SCS ENGINEERS

CORRECTIVE ACTION PLAN
SOUTHEAST COUNTY LANDFILL
LITHIA, FLORIDA

Submitted to:

Hillsborough County Public Works Department
Solid Waste Management Division
332 N. Falkenburg Rd.
Tampa, Florida 33619

Hillsborough County Florida

Prepared by:

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, Florida 33610
(813) 621-0080
Fax: (813) 623-6757

June 26 2017
File No. 09215600.04

Offices Nationwide
www.scsengineers.com

CORRECTIVE ACTION PLAN

Southeast County Landfill
Lithia, Florida

Submitted to:

Hillsborough County
Public Works Department
Solid Waste Management Division
332 N. Falkenburg Rd.
Tampa, Florida 33619

Prepared by:

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, Florida 33610
(813) 621-0080
Fax: (813) 623-6757

June 26, 2017
File No. 09215600.04

Bruce J. Clark, P.E.
No. 31924

6/26/17

Table of Contents

Section **Page**

1 BACKGROUND

During the February 2016 groundwater monitoring event at the Southeast County Landfill (SCLF), elevated readings were observed by the Hillsborough County Public Works Department, Solid Waste Management Division (SWMD) for select parameters at monitoring well TH-67. TH-67 is a detection well approximately 45 feet east of Phase II and monitors surficial groundwater at the SCLF. Since that time, the SWMD and its engineering Consultant, SCS Engineers (SCS), have been conducting investigations of potential causes for the elevated readings and have installed additional measures to monitor the area of concern. As a result of the investigations, it has been determined that the most likely cause of the elevated parameters was the overtopping of the east containment berm due to elevated leachate levels or seepage from isolated saturated zone within the Phase II disposal area.

The results of the on-going investigation have been shared with the Florida Department of Environmental Protection (FDEP) in multiple reports, weekly emails, and meetings. The objective of this Corrective Action Plan (Plan) is to pull all of these reports together into one document, monitor the elevated liquid level in piezometers sealed in the leachate collection and removal system (LCRS), monitor water quality in the area adjacent to Phase II, and to propose actions that the SWMD will take to reduce the leachate head on liner to an Approved Operating Level. This Plan is part of, and only related, to a Consent Agreement between the SWMD and FDEP.

A Supplemental Findings report is included in Attachment 1. This report documents actions taken by the SWMD from December 2016 through May 2017. The SWMD and SCS will provide on-going reporting of all activities related to this Plan through the use of separate memorandums or letter reports.

As this Plan is reviewed and the effectiveness of leachate removal and water quality are evaluated, revisions and amendments to the Plan will be made. Revisions and amendment dates will be documented on the Table of Amendments.

2 LEACHATE REMOVAL ASPECTS

Operational Leachate Levels

Since the original 1984 Operation Permit for the SCLF Phase I through VI disposal areas, there have been several documents that reference different operational head on bottom clay liner system, varying from 12 to 36 inches. The SWMD will request from the FDEP, in a separate document, a permit modification to clarify and establish a maximum operating head over liner depth which will serve as the approved operating level and the ultimate goal for this Plan.

Leachate Levels

During the site investigation completed to-date within the Phase I-VI disposal areas, varying depths of leachate above the approved level have been identified (Refer to Attachment 1 with a listing of initial measured points and supplemental readings and/or additional monitoring points will be added as this Plan develops during the duration of its implementation). The elevated readings have been measured in piezometers (Refer to Attachment 1 for a table of liquid levels,

landfill cross sections, and figure with estimated top of clay). Perched liquid also has been found in the landfill gas (LFG) recovery system and in some condensate traps. The highest levels were measured in the eastern part of Phase I, the central and south portion of Phase II, and the eastern portion of Phase III. Liquid levels within the LFG recovery system wells are significantly different than levels measured in the piezometers installed to specifically measure leachate head over the clay bottom liner. The LFG well system liquids appear to be perched, and are not related to the piezometer liquid levels. The leachate in the gas wells drain very slowly, if at all. This appears to be due to the very dense ash and waste at the base of the gas well. This is a phenomena that is common in many landfills and has been validated in research conducted in Florida landfills by Dr. Timothy Townsend.[1]

Because of the areal discontinuity in liquid levels noted in the LFG recovery system, LFG condensate traps, and the piezometers, multiple, temporary dewatering locations will likely be necessary to achieve successful leachate removal and reduction of the head on liner to the Approved Operating Level within a time frame agreed to by the County. To-date the leachate removal actions by the SWMD have included:

1. Installation of permanent air-operated pumps in three LFG well condensate traps (CT-1, CT-2, and CT-3) and four LFG extraction wells (EW-38, EW-44, EW-48, and EW-66) in Phase I and Phase II.

2. Dewatering of 25 LFG extraction wells was conducted on a one-time basis and was conducted from January 5 through January 27, 2017. This included 15 LFG wells in Phase II.

3. Installation of a temporary dewatering trench sump and pump (designated as TPS-2 since it is located in Phase II) in the southeast area of Phase II.

Currently the active total daily liquid removal from No. 1, and 3 above, is approximately 3,300 gallons per day (GPD). Table 1 summarizes the individual liquid volume contributions removed.

Table 1. Summary of Liquid Removal Rates

Dewatering Point	Approximate Removal Rate (GPD)
LFG EW-38, EW-44, EW-48, & EW-66 and CT-1, CT-2, CT-3	1,000
TPS-2	2,300
TOTAL APPROXIMATE REMOVAL RATE	**3,300**

1. Effect of Perched Water Conditions in MSW Landfills: Considerations for Landfill Operators, Dr. Timothy Townsend

Estimated Leachate Quantity

Based on calculations made by SCS, it is estimated that a total amount of leachate stored above the 30-inch level, roughly within the Phase II area, is approximately 13.5 million gallons. The 30-inch depth was chosen for the calculation based on historical levels and this level is subject to change with the Alternate Procedure to be applied for to establish the Approved Operating Level for the Phase I-VI disposal areas. This quantity does not include leachate perched in the gas wells and any excess leachate created by rainfall that is in excess of that collected in the main leachate sump at PS-B. The key assumptions in this estimate include:

- Potential area with "collectable" leachate = 2,700,000 s.f. (~62 acres)
- Average thickness of perched leachate (above the 30-inch level) = 6.8 ft.
- Percentage overall area that is dry (does not contain appreciable amount of leachate) = 30%
- Percent of remaining volume containing ash = 60%
- Saturated ash does not provide accessible leachate – permeability is too low.
- Percent of volume containing "other wastes" = 40%
- Porosity of "other wastes" = 50%
- Fraction of leachate held in pores by capillary action = 30%

For the purpose of establishing leachate removal activities, this volume of liquid was targeted and pumping removal rates for existing and proposed points established in an effort to provide an estimated timeline to the Plan. A total leachate withdrawal rate of approximately 42,000 gallons per day (GPD) was established as a goal to remove the volume within approximately one year. However, given some of the complexity of the landfill dewatering the SWMD has seen to date, the ultimate volume of leachate, removal rates, and ultimately the timeline, could be more or less than that estimated.

3 CURRENT CORRECTIVE ACTION PLAN

Cleanout Installation

The original design of the main leachate collection header of Phases I, II, and III did not include a typical header cleanout point. The SWMD located the leachate collection pipe and constructed a cleanout on the header on the south side of Phase I on or about March 9, 2017. The SWMD then jet cleaned and inspected this LCRS header pipe in Phase I area and results of the inspection indicated the pipe is open and collecting leachate. Several attempts over a period of three weeks were made by the SWMD with large excavations to locate the leachate collection pipe in the Phase II area and one attempt to locate the header in the Phase III area. These excavations have not been successful to-date. Additional excavation in Phase II is scheduled to begin on June 26, 2017, as described in Section 4 below. This more aggressive excavation has two goals, i) to locate the Phase II LCRS pipe and ii) to install a cut-off trench.

Temporary Leachate Collection Sump

The SWMD installed a temporary leachate collection trench and sump on the east side of Phase II. Leachate removed from Temporary Pump (TPS-2) is pumped to the main leachate pump station (MLPS) located north of Phase II. TPS-2 is currently removing an average 2,300 GPD directly from the Phase II disposal area. While installing TPS-2, the gravel trench along the inside perimeter of the berm was found in the location shown on the original design drawings, prepared by CDM Smith dated February 11, 1985, for the Phase I – VI disposal areas. This gravel trench is still functional and conveying leachate to the TPS-2 sump and removal point. This gravel trench is a key feature that will be utilized to withdraw and control leachate head levels along the perimeter of the Phase II disposal area.

Supplemental Leachate Removal

LFG Extraction Well Pumps

Currently the SWMD has installed seven permanent pneumatic pumps in four extraction wells (EW-38, EW-44, EW-48 and EW-66) and three condensate traps (CT-1, CT-2, and CT-3) in the LFG collection system. These pumps are currently removing approximately 1,000 GPD of leachate from the south side of Phase I and Phase II areas.

4 PROPOSED CORRECTIVE ACTION PLAN

The SWMD will execute the corrective action plan and leachate removal activities in four stages summarized as follows. A summary of the total estimated daily leachate removal rates are provided in Stage 2 following this section.

STAGE 1- Pumping of Gas Wells and Condensate Traps

The SWMD will continue to extract leachate from Condensate Traps CT-1, CT-2, and CT-3, LFG wells EW-38, EW-44, EW-48, and EW-66, and TPS-2.

STAGE 2 - Supplemental Leachate Monitoring and Removal Systems

The SWMD is executing the following leachate removal and mitigation activities:

1. Use of GCL fabric to reduce surface water run-in at LFG wells (Planned for the summer of 2017).

2. Large diameter leachate dewatering wells. (two wells have been completed as of May 19, 2017)

3. A leachate cut-off and drainage trench on the perimeter of Phase II (Planned excavation to start June 26, 2107).

4. Additional piezometers to measure leachate head in the eastern part of Phase II. (Two installed as of April 13, 2017)

5. Excavation to locate the end of LCRS header pipes in Phases II and III, installation of a permanent clean-out and jet-cleaning of the headers (Planned upon location of headers).

6. In addition, a separate permit modification is proposed to modify the filling sequence to place additional waste within Phases III, IV, V, and VI. This modification will induce settlement in these disposal areas to promote leachate flow away from the Phase II area and toward the sump, PS-B (Minor Permit Modification submitted to FDEP on April 10, 2017.

These are described in more detail in the following section.

GCL Skirts at LFG Wells (Scheduled for Summer of 2017)
To minimize the potential for surface water entering through the landfill extraction wellheads in the Phase II area, a GCL layer will be placed at the surface around the wells and covered with soil and vegetative cover. These GCL skirts will be installed at all extraction wellheads on Phases I-VI.

Dewatering Wells (Completed)
The SWMD installed two, 8-inch diameter (min) vertical leachate removal wells, within two p36-inch diameter boreholes, in the west central part of the Phase II and eastern part of Phase I disposal areas to provide additional liquid removal. Plan and detail sheets of the dewatering wells are included in Attachment 2. These wells were recently installed, and the pump settings are currently being evaluated and adjusted.

Large diameter boreholes with one or multiple pumps have been used successfully to dewater other landfills. SCS and the SWMD considered other leachate removal options and concluded that the well would be the best current choice. Because the landfill is mainly composed of dense, relatively impermeable ash, leachate flow paths and flow rates are difficult to determine. Thus, flow rates and total volume from any dewatering fixture cannot be accurately estimated at this landfill.

The initial data indicates that the dewatering wells are currently pumping approximately 1,300 GPD combined. While the pumps have the capacity to pump at much greater volumes, the slow recharge rate and the low hydraulic conductivity of the waste appears to limit the amount of liquid available to the pumps. In an effort to increase liquid pumping, SCS is currently evaluating the affects that altering pump placement in the wells may have on pumping volumes and liquid levels.

The target combined pumping rate for all dewatering points, including an allowance for downtime of 10%, results in an effective total pumping rate of approximately 42,000 GPD to remove the 13.5 million gallons. Table 2 summarizes the leachate removal points, and the individual removal rates discussed above.

Table 2. Summary of Proposed Goal for Liquid Removal Rates

Stage	Dewatering Point	Estimated Removal Rate (GPD)
1	TPS-2, EW-38, EW-44, EW-48, EW-66, CT-1 and CT-2	3,300
2	New Dewatering Wells DW-1 and DW-2	1,300*
3	Cut-Off Trench and other methods (to be determined)	37,400
4	Addition methods to increase removal efficiency to be determined	
	TOTAL PROPOSED GOAL REMOVAL RATE	**42,000**

Currently, wells DW-1 and DW-2 are being adjusted to stabilize the pumping of leachate and to minimize collection of sediment from the well installation

Cut-off Trench (Schedule for June 2017)

The SWMD will also install a combination leachate cut-off trench and liquid level monitoring standpipe along the eastern and southern side of Phase II at a depth corresponding to top of the clay (Attachment 3). The cut-off trench will be installed adjacent to the existing gravel trench system along the perimeter berm. A riser pipe at each end of the cut-off wall will allow the SWMD to monitor leachate levels that, if increasing, would alert them to a potential for the leachate to be higher than the elevation of the top of the synthetic liner anchor trench in the berm. In that case, the riser pipe can be used to allow a portable pump suction line to be inserted and the leachate directly removed and the level drawn down before it reaches the top of the berm, and pumping continued until the level begins to recede.

Additional Temporary Piezometers (Completed)

In addition, two temporary piezometers (SB-26 and SB-27) were installed on the eastern side of Phase II, to allow the SWMD to monitor leachate levels and the effectiveness of the removal effects along the east berm. These piezometers will be replaced by monitoring points (riser pipes) along the cut-off trench.

Excavation to Locate LCRS

The SWMD will attempt to locate the header pipes in Phases II and III. If located, a permanent clean-out will be extended through the perimeter berm and the lines jet-cleaned to validate functionality and increase flow capacity. The headers will be inspected with video camera if jetting does not clearly establish increased flow.

Fill Sequence Modification

The filling sequence will be modified to place additional waste within Phases III, IV, V, and VI. This modification will induce settlement in these disposal areas to promote leachate flow away from the Phase II area and toward the sump, PS-B.

STAGE 3 – Leachate Pumping and Level/Water Quality Assessment

As the liquid levels decrease, leachate removal points may be removed from the Plan if pumping points do not appear to be effective in reducing head levels in a specific area. If leachate levels do not decrease, new dewatering points will be added, as necessary in order to maintain the desired pumping rate and or to reduce levels to the Approved Operating Level.

During this Stage 3 period, leachate levels and pumping efficiency may vary and adjustments to the Stage 3 and 4 timeline, methods, and location of leachate removal points, and water quality results will be assessed. Our recommendations will be included in the monthly reports sent to FDEP.

STAGE 4 – Approved Operating Level Stabilization and Completion of the Plan

Upon reducing the leachate level to the Approved Operating Level, the removal of leachate will continue until pumping rates are reduced and levels within Phase I, II, and III are measured at the Approved Operating Level, or less, continually for at least one (1) month This will signify the leachate removal efforts have been effective and will be the start of a period of extended monitoring.

The extending monitoring will be for a one (1) year period, or until the Consent Agreement between the SWMD and FDEP has been satisfied, will be used to determine completion of this Plan.

Upon completion of the removal efforts, a follow-up evaluation report of the LCS will be prepared documenting the results of the Plan and ability of the LCS to maintain the Approved Operating Level. The evaluation will include recommendations on continued operations procedures for the Phase I-VI disposal areas. Procedures may include pumping rates, liquid level monitoring techniques, water quality monitoring, or other procedures as identified during the completion of the Plan. The SWMD will coordinate with FDEP on the evaluation report and any permitting requirements that may be needed for continual operation of the Phase I-VI area.

5 MONITORING AND REPORTING

Temporary Leachate Piezometers

The SWMD has installed 19 temporary piezometers in Phases I-VI. The water levels in these piezometers will continue to be monitored during implementation of this Plan through Stage 4. The SWMD will submit monthly progress reports to the FDEP that document the activities completed during the previous calendar month. These reports will include the preceding monthly leachate pumpage volume and weekly piezometer liquid level readings for the site. The progress report will be submitted to the FDEP by the 15th of each month.

Water Quality Monitoring Wells

The SWMD will continue to collect samples from surficial groundwater monitoring wells TH-20B, TH-38B, TH-66A, TH-67, TH-79, TH-80, TH-81, and TH-82 on a quarterly basis (February, May, August, and November). These samples will be analyzed for sodium, ammonia,

chloride, and total dissolved solids. Field parameters will include temperature, pH, Conductivity, Turbidity, Dissolved Oxygen, and ORP. Results will be submitted to the FDEP within 60 days of completion of laboratory analysis.

Quarterly monitoring of these groundwater monitoring wells will continue for one year or as outlined in Stage 4 of the Plan. At that time, the SWMD will discuss with the FDEP discontinuing quarterly monitoring at these locations.

Quarterly Review of Plan

The SWMD will, at three month intervals, review and evaluate the performance of the activities. This review will include the pumpage rate from dewatering locations, liquid levels in all piezometers, and if modifications are required to ensure leachate levels are dropping and that the system is performing as intended. A status report of the effectiveness and timeline for the Plan after each review period will be provided to the FDEP within 30 days of the review (i.e., before the end of the month in which the review took place).

Long-Term Leachate Monitoring

As outlined in Stage 4 of the Plan, the leachate levels will be monitored for one additional year to confirm that the levels have receded and the Phase I-VI areas are operating as designed and in accordance with the Approved Operating Level. With FDEP approval, following the one year extended monitoring period, the levels will not be monitored at the monitoring locations identified in this Plan.

6 SCHEDULE

A schedule of activities is included in Attachment 4. This schedule includes current and proposed site leachate removal activities and is based on a goal for leachate removal of 42,000 GPD. This time frame estimate is with an understanding that placement and performance of existing and supplemental dewatering wells and other features and leachate removal conditions are optimum, the seasonal effects of weather are minimal, obtaining any necessary governmental approvals in a timely manner, and the dewatering points maintain projected flows. These factors will likely vary during the activities within the Plan.

The intent of this Plan is to reduce leachate head levels down to the Approved Operating Levels based upon pumping information observed during implementation of the Plan.

FDEP will be kept informed of progress of leachate removal, head over liner estimates, water quality results, and schedule updates with reports and data submitted as described in this Plan.

Plan Amendments

Revision #	Description	Date

Attachment 1
Supplemental Findings Report
Dec. 2016 – May 2017

SCS ENGINEERS

LIQUID ASSESSMENT MONITORING SUPPLEMENTAL FINDINGS REPORT DECEMBER 2016 – MAY 2017

SOUTHEAST COUNTY LANDFILL LITHIA, FLORIDA

Submitted to:

Hillsborough County Public Works Department
Solid Waste Management Division
332 N. Falkenburg Rd.
Tampa, Florida 33619

Prepared by:

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, Florida 33610
(813) 621-0080
Fax: (813) 623-6757

June 13, 2017
File No. 09215600.04

Offices Nationwide
www.scsengineers.com

LIQUID ASSESSMENT MONITORING SUPPLEMENTAL FINDINGS REPORT DECEMBER 2016 – MAY 2017

Southeast County Landfill
Lithia, Florida

Submitted to:

Hillsborough County
Public Works Department
Solid Waste Management Division
332 N. Falkenburg Rd.
Tampa, Florida 33619

Prepared by:

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, Florida 33610
(813) 621-0080
Fax: (813) 623-6757

June 13, 2017
File No. 09215600.04

Bruce J. Clark, P.E.
No. 31924 6/26/17

Table of Contents

Section **Page**

List of Figures

Appendices

1 INTRODUCTION

On behalf of Hillsborough County Public Works Department, Solid Waste Management Division (SWMD), SCS Engineers (SCS) is submitting this report to present findings of the liquid assessment monitoring and dewatering activities completed at the Southeast County Landfill (SCLF) located in Lithia, Florida (**Figure 1**). On December 13, 2016, the SWMD submitted to the Florida Department of Environmental Protection (FDEP) a Liquids Assessment Monitoring Finding Report (December 2016 Report) detailing the preliminary results of the on-going investigation related to elevated groundwater quality parameters at onsite piezometer TH-67 and its possible connection to the leachate liquid levels in the Phase II cell of the landfill. The December 2016 Report also included a series of plans depicting a phased approach to assess and address the liquid levels within Phases I through VI of the SCLF. In an email dated December 16, 2016, the FDEP commented that they had no objections to the approach.

The purpose of this report is to present the strategy, methodology, and results of the liquid assessment and dewatering actions completed at the SCLF since the December 2016 Report. A cut-off date for data included in this report was set at the end of May. However, as explained in the report there are some activities that will continue on. These will be reported to the FDEP in supplemental, but separate update memoranda, or letter reports (see Corrective Action Plan dated June 2017). This report includes recommendations for future course of actions to address the above-mentioned concerns. This assessment uses a sequential and flexible approach that allows the results of the previous phase to be incorporated into the next phase of the project. By implementing this approach, SCS was able to adapt the execution of the field efforts to actual field conditions and modify the approach as needed according to site-specific data. The following presents the results of SCS' and SWMD's field investigation and recommendations for future actions to address the elevated leachate liquids levels detected in Phases I, II, and III of the SCLF.

2 BACKGROUND

In June 2016, the SWMD and SCS initiated an investigation related to elevated groundwater quality parameters at monitoring well TH-67 and its possible connection to the leachate liquid levels in Phase II of the SCLF. The initial investigation consisted of the installation and liquid level measurements in four temporary piezometers (SB-01, SB-02, SB-03, and SB-05) strategically located within Phase II of the SCLF (**Figure 2**). These four temporary piezometers were installed in open/unsealed boreholes to the top of the clay liner. The boreholes were previously used to collect clay samples for geotechnical testing related to sequences of waste fill activities. For ease of reference, these unsealed piezometers will be referred to as "Series-1" piezometers. Additional piezometers discussed later in this report were constructed in a different manner. Results of this preliminary investigation indicated that elevated liquid levels were present in all the piezometers installed.

In response to the liquid in Series-1 piezometers, in November 2016, SCS completed an additional investigation that included liquid level assessment in the landfill gas (LFG) extraction wells (EWs) network and in the temporary piezometers installed in Phase II. Results from this limited investigation are included in the December 2016 Report and revealed the presence of elevated liquid levels in LFG EWs located on Phases I and II of the Landfill. SCS compared the

liquid levels data from the temporary piezometers against the levels observed in the EWs to determine if a direct relationship or pattern existed between the two data sets. The comparison revealed no direct correlation between the two data sets, as there was no discernable pattern into the distribution of the liquid levels across the Landfill. Additionally, a direct correlation between the liquid levels observed in the temporary piezometer and the EW was not possible as none of the EW wells extended to the top of the Phases I-VI clay liner.

SCS also compared the distribution and occurrence of the liquid accumulation in the SCLF EWs network. This comparison showed no evidence of a relationship, as the presence or absence of liquid in the EWs changed across the Phases I-VI area without a discernable pattern.

In response to these findings, SCS completed short-term pumping tests in selected LFG EWs and in all four temporary piezometers. These tests were completed to determine, among other things, liquid levels response, recharge rates, movement of leachate through the ash and the drainage sand in the landfill, and if there was a hydraulic connection between LFG EWs and piezometers. The pumping test results indicated that wells EW-44 and EW-48 located in Phase I sustained pumping rates of up to 5 gallons per minute supporting the idea that pockets of perched leachate might exist at the SCLF.

Pumping rates from the temporary piezometers were not as significant. Liquid level measurements showed a relatively rapid drawdown followed by a relative rapid recharge (except SB-01). The pumping liquid level change in the temporary piezometers behave similar to the response of a natural aquifer. Based on these findings, it was determined that the liquid levels observed in the extraction wells were representative of liquid accumulations trapped in "perched zones" created by the differential compaction of waste material within the landfill.

Given that the temporary piezometers were installed in open boreholes without a seal to prevent the potential downward migration of fluids from "perched liquids" above the screen, it was determined that the liquids levels observed at the temporary piezometers are not representative of true head over liner conditions at the landfill. SCS presented the results of these liquid assessment to the FDEP in the December 2016 Report.

The following sections provide a detailed narrative of the interim liquid removal actions and supplemental liquid assessment efforts taken by the SWMD to expeditiously mitigate and address the apparent elevated liquid concern at the SCLF. These activities, in summary, included:

1. Installation of pneumatic pumps in select LFG EWs and LFG condensate traps (completed).

2. Cleaning of select LFG EWs to allow dewatering (completed).

3. Supplemental liquid removal from select LFG EWs (completed).

4. Investigating condition of existing leachate collection and recovery system (initiated).

5. Liquid monitoring and supplemental assessment of head over liner (completed).

Additional description and details of these activities provided in the following sections.

3 SUPPLEMENTAL LIQUID REMOVAL ACTIVITIES

Field activities completed at the SCLF were conducted per the December 2016 Report and the Landfill Gas and Extraction Well Dewatering Plan dated December 20, 2016 (**Appendix A**). The following sections present actions completed to date by the SWMD to mitigate and further assess elevated liquid levels at the SCLF.

3.1 INSTALLATION OF PNEUMATIC PUMPS IN EXTRACTION WELLS AND CONDENSATE TRAPS

The purpose of these activities was to initiate dewatering efforts at the landfill at specific existing locations known to contain leachate. For that purpose, the SWMD installed permanent pneumatic pumps in LFG EWs EW-44 and EW-48, between December 21, 2016 and January 5, 2017. Additional permanent pneumatic pumps were installed in EW-38 and EW-66 in April 2017. These four locations were chosen since they exhibited the highest liquid accumulation levels, pumping, and recharge rates during the November 2016 and January 2017 pumping tests. Leachate percolations into the waste can find its way into the traps. Thus, the SWMD also installed pneumatic pumps at existing condensate traps (CTs) CT-1, CT-2 and CT-3 to enhance liquid dewatering efforts at Phases I and II of the SCLF (**Figure 2**).

3.1.1 Methodology

To maximize the pumping capacity at each of the locations mentioned above, the SWMD placed each pneumatic pump near the bottom of the EWs and condensate traps. The pumps are connected to the existing 2-inch diameter airline that is part of the existing LFG collection and conveyance system. The liquid discharge lines associated with these pneumatic pumps are connected to the existing LFG condensate forcemain line that directs flow through a cleanout in Phase V (C-O-5-3) to the leachate collection system. Each pump is equipped with a meter to measure the pumping rate and the amount of liquids removed from each location. Each pump is operated continuously and SWMD personnel monitor their performance to assure proper functioning and efficiency of the recovery efforts in progress. Please note that CT-3 has been dry since the onset of the pumping efforts, therefore no liquids have been removed from this location. The pump will remain in CT-3 to be utilized in the event the liquid level rises during the wet season.

3.1.2 Findings

Active dewatering efforts from these EWs were initiated on December 21, 2016 and are still ongoing. To date (May 31, 2017) the dewatering efforts have recovered approximately 450,000 gallons of liquids. A table with liquid removed from each EW and CT as of May 31, 2017 is included in **Appendix B**. Drawdown data is not available as the EWs are sealed preventing the collecting of water level measurements during active pumping conditions. Of importance is to mention that the amount of water being pumped from these wells is decreasing, which is an indication of the decreasing amount of liquid around the well or condensate trap. An email from SCS with quantities of liquid pumped from these locations is sent to the FDEP on a weekly basis.

3.2 LANDFILL GAS EXTRACTION WELLS CLEANING

During the November 2016 liquid assessment activities, SCS encountered a viscous black residue in LFG EWs EW-64, EW-66, EW-67, EW-69, and EW-71 that prevented the removal of liquids from these wells. The location of these EWs are key to the investigation of liquid in Phase II.

3.2.1 Methodology

In response to these conditions, SCS contracted Layne Christensen Company (Layne) to remove the black residue and rehabilitate the EWs for incorporation into the liquids removal program. The cleaning consisted of two parts, dilution and pumping. Clean water (approximately 300 gallons) was injected into each EW to dilute and breakdown the viscosity of the black residue in the well. The liquids and residue mixture was then extracted using an airlift pump.

3.2.2 Findings

Liquids and black residue removal was completed at EW-66, EW-69, and EW-71. However, liquids could not be pumped out from EW-64 and EW-67. Following the first unsuccessful attempt, these two EWs were treated with a mixture of water and chlorine (ratio of 50 to 1) in an attempt to break down the residue and allow pumping.

For EW-67, this approach was ineffective, as the solution either flowed out of the well screen and into the surrounding tire chips or the amended water mixture was not strong enough to break down the viscosity of the residue. The SWMD may investigate other methods for removing the residue from EW-67.

In the case of EW-64, it was determined that the initial liquid level reading was false, most likely caused by residue on the interior sides of the well creating a false positive reading of the electronic water level meter. Following the initial cleaning, the liquid level inside the well was less than 2-feet; therefore, there was not enough liquid in the well to sustain pumping.

Once EW cleaning efforts were completed, EW-66, EW-69, and EW-71 were incorporated in the dewatering efforts described below. A summary of the findings of the EW cleaning are included with the memorandum in **Appendix C**.

3.3 SUPPLEMENTAL LIQUID REMOVAL FROM LFG EW NETWORK PHASES I - VI

The purpose of these efforts was to remove liquids as expeditiously as possible from the areas with the highest amount of liquid accumulation and measure how quickly and by how much the liquid level recovered. Then, use this information to formulate a plan for the design and installation of a permanent leachate dewatering system. For the EW dewatering activities, SCS equipped two teams of professionals with submersible pumps and associated piping to extract liquids from EW clusters at the landfill. SCS conducted the liquid removal efforts between January 5 and January 27, 2017. Liquid removal activities consisted of pumping from EWs in Phases I-VI that contained liquid levels greater than 2 feet. Following is an overview of the

dewatering activities completed at the SCLF. A copy of the work plan is included in **Appendix A**.

3.3.1 Methodology

Prior to initiating the dewatering efforts, SCS personnel measured the total depth and liquid level at each EW to assess liquid levels and determine which locations met the above-mentioned criteria. The field teams worked in tandem to pump liquid from each EW and used mobile above ground storage tanks (ASTs) operated by the SWMD to containerize the extracted liquids. To maximize liquid pumpage amounts, SCS placed the submersible pump approximately 6-inches above the bottom of the EW and once the pump was securely placed, pumping was initiated.

SCS collected conductivity readings from the liquids being extracted from each well. Pumping activities continued at each EW until a minimal amount of liquid remained in the EWs or until the AST was full. Once full, the ASTs were transported to the onsite Main Leachate Pump Station (MLPS) and the contents discharged into the sump. In several instances and to maximize efficiency in the field, SCS personnel used the time while the SWMD personnel emptied the AST to set up at the next EW location. After completing the first dewatering event, SCS personnel returned the following day to the same well and if sufficient liquid was present, initiated pumping until the well did not appear to recharge. Typically, each EW was pumped four separate times unless there was insufficient recharge. Deviations from the planned four pump cycles are noted in the Dewatering and Liquid Managements Summary memorandum in **Appendix C**.

3.3.2 Findings

The results of these dewatering efforts indicate that 11 EWs in Phase I, 14 EWs in Phase II, and one EW in Phase V exhibited liquid levels greater than 2 feet prior to dewatering. The resulting liquids levels, liquid column, and amount of water removed from these EWs is provided in **Appendix C**. The following is a summary of the collected EW dewatering data by landfill cell phase.

Phase I Extraction Wells

The Phase I EWs with the greatest volume of liquids removed were EW-50, EW-47, EW-45, and EW-49. For instance, SCS removed 3,255 gallons (gals) of liquids from EW-50 and 2,100 gals from EW-47. From EW-45, SCS removed 1,650 gals and from EW-49 1,055 gals of liquids were removed. Other notable wells were EW-46 (660 gals) and EW-56 (385 gals).

Review of the liquid level data collected prior to the first and last dewatering event indicated that the pumping efforts lowered the liquids levels in the EW wells involved in these efforts. For instance, the starting liquid level at EW-50 on January 13, 2017 was 43.0 ft below top of casing (btoc). On January 19, 2017, the liquid level at EW-50 was 45.0 ft btoc. This represents a water level drop of 2.0 ft from the removal of approximately 3,255 gallons of leachate. Other Phase I EWs with notable diminished liquid levels were EW-49 (1.7 ft) and EW-45 (1.4 ft) and EW-47 (0.9 ft). In general, a

similar pattern was apparent at all the Phase I EWs wells pumped during these efforts. During this time, no significant rain fell, thus limiting the creation of new leachate and possibly altering the liquid level in each EW.

Phase II Extraction Wells

The EWs in Phase II with the greatest volume pumped and best recharge were EW-30, EW-38, and EW-66. Specifically, SCS removed 2,650 gals from EW-30; 1,900 gals from EW-66; and 650 gals from EW-38. Other notable EWs include EW-32, EW-70, and EW-71. EW-38 did not produce as much volume, but was consistent. Both EW-70 and EW-71 pumped well during both pumping events while EW-29, EW-31, EW-33, EW-34, EW-34, and EW-35 were pumped only once as the water liquid level dropped to 2 feet or lower.

Review of the liquid level data collected prior to the first and last dewatering event indicated that the pumping activities successfully lowered the liquids levels in the EW wells involved in these efforts. For instance, the starting liquid level at EW-30 on January 11, 2017 was 43.5 ft btoc. On January 19, 2017, the liquid level at EW-30 was 46.0 ft btoc. This represents a water level drop of 2.5 ft from the removal of approximately 2,650 gallons of leachate. Other Phase II EWs with notable diminished liquid levels were EW-69 and EW-39.

Phases III, IV, V, and VI Extraction Wells

With the exception of EW-21, the EWs in Phases III, IV, V, and VI did not contain adequate liquid to be pumped. EW-21 was pumped once, but did not recharge adequately to allow additional pumping.

Summary

In total, 26 EWs were pumped at least once during these dewatering efforts and a total of approximately18,170 gallons of leachate were removed from the landfill. The highest volume of liquids were removed from EW-50, EW-30, EW-47, EW-66, EW-45, and EW-49 located in Phase I and Phase II. The Dewatering and Liquids Management Summary memorandum (**Appendix C**) contains recommendations for additional permanent pneumatic pump installations. Following this effort, permanent pneumatic pumps were installed in EW-38 and EW-66 to assist in the removal of liquid on the east and north sides of Phase II.

This effort reinforced the fact that there are pockets of perched liquid in Phases I and II that are not representative of leachate head over liner. The fact that we were able to drawdown the levels slightly at each EW is an indicator that the liquid can be removed by use of pumps in the EWs.

4 LEACHATE COLLECTION AND RECOVERY SYSTEM INVESTIGATION

As part of the on-going investigation of liquid, the SWMD conducted explorations to locate and assess the condition of the Leachate Collection and Recovery System (LCRS) in Phases I, II, and III. The header pipes for these areas were not intended to extend to cleanouts, per the original design plans. The following sections provide detail narrative of the action taken by the SWMD to assess this concern.

4.1 TRENCH EXCAVATION

Between February 1 and February 7, 2017, the SWMD staff and Waste Management Inc. (WMI) conducted trench exploration activities to locate the perimeter LCRS header pipe for Phases I, II, and III of the SCLF. The approximate trench excavation locations are shown in **Figure 3.**

4.1.1 Methodology

The purpose of the exploration was to locate the LCRS headers without damaging the LCRS header pipe, perimeter hypalon liner, and the bottom clay liner. The terminus of the leachate header pipes were scaled from the construction plans and then that location transferred to coordinates that were staked in the field, at each phase (I, II, and III), by a land surveyor (**See Figure 3**). This was to provide a gage for planning the extent and number of excavations for locating the pipe. The pipe was estimated to be approximately 15 feet below the top of the landfill and thus other techniques, such as ground penetrating radar (GPR) were not believed to be useful. A GPR survey was initially made to locate the header in Phase II but was not successful. At each location, the trenches were extended approximately 50 feet in length on each side of the survey marker for a total length of 100 feet. **Appendix D** contains the report prepared by SWMD detailing these activities. To accomplish this goal, the following methodology was used:

- SWMD excavated a 4-foot wide trench 25 feet inside the solid waste boundary, away from the edge of the perimeter hypalon liner.
- The excavation extended to the top of the sand layer and the top 12 inches of sand was removed. The existing cover soils were stockpiled for reuse and the waste removed was hauled to the active working phase of the Landfill.
- Using the excavator bucket teeth, the operator scraped the upper 12 inches of the remaining sand layer with the expectation of locating the upper portion of the LCRS gravel trench (assuming the total sand layer is 3 feet thick and the gravel trench around the pipe is 2 square feet).
- After the trench exploration was completed, the trench was backfilled with sand to about 2 feet from the surface. Stockpiled clayey cover soil was used for the remaining 2 feet.

4.1.2 Findings

Phase I

The trench in Phase I was completed on February 1, 2017. The trench was located in the middle of the southern footprint of Phase I. The trench was 108 feet long by 15 feet deep. The drainage sand layer appeared moist and the waste was dry. At the trench location, the waste consisted of a 2-foot thick layer of class I MSW with a large quantity of agricultural plastic material. No ash was observed. The LCRS gravel trench was surveyed, cleanout pipes installed, and the header pipe jet cleaned and inspected. The installation of the cleanout riser pipe, jet cleaning, and inspection are described in Section 4.2.

Phase II

The trench in Phase II began on February 7, 2017. Two trenches were excavated in Phase II. The first trench (2A) was located in the middle of the eastern footprint of Phase II. This trench was 142 feet long by 15 feet deep and the drainage sand appeared moist and the waste was dry. At this location, the waste type consisted of a 2-foot layer of class I MSW with a large quantity of agricultural plastic material. No ash was observed. The LCRS gravel trench was not located and this trench was backfilled.

The second trench (2B) was located in the southeast portion of the eastern footprint of Phase II. This trench was 100 feet long by 15 feet deep. The drainage sand was saturated and the waste was wet. At the trench location, the waste consisted of a 3-foot layer of Class I MSW with a large quantity of agricultural plastic material. No ash was observed. A possible location of the LCRS gravel trench was located, however, it could not be confirmed due to standing leachate in the trench.

On February 10, 2017, the SWMD installed a temporary sump with vacuum assisted diesel pump to remove leachate from this location. This location is referred to as Temporary Pump Station 2 (TPS-2) **(See Figure 4)**. The trench and sump were backfilled. Information on leachate removal (pumpage) from TPS-2 is provided in the Corrective Action Plan document.

Phase III

The trench in Phase III was completed from February 2, 2016 through February 6, 2017. The trench was located in the northwest corner of the northern footprint of Phase III. The trench was 190 feet long by 20 feet deep. The drainage sand appeared moist and the waste was dry. At the trench location, the waste consisted of a 6-foot layer of class I MSW with a large quantity of agricultural plastic material. Ash was observed mixed with the plastic material. The LCRS gravel trench was not located and the trench was backfilled. If as-built information with differing information is found, the SWMD may attempt to locate the Phase III LCRS by trenching further into the landfill. However, at this time, there does not appear to be perched liquid in Phase III.

4.2 PHASE I CLEANOUT INSTALLATION, CLEANING, AND INSPECTION

Trenching activities conducted by the SWMD in February 2017 located the LCRS header pipe along the south side of Phase I. Once located, a cleanout pipe was connected to the header line to allow access for high-pressure water jet cleaning and future maintenance and inspection of the pipe. The Phase I cleanout location is shown on **Figure 5**. Additional cleanouts were installed to access the perimeter pipe in the east and west directions. A cross section and detail of the cleanout are shown on **Figure 6** and **Figure 7**, respectively.

4.2.1 Jet Cleaning (Methodology)

The SWMD contracted Florida JetClean to clean and inspect the Phase I LCRS header pipe. On March 9, 2017, Florida JetClean arrived at the SCLF and with a high-pressure water equipment, jet cleaned the LCRS from three different access points: Phase 1 LCRS header access south (newly installed), Phase I perimeter pipe access east, and Phase I perimeter pipe access west. Appendix E provides the Florida JetClean report regarding the jet cleaning.

4.2.2 Video Inspection (Findings)

Once the jet cleaning was completed, the header and perimeter pipe lines were video-inspected to determine the condition of the pipes. Video inspection showed that the pipes were in good condition with no visible evidence of breakage or leakage. Some debris, mostly consisting of sand, was present inside the main header pipe (8-inch diameter) line and no blockage was observed. **Appendix E** provides the Florida JetClean and SCS reports regarding the video inspection.

5 LIQUID MONITORING AND SUPPLEMENTAL ASSESSMENT

5.1 PIEZOMETER INSTALLATIONS

The purpose of these activities was to determine a true head over the clay liner in areas of Phases I-VI at the SCLF. For that purpose, SCS provided oversight during the installation of 19 piezometers (2 shallow and 17 deep) strategically located across Phases I, II, III, IV and VI. These will be designated "Series-2 piezometers." The installation of these piezometers is necessary, as the construction of the temporary piezometers (Series-1) do not prevent the downward migration of "perched liquids" intersected above the temporary piezometer screen (if any). Therefore, liquid levels in Series-1 piezometers may not be representative of true head over liner conditions at the SCLF. Installation of the "Series-2" piezometers were completed to more accurately measure head-on-liner. Tierra Inc. (Tierra) completed the drilling activities between January 23, 2017 and April 28, 2017. **Figure 2** shows the locations of the Series-2 piezometers.

5.1.1 Methodology

Drilling activities were conducted using the hollow stem auger drilling technique. At each borehole, a 2-inch diameter by 2-foot long split spoon sampler was used to collect continuous

core samples of the landfill material from approximately 10 feet above the projected top of clay depth to the top of clay. The split spoon containing the cored material was retrieved to the surface and examined by SCS personnel to describe the composition of the landfill waste layers, determine the thickness of the landfill drainage sand layer, and to estimate the depth of the top of clay liner.

5.1.2 Waste Description, Drainage Layer, and Depth to Clay Findings

Atop the waste is an 18- to 24-inch layer of intermediate cover soil overlain by sod in all areas of the investigation, with the exception of the active filling area in Phase I (SB-25D and SB-28D). The description of the cored (waste) material collected during the drilling activities indicated that the landfill is generally composed of intermixed layers of waste, sand (daily cover soil), and ash that extend to the top of the drainage sand layer. The waste material is mostly composed of fabric, paper, wood fragments, as well as plastic and metal pieces. The intermixed layers of waste, sand, and ash varied in thickness but in general ranged between six and 12-inches.

In general, the thickness of drainage sand layer in Phase I, II, III and IV ranged between 3 and 6 feet with some exceptions. Depth to the top of clay also varied depending on the boring location across the phases of the landfill. For instance at Phase I, the depth to the top of the clay liner was encountered at approximately 90 feet below ground surface (ft-bgs). The top of clay liner at Phase II was encountered between 63 and 69 ft-bgs, and at Phase III it was observed between 78 and 87 ft-bgs. At Phase IV and Phase VI the top of clay was observed between 78 and 85 ft-bgs. Descriptions of the cored material are provided in **Appendix F**. These clay elevations are, in general, within limits anticipated by SCS through the historic use of clay settlement graphs developed by Ardaman for use in developing the original landfill fill sequence.

5.1.3 Piezometer Installations

Each deep borehole was converted into piezometer at the top of the clay liner, with the screen intersecting a minimum 2-foot continuous section of the drainage sand layer. The deep piezometers were constructed of a 2-inch diameter polyvinyl chloride (PVC) pipe consisting of a 2-foot section of 0.010-inch horizontal slotted, Schedule 40 PVC well screen threaded to a solid PVC riser extending approximately 3 feet above surface. A PVC end cap was connected to the bottom of each screen to provide a sump for sediments. In most instances, the PVC end cap is set below the top of clay.

As part of these activities, SCS also installed shallow piezometers SB-19S and SB-23S that were paired with SB-19D and SB-23D, respectively. These shallow piezometers were installed in the waste section of the landfill and approximately 5 feet above the drainage sand layer in order to measure the hydraulic gradients. The shallow piezometers construction was similar to the deep piezometers except that the shallow wells were equipped with 5-foot screens instead of 2-foot screens. The shallow piezometers SB-19S and SB-23S were installed to approximately 78 ft-bgs and 80 ft-bgs, respectively. The pairing of a shallow piezometer with a deep piezometer and locating these clusters close to an existing LFG EW was made to confirm the initial observation that liquid in the gas EWs, as observed by a shallow piezometer, is essentially “perched”. Although the liquid may vary slowly drain out of the well, the liquid is

not hydraulically connected to nor the same liquid as that in the deep piezometer. Findings and conclusions that confirm this observation are found in Section 5.2.

At each boring location, the annular space between the borehole wall and the piezometer screen was filled with 20/30 graded silica sand from the bottom of the borehole to at least 1-foot above the top of the piezometer screen. A nominal 1-2 foot thick layer of fine sand followed by a 2-3 foot layer of bentonite chips was placed above the filter sand layer to seal the horizon between the landfill drainage sand layer and the landfill ash waste layer and to prevent the downward migration of cement grout into the screened portion of the well. During installation, frequent measurements were made with a weighted tape to allow for proper placement of the annular materials (sand pack, fine sand, and bentonite chips) inside the annular space.

The remaining annular space above the bentonite chips was sealed to the surface by pumping bentonite cement grout through a tremie pipe. Piezometer construction logs are included in **Appendix F.** Upon completion, the cement grout in each piezometer was allowed to set for at least 48 hours, and the piezometer was later developed using a submersible pump.

5.2 LIQUID LEVEL OBSERVATIONS

Liquid level measurements for the newly installed piezometers were initiated the third week of February and are still ongoing. Peavey & Associates (Peavey), a Professional Land Surveyor licensed in the State of Florida, surveyed the top of casing and ground surface elevation of the newly installed piezometers. The collected surveyed data information was tied in vertically relative to the 1929 National Geodetic Vertical Datum (NGVD) and the horizontal coordinates transferred to the base map developed for the SCLF site (**See Figures 8. 9, and 10)**. Results of the survey are included in **Appendix G**.

5.2.1 Methodology

SWMD and SCS personnel collected liquid level measurements from the Series-1 and Series-2 piezometers to establish liquid level trends across the different phases of the landfill. Depth-to-liquid measurements were collected using an electronic water-level indicator, and the surveyed top of casing (TOC) was used as the measuring point. A relative head over liner measurement was calculated by subtracting the recorded liquid elevation from the top of clay elevation. The depth to liquid measurements and calculated head over liner levels are included in **Appendix H**.

5.2.2 Findings

The liquid levels data collected from the Series-2 piezometers indicated that the highest head over liner levels were observed in piezometers located in Phase I (SB-25D) and Phase II (SB-15D and SB-16D) of the landfill. Figures 8, 9, and 10 show the liquid levels in the piezometers and cross sections.

Initial measurements obtained in February 2017 from Phase I piezometer SB-25D showed a head over liner level of more than 10 feet while in Phase II, piezometers SB-15D and SB-16D showed a head over liner level of almost 10 feet and nine feet, respectively. Please note that since February 2017, weekly liquid level data have showed a steady decrease in head over liner levels in almost all the Phase II piezometers. For instance, at piezometer SB-15D the head over

liner level has decreased 2.6 ft since late February 2017 and at SB-16D, the liquid level decreased 2.9 ft during the same period. This drop in liquid levels at the Phase II well is likely due to the dewatering actions currently ongoing by the SCLF and the lack of precipitation during this period of the dry season, as confirmed by rainfall records at the landfill.

The highest head over liner levels in piezometers located in Phase III, IV and VI are 2.3 feet or less. Additionally, no liquid accumulation was observed in shallow piezometers SB-19S and SB-23S.

SCS compared the liquid levels observed in the unsealed Phase II temporary wells (Series 1 piezometers SB-1 through SB-5) against the head over liner levels observed in Series-2 piezometers in Phase II to determine whether there is a correlation between the two. The comparison showed a significant difference in liquid accumulation levels between Series-1 and Series-2 and if the combination of liquid dewatering activities and normal gravity drainage into the LCRS is reducing head over liner.

For instance, since February 2017 temporary piezometer SB-1 has steadily shown a liquid level of more than 10 ft. Piezometer SB-15D (Series-2), which is the closest piezometer to SB-01, has shown not only a decreasing trend but currently there is a 3 foot difference in liquid levels between the two points. Similarly, since February 2017 the liquid level at SB-3 (Series-1) has remained at least eight feet higher than the liquid level observed at Phase II piezometer SB-24D (Series-2) which the closest permanent piezometer to SB-3. This difference in liquid accumulation between the temporary and the permanent piezometers indicates that perched liquids from areas above the temporary piezometers screen are migrating down through the unsealed borehole providing a liquid elevation that is not representative of actual head over liner levels at the Landfill.

5.3 ADDITIONAL SERIES-1 PIEZOMETERS

On April 13, 2016, the SWMD installed two additional piezometers (SB-26 and SB-27) on the southeast side of Phase II. From May 1 to May 2, 2017 SCS installed two piezometers (SB-29 and SB-30) on Phase I and Phase II. These four piezometers are constructed similar to other Series-1 piezometers. Their construction and purposes are listed below.

5.3.1 Methodology

Similar to other drilling activities, these boreholes were conducted using the hollow stem auger drilling technique. A split spoon sampler was used to collect continuous core samples of the landfill material from approximately 10 feet above the projected top of clay depth to the top of clay. The split spoon containing the cored material was retrieved to the surface and examined to describe the composition of the landfill waste layers, determine the thickness of the landfill drainage sand layer, and to estimate the depth of the top of clay liner.

SB-26 and SB-27

The SWMD installed piezometers SB-26 and SB-27 in order to better define the liquid level along the eastern slope of Phase II. These two piezometers are located between SB-05 and the eastern containment berm near TH-67.

SB-29 and SB-30

Prior to the installation of leachate dewatering wells, two borings (SB-29 and SB-30) were drilled at the proposed locations to determine the depth to top of clay and to install temporary piezometers. These piezometers will be used to measure the depth of perched liquid prior to and during pumping. Boring logs are included in **Appendix F**.

5.3.2 Piezometer Installation

SB-26 and SB-27

The depth of cover soil was approximately 2 feet thick at both SB-26 and SB-27. Boring SB-26 consisted of waste from 2' to 23.5' bgs and drainage sand from 23.5' to 26' bgs. The top of clay is 26' bgs. Boring SB-27 consisted of waste from 2' to 12.5' bgs and drainage sand from 12.5' to 14.5' bgs. The top of clay is 14.5' bgs.

The bottom of the piezometers are set at 25.6' bgs and 15.6' bgs at SB-26 and SB-27, respectively. The 10-foot screen is not sealed in the drainage sand layer.

SB-29 and SB-30

The depth of cover soil was approximately 2 feet thick at both SB-29 and SB-30. Boring SB-29 consisted of waste from 2' to 81.5' bgs and drainage sand from 81.5' to 86.5' bgs. The top of clay is 86.5' bgs. Boring SB-30 consisted of waste from 2' to 61' bgs and drainage sand from 61' to 67.5' bgs. The top of clay is 67.5' bgs.

The bottom of the piezometers are set at 87.5 ft bgs and 68.5 ft bgs at SB-29 and SB-30, respectively. The piezometers were constructed of a 2-inch diameter polyvinyl chloride (PVC) pipe consisting of a 10-ft section of 0.010-inch horizontal slotted, Schedule 40 PVC well screen threaded to a solid PVC riser extending approximately 3 feet above surface. A PVC end cap was connected to the bottom of each screen to provide a sump for sediments. In most instances, the PVC end cap is set below the top of clay. The screen is not sealed in the drainage sand layer.

5.3.3 Findings

Peavey surveyed the TOC and ground surface elevation of these four piezometers. Results of the survey are included in **Appendix G**. As with the other piezometers, this survey data was used to determine head over liner. Liquid level data is included in **Appendix H**.

SB-26 and SB-27

The liquid levels data collected on May 26, 2017 indicate approximately 4-feet and 2-feet of head over liner at SB-26 and SB-27, respectively.

SB-29 and SB-30

The liquid levels data collected on May 26, 2017 indicate approximately 11-feet and 6-feet of head over liner at SB-29 and SB-30, respectively. These levels are expected to lower once the dewatering wells are pumping.

5.4 TEMPORARY MONITORING WELLS

Based on recommendations from the FDEP, the SWMD completed the installation of three new temporary groundwater monitoring wells designated TH-80, TH-81, and TH-82 near monitor well TH-67. These new monitoring wells will be used to monitor shallow groundwater quality parameters east of TH-67.

5.4.1 Methodology

Tierra installed these shallow wells in March 2017, under the supervision of SWMD personnel. These wells are located east of TH-67 (**See Figure 3**). Borings for these wells were completed using 6-1/2" hollow stem augers. Boring and well installation logs are included in **Appendix I**.

The wells were constructed of a 2-inch diameter polyvinyl chloride (PVC) pipe consisting of a 10-foot section of 0.010-inch horizontal slotted, Schedule 40 PVC well screen threaded to a solid PVC riser extending approximately 3 feet above surface. A PVC end cap was connected to the bottom of each screen to provide a sump for sediments.

At each boring location, the annular space between the borehole wall and the well screen was filled with 20/30 graded silica sand from the bottom of the borehole to at least 1-foot above the top of the piezometer screen. A nominal 1-foot thick layer of fine sand was placed above the filter sand layer to prevent the downward migration of cement grout into the screened portion of the well. The remainder of the annular space above the fine sand was filled with cement grout. During installation, frequent measurements were made with a weighted tape to allow for proper placement of the annular materials (sand pack and fine sand) inside the annular space. A concrete pad was placed at the ground surface with three bollards surrounding the protective steel casing at each well.

TH-80

TH-80 is approximately 50-feet east of TH-79. The bottom of the well is approximately 15 feet below grade.

TH-81

TH-81 is approximately 50-feet east of TH-67. The bottom of the well is approximately 14 feet below grade.

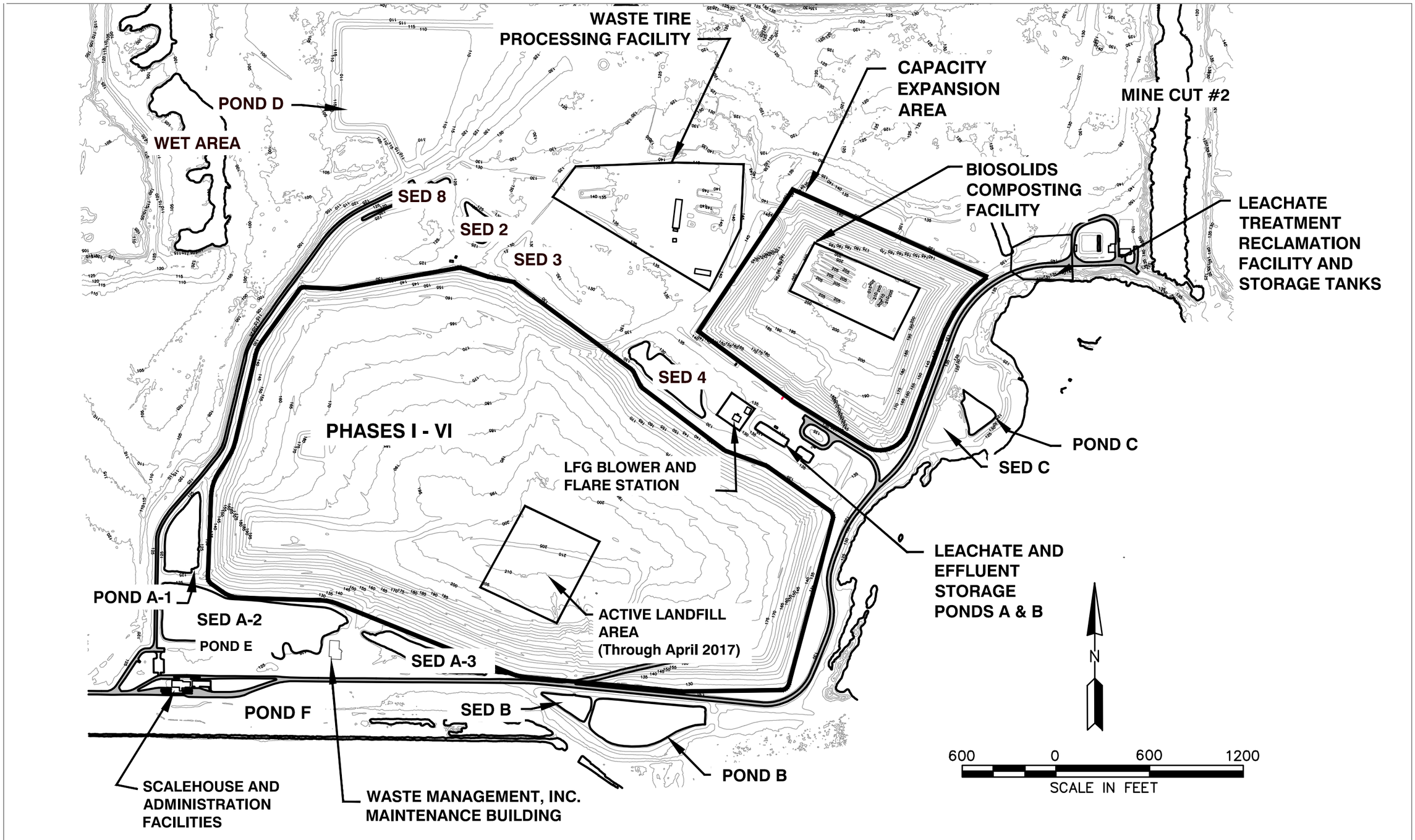
TH-82

TH-82 is on the east side of the landfill perimeter road, approximately 200-feet northeast of TH-67. The bottom of the well is approximately 15 feet below grade.

5.4.2 Findings

Peavey surveyed the TOC and ground surface elevation of these three monitoring wells. Results of the survey are included in **Appendix I**. Sampling of these temporary monitoring wells will be conducted during the monthly supplemental sampling events. Results of the water quality monitoring will be reported to the FDEP as part of the on-going assessment monitoring plan.

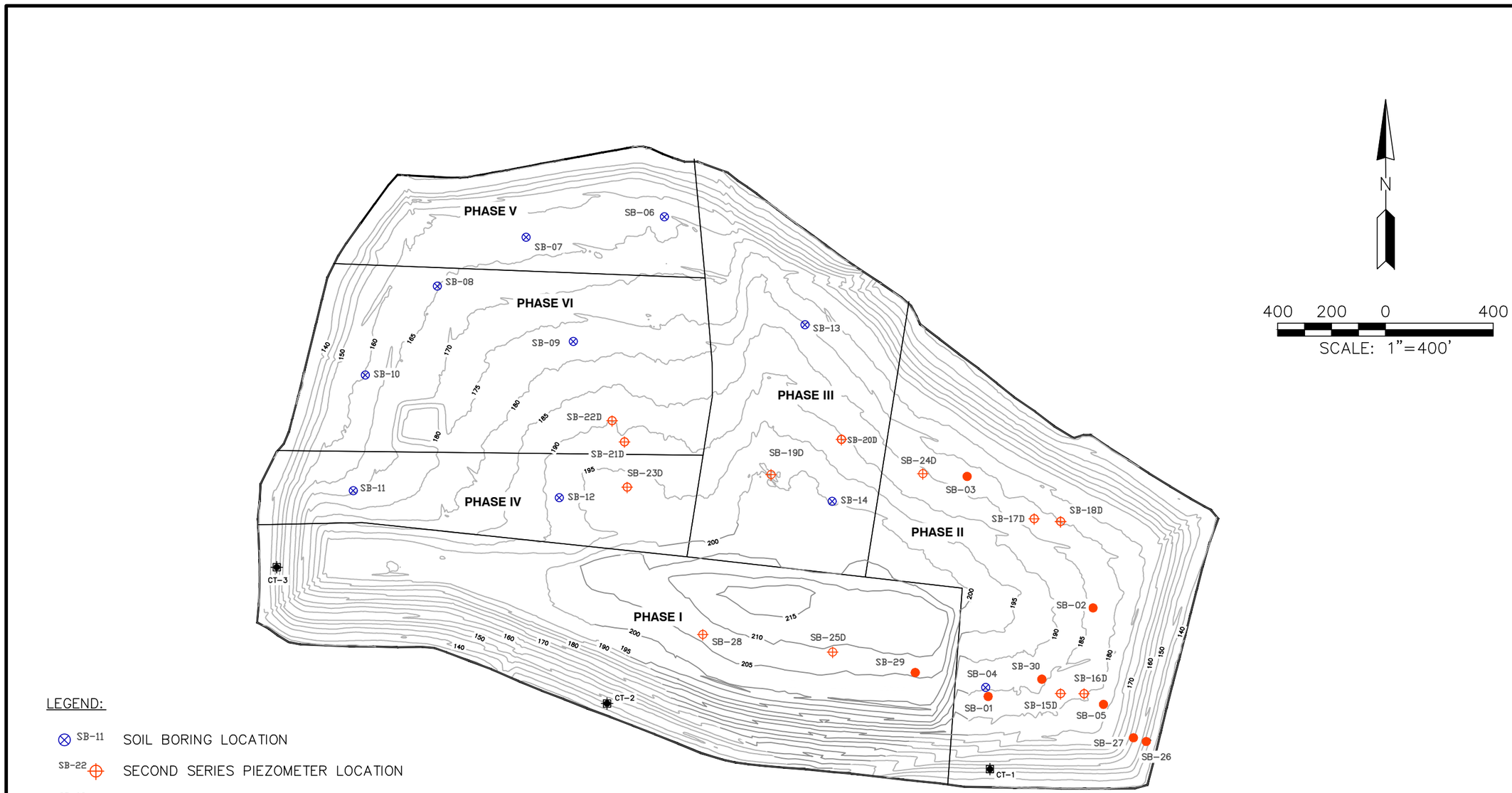
FIGURES



\\TAM-FS02\TAMPA\FILES\PROJECT\09215600.03\PHASE 1\TASK 1100 - GENERAL\2.0 PHASE II GEOTECH\FINDINGS REPORT\REFERENCE PDFS\FIGURES\FIGURE 1.DWG

SCS ENGINEERS

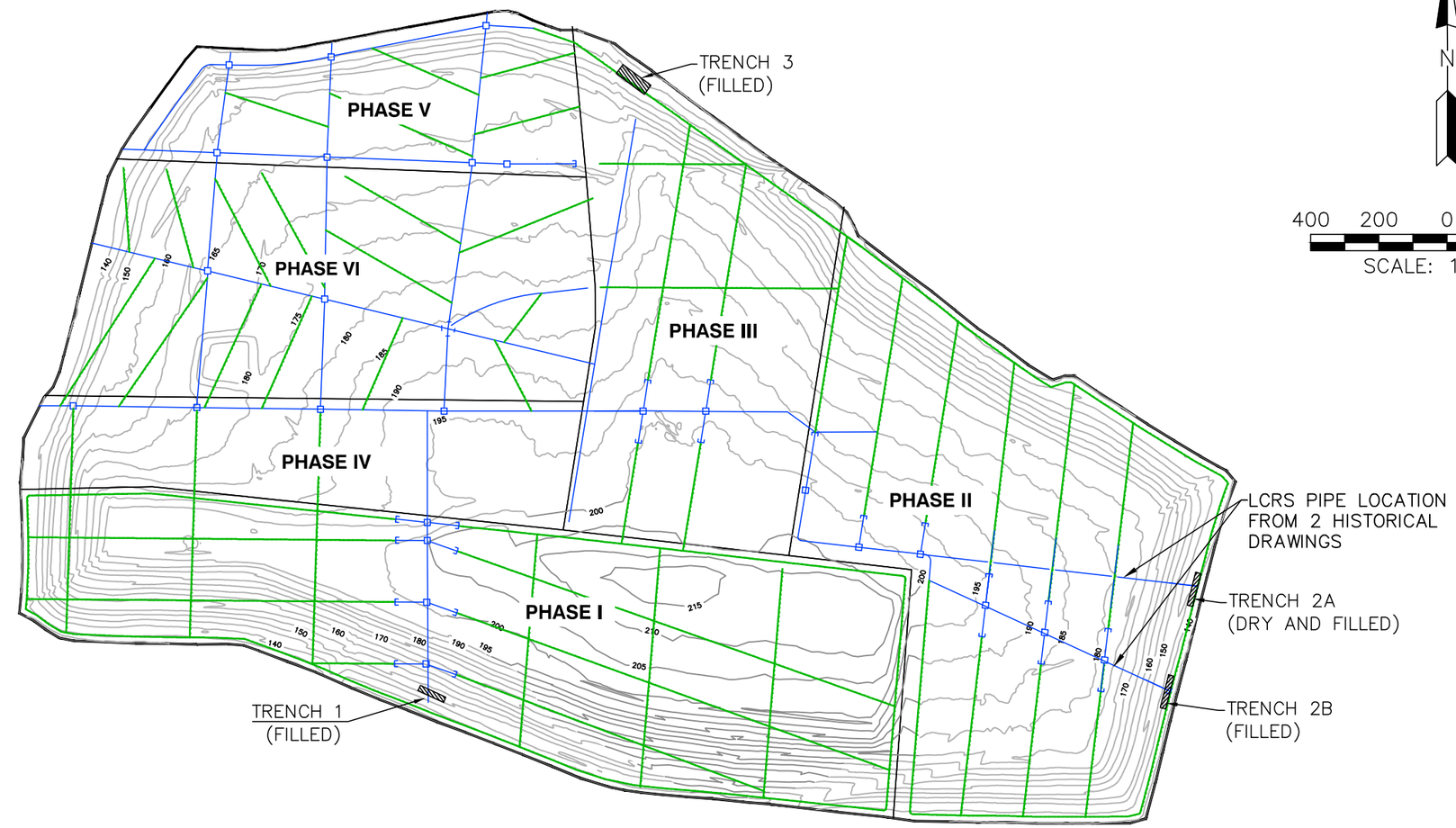
FIGURE 1. SITE LOCATION
SOUTHEAST COUNTY LANDFILL
JUNE 2017



F:\PROJECT\09215600.03\PHASE 1\TASK 1100 - GENERAL\2.0 PHASE II GEOTECH\FINDINGS REPORT\REFERENCE PDFS\FIGURES\FINDINGS REPORT FIGURES 2 AND 3.DWG

SCS ENGINEERS

FIGURE 2. PIEZOMETER LOCATION PLAN
SOUTHEAST COUNTY LANDFILL
JUNE 2017



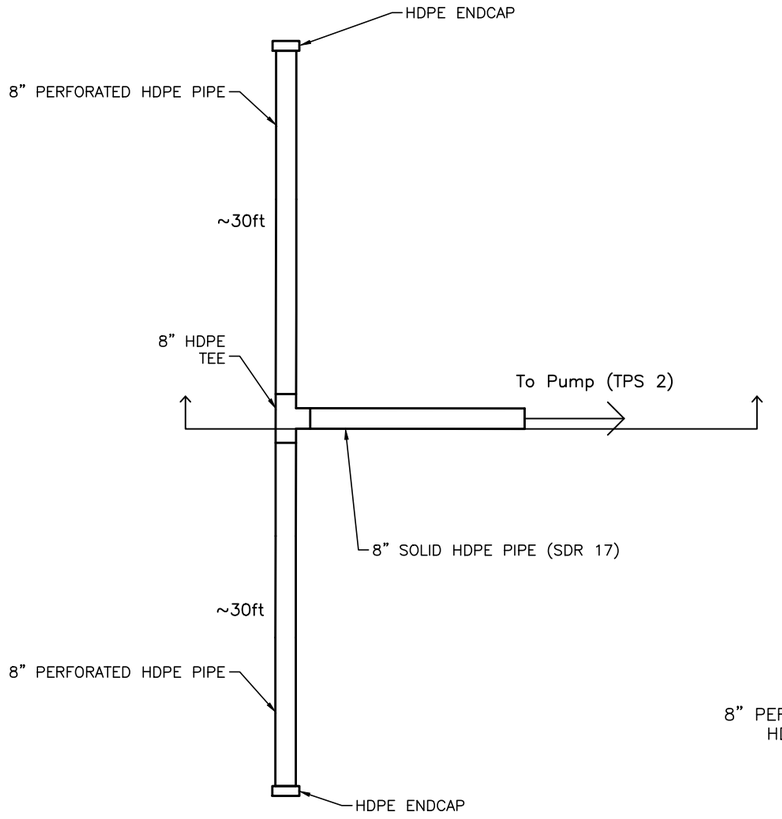
LEGEND:

- TRENCH
- PHASE LIMIT
- GRAVEL LEACHATE COLLECTION TRENCH
- LEACHATE COLLECTION AND RECOVERY SYSTEM (PIPE)

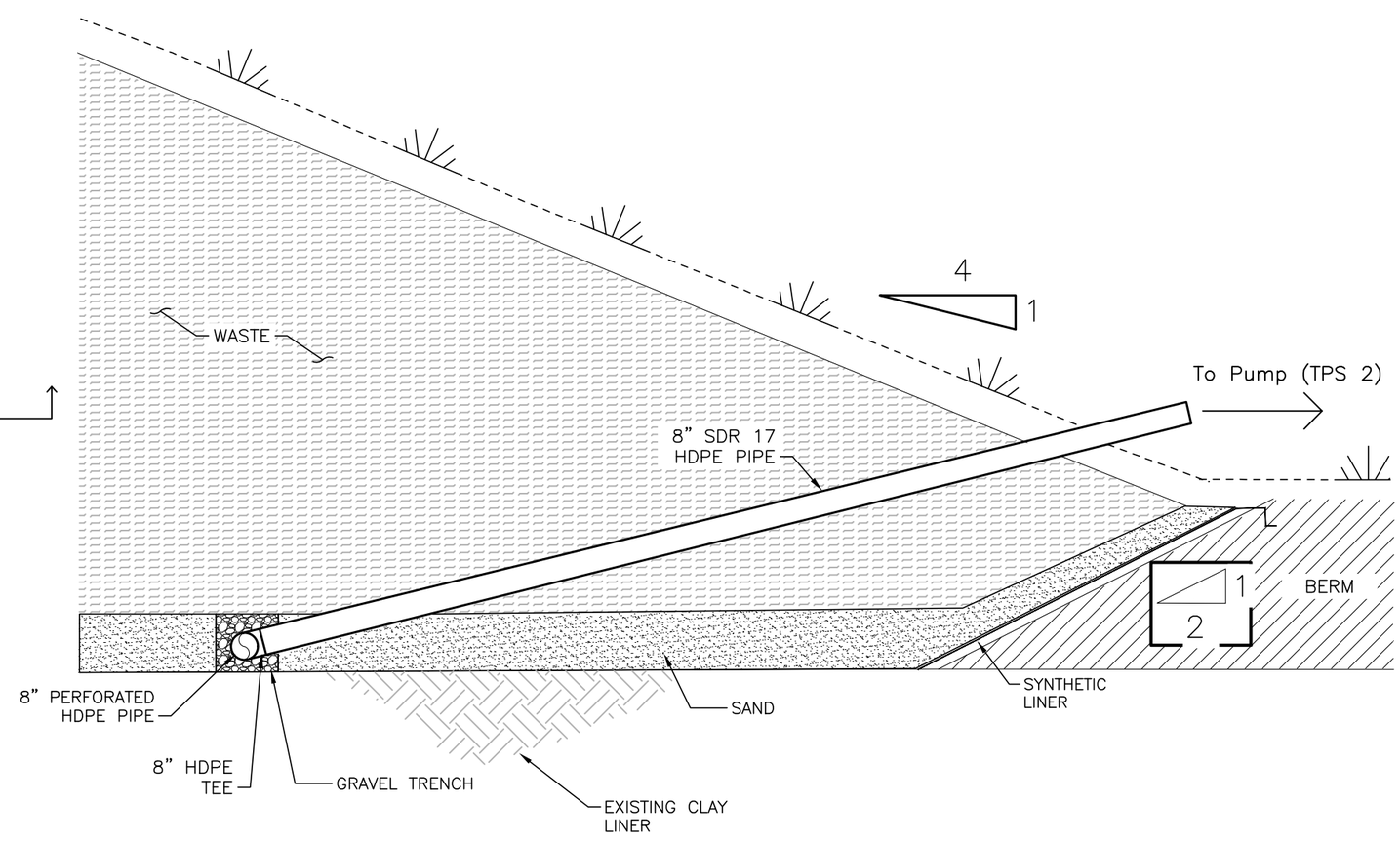
SCS ENGINEERS

\\TAM-FS02\TAMPA\FILES\PROJECT\09215600.03\PHASE 1\TASK 1100 - GENERAL\2.0 PHASE II GEOTECH\FINDINGS REPORT\REFERENCE PDFS\FIGURES\FINDINGS REPORT FIGURES 2 AND 3.DWG

FIGURE 3. TRENCH LOCATIONS
SOUTHEAST COUNTY LANDFILL
JUNE 2017

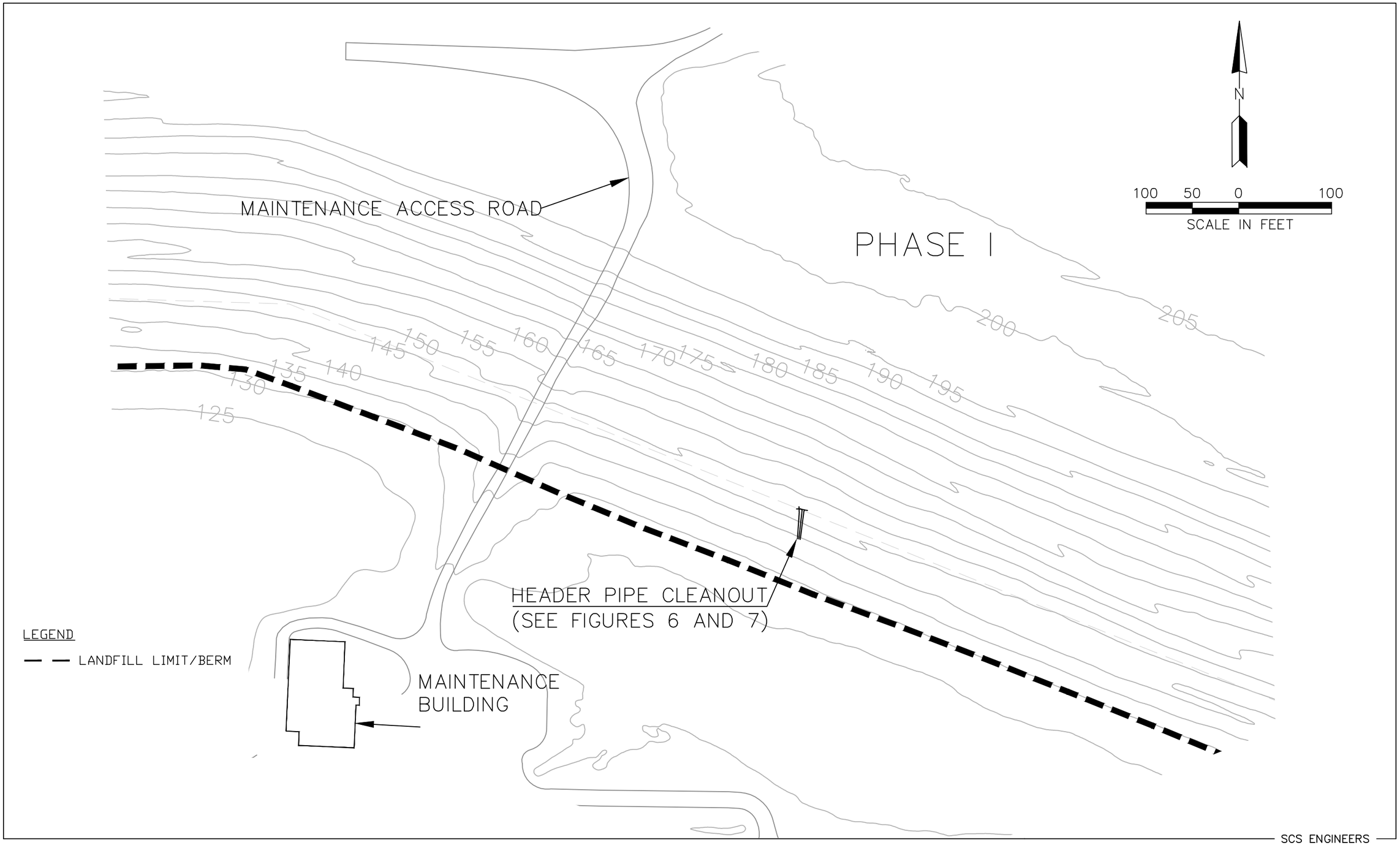


PLAN VIEW



CROSS SECTION

FIGURE 4. TEMPORARY PUMP STATION 2 PLAN VIEW AND CROSS SECTION
SOUTHEAST COUNTY LANDFILL
JUNE 2017



\\TAM-FS02\TAMPA\FILES\PROJECT\09215600.03\PHASE 1\TASK 1100 - GENERAL\2.0 PHASE II GEOTECH\FINDINGS REPORT\REFERENCE PDFS\FIGURES\FINDINGS REPORT FIGURE 5.DWG

SCS ENGINEERS

FIGURE 5. PHASE 1 CLEANOUT LOCATION
SOUTHEAST COUNTY LANDFILL
JUNE 2017

NOT TO SCALE. FOR ILLUSTRATION ONLY.

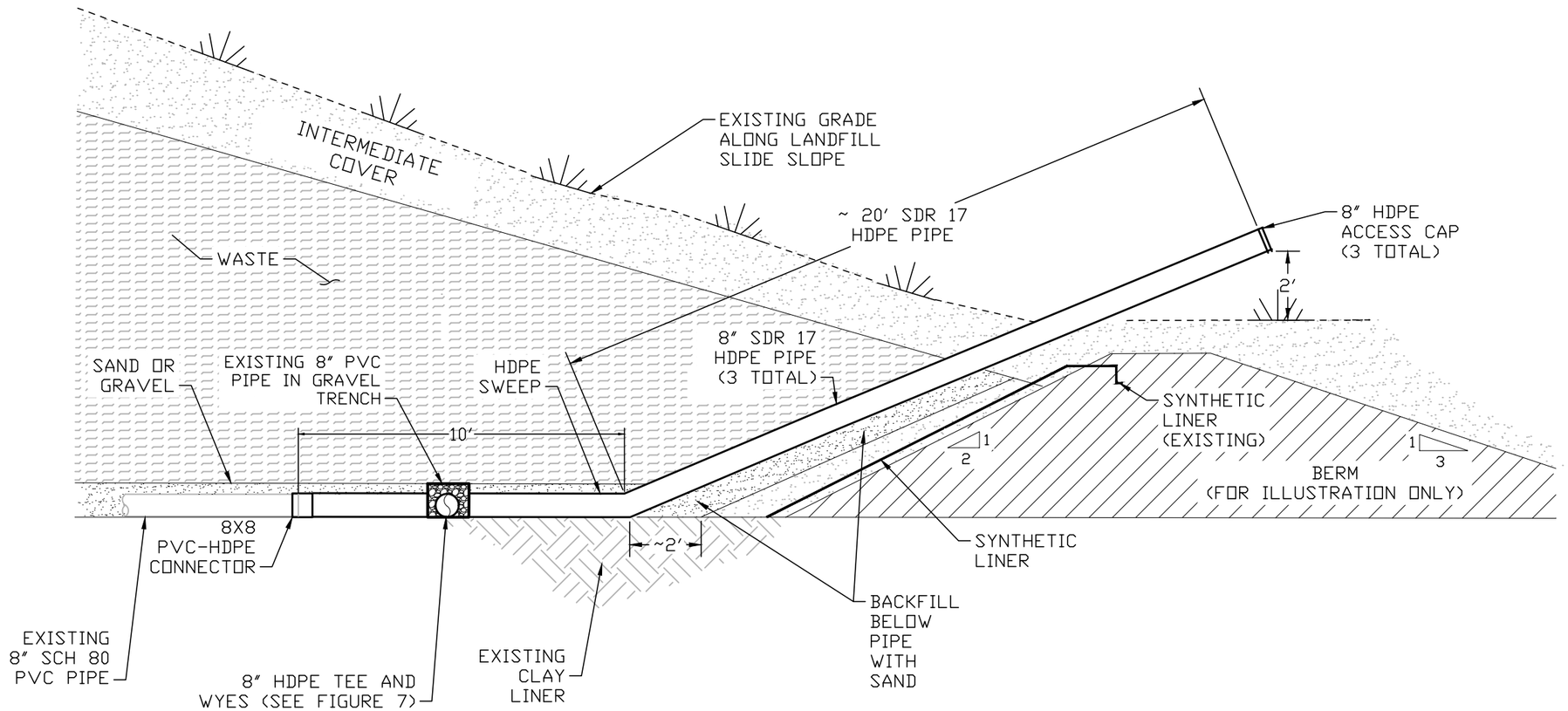
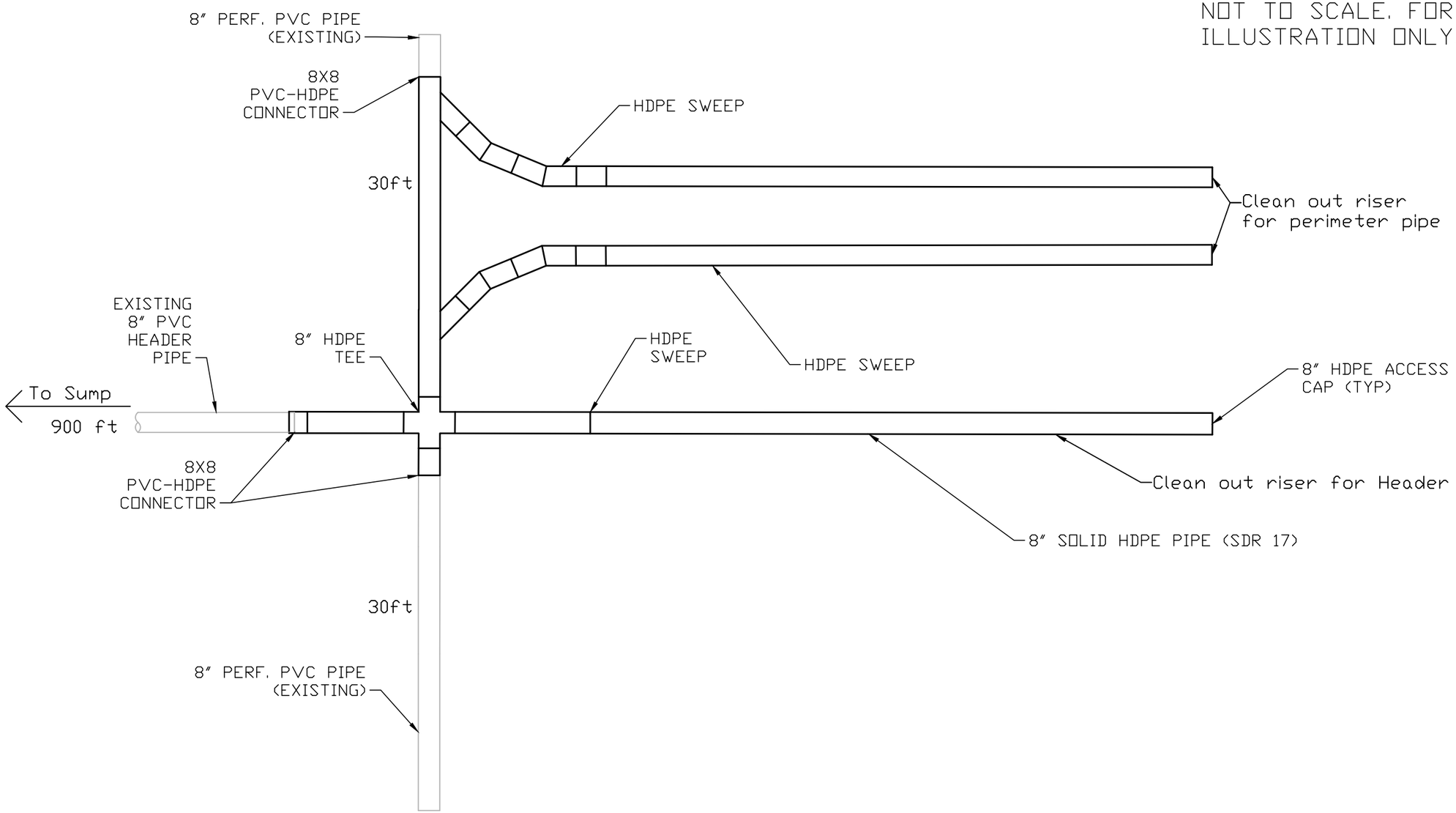


FIGURE 6. PHASE I HEADER CLEANOUT CROSS SECTION
SOUTHEAST COUNTY LANDFILL
JUNE 2017

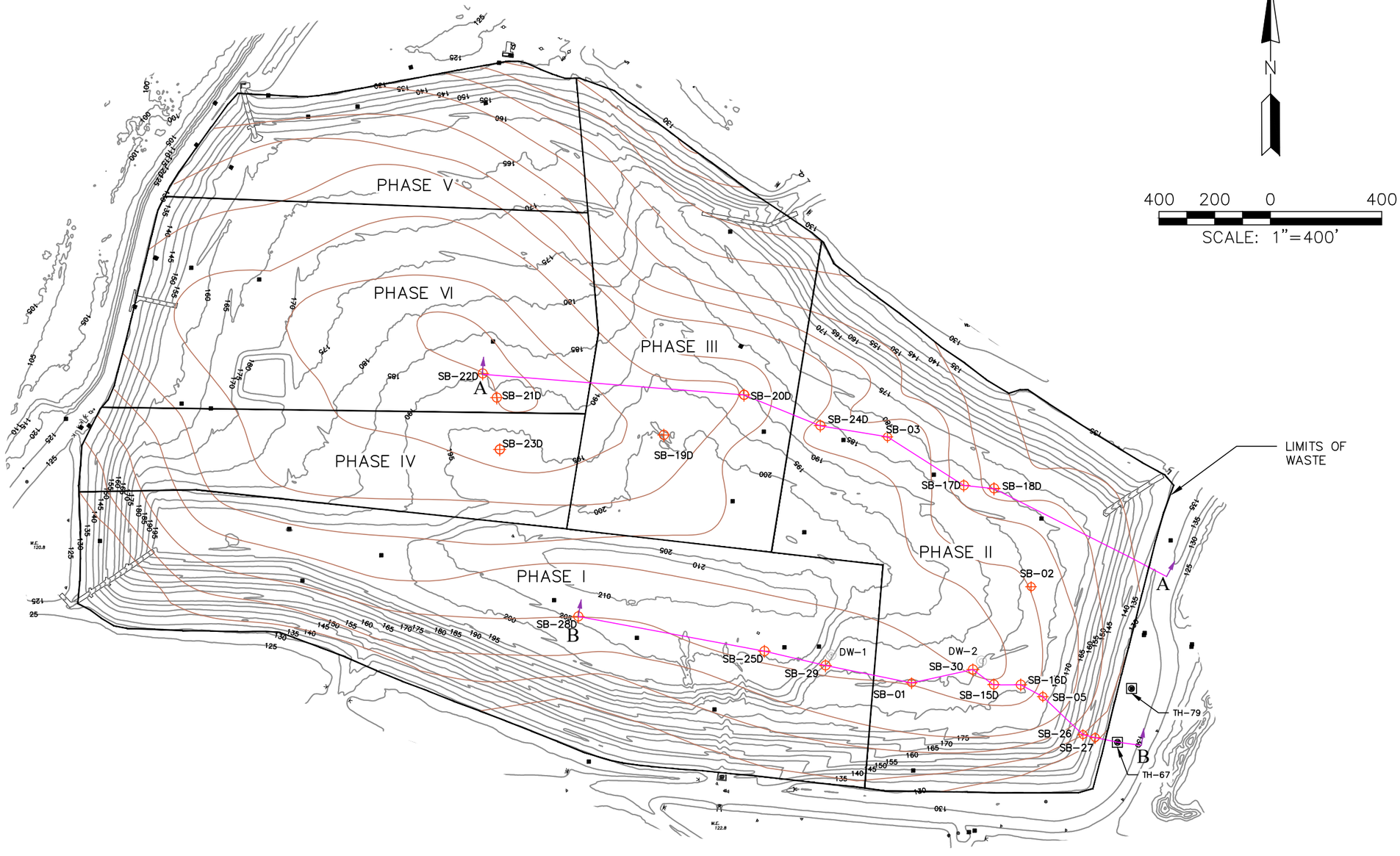


NOT TO SCALE. FOR ILLUSTRATION ONLY.

SCS ENGINEERS

\\TAM-FS02\TAMPA\FILES\PROJECT\09215600.03\PHASE 1\TASK 1100 - GENERAL\2.0 PHASE II GEOTECH\FINDINGS REPORT\REFERENCE PDFS\FIGURES\FINDINGS REPORT FIGURES 6 AND 7.DWG

FIGURE 7. PHASE I HEADER CLEANOUT PLAN VIEW
SOUTHEAST COUNTY LANDFILL
JUNE 2017



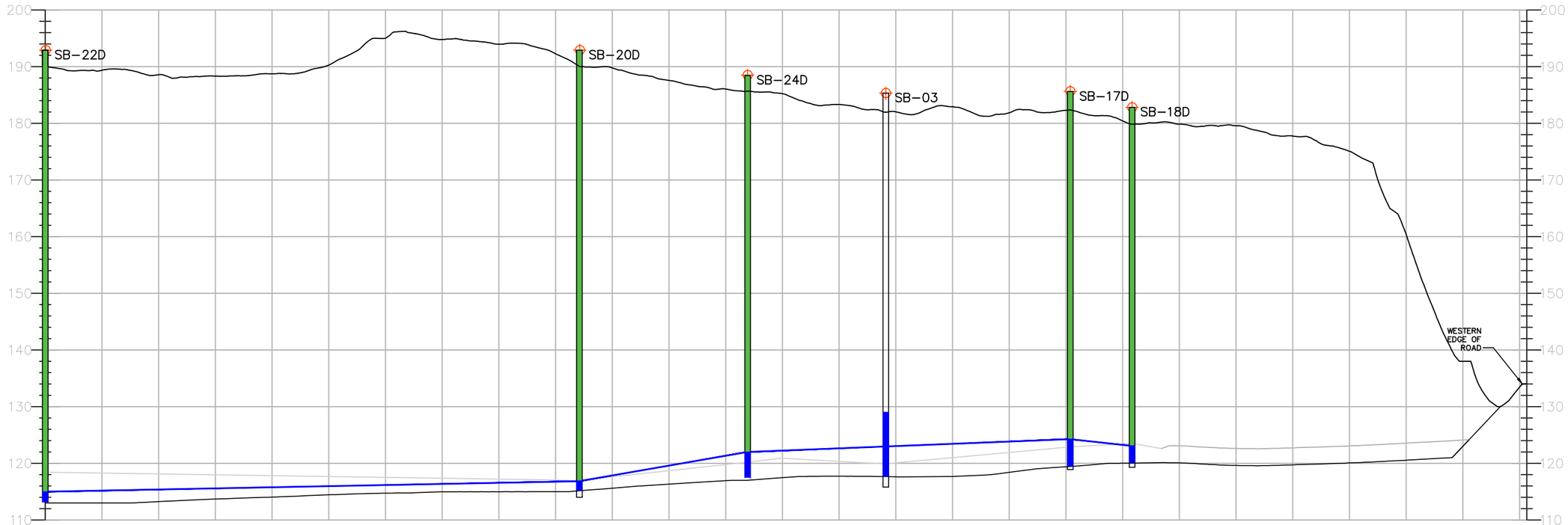
NOTE:
1. TOPOGRAPHIC SURVEY BY PICKETT, JANUARY 2017.
2. CLAY CONTOURS ARE BASED ON 2017 TOP OF CLAY CONTOURS CALCULATIONS AND FIELD-MEASURED CLAY ELEVATIONS DURING INSTALLATION OF PIEZOMETERS.

\\TAM-FS02\TAMPA\FILES\PROJECT\09215600.03\PHASE 1\TASK 1100 - GENERAL\2.0 PHASE II GEOTECH\FINDINGS REPORT\REFERENCE PDFS\FIGURES\FIGURES 8, 9, 10.DWG

SCS ENGINEERS

FIGURE 8. PLAN VIEW OF PIEZOMETERS AND SECTIONS
SOUTHEAST COUNTY LANDFILL
JUNE 2017

A–A
SOUTHEAST COUNTY LANDFILL, MAY 2017
HORIZONTAL SCALE: 1"=200'
VERTICAL SCALE: 1"=20'



NOTE:
1. PIEZOMETER DIMENSIONS SHOWN ARE BASED ON SURVEY BY PEAVEY & ASSOCIATES AND PIEZOMETER CONSTRUCTION LOGS BY SCS, 2017.
2. LIQUID LEVELS SHOWN ARE BASED ON READINGS DATED MAY 19, 2017 BY COUNTY PERSONNEL.

DENOTES PIEZOMETERS WITH SCREENS SET IN DRAINAGE SAND

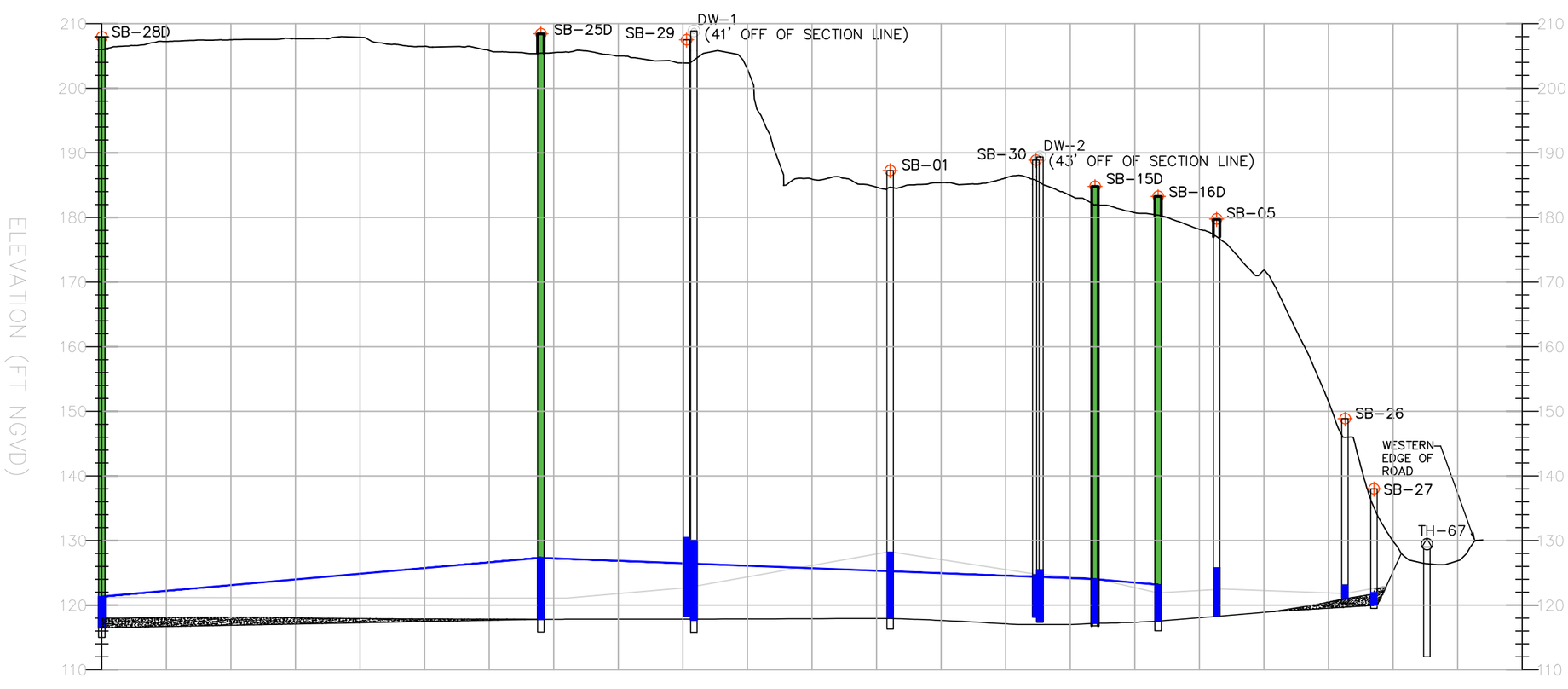
DENOTES LIQUID

SCS ENGINEERS

F:\PROJECT\09215600.03\PHASE 1\TASK 1100 – GENERAL\2.0 PHASE II GEOTECH\FINDINGS REPORT\REFERENCE PDFS\FIGURES\FIGURES 8, 9, 10.DWG

FIGURE 9. SECTION A–A PIEZOMETER LIQUID LEVELS
SOUTHEAST COUNTY LANDFILL
JUNE 2017

B–B
SOUTHEAST COUNTY LANDFILL, MAY 2017
HORIZONTAL SCALE: 1"=200'
VERTICAL SCALE: 1"=20'



NOTE:
1. PIEZEOMETER DIMENSIONS SHOWN ARE BASED ON SURVEY BY PEAVEY & ASSOCIATES AND PIEZEOMETER CONSTRUCTION LOGS BY SCS, 2017.
2. LIQUID LEVELS SHOWN ARE BASED ON READINGS DATED MAY 19, 2017 BY COUNTY PERSONNEL.

DENOTES PIEZOMETERS WITH SCREENS SET IN DRAINAGE SAND

DENOTES LIQUID

SCS ENGINEERS

F:\PROJECT\09215600.03\PHASE 1\TASK 1100 - GENERAL\2.0 PHASE II GEOTECH\FINDINGS REPORT\REFERENCE PDFS\FIGURES\FIGURES 8, 9, 10.DWG

FIGURE 10. SECTION B–B PIEZOMETER LIQUID LEVELS
SOUTHEAST COUNTY LANDFILL
JUNE 2017

Appendix A
LFG EW Dewatering Plan
December 20, 2016

Environmental Consultants
and Contractors

4041 Park Oaks Blvd.
Suite 100
Tampa, FL 33610-9501

813 621-0080
FAX 813 623-6757
www.scsengineers.com

SCS ENGINEERS

December 20, 2016
File No. 09215600.03

MEMORANDUM

TO: Mr. Larry E. Ruiz, S.C., Manager Landfill Operations
Hillsborough County Solid Waste Division
Mr. David S. Adams, P.G., Environmental Manager
Hillsborough County Public Utilities Department

FROM: Mr. Bruce J. Clark, P.E., SCS Engineers
Mr. Robert B. Curtis, P.E., SCS Engineers
Mr. Robert L. Westly, P.G., RL Westly, PLLC

SUBJECT: Summary of Southeast County Landfill LFG EW Dewatering Plan

This memo summarizes a proposed initial dewatering plan for the Southeast County Landfill (SCLF). We have prepared this plan as a result of exploratory studies that indicate varying liquid levels in the landfill, which may, or may not, represent leachate head over liner. The intent of the dewatering plan is to promptly reduce the liquid levels and provide an approach for assessing how best to control liquid buildup in the future.

SCLF DEWATERING PLAN

The dewatering plan is proposed to be conducted in two phases as summarized below:

- Phase 1 - Install permanent dewatering pumps in landfill gas extraction wells (LFG EW's), EW-44 and EW-48 because of their relatively high production rate, then dewater all other existing LFG EW's in a staged approach.

- Phase 2 (if necessary) – Install supplemental, dedicated dewatering wells in the landfill, repeat dewatering of LFG EWs, and/or install permanent pumps in selected LFG EW's.

Phase 1

Equipment and Logistics

1) Selected LFG EW's on the SCLF will be dewatered where recorded liquid level depths in the EW wells have exceeded 24-inches in the in the most recent water level readings. Refer to the **Attachment 1**. The 24-inch criterion is due to the head-over-intake operating requirements for the submersible dewatering pump.

    a. SCS will provide a crew of two professionals to set-up/break-down the equipment, operate the dewatering pumps, and collect data. The Hillsborough County Solid Waste Management Division (SWMD) will supply the portable tank and periodically provide a tanker for emptying

the portable tank and taking the pumpage for final disposal in Leachate Treatment and Reclamation Facility (LTRF).

b. LFG EW's will be dewatered singly or in clusters of two, as logistics permit. In order to dewater as quickly as possible, LFG EW's will be preferentially dewatered in clusters, as practical. See **Attachment 1** for locations of LFG EW's to be dewatered in clusters.

c. The discharge of the dewatering pumps where two LFG EW's are simultaneously dewatered will be manifolded with a 1-inch or 1-1/2-inch diameter discharge line laid on the landfill. The discharge from the pumps will be directed into a portable tank.

d. Field data will be collected in each well during dewatering and will include the following parameters:
   i. Starting liquid level during each dewatering cycle (two dewatering events per day).
   ii. Number of dewatering cycles and date(s) dewatered.
   iii. Approximate time required to dewater each cycle.
   iv. Total quantity of liquids pumped (total in aggregate)
   v. Physical characteristics (once, grab sample during dewatering): pH, conductivity, color.
   vi. Final liquid level during each dewatering cycle.

2) The SCLF will be dewatered in multiple stages. There are seven proposed stages covering 36 existing LFG EWs. See **Attachment 1** for locations of each dewatering stage.

<u>Stage 0</u>

1. SWMD will install permanent pneumatic-controlled pumps in LFG EW-44 and EW-48, and in Condensate Trap (CT-1).

<u>Stages 1 through 7</u>

1. See **Attachment 1** and **Table 1** on the following page for summary of dewatering stages. For the remaining stages 1 through 7, the SCS will use temporary submersible pumps to dewater LFG EW's until they recharge to less than 24-inches of liquid, i.e. 24-inches above the end cap of each LFG EW perforated pipe. We believe that three to five consecutive dewatering cycles will be necessary to fully dewater a well over a period of about three to five days (one cycle per day), assuming no significant rainfall infiltration events.

2. Liquid levels in all LFG EW's will be lowered to below the berm elevation.

Table 1. Dewatering Stages

Stage	Well(s)	Stage	Well(s)
0	EW-44	4	EW-49
	EW-48		EW-50 & EW-51
	CT-1		EW-52 & EW-53
1	EW-38 & EW-39		EW-55
	EW-40 & EW-41	5	EW-2
	EW-45		EW-56
	EW-46 & EW-47		EW-12
2	EW-35		EW-15
	EW-33 & EW-34	6	EW-21
	EW-31 & EW-32		EW-27
	EW-29 & EW-30		EW-65
3	EW-61		EW-64
	EW-63	7	EW-66
	WE-68		EW-67
	EW-70		EW-69
			EW-71

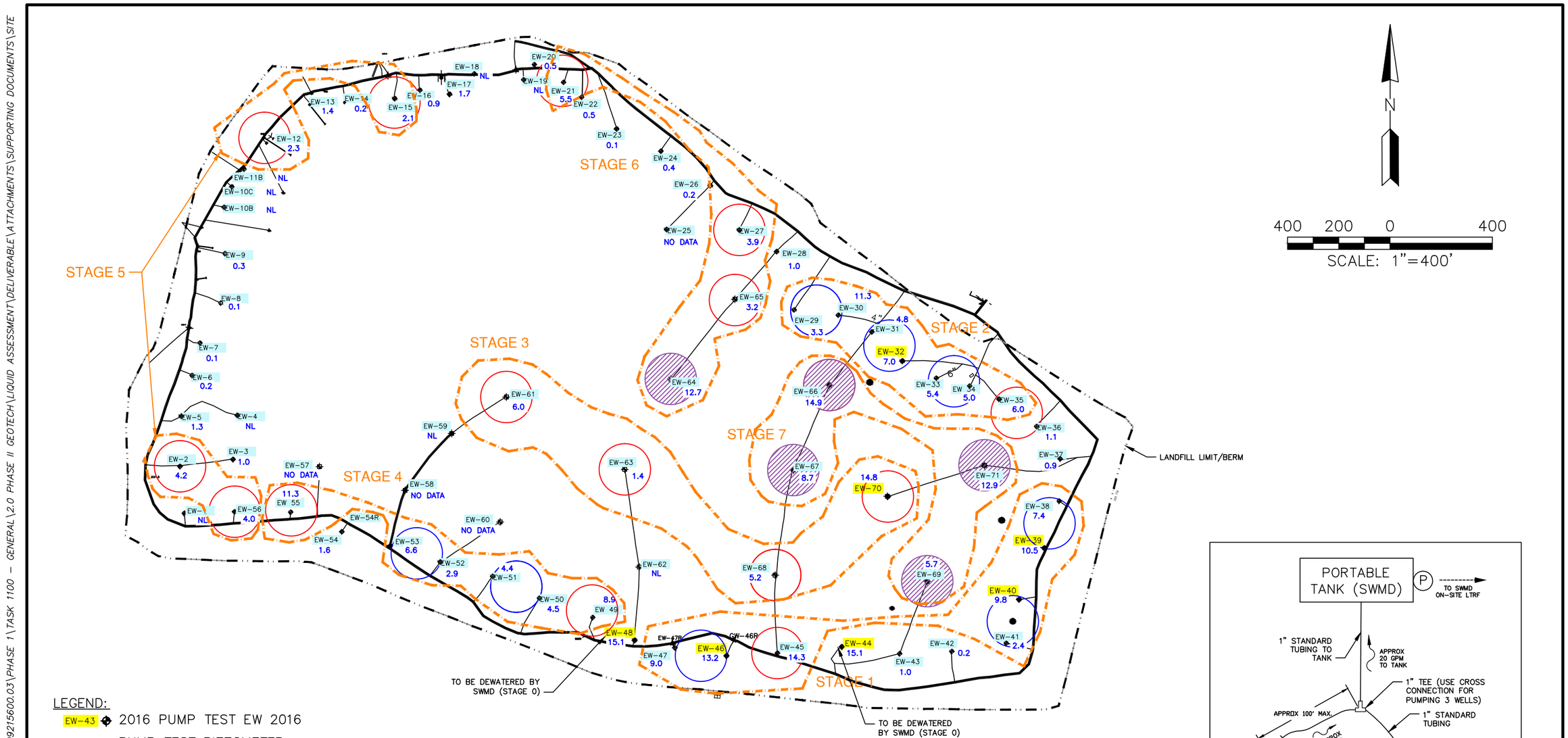
3) Schedule

a) We assume that four dewaterings (whether a single EW or double cluster) can be can be accomplished in one day, if the following is available: two field personnel, four submersible pumps, and two tanks (two dewater simultaneously in two different locations in a stage). It is estimated that each dewatering of an LFG EW well will take approximately four hours to complete. This rate is based on prior field experience pumping the LFG EW's at SCLF.

b) According to our estimates, the dewatering plan can be completed in approximately four weeks, if operations are conducted on a typical Monday – Friday, 10-hour-day, schedule, without any unforeseen delays, and the conditions in the preceding paragraph a) are met.

Phase 2

The need for Phase 2 of the dewatering plan is to be determined after results of Phase 1 dewatering have been reviewed by the SWMD and the FDEP. Phase 2, if required by the FDEP, could likely involve supplemental, dedicated dewatering wells in areas where LFG EW's do not provide adequate coverage, and possibly another round of temporary pump dewatering in some LFG EWs and/or permanent dewatering pumps installed in some of the existing LFG EW's.



\\TAM-FS02\TAMPA\FILES\PROJECT\09215600.03\PHASE 1\TASK 1100 - GENERAL\2.0 PHASE II GEOTECH\LIQUID ASSESSMENT\DELIVERABLE\ATTACHMENTS\SUPPORTING DOCUMENTS\SITE PLANS AND FIGURES FOR REPORT.DWG

SCS ENGINEERS

ATTACHMENT 1. DEWATERING PLAN STAGING MAP
(PHASE 1 OF PLAN)

Appendix B
EW and CT Pneumatic Pump Discharge Table

Appendix B
Landfill Gas Eextraction Well and Condensate Trap Dewatering
Daily and Weekly Summary
Southeast County Landfill

DATE	CT-1 (gal)	CT-2 (gal)	CT-3 (gal)	EW-38 (gal)	EW-44 (gal)	EW-48 (gal)	EW-66 (gal)	All (gpd)	WEEKLY TOTAL (gal)	Daily Avg (gpd)
12/21/2016	0	0	0	0	988	537	0	1,525		
12/22/2016	0	0	0	0	754	433	0	1,187		
12/23/2016	0	0	0	0	1,016	568	0	1,584		
12/24/2016	0	0	0	0	0	0	0	0		
12/25/2016	0	0	0	0	165	91	0	256		
12/26/2016	0	0	0	0	1,526	745	0	2,271		
12/27/2016	0	0	0	0	710	500	0	1,210		
12/28/2016	0	0	0	0	1,192	500	0	1,692		
12/29/2016	0	0	0	0	854	468	0	1,322		
12/30/2016	0	0	0	0	824	449	0	1,273		
12/31/2016	0	0	0	0	0	0	0	0	8,024	1146
1/1/2017	0	0	0	0	231	124	0	355		
1/2/2017	0	0	0	0	1,483	730	0	2,213		
1/3/2017	0	0	0	0	823	422	0	1,245		
1/4/2017	0	0	0	0	893	470	0	1,363		
1/5/2017	2,004	0	0	0	799	421	0	3,224		
1/6/2017	514	0	0	0	791	427	0	1,732		
1/7/2017	0	0	0	0	0	0	0	0	10,132	1447
1/8/2017	806	0	0	0	280	139	0	1,225		
1/9/2017	761	0	0	0	584	1,451	0	2,796		
1/10/2017	0	0	0	0	0	0	0	0		
1/11/2017	4,435	0	0	0	1,722	117	0	6,274		
1/12/2017	2,341	0	0	0	897	652	0	3,890		
1/13/2017	2,173	0	0	0	808	551	0	3,532		
1/14/2017	812	0	0	0	290	247	0	1,349	19,066	2724
1/15/2017	0	934	0	0	0	0	0	934		
1/16/2017	2,884	584	0	0	1,386	1,133	0	5,987		
1/17/2017	2,610	89	0	0	914	789	0	4,402		
1/18/2017	2,700	106	0	0	871	747	0	4,424		
1/19/2017	2,068	260	0	0	635	601	0	3,564		
1/20/2017	2,569	336	0	0	777	714	0	4,396		
1/21/2017	0	0	0	0	0	0	0	0	23,707	3387
1/22/2017	973	430	0	0	259	266	0	1,928		
1/23/2017	3,074	164	0	0	1,305	1,113	0	5,656		
1/24/2017	2,030	173	0	0	737	615	0	3,555		
1/25/2017	1,737	488	0	0	666	623	0	3,514		
1/26/2017	1,680	469	0	0	646	642	0	3,437		
1/27/2017	1,531	250	0	0	608	473	0	2,862		
1/28/2017	1,664	87	0	0	608	401	0	2,760	23,712	3387
1/29/2017	1,664	77	0	0	608	401	0	2,750		
1/30/2017	808	0	0	0	647	386	0	1,841		
1/31/2017	2,139	36	0	0	776	412	0	3,363		
2/1/2017	1,887	62	0	0	661	434	0	3,044		
2/2/2017	1887	62	0	0	661	434	0	3,044		
2/3/2017	2992	626	0	0	959	684	0	5,261		
2/4/2017	2992	626	0	0	1109	685	0	5,412	24,715	3531
2/5/2017	0	0	0	0	0	0	0	0		
2/6/2017	1164	351	0	0	643	370	0	2,528		
2/7/2017	0	434	0	0	579	439	0	1,452		
2/8/2017	6303	434	0	0	770	449	0	7,956		
2/9/2017	8443	436	0	0	686	424	0	9,989		

Appendix B
Landfill Gas Eextraction Well and Condensate Trap Dewatering
Daily and Weekly Summary
Southeast County Landfill

DATE	CT-1 (gal)	CT-2 (gal)	CT-3 (gal)	EW-38 (gal)	EW-44 (gal)	EW-48 (gal)	EW-66 (gal)	All (gpd)	WEEKLY TOTAL (gal)	Daily Avg (gpd)
2/10/2017	7597	382	0	0	516	355	0	8,850		
2/11/2017	9119	322	0	0	645	443	0	10,529	41,304	5901
2/12/2017	9119	322	0	0	645	443	0	10,529		
2/13/2017	9208	0	0	0	813	444	0	10,465		
2/14/2017	9731	0	0	0	1178	452	0	11,361		
2/15/2017	9807	0	0	0	886	445	0	11,138		
2/16/2017	9233	0	0	0	712	404	0	10,349		
2/17/2017	7652	0	0	0	552	342	0	8,546		
2/18/2017	9223	1	0	0	543	399	0	10,166	72,554	10365
2/19/2017	9223	1	0	0	543	399	0	10,166		
2/20/2017	9480	0	0	0	516	424	0	10,420		
2/21/2017	9836	0	0	0	578	427	0	10,841		
2/22/2017	9142	0	0	0	595	421	0	10,158		
2/23/2017	4816	83	0	0	580	496	0	5,975		
2/24/2017	4923	32	0	0	480	410	0	5,845		
2/25/2017	3677	0	0	0	459	368	0	4,504	57,909	8273
2/26/2017	3677	0	0	0	459	368	0	4,504		
2/27/2017	1580	2	0	0	439	418	0	2,439		
2/28/2017	1574	0	0	0	481	447	0	2,502		
3/1/2017	1667	158	0	0	504	455	0	2,784		
3/2/2017	2182	364	0	0	429	515	0	3,490		
3/3/2017	1327	168	0	0	201	329	0	2,025		
3/4/2017	1327	168	0	0	201	329	0	2,025	19,769	2824
3/5/2017	1327	168	0	0	201	329	0	2,025		
3/6/2017	1392	358	0	0	330	326	0	2,406		
3/7/2017	1635	803	0	0	519	422	0	3,379		
3/8/2017	1424	133	0	0	458	367	0	2,382		
3/9/2017	1680	205	0	0	510	418	0	2,813		
3/10/2017	2090	366	0	0	543	420	0	3,419		
3/11/2017	2289	268	0	0	585	382	0	3,524	19,948	2850
3/12/2017	2289	268	0	0	585	382	0	3,524		
3/13/2017	2625	13	0	0	647	346	0	3,631		
3/14/2017	2039	287	0	0	501	350	0	3,177		
3/15/2017	1356	476	0	0	453	306	0	2,591		
3/16/2017	1018	409	0	0	385	268	0	2,080		
3/17/2017	1028	0	0	0	443	336	0	1,807		
3/18/2017	1430	195	0	0	524	452	0	2,601	19,411	2773
3/19/2017	1430	195	0	0	524	452	0	2,601		
3/20/2017	917	282	0	0	400	229	0	1,828		
3/21/2017	1599	467	0	0	487	409	0	2,962		
3/22/2017	1618	412	0	0	510	335	0	2,875		
3/23/2017	1327	411	0	0	452	299	0	2,489		
3/24/2017	1622	313	0	0	608	322	0	2,865		
3/25/2017	1739	0	0	0	298	370	0	2,407	18,027	2575
3/26/2017	1739	0	0	0	298	370	0	2,407		
3/27/2017	1500	0	0	0	360	403	0	2,263		
3/28/2017	1324	0	0	0	339	409	0	2,072		
3/29/2017	1042	0	0	0	335	383	0	1,760		
3/30/2017	1408	0	0	0	388	445	0	2,241		
3/31/2017	1056	0	0	0	411	390	0	1,857		
4/1/2017	982	0	0	0	426	427	0	1,835	14,435	2062

Appendix B
Landfill Gas Eextraction Well and Condensate Trap Dewatering
Daily and Weekly Summary
Southeast County Landfill

DATE	CT-1 (gal)	CT-2 (gal)	CT-3 (gal)	EW-38 (gal)	EW-44 (gal)	EW-48 (gal)	EW-66 (gal)	All (gpd)	WEEKLY TOTAL (gal)	Daily Avg (gpd)
4/2/2017	982	0	0	0	426	427	0	1,835		
4/3/2017	909	0	0	0	366	411	0	1,686		
4/4/2017	786	0	0	0	185	352	0	1,323		
4/5/2017	827	1	0	0	376	440	0	1,644		
4/6/2017	643	1	8	0	245	306	0	1,203		
4/7/2017	537	1	0	0	204	283	0	1,025		
4/8/2017	90	0	0	0	59	64	0	213	8,929	1276
4/9/2017	0	0	0	0	0	0	0	0		
4/10/2017	241	0	0	0	368	239	0	848		
4/11/2017	464	0	0	141	304	234	0	1,143		
4/12/2017	795	2	0	111	320	379	1121	2,728		
4/13/2017	952	0	0	90	292	374	510	2,218		
4/14/2017	747	1	0	55	345	316	363	1,827		
4/15/2017	638	0	0	55	397	336	334	1,760	10,524	1503
4/16/2017	638	0	0	55	397	336	334	1,760		
4/17/2017	136	0	0	59	403	347	298	1,243		
4/18/2017	1118	0	0	46	451	364	335	2,314		
4/19/2017	407	0	0	40	336	252	233	1,268		
4/20/2017	551	0	0	49	437	333	293	1,663		
4/21/2017	537	0	0	66	396	287	281	1,567		
4/22/2017	661	0	0	76	460	347	283	1,827	11,642	1663
4/23/2017	661	0	0	76	460	347	283	1,827		
4/24/2017	566	0	0	57	353	255	248	1,479		
4/25/2017	529	0	0	31	380	281	256	1,477		
4/26/2017	478	0	0	24	369	293	258	1,422		
4/27/2017	376	0	0	12	355	307	264	1,314		
4/28/2017	258	0	0	0	351	293	235	1,137		
4/29/2017	287	0	0	2	376	284	243	1,192	9,848	1407
4/30/2017	287	0	0	2	376	284	243	1,192		
5/1/2017	311	0	0	2	378	271	243	1,205		
5/2/2017	316	0	2	4	380	279	240	1,221		
5/3/2017	343	0	0	4	340	275	241	1,203		
5/4/2017	429	0	0	38	340	264	256	1,327		
5/5/2017	334	0	0	15	340	219	220	1,128		
5/6/2017	87	0	0	0	340	274	218	919	8,195	1171
5/7/2017	87	0	0	0	340	274	218	919		
5/8/2017	95	0	0	0	340	185	213	833		
5/9/2017	233	0	0	0	340	266	215	1,054		
5/10/2017	187	0	0	0	340	289	207	1,023		
5/11/2017	259	0	0	0	340	329	234	1,162		
5/12/2017	331	0	0	8	344	318	213	1,214		
5/13/2017	335	4	0	10	371	303	62	1,085	7,290	1041
5/14/2017	335	4	0	10	371	303	62	1,085		
5/15/2017	239	0	0	0	335	276	0	850		
5/16/2017	204	0	0	0	300	235	233	972		
5/17/2017	247	0	0	0	328	308	0	883		
5/18/2017	243	0	0	0	351	340	0	934		
5/19/2017	204	0	0	0	304	291	0	799		
5/20/2017	255	0	0	0	332	309	274	1,170	6,693	956
5/21/2017	255	0	0	0	332	309	274	1,170		
5/22/2017	334	0	0	0	302	285	240	1,161		

Appendix B
Landfill Gas Eextraction Well and Condensate Trap Dewatering
Daily and Weekly Summary
Southeast County Landfill

DATE	CT-1 (gal)	CT-2 (gal)	CT-3 (gal)	EW-38 (gal)	EW-44 (gal)	EW-48 (gal)	EW-66 (gal)	All (gpd)	WEEKLY TOTAL (gal)	Daily Avg (gpd)
5/23/2017	338	0	0	0	317	270	230	1,155		
5/24/2017	394	0	0	3	337	278	237	1,249		
5/25/2017	306	0	0	0	314	252	208	1,080		
5/26/2017	286	0	0	0	270	229	190	975		
5/27/2017	353	0	0	0	294	261	197	1,105	7,895	1128
5/28/2017	353	0	0	0	294	261	197	1,105		
5/29/2017	353	0	0	0	294	261	197	1,105		
5/30/2017	355	0	0	0	288	264	191	1,098		
5/31/2017	355	0	0	0	301	266	189	1,111		

Appendix C
Dewatering and Liquids Managements Summary

Environmental Consultants
and Contractors

4041 Park Oaks Blvd.
Suite 100
Tampa, FL 33610-9501

813 621-0080
FAX 813 623-6757
www.scsengineers.com

SCS ENGINEERS

March 10, 2017
File No. 09215600.03

MEMORANDUM

TO: Mr. Larry E. Ruiz, SC, Solid Waste Management Division

FROM: Mr. Bruce J. Clark, P.E., SCS Engineers
Mr. Robert B. Curtis, P.E., SCS Engineers

SUBJECT: Southeast County Landfill Dewatering & Liquids Management Summary

CC: File

BACKGROUND

As requested by the Hillsborough County Public Works Department, Solid Waste Management Division (SWMD), SCS Engineers (SCS) has completed a series of dewatering and liquids management efforts located in Phases I-VI of the Southeast County Landfill (Landfill). On December 16, 2016, SCS submitted a liquids assessment report to the Florida Department of Environmental Protection (FDEP) which included a liquids dewatering plan as part of an on-going investigation into elevated readings of select groundwater quality parameters at TH-67 and its possible connection to liquid levels in Phase II of the Landfill. A summary of work performed as well as our initial findings are presented in the following paragraphs for your consideration.

LANDFILL DEWATERING EFFORTS

SCS prepared a dewatering plan for parts of the landfill gas (LFG) extraction well (EW) system as a follow up to the previously-referenced report. On December 20, 2016, SCS submitted a summary of this LFG EW Dewatering Plan to the SWMD and FDEP. Two teams of professionals worked simultaneously on LFG EW clusters to remove liquids from strategic areas of the Landfill that would likely yield high flows and would lead to greater liquids removal from the Landfill. A map of LFG EWs that were dewatered can be found in **Attachment 1.**

Method Summary

Multiple pumps and teams were employed as a means of expediting the liquids removal process. Each team used a submersible pump to pump liquids from select EWs into a mobile tank operated by the SWMD. The tank was ultimately transported to the Main Leachate Pump Station (MLPS) and the contents discharged into the sump. Liquid in the sump was pumped to the Leachate Treatment and Reclamation Facility (LTRF). Prior to pumping, the depth to bottom and liquid level at the LFG EW was measured and recorded. If a LFG EW contained greater than two feet estimated liquid depth, the well was pumped; however, if a well was essentially dry or if liquid was at a level below the

submersible pump intake (i.e. less than two feet), then the well was not dewatered (refer to **Attachment 2**).

An EW pumping cycle was generally completed during a full day of effort. However, in certain cases, the work day ended or the pump was unable to continue operating due to insufficient liquid level. In some instance the mobile tank was full and the field crew moved to another location while the tank was emptied. After one dewatering cycle was completed, personnel would return the following day to the same LFG EW, take a liquid level measurement, and then (if sufficient liquid was present) resume pumping until the well did not appear to recharge. Typically, each LFG EW was pumped four separate times unless there was insufficient recharge or some unforeseen issue. Any deviations from the planned four pump cycles are noted on the table in **Attachment 2**.

Dewatering Pumps

As part of the Dewatering Plan, between December 21, 2016 and January 5, 2017, the SWMD installed permanent pneumatic pumps in two LFG EWs and two condensate traps (CT). Pumps were installed in EW-44, EW-48, CT-1, and CT-2. These locations were selected based on recharge capacity determined during an initial dewatering study. The discharge lines are connected to the existing LFG condensate forcemain that flows to the leachate collection system. The SWMD has been monitoring the daily flow from these pumps.

CLEANING OF SELECTED WELLS

During SCS's initial field work in November and December 2016, we encountered a viscous black residue in certain LFG EWs at the Landfill. SWMD personnel also noted this material during their monitoring. Layne Christensen Company (Layne) was contracted to attempt to remove the residue. The following wells were cleaned prior to dewatering: EW-64, EW-66, EW-67, EW-69, and EW-71. These wells are shown in **Attachment 1.** Approximately 300 gallons of clean water was injected into each well in order to dilute the residue. An air lift pump was then used to pump liquid (with sediment) from each well. Liquid and residue were successfully removed from EW-66, EW-69, and EW-71. Layne was unable to pump liquid from EW-64 and EW-67. EW-64 was then treated with a mixture of approximately 295 gallons water and five gallons of chlorine to break up the residue. This was unsuccessful. It appears the solution flowed out of the well through the screen and into the surrounding tire chips.

Following the cleaning, EW-66, EW-69, and EW-71 were dewatered as described previously. EW-64 and EW-67 could not be dewatered. If requested by the SWMD, we will review alternate cleaning methods for these two wells.

DEWATERING SUMMARY

SCS's dewatering efforts were conducted beginning January 5, 2017 and ending January 27, 2017. A few summary metrics are included in **Table 1** on the following page. The full set of dewatering data is presented in **Attachment 2**.

Table 1. SCLF LFG EW Dewatering Summary Data (Jan. 5 – Jan. 27, 2017)

Total Wells Pumped	25
Total Liquids Removed (Gal)	18,170
Well with Greatest Volume Removed	EW-50 (3,255 Gal Removed)
Wells with > 1,000 Gal Removed	EW-50, EW-30, EW-47, EW-66, EW-45, EW-49
Volume Pumped vs. Drawdown: Ratio >100	Pump Candidates: EW-47, EW-66, EW-30, EW-32

The liquid levels were generally lower during the January 2017 event than measured in October 2016. Some of the EWs that were scheduled to be dewatered contained less than two feet of liquid and could not be pumped. In general, LFG EWs on the east side of the Landfill (Phase II and southeast side of Phase I) contained more than two feet of liquid and were dewatered. LFG EWs on the west side of the Landfill either did not contain enough liquid (less than two feet) to be pumped or, as in the case of EW-64, could not be pumped due to residue. A total of 25 of the initially planned 36 EWs were pumped. Of the remaining 11 EWs, nine were not pumped due to insufficient water (less than 2-feet) and two due to the previously mentioned residue.

Phase I Extraction Wells

The EWs in Phase I with the greatest volume pumped and best recharge are along the southeast near Phase II. Specifically EW-45, EW-47 and EW-50 exhibit the greatest volume and recharge. This seems reasonable since they are in or near the active filling area. The initial pumping of EW-49 produced a large quantity of leachate, but did not recharge as well as well as the three nearby EWs. EW-56 showed good recharge and relatively moderate volume.

Phase II Extraction Wells

The EWs in Phase II with the greatest volume pumped and best recharge are EW-30, EW-32 and EW-66. Other notable EWs include EW-38, EW-70, and EW-71. EW-38 did not produce as much volume, but was consistent and showed good recharge. Both EW-70 and EW-71 recharged well, but we have limited data.

Phases III, IV, V, and VI Extraction Wells

With the exception of EW-64, the EWs in Phases III, IV, V, and VI did not contain adequate liquid to be pumped. EW-64 appears to contain a black residue that is restricting pumping. This residue could not be removed with the cleaning attempts.

RECOMMENDATIONS

Phase I Extraction Wells

The EWs in Phase I with the greatest volume pumped and best recharge are along the southeast near Phase II. These include EW-45, EW-47, and EW-50. The SWMD has already installed four permanent

pneumatic pumps along this section. There is adequate coverage and we do not recommend additional pumps in Phase I at this time.

Phase II Extraction Wells

The current pumps in Phase I and the pump installed in CT-1 provide leachate removal along the south side of Phase II. Additional dewatering should be conducted along the north and east sides. We recommend installing two additional pneumatic pumps in EWs within Phase II. Table 2 shows dewatering data associated with potential dewatering points within Phase II.

Table 2. Select Dewatering Summary Data

Well	Bottom Elev. (ft-NGVD)	Pump Cycles	Average Volume Pumped per Cycle (Gal.)	Liquid Depth Prior to First Cycle (ft)	Liquid Depth Prior to Last Cycle (ft)	Change in Depth First-to-Last Cycle (ft)	Average Drawdown During Pumping (Gal.)
North Side							
EW-30	125.3	5	530**	6.7	4.2	2.5	3.7
EW-32	123.0	4	110	4.1	3.6	0.5	1.1
EW-66	123.9	2	950**	13.8	13.3	0.4	5.4
East Side							
EW-38	124.9	4*	187***	5.6	4.8	0.7	3.2
EW-39	123.7	4	115	6.5	5.3	1.2	4.3
EW-40	123.9	4*	170***	6.6	5.9	0.7	5.2

Notes:
* Some pump cycles not completed due to mechanical problems with pump equipment.
** Some pump cycles stopped before complete drawdown due to full tank. Volume included in average since volume > 100 gallons.
*** Average of completed cycles. Does not include cycles stopped due to equipment issues.

North Side

On the north side, we recommend installing a permanent pump in EW-66. We considered wells EW-30, EW-32 and EW-66, which are all good options. They each have their merits and have similar bottom depths, but EW-66 pumped the greatest volume with less drawdown. Unfortunately, EW-66 was pumped only two times, however the volume pumped from EW-66 increased with each pump cycle and exhibited good recharge. The average volume pumped from EW-30 was over 500 gallons, but showed limited recharge and may soon go dry with continuous pumping.

East Side

On the east side, we recommend installing a permanent pump in EW-38. This well produced a good volume with limited drawdown. EW-40 is an alternative, but exhibited more drawdown during pumping. Both EW-38 and EW-40 had similar reductions in liquid depth from the first pump cycle to the last.

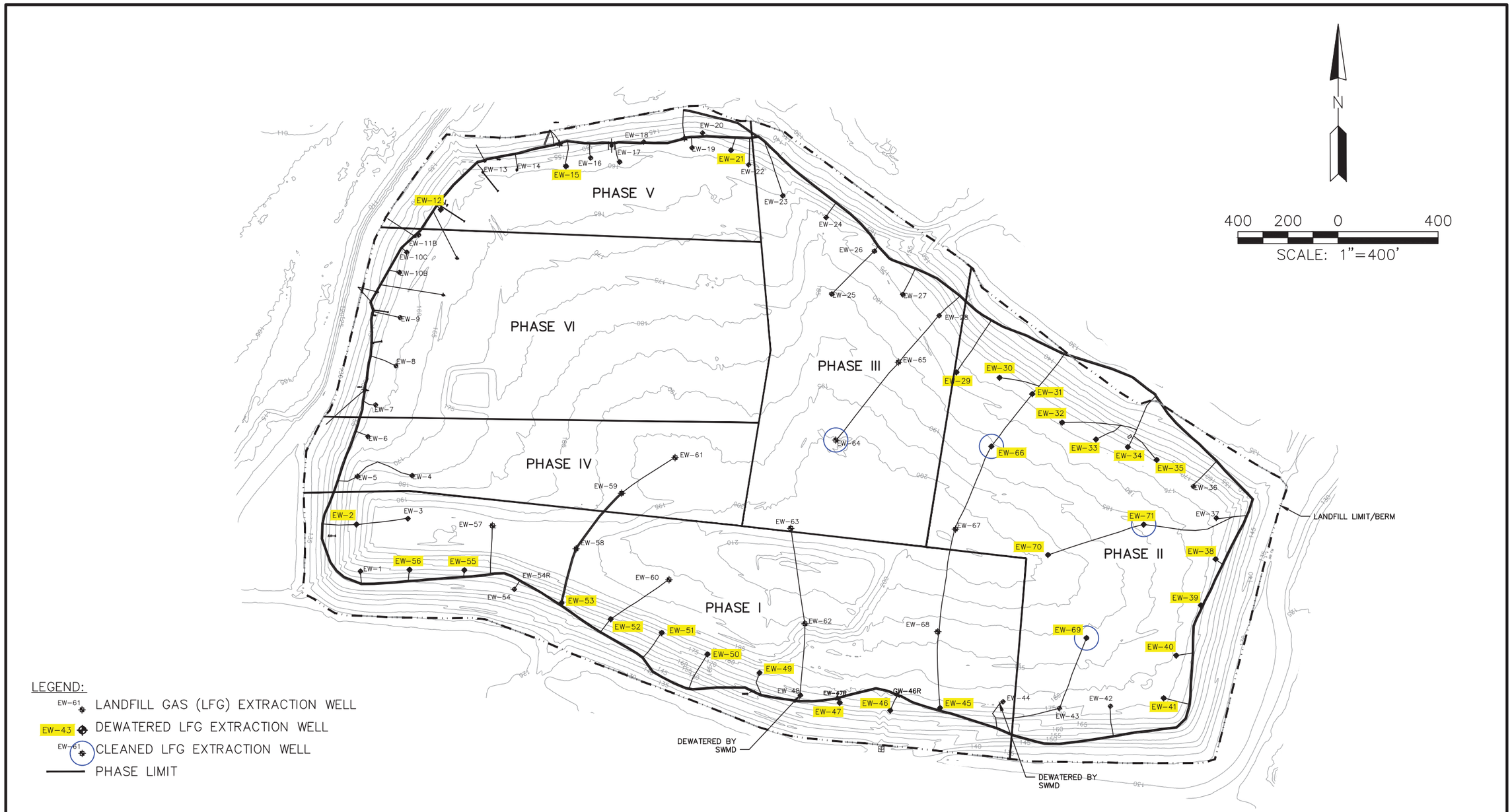
CONCLUSION

The dewatering provided information to select locations for the installation of permanent dewatering pumps. SCS provided our recommendations for pump installation based on a review of the data provided.

During the dewatering effort, water levels were monitored in other EWs in close proximity to the LFG EW being pumped. There was no indication that the liquid levels in the EWs are connected. Therefore, pumping a single EW may not remove liquid in a nearby EW.

During the dewatering effort, SCS and SWMD monitored liquid levels in the four older piezometers in Phase II (SB-01, SB-02, SB-03, and SB-05). The liquid levels did not lower or change as EWs were pumped. This may indicate there is no correlation between the liquid levels in these EWs and the piezometers. Extraction of liquid in areas where piezometers are installed may require a different and supplemental technique that removes liquid directly from the lower level of the landfill (i.e. at the sand drainage layer).

Attachment 1
LFG EW Dewatering Locations



\\TAM-FS02\TAMPA\FILES\PROJECT\09215600.03\PHASE 1\TASK 1100 - GENERAL\2.0 PHASE II GEOTECH\DEWATERING PLAN\REPORT\CAD FIGURES\ATT 1 - DEWATERING LOCATIONS.DWG

SCS ENGINEERS

ATTACHMENT 1. MAP OF DEWATERED AND CLEANED LANDFILL GAS EXTRACTION WELLS
SOUTHEAST COUNTY LANDFILL
FEBRUARY 2017

Attachment 2
LFG EW Dewatering Data

Attachment 2. SCLF Dewatering Field Data (Jan 5 - Jan. 27, 2017)

Phase	WELL	WELL DEPTH (ft-BTOC)	DATE	DEWATERING CYCLE	STARTING LIQUID LEVEL (ft-BTOC)	CALCULATED INITIAL LIQUID COLUMN (ft)	APPROX TIME PER CYCLE (min)	TOTAL QUANTITY PUMPED (est. gpd)	PHYSICAL CHARACTERISTICS	pH	CONDUCTIVITY (µS/cm)	FINAL LIQUID LEVEL (ft-BTOC)	CHANGE IN LIQUID COLUMN (ft.)	LIQUID PUMPED: COLUMN REDUCTION (Gal:ft.)	COMMENTS
I	EW-2	60.5	1/20/17	1	57.5	3.0	12	50	Brown	7.41	17,450	58.5	1.0	50	
			1/23/17	2	57.5	3.1	8	20	Foamy, brown, visible gas	7.45	16,950	58.5	1.1	19	Foam at end of cycle - air in pump discharge
I	EW-45	48.3	1/6/17	1	36.8	11.5	105	350	Light tan, odor	7.99	27,290	42.7	5.9	59	Near active fill area
			1/9/17	2	37.3	11.0	150	400	Yellow, clear	7.48	33,990	43.4	6.1	66	
			1/10/17	3	38.0	10.3	160	400	Yellow, clear	7.44	43,060	44.2	6.2	65	
			1/11/17	4	38.2	10.1	240	500	Brown	7.93	43,250	44.0	5.8	86	
I	EW-46	43.2	1/6/17	1	32.7	10.5	100	120	Pale yellow, odor	7.38	10,340	41.4	8.7	14	
			1/9/17	2	33.5	9.7	90	190	Pale yellow	7.52	7,510	40.4	6.9	27	
			1/10/17	3	33.9	9.3	85	175	Pale yellow	7.27	14,340	40.5	6.6	27	
			1/11/17	4	33.8	9.4	79	175	Pale yellow, odor	7.57	14,610	40.3	6.5	27	
I	EW-47	41.0	1/10/17	1	34.3	6.7	180	300	Black, odor	7.95	32,700	37.6	3.3	92	Stopped pump at the end of day
			1/11/17	2	34.4	6.6	170	300	Black, odor	7.60	31,860	38.7	4.3	70	Stopped pump at the end of day
			1/12/17	3	35.0	6.0	300	600	Black, odor	7.66	27,410	39.0	4.0	150	Stopped pump when tank filled up
			1/16/17	4	35.2	5.8	437	900	Black, Visible gas	7.26	8,960	39.4	4.2	214	High flow, filled tank; stopped pump when tank filled up
I	EW-49	54.3	1/13/17	1	47.8	6.5	45	300	Brown, odor	7.91	41,950	53.6	5.8	52	
			1/16/17	2	48.1	6.2	32	400	Black, visible gas odor	7.79	25,500	52.6	4.5	90	
			1/17/17	3	48.5	5.8	100	150	Black, visible gas	7.45	36,910	52.5	4.0	38	Lower flow
			1/18/17	4	49.5	4.8	14	180	Black, visible gas	7.52	46,420	52.4	2.9	62	
			1/19/17	5	49.5	4.8	9	25	Black, visible gas	7.61	38,170	52.5	3.0	8	Difficulty getting flow due to short water column
I	EW-50	46.0	1/13/17	1	43.0	3.0	120	600	Brown, odor	7.94	36,290	52.2	9.2	65	Stopped pump when tank filled up
			1/16/17	2	43.4	2.6	325	780	Brown, odor	7.43	24,510	52.1	8.7	90	
			1/17/17	3	43.5	2.5	394	625	Brown, odor	7.41	13,480	51.7	8.2	77	
			1/18/17	4	43.4	2.6	331	650	Brown, odor	7.53	38,750	51.8	8.4	77	
			1/19/17	5	45.0	1.0	300	600	Brown, odor	7.58	34,030	51.3	6.3	96	Stopped pump at the end of day
I	EW-51	58.5	1/18/17	1	53.9	4.6	0	0	Light brown	7.64	25,240	53.9	0.0	N/A	Pump kept turning off - no pumping
			1/19/17	2	54.0	4.5	20	100	Foamy, brown, odor	7.15	35,600	57.0	3.0	33	Foam at end of cycle - air in pump discharge
			1/20/17	3	54.2	4.3	39	155	Dark brown, odor	7.33	25,770	56.2	2.0	78	
I	EW-52	52.9	1/19/17	1	51.0	1.9	NR	NR	NR	NR	NR	51.0	0.0	N/A	Insufficient water, did not pump
I	EW-53	50.9	1/20/17	1	48.5	2.4	6	50	Dark brown	7.42	32,130	49.7	1.2	42	
			1/27/17	2	49.1	1.8	0	0	NR	NR	NR	49.1	0.0	N/A	Insufficient water, did not pump
I	EW-55	57.3	1/19/17	1	57.0	0.3	NR	NR	NR	NR	NR	57.0	0.0	N/A	Did not pump - error in WL reading
			1/20/17	2	48.5	8.8	8	50	Dark brown, odor	7.42	32,130	49.7	1.2	42	
I	EW-56	57.0	1/23/17	1	52.9	4.1	95	200	Light brown, visible gas	7.51	15,800	54.9	2.0	103	
			1/27/17	2	53.0	4.0	60	185	Light brown, visible gas	8.00	31,000	55.5	2.5	74	
I	EW-68	52.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	Located in active fill area - did not pump

NOTE:
NR = Data was not recorded due to pump malfunction, end of work day, or other circumstances.
ND = Not dewatered; see comments for reason.
BTOC = Below Top of Casing
GPM = Gallons per Minute

Attachment 2. SCLF Dewatering Field Data (Jan 5 - Jan. 27, 2017)

Phase	WELL	WELL DEPTH (ft-BTOC)	DATE	DEWATERING CYCLE	STARTING LIQUID LEVEL (ft-BTOC)	CALCULATED INITIAL LIQUID COLUMN (ft)	APPROX TIME PER CYCLE (min)	TOTAL QUANTITY PUMPED (est. gpd)	PHYSICAL CHARACTERISTICS	pH	CONDUCTIVITY (µS/cm)	FINAL LIQUID LEVEL (ft-BTOC)	CHANGE IN LIQUID COLUMN (ft.)	LIQUID PUMPED: COLUMN REDUCTION (Gal:ft.)	COMMENTS
II	EW-29	57.2	1/11/17	1	54.9	2.3	5	15	Light brown	NR	NR	56.0	1.1	14	Short pump cycle
			1/12/17	2	55.9	1.3	0	0	NR	NR	NR	55.9	0.0	N/A	Insufficient water, did not pump
			1/17/17	3	55.8	1.4	0	0	NR	NR	NR	55.8	0.0	N/A	Insufficient water, did not pump
II	EW-30	50.2	1/11/17	1	43.5	6.7	60	350	Brown, odor	7.73	31,600	48.8	5.3	66	
			1/12/17	2	44.8	5.4	60	350	Brown, odor	7.84	28,360	47.4	2.6	135	
			1/17/17	3	43.7	6.5	234	820	Brown , odor	7.62	25,180	48.6	4.8	169	Stopped pump when tank filled up
			1/18/17	4	45.5	4.7	357	700	Brown, odor	7.45	23,500	48.5	3.0	233	Stopped pump at the end of day
			1/19/17	5	46.0	4.2	75	430	Foamy, brown, odor	7.28	29,860	48.8	2.8	154	Stopped pump at the end of day. Foam may indicate air in discharge line.
II	EW-31	45.0	1/12/17	1	43.6	1.4	53	580	Brown, odor	8.10	17,250	46.4	2.8	211	
			1/13/17	2	44.3	0.7	0	0	NR	NR	NR	44.3	0.0	N/A	Insufficient water, did not pump
			1/17/17	3	43.6	1.4	0	0	NR	NR	NR	43.6	0.0	N/A	Insufficient water, did not pump
			1/19/17	4	43.7	1.3	0	0	NR	NR	NR	43.7	0.0	N/A	Insufficient water, did not pump
II	EW-32	53.3	1/12/17	1	49.2	4.1	6	30	Brown, odor	7.82	30,990	50.4	1.2	26	
			1/13/17	2	49.6	3.7	4	10	Brown, odor	7.88	32,330	50.7	1.1	9	
			1/17/17	3	49.3	4.1	47	100	Visible gas, light brown	7.56	27,700	50.5	1.3	80	Better flow than previous pumpage
			1/18/17	4	49.7	3.6	74	300	Visible gas, light brown	7.63	30,740	50.6	0.9	319	Better flow than previous pumpage
II	EW-33	50.0	1/12/17	1	48.3	1.7	4	10	Brown, odor	7.97	32,890	48.7	0.4	29	Difficulty priming pump
			1/13/17	2	48.5	1.5	0	0	NR	NR	NR	48.5	0.0	N/A	Insufficient water, did not pump
			1/17/17	3	48.0	2.0	0	0	NR	NR	NR	48.0	0.0	N/A	Insufficient water, did not pump
			1/19/17	4	48.0	2.0	0	0	NR	NR	NR	48.0	0.0	N/A	Insufficient water, did not pump
II	EW-34	42.3	1/12/17	1	39.7	2.6	39	200	Brown, odor	7.74	27,830	45.0	5.3	38	
			1/13/17	2	40.5	1.8	0	0	NR	NR	NR	40.5	0.0	N/A	Insufficient water, did not pump
			1/17/17	3	39.8	2.6	0	0	NR	NR	NR	39.8	0.0	N/A	Insufficient water, did not pump
			1/19/17	4	39.9	2.5	19	60	Brown, odor	7.47	38,670	45.3	5.4	11	Short pump cycle
II	EW-35	43.3	1/12/17	1	41.4	1.9	5	15	NR	NR	NR	41.9	0.5	30	Short pump time - unable to retrieve sample
			1/13/17	2	42.6	0.7	0	0	NR	NR	NR	42.6	0.0	N/A	Insufficient water, did not pump
			1/17/17	3	41.4	1.9	0	0	NR	NR	NR	41.4	0.0	N/A	Insufficient water, did not pump
			1/19/17	4	41.4	1.9	0	0	NR	NR	NR	41.4	0.0	N/A	Insufficient water, did not pump
II	EW-38	48.9	1/5/17	1	43.3	5.6	15	100	Dark brown, warm, odor	7.80	30,000	46.8	3.5	29	Stopped pump early to avoid overheating
			1/6/17	2	43.5	5.4	24	200	Dark brown, odor	7.84	30,020	46.9	3.4	59	
			1/9/17	3	44.3	4.6	30	200	Brown, odor	7.50	15,550	47.0	2.7	74	
			1/10/17	4	44.1	4.8	25	160	Brown, odor	7.91	42,970	47.2	3.1	52	
II	EW-39	51.0	1/5/17	1	44.6	6.5	20	100	Tan	7.68	11,450	49.0	4.5	22	
			1/6/17	2	44.5	6.5	15	100	Warm, brown, odor	7.95	22,890	49.1	4.6	22	
			1/9/17	3	44.4	6.6	30	180	Tan, odor	7.43	30,580	49.0	4.6	39	
			1/11/17	4	45.7	5.3	27	80	Tan, odor	8.06	38,340	49.0	3.3	24	

NOTE:
NR = Data was not recorded due to pump malfunction, end of work day, or other circumstances.
ND = Not dewatered; see comments for reason.
BTOC = Below Top of Casing
GPM = Gallons per Minute

Attachment 2. SCLF Dewatering Field Data (Jan 5 - Jan. 27, 2017)

Phase	WELL	WELL DEPTH (ft-BTOC)	DATE	DEWATERING CYCLE	STARTING LIQUID LEVEL (ft-BTOC)	CALCULATED INITIAL LIQUID COLUMN (ft)	APPROX TIME PER CYCLE (min)	TOTAL QUANTITY PUMPED (est. gpd)	PHYSICAL CHARACTERISTICS	pH	CONDUCTIVITY (µS/cm)	FINAL LIQUID LEVEL (ft-BTOC)	CHANGE IN LIQUID COLUMN (ft.)	LIQUID PUMPED: COLUMN REDUCTION (Gal:ft.)	COMMENTS
II	EW-40	57.0	1/6/17	1	50.4	6.6	28	180	Tan, Warm, odor	7.78	22,930	55.1	4.7	38	
			1/9/17	2	49.9	7.1	30	200	Light tan	7.23	28,400	55.0	5.1	39	
			1/10/17	3	51.2	5.8	0	0	NR	NR	NR	51.2	0.0	N/A	Very little pumped due to pump malfunction
			1/11/17	4	51.1	5.9	35	130	Tan, odor	7.77	36,940	57.0	5.9	22	
II	EW-41	52.7	1/6/17	1	50.7	2.0	0	0	NR	NR	NR	50.7	0.0	N/A	Insufficient water, did not pump
II	EW-66	66.4	1/23/17	1	52.7	13.8	83	500	Foamy, brown	7.70	27,460	55.3	2.6	191	Stopped pump when tank filled up
			1/24/17	2	53.1	13.3	273	1400	Brown, visible gas	7.67	28,520	61.3	8.2	172	Stopped pump when tank filled up
II	EW-67	83.0	1/20/17	ND	73.2	9.8	0	0	ND	ND	ND	ND	ND	N/A	Blockage from black residue - did not pump
II	EW-69	67.5	1/20/17	1	60.2	7.3	153	350	Light brown, odor	7.91	19,020	65.7	5.4	65	
			1/27/17	2	62.0	5.5	58	125	Brownish, odor	7.67	29,950	65.1	3.1	40	
II	EW-70	78.2	1/13/17	1	63.8	14.4	95	340	Brown, odor	8.16	30,860	76.0	12.2	28	
			1/26/17	2	62.5	15.7	0	0	NR	NR	NR	62.5	0.0	N/A	Pump operational difficulty
II	EW-71	62.1	1/20/17	1	49.1	13.1	106	325	Light brown, odor	8.09	35,650	61.4	12.4	26	
			1/23/17	2	49.6	12.6	34	270	Brown, visible gas	7.70	26,950	61.2	11.7	23	
III	EW-27	50.3	1/23/17	ND	49.2	1.1	ND	ND	ND	ND	ND	49.2	0.0	N/A	Insufficient water, did not pump
III	EW-63	77.0	1/20/17	ND	76.6	0.4	ND	ND	ND	ND	ND	76.6	0.0	N/A	Insufficient water, did not pump.
III	EW-64	79.0	1/25/17	ND	66.3	12.7	ND	ND	ND	ND	ND	66.3	0.0	N/A	Blockage from black residue - did not pump
III	EW-65	70.6	1/25/17	ND	70.6	0.0	ND	ND	ND	ND	ND	70.6	0.0	N/A	Insufficient water, did not pump
IV	EW-61	77.0	1/25/17	ND	76.4	0.6	ND	ND	ND	ND	ND	76.4	0.0	N/A	Insufficient water, did not pump
V	EW-12	40.5	1/23/17	1	40.0	0.5	NR	NR	NR	NR	NR	40.0	0.0	N/A	Insufficient water, did not pump
V	EW-15	43.0	1/23/17	1	41.0	2.0	NR	NR	NR	NR	NR	41.0	0.0	N/A	Insufficient water, did not pump
V	EW-21	36.3	1/23/17	1	32.7	3.6	28	40	Dark brown	6.94	41,720	34.5	1.8	22	
			1/24/17	2	34.3	2.0	0	0	NR	NR	NR	34.3	0.0	N/A	Insufficient water, did not pump

NOTE:
NR = Data was not recorded due to pump malfunction, end of work day, or other circumstances.
ND = Not dewatered; see comments for reason.
BTOC = Below Top of Casing
GPM = Gallons per Minute

Appendix D
Trench Exploration Work Memorandum
February 15, 2017

Hillsborough County Florida

PUBLIC WORKS
PO Box 1110 Tampa, FL 33601-1110
(813) 272-5912 | Fax: (813) 272-5811

MEMORANDUM

DATE: February 15, 2017

TO: Kimberly Byer, Division Director, Public Works Department, Solid Waste Management Division

FROM: Larry Ruiz, Section Manager, Public Works Department, Solid Waste Management Division

SUBJECT: Trench Exploration Work at the Southeast County Landfill

The Solid Waste Management Division Staff and Waste Management conducted a trench exploration project with the intent to locate the perimeter leachate collection and recovery system (LCRS) header pipe for Phases I through III. The main goal of the exploration was to locate the LCRS headers while at the same time preventing damage to the LCRS header, perimeter hypalon liner, and the bottom clay liner. To accomplish this goal, the following methodology was used:

- An excavation of a 4-foot wide trench was made 25 feet inside the solid waste boundary, away from the edge of the perimeter hypalon liner.
- The approximate location of the header was field located by a Surveyor using coordinates provided by SCS Engineers obtained using information available from old as-built drawings (See Figure 1).
- Initially the trenches were planned to extend 50 feet in length on each side of the survey marker for a total length of 100 feet.
- Excavation occurred to the top of the sand layer and the top 12 inches of sand was removed. Existing cover soil was stockpiled for reuse. Waste removed was hauled to the active working face.
- Using the excavator bucket teeth the operator scraped the upper 12 inches of the remaining sand layer with the expectation of locating the upper portion of the LCRS gravel trench (assuming the total sand layer is 3 feet thick and the gravel trench around the pipe is 2 square feet).
- After the trench exploration was completed, the trench was backfilled with sand to about 2 feet from the surface. Stockpiled clayey cover soil was used for the remaining 2 feet.

Phase I Observations:
The trench in Phase I was completed on February 1, 2017. The trench was located in the middle of the southern footprint of Phase I. The trench was 108 feet long by 15 feet deep. The drainage sand layer appeared moist and the waste was dry. At the trench location the waste consisted of a 2-foot thick layer of class I MSW with a large quantity of agricultural plastic material. No ash was observed (See Picture No. 1). The LCRS gravel trench was located and 20 feet of the trench remains open to allow for the future installation of a cleanout pipe. The SWMD is currently obtaining quotes from Contractors for the installation of a cleanout pipe.

Phase II Observations:
The trench in Phase II began on February 7, 2017. Two trenches were excavated in Phase II. The first trench (2A) was located in the middle of the eastern footprint of Phase II. This trench was 142 feet long by 15 feet deep. The drainage sand appeared moist and the waste was dry. At the trench location the waste type consisted of a 2-foot layer of class I MSW with a large quantity of agricultural plastic material. No ash was observed (See Picture No. 2). The LCRS gravel trench was not located and this trench was backfilled.

The second trench (2B) was located in the southeast portion of the eastern footprint of Phase II. This trench was 100 feet long by 15 feet deep. The drainage sand was saturated and the waste was wet. At the trench location the waste consisted of a 3-foot layer of class I MSW with a large quantity of agricultural plastic material. No ash was observed (See Picture No. 3). A possible location of the LCRS gravel trench was located, however, it could not be confirmed due to standing leachate in the trench. On February 10, 2017, the SWMD installed a temporary vacuum assisted diesel pump to remove leachate from this location (See Picture No. 4). This 20 foot long portion of the excavated trench remains open to allow for future dewatering and confirmation of the trench location. If the LCRS trench location is confirmed, it will be followed by installation of a cleanout pipe. The SWMD is currently obtaining quotes from Contractors for the installation of a cleanout pipe.

Phase III Observations:
The trench in Phase III was completed from February 2nd through the 6th, 2017. The trench was located in the northwest corner of the northern footprint of Phase III. The trench was 190 feet long by 20 feet deep. The drainage sand appeared moist and the waste was dry. At the trench location the waste consisted of a 6-foot layer of class I MSW with a large quantity of agricultural plastic material. Ash was observed mixed with the plastic material (See Picture No. 5). The LCRS gravel trench was not located and the trench was backfilled. Unless additional as-built information is found to better locate this gravel LCRS trench, the SWMD is not planning additional trenching in Phase III.

Please let me know if you have any questions regarding the information provided.

Sincerely,

Larry E. Ruiz

Larry E. Ruiz, SC
Manager Landfill Operation
Solid Waste Management Division

LR/ya
Enclosures

Picture 1

Phase I trench looking west showing top of sand layer. Green pipe in the picture is an abandoned leachate forcemain.

Picture 2

Phase II trench “A” looking south showing top of sand layer.

Picture 3

Phase II trench “B” looking south showing top of sand layer.

Picture 4

Phase II trench “B” looking north showing temporary pump.

Picture 5

Phase III trench looking east showing top of sand layer.

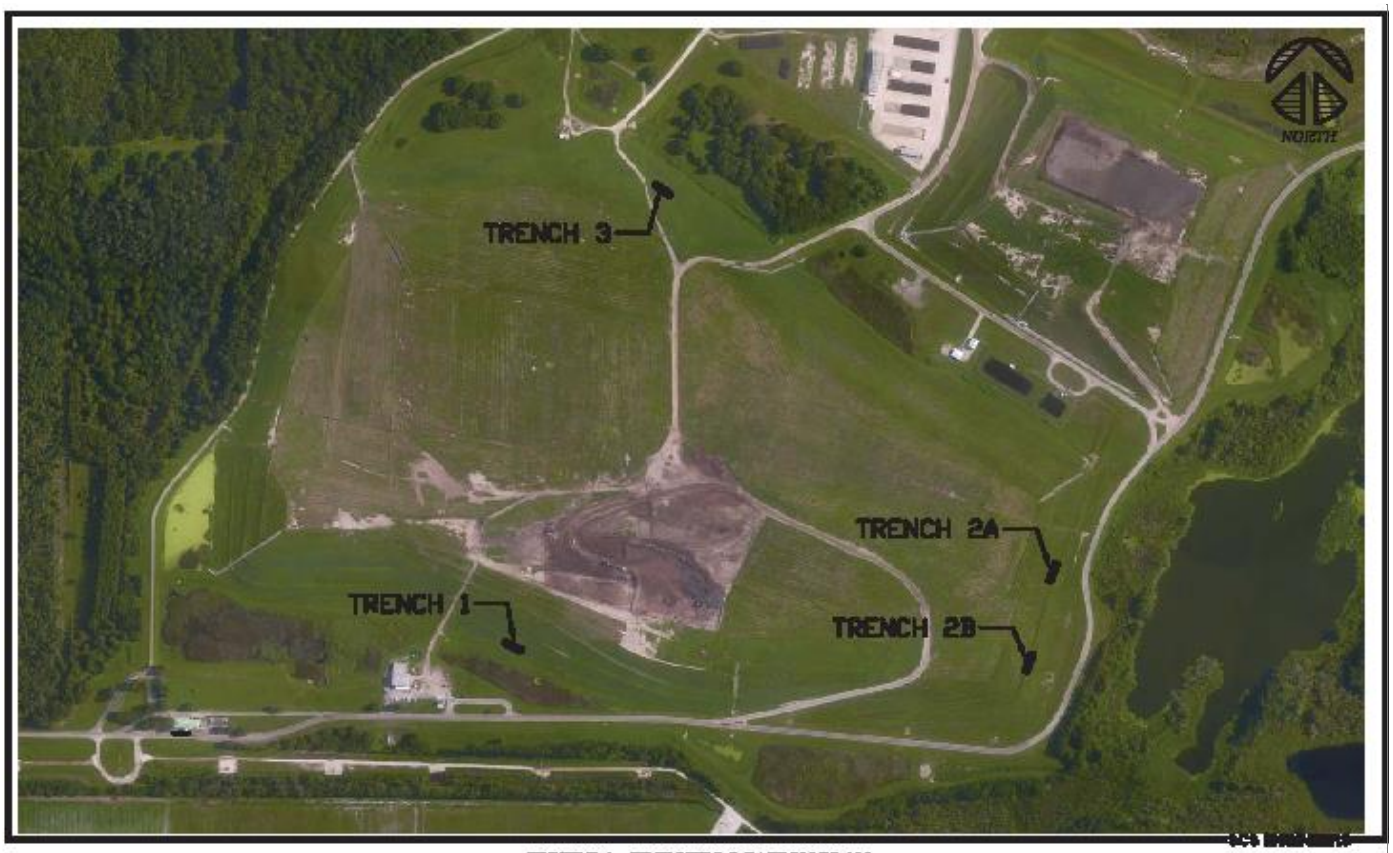


FIGURE 1 - TRENCH LOCATION PLAN

Appendix E
Florida JetClean Reports
March 2017

FLORIDA JETCLEAN

HIGH PRESSURE WATER JETTING
EXPLOSION PROOF VIDEO INSPECTION
VACUUM TRUCK SERVICES
WWW.FLORIDAJETCLEAN.COM

7538 DUNBRIDGE DRIVE
ODESSA, FL 33556
T: 800-226-8013 / F: 813-926-4616
FLORIDAJETCLEAN@YAHOO.COM

Hillsborough County Solid Waste
Southeast Landfill
Phase 1 Header
2017 Pipe Jetcleaning

Work Performed
March 2017

Conducted By:
Florida Jetclean
800-226-8013

FLORIDA JETCLEAN

HIGH PRESSURE WATER JETTING
EXPLOSION PROOF VIDEO INSPECTION
VACUUM TRUCK SERVICES
WWW.FLORIDAJETCLEAN.COM

7538 DUNBRIDGE DRIVE
ODESSA, FL 33556
T: 800-226-8013 / F: 813-926-4616
FLORIDAJETCLEAN@YAHOO.COM

REPORT

DATE : 3/23/2017
TO : Larry Ruiz – Hillsborough County Solid Waste Management - SELF
FROM : Ralph Calistri (floridajetclean@yahoo.com)
SUBJECT : Southeast Landfill - Phase 1 Header - Jetcleaning Project

Florida Jetclean completed the high-pressure water-jetting of the Phase 1 Header - Access 1, 2 & 3, leachate collection piping on 3/9/2017.

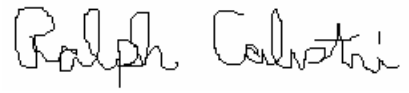
As the below jetting log indicates, the Phase 1 Header piping was jetcleaned as far as possible from the available access locations utilizing high-pressure water-jetting nozzle.

SOUTHEAST LANDFILL – PHASE 1 HEADER
LEACHATE COLLECTION SYSTEM JETTING LOG
JETTING PERFORMED BY FLORIDA JETCLEAN
MARCH 2017

LOCATION	ACHIEVED DISTANCE (ft)	COMMENTS
P1 Header - Access 1	913'	End of pipe reached.
P1 Header - Access 1	91'	End of pipe reached.
P1 Header - Access 1	97'	End of pipe reached.

Please call us with questions or concerns.

Regards,



Ralph Calistri - Florida Jetclean - 800-226-8013

FLORIDA JETCLEAN

HIGH PRESSURE WATER JETTING
EXPLOSION PROOF VIDEO INSPECTION
VACUUM TRUCK SERVICES
WWW.FLORIDAJETCLEAN.COM

7538 DUNBRIDGE DRIVE
ODESSA, FL 33556
T: 800-226-8013 / F: 813-926-4616
FLORIDAJETCLEAN@YAHOO.COM

Hillsborough County Solid Waste
Southeast Landfill
Phase 1 Header
2017 Pipe EX Video Inspections

Work Performed
March 2017

Conducted By:
Florida Jetclean
800-226-8013

FLORIDA JETCLEAN

HIGH PRESSURE WATER JETTING
EXPLOSION PROOF VIDEO INSPECTION
VACUUM TRUCK SERVICES
WWW.FLORIDAJETCLEAN.COM

7538 DUNBRIDGE DRIVE
ODESSA, FL 33556
T: 800-226-8013 / F: 813-926-4616
FLORIDAJETCLEAN@YAHOO.COM

REPORT

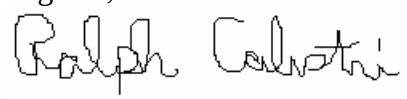
DATE : 3/23/2017
TO : Larry Ruiz – Hillsborough County Solid Waste Management - SELF
FROM : Ralph Calistri (floridajetclean@yahoo.com)
SUBJECT : Southeast Landfill - Phase 1 Header - EX Video Inspection Project

Florida Jetclean completed the explosion-proof video-inspection work on the Phase 1 leachate collection Header, Access locations 1, 2 & 3, on 3/9/2017.

Explosion-proof Video-inspections:
After pipe jetcleaning was completed, the above piping was video-inspected as far as possible from each available access location utilizing certified explosion-proof video-inspection equipment. Please reference the provided videos, Pipe Graphic Reports, and CCTV Survey Listings for the detailed results of these inspections.

Please call us with questions or concerns.

Regards,



Ralph Calistri - Florida Jetclean - 800-226-8013

CCTV Surveys List for HILLSBOROUGH COUNTY

Number of surveys in this list is 4 **as of** Thursday, March 09, 2017 **Unit of measure:** ft

Setup	Date	Street	Start MH	Finish MH	Dir	Size inch	Pre Clean	Vid Cassette	Scheduled Length	Surveyed Length
1	3/9/2017	PHASE 1 HEADER	ACCESS 1 SOUTH-	NORTH	D	8	Y	1		140.5
2	3/9/2017	PHASE 1 HEADER	ACCESS 2	EAST	U	8	Y	1	91.0	91.7
3	3/9/2017	PHASE 1 HEADER	ACCESS 3	WEST	U	8	Y	1	97.5	97.6
4	3/9/2017	PHASE 1 HEADER	ACCESS 1 SOUTH-	NORTH	D	8	Y	1		149.9
								Total Scheduled Length	188.5	
								Total Length Surveyed		479.7

Pipe Graphic Report of PLR ACCESS 1 SOUTH- A **for** HILLSBOROUGH COUNTY

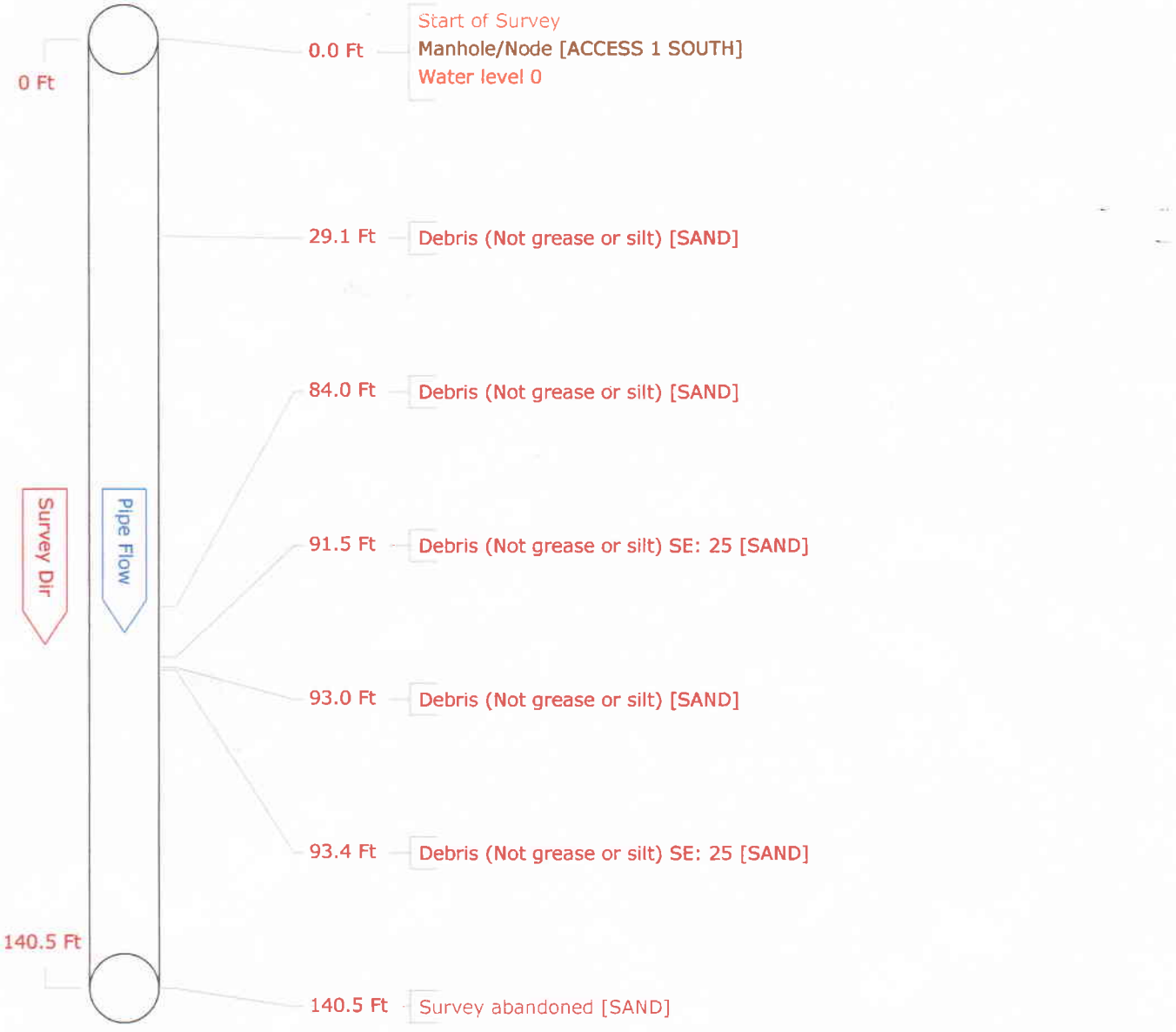
Work Order		**Contract**		**Video** 1	**Setup** 1
Facility		**Operator**		**Van Ref**	**Surveyed On** 03/09/2017
Street Name	PHASE 1 HEADER	**City**	SE HILLSBOROUGH LF		
Location type	Berm				
Surface					
Survey purpose	Other (state in comments)			**Weather**	Dry

Pipe Use	Other (state in comments)	**Schedule length**	Ft	**From**	ACCESS 1 SOUTH-	**Depth** Ft
Shape	Circular	**Size** 8 **by**	ins	**To**	NORTH	**Depth** Ft
Material	Polyvinyl chloride	**Joint spacing**	Ft	**Direction**	Downstream	
Lining		**Year laid**		**Pre-clean**	Y **Last cleaned**	3/8/2017

General note JETTING 913 FEET

Location note

Structural Service Constructional
Miscellaneous Hydraulic



PIPELOGIX INC

FLORIDA JETCLEAN
Phone:1-800-226-8013

CCTV pictures of ACCESS 1 SOUTH- A **for** HILLSBOROUGH COUNTY

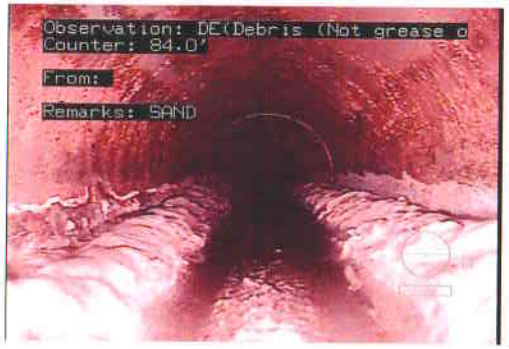
Work Order	Video 1	Surveyed On 03/09/2017	Direction Downstream	Setup 1
Street Name PHASE 1 HEADER		City Name SE HILLSBOROUGH LF	Weather Dry	
Location Berm		From Manhole ACCESS 1 SOUTH-	To Manhole NORTH	

Date: 03/09/2017
Distance: 29.1 Ft
Obs: Debris (Not grease or silt)

Comments:
SAND

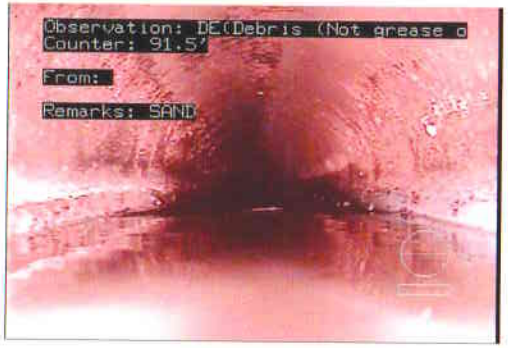
Date: 03/09/2017
Distance: 84.0 Ft
Obs: Debris (Not grease or silt)

Comments:
SAND



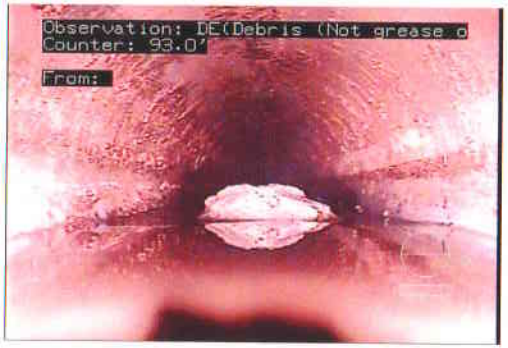
Date: 03/09/2017
Distance: 91.5 Ft
Obs: Debris (Not grease or silt)

Comments:
SAND



Date: 03/09/2017
Distance: 93.0 Ft
Obs: Debris (Not grease or silt)

Comments:
SAND



Date: 03/09/2017
Distance: 93.4 Ft
Obs: Debris (Not grease or silt)

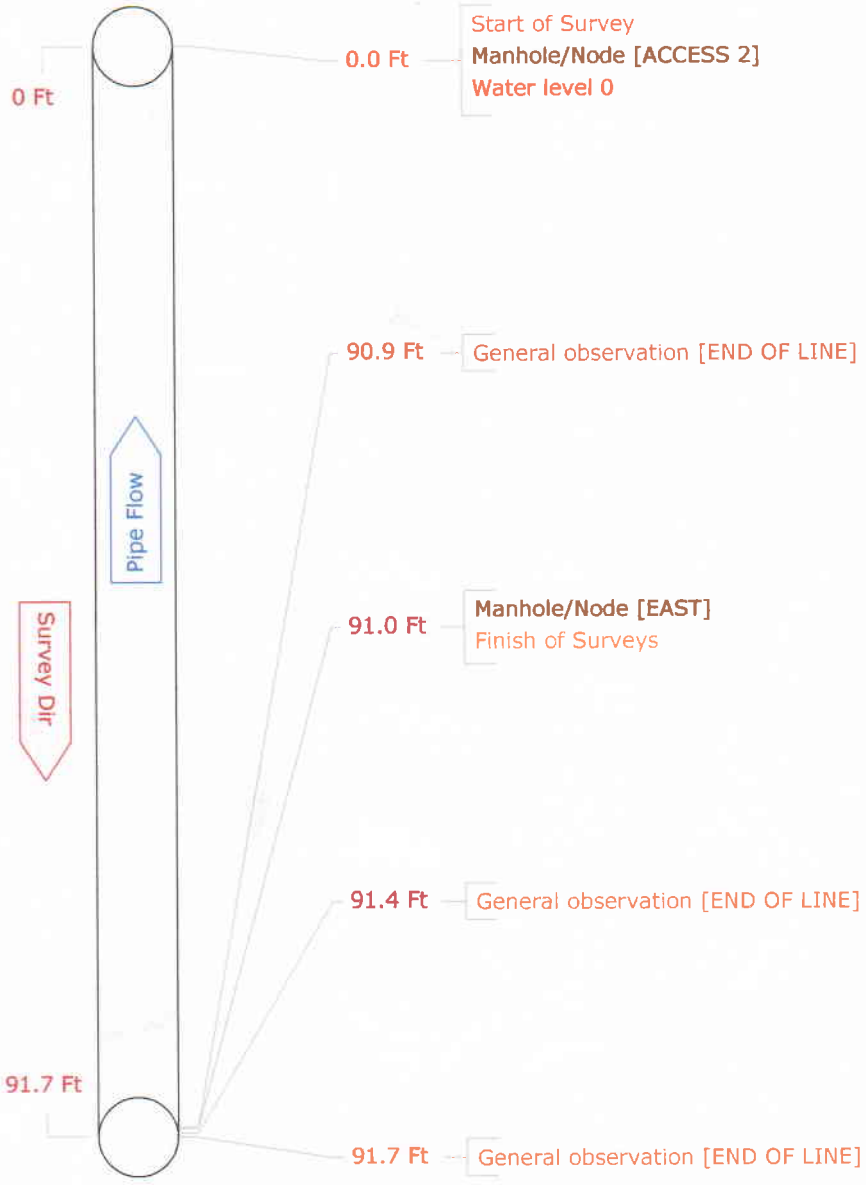
Comments:
SAND

Date: 03/09/2017
Distance: 140.5 Ft
Obs: Survey abandoned

Comments:
SAND

Pipe Graphic Report of PLR EAST B **for** HILLSBOROUGH COUNTY

Work Order		**Contract**		**Video** 1	**Setup** 2
Facility		**Operator**		**Van Ref**	**Surveyed On** 03/09/2017
Street Name	PHASE 1 HEADER		**City**	SE HILLSBOROUGH LF	
Location type	Berm				
Surface					
Survey purpose	Other (state in comments)			**Weather** Dry	
Pipe Use	Other (state in comments)	**Schedule length**	91.0 Ft	**From** ACCESS 2	**Depth** Ft
Shape	Circular	**Size** 8	**by** ins	**To** EAST	**Depth** Ft
Material	Polyvinyl chloride	**Joint spacing**	Ft	**Direction** Upstream	
Lining		**Year laid**		**Pre-clean** Y	**Last cleaned** 3/8/2017
General note	JETTING 91 FEET			Structural Service Constructional	
Location note				Miscellaneous Hydraulic	



PIPELOGIX INC

FLORIDA JETCLEAN
Phone:1-800-226-8013

CCTV pictures of EAST B **for** HILLSBOROUGH COUNTY

Work Order	**Video** 1	**Surveyed On** 03/09/2017	**Direction** Upstream	**Setup** 2
Street Name PHASE 1 HEADER		**City Name** SE HILLSBOROUGH LF	**Weather** Dry	
Location Berm		**From Manhole** ACCESS 2	**To Manhole** EAST	

Date: 03/09/2017
Distance: 90.9 Ft
Obs: General observation

Comments:
END OF LINE

Date: 03/09/2017
Distance: 91.0 Ft
Obs: Finish of Surveys

Comments:

Date: 03/09/2017
Distance: 91.7 Ft
Obs: General observation

Comments:
END OF LINE

Pipe Graphic Report of PLR WEST C **for** HILLSBOROUGH COUNTY

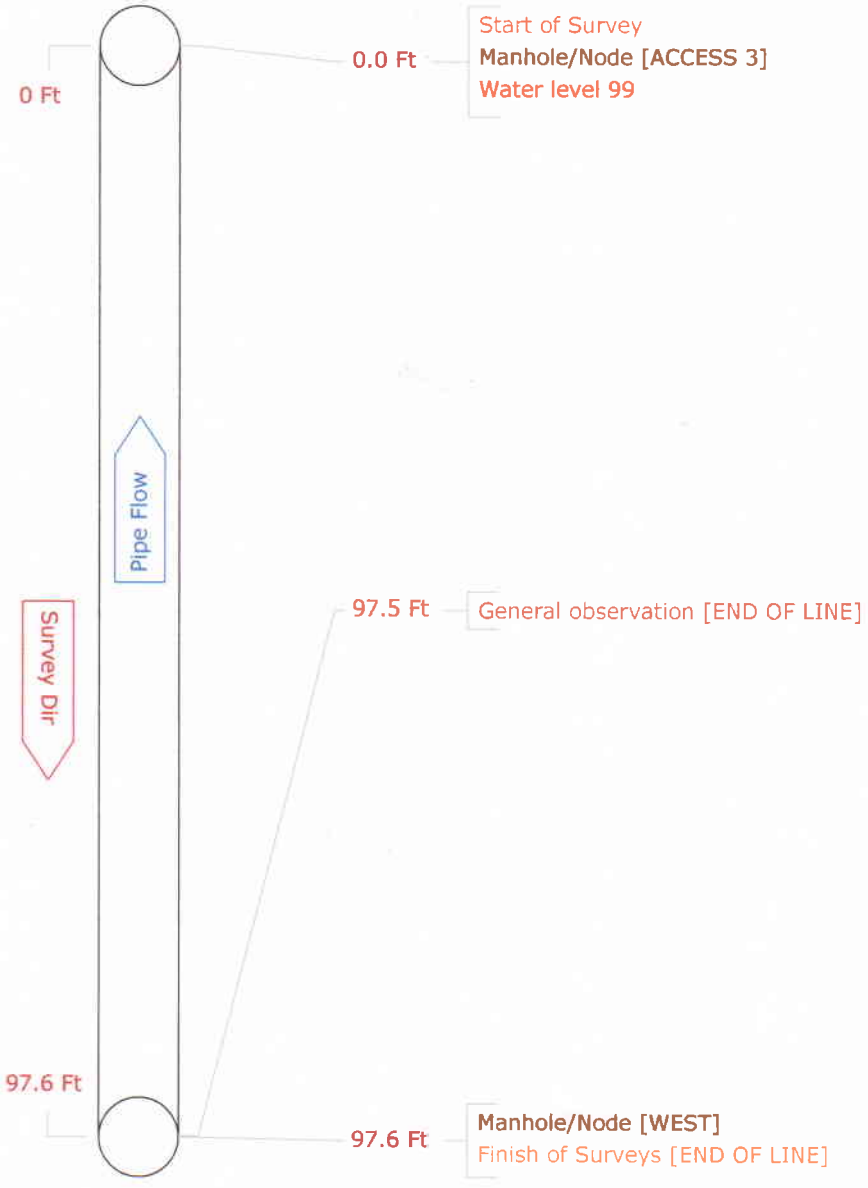
Work Order		**Contract**		**Video** 1	**Setup** 3
Facility		**Operator**		**Van Ref**	**Surveyed On** 03/09/2017
Street Name	PHASE 1 HEADER	**City**	SE HILLSBOROUGH LF		
Location type	Berm				
Surface					
Survey purpose	Other (state in comments)		**Weather**	Dry	

Pipe Use	Other (state in comments)	**Schedule length**	97.5 Ft	**From** ACCESS 3	**Depth** Ft
Shape	Circular	**Size** 8	**by** ins	**To** WEST	**Depth** Ft
Material	Polyvinyl chloride	**Joint spacing**	Ft	**Direction** Upstream	
Lining		**Year laid**		**Pre-clean** Y	**Last cleaned** 3/8/2017

General note JETTING=97 FEET

Location note

Structural Service Constructional
Miscellaneous Hydraulic

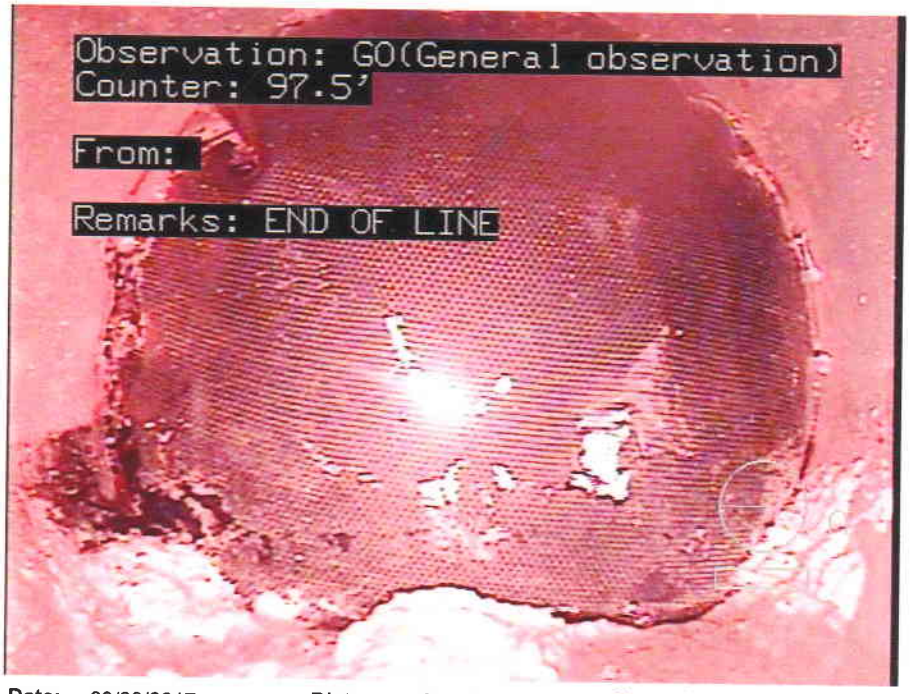


PIPELOGIX INC

FLORIDA JETCLEAN
Phone:1-800-226-8013

CCTV pictures of WEST C **for** HILLSBOROUGH COUNTY

Work Order		**Surveyed On** 03/09/2017	**Setup** 3
Street Name	PHASE 1 HEADER		**Video** 1
City Name	SE HILLSBOROUGH LF	**Weather** Dry	
Location	Berm		
From Manhole	ACCESS 3	**To Manhole** WEST	**Direction** Upstream



Date: 03/09/2017 **Distance:** 97.5 Ft **Obs:** General observation

Comments: END OF LINE

Date: 03/09/2017 **Distance:** 97.6 Ft **Obs:** Finish of Surveys

Comments: END OF LINE

Pipe Graphic Report of PLR ACCESS 1 SOUTH- D **for** HILLSBOROUGH COUNTY

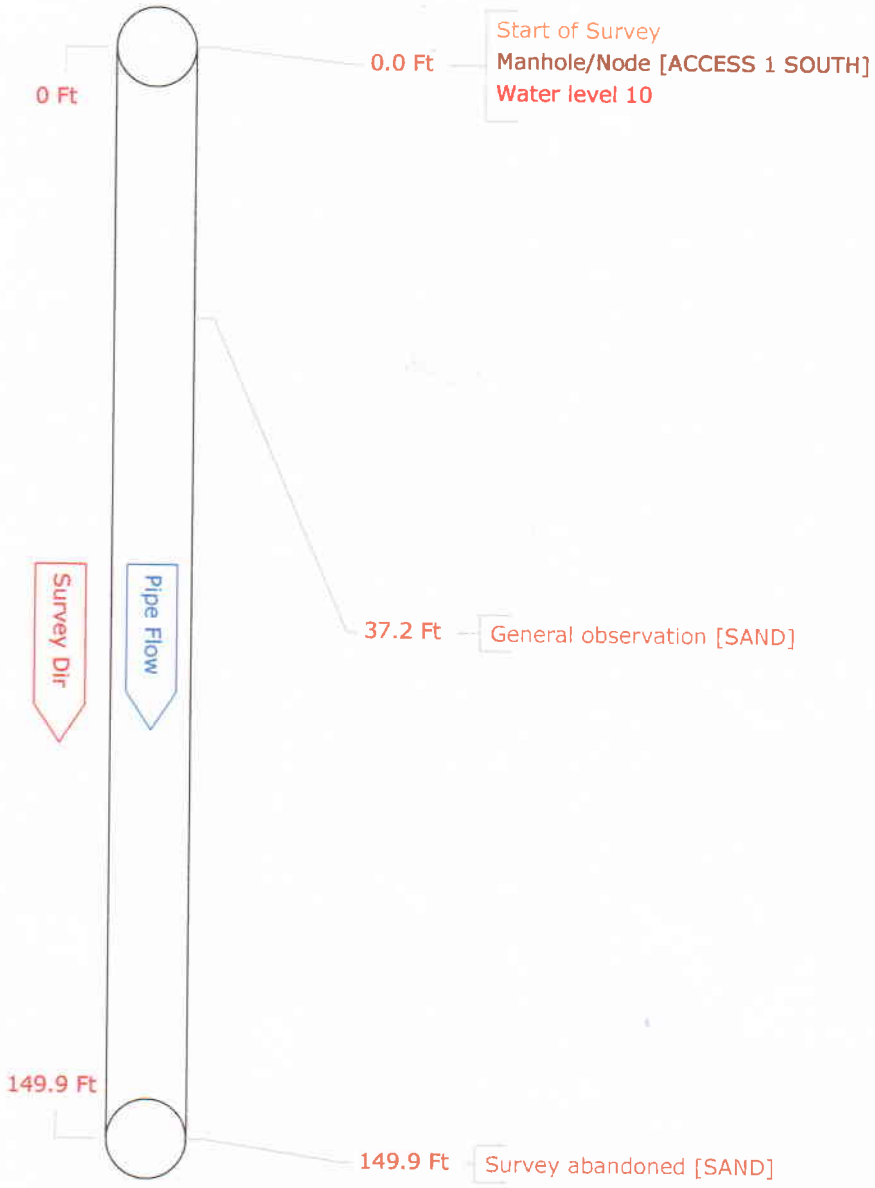
Work Order		**Contract**		**Video** 1	**Setup** 4
Facility		**Operator**		**Van Ref**	**Surveyed On** 03/09/2017
Street Name	PHASE 1 HEADER		**City**	SE HILLSBOROUGH LF	
Location type	Berm				
Surface					
Survey purpose	Other (state in comments)			**Weather**	Dry

Pipe Use	Other (state in comments)	**Schedule length**	Ft	**From** ACCESS 1 SOUTH-	**Depth** Ft
Shape	Circular	**Size** 8 **by**	ins	**To** NORTH	**Depth** Ft
Material	Polyvinyl chloride	**Joint spacing**	Ft	**Direction** Downstream	
Lining		**Year laid**		**Pre-clean** Y	**Last cleaned** 3/8/2017

General note JETTING=913 FEET

Location note

Structural Service Constructional
Miscellaneous Hydraulic



PIPELOGIX INC

FLORIDA JETCLEAN
Phone:1-800-226-8013

CCTV pictures of ACCESS 1 SOUTH- D **for** HILLSBOROUGH COUNTY

Work Order	Video 1	Surveyed On 03/09/2017	Direction Downstream	Setup 4
Street Name PHASE 1 HEADER		City Name SE HILLSBOROUGH LF	Weather Dry	
Location Berm		From Manhole ACCESS 1 SOUTH-	To Manhole NORTH	

Date: 03/09/2017
Distance: 37.2 Ft
Obs: General observation

Comments:
SAND

Date: 03/09/2017
Distance: 149.9 Ft
Obs: Survey abandoned

Comments:
SAND

FLORIDA JETCLEAN

HIGH PRESSURE WATER JETTING
EXPLOSION PROOF VIDEO INSPECTION
VACUUM TRUCK SERVICES
WWW.FLORIDAJETCLEAN.COM

7538 DUNBRIDGE DRIVE
ODESSA, FL 33556
T: 800-226-8013 / F: 813-926-4616
FLORIDAJETCLEAN@YAHOO.COM

Hillsborough County Solid Waste
Southeast Landfill
2017 Pipe Jetcleaning

Work Performed
April 2017

Conducted By:
Florida Jetclean
800-226-8013

FLORIDA JETCLEAN

HIGH PRESSURE WATER JETTING
EXPLOSION PROOF VIDEO INSPECTION
VACUUM TRUCK SERVICES
WWW.FLORIDAJETCLEAN.COM

7538 DUNBRIDGE DRIVE
ODESSA, FL 33556
T: 800-226-8013 / F: 813-926-4616
FLORIDAJETCLEAN@YAHOO.COM

REPORT

DATE : 4/4/2017
TO : Larry Ruiz – Hillsborough County Solid Waste Management - SELF
FROM : Ralph Calistri (floridajetclean@yahoo.com)
SUBJECT : Southeast Landfill - Leachate Pipe Jetcleaning Project

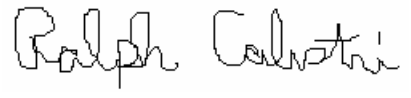
Florida Jetclean completed the high-pressure water-jetting of selected areas of the leachate collection piping at the Hillsborough County Southeast Landfill on 4/3/2017. The below jetting log documents the pipes that were addressed, and the distances that were achieved with the high-pressure water-jetting nozzle in each pipe. These pipes were blockage free at the completion of these activities.

SOUTHEAST LANDFILL
LEACHATE COLLECTION SYSTEM JETTING LOG
JETTING PERFORMED BY FLORIDA JETCLEAN
APRIL 2017

LOCATION	ACHIEVED DISTANCE (ft)	COMMENTS
Phase IV - CO 4-1	1,965'	Maximum Distance Achievable
Phase V - CO 5-2	1,125'	End Of Pipe Reached.
Phase V - CO 5-3	1,200'	End Of Pipe Reached.
Phase V - CO 5-1	1,450'	End Of Pipe Reached.
Phase VI - CO 6-1	1,180'	End Of Pipe Reached.
Phase V - CO 5-4	1,020'	End Of Pipe Reached.

Please call us with questions or concerns.

Regards,



Ralph Calistri - Florida Jetclean - 800-226-8013

Appendix F
Boring and Piezometer Installation Logs

Table 1 - Boring and Piezometer Installation Data
Southeast County Landfill

Phase	Boring No.	Survey			Boring				Piezometer Construction										Comments
		Northing	Easting	Elevation Ground (NGVD 1929)	Depth Top of Clay (ft bgs)	Elevation Top of Clay (NGVD 1929)	Depth Top of Sand (ft bgs)	Elevation Top of Sand (NGVD 1929)	Bottom of PVC (ft bgs)	Screened Length (ft)	Solid PVC Length (ft bgs)	Coarse Sand Pack (ft bgs)	Fine Sand Pack (ft bgs)	Bentonite Chips (ft bgs)	Grout (ft bgs)	Elevation Top PVC (NGVD 1929)	Measured Depth (ft-TPVC)	Stick up (ft)	
I	SB-25D	1249933.9	597434.2	205.8	88.3	117.5	84.7	121.1	89.6	2	87.1	90 - 87	87 - 86	86 - 83	83 - 0	208.83	92.6	3.03	Series 2 - drainage sand
	SB-25D adjusted*	1249933.9	597434.2	207.8	90.3	117.5	86.7	121.1	91.7	2	89.2	92-89	89-88	88-85	85-2	211.40	95.3	3.6	Series 2 - drainage sand
	SB-28D	1250040.0	596725.3	205.7	89.0	116.7	84.5	121.2	89.5	2	87.0	90 - 86.5	86.5 - 85.5	85.5 - 83	83 - 0	208.62	92.5	2.93	Series 2 - drainage sand
	SB-29	1249866.0	597614.4	204.2	86.7	117.5	81.5	122.7	87.5	10	77.0	87 - 74	-	74 - 72	soil	207.86	89.25	3.64	Series 1
II	SB-01	1249803.8	597922.9	184.8	66.5	118.3	63.5	121.3	67.5	10	57.0	67.3 - 54	-	-	-	188.35	70.9	3.55	Series 1
	SB-02	1250147.3	598351.8	183.9	66.0	117.9	63.0	120.9	66.5	10	56.0	66.5 - 53	-	-	-	187.62	70.2	3.72	Series 1
	SB-03	1250682.8	597834.5	182.4	65.0	117.4	62.5	119.9	66.2	10	55.7	66.2 - 53	-	-	-	185.73	65.3	3.33	Series 1
	SB-05	1249764.6	598401.7	177.5	59.0	118.5	55.0	122.5	58.7	10	48.2	58.7 - 45	-	-	-	180.19	61.4	2.69	Series 1
	SB-15D	1249797.0	598218.8	181.7	64.7	117.0	57.6	124.1	65.3	2	62.8	65.3 - 62	62 - 60	60 - 57	57 - 0	184.44	68.0	2.74	Series 2 - drainage sand
	SB-16D	1249796.9	598315.2	180.4	63.2	117.2	58.5	121.9	64.0	2	61.5	64 - 60.5	60.5 - 59.5	59.5 - 56.5	56.5 - 0	183.6	67.2	3.20	Series 2 - drainage sand
	SB-17D	1250512.1	598111.1	182.4	62.8	119.6	59.5	122.9	63.6	2	61.1	63.6 - 61.5	61.5 - 60.5	60.5 - 57.5	57.5 - 0	185.47	66.7	3.07	Series 2 - drainage sand
	SB-18D	1250501.7	598219.3	179.8	59.5	120.3	56.3	123.5	60.6	2	58.1	60.6 - 58	58 - 57	57 - 53	53 - 0	182.71	63.5	2.91	Series 2 - drainage sand
	SB-26	1249616.9	598539.2	145.3	26.0	119.3	23.5	121.8	25.6	10	15.1					148.36	28.6	3.00	Series 1
	SB-27	1249606.0	598582.8	135.1	14.5	120.6	12.5	122.6	15.6	10	5.1					138.11	18.51	2.91	Series 1
	SB-30	1249850.5	598143.7	185.8	68.0	117.8	61.0	124.8	68.5	10	58.0	68 - 55	-	65 - 63	soil	189.53	70.7	3.75	Series 1
III	SB-19D	1250693.0	597033.6	200.4	86.2	114.2	81.5	118.9	87.3	2	84.8	87.3 - 84.5	84.5 - 83	83 - 80	80 - 0	203.06	89.9	2.66	Series 2 - drainage sand
	SB-19S	1250679.8	597036.8	200.0	NA	NA	77.5	NA	75.2	5	69.7	76.5 - 69	-	69 - 67	67 - 0	203.36	78.6	3.36	Series 2 - shallow
	SB-20D	1250837.8	597321.7	190.0	75.0	115.0	70.5	119.5	75.2	2	72.7	75.3 - 71.5	71.5 - 71	71 - 69	69 - 0	192.86	78.1	2.86	Series 2 - drainage sand
	SB-24D	1250696.9	597654.7	186.1	68.5	117.6	65.2	120.9	69.8	2	67.3	70 - 67	67 - 66	66 - 63	63 - 0	188.82	72.6	2.72	Series 2 - drainage sand
VI	SB-21D	1250827.3	596433.6	191.3	78.3	113.0	71.5	119.8	78.9	2	76.4	78.9 - 75.5	75.5 - 73.5	73.5 - 70.5	70.5 - 0	194.30	81.9	3.00	Series 2 - drainage sand
	SB-22D	1250913.8	596382.9	190.0	76.8	113.2	71.6	118.4	77.6	2	75.1	77.6 - 75	75 - 73.5	73.5 - 70.5	70.5 - 0	193.05	80.6	3.05	Series 2 - drainage sand
IV	SB-23D	1250642.4	596444.3	196.5	83.2	113.3	79.0	117.5	84.0	2	81.5	84 - 81.5	81.5 - 80.5	80.5 - 78.5	78.5 - 0	199.70	87.2	3.20	Series 2 - drainage sand
	SB-23S	1250636.7	596455.0	196.4	NA	NA	NA	NA	77.3	5	71.8	77.5 - 70	-	70 - 68	68 - 0	199.45	80.3	3.05	Series 2 - shallow

Notes:

*Additional waste and soil was added to area surrounding SB-25D after installation, therefore PVC riser was extended and ground and Top PVC elevations changed.

SB-29 and SB-30 contain sediment

Borings SB-14 through SB-25 and SB-28 through SB-30 drilled using hollow stem augers.

Borings SB-26 and SB-27 drilled using _____.

Series 1 indicates the piezometer not isolated in discreet interval.

Series 2 indicates the piezometer isolated in discreet interval, either drainage sand or waste .

"D" denotes deep piezometer, "S" denotes shallow piezometer.

Need to check field notes

Estimated - no survey data

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASE II GEOTECHNICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-01
SHEET 1 of 4
JOB NO. 09215600.02
CHKD. BY __

DRILLER: TIERRA
INSPECTOR: SCS -Stephanie Liptak
SAMPLER: Split Spoon - Started at 56'
METHOD: Circulated Mud Rotary
CASING SIZE: 4" OTHER:

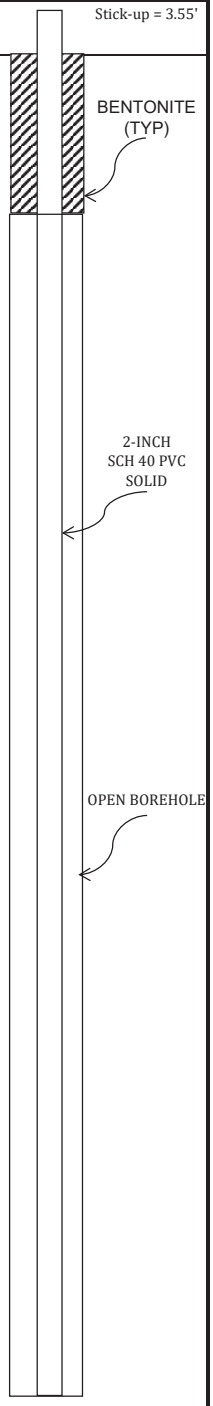
HORIZ: N1249803.8 E597922.9 See notes for datum
ELEV.: GROUND = 184.8 WELL MP: Top of PVC (Riser) 188.35
DATE START 6/2/2016 DATE END 6/3/2016

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
		NA	NA		NC	**SAND**	0
				1		Brown sand with some organic material and sod	
				2		2'	
						WASTE	
				3			
						Wash Boring	
				4			
5				5			
							0
				6			
				7			
				8			
				9			
10				10			
							0
				11			
				12			
				13			
				14			
15				15			
							0
				16			
				17			
				18			
				19			
20				20			

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from drilling fluid when no split spoon collected.

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASE II GEOTECHNICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-01
SHEET 2 of 4
JOB NO. 09215600.02
CHKD. BY __

DRILLER: TIERRA
INSPECTOR: SCS -Stephanie Liptak
SAMPLER: Split Spoon - Started at 56'
METHOD: Circulated Mud Rotary
CASING SIZE: 4" OTHER:

HORIZ: N1249803.8 E597922.9 See notes for datum
ELEV.: GROUND = 184.8 WELL MP: Top of PVC (Riser) 188.35
DATE START 6/2/2016 DATE END 6/3/2016

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)	WELL INSTALLATION DIAGRAM
		NA	NA		NA	**WASTE (CONT.)**	0	
				21				
				22				
				23				
				24				
25				25				
							0	
				26				2-INCH SCH 40 PVC SOLID
				27				
				28				
				29				
30				30				
							0	
				31				
				32				
				33				
				34				
								OPEN BOREHOLE
35				35				
							0	
				36				
				37				
				38				
				39				
40				40				

Notes:
DTW = Depth to water
btor = Below top of riser
MOP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASE II GEOTECHNICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-01
SHEET 3 of 4
JOB NO. 09215600.02
CHKD. BY __

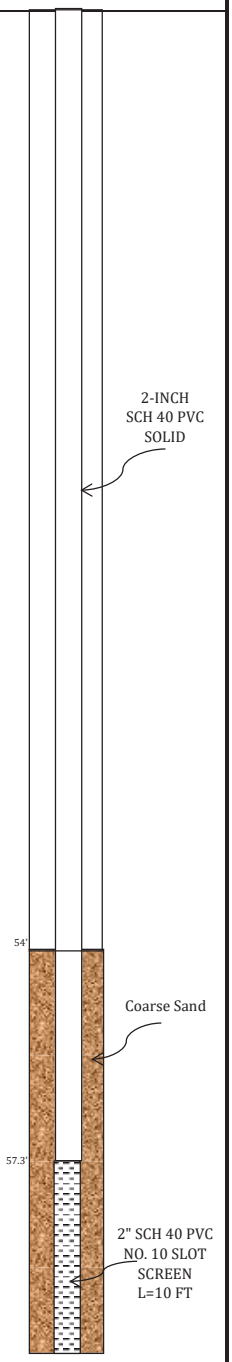
DRILLER: TIERRA
INSPECTOR: SCS -Stephanie Liptak
SAMPLER: Split Spoon - Started at 56'
METHOD: Circulated Mud Rotary
CASING SIZE: 4" OTHER:

HORIZ: N1249803.8 E597922.9 See notes for datum
ELEV.: GROUND = 184.8 WELL MP: Top of PVC (Riser) 188.35
DATE START 6/2/2016 DATE END 6/3/2016

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
		NA	NA		NS	**WASTE (CONT.)**	0
				41			
				42			
				43			
				44			
45				45			0
				46			
				47			
				48			
				49			
50				50			0
				51			
				52			
				53			
				54			
55				55			0
				56			
						56.5'	
		S-1	18	57		**SAND**	
				58			
		S-2	18			Gray fine to med sand (moist to wet)	
				59			
60				60			



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASE II GEOTECHNICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-01
SHEET 4 of 4
JOB NO. 09215600.02
CHKD. BY __

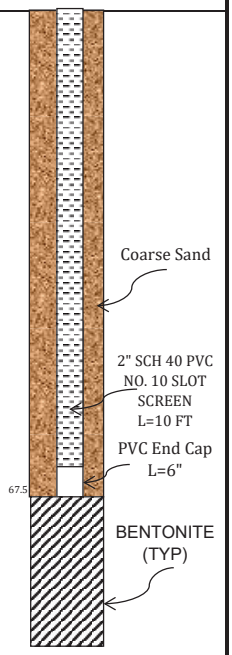
DRILLER: TIERRA
INSPECTOR: SCS -Stephanie Liptak
SAMPLER: Split Spoon - Started at 56'
Hydraulic Hammer
METHOD: Circulated Mud Rotary
CASING SIZE: 4" OTHER:

HORIZ: N1249803.8 E597922.9 See notes for datum
ELEV.: GROUND = 184.8 WELL MP: Top of PVC (Riser) 188.35
DATE START 6/2/2016 DATE END 6/3/2016

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

Casing DEPTH	Casing TIME	SAMPLE NO.	REC (in.)	SAMPLE DEPTH (Ft.)	BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
						SAND (CONT.)	0
		S-3	18	61			
				62			
				63			
		S-4	18			Gray fine to med sand (moist to wet)	
				64			
65				65			
							0
		S-5	6	66			
						Gray sand mixed with silt (Wet) 66.5'	
				67		**CLAY**	
		T-1	24	68			
						White silty clay (Phosphatic)	
				69			
						BOE = 69.5'	



Notes:
- ADVANCED TO 69.5' TO COLLECT CLAY SAMPLES FOR GEOTECHNICAL INVESTIGATION.
- BOTTOM OF PIEZOMETER SET AT 67.3 DUE TO SWELLING CLAY

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASE II GEOTECHNICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-02
SHEET 1 of 4
JOB NO. 09215600.02
CHKD. BY __

DRILLER: TIERRA
INSPECTOR: SCS -Stephanie Liptak
SAMPLER: Split Spoon - Started at 59'
Hydraulic Hammer
METHOD: Drive and Wash
CASING SIZE: 4" OTHER:

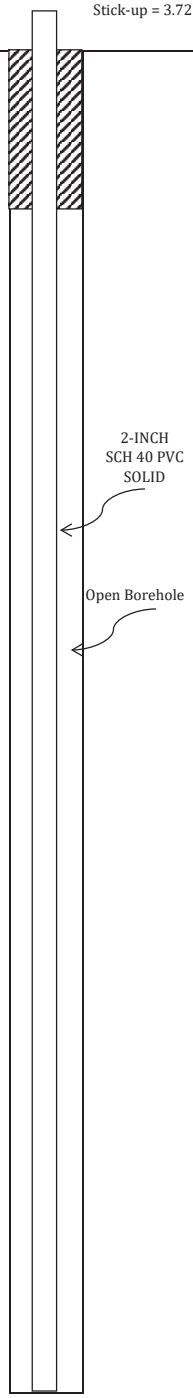
HORIZ: N1250147.3 E598351.8 See notes for datum
ELEV.: 183.9 WELL MP: Top of PVC (Riser) 187.62
DATE START 6/3/2016 DATE END 6/8/2016

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

CASING DEPTH	CASING TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
		NA	NA		NC	**SAND**	0
				1		Brown sand with some organic material and sod	
						2'	
				2		**WASTE**	
				3			
						Wash Boring	
				4			
5				5			▼
							0
				6			
				7			
				8			
				9			
10				10			▼
							0
				11			
				12			
				13			
				14			
15				15			▼
							0
				16			
				17			
				18			
				19			
20		▼	▼	20	▼		▼

WELL INSTALLATION DIAGRAM



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from wash when no split spoon or shelby tube collected.

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASE II GEOTECHNICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-02
SHEET 2 of 4
JOB NO. 09215600.02
CHKD. BY __

DRILLER: TIERRA
INSPECTOR: SCS -Stephanie Liptak
SAMPLER: Split Spoon - Started at 59'
METHOD: Circulated Mud Rotary
CASING SIZE: 4" OTHER:

HORIZ: N1250147.3 E598351.8 See notes for datum
ELEV.: 183.9 WELL MP: Top of PVC (Riser) 187.62
DATE START 6/3/2016 DATE END 6/8/2016

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)	WELL INSTALLATION DIAGRAM
		NA	NA		NA	**WASTE (CONT.)**	0	
				21				
						Wash Boring		
				22				Open Borehole
				23				
				24				
25				25				
							0	
				26				2-INCH SCH 40 PVC SOLID
				27				
				28				
				29				
30				30				
							0	
				31				
				32				
				33				
				34				
35				35				
							0	
				36				
				37				
				38				
				39				
40				40				

Notes:
DTW = Depth to water
btor = Below top of riser
MOP = Measuring point

SCS ENGINEERS

4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASE II GEOTECHNICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-02
SHEET 3 of 4
JOB NO. 09215600.02
CHKD. BY __

DRILLER: TIERRA
INSPECTOR: SCS -Stephanie Liptak
SAMPLER: Split Spoon - Started at 59'
METHOD: Drive and Wash
CASING SIZE: 4" OTHER:

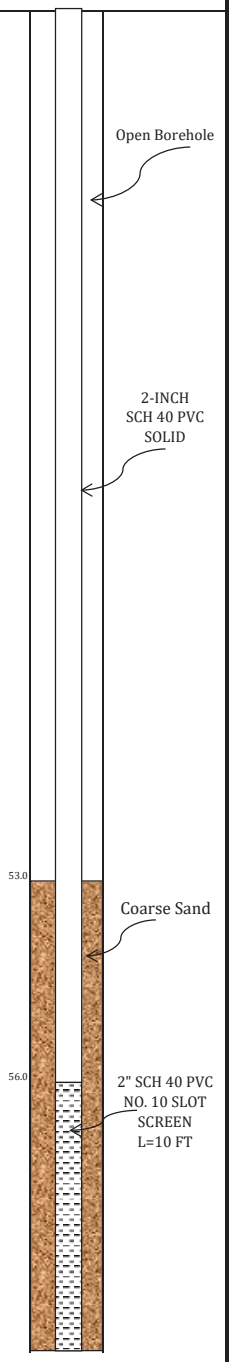
HORIZ: N1250147.3 E598351.8 See notes for datum
ELEV.: 183.9 WELL MP: Top of PVC (Riser) 187.62
DATE START 6/3/2016 DATE END 6/8/2016

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
		NA	NA		NS	**WASTE (CONT.)**	0
				41			
						Wash Boring	
				42			
				43			
				44			
45				45			
							0
				46			
				47			
				48			
				49			
50				50			
							0
				51			
				52			
				53			
				54			
55				55			
							0
				56			
				57			
				58			
				59			
						Sand, glass, wood, other debris	
60		S-1	24	60			

WELL INSTALLATION DIAGRAM



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASE II GEOTECHNICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-02
SHEET 4 of 4
JOB NO. 09215600.02
CHKD. BY __

DRILLER: TIERRA
INSPECTOR: SCS -Stephanie Liptak
SAMPLER: Split Spoon - Started at 59'
METHOD: Drive and Wash
CASING SIZE: 4" OTHER:

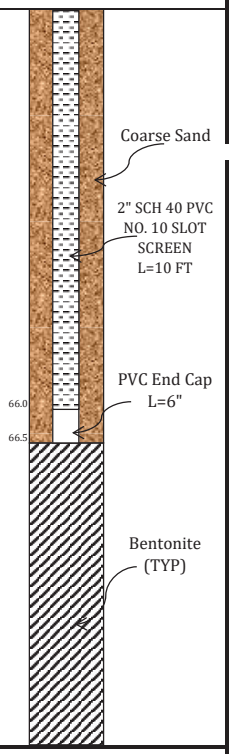
HORIZ: N1250147.3 E598351.8 See notes for datum
ELEV.: 183.9 WELL MP: Top of PVC (Riser) 187.62
DATE START 6/3/2016 DATE END 6/8/2016

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
			NA		NC	**WASTE (CONT.)**	0
				61			
		S-2	24	62		Sand, glass, wood, other debris	
				63		63.0'	
		S-3	24	64		**SAND**	
65				65		Gray fine to med sand (moist to wet)	
		T-1	24	66		66.0'	0
				67		**CLAY**	
			0	68		White silty clay (Phosphatic)	
				69			
		T-1	24	70			
				71			

WELL INSTALLATION DIAGRAM



BOE = 71'

Notes:
- ADVANCED TO 71.0' TO COLLECT SAMPLES FOR GEOTECHNICAL INVESTIGATION.
- BOTTOM OF BORING BACKFILLED WITH BENTONITE
- BOTTOM OF PIEZOMENTER SET AT 66.5 DUE TO SWELLING CLAY

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASE II GEOTECHNICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-03
SHEET 1 of 4
JOB NO. 09215600.02
CHKD. BY __

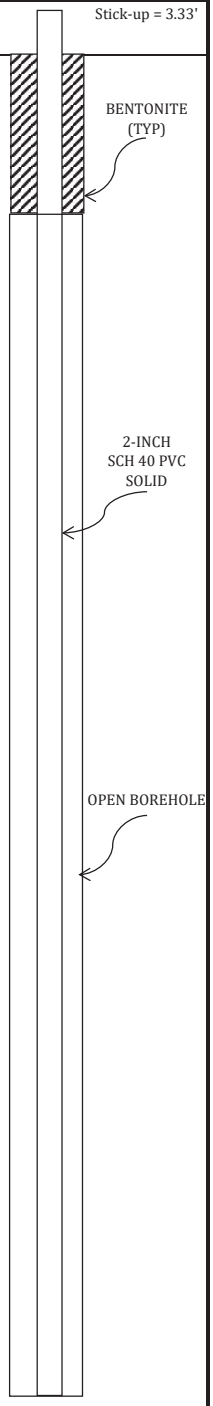
DRILLER:	TIERRA	HORIZ: N1250682.8 E597834.5	See notes for datum
		ELEV.: GROUND = 182.4	WELL MP: Top of PVC (Riser) 185.73
INSPECTOR:	SCS -Stephanie Liptak	DATE START 6/9/2016	DATE END 6/10/2016
SAMPLER:	Split Spoon - Started at 55' Hydraulic Hammer		
METHOD:	Circulated Mud Rotary		
CASING SIZE:	4" OTHER:		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

CASING DEPTH	CASING TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
		NA	NA		NC	**SAND**	0
				1		Brown sand with some organic material and sod	
				2		2'	
						WASTE	
				3			
						Wash Boring	
				4			
5				5			▼
							0
				6			
				7			
				8			
				9			
10				10			▼
							0
				11			
				12			
				13			
				14			
15				15			▼
							0
				16			
				17			
				18			
				19			
20		▼	▼	20	▼		▼

WELL INSTALLATION DIAGRAM



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from drilling fluid when no split spoon or shebly tube collected.

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASE II GEOTECHNICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-03
SHEET 2 of 4
JOB NO. 09215600.02
CHKD. BY __

DRILLER:	TIERRA	HORIZ: N1250682.8 E597834.5	See notes for datum
		ELEV.: GROUND = 182.4	WELL MP: Top of PVC (Riser) 185.73
INSPECTOR:	SCS -Stephanie Liptak	DATE START 6/9/2016	DATE END 6/10/2016
SAMPLER:	Split Spoon - Started at 55'		
METHOD:	Circulated Mud Rotary		
CASING SIZE:	4" OTHER:		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)	WELL INSTALLATION DIAGRAM
		NA	NA		NA	**WASTE (CONT.)**	0	
				21				
				22				
				23				
				24				
25				25				
							0	
				26				2-INCH SCH 40 PVC SOLID
				27				
				28				
				29				
30				30				
							0	
				31				
				32				
				33				
				34				
								OPEN BOREHOLE
35				35				
							0	
				36				
				37				
				38				
				39				
40				40				

Notes:

DTW = Depth to water
btor = Below top of riser
MOP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASE II GEOTECHNICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-03
SHEET 3 of 4
JOB NO. 09215600.02
CHKD. BY __

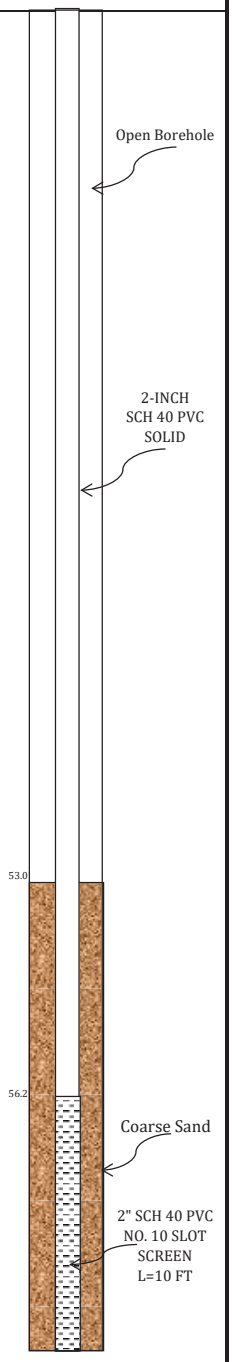
DRILLER: TIERRA
INSPECTOR: SCS -Stephanie Liptak
SAMPLER: Split Spoon - Started at 55'
METHOD: Circulated Mud Rotary
CASING SIZE: 4" OTHER:

HORIZ: N1250682.8 E597834.5 See notes for datum
ELEV.: GROUND = 182.4 WELL MP: Top of PVC (Riser) 185.73
DATE START 6/9/2016 DATE END 6/10/2016

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
		NA	NA		NS	**WASTE (CONT.)**	0
				41			
				42			
				43			
				44			
45				45			0
				46			
				47			
				48			
				49			
50				50			0
				51			
				52			
				53			
				54			
55				55			0
		S-1	24	56			
				57			
		S-2	24	58			
				59			
		S-3	24				
60				60			



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASE II GEOTECHNICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-03
SHEET 4 of 4
JOB NO. 09215600.02
CHKD. BY __

DRILLER: TIERRA
INSPECTOR: SCS -Stephanie Liptak
SAMPLER: Split Spoon - Started at 55'
METHOD: Circulated Mud Rotary
CASING SIZE: 4" OTHER:

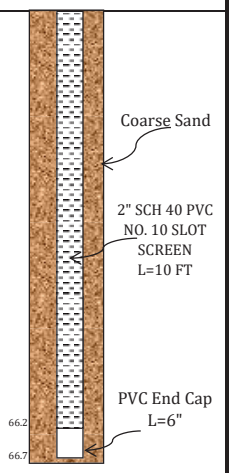
HORIZ: N1250682.8 E597834.5 See notes for datum
ELEV.: GROUND = 182.4 WELL MP: Top of PVC (Riser) 185.73
DATE START 6/9/2016 DATE END 6/10/2016

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
		S-3 (cont.)	24			**WASTE (CONT.)**	0
				61			
			0				
				62			
						62.5'	
				63		**SAND**	
		S-4	24				
				64		Gray fine to med sand (moist to wet)	
65				65		65.0'	
						CLAY	0
				66			
		T-1	24			White silty clay (Phosphatic)	
				67			

WELL INSTALLATION DIAGRAM



BOE = 67.5'

Notes:
- ADVANCED TO 67.5' TO SET PIEZOMETER IN ORDER TO COLLECT CLAY SAMPLES FOR GEOTECHNICAL INVESTIGATION.
- BOTTOM OF PIEZOMETER SET AT 66.2 DUE TO SWELLING CLAY

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASE II GEOTECHNICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-05
SHEET 1 of 3
JOB NO. 09215600.02
CHKD. BY __

DRILLER: TIERRA
INSPECTOR: SCS -Stephanie Liptak
SAMPLER: Split Spoon - Started at 57'
Hydraulic Hammer
METHOD: Hollow Stem Auger
CASING SIZE: 4" OTHER:

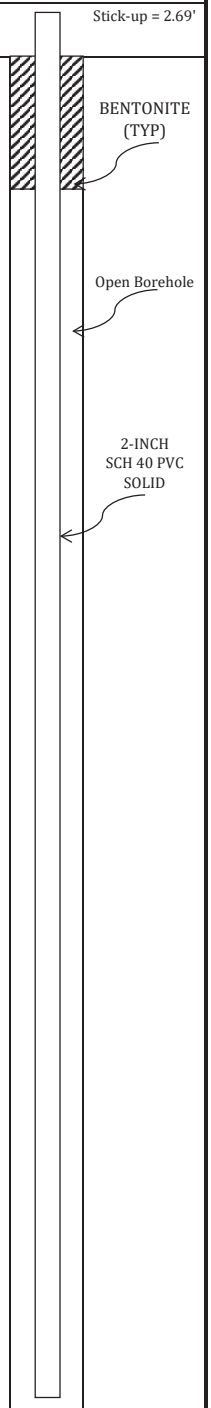
HORIZ: N1249764.6 E598401.7 See notes for datum
ELEV.: GROUND = 177.5 WELL MP: Top of PVC (Riser) 180.19
DATE START 6/21/2016 DATE END 6/22/2016

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

CASING DEPTH	CASING TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
		NA	NA		NC	**SAND**	0
				1		Brown sand with some organic material and sod	
				2		2'	
						WASTE	
				3			
						Bulk Auger Cuttings of MSW	
				4			
5				5			▼
							0
				6			
				7			
				8			
				9			
10				10			▼
							0
				11			
				12			
				13			
				14			
15				15			▼
							0
				16			
				17			
				18			
				19			
20		▼	▼	20	▼		▼

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASE II GEOTECHNICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-05
SHEET 2 of 3
JOB NO. 09215600.02
CHKD. BY __

DRILLER: TIERRA
INSPECTOR: SCS -Stephanie Liptak
SAMPLER: Split Spoon - Started at 57'
METHOD: Hollow Stem Auger
CASING SIZE: 4" OTHER:

HORIZ: N1249764.6 E598401.7 See notes for datum
ELEV.: GROUND = 177.5 WELL MP: Top of PVC (Riser) 180.19
DATE START 6/21/2016 DATE END 6/22/2016

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)	WELL INSTALLATION DIAGRAM
		NA	NA		NA	**WASTE (CONT.)**	0	
				21				
				22				Open Borehole
				23				
				24				
25				25			▼	
							0	
				26				2-INCH SCH 40 PVC SOLID
				27				
				28				
				29				
30				30			▼	
							0	
				31				
				32				
				33				
				34				
35				35			▼	
							0	
				36				
				37				
				38				
				39				
40		▼	▼	40	▼	▼	▼	

Notes:
DTW = Depth to water
btor = Below top of riser
MOP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASE II GEOTECHNICAL INVESTIGATION
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

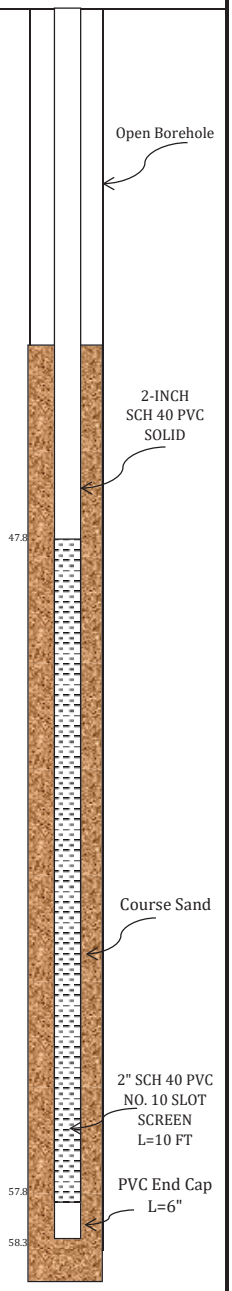
REPORT OF BORING : SB-05
SHEET 3 of 3
JOB NO. 09215600.02
CHKD. BY __

DRILLER:	TIERRA	HORIZ: N1249764.6 E598401.7	See notes for datum
		ELEV.: GROUND = 177.5	WELL MP: Top of PVC (Riser) 180.19
INSPECTOR:	SCS -Stephanie Liptak	DATE START 6/21/2016	DATE END 6/22/2016
SAMPLER:	Split Spoon - Started at 57'		
METHOD:	Hollow Stem Auger		
CASING SIZE:	4" OTHER:		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
		NA	NA		NS	**WASTE (CONT.)**	0
				41			
				42			
				43			
				44			
45				45			
							0
				46			
				47			
				48			
				49			
50				50			
							0
				51			
				52			
				53			
				54			
55				55		55.0'	
						SAND	0
				56			
				57			
						Gray fine to med sand (moist to wet)	
		S-1	18	58			
				59		59.0'	
						CLAY	
		S-2	18	60		White silty clay (Phosphatic)	



BOE @ 60.5'

Notes:
- ADVANCED TO 60.5' TO SET PIEZOMETER IN ORDER TO COLLECT CLAY SAMPLES FOR GEOTECHNICAL INVESTIGATION.
- BOTTOM OF PIEZOMENTER SET AT 57.8'

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-15D
SHEET 1 of 4
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Derek, Cruz, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 53'
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

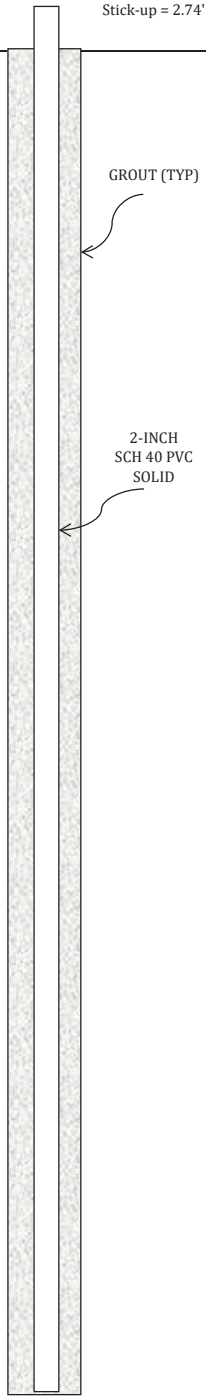
HORIZ: N1249797.0 E598218.8 See notes for datum
ELEV.: GROUND = 181.7 WELL MP: Top of PVC (Riser) 184.44
DATE START 2/16/2017 DATE END 2/20/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	11:11	NA	NA		NS	**SAND**	0
				1		Brown sand with organic material and sod	
				2		2'	
						WASTE	
				3			
				4		Black and brown fine silty sand intermixed with plastic, paper, organics (dry)	
5	11:21			5			
	11:26						0
				6			
				7			
						Black fine silty sand intermixed with waste (lots of plastic, paper, organics, wood, tire shreds) (dry to moist)	
				8			
				9			
10	11:35			10			
	11:41						0
				11			
				12			
						Black fine silty sand intermixed with plastic, paper, wood (moist)	
				13			
				14			
15	11:45			15			
	11:48						0
				16			
				17			
						Black fine silty sand intermixed with plastic, paper, wood (moist)	
				18			
				19			
20	11:52			20			

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-15D
SHEET 2 of 4
JOB NO. 09215600.03
CHKD. BY __

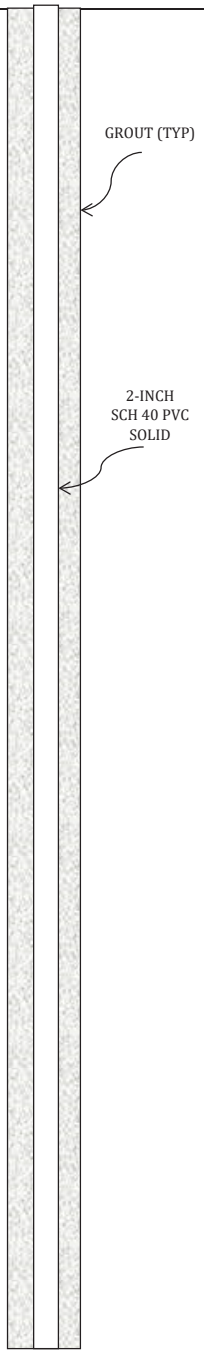
DRILLER: TIERRA - Derek, Cruz, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 53'
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

HORIZ: N1249797.0 E598218.8 See notes for datum
ELEV.: GROUND = 181.7 WELL MP: Top of PVC (Riser) 184.44
DATE START 2/16/2017 DATE END 2/20/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	11:56	NA	NA		NS	**WASTE (CONT.)**	0
				21			
				22			
				23		Black fine silty sand intermixed with paper, plastic, metal wire (moist)	
				24			
25	12:01			25			
	12:04						0
				26			
				27			
						Black fine silty sand intermixed with paper, plastic, metal wire (moist)	
				28			
				29			
30	12:13			30			
	12:17						0
				31			
				32			
						Black fine silty sand intermixed with plastic, paper, tire shreds, wood, organics (moist)	
				33			
				34			
35	12:36			35			
	14:29						0
				36			
				37			
						Black fine silty sand intermixed with plastic, paper, wood, metal wire (moist)	
				38			
				39			
40	14:34			40			



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

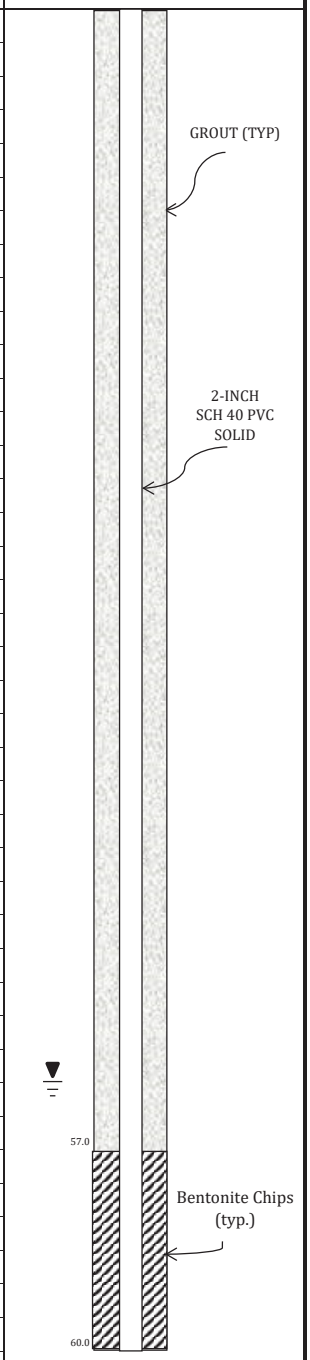
REPORT OF BORING : SB-15D
SHEET 3 of 4
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Derek, Cruz, and Ben
INSPECTOR: SCS - C. Devitt
HORIZ: N1249797.0 E598218.8 See notes for datum
ELEV.: GROUND = 181.7 WELL MP: Top of PVC (Riser) 184.44
DATE START 2/16/2017 DATE END 2/20/2017
SAMPLER: Split Spoon - Started at 53' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	14:40	NA	NA		NS	**WASTE (CONT.)**	0
				41			
				42			
				43		Black fine silty sand intermixed with fabric, organics, plastic, paper, tire shreds (moist)	
				44			
45	14:53			45			
	15:17						0
				46			
				47			
						Black fine silty sand intermixed with fabric, organics, plastic, paper, tire shreds (moist)	
				48			
				49			
50	15:36			50			
	15:43						0
				51			
						Black fine silty sand intermixed with fabric, wood, paper, plastic, organics (moist)	
				52			
	15:49			53			
	15:57	S-1	0		10	Start Split Spoon sampling at 53'	
				54	7		
					16	No recovery	
55	15:59			55	12		
	16:08	S-2	14		9	Black fine silty sand mixed with paper, plastic bags, wood (moist)	0
				56	18	Wood	
					8		
	16:09			57	9	Gray sand and black fine silty sand mixed with wood, plastic, organics (wet)	
	16:21	S-3	10		20	Black fine silty sand and wood (wet)	
				58	13	57.6'	
					19	**SAND**	
	16:23			59	21		
	16:38	S-4	19		25	Gray fine sand (wet)	
60				60	23		



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-15D
SHEET 4 of 4
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Derek, Cruz, and Ben
INSPECTOR: SCS - C. Devitt
HORIZ: N1249797.0 E598218.8 See notes for datum
ELEV.: GROUND = 181.7 WELL MP: Top of PVC (Riser) 184.44
DATE START 2/16/2017 DATE END 2/20/2017

SAMPLER: Split Spoon - Started at 53'
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

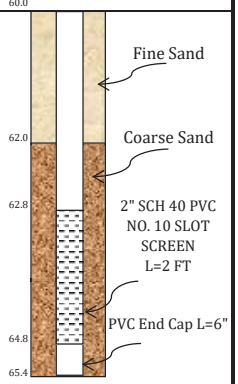
GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
		S-4	19		37	**SAND (CONT)**	0
	16:41			61	43		
	9:21				6		
		S-5	22	62	25		
					42		
	9:25			63	68	Light gray/tan fine sand (wet)	
	9:45				8		
		S-6	26	64	15		
					8		
	9:46			65	9	64.7'	
	10:00				2	**CLAY**	
		S-7	24	66	2		
					2	Gray silty clay (wet)	
	10:01			67	4		

BOE=67'

WELL INSTALLATION DIAGRAM



Notes:
- ADVANCED AUGERS TO 67' TO SET PIEZOMETER. COLLECTED SPLIT SPOON FROM 65'-67' TO CONFIRM CLAY.
- BOTTOM OF PVC END CAP AND PRE-PACKED SCREEN SET ~0.5' INTO CLAY.
- DEVELOPED PIEZOMETER ON 2/21/17 USING MONSOON SUBMERSIBLE PUMP. REMOVED ~25 GALLONS..

Initial location of SB-15D hit obstruction at 20'. Relocated and began new boring ~10' south of original location- set piezometer.

Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
BOE = Bottom of exploration

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-16D
SHEET 1 of 4
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Derek and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 50'
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

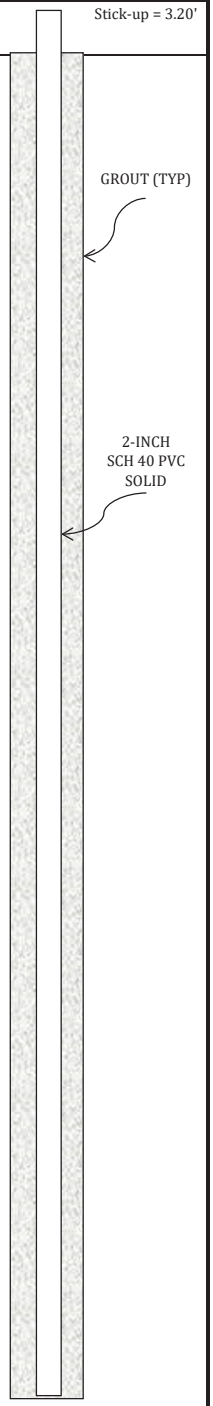
HORIZ: N1249796.9 E598315.2 See notes for datum
ELEV.: GROUND = 180.4 WELL MP: Top of PVC (Riser) 183.6
DATE START 2/14/2017 DATE END 2/15/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	14:45	NA	NA		NS	**SAND**	0
				1		Brown sand with organic material and sod	
				2		2'	
						WASTE	
				3			
				4		Dark brown fine silty sand intermixed with tplastic, tile, paper, fabric (dry to moist)	
5	15:15			5			
	15:18					Gray sand with possibly some clay content (cohesive) with little waste	0
				6			
				7			
				8		Black fine silty sand intermixed with a large amount of waste-paper, wood, plastic, organics, metal, fabric (moderately moist)	
				9			
10	15:30			10			
	15:34						0
				11			
				12			
				13		Black fine silty sand intermixed with a large amount of waste-plastic, paper, wood, organics, metal, fabric (moderately moist)	
				14			
15	15:51			15			
	15:56						0
				16			
				17			
				18		Black fine silty sand intermixed with plastic, paper, organics, wood (moderately moist)	
				19			
20	16:03			20			
						20' Hard obstruction	

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

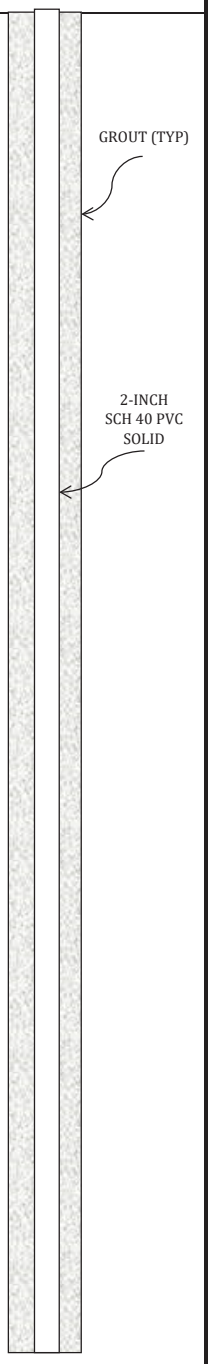
SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-16D SHEET 2 of 4 JOB NO. 09215600.03 CHKD. BY __

DRILLER:	TIERRA - Derek and Ben	HORIZ: N1249796.9 E598315.2	See notes for datum
		ELEV.: GROUND = 180.4	WELL MP: Top of PVC (Riser) 183.6
INSPECTOR:	SCS - C. Devitt	DATE START 2/14/2017	DATE END 2/15/2017
SAMPLER:	Split Spoon - Started at 50' Hydraulic Hammer		
METHOD:	Hollow -Stem Auger (HSA)		
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D.	OTHER: CME 55 Drill Rig	

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	16:07	NA	NA		NS	**WASTE (CONT.)**	0
				21			
				22			
				23		Black fine silty sand intermixed with paper, organics, wood, plastic (moist)	
				24			
25	16:28			25			
	16:33						0
				26			
				27			
						Black fine silty sand intermixed with plastic, paper, wood, fabric, metal wire (moist)	
				28			
				29			
30	16:39			30			
	16:44						0
				31			
				32			
						Black fine silty sand intermixed with a metal wire, organics, plastic, paper (moist)	
				33			
				34			
35	16:48			35			
	16:52						0
				36			
				37			
						Black fine silty sand intermixed with a metal wire, organics, plastic, paper (moist)	
				38			
				39			
40	17:00			40			



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-16D
SHEET 3 of 4
JOB NO. 09215600.03
CHKD. BY __

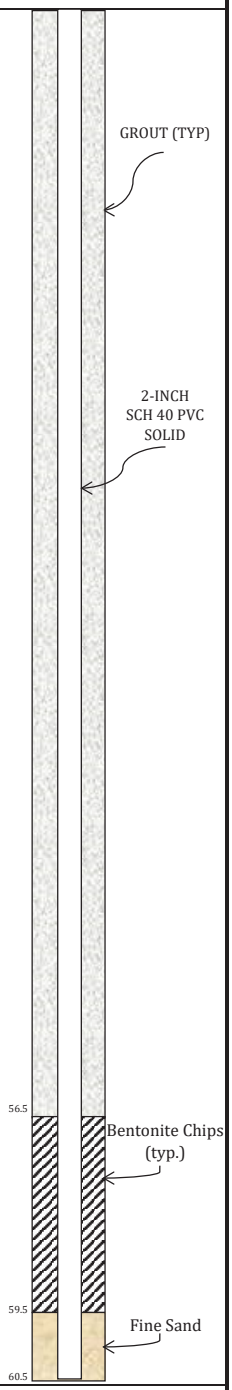
DRILLER: TIERRA - Derek and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 50'
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

HORIZ: N1249796.9 E598315.2 See notes for datum
ELEV.: GROUND = 180.4 WELL MP: Top of PVC (Riser) 183.6
DATE START 2/14/2017 DATE END 2/15/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	17:03	NA	NA		NS	**WASTE (CONT.)**	0
				41			
				42			
				43		Black fine silty sand mixed with wood, paper, plastic, organics (moist)	
				44			
45	17:05			45			
	8:35						0
				46			
				47			
						Black fine silty sand mixed with wood, paper, plastic, organics (moist)	
				48			
				49			
50	8:43			50			
	9:08				13	Start Split Spoon Sampling at 50'	0
		S-1	5	51	17	Black fine silty sand intermixed with organics, wood, plastic (moist)	
					12		
	9:10			52	30		
	9:29				9	Wood	
		S-2	20	53	13	Black fine silty sand mixed w/ plastic, paper (moist)	
					16	Wood	
	9:31			54	17	Black fine silty sand mixed w/ organics, wood, plastic bags (moist)	
	9:39				45	Black fine silty sand mixed with waste (moist)	
55		S-3	15	55	9		
					9	Wood	0
	9:42			56	10	Gray sand mixed with black fine silty sand, little waste (wet)	
	9:55				13	Gray sand (wet)	
		S-4	20	57	10		
					10	Black fine silty sand mixed with wood, organics, glass (wet)	
	9:56			58	10	Gray sand (wet)	
	10:15				4	Black fine silty sand mixed with waste (wet) 58.5'	
		S-5	21	59	17	**SAND**	
					30	Gray, fine to medium sand, compacted (wet)	
60	10:18			60	38		



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-16D
SHEET 4 of 4
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Derek and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 50' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

HORIZ: N1249796.9 E598315.2 See notes for datum
ELEV.: GROUND = 180.4 WELL MP: Top of PVC (Riser) 183.6
DATE START 2/14/2017 DATE END 2/15/2017

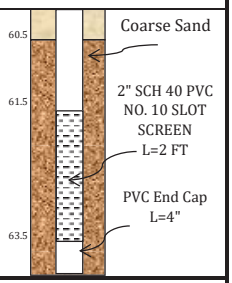
GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	10:30	S-6	24		9	**SAND (CONT)**	0
				61	16		
					27		
	10:32			62	26	Light gray/tan, fine to medium grain size sand (wet)	
	10:50	S-7	24		2		
				63	2	63.2'	
					3	**CLAY**	
	10:52			64	4	Gray silty clay (wet)	

BOE=64'

WELL INSTALLATION DIAGRAM



Notes:
- ADVANCED AUGERS TO 64' TO SET PIEZOMETER. HIGH LIQUID LEVEL CREATED SAND INTRUSION INTO AUGERS.
- BOTTOM OF PVC END CAP AND PRE-PACKED SCREEN SET ~0.75' INTO CLAY.
- DEVELOPED PIEZOMETER ON 2/17/17 USING MONSOON SUBMERSIBLE PUMP. REMOVED ~ 80 GALLONS..

Location ~10' south of original location, obstruction at ~15' below ground at original location, causing move.

Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
BOE = Bottom of exploration

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-17D
SHEET 1 of 4
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz
SAMPLER: Split Spoon - Started at 55'
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

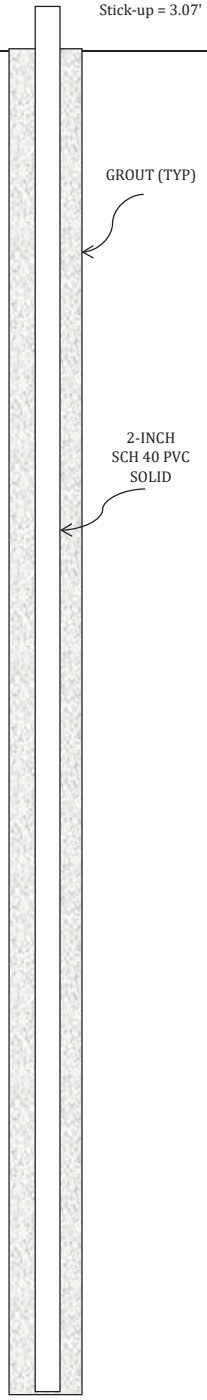
HORIZ: N1250512.1 E598111.1 See notes for datum
ELEV.: GROUND = 182.4 WELL MP: Top of PVC (Riser) 185.47
DATE START 2/9/2017 DATE END 2/10/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	12:53	NA	NA		NS	**SAND**	0
				1		Brown sand with little debris (waste), organic material, metal/ash	
						1.5'	
				2		**WASTE**	
				3			
						Black fine silty sand intermixed with tires, wood, plastic, VHS tape strip, paper, metal, plastic bags (dry)	
				4			
5	13:23			5			
	13:26						0
				6			
				7		Black fine silty sand intermixed with plastic, wood, metal (dry to moist)	
				8			
				9			
						Black fine silty sand intermixed with a large amount of waste-fabric, wood, plastic, metal wire (moist)	
10	13:32			10			
	13:37						0
				11			
				12			
						Black fine silty sand intermixed with a large amount of waste-plastic, paper, wood, styrofoam, metal, fabric (dry)	
				13			
				14			
15	13:49			15			
	13:52						0
				16			
				17			
						Black fine silty sand intermixed with plastic, paper, wood (dry)	
				18			
				19			
20	14:01			20			

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-17D
SHEET 2 of 4
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz
SAMPLER: Split Spoon - Started at 55'
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

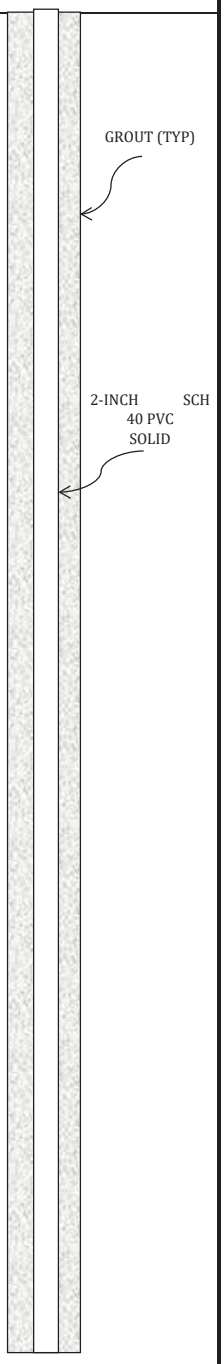
HORIZ: N1250512.1 E598111.1 See notes for datum
ELEV.: GROUND = 182.4 WELL MP: Top of PVC (Riser) 185.47
DATE START 2/9/2017 DATE END 2/10/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	14:05	NA	NA		NS	**WASTE (CONT.)**	0
				21			
				22			
				23		Black fine silty sand intermixed with wood, metal wire, plastic (dry)	
				24			
25	14:23			25			
	14:26					. . . hard obstruction at 25.0'	0
				26			
				27			
				28		Black fine silty sand intermixed with plastic, wood, fabric, metal (dry)	
				29			
30	14:39			30			
	14:43						0
				31			
				32			
				33		Black dirst intermixed with a lot of hard plastic, wood, metal, fabric, palstic bags, paper (dry)	
				34			
35	15:04			35			
	15:08						0
				36			
				37			
				38		Black fine silty sand intermixed with plastic, metal, rubber (dry)	
				39			
40	15:24			40			

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-17D
SHEET 3 of 4
JOB NO. 09215600.03
CHKD. BY __

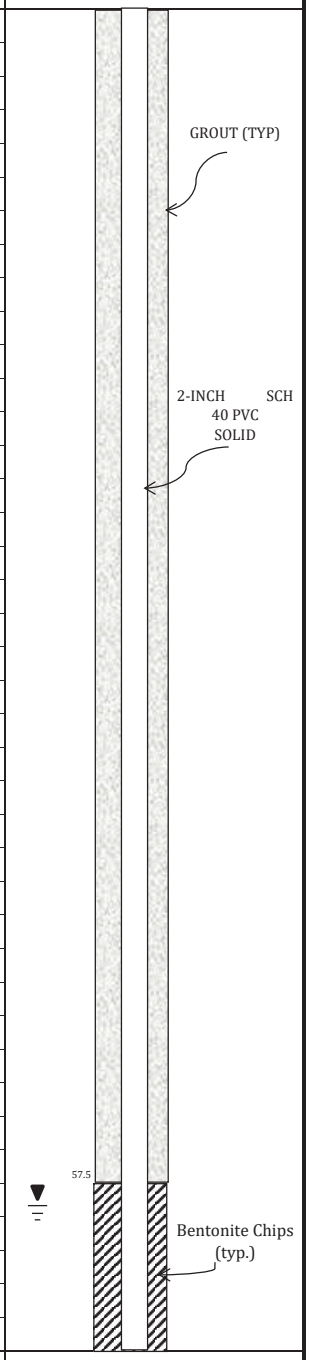
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz
SAMPLER: Split Spoon - Started at 55'
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

HORIZ: N1250512.1 E598111.1 See notes for datum
ELEV.: GROUND = 182.4 WELL MP: Top of PVC (Riser) 185.47
DATE START 2/9/2017 DATE END 2/10/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	15:28	NA	NA		NS	**WASTE (CONT.)**	0
				41			
				42			
				43		Black fine silty sand intermixed with wood, hard plastic, metal (dry)	
				44			
45	15:41			45			
	15:43						0
				46			
				47			
						Black fine silty sand intermixed with wood, hard plastic, metal, fabric (dry)	
				48			
				49			
50	15:50			50			
	15:54						0
				51			
				52		Black fine silty sand intermixed wood, hard plastic, metal wire (dry)	
				53			
				54			
55	16:02			55		Black fine silty sand, plastic, organics (very moist)	
	16:15				16	Start Split Spoon Sampling at 55'	0
		S-1	11	56	150/5	Misc. waste, wood, plastic (very wet- perched water)	
					-	. . . Obstruction at 55.9'	
	16:19			57	-		
	16:47				4		
		S-2	18	58	11	Black fine silty sand intermixed with wood, plastic, paper, shell (very moist)	
					8		
	16:48			59	12		
	8:47	S-3	20		13	Black fine silty sand intermixed with wood, plastic, waste 59.5'	
60				60	22	**SAND**	



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-17D
SHEET 4 of 4
JOB NO. 09215600.03
CHKD. BY __

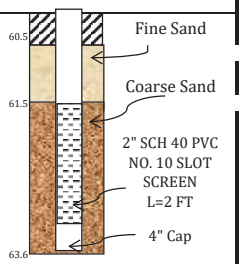
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz
SAMPLER: Split Spoon - Started at 55'
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

HORIZ: N1250512.1 E598111.1 See notes for datum
ELEV.: GROUND = 182.4 WELL MP: Top of PVC (Riser) 185.47
DATE START 2/9/2017 DATE END 2/10/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
		S-3	20		45	**SAND (CONT.)**	0
	8:50			61	70		
	9:05	S-4	20		4	Coarse gray sand (wet)	
				62	15		
					25		
	9:07			63	15	62.8'	
	9:28	S-5	24		WH	**CLAY**	
				64	2	White silty clay (phosphatic)	
					3		
65	9:28			65	4	65'	



BOE = 65'

Notes:
- ADVANCED AUGERS TO 63' TO SET PIEZOMETER. COLLECTED SPLIT SPOON FROM 63'-65' TO CONFIRM CLAY.
- BOTTOM OF PVC END CAP AND PRE-PACKED SCREEN SET ~0.8' INTO CLAY.
- DEVELOPED PIEZOMETER ON 2/27/17 USING MONSOON SUBMERSIBLE PUMP. REMOVED ~ 10 GALLONS.

Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
BOE = Bottom of exploration
WH = Weight of hammer

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-18D
SHEET 1 of 4
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz/C. Devitt
SAMPLER: Split Spoon - Started at 50'
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

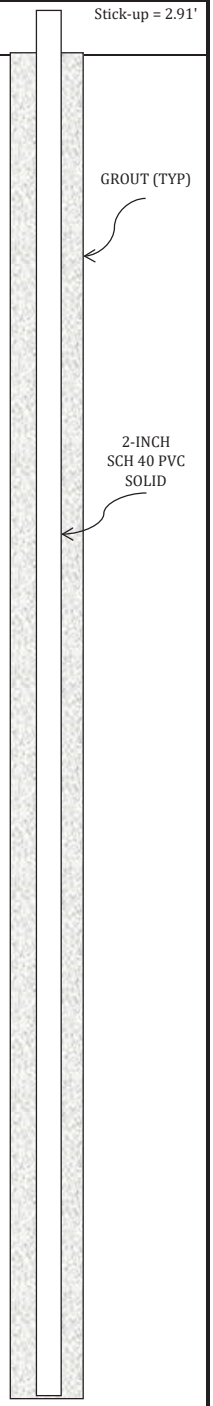
HORIZ: N1250501.7 E598219.3 See notes for datum
ELEV.: GROUND = 179.8 WELL MP: Top of PVC (Riser) 182.71
DATE START 2/10/2017 DATE END 2/13/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	8:51	NA	NA		NS	**SAND**	0
				1		Brown sand with little debris (waste), organic material, metal/ash	
						1.5'	
				2		**WASTE**	
				3			
						Black silty fine sand intermixed with plastic, wood, floor tile (dry)	
				4			
5	9:03			5			
	9:08						0
				6			
				7			
				8		Black silty fine sand intermixed with plastic, fabric, wood (dry)	
				9			
10	9:17			10			
	9:21						0
				11			
				12			
						Black silty fine sand intermixed with wood, fabric, plastic (dry)	
				13			
				14			
						Black silty fine sand intermixed with a large amount of misc. waste- carpet, plastic, foam, fabric (dry)	
15	9:30			15			
	9:35						0
				16			
				17			
						Black silty fine sand intermixed with a large amount of misc. waste- fabric, plastic, metal, plexiglass (dry)	
				18			
				19			
20	9:41			20			

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

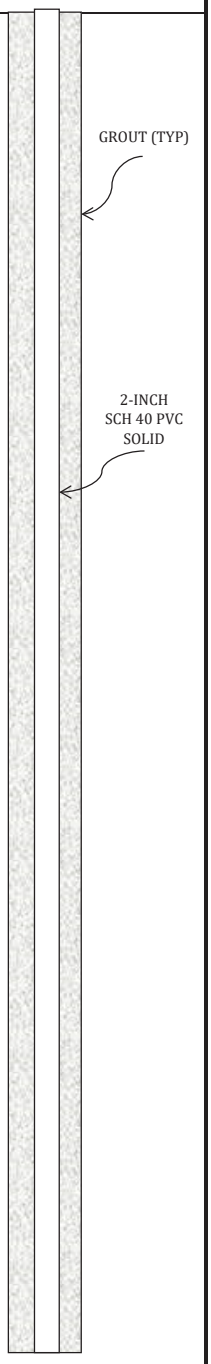
SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-18D SHEET 2 of 4 JOB NO. 09215600.03 CHKD. BY __

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ:	N1250501.7 E598219.3	See notes for datum	
		ELEV.:	GROUND = 179.8	WELL MP: Top of PVC (Riser) 182.71	
INSPECTOR:	SCS - B. Weglarz/C. Devitt	DATE START	2/10/2017	DATE END	2/13/2017
SAMPLER:	Split Spoon - Started at 50' Hydraulic Hammer				
METHOD:	Hollow -Stem Auger (HSA)				
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D.	OTHER:	CME 55 Drill Rig		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	9:44	NA	NA		NS	**WASTE (CONT.)**	0
				21			
				22			
				23		Black silty fine sand intermixed with metal wire, plastic, wood, and rubber (dry)	
				24			
25	9:48			25			
	9:52						0
				26			
				27			
						Black silty fine sand intermixed with wood, plastic, rubber sole, metal (moist)	
				28			
				29			
30	10:02			30			
	10:47						0
				31			
				32			
						Black silty fine sand intermixed with brown silty fine sand, plastic, wood, metal wire, metal chunks (dry to moist)	
				33			
				34			
35	10:57			35			
	11:00						0
				36			
				37			
						Black silty fine sand intermixed with plastic, wood, some brown silty fine sand and chunks of metal (moist)	
				38			
				39			
40	11:06			40			



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-18D
SHEET 3 of 4
JOB NO. 09215600.03
CHKD. BY __

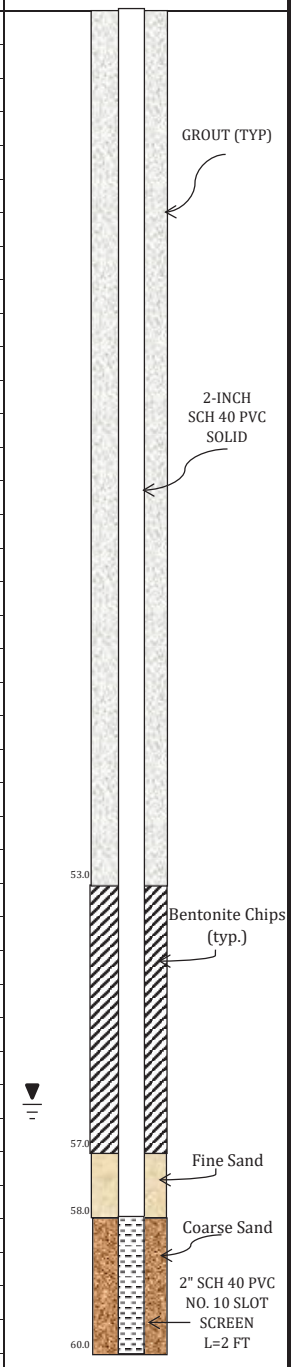
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz/C. Devitt
SAMPLER: Split Spoon - Started at 50' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

HORIZ: N1250501.7 E598219.3 See notes for datum
ELEV.: GROUND = 179.8 WELL MP: Top of PVC (Riser) 182.71
DATE START 2/10/2017 DATE END 2/13/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	11:09	NA	NA		NS	**WASTE (CONT.)**	0
				41			
				42			
				43		Black silty fine sand intermixed with plastic, wood, and misc. waste (moist)	
				44			
45	11:14			45			
	11:17						0
				46			
				47			
						Black silty fine sand intermixed with wood, plastic, and metal chunks (very moist)	
				48			
				49			
50	11:23			50			
	11:28				12	Start Split Spoon Sampling at 50'	0
		S-1	16	51	21	Black silty fine sand intermixed with wood, plastic, misc. waste (very moist to wet)	
					26	. . . 3" layer of white shell and stone	
	11:29			52	15		
	11:42				6	. . . Water at 52' (pocket)	
		S-2	19	53	15	Black silty fine sand intermixed with sand, paper, plastic, rocks, wood, misc. waste (moist)	
					12		
	11:43			54	12		
	12:00				17		
55		S-3	13	55	60	Dark sand (moist)	
					21	Wood and coarse gray sand intermixed with rocks and black mud (wet)	0
	12:02			56	54		
	12:16				10	56.3'	
		S-4	18	57	20	**SAND**	
					35		
	12:18			58	41	Coarse gray sand (Moist to wet)	
	12:25				7		
		S-5	21	59	11	. . . Becoming more silty (sand mixed with clay)	
					7	59.5'	
60	12:25			60	8	**CLAY**	



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-18D SHEET 4 of 4 JOB NO. 09215600.03 CHKD. BY __

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ: N1250501.7 E598219.3	See notes for datum
		ELEV.: GROUND = 179.8	WELL MP: Top of PVC (Riser) 182.71
INSPECTOR:	SCS - B. Weglarz/C. Devitt	DATE START 2/10/2017	DATE END 2/13/2017
SAMPLER:	Split Spoon - Started at 50' Hydraulic Hammer		
METHOD:	Hollow -Stem Auger (HSA)		
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER		SAMPLE				SAMPLE DESCRIPTION	H&S	WELL INSTALLATION DIAGRAM
DEPTH	TIME	NO.	REC (in.)	DEPTH (Ft.)	BLOWS (/6")		Methane (ppm)	
	12:31	S-6	24		2	**CLAY (CONT.)**	0	60.5 PVC End Cap L=6"
				61	2			
					3	White silty clay (phosphatic)		
62	12:31			62	4	62'		

BOE = 62'

Notes:
- ADVANCED AUGERS TO 62' TO SET PIEZOMETER. COLLECTED SPLIT SPOON FROM 60'-62' TO CONFIRM CLAY.
- BOTTOM OF PVC END CAP AND PRE-PACKED SCREEN SET ~1.0' INTO CLAY.
- DEVELOPED PIEZOMETER ON 2/24/17 USING MONSOON SUBMERSIBLE PUMP. REMOVED ~ 10 GALLONS.

Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point
BOE = Bottom of exploration

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-19D
SHEET 1 of 5
JOB NO. 09215600.03
CHKD. BY __

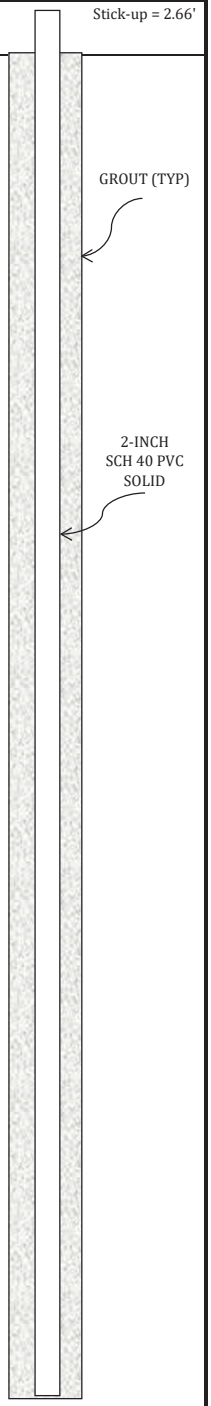
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz/ M. Rivera
SAMPLER: Split Spoon - Started at 75'
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME-55 Drill Rig

HORIZ: N1250693.0 E597033.6 See notes for datum
ELEV.: GROUND = 200.4 WELL MP: Top of PVC (Riser) 203.06
DATE START 2/1/2017 DATE END 2/3/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	10:02	NA	NA		NC	**SAND**	0
				1		Brown sand with little debris (waste), organic material, metal/ash	
						1.5'	
				2		**WASTE**	
						Metal, plastic, wires, glass, paper, wood (dry)	
				3			
						Metal, wire mixed with black silty fine sand (dry)	
				4			
						Metal wire, black silty fine sand, pieces of radiator (dry)	
5	10:43			5			
	10:51					Black silty fine sand (dry)	0
				6			
				7			
				8		Glass, metal scraps, nails, metal wire, brown silty fine sand, moist black silty fine sand, copper wire, misc. waste, rubber, strips of plastic (mostly dry)	
				9			
10	11:22			10			
	11:26					Rubber, wood, strips of plastic, black silty fine sand (slightly moist)	0
				11			
						Wood, strips of plastic, black silty fine sand, some brown silty fine sand (slightly moist)	
				12			
				13			
						Fiberglass, black silty fine sand intermixed with small amounts of brown silty fine sand, misc. waste (slightly moist)	
				14			
15	11:43			15			
	11:47					Plastic, metal, black silty fine sand, (slightly moist)	0
				16		Rubber, glass, fiberglass, black silty fine sand (slightly moist)	
				17		Metal wire, black and brown silty fine sand intermixed, metal chunks (slightly moist)	
				18		Rubber, plastic strips, plastic chunks (slightly moist)	
				19		Moist clay, black and brown silty fine sand intermixed, wood (slightly moist)	
20	12:27			20			



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-19D
SHEET 2 of 5
JOB NO. 09215600.03
CHKD. BY __

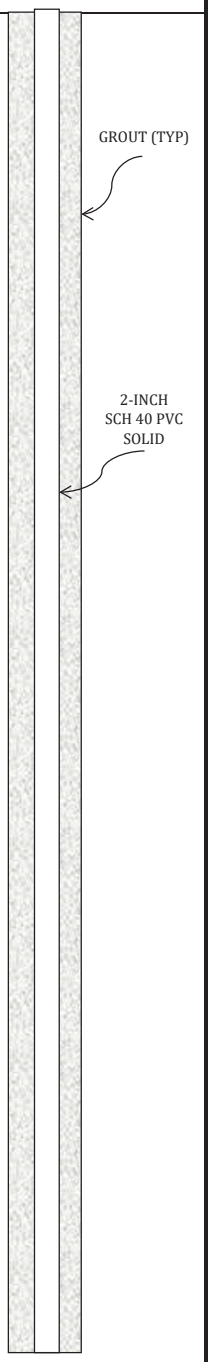
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz/ M. Rivera
SAMPLER: Split Spoon - Started at 75' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME-55 Drill Rig

HORIZ: N1250693.0 E597033.6 See notes for datum
ELEV.: GROUND = 200.4 WELL MP: Top of PVC (Riser) 203.06
DATE START 2/1/2017 DATE END 2/3/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	12:33	NA	NA		NA	**WASTE (CONT.)**	0
				21			
				22			
				23		Metal chunks, wood, plastic, fiberglass, paper, metal wire mixed with black silty fine sand. Some layers of light brown sand. (Slightly moist)	
				24			
25	12:53			25			
	12:57					Wood, black and brown silty fine sand intermixed (slightly moist)	0
				26			
						Plastic, wire, black and brown silty fine sand intermixed, fabric, rug, plastic bag (slightly moist)	
				27			
						Metal chunks, black and brown silty fine sand intermixed (slightly moist)	
				28			
				29		Wood, black and brown silty fine sand intermixed (slightly moist)	
30	13:24			30			
	13:30					Metal chunks, fabric, black and brown silty fine sand intermixed (dry), carpet, black silty fine sand (moist)	0
				31			
				32		PVC, wood, roots, rubber, fiberglass, black and brown silty fine sand intermixed (slightly moist)	
				33			
				34		Tar paper, black and brown silty fine sand intermixed (slightly moist)	
35	13:53			35			
	13:55						0
				36		Plastic bag, black silty fine sand (dry)	
				37		Rug, plastic, rubber, black and brown silty fine sand (slightly moist)	
				38			
						Black silty fine sand, plastic, black and brown silty fine sand intermixed, metal wire (slightly moist)	
				39			
						Plastic scraps, black and brown silty fine sand intermixed (mostly dry)	
40	14:32			40			



Notes:
DTW = Depth to water
btor = Below top of riser
MOP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-19D
SHEET 3 of 5
JOB NO. 09215600.03
CHKD. BY __

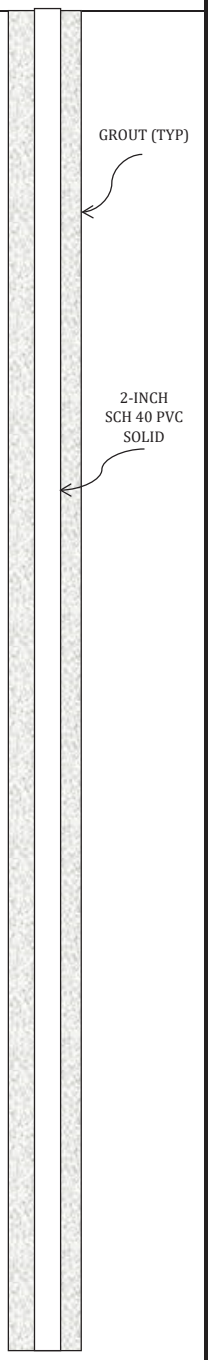
DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ: N1250693.0 E597033.6	See notes for datum
		ELEV.: GROUND = 200.4	WELL MP: Top of PVC (Riser) 203.06
INSPECTOR:	SCS - B. Weglarz/ M. Rivera	DATE START 2/1/2017	DATE END 2/3/2017
SAMPLER:	Split Spoon - Started at 75' Hydraulic Hammer		
METHOD:	Hollow -Stem Auger (HSA)		
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER: CME-55 Drill Rig		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	14:37	NA	NA		NS	**WASTE (CONT.)**	0
				41		Plastic, metal wire, wood (mostly dry) Hard drilling 40'	
						Fiberglass, copper, roots, black and brown silty fine sand intermixed (mostly dry)	
				42			
				43		Black and brown silty fine sand intermixed, wood, plastic (mostly dry)	
				44			
45	14:59			45			
	15:03						0
				46		Plastic, wood, black silty fine sand (mostly dry)	
				47		Plastic bags, copper wire, black silty fine sand (mostly dry)	
				48			
				49		Glass, newspaper, black silty fine sand (mostly dry)	
50	15:19			50			
	15:24						0
				51		Black silty fine sand, plastic, wood, metal (dry)	
				52		Black silty fine sand, plastic bags, nails, metal wire (dry)	
				53			
				54		Rubber tires, plastic strips, roots, black silty fine sand (dry, very light and fluffy)	
55	15:33			55			
	15:37					Wood, plastic, black silty fine sand (mostly dry)	0
				56			
				57		Black silty fine sand, wood, plastic, metal chunks (mostly dry)	
				58			
				59		Black silty fine sand, big chunks of plastic, wood (mostly dry)	
60	15:54			60			

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-19D
SHEET 4 of 5
JOB N0. 09215600.03
CHKD. BY __

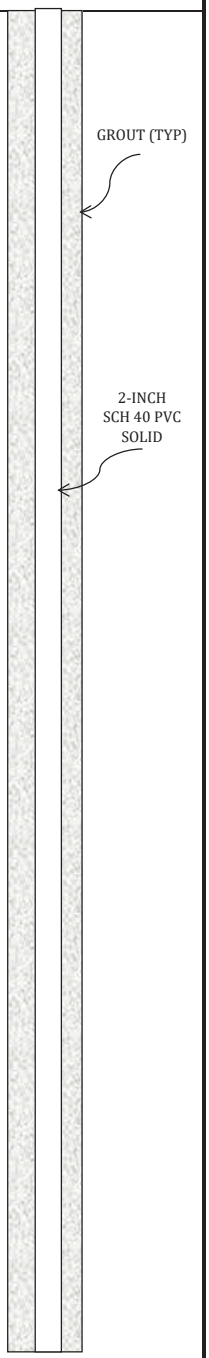
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz/ M. Rivera
SAMPLER: Split Spoon - Started at 75' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME-55 Drill Rig

HORIZ: N1250693.0 E597033.6 See notes for datum
ELEV.: GROUND = 200.4 WELL MP: Top of PVC (Riser) 203.06
DATE START 2/1/2017 DATE END 2/3/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	15:57	NA	NA		NC	**WASTE (CONT.)**	0
				61			
				62			
				63		Black silty fine sand, wood, plastic bag, plastic chunks, metal wire (mostly dry)	
				64			
65	16:11			65			
	16:49						0
				66			
				67			
						Black silty fine sand, wood, plastic bag, plastic chunks (mostly dry)	
				68			
				69			
70	17:04			70			
	9:00						0
				71			
				72			
						Black silty fine sand, wood, plastic bag, plastic chunks (mostly dry)	
				73			
				74			
75	9:35	▼	▼	75	▼		
	9:44				2	Start Split Spoon Sampling at 75' Black silty fine sand intermixed with glass and wood (moist)	0
		S-1	15	76	4	Wood	
					8		
	9:45			77	21	Paper, wood, black silty fine sand (moist)	
	10:11				6		
		S-2	16	78	8	Ash intermixed with glass and wood (moist)	
					5	Coarse white sand with black specks (moist)	
	10:13			79	4	Black silty fine sand intermixed with paper and wood (moist)	
	10:33	S-3	15		5	Ash intermixed with glass and wood (moist)	
80				80	7	Wood and plastic intermixed with some ash and black silty fine sand (moist)	



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-19D
SHEET 5 of 5
JOB NO. 09215600.03
CHKD. BY __

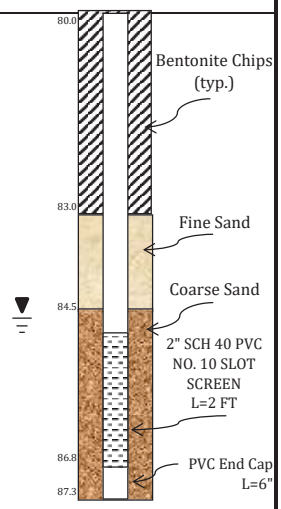
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz/ M. Rivera
SAMPLER: Split Spoon - Started at 75' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME-55 Drill Rig

HORIZ: N1250693.0 E597033.6 See notes for datum
ELEV.: GROUND = 200.4 WELL MP: Top of PVC (Riser) 203.06
DATE START 2/1/2017 DATE END 2/3/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
		S-3 (cont)	15		20	**WASTE (CONT.)**	0
81	10:34			81	23	Plastic, wood, and paper intermixed (moist)	
	11:01				5	Moist black sand and wood 81.5'	
82		S-4	13	82	6	**SAND**	
					7		
83	11:03			83	8	Gray fine sand (Moist)	
	11:44				11		
84		S-5	16	84	20		
					35		
85	11:47			85	63		
	14:49				12		0
86		S-6	15	86	27		
					18	86.2'	
87	14:51			87	13	**CLAY**	
	15:15				2	White silty clay (phosphatic)	
88		S-7	NR	88	3		
					5		
89	15:15			89	5		



BOE = 89'

Notes:
- ADVANCED AUGERS TO 87' TO CONFIRM CLAY AND SET PIEZOMETER.
- BOTTOM OF PVC END CAP AND PRE-PACKED SCREEN SET ~1.1' INTO CLAY.
- DEVELOPED PIEZOMETER ON 2/27/17 USING MONSOON SUBMERSIBLE PUMP. REMOVED ~ 10 GALLONS.

Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-19S
SHEET 1 of 4
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 71'
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

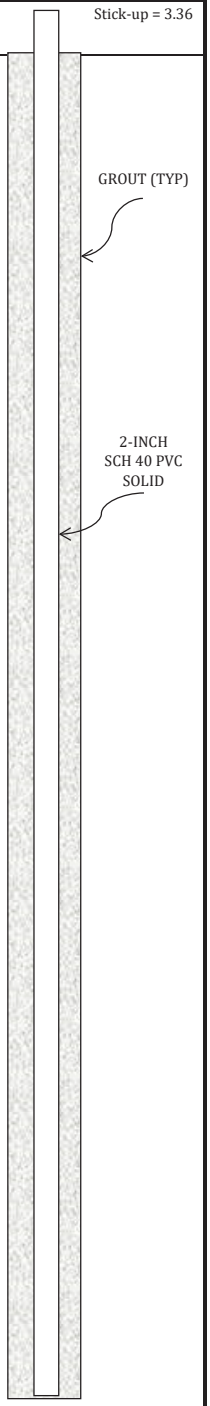
HORIZ: N1250679.77 E597036.76 See notes for datum
ELEV.: GROUND = 200.0 WELL MP: Top of PVC (Riser) 203.36
DATE START 2/24/2017 DATE END 2/27/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	9:06	NA	NA		NS	**SAND**	0
				1		Brown sand with some organic material and sod	
				2		2'	
						WASTE	
				3			
						Brown silty fine sand intermixed with waste- metal pieces, organics (dry)	
				4			
5	9:30			5			
	9:35						0
				6			
				7			
						Black silty fine sand intermixed with waste- wood, organics, plastic, paper. (moderately moist)	
				8			
				9			
10	9:42			10			
	9:48						0
				11			
				12			
						Black silty fine sand intermixed with waste- fabric, wood, paper. (moist)	
				13			
				14			
15	9:55			15			
	9:59						0
				16			
				17			
						Black silty fine sand intermixed with waste- rubber gloves, plastic, paper, fabric. (moist)	
				18			
				19			
20	10:06			20			

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-19S
SHEET 2 of 4
JOB NO. 09215600.03
CHKD. BY __

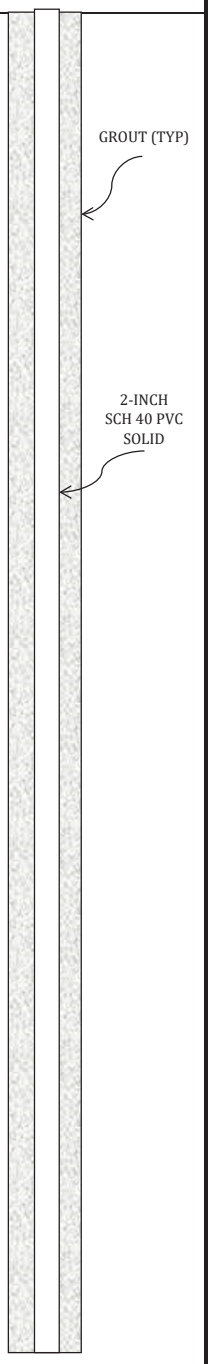
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 71'
Hydraulic Hammer
METHOD: HSA
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

HORIZ: N1250679.77 E597036.76 See notes for datum
ELEV.: GROUND = 200.0 WELL MP: Top of PVC (Riser) 203.36
DATE START 2/24/2017 DATE END 2/27/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	10:09	NA	NA		NS	**WASTE (CONT.)**	0
				21			
				22			
				23		Moist black silty fine sand intermixed with waste- fabric, organics, metal wire, plastic. (moist)	
				24			
25	10:13			25			
	10:16						0
				26			
				27			
						Black silty fine sand intermixed with waste- fabric, plastic, organics, wood. (moist)	
				28			
				29			
30	10:24			30			
	10:28						0
				31			
				32			
						Black silty fine sand intermixed with waste- plastic, rubber, fabric, wood, organics. (moist)	
				33			
				34			
35	10:37			35			
	10:40						0
				36			
				37			
						Black silty fine sand intermixed with waste- fabric, wood, metal. (moist)	
				38			
				39			
40	10:59			40			



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-19S
SHEET 3 of 4
JOB NO. 09215600.03
CHKD. BY __

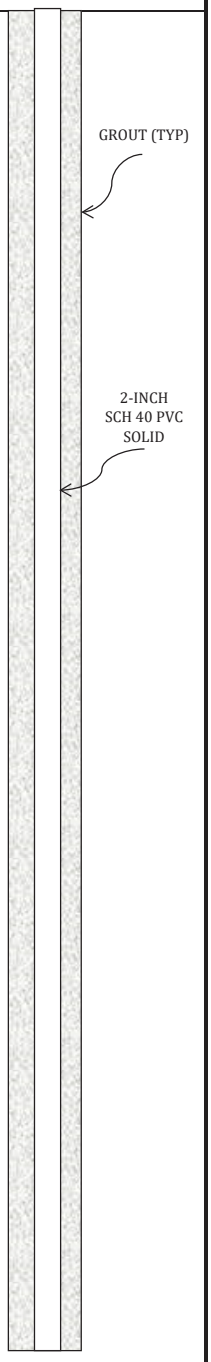
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 71'
Hydraulic Hammer
METHOD: HSA
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

HORIZ: N1250679.77 E597036.76 See notes for datum
ELEV.: GROUND = 200.0 WELL MP: Top of PVC (Riser) 203.36
DATE START 2/24/2017 DATE END 2/27/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	11:02	NA	NA		NS	**WASTE (CONT.)**	0
				41			
				42			
				43		Black silty fine sand intermixed with waste- metal, fabric, plastic, wood, organics. (moist)	
				44			
45	11:21			45			
	11:25						0
				46			
				47			
						Black silty fine sand intermixed with waste- metal, fabric, plastic, wood, organics. (moist)	
				48			
				49			
50	11:31			50			
	11:34						0
				51			
						Black silty fine sand intermixed with waste- wood, organics, rubber, plastic. (moist)	
				52			
				53		...Hard drilling 53'-55'	
				54			
55	11:49			55			
	15:48						0
				56			
				57			
						Black silty fine sand intermixed with waste- wood, organics, metal. (moist)	
				58			
				59			
60	16:11			60			



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-19S
SHEET 4 of 4
JOB NO. 09215600.03
CHKD. BY __

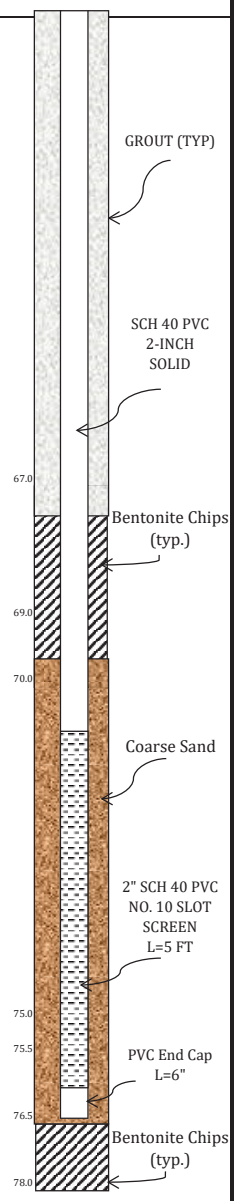
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 71'
Hydraulic Hammer
METHOD: HSA
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

HORIZ: N1250679.77 E597036.76 See notes for datum
ELEV.: GROUND = 200.0 WELL MP: Top of PVC (Riser) 203.36
DATE START 2/24/2017 DATE END 2/27/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	16:17	NA	NA		NS	**WASTE (CONT.)**	0
				61			
				62			
				63		Black silty fine sand intermixed with waste- fabric, organics, wood, paper, metal (moist)	
				64			
65	16:27			65			▼
	16:32					Black silty fine sand intermixed with waste- metal, wood, organics, fabric, plastic. (moist)	0
				66			
				67			
				68			
				69			
70	16:42			70			
	16:48						
	16:52	▼	▼	71	▼	Start Split Spoon Sampling at 71'	▼
	17:00				45	Black silty fine sand with metal, glass, wood (moist)	0
		S-1	21	72	126		
	▼				60		
	17:10			73	68		
	17:25				14	Black silty fine sand with wood, glass, organics. (moist)	
		S-2	14	74	12		
	▼				23		
75	17:27			75	19		
	8:29				11	Black silty fine sand and sand with limestone chunks	
		S-3	18	76	12	Wood and plastic	
	▼				14		
	8:30			77	10	Black silty fine sand with sand and waste (glass)	
	8:50				7	Black silty fine sand with wood and styrofoam	
		S-4	21	78	8	77.5 SAND	
	▼				20		▼
	8:52			79	32		



BOE = 79'

Notes:
- ADVANCED AUGERS TO 71', THEN COLLECTED SPLIT SPOON SAMPLES FROM 71'-79'.
- AUGERS WERE ADVANCED TO 78' BEFORE IT WAS DECIDED TO SET THE WELL AT 76', SO 76.5'-78' WAS FILLED WITH BENTONITE CHIPS PRIOR TO PLACING THE WELL
- BOTTOM OF PVC END CAP AND PRE-PACKAGED SCREEN SET IN WASTE LAYER
- NO LIQUID PRESENT- PIEZOMETER NOT DEVELOPED

Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
BOE = Bottom of exploration

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-20D
SHEET 1 of 4
JOB NO. 09215600.03
CHKD. BY ___

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - L. Urena/M. Rivera
SAMPLER: Split Spoon - Started at 65' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

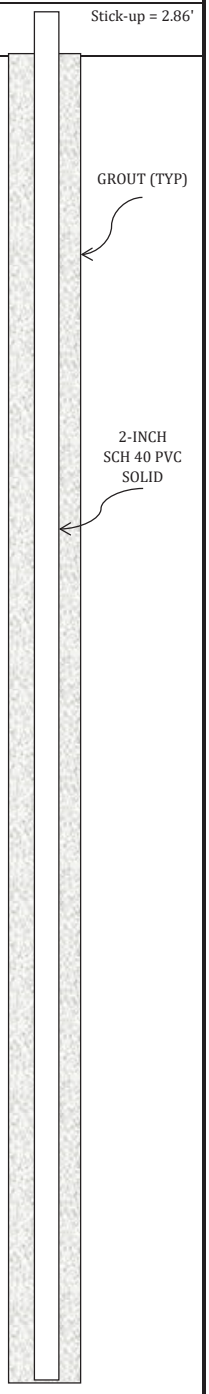
HORIZ: N1250837.8 E597321.7 See notes for datum
ELEV.: GROUND = 190.0 WELL MP: Top of PVC (Riser) 192.86
DATE START 1/23/2017 DATE END 1/27/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	12:53	NA	NA		NS	**SAND**	0
				1		Brown sand with little debris (waste), organic material, metal/ash	
				2		2'	
						WASTE	
				3			
				4		Black silty fine sand intermixed with tires, wood, plastic, VHS tape strip, paper, metal, plastic bags (dry)	
5	13:23			5			
	13:26						0
				6			
				7		Black silty fine sand intermixed with plastic, wood, metal (dry to moist)	
				8			
				9		Black silty fine sand intermixed with a large amount of waste-fabric, wood, plastic, metal wire (moist)	
10	13:32			10			
	13:37						0
				11			
				12		Black silty fine sand intermixed with a large amount of waste-plastic, paper, wood, styrofoam, metal, fabric (dry)	
				13			
				14			
15	13:49			15			
	13:52						0
				16			
				17		Black silty fine sand intermixed with plastic, paper, wood (dry)	
				18			
				19			
20	14:01	↓	↓	20	↓		

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-20D
SHEET 2 of 4
JOB NO. 09215600.03
CHKD. BY __

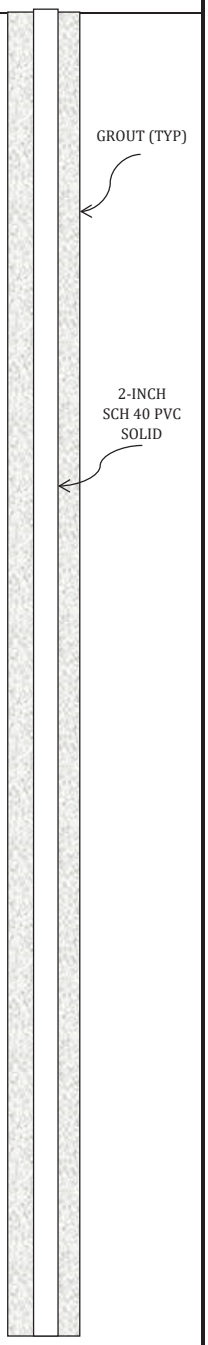
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - L. Urena/M. Rivera
SAMPLER: Split Spoon - Started at 65'
Hydraulic Hammer
METHOD: HSA
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

HORIZ: N1250837.8 E597321.7 See notes for datum
ELEV.: GROUND = 190.0 WELL MP: Top of PVC (Riser) 192.86
DATE START 1/23/2017 DATE END 1/27/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	14:05	NA	NA		NS	**WASTE (CONT.)**	0
				21			
				22			
				23		Black silty fine sand intermixed with wood, metal wire, plastic (dry)	
				24			
25	14:23			25			
	14:26						0
				26			
				27			
						Black silty fine sand intermixed with plastic, wood, fabric, metal (dry)	
				28			
				29			
30	14:39			30			
	14:43						0
				31			
				32			
						Black silty fine sand intermixed with a lot of hard plastic, wood, metal, fabric, palstic bags, paper (dry)	
				33			
				34			
35	15:04			35			
	15:08						0
				36			
				37			
						Sand, organic waste, plastic intermixed with ash, pieces of rubber tires. Black.	
				38			
				39			
40	15:24	▼	▼	40	▼		



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

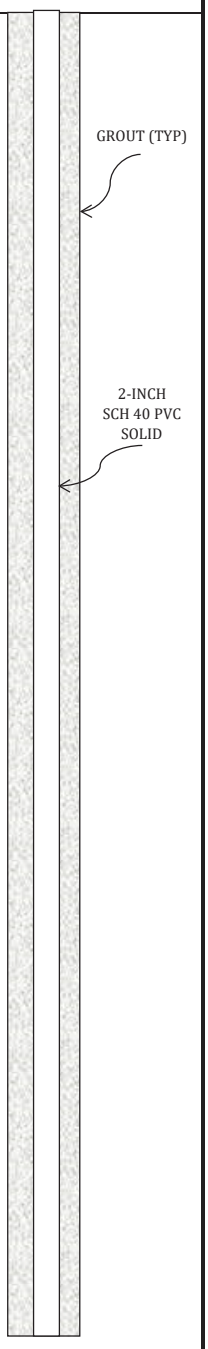
SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-20D SHEET 3 of 4 JOB NO. 09215600.03 CHKD. BY __

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ: N1250837.8 E597321.7	See notes for datum
		ELEV.: GROUND = 190.0	WELL MP: Top of PVC (Riser) 192.86
INSPECTOR:	SCS - L. Urena/M. Rivera	DATE START 1/23/2017	DATE END 1/27/2017
SAMPLER:	Split Spoon - Started at 65' Hydraulic Hammer		
METHOD:	HSA		
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	8:40	NA	NA		NS	**WASTE (CONT.)**	0
				41			
				42		Black sand mixed with ash, organics, debris, rubber tire pieces.	
				43			
				44		...more cohesive with some clay (moist)	
45	9:20			45			
							0
				46			
						...more dense/compacted	
				47			
				48			
				49		Softer, moist to wet, less debris (not much return came out from this interval)	
50	9:50			50			
							0
				51			
				52			
						Black sand and ash intermixed with debris (tire pieces, plastic, wire, organics). Moist, not as dense.	
				53			
				54			
55	10:10			55			
							0
				56			
				57			
						Sand and ash intermixed with organics, metal pieces, fabric, and plastic. Moist and black.	
				58			
				59			
60	10:30			60			



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-20D
SHEET 4 of 4
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - L. Urena/M. Rivera
SAMPLER: Split Spoon - Started at 65'
Hydraulic Hammer
METHOD: HSA
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

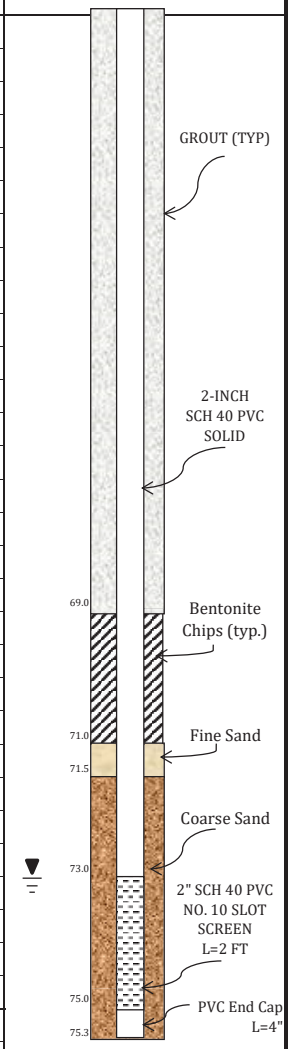
HORIZ: N1250837.8 E597321.7 See notes for datum
ELEV.: GROUND = 190.0 WELL MP: Top of PVC (Riser) 192.86
DATE START 1/23/2017 DATE END 1/27/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	10:30	NA	NA		NS	**WASTE (CONT.)**	0
				61			
				62		Black dense sand and ash intermixed with fabric, metal pieces, plastic, and organics. (moist)	
				63			
				64		Metal pieces, amount of debris less abundant.	
65				65			
	11:55				31	Start Split Spoon Sampling at 65'	0
		S-1	17	66	32	Ash intermixed with sand, glass. Black, compacted. Pieces of asphalt/cemented ash/klinker at tip of spoon. (dry)	
					23		
	11:57			67	21		
	12:30				7		
		S-2	16	68	24	Ash, sand with debris, plastic, wood, glass, cardboard. (dry)	
					22		
	12:32			69	20		
	13:17				11		
70		S-3	19	70	25	Black ash with some sand. Newspaper, plastic, wood, organics. Compacted. (dry)	
					19	70.5'	0
	13:19			71	23	**SAND**	
	13:50				20		
		S-4	22	72	67	Gray very fine to fine sand, very compacted. (dry)	
					91		
	13:59			73	127	. . . Moist	
	15:30				32		
		S-5	NR	74	34	Gray fine sand, becoming silty, mixed with some clay	
					36		
75	15:35			75	10	75'	
	10:40 (1/26)				2	**CLAY**	
		S-6	24	76	3	White silty clay (phosphatic)	
					3		
	10:42			77	4	77'	

BOE = 77'



Notes:
- ADVANCED AUGERS TO 75' TO SET PIEZOMETER. COLLECTED SPLIT SPOON FROM 75'-77' TO CONFIRM CLAY.
- BOTTOM OF PVC END CAP AND PRE-PACKED SCREEN SET ~0.3' INTO CLAY.
- DEVELOPED PIEZOMETER ON 2/27/17 USING MONSOON SUBMERSIBLE PUMP. REMOVED ~ 5 GALLONS.

Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
BOE = Bottom of exploration

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-21D
SHEET 1 of 4
JOB NO. 09215600.03
CHKD. BY __

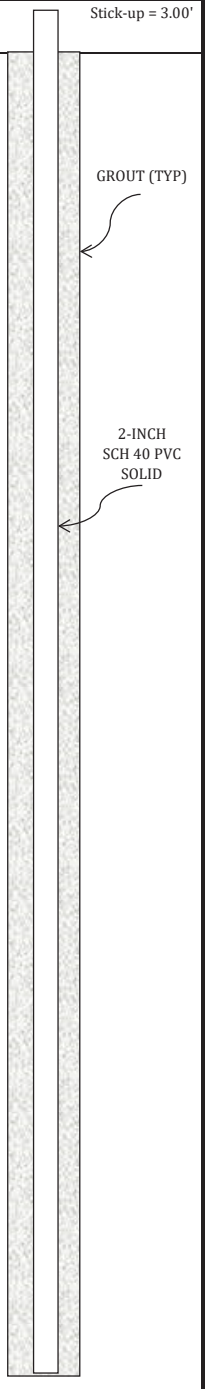
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz/M. Rivera
SAMPLER: Split Spoon - start at 65' Hydraulic Hammer
METHOD: Hollow Stem Auger
CASING SIZE: 4.25" ID & 8.25" OD OTHER:

HORIZ: N1250827.3 E596433.6 See notes for datum
ELEV.: GROUND = 191.3 WELL MP: Top of PVC (Riser) 194.30
DATE START 2/3/2017 DATE END 2/7/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	14:59	NA	NA		NS	**SAND**	0
				1		Brown sand with little debris (waste), organic material, metal/ash	
				2		2'	
						WASTE	0
				3			
				4		Black ash, plastic, metal wire, paper, piece of fabric. (dry)	
5	15:14			5			
	15:19						0
				6			
				7			
				8		Black ash, plastic. (dry)	
				9			
10	15:29			10			
	8:38						0
				11			
				12		Black ash and silty fine sand, rubber, wood, metal, plastic, metal wire. (slightly moist)	
				13			
				14			
						Ash (moist)	0
15	9:00			15			
	9:03						
				16			
				17		Black ash, plastic, fabric, silty fine sand, metal wire, wood. (moist)	
				18			
				19			
20	9:28			20			



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-21D
SHEET 2 of 4
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz/M. Rivera
SAMPLER: Split Spoon - start at 65' Hydraulic Hammer
METHOD: Hollow Stem Auger
CASING SIZE: 4.25" ID & 8.25" OD OTHER:

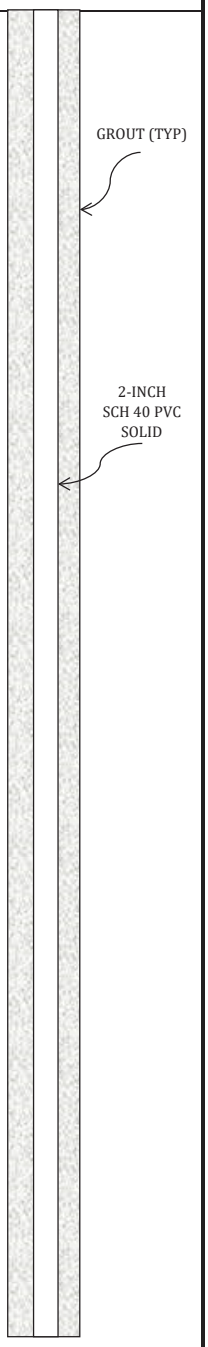
HORIZ: N1250827.3 E596433.6 See notes for datum
ELEV.: GROUND = 191.3 WELL MP: Top of PVC (Riser) 194.30
DATE START 2/3/2017 DATE END 2/7/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	9:32	NA	NA		NS	**WASTE (CONT.)**	0
				21			
				22			
				23		Black silty fine sand, plastic, paper, waste. (moist)	
				24			
25	9:46			25			
	9:49						0
				26			
				27			
						Brown and black silty fine sand, mixed waste- plastic, paper, organics, metal. (slightly moist)	
				28			
				29			
30	10:15			30			
	10:25						0
				31			
				32			
						Black and brown silty fine sand, some clay, metal spoon. Hard drilling. (moist)	
				33			
				34			
35	11:22			35			
	11:26						0
				36			
				37			
						Black silty fine sand, gray sand, plastic, copper wire, metal, paper. (moist)	
				38			
				39			
40	12:17			40			

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MOP = Measuring point

SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-21D SHEET 3 of 4 JOB NO. 09215600.03 CHKD. BY __

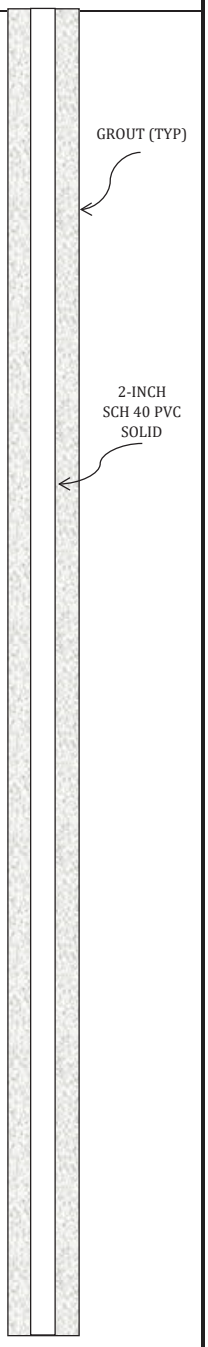
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz/M. Rivera
SAMPLER: Split Spoon - start at 65'
Hydraulic Hammer
METHOD: Hollow Stem Auger
CASING SIZE: 4.25" ID & 8.25" OD OTHER:

HORIZ: N1250827.3 E596433.6 See notes for datum
ELEV.: GROUND = 191.3 WELL MP: Top of PVC (Riser) 194.30
DATE START 2/3/2017 DATE END 2/7/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	12:21	NA	NA		NS	**WASTE (CONT.)**	0
				41			
				42			
				43		Black silty fine sand, metal, plastic, clay. (slightly moist)	
				44			
45	12:33			45			
	12:39						0
				46			
				47			
				48		Black silty fine sand, plastic, metal, fabric. (dry)	
				49			
50	12:47			50			
	12:52						0
				51			
				52			
				53		Black silty fine sand, plastic, metal, wire. (dry)	
				54			
55	13:03			55			
	13:09						0
				56			
				57			
				58		Black silty fine sand, plastic, wire, fabric. (dry)	
				59			
60	13:21			60			



Notes:

DTW = Depth to water
btor = Below top of riser
MOP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-21D
SHEET 4 of 4
JOB NO. 09215600.03
CHKD. BY __

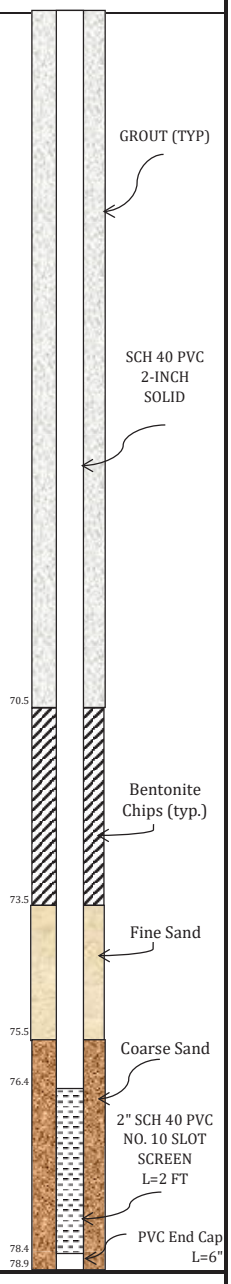
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz/M. Rivera
SAMPLER: Split Spoon - start at 65'
Hydraulic Hammer
METHOD: Hollow Stem Auger
CASING SIZE: 4.25" ID & 8.25" OD OTHER:

HORIZ: N1250827.3 E596433.6 See notes for datum
ELEV.: GROUND = 191.3 WELL MP: Top of PVC (Riser) 194.30
DATE START 2/3/2017 DATE END 2/7/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	13:22	NA	NA		NS	**WASTE (CONT.)**	0
				61			
				62			
				63		Black silty fine sand, plastic, metal, fabric. (dry)	
				64			
65	13:41			65			
	13:49				23	Start Split Spoon Sampling at 65'	0
		S-1	6"	66	29		
					31	Waste- metal, plastic, glass, intermixed with black silty fine sand.	
	13:51			67	86		
	14:09				18		
		S-2	14.4"	68	27	Gray sand.	
					20		
	14:10			69	28	Waste- plastic, styrofoam, wood, paper, glass.	
	14:32				13		
70		S-3	14.5"	70	14	Dark stained gray sand.	
					140	Wood	0
	14:35			71	19	Gray sand intermixed with waste- paper, plastic	
	14:53				10	71.5'	
		S-4	11"	72	12	**SAND**	
					21	Coarse gray sand (dry)	
	2:55			73	32		
	14:55				36		
		S-5	24"	74	39	Coarse gray sand. (moist)	
					55		
75	15:11			75	75		
	15:26				7		0
		S-6	19.2"	76	18	Coarse gray sand. (moist)	
					26		
	15:28			77	21		
	15:45				5		
		S-7	23.6"	78	7	. . . some water came out of tube (wet)	
					5		
	15:45			79	7	78.3' **CLAY** White silty clay (phosphatic) BOE = 79'	



Notes:
- ADVANCED AUGERS TO 79' AND SET PIEZOMETER.
- BOTTOM OF PVC END CAP AND PRE-PACKED SCREEN SET ~0.6' INTO CLAY.
- DEVELOPED PIEZOMETER ON 2/20/17 USING AIR LIFT. REMOVED ~ 8 GALLONS..

Notes:
DTW = Depth to water
btor = Below top of riser
MOP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-22D
SHEET 1 of 4
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz/M. Rivera
SAMPLER: Split Spoon - Start at 65' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER:

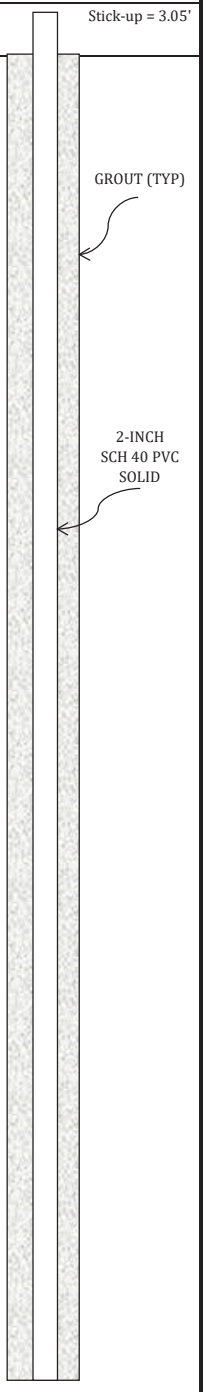
HORIZ: N1250913.8 E596382.9 See notes for datum
ELEV.: GROUND = 190.0 WELL MP: Top of PVC (Riser) 193.05
DATE START 2/7/2017 DATE END 2/8/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	13:45	NA	NA		NS	**SAND**	0
				1		Brown sand with little debris (waste), organic material, metal/ash	
				2		2'	
						WASTE	
				3			
				4		Black and brown silty fine sand intermixed with metal and plastic. (moist)	
5	14:00			5			
	14:05						0
				6			
				7			
				8		Harder drilling, black silty fine sand, metal wire, brown silty fine sand, metal chunks, plastic, nail, fabric, plastic bags. (very moist)	
				9			
10	14:36			10			
	14:41						0
				11			
				12		Black silty fine sand intermixed with plastic, fabric, wood, metal. (dry)	
				13			
				14			
15	14:55			15			
	15:00						0
				16			
				17		Black silty fine sand intermixed with wood, plastic, fabric, and metal. (moist)	
				18			
				19			
20	15:08			20			

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

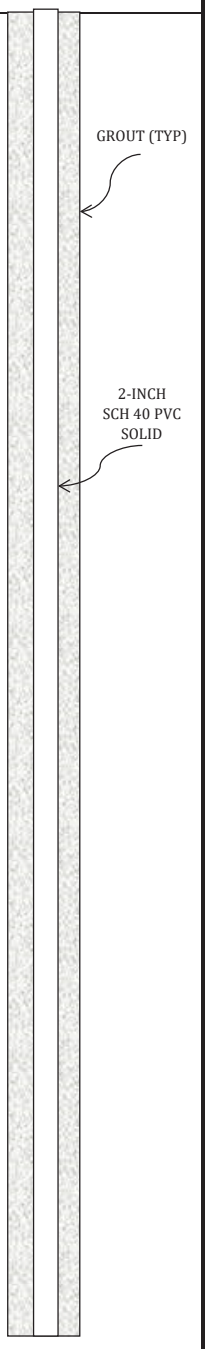
SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-22D SHEET 2 of 4 JOB NO. 09215600.03 CHKD. BY __

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ: N1250913.8 E596382.9	See notes for datum
		ELEV.: GROUND = 190.0	WELL MP: Top of PVC (Riser) 193.05
INSPECTOR:	SCS - B. Weglarz/M. Rivera	DATE START 2/7/2017	DATE END 2/8/2017
SAMPLER:	Split Spoon - Start at 65' Hydraulic Hammer		
METHOD:	Hollow -Stem Auger (HSA)		
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER:		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER		SAMPLE				SAMPLE DESCRIPTION	H&S	WELL INSTALLATION DIAGRAM
DEPTH	TIME	NO.	REC (in.)	DEPTH (Ft.)	BLOWS (/6")		Methane (ppm)	
	15:15	NA	NC		NS	**WASTE (CONT.)**	0	
				21				
				22				
				23		Harder drilling, black silty fine sand intermixed with waste, wood, plastic, metal, fabric.		
				24				
25	15:38			25				
	15:43						0	
				26				
				27				
						Black silty fine sand intermixed with waste- wood, metal, plastic, fabric.		
				28				
				29				
30	16:04			30				
	16:08						0	
				31				
				32				
						Black silty fine sand intermixed with waste- plastic, wood. Hit something very hard at 32 feet, metal.		
				33				
				34				
35	16:36			35				
	8:55						0	
				36				
				37				
						Dark brown silty fine sand, organics, plastics, wood.		
				38				
				39				
40				40				



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-22D SHEET 3 of 4 JOB NO. 09215600.03 CHKD. BY __

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ: N1250913.8 E596382.9	See notes for datum
		ELEV.: GROUND = 190.0	WELL MP: Top of PVC (Riser) 193.05
INSPECTOR:	SCS - B. Weglarz/M. Rivera	DATE START 2/7/2017	DATE END 2/8/2017
SAMPLER:	Split Spoon - Start at 65' Hydraulic Hammer		
METHOD:	Hollow -Stem Auger (HSA)		
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER:		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)	WELL INSTALLATION DIAGRAM
	9:04	NA	NC		NA	**WASTE (CONT.)**	0	
				41				
				42				GROUT (TYP)
				43		Black silty fine sand intermixed with waste including plastic, wire.		
				44				
45				45				
	9:35						0	
				46				2-INCH SCH 40 PVC SOLID
				47				
						Black silty fine sand intermixed with waste including plastic, wire.		
				48				
				49				
50				50				
	9:52						0	
				51				
				52				
						Black silty fine sand intermixed with waste including plastic, wire.		
				53				
				54				
55				55				
	10:14						0	
				56				
				57				
						Black silty fine sand with high paper and plastics content, larger metal pieces.		
				58				
				59				
60				60				

Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-22D
SHEET 4 of 4
JOB NO. 09215600.03
CHKD. BY __

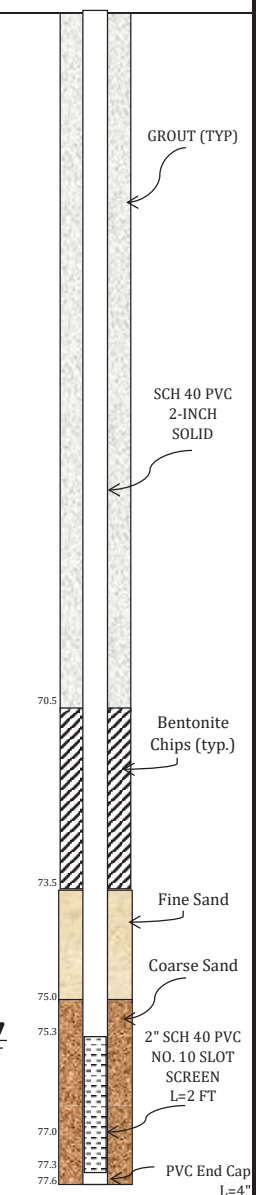
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz/M. Rivera
SAMPLER: Split Spoon - Start at 65'
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER:

HORIZ: N1250913.8 E596382.9 See notes for datum
ELEV.: GROUND = 190.0 WELL MP: Top of PVC (Riser) 193.05
DATE START 2/7/2017 DATE END 2/8/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	10:33	NA	NC		NA	**WASTE (CONT.)**	0
				61			
				62			
				63		Brown organics, plastics, fibers.	
				64			
65	10:48			65			
					12	Start Split Spoon Sampling at 65'	0
		S-1	20.4"	66	15	Silty fine to med sand. (dry)	
					16		
	10:56			67	12	Waste/ash	
	11:05				8	Waste/ash	
		S-2	16.8"	68	7	Silty medium sand	
					12		
	11:09			69	28	Fibrous waste, carpet	
	11:23				18		
70		S-3	3"	70	12	Waste and ash (dry)	0
					13		
	11:26			71	15		
	12:27				10	71.6'	
		S-4	13"	72	16	**SAND**	
					19		
	12:32			73	22		
	12:48				12		
		S-5	20.5"	74	22	Gray coarse Sand (moist)	
					30		
75	12:50			75	43		
					11		0
		S-6	15"	76	24	...76' wet	
					13		
				77	10	76.8'	
	13:03				1	**CLAY**	
		S-7	2"	78	2		
					4	Moist Clay	
79	13:03			79	6	79'	



BOE = 79'

Notes:
- ADVANCED AUGERS TO 77.5', THEN COLLECTED SPLIT SPOON FROM 77'-79' TO CONFIRM TOP OF CLAY.
- BOTTOM OF PVC END CAP AND PRE-PACKED SCREEN SET ~0.8' INTO CLAY.
- DEVELOPED PIEZOMETER ON 2/20/17 USING AIR LIFT. REMOVED ~2 GALLONS.

General Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-23D
SHEET 1 of 5
JOB N0. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz/M. Rivera
SAMPLER: Split Spoon - Started at 70' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER:

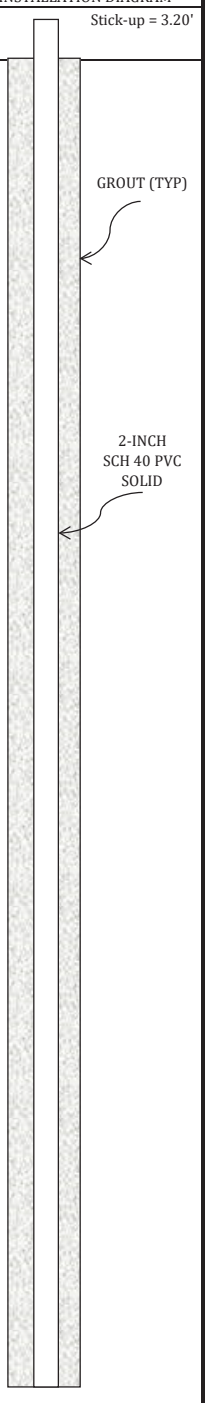
HORIZ: N1250642.4 E596444.3 See notes for datum
ELEV.: GROUND = 196.5 WELL MP: Top of PVC (Riser) 199.70
DATE START 1/27/2017 DATE END 1/30/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	15:45	NA	NA		NC	**SAND**	0
				1		Brown sand with some organic material and sod	
				2		2'	
						WASTE	
				3			
						Sand intermixed with waste (organics, metal, rags, fabric, plastic, wood)	
				4			
5	16:00			5			
	NA (1/30)						0
				6			
				7			
						Organics, plastics. Loosely compacted.	
				8			
				9			
10				10			
	8:45 (1/30)						0
				11			
				12			
						Dark organics, plastics, fibers. Loosely compacted.	
				13			
				14			
15	9:39			15			
							0
				16			
				17			
						Dark organics, fibers, plastics, unprocessed debris. Moderately moist, moderately compacted.	
				18			
				19			
20	10:19			20			

WELL INSTALLATION DIAGRAM



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

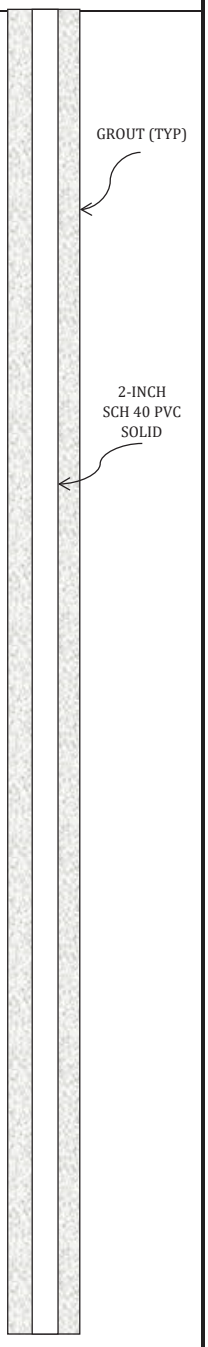
SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-23D SHEET 2 of 5 JOB NO. 09215600.03 CHKD. BY __

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ: N1250642.4 E596444.3	See notes for datum
		ELEV.: GROUND = 196.5	WELL MP: Top of PVC (Riser) 199.70
INSPECTOR:	SCS - B. Weglarz/M. Rivera	DATE START 1/27/2017	DATE END 1/30/2017
SAMPLER:	Split Spoon - Started at 70' Hydraulic Hammer		
METHOD:	Hollow -Stem Auger (HSA)		
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER:		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER		SAMPLE				SAMPLE DESCRIPTION	H&S	WELL INSTALLATION DIAGRAM
DEPTH	TIME	NO.	REC (in.)	DEPTH (Ft.)	BLOWS (/6")		Methane (ppm)	
	10:19	NA	NA		NA	**WASTE (CONT.)**	0	
				21				
				22				
				23		Dark brown organics, moderately moist. No significant change in subsurface. Large chunks of metal.		
				24				
25				25				
	11:22						0	
				26				
				27				
				28		Dark gray silty sand, plastics and fibers.		
				29				
30				30				
	11:52						0	
				31				
				32				
				33		Dark gray silty sand with waste.		
				34				
35				35				
	12:28						0	
				36				
				37				
				38		Dark brown, moderate moisture, plastics.		
				39				
40		▼	▼	40	▼			



Notes:

DTW = Depth to water
btor = Below top of riser
MOP = Measuring point

SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-23D SHEET 3 of 5 JOB NO. 09215600.03 CHKD. BY __

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ: N1250642.4 E596444.3	See notes for datum
		ELEV.: GROUND = 196.5	WELL MP: Top of PVC (Riser) 199.70
INSPECTOR:	SCS - B. Weglarz/M. Rivera	DATE START 1/27/2017	DATE END 1/30/2017
SAMPLER:	Split Spoon - Started at 70' Hydraulic Hammer		
METHOD:	Hollow -Stem Auger (HSA)		
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER:		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER		SAMPLE				SAMPLE DESCRIPTION	H&S	WELL INSTALLATION DIAGRAM
DEPTH	TIME	NO.	REC (in.)	DEPTH (Ft.)	BLOWS (/6")		Methane (ppm)	
	13:10	NA	NA		NS	**WASTE (CONT.)**	0	
				41				
				42				
				43		Dark brown, silty.		
				44				
45	13:40			45				
							0	
				46				
				47				
				48		Dark brown, silty, dry with paper and plastic debris.		
				49				
50				50				
	14:12						0	
				51				
				52				
				53		Dark brown, silty.		
				54				
55				55				
	14:31						0	
				56				
				57				
				58		Dark gray, silty, some plastics.		
				59				
60	15:09	▼	▼	60	▼			

GROUT (TYP)

2-INCH SCH 40 PVC SOLID

Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-23D
SHEET 4 of 5
JOB NO. 09215600.03
CHKD. BY __

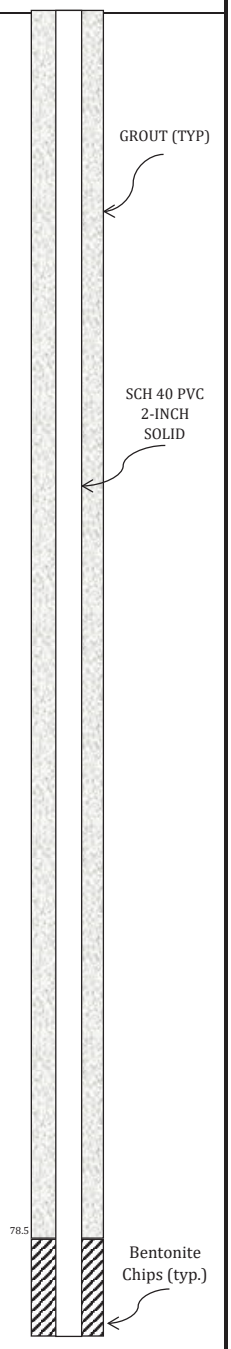
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - B. Weglarz/M. Rivera
SAMPLER: Split Spoon - Started at 70' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER:

HORIZ: N1250642.4 E596444.3 See notes for datum
ELEV.: GROUND = 196.5 WELL MP: Top of PVC (Riser) 199.70
DATE START 1/27/2017 DATE END 1/30/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
			NA		NC	**WASTE (CONT.)**	0
				61			
				62			
				63		Dark brown, silty, dry organics with pieces of plastic and moisture.	
				64			
65				65			
	15:18						0
				66			
				67		Dark brown organics, moderately moist.	
				68			
				69			
						69' "hard" layer, mostly dark organics. Some metal pieces.	
70	15:47			70			
					32	Start Split Spoon Sampling at 70' Waste	0
		S-1	24	71	78	Sand	
					34	Ash/klinker	
	16:12			72	26	Waste, wood, fabric, sand, glass	
	12:34				11	Waste (dry)	
		S-2	23.5	73	12	Black sand (dry)	
					30		
	16:36			74	20	Sand, metal, wood, ash, wood, ceramics (dry)	
	8:21				8		
75		S-3	19	75	8	Black sand and waste intermixed with organics and fabric. (dry)	
					11		0
	8:22			76	15	Piece of wood. (dry)	
	8:52				8	Waste and sand. (dry to moist) Waste- newspaper, wood, plastic. (dry to moist)	
		S-4	23	77	25	Ash with glass. (mostly dry w/ bit of moisture)	
					27		
	8:55			78	21	Waste- fabric, newspaper, wood. (dry)	
	9:18				26	Black sand with waste, some wood	
		S-5	20.4	79	28	79'	
					60	**SAND**	
80	9:22			80	101	Gray fine sand, very compacted (slightly moist)	



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-23D SHEET 5 of 5 JOB NO. 09215600.03 CHKD. BY __

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ: N1250642.4 E596444.3	See notes for datum
		ELEV.: GROUND = 196.5	WELL MP: Top of PVC (Riser) 199.70
INSPECTOR:	SCS - B. Weglarz/M. Rivera	DATE START 1/27/2017	DATE END 1/30/2017
SAMPLER:	Split Spoon - Started at 70' Hydraulic Hammer		
METHOD:	Hollow -Stem Auger (HSA)		
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER:		

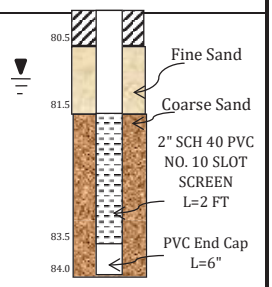
GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	9:52				18	**SAND (CONT.)**	0
81		S-6	21.6	81	28		
					45		
82	9:55			82	60	Gray fine to med sand (moist to wet)	
	10:13				5		
83		S-7	20.4	83	9		
					6	83.2	
84	10:14			84	6	**CLAY** White silty clay (phosphatic)	

BOE = 84'

WELL INSTALLATION DIAGRAM



Notes:
- ADVANCED AUGERS TO 84' TO SET PIEZOMETER IN ORDER TO AVOID SAND INTRUSION.
- BOTTOM OF PVC END CAP AND PRE-PACKED SCREEN SET ~0.8' INTO CLAY.
- DEVELOPED PIEZOMETER ON 2/20/17 USING AIR LIFT. REMOVED ~ 10 GALLONS.

Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-23S
SHEET 1 of 4
JOB NO. 09215600.03
CHKD. BY __

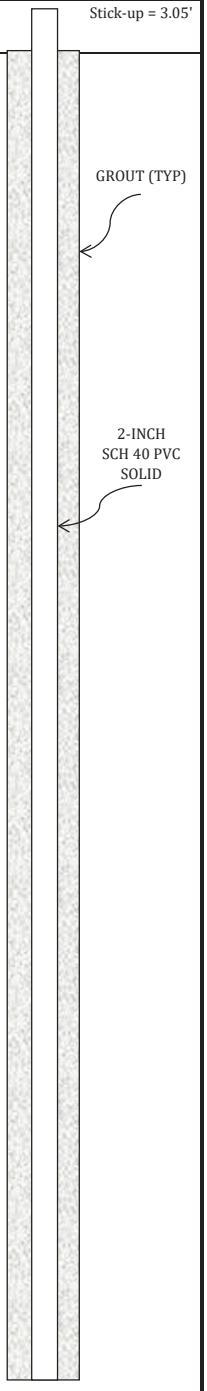
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 69' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

HORIZ: N1250636.73 E596454.97 See notes for datum
ELEV.: GROUND =196.4 WELL MP: Top of PVC (Riser) 199.45
DATE START 2/20/2017 DATE END 2/21/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME (min)	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	10	NA	NA		NS	**SAND**	0
				1		Brown sand with some organic material and sod	
				2		2'	
						WASTE	
				3			
				4		Sand intermixed with waste (organics, metal, rags, fabric, plastic, wood)	
5				5			
	15						0
				6			
				7			
				8		Organics, plastics. Loosely compacted	
				9			
10				10			
	12						0
				11			
				12			
						Dark organics, plastics, fibers. Loosely compacted.	
				13			
				14			
15				15			
	10						0
				16			
				17			
						Dark organics, fibers, plastics, unprocessed debris. Moderately moist, moderately compacted.	
				18			
				19			
20				20			



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.
Times on page 1 represent time taken to drill each 5 foot increment

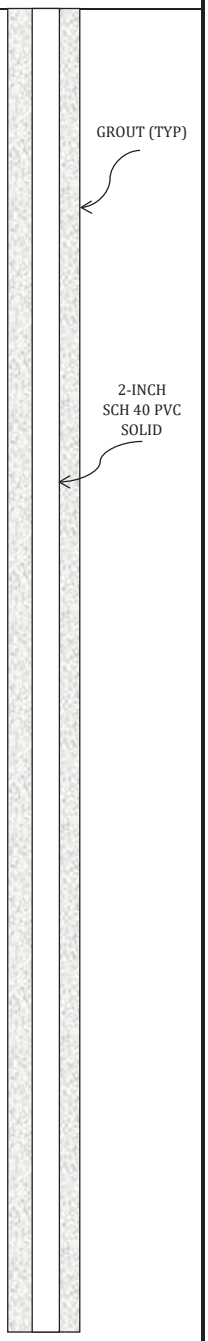
SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-23S SHEET 2 of 4 JOB NO. 09215600.03 CHKD. BY __

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ: N1250636.73 E596454.97	See notes for datum
		ELEV.: GROUND =196.4	WELL MP: Top of PVC (Riser) 199.45
INSPECTOR:	SCS - C. Devitt	DATE START 2/20/2017	DATE END 2/21/2017
SAMPLER:	Split Spoon - Started at 69' Hydraulic Hammer		
METHOD:	HSA		
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER		SAMPLE				SAMPLE DESCRIPTION	H&S	WELL INSTALLATION DIAGRAM
DEPTH	TIME	NO.	REC (in.)	DEPTH (Ft.)	BLOWS (/6")		Methane (ppm)	
	15:11	NA	NA		NS	**WASTE (CONT.)**	0	
				21				
				22				
				23		Dark brown organics, moderately moist.		
				24				
25	15:16			25				
	15:21						0	
				26				
				27				
						Black fine silty sand intermixed with fabric, plastic, paper (moist)		
				28				
				29				
30	15:27			30				
	15:32						0	
				31				
				32				
						Black fine silty sand intermixed with fabric, plastic, paper (moist)		
				33				
				34				
35	15:45			35				
	15:53						0	
				36				
				37				
						Black fine silty sand intermixed with fabric, plastic, paper (moist)		
				38				
				39				
40	16:03	▼	▼	40	▼			



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-23S SHEET 3 of 4 JOB NO. 09215600.03 CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 69'
Hydraulic Hammer
METHOD: HSA
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

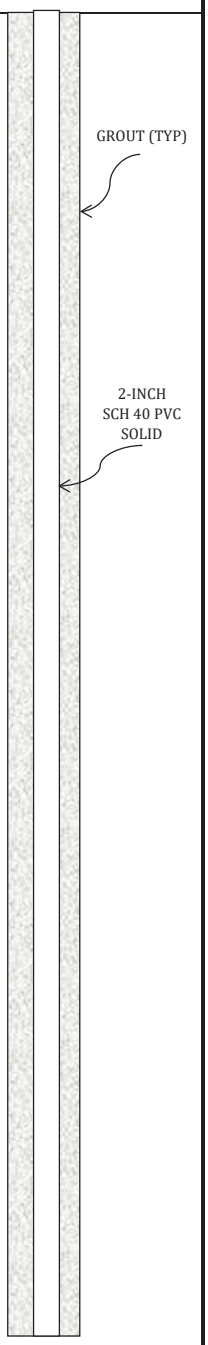
HORIZ: N1250636.73 E596454.97 See notes for datum
ELEV.: GROUND =196.4 WELL MP: Top of PVC (Riser) 199.45
DATE START 2/20/2017 DATE END 2/21/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	16:09	NA	NA		NS	**WASTE (CONT.)**	0
				41			
				42			
				43		Black fine silty sand intermixed with organics, plastic, paper, wood, metal wire (moist)	
				44			
45	16:26			45			
	16:31						0
				46			
				47			
						Black fine silty sand intermixed with organics, plastic, paper, wood, metal wire (moist)	
				48			
				49			
50	16:41			50			
	16:46						0
				51			
				52			
						Black fine silty sand intermixed with plastic, paper, wood, metal, organics, tire shreds (moist)	
				53			
				54			
55	16:52			55			
	16:59						0
				56			
				57			
						Black fine silty sand intermixed with wood, plastic, paper, metal, organics (moist)	
				58			
				59			
60	17:08			60			

WELL INSTALLATION DIAGRAM



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-23S
SHEET 4 of 4
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 69'
Hydraulic Hammer
METHOD: HSA
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

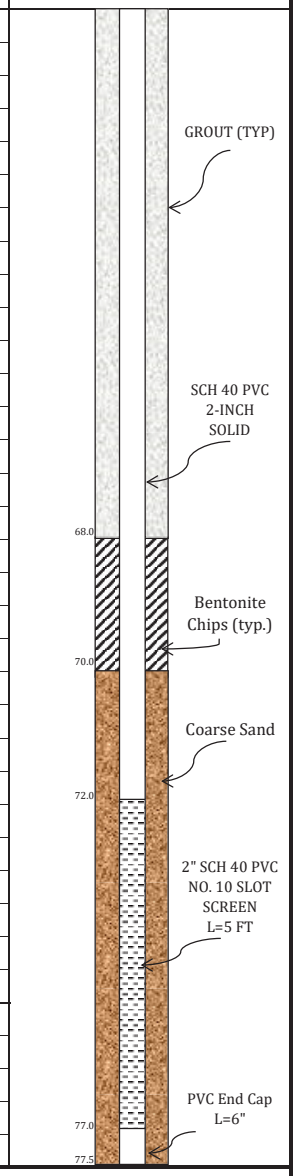
HORIZ: N1250636.73 E596454.97 See notes for datum
ELEV.: GROUND =196.4 WELL MP: Top of PVC (Riser) 199.45
DATE START 2/20/2017 DATE END 2/21/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	17:13	NA	NA		NS	**WASTE (CONT.)**	0
				61			
				62			
				63		Black fine silty sand intermixed with organics, wood, plastic, paper, metal (moist)	
				64			
65	17:22			65			
	17:27						0
				66			
				67		Very hard drilling 65-69, Black fine silty sand with lots of metal pieces (moist)	
				68			
	17:48			69			
	8:47				46	Start Split Spoon sampling at 69'	
70		S-1	NR	70	25		
					30	Black fine silty sand mixed with organics and wood (moist)	0
	8:50			71	8		
	9:07				8	Black fine silty sand mixed with organics and wood (moist)	
		S-2	20	72	8	Gray sand, fine grained (moist)	
					18	Black fine silty sand mixed with organics, wood, glass, plastic bags (wet)	
	9:09			73	25		
	9:19				22		
		S-3	15	74	12	Black fine silty sand mixed with plastic bags, wood, organics, glass, paper (moist)	
					17		
75	9:22			75	27		
	9:49				17		
		S-4	7	76	25	Black fine silty sand mixed with plastic, glass, wood, organics (moist)	
					9		
	9:51			77	13		
						77.5	

BOE = 77.5'



Notes:
- BOTTOM OF PVC END CAP AND PRE-PACKAGED SCREEN SET IN WASTE LAYER
- NO WATER PRESENT- PIEZOMETER NOT DEVELOPED

Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
BOE = Bottom of exploration

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-24D
SHEET 1 of 4
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 58' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

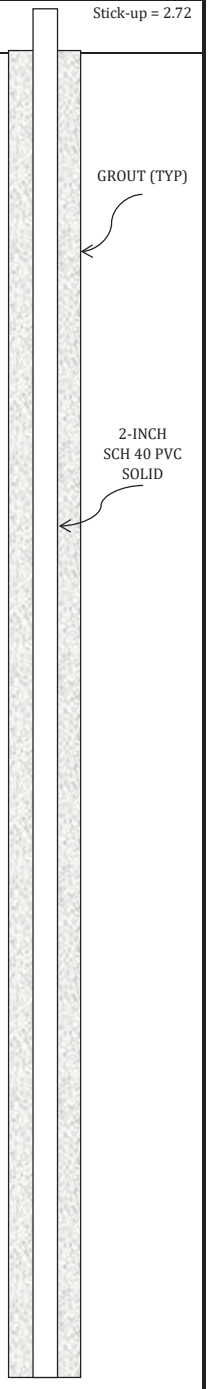
HORIZ: N1250696.87 E597654.72 See notes for datum
ELEV.: GROUND = 186.1 WELL MP: Top of PVC (Riser 188.82)
DATE START 2/27/2017 DATE END 3/1/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	15:53	NA	NA		NS	**SAND**	0
				1		Brown sand with sod, organic material.	
						1.5'	
				2		**WASTE**	
				3			
						Black fine silty sand intermixed with fabric, plastic, paper. (moist)	
				4			
5	16:09			5			
	16:13						0
				6			
				7			
						Black fine silty sand intermixed with fabric, rubber, plastic, wood, organics, paper. (moist)	
				8			
				9			
10	16:17			10			
	16:20						0
				11			
				12			
						Black fine silty sand intermixed with fabric, rubber, plastic, wood, organics, paper. (moist)	
				13			
				14			
15	16:25			15			
	16:28						0
				16			
				17			
						Black fine silty sand intermixed with waste- rubber tire shreds, wood, organics, fabric, plastic. (moist)	
				18			
				19			
20	16:33			20			

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

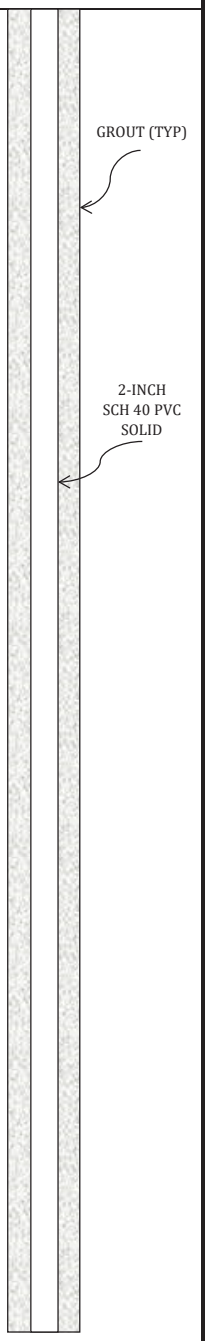
SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-24D SHEET 2 of 4 JOB NO. 09215600.03 CHKD. BY __

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ: N1250696.87 E597654.72	See notes for datum
		ELEV.: GROUND = 186.1	WELL MP: Top of PVC (Riser 188.82)
INSPECTOR:	SCS - C. Devitt	DATE START 2/27/2017	DATE END 3/1/2017
SAMPLER:	Split Spoon - Started at 58' Hydraulic Hammer		
METHOD:	Hollow -Stem Auger (HSA)		
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER		SAMPLE				SAMPLE DESCRIPTION	H&S	WELL INSTALLATION DIAGRAM
DEPTH	TIME	NO.	REC (in.)	DEPTH (Ft.)	BLOWS (/6")		Methane (ppm)	
	16:38	NA	NA		NS	**WASTE (CONT.)**	0	
				21				
				22				
				23		Black fine silty sand intermixed with waste- rubber tire shreds, plastic, organics, fabric. (moist)		
				24				
25	16:44			25				
	16:49						0	
				26				
				27				
						Black fine silty sand intermixed withfabric, plastic, organics, wood, metal. (moist)		
				28				
				29				
30	17:08			30				
	9:03					...Hard drilling 30'-32'	0	
				31				
				32				
						Black fine silty sand intermixed with waste- metal, fabric, wood, organics. (moist)		
				33				
				34				
35	9:21			35				
	10:36						0	
				36				
				37				
						Black fine silty sand intermixed with plastic, metal, tile, fabric, wood. (wet- likely perched water)		
				38				
				39				
40	10:56			40				



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-24D
SHEET 3 of 4
JOB NO. 09215600.03
CHKD. BY __

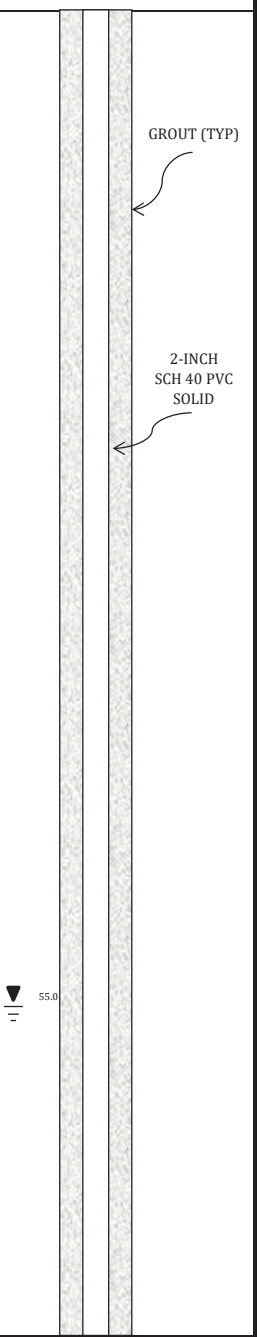
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 58' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

HORIZ: N1250696.87 E597654.72 See notes for datum
ELEV.: GROUND = 186.1 WELL MP: Top of PVC (Riser 188.82)
DATE START 2/27/2017 DATE END 3/1/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	11:00	NA	NA		NS	**WASTE (CONT.)**	0
				41			
				42			
				43		Black fine silty sand intermixed with waste- organics, metal wire, plastic. (wet)	
				44			
45	11:13			45			
	11:16						0
				46			
				47			
						Black fine silty sand inermixed with metal, rubber, plastic, wood. (moist)	
				48			
				49			
50	11:32			50			
	11:43						0
				51			
				52			
						Black fine silty sand inermixed with metal, rubber, plastic, wood. (moist)	
				53			
				54			
55	11:57			55			
	12:02						0
				56			
						Black fine silty sand intermixed with waste- organics, wood, plastic.	
				57			
	12:14			58			
	12:36				10	Start Split Spoon Sampling at 58'	
		S-1	0	59	13		
					8	Black fine silty sand intermixed with waste. (wet)	
60	12:38			60	11		



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-24D
SHEET 4 of 4
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
HORIZ: N1250696.87 E597654.72 See notes for datum
ELEV.: GROUND = 186.1 WELL MP: Top of PVC (Riser 188.82)
DATE START 2/27/2017 DATE END 3/1/2017
SAMPLER: Split Spoon - Started at 58' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

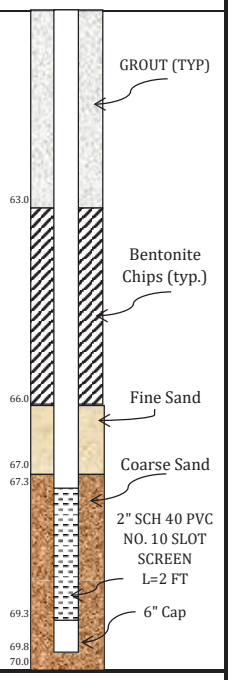
GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	12:54				10		0
		S-2	8	61	11	Black fine silty sand with wood and plastic. (very wet)	
					15		
	12:56			62	22		
	13:14				10		
		S-3	22	63	10	Black fine silty sand with wood, plastic, glass. (very wet)	
					9		
	13:15			64	14		
	13:30				10		
65		S-4	20	65	20	Black fine silty sand and wood. (very wet)	
					42	65.2 SAND	
	13:32			66	63		
	13:59				14		
		S-5	23	67	19	Gray fine sand, compacted. (wet)	
					26		
	14:01			68	20		
	14:18				4	68.5 CLAY	
		S-6	24	69	3		
					4	Gray phosphatic clay. (wet)	
70	14:19			70	5		

BOE = 70'

WELL INSTALLATION DIAGRAM



Notes:
- ADVANCED AUGERS TO 70' TO SET PIEZOMETER. LEACHATE HEAD CAUSED SAND TO FILL AUGER ANULUS.
- BOTTOM OF PVC END CAP AND PRE-PACKED SCREEN SET ~1.3' INTO CLAY.
- DEVELOPED PIEZOMETER ON 3/7/2017 USING MONSOON SUBMERSIBLE PUMP. REMOVED ~ 10 GALLONS.

Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
BOE = Bottom of exploration
WH = Weight of hammer

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-25D
SHEET 1 of 5
JOB N0. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 78' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER:

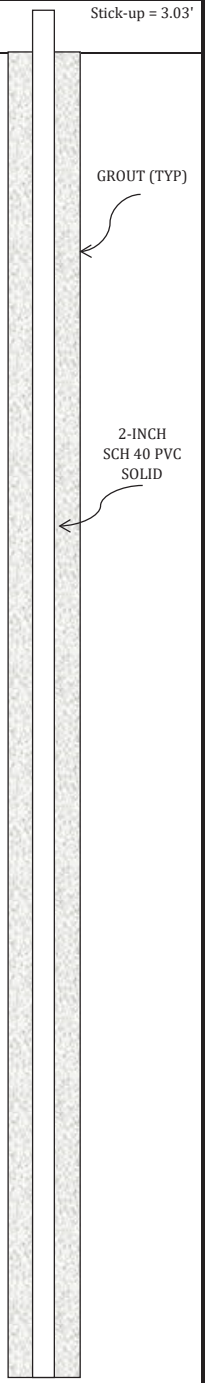
HORIZ: N1249933.86 E597434.18 See notes for datum
ELEV.: GROUND = 205.8 WELL MP: Top of PVC (Riser) 208.83
DATE START 3/2/2017 DATE END 3/7/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	9:13	NA	NA		NC	**SAND**	0
				1		Brown sand and mulch	
				2		2'	
						WASTE	
				3			
						Brown fine silty sand intermixed with woodchips, little waste- metal, fabric, glass (dry)	
				4			
5	9:28			5			
	9:34						0
				6			
				7			
						Black fine silty sand intermixed with some waste- fabric, plastic, rubber tire shreds, woodchips, organics (dry)	
				8			
				9			
10	9:39			10			
	9:43						0
				11			
				12			
						Black fine silty sand intermixed with large amounts of waste- fabric, plastic, rubber, plastic bags, paper, metal, chunks of clay (dry)	
				13			
				14			
15	9:52			15			
	9:56						0
				16			
				17			
						Black fine silty sand intermixed with large amounts of waste- fabric, plastic, rubber, plastic bags, metal chunks, metal wire, organics (dry)	
				18			
				19			
20	10:04			20			

WELL INSTALLATION DIAGRAM



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

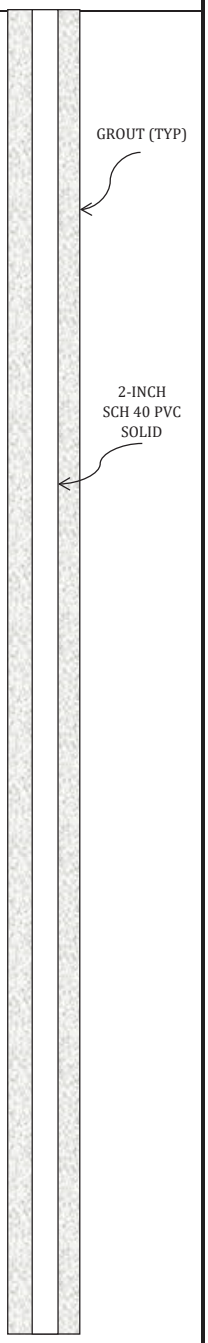
SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-25D SHEET 2 of 5 JOB NO. 09215600.03 CHKD. BY __

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ:	N1249933.86 E597434.18	See notes for datum
		ELEV.:	GROUND = 205.8	WELL MP: Top of PVC (Riser) 208.83
INSPECTOR:	SCS - C. Devitt	DATE START	3/2/2017	DATE END 3/7/2017
SAMPLER:	Split Spoon - Started at 78' Hydraulic Hammer			
METHOD:	Hollow -Stem Auger (HSA)			
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER:			

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER		SAMPLE				SAMPLE DESCRIPTION	H&S	WELL INSTALLATION DIAGRAM
DEPTH	TIME	NO.	REC (in.)	DEPTH (Ft.)	BLOWS (/6")		Methane (ppm)	
	10:23	NA	NA		NA	**WASTE (CONT.)**	0	
				21				
				22				
				23		Black fine silty sand interminxed with large amounts of waste- plastic, fabric, metal wire, rubber, metal chunks (moderately moist)		
				24				
25	10:43			25				
	10:50						0	
				26				
				27				
						Black fine silty sand interminxed with large amounts of waste- plastic, fabric, metal wire, rubber, metal chunks (moderately moist)		
				28				
				29				
30	11:02			30				
	11:06						0	
				31				
				32				
						Brown/black fine silty sand intermixed with large amounts of waste- fabric, plastic bags, rubber, metal wire (moderately moist)		
				33				
				34				
35	11:23			35				
	13:20						0	
				36				
				37				
						Brown/black fine silty sand intermixed with large amounts of waste- fabric, plastic bags, rubber, metal wire (moderately moist)		
				38				
				39				
40	13:39			40				



Notes:

DTW = Depth to water
btor = Below top of riser
MOP = Measuring point

SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-25D SHEET 3 of 5 JOB NO. 09215600.03 CHKD. BY __

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ:	N1249933.86 E597434.18	See notes for datum	
		ELEV.:	GROUND = 205.8	WELL MP: Top of PVC (Riser) 208.83	
INSPECTOR:	SCS - C. Devitt	DATE START	3/2/2017	DATE END	3/7/2017
SAMPLER:	Split Spoon - Started at 78' Hydraulic Hammer				
METHOD:	Hollow -Stem Auger (HSA)				
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER:				

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER		SAMPLE				SAMPLE DESCRIPTION	H&S	WELL INSTALLATION DIAGRAM
DEPTH	TIME	NO.	REC (in.)	DEPTH (Ft.)	BLOWS (/6")		Methane (ppm)	
	13:44	NA	NA		NS	**WASTE (CONT.)**	0	
				41				
						Black fine silty sand intermixed with waste- plastic bags, fabric, wood, metal wire (moist)		
				42		...Hard drilling at 42'		GROUT (TYP)
				43				
				44				
45	14:03			45				
	14:12						0	
				46				2-INCH SCH 40 PVC SOLID
				47				
						Black fine silty sand intermixed with waste- fabric, plastic, metal pieces, metal wire (moist)		
				48				
				49				
50	14:24			50				
	14:35						0	
				51				
				52				
						Black fine silty sand intermixed with waste- metal wire, plastic, fabric, rubber (moist)		
				53				
				54				
55	14:59			55				
	15:55					... Hard drilling at 55'	0	
				56				
				57				
						Black fine silty sand intermixed with waste- metal wire, plastic, fabric (moist)		
				58				
				59				
60	16:19			60				

Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-25D SHEET 4 of 5 JOB NO. 09215600.03 CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 78' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER:

HORIZ: N1249933.86 E597434.18 See notes for datum
ELEV.: GROUND = 205.8 WELL MP: Top of PVC (Riser) 208.83
DATE START 3/2/2017 DATE END 3/7/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)	WELL INSTALLATION DIAGRAM
	16:25		NA		NC	**WASTE (CONT.)**	0	
				61				
				62				GROUT (TYP)
				63		Black fine silty sand intermixed with waste- metal wire, fabric, plastic, metal (moist)		
				64				
65	16:34			65				
	16:40						0	
				66				
								SCH 40 PVC 2-INCH SOLID
				67				
						Black fine silty sand intermixed with waste- metal wire, plastic, wood (moist)		
				68				
				69				
70	16:51			70				
	17:05						0	
				71				
				72		Black fine silty sand intermixed with waste- metal wire, wood, plastic (moist)		
				73				
				74		...74' water		74.0
75	17:18			75				
	9:06						0	
				76				
						Black fine silty sand intermixed with waste- metal wire, wood, plastic (moist)		
				77				
	9:15			78				
	9:35				18	Start Split Spoon Sampling at 78'		
		S-1	18"	79	23			
						Black fine silty sand and sand with glass and plastic (very wet)		
					14			
80	9:38			80	23			

Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

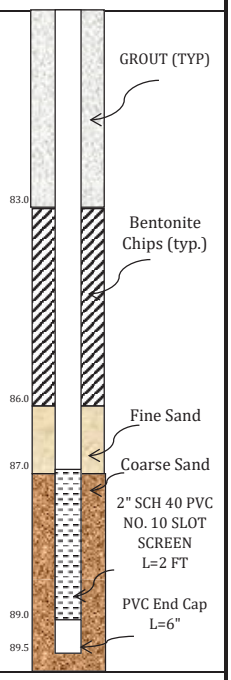
REPORT OF BORING : SB-25D
SHEET 5 of 5
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
HORIZ: N1249933.86 E597434.18 See notes for datum
ELEV.: GROUND = 205.8 WELL MP: Top of PVC (Riser) 208.83
DATE START 3/2/2017 DATE END 3/7/2017
SAMPLER: Split Spoon - Started at 78' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER:

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	9:59				13		0
81		S-2	19"	81	15	Black fine silty sand and sand with wood, glass, plastic	
					14		
82	10:00			82	13		
	10:19				10		
83		S-3	4"	83	9	Black fine silty sand and sand with glass and plastic (very wet)	
					9		
84	10:21			84	16		
	10:25				10	Black fine silty sand with plastic bags, wood, glass (very wet)	
85		S-4	24"	85	21	84.7'	
					47	**SAND**	
86	10:39			86	74		
	11:00				7		
87		S-5	20"	87	16	Gray fine sand (very wet)	
					29		
88	11:02			88	10		
	11:29				3	88.3'	
89		S-6	28"	89	5	**CLAY**	
					5		
90	11:30			90	5	Gray silty clay (wet)	



BOE = 90'

Notes:
- ADVANCED AUGERS TO 90' TO SET PIEZOMETER. LEACHATE HEAD CAUSED SAND TO FILL AUGER ANULUS.
- BOTTOM OF PVC END CAP AND PRE-PACKED SCREEN SET ~1.2' INTO CLAY.
- DEVELOPED PIEZOMETER ON 3/7/2017 USING MONSOON PUMP. REMOVED ~10 GALLONS.
-THIS BORING SHOWED LARGER AMOUNTS OF WASTE COMPARED TO OTHER BORINGS AND ALSO CONTAINED AN UNUSUALLY LARGE AMOUNT OF METAL WIRE THROUGHOUT THE ENTIRE DEPTH.
-UPPER 20' OF BORING IN RECENTLY PLACED WASTE
-SINCE INSTALLATION OF THIS PIEZOMETER, FILL HAS BEEN ADDED IN THE SURROUDING AREA. ELEVATIONS AND STICKUP HAVE CHANGED FROM THESE NUMBERS.

Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-28D
SHEET 1 of 5
JOB N0. 09215600.04
CHKD. BY __

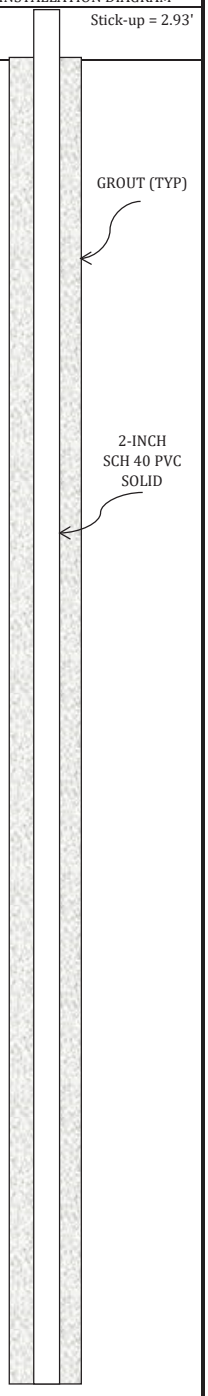
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 78' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER:

HORIZ: N1250040.00 E596725.34 See notes for datum
ELEV.: GROUND = 205.69 WELL MP: Top of PVC (Riser) 208.62
DATE START 4/26/2017 DATE END 5/1/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	10:51	NA	NA		NC	**SAND**	0
				1		Brown sand and mulch	
				2		2'	
						WASTE	
				3			
						Brown fine silty sand intermixed with tire chips, metal pieces, glass, plastic. (dry on top to moist on bottom)	
				4			
5	11:10			5			
	11:14					...Temporary high methane reading. Crew moved away from hole until level lowered.	12,000
				6			
				7			
				8		Black fine silty sand intermixed with waste- metal, plastic, fabric, paper. (moist)	
				9			
10	11:41			10			
	11:45						0
				11			
				12			
				13		Black fine silty sand intermixed with waste- plastic, paper, metal. (moist)	
				14			
15	11:55			15			
	11:59						0
				16			
				17			
				18		Black fine silty sand intermixed with waste- plastic, paper, metal, fabric, organics, tire whips. (moist)	
				19			
20	12:20			20			



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-28D SHEET 2 of 5 JOB NO. 09215600.04 CHKD. BY __

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ:	N1250040.00 E596725.34	See notes for datum	
		ELEV.:	GROUND = 205.69	WELL MP: Top of PVC (Riser) 208.62	
INSPECTOR:	SCS - C. Devitt	DATE START	4/26/2017	DATE END	5/1/2017
SAMPLER:	Split Spoon - Started at 78' Hydraulic Hammer				
METHOD:	Hollow -Stem Auger (HSA)				
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER:				

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER		SAMPLE				SAMPLE DESCRIPTION	H&S	WELL INSTALLATION DIAGRAM
DEPTH	TIME	NO.	REC (in.)	DEPTH (Ft.)	BLOWS (/6")		Methane (ppm)	
	12:23	NA	NA		NA	**WASTE (CONT.)**	0	
				21				
				22				
				23		Black fine silty sand interminxed with lwaste- tire chips, plastic, fabric, organics. (moist)		
				24				
25	12:36			25				
	12:39						0	
				26				
				27				
						Black fine silty sand interminxed with waste- plastic, organics, wood, metal. (moist)		
				28				
				29				
30	13:06			30				
	14:06						0	
				31				
				32				
						Black fine silty sand intermixed with waste- metal wire, fabric, organics, plastic. (moist)		
				33				
				34				
35	14:35			35				
	14:39						0	
				36				
				37				
						Black fine silty sand intermixed with waste- metal wire, fabric, organics, plastic. (moist)		
				38				
				39				
40	15:12			40				

GROUT (TYP)

2-INCH SCH 40 PVC SOLID

Notes:

DTW = Depth to water
btor = Below top of riser
MOP = Measuring point

SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-28D SHEET 3 of 5 JOB NO. 09215600.04 CHKD. BY __

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ:	N1250040.00 E596725.34	See notes for datum	
		ELEV.:	GROUND = 205.69	WELL MP: Top of PVC (Riser) 208.62	
INSPECTOR:	SCS - C. Devitt	DATE START	4/26/2017	DATE END	5/1/2017
SAMPLER:	Split Spoon - Started at 78' Hydraulic Hammer				
METHOD:	Hollow -Stem Auger (HSA)				
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER:				

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)	WELL INSTALLATION DIAGRAM
	15:16	NA	NA		NS	**WASTE (CONT.)**	0	
				41		...Perched water at 41'		
				42				GROUT (TYP)
				43		Black fine silty sand with waste- metal wire, plastic, fabric. (wet)		
				44				
45	15:56			45				
	16:01						0	
				46				2-INCH SCH 40 PVC SOLID
				47				
						Black fine silty sand intermixed with waste- fplastic, metal wire, organics. (moist)		
				48				
				49				
50	16:43			50				
	8:45						0	
				51				
				52				
						Black fine silty sand intermixed with waste- metal wire, tire chips, organics (moist)		
				53				
				54				
55	9:11			55				
	9:16						0	
				56				
				57				
						Black fine silty sand intermixed with waste- metal wire, tire chips, organics (moist)		
				58				
				59				
60	9:40			60				

Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-28D
SHEET 4 of 5
JOB NO. 09215600.04
CHKD. BY __

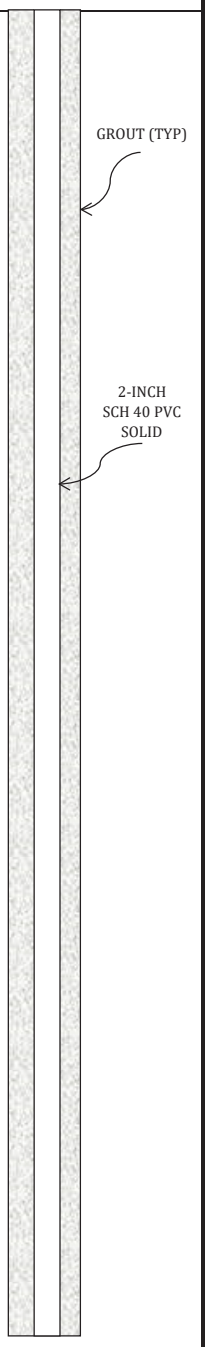
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 78' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER:

HORIZ: N1250040.00 E596725.34 See notes for datum
ELEV.: GROUND = 205.69 WELL MP: Top of PVC (Riser) 208.62
DATE START 4/26/2017 DATE END 5/1/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	9:50		NA		NC	**WASTE (CONT.)**	0
				61			
				62			
				63		Black fine silty sand intermixed with waste- organics, tire chips, plastic, metal. (moist)	
				64			
65	10:36			65			
	10:42						0
				66			
				67			
						Black fine silty sand intermixed with waste- tire chips, metal, plastic, wood chips, organics. (moist)	
				68			
				69			
70	11:15			70			
	11:19						0
				71			
				72			
						Black fine silty sand intermixed with waste- metal pieces, plastic, organics. (moist)	
				73			
				74			
75	11:47			75			
	11:57						0
				76			
						Black fine silty sand intermixed with waste- metal pieces, plastic, organics. (moist)	
				77			
	12:40			78			
	13:14				37	Start Split Spoon Sampling at 78'	
		S-1	9"	79	54		
					20	Sand intermixed with waste- metal wire, glass, wood.	
80	13:18			80	30		



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point

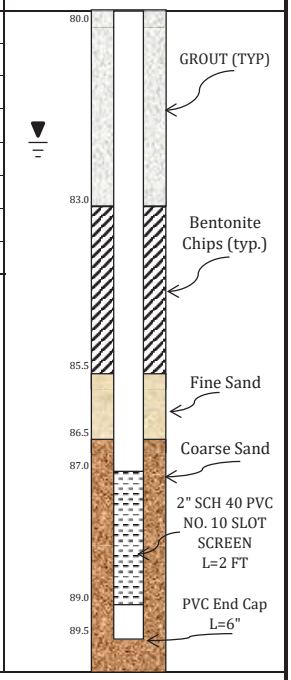
SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-28D SHEET 5 of 5 JOB NO. 09215600.04 CHKD. BY __

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ:	N1250040.00 E596725.34	See notes for datum	
		ELEV.:	GROUND = 205.69	WELL MP: Top of PVC (Riser) 208.62	
INSPECTOR:	SCS - C. Devitt	DATE START	4/26/2017	DATE END	5/1/2017
SAMPLER:	Split Spoon - Started at 78' Hydraulic Hammer				
METHOD:	Hollow -Stem Auger (HSA)				
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER:				

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	13:41				18	**WASTE (CONT.)**	0
81		S-2	19"	81	16	Black fine silty sand and sand with wood, metal wire, glass, plastic	
					19		
82	13:43			82	25		
	14:07				7		
83		S-3	4"	83	7	Black fine silty sand and sand with plastic bags, glass (very wet)	
					9		
84	14:08			84	9		
	14:25				39	Black fine silty sand with plastic bags, wood, glass (very wet)	
85		S-4	24"	85	95	84.5'	
					162	**SAND**	
86	14:39			86	235		
	15:12				18		
87		S-5	20"	87	50	Gray fine sand (very wet)	
					78		
88	15:19			88	103		
	15:45				14		
89		S-6	24"	89	10	89.0'	
					12	**CLAY**	
90	15:46			90	8	Gray silty clay (wet)	



BOE = 90'

Notes:
- ADVANCED AUGERS TO 90' TO SET PIEZOMETER. LEACHATE HEAD CAUSED SAND TO FILL AUGER ANULUS.
- BOTTOM OF PVC END CAP AND PRE-PACKED SCREEN SET AT TOP OF CLAY.
- DEVELOPED PIEZOMETER ON 5/5/17 USING GRUNDFOS SUBMERSIBLE PUMP. REMOVED ~10 GALLONS.

Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-29D
SHEET 1 of 5
JOB N0. 09215600.04
CHKD. BY RBC

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
HORIZ: N1249866.0 E597614.4 See notes for datum
ELEV.: GROUND = 204.22 WELL MP: Top of PVC (Riser) 207.86
DATE START 5/2/2017 DATE END 5/4/2017

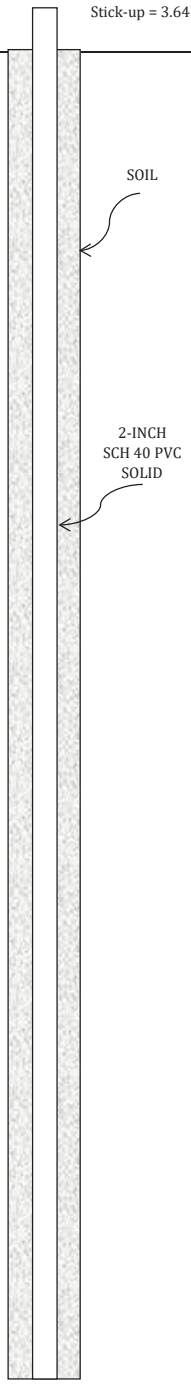
SAMPLER: Split Spoon - Started at 78' Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME-55 Drill Rig

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
		NA	NA		NC	**SAND**	0
				1		Brown sand with little debris (waste), organic material (dry)	
				2		2.0'	
						WASTE	
				3			
						Black fine silty sand intermixed with waste- plastic, paper, metal, fabric. (moist)	
				4			
5	15			5			
							0
				6			
				7			
						Black fine silty sand intermixed with waste- plastic, paper, metal, fabric. (moist)	
				8			
				9			
10	15			10			
							0
				11			
				12			
						Black fine silty sand intermixed with waste- plastic, paper, metal, fabric. (moist)	
				13			
				14			
15	13			15			
							0
				16			
				17			
						Black fine silty sand intermixed with waste- plastic, paper, metal, fabric. (moist)	
				18			
				19			
20	9			20			

WELL INSTALLATION DIAGRAM



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.
Times listed for drilling through 30' and 60-75' represent time to complete each 5' section.

SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-29D SHEET 2 of 5 JOB NO. 09215600.04 CHKD. BY RBC

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ: N1249866.0 E597614.4	See notes for datum
		ELEV.: GROUND = 204.22	WELL MP: Top of PVC (Riser) 207.86
INSPECTOR:	SCS - C. Devitt	DATE START 5/2/2017	DATE END 5/4/2017
SAMPLER:	Split Spoon - Started at 78' Hydraulic Hammer		
METHOD:	Hollow -Stem Auger (HSA)		
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER: CME-55 Drill Rig		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER		SAMPLE				SAMPLE DESCRIPTION	H&S	WELL INSTALLATION DIAGRAM
DEPTH	TIME	NO.	REC (in.)	DEPTH (Ft.)	BLOWS (/6")		Methane (ppm)	
		NA	NA		NA	**WASTE (CONT.)**	0	
				21		...Hard drilling 21'		
				22				SOIL
				23		Black fine silty sand intermixed with waste- plastic, fabric, paper, metal. (moist)		
				24				
25	30			25				
							0	
				26				2-INCH SCH 40 PVC SOLID
				27				
				28		Black fine silty sand intermixed with waste- plastic, fabric, paper, metal. (moist)		
				29				
30	20			30				
	8:20						0	
				31				
				32				
				33		Black fine silty sand intermixed with waste- plastic, fabric, paper, metal. Hard drilling 32-34'. (moist)		
				34				
35	8:26			35				
	8:29						0	
				36				
				37				
				38		Black fine silty sand intermixed with waste- plastic, paper, organics, fabric. (moist)		
				39				
40	8:45			40				

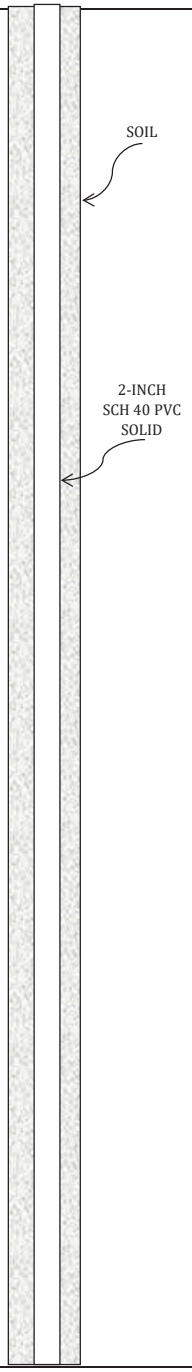
Notes:

DTW = Depth to water
btor = Below top of riser
MOP = Measuring point
Times listed for drilling through 30' and 60-75' represent time to complete each 5' section.

SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-29D SHEET 3 of 5 JOB NO. 09215600.04 CHKD. BY RBC

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ: N1249866.0 E597614.4	See notes for datum
		ELEV.: GROUND = 204.22	WELL MP: Top of PVC (Riser) 207.86
INSPECTOR:	SCS - C. Devitt	DATE START 5/2/2017	DATE END 5/4/2017
SAMPLER:	Split Spoon - Started at 78' Hydraulic Hammer	GROUNDWATER READINGS	
METHOD:	Hollow -Stem Auger (HSA)	DATE / TIME / DTW (ft btor) / CASING / STABILIZATION TIME	
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER: CME-55 Drill Rig		

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	8:50	NA	NA		NS	**WASTE (CONT.)**	0
				41			
				42		Black fine silty sand intermixed with waste- plastic, metal, paper, fabric, organics. (moist)	
				43		...Hard drilling at 43'	
				44			
45	9:20			45			
	9:25						0
				46			
				47			
						Black fine silty sand intermixed with waste- metal, plastic, organics, fabric. (moist)	
				48			
				49			
50	9:35			50			
	9:38						0
				51		...Hard drilling at 51'	
				52			
				53		Black fine silty sand intermixed with waste- metal, plastic, organics, fabric. (moist)	
				54			
55	10:05			55			
	10:09						0
				56			
				57			
						Black fine silty sand intermixed with waste- metal, plastic, organics, fabric. (moist)	
				58			
				59			
60	10:29	▼	▼	60	▼		▼



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point
Times listed for drilling through 30' and 60-75' represent time to complete each 5' section.

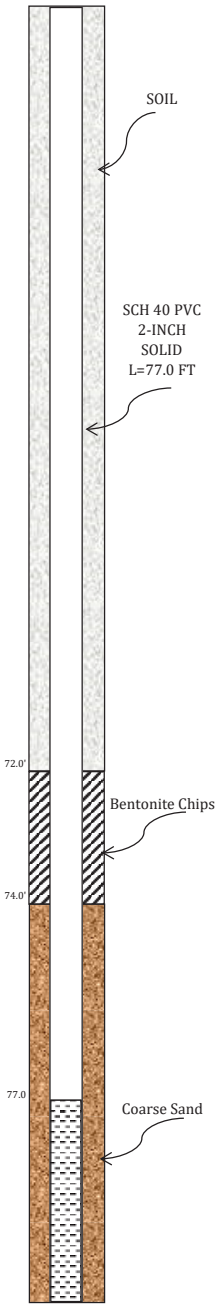
SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-29D SHEET 4 of 5 JOB NO. 09215600.04 CHKD. BY RBC

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ: N1249866.0 E597614.4	See notes for datum
		ELEV.: GROUND = 204.22	WELL MP: Top of PVC (Riser) 207.86
INSPECTOR:	SCS - C. Devitt	DATE START 5/2/2017	DATE END 5/4/2017
SAMPLER:	Split Spoon - Started at 78' Hydraulic Hammer		
METHOD:	Hollow -Stem Auger (HSA)		
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER: CME-55 Drill Rig		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
		NA	NA		NC	**WASTE (CONT.)**	0
				61			
				62			
				63		Black fine silty sand intermixed with waste- plastic, paper, metal, organics. (moist)	
				64			
65	10			65			
							0
				66			
				67			
						Black fine silty sand intermixed with waste- plastic, paper, metal, organics. (moist)	
				68			
				69			
70	4			70			
							0
				71			
				72			
						Black fine silty sand intermixed with waste- plastic, paper, metal, organics. (moist)	
				73			
				74			
75	15			75			
							0
				76			
						Black fine silty sand intermixed with waste- plastic, paper, metal, organics. (moist)	
				77			
	8			78			
	12:47				25	Start split spoon sampling at 78'	
		S-1	4"	79	38		
					65	Soil and waste- wood, plastic, organics	
80	12:53			80	100		



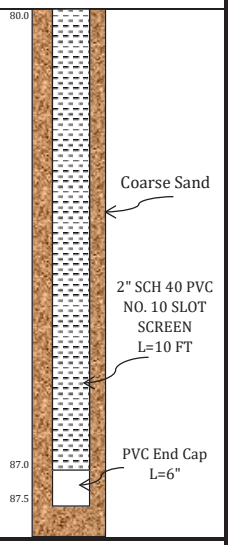
Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point
Times listed for drilling through 30' and 60-75' represent time to complete each 5' section.

SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-29D SHEET 5 of 5 JOB NO. 09215600.04 CHKD. BY RBC

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ:	N1249866.0 E597614.4	See notes for datum	
		ELEV.:	GROUND = 204.22	WELL MP: Top of PVC (Riser) 207.86	
INSPECTOR:	SCS - C. Devitt	DATE START	5/2/2017	DATE END	5/4/2017
SAMPLER:	Split Spoon - Started at 78' Hydraulic Hammer	GROUNDWATER READINGS			
METHOD:	Hollow -Stem Auger (HSA)	DATE	TIME	DTW (ft btor)	CASING / STABILIZATION TIME
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER: CME-55 Drill Rig				

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	13:11				13	**WASTE (CONT.)**	0
81		S-2	23	81	37	Soil and waste- tire chips, metal wire, wood, plastic. (wet)	
					26	81.5'	
82	13:14			82	31	**SAND**	
	13:37	S-3	16		15		
83				83	13		
					21		
84	13:40			84	46		
	14:04	S-4	24		8	Gray fine sand (wet)	
85				85	20		
					24		0
86	14:06			86	29		
	14:32	S-5	24		1		
87				87	3	86.7'	
					3	**CLAY**	
88	14:33			88	4	White silty clay (phosphatic)	



BOE = 88'

Notes:
- ADVANCED AUGERS TO 88' TO CONFIRM CLAY AND SET PIEZOMETER.
- BOTTOM OF PVC END CAP AND PRE-PACKED SCREEN SET ~0.8' INTO CLAY.
- DEVELOPED PIEZOMETER ON 5/4/17 USING GRUNDFOS SUBMERSIBLE PUMP. REMOVED ~7 GALLONS.

Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-30
SHEET 1 of 4
JOB NO. 09215600.04
CHKD. BY RBC

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 58'
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

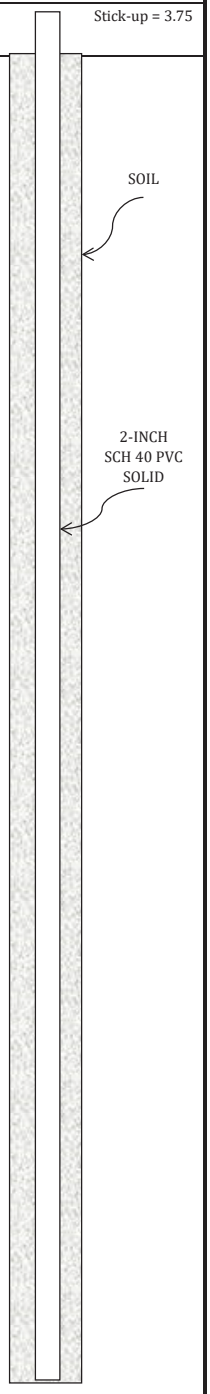
HORIZ: N1249850.5 E598143.7 See notes for datum
ELEV.: GROUND = 185.78 WELL MP: Top of PVC (Riser) 189.53
DATE START 5/1/2017 DATE END 5/2/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	13:30	NA	NA		NS	**SAND**	0
				1		Brown sand with sod, organic material.	
						1.5'	
				2		**WASTE**	
				3		Black fine silty sand intermixed with waste- metal, plastic, organics. (dry)	
				4			
5	13:46			5			
	13:48						0
				6			
				7		Black fine silty sand intermixed with waste- metal, plastic, fabric, organics. (moist)	
				8			
				9			
10	13:58			10			
	14:01						0
				11			
				12		Black fine silty sand intermixed with waste- metal, plastic, organics, fabric. (moist)	
				13			
				14			
15	14:51			15			
	14:54						0
				16			
				17		Black fine silty sand intermixed with waste- plastic, paper, metal, organics. (moist)	
				18			
				19			
20	15:01			20			

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

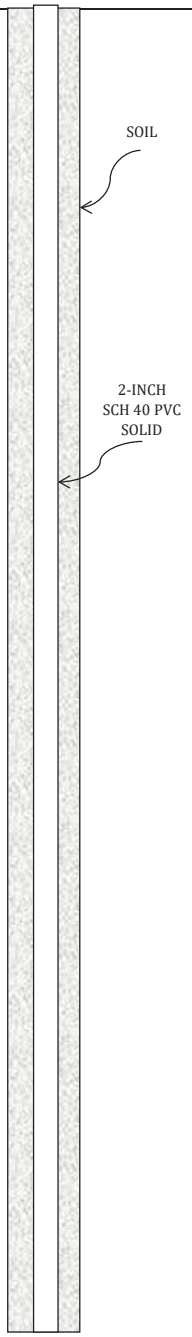
SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-30 SHEET 2 of 4 JOB NO. 09215600.04 CHKD. BY RBC

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ:	N1249850.5 E598143.7	See notes for datum
		ELEV.:	GROUND = 185.78	WELL MP: Top of PVC (Riser) 189.53
INSPECTOR:	SCS - C. Devitt	DATE START	5/1/2017	DATE END 5/2/2017
SAMPLER:	Split Spoon - Started at 58' Hydraulic Hammer			
METHOD:	Hollow -Stem Auger (HSA)			
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D.	OTHER:	CME 55 Drill Rig	

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER		SAMPLE				SAMPLE DESCRIPTION	H&S	WELL INSTALLATION DIAGRAM
DEPTH	TIME	NO.	REC (in.)	DEPTH (Ft.)	BLOWS (/6")		Methane (ppm)	
	15:05	NA	NA		NS	**WASTE (CONT.)**	0	
				21				
				22				
				23		Black fine silty sand intermixed with waste-fabric, plastic, organics, tire shreds. (moist)		
				24				
25	15:11			25				
	15:14						0	
				26				
				27				
						Black fine silty sand intermixed with waste- tire shreds, plastic, organics, fabric. (moist)		
				28				
				29				
30	15:17			30				
	15:20						0	
				31				
				32				
						Black fine silty sand intermixed with waste- plastic, tire shreds, organics, metal. (moist)		
				33				
				34				
35	15:29			35				
	15:32						0	
				36				
				37				
						Black fine silty sand intermixed with waste- plastic, organics, metal, fabric. (moist)		
				38				
				39				
40	15:56			40				



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

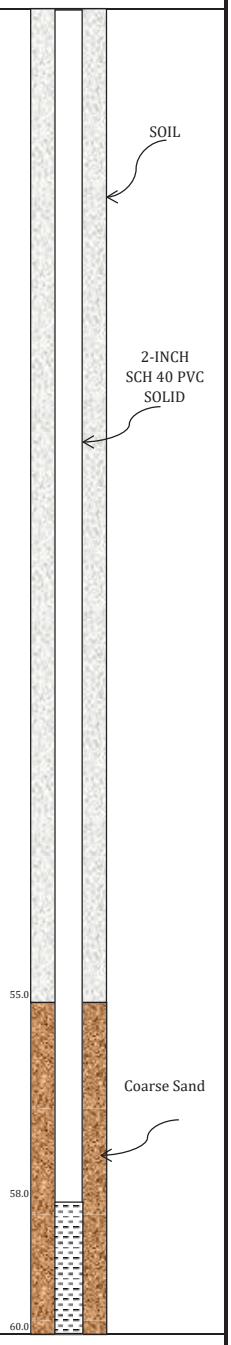
SCS ENGINEERS 4041 Park Oaks Blvd., Suite 100 Tampa, FL 33610	PROJECT PHASES I-VI LIQUID ASSESSMENT MONITORING SOUTHEAST COUNTY LANDFILL LITHIA, FL	REPORT OF BORING : SB-30 SHEET 3 of 4 JOB NO. 09215600.04 CHKD. BY RBC

DRILLER:	TIERRA - Cruz, Derek, and Ben	HORIZ: N1249850.5 E598143.7	See notes for datum
		ELEV.: GROUND = 185.78	WELL MP: Top of PVC (Riser) 189.53
INSPECTOR:	SCS - C. Devitt	DATE START 5/1/2017	DATE END 5/2/2017
SAMPLER:	Split Spoon - Started at 58' Hydraulic Hammer		
METHOD:	Hollow -Stem Auger (HSA)		
CASING SIZE:	4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig		

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER		SAMPLE				SAMPLE DESCRIPTION	H&S	WELL INSTALLATION DIAGRAM
DEPTH	TIME	NO.	REC (in.)	DEPTH (Ft.)	BLOWS (/6")		Methane (ppm)	
	15:59	NA	NA		NS	**WASTE (CONT.)**	0	
				41				
				42				
				43		Black fine silty sand intermixed with waste- plastic, tire shreds, organics. (moist)		
				44				
45	16:08			45				
	16:10						0	
				46				
				47				
						Black fine silty sand intermixed with waste- plastic, tire shreds, organics. (moist)		
				48				
				49				
50	16:14			50				
	16:18						0	
				51				
				52				
						Black fine silty sand intermixed with waste- tire shreds, plastic, metal, organics. (moist)		
				53				
				54				
55	16:38			55				
	16:42						0	
				56				
				57		Black fine silty sand intermixed with waste- tire shreds, plastic, organics, metal. (moist)		
	17:05			58				
	8:11				14	Start Split Spoon Sampling at 58'		
		S-1	13	59	12			
					28	Black fine silty sand intermixed with waste- plastic, wood, metal wire, and ash. (wet)		
60	8:15			60	103			



Notes:

DTW = Depth to water
btor = Below top of riser
MP = Measuring point

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : SB-30
SHEET 4 of 4
JOB NO. 09215600.43
CHKD. BY RBC

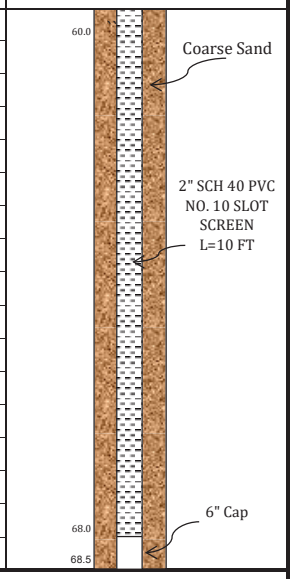
DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt
SAMPLER: Split Spoon - Started at 58'
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 4-1/4" I.D. & 8-1/4" O.D. OTHER: CME 55 Drill Rig

HORIZ: N1249850.5 E598143.7 See notes for datum
ELEV.: GROUND = 185.78 WELL MP: Top of PVC (Riser) 189.53
DATE START 5/1/2017 DATE END 5/2/2017

GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

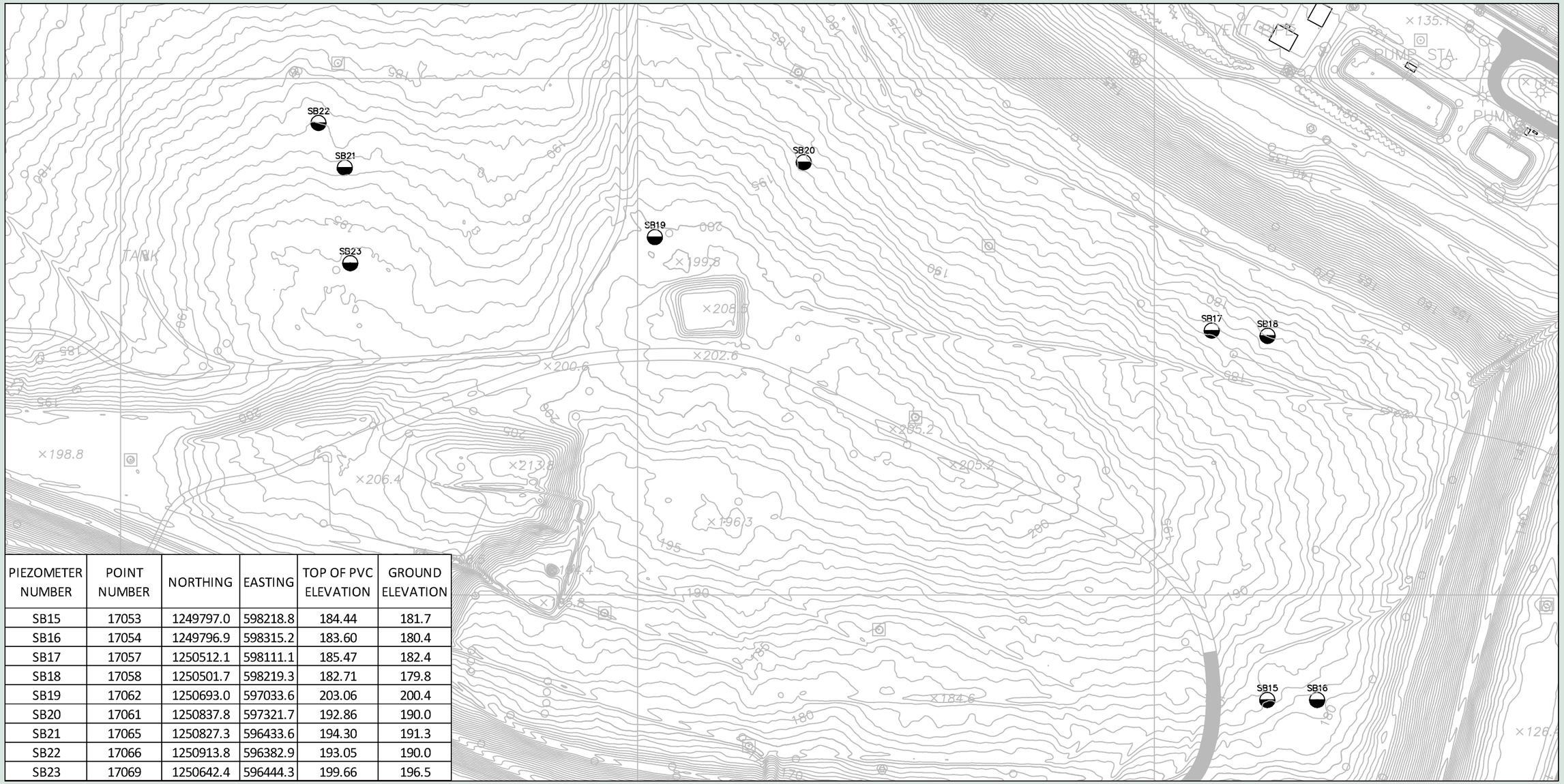
AUGER DEPTH	AUGER TIME	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	8:44	S-2	23		73	Black fine silty sand with waste- wood and plastic. (very wet)	0
				61	29	61'	
					35	**SAND**	
	8:50			62	37		
	9:09	S-3	23		5		
				63	12		
					30		
	9:11			64	43		
	9:24	S-4	24		5	Gray fine sand, compacted. (wet)	
65				65	11		
					12		
	9:26			66	16		
	9:47	S-5	26		3		
				67	2		
					3		
	9:48			68	5	68.0'	
						CLAY Gray phosphatic clay. (wet) BOE = 68.5'	



Notes:
- ADVANCED AUGERS TO 70' TO SET PIEZOMETER. LEACHATE HEAD CAUSED SAND TO FILL AUGER ANULUS.
- BOTTOM OF PVC END CAP AND PRE-PACKED SCREEN SET ~1.0' INTO CLAY.
- DEVELOPED PIEZOMETER ON 5/4 USING GRUNDFOS SUBMERSIBLE PUMP. REMOVED ~140 GALLONS.

Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
BOE = Bottom of exploration
WH = Weight of hammer

Appendix G
Piezometer Surveys



PIEZOMETER NUMBER	POINT NUMBER	NORTHING	EASTING	TOP OF PVC ELEVATION	GROUND ELEVATION
SB15	17053	1249797.0	598218.8	184.44	181.7
SB16	17054	1249796.9	598315.2	183.60	180.4
SB17	17057	1250512.1	598111.1	185.47	182.4
SB18	17058	1250501.7	598219.3	182.71	179.8
SB19	17062	1250693.0	597033.6	203.06	200.4
SB20	17061	1250837.8	597321.7	192.86	190.0
SB21	17065	1250827.3	596433.6	194.30	191.3
SB22	17066	1250913.8	596382.9	193.05	190.0
SB23	17069	1250642.4	596444.3	199.66	196.5

NOTES: *1.) North, the grid, and the coordinates shown hereon are referenced West Zone Fla. State Plane Coordinate System, NAD83 1990 adjustment.*

2.) Elevations are to National Geodetic Vertical Datum 1929.

Peavey & Associates
SURVEYING & MAPPING PA
9399 N LAKE BUFFUM RD
FORT MEADE, FL 33841
PHONE: 863-738-4960
FLORIDA BUSINESS NO.7779

THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND SEAL

DEBORAH L. PEAVEY LICENSE NUMBER No. 6345 STATE OF FLORIDA PROFESSIONAL SURVEYOR & MAPPER

N

SCALE 1"=200'

SPECIFIC PURPOSE SURVEY PIEZOMETERS SB15-23 SOUTHEAST HILLSBOROUGH COUNTY LANDFILL LITHIA, FL

REVISIONS

NO.	BY	DATE	DESCRIPTION

DEBORAH L. PEAVEY, P.S.M.
FLORIDA REGISTRATION
NUMBER 6345
FLORIDA BUSINESS
NUMBER 7779

FILE NAME: 1603 se hillsborough county piezometer 2-23-2017

Field Book: WM1

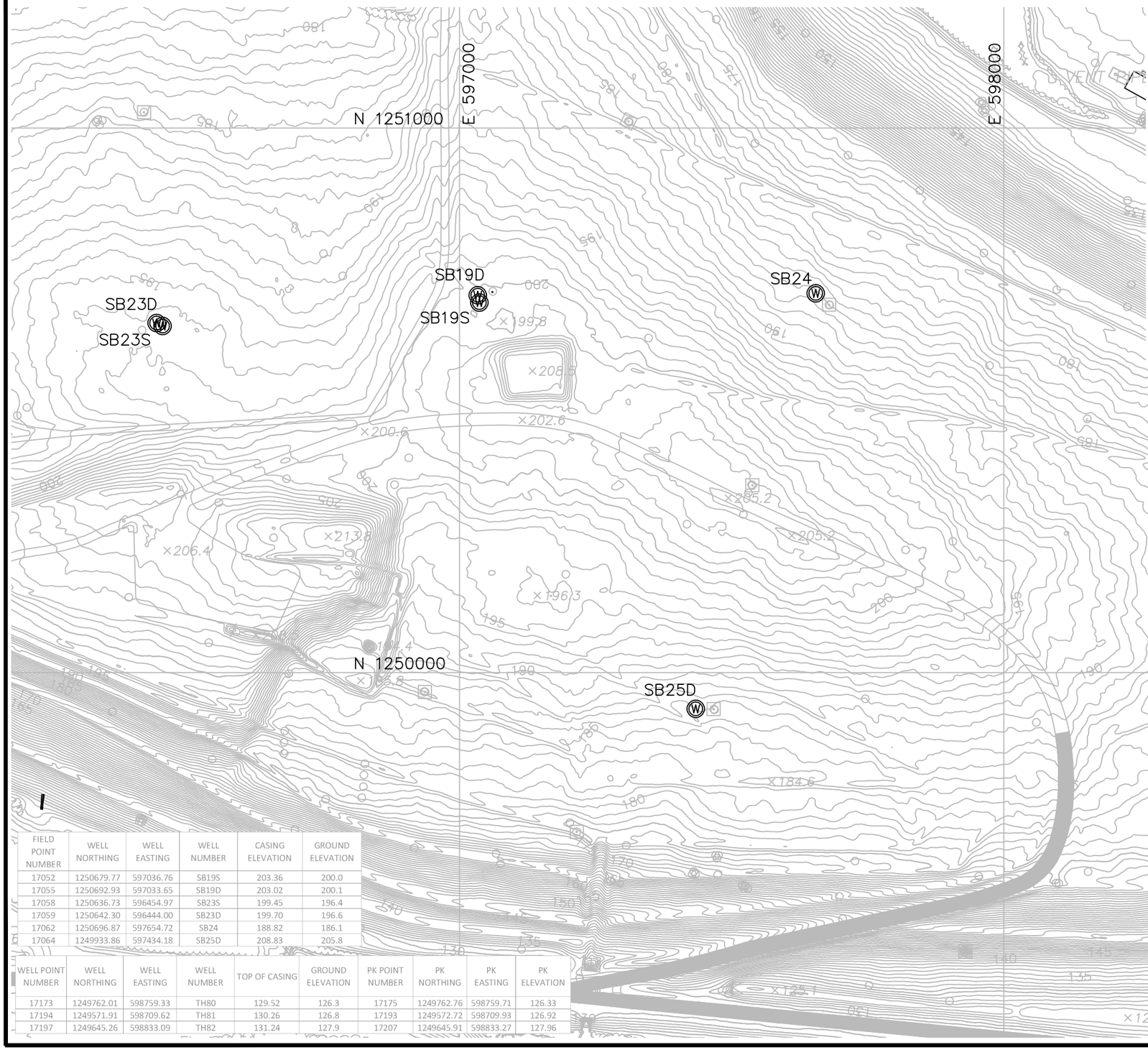
PROJECT NO. 1603

DRAWING NO. 337

2/23/2017
SURVEY DATE

Party Chief: SP

SHEET NO. 1



GRAPHIC SCALE

200 0 100 200

(IN FEET)
1 inch = 200 ft.

LEGEND:

NO. NUMBER
ELEV. ELEVATION

SB25D (W) WELL

SURVEYOR's NOTES:

1.) North Grid and coordinates basis is the West Zone of the Florida State Plane Coordinate System NAD 83/90 adjustment. The vertical datum is NAD1929 using control as provided by client prepared by Pickett & Associates.

2.) This survey was prepared to show wells SB19S,SB19D, SB23S,SB23D,SDB25D,SDB24TH80,TH81 and TH82.

3.) THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

FIELD POINT NUMBER	WELL NORTHING	WELL EASTING	WELL NUMBER	CASING ELEVATION	GROUND ELEVATION
17052	1250679.77	597036.76	SB19S	203.36	200.0
17055	1250692.93	597033.65	SB19D	203.02	200.1
17058	1250636.73	596454.97	SB23S	199.45	196.4
17059	1250642.30	596444.00	SB23D	199.70	196.6
17062	1250696.87	597654.72	SB24	188.82	186.1
17064	1249933.86	597434.18	SB25D	208.83	205.8

WELL POINT NUMBER	WELL NORTHING	WELL EASTING	WELL NUMBER	TOP OF CASING	GROUND ELEVATION	PK POINT NUMBER	PK NORTHING	PK EASTING	PK ELEVATION
17173	1249762.01	598759.33	TH80	129.52	126.3	17175	1249762.76	598759.71	126.33
17194	1249571.91	598709.62	TH81	130.26	126.8	17193	1249572.72	598709.93	126.92
17197	1249645.26	598833.09	TH82	131.24	127.9	17207	1249645.91	598833.27	127.96

REVISION
DATE

DEBORAH L. PEAVEY LICENSE NUMBER No. 6345 STATE OF FLORIDA PROFESSIONAL SURVEYOR & MAPPER

Peavey & Associates
SURVEYING & MAPPING PA
9399 NORTH LAKE BUFFUM ROAD
FORT MEADE, FL 33841
PHONE: 863-738-4960
FLORIDA BUSINESS NO.7779

CLIENT:
SCS ENGINEERS
4041 Park Oaks Blvd
Suite 100
Tampa, Fl 33610

FILE NAME: 1604 wm-southeast gps wells 3-13-2017.dwg

SPECIFIC PURPOSE SURVEY OF GAS & MONITOR WELLS 2017
SOUTHEAST LANDFILL
HILLSBOROUGH COUNTY, FL

DEBORAH L. PEAVEY, P.S.M.
FLORIDA REGISTRATION NUMBER 6345
FLORIDA BUSINESS NUMBER 7779

3/13/2017
SURVEY DATE

PROJECT	DRAWING NO.	SHEET
1604	341	1

Appendix H
Liquid Elevation and Head-Over-Liner Information

Appendix H

Water Level Data - Liquid Assessment Monitoring
Phases I, II, III, IV, and VI - Southeast County Landfill

Phase	Soil Boring #	Date[1]	Depth to water (ft tpvc)	Elevation Top PVC (NGVD)[2]	Water Elevation (NGVD)	Top of Clay Elev (NGVD)[2]	Liquid Depth Over Clay (ft)
II	SB-01	6/9/2016	61.3		127.1		8.8
		6/10/2016	61.4		127.0		8.7
		6/16/2016	61.2		127.2		8.9
		6/21/2016	61.1		127.3		9.0
		6/22/2016	61.5		126.9		8.6
		6/28/2016	61.2		127.2		8.9
		7/13/2016	61.1		127.3		9.0
		7/29/2016	61.8		126.6		8.3
		8/5/2016	60.7		127.7		9.3
		8/12/2016	60.4		128.0		9.6
		8/19/2016	60.3		128.1		9.8
		8/26/2016	60.2		128.2		9.8
		9/2/2016	60.0		128.4		10.1
		9/9/2016	60.0		128.4		10.1
		9/16/2016	59.8		128.6		10.3
		9/23/2016	59.2		129.2		10.9
		9/30/2016	58.8		129.6		11.3
		10/11/2016	58.6		129.8		11.5
		10/14/2016	58.6		129.8		11.5
		10/21/2016	57.8		130.6		12.3
		10/28/2016	58.0		130.4		12.1
		11/4/2016	58.0		130.4		12.1
		11/11/2016	58.2		130.2		11.9
		11/18/2016	58.5		129.9		11.6
		11/25/2016	58.8		129.6		11.3
		12/2/2016	58.2		130.2		11.9
		12/9/2016	58.7		129.7		11.4
		12/16/2016	58.7		129.7		11.4
		12/23/2016	58.7		129.7		11.4
		12/30/2016	58.7		129.7		11.4
		1/6/2017	58.6		129.8		11.5
		1/13/2017	59.2		129.2		10.9
		1/20/2017	58.8		129.6		11.3
		1/27/2017	59.3		129.1		10.8
		2/3/2017	59.6		128.8		10.5
		2/10/2017	59.7		128.7		10.4
		2/17/2017	59.6		128.8		10.5
		2/24/2017	59.3		129.1		10.8
		3/3/2017	59.9		128.5		10.2
		3/10/2017	59.5		128.9		10.6
		3/17/2017	60.0		128.4		10.1
		3/24/2017	59.9		128.5		10.2
		3/31/2017	59.5		128.9		10.6
		4/7/2017	59.8		128.6		10.3
		4/13/2017	59.9		128.5		10.2
		4/21/2017	59.9		128.5		10.2
		4/28/2017	60.0		128.4		10.1
		5/5/2017	59.6		128.8		10.5
		5/12/2017	59.8		128.6		10.3
		5/19/2017	60.2		128.2		9.8
		5/26/2017	60.3		128.1		9.8
		6/2/2017	60.2		128.2		9.8
					-		-

Appendix H

Water Level Data - Liquid Assessment Monitoring
Phases I, II, III, IV, and VI - Southeast County Landfill

Phase	Soil Boring #	Date[1]	Depth to water (ft tpvc)	Elevation Top PVC (NGVD)[2]	Water Elevation (NGVD)	Top of Clay Elev (NGVD)[2]	Liquid Depth Over Clay (ft)
II	SB-02	6/9/2016	54.5	187.62	133.1	117.9	15.2
		6/11/2016	56.5		131.2		13.3
		6/16/2016	54.6		133.0		15.1
		6/21/2016	56.2		131.4		13.5
		6/22/2016	55.4		132.2		14.3
		6/28/2016	56.1		131.5		13.6
		7/13/2016	54.8		132.9		15.0
		7/29/2016	54.9		132.8		14.9
		8/5/2016	56.3		131.3		13.4
		8/12/2016	55.6		132.0		14.1
		8/19/2016	55.8		131.8		13.9
		8/26/2016	55.8		131.8		13.9
		9/2/2016	55.7		131.9		14.0
		9/9/2016	55.7		131.9		14.0
		9/16/2016	55.5		132.1		14.2
		9/23/2016	54.9		132.7		14.8
		9/30/2016	54.6		133.0		15.1
		10/11/2016	54.3		133.3		15.4
		10/14/2016	54.5		133.1		15.2
		10/21/2016	54.0		133.6		15.7
		10/28/2016	55.5		132.1		14.2
		11/4/2016	54.0		133.6		15.7
		11/11/2016	54.4		133.2		15.3
		11/18/2016	54.5		133.1		15.2
		11/25/2016	54.6		133.0		15.1
		12/2/2016	54.9		132.7		14.8
		12/9/2016	55.0		132.6		14.7
		12/16/2016	55.0		132.6		14.7
		12/23/2016	55.0		132.6		14.7
		12/30/2016	55.1		132.5		14.6
		1/6/2017	55.0		132.6		14.7
		1/13/2017	55.4		132.2		14.3
		1/20/2017	54.9		132.7		14.8
		1/27/2017	55.4		132.2		14.3
		2/3/2017	55.6		132.0		14.1
		2/10/2017	55.6		132.0		14.1
		2/17/2017	55.6		132.0		14.1
		2/24/2017	55.4		132.2		14.3
		3/3/2017	55.9		131.7		13.8
		3/10/2017	55.8		131.8		13.9
		3/17/2017	56.2		131.4		13.5
		3/24/2017	56.2		131.4		13.5
		3/31/2017	55.8		131.8		13.9
		4/7/2017	56.4		131.2		13.3
		4/13/2017	56.5		131.1		13.2
		4/21/2017	56.4		131.2		13.3
		4/28/2017	56.7		130.9		13.0
		5/5/2017	56.4		131.2		13.3
		5/12/2017	56.7		130.9		13.0
		5/19/2017	56.9		130.7		12.8
		5/26/2017	57.1		130.5		12.6
		6/2/2017	57.0		130.6		12.7
					-		-

Appendix H

Water Level Data - Liquid Assessment Monitoring
Phases I, II, III, IV, and VI - Southeast County Landfill

Phase	Soil Boring #	Date[1]	Depth to water (ft tpvc)	Elevation Top PVC (NGVD)[2]	Water Elevation (NGVD)	Top of Clay Elev (NGVD)[2]	Liquid Depth Over Clay (ft)
II	SB-3	6/10/2016	51.7	185.73	134.0	117.4	16.63
		6/16/2016	59.7		126.1		8.68
		6/21/2016	59.8		126.0		8.58
		6/22/2016	59.9		125.9		8.48
		6/28/2016	58.0		127.8		10.38
		7/13/2016	56.2		129.6		12.18
		7/29/2016	59.7		126.1		8.68
		8/5/2016	56.2		129.5		12.13
		8/12/2016	56.0		129.7		12.33
		8/19/2016	56.2		129.5		12.13
		8/26/2016	55.8		129.9		12.53
		9/2/2016	56.0		129.7		12.33
		9/9/2016	55.9		129.8		12.43
		9/16/2016	55.0		130.7		13.33
		9/23/2016	55.0		130.7		13.33
		9/30/2016	55.0		130.7		13.33
		10/11/2016	55.0		130.7		13.33
		10/14/2016	55.0		130.7		13.33
		10/21/2016	54.8		130.9		13.53
		10/28/2016	54.7		131.0		13.63
		11/4/2016	54.9		130.8		13.43
		11/11/2016	54.3		131.4		14.03
		11/18/2016	54.3		131.4		14.03
		11/25/2016	54.3		131.4		14.03
		12/2/2016	54.2		131.5		14.13
		12/9/2016	54.9		130.8		13.43
		12/16/2016	54.8		130.9		13.53
		12/23/2016	54.9		130.8		13.43
		12/30/2016	55.1		130.6		13.23
		1/6/2017	54.9		130.8		13.43
		1/13/2017	54.4		131.3		13.93
		1/20/2017	55.0		130.7		13.33
		1/27/2017	55.2		130.5		13.13
		2/3/2017	55.4		130.3		12.93
		2/10/2017	55.7		130.0		12.63
		2/17/2017	55.8		129.9		12.53
		2/24/2017	55.5		130.2		12.8
		3/3/2017	55.9		129.8		12.43
		3/10/2017	55.8		129.9		12.53
		3/17/2017	56.1		129.6		12.23
		3/24/2017	56.1		129.6		12.23
		3/31/2017	55.9		129.8		12.43
		4/7/2017	56.3		129.4		12.03
		4/13/2017	56.2		129.5		12.13
		4/21/2017	56.3		129.4		12.03
		4/28/2017	56.5		129.2		11.83
		5/5/2017	56.3		129.4		12.03
		5/12/2017	56.5		129.2		11.83
		5/19/2017	56.7		129.0		11.63
		5/26/2017	56.8		128.9		11.53
		6/2/2017	56.8		128.9		11.53
					-		-

Appendix H

Water Level Data - Liquid Assessment Monitoring
Phases I, II, III, IV, and VI - Southeast County Landfill

Phase	Soil Boring #	Date[1]	Depth to water (ft tpvc)	Elevation Top PVC (NGVD)[2]	Water Elevation (NGVD)	Top of Clay Elev (NGVD)[2]	Liquid Depth Over Clay (ft)
II	SB-5	6/22/2016	51.7	180.19	128.5	118.5	9.99
		6/28/2016	52.4		127.8		9.29
		7/13/2016	52.3		127.9		9.39
		7/29/2016	52.8		127.4		8.89
		8/5/2016	52.1		128.1		9.59
		8/12/2016	52.0		128.2		9.69
		8/19/2016	52.2		128.0		9.49
		8/26/2016	52.0		128.2		9.69
		9/2/2016	52.0		128.2		9.69
		9/9/2016	52.0		128.2		9.69
		9/16/2016	51.2		129.0		10.49
		9/23/2016	50.9		129.3		10.79
		9/30/2016	50.3		129.9		11.39
		10/11/2016	50.1		130.1		11.59
		10/14/2016	50.0		130.2		11.69
		10/21/2016	50.0		130.2		11.69
		10/28/2016	50.1		130.1		11.59
		11/4/2016	50.3		129.9		11.39
		11/11/2016	50.9		129.3		10.79
		11/18/2016	51.0		129.2		10.69
		11/25/2016	51.0		129.2		10.69
		12/2/2016	51.1		129.1		10.59
		12/9/2016	51.6		128.6		10.09
		12/16/2016	51.3		128.9		10.39
		12/23/2016	51.2		129.0		10.49
		12/30/2016	51.1		129.1		10.59
		1/6/2017	51.4		128.8		10.29
		1/13/2017	51.6		128.6		10.09
		1/20/2017	51.3		128.9		10.39
		1/27/2017	51.8		128.4		9.89
		2/3/2017	51.3		128.9		10.39
		2/10/2017	51.4		128.8		10.29
		2/17/2017	52.2		128.0		9.49
		2/24/2017	52.1		128.1		9.59
		3/3/2017	51.5		128.7		10.19
		3/10/2017	52.3		127.9		9.39
		3/17/2017	53.0		127.2		8.69
		3/24/2017	53.2		127.0		8.49
		3/31/2017	53.3		126.9		8.39
		4/7/2017	53.7		126.5		7.99
		4/13/2017	53.9		126.3		7.79
		4/21/2017	53.9		126.3		7.79
		4/28/2017	54.1		126.1		7.59
		5/5/2017	54.0		126.2		7.69
		5/12/2017	54.1		126.1		7.59
		5/19/2017	54.2		126.0		7.49
		5/26/2017	54.3		125.9		7.39
		6/2/2017	54.3		125.9		7.39
					-		-

Appendix H

Water Level Data - Liquid Assessment Monitoring
Phases I, II, III, IV, and VI - Southeast County Landfill

Phase	Soil Boring #	Date[1]	Depth to water (ft tpvc)	Elevation Top PVC (NGVD)[2]	Water Elevation (NGVD)	Top of Clay Elev (NGVD)[2]	Liquid Depth Over Clay (ft)
II	SB-15D	2/21/2017	55.8	184.44	128.6	117.0	11.6
		2/23/2017	57.75		126.7		9.7
		2/24/2017	57.9		126.5		9.5
		3/3/2017	58.6		125.8		8.8
		3/10/2017	58.4		126.0		9.0
		3/17/2017	59.0		125.4		8.4
		3/24/2017	59.3		125.1		8.1
		3/31/2017	59.4		125.0		8.0
		4/7/2017	59.8		124.6		7.6
		4/13/2017	59.9		124.5		7.5
		4/21/2017	59.9		124.5		7.5
		4/28/2017	60.2		124.2		7.2
		5/5/2017	59.9		124.5		7.5
		5/12/2017	60.2		124.2		7.2
		5/19/2017	60.4		124.0		7.0
		5/26/2017	60.5		123.9		6.9
		6/2/2017	60.5		123.9		6.9
					-		-
II	SB-16D	2/16/2017	54.5	183.60	129.1	117.2	11.9
		2/17/2017	58.36		125.2		8.0
		2/20/2017	58.3		125.3		8.1
		2/23/2017	57.65		126.0		8.7
		2/24/2017	57.8		125.8		8.6
		3/3/2017	58.4		125.2		8.0
		3/10/2017	58.2		125.4		8.2
		3/17/2017	59.6		124.0		6.8
		3/24/2017	59.9		123.7		6.5
		3/31/2017	59.7		123.9		6.7
		4/7/2017	60.3		123.3		6.1
		4/13/2017	60.3		123.3		6.1
		4/21/2017	60.3		123.3		6.1
		4/28/2017	60.5		123.1		5.9
		5/5/2017	60.2		123.4		6.2
		5/12/2017	60.4		123.2		6.0
		5/19/2017	60.4		123.2		6.0
		5/26/2017	60.7		122.9		5.7
		6/2/2017	60.6		123		5.8
					-		-

Appendix H

Water Level Data - Liquid Assessment Monitoring
Phases I, II, III, IV, and VI - Southeast County Landfill

Phase	Soil Boring #	Date[1]	Depth to water (ft tpvc)	Elevation Top PVC (NGVD)[2]	Water Elevation (NGVD)	Top of Clay Elev (NGVD)[2]	Liquid Depth Over Clay (ft)
II	SB-17D	2/16/2017	60.3	185.47	125.2	119.6	5.6
		2/17/2017	60.31		125.2		5.6
		2/20/2017	60.2		125.3		5.7
		2/23/2017	59.90		125.6		6.0
		2/24/2017	60.1		125.4		5.8
		3/3/2017	60.7		124.8		5.2
		3/10/2017	60.6		124.9		5.3
		3/17/2017	60.9		124.6		5.0
		3/24/2017	60.9		124.6		5.0
		3/31/2017	60.6		124.9		5.3
		4/7/2017	61.0		124.5		4.9
		4/13/2017	61.1		124.4		4.8
		4/21/2017	61.2		124.3		4.7
		4/28/2017	61.3		124.2		4.6
		5/5/2017	61.1		124.4		4.8
		5/12/2017	61.3		124.2		4.6
		5/19/2017	61.3		124.2		4.6
		5/26/2017	61.5		124.0		4.4
		6/2/2017	61.5		124.0		4.4
					-		-
II	SB-18D	2/16/2017	55.1	182.71	127.6	120.3	7.3
		2/17/2017	58.91		123.8		3.5
		2/20/2017	58.8		123.9		3.6
		2/23/2017	58.70		124.0		3.7
		2/24/2017	58.9		123.8		3.5
		3/3/2017	59.2		123.5		3.2
		3/10/2017	59.2		123.5		3.2
		3/17/2017	59.4		123.3		3.0
		3/24/2017	59.6		123.1		2.8
		3/31/2017	59.2		123.5		3.2
		4/7/2017	59.5		123.2		2.9
		4/13/2017	59.7		123.0		2.7
		4/21/2017	59.5		123.2		2.9
		4/28/2017	59.7		123.0		2.7
		5/5/2017	59.5		123.2		2.9
		5/12/2017	59.6		123.1		2.8
		5/19/2017	59.7		123.0		2.7
		5/26/2017	59.7		123.0		2.7
		6/2/2017	59.6		123.1		2.8
					-		-

Appendix H

Water Level Data - Liquid Assessment Monitoring
Phases I, II, III, IV, and VI - Southeast County Landfill

Phase	Soil Boring #	Date[1]	Depth to water (ft tpvc)	Elevation Top PVC (NGVD)[2]	Water Elevation (NGVD)	Top of Clay Elev (NGVD)[2]	Liquid Depth Over Clay (ft)
III	SB-19D	2/16/2017	87.5	203.06	115.6	114.2	1.4
		2/17/2017	87.30		115.8		1.6
		2/20/2017	87.2		115.9		1.7
		2/23/2017	87.10		116.0		1.8
		2/24/2017	86.5		116.6		2.4
		3/3/2017	87.3		115.8		1.6
		3/10/2017	87.2		115.9		1.7
		3/17/2017	87.3		115.8		1.6
		3/24/2017	87.3		115.8		1.6
		3/31/2017	87.2		115.9		1.7
		4/7/2017	87.3		115.8		1.6
		4/13/2017	87.3		115.8		1.6
		4/21/2017	87.4		115.7		1.5
		4/28/2017	87.4		115.7		1.5
		5/5/2017	87.2		115.9		1.7
		5/12/2017	87.3		115.8		1.6
		5/19/2017	87.4		115.7		1.5
		5/26/2017	87.4		115.7		1.5
		6/2/2017	87.3		115.8		1.6
					-		-
III	SB-19S	3/3/2017	78.6	203.36	DRY	N/A	N/A
		3/10/2017	78.6		DRY		N/A
		3/17/2017	78.5		DRY		N/A
		3/24/2017	78.5		DRY		N/A
		3/31/2017	78.5		DRY		N/A
		4/7/2017	78.4		DRY		N/A
		4/13/2017	78.5		DRY		N/A
		4/21/2017	78.6		DRY		N/A
		4/28/2017	78.5		DRY		N/A
		5/5/2017	78.5		DRY		N/A
		5/12/2017	78.6		DRY		N/A
		5/19/2017	78.5		DRY		N/A
		5/26/2017	78.5		DRY		N/A
		6/2/2017	78.5		DRY		N/A

Appendix H

Water Level Data - Liquid Assessment Monitoring
Phases I, II, III, IV, and VI - Southeast County Landfill

Phase	Soil Boring #	Date[1]	Depth to water (ft tpvc)	Elevation Top PVC (NGVD)[2]	Water Elevation (NGVD)	Top of Clay Elev (NGVD)[2]	Liquid Depth Over Clay (ft)
III	SB-20D	2/16/2017	74.4	192.86	118.5	115.0	3.5
		2/17/2017	75.83		117.0		2.0
		2/20/2017	75.7		117.2		2.2
		2/23/2017	75.65		117.2		2.2
		2/24/2017	75.7		117.2		2.2
		3/3/2017	75.9		117.0		2.0
		3/10/2017	75.8		117.1		2.1
		3/17/2017	75.7		117.2		2.2
		3/24/2017	75.9		117.0		2.0
		3/31/2017	75.8		117.1		2.1
		4/7/2017	75.9		117.0		2.0
		4/13/2017	76.0		116.9		1.9
		4/21/2017	75.9		117.0		2.0
		4/28/2017	76.1		116.8		1.8
		5/5/2017	75.9		117.0		2.0
		5/12/2017	76.0		116.9		1.9
		5/19/2017	76.1		116.8		1.8
		5/26/2017	76.0		116.9		1.9
		6/2/2017	76.0		116.9		1.9
					-		-
VI	SB-21D	2/16/2017	79.1	194.30	115.2	113.0	2.2
		2/17/2017	79.18		115.1		2.1
		2/20/2017	79.4		114.9		1.9
		2/23/2017	79.05		115.3		2.3
		2/24/2017	79.2		115.1		2.1
		3/3/2017	79.2		115.1		2.1
		3/10/2017	79.2		115.1		2.1
		3/17/2017	79.1		115.2		2.2
		3/24/2017	79.2		115.1		2.1
		3/31/2017	79.0		115.3		2.3
		4/7/2017	79.2		115.1		2.1
		4/13/2017	79.2		115.1		2.1
		4/21/2017	79.2		115.1		2.1
		4/28/2017	79.3		115.0		2.0
		5/5/2017	79.2		115.1		2.1
		5/12/2017	79.2		115.1		2.1
		5/19/2017	79.3		115.0		2.0
		5/26/2017	79.4		114.9		1.9
		6/2/2017	79.3		115.0		2.0
					-		-

Appendix H

Water Level Data - Liquid Assessment Monitoring
Phases I, II, III, IV, and VI - Southeast County Landfill

Phase	Soil Boring #	Date[1]	Depth to water (ft tpvc)	Elevation Top PVC (NGVD)[2]	Water Elevation (NGVD)	Top of Clay Elev (NGVD)[2]	Liquid Depth Over Clay (ft)
VI	SB-22D	2/17/2017	78.5	193.05	114.6	113.2	1.4
		2/17/2017	78.97		114.1		0.9
		2/20/2017	78.8		114.3		1.1
		2/23/2017	78.00		115.1		1.9
		2/24/2017	78.1		115.0		1.8
		3/3/2017	78.1		115.0		1.8
		3/10/2017	78.2		114.9		1.7
		3/17/2017	78.1		115.0		1.8
		3/24/2017	78.0		115.1		1.9
		3/31/2017	77.9		115.2		2.0
		4/7/2017	78.0		115.1		1.9
		4/13/2017	78.1		115.0		1.8
		4/21/2017	78.2		114.9		1.7
		4/28/2017	78.2		114.9		1.7
		5/5/2017	78.1		115.0		1.8
		5/12/2017	78.2		114.9		1.7
		5/19/2017	78.2		114.9		1.7
		5/26/2017	78.2		114.9		1.7
		6/2/2017	78.2		114.9		1.7
					-		-
IV	SB-23D	2/16/2017	83.9	199.70	115.8	113.3	2.5
		2/17/2017	84.0		115.7		2.4
		2/20/2017	84.1		115.6		2.3
		2/23/2017	83.85		115.9		2.6
		2/24/2017	83.9		115.8		2.5
		3/3/2017	84.0		115.7		2.4
		3/10/2017	84.0		115.7		2.4
		3/17/2017	84.0		115.7		2.4
		3/24/2017	83.9		115.8		2.5
		3/31/2017	84.5		115.2		1.9
		4/7/2017	83.9		115.8		2.5
		4/13/2017	84.0		115.7		2.4
		4/21/2017	84.1		115.6		2.3
		4/28/2017	84.1		115.6		2.3
		5/5/2017	84.1		115.6		2.3
		5/12/2017	84.3		115.4		2.1
		5/19/2017	84.2		115.5		2.2
		5/26/2017	84.2		115.5		2.2
		6/2/2017	84.2		115.5		2.2
					-		-

Appendix H

Water Level Data - Liquid Assessment Monitoring
Phases I, II, III, IV, and VI - Southeast County Landfill

Phase	Soil Boring #	Date[1]	Depth to water (ft tpvc)	Elevation Top PVC (NGVD)[2]	Water Elevation (NGVD)	Top of Clay Elev (NGVD)[2]	Liquid Depth Over Clay (ft)
IV	SB-23S	2/23/2017	80.4	199.45	DRY	N/A	N/A
		2/24/2017	80.4		DRY		N/A
		3/3/2017	80.4		DRY		N/A
		3/10/2017	80.3		DRY		N/A
		3/17/2017	80.3		DRY		N/A
		3/24/2017	80.3		DRY		N/A
		3/31/2017	80.3		DRY		N/A
		4/7/2017	80.2		DRY		N/A
		4/13/2017	80.2		DRY		N/A
		4/21/2017	80.2		DRY		N/A
		4/28/2017	80.2		DRY		N/A
		5/5/2017	80.2		DRY		N/A
		5/12/2017	80.1		DRY		N/A
		5/19/2017	80.1		DRY		N/A
		5/26/2017	80.1		DRY		N/A
		6/2/2017	80.1		DRY		N/A
II	SB-24D	3/3/2017	66.3	188.82	122.5	117.6	4.9
		3/10/2017	66.3		122.5		4.9
		3/17/2017	66.5		122.3		4.7
		3/24/2017	66.6		122.2		4.6
		3/31/2017	66.3		122.5		4.9
		4/7/2017	66.6		122.2		4.6
		4/13/2017	66.8		122.0		4.4
		4/21/2017	66.8		122.0		4.4
		4/28/2017	67.0		121.8		4.2
		5/5/2017	66.8		122.0		4.4
		5/12/2017	67.2		121.6		4.0
		5/19/2017	67.3		121.5		3.9
		5/26/2017	67.3		121.5		3.9
		6/2/2017	67.4		121.4		3.8
					-		-
I	SB-25D	3/10/2017	80.6	208.83	128.2	117.5	10.7
		3/17/2017	80.8		128.0		10.5
		3/24/2017	80.8		128.0		10.5
		3/31/2017	80.4		128.4		10.9
		4/7/2017	80.6		128.2		10.7
		4/13/2017	80.8		128.0		10.5
		4/21/2017	80.8		128.0		10.5
		4/28/2017	85.5	213.83	128.3	See Note 3	10.8
		5/5/2017	85.2		128.6		11.1
		5/15/2017	83.6	211.40	127.8	See Note 4	10.3
		5/19/2017	83.8		127.6		10.1
		5/26/2017	83.8		127.6		10.8
		6/2/2017	83.9		127.5		11.1
					-		-

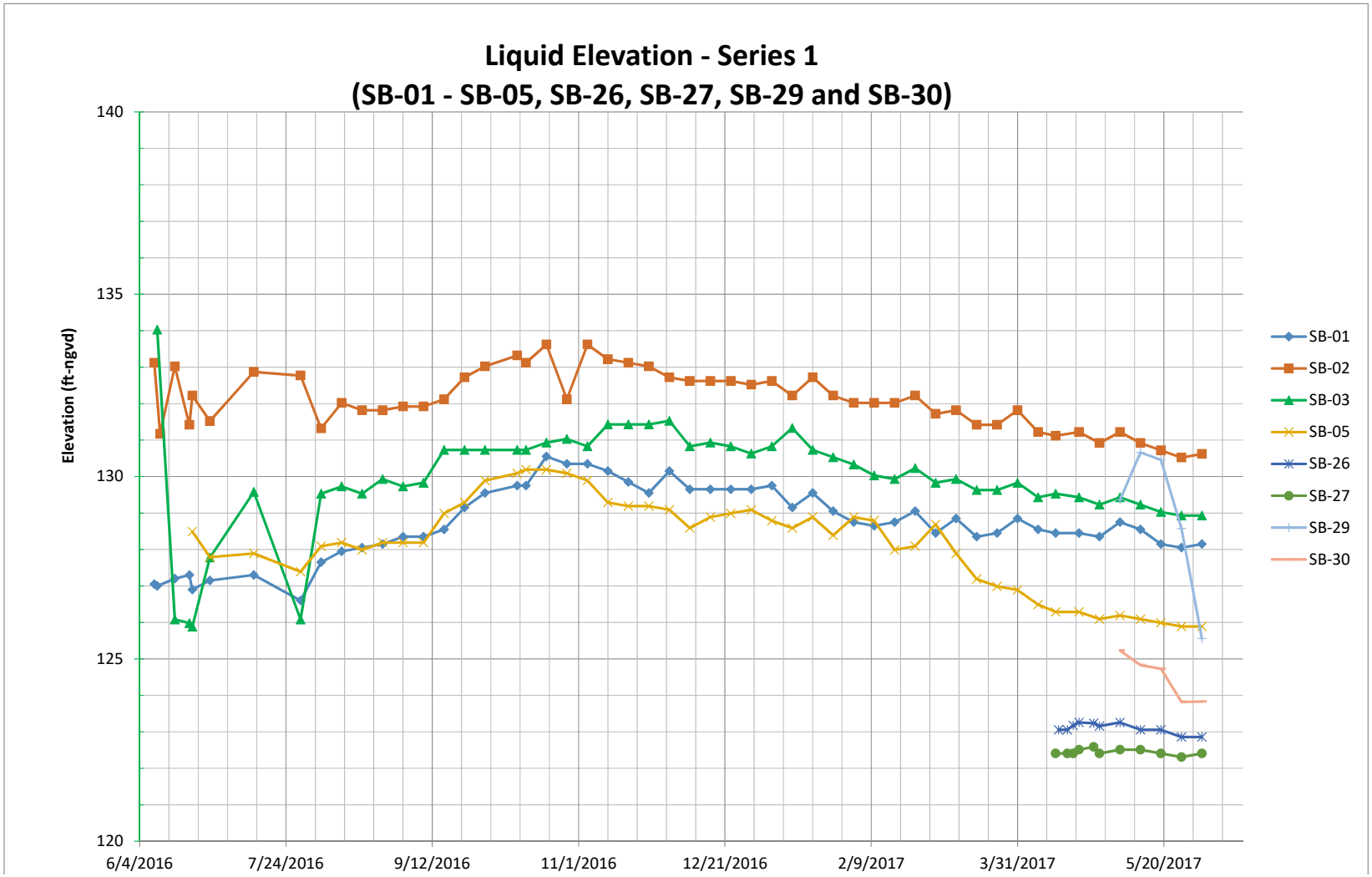
Appendix H

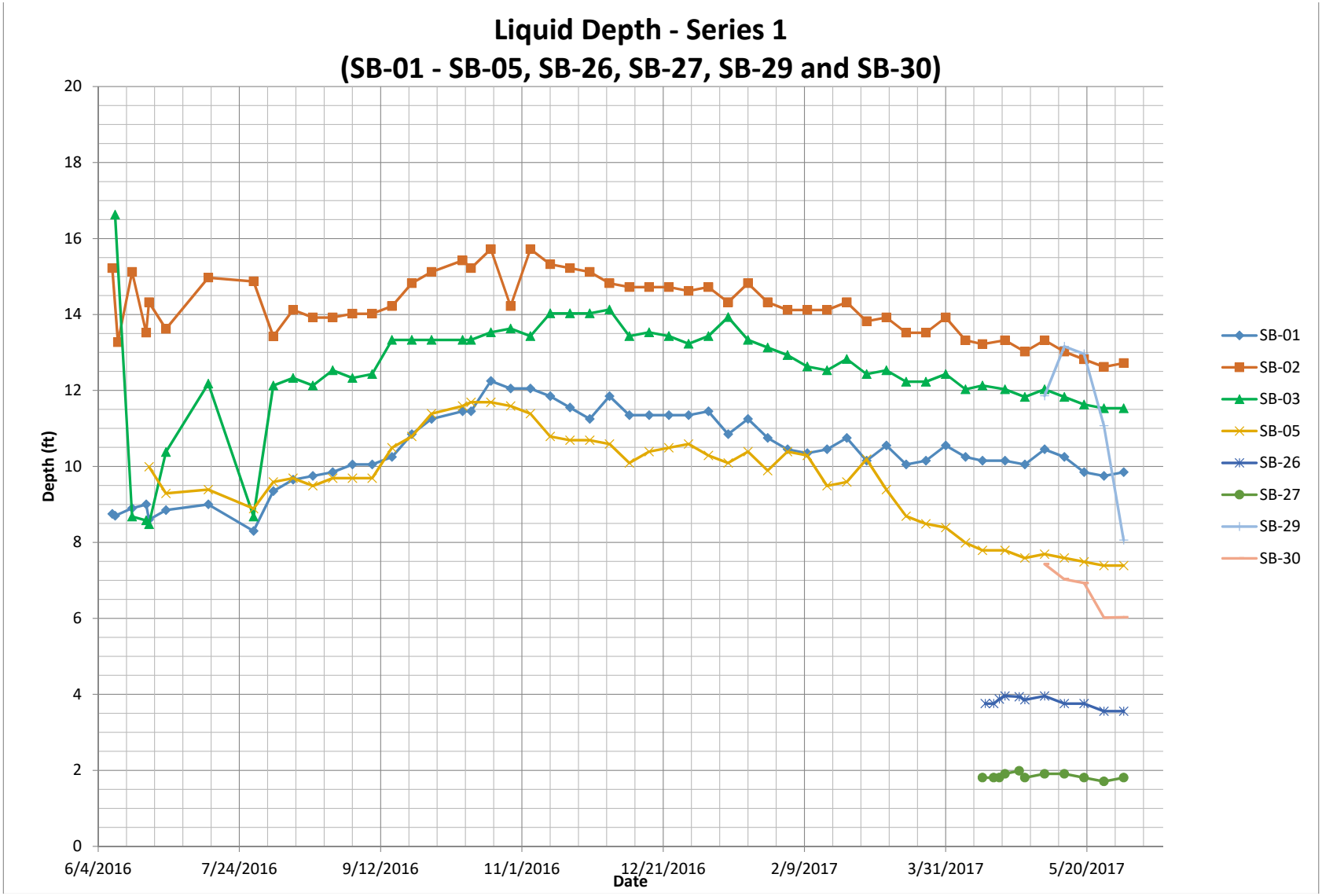
Water Level Data - Liquid Assessment Monitoring
Phases I, II, III, IV, and VI - Southeast County Landfill

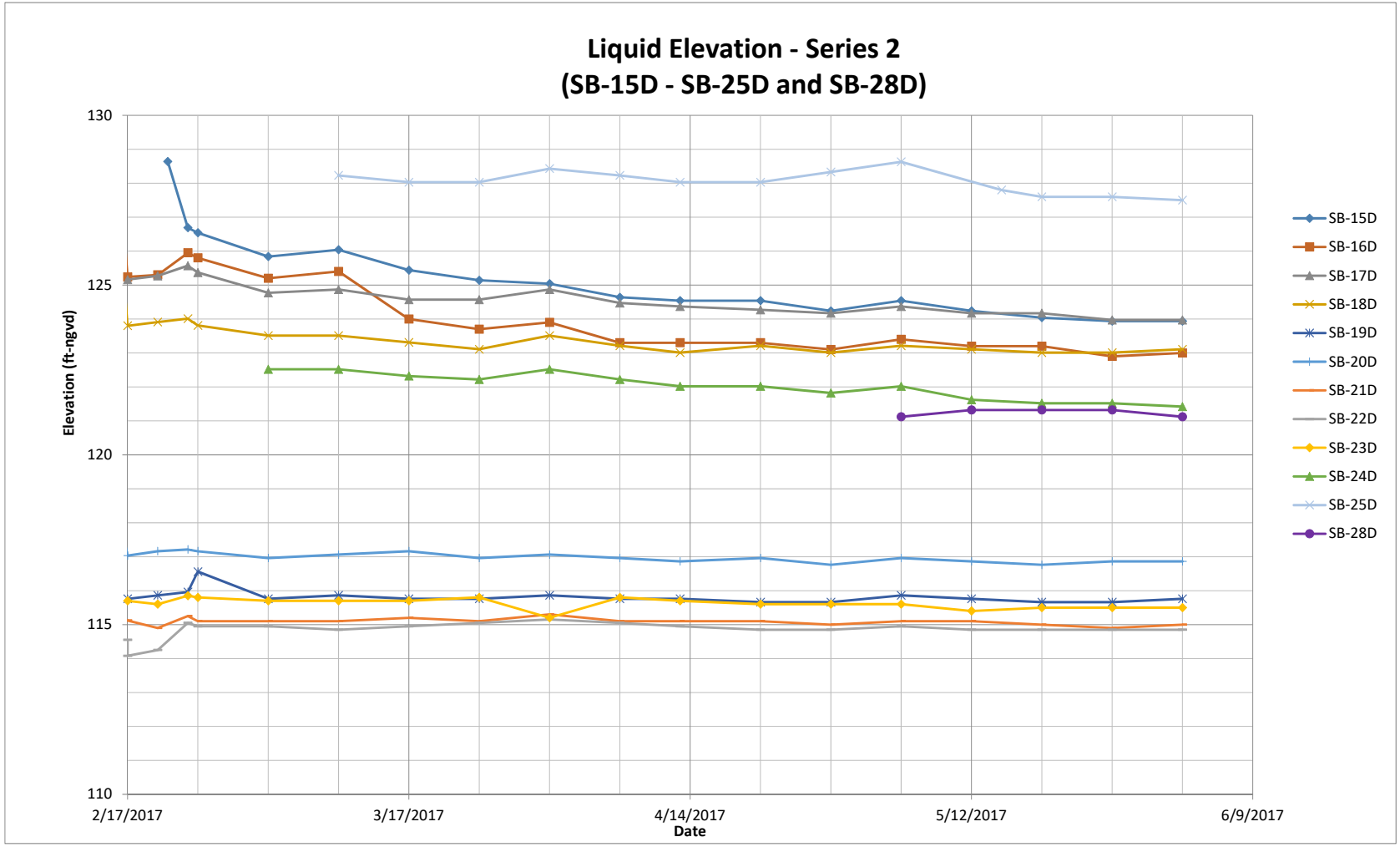
Phase	Soil Boring #	Date[1]	Depth to water (ft tpvc)	Elevation Top PVC (NGVD)[2]	Water Elevation (NGVD)	Top of Clay Elev (NGVD)[2]	Liquid Depth Over Clay (ft)
II	SB-26	4/14/2017	25.3	148.36	123.1	119.3	3.8
		4/17/2017	25.3		123.1		3.8
		4/19/2017	25.2		123.2		3.9
		4/21/2017	25.1		123.3		4.0
		4/26/2017	25.12		123.24		3.94
		4/28/2017	25.2		123.2		3.9
		5/5/2017	25.1		123.3		4.0
		5/12/2017	25.3		123.1		3.8
		5/19/2017	25.3		123.1		3.8
		5/26/2017	25.5		122.9		3.6
		6/2/2017	25.5		122.9		3.6
					-		-
II	SB-27	4/13/2017	15.7	138.11	122.4	120.6	1.8
		4/17/2017	15.7		122.4		1.8
		4/19/2017	15.7		122.4		1.8
		4/21/2017	15.6		122.5		1.9
		4/26/2017	15.52		122.59		1.99
		4/28/2017	15.7		122.4		1.8
		5/5/2017	15.6		122.5		1.9
		5/12/2017	15.6		122.5		1.9
		5/19/2017	15.7		122.4		1.8
		5/26/2017	15.8		122.3		1.7
		6/2/2017	15.7		122.4		1.8
					-		-
I	SB-28D	5/5/2017	87.5	208.62	121.1	116.7	4.4
		5/12/2017	87.3		121.3		4.6
		5/19/2017	87.3		121.3		4.6
		5/26/2017	87.3		121.3		4.6
		6/2/2017	87.5		121.1		4.4
					-		-
I	SB-29	5/5/2017	78.5	207.86	129.4	117.5	11.9
		5/12/2017	77.2		130.7		13.2
		5/19/2017	77.4		130.5		13.0
		5/26/2017	79.3		128.6		11.1
		6/2/2017	82.3		125.6		8.1
					-		-
II	SB-30	5/5/2017	64.3	189.53	125.2	117.8	7.4
		5/12/2017	64.7		124.8		7.0
		5/19/2017	64.8		124.7		6.9
		5/26/2017	65.7		123.8		6.0
		6/2/2017	65.7		123.8		6.0
					-		-

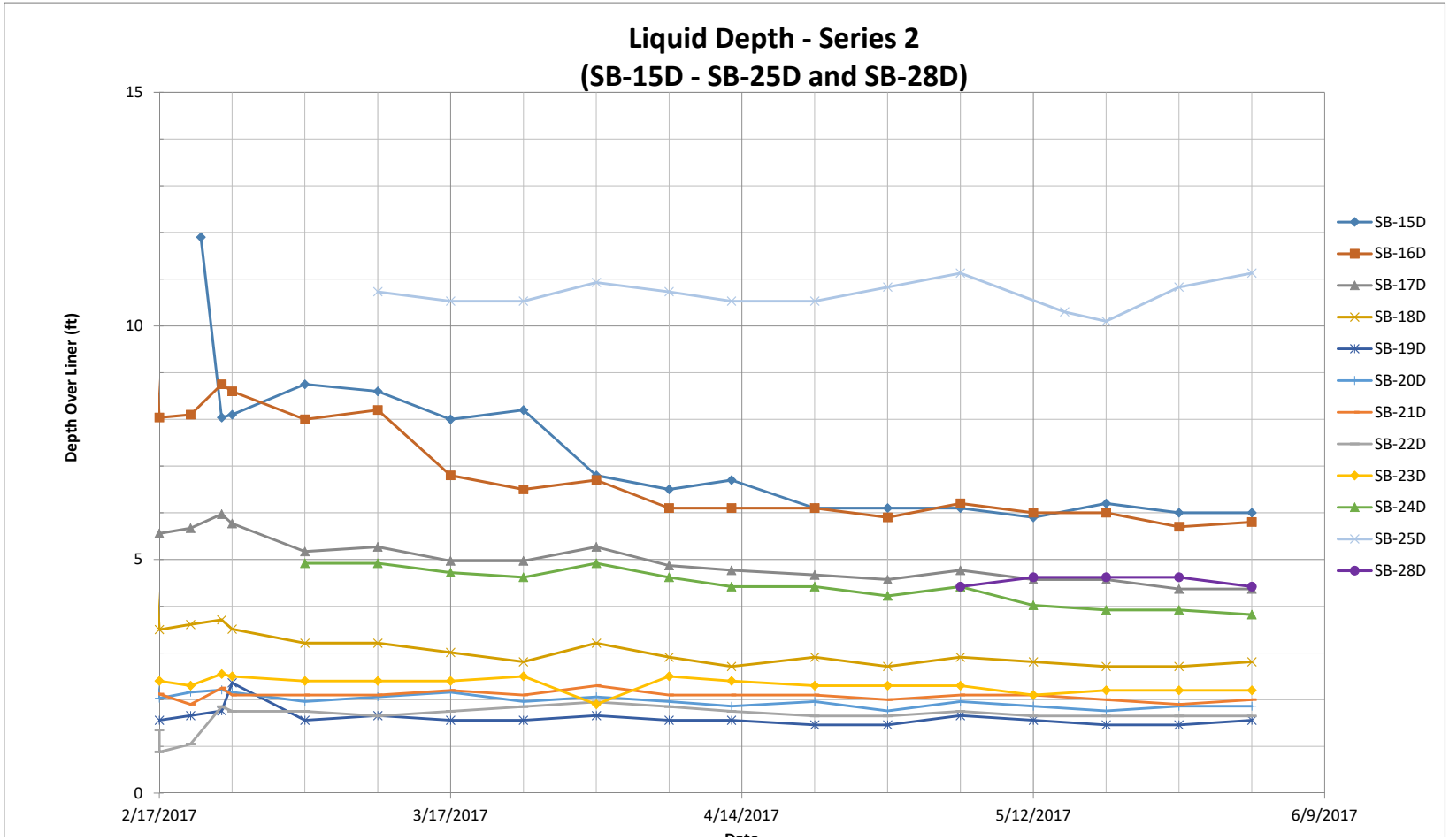
Notes:

1. Water levels collected in SB-15 through SB-23D on 2/16/17 are prior to development.
2. Approximate elevations
3. Extended riser at SB-25D due to waste filling operations.
4. Lowered riser at SB-25D in order to conduct pump test.


Liquid Elevation - Series 1
(SB-01 - SB-05, SB-26, SB-27, SB-29 and SB-30)
Elevation (ft-ngvd)
140
135
130
125
120
6/4/2016
7/24/2016
9/12/2016
11/1/2016
12/21/2016
2/9/2017
3/31/2017
5/20/2017
SB-01
SB-02
SB-03
SB-05
SB-26
SB-27
SB-29
SB-30


Liquid Depth - Series 1
(SB-01 - SB-05, SB-26, SB-27, SB-29 and SB-30)
Depth (ft)
20
18
16
14
12
10
8
6
4
2
0
6/4/2016
7/24/2016
9/12/2016
11/1/2016
12/21/2016
2/9/2017
3/31/2017
5/20/2017
Date
SB-01
SB-02
SB-03
SB-05
SB-26
SB-27
SB-29
SB-30


Liquid Elevation - Series 2
(SB-15D - SB-25D and SB-28D)
Elevation (ft-ngvd)
130
125
120
115
110
2/17/2017
3/17/2017
4/14/2017
5/12/2017
6/9/2017
Date
SB-15D
SB-16D
SB-17D
SB-18D
SB-19D
SB-20D
SB-21D
SB-22D
SB-23D
SB-24D
SB-25D
SB-28D

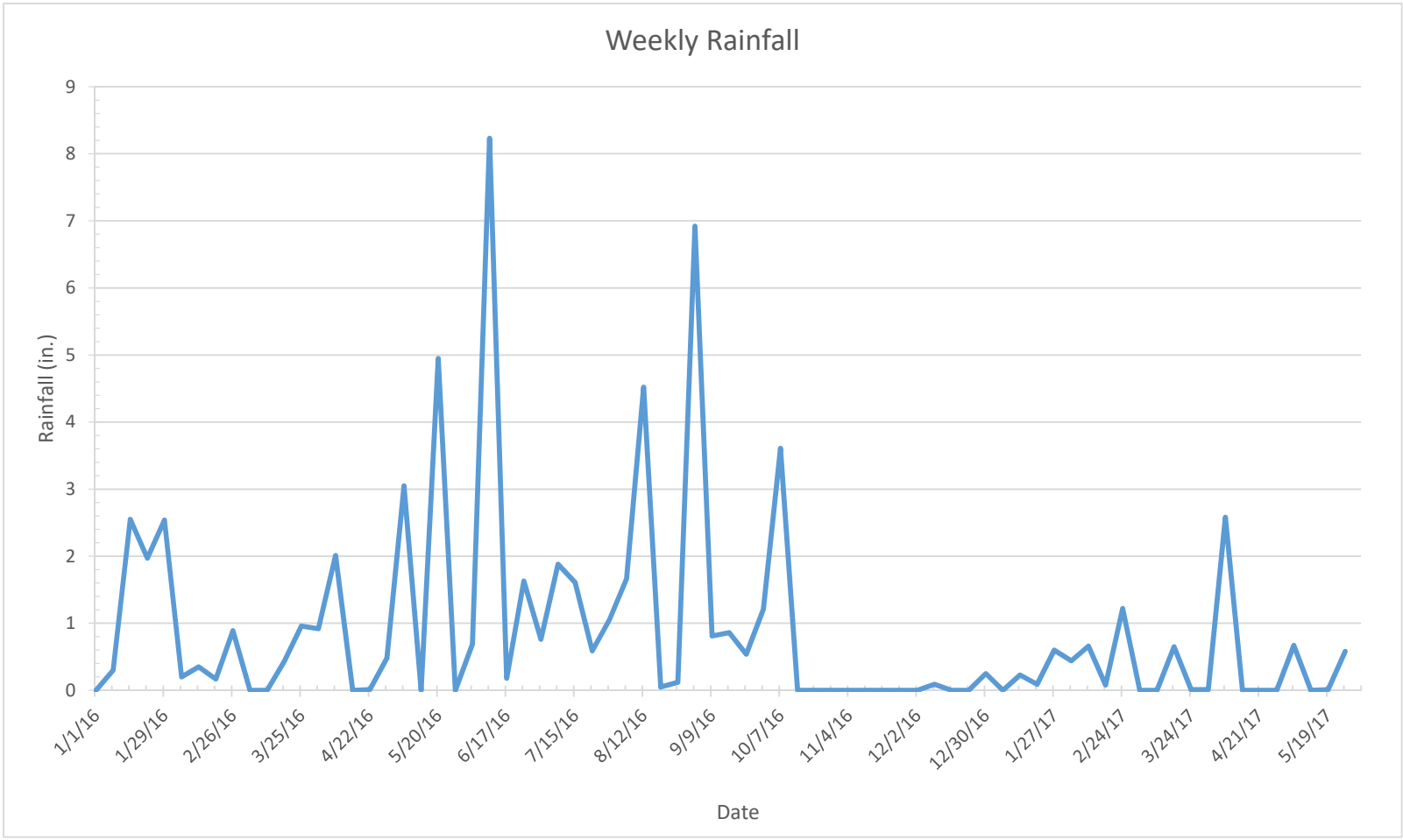

Liquid Depth - Series 2
(SB-15D - SB-25D and SB-28D)
Depth Over Liner (ft)
15
10
5
0
2/17/2017
3/17/2017
4/14/2017
5/12/2017
6/9/2017
SB-15D
SB-16D
SB-17D
SB-18D
SB-19D
SB-20D
SB-21D
SB-22D
SB-23D
SB-24D
SB-25D
SB-28D

Appendix H
Rainfall Data
Liquid Assessment Monitoring
Southeast County Landfill

Week Ending	Rainfall (in.)	Remarks
1/1/16	0	
1/8/16	0.3	
1/15/16	2.55	
1/22/16	1.97	
1/29/16	2.54	
2/5/16	0.2	
2/12/16	0.35	
2/19/16	0.17	
2/26/16	0.89	
3/4/16	0	
3/11/16	0	
3/18/16	0.43	
3/25/16	0.96	
4/1/16	0.92	
4/8/16	2.01	
4/15/16	0	
4/22/16	0.01	
4/29/16	0.48	
5/6/16	3.05	
5/13/16	0	
5/20/16	4.95	
5/27/16	0	
6/3/16	0.69	
6/10/16	8.23	
6/17/16	0.18	
6/24/16	1.63	
7/1/16	0.76	
7/8/16	1.88	
7/15/16	1.61	
7/22/16	0.59	
7/29/16	1.05	
8/5/16	1.66	
8/12/16	4.52	
8/19/16	0.05	
8/26/16	0.12	
9/2/16	6.92	
9/9/16	0.81	
9/16/16	0.86	
9/23/16	0.54	
9/30/16	1.21	
10/7/16	3.61	
10/14/16	0	

Appendix H
Rainfall Data
Liquid Assessment Monitoring
Southeast County Landfill

Week Ending	Rainfall (in.)	Remarks
10/21/16	0	
10/28/16	0	
11/4/16	0	
11/11/16	0	
11/18/16	0	
11/25/16	0	
12/2/16	0	
12/9/16	0.09	
12/16/16	0	
12/23/16	0	
12/30/16	0.25	
1/6/17	0	
1/13/17	0.23	
1/20/17	0.09	
1/27/17	0.6	
2/3/17	0.44	
2/10/17	0.66	
2/17/17	0.08	
2/24/17	1.22	
3/3/17	0	
3/10/17	0	
3/17/17	0.65	
3/24/17	0.01	
3/31/17	0.01	
4/7/17	2.58	
4/14/17	0	
4/21/17	0	
4/28/17	0	
5/5/17	0.67	
5/12/17	0	
5/19/17	0.01	
5/26/17	0.58	
6/2/17	0.33	
6/9/17		


Weekly Rainfall
Rainfall (in.)
9
8
7
6
5
4
3
2
1
0
1/1/16
1/29/16
2/26/16
3/25/16
4/22/16
5/20/16
6/17/16
7/15/16
8/12/16
9/9/16
10/7/16
11/4/16
12/2/16
12/30/16
1/27/17
2/24/17
3/24/17
4/21/17
5/19/17
Date

Appendix I
Shallow Groundwater Monitoring Wells

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : TH-80
SHEET 1 of 1
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt, Hillsborough County - J. Fuller
SAMPLER: No Sampling
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 6-5/8" I.D. OTHER: CME 55 Drill Rig

HORIZ: N1249762.01 E598759.33 See notes for datum
ELEV.: GROUND = 126.3 WELL MP: Top of PVC (Riser) 129.52
DATE START 3/8/2017 DATE END 3/9/2017

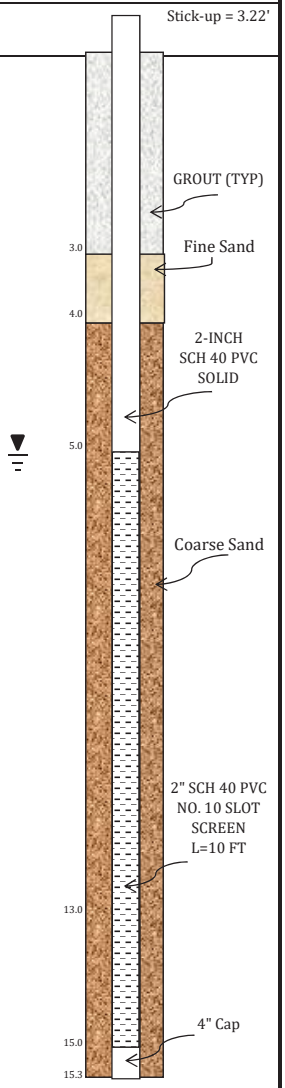
GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME (hr:min)	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	14:28	NA	NA		NS		0
				1			
				2		Brown sand (dry)	
				3			
				4			
						Gray clay (moderately moist)	
5	14:38			5			
	14:40					Gray clay (moist)	0
				6		... Water at 6'	
				7			
				8			
				9		Lighter gray clay, increased cohesiveness (phosphatic) (wet)	
10	14:48			10			
	14:51						0
				11		Light gray phosphatic clay (wet)	
				12			
				13			
						Brown silty clay (wet)	
				14			
15	14:59			15			

BOE = 15'

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

Additional Notes:
- ADVANCED AUGERS TO 15', DID NOT COLLECT SPLIT SPOON SAMPLES
- BOTTOM OF PVC END CAP AND PRE-PACKAGED SCREEN SET IN CLAY LAYER
- PIEZOMETER DEVELOPED BY COUNTY PERSONNEL.
- AUGERS WERE DECONTAMINATED BEFORE STARTING EACH BORING
- SURVEYOR SET PK IN CONCRETE PAD ELEV = 126.33

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : TH-81
SHEET 1 of 1
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt, Hillsborough County - J. Fuller
SAMPLER: No Sampling / Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 6-5/8" I.D. OTHER: CME 55 Drill Rig

HORIZ: N1249571.91 E598709.62 See notes for datum
ELEV.: GROUND = 126.8 WELL MP: Top of PVC (Riser) 130.26
DATE START 3/8/2017 DATE END 3/9/2017

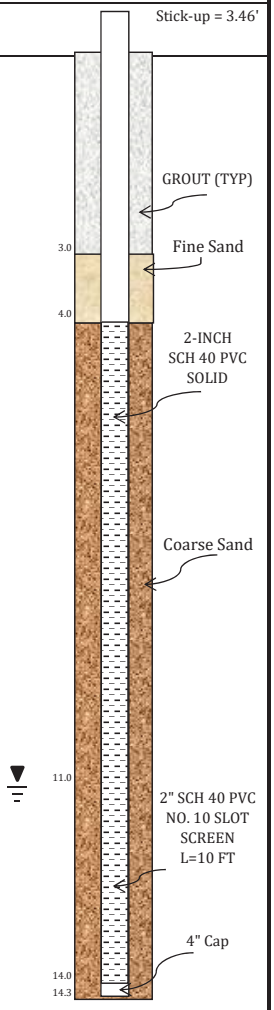
GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME (hr:min)	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	9:56	NA	NA		NS		0
				1			
				2			
				3		Brown sandy silt. (dry at top to moist at bottom)	
				4			
5	10:00			5			
	10:02						0
				6			
				7			
				8		Brown sandy silt (moist)	
				9			
10	10:05			10			
	10:12						0
				11		... Water at 11'	
				12			
				13		Brown sandy silt (wet)	
	10:18			14			

BOE = 14'

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

Additional Notes:
- ADVANCED AUGERS TO 15', DID NOT COLLECT SPLIT SPOON SAMPLES
- BOTTOM OF PVC END CAP AND PRE-PACKAGED SCREEN SET IN CLAY LAYER
- PIEZOMETER DEVELOPED BY COUNTY PERSONNEL.
- AUGERS WERE DECONTAMINATED BEFORE STARTING EACH BORING
- SURVEYOR SET PK IN CONCRETE PAD ELEV = 126.92

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, FL 33610

PROJECT
PHASES I-VI LIQUID ASSESSMENT MONITORING
SOUTHEAST COUNTY LANDFILL
LITHIA, FL

REPORT OF BORING : TH-82
SHEET 1 of 1
JOB NO. 09215600.03
CHKD. BY __

DRILLER: TIERRA - Cruz, Derek, and Ben
INSPECTOR: SCS - C. Devitt, Hillsborough County - J. Fuller
SAMPLER: No Sampling
Hydraulic Hammer
METHOD: Hollow -Stem Auger (HSA)
CASING SIZE: 6-5/8" I.D. OTHER: CME 55 Drill Rig

HORIZ: N1249645.26 E598833.09 See notes for datum
ELEV.: GROUND = 127.9 WELL MP: Top of PVC (Riser) 131.24
DATE START 3/9/2017 DATE END 3/9/2017

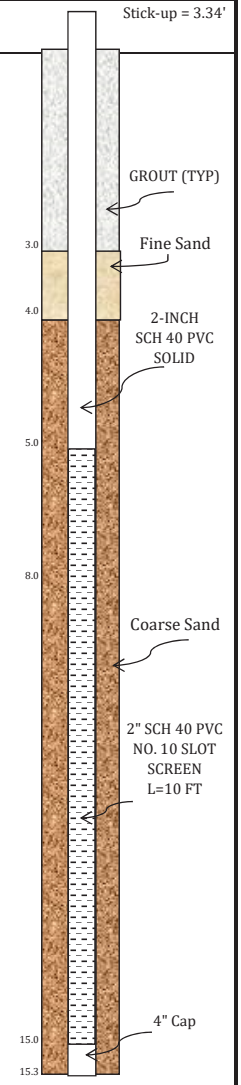
GROUNDWATER READINGS

DATE	TIME	DTW (ft btor)	CASING	STABILIZATION TIME

AUGER DEPTH	AUGER TIME (hr:min)	SAMPLE NO.	SAMPLE REC (in.)	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS (/6")	SAMPLE DESCRIPTION	H&S Methane (ppm)
	9:38	NA	NA		NS		0
				1			
				2			
				3		Brown sandy silt (dry at top to moist at bottom)	
				4			
5	9:42			5			
	9:44						0
				6			
						Dark brown sandy silt (moist)	
				7			
				8		... Water at 8'	
				9		Dark brown sandy silt (wet)	
10	9:49			10			
	9:51						0
				11		Dark brown sandy silt (wet)	
				12		...Hard drilling 12'	
				13			
						Dark brown sandy silt (wet)	
				14			
15	9:59			15			

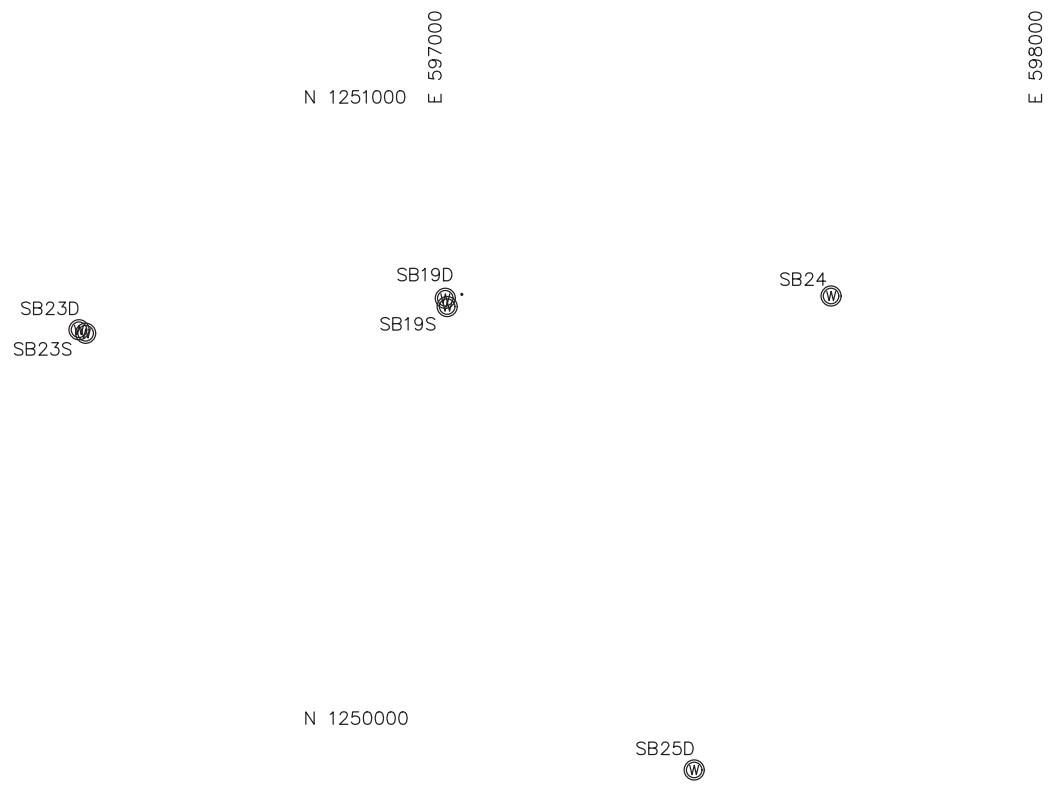
BOE = 15'

WELL INSTALLATION DIAGRAM



Notes:
DTW = Depth to water
btor = Below top of riser
MP = Measuring point
SAMPLE DESCRIPTIONS - based on observed cuttings from auger when no split spoon collected.

Additional Notes:
- ADVANCED AUGERS TO 15', DID NOT COLLECT SPLIT SPOON SAMPLES
- BOTTOM OF PVC END CAP AND PRE-PACKAGED SCREEN SET IN CLAY LAYER
- PIEZOMETER DEVELOPED BY COUNTY PERSONNEL.
- AUGERS WERE DECONTAMINATED BEFORE STARTING EACH BORING
- SURVEYOR SET PK IN CONCRETE PAD ELEV = 127.96



LEGEND:

NO. NUMBER
ELEV. ELEVATION

SB25D (W) WELL

SURVEYOR's NOTES:

1.) North Grid and coordinates basis is the West Zone of the Florida State Plane Coordinate System NAD 83/90 adjustment. The vertical datum is NAD1929 using control as provided by client prepared by Pickett & Associates.

2.) This survey was prepared to show wells SB19S,SB19D, SB23S,SB23D,SDB25D,SDB24TH80,TH81 and TH82.

3.) THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

FIELD POINT NUMBER	WELL NORTHING	WELL EASTING	WELL NUMBER	CASING ELEVATION	GROUND ELEVATION
17052	1250679.77	597036.76	SB19S	203.36	200.0
17055	1250692.93	597033.65	SB19D	203.02	200.1
17058	1250636.73	596454.97	SB23S	199.45	196.4
17059	1250642.30	596444.00	SB23D	199.70	196.6
17062	1250696.87	597654.72	SB24	188.82	186.1
17064	1249933.86	597434.18	SB25D	208.83	205.8

WELL POINT NUMBER	WELL NORTHING	WELL EASTING	WELL NUMBER	TOP OF CASING	GROUND ELEVATION	PK POINT NUMBER	PK NORTHING	PK EASTING	PK ELEVATION	Latitude	Longitude
17173	1249762.01	598759.33	TH80	129.52	126.3	17175	1249762.76	598759.71	126.33	27°46'18.275"	-82°10'39.107"
17194	1249571.91	598709.62	TH81	130.26	126.8	17193	1249572.72	598709.93	126.92	27°46'16.392"	-82°10'39.657"
17197	1249645.26	598833.09	TH82	131.24	127.9	17207	1249645.91	598833.27	127.96	27°46'17.120"	-82°10'38.284"

DATE REVISION

Peavey & Associates
SURVEYING & MAPPING P.A.
9300 NORTH LAKE BLVD.
FORT MEADE, FL 33841
PHONE: 863-738-4960
FLORIDA BUSINESS NO.7779

CLIENT:
SCS ENGINEERS
4041 Park Oaks Blvd
Suite 100
Tampa, Fl 33610

FILE NAME: 1604 wm-southeast gas wells 3-13-2017.dwg

SPECIFIC PURPOSE SURVEY OF GAS & MONITOR WELLS 2017
SOUTHEAST LANDFILL
HILLSBOROUGH COUNTY, FL

DEBORAH L. PEAVEY, P.S.M.
FLORIDA REGISTRATION NUMBER 6348
FLORIDA BUSINESS NUMBER 7779

3/13/2017
SURVEY DATE

PROJECT	DRAWING NO.	SHEET
1604	341	1

SOUTHEAST COUNTY LANDFILL
EXISTING & PROPOSED WELL LOCATION MAP

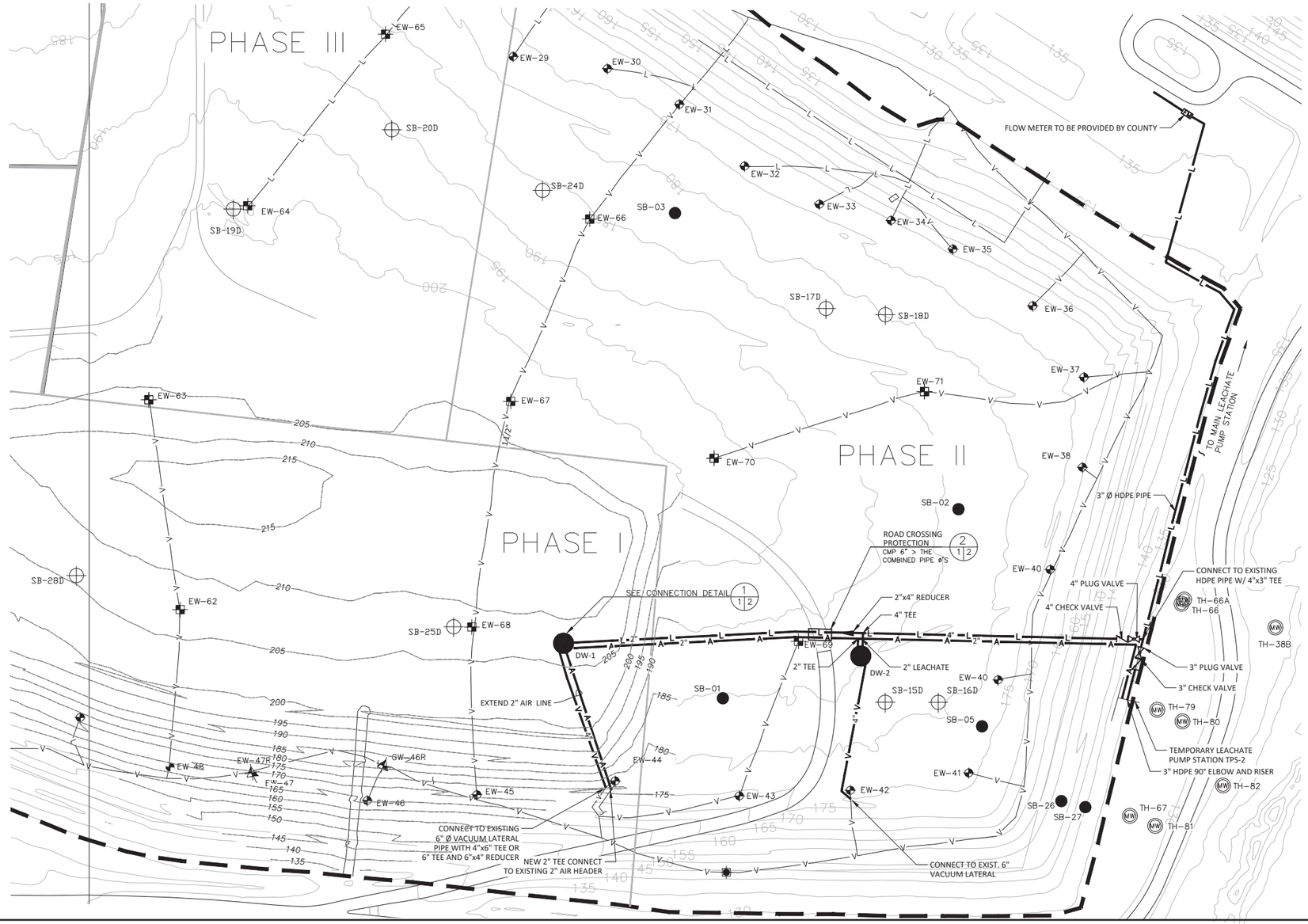
2016 AERIAL PHOTO

Legend

- **Existing Wells**
- **Wells To Be Installed**

Hillsborough County Florida

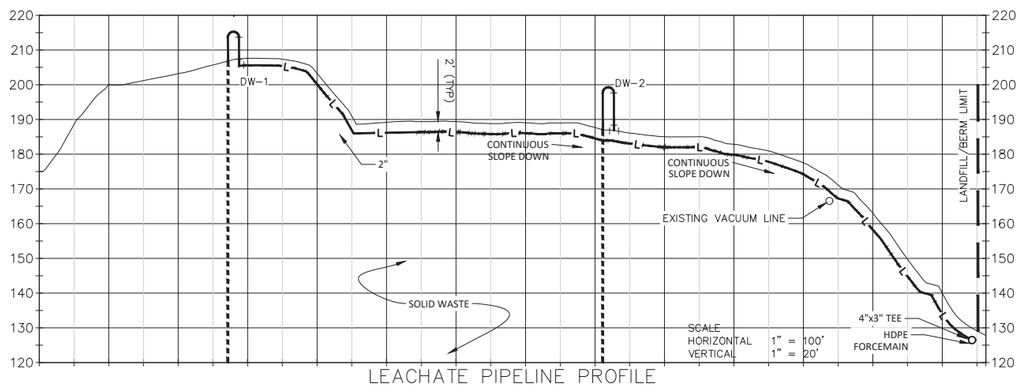
Attachment 2
Dewatering Wells
Plan and Details



LEGEND:

DW-2	LEACHATE DEWATERING WELL & PUMP – APPROXIMATE
EW-61	LANDFILL GAS (LFG) EXTRACTION WELL (CASSON) – EXISTING
EW-45	LANDFILL GAS (LFG) EXTRACTION WELL – EXISTING
TH-81	MONITOR WELLS
SB-01	FIRST SERIES PIEZOMETER
GW-46R	REMOTE WELLHEAD
SB-26	SECOND SERIES PIEZOMETER
	LANDFILL LIMIT/BERM
	PHASE LIMIT
A	PRESSURIZED AIR LINE – EXISTING
A	PRESSURIZED AIR LINE – PROPOSED
L	LEACHATE LINE – EXISTING
L	LEACHATE LINE – PROPOSED
V	VACUUM LINE– EXISTING
V	VACUUM LINE – PROPOSED

NOTES:
1. LOCATIONS OF DEWATERING WELLS TO BE DETERMINED FOLLOWING PILOT HOLE PIEZOMETER INSTALLATION AND PUMP TESTING. LOCATIONS INDICATED ON DRAWING ARE SHOWN AS TYPICAL EXAMPLES.
2. PHASE I DESIGNATES SOLID WASTE FILLING SEQUENCE.
3. EXISTING GROUND TOPOGRAPHY BASED ON AN AERIAL SURVEY DATED JAN 6, 2017 BY PICKETT & ASSOCIATES. PLAN DOES NOT ACCURATELY SHOW PHASE I GRADES.



LEACHATE PIPELINE PROFILE

REV	DATE	DESCRIPTION	BY

BRUCE J. CLARK
LICENSE NO. 31924

DRAWING TITLE: PIPING SITE PLAN AND PROFILE

PROJECT TITLE: SOUTHEAST COUNTY LANDFILL
DEWATERING WELL DESIGN

CLIENT: HILLSBOROUGH COUNTY
PUBLIC WORKS DEPARTMENT
SOLID WASTE MANAGEMENT DIVISION
TAMPA, FL 33619

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS
4041 PARK OAKS BLVD., SUITE 100, TAMPA, FL 33610
813 621-0080 FAX 813 623-6757
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00000892

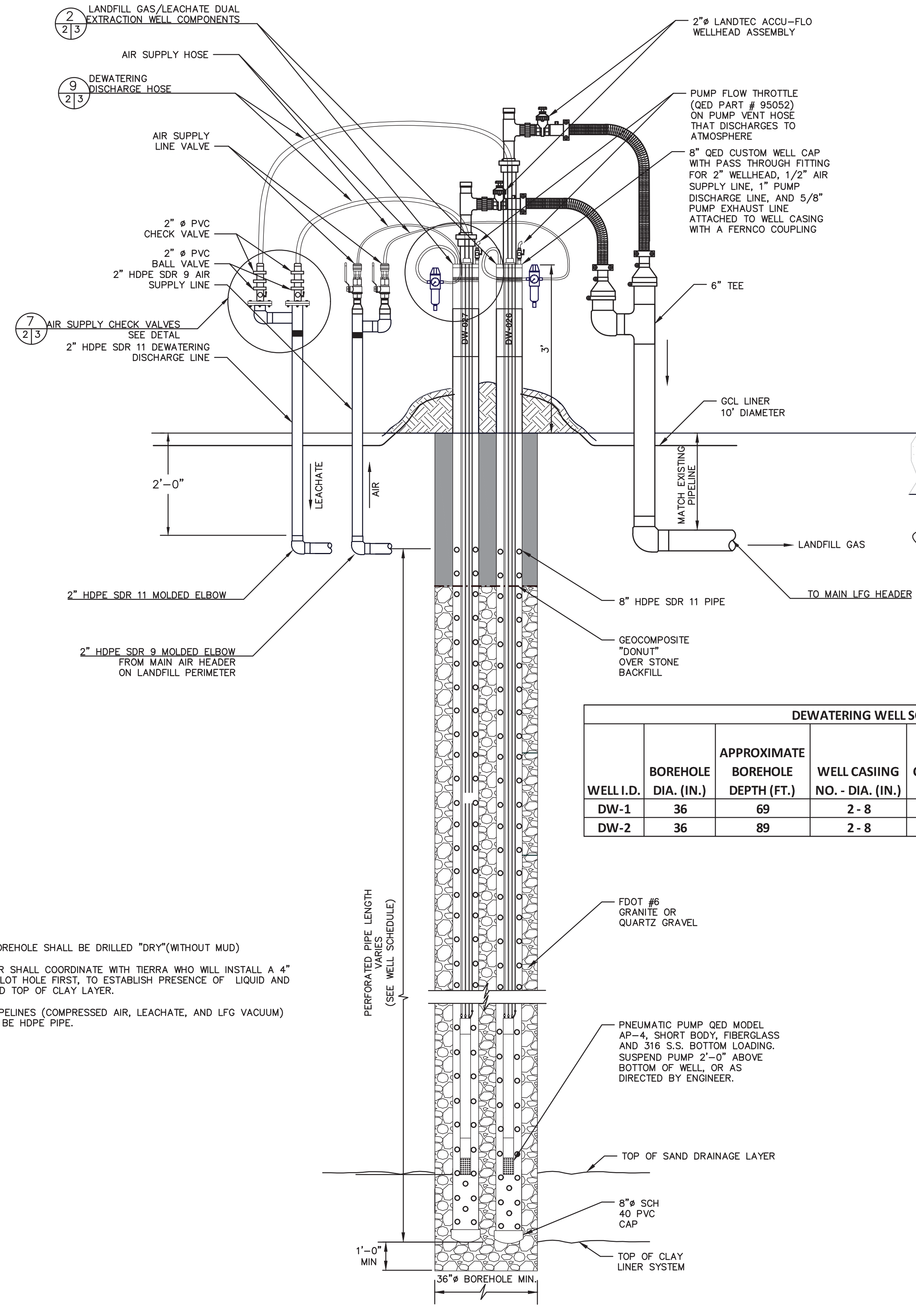
PROJ. NO. 25600.03
DSN. BY: BJC
DWN. BY: LCU
CHK. BY: RBC
Q/A REVIEW BY: RBC
APP. BY: BJC

CADD FILE: SHEET1

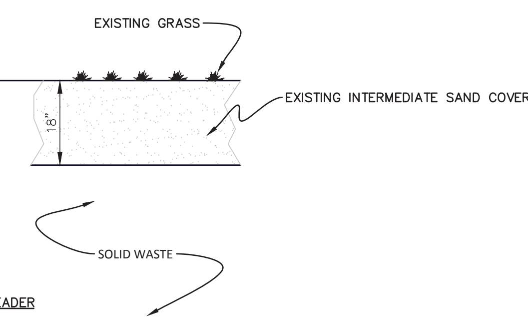
DATE: APRIL 2017

SCALE: AS SHOWN

DRAWING NO. 1



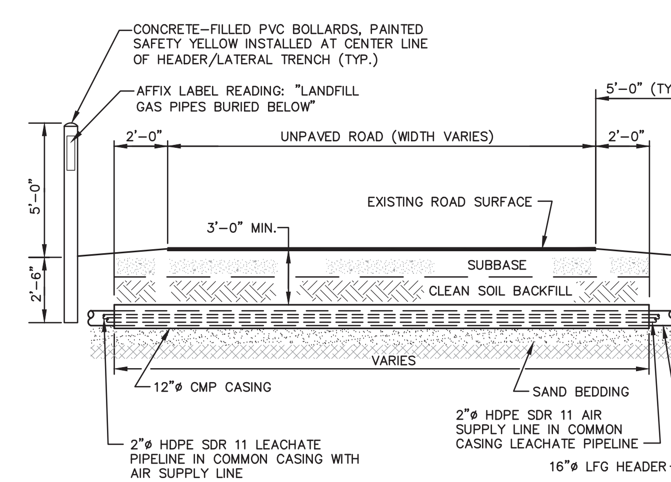
TYPE 1 DEWATERING WELL DETAIL 1 / 1|2
NOT TO SCALE

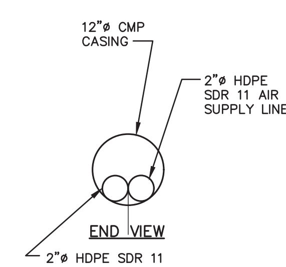


DEWATERING WELL SCHEDULE						
WELL I.D.	BOREHOLE DIA. (IN.)	APPROXIMATE BOREHOLE DEPTH (FT.)	WELL CASIING NO. - DIA. (IN.)	CASING SDR VALUE	APPROXIMATE PERFORATED CASING LENGTH (FT.)	APPROXIMATE DEPTH TO CLAY (FT.)
DW-1	36	69	2 - 8	11	63	68
DW-2	36	89	2 - 8	11	83	88

NOTES:

1. 36" BOREHOLE SHALL BE DRILLED "DRY"(WITHOUT MUD)
2. DRILLER SHALL COORDINATE WITH TIERRA WHO WILL INSTALL A 4" DIA. PILOT HOLE FIRST, TO ESTABLISH PRESENCE OF LIQUID AND TO FIND TOP OF CLAY LAYER.
3. ALL PIPELINES (COMPRESSED AIR, LEACHATE, AND LFG VACUUM) SHALL BE HDPE PIPE.





END VIEW

NOTES:
1. CONTRACTOR RESTORED ROAD TO MATCH ORIGINAL CONDITIONS.
2. CONTRACTOR INSTALLED 2 BOLLARDS, ONE AT EACH END OF THE CMP CASING. BOLLARDS WERE PAINTED SAFETY YELLOW AND LABELED "LANDFILL GAS PIPES BURIED BELOW".
3. SUBBASE CONSISTS OF 12" OF TYPE "B" STABILIZATION MIN. LBR 40.

UNPAVED ROAD CROSSING DETAIL 2 / 1|2
NOT TO SCALE

BRUCE J. CLARK
LICENSE NO. 31924

REV	DATE	DESCRIPTION	BY

DRAWING TITLE
DETAILS 1

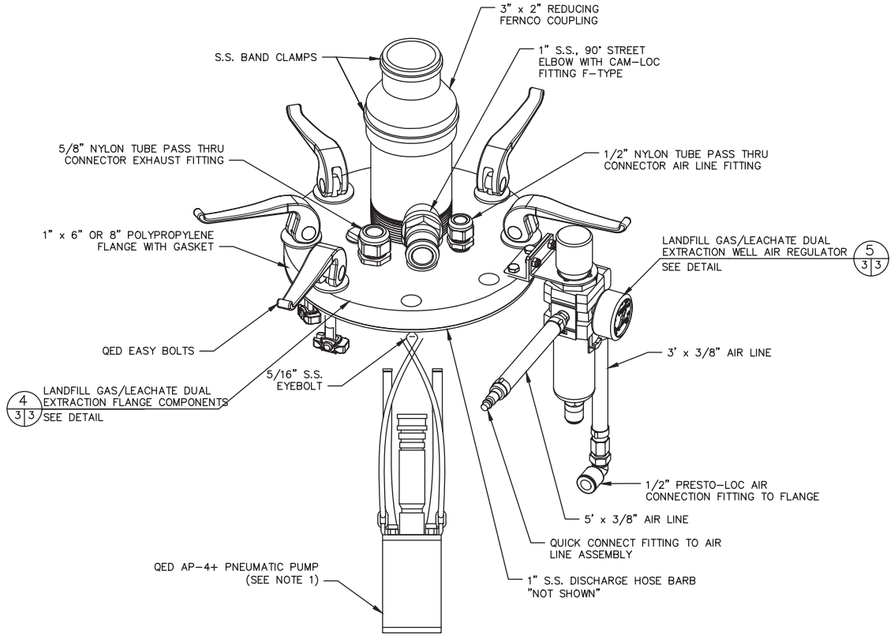
PROJECT TITLE
SOUTHEAST COUNTY LANDFILL DEWATERING WELL DESIGN

CLIENT
HILLSBOROUGH COUNTY PUBLIC WORKS DEPARTMENT SOLID WASTE MANAGEMENT DIVISION TAMPA, FL 33619

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS
4041 PARK OAKS BLVD., SUITE 100, TAMPA, FL 33610
813 621-0080 FAX 813 623-6757
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004892

PROJ. NO. 09215600.03 | DWN. BY: LCU | Q/A RVW BY: RBC
DSN. BY: BJC | CHK. BY: RBC | APP. BY: BJC

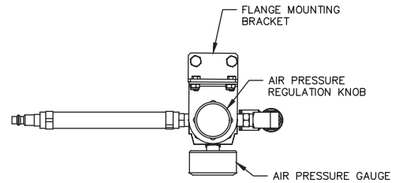
CADD FILE: FIGURE 1 – WELL AND DETAILS
DATE: APRIL 2017
SCALE: AS SHOWN
DRAWING NO. **2**
2 of 3



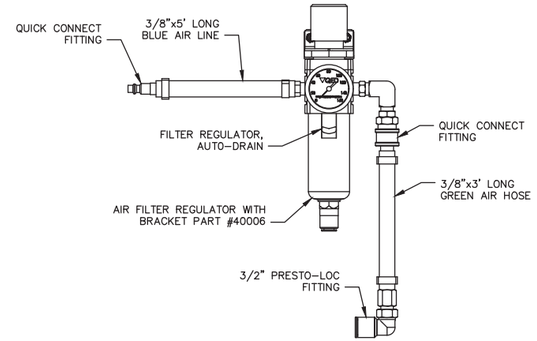
NOTES:

1. QED AP-4+ PNEUMATIC PUMP SHOWN FOR REFERENCE PURPOSES ONLY. PUMP IS NOT INCLUDED WITH FLANGE PACKAGE.
2. AIR LINE AND FORCE MAIN ASSEMBLIES CAN BE CONFIGURED FOR BOTH COLD AND WARM CLIMATES.
3. QBD PUMP COUNTER TO BE ADDED TO DISCHARGE LINE.

LANDFILL GAS/LEACHATE DUAL EXTRACTION WELL COMPONENTS 2 (2 3)
NOT TO SCALE

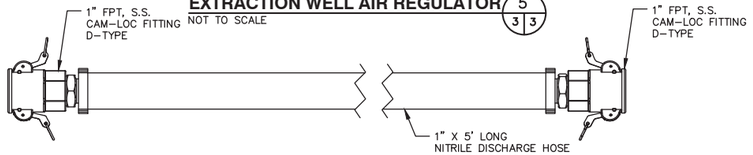


PLAN VIEW

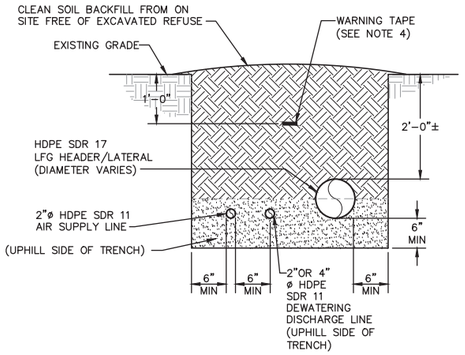


SIDE VIEW

LANDFILL GAS/LEACHATE DUAL EXTRACTION WELL AIR REGULATOR 5 (3 3)
NOT TO SCALE



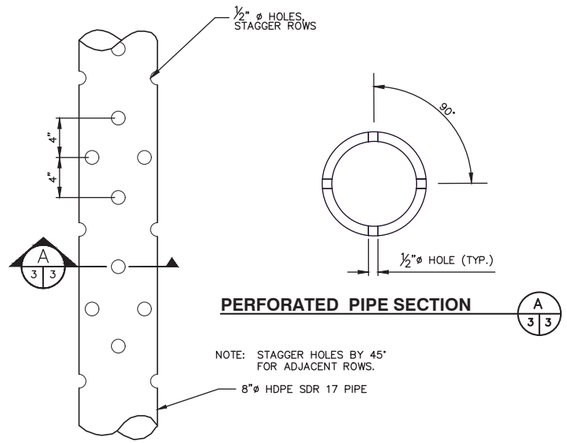
DISCHARGE LINE 9 (3 3)
NOT TO SCALE



HEADER/LATERAL TRENCH DETAIL 8 (1 3)
NOT TO SCALE

NOTES:

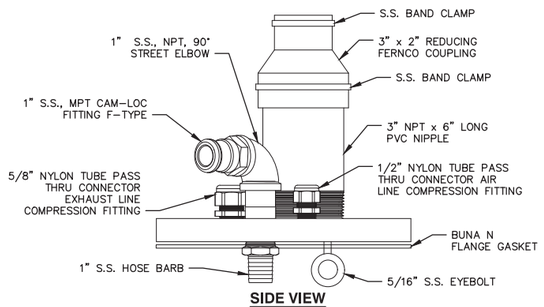
1. HEADER SHALL BE HDPE SDR 17, WITH THE DIAMETERS AND SLOPES AS SHOWN ON THE PLANS.
2. LFG LATERALS SHALL BE SDR 17 WITH THE DIAMETERS SHOWN ON THE PLANS, AND INSTALLED WITH MINIMUM 3% SLOPE.
3. DEWATERING DISCHARGE LINE AND AIR SUPPLY LINE SHALL BE 2" OR 4" ø HDPE SDR 11.
4. WARNING TAPE FOR HEADER/LATERALS SHALL BE MIN. 3" WIDE AND IMPRINTED WITH "GAS LINE BURIED BELOW".



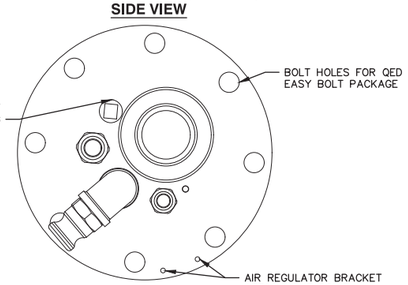
PERFORATED PIPE SECTION A (3 3)

NOTE: STAGGER HOLES BY 45° FOR ADJACENT ROWS.

PERFORATED PIPE DETAIL 3 (2 3)
NOT TO SCALE

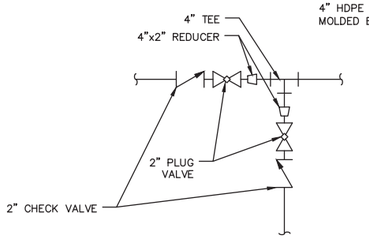


SIDE VIEW

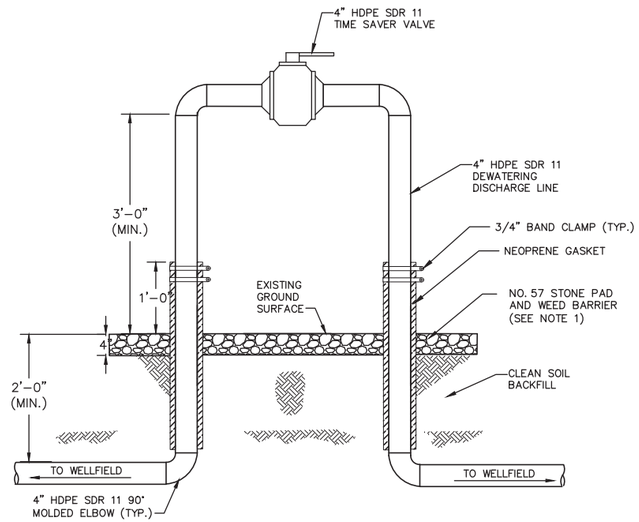


PLAN VIEW

LANDFILL GAS/LEACHATE DUAL EXTRACTION FLANGE COMPONENTS 4 (3 3)
NOT TO SCALE



CONNECTION DETAIL 6 (1 3)
NOT TO SCALE



NOTES:

1. NO. 57 STONE PAD TO BE INSTALLED 36" BEYOND THE RISER PIPE IN ALL DIRECTIONS AND 4" THICK. WEED BARRIER TO BE INSTALLED TO SEPARATE GRAVEL AND CLEAN BACKFILL.
2. RISER PIPE TO BE LABELED WITH VALVE NAME.

DEWATERING LINE ISOLATION VALVE DETAIL 7 (1 3)
NOT TO SCALE

BRUCE J. CLARK LICENSE NO. 31924

REV	DATE	DESCRIPTION	BY

DRAWING TITLE: DETAILS 2

PROJECT TITLE: SOUTHEAST COUNTY LANDFILL DEWATERING WELL DESIGN

CLIENT: HILLSBOROUGH COUNTY PUBLIC WORKS DEPARTMENT SOLID WASTE MANAGEMENT DIVISION TAMPA, FL 33619

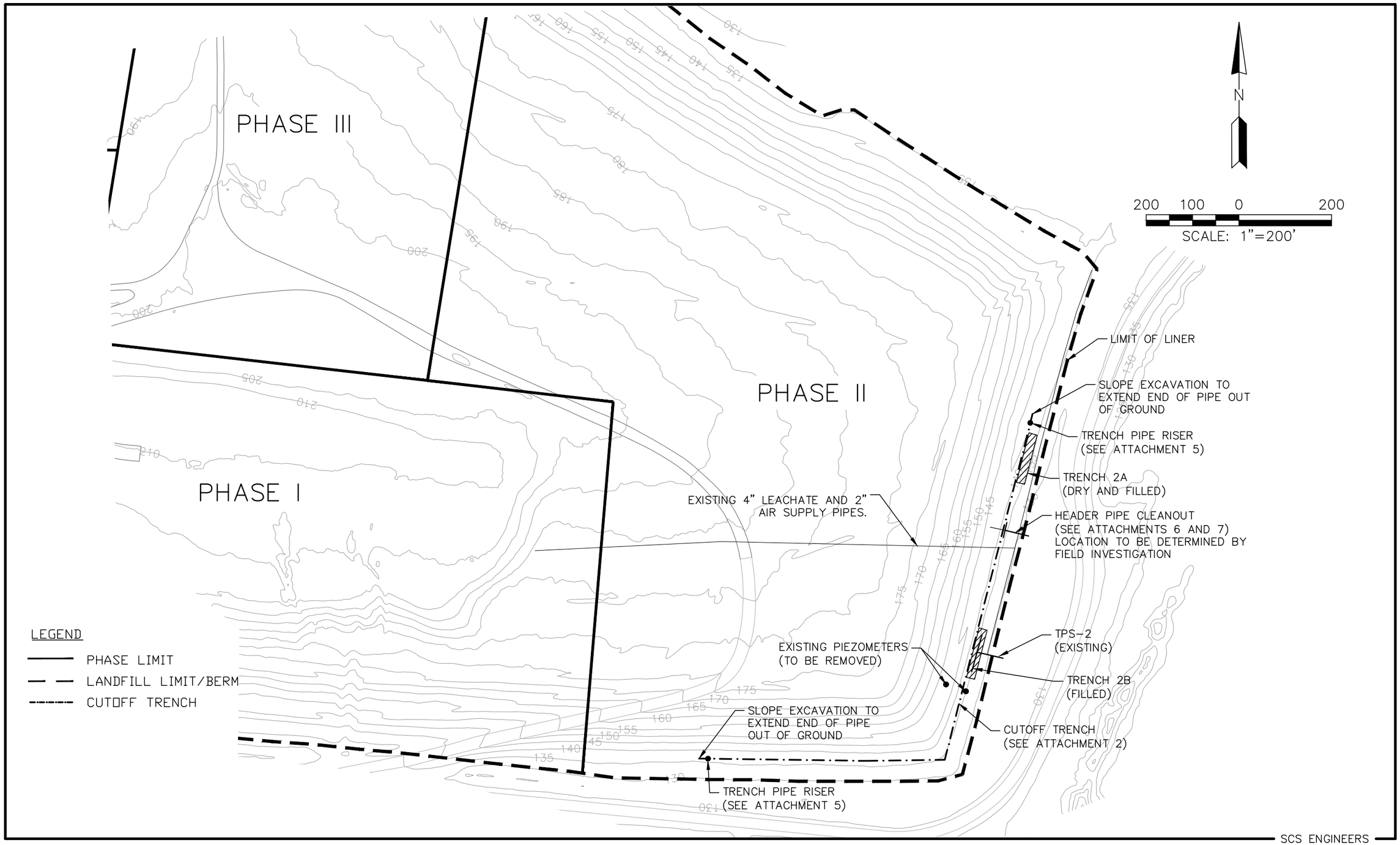
SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS
4041 PARK OAKS BLVD., SUITE 100, TAMPA, FL 33610
813 621-0080 FAX 813 623-6757
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004892

PROJECT NO. 09215600.03 | DSN. BY: BJC | DWN. BY: LCU | CHK. BY: RBC | P/A REVIEW: RBC | APP. BY: BJC

CADD FILE: FIGURE 1 – WELL AND DETAILS
DATE: APRIL 2017
SCALE: AS SHOWN
DRAWING NO. 3
3 of 3

G:\PROJECT\Hillsborough\09215600.03 – Solid Waste\Phase III–IV Geotech\Dewatering Wells\Figure 1 – Well and Details.dwg, May 05, 2017 – 4:34pm, Layout: Normal, Detail_3 Rev. cadd

Attachment 3
Proposed Cut-Off Trench
Plan and Details

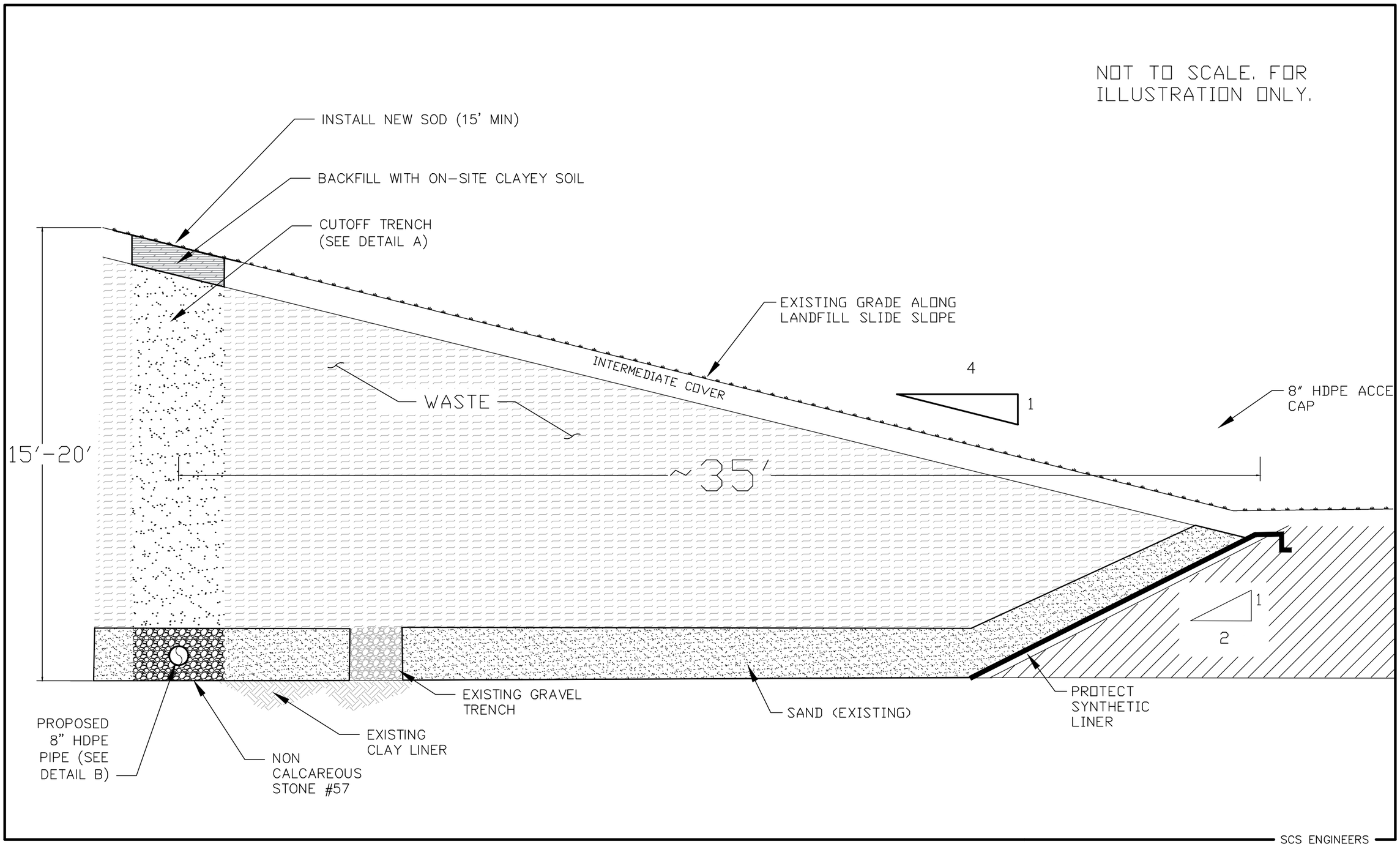


G:\PROJECT\HILLSBOROUGH\09215600.03 - SOLID WASTE\LIQUID INVESTIGATION CAD FIGURES\PHASE II CUTOFF WALL MAP.DWG

SCS ENGINEERS

ATTACHMENT 1. PROPOSED PHASE II CUTOFF TRENCH INSTALLATION
SOUTHEAST COUNTY LANDFILL
MAY 2017

NOT TO SCALE. FOR ILLUSTRATION ONLY.

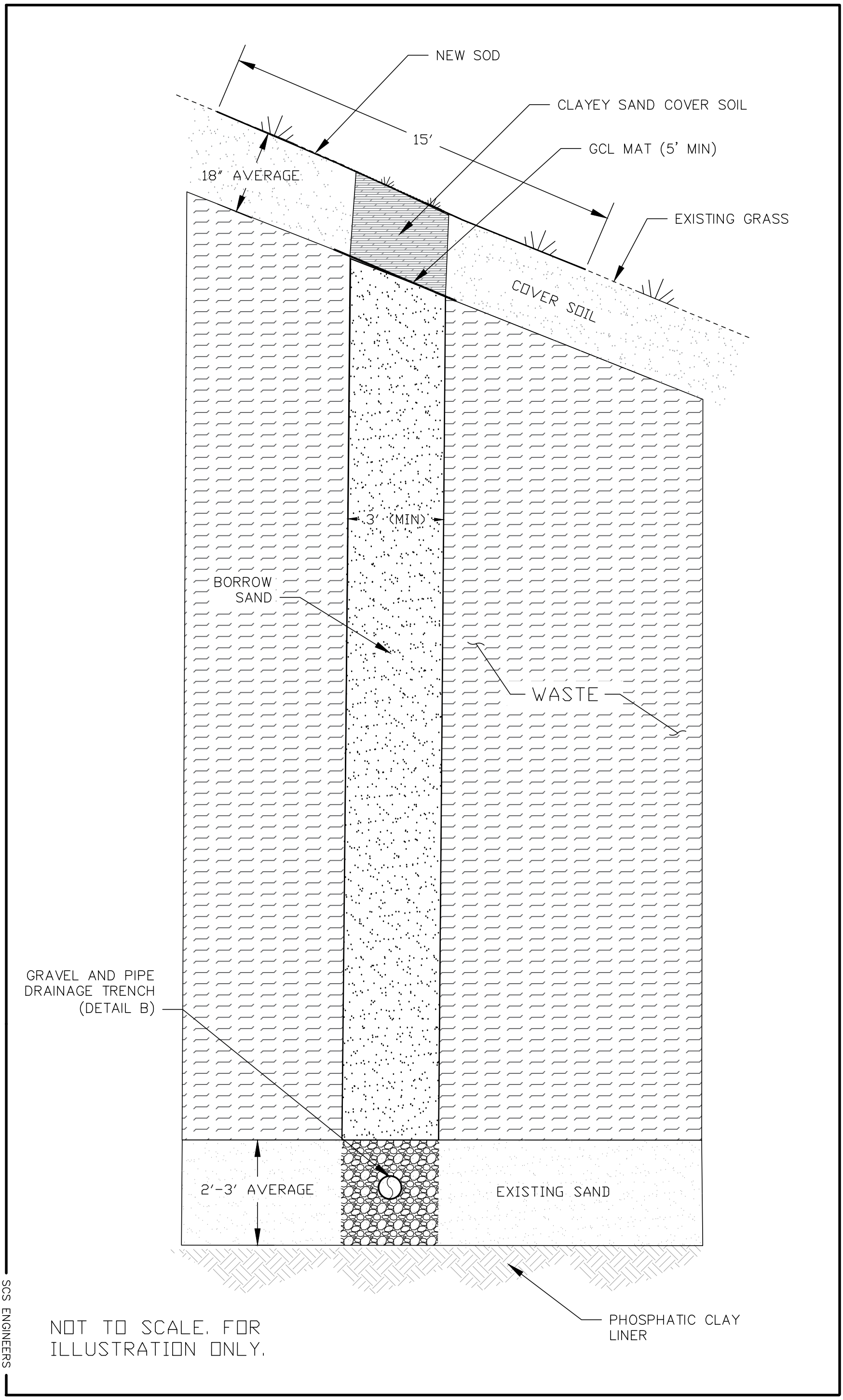


SCS ENGINEERS

G:\PROJECT\HILLSBOROUGH\09215600.03 - SOLID WASTE\LIQUID INVESTIGATION CAD FIGURES\CUTOFF WALL PIPE DETAIL.DWG

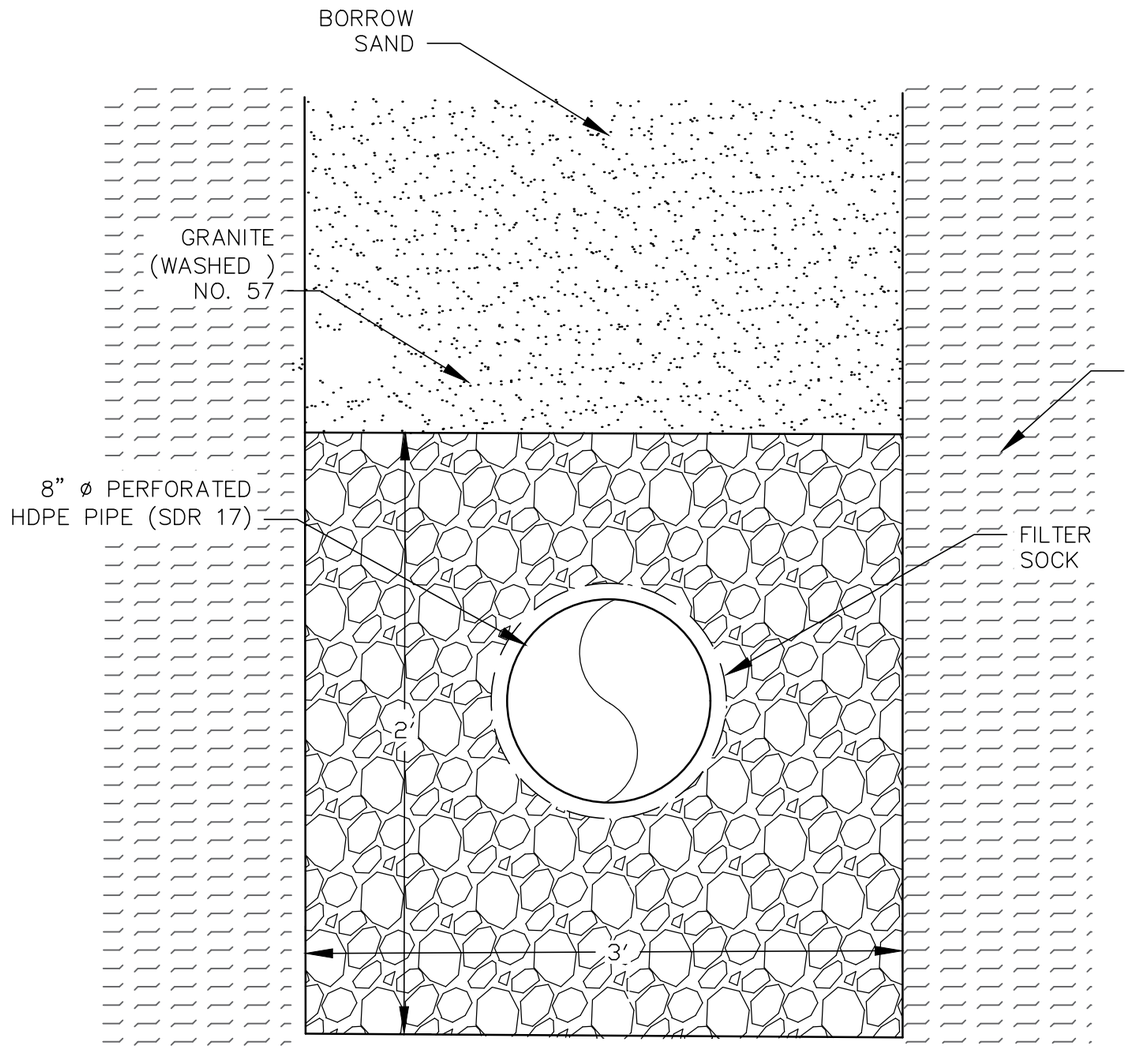
ATTACHMENT 2. PROPOSED CUTOFF TRENCH CROSS SECTION
SOUTHEAST COUNTY LANDFILL
MAY 2017

G:\PROJECT\HILLSBOROUGH\09215600.03 – SOLID WASTE\LIQUID INVESTIGATION CAD FIGURES\CUTOFF WALL PIPE DETAIL.DWG



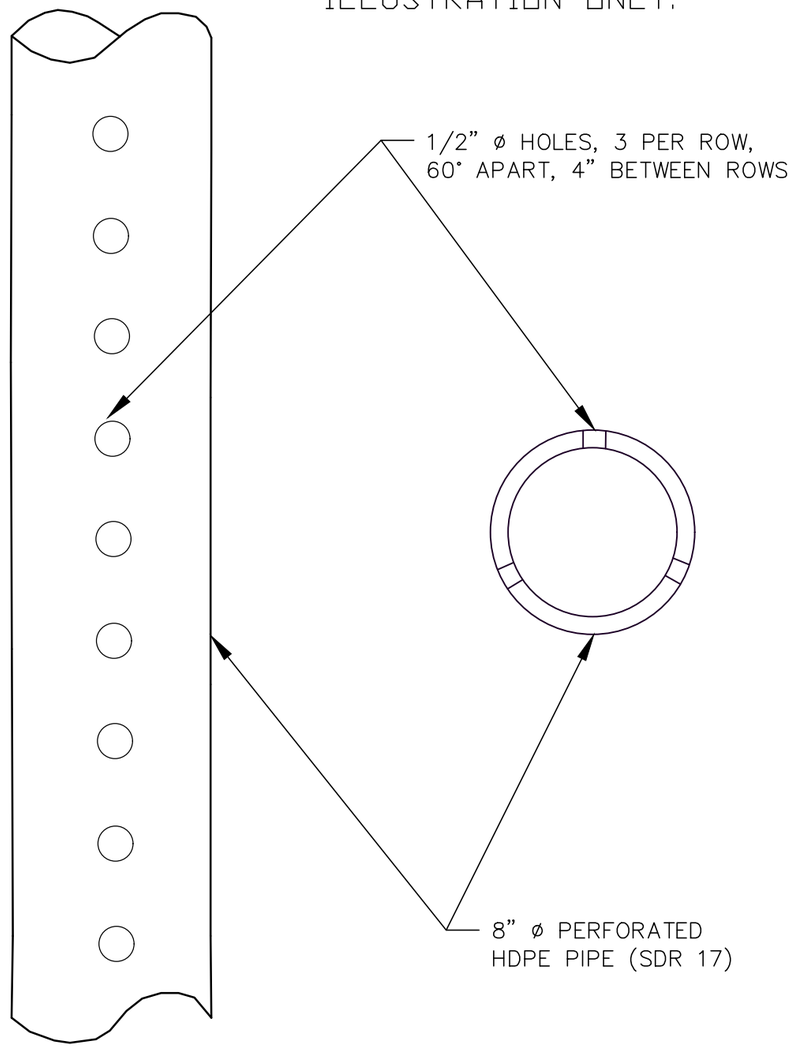
SCS ENGINEERS

ATTACHMENT 3. DETAIL A – CUTOFF TRENCH
SOUTHEAST COUNTY LANDFILL
MAY 2017



LEACHATE CUTOFF/COLLECTION PIPE TRENCH

NOT TO SCALE. FOR ILLUSTRATION ONLY.

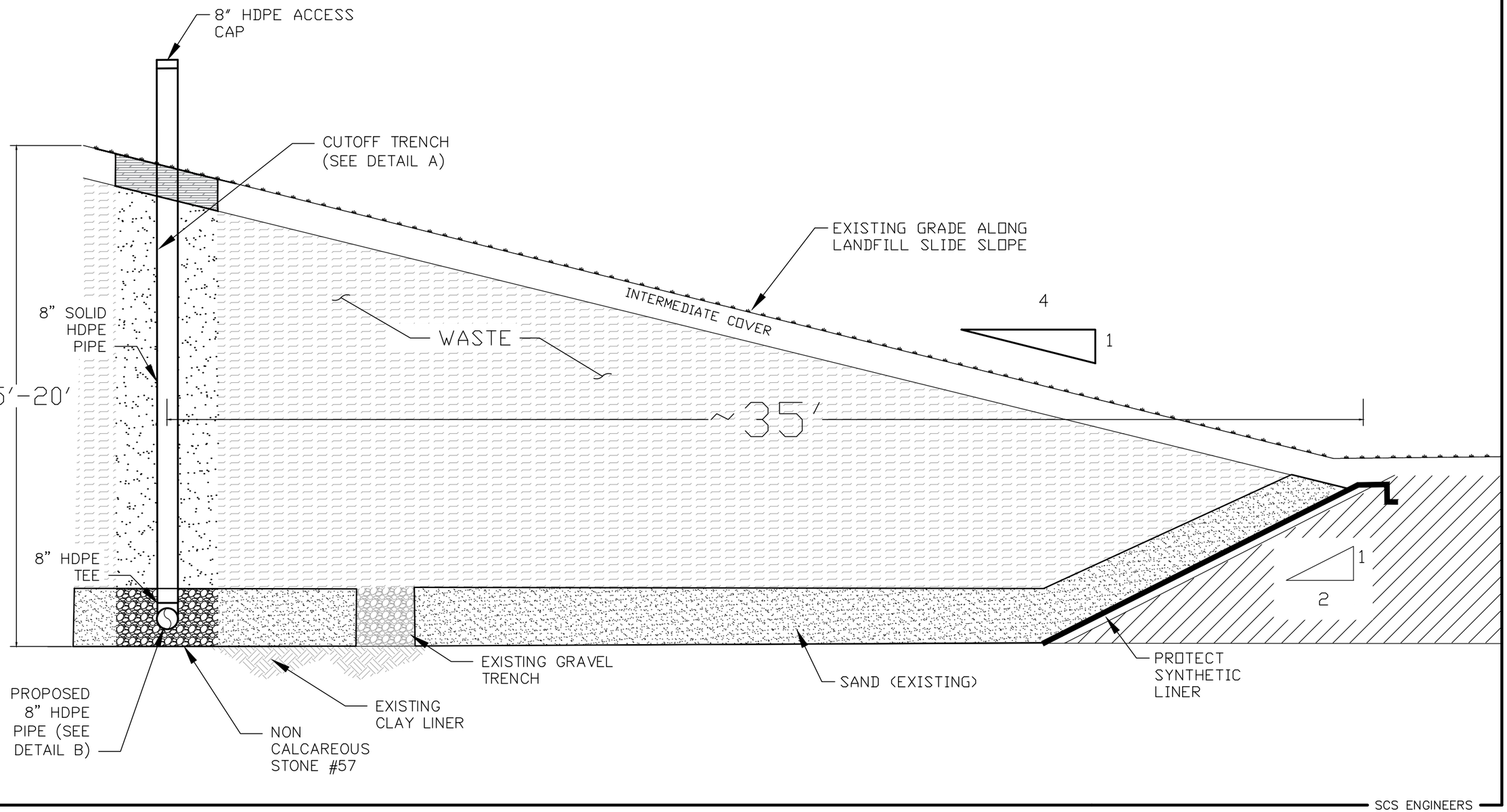


G:\PROJECT\HILLSBOROUGH\09215600.03 - SOLID WASTE\LIQUID INVESTIGATION CAD FIGURES\CUTOFF WALL PIPE DETAIL.DWG

SCS ENGINEERS

ATTACHMENT 4. DETAIL B
SOUTHEAST COUNTY LANDFILL
MAY 2017

NOT TO SCALE. FOR ILLUSTRATION ONLY.

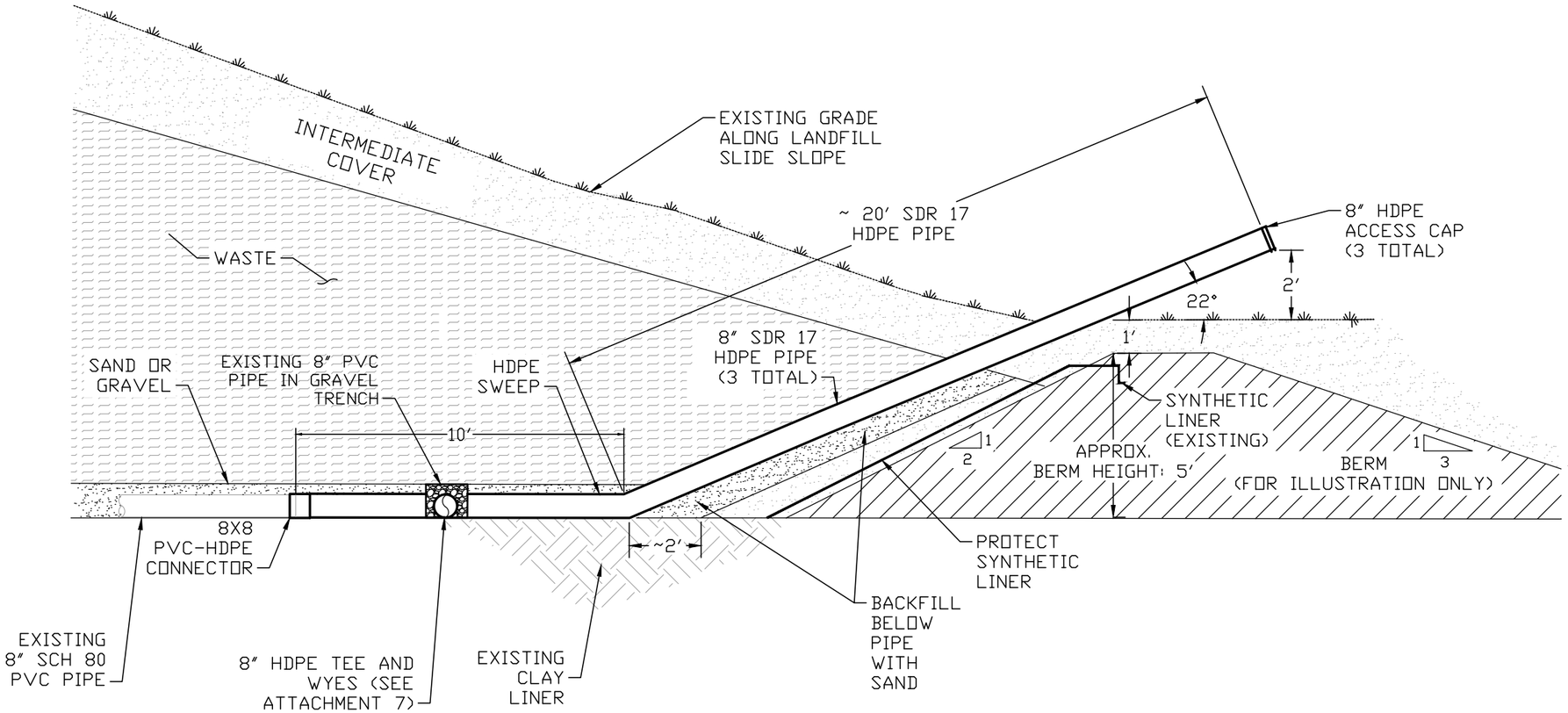


G: \PROJECT\HILLSBOROUGH\09215600.03 - SOLID WASTE\LIQUID INVESTIGATION CAD FIGURES\CUTOFF WALL PIPE DETAIL.DWG

SCS ENGINEERS

ATTACHMENT 5. PROPOSED CUTOFF TRENCH RISER CROSS SECTION
SOUTHEAST COUNTY LANDFILL
MAY 2017

NOT TO SCALE. FOR ILLUSTRATION ONLY.

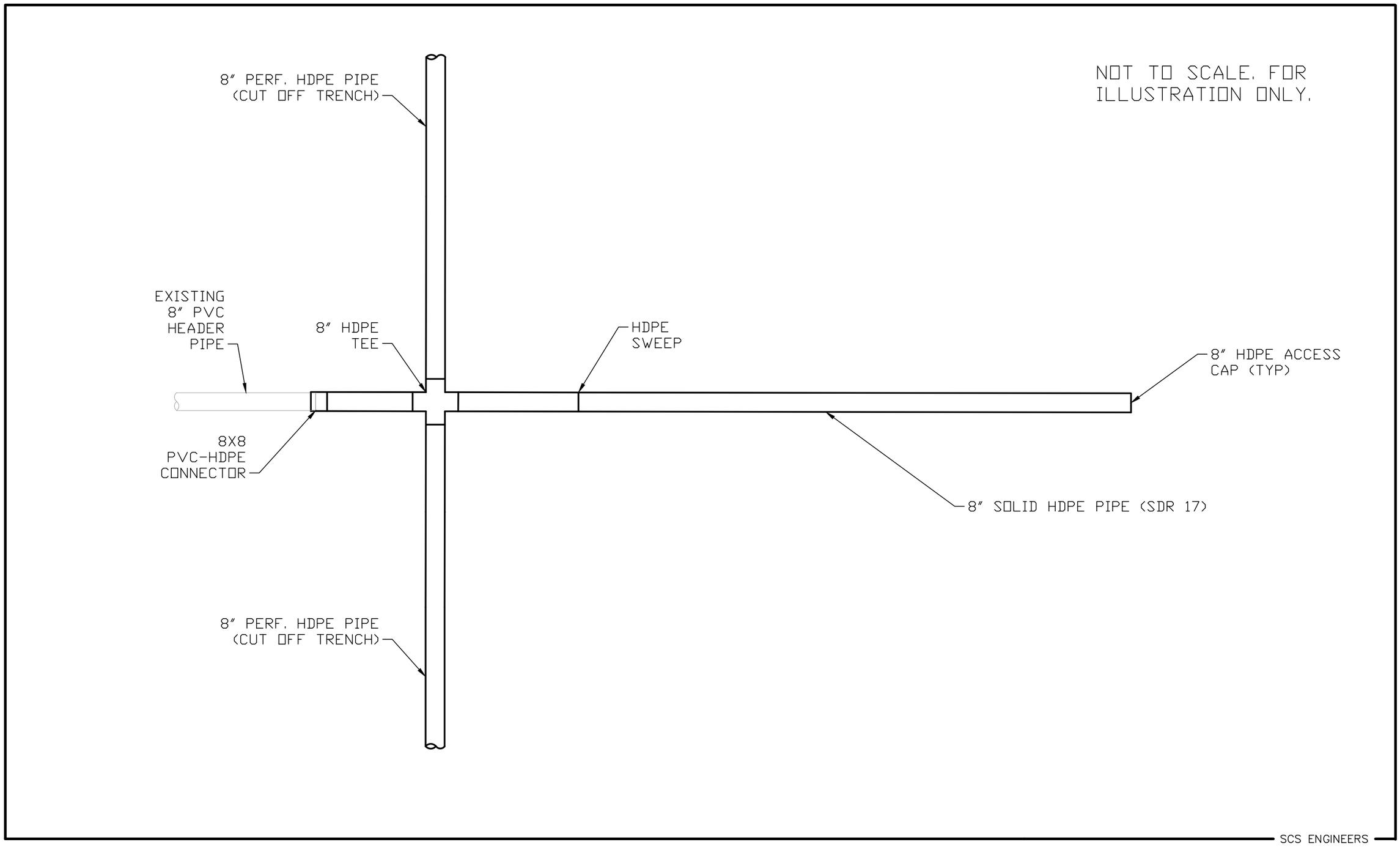


NOTE
SEE ATTACHMENT 7 FOR PLAN VIEW.

G:\PROJECT\HILLSBOROUGH\09215600.03 - SOLID WASTE\LIQUID INVESTIGATION CAD FIGURES\CUTOFF WALL PIPE DETAIL.DWG

SCS ENGINEERS

ATTACHMENT 6. PROPOSED HEADER CLEANOUT CROSS SECTION
SOUTHEAST COUNTY LANDFILL
MAY 2017



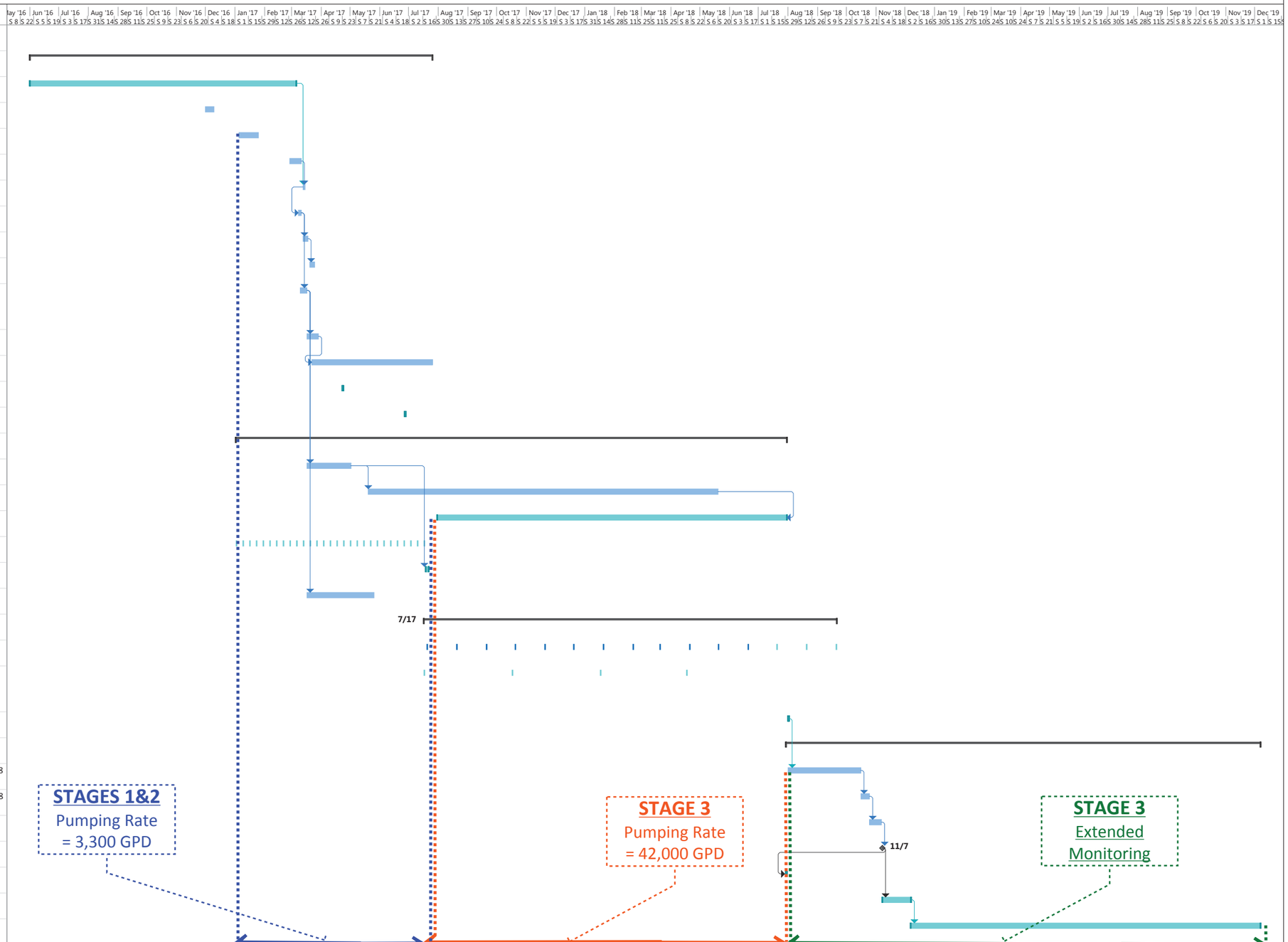
G:\PROJECT\HILLSBOROUGH\09215600.03 - SOLID WASTE\LIQUID INVESTIGATION CAD FIGURES\CUTOFF WALL PIPE DETAIL.DWG

ATTACHMENT 7. PROPOSED HEADER CLEANOUT PLAN VIEW
SOUTHEAST COUNTY LANDFILL
MAY 2017

Attachment 4
Schedule

DEWATERING AND CORRECTIVE ACTION PLAN
SOUTHEAST COUNTY LANDFILL - JUNE 26, 2017

ID	Task Name	Duration	Start	Finish
1	Action Plan for SCLF	1 day	Thu 3/9/17	Thu 3/9/17
2	**STAGE 1**	**300 days**	**Wed 6/1/16**	**Tue 7/25/17**
3	Install All Piezometers (SB-01 through SB-25)	**278 edays**	Wed 6/1/16	Mon 3/6/17
4	Install Shallow Groundwater Monitoring Well (TH-79)	7 days	Thu 12/1/16	Fri 12/9/16
5	Dewater All LFG Wells	21 days	Thu 1/5/17	Wed 1/25/17
6	Install CT-1, CT-2, CT-3, EW-44, EW-48 Pumps	10 days	Mon 2/27/17	Fri 3/10/17
7	Install Temporary Well Point System	2 days	Mon 3/13/17	Tue 3/14/17
8	Install Temp. Leachate Pump Station No. 2 (TPS-2)	3 days	Wed 3/8/17	Fri 3/10/17
9	Phase I Cleanout Installation	5 days	Mon 3/13/17	Fri 3/17/17
10	Jet Clean Leachate Collection System - Phase I	5 days	Mon 3/20/17	Fri 3/24/17
11	Install 3 Shallow Groundwater Monitoring Wells (TH-80, TH-81, TH-82)	5 days	Fri 3/10/17	Thu 3/16/17
12	Survey Wells, Sample and Test Water	8 days	Fri 3/17/17	Tue 3/28/17
13	Provide Interim Status Report	90 days	Wed 3/22/17	Tue 7/25/17
14	Submit Draft Corrective Action Plan to the FDEP	1 day	Sun 4/23/17	Sun 4/23/17
15	Submit Revised Corrective Action Plan to FDEP	1 day	Tue 6/27/17	Tue 6/27/17
16	**STAGE 2**	**411 days**	**Mon 1/2/17**	**Tue 7/31/18**
17	Design Dewatering Wells (DW-1 and DW-2)	32 days	Fri 3/17/17	Mon 5/1/17
18	Install Dewatering Wells (DW-1 & DW-2)/Start Pumping	**365 edays**	Sat 5/20/17	Sun 5/20/18
19	Install Phase II Cutoff Trench and Begin Monitoring	**365 edays**	Mon 7/31/17	Tue 7/31/18
20	Weekly Monitoring	141 days	Mon 1/2/17	Mon 7/17/17
50	Install GCL Around Phase II Wellheads	3 days	Wed 7/19/17	Fri 7/21/17
51	Install 2 LFG Extraction Well Dewatering Pumps (EW-38 & EW-66)	**70 edays**	Thu 3/16/17	Thu 5/25/17
52	**STAGE 3**	**309 days**	**Mon 7/17/17**	**Thu 9/20/18**
53	Monthly Report Level Readings in All Piezometers	306 days	Thu 7/20/17	Thu 9/20/18
69	Review and Evaluate Project Performance Every 90 Days (Piezometers, Dewatering Wells, Trenches, and Other Points)	262 days	Mon 7/17/17	Tue 7/17/18
74	Achieve Compliance Target	1 day	Wed 8/1/18	Wed 8/1/18
75	**STAGE 4**	**355 days**	**Mon 7/30/18**	**Sat 12/7/19**
76	Prepare Draft Final Dewatering Report	54 days	Wed 8/1/18	Mon 10/15/18
77	County Review Report	7 days	Tue 10/16/18	Wed /24/18
78	Finalize Final Dewatering Report	13 days	Thu 10/25/18	Tue 11/6/18
79	Provide Final Dewatering Report to the FDEP	0 days	Wed 11/7/18	Wed 11/7/18
80	Execute termination clauses for the Action Plan	1 day	Mon 7/30/18	Mon 7/30/18
81	FDEP Review	30 edays	Wed 11/7/18	Fri 12/7/18
82	Extended Monitoring	365 edays	Fri 12/7/18	Sat 12/7/19



Project: Dewatering and Corrective Action Plan - SCLF
Date: June 2017

Task, Split, Milestone, Summary, Project Summary, Inactive Task, Inactive Milestone, Inactive Summary, Manual Task, Duration-only, Manual Summary Rollup, Manual Summary, Start-only, Finish-only, External Tasks, External Milestone, Deadline, Progress, Manual Progress

** Brown text are tasks that are completed.
Black text are tasks to be completed.
Durations labeled **"edays" in blue** indicate elapsed, calendar days. All other durations assume standard working days (M-F, 8hr).