circle one)
Telephone No.: (803) 548-2180 Fax No.: (803) 548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Stefan J Smith Date: 4/7/2017
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg, SC Zip: 29003
Latitude: 33.274434 Longitude: 81.049926

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** MW-30D

4. ABANDONMENT: ☐ Yes ☒ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: 2 foot bentonite seal from 46 to 48 feet

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-11057

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 60 ft. Date Started: 3/31/17 Date Completed: 3/31/17

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
.25 in. to 50 ft. depth
_____ in. to _____ ft. depth
Height: Above/(Below)
Surface .25 ft.
Weight 40 lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: PVC Diam.: 2
Slot/Gauge: 010 Length: 10
Set Between: 50 ft. and 60 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 48 ft. to 60 ft.
Effective size 2 Uniformity Coefficient Sand

16. WELL GROUTED? ☒ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☒ Bentonite/Cement ☐ Other _____
Depth: From 1 ft. to 46 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☒ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☒
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe_____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Stefan Smith **CERT. NO.:** 1943
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A (B) C D (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Stefan J Smith Date: 4/19/2017
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg, SC Zip: 29003
Latitude: 33.277681 Longitude: 81.050579

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** MW-31D

4. ABANDONMENT: ☐ Yes ☒ No
Give Details Below
Grouted Depth: from 0 ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: 2 foot bentonite seal from 56 to 58 feet.

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-11057

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☒ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 60 ft. Date Started: 3/28/17 Date Completed: 3/28/17

10. CASING: ☒ Threaded ☐ Welded
Diam.: _____
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
.25 in. to 50 ft. depth
_____ in. to _____ ft. depth
Height: Above/(Below)
Surface .25 ft.
Weight 40 lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: PVC Diam.: 2
Slot/Gauge: 010 Length: 10
Set Between: 50 ft. and 60 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 48 ft. to 60 ft.
Effective size 2 Uniformity Coefficient Sand

16. WELL GROUTED? ☒ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☒ Bentonite/Cement ☐ Other _____
Depth: From 1 ft. to 46 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☒ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☒
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe_____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Stefan Smith **CERT. NO.:** 1943
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A (B) C D (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Stefan J Smith Date: 4/19/2017
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: COUNTY: Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg, SC Zip: 29003
Latitude: 33.276104 Longitude: 81.045907

3. PUBLIC SYSTEM NAME: PUBLIC SYSTEM NUMBER: MW-32D

4. ABANDONMENT: ☐ Yes ☒ No
Give Details Below
Grouted Depth: from 0 ft. to 60 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: 2 foot bentonite seal from 46 to 48 feet

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-11057

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☒ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/5/17
N/A ft. Date Completed: 4/6/17

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
.25 in. to 50 ft. depth
_____ in. to _____ ft. depth
Height: Above/(Below)
Surface .25 ft.
Weight 40 lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: PVC Diam.: 2
Slot/Gauge: 010 Length: 10
Set Between: 50 ft. and 60 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 48 ft. to 60 ft.
Effective size 2 Uniformity Coefficient Sand

16. WELL GROUTED? ☒ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☒ Bentonite/Cement ☐ Other _____
Depth: From 1 ft. to 46 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☒ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☒
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe_____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Stefan Smith CERT. NO.: 1943
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A (B) C D (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Stefan J. Smith Date: 4/19/2017
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg, SC Zip: 29003
Latitude: 33.276104 Longitude: 81.045907

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** MW-32D

4. ABANDONMENT: ☒ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 60 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
(Well abandoned by grouting from total depth to land surface)		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: Tremied grouted with portland/bentonite cement

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-11057

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☒ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/5/17
N/A ft. Date Completed: 4/6/17

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
.25 in. to 50 ft. depth
_____ in. to _____ ft. depth
Height: Above/(Below)
Surface .25 ft.
Weight 40 lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: PVC Diam.: 2
Slot/Gauge: 010 Length: 10
Set Between: 50 ft. and 60 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 48 ft. to 60 ft.
Effective size 2 Uniformity Coefficient Sand

16. WELL GROUTED? ☒ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☒ Bentonite/Cement ☐ Other _____
Depth: From 1 ft. to 46 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☒ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☒
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe_____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Stefan Smith **CERT. NO.:** 1943
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A (B) C D (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Stefan J. Smith Date: 4/19/2017
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Delavan Spray Technologies (last) (first)
Address: 4334 Main Hwy
City: Bamberg State: SC Zip: 29003
Telephone: Work: 803-245-4347 Home:

2. LOCATION OF WELL: **COUNTY:** Bamberg
Name: Delavan Spray Technologies
Street Address: 4436 Main Hwy
City: Bamberg, SC Zip: 29003
Latitude: 33.276104 Longitude: 81.045907

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:** MW-32DR

4. ABANDONMENT: ☐ Yes ☒ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See geologist logs		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: 2 foot bentonite seal from 46 to 48 feet

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☒ Other

7. PERMIT NUMBER: MW-11057

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☒ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 60 ft. Date Started: 5/8/17 Date Completed: 5/8/17

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
.25 in. to 50 ft. depth
_____ in. to _____ ft. depth
Height: Above/(Below)
Surface .25 ft.
Weight 40 lb./ft.
Drive Shoe? ☐ Yes ☒ No

11. SCREEN:
Type: PVC Diam.: 2
Slot/Gauge: 010 Length: 10
Set Between: 50 ft. and 60 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 48 ft. to 60 ft.
Effective size 2 Uniformity Coefficient Sand

16. WELL GROUTED? ☒ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☒ Bentonite/Cement ☐ Other _____
Depth: From 1 ft. to 46 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☒ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☒
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe_____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Stefan Smith **CERT. NO.:** 1943
Address: (Print)
SAEDACCO
9088 Northfield Drive
Fort Mill, SC 29707
Level: A (B) C D (circle one)
Telephone No.: (803)548-2180 Fax No.: (803)548-2181

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Stefan J Smith Date: 5/8/17
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

AECOM

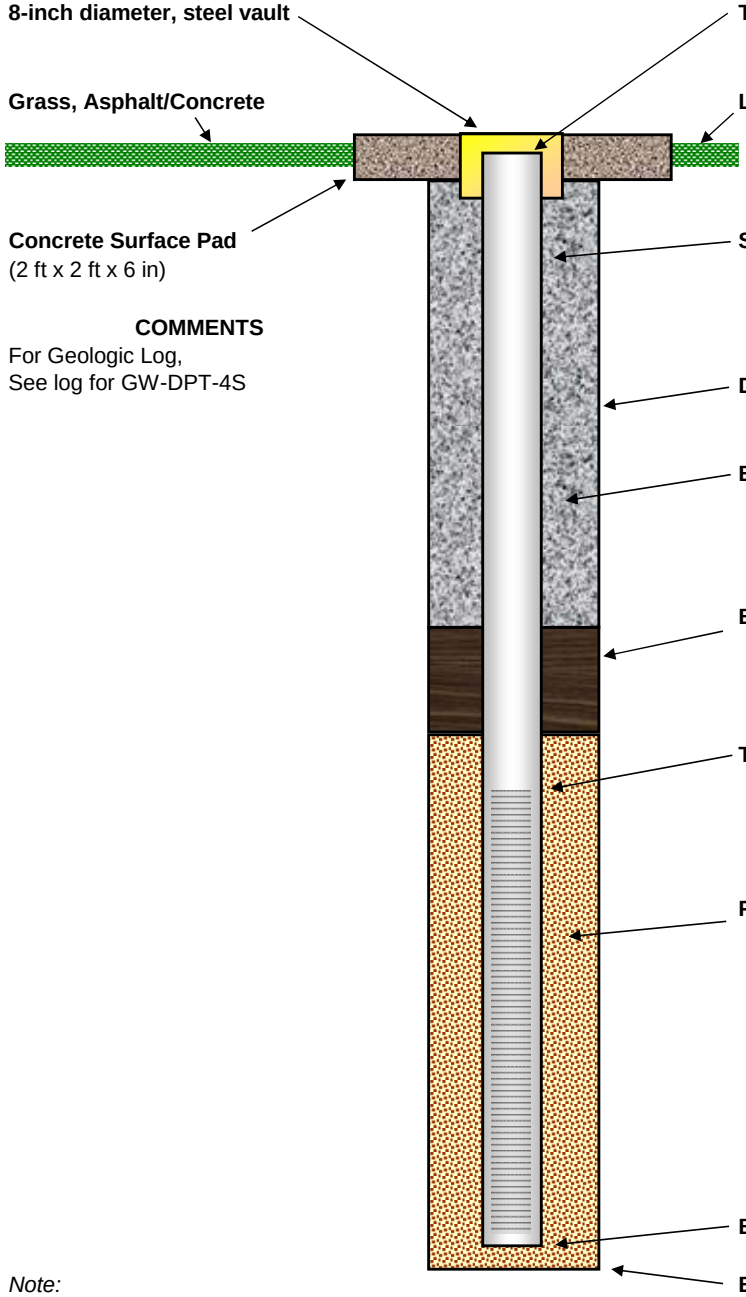
TYPE II GROUNDWATER MONITORING WELL INSTALLATION DETAIL

Project Name: Delavan Spray Technologies **Drilling Co:** SAEDACCO **Well Number:** MW-27

Location: Bamburg, South Carolina **Driller:** Kyle Borgemeister **Job Number:** 60314964.16

Client: United Technology Corporation **Drilling Method:** Hollow Stem Auger **Date Completed:** March 31, 2017

Geologist: Daniel Good **Static Water Level:** 9.91 ft **b.TOC** **Survey Datum:** NAVD-88



8-inch diameter, steel vault

Grass, Asphalt/Concrete

Concrete Surface Pad
(2 ft x 2 ft x 6 in)

COMMENTS
For Geologic Log,
See log for GW-DPT-4S

Top Of Casing Elevation **145.78** ft **-0.15** ft Stickup

Land Surface Elevation **145.93** ft

Surface Casing From **0.0** ft to **19.0** ft

Casing Type: **SCH 40 PVC**
Inside Diameter: **2** in

Diameter of Borehole (nominal)
6 in

Bentonite/Cement Grout*
From **0.0** ft to **15.0** ft
** Aquagaurd bentonite grout topped with Bentonite/Cement grout*

Bentonite Pellet Seal
Type: **Pel-Plug TR30 Pellets**
From **15.0** ft to **17.0** ft

Top of Screen Depth **19.0** ft
Screen Type: **SCH-40 PVC**
Screen Slot Size: **0.010-in** ID **2** in
Screen Length: **10** ft

Filter Sand for Screen
Sand Type: **DSI Well Gravel Pack**
From **17.0** ft to **29.0** ft

Bottom of Well Depth **29.0** ft

Bottom of Boring (estimated) Depth **29** ft

Total Depth of Well, b. Top of Casing Depth **28.9** ft

Note:
Drawing Not to Scale
All Depths are Referenced to Ground Surface

AECOM

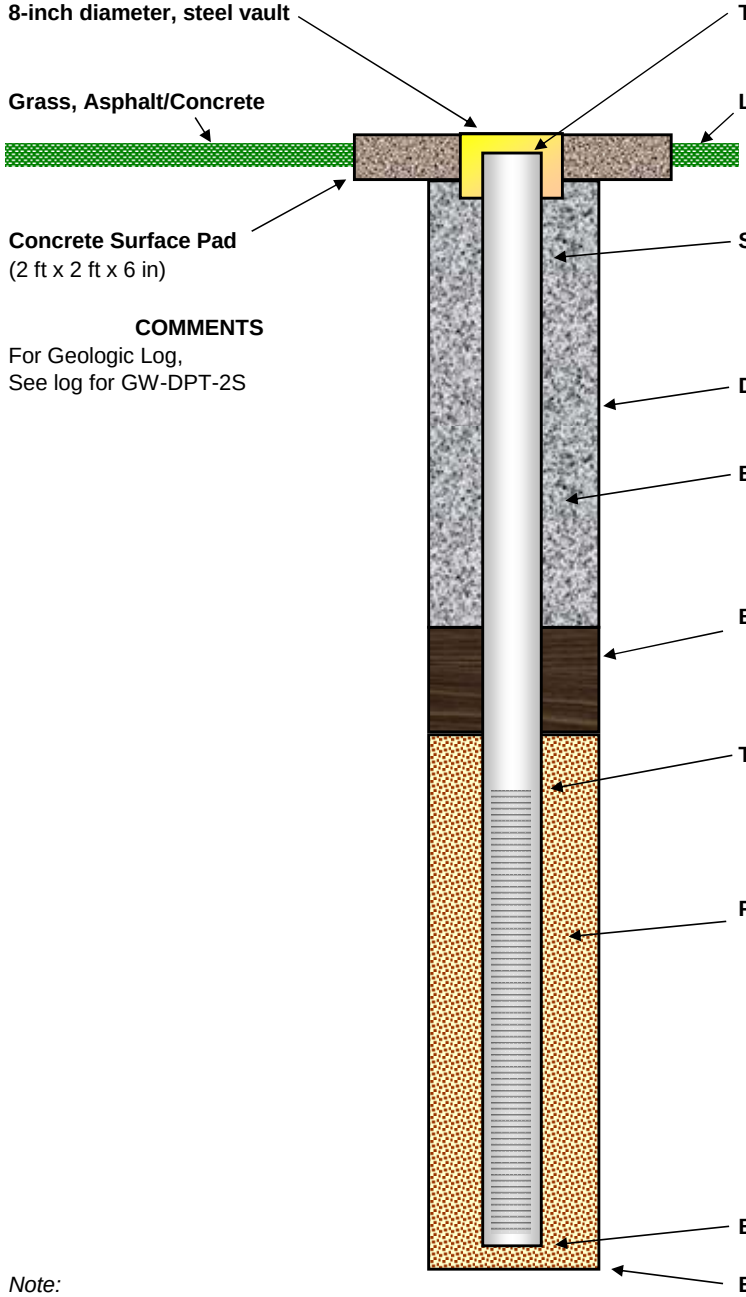
TYPE II GROUNDWATER MONITORING WELL INSTALLATION DETAIL

Project Name: Delavan Spray Technologies **Drilling Co:** SAEDACCO **Well Number:** MW-28

Location: Bamburg, South Carolina **Driller:** Kyle Borgemeister **Job Number:** 60314964.16

Client: United Technology Corporation **Drilling Method:** Hollow Stem Auger **Date Completed:** March 31, 2017

Geologist: Daniel Good **Static Water Level:** 12.60 ft **b.TOC** **Survey Datum:** NAVD-88



8-inch diameter, steel vault

Grass, Asphalt/Concrete

Concrete Surface Pad
(2 ft x 2 ft x 6 in)

COMMENTS
For Geologic Log,
See log for GW-DPT-2S

Top Of Casing Elevation **146.12** ft **-0.23** ft Stickup

Land Surface Elevation **146.35** ft

Surface Casing From **0.0** ft to **19.0** ft

Casing Type: **SCH 40 PVC**
Inside Diameter: **2** in

Diameter of Borehole (nominal)
6 in

Bentonite/Cement Grout*
From **0.0** ft to **14.0** ft
** Aquagaurd bentonite grout topped with Bentonite/Cement grout*

Bentonite Chips Seal
Type: **HolePlug 3/8" Chips**
From **14.0** ft to **17.0** ft

Top of Screen Depth **19.0** ft
Screen Type: **SCH-40 PVC**
Screen Slot Size: **0.010-in** ID **2** in
Screen Length: **10** ft

Filter Sand for Screen
Sand Type: **DSI Well Gravel Pack**
From **17.0** ft to **29.0** ft

Bottom of Well Depth **29.0** ft

Bottom of Boring (estimated) Depth **29** ft

Total Depth of Well, b. Top of Casing Depth **28.8** ft

Note:
Drawing Not to Scale
All Depths are Referenced to Ground Surface

AECOM

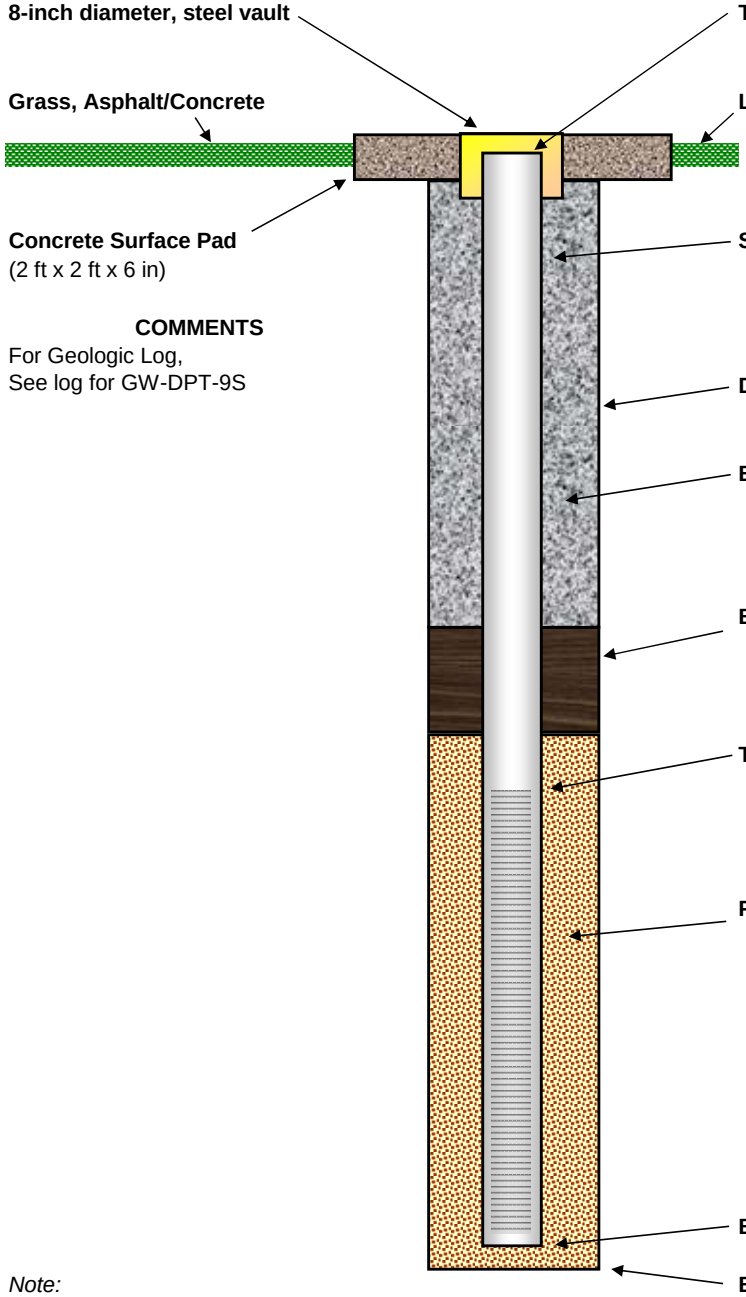
TYPE II GROUNDWATER MONITORING WELL INSTALLATION DETAIL

Project Name: Delavan Spray Technologies **Drilling Co:** SAEDACCO **Well Number:** MW-29

Location: Bamburg, South Carolina **Driller:** Stefan Smith **Job Number:** 60314964.16

Client: United Technology Corporation **Drilling Method:** Hollow Stem Auger **Date Completed:** April 7, 2017

Geologist: Daniel Good **Static Water Level:** 7.17 ft **b.TOC** **Survey Datum:** NAVD-88



8-inch diameter, steel vault

Grass, Asphalt/Concrete

Concrete Surface Pad
(2 ft x 2 ft x 6 in)

COMMENTS
For Geologic Log,
See log for GW-DPT-9S

Top Of Casing Elevation **140.55** ft **-0.48** ft Stickup

Land Surface Elevation **141.03** ft

Surface Casing From **0.0** ft to **19.0** ft

Casing Type: **SCH 40 PVC**
Inside Diameter: **2** in

Diameter of Borehole (nominal)
6 in

Bentonite/Cement Grout*
From **0.0** ft to **15.0** ft
** Aquagaurd bentonite grout topped with Bentonite/Cement grout*

Bentonite Chips Seal
Type: **HolePlug 3/8" Chips**
From **15.0** ft to **17.0** ft

Top of Screen Depth **19.0** ft
Screen Type: **SCH-40 PVC**
Screen Slot Size: **0.010-in** ID **2** in
Screen Length: **10** ft

Filter Sand for Screen
Sand Type: **DSI Well Gravel Pack**
From **17.0** ft to **29.0** ft

Bottom of Well Depth **29.0** ft

Bottom of Boring (estimated) Depth **29** ft

Total Depth of Well, b. Top of Casing Depth **28.5** ft

Note:
Drawing Not to Scale
All Depths are Referenced to Ground Surface

AECOM

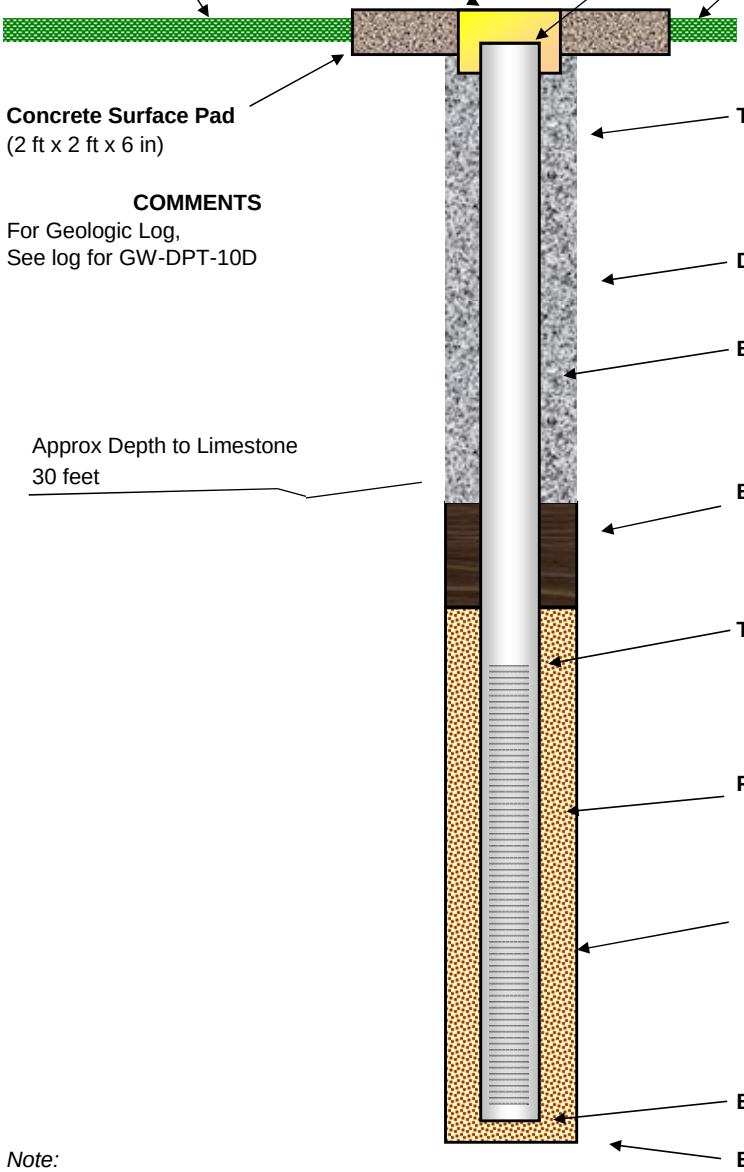
TYPE III GROUNDWATER MONITORING WELL INSTALLATION DETAIL

Project Name: Delavan Spray Technologies **Drilling Co:** SAEDACCO **Well Number:** MW-30D

Location: Bamberg, South Carolina **Driller:** Stefan Smith **Job Number:** 60314964.16

Client: United Technology Corporation **Drilling Method:** Sonic **Date Completed:** April 12, 2017

Geologist: Chuck Suddeth / Daniel Good **Static Water Level:** 5.35 ft b.TOC **Survey Datum:** NAVD-88



8-inch diameter, steel vault

Grass, Asphalt/Concrete

Concrete Surface Pad
(2 ft x 2 ft x 6 in)

COMMENTS
For Geologic Log,
See log for GW-DPT-10D

Approx Depth to Limestone
30 feet

Note:
Drawing Not to Scale
All Depths are Referenced to Ground Surface

Top Of Casing Elevation **136.01** ft **0.11** ft Stickup

Land Surface Elevation **135.90** ft

Temp Surf Casing From **0.0** ft to **60.0** ft
Casing Type: **Temporary Steel**
Inside Diameter: **6** in

Diameter of Borehole (nominal)
6 in

Bentonite/Cement Grout
From **0.0** ft to **46.0** ft

Bentonite Pellet Seal
Type: **Pel-Plug TR30 Pellets**
From **46.0** ft to **48.0** ft

Top of Screen Depth **50.0** ft
Screen Type: **SCH-40 PVC**
Screen Slot Size: **0.010-in** ID **2** in
Screen Length: **10** ft

Filter Sand for Screen
Sand Type: **DSI Well Gravel Pack**
From **48.0** ft to **60.0** ft

Diameter of Borehole (nominal)
6 in

Bottom of Well Depth **60.0** ft

Bottom of Boring (estimated) Depth **60** ft

Total Depth of Well, b. Top of Casing Depth **60.1** ft

AECOM

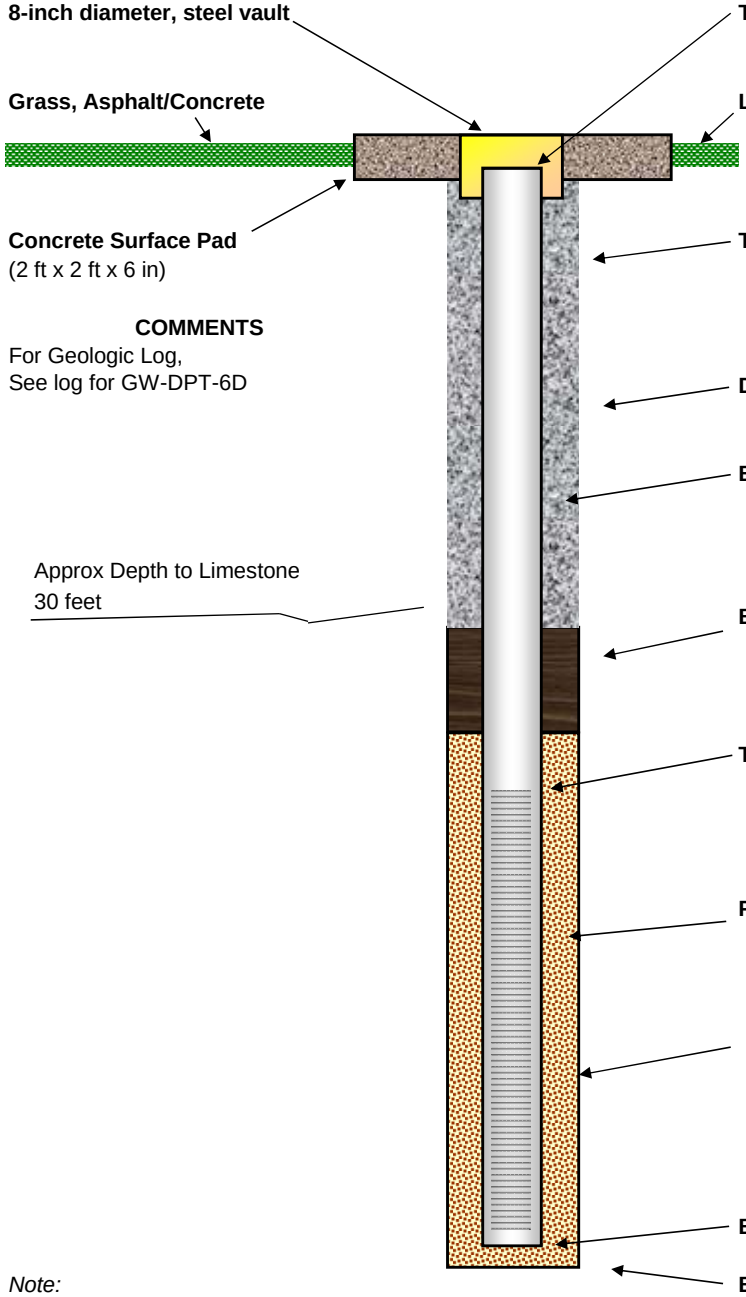
TYPE III GROUNDWATER MONITORING WELL INSTALLATION DETAIL

Project Name: Delavan Spray Technologies **Drilling Co:** SAEDACCO **Well Number:** MW-31D

Location: Bamberg, South Carolina **Driller:** Stefan Smith **Job Number:** 60314964.16

Client: United Technology Corporation **Drilling Method:** Sonic **Date Completed:** April 12, 2017

Geologist: Ron Pauling / Daniel Good **Static Water Level:** 9.42 ft **b.TOC** **Survey Datum:** NAVD-88



COMMENTS
For Geologic Log,
See log for GW-DPT-6D

Top Of Casing Elevation **141.39** ft **0.00** ft Stickup

Land Surface Elevation **141.39** ft

Temp Surf Casing From **0.0** ft to **60.0** ft
Casing Type: **Temporary Steel**
Inside Diameter: **6** in

Diameter of Borehole (nominal)
6 in

Bentonite/Cement Grout
From **0.0** ft to **46.0** ft

Bentonite Pellet Seal
Type: **Pel-Plug TR30 Pellets**
From **46.0** ft to **48.0** ft

Top of Screen Depth **50.0** ft
Screen Type: **SCH-40 PVC**
Screen Slot Size: **0.010-in** ID **2** in
Screen Length: **10** ft

Filter Sand for Screen
Sand Type: **DSI Well Gravel Pack**
From **48.0** ft to **60.0** ft

Diameter of Borehole (nominal)
6 in

Bottom of Well Depth **60.0** ft

Bottom of Boring (estimated) Depth **60** ft

Total Depth of Well, b. Top of Casing Depth **60.0** ft

Note:
Drawing Not to Scale
All Depths are Referenced to Ground Surface

AECOM

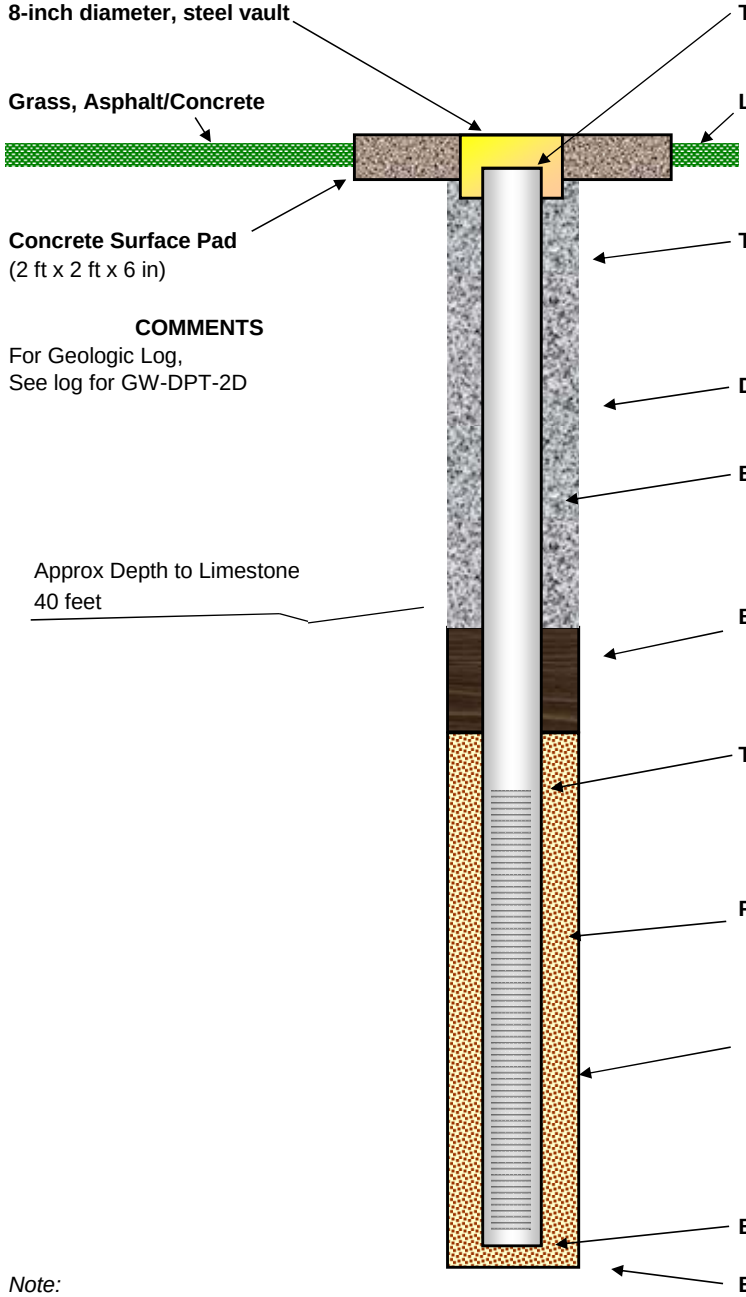
TYPE III GROUNDWATER MONITORING WELL INSTALLATION DETAIL

Project Name: Delavan Spray Technologies **Drilling Co:** SAEDACCO **Well Number:** MW-32DR

Location: Bamberg, South Carolina **Driller:** Stefan Smith **Job Number:** 60314964.16

Client: United Technology Corporation **Drilling Method:** Sonic **Date Completed:** May 8, 2017

Geologist: Daniel Good **Static Water Level:** 7.22 ft b.TOC **Survey Datum:** NAVD-88



Top Of Casing Elevation **138.88** ft **-0.32** ft Stickup

Land Surface Elevation **139.20** ft

Temp Surf Casing From **0.0** ft to **60.0** ft

Casing Type: **Temporary Steel**

Inside Diameter: **6** in

Diameter of Borehole (nominal)

6 in

Bentonite/Cement Grout

From **0.0** ft to **46.0** ft

Bentonite Pellet Seal

Type: **Pel-Plug TR30 Pellets**

From **46.0** ft to **48.0** ft

Top of Screen Depth **50.0** ft

Screen Type: **SCH-40 PVC**

Screen Slot Size: **0.010-in** ID **2** in

Screen Length: **10** ft

Filter Sand for Screen

Sand Type: **DSI Well Gravel Pack**

From **48.0** ft to **60.0** ft

Diameter of Borehole (nominal)

6 in

Bottom of Well Depth **60.0** ft

Bottom of Boring (estimated) Depth **60** ft

Total Depth of Well, b. Top of Casing Depth **59.7** ft

Note:
Drawing Not to Scale
All Depths are Referenced to Ground Surface

AECOM

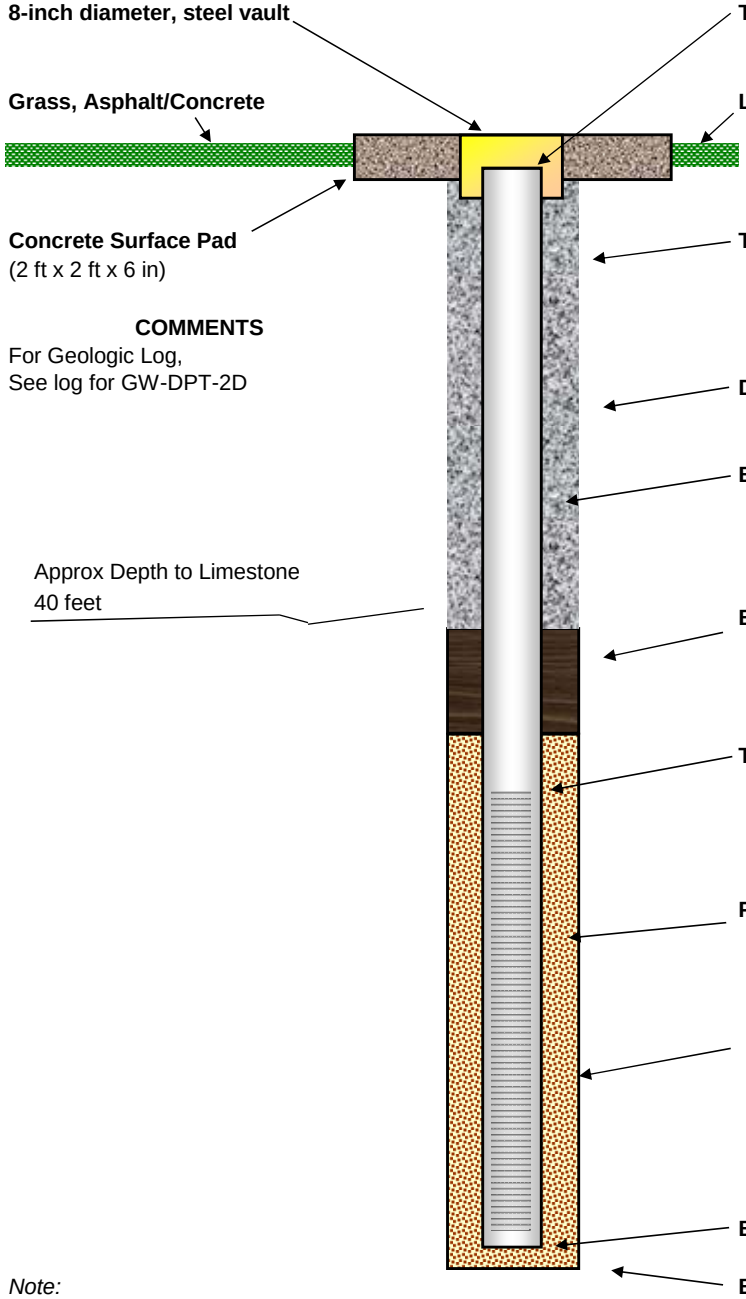
TYPE III GROUNDWATER MONITORING WELL INSTALLATION DETAIL

Project Name: Delavan Spray Technologies **Drilling Co:** SAEDACCO **Well Number:** MW-32D

Location: Bamberg, South Carolina **Driller:** Stefan Smith **Job Number:** 60314964.16

Client: United Technology Corporation **Drilling Method:** Sonic **Date Completed:** April 13, 2017

Geologist: Daniel Good **Static Water Level:** 7.49 ft **b.TOC** **Survey Datum:** NAVD-88



8-inch diameter, steel vault

Grass, Asphalt/Concrete

Concrete Surface Pad
(2 ft x 2 ft x 6 in)

COMMENTS
For Geologic Log,
See log for GW-DPT-2D

Approx Depth to Limestone
40 feet

Note:
Drawing Not to Scale
All Depths are Referenced to Ground Surface

Top Of Casing Elevation **138.92** ft **-0.22** ft Stickup

Land Surface Elevation **139.14** ft

Temp Surf Casing From **0.0** ft to **60.0** ft

Casing Type: **Temporary Steel**
Inside Diameter: **6** in

Diameter of Borehole (nominal)
6 in

Bentonite/Cement Grout
From **0.0** ft to **46.0** ft

Bentonite Pellet Seal
Type: **Pel-Plug TR30 Pellets**
From **46.0** ft to **48.0** ft

Top of Screen Depth **50.0** ft
Screen Type: **SCH-40 PVC**
Screen Slot Size: **0.010-in** ID **2** in
Screen Length: **10** ft

Filter Sand for Screen
Sand Type: **DSI Well Gravel Pack**
From **48.0** ft to **60.0** ft

Diameter of Borehole (nominal)
6 in

Bottom of Well Depth **60.0** ft

Bottom of Boring (estimated) Depth **60** ft

Total Depth of Well, b. Top of Casing Depth **59.8** ft

AECOM

Monitoring Well Development Log

Date Started (yr/mo/day) 4/11/17 Date Completed (yr/mo/day) 4/11/17

Field Personnel Justin Butler

Site Name UTC Delavan Spray Technologies Site

Job # 60314964.16

Well ID # MW-27

___ Upgradient X Downgradient

Weather Conditions Clear

Air Temperature 70's °F

Total Well Depth (TWD) = 29.09 1/100 ft

Depth to Ground Water (DGW) = 9.91 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 19.18 1/100 ft

1 Casing Volume (OCV) = LWC x 0.16 = 3.07 gallons

5 Casing Volumes = 15.35 gallons

Method of Well Development whale pump

Equipment Used

Total Volume of Water Removed ~30 gallons

Date/Time	Discharge Rate (ml/min)	Volume Purged (gallons)	Water Temp. (°C)	Specific Conductivity (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity/Color	Sand Content (%)	Remarks
1412	~1	Initial	21.33	0.044	6.06	5.90	197.4	71100	0	WL-16.75'
1415	~1	~5	20.07	0.036	5.51	5.15	201.5	576.9	0	WL-24.65'
1420	~1	~10	20.85	0.034	5.45	4.47	132.6	>1100	0	WL-Below Pump
1425	~1	~15 (Dry@16)	21.36	0.032	5.65	4.70	138.7	>1100	0	WL-Below Pump
1430	~1	~20	20.30	0.031	7.07	5.01	145.0	38.82	0	WL-22.50'
1435	~1	~25	20.28	0.031	6.71 DO 7.38	4.73	152.2	502.1	0	WL-27.75'
1500	~1	~30	20.39	0.028	6.	4.77	147.3	31.71	0	WL-Below pump

COMMENTS/OBSERVATIONS:

AECOM

Monitoring Well Development Log

Date Started (yr/mo/day) 4-10-17 Date Completed (yr/mo/day) 4-10-17

Field Personnel Daniel Grant

Site Name UTC Delavan Spray Technologies Site

Job # 60314964.16

Well ID # MW 28

___ Upgradient X Downgradient

Weather Conditions Clear

Air Temperature 79 °F

Total Well Depth (TWD) = 29' 1/100 ft

Depth to Ground Water (DGW) = 12.48 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 16.52 1/100 ft

1 Casing Volume (OCV) = LWC x 0.16 = 2.64 gallons

5 Casing Volumes = 13.22 gallons

Method of Well Development Pump

Equipment Used

Total Volume of Water Removed 19.0 gallons

Date/Time	Discharge Rate (ml/min)	Volume Purged (gallons)	Water Temp. (°C)	Specific Conductivity (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity/Color	Sand Content (%)	Remarks
4/10 1800	4500	3.0 gal	20.40	0.541	3.01	6.77	230.5	Brown >1100	6	Allowed to
1810	4500	2.75	20.51	0.533	3.51	6.61	215.4	160.9	0	recharge
1820	4500	3.25	20.37	0.534	3.81	6.64	209.6	49.78	0	to 80%
1830	4500	3.25	20.32	0.548	3.89	6.69	212.8	22.66	0	of original
1840	4500	3.5	20.28	0.542	3.97	6.51	207.6	23.39	0	(WL=15.78)
1850	4500	3.25	20.29	0.541	3.91	6.55	219.9	21.33	0	

COMMENTS/OBSERVATIONS:

AECOM

Monitoring Well Development Log

Date Started (yr/mo/day) 4/11/17 Date Completed (yr/mo/day) 4/11/17

Field Personnel Justin Butler

Site Name UTC Delavan Spray Technologies Site

Job # 60314964.16

Well ID # MW-29

___ Upgradient X Downgradient

Weather Conditions Clear

Air Temperature 70's °F

Total Well Depth (TWD) = 28.89 1/100 ft

Depth to Ground Water (DGW) = 9.45 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 19.44 1/100 ft

1 Casing Volume (OCV) = LWC x 0.16 = 3.11 gallons

5 Casing Volumes = 15.55 gallons

Method of Well Development Whale Pump

Equipment Used

Total Volume of Water Removed ~26 gallons

Date/Time	Discharge Rate (ml/min)	Volume Purged (gallons)	Water Temp. (°C)	Specific Conductivity (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity/Color	Sand Content (%)	Remarks
1540	~1	Initial	19.85	0.447	3.18	6.60	187.0	71100	0	WL - 21.25
1544	~1	~5 (Dry)	19.83	0.546	3.95	6.62	118.2	71100	0	
1551	~1	~8 (Dry	19.46	0.511	6.92	6.46	113.2	32.93	0	
1557	~1	~12 (Dry)	19.18	0.473	2.58	6.42	99.6	1410	0	
1604	~1	~15 (Dry	19.14	0.421	2.54	6.37	96.4	18.28	0	
1610	~1	~19 (Dry)	19.35	0.391	2.96	6.30	67.0	5.83	0	
1616	~1	~23 (Dry)	19.17	0.359	3.03	6.28	71.2	4.58	0	
1624	~1	~26 (Dry)	19.28	0.347	3.05	6.26	75.3	5.26	0	

COMMENTS/OBSERVATIONS: Recharge 80% before purging again

AECOM

Monitoring Well Development Log

Date Started (yr/mo/day) 4/3/17 Date Completed (yr/mo/day) 4/3/17

Field Personnel Justin Butler

Site Name UTC Delavan Spray Technologies Site

Job # 60314964.16

Well ID # MW-30D

___ Upgradient X Downgradient

Weather Conditions Clear

Air Temperature 60's °F

Total Well Depth (TWD) = 59.78 1/100 ft

Depth to Ground Water (DGW) = 4.91 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 54.91 1/100 ft

1 Casing Volume (OCV) = LWC x 0.16 = 8.79 gallons

5 Casing Volumes = 43.95 gallons

Method of Well Development Whale Pump

Equipment Used

Total Volume of Water Removed ~40 gallons

Date/Time	Discharge Rate (ml/min)	Volume Purged (gallons)	Water Temp. (°C)	Specific Conductivity (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity/Color	Sand Content (%)	Remarks
0829	1.6	Initial	18.26	0.177	0.10	7.81	-605.4	>1100	~10	Initial
0832	1.6	~5	18.31	0.260	2.05	7.65	-175.6	144.5	~5	WL: 5.01
0835	1.6	~10	18.32	0.259	1.87	7.63	-174.1	210.7	<5	WL: 5.01
0838	1.6	~15	18.11	0.261	2.13	7.61	-159.6	491.3	<5	WL: 5.01
0841	1.6	~20	18.44	0.260	2.21	7.60	-166.9	399.3	0	WL: 5.01
0844	1.6	~25	18.27	0.261	2.45	7.61	-154.6	209.5	0	WL: 5.01
0847	1.6	~30	18.41	0.262	2.48	7.62	-153.9	113.2	0	WL: 5.01
0850	1.6	~35	18.44	0.262	2.52	7.61	-128.7	7.88	0	WL: 5.01
0853	1.6	~40	18.46	0.262	2.51	7.60	-126.3	6.97	0	WL: 501

COMMENTS/OBSERVATIONS:

AECOM

Monitoring Well Development Log

Date Started (yr/mo/day) 4/13/17 Date Completed (yr/mo/day) 4/13/17

Field Personnel Justin Butler

Site Name UTC Delavan Spray Technologies Site

Job # 60314964.16

Well ID # MW-31D

___ Upgradient X Downgradient

Weather Conditions Clear

Air Temperature 60's °F

Total Well Depth (TWD) = 60.35 1/100 ft

Depth to Ground Water (DGW) = 9.23 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 51.12 1/100 ft

1 Casing Volume (OCV) = LWC x 0.16 = 8.18 gallons

5 Casing Volumes = 40.9 gallons

Method of Well Development Whale Pump

Equipment Used

Total Volume of Water Removed ~40 gallons

Date/Time	Discharge Rate (ml/min)	Volume Purged (gallons)	Water Temp. (°C)	Specific Conductivity (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity/Color	Sand Content (%)	Remarks
0929	1.6	Initial	18.68	0.198	4.19	8.04	-199.3	>1100	<10	WL: Initial
0932	1.6	~5	18.77	0.239	2.23	7.85	-194.3	>1100	<5	WL: 10.10
0935	1.6	~10	18.91	0.239	2.95	7.78	-150.7	>1100	<5	WL: 10.10
0938	1.6	~15	19.03	0.239	3.42	7.78	-121.7	323.4	0	WL: 10.10
0941	1.6	~20	19.04	0.240	3.63	7.75	-97.8	266.4	0	WL: 10.10
0944	1.6	~25	19.50	0.237	3.72	7.75	-78.6	67.49	0	WL: 10.10
0947	1.6	~30	19.43	0.239	3.79	7.73	-73.1	5.40	0	WL 10.10
0950	1.6	~~~35~~ ~35	19.41	0.242	3.77	7.71	-69.3	6.24	0	WL: 10.10
0953	1.6	~40	19.38	0.241	3.81	7.69	-65.4	6.09	0	WL: 10.10

COMMENTS/OBSERVATIONS:

AECOM

Monitoring Well Development Log

Date Started (yr/mo/day) 4/13/17 Date Completed (yr/mo/day) 4/13/17

Field Personnel Justin Butler

Site Name UTC Delavan Spray Technologies Site

Job # 60314964.16

Well ID # MW-32D

____ Upgradient X Downgradient

Weather Conditions Clear

Air Temperature 70's °F

Total Well Depth (TWD) = 53.65 1/100 ft

Depth to Ground Water (DGW) = 6.23 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 47.42 1/100 ft

1 Casing Volume (OCV) = LWC x 0.16 = 7.59 gallons

5 Casing Volumes = 37.95 gallons

Method of Well Development whale pump

Equipment Used

Total Volume of Water Removed ~40 gallons

Date/Time	Discharge Rate (ml/min)	Volume Purged (gallons)	Water Temp. (°C)	Specific Conductivity (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity/Color	Sand Content (%)	Remarks
1209	1.6	Initial	20.09	0.227	4.82	7.93	-54.5	>1100	>10%	WL: Initial
1212	1.6	~5	19.21	0.241	4.12	7.80	-106.1	>1100	<10%	WL: 7.72
1215	1.6	~10	19.33	0.269	2.79	7.69	-105.1	>1100	<5%	WL: 7.72
1218	1.6	~15	19.19	0.274	2.77	7.68	-96.8	>1100	0	WL: 7.72
1221	1.6	~20	19.31	0.276	2.53	7.64	-61.8	47.93	0	WL: 7.72
1224	1.6	~25	19.75	0.277	2.15	7.61	-55.3	364.7	0	WL: 7.72
1227	1.6	~30	19.89	0.278	2.13	7.63	-44.2	31.36	0	WL: 7.72
1230	1.6	~35	19.70	0.276	2.16	7.62	-46.7	16.88	0	WL: 7.72
1233	1.6	~40	19.81	0.278	2.19	7.62	-41.2	18.13	0	WL: 7.72

COMMENTS/OBSERVATIONS:

AECOM

Monitoring Well Development Log

Date Started (yr/mo/day) 5/9/2017 Date Completed (yr/mo/day) 5-9-17

Field Personnel Daniel Good

Site Name UTC Delavan Spray Technologies Site

Job # 60314964.16

Well ID # MW-32D

____ Upgradient X ____ Downgradient

Weather Conditions Clear, Sunny

Air Temperature 68°F °F

Total Well Depth (TWD) = 60.69 1/100 ft

Depth to Ground Water (DGW) = 7.22 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 53.47 1/100 ft

1 Casing Volume (OCV) = LWC x 0.16 = 8.55 gallons

5 Casing Volumes = 42.77 gallons

Method of Well Development Pumping

Equipment Used Whale Pump

Total Volume of Water Removed 56 gallons

Date/Time	Discharge Rate (ml/min)	Volume Purged (gallons)	Water Temp. (°C)	Specific Conductivity (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity/Color	Sand Content (%)	Remarks
0810	3800	–	20.58	0.297	3.99	7.26	137.2	71100 white	0	
0815	3800	5	20.30	0.289	3.14	7.49	78.5	71100 white	0	WL= 7.61
0820	"	10	20.24	0.290	3.16	7.53	57.9	71100 white	0	
0825	"	15	20.33	0.289	2.39	7.56	34.1	71100 white	0	WL= 7.63
0830	"	20	20.60	0.287	2.35	7.58	9.2	71100 white	0	
0835	"	25	20.49	0.287	2.42	7.58	13.9	71100 white	0	WL= 7.67
0840	"	30	20.38	0.288	2.49	7.57	5.0	71100 white	0	
0845	"	35	20.34	0.288	2.44	7.58	7.1	683.9	0	WL= 7.66
0850	"	40	20.22	0.287	2.32	7.68	5.3	382.5	0	
0855	"	45	20.21	0.287	2.30	7.64	6.2	101.6	0	
0900	"	50	20.25	0.287	2.19	7.81	10.7	15.46	0	

COMMENTS/OBSERVATIONS:

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr)	3-28-17
Field Personnel	Daniel Good
Site Name	UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #	60314964.16
Sample ID	GW DPT 15-29
Upgradient / Downgradient / Sidegradient / Source	___ / X / ___ / ___
Weather Conditions	65 clear
Air Temperature	~~75~~ ° F
Total Well Depth (TWD) =	1/100 ft
Depth to Ground Water (DGW) =	N/A 1/100 ft
Length of Water Column (LWC) = TWD - DGW =	N/A 1/100 ft
1 Casing Volume (OCV) = LWC x ___ =	N/A gal
3 Casing Volumes =	N/A gal = Standard Evacuation Volume
Method of Sample Evacuation	Purging with a peristaltic pump
Method of Sample Collection	peristaltic pump; reverse flow for VOCs
Total Volume of Water Removed	2.25 gal

Casing Diameter	1 3/8 inches
Casing Material	Stainless Steel
Measuring Point Elevation	Unknown 1/100 ft
Height of Riser (above land surface)	1' 1/100 ft
Land Surface Elevation	Unknown 1/100 ft
Screened Interval	29-25 1/100 ft
Dedicated Pump or Bailer	YES ___ NO N/A Type ___
Steel Guard Pipe Around Casing	YES ___ NO N/A
Locking Cap	YES ___ NO N/A
Protective Post/Abutment	YES ___ NO N/A
Well Integrity Satisfactory	YES ___ NO N/A
Yield	LOW ___ MODERATE ___ HIGH X
Comments/Observations	ND
Sample Time: 1030	QA/QC: ~~Dup A @ 1035~~
Sample Analytes: VOCs - screening sample	

FIELD ANALYSES

VOLUME PURGED (gallons)		0.75	1.5	2.25				
TIME (Military)	1010	1005	1020	1075				
Water Level (ft. BTOC)	N/A							
pH (S.U.)	7.28	7.15	7.11	7.15				
Sp. Cond. (mS/cm)	0.207	0.199	0.199	0.196				
Water Temp. (°C)	2931	19.94	19.82	19.76				
Turbidity (NTUs)	717.4	671.3	519.1	641.5				
Dissolved Oxygen (mg/L)	2.65	2.46	2.48	2.51				
Salinity (ppt)	0.10	0.10	0.09	0.09				
ORP (mV)	39.1	38.1	35.9	39.3				

COMMENTS/OBSERVATIONS begin purging at

Purging rate (ml/min) 560

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr)	3-28-17
Field Personnel	Daniel Good
Site Name	UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #	60314964.16
Sample ID	GW-DPT-25-29
	___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions	clear
Air Temperature	65 ° F
Total Well Depth (TWD) =	N/A 1/100 ft
Depth to Ground Water (DGW) =	N/A 1/100 ft
Length of Water Column (LWC) = TWD - DGW =	N/A 1/100 ft
1 Casing Volume (OCV) = LWC x ___ =	N/A gal
3 Casing Volumes =	N/A gal = Standard Evacuation Volume
Method of Sample Evacuation	Purging with a peristaltic pump
Method of Sample Collection	peristaltic pump; reverse flow for VOCs
Total Volume of Water Removed	3.0 gal

Casing Diameter	1 3/8 inches
Casing Material	Stainless Steel
Measuring Point Elevation	Unknown 1/100 ft
Height of Riser (above land surface)	1' 1/100 ft
Land Surface Elevation	Unknown 1/100 ft
Screened Interval	29-25 1/100 ft
Dedicated Pump or Bailer	YES ___ NO ___ N/A ___ Type ___
Steel Guard Pipe Around Casing	YES ___ NO ___ N/A
Locking Cap	YES ___ NO N/A
Protective Post/Abutment	YES ___ NO N/A
Well Integrity Satisfactory	YES ___ NO N/A
Yield	LOW ___ MODERATE X HIGH ___
Comments/Observations	
Sample Time: 0905	QA/QC:
Sample Analytes: VOCs - screening sample	

FIELD ANALYSES

VOLUME PURGED (gallons)	~~0.0~~	0.75	1.5	2.25	3.0			
TIME (Military)	0840	0845	0850	0855	0900			
Water Level (ft. BTOC)								
pH (S.U.)	7.13	7.23	7.26	7.28	7.23			
Sp. Cond. (mS/cm)	0.263	0.231	0.233	0.233	0.232			
Water Temp. (°C)	19.71	19.65	19.61	19.61	19.57			
Turbidity (NTUs)	>1100	1098	691.1	708.6	661.0			
Dissolved Oxygen (mg/L)	2.43	2.53	2.53	2.52	2.44			
Salinity (ppt)	0.12	0.11	0.11	0.11	0.11			
ORP (mV)	133.2	98.2	83.3	80.8	82.1			

COMMENTS/OBSERVATIONS begin purging at

Purging rate (ml/min) 560

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr)	3-27-17
Field Personnel	Daniel Good
Site Name	UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #	60314964.16
Sample ID	GW DPT 35 - ~~37~~ 34
	___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions	Clear
Air Temperature	70 ° F
Total Well Depth (TWD) =	N/A 1/100 ft
Depth to Ground Water (DGW) =	N/A 1/100 ft
Length of Water Column (LWC) = TWD - DGW =	N/A 1/100 ft
1 Casing Volume (OCV) = LWC x ___ =	N/A gal
3 Casing Volumes =	N/A gal = Standard Evacuation Volume
Method of Sample Evacuation	Purging with a peristaltic pump
Method of Sample Collection	peristaltic pump; reverse flow for VOCs
Total Volume of Water Removed	5.25 gal

Casing Diameter	1 3/8 inches
Casing Material	Stainless Steel
Measuring Point Elevation	Unknown 1/100 ft
Height of Riser (above land surface)	1' 1/100 ft
Land Surface Elevation	Unknown 1/100 ft
Screened Interval	~~3~~4-30 1/100 ft
Dedicated Pump or Bailer	YES ___ NO N/A Type ___
Steel Guard Pipe Around Casing	YES ___ NO N/A
Locking Cap	YES ___ NO N/A
Protective Post/Abutment	YES ___ NO N/A
Well Integrity Satisfactory	YES ___ NO N/A
Yield	LOW ___ MODERATE X HIGH ___
Comments/Observations	1805
Sample Time	1805 QA/QC:
Sample Analytes: VOCs - screening sample	

FIELD ANALYSES

VOLUME PURGED (gallons)		0.75	1.5	2.25	3.0	3.75	4.5	5.25
TIME (Military)	1725	1730	1735	1740	1745	1750	1755	180
Water Level (ft. BTOC)						3.02		
pH (S.U.)	3.71	-0.44	-0.64	1.46	1.31	~~2.02~~	3.13	3.30
Sp. Cond. (mS/cm)	0.051	0.036	0.029	0.023	0.029	0.021	0.019	0.018
Water Temp. (°C)	21.86	21.00	20.89	21.01	20.77	20.46	20.31	20.25
Turbidity (NTUs)	71100	71100	603.4	721.4	619.1	118.1	129.9	112.0
Dissolved Oxygen (mg/L)	2.96	3.47	3.61	3.93	3.82	3.91	4.01	4.12
Salinity (ppt)	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
ORP (mV)	239.3	413.4	424.2	339.0	340.2	333.6	358.7	346.8

COMMENTS/OBSERVATIONS begin purging at

Purging rate (ml/min) 560

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr)	3-27-17
Field Personnel	Daniel Good
Site Name	UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #	60314964.16
Sample ID	GW-DPT - 45 -24
	____ Upgradient X Downgradient ____ Sidegradient ____ Source
Weather Conditions	Clear
Air Temperature	75° ° F
Total Well Depth (TWD) =	24 1/100 ft
Depth to Ground Water (DGW) =	N/A 1/100 ft
Length of Water Column (LWC) = TWD - DGW =	N/A 1/100 ft
1 Casing Volume (OCV) = LWC x ____ =	N/A gal
3 Casing Volumes =	N/A gal = Standard Evacuation Volume
Method of Sample Evacuation	Purging with a peristaltic pump
Method of Sample Collection	peristaltic pump; reverse flow for VOCs
Total Volume of Water Removed	2.4 gal

Casing Diameter	2¼ ~~OD~~ OD ID = ~1 3/8" inches
Casing Material	Stainless Steel
Measuring Point Elevation	Unknown 1/100 ft
Height of Riser (above land surface)	1' 1/100 ft
Land Surface Elevation	Unknown 1/100 ft
Screened Interval	24-20 1/100 ft
Dedicated Pump or Bailer	YES ____ NO N/A ____ Type ____
Steel Guard Pipe Around Casing	YES ____ NO ____ N/A
Locking Cap	YES ____ NO N/A
Protective Post/Abutment	YES ____ NO N/A
Well Integrity Satisfactory	YES ____ NO N/A
Yield	LOW X MODERATE ~~X~~ HIGH ____
Comments/Observations	
Sample Time:	1505 QA/QC:
Sample Analytes: VOCs - screening sample	

FIELD ANALYSES

VOLUME PURGED (gallons)	0	0.4	0.8	1.2	1.6	2.0	2.4	
TIME (Military)	1435	1440	1445	1450	1455	1500	1505	
Water Level (ft. BTOC)								
pH (S.U.)	4.87	3.57	3.27	1.69	2.11	2.13	2.22	
Sp. Cond. (mS/cm)	0.034	0.033	0.031	0.030	0.031	0.030	0.30	
Water Temp. (°C)	22.04	21.44	21.29	21.09	20.51	20.48	20.46	
Turbidity (NTUs)	~~5,1~~ > 1100	> 1100	> 1100	> 1100	> 1100	> 1100	> 1100	
Dissolved Oxygen (mg/L)	5.10	4.58	4.47	4.23	3.97	4.04	4.13	
Salinity (ppt)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
ORP (mV)	91.8	148.8	149.0	237.8	208.1	215.8	206.1	

COMMENTS/OBSERVATIONS begin purging at

Purging rate (ml/min) 300

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr)	3-29-17
Field Personnel	Daniel Good
Site Name	UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #	60314964.16
Sample ID	GW OPT 55-19
Upgradient / Downgradient / Sidegradient / Source	___ / X / ___ / ___
Weather Conditions	65
Air Temperature	Clear ° F
Total Well Depth (TWD) =	19 1/100 ft
Depth to Ground Water (DGW) =	N/A 1/100 ft
Length of Water Column (LWC) = TWD - DGW =	N/A 1/100 ft
1 Casing Volume (OCV) = LWC x ___ =	N/A gal
3 Casing Volumes =	N/A gal = Standard Evacuation Volume
Method of Sample Evacuation	Purging with a peristaltic pump
Method of Sample Collection	peristaltic pump; reverse flow for VOCs
Total Volume of Water Removed	2.8 gal

Casing Diameter	1 3/8 inches
Casing Material	Stainless Steel
Measuring Point Elevation	Unknown 1/100 ft
Height of Riser (above land surface)	1' 1/100 ft
Land Surface Elevation	Unknown 1/100 ft
Screened Interval	19-15 1/100 ft
Dedicated Pump or Bailer	YES ___ NO N/A Type ___
Steel Guard Pipe Around Casing	YES ___ NO N/A
Locking Cap	YES ___ NO N/A
Protective Post/Abutment	YES ___ NO N/A
Well Integrity Satisfactory	YES ___ NO N/A
Yield	LOW X MODERATE ~~X~~ HIGH ___
Comments/Observations	
Sample Time:	10 10 QA/QC:
Sample Analytes: VOCs - screening sample	

FIELD ANALYSES

VOLUME PURGED (gallons)		0.4	0.8	~~0.~~ 1.2	1.6	2.0	2.4	2.8
TIME (Military)	~~0800~~ 935	940	945	950	955	1000	1005	1010
Water Level (ft. BTOC)								
pH (S.U.)	5.04	3.15	3.22	2.95	2.92	2.87	2.91	2.93
Sp. Cond. (mS/cm)	0.052	0.041	0.040	0.040	0.040	0.040	0.040	0.040
Water Temp. (°C)	18.97	19.03	19.12	19.11	19.14	19.16	19.17	19.19
Turbidity (NTUs)	>1000	1100	1100	1070	851.8	772.1	781.6	691.4
Dissolved Oxygen (mg/L)	5.18	2.12	1.02	0.59	0.48	0.45	0.40	0.42
Salinity (ppt)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
ORP (mV)	-11.7	-96.1	-103.2	-72.2	-38.4	-36.4	-35.0	-34.8

COMMENTS/OBSERVATIONS begin purging at

Purging rate (ml/min) 300

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr): 3-29-17
Field Personnel: Daniel Good
Site Name: UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #: 60314964.16
Sample ID: GW DPT 65 24
___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions: Clear
Air Temperature: 60 ° F
Total Well Depth (TWD) = 24 1/100 ft
Depth to Ground Water (DGW) = N/A 1/100 ft
Length of Water Column (LWC) = TWD - DGW = N/A 1/100 ft
1 Casing Volume (OCV) = LWC x ___ = N/A gal
3 Casing Volumes = N/A gal = Standard Evacuation Volume
Method of Sample Evacuation: Purging with a peristaltic pump
Method of Sample Collection: peristaltic pump; reverse flow for VOCs
Total Volume of Water Removed: 5.25 gal

Casing Diameter: 1 3/8 inches
Casing Material: SS Stainless steel
Measuring Point Elevation: N/A 1/100 ft
Height of Riser (above land surface): 1' 1/100 ft
Land Surface Elevation: N/A 1/100 ft
Screened Interval: 24-20 1/100 ft
Dedicated Pump or Bailer YES ___ NO ___ Type N/A
Steel Guard Pipe Around Casing YES ___ NO N/A
Locking Cap YES ___ NO N/A
Protective Post/Abutment YES ___ NO N/A
Well Integrity Satisfactory YES ___ NO N/A
Yield LOW ___ MODERATE √ HIGH ___
Comments/Observations
Sample Time: 0835 QA/QC:
Sample Analytes: VOCs - screening sample

FIELD ANALYSES

VOLUME PURGED (gallons)		0.75	1.5	2.25	3	3.75	4.5	5.25
TIME (Military)	0755	0800	0805	0810	0815	0820	0825	0830
Water Level (ft. BTOC)								
pH (S.U.)	4.65	4.59	4.71	4.80	4.92	5.06	5.17	5.20
Sp. Cond. (mS/cm)	0.255	0.102	0.096	0.103	0.104	0.112	0.117	0.119
Water Temp. (°C)	17.47	19.25	19.33	19.31	19.28	19.24	19.27	19.35
Turbidity (NTUs)	>1100	>1120	>1120	1078	771.3	620.1	672.0	653.7
Dissolved Oxygen (mg/L)	3.86	2.39	2.06	1.86	1.75	1.71	1.76	1.72
Salinity (ppt)	0.12	0.05	0.04	0.05	0.05	0.05	0.05	0.05
ORP (mV)	251.3	93.8	109.0	113.5	118.2	126.5	126.9	126.7

COMMENTS/OBSERVATIONS: begin purging at
Purging rate (ml/min): 560

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr)	3-28-17
Field Personnel	Daniel Good
Site Name	UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #	60314964.16
Sample ID	GW DPT 75 29
	___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions	~~70~~ Clear
Air Temperature	70 ° F
Total Well Depth (TWD) =	29 1/100 ft
Depth to Ground Water (DGW) =	N/A 1/100 ft
Length of Water Column (LWC) = TWD - DGW =	N/A 1/100 ft
1 Casing Volume (OCV) = LWC x ___ =	N/A gal
3 Casing Volumes =	N/A gal = Standard Evacuation Volume
Method of Sample Evacuation	Purging with a peristaltic pump
Method of Sample Collection	peristaltic pump; reverse flow for VOCs
Total Volume of Water Removed	5.25 gal

Casing Diameter	1 3/8			inches
Casing Material	Stainless Steel			
Measuring Point Elevation	Unknown			1/100 ft
Height of Riser (above land surface)	1'			1/100 ft
Land Surface Elevation	Unknown			1/100 ft
Screened Interval	29-25			1/100 ft
Dedicated Pump or Bailer	YES ___	NO ___	N/A ___	Type ___
Steel Guard Pipe Around Casing	YES ___	NO ___	N/A ___	
Locking Cap	YES ___	NO ___	N/A ___	
Protective Post/Abutment	YES ___	NO ___	N/A ___	
Well Integrity Satisfactory	YES ___	NO ___	N/A ___	
Yield	LOW ___	MODERATE X	HIGH ___	

Comments/Observations

Sample Time: 1700 QA/QC:

Sample Analytes: VOCs - screening sample

FIELD ANALYSES

VOLUME PURGED (gallons)		0.75	1.5	2.25	3.0	3.75	4.5	5.25
TIME (Military)	1620	1625	1630	1635	1640	1645	1650	1655
Water Level (ft. BTOC)								
pH (S.U.)	6.77	6.70	6.18	6.48	6.73	6.79	6.90	6.93
Sp. Cond. (mS/cm)	0.262	0.260	0.248	0.259	0.261	0260	0.260	0.258
Water Temp. (°C)	22.09	21.64	21.25	21.64	21.91	22.21	22.23	21.96
Turbidity (NTUs)	>1000	>1100	983.6	>1100	>1100	>1100	>1100	>1100
Dissolved Oxygen (mg/L)	6.97	4.13	2.22	1.26	1.19	1.17	1.16	1.16
Salinity (ppt)	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
ORP (mV)	7.5	33.1	50.7	51.5	40.9	36.3	32.6	32.4

COMMENTS/OBSERVATIONS begin purging at 0.15 Gpm

Purging rate (ml/min) 560

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr)	3-28-17
Field Personnel	Daniel Good
Site Name	UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #	60314964.16
Sample ID	GW DPT 85 19
	___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions	75°F, clear
Air Temperature	75 ° F
Total Well Depth (TWD) =	19 1/100 ft
Depth to Ground Water (DGW) =	N/A 1/100 ft
Length of Water Column (LWC) = TWD - DGW =	N/A 1/100 ft
1 Casing Volume (OCV) = LWC x ___ =	N/A gal
3 Casing Volumes =	N/A gal = Standard Evacuation Volume
Method of Sample Evacuation	Purging with a peristaltic pump
Method of Sample Collection	peristaltic pump; reverse flow for VOCs
Total Volume of Water Removed	5.25 gal

Casing Diameter	1 3/4" inches
Casing Material	Stainless Steel
Measuring Point Elevation	Unknown 1/100 ft
Height of Riser (above land surface)	1' 1/100 ft
Land Surface Elevation	Unknown 1/100 ft
Screened Interval	19-15' 1/100 ft
Dedicated Pump or Bailer	YES ___ NO N/A Type ___
Steel Guard Pipe Around Casing	YES ___ NO N/A
Locking Cap	YES ___ NO N/A
Protective Post/Abutment	YES ___ NO N/A
Well Integrity Satisfactory	YES ___ NO N/A
Yield	LOW ___ MODERATE X HIGH ___
Comments/Observations	
Sample Time: 1505	QA/QC:
Sample Analytes: VOCs - screening sample	

FIELD ANALYSES

VOLUME PURGED (gallons)		0.75	1.5	2.25	3.0	3.75	4.5	5.25
TIME (Military)	1425	1430	1435	1440	1445	1450	1455	1500
Water Level (ft. BTOC)								
pH (S.U.)	5.19	1.56	1.49	1.71	1.78	2.35	2.26	2.34
Sp. Cond. (mS/cm)	0.037	0.036	0.036	0.035	0.035	0.034	0.034	0.033
Water Temp. (°C)	23.51	21.27	21.29	21.14	20.99	20.93	20.91	21.02
Turbidity (NTUs)	>1100	170.2	198.8	176.5	161.2	164.8	~~178.5~~ 178.3	171.5
Dissolved Oxygen (mg/L)	6.81	5.72	5.51	5.0	3.19	2.91	2.92	2.93
Salinity (ppt)	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01
ORP (mV)	48.4	283.4	292.6	289.6	291.5	281.4	281.8	273.7

COMMENTS/OBSERVATIONS begin purging at

Purging rate (ml/min) 560

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr)	3-31-17
Field Personnel	Daniel Good
Site Name	UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #	60314964.16
Sample ID	GW DPT 95-29
	___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions	Clear
Air Temperature	70 °F
Total Well Depth (TWD) =	29' 1/100 ft
Depth to Ground Water (DGW) =	N/A 1/100 ft
Length of Water Column (LWC) = TWD - DGW =	N/A 1/100 ft
1 Casing Volume (OCV) = LWC x ___ =	N/A gal
3 Casing Volumes =	N/A gal = Standard Evacuation Volume
Method of Sample Evacuation	Purging with a peristaltic pump
Method of Sample Collection	peristaltic pump; reverse flow for VOCs
Total Volume of Water Removed	4.5 gal

Casing Diameter	1 3/4 inches
Casing Material	Stainless Steel
Measuring Point Elevation	Unknown 1/100 ft
Height of Riser (above land surface)	1' 1/100 ft
Land Surface Elevation	Unknown 1/100 ft
Screened Interval	29-24 1/100 ft
Dedicated Pump or Bailer	YES ___ NO ___ N/A ___ Type ___
Steel Guard Pipe Around Casing	YES ___ NO ___ N/A
Locking Cap	YES ___ NO ___ N/A
Protective Post/Abutment	YES ___ NO ___ N/A
Well Integrity Satisfactory	YES ___ NO ___ N/A
Yield	LOW ___ MODERATE X HIGH ___
Comments/Observations	
Sample Time:	1310 QA/QC:
Sample Analytes: VOCs - screening sample	

FIELD ANALYSES

VOLUME PURGED (gallons)		0.75	1.5	2.25	3.0	3.75	4.5	
TIME (Military)	1235	1240	1245	1250	1255	1300	1305	~~1310~~
Water Level (ft. BTOC)								
pH (S.U.)	7.02	6.59	6.41	6.40	6.17	6.22	6.28	
Sp. Cond. (mS/cm)	0.220	0.223	0.212	0.210	0.176	0.178	0.179	
Water Temp. (°C)	24.83	21.05	20.81	20.85	20.63	20.89	21.08	
Turbidity (NTUs)	71100	71100	71100	71100	742.6	893.5	71100	
Dissolved Oxygen (mg/L)	3.46	2.54	2.64	2.61	2.11	~~2.23~~	2.20	
Salinity (ppt)	0.10	0.11	0.10	0.10	0.08	0.08	0.08	
ORP (mV)	99.1	108.2	120.7	121.6	128.5	125.8	126.4	

COMMENTS/OBSERVATIONS begin purging at

Purging rate (ml/min) 560

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr)	4-4-17
Field Personnel	Daniel Good
Site Name	UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #	60314964.16
Sample ID	GW DPT 10 45
	___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions	Clear
Air Temperature	80°F ° F
Total Well Depth (TWD) =	45 1/100 ft
Depth to Ground Water (DGW) =	9.04 1/100 ft
Length of Water Column (LWC) = TWD - DGW =	35.96 1/100 ft
1 Casing Volume (OCV) = LWC x .16 =	5.75 gal
3 Casing Volumes =	17.26 gal = Standard Evacuation Volume
Method of Sample Evacuation	~~Purging with a peristaltic pump~~ Typhoon pump
Method of Sample Collection	~~peristaltic pump; reverse flow for VOCs~~
Total Volume of Water Removed	Whale Pump / Poly Tubing 7.5 gal

Casing Diameter	2" inches
Casing Material	Stainless Steel
Measuring Point Elevation	Unknown 1/100 ft
Height of Riser (above land surface)	2' 1/100 ft
Land Surface Elevation	Unknown 1/100 ft
Screened Interval	40-45' 1/100 ft
Dedicated Pump or Bailer	YES ___ NO N/A Type ___
Steel Guard Pipe Around Casing	YES ___ NO N/A
Locking Cap	YES ___ NO N/A
Protective Post/Abutment	YES ___ NO N/A
Well Integrity Satisfactory	YES ___ NO N/A
Yield	LOW ___ MODERATE X HIGH ___
Comments/Observations	
Sample Time: 1610	QA/QC:
Sample Analytes: VOCs - screening sample	

FIELD ANALYSES

VOLUME PURGED (gallons)		~2.5	~5	~7.5				
TIME (Military)	15 45	1550	1555	1600				
Water Level (ft. BTOC)	13.17	18.74	19.89	21.05				
pH (S.U.)	7.66	7.32	7.36	7.49				
Sp. Cond. (mS/cm)	0.262	0.263	0.263	0.261				
Water Temp. (°C)	21.93	22.02	22.07	22.11				
Turbidity (NTUs)	>1000	>1000	>1000	>1000				
Dissolved Oxygen (mg/L)	6.19	2.56	2.54	2.51				
Salinity (ppt)	0.13	0.12	0.12	0.12				
ORP (mV)	116.9	100.0	92.8	89.3				

COMMENTS/OBSERVATIONS begin purging at

Purging rate (ml/min) 1800

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr)	4-5-17
Field Personnel	Daniel Good
Site Name	UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #	60314964.16
Sample ID	GW DPT 10 60
	___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions	Cloudy
Air Temperature	65 °F
Total Well Depth (TWD) =	60' 1/100 ft
Depth to Ground Water (DGW) =	9.42 bgs 1/100 ft
Length of Water Column (LWC) = TWD - DGW =	50.58 1/100 ft
1 Casing Volume (OCV) = LWC x 0.16 =	8.09 gal
3 Casing Volumes =	24.27 gal = Standard Evacuation Volume
Method of Sample Evacuation	~~Purging with a peristaltic pump~~ Whale Pump
Method of Sample Collection	~~peristaltic pump, reverse flow for VOCs~~
Total Volume of Water Removed	poly tubing 25.5 gal

Switch Pumps @ 805

Casing Diameter	2" inches
Casing Material	Stainless Steel
Measuring Point Elevation	Unknown 1/100 ft
Height of Riser (above land surface)	3' 1/100 ft
Land Surface Elevation	Unknown 1/100 ft
Screened Interval	60-55 1/100 ft
Dedicated Pump or Bailer	YES ___ NO N/A Type ___
Steel Guard Pipe Around Casing	YES ___ NO N/A
Locking Cap	YES ___ NO N/A
Protective Post/Abutment	YES ___ NO N/A
Well Integrity Satisfactory	YES ___ NO N/A
Yield	LOW X MODERATE ___ HIGH ___
Comments/Observations	
Sample Time: 0850	QA/QC:
Sample Analytes: VOCs - screening sample	

FIELD ANALYSES

VOLUME PURGED (gallons)		0.5	5.5	10.5	15.5	20.5	25.5	
TIME (Military)	0800	805	0820	0825	0830	835	0840	
Water Level (ft. BTOC)	21.57	21.33	~~25.3~~ 25.41	28.62	31.13	36.46	39.88	
pH (S.U.)	7.11	6.95	6.94	7.08	7.12	7.19	7.18	
Sp. Cond. (mS/cm)	0.363	0.405	0.392	0.391	0.391	0.390	0.390	
Water Temp. (°C)	17.45	17.53	19.47	20.26	20.38	20.55	20.59	
Turbidity (NTUs)	>1100	>1100	>1100	>1100	>1100	>1100	>1100	
Dissolved Oxygen (mg/L)	5.94	1.05	0.55	0.54	0.54	0.52	0.50	
Salinity (ppt)	0.18	0.20	0.19	0.18	0.18	0.17	0.18	
ORP (mV)	57.9	-177.8	-278.3	-307.6	-117.9	-123.5	-130.2	

COMMENTS/OBSERVATIONS begin purging at 378 / 3785

Purging rate (ml/min)

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr): 4-6-17
Field Personnel: Daniel Good
Site Name: UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #: 60314964.16
Sample ID: GW DPT 20-50
___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions: Overcast
Air Temperature: 60 ° F
Total Well Depth (TWD) = 50 1/100 ft
Depth to Ground Water (DGW) = 9.61 1/100 ft
Length of Water Column (LWC) = TWD - DGW = 40.39 1/100 ft
1 Casing Volume (OCV) = LWC x 0.16 = 1.61 gal
3 Casing Volumes = 14.39 gal = Standard Evacuation Volume
Method of Sample Evacuation: ~~Purging with a peristaltic pump~~ submersible pump
Method of Sample Collection: ~~peristaltic pump; reverse flow for VOCs~~ Poly tube
Total Volume of Water Removed: 10 gal

Casing Diameter: 2" inches
Casing Material: steel
Measuring Point Elevation: N/A 1/100 ft
Height of Riser (above land surface): 2' 1/100 ft
Land Surface Elevation: N/A 1/100 ft
Screened Interval: 50-45 1/100 ft
Dedicated Pump or Bailer: YES ___ NO ___ Type N/A
Steel Guard Pipe Around Casing: YES ___ NO N/A
Locking Cap: YES ___ NO N/A
Protective Post/Abutment: YES ___ NO N/A
Well Integrity Satisfactory: YES ___ NO N/A
Yield: LOW X MODERATE ___ HIGH ___
Comments/Observations
Sample Time: 900 QA/QC:
Sample Analytes: VOCs - screening sample

FIELD ANALYSES

VOLUME PURGED (gallons)	Initial	2	4	6	8	10		
TIME (Military)	0830	0835	0840	0845	0850	0855		
Water Level (ft. BTOC)		42.33	43.57	43.21	43.69	44.00		
pH (S.U.)	6.35	6.52	6.68	6.75	6.71	6.72		
Sp. Cond. (mS/cm)	0.428	0.423	0.422	0.422	0.421	0.421		
Water Temp. (°C)	19.34	19.45	19.21	19.16	19.23	19.19		
Turbidity (NTUs)	>1100	>1100	>1100	710.1	672.2	616.8		
Dissolved Oxygen (mg/L)	0.25	0.23	0.22	0.22	0.21	0.22		
Salinity (ppt)	0.21	0.20	0.20	0.19	0.19	0.19		
ORP (mV)	-277.8	-280.2	-107.4	38.9	35.8	35.1		

COMMENTS/OBSERVATIONS: begin purging at
Purging rate (ml/min) 1500

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr): 4-6-17
Field Personnel: Daniel Good
Site Name: UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #: 60314964.16
Sample ID: GW DPT 2D 64
___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions: Overcast
Air Temperature: 60 ° F
Total Well Depth (TWD) = 64 1/100 ft
Depth to Ground Water (DGW) = 8.13 1/100 ft
Length of Water Column (LWC) = TWD - DGW = 55.87 1/100 ft
1 Casing Volume (OCV) = LWC x ___ = 8.94 gal
3 Casing Volumes = 26.81 gal = Standard Evacuation Volume
Method of Sample Evacuation: ~~Purging with a peristaltic pump~~ Whale Pump
Method of Sample Collection: ~~peristaltic pump; reverse flow for VOCs~~
Total Volume of Water Removed: Poly tubing 21 gal

Casing Diameter: 2" inches
Casing Material: Stainless Steel
Measuring Point Elevation: Unknown 1/100 ft
Height of Riser (above land surface): 1' 1/100 ft
Land Surface Elevation: Unknown 1/100 ft
Screened Interval: 64-59 1/100 ft
Dedicated Pump or Bailer: YES ___ NO N/A Type ___
Steel Guard Pipe Around Casing: YES ___ NO N/A
Locking Cap: YES ___ NO N/A
Protective Post/Abutment: YES ___ NO N/A
Well Integrity Satisfactory: YES ___ NO N/A
Yield: LOW X MODERATE ___ HIGH ___
Comments/Observations
Sample Time: 12:10 QA/QC:
Sample Analytes: VOCs - screening sample

FIELD ANALYSES

VOLUME PURGED (gallons)		10		~~15~~ 14		~~22~~ 18	21	~~28~~ 22
TIME (Military)	1130	Dry	1140	Dry	1150	DRY	1200	Dry
Water Level (ft. BTOC)								
pH (S.U.)	7.21	Recharging	7.28	Recharging	7.35	Recharging	7.39	
Sp. Cond. (mS/cm)	0.395		0.391		0.398		0.401	
Water Temp. (°C)	21.10		21.55		21.59		21.63	
Turbidity (NTUs)	71100		71100		71100		71100	
Dissolved Oxygen (mg/L)	0.36		0.44		0.49		0.47	
Salinity (ppt)	0.19		0.18		0.17		0.17	
ORP (mV)	-29.9		-35.19		-37.7		-43.7	

COMMENTS/OBSERVATIONS: begin purging at
Purging rate (ml/min) 2500

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr): 4-4-17
Field Personnel: Daniel Good
Site Name: UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #: 60314964.16
Sample ID: GW DPT 42-60 ~~41~~
___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions:
Air Temperature: ~~GW~~ 65 °F
Total Well Depth (TWD) = 1/100 ft
Depth to Ground Water (DGW) = 7.98 1/100 ft
Length of Water Column (LWC) = TWD - DGW = 52.02 1/100 ft
1 Casing Volume (OCV) = LWC x 0.16 = 8.32 gal
3 Casing Volumes = 24.96 gal = Standard Evacuation Volume
Method of Sample Evacuation: ~~Purging with a peristaltic pump~~ Whale Pump
Method of Sample Collection: ~~peristaltic pump; reverse flow for VOCs~~
Total Volume of Water Removed: poly tubing 20 gal

Casing Diameter: 2" inches
Casing Material: steel
Measuring Point Elevation: N/A 1/100 ft
Height of Riser (above land surface): 2' 1/100 ft
Land Surface Elevation: N/A 1/100 ft
Screened Interval: 55-60 1/100 ft
Dedicated Pump or Bailer: YES ___ NO X Type ___
Steel Guard Pipe Around Casing: YES ___ NO X
Locking Cap: YES ___ NO X
Protective Post/Abutment: YES ___ NO X
Well Integrity Satisfactory: YES ___ NO N/A
Yield: LOW ___ MODERATE ___ HIGH √
Comments/Observations
Sample Time: 0935 QA/QC:
Sample Analytes: VOCs - screening sample

FIELD ANALYSES

VOLUME PURGED (gallons)		5	10	15	20			
TIME (Military)	0910	0915	0920	0925	0930			
Water Level (ft. BTOC)	13.61	13.42	13.01	12.81	12.72			
pH (S.U.)	7.09	7.20	7.29	7.31	7.36			
Sp. Cond. (mS/cm)	0.384	0.287	0.250	0.240	0.238			
Water Temp. (°C)	18.51	18.90	18.95	18.97	18.94			
Turbidity (NTUs)	7100	638.6	617.5	641.2	604.7			
Dissolved Oxygen (mg/L)	1.75	3.51	4.75	4.92	5.03			
Salinity (ppt)	0.18	0.14	0.12	0.11	0.11			
ORP (mV)	114.4	37.8	52.252	56.8	60.1			

COMMENTS/OBSERVATIONS: begin purging at
Purging rate (ml/min): 3785

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr): 03/28/2017
Field Personnel: Ron Pendley
Site Name: UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #: 60314964.16
Sample ID: GW-DPT-05D-52'
___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions: PC mild
Air Temperature: 64 ° F
Total Well Depth (TWD) = 52.0 1/100 ft
Depth to Ground Water (DGW) = 7.6 1/100 ft
Length of Water Column (LWC) = TWD - DGW = 44.4 1/100 ft
1 Casing Volume (OCV) = LWC x 0.163 = 7.2 gal
3 Casing Volumes = 21.6 gal = Standard Evacuation Volume
Method of Sample Evacuation: Purging with a ~~peristaltic~~ submersible pump
Method of Sample Collection: peristaltic pump; reverse flow for VOCs
Total Volume of Water Removed ~23 gal

Casing Diameter: 2 inches
Casing Material: SS
Measuring Point Elevation: 1/100 ft
Height of Riser (above land surface): 1/100 ft
Land Surface Elevation: 1/100 ft
Screened Interval: 47' - 52' 1/100 ft
Dedicated Pump or Bailer YES ___ NO ___ Type ___
Steel Guard Pipe Around Casing YES ___ NO ___
Locking Cap YES ___ NO ___
Protective Post/Abutment YES ___ NO ___
Well Integrity Satisfactory YES ___ NO ___
Yield LOW ___ MODERATI ___ HIGH X
Comments/Observations
Sample Time: QA/QC:
Sample Analytes: VOCs - screening sample Sample Time 0850

FIELD ANALYSES

	initial							
VOLUME PURGED (gallons)	~~0823~~	12	13.6	17.6	19.2			
TIME (Military)	0823	0838	0840	0845	0847			
Water Level (ft. BTOC)	7.6	8.53	9.27	10.21	10.21			
pH (S.U.)	7.70	6.96	6.94	6.91	6.89			
Sp. Cond. (mS/cm)	0.237	0.236	0.238	0.242	0.251			
Water Temp. (°C)	19.11	19.17	19.18	19.18	19.18			
Turbidity (NTUs)	156.6	182.1	127.6	89.62	80.53			
Dissolved Oxygen (mg/L)	4.15	2.98	3.02	3.10	3.39			
Salinity (ppt)	0.11	0.11	0.11	0.11	0.12			
ORP (mV)	189.0	82.8	77.5	71.8	68.1			

COMMENTS/OBSERVATIONS begin purging at 0821
Purging rate (ml/min) 500 mL/10 sec = 3000 mL/min = 0.8 gal/min

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr): 03/28/17
Field Personnel: Ron Paulling
Site Name: UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #: 60314964.16
Sample ID: GW-DPT-6D-61
___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions: PC mild
Air Temperature: 81 ° F
Total Well Depth (TWD) = 61.0 1/100 ft
Depth to Ground Water (DGW) = 7.9 1/100 ft
Length of Water Column (LWC) = TWD - DGW = 53.1 1/100 ft
1 Casing Volume (OCV) = LWC x ~~8.7 1.163~~ = 8.7 gal
3 Casing Volumes = 26.1 gal = Standard Evacuation Volume
Method of Sample Evacuatior: Purging with a ~~peristaltic~~ submersible pump
Method of Sample Collection: ~~peristaltic pump; reverse flow for VOCs~~
Total Volume of Water Removed: ~35 gal

Casing Diameter: 2" inches
Casing Material: steel stainless
Measuring Point Elevation: 1/100 ft
Height of Riser (above land surface): 1/100 ft
Land Surface Elevation: 1/100 ft
Screened Interval: 56' - 61' 1/100 ft
Dedicated Pump or Bailer: YES ___ NO ___ Type ___
Steel Guard Pipe Around Casing: YES ___ NO ___
Locking Cap: YES ___ NO ___
Protective Post/Abutment: YES ___ NO ___
Well Integrity Satisfactory: YES ___ NO ___
Yield: LOW ___ MODERATI ___ HIGH X
Comments/Observations
Sample Time: 1640 QA/QC:
Sample Analytes: VOCs - screening sample

FIELD ANALYSES

VOLUME PURGED (gallons)	Initial	8	16	24	32			
TIME (Military)	1555	1605	PR: ~~1610~~ 1615	1625	1635			
Water Level (ft. BTOC)	7.9	14.40	14.40	14.48	14.65			
pH (S.U.)	7.68	7.56	7.35	7.24	7.19			
Sp. Cond. (mS/cm)	0.222	0.239	0.245	0.247	0.247			
Water Temp. (°C)	21.15	20.00	19.86	19.60	19.51			
Turbidity (NTUs)	>1000	1100	452.8	1100	1100			
Dissolved Oxygen (mg/L)	2.68	3.41	3.59	3.76	3.84			
Salinity (ppt)	0.10	0.11	0.12	0.12	0.12			
ORP (mV)	15.8	30.1	10.4	-29.7	-42.4			

COMMENTS/OBSERVATIONS: begin purging at 1555
Purging rate (ml/min): 500 mL/10 sec = 0.8 GPM

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr): 03/29/2017
Field Personnel: Ron Paulling
Site Name: UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #: 60314964.16
Sample ID: GW-DPT-TD-62
___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions: Clear mild
Air Temperature: ___ ° F
Total Well Depth (TWD) = 62.0 1/100 ft
Depth to Ground Water (DGW) = 13.5' 1/100 ft
Length of Water Column (LWC) = TWD - DGW = 48.5 1/100 ft
1 Casing Volume (OCV) = LWC x 0.163 = 7.9 gal
3 Casing Volumes = ~~8.0~~ 24.0 gal = Standard Evacuation Volume
Method of Sample Evacuatior: Purging with a ~~peristaltic pump~~ submersible
Method of Sample Collection: ~~peristaltic pump; reverse flow for VOCs~~
Total Volume of Water Removed: ~5L gal

Casing Diameter: 2 inches
Casing Material: SS
Measuring Point Elevation: ___ 1/100 ft
Height of Riser (above land surface): ___ 1/100 ft
Land Surface Elevation: ___ 1/100 ft
Screened Interval: 57'-62' 1/100 ft
Dedicated Pump or Bailer: YES ___ NO ___ Type ___
Steel Guard Pipe Around Casing: YES ___ NO ___
Locking Cap: YES ___ NO ___
Protective Post/Abutment: YES ___ NO ___
Well Integrity Satisfactory: YES ___ NO ___
Yield: LOW ___ MODERATI ___ HIGH X
Comments/Observations
Sample Time: 1210 QA/QC:
Sample Analytes: VOCs - screening sample

FIELD ANALYSES

VOLUME PURGED (gallons)	Initial	8	16	24	32	48		
TIME (Military)	1100	1110	1120	1130	1140	1148		
Water Level (ft. BTOC)	13.50	13.62	13.61	13.58	13.58	13.59		
pH (S.U.)	7.62	7.59	7.58	7.56	7.55	7.54		
Sp. Cond. (mS/cm)	0.237	0.238	0.239	0.242	0.246	0.245		
Water Temp. (°C)	18.98	18.93	18.91	18.91	18.90	18.91		
Turbidity (NTUs)	+1000	+1000	918.1	+1000	1100	854.6		
Dissolved Oxygen (mg/L)	5.67	5.31	5.29	5.27	5.04	5.12		
Salinity (ppt)	0.11	0.11	0.11	0.12	0.12	0.12		
ORP (mV)	131.6	176.9	230.8	256.2	187.2	182.4		

COMMENTS/OBSERVATIONS: begin purging at
Purging rate (ml/min): 500 mL/10 sec = 0.8 GPM

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr): 03/29/17
Field Personnel: KM Paulling
Site Name: UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #: 60314964.16
Sample ID: GW-DPT-8D-62
__ Upgradient X Downgradient __ Sidegradient __ Source
Weather Conditions: CL mild, no wind
Air Temperature: 82 ° F
Total Well Depth (TWD) = 62.0 1/100 ft
Depth to Ground Water (DGW) = 11.10 1/100 ft
Length of Water Column (LWC) = TWD - DGW = 50.9 1/100 ft
1 Casing Volume (OCV) = LWC x 0.163 = 8.3 gal
3 Casing Volumes = 24.9 gal = Standard Evacuation Volume
Method of Sample Evacuatior: Purging with a ~~peristaltic~~ submersible pump
Method of Sample Collection: ~~peristaltic pump; reverse flow for VOCs~~
Total Volume of Water Removed: 24 gal

Casing Diameter: 2" inches
Casing Material: SS
Measuring Point Elevation: Ground surface 1/100 ft
Height of Riser (above land surface): 1/100 ft
Land Surface Elevation: 1/100 ft
Screened Interval: 57' - 62' 1/100 ft
Dedicated Pump or Bailer YES __ NO __ Type __
Steel Guard Pipe Around Casing YES __ NO __
Locking Cap YES __ NO __
Protective Post/Abutment YES __ NO __
Well Integrity Satisfactory YES __ NO __
Yield LOW __ MODERATI __ HIGH X
Comments/Observations
Sample Time: 1735 QA/QC:
Sample Analytes: VOCs - screening sample

FIELD ANALYSES

VOLUME PURGED (gallons)	Initial	8.0	16.0	24.0				
TIME (Military)	1700	1710	1720	1730				
Water Level (ft. BTOC)	11.10	11.11	10.96	10.95				
pH (S.U.)	7.71	7.66	7.65	7.62				
Sp. Cond. (mS/cm)	0.222	0.232	0.238	0.241				
Water Temp. (°C)	20.77	20.24	19.95	19.85				
Turbidity (NTUs)	+1000	+1000	772.2	+1100				
Dissolved Oxygen (mg/L)	6.01	3.80	3.74	3.79				
Salinity (ppt)	0.11	0.11	0.11	0.11				
ORP (mV)	395.7	88.8	-1.2	-35.8				

COMMENTS/OBSERVATIONS: begin purging at
Purging rate (ml/min): 500 mL / 10 sec = 0.8 GPM

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr): 3/30/17
Field Personnel: C. Tiddeth
Site Name: UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #: 60314964.16
Sample ID: GW-DPT-9D-47
___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions: Sunny, warm
Air Temperature: 80 ° F
Total Well Depth (TWD) = 47 bgs = 51 TOC 1/100 ft
Depth to Ground Water (DGW) = 8.26 TOC 1/100 ft
Length of Water Column (LWC) = TWD - DGW = 42.74 1/100 ft
1 Casing Volume (OCV) = LWC x 0.163 = 6.97 gal
3 Casing Volumes = 20.9 gal = Standard Evacuation Volume
Method of Sample Evacuation: Purging with a ~~peristaltic~~ submersible pump
Method of Sample Collection: ~~peristaltic pump; reverse flow for VOCs~~
Total Volume of Water Removed: ~~14.12~~ 17.65 gal

Casing Diameter: 2 inches
Casing Material: SS
Measuring Point Elevation: 1/100 ft
Height of Riser (above land surface): 1/100 ft
Land Surface Elevation: 1/100 ft
Screened Interval: 42'-47 1/100 ft
Dedicated Pump or Bailer YES ___ NO ___ Type ___
Steel Guard Pipe Around Casing YES ___ NO ___
Locking Cap YES ___ NO ___
Protective Post/Abutment YES ___ NO ___
Well Integrity Satisfactory YES ___ NO ___
Yield LOW ___ MODERATI ___ HIGH ___
Comments/Observations
Sample Time: 1540 QA/QC:
Sample Analytes: VOCs - screening sample

FIELD ANALYSES

VOLUME PURGED (gallons)	Initial	3.53	7.06	10.59	14.12			
TIME (Military)	1512	1519	1525	1530	1535			
Water Level (ft. BTOC)	8.26	~~8.23~~ 8.23	8.23	8.23	8.21			
pH (S.U.)	7.83	7.12	7.03	6.89	6.45			
Sp. Cond. (mS/cm)	0.219	0.227	0.230	0.231	0.234			
Water Temp. (°C)	21.04	20.65	20.44	20.32	20.20			
Turbidity (NTUs)	192.7	711.0	>1100	821.5	684.8			
Dissolved Oxygen (mg/L)	2.97	3.77	3.91	3.49	3.23			
Salinity (ppt)								
ORP (mV)	132.4	110.3	95.4	91.2	88.7			

COMMENTS/OBSERVATIONS begin purging at
Purging rate (ml/min) 16.9 oz / 11.21 sec = 0.1320 gal / 0.1868 min = 0.71 gpm

16.9 oz / 11.21 sec

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr): 3/30/17
Field Personnel: C. Sudderth
Site Name: UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #: 60314964.16
Sample ID: GW-DPT-9D-60
__ Upgradient X Downgradient __ Sidegradient __ Source
Weather Conditions: Sunny, warm
Air Temperature: 80° F
Total Well Depth (TWD) = 60' bgs = 64' TOC 1/100 ft
Depth to Ground Water (DGW) = 8.20 1/100 ft
Length of Water Column (LWC) = TWD - DGW = 55.8 1/100 ft
1 Casing Volume (OCV) = LWC x 0.163 = 9.1 gal
3 Casing Volumes = 27.3 gal = Standard Evacuation Volume
Method of Sample Evacuation: Purging with a ~~peristaltic~~ submersible pump
Method of Sample Collection: ~~peristaltic pump; reverse flow for VOCs~~
Total Volume of Water Removed: 21.3 gal

Casing Diameter: 2 inches
Casing Material: SS
Measuring Point Elevation: 1/100 ft
Height of Riser (above land surface): 1/100 ft
Land Surface Elevation: 1/100 ft
Screened Interval: 56'-60' 1/100 ft
Dedicated Pump or Bailer: YES __ NO __ Type __
Steel Guard Pipe Around Casing: YES __ NO __
Locking Cap: YES __ NO __
Protective Post/Abutment: YES __ NO __
Well Integrity Satisfactory: YES __ NO __
Yield: LOW __ MODERATE __ HIGH __
Comments/Observations
Sample Time: 1815 QA/QC:
Sample Analytes: VOCs - screening sample

FIELD ANALYSES

VOLUME PURGED (gallons)	Initial	3.55	7.1	10.65	14.2	17.75		
TIME (Military)	1745	1750	1755	1800	1805	1810		
Water Level (ft. BTOC)	8.25	8.20	~~8.00~~ 8.20	8.20	8.20	8.20		
pH (S.U.)	7.98	7.72	7.70	7.70	7.67	7.66		
Sp. Cond. (mS/cm)	0.178	0.193	0.197	0.199	0.201	0.204		
Water Temp. (°C)	21.20	20.80	20.78	20.76	20.68	20.65		
Turbidity (NTUs)	945.1	>1,000	>1,100	>1,100	>1,100	918.5		
Dissolved Oxygen (mg/L)	3.80	3.29	3.24	3.26	3.22	3.20		
Salinity (ppt)								
ORP (mV)	62.0	63.0	49.1	46.5	46.8	45.7		

COMMENTS/OBSERVATIONS: begin purging at
Purging rate (ml/min) 16.9 OZ/11.21 sec = 0.71 gpm

16.9 OZ/11.21 sec

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr)	3/31/17
Field Personnel	C. Suddeth
Site Name	UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #	60314964.16
Sample ID	GW-DPT-10D-47
	___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions	Sunny, warm
Air Temperature	80 ° F
Total Well Depth (TWD) =	47' bgs = 51' TOC 1/100 ft
Depth to Ground Water (DGW) =	9.33 1/100 ft
Length of Water Column (LWC) = TWD - DGW =	41.67 1/100 ft
1 Casing Volume (OCV) = LWC x	0.163 = 6.79 gal
3 Casing Volumes =	gal = Standard Evacuation Volume
Method of Sample Evacuation	Purging with a ~~peristaltic~~ submersible pump
Method of Sample Collection	~~peristaltic pump; reverse flow for VOCs~~
Total Volume of Water Removed	16.8 gal

Casing Diameter	2 inches
Casing Material	SS
Measuring Point Elevation	1/100 ft
Height of Riser (above land surface)	1/100 ft
Land Surface Elevation	1/100 ft
Screened Interval	43-47' 1/100 ft
Dedicated Pump or Bailer	YES ___ NO ___ Type ___
Steel Guard Pipe Around Casing	YES ___ NO ___
Locking Cap	YES ___ NO ___
Protective Post/Abutment	YES ___ NO ___
Well Integrity Satisfactory	YES ___ NO ___
Yield	LOW ___ MODERATE ___ HIGH ___
Comments/Observations	
Sample Time: 1130	QA/QC:
Sample Analytes: VOCs - screening sample	

FIELD ANALYSES

VOLUME PURGED (gallons)	Initial	3.36	6.72	10.08	13.44			
TIME (Military)	1105	1110	1115	1120	1125			
Water Level (ft. BTOC)	9.33							
pH (S.U.)	7.84	7.67	7.61	7.60	7.60			
Sp. Cond. (mS/cm)	0.243	0.256	0.266	0.271	0.270			
Water Temp. (°C)	21.27	20.13	20.05	19.83	19.77			
Turbidity (NTUs)	>1,100	>1,100	774.1	>1,100	521.4			
Dissolved Oxygen (mg/L)	60.3	4.97	4.80	4.68				
Salinity (ppt)								
ORP (mV)	165.0	145.7	134.9	108.7	85.4			

COMMENTS/OBSERVATIONS begin purging at

Purging rate (ml/min) 16.9 OZ / 11.79 sec = 0.1320 gal / 0.1965 = 0.67 gpm

16.9 OZ / 11.79 SEC

AECOM

FIELD DATA LOG FOR GROUNDWATER SAMPLING

Date (mo/day/yr)	3/31/17
Field Personnel	C. Sudderth
Site Name	UTC Delavan Spray Technologies Site, Bamberg, SC
AECOM Job #	60314964.16
Sample ID	GW-DPT-10D-56
	___ Upgradient X Downgradient ___ Sidegradient ___ Source
Weather Conditions	Sunny, warm
Air Temperature	80 ° F
Total Well Depth (TWD) =	56' bgs = 60' TOC 1/100 ft
Depth to Ground Water (DGW) =	9.36 1/100 ft
Length of Water Column (LWC) = TWD - DGW =	50.64 1/100 ft
1 Casing Volume (OCV) = LWC x 0.163 =	8.25 gal
3 Casing Volumes =	24.8 gal = Standard Evacuation Volume
Method of Sample Evacuation	Purging with a ~~peristaltic~~ submersible pump
Method of Sample Collection	~~peristaltic pump; reverse flow for VOCs~~
Total Volume of Water Removed	15.2 gal

Casing Diameter	2 inches
Casing Material	SS
Measuring Point Elevation	1/100 ft
Height of Riser (above land surface)	1/100 ft
Land Surface Elevation	1/100 ft
Screened Interval	52-56' 1/100 ft
Dedicated Pump or Bailer	YES ___ NO ___ Type ___
Steel Guard Pipe Around Casing	YES ___ NO ___
Locking Cap	YES ___ NO ___
Protective Post/Abutment	YES ___ NO ___
Well Integrity Satisfactory	YES ___ NO ___
Yield	LOW ___ MODERATE ___ HIGH ___
Comments/Observations	
Sample Time: 1400	QA/QC:
Sample Analytes: VOCs - screening sample	

FIELD ANALYSES

VOLUME PURGED (gallons)	Initial	3.03	6.06	9.09	12.12			
TIME (Military)	1335	1340	1345	1350	1355			
Water Level (ft. BTOC)	9.36	9.34	9.32	9.32	9.32			
pH (S.U.)	7.97	7.83	7.74	7.72	7.71			
Sp. Cond. (mS/cm)	0.223	0.246	0.260	0.264	0.267			
Water Temp. (°C)	21.35	20.76	20.54	20.46	20.53			
Turbidity (NTUs)	>1,100	771	>1,100	>1,100	>1,100			
Dissolved Oxygen (mg/L)	4.53	3.90	4.57	4.55	4.97			
Salinity (ppt)								
ORP (mV)	48.1	29.6	-14.0	-3.9	-41.0			

COMMENTS/OBSERVATIONS begin purging at

Purging rate (ml/min) 16.9 oz / 13.05 sec = 0.61 gpm

16.9 oz / 13.05 sec

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Chain of Custody Record

Number 70204

Client AECOM	**Report to Contact** Leslee Alexander	**Telephone No. / E-mail** 864 234 2282 leslee.alexander@aecom.com
Address 10 Patewood Drive Bldg 6, Ste. 500	**Sampler's Signature** X	**Analysis (Attach list if more space is needed)**
City Greenville **State** SC **Zip Code** 29615	**Printed Name** Daniel R. Gwaltney	
Project Name UTC Delavan, GW Delineation		
Project No. 60314964.16	**P.O. No.** 87223	

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	G=Grab C=Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	5035 Kit	VOCs 8260B	Remarks / Cooler I.D.
GW DPT 45 24	3-27-17	1505	G	✓						✓			✓	Report PCE
GW DPT 35 34	3-27	1805												ONLY
GW DPT 25 29	3-28-17	0905												24 HR TAT
GW DPT 15 29	3-28	1030												

Laboratory Lot Number

Turn Around Time Required (Prior lab approval required for expedited TAT.)
☐ Standard ☑ Rush (Specify) 24 HR TAT

Sample Disposal
☐ Return to Client ☑ Disposal by Lab

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by Daniel R. Gwaltney	3-27-17	1335	1. Received by Ron Pauling	3-27-17	1335
2. Relinquished by Ron Pauling	3/28/17	1535	2. Received by	3/28/17	300
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by	Date	Time	4. Laboratory received by	Date	Time

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack

Receipt Temp._____ °C

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Chain of Custody Record

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Number 70208

Client: AECOM	Report to Contact: Leslee Alexander	Telephone No. / E-mail: 864-234-2282 leslee.alexander@aecom.com	Quote No.
Address: 10 Patewood Drive Bldg 6 STE 500	Sampler's Signature: X [signature]	Analysis (Attach list if more space is needed)	Page 1 of 1
City: Greenville / State: SC / Zip Code: 29615	Printed Name: Ron Paulling		
Project Name: UTC Delavan GW Delineation			Laboratory Lot Number
Project No.: 60314964.16	P.O. No.: 87223		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	G=Grab C=Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	H_2SO_4	HNO_3	HCl	NaOH	5035 Kit	8260B PCE	Remarks / Cooler I.D.
GW-DPT-5D-52	3/28/17	0850	G	X						3			3	Report PCE ONLY 24 HR TAT

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☑ Rush (Specify) 24 HR TAT

Sample Disposal ☐ Return to Client ☑ Disposal by Lab

Possible Hazard Identification ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

1. Relinquished by: Ron Paulling	Date: 3/28/17	Time: 1550	1. Received by: [signature]	Date: 3/29	Time: 350
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by	Date	Time	4. Laboratory received by	Date	Time

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack

Receipt Temp. _____ °C

WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

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Chain of Custody Record

Number 70209

Client AECOM	**Report to Contact** Leslee Alexander	**Telephone No. / E-mail** 864-234-2282 leslee.alexander@aecom.com	**Quote No.**
Address 10 Patewood Dr. Bldg 6 STE500	**Sampler's Signature** X Ron Paulling	**Analysis (Attach list if more space is needed)**	**Page** 1 of 1
City Greenville **State** SC **Zip Code** 29615	**Printed Name** Ron Paulling		
Project Name UTC Delavan GW Delineation			**Laboratory Lot Number**
Project No. 60314964.16	**P.O. No.** 87223		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	G=Grab C=Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	5035 Kit	VOCs 8260B	Remarks / Cooler I.D.
GW-DPT-6D-61	3/28/17	1640	G	X						3			X	Report PCE
GW-DPT-7D-62	3/29/17	1210	G	X						3			X	ONLY
														24 HR TAT

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☑ Rush (Specify) 24 HR TAT

Sample Disposal ☐ Return to Client ☑ Disposal by Lab

Possible Hazard Identification ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by Ron Paulling	3/29/17	1330	1. Received by Daniel Good	3-21-17	1330
2. Relinquished by Daniel Good	3-21-17	1530	2. Received by Dwight Hope	3/29/17	1530
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by	Date	Time	4. Laboratory received by	Date	Time

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack

Receipt Temp._____ °C

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Chain of Custody Record

Number 70205

(864)234 2282

Client AECOM	**Report to Contact** Leslie Alexander	**Telephone No. / E-mail** leslee.alexander@aecom.com	**Quote No.**
Address 10 Patewood Dr. Bldg 6 Ste 500	**Sampler's Signature** x Daniel Good	**Analysis (Attach list if more space is needed)**	**Page** 1 of 1
City Greenville **State** SC **Zip Code** 29615	**Printed Name** Daniel Good		
Project Name UTC Pelzer 2017 GW Delineation			**Laboratory Lot Number**
Project No. 603 14964.16	**P.O. No.** 87223		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	G=Grab C=Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	5035 Kit	8260 B	Remarks / Cooler I.D.
GW DPT 85 19	3-28-17	1505	G	✓						✓			✓	Report PCE only
GW DPT 75 29	3-28 17	1700												24 hr. TAT
GW DPT 65 24	3-29 17	0835												
GW DPT 55 19	3-29 17	1010												

Turn Around Time Required (Prior lab approval required for expedited TAT.)
☐ **Standard** ☐ **Rush (Specify)**

Sample Disposal
☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by Daniel Good	3-29-17		1. Received by	3/29/17	1550
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by	Date	Time	4. Laboratory received by	Date	Time

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack

Receipt Temp._____ °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

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Chain of Custody Record

Number 70210

864-234-2282

Client	Report to Contact	Telephone No. / E-mail	Quote No.
AECOM	Leslee Alexander	leslee.alexander@aecom.com	

Address	Sampler's Signature	Analysis (Attach list if more space is needed)	Page 1 of 1
10 Patewood Dr. Bldg 6 STE 500	X Ron Paulling		

City	State	Zip Code	Printed Name
Greenville	SC	29615	Ron Paulling

Project Name	Project No.	P.O. No.
UTC Delavan GW Delineation	60314964.16	87223

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	G=Grab C=Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	5035 Kit	VOCs 8260B	Laboratory Lot Number	Remarks / Cooler I.D.
GW-DPT-8D-62	3/29/2017	1735	G	X						3			X		Report PCE ONLY 24 HR TAT

Turn Around Time Required (Prior lab approval required for expedited TAT.)
☐ Standard ☑ Rush (Specify) 24 HR TAT

Sample Disposal
☐ Return to Client ☑ Disposal by Lab

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

1. Relinquished by	Ron Paulling	Date	3/29/17	Time	1745	1. Received by	Daniel Good
2. Relinquished by	Daniel Good	Date	3-30-17	Time	0840	2. Received by	Chuck Suddeth
3. Relinquished by	Daniel Good & Chuck Suddeth	Date	3-30-17	Time	1520	3. Received by	
4. Relinquished by		Date		Time		4. Laboratory received by	

1. Received by	Daniel Good	Date	3/29/17	Time	1745
2. Received by	Chuck Suddeth	Date	3/30/17	Time	0840
3. Received by		Date	3/30/17	Time	1520
4. Laboratory received by		Date		Time	

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack

Receipt Temp._____ °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

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Chain of Custody Record

Number 70207

864 231 2212

Client AECOM	**Report to Contact** Leslee Alexander	**Telephone No. / E-mail** Leslee.Alexander@aecom.com	**Quote No.**
Address 10 Patewood Dr. Bldg 6, Ste 500	**Sampler's Signature** X Daniel G. Good	**Analysis (Attach list if more space is needed)**	**Page** 1 of 1
City Greenville **State** SC **Zip Code** 29615	**Printed Name** Daniel Good		
Project Name UTC Delavan			**Laboratory Lot Number**
Project No. 60314964.16	**P.O. No.** 87223		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	G=Grab C=Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	5035 Kit	8260B	Remarks / Cooler I.D.
GW DPT 9S 29	3-30-17	1310	G	✓						✓			✓	PCE only
														24 hr. TAT

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by Daniel Good	3-30-17		1. Received by	3/30/17	1500
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by	Date	Time	4. Laboratory received by	Date	Time

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack

Receipt Temp._____ °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effe

Chain of Custody Record

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Number 70206

AECOM	Report to Contact: Leslee Alexander	Telephone No. / E-mail: Leslee.Alexander@AECOM.com	Quote No.
Address: 10 Patewood Dr. Bldg. 6 Ste 500	Sampler's Signature: X Charles K. Sudduth	Analysis (Attach list if more space is needed)	Page 1 of 1
City: Greenville / State: SC / Zip Code: 29615	Printed Name: Chuck Sudduth		
Project Name: UTC Delavan GW Delineation			
Project No.: 60314764.16	P.O. No.: 87223		Laboratory Lot Number

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	G=Grab C=Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	5035 Kit	8260B	Remarks / Cooler I.D.
GW-DPT-9D-47	3/30/17	1540	✓	✓						✓			✓	PCE only
GW-DPT-9D-60	3/30/17	1815												24hr. TAT
GW-DPT-10D-47	3/31/17	1130												
GW-DPT-10D-56	3/31/17	1400												

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Charles K Sudduth	3/31/17	1450	1. Received by: Daniel Good	3-31-17	1450
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by: Daniel Good	3-31-17	1921	4. Laboratory received by: [signature]	3/31/17	1921

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack

Receipt Temp._____ °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

IDW MANAGEMENT FORM

PROJECT: UTC Bamberg

SITE NAME: UTC Delavan Specialty Chemicals Site

LOCATION: Bamberg, South Carolina **PROJECT #:** 60314964.16

CONTAINER NUMBER	MEDIA DESCRIPTION	MEDIA ORIGIN	DATE FILLED	DATE SAMPLED	DATE DISPOSED	COMMENTS
K1	Soil Cuttings	DPT 1S-9S, MW-27	3/30/2017	4/4/2017		
K2	Purge Water/Decon Water	DPT 1S-9S	3/30/2017	4/10/2017		
K3	Soil Cuttings	MW-27	3/30/2017	4/4/2017		
K4	Soil Cuttings	MW-27,-28	3/31/2017	4/4/2017		
K5	Soil Cuttings	MW-28	3/31/2017	4/4/2017		
K6	Soil Cuttings	MW-28	3/31/2017	4/4/2017		
B1	Soil Cuttings	DPT-6D	3/29/2017	4/4/2017		
B2	Drilling Fluids	DPT-6D	3/28/2017	4/10/2017		
B3	Drilling Fluids	DPT-6D	3/28/2017	4/10/2017		
B4	Drilling Fluids	DPT-7D	3/29/2017	4/10/2017		
B5	Drilling Fluids	DPT-7D	3/29/2017	4/10/2017		
B6	Soil Cuttings	DPT-6D	3/28/2017	4/4/2017		
B7	Drilling Fluids	DPT-7D, -8D	3/29/2017	4/10/2017		
B8	Soil Cuttings	DPT-5D	3/27/2017	4/4/2017		
B9	Drilling Fluids	DPT-6D	3/28/2017	4/10/2017		
B10	Drilling Fluids	DPT-5D	3/27/2017	4/10/2017		
B11	Drilling Fluids	DPT-5D	3/27/2017	4/10/2017		

IDW MANAGEMENT FORM

PROJECT: UTC Bamberg

SITE NAME: UTC Delavan Specialty Chemicals Site

LOCATION: Bamberg, South Carolina **PROJECT #:** 60314964.16

CONTAINER NUMBER	MEDIA DESCRIPTION	MEDIA ORIGIN	DATE FILLED	DATE SAMPLED	DATE DISPOSED	COMMENTS
B12	Soil Cuttings	DPT-7D	3/29/2017	4/4/2017		
B13	Drilling Fluids	DPT-7D	3/30/2017	4/10/2017		
B14	Drilling Fluids	DPT-7D	3/30/2017	4/10/2017		
B15	Drilling Fluids	DPT-10D	3/31/2017	4/10/2017		
B16	Drilling Fluids	DPT-10D	3/31/2017	4/10/2017		
B17	Soil Cuttings	DPT-10D	3/31/2017	4/4/2017		
B18	Soil Cuttings	DPT-9D	3/30/2017	4/4/2017		
B19	Drilling Fluids	DPT-5D	3/27/2017	4/10/2017		
B20	Soil Cuttings	DPT-1D,2D	4/5/2017			
B21	Cuttings/Fluids	DPT-1D,2D	4/6/2017	4/10/2017		
B22	Cuttings/Fluids	DPT-1D,2D	4/6/2017	4/10/2017		
B23	Soil Cuttings	DPT-1D,2D	4/6/2017			
B24	Cuttings/Fluids	DPT-1D,2D	4/6/2017	4/10/2017		
B25	Soil Cuttings	DPT-2D	4/6/2017			
K7	Soil Cuttings	MW-29	4/7/2017			
B26	Soil Cuttings	DPT-4D	4/4/2017	4/4/2017		
B27	Soil Cuttings	DPT-4D	4/4/2017	4/4/2017		

IDW MANAGEMENT FORM

PROJECT: UTC Bamberg

SITE NAME: UTC Delavan Specialty Chemicals Site

LOCATION: Bamberg, South Carolina **PROJECT #:** 60314964.16

CONTAINER NUMBER	MEDIA DESCRIPTION	MEDIA ORIGIN	DATE FILLED	DATE SAMPLED	DATE DISPOSED	COMMENTS
B28	Soil Cuttings	DPT-1D	4/7/2017			
K8	Soil Cuttings	MW-29	42832.0			
K9	Development Water	MW-28	4/8/2017			
B29	Cuttings/Fluids	MW-30D,-31D	4/9/2017			
B30	Soil Cuttings	DPT-9D, -10D	3/31/2017			
B31	Development Water	MW-30D	4/13/2017			
B32	Development Water	MW-32D	4/13/2017			
B33	Drilling Fluids	MW-31D	4/12/2017			
K10	Development Water	MW-27, -29	4/11/2017			
D1	Decon Water	Decon pad	4/7/2017			
D2	Decon Water	Decon pad	4/7/2017			

3-27-17 2017 GW Delineation p. 1/2

0600 Meet Walter Gerald at AECOM - Greenville, Mob to UTC - Delavan (Bamberg, SC)
0910 Meet Scott Smith (GEL) to clear locations on Bamberg Property
1020 Clear locations on Kinsey property
1030 Ron Pauling (AECOM) onsite
1050 Mob to UTC plant, check in
1105 Stefan Smith, Stephen Farris onsite (SAEDACCO)
1120 Kyle Borgemeister, Brian Biddix (SAEDACCO) onsite
1130 Joel Carrillo (SAEDACCO) onsite
1150 Ron, Walter, and Stefan to Bamberg Property
Kyle, Bryan, Daniel to Kinsey Property
1200 Stage Geoprobe support truck on Kinsey Property
1215 Meet with Ron to exchange equipment,
1245 Break for lunch
1330 Return, calibrate YSI, PID, clear 5' w/ hand auger
1350 Begin drilling GW DPT 45
1425 Terminate boring at 24' bgs, samples 20-24'
1505 Sample GW-DPT-45-24' collected
1520 Mob to GW DPT-35, decon rods/screen in buckets
1550 ~~Sate~~ moisture at 13' bgs, set
Screen at 17' w/ sampler
1600 Interval is not producing water,

3-27-17 2017 GW Delineation 2/2

1600 Will go back down with coring rods deeper

1615 Material is saturated, will set screen 20-24', ~~called~~

1625 Interval not producing enough water to come up peristaltic pump, will have to core further

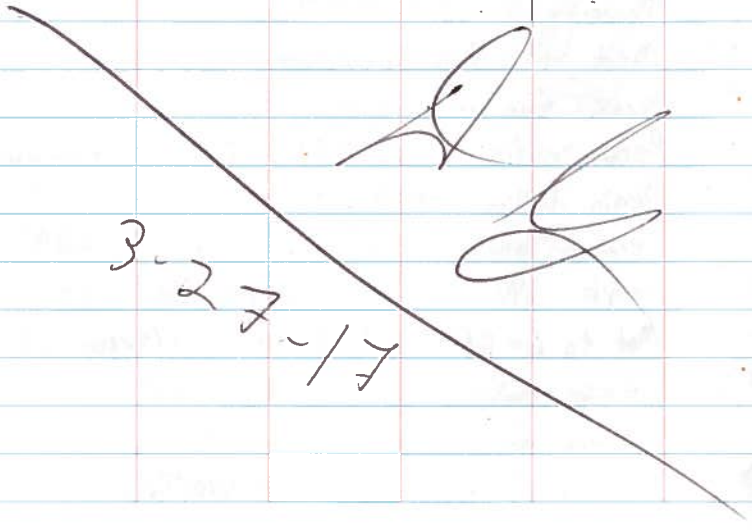
1700 Sandier region at 34', will set sampler 30-34', also has elevated PID readings

1725 Begin Sampling GW-DPT-35-34

1805 Collect sample " " "

1810 Clean up, decon rods / screen

1830 SAEDACCO offsite, AECOM offsite



3-28-17 2017 GW Delineation 1/2

0700 Daniel Good, Ron Paulling onsite, (AECOM)

0710 Calibrate YSI, PID

0720 SAEDACCO onsite (Kyle Borgemeister, Bryan Biddy)

0745 HAs, rig inspection, Hand clear 5'

0750 Begin drilling GW DPT 25

0820 Wet sandy interval 25-29' will set screen and sample

0905 GW DPT 25 29 sampled at 0905

0925 decon, mob to GW DPT 15

0955 terminated at 29' screened 25-29

1010 Begin sampling GW DPT 15 29

1030 Collect sample " " " at 1030 along with Dup A

~~Samp~~ Dup A will not be submitted per text message from Leslee Alexander

1045 decon rods, screen, and rig with pressure washer on temporary decon Pad

1120 Manage IDW (drum soil cores, decon water, purge water)

1200 refuel Geoprobe

1230 Break for lunch, Kyle Borgemeister remains on site, Daniel Good Returns 1250

3-28-17 2017 GW Delineation 2/2

1320 Kyle hand clears GW DPT 85
1325 SAEDACCO back onsite
1400 Hand clearing GW DPT 85 is going slow due to gravel and hard material at location
1415 begin drilling GW DPT 85
1425 14-19' looks water bearing, and has highest PID Readings, begin sampling
1505 collect sample GW DPT 85 19
1510 decon screen/rods, mob to GW DPT 75, hand clear 5'
1530 Begin drilling GW DPT 75
- Gary ~~Polk~~ Hope onsite to pick up Samples Ron Has samples on bamberg property. Stop drilling, and Daniel Good guides him to Ron
1545 Gary offsite with samples, resume
1605 Water bearing region with elevated PID Levels 24-29', set screen on interval
1620 Begin sampling
1700 Collect Sample GW DPT 75 29
1715 decon, mob rig to GW DPT 65
1730 Add bentonite chips to previous holes
1800 SAEDACCO offsite
1810 Daniel Good offsite

3-28-17

3-29-17 2017 GW Delineation 1/2

~~06~~

0645 Daniel Good onsite, calibrate YSI and PID
0700 Ron Pawling (AECOM) Brian Biddix, Kyle Bergemeister (SAEDACCO) onsite, H&S meeting, and rig inspection
0710 Hand clear GW DPT 65, begin drilling
0745 Water bearing region at 19-24' with higher PID readings, will set screen here
0755 Begin sampling
0835 collect sample GW DPT 65 24
0850 mob rig, decon screen/rods, clean 5'
0855 begin drilling GW DPT 55
0925 Water bearing region
0935 begin sampling
1010 collect GW DPT 55 19
1015 Decon screen, rods rig, clean up area
1045 mob to point GW DPT 4D.
1145 begin drilling GW DPT 4D
1220 Refusal at 41'
1225 Break for lunch, drillers offsite
1330 Drillers return
1335 Clean up 4D Area
1500 Pack cooler for Courier
1530 Cooler and CoC's delivered to Gary Hodge

3-29-17

1600 go to GW DPT 80 to assist Ron Paulling however possible

1800 offsite, end of day

2/2

3-29-17

3-30-17 2017 GW Delineation 1/2

0700 onsite

0725 SAE DAC CO onsite (Stefan Smith, Joel Carrillo Stephen Farris, Brian Biddix, Kyle Borgemeister) Chuck Suddeth (AECOM) onsite

0735 mob rig to GW DPT 90

0745 HTS rig inspection,

0800 Begin drilling

0830 Rig down w/ electrical issues

0915 mechanic on the way to fix rig, moving IDW while rig is down

1055 GW DPT 95 added mob rig to location

1145 begin drilling GW DPT 95

1215 Sampling depth (24-29 reached) Drillers break for lunch

~~1310 Drillers~~

1325 Daniel Good Samples GW DPT 95

1310 Sample collected

1315 Drillers return mob

~~mob~~ rig to GW DPT 45 location

1350 Thunder heard, stand down

1400 retrieve samples from Chuck Suddeth, offsite to buy ice

1430 return with cooler ready for courier

1430 Drillers switch tooling to ~~auger~~ coring 2/2 for MW 27 additional 5'

1500 Begin coring MW 27 location to 29'

1520 cored to 29', courier onsite to retriere samples

1545 change tooling and begin drilling MW-27 with 4¼/6" ID/OD augers (Hollow Stem)

1700 Reached depth of 29', begin setting well

1725 6 bags of sand added, sand (29'-17')

1730 ½ bucket bentonite (Pel-Plug TR30) (~15 lb) added. bentonite 17-15', water added to annulus to ensure hydration

1745 Clean up, decon augers

1810 Kyle and Brian offsite

1820 Go to sonic rig, relieve Chuck Suddeth, supervise breakdown

1825 Chuck Suddeth offsite

1855 Stefan Smith, Stephen Farris, Joel Carillo offsite

1900 Daniel Good offsite

3-30-17

3-31-17 2017 GW Delineation 1/1

0706 Daniel Good onsite

0715 SAEDACCO onsite, H2S, rig inspection

0725 ~~Refuel rig~~ (Kyle Borgemeister, Brian Biddix)

0725 Refuel rig

0735 Begin drilling MW-28 in GW OPT 25 location.

0930 Reached target depth of 29', begin setting well (10' screen)

0945 Sand (6 bags) added 29'-17'

0955 bentonite (1 bag 3/8" chips) added (17-14') water added for hydration

1010 clean up area, pack up support truck

1110 Grout MW-27, MW-28

1140 Stage IDW drums at roadside for truck to pick up

1215 Break for lunch

1300 Return for lunch

1310 manage IDW, load equipment for demob

1600 Go to UTC facility to offload drums

1700 SAEDACCO (All) offsite), Daniel Good to deliver samples to Shealy

1820 Deliver samples to Shealy

2015 arrive in Greenville

3-31-17

04-03-17 2017 GW Delineation 1/1

1320 SAEDACCO (Stefan Smith, Joel Carrillo, Brian Liddix onsite. His meeting, Rig inspection

1335 Set up on GW DPT 40

1425 Begin drilling " " with Hollow stem augers to previous refusal (41')

1445 begin using split spoon

1600 Void 51'-58'. Thunderstorms in area, stand down

1700 storms continue with no signs of stopping, end of day

04-03-17

4-4-17 2017 GW Delineation

0700 onsite, calibrate PID, YSI

0715 SAEDACCO onsite

0725 His, Rig inspection

0735 Resume drilling GW DPT 40

0800 Begin setting up packer for GW sample

0905 Packer Set, begin sampling,

0935 sample collected (GW DPT 40 60)

0940 Pack up, mob to GW DPT 10, Decon augers, screen

1025 Collect soil IDW samples
IDW-1-Kinsey

1050 Begin drilling GW DPT 10

1206 Break for lunch (at 31')

1235 Get Ice, pack coolers

1300 Drillers return from lunch

1315 Resume Drilling

1445 ~~Begin~~ set up to collect GW

1500 Pump ~~malfunctioning~~ or packer malfunctioning, pulling pump and packer, clean screen, retry

1530 Garry onsite to retrieve samples

1610 GW DPT 10 45 collected, decon screen/packer

1620 Resume Drilling

1755 Depth of 60' bgs reached, YSI batteries dead, will collect sample in the morning

4-4-17

4-5-17 2017 GW Delineation 1/1

0700 Daniel Good onsite, calibrate YSI, PID
0720 SAEDACCO onsite, H&S, Rig insp.
0730 send packer down GW DPT ID 60,
0800 Begin sampling ID-60
0805 Switch pumps due to malfunction
0820 resume sampling
0850 collect GW DPT ID-60
-Drillers decon augers
1035 Begin drilling GW DPT 2D
1220 Break for lunch @ 38'
1310 Return
1315 Resume drilling
1420 Gary onsite to retrieve samples
1425 Lightning heard, stand down
1600 No thunder for 30 min.
- Heaving sands have filled the augers up ~5' from bottom, must clear before resuming coring
1630 Resume coring
1700 ~~Lightning~~ lightning sighted, end of day

4-5-17

4-6-17 2017 GW Delineation 1/1

0700 Daniel Good onsite, Calibrate YSI, PID
0720 SAEDACCO onsite, H&S, Rig inspection
0735 Clear augers of heaving sand from last night
0745 Resume drilling
~~0900 collect GW D~~
0820 Begin setting up for sampling GW DPT 2D 50
0830 Begin sampling.
~~-Interval is low yielding, purged dry 3 times and collected sample~~
0900 Sample GW DPT 2D 50 collected
0915 Resume coring drilling
1115 Set up to collect GW DPT 2D 64
1130 Begin Sampling
- Interval is low yielding, purged dry 3 times and sample was collected
1210 Sample collected GW DPT 2D 64
1210 Break for lunch, return 1300
1300 Pull rods, decon
1430 Manage IDW, stage barrels for transport to UTC
1600 Stage drums at UTC facility
1730 mob augers & supplies to GW DPT 95 location
1810 offsite

4-6-17

4-7-17 2017 GW Delineation 1/1

0715 Onsite, SAEDACCO onsite, H&S meeting, rig inspection

0725 Mob rig to GW DPT 95 for MW Install
0805 Begin drilling MW-
0830 TD = 29' reached, set well with sand (8 bags) and bentonite (~2/3 of a bag Hole Plug) allow to hydrate (10' screen, 29-19')
~~0845 Pull augers~~ sand - 29'-17' bentonite 17'-15'
0845 Pull augers, clean up area
0950 Pour 1/2 batch of grout (4 bags (47lb ea) + 20 Gal H_2O + 1/4 bag QuikGel)
Mob to decon pad, decon augers
Pump off decon Pad into drum
Move drums to UTC Facility
1230 Break for lunch
1330 Return
1335 Loading on trailer
1400 Put pads on MW-27, -28, -29
1630 Clean up area
1715 SAEDACCO offsite, Daniel Grood off
1805 return to Greenville

4-7-17

4-10-17 2017 GW Delineation P. 1/1

1145 SAEDACCO onsite (Stefan Smith, Brian Biddix, Joel Carrillo onsite, offload rig,
1200 Break for Lunch
1300 Mob to GWDPT 100 for MW-Install
1330 setup, H&S, rig inspection
1430 Begin drilling MW-30 down GWDPT 100' boring
1530 Drill head cracked, rig offline
1600 Collect IDW - Bamberg
1615 Collect IDW Kinsey
1645 Set up on MW 28 to develop
1745 Calibrate YSI
1800 Begin developing MW-28
1900 Development complete
1915 offsite

4-10-17

4-11-17 2017 GW Delineation P. 1/2

0600 Daniel Good onsite, label IDW at VTC

0730 SAEDACCO onsite, grouting boreholes

0735 H&S meeting w/ funnel tremie pipe

0900 GW DPT 95 Grouted w/ 3 batches of grout (1 batch: 40 gal H_2O, (7) 47lb bags portland, 0.25 bag QuikGel bentonite

1005 Brian Biddix offsite to retrieve rig parts, Joel Carrillo and Stefan Smith continue grouting

1030 3 Batches into GW DPT 80

1035 Remove damaged parts from drill rig

1145 Brian returns with part

1200 The wrong part was sent, rig will be down rest of the day

1230 Break for lunch

1330 Return

1340 Stefan Smith offsite to retrieve 8150 LS sonic rig to replace 8140LS

1400 Deliver IDW samples to VTC Shipping/Receiving

1415 Drillers Packing up 8140 Rig

1430 Drillers receive instructions to find a machine shop to repair rig spindle

4-4-17 2017 GW Delineation P. 2/2

1500 Stefan Smith returns, 8150 rig will not be coming onsite, sub piece on spindle will be cut off and drilling resumed

1615 Rig hydraulics not responding

1700 Brian and Joel Grout GW DPT 70

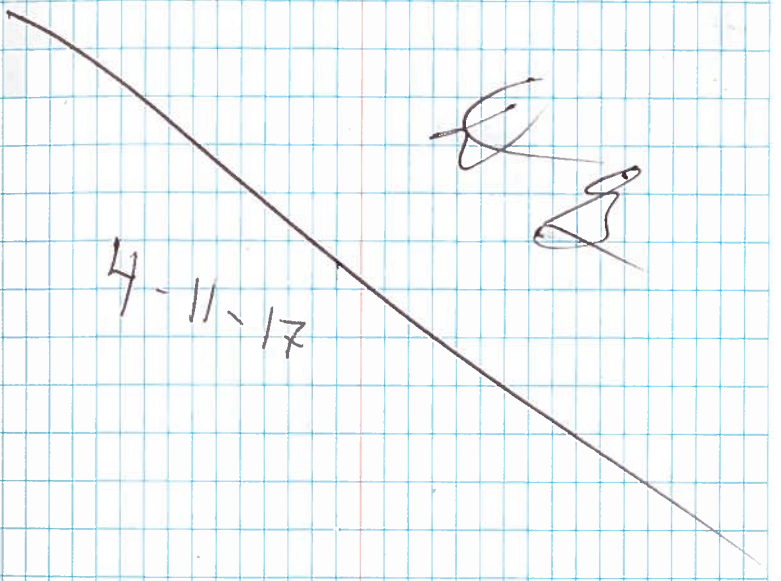
1800 Rig functional resume drilling MW 30D

1920 TD = 60' reached, pull 4' rods

1935 Begin setting well
- Sand 60-48 (6 bags)
- Bentonite 48-46 (1/2 bucket)

2000 Pack up

2020 off site



4-12-17 2017 GW Delineation p. 1/2

0700 Daniel Good (AECOM) onsite
0720 Stefan Smith (SAEDACO) onsite
0750 Joel Carrillo, Brian Biddix onsite (SAEDACO)
H&S, rig inspection,
0806 1 batch Aquagaurd (3 bags + 35 gal H_2O)
0820 2nd batch Aquagaurd added, (MW-30D)
will top off with Portland when pads are added
0830 Pack up, mob to GW DPT 6D (MW 31D)
0915 Begin drilling MW-31D
1015 TD=60' reached, pull 4" rods
~~1030~~ 1030 Begin setting well - Screen 60-50'
-1115 Sand added 60-48'
-1125 Bentonite pelletts 48-46
1130 Break for lunch
1230 Return
1240 Add one batch of bentonite
1245 Well casing came up when pulling Sonic casing rods, well will have to be re-drilled ~5' South of original location
- 6" Sonic casing ~~not pulled~~ was not pulled up far enough above bentonite,

4-12-17 GW Delineation - 2017 p. 2/2

1330 Begin Redrilling MW-31D
1510 Begin resetting MW 31D
-1525 Sand added 60-48 (6 bags)
1540 Bentonite pelletts 46-46
1600 Grout GW DPT 5D with Aquagaurd (tremie)
~~1650~~ 1650 Add Aquagaurd to MW 31D via Tremie pipe
1725 Pack up, mob to GW DPT 2D (MW-32D)
1820 Begin drilling MW 32D
1920 TD=60' Reached.
1925 Begin setting well
⇒ 2000 - Sand bridging, will resolve tomorrow, TD=58'
2010 offsite

4-12-17

4-13-17 2017 GW Delineation 1/1

0730 SAE DACCO (Joel Castillo, Stefan Smith, Brian Biddix onsite, HIS, rig inspection

0745 Flush water down MW-32D annulus to clear bridge and lower well to proper depth

0815 Resume adding sand (60'-48') (4 bags 9/12, 3 4/12

0830 Add bentonite pellets (48-46') (1/2 bucket

0845 Grout GW DPT 41

0930 ~~Grout Add grout to~~ Add agg and grout to MW-32D, ~~decon~~ (2 batches), decon

1000 Pack up rigs and support trucks for demob

1215 Daniel Good offsite for appointment

1830 Return to site to label drums

1915 offsite

4-13-17

4-14-17 2017 GW Delineation 1/1

0800 Daniel Good onsite

0835 Begin pumping to attempt to clear suspected sand in MW 32D

0935 30 gallons removed, very little sand, some stuck in whale pump nose cone

0950 dispose of development water in drum B32 at UTC facility

1005 Drive around to boring sites to examine ground condition, trash, etc.

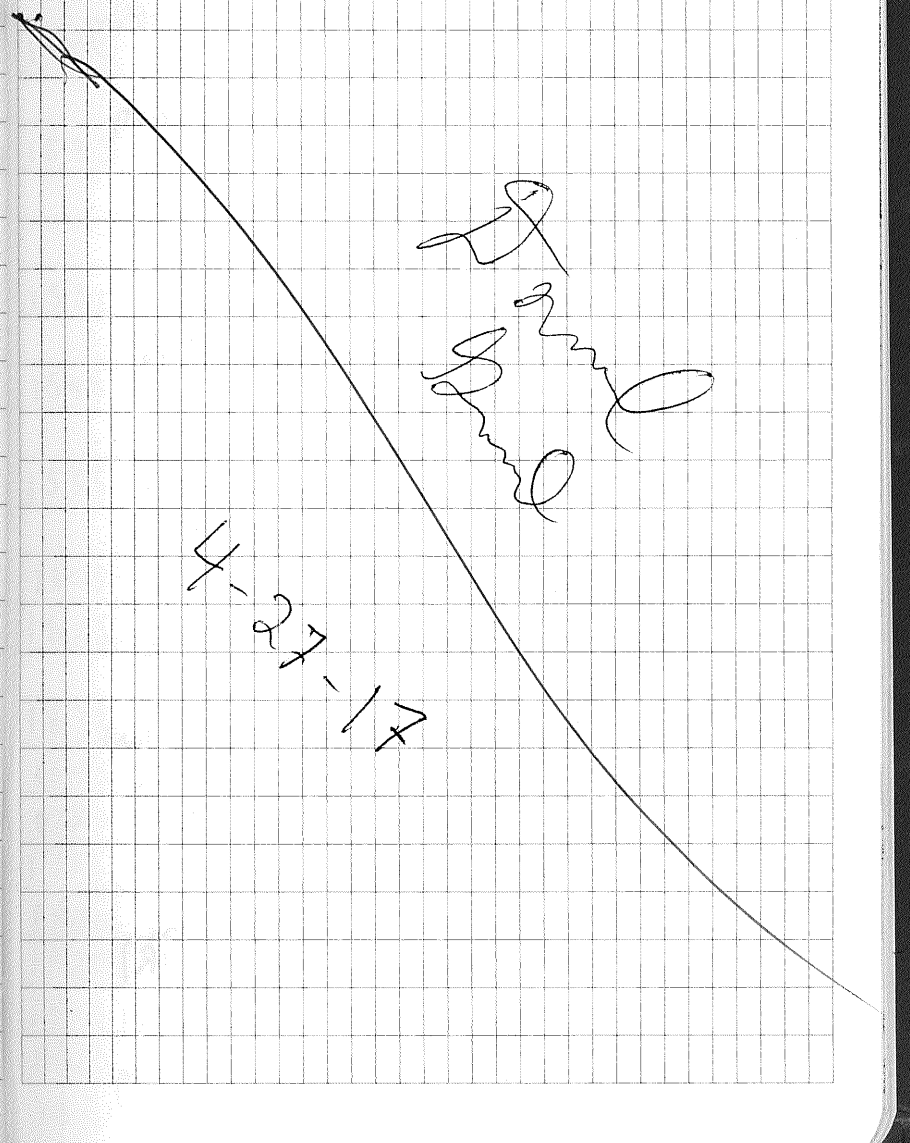
1045 offsite, return to ~~gce~~ Greenville

1310 Arrive AECOM-Greenville

4-14-17

0500	Depart AECOM - Greenville
0705	Pick up air compressor at Sunbelt in Columbia
0825	Pick up tubing
0835	Onsite, MW-32D TD=53.65
0850	Run airlift pump, 1.25" tubing came off of barb fitting on pump TD = 44'
0925	Run pump again, 1.25" PVC coupling split TD=39'
0950	Call Walter Gerald / Leslee Alexander - Sample of sand in well requested, sample taken from inside the pump - Pump will be repaired and retry pumping
1050	leave for hardware store
1140	Return to site, rebuild pump
1215	Begin pumping
1225	Pump stuck in well, will try to retrieve.
1320	Pump will not come loose, tubing came loose, pump lost
1325	GW DPT 1D was insufficiently abandoned TD = 15'
1330	GW DPT 5D TD = 12', all other holes sufficiently abandoned or not found
1340	Dispose of IDW at UTC Facility (Drum B32)
1400	offsite

1515	Return air compressor
1700	Arrive at AECOM Greenville



5-8-17 2017 GW Delineation p. 1/2

Daniel Good

0645 Pick up equipment at progress park

0930 Onsite (MW-32D location - begin setting up survey transit

1005 Locate DPT points on Bamberg property logging road

1055 SAEOAcco onsite (Stefan Smith, Bryan Biddix, Joel Canfield)

1105 H&S meeting

1110 Mob to MW32D location, begin setting up

1125 Survey stake relative to TOC on MW 32D
TOC 3.84'
Stake (High side) 3.40' Diff=0.44'
High side of stake is 0.44' above TOC

1150 Skid steer has not arrived, break for lunch

1220 SAEOAcco returns from Lunch, still no skidsteer. We will try to locate GW DPT 4D boring in the meantime

1250 Skid steer onsite, resume setting upon MW 32D redrill location (MW 32DR)

1330 Begin Drilling with 4" ~~casing~~ rods. Will drill to 60' then overream w/ 6" casing

5-8-17 2017 GW Delineation p. 2/2

1405 Begin drilling with 6" casing

1440 Begin Reached 60' w/ 6" casing, begin pulling 4" rods

1455 Begin setting well with sand 60'-48' (6 bags)

1530 Add bentonite pellets 48-46' rods pulled up to 37' and allowed to hydrate (TD = 60.69)

1535 mix grout to top off GW DPT 1D, 5D (1 bags Portland, gal H2O, bag Quik Gel

1545 Add ~ 20 gallons grout to GW DPT 1D (TD = 12.5')

1555 Add ~ 20 gallons grout to GW DPT 5D (TD = 9.8')

1605 Begin abandoning MW 32 DR

1625 mix grout for abandonment and well

1635 Tremie grout down MW-32D

1645 Tremie grout into MW-32DR annulus

1730 Pack up rig

1745 Set pad on MW 32 DR

1800 cut MW32D off below grade, fill pad hole

1820 Stage 3 drums ID w/ at UTC facility

1915 SAEOAcco offsite

1925 Grout is at top of DPT-1D, -5D

1930 Daniel Good offsite

5-8-17

5-9-17 2017 GW Delineation p. 1/1

0700 onsite, drop drum at UTC Facility
0730 calibrate YSI, Turb meter.
0800 Begin developing MW 32D
0930 Development complete, offsite to get gas
0950 Pump development water from drum in truck to ~~drum~~ drum in UTC facility with whale pump
1040 Development water transferred
1045 Locate GW DPT points on Kinsey property.
1105 GW-DPT-85 suspected to be underneath truck bed liner filled with water, scrap metal, and trash, unable to move
1125 all GW-DPT points located (GW-~~DPT~~-85 location approximate, locations flagged and labeled
1135 offsite

AS
5-9-17

3/27/17 (Mon.)

0700 Travel to UTC - Bamberg site.
0930 Arrive at site; met Walter Gerald and Donnie Goode with AECOM, got H&S briefing, Scott Smith w/ GEL located utilities at proposed drilling locations.
1100 SAIDECO crew arrive, gave them H&S briefing; drill crew broke for lunch.
1150 Crew back on site, crew got water, Walter departed site.
1245 AECOM began set up at first location, after riding to all locations it was agreed to start at GW-DPT-5D and work our way down logging road.
1300 Calcd YSI + turbidity meters
1400 Crew got additional water, rig set on hole, began coring to target depth
1715 At 47' depth, encountered LIMESTONE @ 31.5'. Highest PID was 2.1 ppm @ 35' and 2.0 ppm @ 47', Walter contacted and we

3/27/17 (Mon.)

1715 (CONT) decided to do one more 10' run and screen it to see if PID reading increase.

1820 Cored to 57' below grade, highest reading 0.4 ppm at 57'.

1830 Will collect ground water sample just below 47' depth tomorrow. Departed site, went to UTC to turn in badge, door locked, no one at front desk. AECOM rep departed site, will resume at 0700 tomorrow.

R. Parker 3-27-17

3/28/2017 (Tues)

0620 Travel to site UTC Bamberg.

0700 Arrive in parking lot, no one at front desk. Danny Goode in parking lot. Calibrated YSI and turbidity meters.

0730 Meet drillers at Bamberg Tract on hole GW-DPT-5D. conducted H&S Tailgate Meeting, Talked with driller Stephan Smith, based on PID readings, will collect sample just below 47' depth. Driller will pull 6" casing from 57' to 47' and insert 5' screen to collect sample from 47' to 52'.

0820 Began purging 47'-52' at GW-DPT-5D

0850 Parameters stabilized, screening sample GW-DPT-5D-52 collected

0900 Driller Stephan Smith contacted his office, and he is going to pay for water meter from town of Bamberg, Water source on back

3/28/2017 (Tues.)

0900 (CONT.) of plant is a garden hose that flows slowly. Drill crew plans to tap into a fire hydrant on Hwy 301.

0930 AECOM got more ice while Stephan at the town complex.

1020 AECOM rep contacted Leslee Alexander and told her about fire hydrant and sample from GW-DPT-~~6D~~ 5D from 47'-52'. Also, Leslee will check on duplicate and MS/MSD on these groundwater screening samples. Analytical lab courier supposed to arrive on-site approx. 1530; Leslee will notify us as soon as she firms that up.

1030 Drill crew set up on GW-DPT-6D after DCON'ing all down hole equipment.

1040 Leslee confirmed - no QA/QC samples required for groundwater screening samples.

1100 Drill crew got more water and began advancing GW-DPT-6D to target depth.

1220 SAEDACCO at 37' depth, encountered top of LIMESTONE AQ @ 30' in GW-DPT-6D. Crew went to get lunch and more water.

1335 Met Pownell Goode to get ice and his screening samples. Crew back on site and resumed coring.

1450 Crew at 57', got PID readings 1.2 ppm @ 56' and 1.3 ppm @ 57' instructed drill crew to collect a groundwater screening sample from 57' to 62' below grade.

1520 Crew advanced 4" core barrel to 62' - No Recovery.

1535 Advanced 5' stainless steel screen to 61' - as far as would go - fell in from NR. Also Gary from Shealy arrived and picked up samples for 24 hr TAT.

1555 Began purging GW-DPT-6D-61.

3/28/2017 (Tues.)

3/28/17 (Tues.)

1635 Pumped out 32 gallons which was appox 4 well volumes parameters stabilized.

1640 Collected groundwater screen sample GW-DPT-6D-61 from 56' to 61' below grade.

1645 Drill crew began DCONing equipment and breaking down site.

1730 Departed site.

R. Pulley 3-28-17

3-29-17 (Wed.)

0700 Arrive at site; left voice mail for Walter Gerald. Crew on site. conducted H&S briefing.

0720 Cal'd YSI and turbidity meters, while crew set up on GW-DPT-7D. Weather: cool in AM 58°F, humid

0805 Crew began coring at GW-DPT-7D.

1000 Based on PID Reading 1.4 ppm @ 47' depth, instructed drillers to set groundwater sample from 47'-52'. Fill came back up in 6" casing and drill crew could not advance ~~casing~~ RP sampler out of casing. Made one attempt to blow it out unsuccessfully, cored on down and set up sampler 57'-62'.

1045 At 57' got PID reading of 0.8 ppm. Set sampler 57'-62'.

1100 Began purging.

1240 Collected GW-DPT-7D-62 from 57'-62' below grade.

1215 Drill crew began tripping out of hole and breaking down site.

1255 Broke for lunch.

3/29/17 (Wed.)

1330 Relinquished two (2) groundwater samples (GW-DPT-6D-61 and GW-DPT-7D-62) to Daniel Good for courier.
1350 Set up on GW-DPT-8D.
1415 Began coring.
1620 Crew at 57' depth, based on PID readings 1.2 ppm @ 57', instructed drillers to get groundwater sample from 57'-62'.
1700 Began purging from 57'-62'
1735 Collected sample GW-DPT-6D-62
1745 DCON'ed equipment, hauled paperwork to Daniel Good.
1800 Departed site.

R Powell
3-29-17

3/30/17 (Thurs)

0720 C. Suddeth arrives on site. Meet D. Goode. Drive to boring GW-DPT-9D location. Conduct safety & pre-job meeting
0730 Set up rig at GW-DPT-9D
0810 Begin drilling GW-DPT-9D
0830 At 17 ft. Driller notes numerous error codes from drill rig computer. Driller stops & calls his office and Geoprobe. Geoprobe thinks it's an electrical problem.
0910 Driller to get a multi-meter for electrical testing while mechanic is on the way.
Crew moving IDW to plant while waiting.
Steven is chasing electrical problems on sonic rig. He fixed an electrical connection and replaced a joystick.
1055 Sonic rig running again. Continue drilling GW-DPT-9D.
1145 At 47 ft. Break for lunch.
1230 back on site
1245 SAEDACCO mechanic on site, continue analysis and repairs.
1310 Continue drilling GW-DPT-9D.
1400 Down due to rain & thunder
1500 Install pump & prep for sample GW-DPT-9D-47
1540 Collect sample GW-DPT-9D-47

3/30/17

1545	Run in rods & drill from 57 to 67
1815	Collect GW-DPT-9D-60
1830	Depart site

3/31/17

0715	Arrive on site
0730	Drillers on site. Conduct pre-job and safety meetings
0745	Move rig & equipment from GW-DPT-9D to GW-DPT-10D.
0840	Begin drilling GW-DPT-10D
1030	Have discussion with W. Gerald. Drillers plan to de-mob the sonic rig today and replace with another crew tomorrow
1040	Instruct drillers to sample the 42-47 interval. Collect GW-DPT-10D at 1130 after screen installed to 47 ft, 6" casing pulled back to 42 ft and packer inflated to seal off the zone. Then purged & monitored parameters
1140	Remove sampling tools ~~and drill 47-57 ft.~~
1200	Break for lunch
1240	Drill 47'-57'
	Install screen to 56' open casing to 51 ft ↳ screen 51'-56
	Inflate packer to seal off sampler inside casing purge temp well & monitor parameters
1400	Collect gw sample GW-DPT-10D-56
	Drillers have been instructed to demob this drill rig for another project with this project to continue with a replacement rig on 4/3/17 Therefore, end work for the day

3/31/17

1415	C. Suddeth meets with D. Goode to go over work for next week.
1500	C. Suddeth depart site. Then pull over for conversation with W. Gerald
1530	Depart Bamberg
1700	Arrive home

4/13/17 Justin Better

0715 Leave Hotel
0745 Arrive on site
0800 Calibrate YSI (08L101000) + TM (00704141)
0825 mob to MW-30D, begin development
0855 Finish development
0925 mob to MW-31D, begin development
0955 Finish Development
1030 mob to hotel to gather things and check out.
1200 ~~mob to~~ back on site
1205 mob to MW-32D, begin development
1235 Finish development
1300 mob to MW-30D
1310 begin purging for sample
1405 sample time MW-30D
1440 mob to MW-31D, begin purge
1530 sample time MW-31D
1605 mob to MW-32D, begin purge
1650 sample time MW-32D
1710 Begin water levels on deep wells
1805 Finish water levels
1815 Pack samples
1930 Leave site
2000 Relinquish samples @ Fedex

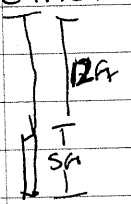
UTC Bamberg 2017 GW Delineations 5/10/17

0600 Depart for site - LAlexander. JForsberg & C. Sudderth to depart Columbia office ~730. Field crew to meet in Bamberg on the property of H. Bamberg across from Delavan Spray Technologies Site.
0900 LAlexander onsite. Drive to check boring GW-DPT-5D.
0915 Set up on GWDPT-6D / MW-31D. Message C Sudderth. They got delayed leaving Columbia & are en route. Planning to set up on GPS monument down the road prior to arrival on site. LAlexander begins H&S paperwork & logs
0940 Finished paperwork. Begin in setting up for slug testing of MW-31D TD measured at 60.37 Ft BTOC initial DTW = 9.43 Ft BTOC
1015 JForsberg & C. Sudderth (survey crew) on site. Review site duties & H&S tailgate meeting.
1040 Survey crew mobs to MW-25D & 26D to tie in. LAlexander continues w/ slug test. Set transducer. DTW = 9.43 Ft BTOC
Reference level = 25.45 ~~7.9~~ Ft

5/10/17 UTC Delaware GW Delineation

Slug bar #1 ⇒ 5 Ft long, 1.5" diameter

Not measured rope so slug top is ~ 12 Ft BTOC at the knot at 12 Ft to get top at 12 Ft BTOC



perform several slugs in & slug out tests
See slug test worksheet for details

1150 Completed 3 slugs-in tests (falling head)

1200 Mob to MW-30D (GW-DPT-10D).
Set up for slug tests
DTW = 5.41 Ft BTOC
TD = 59.83

1305 Completed 3 slug in & 3 slug out tests. Well water level is recovering very quickly & response has "waves" in the data that are typical of a damped response
Will attempt to connect 2-5 Ft long slugs together for more displacement.
Slug 2 is 5 Ft 3/4" long & 1.5" diameter
Performed MW-300-in 4, -out 4, -in 5 & -out 5 w/ 2 slugs attached
(Note - logging didn't start for out 4 so test is no good)

UTC Delaware GW Delineation 5/10/17

1351 Load up & mob to MW-32DR.

1415 Set up on MW-32DR
DTW = 7.37 Ft BTOC
TD = 60.72 Ft BTOC
Use slug #1 ⇒ 5' long 1.5" diam.

1530 Finished 4 slugs in & slug out tests at MW-32DR. The first two (MW-32DR-in 1 & out 1) were performed w/ Slug #1. The next used slug 1 & 2 to get increased displacement.
Test MW-32DR-in 2 is no good b/c it took too long to get the plugs in the well (they got tangled) & the early data is too far apart so the peak is missing.

1540 Loaded up & finished on (slug testing) Barclay property. Waiting for Chuck & Jason to finish Survey before moving across to Kinsey property. They had to switch to 2-man rod & survey mapping b/c the GPS satellites are not available/ insufficient coverage. Using the time to download data from mcon unit to laptop

5/10/17 UTC Delaware GW Delineation

1635 Chuck & Jason finish & wrap mob to Kinsey property

1650 Set up for slug testing on MW-27. Survey crew begins surveying borings & wells
MW-27 DTW = 9.73 Ft BTOC
TD = 29.10' BTOC

1730 Set up for slug testing on MW-28, Jason finishes up & heads back to Columbia
Chuck stays to help w/ slug testing.

1800 Mr Kinsey comes out. Not happy about permanent wells on his property.

1910 Set up for slug test on MW-29
DTW = 7.24' BTOC

2000 Finish up tests at MW-29. C Suddeth & L Alexander pack up & head to Columbia

2130 L Alexander drops C Suddeth at car in Columbia. Continues on to office in Greenville.

1115 Arrive at office in Greenville. Unload equipment & drop keys for rental pick up in the morning.

APPENDIX C

LABORATORY ANALYTICAL DATA

- Laboratory Reports
  - Shealy Environmental Services, Inc.
  - SGS Accutest, Inc.
- Data Validation Reports

Report of Analysis

AECOM
10 Patewood Drive
Building 6, Suite 500
Greenville, SC 29615
Attention: Doria Cullom

Project Name: UTC Delavan, GW Delineation

Project Number: 60314964.16

Lot Number: SC28050

Date Completed: 03/29/2017

Nisreen Saikaly
Project Manager

This report shall not be reproduced, except in its entirety, without the written approval of Shealy Environmental Services, Inc.

The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative

AECOM

Lot Number: SC28050

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

AECOM

Lot Number: SC28050

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	GW DPT 4S 24	Aqueous	03/27/2017 1505	03/28/2017
002	GW DPT 3S 34	Aqueous	03/27/2017 1805	03/28/2017
003	GW DPT 2S 29	Aqueous	03/28/2017 0905	03/28/2017
004	GW DPT 1S 29	Aqueous	03/28/2017 1030	03/28/2017
005	GW DPT-5D-52	Aqueous	03/28/2017 0850	03/28/2017
006	TRIP BLANK	Aqueous	03/27/2017	03/28/2017

(6 samples)

Executive Summary

AECOM

Lot Number: SC28050

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
005	GW DPT-5D-52	Aqueous	Tetrachloroethene	8260B	61		ug/L	9

(1 detection)

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SC28050-001
Description: GW DPT 4S 24
Matrix: Aqueous
Date Sampled: 03/27/2017 1505
Date Received: 03/28/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	03/28/2017 2328	ECP		38262

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		130	70-130
Bromofluorobenzene		101	70-130
Toluene-d8		116	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: GW DPT 3S 34
Date Sampled: 03/27/2017 1805
Date Received: 03/28/2017

Laboratory ID: SC28050-002
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	03/28/2017 2351	ECP		38262

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		128	70-130
Bromofluorobenzene		102	70-130
Toluene-d8		118	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: GW DPT 2S 29
Date Sampled: 03/28/2017 0905
Date Received: 03/28/2017

Laboratory ID: SC28050-003
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	03/29/2017 0016	ECP		38262

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		129	70-130
Bromofluorobenzene		102	70-130
Toluene-d8		117	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: GW DPT 1S 29
Date Sampled: 03/28/2017 1030
Date Received: 03/28/2017

Laboratory ID: SC28050-004
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	03/29/2017 0039	ECP		38262

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		126	70-130
Bromofluorobenzene		94	70-130
Toluene-d8		111	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SC28050-005
Description: GW DPT-5D-52
Matrix: Aqueous
Date Sampled: 03/28/2017 0850
Date Received: 03/28/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	03/29/2017 0103	ECP		38262

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	61		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		128	70-130
Bromofluorobenzene		98	70-130
Toluene-d8		114	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: TRIP BLANK
Date Sampled: 03/27/2017
Date Received: 03/28/2017

Laboratory ID: SC28050-006
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	03/29/2017 0126	ECP		38262

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		128	70-130
Bromofluorobenzene		101	70-130
Toluene-d8		117	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: SQ38262-001
Batch: 38262
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Tetrachloroethene	ND		1	1.0	0.40	ug/L	03/28/2017 2212

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		101	70-130
1,2-Dichloroethane-d4		126	70-130
Toluene-d8		115	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: SQ38262-002
Batch: 38262
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Tetrachloroethene	50	52		1	103	70-130	03/28/2017 2118

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		97	70-130
1,2-Dichloroethane-d4		114	70-130
Toluene-d8		115	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - Duplicate

Sample ID: SC28050-001DU
Batch: 38262
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Result (ug/L)	Q	Dil	% RPD	% RPD Limit	Analysis Date
Tetrachloroethene	ND	ND		1	0.00	20	03/29/2017 0150

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		130	70-130
Bromofluorobenzene		100	70-130
Toluene-d8		117	70-130

PQL = Practical quantitation limit

ND = Not detected at or above the MDL

P = The RPD between two GC columns exceeds 40%

J = Estimated result < PQL and ≥ MDL

N = Recovery is out of criteria

+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MS

Sample ID: SC28050-002MS
Batch: 38262
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Tetrachloroethene	ND	50	57		1	114	70-130	03/29/2017 0213

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		122	70-130
Bromofluorobenzene		98	70-130
Toluene-d8		116	70-130

PQL = Practical quantitation limit

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

ND = Not detected at or above the MDL

J = Estimated result < PQL and ≥ MDL

+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

SHEALY ENVIRONMENTAL SERVICES, INC.

106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Chain of Custody Record

Number 70204

Client: AECOM	Report to Contact: Leslee Alexander	Telephone No. / E-mail: 864 234 2282 leslee.alexander@aecom.com	Quote No.
Address: 10 Patewood Drive Bldg 6, Ste. 500	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page 1 of 1
City: Greenville State: SC Zip Code: 29615	Printed Name: Daniel R. Gould	VOC's 8260B	SC28050
Project Name: UTC Delavan, GW Delineation			
Project No.: 603149964.16	P.C. No.: 87223		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab/Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Other	No of Containers by Preservative Type: Unpres	H2SO4	HNO3	HCl	NaOH	Na2S2O3	VOC's 8260B	Remarks / Cooler I.D.
GW DPT 45 24	3-27-17	1505	G	✓						✓			✓	Report PCE
GW DPT 35 34	3-27	1805												ONLY
GW DPT 25 29	3-28-17	0905												24 HR TAT
GW DPT 15 29	3-28	1030												

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☑ Rush (Specify): 24 HR TAT

Sample Disposal ☐ Return to Client ☑ Disposal by Lab

Possible Hazard Identification ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Daniel R. Gould	3-27-17	1335	1. Received by: Ron Paulling	3-27-17	1335
2. Relinquished by: Ron Paulling	3/28/17	1535	2. Received by: Dusty Hope	3/28/17	300
3. Relinquished by: Dusty Hope	3/29/17	1653	3. Received by:	Date	Time
4. Relinquished by:	Date	Time	4. Laboratory received by: Casey Ford	3/29/17	1653

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) (Yes) No Ice Pack Receipt Temp. 3.0 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

SHEALY

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 70208

Client: AECOM	Report to Contact: Leslee Alexander	Telephone No. / E-mail: 864-234-2282 leslee.alexander@aecom.com	Quote No.
Address: 10 Patewood Drive Bldg 6 STE 500	Sampler's Signature: X [signature]	Analysis (Attach list if more space is needed): 8260B PCE	Page 1 of 1
City: Greenville	State: SC	Zip Code: 29615	Printed Name: Ron Paulling
Project Name: UTC Delavan GW Delineation			SC28050
Project No.: 60314964.16	P.O. No.: 87223		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab / Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	HCl	HNO3	H2SO4	NaOH	Na2S2O3	8260B PCE	Remarks / Cooler I.D.
GW-DPT-5D-52	3/28/17	0850	G	X				3					3	Report PCE ONLY 24 HR TAT

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☑ Rush (Specify) 24 HR TAT

Sample Disposal ☐ Return to Client ☑ Disposal by Lab

Possible Hazard Identification ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Ron Paulling	3/28/17		1. Received by: [signature]	3/28/17	3:30
2. Relinquished by: [signature]	3/28	16:53	2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by			4. Laboratory received by: [signature]	3/28/17	1653

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY Received on ice (Circle) (Yes) No Ice Pack Receipt Temp. 3.0 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
Document Number: ME0018C-08

Page 1 of 1
Effective Date: 03/07/2017
Expiry Date: 03/07/2022

Sample Receipt Checklist (SRC)

Client: AECOM Cooler Inspected by/date: CCT 3/28/17 Lot #: SC28050

Means of receipt: ☑ SESI ☐ Client ☐ UPS ☐ FedEx ☐ Other			
Yes ☑	No ☐		1. Were custody seals present on the cooler?
Yes ☑	No ☐	NA ☒	2. If custody seals were present, were they intact and unbroken?

CCT 3/28/17

pH strip ID: N/A Cl strip ID: N/A

Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt:

303.2 / / °C / / °C / / °C

Method: ☐ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None

Yes ☐	No ☐	NA ☑	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
Yes ☐	No ☐	NA ☑	4. Is the commercial courier's packing slip attached to this form?
Yes ☑	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☑	No ☐		6. Were sample IDs listed on the COC?
Yes ☑	No ☐		7. Were sample IDs listed on all sample containers?
Yes ☑	No ☐		8. Was collection date & time listed on the COC?
Yes ☑	No ☐		9. Was collection date & time listed on all sample containers?
Yes ☑	No ☐		10. Did all container label information (ID, date, time) agree with the COC?
Yes ☑	No ☐		11. Were tests to be performed listed on the COC?
Yes ☑	No ☐		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes ☑	No ☐		13. Was adequate sample volume available?
Yes ☑	No ☐		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes ☐	No ☑		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
Yes ☐	No ☑	NA ☐	16. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol/BNA (< 0.5mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
Yes ☐	No ☑		22. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4, HNO_3, HCl, NaOH) using SR # _____.

Sample(s) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC > 0.5 mg/L (If 421 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SC Drinking Water Project Sample(s) pH verified to be < 2 by _____ Date: _____

Sample(s) _____ were Not received at a pH of < 2 and were adjusted accordingly using SR# _____

Sample labels applied by: CCT Verified by: _____ Date: 3/28/17

Comments: _____

Report of Analysis

AECOM
10 Patewood Drive
Building 6, Suite 500
Greenville, SC 29615
Attention: Doria Cullom

Project Name: UTC Delavan, GW Delineation

Project Number: 60314964.16

Lot Number: SC29040

Date Completed: 03/30/2017

Date Revised: 03/30/2017



Nisreen Saikaly
Project Manager

This report shall not be reproduced, except in its entirety, without the written approval of Shealy Environmental Services, Inc.

The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative

AECOM

Lot Number: SC29040

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

VOC

Surrogate recovery for the following sample(s) was outside the upper control limit: SC29040-003, SC29040-004. This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Sample Summary

AECOM

Lot Number: SC29040

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	GW DPT 8S 19	Aqueous	03/28/2017 1505	03/29/2017
002	GW DPT 7S 29	Aqueous	03/28/2017 1700	03/29/2017
003	GW DPT 6S 24	Aqueous	03/29/2017 0835	03/29/2017
004	GW DPT 5S 19	Aqueous	03/29/2017 1010	03/29/2017

(4 samples)

Executive Summary

AECOM

Lot Number: SC29040

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
002	GW DPT 7S 29	Aqueous	Tetrachloroethene	8260B	0.72	J	ug/L	6

(1 detection)

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: GW DPT 8S 19
Date Sampled: 03/28/2017 1505
Date Received: 03/29/2017

Laboratory ID: SC29040-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	03/29/2017 2353	ECP		38402

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		126	70-130
Bromofluorobenzene		95	70-130
Toluene-d8		115	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SC29040-002
Description: GW DPT 7S 29
Matrix: Aqueous
Date Sampled: 03/28/2017 1700
Date Received: 03/29/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	03/30/2017 0016	ECP		38402

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	0.72	J	1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		130	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		111	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: GW DPT 6S 24
Date Sampled: 03/29/2017 0835
Date Received: 03/29/2017

Laboratory ID: SC29040-003
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	03/30/2017 0039	ECP		38402

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4	N	135	70-130
Bromofluorobenzene		102	70-130
Toluene-d8		119	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SC29040-004
Description: GW DPT 5S 19
Matrix: Aqueous
Date Sampled: 03/29/2017 1010
Date Received: 03/29/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	03/30/2017 0102	ECP		38402

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4	N	134	70-130
Bromofluorobenzene		101	70-130
Toluene-d8		120	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: SQ38402-001
Batch: 38402
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Tetrachloroethene	ND		1	1.0	0.40	ug/L	03/29/2017 2147

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		95	70-130
1,2-Dichloroethane-d4		125	70-130
Toluene-d8		113	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: SQ38402-002
Batch: 38402
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Tetrachloroethene	20	19		1	93	70-130	03/29/2017 2053

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		91	70-130
1,2-Dichloroethane-d4		116	70-130
Toluene-d8		108	70-130

PQL = Practical quantitation limit

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

ND = Not detected at or above the MDL

J = Estimated result < PQL and ≥ MDL

+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

SHEALY ENVIRONMENTAL SERVICES, INC.

106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Chain of Custody Record

Number 70205

(864) 234 2282

Client: AECOM	Report to Contact: Leslee Alexander	Telephone No. / E-mail: leslee.alexander@aecom.com	Quote No.
Address: 10 Patewood Dr. Bldg 6. Ste 500	Sampler's Signature: x Daniel Good	Analysis (Attach list if more space is needed)	Page 1 of 1
City: Greenville, State: SC, Zip Code: 29615	Printed Name: Daniel Good		SC29040
Project Name: UTC Delavan 2017 GW Delineation			
Project No.: 603 14964.16	P.O. No.: 87223		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Collection Code (Grab/Comp)	Matrix: Aqueous	Matrix: Soil	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		8260 B	Remarks / Cooler I.D.
GW DPT 85 19	3-28-17	1505	G	✓						✓				✓	Report PCE only
GW DPT 75 29	3-28-17	1700													24 hr. TAT
GW DPT 65 24	3-29-17	0835													
GW-DPT 55 19	3-29-17	1010								✓				✓	

Turn Around Time Required (Prior lab approval required for expedited TAT.)
☐ Standard ☐ Rush (Specify)

Sample Disposal
☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Daniel Good	3-29-17	1530	1. Received by: Sagi Hope	3/29/17	1530
2. Relinquished by: Sagi Hope	3/29/17	1632	2. Received by:	Date	Time
3. Relinquished by:	Date	Time	3. Received by:	Date	Time
4. Relinquished by:	Date	Time	4. Laboratory received by: Casey Trexler	3/29/17	1632

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) (Yes) No Ice Pack
Receipt Temp. 4.5 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-153 Effective Date: 09-01-2014

Shealy Environmental Services, Inc
Document Number: ME0018C-08

Page 1 of 1
Effective Date: 03/07/2017
Expiry Date: 03/07/2022

Sample Receipt Checklist (SRC)

Client: AECOM SBE 3/29/17 Cooler Inspected by/date: SBE 3/29-17 Lot #: SC29040

Means of receipt: ~~SEST~~ ☐ Client ☐ UPS ☐ FedEx ☐ Other			
Yes ☐	No ☑		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☐	2. If custody seals were present, were they intact and unbroken?
pH strip ID: Cl strip ID: Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt: 14.5/14.5 °C / / °C / / °C / / °C Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C Method of coolant: ☑ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None			
Yes ☐	No ☐	NA ☑	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
Yes ☐	No ☐	NA ☑	4. Is the commercial courier's packing slip attached to this form?
Yes ☑	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☑	No ☐		6. Were sample IDs listed on the COC?
Yes ☑	No ☐		7. Were sample IDs listed on all sample containers?
Yes ☑	No ☐		8. Was collection date & time listed on the COC?
Yes ☑	No ☐		9. Was collection date & time listed on all sample containers?
Yes ☑	No ☐		10. Did all container label information (ID, date, time) agree with the COC?
Yes ☑	No ☐		11. Were tests to be performed listed on the COC?
Yes ☑	No ☐		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes ☑	No ☐		13. Was adequate sample volume available?
Yes ☑	No ☐		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes ☐	No ☑		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
Yes ☐	No ☑	NA ☐	16. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol/BNA (< 0.5mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
Yes ☐	No ☑		22. Was the quote number used taken from the container label?
Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)			
Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4, HNO_3, HCl, NaOH) using SR # _____.			
Sample(s) _____ were received with bubbles >6 mm in diameter.			
Samples(s) _____ were received with TRC > 0.5 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.			
SC Drinking Water Project Sample(s) pH verified to be < 2 by _____ Date: _____ Sample(s) _____ were Not received at a pH of < 2 and were adjusted accordingly using SR# _____			
Sample labels applied by: SBE Verified by: _____ Date: 3-29-17			

Comments: _____

Report of Analysis

AECOM
10 Patewood Drive
Building 6, Suite 500
Greenville, SC 29615
Attention: Doria Cullom

Project Name: UTC Delavan, GW Delineation

Project Number: 60314964.16

Lot Number: SC29041

Date Completed: 03/30/2017

Nisreen Saikaly
Project Manager

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The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative

AECOM

Lot Number: SC29041

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

AECOM

Lot Number: SC29041

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	GW-DPT-6D-61	Aqueous	03/28/2017 1640	03/29/2017
002	GW-DPT-7D-62	Aqueous	03/29/2017 1210	03/29/2017
003	TRIP BLANK	Aqueous	03/28/2017	03/29/2017

(3 samples)

Executive Summary

AECOM

Lot Number: SC29041

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	GW-DPT-6D-61	Aqueous	Tetrachloroethene	8260B	210		ug/L	5
002	GW-DPT-7D-62	Aqueous	Tetrachloroethene	8260B	73		ug/L	6

(2 detections)

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: GW-DPT-6D-61
Date Sampled: 03/28/2017 1640
Date Received: 03/29/2017

Laboratory ID: SC29041-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	5	03/30/2017 0149	ECP		38402

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	210		5.0	2.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		127	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		112	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SC29041-002
Description: GW-DPT-7D-62
Matrix: Aqueous
Date Sampled: 03/29/2017 1210
Date Received: 03/29/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	03/30/2017 1205	ALL		38447

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	73		1.0	0.40	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		115	70-130
Bromofluorobenzene		82	70-130
Toluene-d8		100	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SC29041-003
Description: TRIP BLANK
Matrix: Aqueous
Date Sampled: 03/28/2017
Date Received: 03/29/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	03/29/2017 2220	ECP		38402

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		125	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		112	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: SQ38402-001
Batch: 38402
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Tetrachloroethene	ND		1	1.0	0.40	ug/L	03/29/2017 2147

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		95	70-130
1,2-Dichloroethane-d4		125	70-130
Toluene-d8		113	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: SQ38402-002
Batch: 38402
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Tetrachloroethene	20	19		1	93	70-130	03/29/2017 2053

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		91	70-130
1,2-Dichloroethane-d4		116	70-130
Toluene-d8		108	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MS

Sample ID: SC29041-001MS
Batch: 38402
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Tetrachloroethene	210	250	510		5	121	70-130	03/30/2017 0212

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		121	70-130
Bromofluorobenzene		100	70-130
Toluene-d8		119	70-130

PQL = Practical quantitation limit

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

ND = Not detected at or above the MDL

J = Estimated result < PQL and ≥ MDL

+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MSD

Sample ID: SC29041-001MD
Batch: 38402
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Tetrachloroethene	210	250	490		5	112	4.8	70-130	20	03/30/2017 0236

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		113	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		114	70-130

PQL = Practical quantitation limit

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

ND = Not detected at or above the MDL

J = Estimated result < PQL and ≥ MDL

+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: SQ38447-001
Batch: 38447
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Tetrachloroethene	ND		1	1.0	0.40	ug/L	03/30/2017 1102

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		80	70-130
1,2-Dichloroethane-d4		113	70-130
Toluene-d8		99	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: SQ38447-002
Batch: 38447
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Tetrachloroethene	20	19		1	94	70-130	03/30/2017 0930

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		78	70-130
1,2-Dichloroethane-d4		105	70-130
Toluene-d8		97	70-130

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCSD

Sample ID: SQ38447-003
Batch: 38447
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Tetrachloroethene	20	19		1	93	1.4	70-130	20	03/30/2017 1005

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		81	70-130
1,2-Dichloroethane-d4		107	70-130
Toluene-d8		99	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

SHEALY ENVIRONMENTAL SERVICES, INC.

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Chain of Custody Record

Number 70209

864-234-2282

Client: AECOM	Report to Contact: Leslee Alexander	Telephone No. / E-mail: leslee.alexander@aecom.com
Address: 10 Patewood Dr. Bldg 6 STE500	Sampler's Signature: x Ron Paulling	Analysis (Attach list if more space is needed)
City: Greenville State: SC Zip Code: 29615	Printed Name: Ron Paulling	
Project Name: LTC Delavan GW Delineation		
Project No.: 60314964.16	P.O. No.: 87223	

Quote No.

Page 1 of 1

SC29041

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab/Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No. of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	Soda Ash	VOCs 8260B	Remarks / Cooler I.D.
GW-DPT-6D-61	3/28/17	1640	G	X						3			X	Report PCE ONLY
GW-DPT-7D-62	3/29/17	1210	G	X						3			X	24 HR TAT

Turn Around Time Required (Prior lab approval required for expedited TAT.)
☐ Standard ☑ Rush (Specify) 24 HR TAT

Sample Disposal
☐ Return to Client ☑ Disposal by Lab

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Ron Paulling	3/29/17	1330	1. Received by: Daniel Good	3-29-17	1330
2. Relinquished by: Daniel Good	3-29-17	1530	2. Received by: Bryan Hogue	3/29/17	1530
3. Relinquished by: Bryan Hogue	3/29/17	1632	3. Received by:	Date	Time
4. Relinquished by:	Date	Time	4. Laboratory received by: Casey Treat	3/29/17	1632

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) (Yes) No Ice Pack

Receipt Temp. 4.5 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 09-01-2014

Shealy Environmental Services, Inc.
Document Number: MB0018C-08

Page 1 of 1
Effective Date: 03/07/2017
Expiry Date: 03/07/2022

Sample Receipt Checklist (SRC)

Client: AECOM Cooler Inspected by/date: SBE 3-29-17 Lot #: SCZ9041

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other			
Yes ☐	No ☑		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☑	2. If custody seals were present, were they intact and unbroken?
pH strip ID: Cl strip ID: Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt: 14.5/4.5 °C ___/___/___ °C ___/___/___ °C ___/___/___ °C Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C Method of coolant: ☑ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None			
Yes ☐	No ☐	NA ☑	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
Yes ☐	No ☐	NA ☑	4. Is the commercial courier's packing slip attached to this form?
Yes ☑	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☑	No ☐		6. Were sample IDs listed on the COC?
Yes ☑	No ☐		7. Were sample IDs listed on all sample containers?
Yes ☑	No ☐		8. Was collection date & time listed on the COC?
Yes ☑	No ☐		9. Was collection date & time listed on all sample containers?
Yes ☑	No ☐		10. Did all container label information (ID, date, time) agree with the COC?
Yes ☑	No ☐		11. Were tests to be performed listed on the COC?
Yes ☑	No ☐		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes ☑	No ☐		13. Was adequate sample volume available?
Yes ☑	No ☐	3/29/17 SBE	14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes ☑	No ☑	SBE	15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
Yes ☑	No ☑	NA ☐	16. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol/BNA (< 0.5mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
Yes ☐	No ☑		22. Was the quote number used taken from the container label?
Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)			
Sample(s) ___ were received incorrectly preserved and were adjusted accordingly in sample receiving with ___ (H_2SO_4, HNO_3, HCl, NaOH) using SR # ___.			
Sample(s) ___ were received with bubbles >6 mm in diameter.			
Samples(s) ___ were received with TRC > 0.5 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: ___.			
SC Drinking Water Project Sample(s) pH verified to be < 2 by ___ Date: ___ Sample(s) ___ were Not received at a pH of < 2 and were adjusted accordingly using SR# ___			
Sample labels applied by: SBE Verified by: ___ Date: 3-29-17			

Comments: trip blanks rec'd

Report of Analysis

AECOM
10 Patewood Drive
Building 6, Suite 500
Greenville, SC 29615
Attention: Doria Cullom

Project Name: UTC Delvan GW Delineation

Project Number: 60314964.16

Lot Number: SC30040

Date Completed: 03/31/2017

Date Revised: 04/04/2017



Nisreen Saikaly
Project Manager

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The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative

AECOM

Lot Number: SC30040

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

AECOM

Lot Number: SC30040

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	GW-DPT-8D-62	Aqueous	03/29/2017 1735	03/30/2017
002	GW-DPT-9S-29	Aqueous	03/30/2017 1310	03/30/2017
003	TRIP BLANK	Aqueous	03/30/2017	03/30/2017

(3 samples)

Executive Summary

AECOM

Lot Number: SC30040

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	GW-DPT-8D-62	Aqueous	Tetrachloroethene	8260B	130		ug/L	5
002	GW-DPT-9S-29	Aqueous	Tetrachloroethene	8260B	10		ug/L	6

(2 detections)

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SC30040-001
Description: GW-DPT-8D-62
Matrix: Aqueous
Date Sampled: 03/29/2017 1735
Date Received: 03/30/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	5	03/31/2017 0451	ECP		38516

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	130		5.0	2.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		93	70-130
Bromofluorobenzene		98	70-130
Toluene-d8		91	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SC30040-002
Description: GW-DPT-9S-29
Matrix: Aqueous
Date Sampled: 03/30/2017 1310
Date Received: 03/30/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	03/31/2017 0408	ECP		38516

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	10		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		93	70-130
Bromofluorobenzene		97	70-130
Toluene-d8		89	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SC30040-003
Description: TRIP BLANK
Matrix: Aqueous
Date Sampled: 03/30/2017
Date Received: 03/30/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	03/30/2017 2327	ECP		38516

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		90	70-130
Bromofluorobenzene		99	70-130
Toluene-d8		92	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Report of Analysis

AECOM
10 Patewood Drive
Building 6, Suite 500
Greenville, SC 29615
Attention: Doria Cullom

Project Name: UTC Delvan GW Delineation

Project Number: 60314964.16

Lot Number: SC31062

Date Completed: 04/03/2017

Nisreen Saikaly
Project Manager

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Case Narrative

AECOM

Lot Number: SC31062

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If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

AECOM

Lot Number: SC31062

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	GW-DPT-9D-47	Aqueous	03/30/2017 1540	03/31/2017
002	GW-DPT-9D-60	Aqueous	03/30/2017 1815	03/31/2017
003	GW-DPT-10D-47	Aqueous	03/31/2017 1130	03/31/2017
004	GW-DPT-10D-56	Aqueous	03/31/2017 1400	03/31/2017
005	TRIP BLANK	Aqueous	03/30/2017	03/31/2017

(5 samples)

Executive Summary

AECOM

Lot Number: SC31062

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	GW-DPT-9D-47	Aqueous	Tetrachloroethene	8260B	140		ug/L	5
002	GW-DPT-9D-60	Aqueous	Tetrachloroethene	8260B	99		ug/L	6
003	GW-DPT-10D-47	Aqueous	Tetrachloroethene	8260B	120		ug/L	7
004	GW-DPT-10D-56	Aqueous	Tetrachloroethene	8260B	120		ug/L	8

(4 detections)

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: GW-DPT-9D-47
Date Sampled: 03/30/2017 1540
Date Received: 03/31/2017

Laboratory ID: SC31062-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	5	04/01/2017 1444	JJG		38632

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	140		5.0	2.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		93	70-130
Bromofluorobenzene		96	70-130
Toluene-d8		91	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: GW-DPT-9D-60
Date Sampled: 03/30/2017 1815
Date Received: 03/31/2017

Laboratory ID: SC31062-002
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/01/2017 2052	JJG		38632

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	99		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		93	70-130
Bromofluorobenzene		100	70-130
Toluene-d8		91	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SC31062-003
Description: GW-DPT-10D-47
Matrix: Aqueous
Date Sampled: 03/31/2017 1130
Date Received: 03/31/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	5	04/01/2017 1506	JJG		38632

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	120		5.0	2.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		91	70-130
Bromofluorobenzene		101	70-130
Toluene-d8		93	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SC31062-004
Description: GW-DPT-10D-56
Matrix: Aqueous
Date Sampled: 03/31/2017 1400
Date Received: 03/31/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/01/2017 2113	JJG		38632

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	120		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		94	70-130
Bromofluorobenzene		100	70-130
Toluene-d8		94	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: TRIP BLANK
Date Sampled: 03/30/2017
Date Received: 03/31/2017

Laboratory ID: SC31062-005
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/01/2017 1422	JJG		38632

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		96	70-130
Bromofluorobenzene		100	70-130
Toluene-d8		95	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: SQ38632-001
Batch: 38632
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Tetrachloroethene	ND		1	1.0	0.40	ug/L	04/01/2017 1318

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		101	70-130
1,2-Dichloroethane-d4		92	70-130
Toluene-d8		94	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: SQ38632-002
Batch: 38632
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Tetrachloroethene	50	53		1	106	70-130	04/01/2017 1221

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		95	70-130
1,2-Dichloroethane-d4		87	70-130
Toluene-d8		92	70-130

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 70206

Client: AECOM	Report to Contact: Leslee Alexander	Telephone No. / E-mail: Leslee.Alexander@AECOM.com	Quote No.
Address: 10 Patewood Dr. Bldg 6 Ste 500	Sampler's Signature: x Charles K Sudduth	Analysis (Attach list if more space is needed): 8260B	Page 1 of 1
City: Greenville / State: SC / Zip Code: 29615	Printed Name: Chuck Sudduth		SC31062
Project Name: UTC Delavan GW Delineation			
Project No.: 60314964.16	P.O. No.: 87223		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab / Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No. of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc	Remarks / Cooler I.D.
GW-DPT-9D-47	3/30/17	1540	✓	✓						✓			PCE only
GW-DPT-9D-60	3/30/17	1815											24hr. TAT
GW-DPT-10D-47	3/31/17	1130											
GW-DPT-10D-56	3/31/17	1400											

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

1. Relinquished by: Charles K Sudduth	Date: 3/31/17	Time: 1450	1. Received by: Daniel Good	Date: 3-31-17	Time: 1450
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: Daniel Good	Date: 3-31-17	Time: 1821	4. Laboratory received by: [signature]	Date: 3/31/17	Time: 1821

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) Yes / No Ice Pack Receipt Temp 2.4 °C TD

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 05-01-2014

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
Document Number: MB0018C-08

Page 1 of 1
Effective Date: 03/07/2017
Expiry Date: 03/07/2022

Sample Receipt Checklist (SRC)

Client: AECOM Cooler Inspected by/date: JWB 3/31/17 Lot #: SC31062

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other

Yes ☐	No ☑		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☑	2. If custody seals were present, were they intact and unbroken?

pH strip ID: NA Cl strip ID: NA

Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt:

12.4/2.4 °C ___/___ °C ___/___ °C ___/___ °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☐ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None

Yes ☐	No ☐	NA ☑	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
Yes ☐	No ☐	NA ☑	4. Is the commercial courier's packing slip attached to this form?
Yes ☑	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☑	No ☐		6. Were sample IDs listed on the COC?
Yes ☑	No ☐		7. Were sample IDs listed on all sample containers?
Yes ☑	No ☐		8. Was collection date & time listed on the COC?
Yes ☑	No ☐		9. Was collection date & time listed on all sample containers?
Yes ☑	No ☐		10. Did all container label information (ID, date, time) agree with the COC?
Yes ☑	No ☐		11. Were tests to be performed listed on the COC?
Yes ☑	No ☐		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes ☑	No ☐		13. Was adequate sample volume available?
Yes ☑	No ☐		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes ☑	No ☐		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
Yes ☑	No ☐	NA ☐	16. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol/BNA (< 0.5mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
Yes ☐	No ☑		22. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4, HNO_3, HCl, NaOH) using SR # _____.

Sample(s) Trip blank (1) were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC > 0.5 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SC Drinking Water Project Sample(s) pH verified to be < 2 by _____ Date: _____

Sample(s) _____ were Not received at a pH of < 2 and were adjusted accordingly using SR# _____

Sample labels applied by: JWB Verified by: _____ Date: 3/31/17

Comments: Trip blank not on COC

Report of Analysis

AECOM
10 Patewood Drive
Building 6, Suite 500
Greenville, SC 29615
Attention: Doria Cullom

Project Name: UTC Delavan

Project Number: 60314964

Lot Number: SD04050

Date Completed: 04/05/2017

Nisreen Saikaly
Project Manager

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Case Narrative

AECOM

Lot Number: SD04050

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

AECOM

Lot Number: SD04050

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	GW DPT 4D 60	Aqueous	04/04/2017 0935	04/04/2017
002	TRIP BLANK	Aqueous	04/04/2017	04/04/2017

(2 samples)

Executive Summary

AECOM

Lot Number: SD04050

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	GW DPT 4D 60	Aqueous	Tetrachloroethene	8260B	20		ug/L	5

(1 detection)

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SD04050-001
Description: GW DPT 4D 60
Matrix: Aqueous
Date Sampled: 04/04/2017 0935
Date Received: 04/04/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/05/2017 1127	TML		38905

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	20		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		119	70-130
Bromofluorobenzene		83	70-130
Toluene-d8		105	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SD04050-002
Description: TRIP BLANK
Matrix: Aqueous
Date Sampled: 04/04/2017
Date Received: 04/04/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/05/2017 1104	TML		38905

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		120	70-130
Bromofluorobenzene		85	70-130
Toluene-d8		108	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: SQ38905-001
Batch: 38905
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Tetrachloroethene	ND		1	1.0	0.40	ug/L	04/05/2017 1035

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		83	70-130
1,2-Dichloroethane-d4		118	70-130
Toluene-d8		106	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: SQ38905-002
Batch: 38905
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Tetrachloroethene	50	48		1	97	70-130	04/05/2017 0944

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		83	70-130
1,2-Dichloroethane-d4		112	70-130
Toluene-d8		104	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

Shealy Environmental Services, Inc.
106 Vantage Point Drive
West Columbia, South Carolina 29172
Telephone No. (803) 791-9700 Fax No. (803) 791-9111
www.shealylab.com

Chain of Custody Record

Number

Client	Report to Contact	Sampler (Printed Name)	Quote No.
AECOM	Leslee Alexander	Daniel Good	
Address	**Telephone No. / Fax No. / Email**	**Waybill No.**	**Page**
10 Patewood Dr. Bldg 6 Ste 500	leslee.alexander@aecom.com		of
City / State / Zip Code	**Preservative**		**Number of Containers**
Greenville / SC / 29615	1. Unpres. 4. HNO3 7. NaOH; 2. NaOH/ZnA 5. HCL; 3. H2SO4 6. Na Thio.		**Bottle (See Instructions on back)**
Project Name			
VTC Delaware			
Project Number	**P.O Number**		
60314964	87223		

SD04050

Sample ID / Description (Containers for each sample may be combined on one line)	Date	Time	G=Grab C=Composite	Matrix: GW	DW	WW	S	Other	Analysis: VOCs 8260B														Number of Containers / Bottle (See Instructions on back)
GW DPT 4D 60	4-4-17	0935	G	✓					✓														PCE only 24hr TAT

Turn Around Time Required (Prior lab approval required for expedited TA)	Sample Disposal	QC Requirements (Specify)	Possible Hazard Identification
☐ Standard ☐ Rush (Please Specify)	☐ Return to Client ☐ Disposal by Lab		☐Non-Hazard ☐Flammable ☐Skin Irritant ☐Poison ☐Unknown

	Date	Time		Date	Time
1. Relinquished by / Sampler: Daniel Good	4-4-17	1530	1. Received by: [signature]	4/4/17	1530
2. Relinquished by: [signature] to fed ex	4/4/17	1650	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by	Date	Time	4. Laboratory Received by: [signature]	Date 4/4/17	Time 1650

Note: All samples are retained for six weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Check) ☐ Yes ☑ No ☐ Ice Pack
Receipt Temp. 9.0 °C for 4/4/17
Temp. Blank ☐ Y / ☑ N

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
Document Number: ME0018C-08

Page 1 of 1
Effective Date: 03/07/2017
Expiry Date: 03/07/2022

Sample Receipt Checklist (SRC)

Client: AECOM Cooler Inspected by/date: CT / 4/4/17 Lot #: 500405O

Means of receipt: ☑ SESI ☐ Client ☐ UPS ☐ FedEx ☐ Other			
Yes ☐	No ☑		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☑	2. If custody seals were present, were they intact and unbroken?

pH strip ID: NA Cl strip ID: NA

Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt:

4.0/4.0 °C / / °C / / °C / / °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None

Yes ☐	No ☐	NA ☑	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
Yes ☐	No ☐	NA ☑	4. Is the commercial courier's packing slip attached to this form?
Yes ☑	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☑	No ☐		6. Were sample IDs listed on the COC?
Yes ☑	No ☐		7. Were sample IDs listed on all sample containers?
Yes ☑	No ☐		8. Was collection date & time listed on the COC?
Yes ☑	No ☐		9. Was collection date & time listed on all sample containers?
Yes ☑	No ☐		10. Did all container label information (ID, date, time) agree with the COC?
Yes ☑	No ☐		11. Were tests to be performed listed on the COC?
Yes ☑	No ☐		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes ☑	No ☐		13. Was adequate sample volume available?
Yes ☑	No ☐		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes ☑	No ☒	CT	15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
Yes ☐	No ☑	NA ☐	16. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol/BNA (< 0.5mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
Yes ☐	No ☑		22. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4, HNO_3, HCl, NaOH) using SR # _____.

Sample(s) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC > 0.5 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SC Drinking Water Project Sample(s) pH verified to be < 2 by _____ Date: _____

Sample(s) _____ were Not received at a pH of < 2 and were adjusted accordingly using SR#

Sample labels applied by: CT Verified by: _____ Date: 4/4/17

Comments: Received Trip Blank not listed on Chain.

Report of Analysis

AECOM
10 Patewood Drive
Building 6, Suite 500
Greenville, SC 29615
Attention: Doria Cullom

Project Name: UTC Delavan GW Delineation

Project Number: 60314964.16

Lot Number: SD05072

Date Completed: 04/06/2017



Nisreen Saikaly
Project Manager

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The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative

AECOM

Lot Number: SD05072

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

AECOM

Lot Number: SD05072

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	GWDPT 1D 45	Aqueous	04/04/2017 1610	04/05/2017
002	GWDPT 1D 60	Aqueous	04/05/2017 0850	04/05/2017
003	TRIP BLANK	Aqueous	04/05/2017	04/05/2017

(3 samples)

Executive Summary

AECOM

Lot Number: SD05072

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	GWDPT 1D 45	Aqueous	Tetrachloroethene	8260B	9.8		ug/L	5
002	GWDPT 1D 60	Aqueous	Tetrachloroethene	8260B	59		ug/L	6

(2 detections)

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SD05072-001
Description: GWDPT 1D 45
Matrix: Aqueous
Date Sampled: 04/04/2017 1610
Date Received: 04/05/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	04/06/2017 1047	TML		39001

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	9.8		1.0	0.40	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		114	70-130
Bromofluorobenzene		84	70-130
Toluene-d8		103	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SD05072-002
Description: GWDPT 1D 60
Matrix: Aqueous
Date Sampled: 04/05/2017 0850
Date Received: 04/05/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	1	04/06/2017 1110	TML		39001

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	59		1.0	0.40	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		118	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		106	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SD05072-003
Description: TRIP BLANK
Matrix: Aqueous
Date Sampled: 04/05/2017
Date Received: 04/05/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/05/2017 2300	ECP		38977

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		121	70-130
Bromofluorobenzene		86	70-130
Toluene-d8		107	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: SQ38977-001
Batch: 38977
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Tetrachloroethene	ND		1	1.0	0.40	ug/L	04/05/2017 2149

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		84	70-130
1,2-Dichloroethane-d4		115	70-130
Toluene-d8		106	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: SQ38977-002
Batch: 38977
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Tetrachloroethene	20	17		1	87	70-130	04/05/2017 2051

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		83	70-130
1,2-Dichloroethane-d4		113	70-130
Toluene-d8		105	70-130

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: SQ39001-001
Batch: 39001
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Tetrachloroethene	ND		1	1.0	0.40	ug/L	04/06/2017 1017

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		86	70-130
1,2-Dichloroethane-d4		118	70-130
Toluene-d8		103	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: SQ39001-002
Batch: 39001
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Tetrachloroethene	50	44		1	88	70-130	04/06/2017 0925

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		85	70-130
1,2-Dichloroethane-d4		109	70-130
Toluene-d8		106	70-130

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

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West Columbia, South Carolina 29172
Telephone No. (803) 791-9700 Fax No. (803) 791-9111
www.shealylab.com

SHEALY **Chain of Custody Record** **Number**

Client: AECOM	Report to Contact: Leslee Alexander	Sampler (Printed Name): Daniel Good	Quote No.
Address: 10 Patewood Drive Bldg 5 Ste 350	Telephone No. / Fax No. / Email: leslee.alexander@aecom.com	Waybill No.	Page: 1 of 1
City: Greenville; State: SC; Zip Code: 29615	Preservative: 1. Unpres. 2. NaOH/ZnA 3. H2SO4 4. HNO3 5. HCl 6. Na Thio. 7. NaOH		Number of Containers / Bottle (See Instructions on back) / Preservative
Project Name: UTC-Delaware GW Delineation			
Project Number: 60314964.16; P.O. Number: 87223			SD05072

Sample ID / Description (Containers for each sample may be combined on one line)	Date	Time	G=Grab C=Composite	Matrix: GW	DW	WW	S	Other	Analysis: 8260B														Preservative
GWDPT ID ~~60~~ 45	4-4-17	~~1610~~ 1610	G	V					V														PCE only 24hr
GWDPT ID 60	4-5-17	0850	G	V					V														TAT

Turn Around Time Required (Prior lab approval required for expedited TAT): ☐ Standard ☐ Rush (Please Specify)	Sample Disposal: ☐ Return to Client ☐ Disposal by Lab		QC Requirements (Specify)	Possible Hazard Identification: ☐Non-Hazard ☐Flammable ☐Skin Irritant ☐Poison ☐Unknown		
1. Relinquished by / Sampler: Daniel Good	Date: 4-5-17	Time: 1425	1. Received by: Doug Hope	Date: 4/5/17	Time: 1425	
2. Relinquished by	Date	Time	2. Received by	Date	Time	
3. Relinquished by	Date	Time	3. Received by	Date	Time	
4. Relinquished by: Doug Hope	Date: 4/5/17	Time: 1538	4. Laboratory Received by: Tracy Donald	Date: 4/5/17	Time: 1538	
Note: All samples are retained for six weeks from receipt unless other arrangements are made.			LAB USE ONLY. Received on Ice (Check): ☑ Yes ☐ No ☐ Ice Pack	Receipt Temp. 4.9 °C	Temp. Blank: ☑ Y / ☐ N	

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
Document Number: MED018C-08

Page 1 of 1
Effective Date: 03/07/2017
Expiry Date: 03/07/2022

Sample Receipt Checklist (SRC)

Client: AECOM Cooler Inspected by/date: JRR / 4/5/17 Lot #: SD05072

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other			
Yes ☐	No ☑		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☑	2. If custody seals were present, were they intact and unbroken?

pH strip ID: NA Cl strip ID: NA
Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt:
14.9/14.9 °C ___/___/___°C ___/___/___°C ___/___/___°C
Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C
Method of coolant: ☑ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None

Yes ☐	No ☐	NA ☑	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
Yes ☑	No ☐	NA ☐	4. Is the commercial courier's packing slip attached to this form?
Yes ☑	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☑	No ☐		6. Were sample IDs listed on the COC?
Yes ☑	No ☐		7. Were sample IDs listed on all sample containers?
Yes ☑	No ☐		8. Was collection date & time listed on the COC?
Yes ☑	No ☐		9. Was collection date & time listed on all sample containers?
Yes ☑	No ☐		10. Did all container label information (ID, date, time) agree with the COC?
Yes ☑	No ☐		11. Were tests to be performed listed on the COC?
Yes ☑	No ☐		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes ☑	No ☐		13. Was adequate sample volume available?
Yes ☑	No ☐		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes ☑	No ☑	JRR 4/5/17	15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
Yes ☐	No ☐	NA ☐	16. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol/BNA (< 0.5mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
Yes ☐	No ☑		22. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4, HNO_3, HCl, NaOH) using SR # _____.

Sample(s) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC > 0.5 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SC Drinking Water Project Sample(s) pH verified to be < 2 by _____ Date: _____
Sample(s) _____ were Not received at a pH of < 2 and were adjusted accordingly using SR# _____

Sample labels applied by: JRR Verified by: _____ Date: 4/5/17

Comments: Trip blank not on COC

Report of Analysis

AECOM
10 Patewood Drive
Building 6, Suite 500
Greenville, SC 29615
Attention: Doria Cullom

Project Name: UTC Delavan GW Delineation

Project Number: 60314964.16

Lot Number: SD06052

Date Completed: 04/07/2017

Nisreen Saikaly
Project Manager

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The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative

AECOM

Lot Number: SD06052

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

AECOM

Lot Number: SD06052

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	GWDPT 2D 50	Aqueous	04/06/2017 0900	04/06/2017
002	GWDPT 2D 64	Aqueous	04/06/2017 1210	04/06/2017
003	TRIP BLANK	Aqueous	04/06/2017 0900	04/06/2017

(3 samples)

Executive Summary

AECOM

Lot Number: SD06052

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	GWDPT 2D 50	Aqueous	Tetrachloroethene	8260B	15		ug/L	5
002	GWDPT 2D 64	Aqueous	Tetrachloroethene	8260B	47		ug/L	6

(2 detections)

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SD06052-001
Description: GWDPT 2D 50
Matrix: Aqueous
Date Sampled: 04/06/2017 0900
Date Received: 04/06/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/06/2017 2322	ECP		39075

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	15		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		120	70-130
Bromofluorobenzene		87	70-130
Toluene-d8		106	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SD06052-002
Description: GWDPT 2D 64
Matrix: Aqueous
Date Sampled: 04/06/2017 1210
Date Received: 04/06/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/06/2017 2346	ECP		39075

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	47		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		119	70-130
Bromofluorobenzene		86	70-130
Toluene-d8		106	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: SD06052-003
Description: TRIP BLANK
Matrix: Aqueous
Date Sampled: 04/06/2017 0900
Date Received: 04/06/2017

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/06/2017 2259	ECP		39075

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.40	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		121	70-130
Bromofluorobenzene		85	70-130
Toluene-d8		107	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: SQ39075-001
Batch: 39075
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Tetrachloroethene	ND		1	1.0	0.40	ug/L	04/06/2017 2221

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		87	70-130
1,2-Dichloroethane-d4		120	70-130
Toluene-d8		107	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: SQ39075-002
Batch: 39075
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Tetrachloroethene	20	20		1	100	70-130	04/06/2017 2123

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		82	70-130
1,2-Dichloroethane-d4		112	70-130
Toluene-d8		103	70-130

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

Shealy Environmental Services, Inc.
106 Vantage Point Drive
West Columbia, South Carolina 29172
Telephone No. (803) 791-9700 Fax No. (803) 791-9111
www.shealylab.com

Chain of Custody Record

Number

Client: AECOM	Report to Contact: Leslee Alexander	Sampler (Printed Name): Daniel Good	Quote No.
Address: 10 Patewood Dr. Bldg 6. Ste 500	Telephone No. / Fax No. / Email: Leslee.alexander@aecom.com	Waybill No.	Page: 1 of 1
City: Greenville / State: SC / Zip Code: 29615	Preservative: 1. Unpres. 2. NaOH/ZnA 3. H2SO4 4. HNO3 5. HCL 6. Na Thio. 7. NaOH		
Project Name: UTC Delaron GW Delineation			
Project Number: 603 14964.16	P.O Number: 87223		

Sample ID / Description (Containers for each sample may be combined on one line)	Date	Time	G=Grab C=Composite	Matrix: GW	DW	WW	S	Other	Analysis: BTEX												Number of Containers	Bottle (See instructions on back)	Preservative
GW OPT 2D 50	4-6-17	0900	G	✓						✓													PCE only
GW OPT 2D 64	4-6-17	1210	G	✓						✓													24hr TAT
Trip blank										✓													

SD06052

Turn Around Time Required (Prior lab approval required for expedited TAT): ☐ Standard ☑ Rush (Please Specify)

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab

QC Requirements (Specify):

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

	Date	Time		Date	Time
1. Relinquished by / Sampler: Daniel Good	4/6/17	1530	1. Received by: [signature]	4/6/17	1530
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: [signature]	4/6/17	1652	4. Laboratory Received by: [signature]	4-6-17	1652

Note: All samples are retained for six weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Check) ☑ Yes ☐ No ☐ Ice Pack
Receipt Temp. 3.6 °C
Temp. Blank ☐ Y / ☑ N

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
Document Number: ME0018C-08

Page 1 of 1
Effective Date: 03/07/2017
Expiry Date: 03/07/2022

Sample Receipt Checklist (SRC)

Client: AECOM Cooler Inspected by/date: JGG / 4/6/17 Lot #: SD06052

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other			
Yes ☐	No ☑		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☑	2. If custody seals were present, were they intact and unbroken?

pH strip ID: NA Cl strip ID: NA

Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt:

13.6 / 13.6 °C ___ / ___ °C ___ / ___ °C ___ / ___ °C

Method: ☑ Temperature Blank ☑ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

JGG 4/6/17

Method of coolant: ☑ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None

Yes ☐	No ☐	NA ☑	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
Yes ☐	No ☐	NA ☐	4. Is the commercial courier's packing slip attached to this form?
Yes ☑	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☑	No ☐		6. Were sample IDs listed on the COC?
Yes ☑	No ☐		7. Were sample IDs listed on all sample containers?
Yes ☑	No ☐		8. Was collection date & time listed on the COC?
Yes ☑	No ☐		9. Was collection date & time listed on all sample containers?
Yes ☑	No ☐		10. Did all container label information (ID, date, time) agree with the COC?
Yes ☑	No ☐		11. Were tests to be performed listed on the COC?
Yes ☑	No ☐		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes ☑	No ☐		13. Was adequate sample volume available?
Yes ☑	No ☐		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes ☐	No ☑		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
Yes ☑	No ☐	NA ☐	16. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol/BNA (< 0.5mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
Yes ☐	No ☑		22. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4, HNO_3, HCl, NaOH) using SR # _____.

Sample(s) 002 (2) 003 (2) were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC > 0.5 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SC Drinking Water Project Sample(s) pH verified to be < 2 by _____ Date: _____

Sample(s) _____ were Not received at a pH of < 2 and were adjusted accordingly using SR# _____

Sample labels applied by: JGG Verified by: _____ Date: 4/6/17

Comments: _____

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Automated Report

Technical Report for

United Technologies Corporation

AECOMSCG: Delavan Spray Technologies; Bamberg, SC

60314964.16

SGS Accutest Job Number: FA42740



Sampling Date: 04/04/17

Report to:

AECOM Environment
10 Patewood Dr Bldg VI, Suite 500
Greenville, SC 29615
doria.cullom@aecom.com

ATTN: Doria Cullom

Total number of pages in report: 39

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Heather Wandrey 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(L-A-B L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, GA, IA, KY, MA, NV, OK, OR, UT, WA

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Test results relate only to samples analyzed.

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Sample Summary

United Technologies Corporation

Job No: FA42740

AECOMSCG: Delavan Spray Technologies; Bamberg, SC
Project No: 60314964.16

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA42740-1	04/04/17	10:25	DG	04/05/17	SO	Soil	IDW-1-KINSEY
FA42740-2	04/04/17	13:00	DG	04/05/17	SO	Soil	IDW-1-BAMBERG

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: United Technologies Corporation **Job No:** FA42740

Site: AECOMSCG: Delavan Spray Technologies; Bamberg, SC **Report Date:** 4/14/2017 7:32:37 PM

2 Sample(s) were collected on 04/04/2017 and were received at SGS Accutest Southeast (SASE) on 04/05/2017 properly preserved, at 4.3 Deg. C and intact. These Samples received an SASE job number of FA42740. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: LEACHATE **Batch ID:** VM4084

All samples were prepared within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA42850-1MS, FA42850-1MSD, FA42740-1DUP were used as the QC samples indicated.

Matrix Spike/Matrix Spike Duplicate Recovery(s) for Carbon Tetrachloride are outside control limits. Probable cause is due to matrix interference. % RPD was within control limits in MS/MSD.

RPD(s) for DUP for Chlorobenzene, Chloroform, Tetrachloroethylene, Trichloroethylene are outside control limits for sample FA42740-1DUP. Probable cause is due to sample non-homogeneity.

Extractables by GCMS By Method SW846 8270D

Matrix: LEACHATE **Batch ID:** OP64620

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA42660-1LDUP, FA42740-1MS, FA42740-1MSD were used as the QC samples indicated.

Metals By Method SW846 6010D

Matrix: LEACHATE **Batch ID:** MP31953

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA42740-1DUP, FA42740-2DUP, FA42740-2MS, FA42740-2MSD, FA42740-2SDL were used as the QC samples for metals.

RPD(s) for Duplicate for Lead are outside control limits for sample MP31953-D2. RPD acceptable due to low duplicate and sample concentrations.

Metals By Method SW846 7470A

Matrix: LEACHATE **Batch ID:** MP31961

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA42740-2DUP, FA42740-2MS, FA42740-2MSD, FA42740-2SDL, FA42740-1DUP were used as the QC samples for metals.

RPD(s) for Duplicate for Mercury are outside control limits for sample MP31961-D2. RPD acceptable due to low duplicate and sample concentrations.

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____ Date April 14, 2017

Kim Benham, Client Services (signature on file)

Summary of Hits

Job Number: FA42740
Account: United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC
Collected: 04/04/17

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA42740-1	**IDW-1-KINSEY**					
Chlorobenzene		0.0027 J	0.010	0.0020	mg/l	SW846 8260B
Chloroform		0.0036 J	0.010	0.0030	mg/l	SW846 8260B
Copper		0.014 J	0.25	0.010	mg/l	SW846 6010D
Mercury		0.00063 J	0.0050	0.00050	mg/l	SW846 7470A
Nickel		0.012 J	0.40	0.0040	mg/l	SW846 6010D
FA42740-2	**IDW-1-BAMBERG**					
Tetrachloroethylene		0.0063 J	0.010	0.0022	mg/l	SW846 8260B

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	IDW-1-KINSEY		
Lab Sample ID:	FA42740-1	**Date Sampled:**	04/04/17
Matrix:	SO - Soil	**Date Received:**	04/05/17
Method:	SW846 8260B SW846 1311	**Percent Solids:**	n/a
Project:	AECOMSCG: Delavan Spray Technologies; Bamberg, SC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M95189.D	10	04/11/17	KM	04/10/17	OP64569	VM4084
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCLP List **TCLP Leachate method SW846 1311**

CAS No.	Compound	Result	HW#	MCL	RL	MDL	Units	Q
71-43-2	Benzene	ND	D018	0.50	0.010	0.0031	mg/l	
78-93-3	2-Butanone (MEK)	ND	D035	200	0.050	0.020	mg/l	
56-23-5	Carbon Tetrachloride	ND	D019	0.50	0.010	0.0036	mg/l	
108-90-7	Chlorobenzene	0.0027	D021	100	0.010	0.0020	mg/l	J
67-66-3	Chloroform	0.0036	D022	6.0	0.010	0.0030	mg/l	J
106-46-7	1,4-Dichlorobenzene	ND	D027	7.5	0.010	0.0026	mg/l	
107-06-2	1,2-Dichloroethane	ND	D028	0.50	0.010	0.0031	mg/l	
75-35-4	1,1-Dichloroethylene	ND	D029	0.70	0.010	0.0032	mg/l	
127-18-4	Tetrachloroethylene	ND	D039	0.70	0.010	0.0022	mg/l	
79-01-6	Trichloroethylene	ND	D040	0.50	0.010	0.0035	mg/l	
75-01-4	Vinyl Chloride	ND	D043	0.20	0.010	0.0041	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	94%		85-112%
460-00-4	4-Bromofluorobenzene	99%		83-118%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
MCL = Maximum Contamination Level (40 CFR 261 7/1/11) B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW-1-KINSEY		
Lab Sample ID:	FA42740-1	**Date Sampled:**	04/04/17
Matrix:	SO - Soil	**Date Received:**	04/05/17
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	AECOMSCG: Delavan Spray Technologies; Bamberg, SC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4D1214.D	1	04/14/17	NG	04/12/17	OP64620	S4D44
Run #2							

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2		

ABN TCLP List **TCLP Leachate method SW846 1311**

CAS No.	Compound	Result	HW#	MCL	RL	MDL	Units	Q
95-48-7	2-Methylphenol	ND	D023	200	0.050	0.0056	mg/l	
	3&4-Methylphenol	ND	D024	200	0.050	0.0098	mg/l	
87-86-5	Pentachlorophenol	ND	D037	100	0.25	0.050	mg/l	
95-95-4	2,4,5-Trichlorophenol	ND	D041	400	0.050	0.0074	mg/l	
88-06-2	2,4,6-Trichlorophenol	ND	D042	2.0	0.050	0.0075	mg/l	
106-46-7	1,4-Dichlorobenzene	ND	D027	7.5	0.050	0.0050	mg/l	
121-14-2	2,4-Dinitrotoluene	ND	D030	0.13	0.050	0.0081	mg/l	
118-74-1	Hexachlorobenzene	ND	D032	0.13	0.050	0.0069	mg/l	
87-68-3	Hexachlorobutadiene	ND	D033	0.50	0.050	0.0050	mg/l	
67-72-1	Hexachloroethane	ND	D034	3.0	0.050	0.016	mg/l	
98-95-3	Nitrobenzene	ND	D036	2.0	0.050	0.0093	mg/l	
110-86-1	Pyridine	ND	D038	5.0	0.10	0.020	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	36%		14-67%
4165-62-2	Phenol-d5	24%		10-50%
118-79-6	2,4,6-Tribromophenol	90%		33-118%
4165-60-0	Nitrobenzene-d5	91%		42-108%
321-60-8	2-Fluorobiphenyl	80%		40-106%
1718-51-0	Terphenyl-d14	75%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
MCL = Maximum Contamination Level (40 CFR 261 7/1/11) B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-1-KINSEY
Lab Sample ID: FA42740-1
Matrix: SO - Soil
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Date Sampled: 04/04/17
Date Received: 04/05/17
Percent Solids: n/a

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	MDL	Units	DF	Prep	Analyzed	By	Method
Antimony	0.010 U			0.060	0.010	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Arsenic	0.013 U	D004	5.0	0.10	0.013	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Beryllium	0.0020 U			0.040	0.0020	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Cadmium	0.0020 U	D006	1.0	0.050	0.0020	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Chromium	0.010 U	D007	5.0	0.10	0.010	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Copper	0.014 J			0.25	0.010	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Lead	0.011 U	D008	5.0	0.050	0.011	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Mercury	0.00063 J	D009	0.20	0.0050	0.00050	mg/l	1	04/12/17	04/12/17	JL	SW846 7470A [1]
Nickel	0.012 J			0.40	0.0040	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Selenium	0.029 U	D010	1.0	0.10	0.029	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Silver	0.0070 U	D011	5.0	0.10	0.0070	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Thallium	0.014 U			0.10	0.014	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Zinc	0.10 U			0.20	0.10	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]

(1) Instrument QC Batch: MA13982
(2) Instrument QC Batch: MA13983
(3) Prep QC Batch: MP31953
(4) Prep QC Batch: MP31961

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL
MCL = Maximum Contamination Level (40 CFR 261 7/1/11) J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: IDW-1-BAMBERG
Lab Sample ID: FA42740-2 **Date Sampled:** 04/04/17
Matrix: SO - Soil **Date Received:** 04/05/17
Method: SW846 8260B SW846 1311 **Percent Solids:** n/a
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M95191.D	10	04/11/17	KM	04/10/17	OP64569	VM4084
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCLP List **TCLP Leachate method SW846 1311**

CAS No.	Compound	Result	HW#	MCL	RL	MDL	Units	Q
71-43-2	Benzene	ND	D018	0.50	0.010	0.0031	mg/l	
78-93-3	2-Butanone (MEK)	ND	D035	200	0.050	0.020	mg/l	
56-23-5	Carbon Tetrachloride	ND	D019	0.50	0.010	0.0036	mg/l	
108-90-7	Chlorobenzene	ND	D021	100	0.010	0.0020	mg/l	
67-66-3	Chloroform	ND	D022	6.0	0.010	0.0030	mg/l	
106-46-7	1,4-Dichlorobenzene	ND	D027	7.5	0.010	0.0026	mg/l	
107-06-2	1,2-Dichloroethane	ND	D028	0.50	0.010	0.0031	mg/l	
75-35-4	1,1-Dichloroethylene	ND	D029	0.70	0.010	0.0032	mg/l	
127-18-4	Tetrachloroethylene	0.0063	D039	0.70	0.010	0.0022	mg/l	J
79-01-6	Trichloroethylene	ND	D040	0.50	0.010	0.0035	mg/l	
75-01-4	Vinyl Chloride	ND	D043	0.20	0.010	0.0041	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	95%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
MCL = Maximum Contamination Level (40 CFR 261 7/1/11) B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW-1-BAMBERG		
Lab Sample ID:	FA42740-2	**Date Sampled:**	04/04/17
Matrix:	SO - Soil	**Date Received:**	04/05/17
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	AECOMSCG: Delavan Spray Technologies; Bamberg, SC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L0690935.D	1	04/13/17	NG	04/12/17	OP64620	SL3989
Run #2							

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2		

ABN TCLP List **TCLP Leachate method SW846 1311**

CAS No.	Compound	Result	HW#	MCL	RL	MDL	Units	Q
95-48-7	2-Methylphenol	ND	D023	200	0.050	0.0056	mg/l	
	3&4-Methylphenol	ND	D024	200	0.050	0.0098	mg/l	
87-86-5	Pentachlorophenol	ND	D037	100	0.25	0.050	mg/l	
95-95-4	2,4,5-Trichlorophenol	ND	D041	400	0.050	0.0074	mg/l	
88-06-2	2,4,6-Trichlorophenol	ND	D042	2.0	0.050	0.0075	mg/l	
106-46-7	1,4-Dichlorobenzene	ND	D027	7.5	0.050	0.0050	mg/l	
121-14-2	2,4-Dinitrotoluene	ND	D030	0.13	0.050	0.0081	mg/l	
118-74-1	Hexachlorobenzene	ND	D032	0.13	0.050	0.0069	mg/l	
87-68-3	Hexachlorobutadiene	ND	D033	0.50	0.050	0.0050	mg/l	
67-72-1	Hexachloroethane	ND	D034	3.0	0.050	0.016	mg/l	
98-95-3	Nitrobenzene	ND	D036	2.0	0.050	0.0093	mg/l	
110-86-1	Pyridine	ND	D038	5.0	0.10	0.020	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	30%		14-67%
4165-62-2	Phenol-d5	19%		10-50%
118-79-6	2,4,6-Tribromophenol	84%		33-118%
4165-60-0	Nitrobenzene-d5	70%		42-108%
321-60-8	2-Fluorobiphenyl	73%		40-106%
1718-51-0	Terphenyl-d14	74%		39-121%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
MCL = Maximum Contamination Level (40 CFR 261 7/1/11) B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW-1-BAMBERG
Lab Sample ID: FA42740-2
Matrix: SO - Soil
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Date Sampled: 04/04/17
Date Received: 04/05/17
Percent Solids: n/a

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	MDL	Units	DF	Prep	Analyzed	By	Method
Antimony	0.010 U			0.060	0.010	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Arsenic	0.013 U	D004	5.0	0.10	0.013	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Beryllium	0.0020 U			0.040	0.0020	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Cadmium	0.0020 U	D006	1.0	0.050	0.0020	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Chromium	0.010 U	D007	5.0	0.10	0.010	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Copper	0.010 U			0.25	0.010	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Lead	0.011 U	D008	5.0	0.050	0.011	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Mercury	0.00050 U	D009	0.20	0.0050	0.00050	mg/l	1	04/12/17	04/12/17	JL	SW846 7470A [1]
Nickel	0.0040 U			0.40	0.0040	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Selenium	0.029 U	D010	1.0	0.10	0.029	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Silver	0.0070 U	D011	5.0	0.10	0.0070	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Thallium	0.014 U			0.10	0.014	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]
Zinc	0.10 U			0.20	0.10	mg/l	1	04/12/17	04/12/17	LM	SW846 6010D [2]

(1) Instrument QC Batch: MA13982
(2) Instrument QC Batch: MA13983
(3) Prep QC Batch: MP31953
(4) Prep QC Batch: MP31961

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL
MCL = Maximum Contamination Level (40 CFR 261 7/1/11) J = Indicates a result > = MDL but < RL

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

SGS ACCUTEST

SGS Accutest Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.accutest.com

SGS ACCUTEST JOB # : FA42740 **PAGE** 1 **OF** 1

SGS Accutest Quote # | **SKIFF #**

Client / Reporting Information

Company Name: AECOM
Address: 10 Patewood Drive Bldg 6 Ste 520
City: Greenville State: SC Zip: 29615
Project Contact: Leslee Alexander Email: leslee.alexander@aecom.com
Phone #: 864 234 2282
Sampler(s) Name(s) (Printed)
Sampler 1: Daniel Good Sampler 2:

Project Information

Project Name: VC Delavan GW Delineation
Street Ba
City Bamberg State SC
Project # 60314964.16
Fax #
Client Purchase Order # 87458

Analytical Information

V8260 TCL
A8270 TCL, PM13
Priority Pollutant Metals

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Accutest Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MeOH	LAB USE ONLY
1	IDW-1-Kinsey	4-4-17	1025	DG	SO	4								✓	✓	
2	IDW-1-Bamberg	4-4-17	1300	DG	SO	4								✓	✓	

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

72 Hr TAT

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	Daniel Good	4/4/17 1500	2 FX	3 FX		4 04/05/17 915
5	Relinquished by/Affiliation	Date Time:	6 Received By/Affiliation	7 Relinquished By/Affiliation	Date Time:	8 Received By/Affiliation

Lab Use Only : Cooler Temperature (s) Celsius: 4.3

SGS ACCUTEST - ORLANDO SAMPLE RECEIPT CONFIRMATION

SGS ACCUTEST'S JOB NUMBER: FA42740 CLIENT: Aecom PROJECT: UTC Delaware

DATE/TIME RECEIVED: 04/05/17 915 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 1

METHOD OF DELIVERY: (FEDEX) UPS ACCUTEST COURIER DELIVERY OTHER:

AIRBILL NUMBERS: 7861 3567 7889

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [X] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

MISC. INFORMATION

NUMBER OF ENCORES ? 25-GRAM_____ 5-GRAM_____

NUMBER OF 5035 FIELD KITS ? 2

NUMBER OF LAB FILTERED METALS ? _____

TEMPERATURE INFORMATION

- [ ] IR THERM ID 1 CORR. FACTOR +0.5
- [ ] OBSERVED TEMPS: 3.9
- [ ] CORRECTED TEMPS: 4.3 (USED FOR LIMS)

SAMPLE INFORMATION

- [ ] INCORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- [ ] ID'S ON COC DO NOT MATCH LABEL
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] 5035 FIELD KITS NOT RECEIVED WITHIN 48 HOURS
- [ ] BULK VOA SOIL JARS NOT RECEIVED WITHIN 48 HOURS
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] RESIDUAL CHLORINE PRESENT LOT#_____

{APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS}

TEST STRIP LOT#s pH 0-3 230315 pH 10-12 219813A OTHER (specify) _____

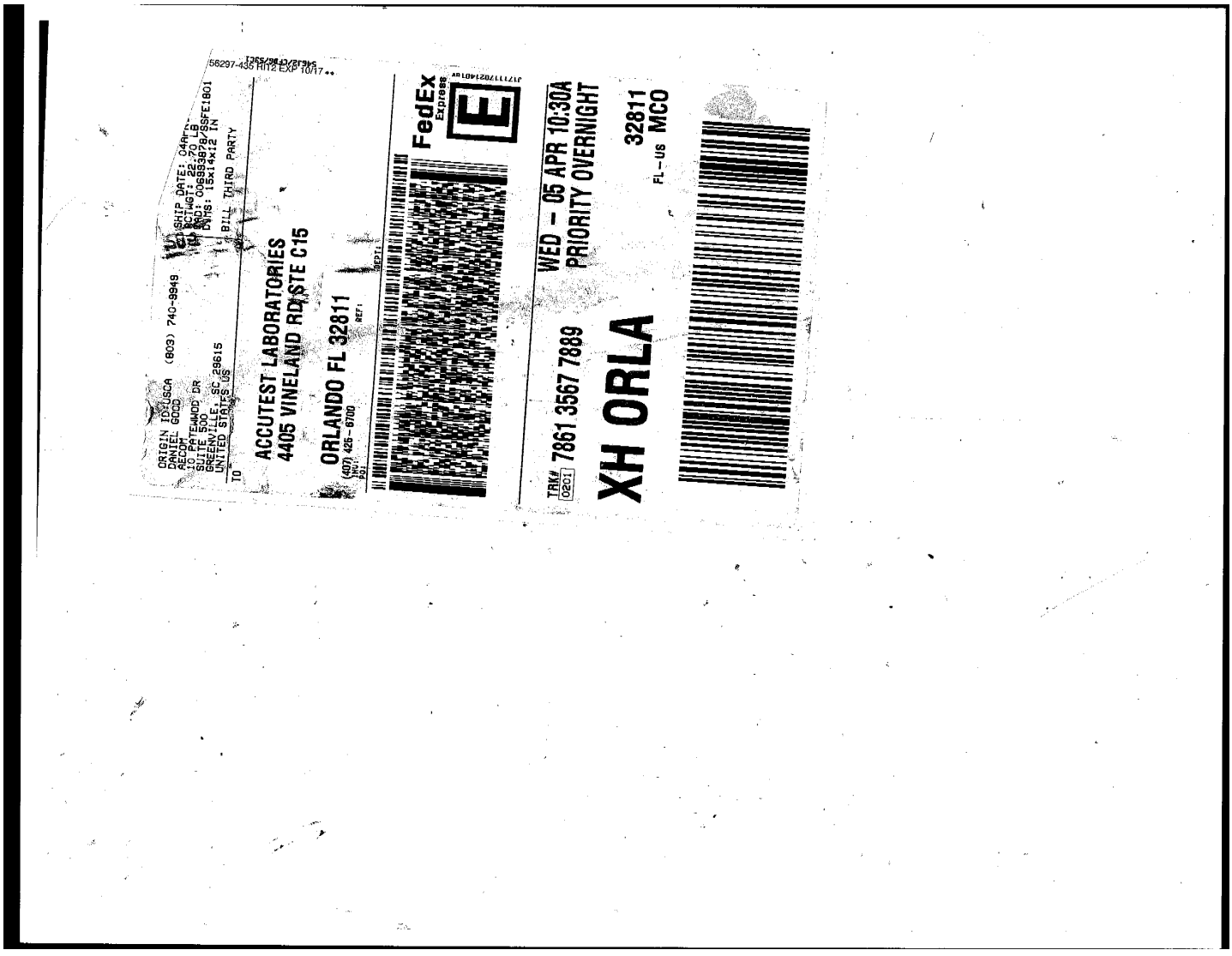
SUMMARY OF COMMENTS.

TECHNICIAN SIGNATURE/DATE: 04/05/17 REVIEWER SIGNATURE/DATE: 04-05-17

NF 02/16 receipt confirmation 020116.xls

5.1 5

FA42740: Chain of Custody
Page 2 of 3



FA42740: Chain of Custody
Page 3 of 3

GC/MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Leachate Blank Summary

Job Number: FA42740
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP64569-LB	M95188.D	10	04/11/17	KM	04/10/17	OP64569	VM4084

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA42740-1, FA42740-2

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	10	3.1	ug/l	
78-93-3	2-Butanone (MEK)	ND	50	20	ug/l	
56-23-5	Carbon Tetrachloride	ND	10	3.6	ug/l	
108-90-7	Chlorobenzene	ND	10	2.0	ug/l	
67-66-3	Chloroform	ND	10	3.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	10	2.6	ug/l	
107-06-2	1,2-Dichloroethane	ND	10	3.1	ug/l	
75-35-4	1,1-Dichloroethylene	ND	10	3.2	ug/l	
127-18-4	Tetrachloroethylene	ND	10	2.2	ug/l	
79-01-6	Trichloroethylene	ND	10	3.5	ug/l	
75-01-4	Vinyl Chloride	ND	10	4.1	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	103%	83-118%
17060-07-0	1,2-Dichloroethane-D4	101%	79-125%
2037-26-5	Toluene-D8	94%	85-112%
460-00-4	4-Bromofluorobenzene	99%	83-118%

Blank Spike Summary

Job Number: FA42740
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VM4084-BS	M95171.D	10	04/11/17	KM	n/a	n/a	VM4084

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA42740-1, FA42740-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	250	235	94	81-122
78-93-3	2-Butanone (MEK)	1250	1170	94	56-143
56-23-5	Carbon Tetrachloride	250	295	118	76-136
108-90-7	Chlorobenzene	250	259	104	82-124
67-66-3	Chloroform	250	225	90	80-124
106-46-7	1,4-Dichlorobenzene	250	256	102	78-120
107-06-2	1,2-Dichloroethane	250	223	89	75-125
75-35-4	1,1-Dichloroethylene	250	194	78	78-137
127-18-4	Tetrachloroethylene	250	296	118	76-135
79-01-6	Trichloroethylene	250	252	101	81-126
75-01-4	Vinyl Chloride	250	286	114	69-159

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	101%	83-118%
17060-07-0	1,2-Dichloroethane-D4	94%	79-125%
2037-26-5	Toluene-D8	95%	85-112%
460-00-4	4-Bromofluorobenzene	103%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA42740
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA42850-1MS	M95193.D	10	04/11/17	KM	n/a	n/a	VM4084
FA42850-1MSD	M95194.D	10	04/11/17	KM	n/a	n/a	VM4084
FA42850-1	M95192.D	10	04/11/17	KM	04/10/17	OP64569	VM4084

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA42740-1, FA42740-2

CAS No.	Compound	FA42850-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	10	U	250	281	112	250	289	116	3	81-122/14
78-93-3	2-Butanone (MEK)	50	U	1250	1170	94	1250	1150	92	2	56-143/18
56-23-5	Carbon Tetrachloride	10	U	250	343	137*	250	358	143*	4	76-136/23
108-90-7	Chlorobenzene	10	U	250	279	112	250	284	114	2	82-124/14
67-66-3	Chloroform	10	U	250	258	103	250	263	105	2	80-124/15
106-46-7	1,4-Dichlorobenzene	10	U	250	278	111	250	285	114	2	78-120/15
107-06-2	1,2-Dichloroethane	10	U	250	254	102	250	259	104	2	75-125/14
75-35-4	1,1-Dichloroethylene	10	U	250	290	116	250	296	118	2	78-137/18
127-18-4	Tetrachloroethylene	10	U	250	310	124	250	314	126	1	76-135/16
79-01-6	Trichloroethylene	10	U	250	290	116	250	294	118	1	81-126/15
75-01-4	Vinyl Chloride	10	U	250	266	106	250	263	105	1	69-159/18

CAS No.	Surrogate Recoveries	MS	MSD	FA42850-1	Limits
1868-53-7	Dibromofluoromethane	98%	98%	105%	83-118%
17060-07-0	1,2-Dichloroethane-D4	93%	92%	101%	79-125%
2037-26-5	Toluene-D8	94%	93%	94%	85-112%
460-00-4	4-Bromofluorobenzene	100%	104%	98%	83-118%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA42740
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA42740-1DUP	M95190.D	10	04/11/17	KM	n/a	n/a	VM4084
FA42740-1	M95189.D	10	04/11/17	KM	04/10/17	OP64569	VM4084

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA42740-1, FA42740-2

CAS No.	Compound	FA42740-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
71-43-2	Benzene	ND		ND		nc	14
78-93-3	2-Butanone (MEK)	ND		ND		nc	18
56-23-5	Carbon Tetrachloride	ND		ND		nc	23
108-90-7	Chlorobenzene	2.7	J	ND		200*	14
67-66-3	Chloroform	3.6	J	ND		200*	15
106-46-7	1,4-Dichlorobenzene	ND		ND		nc	15
107-06-2	1,2-Dichloroethane	ND		ND		nc	14
75-35-4	1,1-Dichloroethylene	ND		ND		nc	18
127-18-4	Tetrachloroethylene	ND		3.0	J	200*	16
79-01-6	Trichloroethylene	ND		55.7		200*	15
75-01-4	Vinyl Chloride	ND		ND		nc	18

CAS No.	Surrogate Recoveries	DUP	FA42740-1	Limits
1868-53-7	Dibromofluoromethane	104%	104%	83-118%
17060-07-0	1,2-Dichloroethane-D4	102%	100%	79-125%
2037-26-5	Toluene-D8	93%	94%	85-112%
460-00-4	4-Bromofluorobenzene	100%	99%	83-118%

* = Outside of Control Limits.

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Leachate Blank Summary

Job Number: FA42740
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP64620-LB	L0690931.D	1	04/13/17	NG	04/12/17	OP64620	SL3989

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA42740-1, FA42740-2

CAS No.	Compound	Result	RL	MDL	Units	Q
95-48-7	2-Methylphenol	ND	50	5.6	ug/l	
	3&4-Methylphenol	ND	50	9.8	ug/l	
87-86-5	Pentachlorophenol	ND	250	50	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	50	7.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	50	7.5	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	50	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	50	8.1	ug/l	
118-74-1	Hexachlorobenzene	ND	50	6.9	ug/l	
87-68-3	Hexachlorobutadiene	ND	50	5.0	ug/l	
67-72-1	Hexachloroethane	ND	50	16	ug/l	
98-95-3	Nitrobenzene	ND	50	9.3	ug/l	
110-86-1	Pyridine	ND	100	20	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	26%	14-67%
4165-62-2	Phenol-d5	17%	10-50%
118-79-6	2,4,6-Tribromophenol	74%	33-118%
4165-60-0	Nitrobenzene-d5	69%	42-108%
321-60-8	2-Fluorobiphenyl	70%	40-106%
1718-51-0	Terphenyl-d14	65%	39-121%

Blank Spike Summary

Job Number: FA42740
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP64620-LBS	L0690930.D	1	04/13/17	NG	04/12/17	OP64620	SL3989

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA42740-1, FA42740-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
95-48-7	2-Methylphenol	500	283	57	43-90
	3&4-Methylphenol	1000	486	49	36-88
87-86-5	Pentachlorophenol	1000	738	74	61-115
95-95-4	2,4,5-Trichlorophenol	500	420	84	62-109
88-06-2	2,4,6-Trichlorophenol	500	425	85	59-107
106-46-7	1,4-Dichlorobenzene	500	358	72	45-98
121-14-2	2,4-Dinitrotoluene	500	414	83	61-110
118-74-1	Hexachlorobenzene	500	413	83	63-108
87-68-3	Hexachlorobutadiene	500	326	65	42-102
67-72-1	Hexachloroethane	500	331	66	42-100
98-95-3	Nitrobenzene	500	367	73	50-104
110-86-1	Pyridine	500	204	41	23-74

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	38%	14-67%
4165-62-2	Phenol-d5	24%	10-50%
118-79-6	2,4,6-Tribromophenol	82%	33-118%
4165-60-0	Nitrobenzene-d5	74%	42-108%
321-60-8	2-Fluorobiphenyl	81%	40-106%
1718-51-0	Terphenyl-d14	76%	39-121%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA42740
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP64620-MS	L0690933.D	1	04/13/17	NG	04/12/17	OP64620	SL3989
OP64620-MSD	L0690934.D	1	04/13/17	NG	04/12/17	OP64620	SL3989
FA42740-1	4D1214.D	1	04/14/17	NG	04/12/17	OP64620	S4D44

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA42740-1, FA42740-2

CAS No.	Compound	FA42740-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
95-48-7	2-Methylphenol	ND		500	281	56	500	286	57	2	43-90/28
	3&4-Methylphenol	ND		1000	472	47	1000	487	49	3	36-88/28
87-86-5	Pentachlorophenol	ND		1000	874	87	1000	807	81	8	61-115/26
95-95-4	2,4,5-Trichlorophenol	ND		500	449	90	500	428	86	5	62-109/22
88-06-2	2,4,6-Trichlorophenol	ND		500	458	92	500	431	86	6	59-107/23
106-46-7	1,4-Dichlorobenzene	ND		500	401	80	500	387	77	4	45-98/25
121-14-2	2,4-Dinitrotoluene	ND		500	471	94	500	443	89	6	61-110/21
118-74-1	Hexachlorobenzene	ND		500	465	93	500	443	89	5	63-108/22
87-68-3	Hexachlorobutadiene	ND		500	365	73	500	356	71	2	42-102/28
67-72-1	Hexachloroethane	ND		500	401	80	500	373	75	7	42-100/29
98-95-3	Nitrobenzene	ND		500	394	79	500	393	79	0	50-104/28
110-86-1	Pyridine	ND		500	209	42	500	202	40	3	23-74/34

CAS No.	Surrogate Recoveries	MS	MSD	FA42740-1	Limits
367-12-4	2-Fluorophenol	35%	36%	36%	14-67%
4165-62-2	Phenol-d5	21%	23%	24%	10-50%
118-79-6	2,4,6-Tribromophenol	92%	84%	90%	33-118%
4165-60-0	Nitrobenzene-d5	79%	74%	91%	42-108%
321-60-8	2-Fluorobiphenyl	86%	82%	80%	40-106%
1718-51-0	Terphenyl-d14	85%	76%	75%	39-121%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA42740
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP64620-DUP	L0690938.D	1	04/13/17	NG	04/12/17	OP64620	SL3989
FA42660-1L	L0690937.D	1	04/13/17	NG	04/12/17	OP64620	SL3989

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA42740-1, FA42740-2

CAS No.	Compound	FA42660-1L ug/l	Q	DUP ug/l	Q	RPD	Limits
95-48-7	2-Methylphenol	50 U		ND		nc	28
	3&4-Methylphenol	50 U		ND		nc	28
87-86-5	Pentachlorophenol	250 U		ND		nc	26
95-95-4	2,4,5-Trichlorophenol	50 U		ND		nc	22
88-06-2	2,4,6-Trichlorophenol	50 U		ND		nc	23
106-46-7	1,4-Dichlorobenzene	50 U		ND		nc	25
121-14-2	2,4-Dinitrotoluene	50 U		ND		nc	21
118-74-1	Hexachlorobenzene	50 U		ND		nc	22
87-68-3	Hexachlorobutadiene	50 U		ND		nc	28
67-72-1	Hexachloroethane	50 U		ND		nc	29
98-95-3	Nitrobenzene	50 U		ND		nc	28
110-86-1	Pyridine	100 U		ND		nc	34

CAS No.	Surrogate Recoveries	DUP	FA42660-1L	Limits
367-12-4	2-Fluorophenol	29%	28%	14-67%
4165-62-2	Phenol-d5	19%	17%	10-50%
118-79-6	2,4,6-Tribromophenol	75%	88%	33-118%
4165-60-0	Nitrobenzene-d5	68%	80%	42-108%
321-60-8	2-Fluorobiphenyl	67%	82%	40-106%
1718-51-0	Terphenyl-d14	51%	74%	39-121%

* = Outside of Control Limits.

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA42740
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31953
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date:					04/12/17		04/12/17		04/12/17
Metal	RL	IDL	MDL	MB raw	final	MB raw	final	MB raw	final
Aluminum	0.20	.014	.014						
Antimony	0.0060	.001	.001	0.00090	<0.0060	0.0060	<0.060	0.010	<0.060
Arsenic	0.010	.0013	.0013	-0.00080	<0.010	-0.0070	<0.10	-0.015	<0.10
Barium	0.20	.001	.005						
Beryllium	0.0040	.0002	.0002	0.000080	<0.0040	-0.00010	<0.040	-0.00010	<0.040
Cadmium	0.0050	.0002	.0002	-0.000010	<0.0050	0.0	<0.050	-0.00030	<0.050
Calcium	1.0	.05	.05						
Chromium	0.010	.001	.001	-0.00030	<0.010	0.0	<0.10	-0.0020	<0.10
Cobalt	0.050	.0002	.0002						
Copper	0.025	.001	.001	0.00020	<0.025	0.0030	<0.25	0.0010	<0.25
Iron	0.30	.017	.017						
Lead	0.0050	.001	.0011	0.00010	<0.0050	0.0050	<0.050	-0.0050	<0.050
Magnesium	5.0	.035	.035						
Manganese	0.015	.0005	.001						
Molybdenum	0.050	.0003	.0003						
Nickel	0.040	.0004	.0004	-0.00030	<0.040	-0.0020	<0.40	-0.0020	<0.40
Potassium	10	.2	.2						
Selenium	0.010	.0024	.0029	-0.0013	<0.010	0.0030	<0.10	0.0010	<0.10
Silver	0.010	.0007	.0007	-0.00020	<0.010	-0.0010	<0.10	-0.0030	<0.10
Sodium	10	.5	.5						
Strontium	0.010	.0005	.0005						
Thallium	0.010	.0011	.0014	-0.0025	<0.010	-0.022	<0.10	-0.018	<0.10
Tin	0.050	.0009	.001						
Titanium	0.010	.0005	.001						
Vanadium	0.050	.0005	.0006						
Zinc	0.020	.003	.01	0.00010	<0.020	0.011	<0.20	0.0040	<0.20

Associated samples MP31953: FA42740-1, FA42740-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA42740
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31953
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date:			04/12/17					04/12/17	
Metal	FA42740-2 Original	DUP	RPD	QC Limits	FA42740-2 Original	MS	Spikelot MPFLICP2	% Rec	QC Limits
Aluminum									
Antimony	0.0	0.0	NC	0-20	0.0	5.2	5.0	104.0	80-120
Arsenic	0.0	0.0	NC	0-20	0.0	21.1	20.0	105.5	80-120
Barium	anr								
Beryllium	0.0	0.0	NC	0-20	0.0	0.55	0.50	110.0	80-120
Cadmium	0.0	0.0	NC	0-20	0.0	0.52	0.50	104.0	80-120
Calcium									
Chromium	0.0	0.0	NC	0-20	0.0	2.1	2.0	105.0	80-120
Cobalt									
Copper	0.0	0.0	NC	0-20	0.0	2.6	2.5	104.0	80-120
Iron									
Lead	0.0	0.0	NC	0-20	0.0	5.0	5.0	100.0	80-120
Magnesium									
Manganese									
Molybdenum									
Nickel	0.0	0.0	NC	0-20	0.0	5.3	5.0	106.0	80-120
Potassium									
Selenium	0.0	0.0	NC	0-20	0.0	20.7	20.0	103.5	80-120
Silver	0.0	0.0	NC	0-20	0.0	0.48	0.50	96.0	80-120
Sodium									
Strontium									
Thallium	0.0	0.0	NC	0-20	0.0	19.9	20.0	99.5	80-120
Tin									
Titanium									
Vanadium									
Zinc	0.0	0.0	NC	0-20	0.0	5.2	5.0	104.0	80-120

Associated samples MP31953: FA42740-1, FA42740-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA42740
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31953
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date:					04/12/17				04/12/17	
Metal	FA42740-2 Original	MSD	Spikelot MPFLICP2	% Rec	MSD RPD	QC Limit	FA42740-1 Original	DUP	RPD	QC Limits
Aluminum										
Antimony	0.0	5.3	5.0	106.0	1.9	20	0.0	0.0	NC	0-20
Arsenic	0.0	21.1	20.0	105.5	0.0	20	0.0	0.0	NC	0-20
Barium	anr									
Beryllium	0.0	0.55	0.50	110.0	0.0	20	0.0	0.0	NC	0-20
Cadmium	0.0	0.52	0.50	104.0	0.0	20	0.0	0.0	NC	0-20
Calcium										
Chromium	0.0	2.1	2.0	105.0	0.0	20	0.0	0.0	NC	0-20
Cobalt										
Copper	0.0	2.6	2.5	104.0	0.0	20	0.014	0.015	6.9	0-20
Iron										
Lead	0.0	5.0	5.0	100.0	0.0	20	0.010	0.0	200.0(a)	0-20
Magnesium										
Manganese										
Molybdenum										
Nickel	0.0	5.3	5.0	106.0	0.0	20	0.012	0.010	18.2	0-20
Potassium										
Selenium	0.0	20.8	20.0	104.0	0.5	20	0.0	0.0	NC	0-20
Silver	0.0	0.48	0.50	96.0	0.0	20	0.0	0.0	NC	0-20
Sodium										
Strontium										
Thallium	0.0	19.9	20.0	99.5	0.0	20	0.0	0.0	NC	0-20
Tin										
Titanium										
Vanadium										
Zinc	0.0	5.2	5.0	104.0	0.0	20	0.043	0.037	15.0	0-20

Associated samples MP31953: FA42740-1, FA42740-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA42740
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31953
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date:		04/12/17				04/12/17	
Metal	BSP Result	Spikelot MPFLICP2	% Rec	QC Limits	BSP Result	Spikelot MPFLICP2	% Rec	QC Limits
Aluminum								
Antimony	0.53	0.50	106.0	80-120	5.2	5.0	104.0	80-120
Arsenic	2.1	2.0	105.0	80-120	21.0	20.0	105.0	80-120
Barium	anr							
Beryllium	0.055	0.050	110.0	80-120	0.55	0.50	110.0	80-120
Cadmium	0.053	0.050	106.0	80-120	0.52	0.50	104.0	80-120
Calcium								
Chromium	0.21	0.20	105.0	80-120	2.1	2.0	105.0	80-120
Cobalt								
Copper	0.26	0.25	104.0	80-120	2.6	2.5	104.0	80-120
Iron								
Lead	0.50	0.50	100.0	80-120	5.0	5.0	100.0	80-120
Magnesium								
Manganese								
Molybdenum								
Nickel	0.54	0.50	108.0	80-120	5.3	5.0	106.0	80-120
Potassium								
Selenium	2.0	2.0	100.0	80-120	20.6	20.0	103.0	80-120
Silver	0.046	0.050	92.0	80-120	0.47	0.50	94.0	80-120
Sodium								
Strontium								
Thallium	2.0	2.0	100.0	80-120	19.9	20.0	99.5	80-120
Tin								
Titanium								
Vanadium								
Zinc	0.54	0.50	108.0	80-120	5.3	5.0	106.0	80-120

Associated samples MP31953: FA42740-1, FA42740-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA42740
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31953
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 04/12/17

Metal	BSP Result	Spikelot MPFLICP2	% Rec	QC Limits
Aluminum				
Antimony	5.3	5.0	106.0	80-120
Arsenic	21.0	20.0	105.0	80-120
Barium	anr			
Beryllium	0.55	0.50	110.0	80-120
Cadmium	0.53	0.50	106.0	80-120
Calcium				
Chromium	2.1	2.0	105.0	80-120
Cobalt				
Copper	2.6	2.5	104.0	80-120
Iron				
Lead	5.0	5.0	100.0	80-120
Magnesium				
Manganese				
Molybdenum				
Nickel	5.4	5.0	108.0	80-120
Potassium				
Selenium	20.4	20.0	102.0	80-120
Silver	0.46	0.50	92.0	80-120
Sodium				
Strontium				
Thallium	20.0	20.0	100.0	80-120
Tin				
Titanium				
Vanadium				
Zinc	5.4	5.0	108.0	80-120

Associated samples MP31953: FA42740-1, FA42740-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA42740
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31953
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: ug/l

Prep Date: 04/12/17

Metal	FA42740-2 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony	0.00	0.00	NC	0-10
Arsenic	0.00	0.00	NC	0-10
Barium	anr			
Beryllium	0.00	0.00	NC	0-10
Cadmium	0.00	0.00	NC	0-10
Calcium				
Chromium	0.00	0.00	NC	0-10
Cobalt				
Copper	0.00	0.00	NC	0-10
Iron				
Lead	0.00	0.00	NC	0-10
Magnesium				
Manganese				
Molybdenum				
Nickel	0.00	0.00	NC	0-10
Potassium				
Selenium	0.00	0.00	NC	0-10
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium	0.00	0.00	NC	0-10
Tin				
Titanium				
Vanadium				
Zinc	0.00	0.00	NC	0-10

Associated samples MP31953: FA42740-1, FA42740-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA42740
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31961 Methods: SW846 7470A
Matrix Type: LEACHATE Units: mg/l

Prep Date: 04/12/17 04/12/17

Metal	RL	IDL	MDL	MB raw	MB final	MB raw	MB final
Mercury	0.00050	.00003	.00005	0.000075	<0.00050	0.00028	<0.0050

Associated samples MP31961: FA42740-1, FA42740-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA42740
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31961
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 04/12/17 04/12/17

Metal	FA42740-2 Original	DUP	RPD	QC Limits	FA42740-2 Original	MS	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.0	0.0	NC	0-20	0.0	0.030	0.030	100.0	80-120

Associated samples MP31961: FA42740-1, FA42740-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA42740
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31961
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 04/12/17 04/12/17

Metal	FA42740-2 Original	MSD	Spikelot HGFLWS1	% Rec	MSD RPD	QC Limit	FA42740-1 Original	DUP	RPD	QC Limits
Mercury	0.0	0.030	0.030	100.0	0.0	20	0.00063	0.0	200.0(a)	0-20

Associated samples MP31961: FA42740-1, FA42740-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA42740
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31961
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date:			04/12/17				04/12/17	
Metal	BSP Result	Spikelot HGFLWS1	% Rec	QC Limits	BSP Result	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.0030	0.0030	100.0	80-120	0.030	0.030	100.0	80-120

Associated samples MP31961: FA42740-1, FA42740-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA42740
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31961
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: ug/l

Prep Date: 04/12/17

Metal	FA42740-2 Original	SDL 1:5	%DIF	QC Limits
Mercury	0.00	0.00	NC	0-10

Associated samples MP31961: FA42740-1, FA42740-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

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Automated Report

Technical Report for

United Technologies Corporation

AECOMSCG: Delavan Spray Technologies; Bamberg, SC

60314964.16

SGS Accutest Job Number: FA42947



Sampling Date: 04/10/17

Report to:

AECOM Environment
10 Patewood Dr Bldg VI, Suite 500
Greenville, SC 29615
doria.cullom@aecom.com

ATTN: Doria Cullom

Total number of pages in report: **49**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Heather Wandrey 407-425-6700

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Sample Summary

United Technologies Corporation

Job No: FA42947

AECOMSCG: Delavan Spray Technologies; Bamberg, SC
Project No: 60314964.16

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA42947-1	04/10/17	16:00	DG	04/12/17	AQ	Water	IDW BAMBERG
FA42947-2	04/10/17	16:15	DG	04/12/17	AQ	Water	IDW KINSEY
FA42947-3	04/10/17	00:00	DG	04/12/17	AQ	Trip Blank Water	TRIP BLANK

Summary of Hits

Job Number: FA42947
Account: United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC
Collected: 04/10/17

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA42947-1	**IDW BAMBERG**					
Bromodichloromethane		0.62 J	1.0	0.24	ug/l	SW846 8260B
Chloroform		2.4	1.0	0.30	ug/l	SW846 8260B
1,1-Dichloroethylene		0.36 J	1.0	0.32	ug/l	SW846 8260B
Tetrachloroethylene		18.6	1.0	0.22	ug/l	SW846 8260B
Chromium		8.3 J	10	1.0	ug/l	SW846 6010D
Copper		2.8 J	25	1.0	ug/l	SW846 6010D
Mercury		0.074 J	0.50	0.030	ug/l	SW846 7470A
Nickel		1.8 J	40	0.40	ug/l	SW846 6010D
Zinc		29.4	20	4.4	ug/l	SW846 6010D
FA42947-2	**IDW KINSEY**					
Carbon Disulfide		38.0	2.0	0.53	ug/l	SW846 8260B
Tetrachloroethylene		0.65 J	1.0	0.22	ug/l	SW846 8260B
Beryllium		4.2	4.0	0.20	ug/l	SW846 6010D
Cadmium		2.2 J	5.0	0.20	ug/l	SW846 6010D
Chromium		65.7	10	1.0	ug/l	SW846 6010D
Copper		5.4 J	25	1.0	ug/l	SW846 6010D
Lead		8.1	5.0	1.1	ug/l	SW846 6010D
Mercury		0.11 J	0.50	0.030	ug/l	SW846 7470A
Nickel		20.4 J	40	0.40	ug/l	SW846 6010D
Thallium		1.7 J	10	1.4	ug/l	SW846 6010D
Zinc		230	20	4.4	ug/l	SW846 6010D
FA42947-3	**TRIP BLANK**					
Methylene Chloride		2.6 J	5.0	2.0	ug/l	SW846 8260B

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	IDW BAMBERG		
Lab Sample ID:	FA42947-1	**Date Sampled:**	04/10/17
Matrix:	AQ - Water	**Date Received:**	04/12/17
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	AECOMSCG: Delavan Spray Technologies; Bamberg, SC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B121249.D	1	04/13/17	WV	n/a	n/a	VB4878
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	0.62	1.0	0.24	ug/l	J
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	2.4	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.36	1.0	0.32	ug/l	J
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
74-83-9	Methyl Bromide	ND	2.0	0.59	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	18.6	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW BAMBERG		
Lab Sample ID:	FA42947-1	**Date Sampled:**	04/10/17
Matrix:	AQ - Water	**Date Received:**	04/12/17
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	AECOMSCG: Delavan Spray Technologies; Bamberg, SC		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		83-118%
17060-07-0	1,2-Dichloroethane-D4	98%		79-125%
2037-26-5	Toluene-D8	96%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW BAMBERG		
Lab Sample ID:	FA42947-1	**Date Sampled:**	04/10/17
Matrix:	AQ - Water	**Date Received:**	04/12/17
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	AECOMSCG: Delavan Spray Technologies; Bamberg, SC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L0691012.D	1	04/19/17	NG	04/13/17	OP64641	SL3992
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	50	10	ug/l	
59-50-7	4-Chloro-3-methyl Phenol	ND	5.0	0.59	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	0.63	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	0.84	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	0.74	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	5.0	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	2.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	0.56	ug/l	
	3&4-Methylphenol	ND	5.0	0.98	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.85	ug/l	
100-02-7	4-Nitrophenol	ND	25	5.0	ug/l	
87-86-5	Pentachlorophenol	ND	25	5.0	ug/l	
108-95-2	Phenol	ND	5.0	0.50	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	0.74	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.75	ug/l	
83-32-9	Acenaphthene	ND	5.0	0.63	ug/l	
208-96-8	Acenaphthylene	ND	5.0	0.64	ug/l	
120-12-7	Anthracene	ND	5.0	0.80	ug/l	
56-55-3	Benzo(a)anthracene	ND	5.0	0.76	ug/l	
50-32-8	Benzo(a)pyrene	ND	5.0	0.78	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	5.0	0.78	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	5.0	0.82	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	5.0	0.86	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	0.61	ug/l	
101-55-3	4-Bromophenyl Phenyl Ether	ND	5.0	0.85	ug/l	
85-68-7	Butyl Benzyl Phthalate	ND	5.0	1.0	ug/l	
86-74-8	Carbazole	ND	5.0	0.60	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.63	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	0.81	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	0.73	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	0.76	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	0.50	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW BAMBERG		
Lab Sample ID:	FA42947-1	**Date Sampled:**	04/10/17
Matrix:	AQ - Water	**Date Received:**	04/12/17
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	AECOMSCG: Delavan Spray Technologies; Bamberg, SC		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl Phenyl Ether	ND	5.0	0.54	ug/l	
218-01-9	Chrysene	ND	5.0	0.85	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	5.0	0.80	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.60	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.0	0.50	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	0.64	ug/l	
84-66-2	Diethyl Phthalate	ND	5.0	1.0	ug/l	
131-11-3	Dimethyl Phthalate	ND	5.0	1.0	ug/l	
84-74-2	Di-n-butyl Phthalate	ND	5.0	1.0	ug/l	
117-84-0	Di-n-octyl Phthalate	ND	5.0	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	0.81	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	0.71	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	ug/l	
206-44-0	Fluoranthene	ND	5.0	0.55	ug/l	
86-73-7	Fluorene	ND	5.0	0.70	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	0.69	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	0.50	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l	
67-72-1	Hexachloroethane	ND	5.0	1.6	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.0	0.71	ug/l	
78-59-1	Isophorone	ND	5.0	0.78	ug/l	
91-57-6	2-Methylnaphthalene	ND	5.0	0.60	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	1.8	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.88	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	1.2	ug/l	
98-95-3	Nitrobenzene	ND	5.0	0.93	ug/l	
621-64-7	N-Nitrosodi-n-propylamine	ND	5.0	0.67	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.81	ug/l	
85-01-8	Phenanthrene	ND	5.0	0.86	ug/l	
129-00-0	Pyrene	ND	5.0	0.68	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.1	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	20%		14-67%
4165-62-2	Phenol-d5	13%		10-50%
118-79-6	2,4,6-Tribromophenol	77%		33-118%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW BAMBERG		
Lab Sample ID:	FA42947-1	**Date Sampled:**	04/10/17
Matrix:	AQ - Water	**Date Received:**	04/12/17
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	AECOMSCG: Delavan Spray Technologies; Bamberg, SC		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	81%		42-108%
321-60-8	2-Fluorobiphenyl	84%		40-106%
1718-51-0	Terphenyl-d14	71%		39-121%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW BAMBERG
Lab Sample ID: FA42947-1
Matrix: AQ - Water
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Date Sampled: 04/10/17
Date Received: 04/12/17
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	1.0 U	6.0	1.0	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Arsenic	1.3 U	10	1.3	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Beryllium	0.20 U	4.0	0.20	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Cadmium	0.20 U	5.0	0.20	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Chromium	8.3 J	10	1.0	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Copper	2.8 J	25	1.0	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Lead	1.1 U	5.0	1.1	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Mercury	0.074 J	0.50	0.030	ug/l	1	04/14/17	04/14/17	JL	SW846 7470A [1]	SW846 7470A [3]
Nickel	1.8 J	40	0.40	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Selenium	2.9 U	10	2.9	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Silver	0.70 U	10	0.70	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Thallium	1.4 U	10	1.4	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Zinc	29.4	20	4.4	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA13989
(2) Instrument QC Batch: MA13994
(3) Prep QC Batch: MP31973
(4) Prep QC Batch: MP31977

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	IDW KINSEY		
Lab Sample ID:	FA42947-2	**Date Sampled:**	04/10/17
Matrix:	AQ - Water	**Date Received:**	04/12/17
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	AECOMSCG: Delavan Spray Technologies; Bamberg, SC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B121250.D	1	04/13/17	WV	n/a	n/a	VB4878
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	38.0	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
74-83-9	Methyl Bromide	ND	2.0	0.59	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.65	1.0	0.22	ug/l	J
108-88-3	Toluene	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW KINSEY		
Lab Sample ID:	FA42947-2	**Date Sampled:**	04/10/17
Matrix:	AQ - Water	**Date Received:**	04/12/17
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	AECOMSCG: Delavan Spray Technologies; Bamberg, SC		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	102%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	103%		83-118%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW KINSEY		
Lab Sample ID:	FA42947-2	**Date Sampled:**	04/10/17
Matrix:	AQ - Water	**Date Received:**	04/12/17
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	AECOMSCG: Delavan Spray Technologies; Bamberg, SC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L0691013.D	1	04/19/17	NG	04/13/17	OP64641	SL3992
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	48	9.5	ug/l	
59-50-7	4-Chloro-3-methyl Phenol	ND	4.8	0.56	ug/l	
95-57-8	2-Chlorophenol	ND	4.8	0.60	ug/l	
120-83-2	2,4-Dichlorophenol	ND	4.8	0.80	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.8	0.70	ug/l	
51-28-5	2,4-Dinitrophenol	ND	24	4.8	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	9.5	1.9	ug/l	
95-48-7	2-Methylphenol	ND	4.8	0.53	ug/l	
	3&4-Methylphenol	ND	4.8	0.93	ug/l	
88-75-5	2-Nitrophenol	ND	4.8	0.81	ug/l	
100-02-7	4-Nitrophenol	ND	24	4.8	ug/l	
87-86-5	Pentachlorophenol	ND	24	4.8	ug/l	
108-95-2	Phenol	ND	4.8	0.48	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.8	0.70	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.8	0.72	ug/l	
83-32-9	Acenaphthene	ND	4.8	0.60	ug/l	
208-96-8	Acenaphthylene	ND	4.8	0.61	ug/l	
120-12-7	Anthracene	ND	4.8	0.76	ug/l	
56-55-3	Benzo(a)anthracene	ND	4.8	0.72	ug/l	
50-32-8	Benzo(a)pyrene	ND	4.8	0.75	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	4.8	0.74	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	4.8	0.78	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	4.8	0.82	ug/l	
100-51-6	Benzyl Alcohol	ND	4.8	0.58	ug/l	
101-55-3	4-Bromophenyl Phenyl Ether	ND	4.8	0.81	ug/l	
85-68-7	Butyl Benzyl Phthalate	ND	4.8	0.95	ug/l	
86-74-8	Carbazole	ND	4.8	0.57	ug/l	
106-47-8	4-Chloroaniline	ND	4.8	0.60	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	4.8	0.77	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	4.8	0.70	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	4.8	0.72	ug/l	
91-58-7	2-Chloronaphthalene	ND	4.8	0.48	ug/l	

ND = Not detected MDL = Method Detection Limit
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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW KINSEY		
Lab Sample ID:	FA42947-2	**Date Sampled:**	04/10/17
Matrix:	AQ - Water	**Date Received:**	04/12/17
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	AECOMSCG: Delavan Spray Technologies; Bamberg, SC		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
7005-72-3	4-Chlorophenyl Phenyl Ether	ND	4.8	0.51	ug/l	
218-01-9	Chrysene	ND	4.8	0.81	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	4.8	0.77	ug/l	
132-64-9	Dibenzofuran	ND	4.8	0.57	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	4.8	0.48	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	4.8	0.48	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	4.8	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	4.8	0.61	ug/l	
84-66-2	Diethyl Phthalate	ND	4.8	0.95	ug/l	
131-11-3	Dimethyl Phthalate	ND	4.8	0.95	ug/l	
84-74-2	Di-n-butyl Phthalate	ND	4.8	0.95	ug/l	
117-84-0	Di-n-octyl Phthalate	ND	4.8	0.95	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	4.8	0.77	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	4.8	0.68	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	4.8	0.95	ug/l	
206-44-0	Fluoranthene	ND	4.8	0.53	ug/l	
86-73-7	Fluorene	ND	4.8	0.67	ug/l	
118-74-1	Hexachlorobenzene	ND	4.8	0.66	ug/l	
87-68-3	Hexachlorobutadiene	ND	4.8	0.48	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	4.8	1.7	ug/l	
67-72-1	Hexachloroethane	ND	4.8	1.6	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	4.8	0.68	ug/l	
78-59-1	Isophorone	ND	4.8	0.74	ug/l	
91-57-6	2-Methylnaphthalene	ND	4.8	0.57	ug/l	
91-20-3	Naphthalene	ND	4.8	0.48	ug/l	
88-74-4	2-Nitroaniline	ND	4.8	1.7	ug/l	
99-09-2	3-Nitroaniline	ND	4.8	0.84	ug/l	
100-01-6	4-Nitroaniline	ND	4.8	1.1	ug/l	
98-95-3	Nitrobenzene	ND	4.8	0.89	ug/l	
621-64-7	N-Nitrosodi-n-propylamine	ND	4.8	0.64	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.8	0.77	ug/l	
85-01-8	Phenanthrene	ND	4.8	0.82	ug/l	
129-00-0	Pyrene	ND	4.8	0.65	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	4.8	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	25%		14-67%
4165-62-2	Phenol-d5	16%		10-50%
118-79-6	2,4,6-Tribromophenol	88%		33-118%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	IDW KINSEY		
Lab Sample ID:	FA42947-2	**Date Sampled:**	04/10/17
Matrix:	AQ - Water	**Date Received:**	04/12/17
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	AECOMSCG: Delavan Spray Technologies; Bamberg, SC		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	76%		42-108%
321-60-8	2-Fluorobiphenyl	86%		40-106%
1718-51-0	Terphenyl-d14	61%		39-121%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: IDW KINSEY
Lab Sample ID: FA42947-2
Matrix: AQ - Water
Date Sampled: 04/10/17
Date Received: 04/12/17
Percent Solids: n/a
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	1.0 U	6.0	1.0	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Arsenic	1.3 U	10	1.3	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Beryllium	4.2	4.0	0.20	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Cadmium	2.2 J	5.0	0.20	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Chromium	65.7	10	1.0	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Copper	5.4 J	25	1.0	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Lead	8.1	5.0	1.1	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Mercury	0.11 J	0.50	0.030	ug/l	1	04/14/17	04/14/17	JL	SW846 7470A [1]	SW846 7470A [3]
Nickel	20.4 J	40	0.40	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Selenium	2.9 U	10	2.9	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Silver	0.70 U	10	0.70	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Thallium	1.7 J	10	1.4	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]
Zinc	230	20	4.4	ug/l	1	04/14/17	04/17/17	LM	SW846 6010D [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA13989
(2) Instrument QC Batch: MA13994
(3) Prep QC Batch: MP31973
(4) Prep QC Batch: MP31977

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	FA42947-3	**Date Sampled:**	04/10/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	04/12/17
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	AECOMSCG: Delavan Spray Technologies; Bamberg, SC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B121251.D	1	04/13/17	WV	n/a	n/a	VB4878
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
74-83-9	Methyl Bromide	ND	2.0	0.59	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
75-09-2	Methylene Chloride	2.6	5.0	2.0	ug/l	J
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	FA42947-3	**Date Sampled:**	04/10/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	04/12/17
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	AECOMSCG: Delavan Spray Technologies; Bamberg, SC		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		83-118%
17060-07-0	1,2-Dichloroethane-D4	100%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	102%		83-118%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

SGS ACCUTEST

SGS Accutest Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.accutest.com

FA42947

SGS ACCUTEST JOB # : PAGE 1 OF 1

SGS Accutest Quote # | SKIFF #

Client / Reporting Information

Company Name: AECOM
Address: 10 Patewood Drive Bldg 6 Ste 502
City: Greenville State: SC Zip: 29615
Project Contact: Leslee Alexander Email: leslee.alexander@aecom.com
Phone #: 864 234 2282
Sampler(s) Name(s) (Printed) Sampler 1: Daniel Good Sampler 2:

Project Information

Project Name: UTC Delavan
Street
City Bamberg State SC
Project # 60314964.16
Fax #
Client Purchase Order # 87458

Analytical Information

V8260 TCL | AB8270 TCL | PM13

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air

SGS Accutest Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZNAC	DI WATER	MEOH	V8260 TCL	AB8270 TCL	PM13	LAB USE ONLY
1	IDW Bamberg	4-10-17	1600	DG	LIQ	6			✓		✓					✓	✓	✓	
2	IDW Kinsey	4-10-17	1615	DG	LIQ	6			✓		✓					✓	✓	✓	
3	Trip Blank															✓			

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

72 hr TAT

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	Daniel Good	4/10 1400	2 FX	3 FX	04-12-17	4 J. Cornell (AIHe) 07:00
5	Relinquished by/Affiliation	Date Time:	6 Received By/Affiliation	7 Relinquished By/Affiliation	Date Time:	8 Received By/Affiliation

Lab Use Only : Cooler Temperature (s) Celsius: 4.0

SGS ACCUTEST - ORLANDO SAMPLE RECEIPT CONFIRMATION

SGS ACCUTEST'S JOB NUMBER: FA 42947 CLIENT: AECOM PROJECT: WTC DEIARAN

DATE/TIME RECEIVED: 04-12-17 07:00 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 1

METHOD OF DELIVERY: (FEDEX) UPS ACCUTEST COURIER DELIVERY OTHER:

AIRBILL NUMBERS: 8020 4594 5798

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET

TRIP BLANK INFORMATION

- [X] TRIP BLANK PROVIDED
- [ ] TRIP BLANK NOT PROVIDED
- [ ] TRIP BLANK NOT ON COC
- [X] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [X] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

MISC. INFORMATION

NUMBER OF ENCORES ? 25-GRAM_____ 5-GRAM_____

NUMBER OF 5035 FIELD KITS ? _____

NUMBER OF LAB FILTERED METALS ? _____

TEMPERATURE INFORMATION

- [ ] IR THERM ID 1 CORR. FACTOR +0.4
- [ ] OBSERVED TEMPS: 3.6
- [ ] CORRECTED TEMPS: 4.0 (USED FOR LIMS)

SAMPLE INFORMATION

- [X] INCORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- [ ] ID'S ON COC DO NOT MATCH LABEL
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] 5035 FIELD KITS NOT RECEIVED WITHIN 48 HOURS
- [ ] BULK VOA SOIL JARS NOT RECEIVED WITHIN 48 HOURS
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] RESIDUAL CHLORINE PRESENT LOT#_____

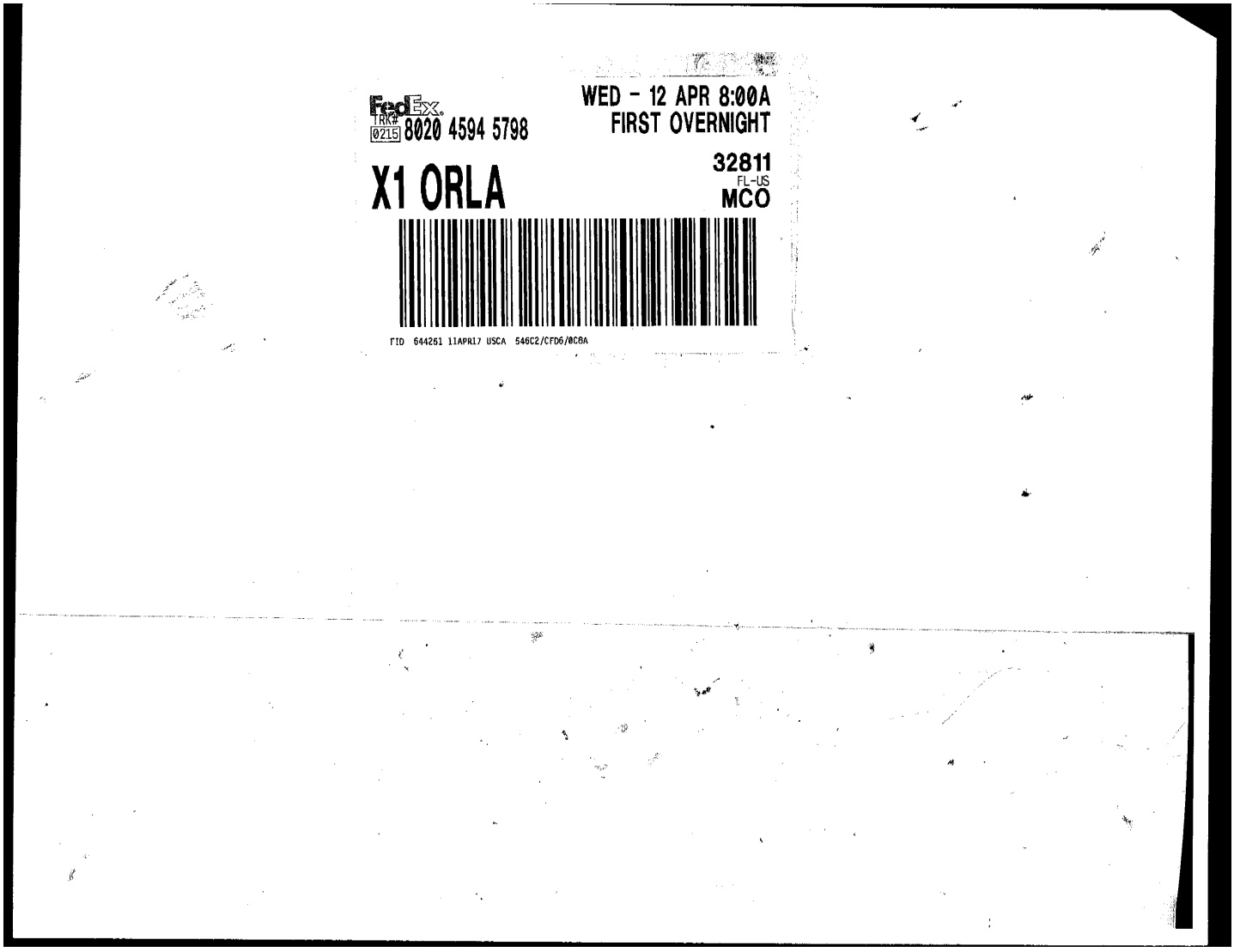
{APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS}

TEST STRIP LOT#s pH 0-3 (230315) pH 10-12 219813A OTHER (specify) _____

SUMMARY OF COMMENTS: RECEIVED 1 (8270) AMBER PER SAMPLE; LABELS FOR METALS WORK N/P

TECHNICIAN SIGNATURE/DATE: 04-12-17 REVIEWER SIGNATURE/DATE: 04/12/17

NF 02/16 receipt confirmation 020116.xls



FA42947: Chain of Custody
Page 3 of 3

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA42947
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB4878-MB	B121243.D	1	04/13/17	WV	n/a	n/a	VB4878

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA42947-1, FA42947-2, FA42947-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
74-83-9	Methyl Bromide	ND	2.0	0.59	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.72	ug/l	

Method Blank Summary

Job Number: FA42947
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB4878-MB	B121243.D	1	04/13/17	WV	n/a	n/a	VB4878

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA42947-1, FA42947-2, FA42947-3

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	101%	79-125%
2037-26-5	Toluene-D8	97%	85-112%
460-00-4	4-Bromofluorobenzene	101%	83-118%

Blank Spike Summary

Job Number: FA42947
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB4878-BS	B121242.D	1	04/13/17	WV	n/a	n/a	VB4878

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA42947-1, FA42947-2, FA42947-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	149	119	50-147
71-43-2	Benzene	25	25.6	102	81-122
75-27-4	Bromodichloromethane	25	25.9	104	79-123
75-25-2	Bromoform	25	25.7	103	66-123
78-93-3	2-Butanone (MEK)	125	126	101	56-143
75-15-0	Carbon Disulfide	25	26.4	106	66-148
56-23-5	Carbon Tetrachloride	25	27.3	109	76-136
108-90-7	Chlorobenzene	25	25.3	101	82-124
75-00-3	Chloroethane	25	24.2	97	62-144
67-66-3	Chloroform	25	25.1	100	80-124
124-48-1	Dibromochloromethane	25	26.1	104	78-122
75-34-3	1,1-Dichloroethane	25	25.7	103	81-122
107-06-2	1,2-Dichloroethane	25	24.1	96	75-125
75-35-4	1,1-Dichloroethylene	25	26.6	106	78-137
156-59-2	cis-1,2-Dichloroethylene	25	24.5	98	78-120
156-60-5	trans-1,2-Dichloroethylene	25	28.5	114	76-127
78-87-5	1,2-Dichloropropane	25	24.6	98	76-124
10061-01-5	cis-1,3-Dichloropropene	25	24.4	98	75-118
10061-02-6	trans-1,3-Dichloropropene	25	26.7	107	80-120
100-41-4	Ethylbenzene	25	25.5	102	81-121
591-78-6	2-Hexanone	125	115	92	61-129
74-83-9	Methyl Bromide	25	23.5	94	59-143
74-87-3	Methyl Chloride	25	23.4	94	50-159
75-09-2	Methylene Chloride	25	26.9	108	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	111	89	66-122
100-42-5	Styrene	25	24.8	99	78-119
79-34-5	1,1,2,2-Tetrachloroethane	25	24.3	97	72-120
127-18-4	Tetrachloroethylene	25	26.2	105	76-135
108-88-3	Toluene	25	25.3	101	80-120
71-55-6	1,1,1-Trichloroethane	25	25.1	100	75-130
79-00-5	1,1,2-Trichloroethane	25	24.9	100	76-119
79-01-6	Trichloroethylene	25	26.4	106	81-126
75-01-4	Vinyl Chloride	25	24.9	100	69-159
1330-20-7	Xylene (total)	75	75.2	100	80-126

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA42947
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB4878-BS	B121242.D	1	04/13/17	WV	n/a	n/a	VB4878

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA42947-1, FA42947-2, FA42947-3

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	100%	79-125%
2037-26-5	Toluene-D8	99%	85-112%
460-00-4	4-Bromofluorobenzene	102%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA42947
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA42819-1MS	B121259.D	500	04/13/17	WV	n/a	n/a	VB4878
FA42819-1MSD	B121260.D	500	04/13/17	WV	n/a	n/a	VB4878
FA42819-1	B121252.D	500	04/13/17	WV	n/a	n/a	VB4878

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA42947-1, FA42947-2, FA42947-3

CAS No.	Compound	FA42819-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		62500	66100	106	62500	65700	105	1	50-147/21
71-43-2	Benzene	29900		12500	41700	94	12500	42000	97	1	81-122/14
75-27-4	Bromodichloromethane	ND		12500	16300	130*	12500	15200	122	7	79-123/19
75-25-2	Bromoform	ND		12500	15400	123	12500	14500	116	6	66-123/21
78-93-3	2-Butanone (MEK)	ND		62500	66800	107	62500	65400	105	2	56-143/18
75-15-0	Carbon Disulfide	ND		12500	16700	134	12500	15800	126	6	66-148/23
56-23-5	Carbon Tetrachloride	ND		12500	17000	136	12500	15700	126	8	76-136/23
108-90-7	Chlorobenzene	ND		12500	16100	129*	12500	14700	118	9	82-124/14
75-00-3	Chloroethane	ND		12500	16800	134	12500	16300	130	3	62-144/20
67-66-3	Chloroform	ND		12500	15800	126*	12500	14900	119	6	80-124/15
124-48-1	Dibromochloromethane	ND		12500	16000	128*	12500	15000	120	6	78-122/19
75-34-3	1,1-Dichloroethane	ND		12500	16500	132*	12500	15600	125*	6	81-122/15
107-06-2	1,2-Dichloroethane	ND		12500	15100	121	12500	14800	118	2	75-125/14
75-35-4	1,1-Dichloroethylene	ND		12500	16300	130	12500	15800	126	3	78-137/18
156-59-2	cis-1,2-Dichloroethylene	ND		12500	15600	125*	12500	14800	118	5	78-120/15
156-60-5	trans-1,2-Dichloroethylene	ND		12500	17700	142*	12500	17300	138*	2	76-127/17
78-87-5	1,2-Dichloropropane	ND		12500	15500	124	12500	15000	120	3	76-124/14
10061-01-5	cis-1,3-Dichloropropene	ND		12500	15400	123*	12500	14700	118	5	75-118/23
10061-02-6	trans-1,3-Dichloropropene	ND		12500	16200	130*	12500	15800	126*	3	80-120/22
100-41-4	Ethylbenzene	1980		12500	17700	126*	12500	16700	118	6	81-121/14
591-78-6	2-Hexanone	ND		62500	66600	107	62500	64700	104	3	61-129/18
74-83-9	Methyl Bromide	ND		12500	15100	121	12500	14200	114	6	59-143/19
74-87-3	Methyl Chloride	ND		12500	14700	118	12500	14600	117	1	50-159/19
75-09-2	Methylene Chloride	ND		12500	17400	139*	12500	16900	135	3	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		62500	67500	108	62500	64900	104	4	66-122/16
100-42-5	Styrene	ND		12500	15900	127*	12500	14800	118	7	78-119/23
79-34-5	1,1,2,2-Tetrachloroethane	ND		12500	14800	118	12500	15100	121*	2	72-120/14
127-18-4	Tetrachloroethylene	ND		12500	16700	134	12500	15300	122	9	76-135/16
108-88-3	Toluene	5110		12500	20300	122*	12500	19500	115	4	80-120/14
71-55-6	1,1,1-Trichloroethane	ND		12500	16000	128	12500	14700	118	8	75-130/16
79-00-5	1,1,2-Trichloroethane	ND		12500	15600	125*	12500	15000	120*	4	76-119/14
79-01-6	Trichloroethylene	ND		12500	16700	134*	12500	15700	126	6	81-126/15
75-01-4	Vinyl Chloride	ND		12500	15400	123	12500	15000	120	3	69-159/18
1330-20-7	Xylene (total)	9530		37500	54800	121	37500	52800	115	4	80-126/15

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA42947
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA42819-1MS	B121259.D	500	04/13/17	WV	n/a	n/a	VB4878
FA42819-1MSD	B121260.D	500	04/13/17	WV	n/a	n/a	VB4878
FA42819-1	B121252.D	500	04/13/17	WV	n/a	n/a	VB4878

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA42947-1, FA42947-2, FA42947-3

CAS No.	Surrogate Recoveries	MS	MSD	FA42819-1	Limits
1868-53-7	Dibromofluoromethane	100%	101%	101%	83-118%
17060-07-0	1,2-Dichloroethane-D4	96%	99%	100%	79-125%
2037-26-5	Toluene-D8	98%	99%	98%	85-112%
460-00-4	4-Bromofluorobenzene	102%	106%	101%	83-118%

* = Outside of Control Limits.

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA42947
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP64641-MB	L0691005.D	1	04/19/17	NG	04/13/17	OP64641	SL3992

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA42947-1, FA42947-2

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	50	10	ug/l	
59-50-7	4-Chloro-3-methyl Phenol	ND	5.0	0.59	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	0.63	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	0.84	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	0.74	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	5.0	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	2.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	0.56	ug/l	
	3&4-Methylphenol	ND	5.0	0.98	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.85	ug/l	
100-02-7	4-Nitrophenol	ND	25	5.0	ug/l	
87-86-5	Pentachlorophenol	ND	25	5.0	ug/l	
108-95-2	Phenol	ND	5.0	0.50	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	0.74	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.75	ug/l	
83-32-9	Acenaphthene	ND	5.0	0.63	ug/l	
208-96-8	Acenaphthylene	ND	5.0	0.64	ug/l	
120-12-7	Anthracene	ND	5.0	0.80	ug/l	
56-55-3	Benzo(a)anthracene	ND	5.0	0.76	ug/l	
50-32-8	Benzo(a)pyrene	ND	5.0	0.78	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	5.0	0.78	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	5.0	0.82	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	5.0	0.86	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	0.61	ug/l	
101-55-3	4-Bromophenyl Phenyl Ether	ND	5.0	0.85	ug/l	
85-68-7	Butyl Benzyl Phthalate	ND	5.0	1.0	ug/l	
86-74-8	Carbazole	ND	5.0	0.60	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.63	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	0.81	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	0.73	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	0.76	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	0.50	ug/l	
7005-72-3	4-Chlorophenyl Phenyl Ether	ND	5.0	0.54	ug/l	
218-01-9	Chrysene	ND	5.0	0.85	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	5.0	0.80	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.60	ug/l	

Method Blank Summary

Job Number: FA42947
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP64641-MB	L0691005.D	1	04/19/17	NG	04/13/17	OP64641	SL3992

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA42947-1, FA42947-2

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	5.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.0	0.50	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	0.64	ug/l	
84-66-2	Diethyl Phthalate	ND	5.0	1.0	ug/l	
131-11-3	Dimethyl Phthalate	ND	5.0	1.0	ug/l	
84-74-2	Di-n-butyl Phthalate	ND	5.0	1.0	ug/l	
117-84-0	Di-n-octyl Phthalate	ND	5.0	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	0.81	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	0.71	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	ug/l	
206-44-0	Fluoranthene	ND	5.0	0.55	ug/l	
86-73-7	Fluorene	ND	5.0	0.70	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	0.69	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	0.50	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l	
67-72-1	Hexachloroethane	ND	5.0	1.6	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.0	0.71	ug/l	
78-59-1	Isophorone	ND	5.0	0.78	ug/l	
91-57-6	2-Methylnaphthalene	ND	5.0	0.60	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	1.8	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.88	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	1.2	ug/l	
98-95-3	Nitrobenzene	ND	5.0	0.93	ug/l	
621-64-7	N-Nitrosodi-n-propylamine	ND	5.0	0.67	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.81	ug/l	
85-01-8	Phenanthrene	ND	5.0	0.86	ug/l	
129-00-0	Pyrene	ND	5.0	0.68	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.1	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	30%	14-67%
4165-62-2	Phenol-d5	19%	10-50%

Method Blank Summary

Job Number: FA42947
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP64641-MB	L0691005.D	1	04/19/17	NG	04/13/17	OP64641	SL3992

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA42947-1, FA42947-2

CAS No.	Surrogate Recoveries		Limits
118-79-6	2,4,6-Tribromophenol	97%	33-118%
4165-60-0	Nitrobenzene-d5	85%	42-108%
321-60-8	2-Fluorobiphenyl	94%	40-106%
1718-51-0	Terphenyl-d14	99%	39-121%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Semi-Volatile [a]		0	ug/l	

(a) No TICs detected.

Blank Spike Summary

Job Number: FA42947
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP64641-BS	L0691004.D	1	04/19/17	NG	04/13/17	OP64641	SL3992

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA42947-1, FA42947-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	100	18.2	18	10-69
59-50-7	4-Chloro-3-methyl Phenol	50	35.8	72	54-103
95-57-8	2-Chlorophenol	50	33.7	67	52-98
120-83-2	2,4-Dichlorophenol	50	37.8	76	53-103
105-67-9	2,4-Dimethylphenol	50	33.8	68	43-90
51-28-5	2,4-Dinitrophenol	100	80.3	80	44-112
534-52-1	4,6-Dinitro-o-cresol	100	88.8	89	66-121
95-48-7	2-Methylphenol	50	28.6	57	43-90
	3&4-Methylphenol	100	51.1	51	36-88
88-75-5	2-Nitrophenol	50	36.9	74	53-102
100-02-7	4-Nitrophenol	100	27.1	27	18-62
87-86-5	Pentachlorophenol	100	98.2	98	61-115
108-95-2	Phenol	50	11.9	24	19-56
95-95-4	2,4,5-Trichlorophenol	50	45.3	91	62-109
88-06-2	2,4,6-Trichlorophenol	50	47.0	94	59-107
83-32-9	Acenaphthene	50	43.5	87	61-107
208-96-8	Acenaphthylene	50	45.8	92	60-104
120-12-7	Anthracene	50	41.5	83	65-108
56-55-3	Benzo(a)anthracene	50	40.2	80	66-111
50-32-8	Benzo(a)pyrene	50	46.4	93	62-107
205-99-2	Benzo(b)fluoranthene	50	44.1	88	65-114
191-24-2	Benzo(g,h,i)perylene	50	46.7	93	66-116
207-08-9	Benzo(k)fluoranthene	50	43.5	87	65-114
100-51-6	Benzyl Alcohol	50	27.3	55	46-94
101-55-3	4-Bromophenyl Phenyl Ether	50	41.2	82	65-109
85-68-7	Butyl Benzyl Phthalate	50	40.7	81	65-112
86-74-8	Carbazole	50	45.2	90	59-113
106-47-8	4-Chloroaniline	50	39.7	79	49-105
111-91-1	bis(2-Chloroethoxy)methane	50	30.1	60	51-102
111-44-4	bis(2-Chloroethyl)ether	50	42.2	84	53-100
108-60-1	bis(2-Chloroisopropyl)ether	50	43.2	86	45-106
91-58-7	2-Chloronaphthalene	50	41.4	83	57-103
7005-72-3	4-Chlorophenyl Phenyl Ether	50	44.5	89	62-105
218-01-9	Chrysene	50	42.7	85	66-111
53-70-3	Dibenzo(a,h)anthracene	50	46.0	92	66-119
132-64-9	Dibenzofuran	50	43.1	86	61-106

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA42947
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP64641-BS	L0691004.D	1	04/19/17	NG	04/13/17	OP64641	SL3992

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA42947-1, FA42947-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
95-50-1	1,2-Dichlorobenzene	50	36.2	72	48-97
541-73-1	1,3-Dichlorobenzene	50	35.6	71	45-95
106-46-7	1,4-Dichlorobenzene	50	36.4	73	45-98
91-94-1	3,3'-Dichlorobenzidine	50	45.3	91	46-117
84-66-2	Diethyl Phthalate	50	43.3	87	64-108
131-11-3	Dimethyl Phthalate	50	43.4	87	63-106
84-74-2	Di-n-butyl Phthalate	50	42.8	86	65-107
117-84-0	Di-n-octyl Phthalate	50	44.7	89	62-118
121-14-2	2,4-Dinitrotoluene	50	46.5	93	61-110
606-20-2	2,6-Dinitrotoluene	50	43.1	86	63-108
117-81-7	bis(2-Ethylhexyl)phthalate	50	42.0	84	61-117
206-44-0	Fluoranthene	50	43.1	86	63-106
86-73-7	Fluorene	50	45.4	91	62-108
118-74-1	Hexachlorobenzene	50	44.5	89	63-108
87-68-3	Hexachlorobutadiene	50	34.0	68	42-102
77-47-4	Hexachlorocyclopentadiene	50	38.0	76	39-102
67-72-1	Hexachloroethane	50	37.2	74	42-100
193-39-5	Indeno(1,2,3-cd)pyrene	50	42.1	84	64-119
78-59-1	Isophorone	50	39.4	79	43-87
91-57-6	2-Methylnaphthalene	50	34.8	70	51-102
91-20-3	Naphthalene	50	36.9	74	47-100
88-74-4	2-Nitroaniline	50	44.0	88	54-128
99-09-2	3-Nitroaniline	50	43.7	87	56-106
100-01-6	4-Nitroaniline	50	39.5	79	55-120
98-95-3	Nitrobenzene	50	38.6	77	50-104
621-64-7	N-Nitrosodi-n-propylamine	50	41.7	83	52-104
86-30-6	N-Nitrosodiphenylamine	50	43.4	87	64-108
85-01-8	Phenanthrene	50	43.5	87	66-110
129-00-0	Pyrene	50	41.5	83	64-113
120-82-1	1,2,4-Trichlorobenzene	50	36.1	72	45-97

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	36%	14-67%
4165-62-2	Phenol-d5	23%	10-50%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA42947
Account: UTC United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP64641-BS	L0691004.D	1	04/19/17	NG	04/13/17	OP64641	SL3992

The QC reported here applies to the following samples: **Method:** SW846 8270D

FA42947-1, FA42947-2

CAS No.	Surrogate Recoveries	BSP	Limits
118-79-6	2,4,6-Tribromophenol	88%	33-118%
4165-60-0	Nitrobenzene-d5	77%	42-108%
321-60-8	2-Fluorobiphenyl	85%	40-106%
1718-51-0	Terphenyl-d14	79%	39-121%

* = Outside of Control Limits.

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA42947
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31973 Methods: SW846 7470A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 04/14/17

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.50	.03	.03	0.019	<0.50

Associated samples MP31973: FA42947-1, FA42947-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA42947
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31973
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 04/14/17 04/14/17

Metal	FA42813-21 Original	DUP	RPD	QC Limits	FA42813-21 Original	MS	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.11	0.054	68.3 (a)	0-20	0.11	2.8	3	89.7	80-120

Associated samples MP31973: FA42947-1, FA42947-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA42947
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31973
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 04/14/17

Metal	FA42813-21 Original	MSD	Spikelot HGFLWS1	% Rec	MSD RPD	QC Limit
Mercury	0.11	2.8	3	89.7	0.0	20

Associated samples MP31973: FA42947-1, FA42947-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA42947
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31973
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 04/14/17

Metal	BSP Result	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	3.2	3	106.7	80-120

Associated samples MP31973: FA42947-1, FA42947-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA42947
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31973
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 04/14/17

Metal	FA42813-21 Original	SDL 1:5	%DIF	QC Limits
Mercury	0.108	0.00	100.0(a)	0-10

Associated samples MP31973: FA42947-1, FA42947-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA42947
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31977
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 04/14/17

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	14	14		
Antimony	6.0	1	1	0.0	<6.0
Arsenic	10	1.3	1.3	-1.0	<10
Barium	200	1	1		
Beryllium	4.0	.2	.2	-0.15	<4.0
Cadmium	5.0	.2	.2	-0.12	<5.0
Calcium	1000	50	50		
Chromium	10	1	1	-0.30	<10
Cobalt	50	.2	.2		
Copper	25	1	1	-0.30	<25
Iron	300	17	17		
Lead	5.0	1	1.1	0.10	<5.0
Magnesium	5000	35	35		
Manganese	15	.5	1		
Molybdenum	50	.3	.3		
Nickel	40	.4	.4	-0.10	<40
Potassium	10000	200	200		
Selenium	10	2.4	2.9	-1.5	<10
Silver	10	.7	.7	-0.20	<10
Sodium	10000	500	500		
Strontium	10	.5	.5		
Thallium	10	1.1	1.4	-0.50	<10
Tin	50	.9	1		
Titanium	10	.5	1		
Vanadium	50	.5	.6		
Zinc	20	3	4.4	1.7	<20

Associated samples MP31977: FA42947-1, FA42947-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA42947
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31977
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 04/14/17 04/14/17

Metal	FA42947-1 Original	DUP	RPD	QC Limits	FA42947-1 Original	MS	Spikelot MPFLICP2	% Rec	QC Limits
Aluminum									
Antimony	0.0	0.0	NC	0-20	0.0	513	500	102.6	80-120
Arsenic	0.0	0.0	NC	0-20	0.0	2040	2000	102.0	80-120
Barium									
Beryllium	0.0	0.0	NC	0-20	0.0	52.9	50	105.8	80-120
Cadmium	0.0	0.0	NC	0-20	0.0	51.3	50	102.6	80-120
Calcium									
Chromium	8.3	7.8	6.2	0-20	8.3	215	200	103.4	80-120
Cobalt									
Copper	2.8	2.9	3.5	0-20	2.8	254	250	100.5	80-120
Iron									
Lead	0.0	1.2	200.0(a)	0-20	0.0	483	500	96.6	80-120
Magnesium									
Manganese									
Molybdenum									
Nickel	1.8	1.6	11.8	0-20	1.8	522	500	104.0	80-120
Potassium									
Selenium	0.0	0.0	NC	0-20	0.0	2010	2000	100.5	80-120
Silver	0.0	0.0	NC	0-20	0.0	46.1	50	92.2	80-120
Sodium									
Strontium									
Thallium	0.0	0.0	NC	0-20	0.0	1930	2000	96.5	80-120
Tin									
Titanium									
Vanadium									
Zinc	29.4	35.0	17.4	0-20	29.4	541	500	102.3	80-120

Associated samples MP31977: FA42947-1, FA42947-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA42947
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31977
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 04/14/17

Metal	FA42947-1 Original	MSD	Spikelot MPFLICP2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony	0.0	518	500	103.6	1.0	20
Arsenic	0.0	2070	2000	103.5	1.5	20
Barium						
Beryllium	0.0	53.6	50	107.2	1.3	20
Cadmium	0.0	51.8	50	103.6	1.0	20
Calcium						
Chromium	8.3	217	200	104.4	0.9	20
Cobalt						
Copper	2.8	256	250	101.3	0.8	20
Iron						
Lead	0.0	487	500	97.4	0.8	20
Magnesium						
Manganese						
Molybdenum						
Nickel	1.8	529	500	105.4	1.3	20
Potassium						
Selenium	0.0	2040	2000	102.0	1.5	20
Silver	0.0	46.6	50	93.2	1.1	20
Sodium						
Strontium						
Thallium	0.0	1950	2000	97.5	1.0	20
Tin						
Titanium						
Vanadium						
Zinc	29.4	545	500	103.1	0.7	20

Associated samples MP31977: FA42947-1, FA42947-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA42947
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31977
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 04/14/17

Metal	BSP Result	Spikelot MPFLICP2	% Rec	QC Limits
Aluminum				
Antimony	521	500	104.2	80-120
Arsenic	2060	2000	103.0	80-120
Barium				
Beryllium	53.2	50	106.4	80-120
Cadmium	52.3	50	104.6	80-120
Calcium				
Chromium	207	200	103.5	80-120
Cobalt				
Copper	251	250	100.4	80-120
Iron				
Lead	485	500	97.0	80-120
Magnesium				
Manganese				
Molybdenum				
Nickel	531	500	106.2	80-120
Potassium				
Selenium	2040	2000	102.0	80-120
Silver	46.4	50	92.8	80-120
Sodium				
Strontium				
Thallium	1940	2000	97.0	80-120
Tin				
Titanium				
Vanadium				
Zinc	524	500	104.8	80-120

Associated samples MP31977: FA42947-1, FA42947-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA42947
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31977
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 04/14/17

Metal	FA42947-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony	0.00	0.00	NC	0-10
Arsenic	0.00	0.00	NC	0-10
Barium				
Beryllium	0.00	0.00	NC	0-10
Cadmium	0.00	0.00	NC	0-10
Calcium				
Chromium	8.30	7.00	15.7 (a)	0-10
Cobalt				
Copper	2.80	0.00	100.0(a)	0-10
Iron				
Lead	0.00	0.00	NC	0-10
Magnesium				
Manganese				
Molybdenum				
Nickel	1.80	2.00	11.1 (a)	0-10
Potassium				
Selenium	0.00	0.00	NC	0-10
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium	0.00	0.00	NC	0-10
Tin				
Titanium				
Vanadium				
Zinc	29.4	30.7	4.4	0-10

Associated samples MP31977: FA42947-1, FA42947-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

POST DIGESTATE SPIKE SUMMARY

Login Number: FA42947
Account: UTC - United Technologies Corporation
Project: AECOMSCG: Delavan Spray Technologies; Bamberg, SC

QC Batch ID: MP31977
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 04/14/17

Metal	Sample ml	Final ml	FA42947-1 Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony	9.8	10			113.1	0.2	5	100	113.1	80-120
Arsenic	9.8	10			108.2	0.2	5	100	108.2	80-120
Barium										
Beryllium	9.8	10			54.27	0.2	2.5	50	108.5	80-120
Cadmium	9.8	10			54.33	0.2	2.5	50	108.7	80-120
Calcium										
Chromium	9.8	10	8.3	8.134	61.4	0.2	2.5	50	106.5	80-120
Cobalt										
Copper	9.8	10	2.8	2.744	106.3	0.2	5	100	103.6	80-120
Iron										
Lead	9.8	10			50.1	0.2	2.5	50	100.2	80-120
Magnesium										
Manganese										
Molybdenum										
Nickel	9.8	10	1.8	1.764	109.6	0.2	5	100	107.8	80-120
Potassium										
Selenium	9.8	10			100.2	0.2	5	100	100.2	80-120
Silver	9.8	10			48	0.2	2.5	50	96.0	80-120
Sodium										
Strontium										
Thallium	9.8	10			97.5	0.2	5	100	97.5	80-120
Tin										
Titanium										
Vanadium										
Zinc	9.8	10	29.4	28.812	298.8	0.2	12.5	250	108.0	80-120

Associated samples MP31977: FA42947-1, FA42947-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(**) Corr. sample result = Raw * (sample volume / final volume)
(anr) Analyte not requested

DATA ASSESSMENT REPORT

Data assessment is a systematic process for reviewing a body of data against a predefined set of criteria to provide assurance that the data meet project Data Quality Objective (DQO) requirements. The purpose of the data assessment process is to determine if and how the usability of the analytical data is affected by the overall analytical processes and sample collection and handling procedures. If specific DQOs are not met, the data are qualified (i.e., data flags are assigned to sample results) in accordance with guidelines established by the United States Environmental Protection Agency (USEPA). Data assessment allows the data user to adequately determine if the data can be used for its intended purpose. The data acceptance criteria are established according to Standard Operating Procedures (SOPs) and Statements of Work (SOWs) provided to the contracted analytical laboratory. The assessment of data quality and usability involves five components, as described below.

1) **Field Sampling Check** is a process to ensure that all samples were collected and the laboratory analyses were performed as stipulated in the applicable site-specific Work Plan or Field Sampling Plan (FSP). Inspection of sample preservation procedures, sample handling, analysis requested, sample description and identification (ID), cooler receipt forms, holding time evaluation, and Chain of Custody procedures are all evaluated to ensure that the evidentiary nature of the samples and the resulting analytical data have not been compromised.

2) **Data Verification** is a process for determining the completeness, correctness, consistency, and compliance of a data package in accordance with requirements contained in the applicable SOW and/or contract-specific requirements. This is a review of the data package, electronic data deliverable (EDD), and invoice received from the contract laboratory to ensure that the contract required information is present and complete prior to data validation.

3) **Data Review** is a process of reviewing the primary quality control (QC) data provided by the laboratory and the results of any internal quality assurance (QA)/QC samples, such as field blanks, trip blanks, equipment blanks or ambient blanks, field split samples, and duplicate samples, to ascertain any effect the laboratory's procedures or the sample collection process has on the data.

4) **Data Evaluation** is a process to determine if the data meet project-specific DQOs and contract requirements. This evaluation may involve a review of field sampling and sample management procedures, laboratory audits, Performance Evaluation (PE) sample results, and any other data quality indicators that are available.

5) **Data Validation** is a process to determine the accuracy and precision of analytical data generated and to identify any anomalies encountered. The validation process is performed in accordance with USEPA regional or national functional guidelines, project-specific guidelines, and

compliance with the requirements of each analytical method. Two major components of data validation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance for each analytical method to determine if the samples were analyzed within the prescribed acceptance criteria of the method. Evaluation of matrix interferences involves the analysis of surrogate spike recoveries, matrix spike recoveries, and duplicate sample results. Data not meeting project-specific DQOs or the requirements of the analytical method are qualified with data flags according to referenced guidelines.

Data Assessment Procedures

AECOM performed independent QC checks of field and laboratory procedures that were used in collecting and analyzing the data. The QC checks verify that the data collected are of appropriate quality for the intended data use and that the DQOs were met. The steps and guidelines followed during the data validation process were modeled on the *USEPA National Functional Guidelines for Inorganic Superfund Data Review* (USEPA, August 2014) and *USEPA National Functional Guidelines for Superfund Organic Data Review* (USEPA, August 2014). In addition, method-specific criteria set forth in the compendium of analytical methods found in the *Test Methods for Evaluation Solid Waste (SW-846*), *Update IV* (USEPA, February 2007) are also evaluated during the validation process. This validation process has been adapted to meet the DQO requirements for generation of definitive critical data.

Data Validation Results

The analytical data associated with analytical data package FA42740 were collected on April 4, 2017 for UTC - Delavan Spray Technologies located in Bamberg, South Carolina. The analytical data were validated according to the procedures outlined above. Where data flags have been applied to this data set, they are separated by a slash "/" and presented in the following format:

Laboratory Flag / Result Flags / Analysis Flags

- Laboratory Flag: This flag precedes the first slash and is added by the laboratory as a result of QC excursions from the analytical method. These flags are laboratory-specific and are described in the associated laboratory report.

- Result Flags: These are presented after the first slash and are added by AECOM based on data validation procedures and guidelines. They tell how and if the data should be used.

- Analysis Flags: These flags are presented after the second slash and are added by AECOM to inform the data user of any specific QA/QC problems that were encountered.

Any data requiring qualification as a result of the validation process were assigned data flags, as discussed below. The validation flags indicate how any QC excursions may have impacted the usability of the data.

TCLP Volatile Organic Compounds by Method 8260B

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

TCLP Semivolatile Organic Compounds by Method 8270D

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

TCLP PP Metals by Methods 6010C/7470B

Results of lead and mercury in sample IDW-1-Bamberg were qualified "/M/D" due to the relative percent difference between the matrix spike and matrix spike duplicate exceeding the established criteria of 30% (200% each). These qualifiers indicate imprecision with laboratory methodology, instrumentation, or matrix interference.

Data Summary and Usability

The QC excursions encountered during the validation of this data set did not result in the rejection of any data. Therefore, the data associated with this laboratory batch should be considered compliant and adequate for its intended use.

References

United States Environmental Protection Agency (USEPA), February 2007. *Test Methods for Evaluating Solid Waste (SW-846), Update IV*.

United States Environmental Protection Agency (USEPA), August 2014. *USEPA National Functional Guidelines for Superfund Organic Data Review*. Publication #EPA540-R-014-002.

United States Environmental Protection Agency (USEPA), August 2014. *USEPA National Functional Guidelines for Inorganic Superfund Data Review*. Publication #USEPA540/R-013-001.

DATA ASSESSMENT REPORT

Data assessment is a systematic process for reviewing a body of data against a predefined set of criteria to provide assurance that the data meet project Data Quality Objective (DQO) requirements. The purpose of the data assessment process is to determine if and how the usability of the analytical data is affected by the overall analytical processes and sample collection and handling procedures. If specific DQOs are not met, the data are qualified (i.e., data flags are assigned to sample results) in accordance with guidelines established by the United States Environmental Protection Agency (USEPA). Data assessment allows the data user to adequately determine if the data can be used for its intended purpose. The data acceptance criteria are established according to Standard Operating Procedures (SOPs) and Statements of Work (SOWs) provided to the contracted analytical laboratory. The assessment of data quality and usability involves five components, as described below.

1) **Field Sampling Check** is a process to ensure that all samples were collected and the laboratory analyses were performed as stipulated in the applicable site-specific Work Plan or Field Sampling Plan (FSP). Inspection of sample preservation procedures, sample handling, analysis requested, sample description and identification (ID), cooler receipt forms, holding time evaluation, and Chain of Custody procedures are all evaluated to ensure that the evidentiary nature of the samples and the resulting analytical data have not been compromised.

2) **Data Verification** is a process for determining the completeness, correctness, consistency, and compliance of a data package in accordance with requirements contained in the applicable SOW and/or contract-specific requirements. This is a review of the data package, electronic data deliverable (EDD), and invoice received from the contract laboratory to ensure that the contract required information is present and complete prior to data validation.

3) **Data Review** is a process of reviewing the primary quality control (QC) data provided by the laboratory and the results of any internal quality assurance (QA)/QC samples, such as field blanks, trip blanks, equipment blanks or ambient blanks, field split samples, and duplicate samples, to ascertain any effect the laboratory's procedures or the sample collection process has on the data.

4) **Data Evaluation** is a process to determine if the data meet project-specific DQOs and contract requirements. This evaluation may involve a review of field sampling and sample management procedures, laboratory audits, Performance Evaluation (PE) sample results, and any other data quality indicators that are available.

5) **Data Validation** is a process to determine the accuracy and precision of analytical data generated and to identify any anomalies encountered. The validation process is performed in accordance with USEPA regional or national functional guidelines, project-specific guidelines, and

compliance with the requirements of each analytical method. Two major components of data validation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance for each analytical method to determine if the samples were analyzed within the prescribed acceptance criteria of the method. Evaluation of matrix interferences involves the analysis of surrogate spike recoveries, matrix spike recoveries, and duplicate sample results. Data not meeting project-specific DQOs or the requirements of the analytical method are qualified with data flags according to referenced guidelines.

Data Assessment Procedures

AECOM performed independent QC checks of field and laboratory procedures that were used in collecting and analyzing the data. The QC checks verify that the data collected are of appropriate quality for the intended data use and that the DQOs were met. The steps and guidelines followed during the data validation process were modeled on the *USEPA National Functional Guidelines for Inorganic Superfund Data Review* (USEPA, August 2014) and *USEPA National Functional Guidelines for Superfund Organic Data Review* (USEPA, August 2014). In addition, method-specific criteria set forth in the compendium of analytical methods found in the *Test Methods for Evaluation Solid Waste (SW-846*), *Update IV* (USEPA, February 2007) are also evaluated during the validation process. This validation process has been adapted to meet the DQO requirements for generation of definitive critical data.

Data Validation Results

The analytical data associated with analytical data package FA42947 were collected on April 10, 2017 for UTC - Delavan Spray Technologies located in Bamberg, South Carolina. The analytical data were validated according to the procedures outlined above. Where data flags have been applied to this data set, they are separated by a slash "/" and presented in the following format:

Laboratory Flag / Result Flags / Analysis Flags

- Laboratory Flag: This flag precedes the first slash and is added by the laboratory as a result of QC excursions from the analytical method. These flags are laboratory-specific and are described in the associated laboratory report.

- Result Flags: These are presented after the first slash and are added by AECOM based on data validation procedures and guidelines. They tell how and if the data should be used.

- Analysis Flags: These flags are presented after the second slash and are added by AECOM to inform the data user of any specific QA/QC problems that were encountered.

Any data requiring qualification as a result of the validation process were assigned data flags, as discussed below. The validation flags indicate how any QC excursions may have impacted the usability of the data.

Volatile Organic Compounds by Method 8260B

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Semivolatile Organic Compounds by Method 8270D

Non-detected results of benzoic acid and phenol associated with preparatory batch SL3992 were qualified "/R/c" due to low recovery in the associated laboratory control sample. These qualifiers indicate the non-detections of these compounds are biased low and should be rejected.

PP Metals by Methods 6010C/7470B

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Data Summary and Usability

With the exception of non-detected results of benzoic acid and phenol associated with preparatory batch SL3992, the QC excursions encountered during the validation of this data set did not result in the rejection of any data. Therefore, the remaining data associated with this laboratory batch should be considered compliant and adequate for its intended use.

References

United States Environmental Protection Agency (USEPA), February 2007. *Test Methods for Evaluating Solid Waste (SW-846), Update IV.*

United States Environmental Protection Agency (USEPA), August 2014. *USEPA National Functional Guidelines for Superfund Organic Data Review*. Publication #EPA540-R-014-002.

United States Environmental Protection Agency (USEPA), August 2014. *USEPA National Functional Guidelines for Inorganic Superfund Data Review*. Publication #USEPA540/R-013-001.

APPENDIX D

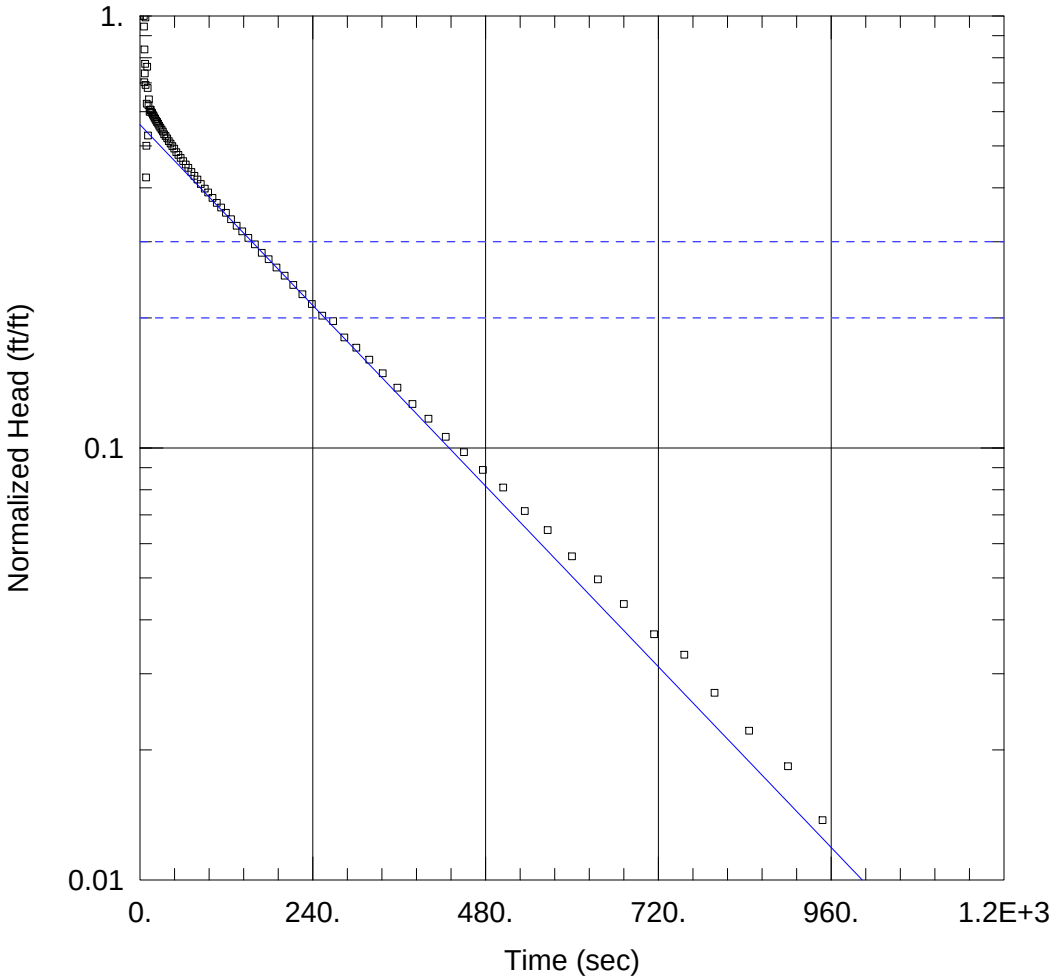
SLUG TEST ANALYSIS

Summary of Slug Test Details
UTC Delavan Spray Technologies Site
Bamberg, South Carolina
AECOM Project No. 60314964

Location	Test Name	GS Elevation(ft MSL)	Top of Casing (Riser) Elevation (ft MSL)	Northing	Easting	Rw, Borehole Radius (feet)	Rc, Casing Radius (feet)	L, Saturated Screen Length	ho, static water Level from TOC (ft below TOC)	ho, static water Elev (ft MSL)	H, distance from static water level to bottom of well (feet)	b, Aquifer Saturated Thickness (feet)	d, distance to top of screen from static WL (ft)*	Rising (R) or Falling (F) Head Test	Screen Zone
MW-27	MW27-in1	145.93	145.78	527170.791	1985303.579	0.25	0.083333	10	9.73	136.05	19.12	50.42	9.12	F	Shallow
MW-27	MW27-in2	145.93	145.78	527170.791	1985303.579	0.25	0.083333	10	9.73	136.05	19.12	50.42	9.12	F	Shallow
MW-27	MW27-out1	145.93	145.78	527170.791	1985303.579	0.25	0.083333	10	9.73	136.05	19.12	50.42	9.12	R	Shallow
MW-27	MW27-out2	145.93	145.78	527170.791	1985303.579	0.25	0.083333	10	9.73	136.05	19.12	50.42	9.12	R	Shallow
MW-28	MW28-in1	146.35	146.12	527277.921	1985209.244	0.25	0.083333	10	12.65	133.47	16.12	47.58	6.12	F	Shallow
MW-28	MW28-in2	146.35	146.12	527277.921	1985209.244	0.25	0.083333	10	12.65	133.47	16.12	47.58	6.12	F	Shallow
MW-28	MW28-out1	146.35	146.12	527277.921	1985209.244	0.25	0.083333	10	12.65	133.47	16.12	47.58	6.12	R	Shallow
MW-28	MW28-out2	146.35	146.12	527277.921	1985209.244	0.25	0.083333	10	12.65	133.47	16.12	47.58	6.12	R	Shallow
MW-29	MW29-in1	141.03	140.55	526939.419	1985074.632	0.25	0.083333	10	7.24	133.31	21.28	53.24	11.28	F	Shallow
MW-29	MW29-out1	141.03	140.55	526939.419	1985074.632	0.25	0.083333	10	7.24	133.31	21.28	53.24	11.28	R	Shallow
MW-30D	MW30D-in1	135.9	136.01	524342.129	1984738.757	0.25	0.083333	10	5.41	130.60	54.70	54.48	44.70	F	Deeper Limestone
MW-30D	MW30D-in2	135.9	136.01	524342.129	1984738.757	0.25	0.083333	10	5.41	130.60	54.70	54.48	44.70	F	Deeper Limestone
MW-30D	MW30D-in3	135.9	136.01	524342.129	1984738.757	0.25	0.083333	10	5.41	130.60	54.70	54.48	44.70	F	Deeper Limestone
MW-30D	MW30D-in4	135.9	136.01	524342.129	1984738.757	0.25	0.083333	10	5.41	130.60	54.70	54.48	44.70	F	Deeper Limestone
MW-30D	MW30D-in5	135.9	136.01	524342.129	1984738.757	0.25	0.083333	10	5.41	130.60	54.70	54.48	44.70	F	Deeper Limestone
MW-30D	MW30D-out1	135.9	136.01	524342.129	1984738.757	0.25	0.083333	10	5.41	130.60	54.70	54.48	44.70	R	Deeper Limestone
MW-30D	MW30D-out2	135.9	136.01	524342.129	1984738.757	0.25	0.083333	10	5.41	130.60	54.70	54.48	44.70	R	Deeper Limestone
MW-30D	MW30D-out3	135.9	136.01	524342.129	1984738.757	0.25	0.083333	10	5.41	130.60	54.70	54.48	44.70	R	Deeper Limestone
MW-30D	MW30D-out5	135.9	136.01	524342.129	1984738.757	0.25	0.083333	10	5.41	130.60	54.70	54.48	44.70	R	Deeper Limestone
MW-31D	MW31D-in1	141.39	141.39	525496.612	1984570.761	0.25	0.083333	10	9.43	131.96	50.57	50.57	40.57	F	Deeper Limestone
MW-31D	MW31D-in2	141.39	141.39	525496.612	1984570.761	0.25	0.083333	10	9.43	131.96	50.57	50.57	40.57	F	Deeper Limestone
MW-31D	MW31D-in3	141.39	141.39	525496.612	1984570.761	0.25	0.083333	10	9.43	131.96	50.57	50.57	40.57	F	Deeper Limestone
MW-31D	MW31D-out1	141.39	141.39	525496.612	1984570.761	0.25	0.083333	10	9.43	131.96	50.57	50.57	40.57	R	Deeper Limestone
MW-31D	MW31D-out2	141.39	141.39	525496.612	1984570.761	0.25	0.083333	10	9.43	131.96	50.57	50.57	40.57	R	Deeper Limestone

Summary of Slug Test Details
UTC Delavan Spray Technologies Site
Bamberg, South Carolina
AECOM Project No. 60314964

Location	Test Name	GS Elevation(ft MSL)	Top of Casing (Riser) Elevation (ft MSL)	Northing	Easting	Rw, Borehole Radius (feet)	Rc, Casing Radius (feet)	L, Saturated Screen Length	ho, static water Level from TOC (ft below TOC)	ho, static water Elev (ft MSL)	H, distance from static water level to bottom of well (feet)	b, Aquifer Saturated Thickness (feet)	d, distance to top of screen from static WL (ft)*	Rising (R) or Falling (F) Head Test	Screen Zone
MW-31D	MW31D-out3	141.39	141.39	525496.612	1984570.761	0.25	0.083333	10	9.43	131.96	50.57	50.57	40.57	R	Deeper Limestone
MW-32DR	MW32DR-in1	139.2	138.88	524925.355	1985966.152	0.25	0.083333	10	7.37	131.51	52.31	52.95	42.31	F	Deeper Limestone
MW-32DR	MW32DR-in2	139.2	138.88	524925.355	1985966.152	0.25	0.083333	10	7.37	131.51	52.31	52.95	42.31	F	Deeper Limestone
MW-32DR	MW32DR-in3	139.2	138.88	524925.355	1985966.152	0.25	0.083333	10	7.37	131.51	52.31	52.95	42.31	F	Deeper Limestone
MW-32DR	MW32DR-in4	139.2	138.88	524925.355	1985966.152	0.25	0.083333	10	7.37	131.51	52.31	52.95	42.31	F	Deeper Limestone
MW-32DR	MW32DR-out1	139.2	138.88	524925.355	1985966.152	0.25	0.083333	10	7.37	131.51	52.31	52.95	42.31	R	Deeper Limestone
MW-32DR	MW32DR-out2	139.2	138.88	524925.355	1985966.152	0.25	0.083333	10	7.37	131.51	52.31	52.95	42.31	R	Deeper Limestone
MW-32DR	MW32DR-out3	139.2	138.88	524925.355	1985966.152	0.25	0.083333	10	7.37	131.51	52.31	52.95	42.31	R	Deeper Limestone
MW-32DR	MW32DR-out4	139.2	138.88	524925.355	1985966.152	0.25	0.083333	10	7.37	131.51	52.31	52.95	42.31	R	Deeper Limestone



MW27-IN1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW27-in1_BR.aqt
Date: 06/08/17 Time: 14:02:52

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-27
Test Date: 5/10/17

AQUIFER DATA

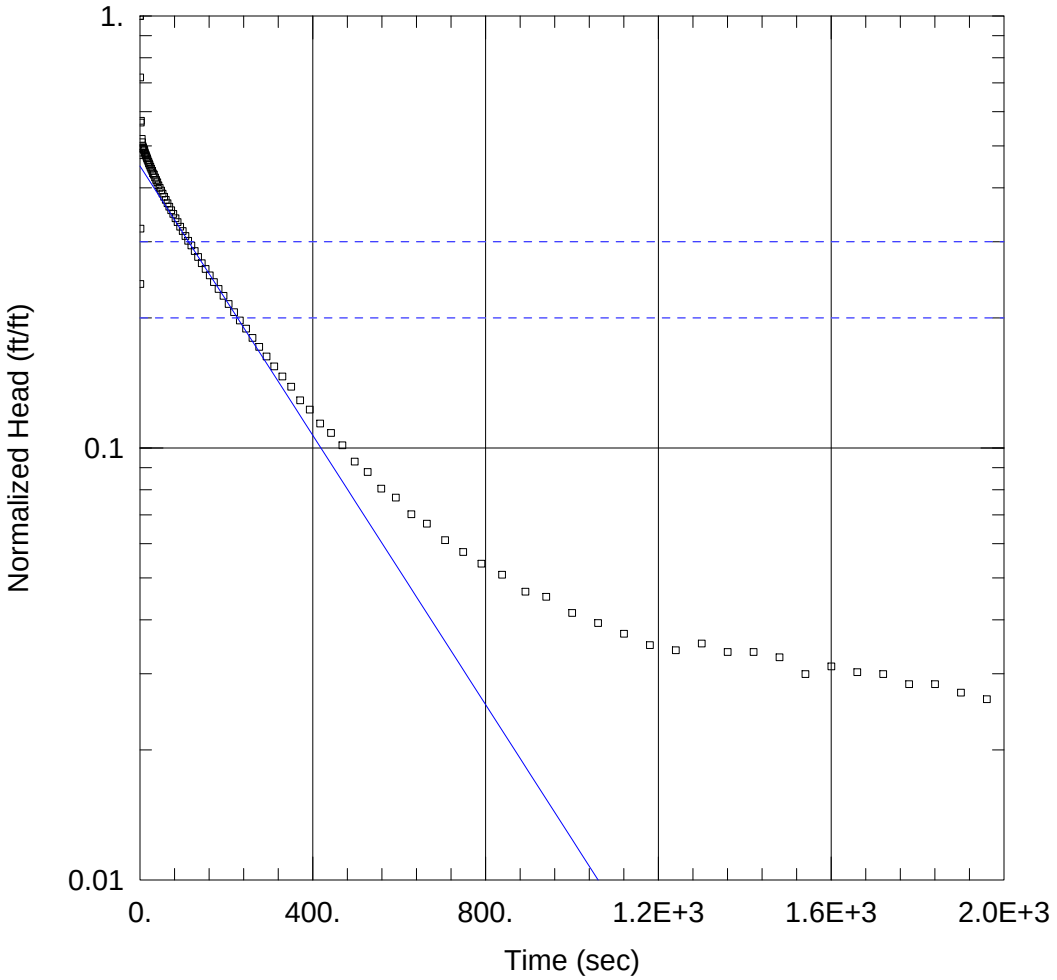
Saturated Thickness: 50.42 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-27)

Initial Displacement: 2.619 ft Static Water Column Height: 19.12 ft
Total Well Penetration Depth: 19.12 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.3193 ft/day y0 = 1.467 ft



MW27-IN2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW27-in2_BR.aqt
Date: 06/08/17 Time: 14:09:18

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-27
Test Date: 5/10/17

AQUIFER DATA

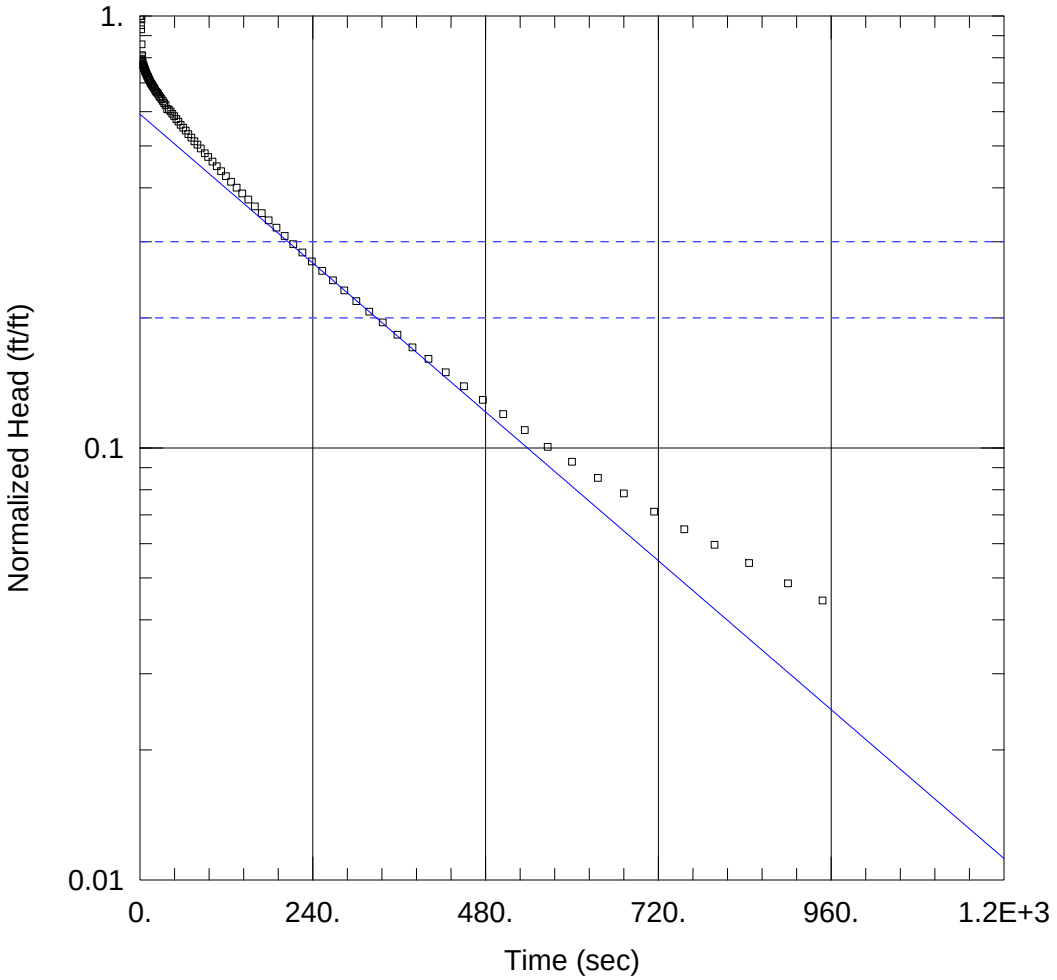
Saturated Thickness: 50.42 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-27)

Initial Displacement: 3.205 ft
Total Well Penetration Depth: 19.12 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 19.12 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.2855 ft/day
y0 = 1.44 ft



MW27-OUT1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW27-out1_BR.aqt
Date: 06/08/17 Time: 14:05:23

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-27
Test Date: 5/10/17

AQUIFER DATA

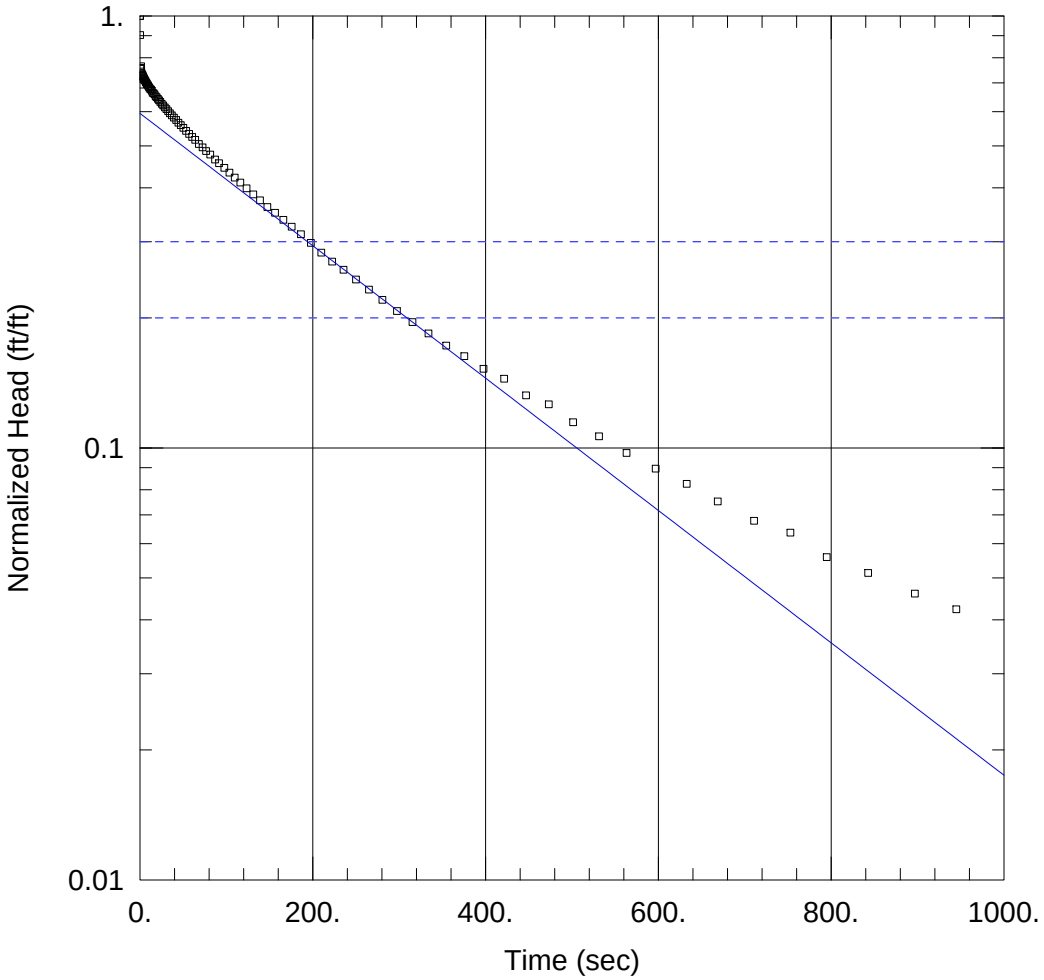
Saturated Thickness: 50.42 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-27)

Initial Displacement: 2.346 ft Static Water Column Height: 19.12 ft
Total Well Penetration Depth: 19.12 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.2631 ft/day y0 = 1.39 ft



MW27-OUT2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW27-out2_BR.aqt
Date: 06/08/17 Time: 14:11:08

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-27
Test Date: 5/10/17

AQUIFER DATA

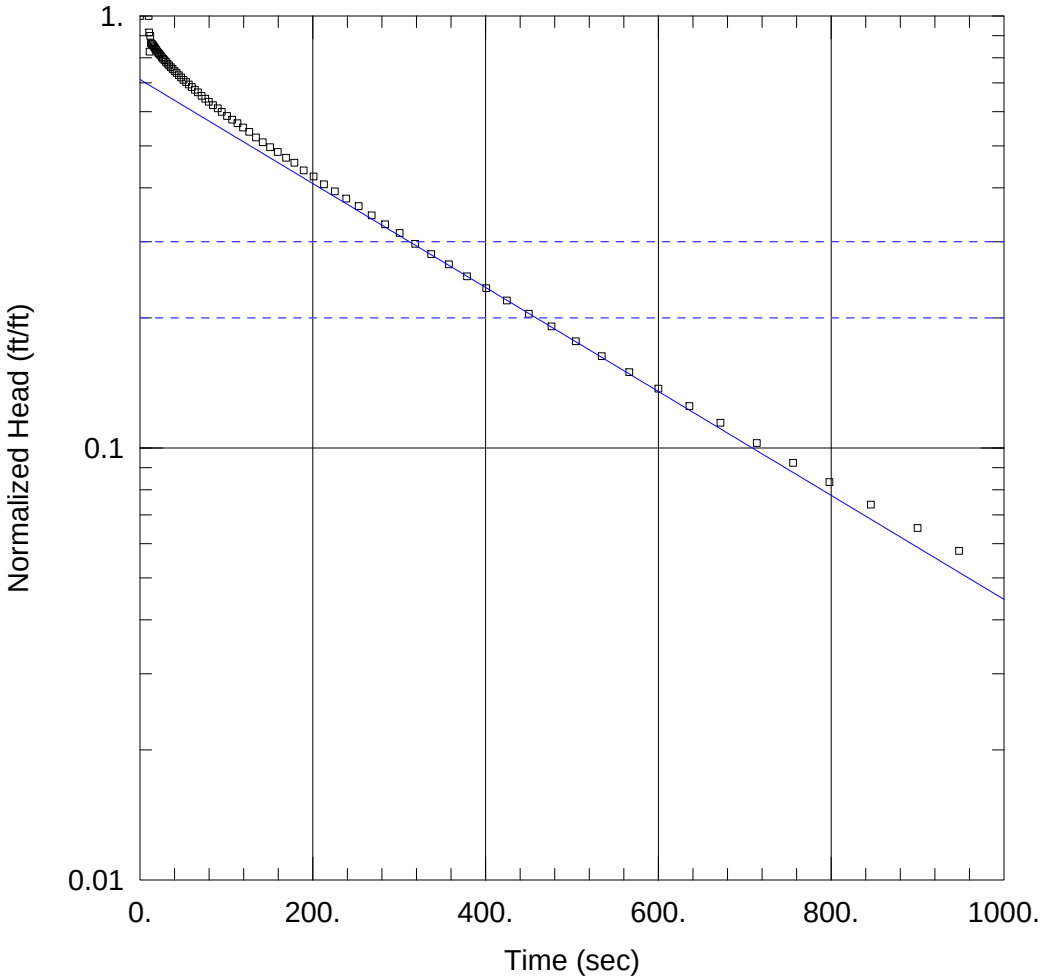
Saturated Thickness: 50.42 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-27)

Initial Displacement: 2.434 ft
Total Well Penetration Depth: 19.12 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 19.12 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.2807 ft/day
y0 = 1.448 ft



MW28-IN1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW28-in1_BR.aqt
Date: 06/08/17 Time: 14:15:00

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-28
Test Date: 5/10/17

AQUIFER DATA

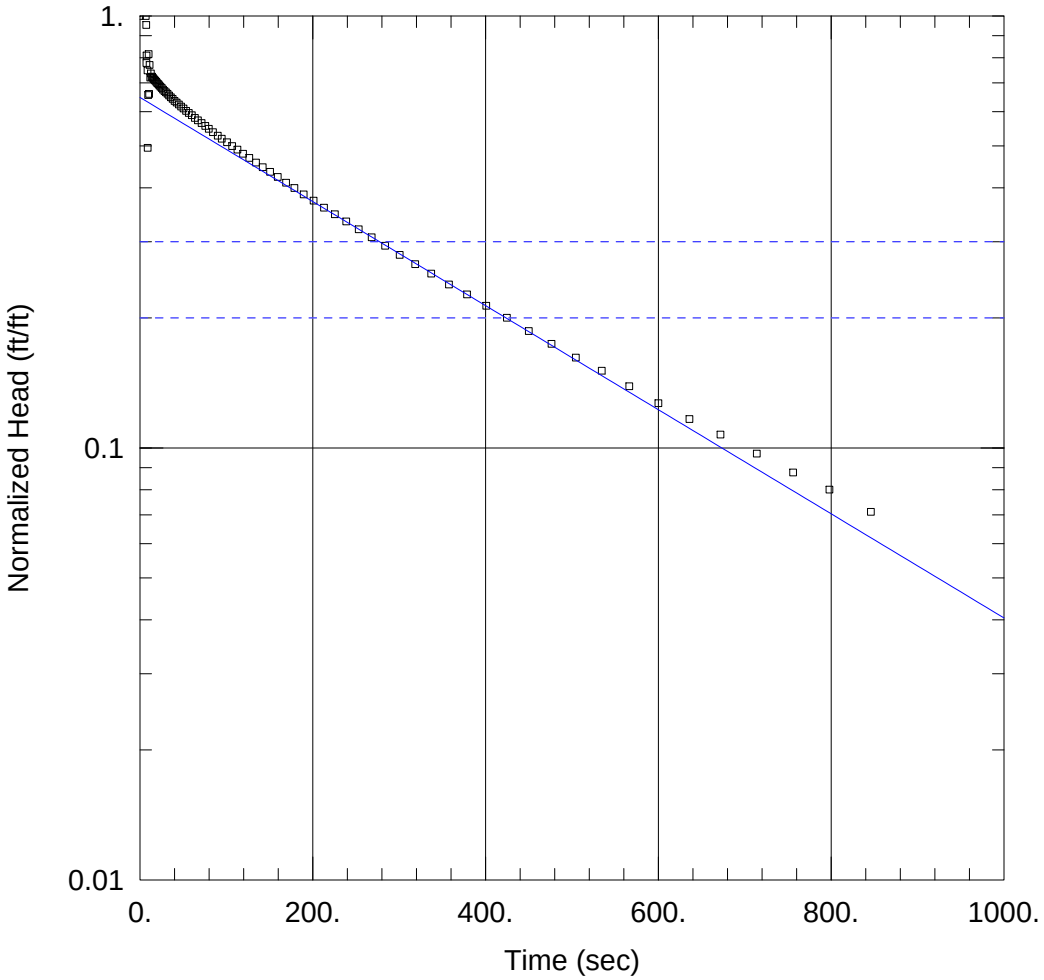
Saturated Thickness: 47.58 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-28)

Initial Displacement: 2.544 ft Static Water Column Height: 16.12 ft
Total Well Penetration Depth: 16.12 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.2145 ft/day y0 = 1.812 ft



MW28-IN2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW28-in2_BR.aqt
Date: 06/08/17 Time: 14:18:57

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-28
Test Date: 5/10/17

AQUIFER DATA

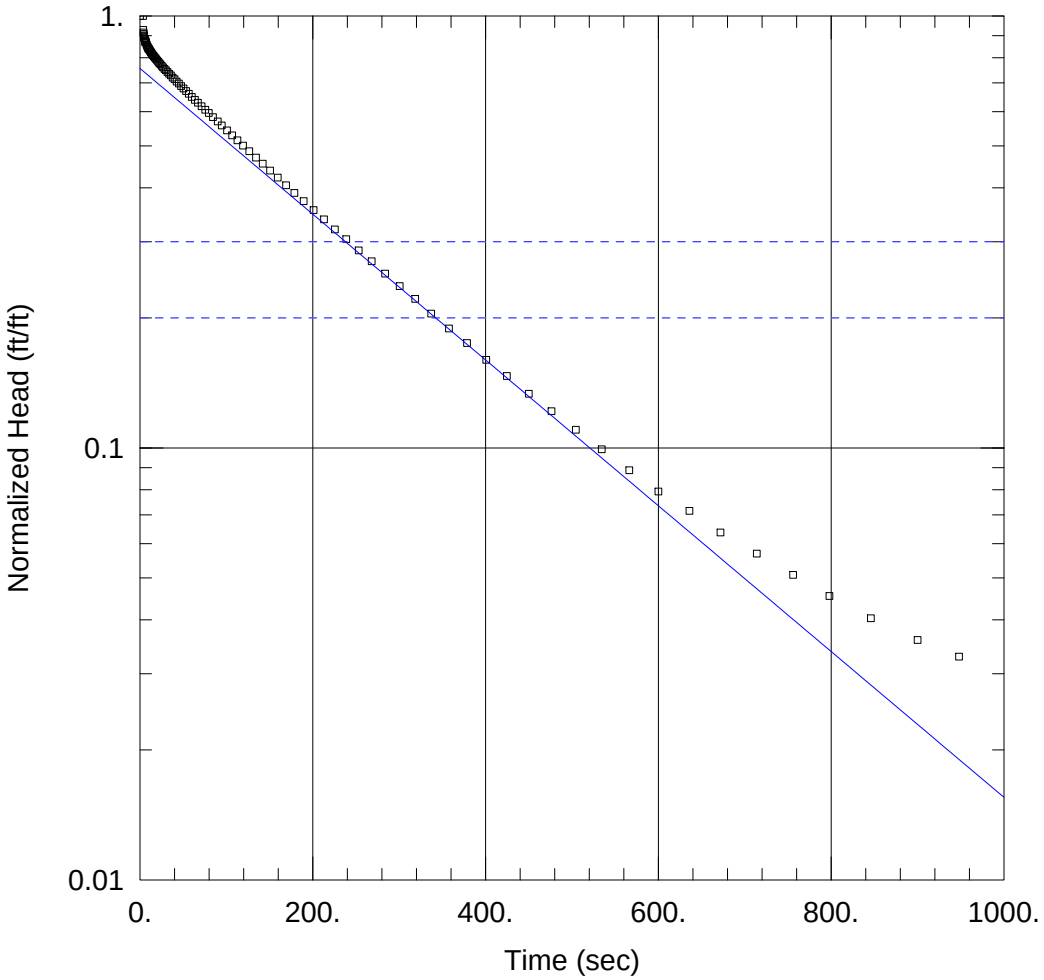
Saturated Thickness: 47.58 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-28)

Initial Displacement: 3.009 ft
Total Well Penetration Depth: 16.12 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 16.12 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.2148 ft/day
y0 = 1.949 ft



MW28-OUT1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW28-out1_BR.aqt
Date: 06/08/17 Time: 14:16:51

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-28
Test Date: 5/10/17

AQUIFER DATA

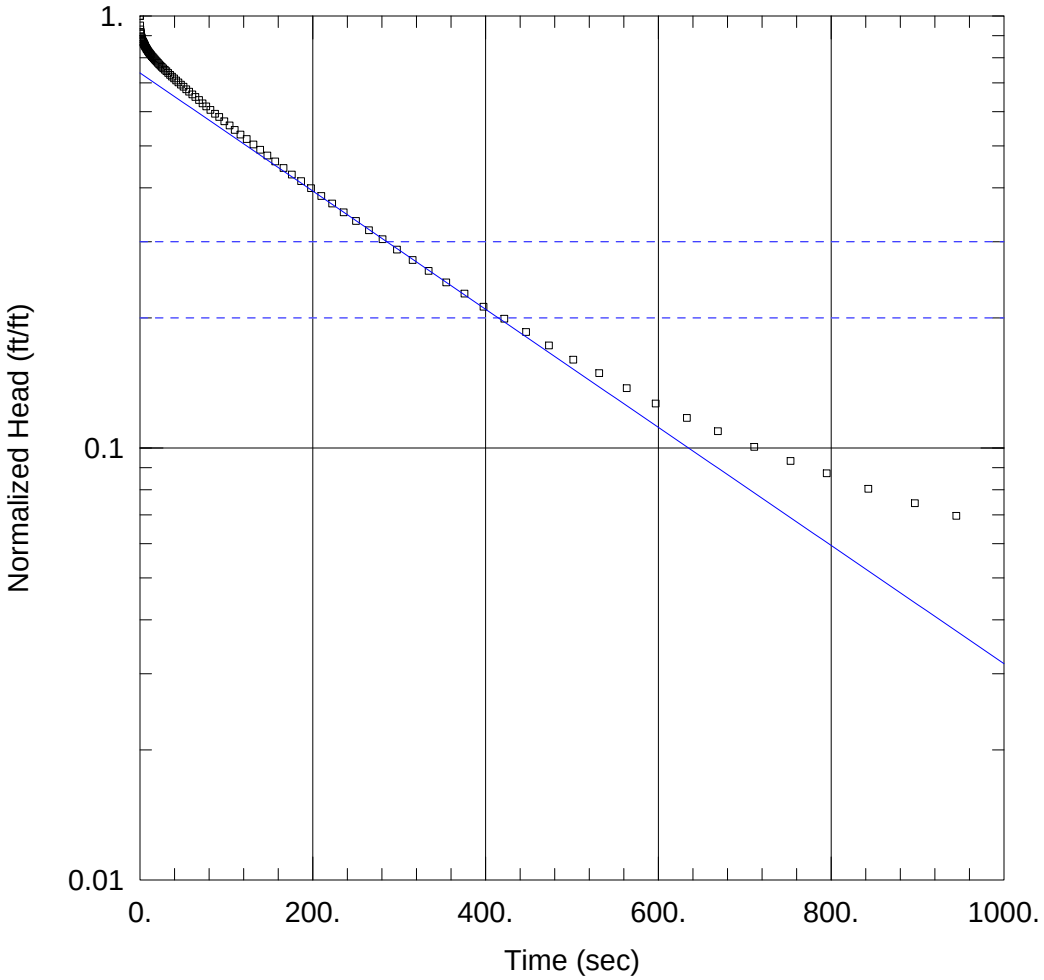
Saturated Thickness: 47.58 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-28)

Initial Displacement: 2.951 ft
Total Well Penetration Depth: 16.12 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 16.12 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.3008 ft/day
y0 = 2.231 ft



MW28-OUT2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW28-out2_BR.aqt
Date: 06/09/17 Time: 12:06:36

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-28
Test Date: 5/10/17

AQUIFER DATA

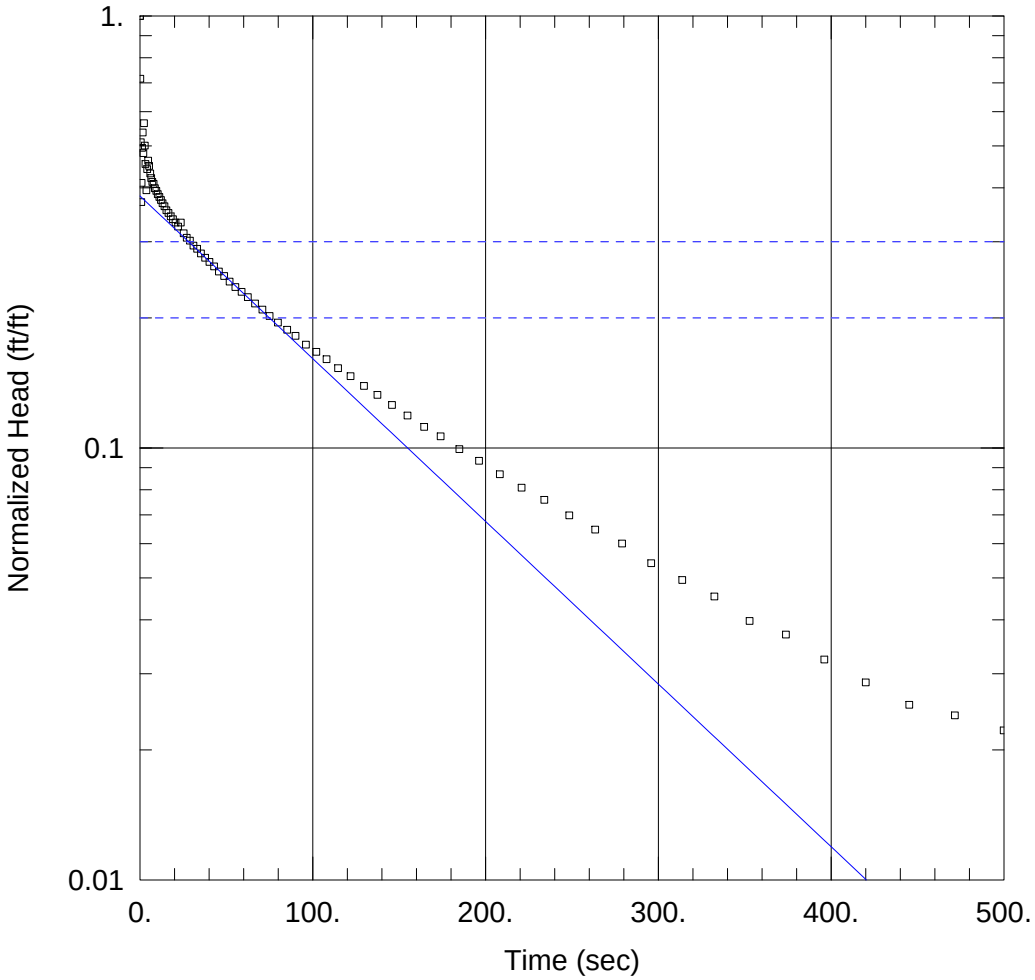
Saturated Thickness: 47.58 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-28)

Initial Displacement: 2.873 ft Static Water Column Height: 16.12 ft
Total Well Penetration Depth: 16.12 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.2438 ft/day y0 = 2.12 ft



MW29-IN1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW29-in1_BR.aqt
Date: 06/08/17 Time: 14:24:43

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-29
Test Date: 5/10/17

AQUIFER DATA

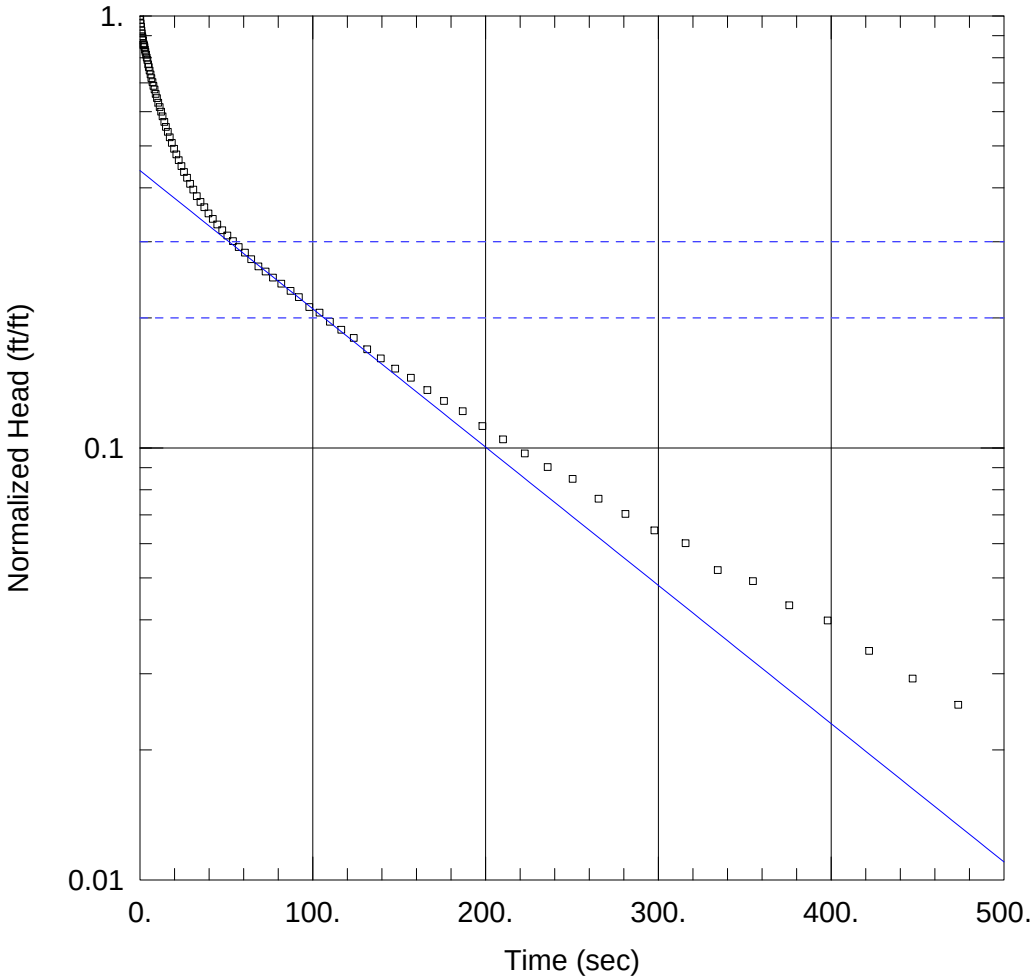
Saturated Thickness: 53.24 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-29)

Initial Displacement: 2.163 ft
Total Well Penetration Depth: 21.28 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 21.28 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.701 ft/day
y0 = 0.8284 ft



MW29-OUT1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW29-out1_BR.aqt
Date: 06/08/17 Time: 14:27:48

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-29
Test Date: 5/10/17

AQUIFER DATA

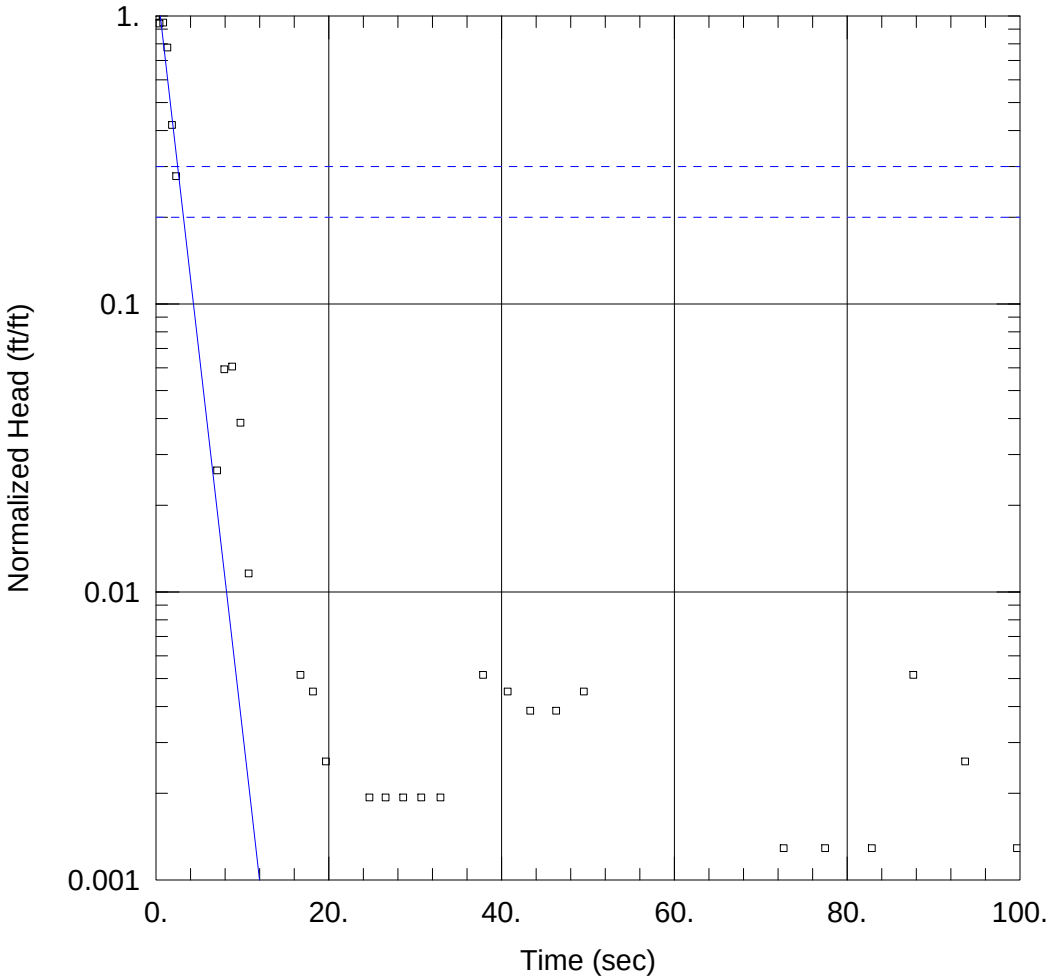
Saturated Thickness: 53.24 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-29)

Initial Displacement: 2.359 ft
Total Well Penetration Depth: 21.28 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 21.28 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.5957 ft/day
y0 = 1.034 ft



MW30D-IN1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-in1_B&R.aqt
Date: 06/07/17 Time: 12:09:47

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

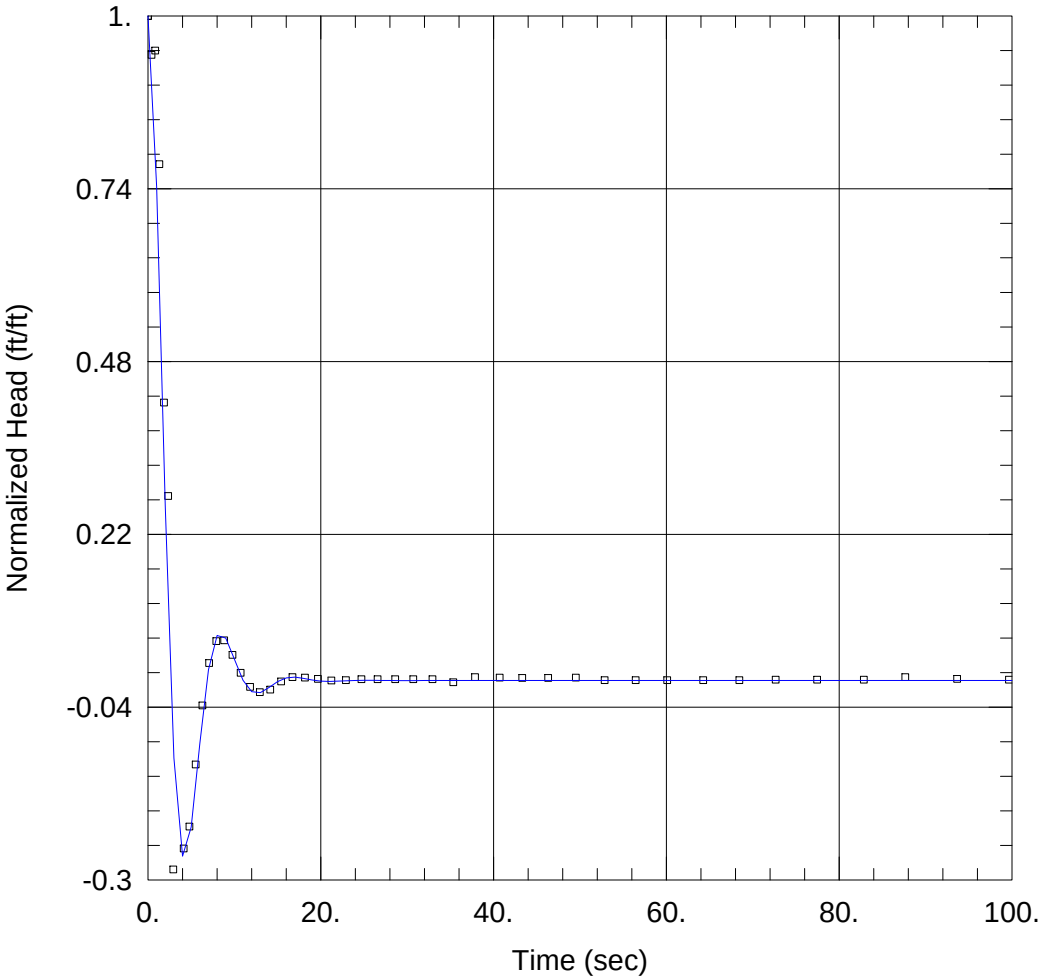
Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 1.552 ft
Total Well Penetration Depth: 54.7 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 54.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 68.86 ft/day
y0 = 2.098 ft



MW30D-IN1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-in1_SG.aqt
Date: 06/07/17 Time: 13:06:56

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

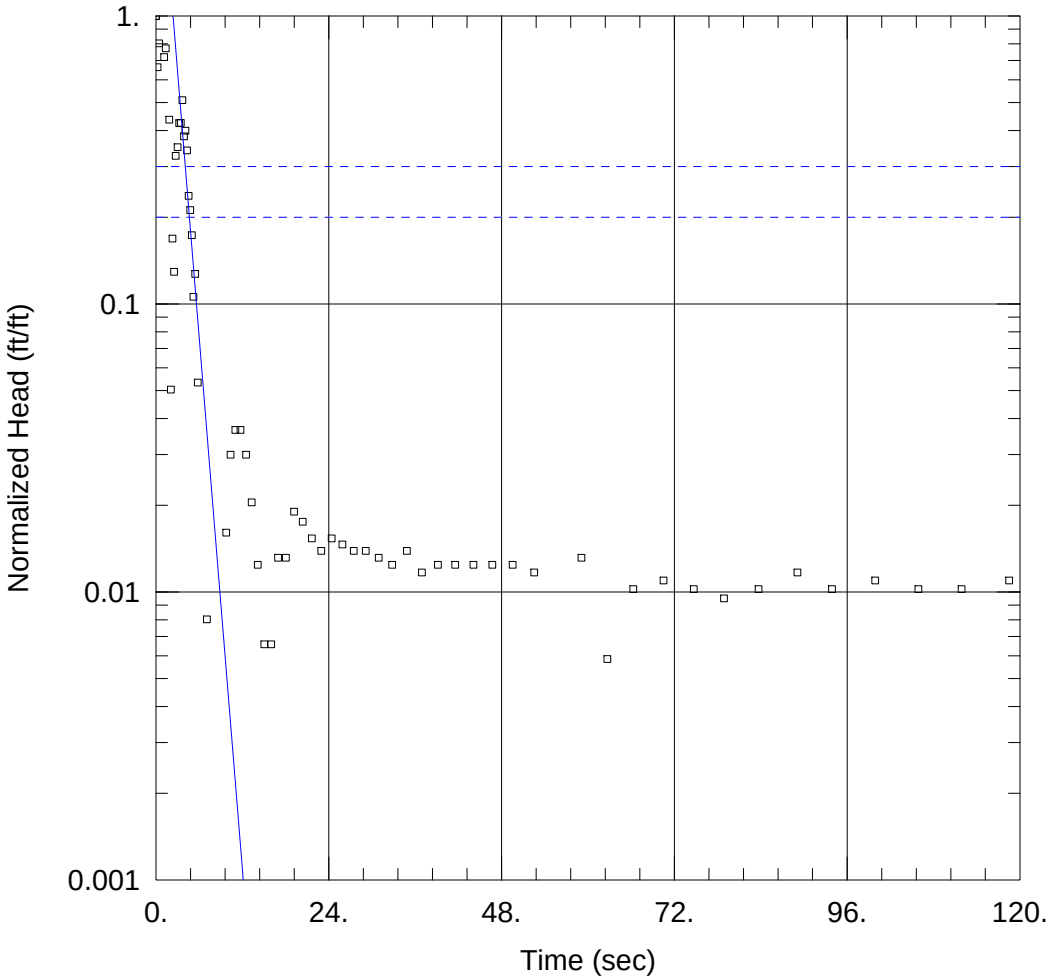
Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 1.552 ft Static Water Column Height: 54.7 ft
Total Well Penetration Depth: 54.7 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar
K = 122.6 ft/day Le = 48.73 ft



MW30D-IN2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-in2_B&R.aqt
Date: 06/07/17 Time: 14:28:43

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

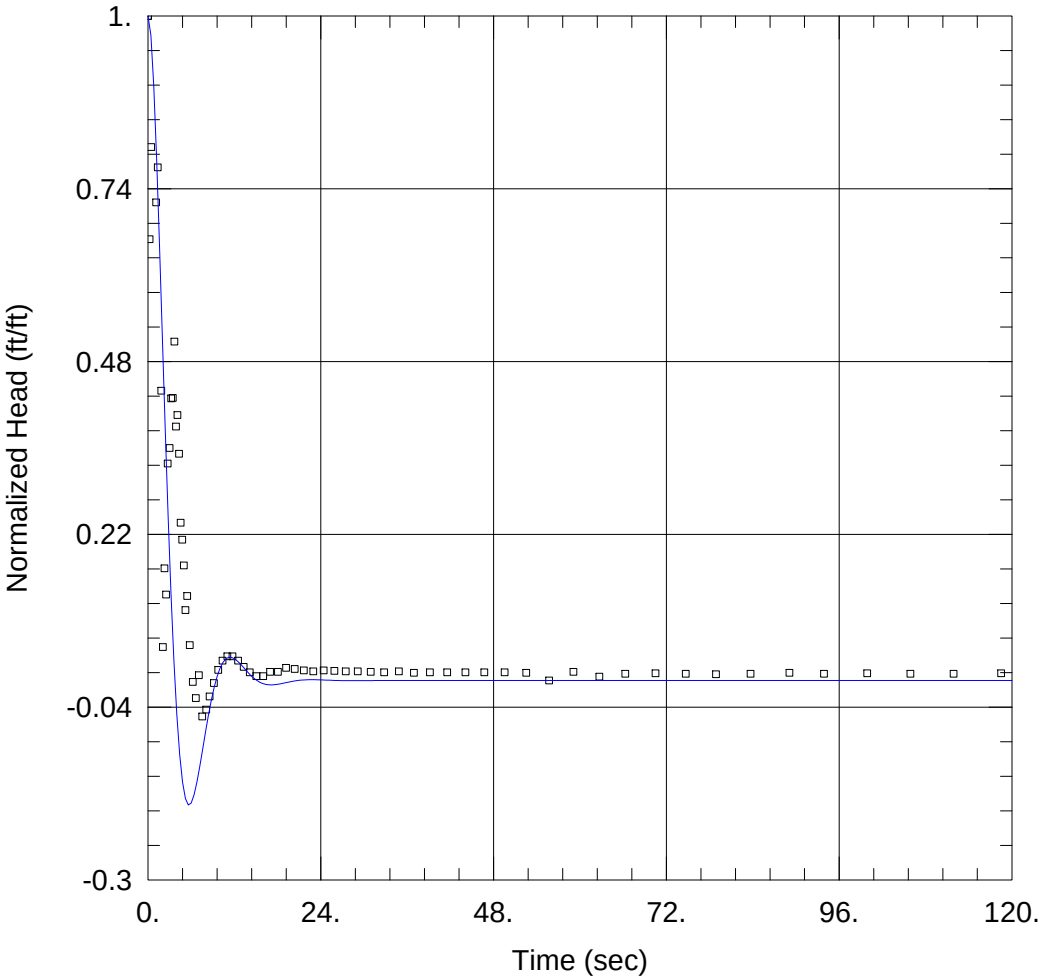
Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 1.369 ft Static Water Column Height: 54.7 ft
Total Well Penetration Depth: 54.7 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 76.48 ft/day y0 = 7.33 ft



MW30D-IN2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-in2_SG.aqt
Date: 06/07/17 Time: 14:36:44

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

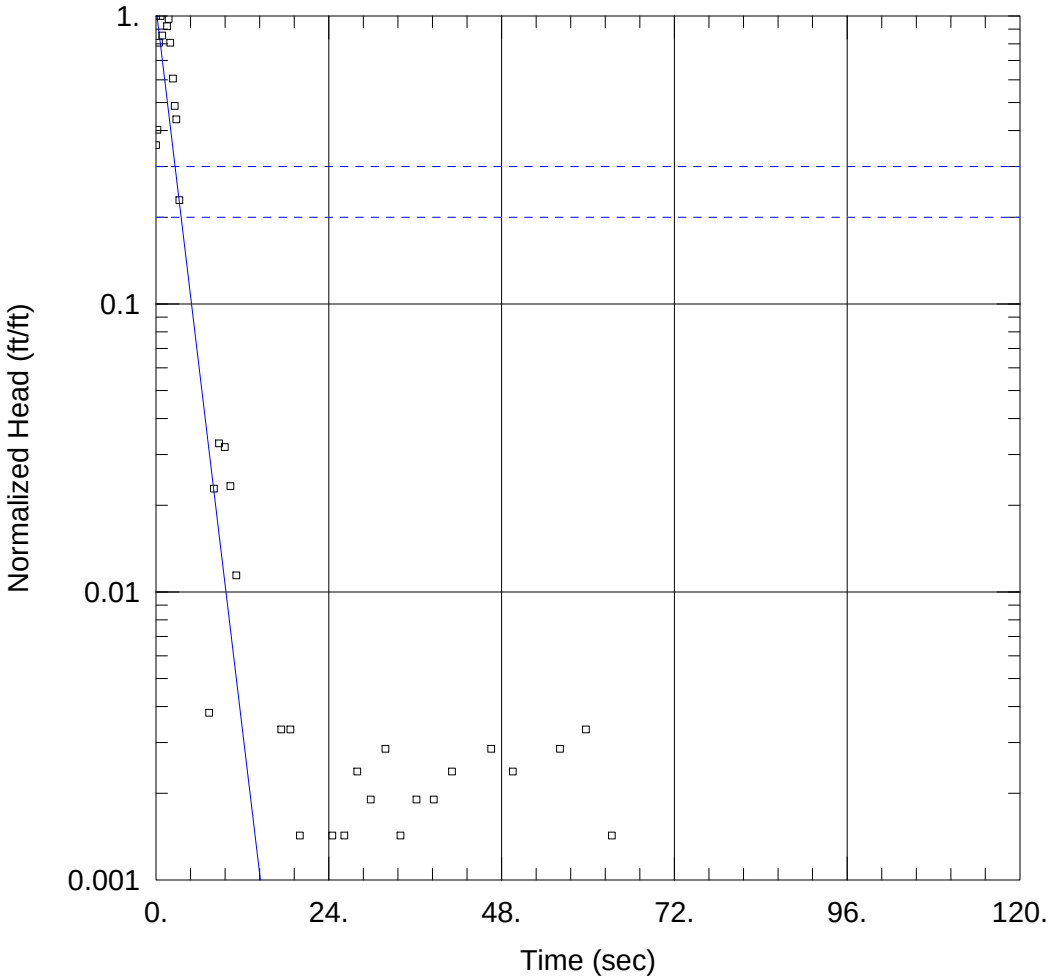
Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 1.369 ft Static Water Column Height: 54.7 ft
Total Well Penetration Depth: 54.7 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar
K = 72.67 ft/day Le = 82.39 ft



MW30D-IN3

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-in3_B&R.aqt
Date: 06/07/17 Time: 14:52:09

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

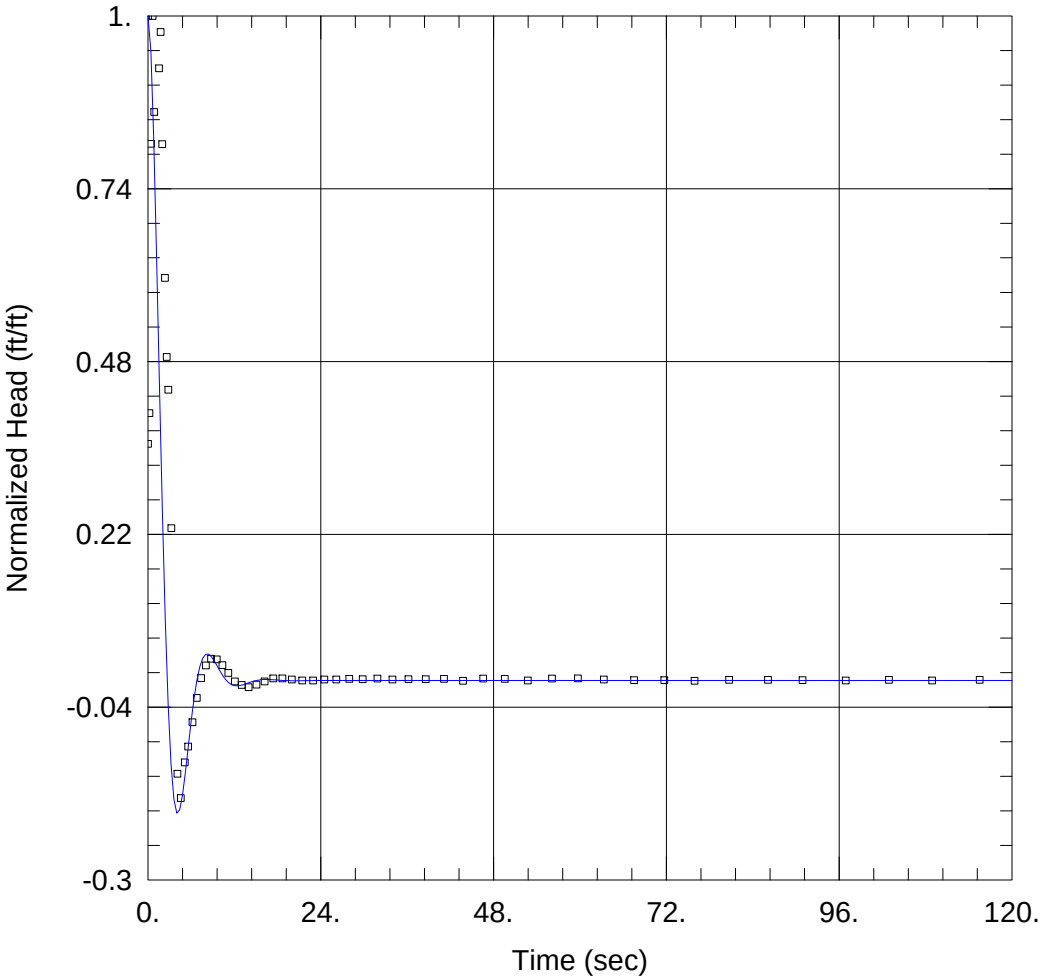
WELL DATA (MW-30D)

Initial Displacement: 2.103 ft
Total Well Penetration Depth: 54.7 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 54.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 51.98 ft/day
y0 = 2.259 ft



MW30D-IN3

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-in3_SG.aqt
Date: 06/07/17 Time: 14:53:33

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

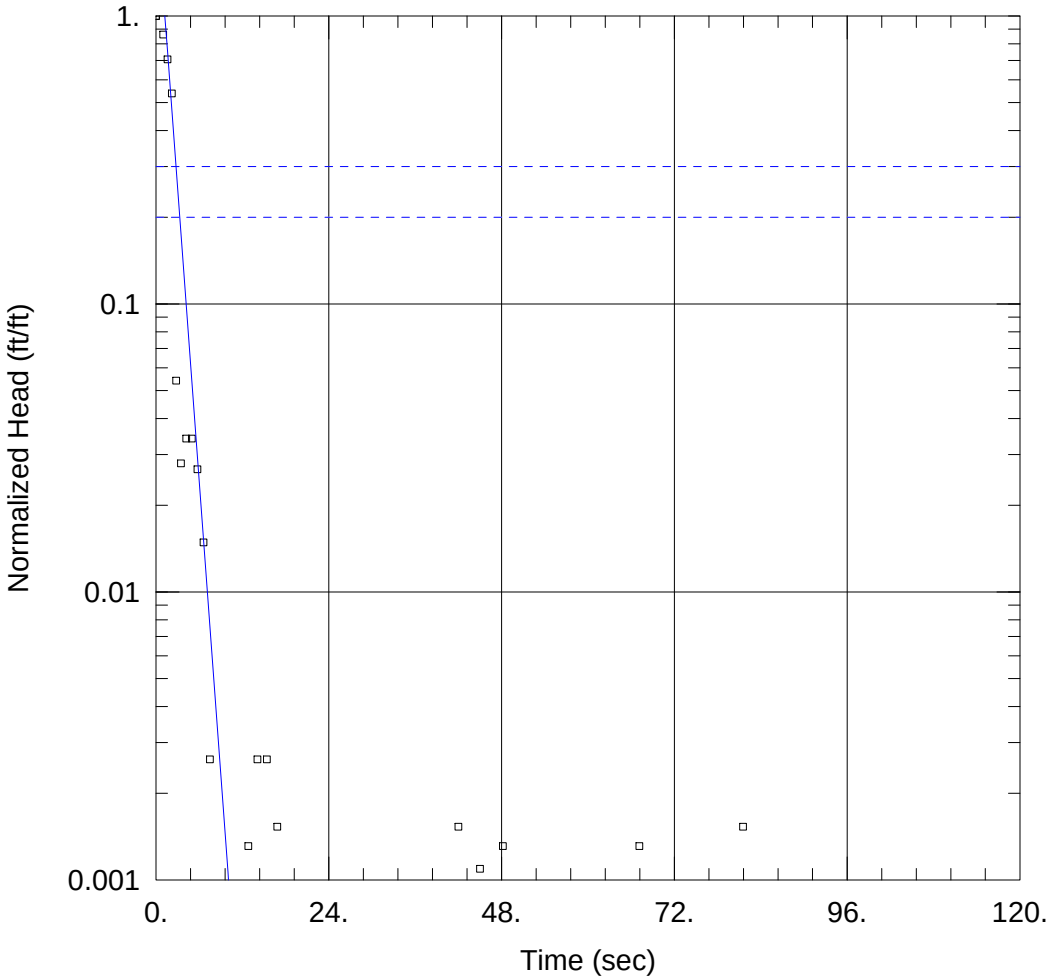
Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 2.103 ft
Total Well Penetration Depth: 54.7 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 54.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 103.7 ft/day
Le = 43.64 ft



MW30D-IN4

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-in4_B&R.aqt
Date: 06/07/17 Time: 15:20:13

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

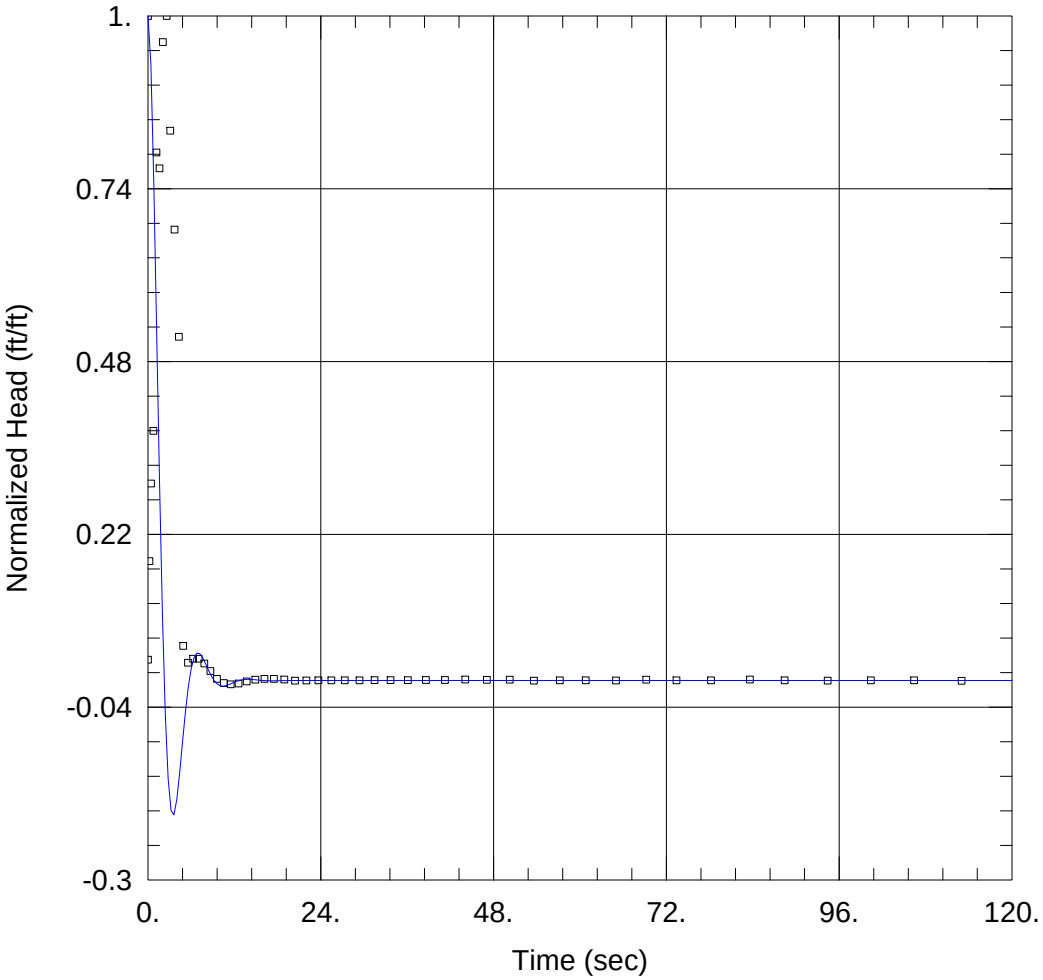
Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 4.577 ft
Total Well Penetration Depth: 54.7 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 54.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 84.42 ft/day
y0 = 12.1 ft



MW30D-IN4

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-in4_SG.aqt
Date: 06/07/17 Time: 15:16:40

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

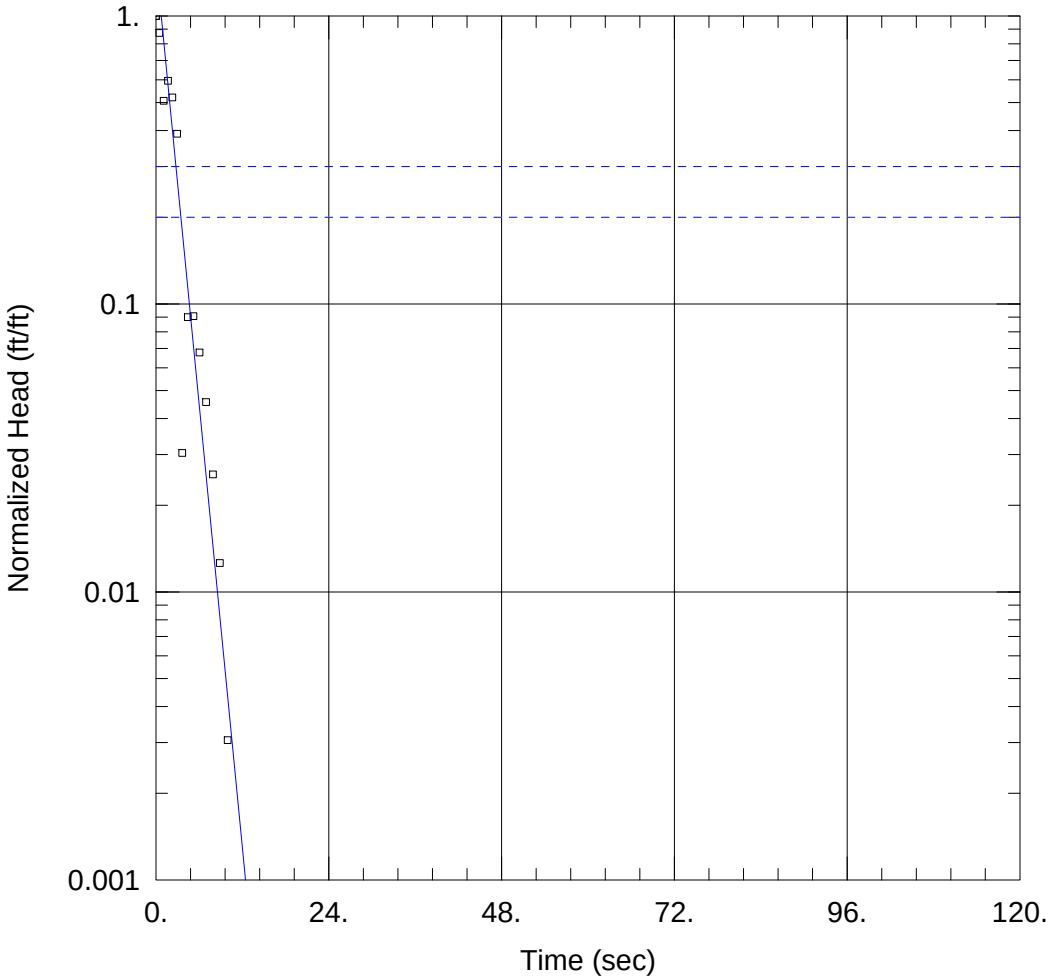
Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 4.764 ft
Total Well Penetration Depth: 54.7 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 54.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
K = 124.1 ft/day
Solution Method: Springer-Gelhar
Le = 31.21 ft



MW30D-IN5

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-in5_B&R.aqt
Date: 06/07/17 Time: 15:27:37

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

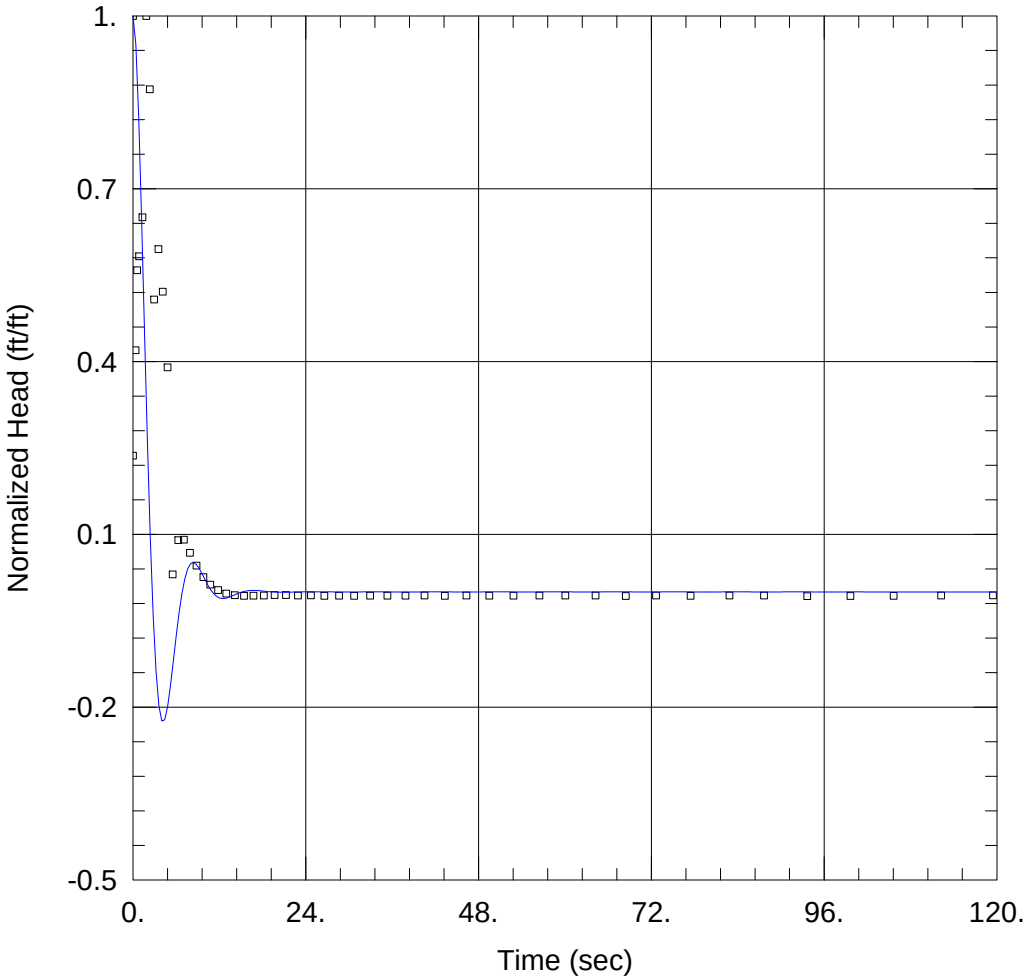
WELL DATA (MW-30D)

Initial Displacement: 5.236 ft
Total Well Penetration Depth: 54.7 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 54.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 63.73 ft/day
y0 = 8.063 ft



MW30D-IN5

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-in5_SG.aqt
Date: 06/07/17 Time: 15:26:44

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

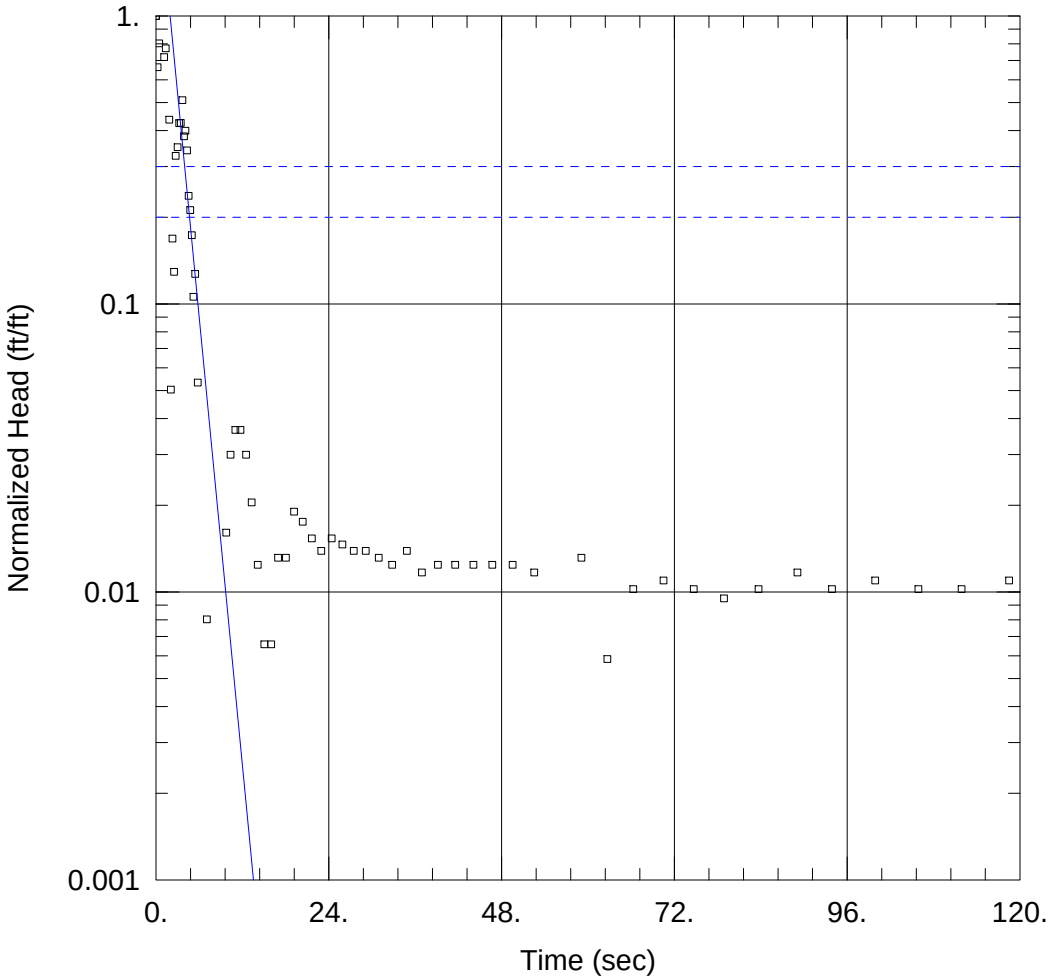
Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 5.236 ft Static Water Column Height: 54.7 ft
Total Well Penetration Depth: 54.7 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar
K = 107.3 ft/day Le = 46.23 ft



MW30D-OUT1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-out1_BR.aqt
Date: 06/07/17 Time: 12:54:04

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

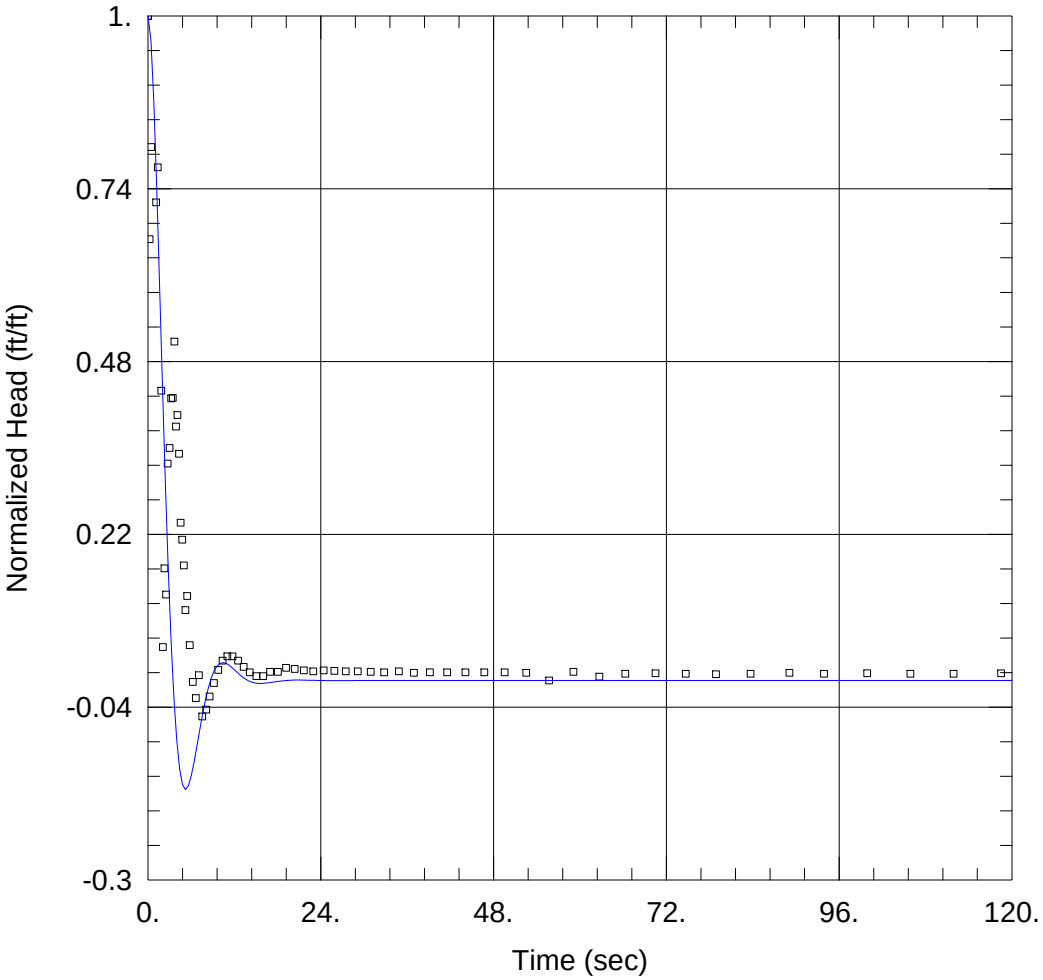
Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 1.369 ft Static Water Column Height: 54.7 ft
Total Well Penetration Depth: 54.7 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 68.38 ft/day y0 = 4.414 ft



MW30D-OUT1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-out1_SG.aqt
Date: 06/07/17 Time: 13:13:38

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

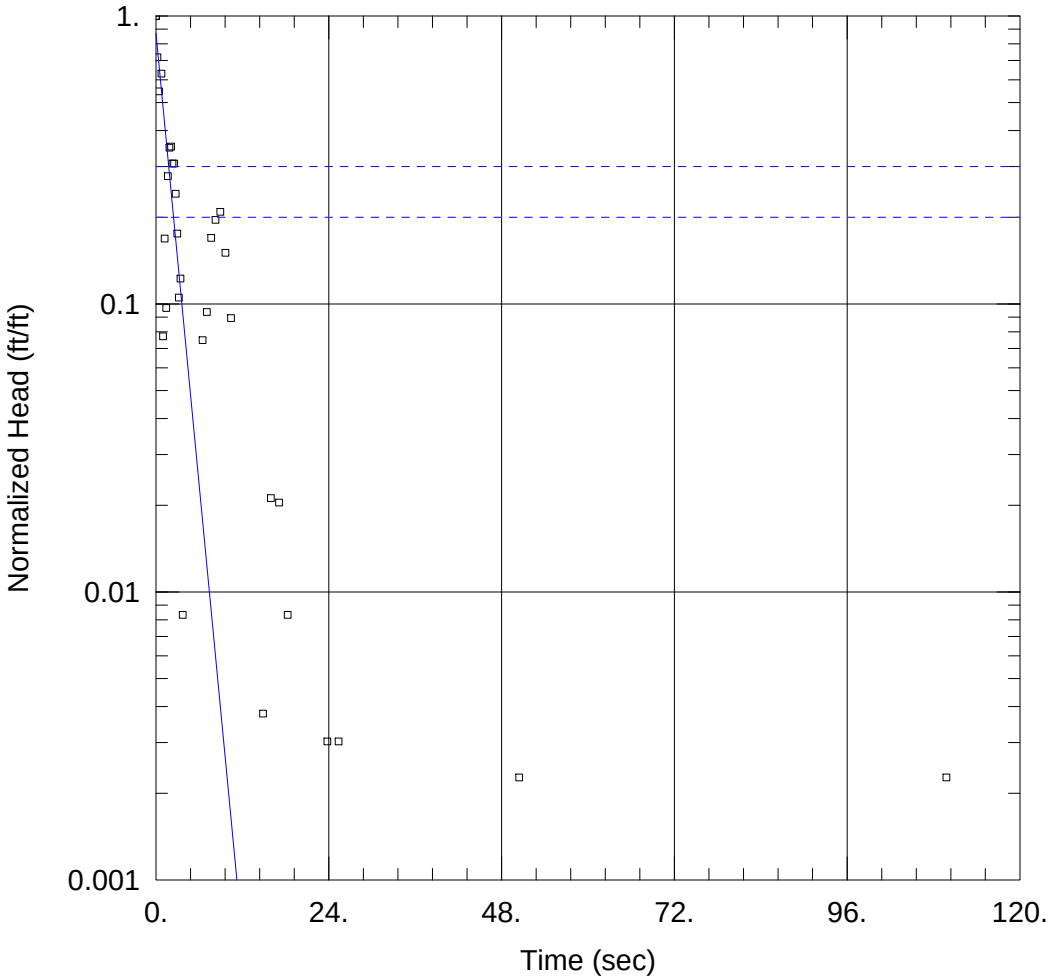
Saturated Thickness: 54.48 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 1.369 ft
Total Well Penetration Depth: 54.7 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 54.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
K = 76.39 ft/day
Solution Method: Springer-Gelhar
Le = 66.38 ft



MW30D-OUT2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-out2_B&R.aqt
Date: 06/07/17 Time: 14:43:23

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

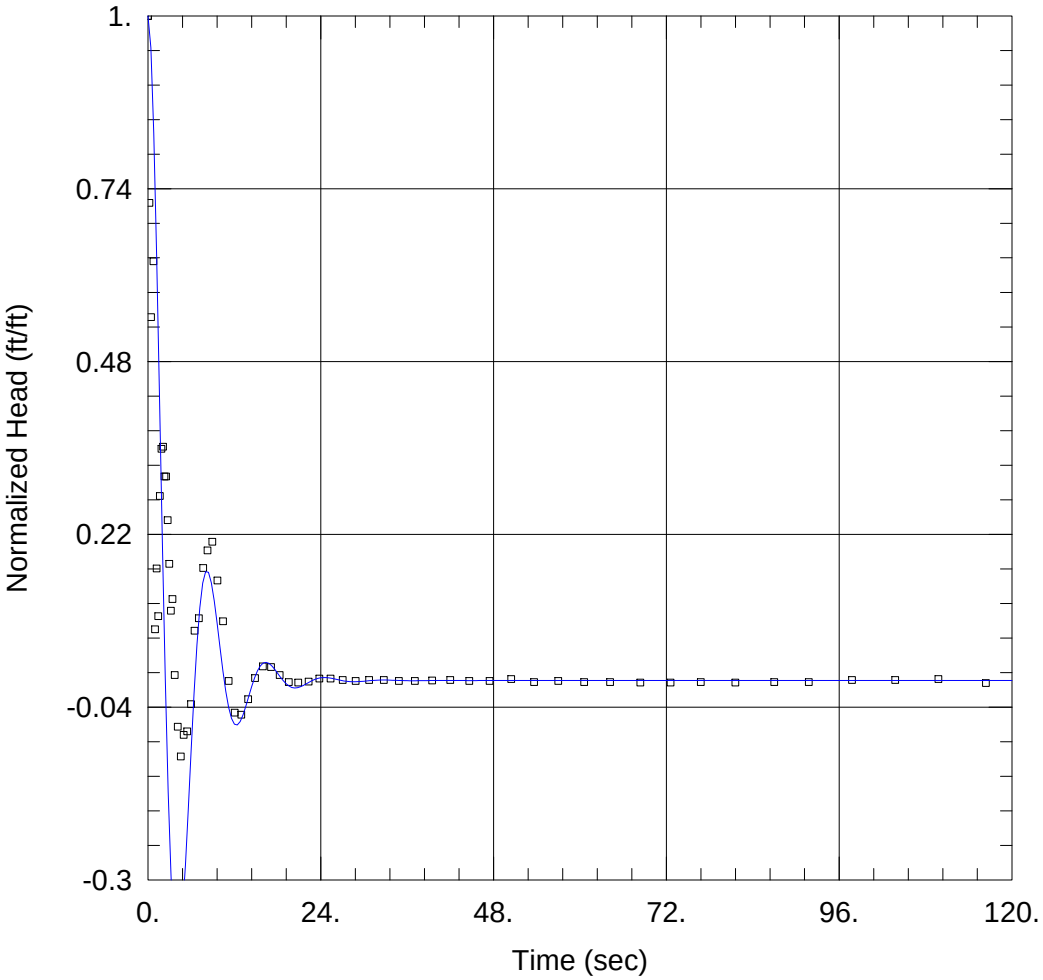
Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 1.322 ft Static Water Column Height: 54.7 ft
Total Well Penetration Depth: 54.7 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 65.05 ft/day y0 = 1.15 ft



MW30D-OUT2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-out2_SG.aqt
Date: 06/07/17 Time: 14:42:24

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

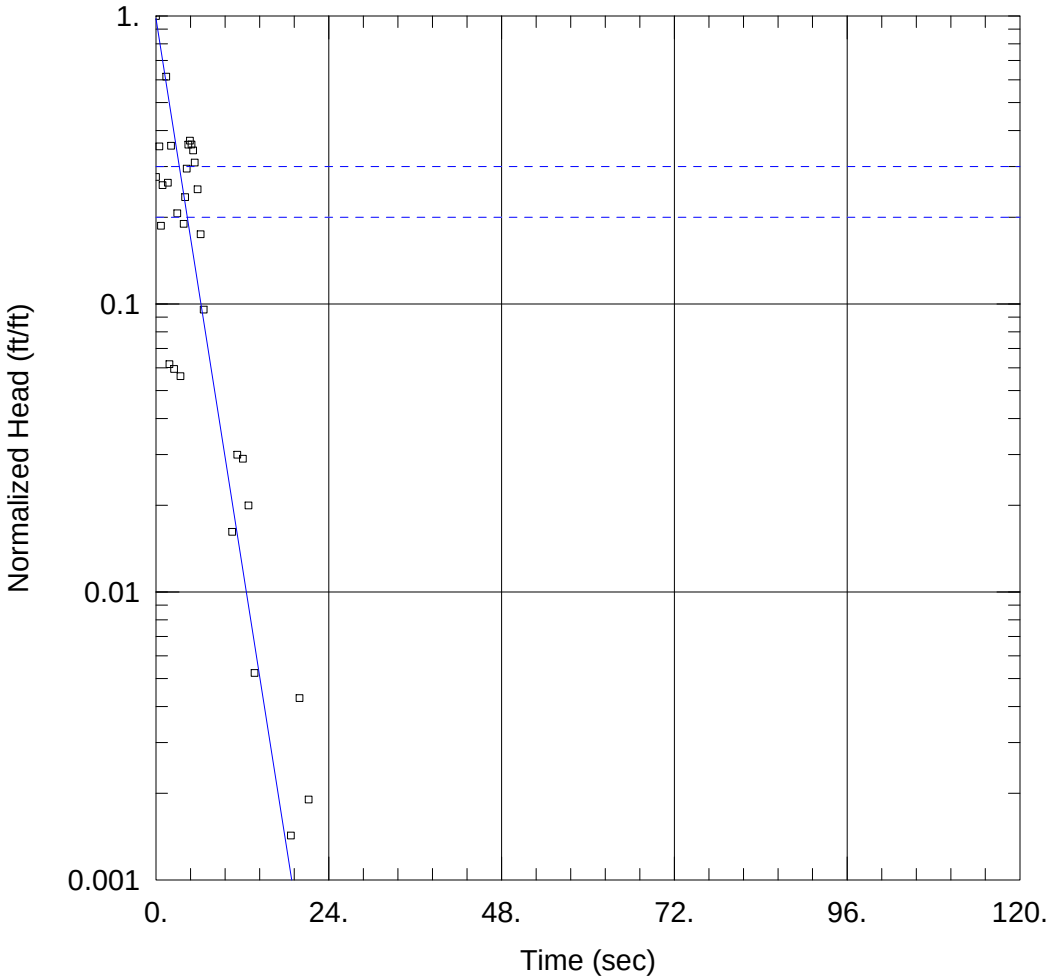
Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 1.322 ft
Total Well Penetration Depth: 54.7 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 54.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 161.3 ft/day
Le = 50.36 ft



MW30D-OUT3

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-out3_B&R.aqt
Date: 06/07/17 Time: 15:11:37

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

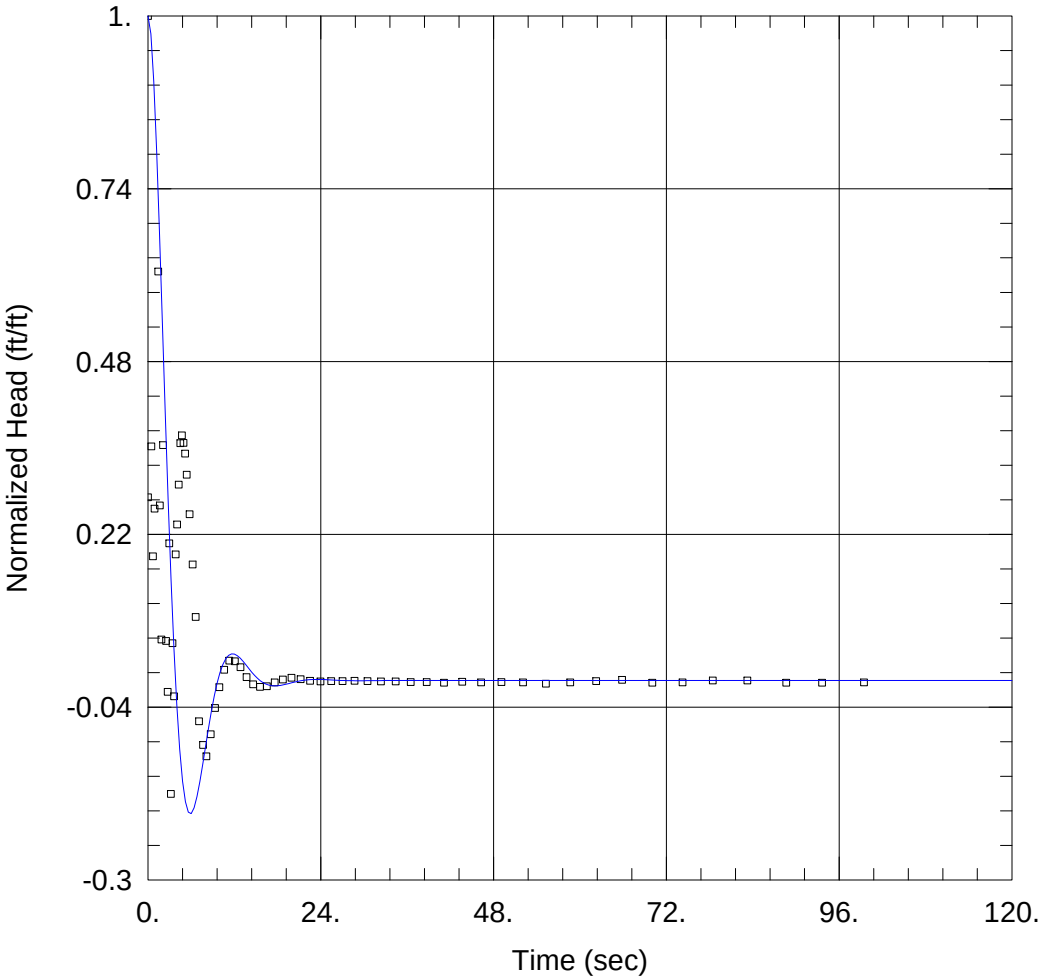
Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 2.103 ft
Total Well Penetration Depth: 54.7 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 54.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 39.46 ft/day
y0 = 2.059 ft



MW30D-OUT3

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW30D-out3_SG.aqt
Date: 06/07/17 Time: 14:57:46

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

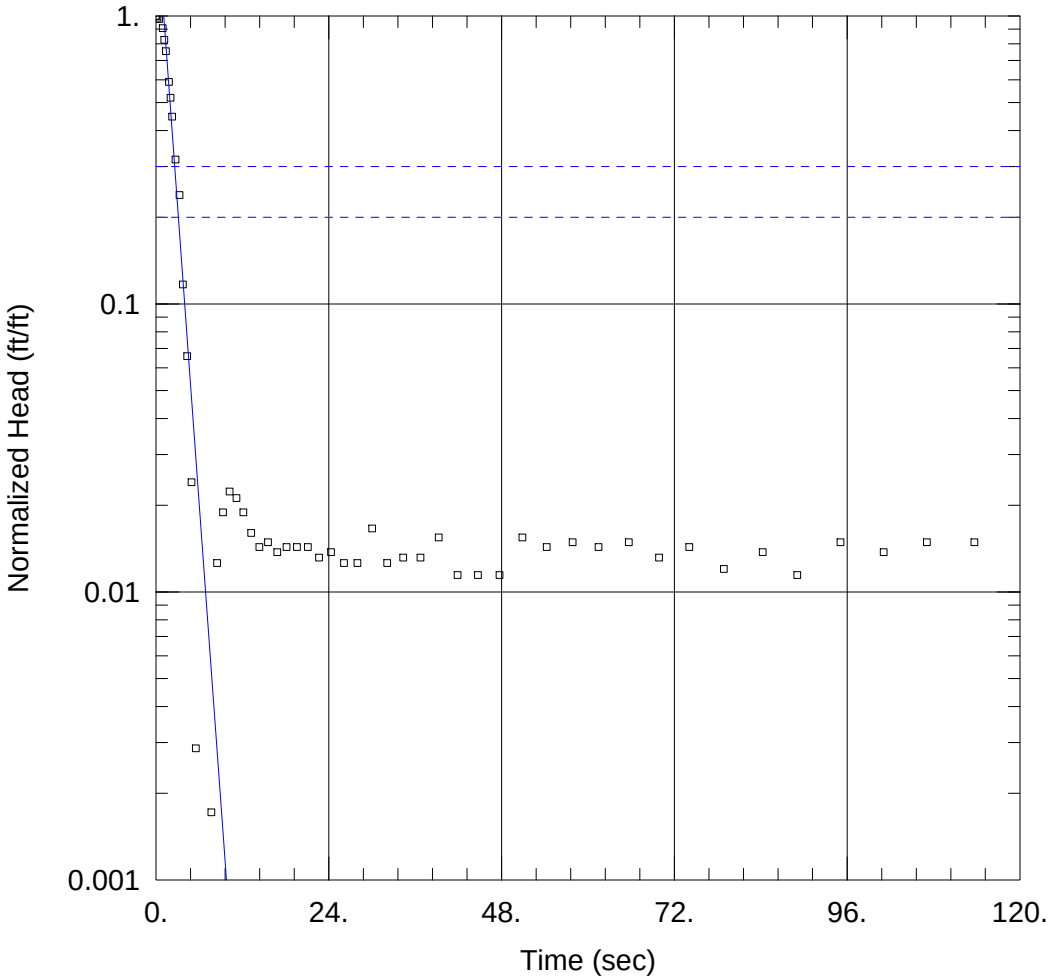
Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 2.103 ft
Total Well Penetration Depth: 54.7 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 54.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 72.22 ft/day
Le = 89.06 ft



MW30D-OUT5

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW30D-out5_B&R.aqt
Date: 06/09/17 Time: 12:07:19

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

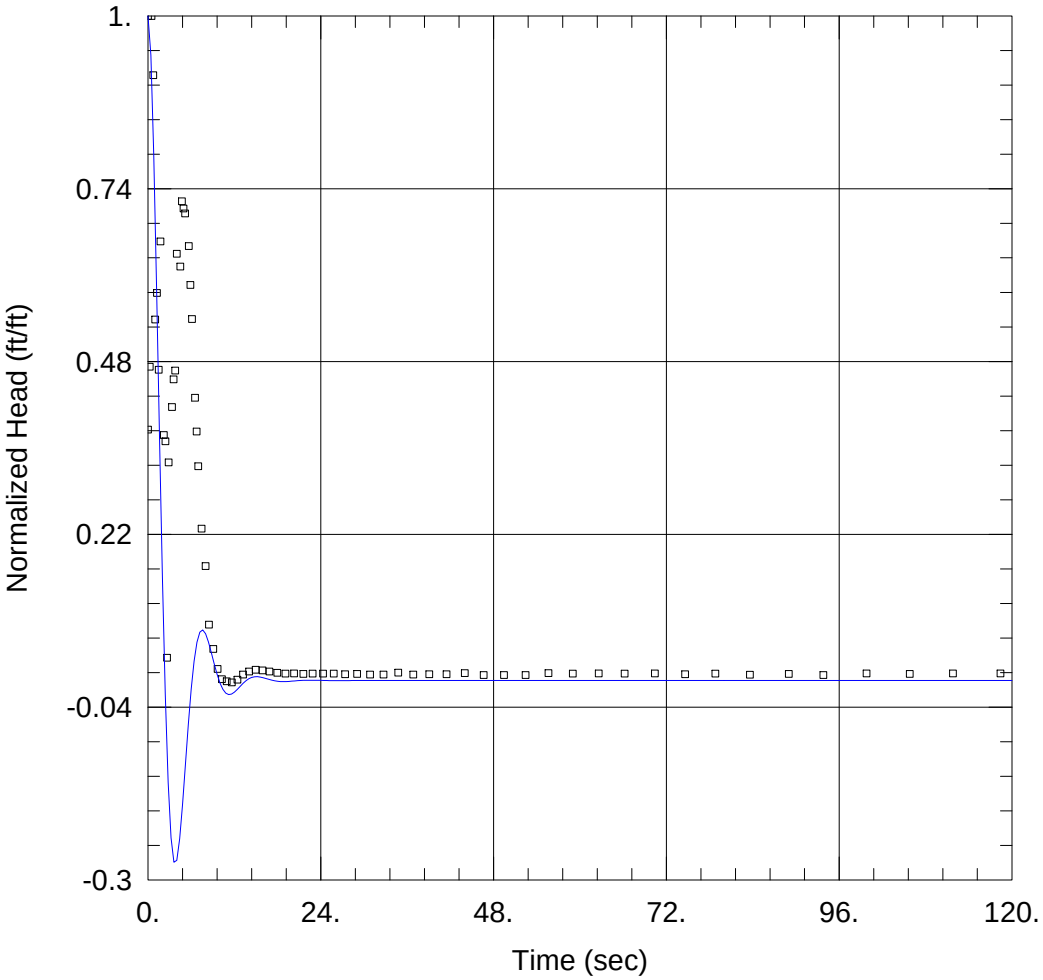
Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 1.747 ft
Total Well Penetration Depth: 54.7 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 54.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 85.67 ft/day
y0 = 4.118 ft



MW30D-OUT5

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW30D-out5_SG.aqt
Date: 06/09/17 Time: 12:08:16

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-30D
Test Date: 5/10/17

AQUIFER DATA

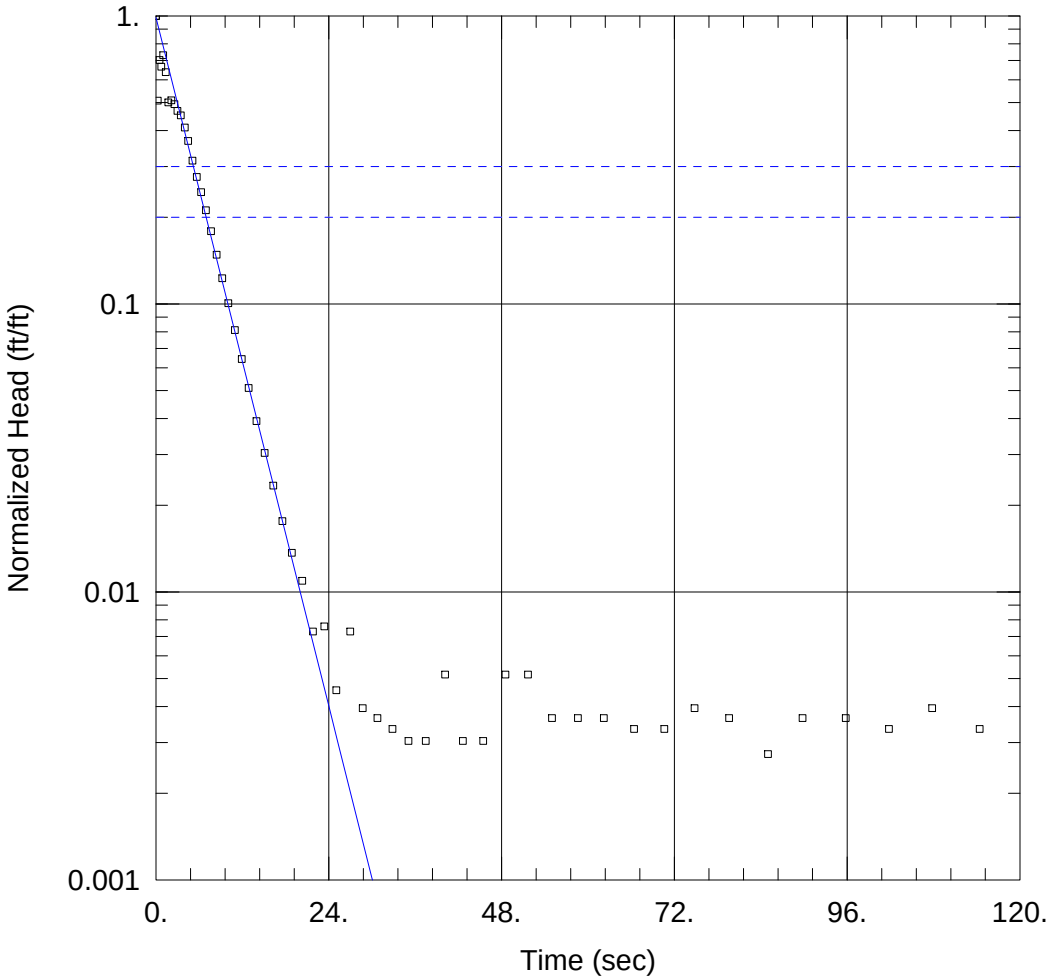
Saturated Thickness: 54.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-30D)

Initial Displacement: 2.423 ft
Total Well Penetration Depth: 54.7 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 54.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 131.6 ft/day
Le = 39.56 ft



MW31D-IN1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW31D-in1_B&R.aqt
Date: 06/07/17 Time: 11:23:35

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-31D
Test Date: 5/10/17

AQUIFER DATA

Saturated Thickness: 50.57 ft Anisotropy Ratio (Kz/Kr): 1.

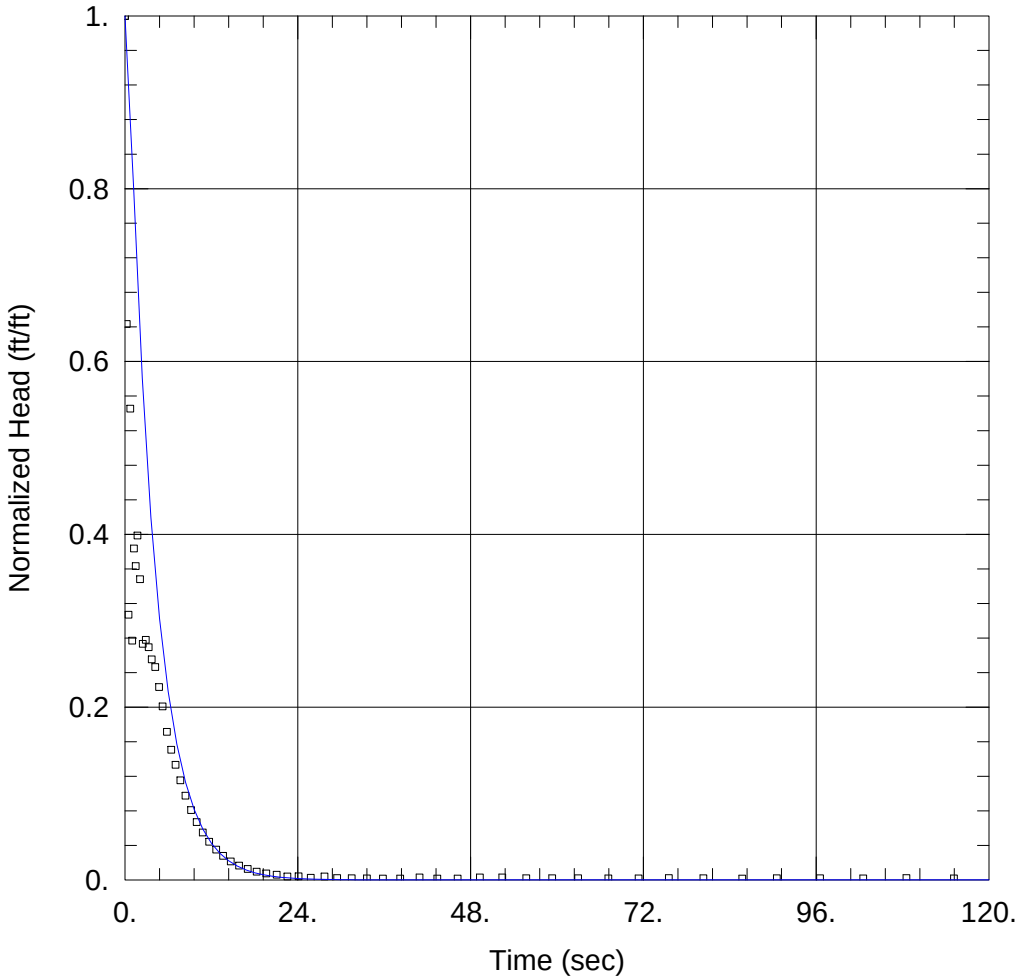
WELL DATA (MW-31D)

Initial Displacement: 3.292 ft
Total Well Penetration Depth: 50.57 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 50.57 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 25.97 ft/day
y0 = 3.247 ft



MW31D-IN1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW31D-in1_SG.aqt
Date: 06/07/17 Time: 14:16:30

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-31D
Test Date: 5/10/17

AQUIFER DATA

Saturated Thickness: 50.57 ft Anisotropy Ratio (Kz/Kr): 1.

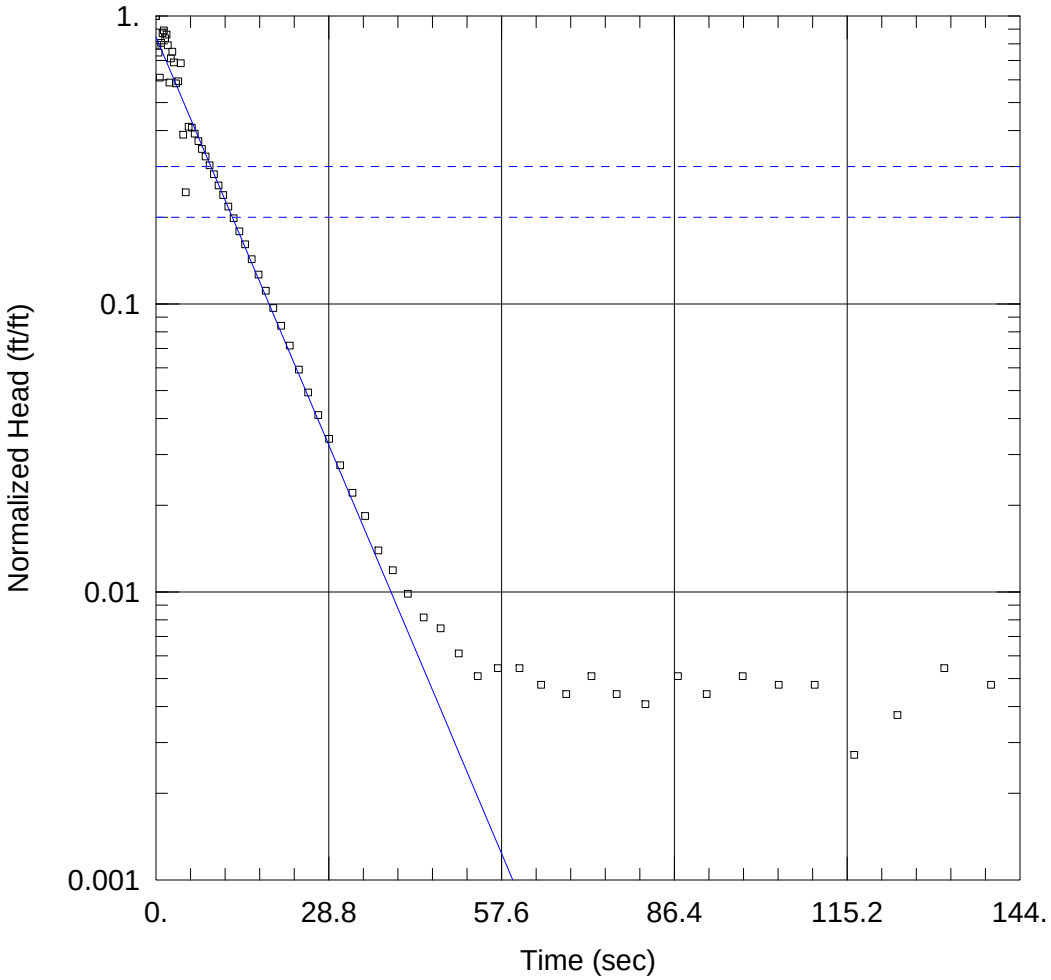
WELL DATA (MW-31D)

Initial Displacement: 6.036 ft
Total Well Penetration Depth: 50.57 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 50.57 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 26.43 ft/day
Le = 45.71 ft



MW31D-IN2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW31D-in2_B&R.aqt
Date: 06/07/17 Time: 11:38:13

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-31D
Test Date: 5/10/17

AQUIFER DATA

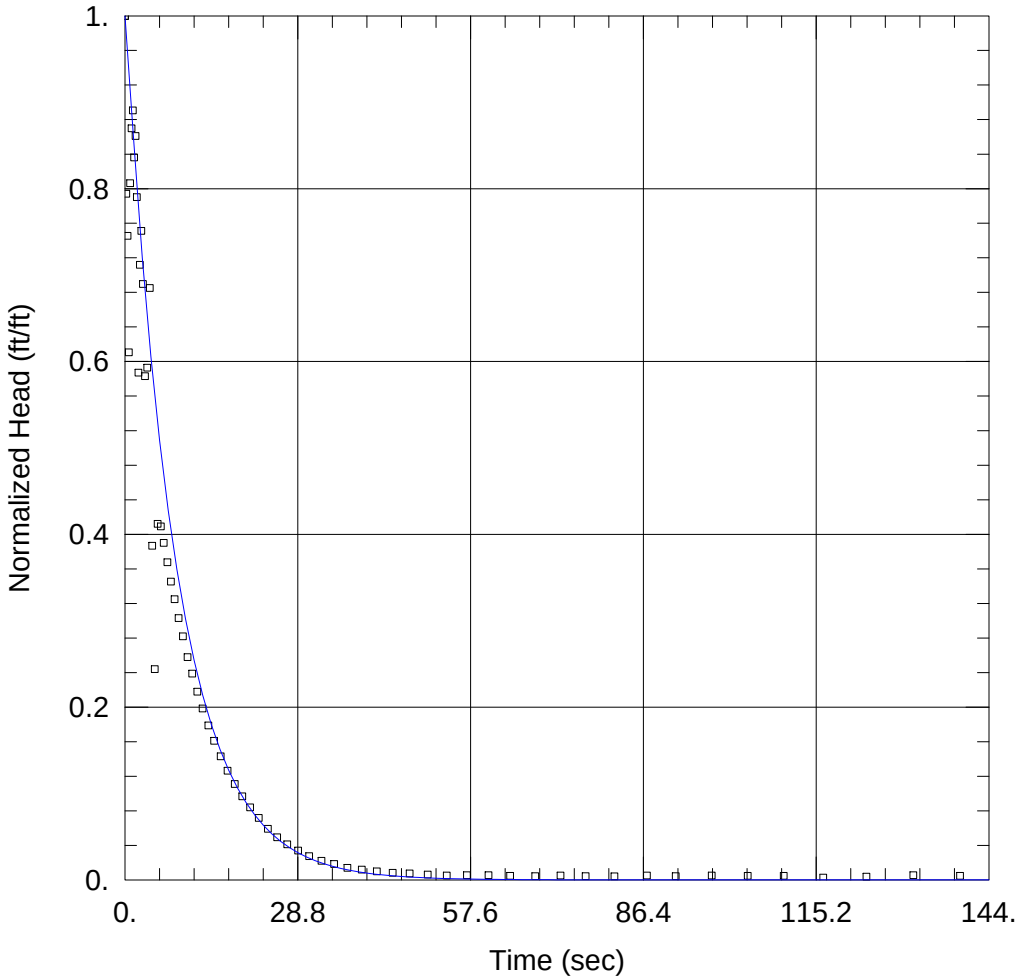
Saturated Thickness: 50.57 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-31D)

Initial Displacement: 2.943 ft
Total Well Penetration Depth: 50.57 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 50.57 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 12.83 ft/day
y0 = 2.487 ft



MW31D-IN2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW31D-in2_SG.aqt
Date: 06/07/17 Time: 14:20:59

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-31D
Test Date: 5/10/17

AQUIFER DATA

Saturated Thickness: 50.57 ft Anisotropy Ratio (Kz/Kr): 1.

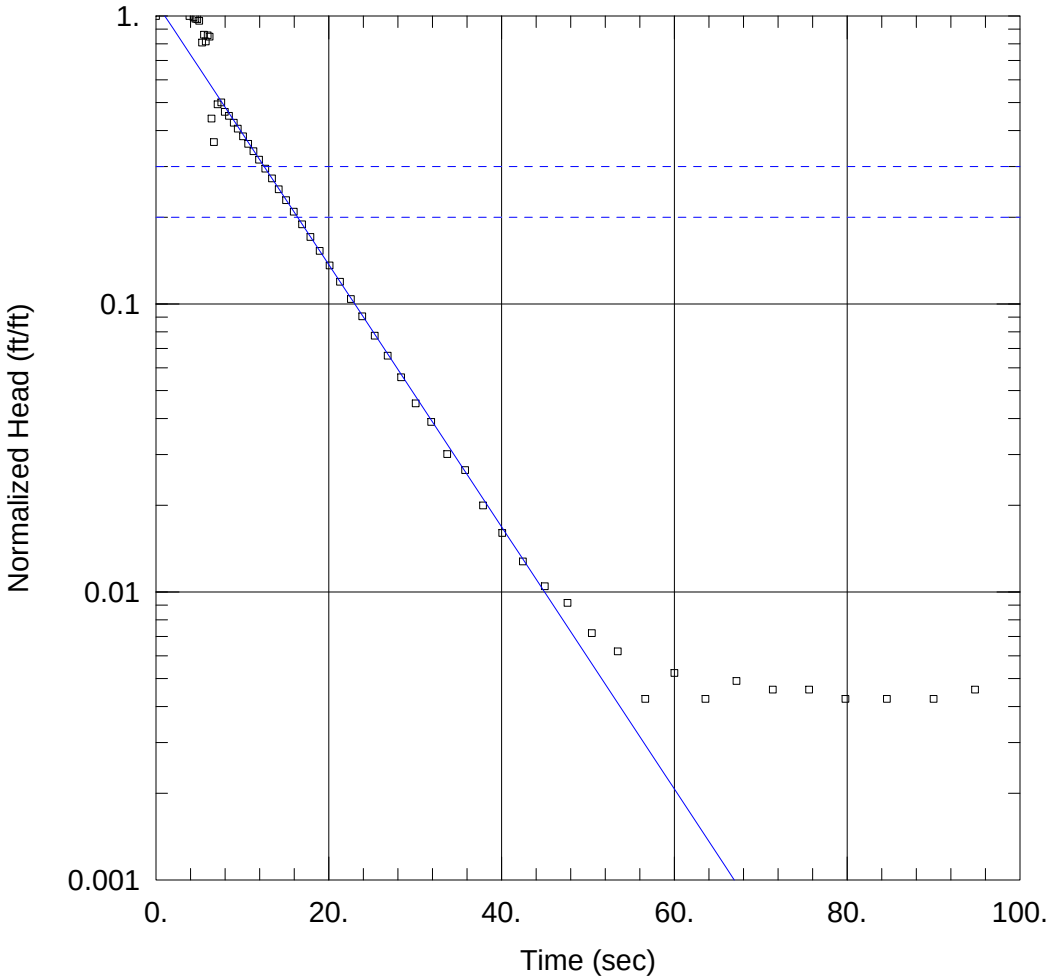
WELL DATA (MW-31D)

Initial Displacement: 2.943 ft
Total Well Penetration Depth: 50.57 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 50.57 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 12.66 ft/day
Le = 41.69 ft



MW31D-IN3

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW31D-in3_B&R.aqt
Date: 06/09/17 Time: 12:09:07

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-31D
Test Date: 5/10/17

AQUIFER DATA

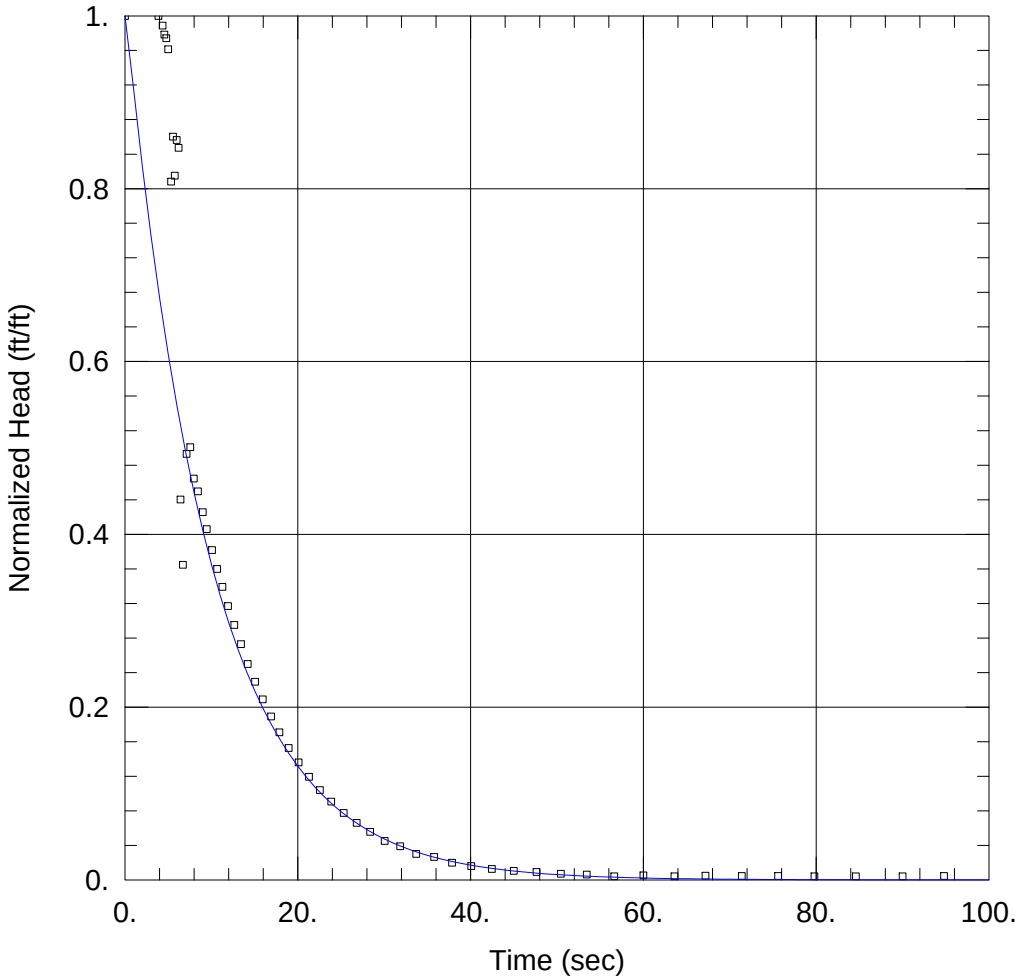
Saturated Thickness: 50.57 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-31D)

Initial Displacement: 3.057 ft
Total Well Penetration Depth: 50.57 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 50.57 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 11.88 ft/day
y0 = 3.407 ft



MW31D-IN3

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW31D-in3_SG.aqt
Date: 06/07/17 Time: 14:21:57

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-31D
Test Date: 5/10/17

AQUIFER DATA

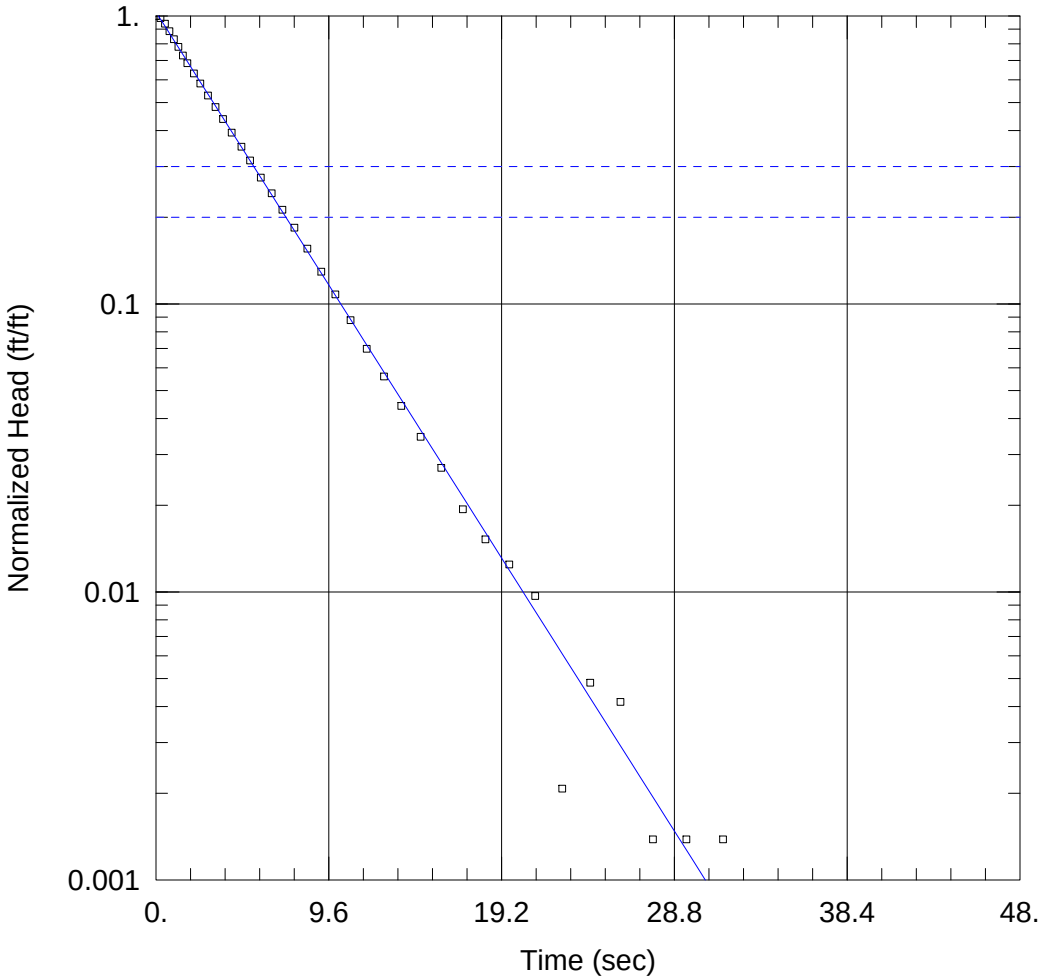
Saturated Thickness: 50.57 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-31D)

Initial Displacement: 3.057 ft Static Water Column Height: 50.57 ft
Total Well Penetration Depth: 50.57 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar
K = 10.77 ft/day Le = 41.69 ft



MW31D-OUT1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW31D-out1_BR.aqt
Date: 06/09/17 Time: 12:10:03

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-31D
Test Date: 5/10/17

AQUIFER DATA

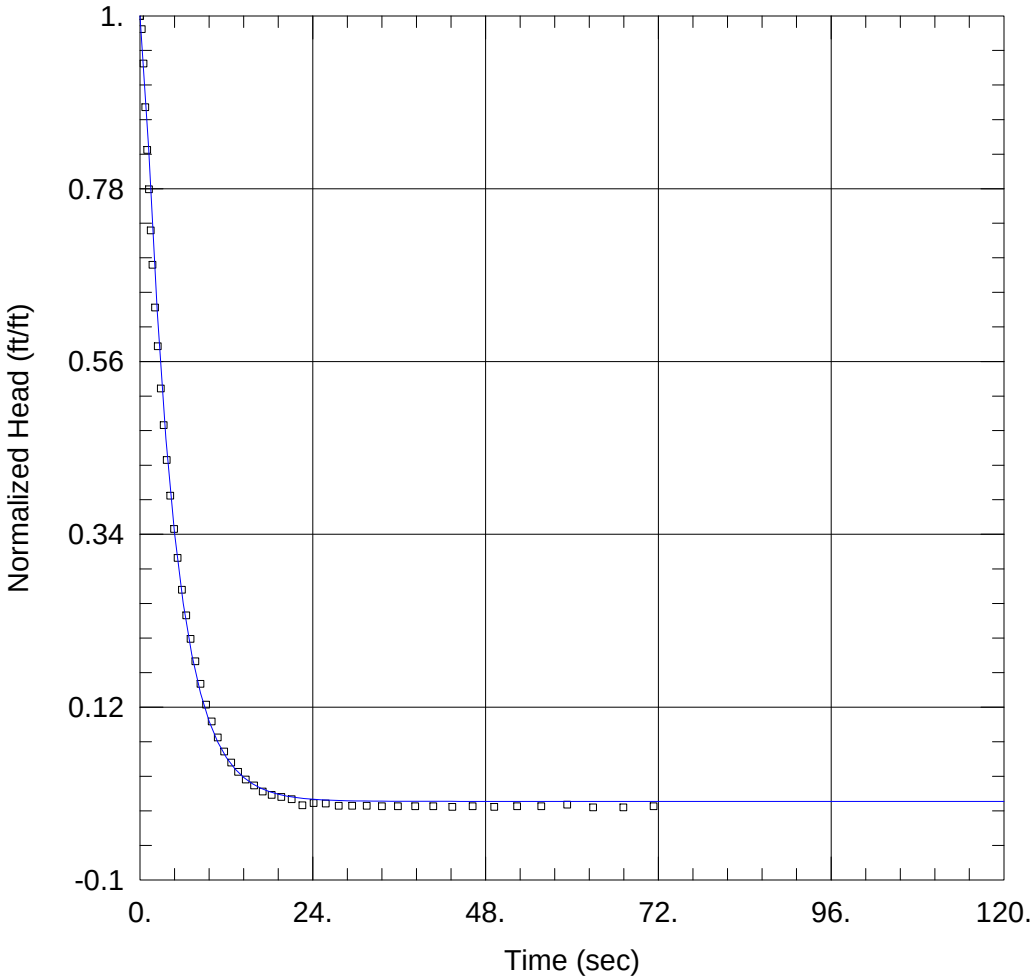
Saturated Thickness: 50.57 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-31D)

Initial Displacement: 1.446 ft Static Water Column Height: 50.57 ft
Total Well Penetration Depth: 50.57 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 25.76 ft/day y0 = 1.492 ft



MW31D-OUT1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW31D-out1_SG.aqt
Date: 06/07/17 Time: 14:24:41

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-31D
Test Date: 5/10/17

AQUIFER DATA

Saturated Thickness: 50.57 ft Anisotropy Ratio (Kz/Kr): 1.

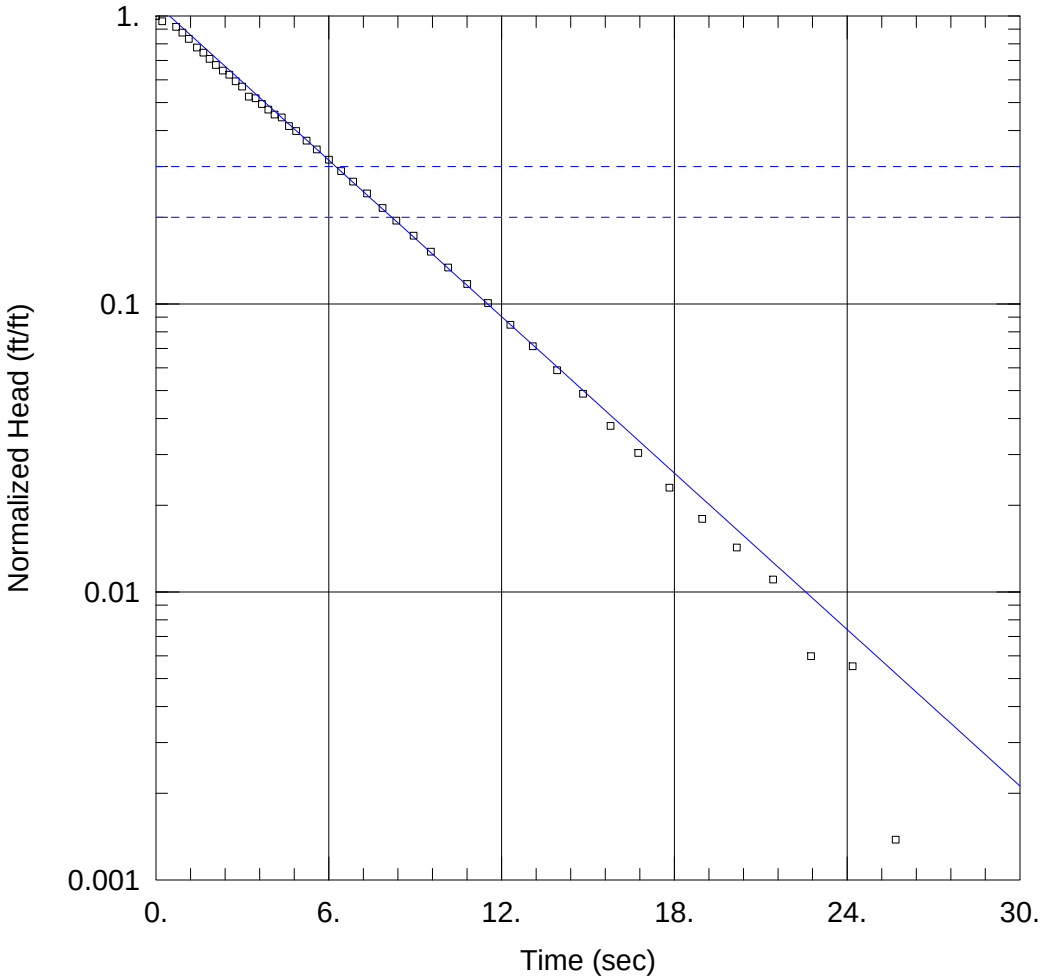
WELL DATA (MW-31D)

Initial Displacement: 1.436 ft
Total Well Penetration Depth: 50.57 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 50.57 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 23.99 ft/day
Le = 63.1 ft



MW31D-OUT2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW31D-out2_B&R.aqt
Date: 06/07/17 Time: 11:49:08

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-31D
Test Date: 5/10/17

AQUIFER DATA

Saturated Thickness: 50.57 ft Anisotropy Ratio (Kz/Kr): 1.

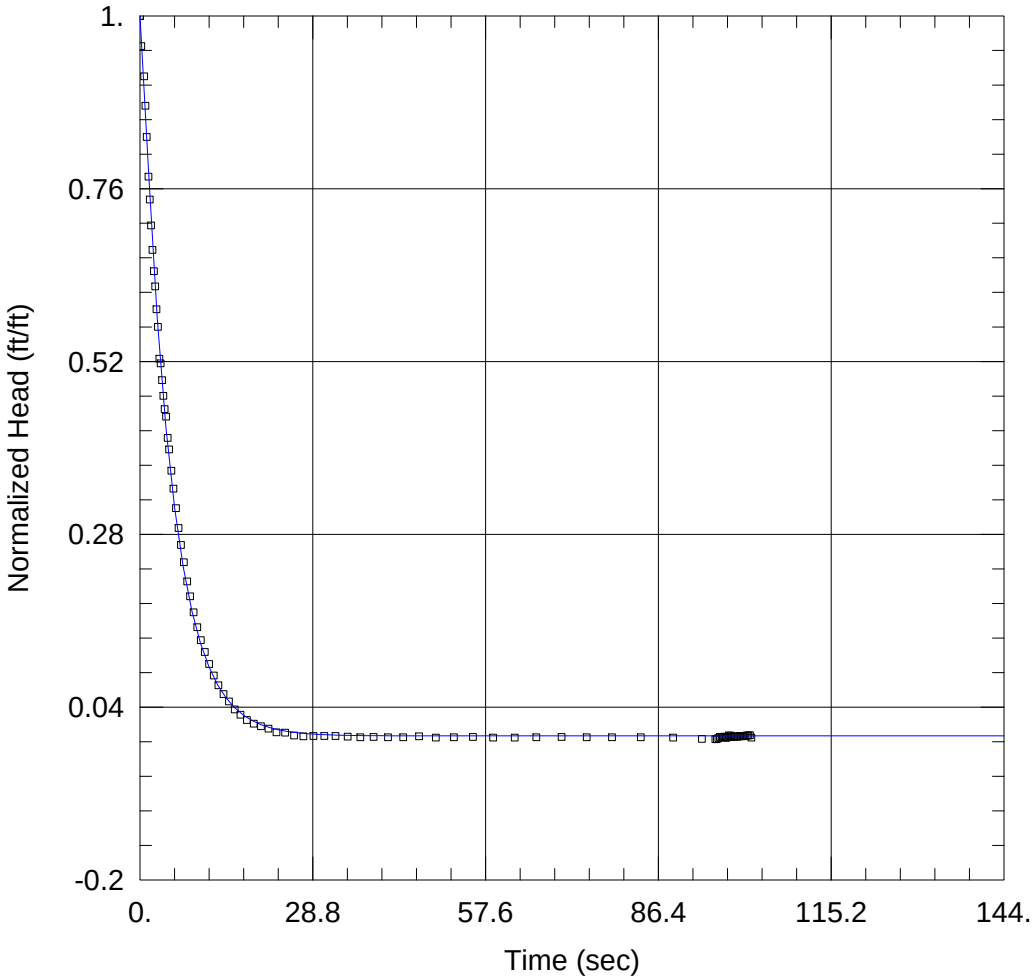
WELL DATA (MW-31D)

Initial Displacement: 2.174 ft
Total Well Penetration Depth: 50.57 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 50.57 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 23.62 ft/day
y0 = 2.397 ft



MW31D-OUT2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW31D-out2_SG.aqt
Date: 06/07/17 Time: 14:25:43

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-31D
Test Date: 5/10/17

AQUIFER DATA

Saturated Thickness: 50.57 ft Anisotropy Ratio (Kz/Kr): 1.

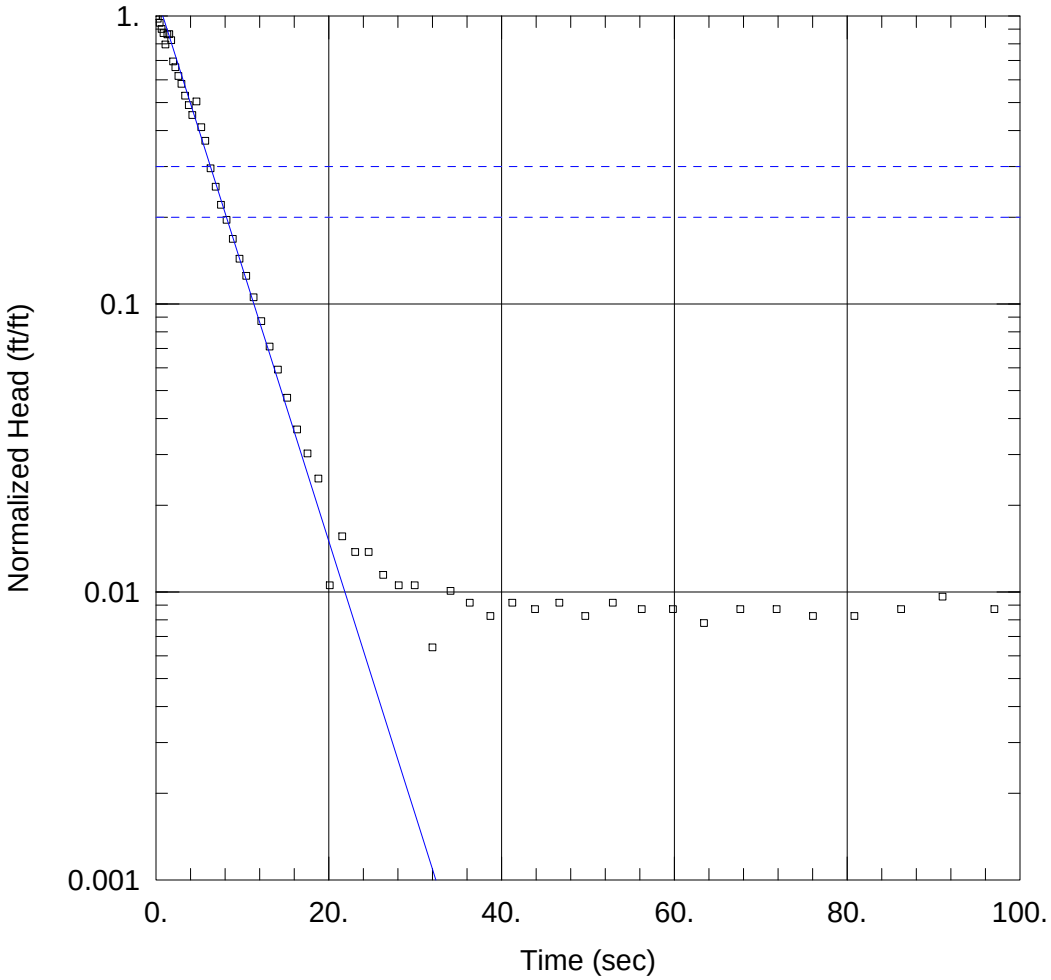
WELL DATA (MW-31D)

Initial Displacement: 2.172 ft
Total Well Penetration Depth: 50.57 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 50.57 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 21.23 ft/day
Le = 39.81 ft



MW31D-OUT3

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW31D-out3_B&R.aqt
Date: 06/07/17 Time: 12:01:08

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-31D
Test Date: 5/10/17

AQUIFER DATA

Saturated Thickness: 50.57 ft Anisotropy Ratio (Kz/Kr): 1.

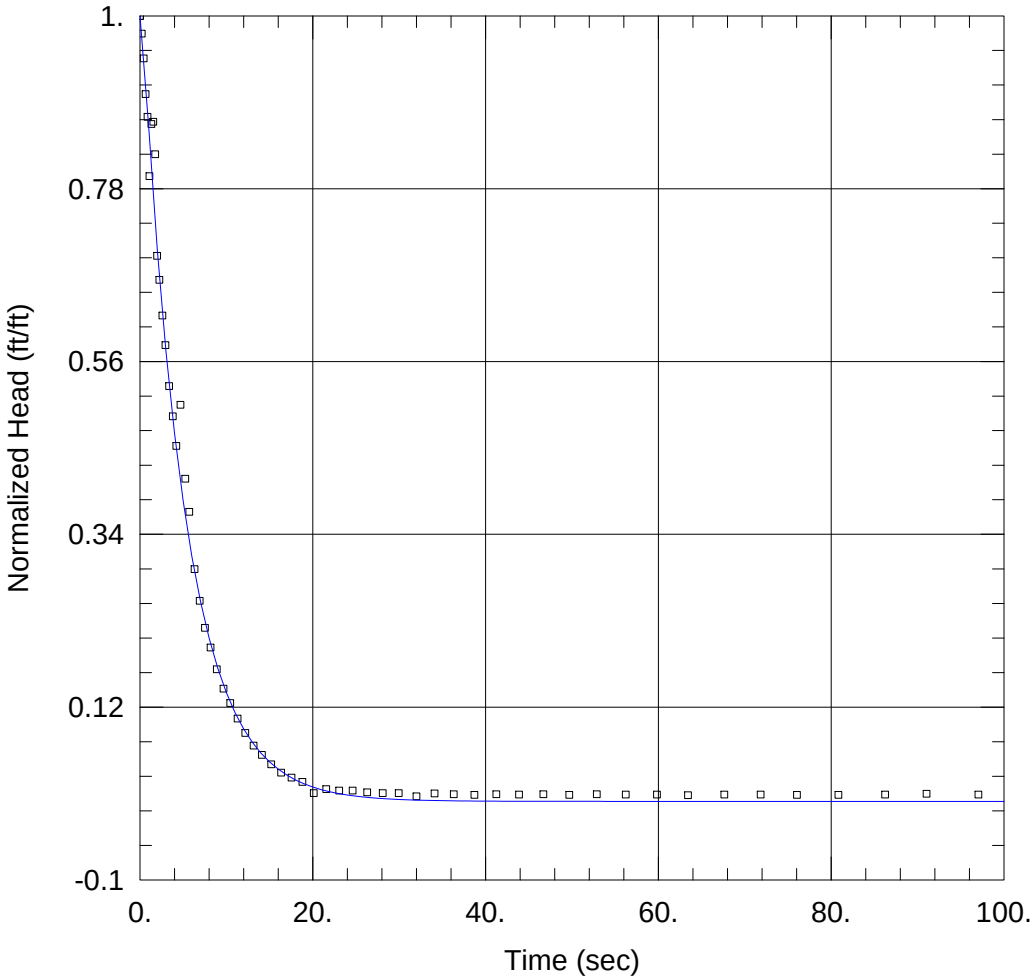
WELL DATA (MW-31D)

Initial Displacement: 2.181 ft
Total Well Penetration Depth: 50.57 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 50.57 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 24.77 ft/day
y0 = 2.594 ft



MW31D-OUT3

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\Aqtesolv\MW31D-out3_SG.aqt
Date: 06/07/17 Time: 14:26:40

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-31D
Test Date: 5/10/17

AQUIFER DATA

Saturated Thickness: 50.57 ft Anisotropy Ratio (Kz/Kr): 1.

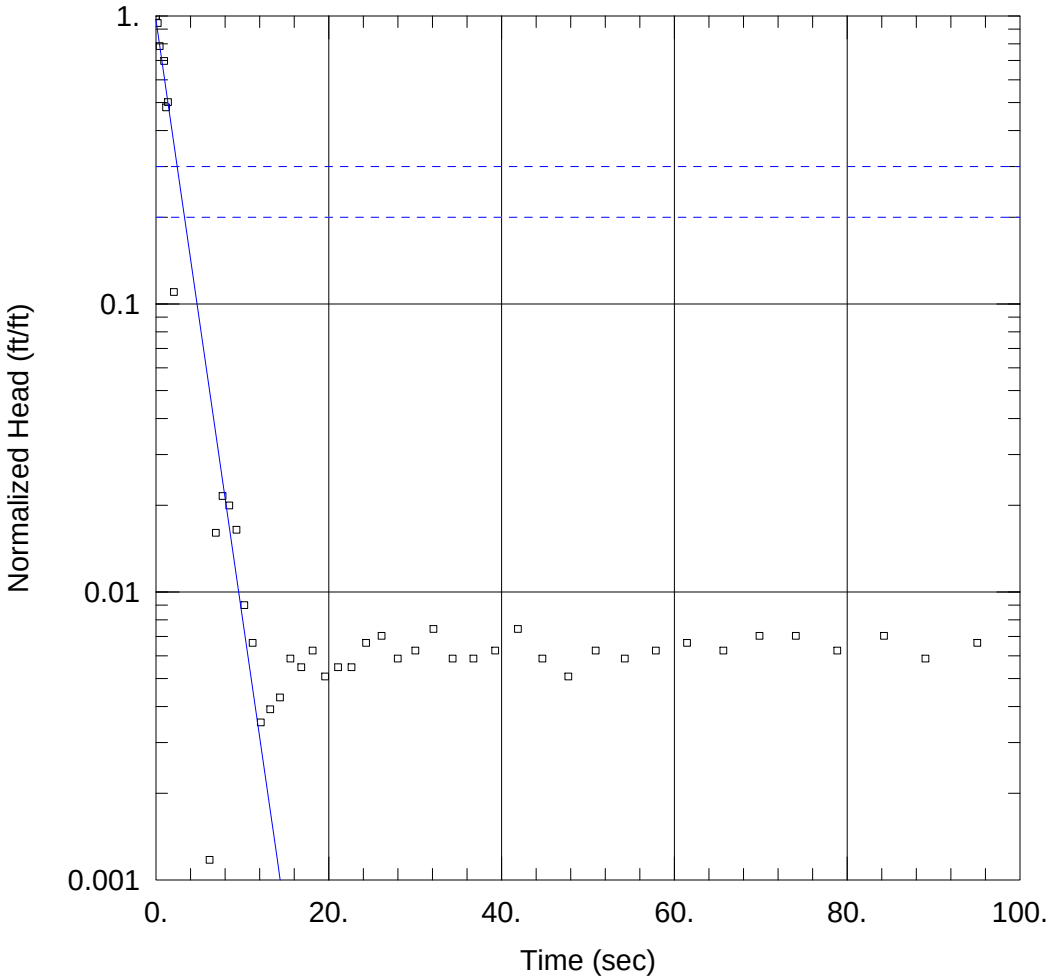
WELL DATA (MW-31D)

Initial Displacement: 2.181 ft
Total Well Penetration Depth: 50.57 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 50.57 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 21.87 ft/day
Le = 40.53 ft



MW32DR-IN1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-in1_BR.aqt
Date: 06/08/17 Time: 13:02:23

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

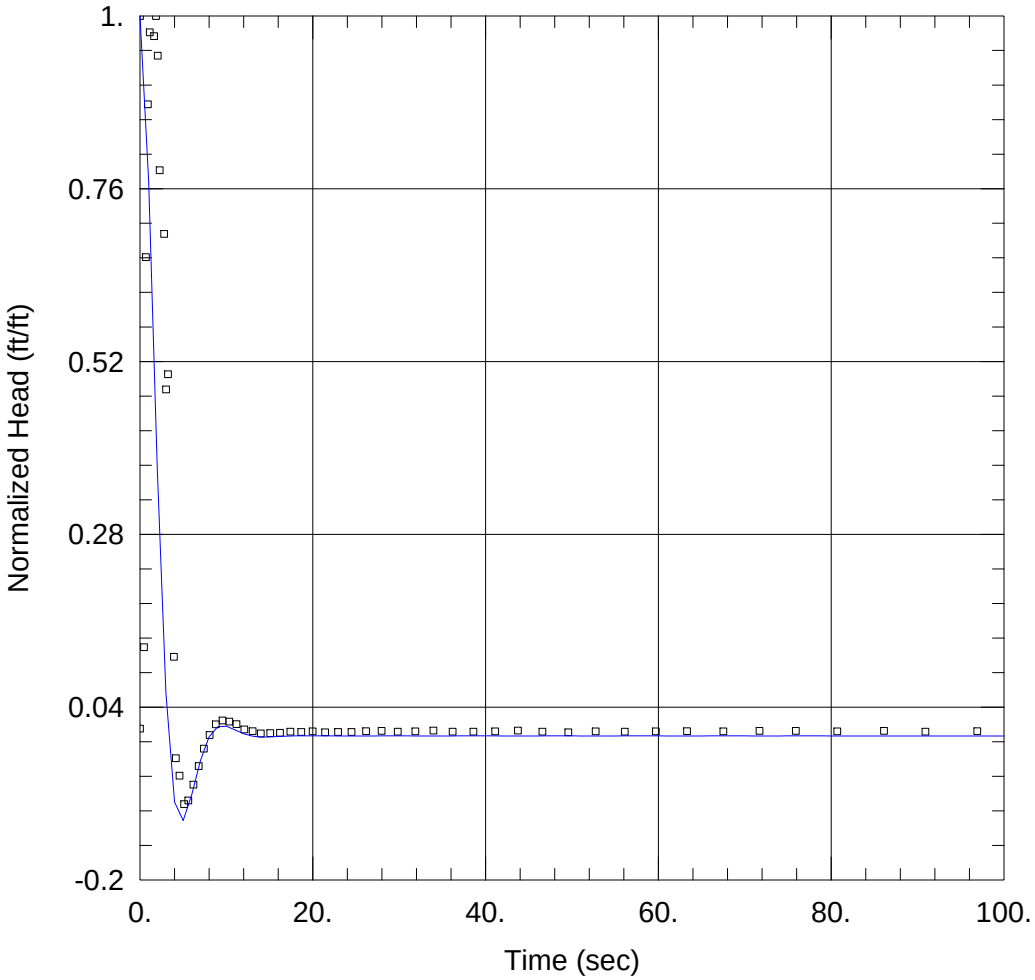
WELL DATA (MW-32DR)

Initial Displacement: 2.556 ft
Total Well Penetration Depth: 52.31 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 52.31 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 50.2 ft/day
y0 = 2.473 ft



MW32DR-IN1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-in1_SG.aqt
Date: 06/08/17 Time: 13:00:28

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

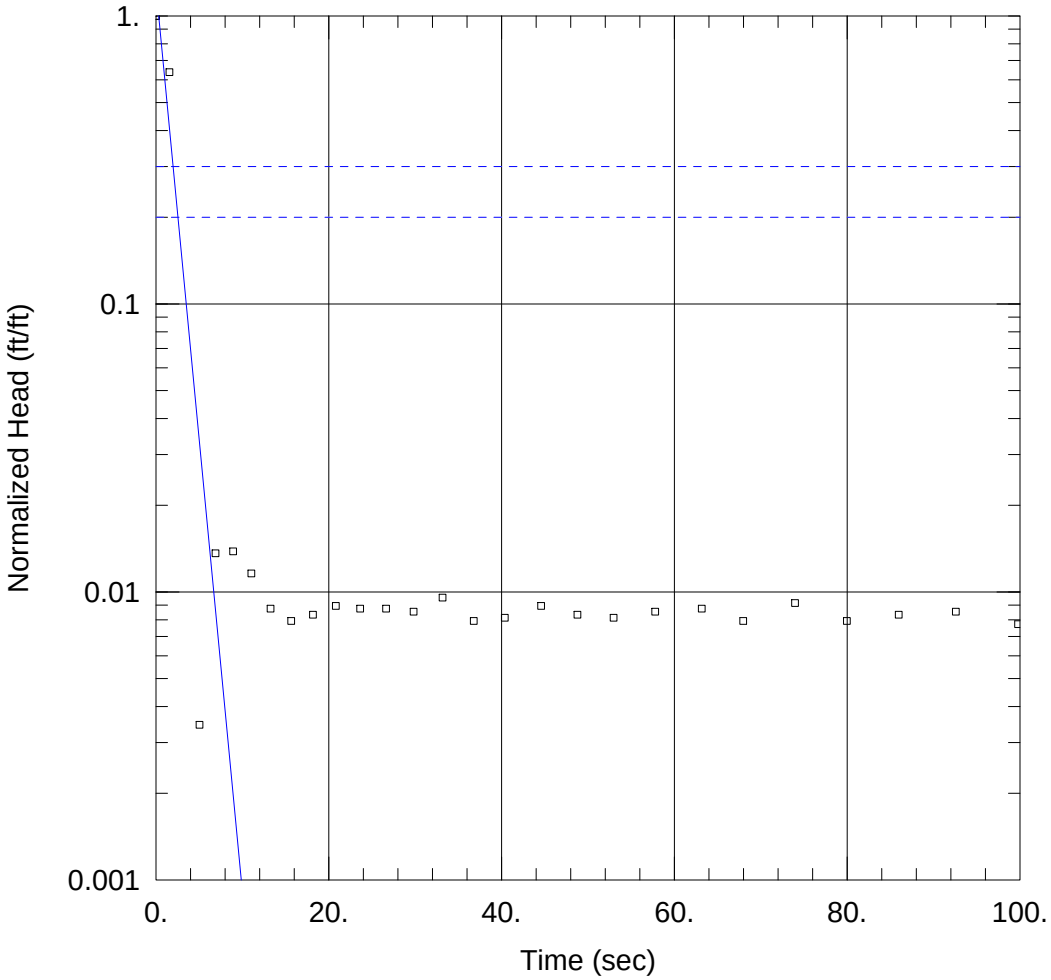
Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-32DR)

Initial Displacement: 2.556 ft
Total Well Penetration Depth: 52.31 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 52.31 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 75.34 ft/day
Le = 50.84 ft



MW32DR-IN2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-in2_BR.aqt
Date: 06/08/17 Time: 13:16:05

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

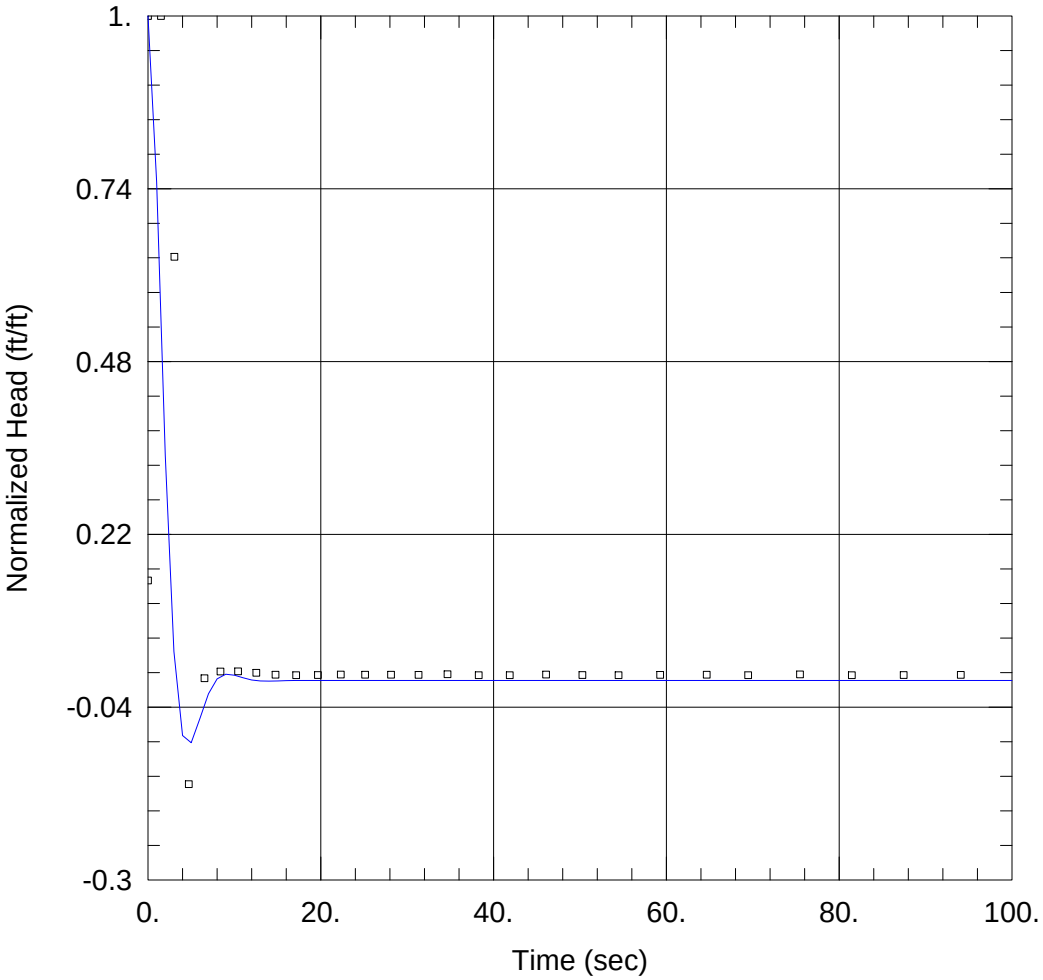
Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-32DR)

Initial Displacement: 4.918 ft Static Water Column Height: 52.31 ft
Total Well Penetration Depth: 52.31 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 75.94 ft/day y0 = 6.178 ft



MW32DR-IN2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-in2_SG.aqt
Date: 06/08/17 Time: 13:42:06

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

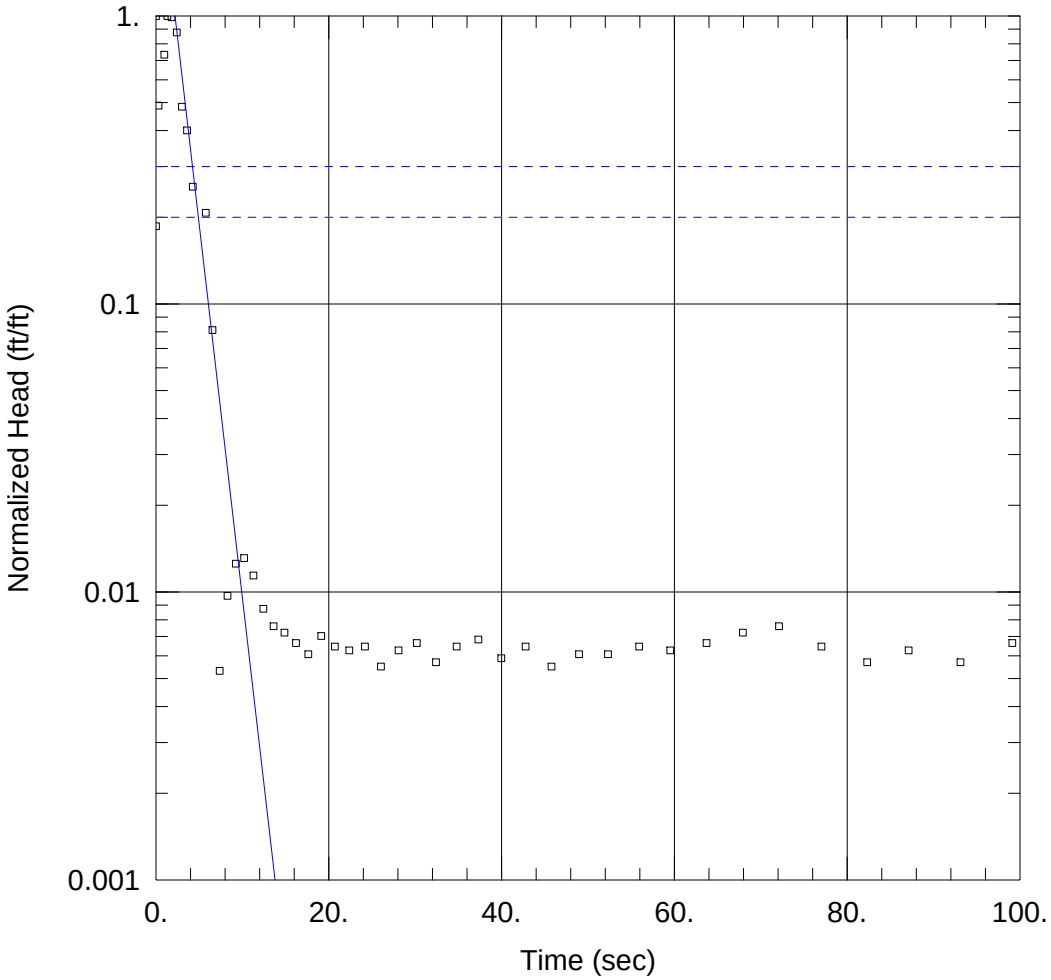
Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-32DR)

Initial Displacement: 4.918 ft
Total Well Penetration Depth: 52.31 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 52.31 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 75.83 ft/day
Le = 44.73 ft



MW32DR-IN3

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-in3_BR.aqt
Date: 06/08/17 Time: 13:38:11

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

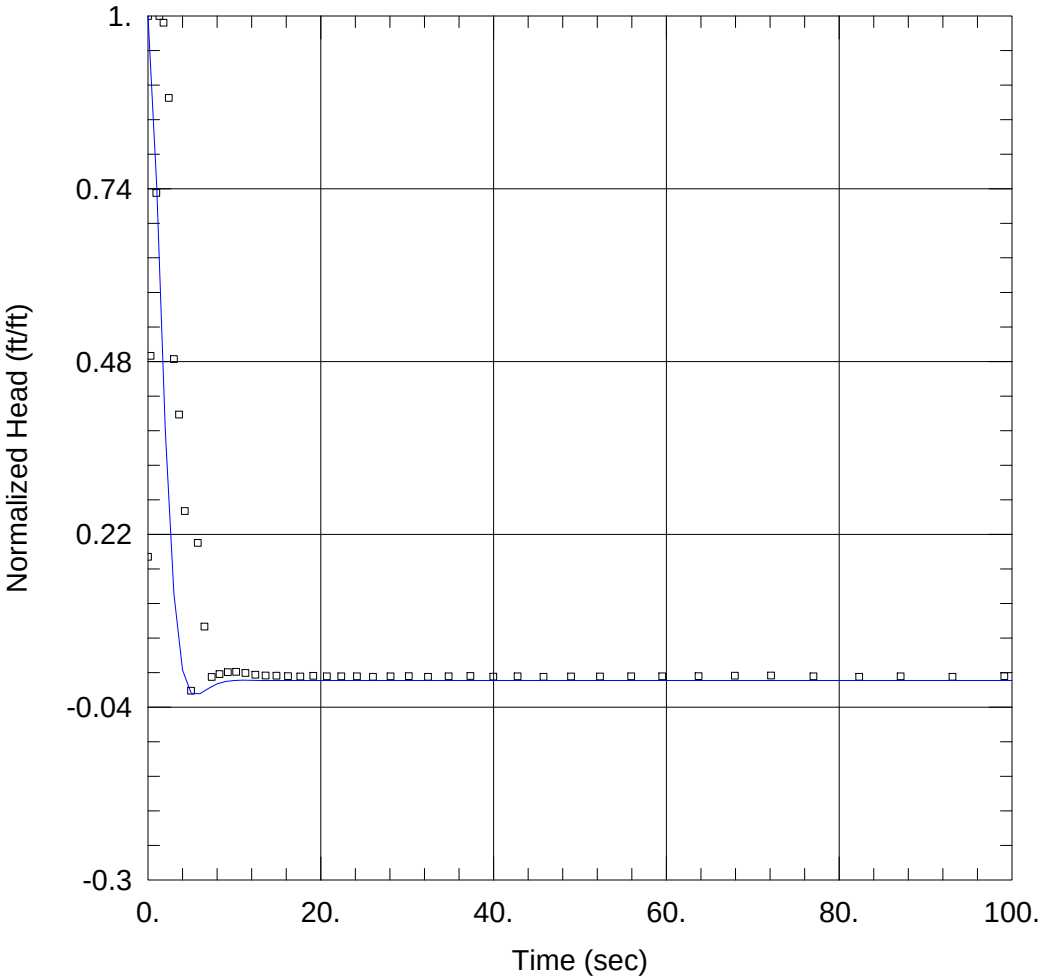
Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-32DR)

Initial Displacement: 5.265 ft
Total Well Penetration Depth: 52.31 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 52.31 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 62.7 ft/day
y0 = 19.66 ft



MW32DR-IN3

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-in3_SG.aqt
Date: 06/08/17 Time: 13:43:16

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

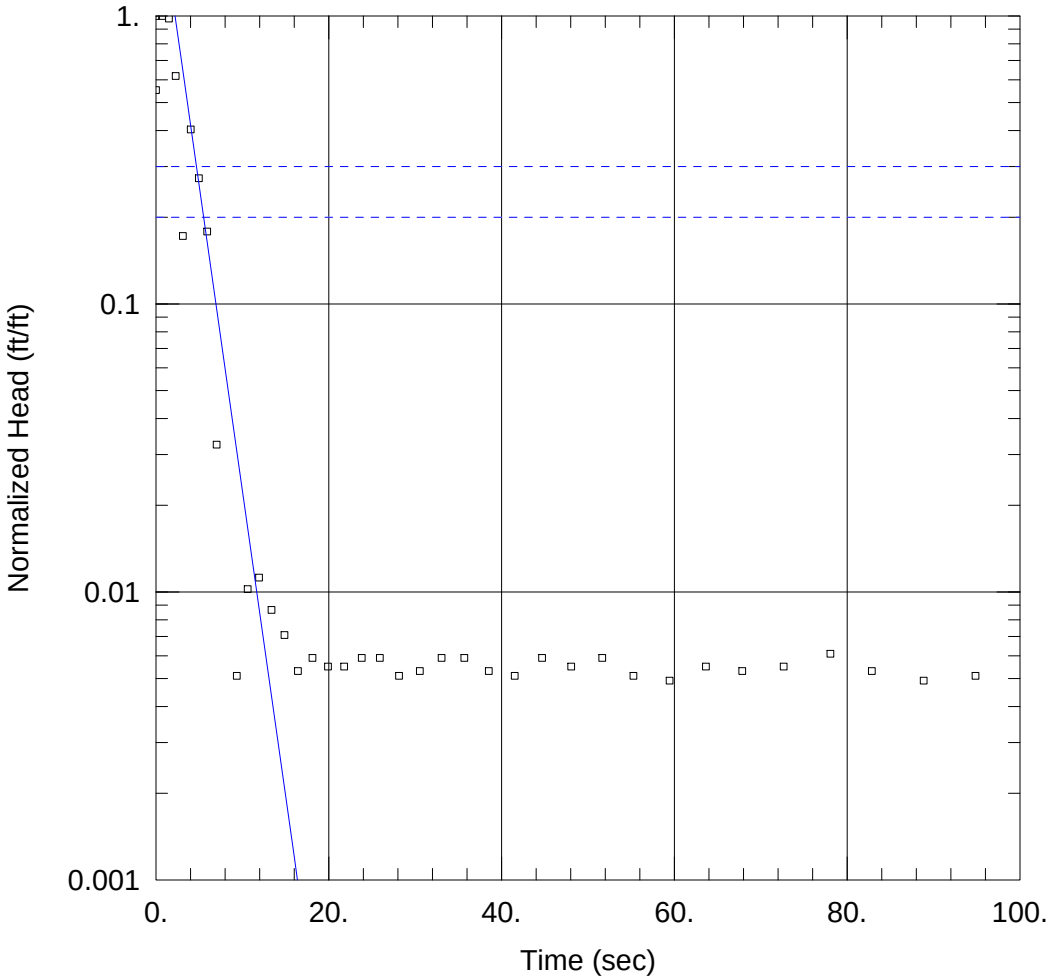
Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-32DR)

Initial Displacement: 5.265 ft Static Water Column Height: 52.31 ft
Total Well Penetration Depth: 52.31 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar
K = 61.4 ft/day Le = 39.48 ft



MW32DR-IN4

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-in4_BR.aqt
Date: 06/08/17 Time: 13:55:20

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

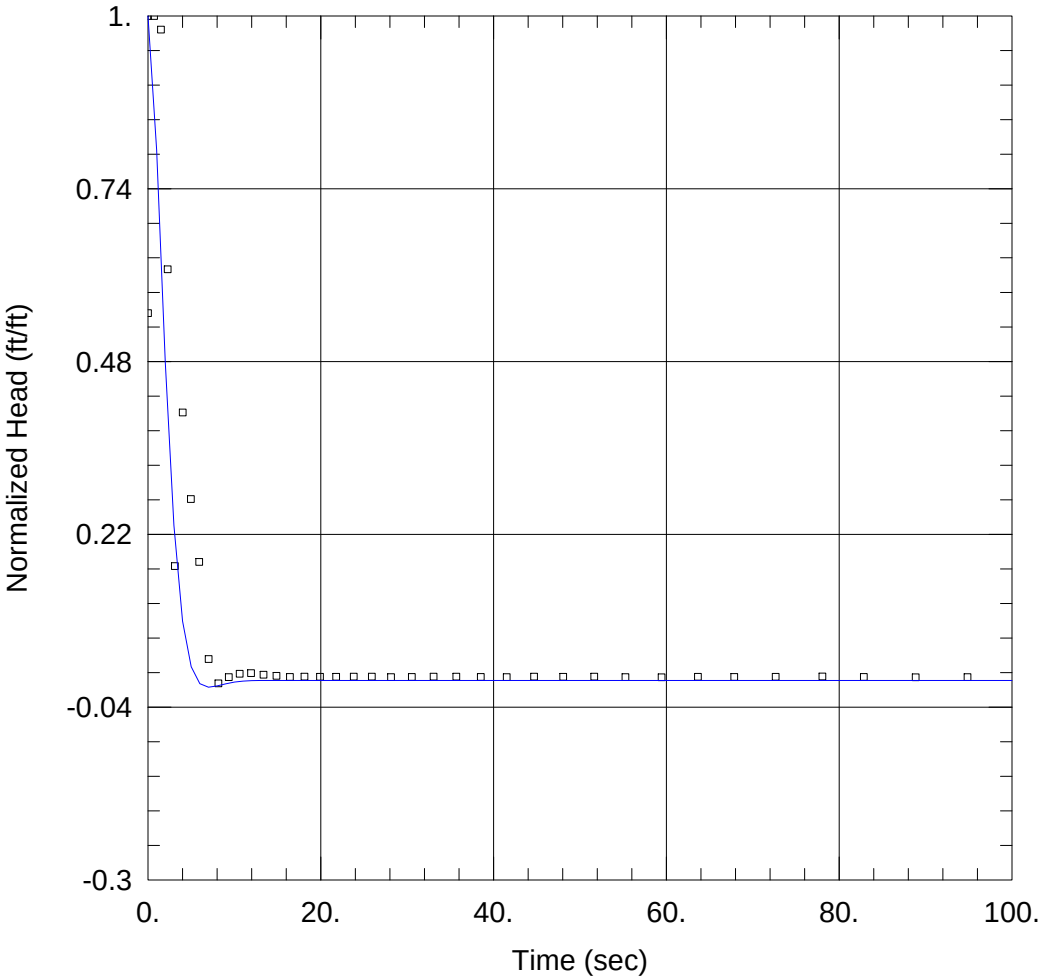
Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-32DR)

Initial Displacement: 5.084 ft Static Water Column Height: 52.31 ft
Total Well Penetration Depth: 52.31 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 51.2 ft/day y0 = 14.96 ft



MW32DR-IN4

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-in4_SG.aqt
Date: 06/08/17 Time: 13:54:33

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

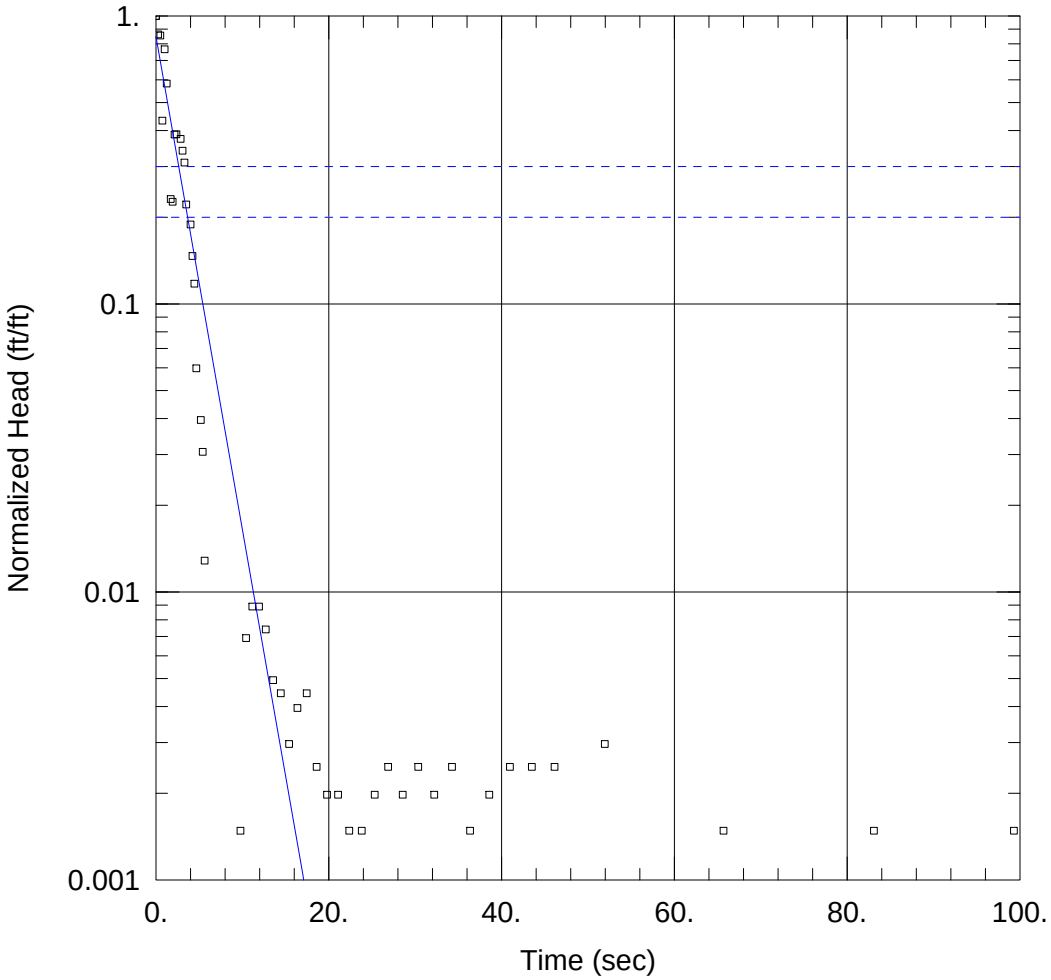
Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-32DR)

Initial Displacement: 5.084 ft Static Water Column Height: 52.31 ft
Total Well Penetration Depth: 52.31 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar
K = 50.33 ft/day Le = 51.47 ft



MW32DR-OUT1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-out1_BR.aqt
Date: 06/08/17 Time: 13:10:28

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

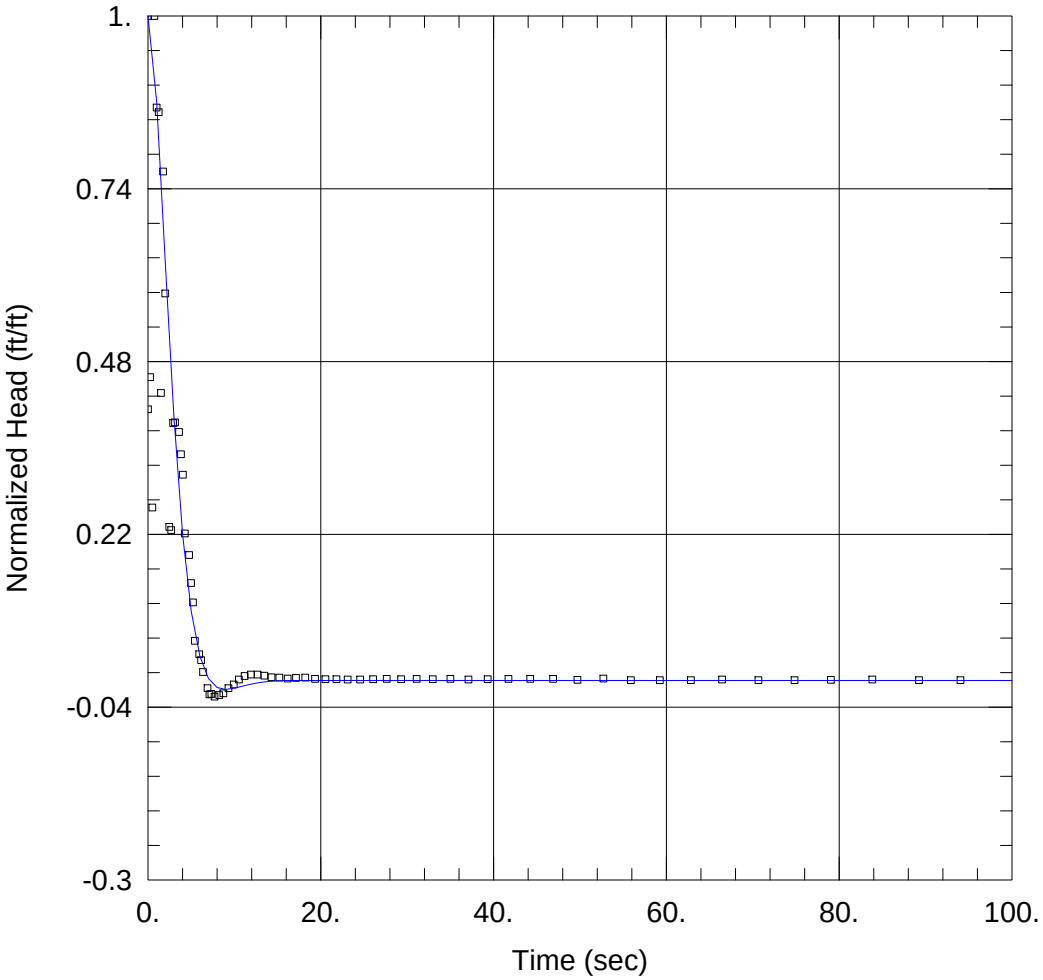
Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-32DR)

Initial Displacement: 2.024 ft
Total Well Penetration Depth: 52.31 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 52.31 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 41.39 ft/day
y0 = 1.714 ft



MW32DR-OUT1

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-out1_SG.aqt
Date: 06/08/17 Time: 13:40:32

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

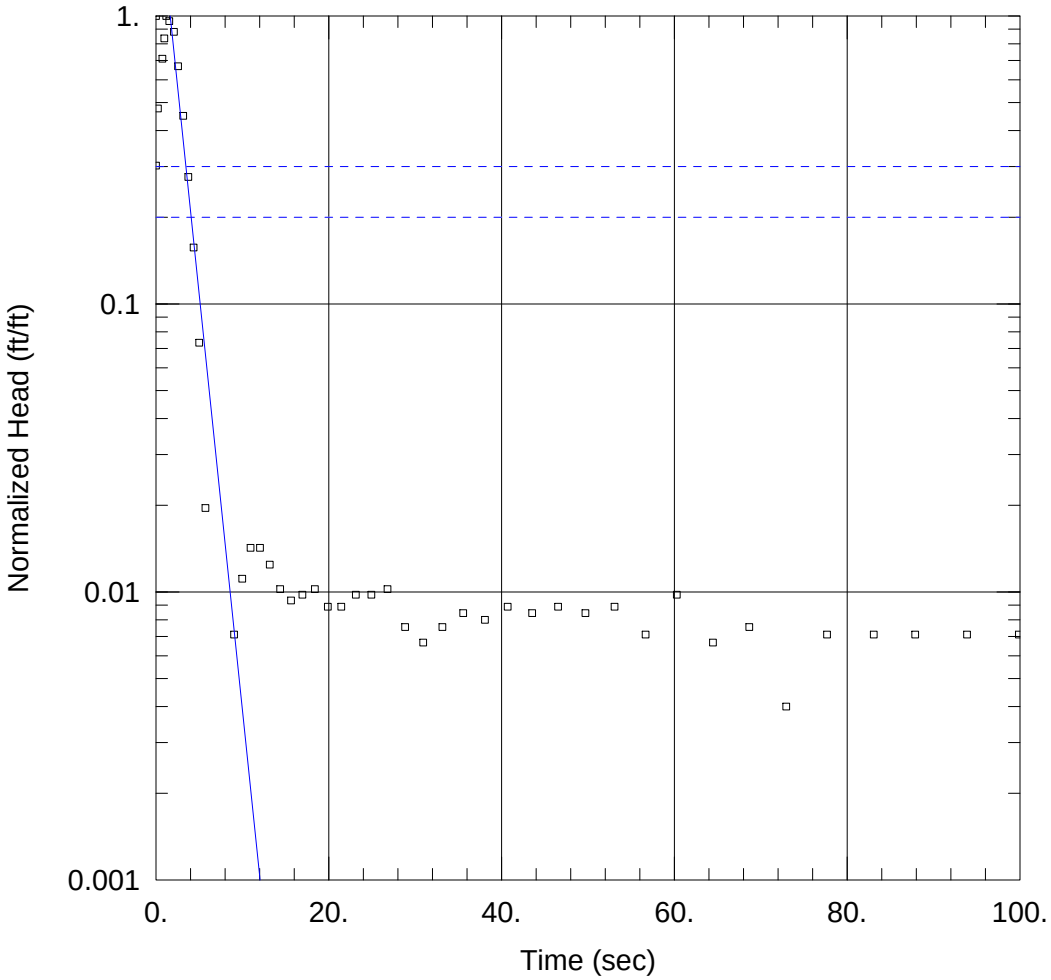
Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-32DR)

Initial Displacement: 2.024 ft Static Water Column Height: 52.31 ft
Total Well Penetration Depth: 52.31 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar
K = 39. ft/day Le = 90.34 ft



MW32DR-OUT2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-out2_BR.aqt
Date: 06/08/17 Time: 13:26:36

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

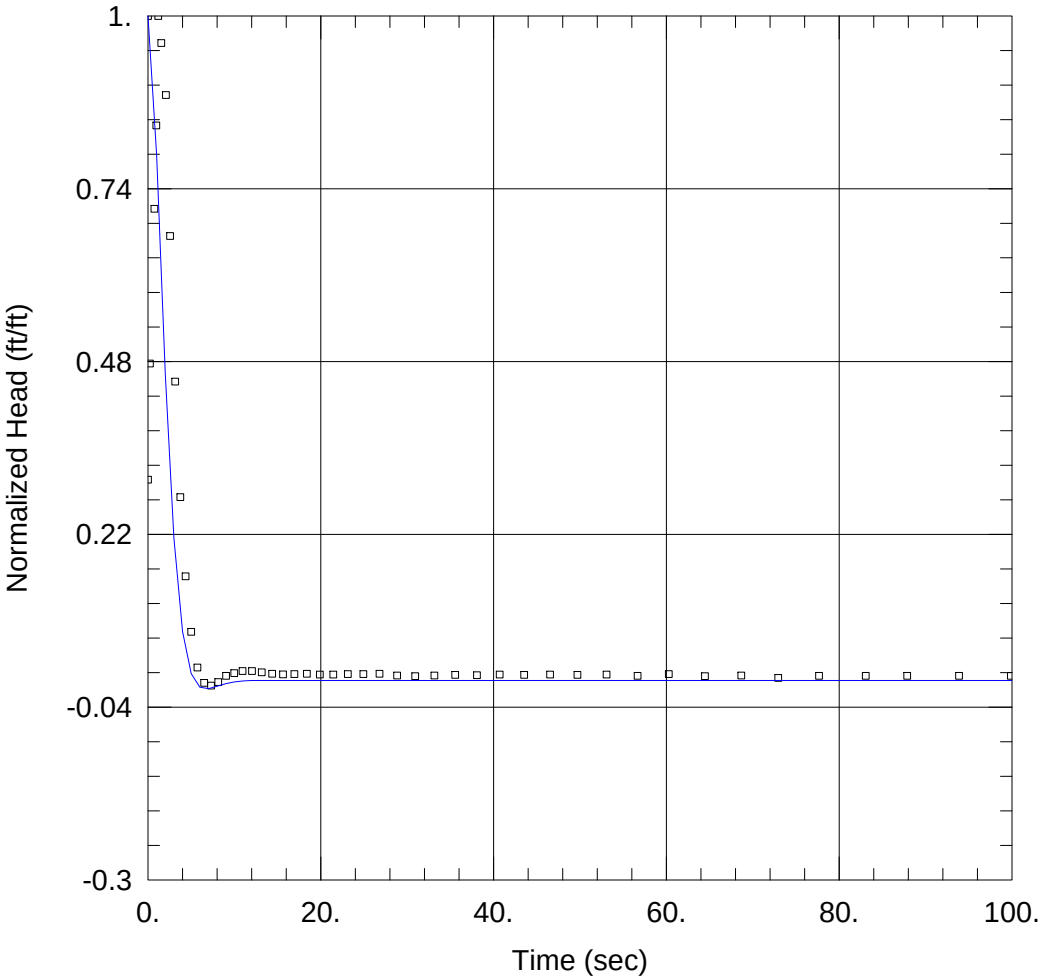
Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-32DR)

Initial Displacement: 2.25 ft
Total Well Penetration Depth: 52.31 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 52.31 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 69.78 ft/day
y0 = 6.729 ft



MW32DR-OUT2

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-out2_SG.aqt
Date: 06/08/17 Time: 13:39:24

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

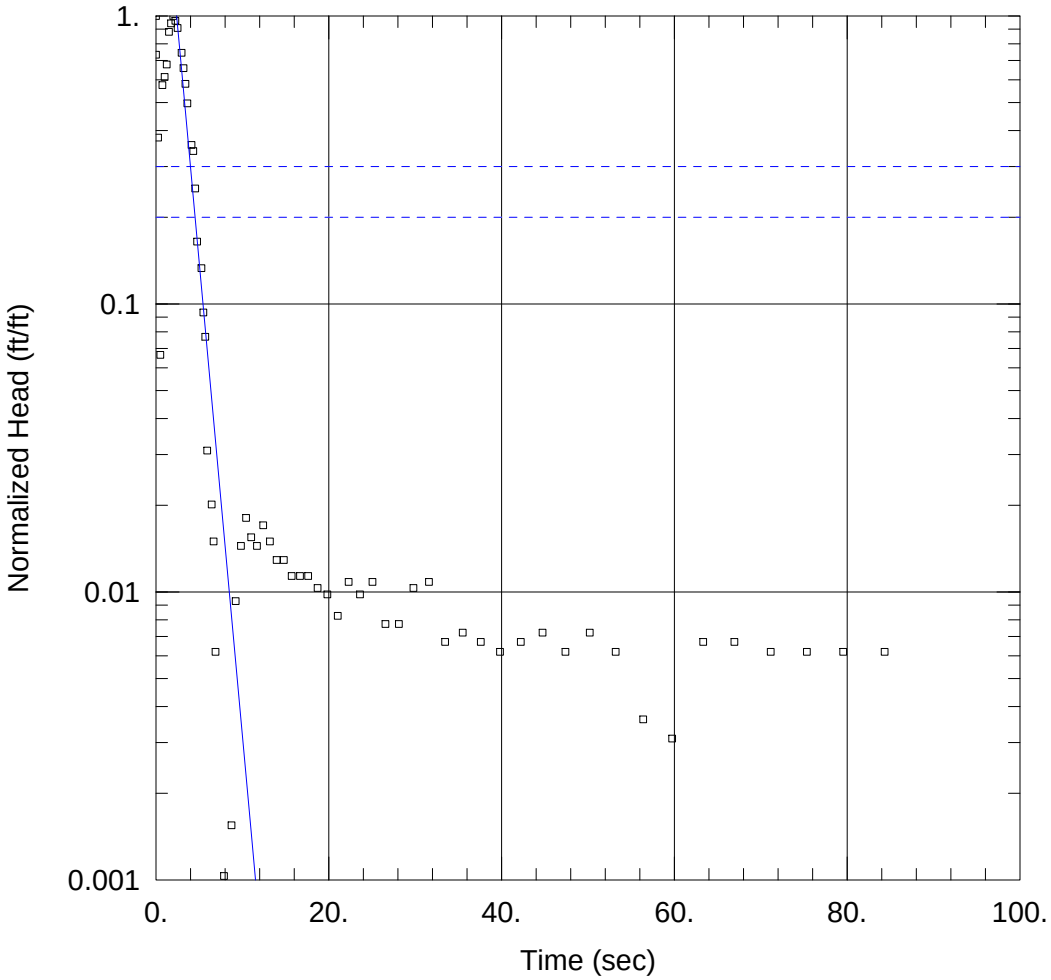
Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-32DR)

Initial Displacement: 2.25 ft
Total Well Penetration Depth: 52.31 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 52.31 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 52.62 ft/day
Le = 49.33 ft



MW32DR-OUT3

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-out3_BR.aqt
Date: 06/08/17 Time: 13:50:52

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

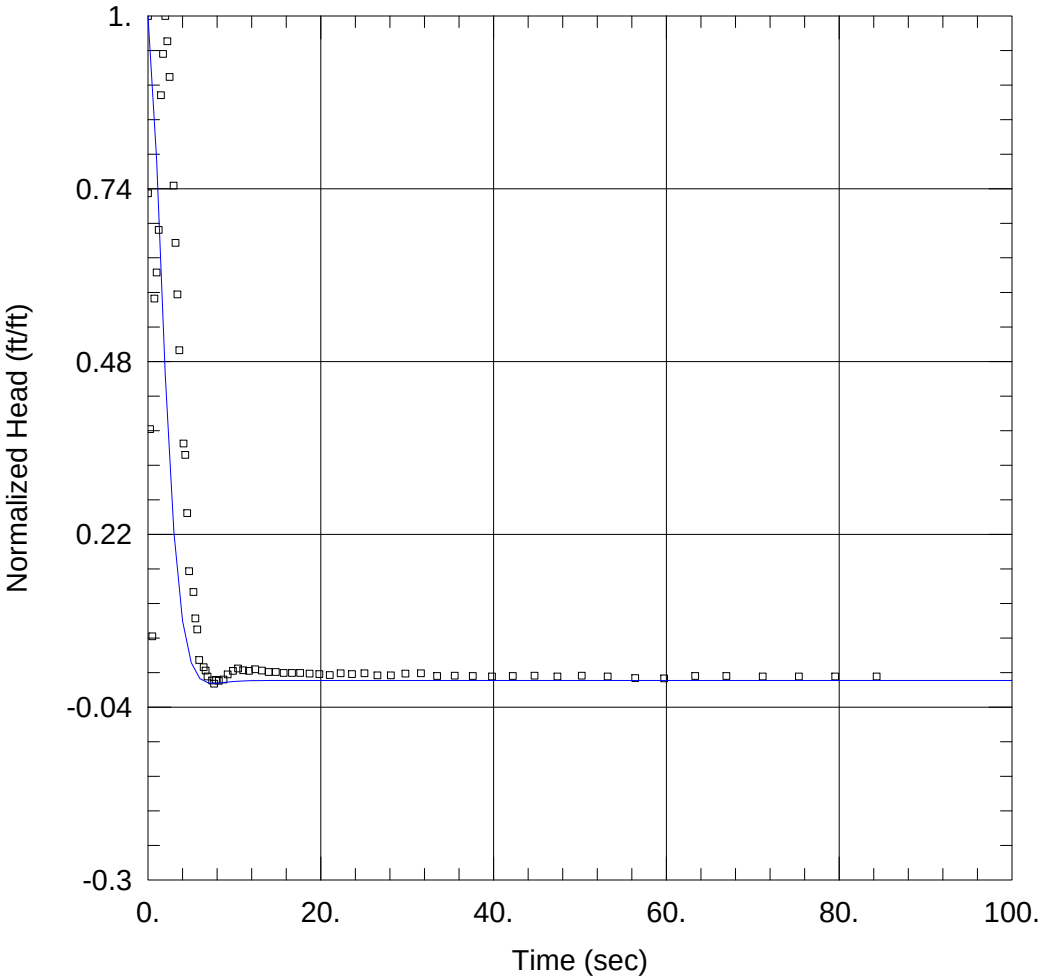
Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-32DR)

Initial Displacement: 1.938 ft
Total Well Penetration Depth: 52.31 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 52.31 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 79.5 ft/day
y0 = 11.9 ft



MW32DR-OUT3

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-out3_SG.aqt
Date: 06/08/17 Time: 13:50:27

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

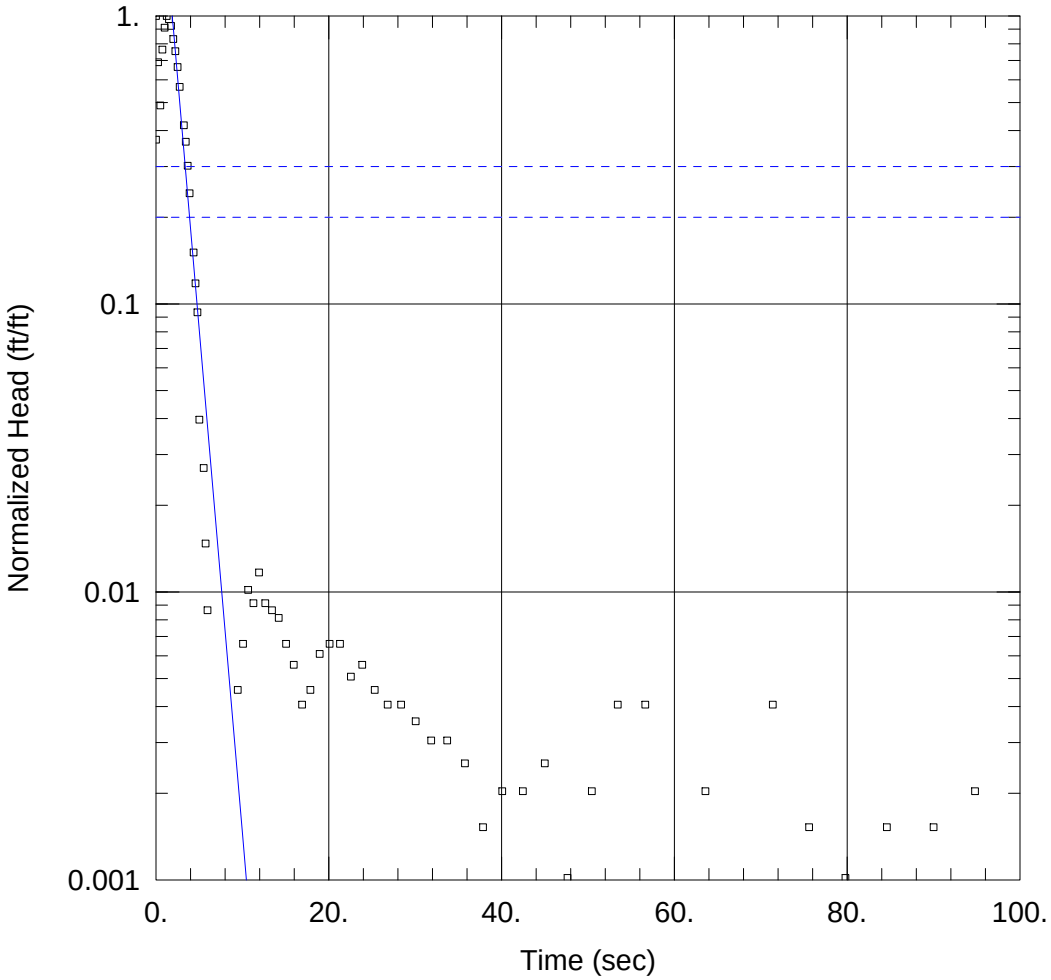
Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-32DR)

Initial Displacement: 1.938 ft
Total Well Penetration Depth: 52.31 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 52.31 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 50.75 ft/day
Le = 45.89 ft



MW32DR-OUT4

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-out4_BR.aqt
Date: 06/08/17 Time: 13:58:28

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

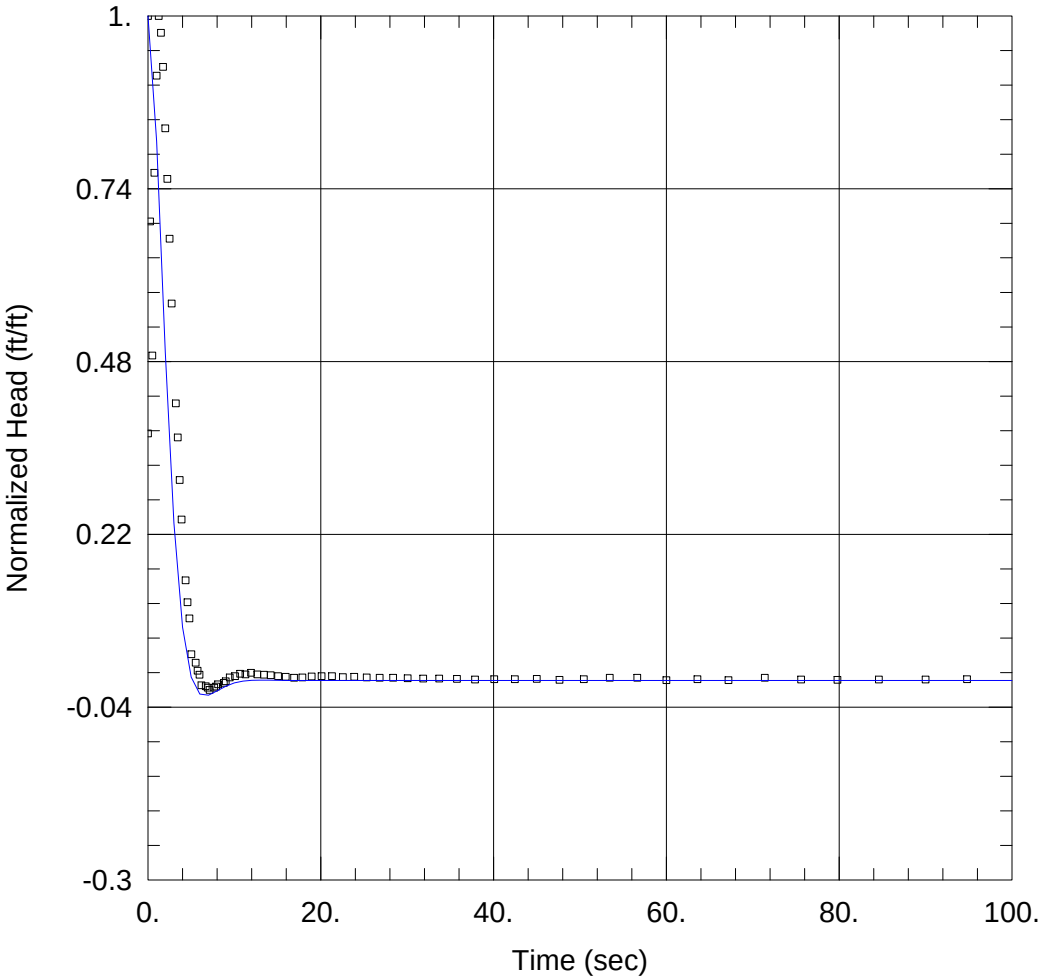
Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-32DR)

Initial Displacement: 1.969 ft
Total Well Penetration Depth: 52.31 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 52.31 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 84.53 ft/day
y0 = 8.986 ft



MW32DR-OUT4

Data Set: C:\Projects\UTC Delavan\2017 GW Delineation\slug testing\Aqtesolv\MW32DR-out4_SG.aqt
Date: 06/08/17 Time: 13:57:58

PROJECT INFORMATION

Company: AECOM
Client: UTC
Project: 60134964
Location: Bamberg, SC
Test Well: MW-32DR
Test Date: 5/10/17

AQUIFER DATA

Saturated Thickness: 52.95 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-32DR)

Initial Displacement: 1.969 ft
Total Well Penetration Depth: 52.31 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 52.31 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 51.09 ft/day
Le = 57.66 ft