Site Acceptability Report

Addendum to Huffaker Road Landfill
(Permit # 057-022D(LI))

Parcel F Lateral Expansion

Rome, Floyd County, Georgia

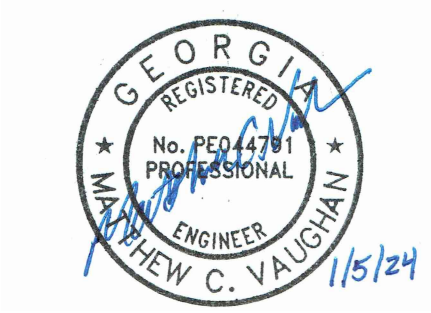
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Executive Summary

Georgia Power Company (Georgia Power) currently operates the Huffaker Road Landfill (HRL) solid waste facility, Georgia Environmental Protection Division (EPD) solid waste permit #057-022D (LI), to store coal combustion residual (CCR) waste being excavated from Plant Hammond, approximately 10 miles west of Rome, Georgia. Accommodation of the remaining volume of ash from Plant Hammond requires Georgia Power to propose a landfill expansion in Parcel F (referred to as "HRL F" hereafter) south of now-operational HRL located in Parcels A, B & E (Georgia Power, 2022a, plan pages H-628-10 & H9168) to meet projected capacity requirements. Because existing HRL facility is not yet approved as a CCR solid waste facility, HRL F's expansion will be included in the current permit application for CCR solid waste disposal at HRL (Georgia Power, 2022a).

Site investigations were performed as per Circular 14 guidelines (McLemore and Perriello, 1997), Georgia EPD Rules of Solid Waste Management (Georgia EPD, 2022a), Comprehensive Solid Waste Management Act of Georgia (Georgia Department of Natural Resources (DNR), 2022a) and the Federal CCR Rule (Environmental Protection Agency (EPA), 2015) to determine the acceptability of HRL F for CCR waste disposal. Key findings documented herein the Site Acceptability Report (SAR) include the following:

- HRL F is zoned H-I, Heavy Industrial.
- HRL F is not located within
    - 6 miles of an airport,
    - 100-year floodplain,
    - 200 feet of a Holocene fault,
    - an unstable area, such as one with karst terrain, poor foundation soils, or poor geomorphologic characteristics,
    - significant groundwater recharge area defined by Georgia Geologic Survey (GGS) Hydrologic Atlas 18,
    - 5,708 yards (or approximately 3.2 miles) of a National Historic Site,
    - 0.5 miles of a county boundary,
    - 100 feet of a protected trout stream,
    - 2 miles of a military bombing range,
    - 1 mile of a private recreational camp.

- Ecological Solutions delineated wetlands, tributaries of Smith Creek and other environmental features in January 2021. 1.1 acres of the 9.97 acres of total wetlands at HRL F will be impacted within proposed waste footprint of HRL F CCR landfill. Anticipated jurisdictional wetlands of the 1.1 acres of wetlands impacting proposed waste area, as defined by the United States Army Corps of Engineers (USACE), will require notice through Individual Permit and Section 401/404 permit.
- A bald eagle was observed at HRL F during the Ecological Solutions January 2021 survey, but HRL F was not identified to be in a sensitive habitat that contains a lake, large river or seacoast. If nationwide Section 404 permitting is required for concurrence with regulations in terms of threatened and/or endangered species, early coordination will be implemented with applicable regulatory agencies as per 2021 Ecological Solutions report.
- A minimum 200-foot buffer will be maintained between the proposed limits of CCR waste and the CCR permit boundary for HRL F.
- HRL F is located more than 2 miles from the nearest surface water intake. HRL F does not lie within the protection area for a documented Wellhead Protection Plan (WHPP). February 2023 water resource survey for HRL F did not locate new groundwater or surface water withdrawal locations installed since the previous survey from 2018.
- Groundwater pollution potential was determined using the LeGrand Method described in Circular 14. Analysis produced scores of 10.5 and 14.7 with a pollution potential of “possible” and “possible, but not likely” for natural and engineered scenarios, respectively.
- Proposed bottom liner system at HRL F will consist of 60 mil high density polyethylene (HDPE) geosynthetic layer that will overlie 2 feet of compacted soil with a hydraulic conductivity of 1 $x10^{-7}$ cm/sec or lower, or a polymerized geosynthetic clay liner (GCL) which is in turn placed on 2 feet of compacted soil with a hydraulic conductivity of 1 $x10^{-5}$ cm/sec or lower, in conformance with Stantec’s November 2018 Engineering Report submittal to Georgia EPD.
- A groundwater and surface water monitoring system will be designed to provide detection monitoring of the proposed HRL F landfill as per Georgia Rules of Solid Waste Management and EPA guidance.

Abbreviations

AMSL	Above Mean Sea Level
ASTM	American Society for Testing and Materials
bgs	Below ground surface
CCR	Coal Combustion Residuals
CEC	Cation Exchange Capacity
cm/sec	Centimeters per second
CQA	Construction Quality Assurance
CU	Consolidated Undrained
DNR	Department of Natural Resources
EDR	Environmental Data Resources, Inc.
EPD	Environmental Protection Division
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
GCL	Geosynthetic Clay Liner
GGS	Georgia Geologic Survey
Georgia Power	Georgia Power Company
GIS	Geographic Information Systems
GPS	Global Positioning System
g	Constant, gravitational acceleration
h	Height
Δh	Change in height
HDPE	High density polyethylene
HELP	Hydrologic Evaluation of Leachate Potential
HRL	Huffaker Road Landfill
HRL F	Huffaker Road Landfill, Parcel F (Suitability Study Area)
i	Hydraulic gradient



ID	Inner diameter
k_h	Horizontal saturated hydraulic conductivity
k_v	Vertical permeability
meq/100g	Milliequivalents per 100 grams
MW	Megawatts
n_e	Effective porosity
NAVD	North American Vertical Datum
NOAA	National Oceanic and Atmospheric Administration
NWIS	National Water Information System
OCGA	Official Code of Georgia Annotated
PVC	Polyvinyl chloride
PWR	Partially weathered rock
RQD	Rock Quality Designation
SAR	Site Acceptability Report
SCS	Southern Company Services
SPT	Standard Penetration Test
Stantec	Stantec Consulting Services, Inc.
TCLP	Toxicity Characteristic Leaching Procedure
USACE	United States Army Corps of Engineers
USCS	Unified Soil Classification System
USGS	United States Geological Survey
V	Velocity
WHPP	Wellhead Protection Plan



1.0 GENERAL SITE AREA

1.1 BACKGROUND

Georgia Power Company's (Georgia Power) publicly available plant information states that Plant Hammond began commercial operation in 1954 in Floyd County, Georgia and was retired in 2019. The plant had four coal-fired units capable of producing 800 megawatts (MW) of electricity prior to retirement (Georgia Power, 2022b).

Georgia Power plans to close four ash ponds, AP-1, AP-2, AP-3, and AP-4, at Plant Hammond. Ash ponds AP-1, AP-2 and AP-4 will be closed by removal and AP-3 will be closed in place. AP-2 is currently being excavated; disposal of excavated waste is at lined Huffaker Road Landfill (HRL) Parcels A and B, approximately five (5) miles northeast of Plant Hammond (Figure 1-1).

Boral Bricks, Incorporated was the previous owner of two tracts of land totaling approximately 419 acres located at 2131 Huffaker Road in Rome, Georgia, now known as HRL. Tracts 1 (134.45 acres) and 2 (283.97 acres) are both on south side of Huffaker Road (Georgia Power, 2022a).

Georgia Power HRL facility has 6 parcels: A, B, C, D, E, and F. Georgia Power prepared the initial Site Acceptability Report (SAR) in December 2002, and it did not include Parcel F of Tract 2 south of the railroad (Legal Description for Tract 2 included in Appendix A). HRL Parcels A, B, C, D and E were approved for disposal in 2006 per Georgia EPD solid waste permit #057-022D (LI). The SAR was updated in November 2018 to comply with the newly established Georgia EPD Rule 391-3-4-.10 (State CCR Rule, Georgia EPD, 2022a) for suitability of land north of the railroad (Parcels A, B, C, D) for proposed disposal of coal combustion residual (CCR) by-products generated at Plant Hammond.

HRL receives CCR coal ash and gypsum impoundment excavation waste from the above-mentioned locations at Plant Hammond. Georgia Power completed waste characterization in the previous 2002 SAR for CCR proposed for placement in the HRL landfill. Results of Toxicity Characteristic Leaching Procedure (TCLP) for both ash and gypsum waste are found in Appendix B. These wastes are listed in Circular 14 as industrial wastes with a "moderate potential" for groundwater pollution.

This report presents the results of a site acceptability study performed for the purpose of EPD approval to reclaim the area from previous construction operations at HRL Parcel F (HRL F) to expand an existing private industry CCR landfill permit. It is an amendment to the previously submitted Huffaker Road Landfill SAR (Southern Company Services (SCS), 2002) and the amended November 2018 SAR (Stantec, 2018); previous reports are included in Appendix B. The proposed lateral expansion at HRL F will have an additional 214.5 acres that makes the total permitted area at HRL 413 acres.

1.2 DESCRIPTION OF GENERAL AREA

1.2.1 Location

The geographic center of the HRL F, in decimal degrees, is at approximately 34.289608, -85.301778. HRL F is in a rural area with pine and hardwood woodlands (SCS, 2002) surrounding an open, grassy valley where clay mining previously occurred. Land use near HRL F is a combination of agricultural, residential, and industrial activities. Residences are located on the northern side of Huffaker Road approximately 400 feet from the eastern boundary of Parcels A and B. The Mount Alto Baptist Church is located on the southern side of Huffaker Road approximately 0.5 miles east of the operational landfill Parcels A & B. Additional residences are located approximately 0.75 miles from the eastern boundary of the HRL F, 0.5 mile to the west of HRL F and 0.5 miles to the south of the property boundary at HRL F. The property to the north of the HRL is owned by General Shale Brick, Inc.

1.2.2 General Topography and Hydrology

Georgia Department of Natural Resources (DNR) “Physiographic Map of Georgia from 1976” contains subdivided areas of the Valley and Ridge; HRL F lies within the Great Valley District, which is part of the Southern Valley and Ridge Section. Characteristic features of the district include broad and open areas with scattered hills and ridges, and elevations are 700-800 feet above mean sea level (AMSL) with relief of about 50 to 100 feet (Clark and Zisa, 1976).

Figure 1-2 shows the HRL F boundaries over the United States Geological Survey (USGS) 2020 7.5-minute Rock Mountain topographic map (USGS, 2020). Review of Figure 1-2, wherein the HRL F lies, indicates HRL F is within in a gently sloping valley trending northeast to southwest, bound by Judy Mountain to its south and the northern ridgeline containing a series of knobs and undulations, such as Lavender Mountain and Fouche Gap. Judy Mountain and southern to southeastern HRL F has characteristic dendritic and trellis drainage to Smith Creek to the north, which drains for approximately three (3) miles to the south into the Coosa River near Plant Hammond. Preferential 60-to-120-degree fracturing and jointing of bedrock dictates the flow paths for the streams.

HRL F lies within the Alabama-Coosa-Tallapoosa regional river basin; the headwaters of the Coosa River are at confluence of the Etowah and Oostanaula Rivers near Rome, Georgia, approximately seven (7) miles to the east of HRL F. Drainage of the Coosa River meanders west and southwest until reaching the headwaters of the Alabama River, which include the confluence of the Coosa River and Tallapoosa River near Wetumpka, Alabama. The Alabama River then drains further southwest until reaching the headwaters of the Mobile River, located at the confluence of the Alabama River and the Tombigbee River, north of Mobile, Alabama. The Mobile River drains south until discharge into the Mobile Bay, north of the Gulf of Mexico.

1.2.3 General Geology

The geology for HRL is based on information presented in the text “Geology and Mineral resources of the Paleozoic Area in Northwest Georgia,” (Butts and Gildersleeve, 1948) Figure 4 from “Geology and ground-water resources of Floyd and Polk Counties” (Cressler, 1970) and the USGS, Rock Mountain, Georgia 7.5-Minute Quadrangle (Kath, 2021).

HRL is located within the Valley and Ridge Province of northwest Georgia (Butts and Gildersleeve, 1948). The Valley and Ridge Province contains Paleozoic sedimentary rocks that have been folded and faulted into the ridges and valleys that give this region its name. The ridges are relatively erosion-resistant sandstone and chert while the valleys overlie more easily-eroded shale, dolomites, and limestone. Faults in the Valley and Ridge province are thrust faults, where sheets of limestone, sandstone, and shale have been pushed northwestward on top of each other for distances of several miles.

1.3 POPULATION TRENDS

The population of Floyd County, Georgia for the year 2021 was estimated to be 98,771, up from 96,317 according to 2010-2020 Census figures. Floyd County has a population growth rate of 0.2% from 2020 to 2021. Employment in the county has decreased by 2.2% from 2019 to 2020 as opposed to an increase of 1.6% throughout Georgia during the same time (United States Census Bureau, 2022).

1.4 PROXIMITY TO PERMITTED STATE/FEDERAL FACILITIES

A search of permitted Georgia EPD solid waste facilities within two miles of the HRL F was performed to satisfy Official Code of Georgia Annotated (OCGA) 12-8-25.4. One (1) closed landfill, the Floyd County – Berry Hill Road sanitary landfill, EPD solid waste permit number 057-009D(SL), is approximately 1.25 miles northeast of the HRL F.

A search of “federally restricted military air space which is used for a bombing range” within two (2) miles of the HRL F was performed to satisfy both OCGA 12-8-25.3(d) and EPD Solid Waste Rule 391-3-4-.05(k). No military base was found within Floyd County (Georgia Department of Community Affairs, 2021).

No other federal or state facility was found near HRL F.

1.5 THREATENED AND ENDANGERED SPECIES/WILDLIFE HABITAT SURVEY

Species of animals common to the area include white-tailed deer, wild turkey, gray squirrels, beavers, raccoons, bob-white quail, blue jays, crows, and other common species of birds (SCS, 2002, Georgia Natural Heritage Program and Marion Dobbs). Report from 2002 contained a copy of a letter addressing endangered species, a list from the Georgia Natural Heritage Program regarding amphibians, mammals, and reptiles common to Floyd County, and a list of birds common to Floyd County.

Ecological Solutions surveyed HRL F in January 2021 to locate threatened and endangered species. The HRL F was identified as a potential habitat for the gray bat, Indiana bat and northern long-eared bat (Appendix C). Suitable habitats include the forested areas within HRL F that have either wetlands or uplands. In addition, one (1) bald eagle, a threatened species in Georgia, was identified in the field survey (Appendix C). However, common habitats for bald eagles in Floyd County include “edge of large lakes and rivers; seacoasts,” (Georgia DNR Wildlife Resources Division, 2023) which are not indicative of the proposed permit area at HRL F.

1.6 PROXIMITY TO ROADS, AIRPORTS AND RAILROADS

Parcels A through D in Tract 1 north of the HRL F are adjacent to Huffaker Road, which has a frontage of approximately 3600 feet. HRL is approximately five miles north of the intersection of Huffaker Road and Georgia Highway 20.

Norfolk Southern has an east-west rail line that separates Tract 1 and Tract 2 (Georgia Power, 2022a). There is a 50-foot buffer right-of-way on each side of the rail line.

Circular 14 and EPD Solid Waste Rule 391-3-4-.05l require a minimum separation distance of 10,000 feet from the end of runways servicing turbojet aircraft. Furthermore, federal requirements are as per Section 503 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (PL 106-181)(AIR 21), 49 U.S.C. 44718(d). Siting criteria for new landfills subject to AIR 21 as per the Ford Act prohibit the construction of new *municipal* landfills within six (6) miles of "certain public-use airports" defined therein. Airports not subject to AIR 21 conversely must meet minimum Federal Aviation Administration (FAA) requirements for piston-powered aircraft (5,000 feet separation distance), turbine-powered aircraft (10,000 feet separation distance) and five (5) mile separation boundary between closest point of aircraft operations relative to a property (FAA, 2020).

Proposed CCR facility at the HRL F will not be a municipal landfill and will contain CCR industrial waste. CCR industrial landfills are not bird attractants, so Circular 14 criteria, EPD Rules of Solid Waste and federal regulations do not apply.

1.7 PROXIMITY TO COUNTY BOUNDARIES, RECREATIONAL CAMPS AND NATIONAL HISTORIC SITES

The nearest county boundary is the boundary between Floyd County and Chattooga County, approximately four (4) miles northwest of the HRL F. Circular 14, per OCGA 12-8-25, states that no part of a site can be within one-half mile of an adjoining county without the approval of the government of the adjoining county. No portion of the HRL F is within one-half mile of an adjoining county.

HRL F was searched online in accordance with OCGA 12-8-25.5 for private recreational camps. No private recreational camps were located within one (1) mile of the HRL F (Allstays, 2022).

According to Circular 14 and OCGA 12-8-25.1, no industrial landfill shall be located within 5,708 yards of a National Historic Site. Andersonville, Georgia, Jimmy Carter's home in Plains, Georgia, and the Martin Luther King, Junior Park are the three (3) National Historic Sites in Georgia (National Park Service, 2022). HRL F is not within 5,708 yards (or approximately 3.2 miles) of the three (3) National Historic Sites in Georgia.

1.8 PROXIMITY TO FLOODPLAINS

A search of HRL F was conducted to satisfy requirements as per Circular 14 and EPD Solid Waste Rule 391-3-4-.05(d). Based on the Flood Insurance Rate Maps, Floyd County, Georgia, Panel 170 of 425, Map Number 13115C0170E, dated September 25, 2009, the HRL F is not located in a delineated 100-year floodplain (Federal Emergency Management Agency (FEMA), 2009). FEMA map from 2009 depicting floodplains relative to the HRL F is provided in Figure 1-3.

1.9 PROXIMITY TO STREAMS AND WETLANDS

Ecological Solutions conducted a natural resources survey of the HRL F in January 2021 to delineate wetlands, water bodies, streams and threatened and/or endangered species habitats as per Circular 14, Georgia state laws and federal requirements (Appendix C). HRL F is approximately 214.5 acres based on permit drawings (Georgia Power, 2022a). Environmental features delineated at the HRL F were as follows:

- Three (3) non-jurisdictional open bodies of water, #01, 02 and 03, are within the proposed HRL F permit boundary,
- Smith Creek (Perennial Stream #01) has several feeder tributaries that are either perennial (#03, 04) or intermittent (#01, 02, 03, 04, 06, 07) within the proposed HRL F permit boundary,
- Separate perennial streams #02 and #05, intermittent stream #08 and ephemeral stream #01 are also within the proposed HRL F permit boundary,
- Intermittent streams #02, 07, and 08, plus wetlands #07, 08, and 09, are within the proposed HRL F waste footprint and will be impacted.

9.97 acres of total wetlands are in the proposed HRL F permit area based on the wetland delineation report in Appendix C; 1.1 acres of the 9.97 acres of total wetlands across proposed permit area will be impacts within the proposed waste footprint of the HRL F.

1.10 PROXIMITY TO MOST SIGNIFICANT GROUNDWATER RECHARGE AREAS

A search of HRL F was conducted to satisfy requirements as per Circular 14, OCGA 12-8-25.2-3 and EPD Solid Waste Rule 391-3-4-.05(i) for locations within, or two (2) miles from, areas of significant groundwater recharge shown on GGS Hydrologic Atlas 18 (Davis et al., 1992). The nearest significant, unconfined aquifer recharge areas are located approximately six (6) miles to the southeast and to the northwest of the HRL F. Figure 1-4 depicts the nearest significant recharge areas relative to the HRL F.

1.11 PROXIMITY TO PUBLIC AND DOMESTIC WATER SUPPLIES/ WELLHEAD PROTECTION PLANNING (WHPP)

An updated water resources survey was performed in February 2023 to supplement the previous water resource surveys conducted in 2002 (SCS, 2002) and 2018 (Stantec, 2018) pursuant to EPD Solid Waste Rules 391-3-4-.05(j)(1 & 8) for locations of nearby public and domestic water supplies relative to the HRL F. February 2023 survey updates include the following:

- Review of the Rome-Floyd County and National Water Information System (NWIS) web pages to verify raw water sources,
- Review of EPD-regulated water supplies,
- Environmental Data Resources, Incorporated (EDR) GeoCheck Report,
- Windshield survey verifying private wells from previous 2001 and 2018 surveys.

The 2023 review of the Rome-Floyd County raw water intakes, which are the nearest municipal water intakes to the HRL, are located more than seven miles east, or up-gradient, of HRL on the Etowah and Oostanaula Rivers. There are no municipal surface water intakes within two miles of HRL.

Stantec also searched EPD-regulated water systems to check if Wellhead Protection Plans (WHPP) exist within two (2) miles of HRL F. As of February 2023, there are no WHPP within two (2) miles of the HRL F.

The February 2023 EDR GeoCheck database search included the approximate center (latitude and longitude) of HRL F to define the search based on criteria of 0.5 miles for private water resources and two (2) miles for public water resources. A summary of search results is provided in Appendix D. The EDR search found 9 USGS wells within two (2) miles of HRL F that were also wells identified in the previous searches from 2001 and 2018.

Stantec conducted a windshield survey to verify the six (6) private wells identified in the October 2001 survey and check for new water resources on February 15, 2023. Survey team confirmed the presence of the six (6) wells from October 2001. Previous water resources surveys concluded one well at 1872 Huffaker Road was previously used for irrigation, and the remaining five (5) of the six (6) identified private wells within 0.5 miles of HRL were not in use.

Based on the updated February 2023 search results, there are no new surface water intakes, wells, springs or other points of groundwater withdrawal for public or municipal water supply located within two (2) miles of the HRL F. The six (6) private wells located in October 2001 are cross- to up-gradient of the HRL F, which are either unused or used for irrigation purposes. Table 1 lists the nine (9) USGS wells identified in the February 2023 EDR GeoCheck database search and the six (6) private water wells from the October 2001 water resources survey. Figure 1-5 depicts station locations relative to HRL F with applicable search radii of 0.5 miles and two (2) miles.

Table 1. Summary of February 2023 Water Resource Survey Results

Well ID	Alternate ID(s)	Latitude	Longitude	Elevation* (feet AMSL)	Depth ** (feet bgs)	Information	Search Method	Water Resource Type**
Well 1 & 2	N/A	34.297419	-85.293331	684	Unknown (Well 1) & 20 (Well 2)	Boral Bricks: 2131 Huffaker Road Rome, Georgia 30165	Review of 2001 survey/2023 windshield survey	Private domestic well, unused
Well 3	N/A	34.299808	-85.294417	683	<100	John W. Hardin: 2114 Huffaker Road Rome, Georgia 30165	Review of 2001 survey/2023 windshield survey	Private domestic well, unused
Well 4	N/A	34.301097	-85.294303	688	N/A	Selena Hammond: 2114 Huffaker Road Rome, Georgia 30165	Review of 2001 survey/2023 windshield survey	Private domestic well, unused
Well 5	N/A	34.298942	-85.286853	689	95	H.A. & Nora Holbrook: 1881 Huffaker Road Rome, Georgia 30165	Review of 2001 survey/2023 windshield survey	Private domestic well, unused
Well 6	N/A	34.300375	-85.287258	709	75	Buddy & Wydean Smith: 1872 Huffaker Road Rome, Georgia 30165	Review of 2001 survey/2023 windshield survey	Private irrigation well
03JJ25	USGS 40000267016/ 4204	34.279537	-85.295788	680	71	W.F. Riley: 658 North Avery Road NW, Rome, GA 30165	Review of 2001, 2018 surveys/EDR/2023 windshield survey	USGS Domestic well
03JJ29	USGS40000267075/4204	34.299814	-85.283287	670	74	Oconee Clay Products	Review of 2001, 2018 surveys/EDR	USGS Domestic well
03JJ27	USGS40000267052/4215	34.289815	-85.277176	695	79	W.H. Wood	Review of 2001, 2018 surveys/EDR	USGS Domestic well
03JJ32	USGS40000267041/4210	34.285648	-85.328289	620	121	Claude H. Haire	Review of 2001, 2018 surveys/EDR	USGS Domestic well
03JJ28	USGS40000267007/4202	34.278148	-85.277732	640	75	Roy Myers	Review of 2001, 2018 surveys/EDR	USGS Unused well
03JJ22	USGS40000266986/4190	34.265649	-85.299677	635	150	Oliver Montague	Review of 2001, 2018 surveys/EDR	USGS Withdrawal well
03JJ21	USGS40000266985/4189	34.265649	-85.297732	630	80	George Benton	Review of 2001, 2018 surveys/EDR	USGS Unused well
03JJ33	USGS40000267056/4217	34.293148	-85.334956	655	68.5	O.S. Underwood	Review of 2001, 2018 surveys/EDR	USGS Domestic well
03JJ24	USGS40000266980/4187	34.26426	-85.28551	638	65	Hardin and Holden	Review of 2001, 2018 surveys/EDR	USGS Commercial well

Notes:
AMSL – Above Mean Sea Level
Bgs – below ground surface
N/A – Not applicable
* Data from 2018 Well Survey Update
** Data from Kemron 2001 Well Survey in original 2002 Site Acceptability Report

1.12 PROXIMITY TO TROUT STREAMS

Smith Creek is a tributary of the Coosa River and physically separates Parcel E from HRL F within Tract 2. Georgia's Erosion and Sedimentation Control Act (OCGA 12-7-6. (b)16)) regulates any land-disturbing activity near streams designated as "trout streams." As such, Circular 14 requires a solid waste permit applicant to determine whether a defined perennial stream onsite is defined as a trout stream per Georgia state law. A search of enumerated trout streams through Georgia Rules and Regulations for Water Quality Control, Chapter 391-3-6(15) (a-b), indicated two watersheds located at the HRL F, Cabin Creek watershed, which contains Smith Creek, and Beech Creek watershed, did not contain streams designated as trout streams (Georgia DNR and Georgia EPD, 2022b).

1.13 ZONING AND NOTIFICATION

HRL F is zoned H-I, Heavy Industrial. Georgia Power received an updated zoning letter from the Floyd County Board of Commissioners on February 16, 2023 (Appendix E) to comply with Georgia EPD Rule 391-3-6(05) (a-b) and OCGA 12-8-24g.

2.0 SURFACE AND SUBSURFACE INVESTIGATIONS

2.1 SITE TOPOGRAPHY

The HRL F proposed lateral expansion is approximately 214.5 acres. HRL F changes in elevation of 630 feet AMSL in the northwestern corner of the property to an elevation of 660 feet AMSL in the northeastern property corner. Elevation ranges from 700 feet AMSL in the southwestern corner to 745 feet AMSL going along southeastern side of proposed HRL F permit area. There is an old fill location near the center of the HRL F. This material will be removed from the Parcel F footprint, and with the possible exception of temporary cover material applications, not used during construction of the landfill. It appears as a circular knob approximately 30 feet higher in elevation than the surrounding adjacent lowlands. Relief in valleys is low and gradual where slopes are typically around 1% to 5%. Ridgeline relief of north slope of Judy Mountain in the southern portion of the HRL F is undulating and more pronounced relative to the adjacent valley floors. Slopes from the ridgelines vary, but they generally are at least 10%. Streams within the HRL F boundary generally follow a dendritic to trellis drainage pattern that is dependent on the fracturing of the bedrock underlying the HRL F.

SCS performed aerial surveys of the HRL from 2006 to 2022. SAM of McDonough, Georgia validated previous topographic survey data collected at HRL F in May 2023 (Appendix F) Data validation included both LiDAR processing and a field ground control survey at HRL F, which meets the technical standards in Rule 180-7-.04: Topography and Vertical Measurements as per the Georgia Board of Professional Engineers and Land Surveyors. A Georgia Registered Land Surveyor also signed and sealed a topographic map set of HRL F based on the data validation report and field survey results from May 2023 (Appendix F).

An existing conditions map that includes the topography validated in Appendix F, piezometers (Section 2.3.4), and natural features (Section 1.9) at HRL F is shown on Figure 2-1. A Professional Engineer licensed in Georgia sealed the map as per requirements of Circular 14.

2.2 SITE GEOLOGY

According to the Rock Mountain, Georgia 7.5-Minute Quadrangle geologic map in Figure 2-2 (Kath, 2021), HRL F is predominately located within a valley of the Valley and Ridge Province. Valley containing the HRL F is a synclinal fold called the Judy Mountain Syncline.

Regional rock formations comprising the HRL F include the Floyd Sandstone member and the Floyd Shale formation (Kath, 2021). The Floyd Sandstone, the upper member of the Floyd Shale formation previously interpreted to be the Hartselle Sandstone (Cressler, 1970), primarily underlies HRL F. The Floyd Sandstone member is an Upper Mississippian aged formation and is a thinly bedded, gray calcareous sandstone with interbedded dark shale partings. Thick-bedded sandstone layers (5 feet to 15 feet thick) are also present within the formation, resulting in steepened topography. The Floyd Sandstone ranges from 50-300-feet in thickness, depending on location.

The west-northwest and northeast portions of HRL F overlie the Floyd Shale, which is also an Upper Mississippian formation. The Floyd Shale is a thinly bedded, dark gray to black carbonaceous shale with interbedded siltstone, fine-grained sandstone, and basal limestone. Based on drilling activities, the Floyd Shale was determined to be 950-feet

thick. It may be thicker based on the outcropping around Judy Mountain approximately one (1) mile to the southwest of HRL F and maximum cited thickness of 1,200 feet (SCS, 2002).

2.3 GEOTECHNICAL AND HYDROGEOLOGIC EXPLORATION PROGRAM

2.3.1 Basis

Stantec conducted geotechnical and hydrogeological investigations of the HRL F in 2021 and 2022. The scope of the 2021 geotechnical investigation, provided in report (Stantec, 2021), was as follows:

- Eighteen (18) geotechnical borings were drilled (12 abandoned) across HRL F using hollow-stem augers,
- Standard penetration tests (SPT) and split-spoon sampling were conducted continuously for the first 10-feet below existing grade and at 5-foot intervals thereafter until auger refusal was encountered,
- Bulk soil samples were collected from boring auger cuttings,
- NQ-3 wireline rock coring was conducted in five (5) borings to evaluate bedrock quality,
- Four (4) piezometers in rock and two (2) piezometers in weathered rock were installed to measure groundwater levels at HRL F,
- Four (4) test pits were excavated to determine top of rock in southwestern area of HRL F, and
- Bulk soil samples were collected from the four (4) test pits.

In April 2022, follow up field work related to permitting for a new solid waste facility at the HRL F was conducted (Stantec, 2022). The scope of the 2022 site investigation activities was as follows:

- Drilled 20 soil borings (1 abandoned) per the boring layout depicted in proposed boring layout,
- Performed continuous (SPT) and split-spoon sampling for the first 10 feet below existing grade and at 5-foot intervals thereafter until auger refusal at seven (7) proposed boring locations,
- Performed SPT and split-spoon sampling at 5-foot intervals until auger refusal at remaining 13 borings,
- Collected bulk soil samples from 18 borings (weathered rock encountered at surface of HRL-19, so no bulk sample was collected),
- Performed cation exchange capacity soil sampling at eight (8) borings to evaluate attenuation potential and sorption of in-situ subsurface materials at HRL F,
- Conducted NQ-3 wireline rock coring in 10 borings to evaluate rock quality,
- Installed nine (9) piezometers in competent rock and 10 piezometers in weathered rock to measure groundwater levels at HRL F and conducted slug tests as per Section 2.5.4 to measure in-situ hydraulic conductivity, and

- Conducted geologic mapping of observed rock outcrops and fractures present at HRL F.

2.3.2 Depth Criteria

Boring depths were based on the previous geotechnical subsurface investigations and Circular 14 requirements. Subsurface of HRL F contains a shallow overburden profile thickness of about 10 feet below existing grade, and a variable thickness of heavily weathered shale overlies the top of competent shale. Additionally, at least one stockpile of overburden material stripped during construction operations still exists at the HRL F. Reconnaissance of the HRL F revealed weathered shale exposures due to the removal of material during construction, especially near erosional gullies containing check dams from the previous construction operation. The overburden stockpile will be excavated and utilized elsewhere at HRL, Plant Hammond, or other Georgia Power facility(s) for general fill or disposed at a properly permitted facility.

Circular 14 requires rock coring when groundwater surface occurred within 20 feet of top of weathered rock (McLemore and Perriello, 1997). Since bedrock was expected within 20 feet of the top of groundwater, rock coring required a minimum of 10 feet of rock core, or until recovery exceeded 95% within the last 5 feet, in an adequate number of borings per 20 acres of the HRL F.

2.3.3 Boring Drilling Methods

Eighteen (18) borings were drilled across the Parcel F area south of Smith Creek within SCS Tract 2 (Figure 2-1). Stantec executed the 2021 drilling operations. Stantec drillers had a driller's bond in Georgia at the time of the 2021 investigation; a copy of the bond is included in Appendix G. A Professional Geologist in Georgia with Stantec oversaw drilling and sampling operations. The field crew used one CME55T track-mounted drill rig to execute the drilling and sampling program. The rig was equipped with downhole equipment to support the drilling and sampling program, including hollow-stem augers, NQ-3 rock core barrel, casing, and sampling equipment.

Twenty (20) borings were drilled across the approximately 214 acres south of Smith Creek within SCS Tract 2, which was proposed location for landfill at the HRL F (Figure 2-1). SCS executed 2022 drilling operations using personnel bonded in Georgia. A copy of the driller's bond is included in Appendix G. A Stantec field engineer conducted sampling operations that a Professional Geologist in Georgia supervised. The field crew used one CME550X all-terrain drill rig to execute the drilling and sampling program. The rig was equipped with downhole equipment to support the drilling and sampling program, including hollow-stem augers, NQ-3 rock core barrel, casing, and sampling equipment.

Boring logs for both 2021 and 2022 investigations are found in Appendix H.

2.3.3.1 Hollow-Stem Auger

The 2021 HRL F investigation included advancement of 18 borings with 4.25-inch inner diameter (ID) hollow stem augers in accordance with American Standard for Testing Materials (ASTM) D6151. The 2022 HRL F investigation included advancement of 15 borings with 2.25-inch ID hollow stem augers and five (5) borings with 4.25-inch ID hollow stem augers in accordance with ASTM D6151. Exhibit 1 at the end of the report shows the locations and types of hollow-stem auger borings from 2021 and 2022.



2.3.3.2 Wireline Rock Coring

Stantec implemented NQ-3-size rock coring in five (5) borings for the 2021 investigation and 10 borings for the 2022 investigation in accordance with ASTM D2113 and Circular 14. Depth to auger refusal in relation to depth to groundwater dictated the NQ-3 coring, as necessary. Coring run lengths, recovery, rock quality designation (RQD), and other pertinent data were recorded on the boring logs for each that required rock coring; Exhibit 1 shows the locations of coring in 2021 and 2022.

2.3.4 Piezometer Installation

Stantec installed 6 temporary piezometers in 2021 and 19 temporary piezometers in 2022 at the HRL F. Exhibit 1 shows the location of piezometers installed at the HRL F during both 2021 and 2022 investigations.

Each temporary piezometer, either 1-inch or 2-inch diameter, consisted of a 10-foot slotted screen with Schedule 40 polyvinyl chloride (PVC) flush-threaded riser extending to the surface with approximately 3 feet of casing above ground. The well screen has 0.010-inch slotted openings, and the bottom joint of the screen is fitted with a PVC sump; screens with sand-filled pre-packs are shown in Table 2.

Table 2. HRL Parcel F Piezometer Drilling Data Summary

Boring No.	Northing[1]	Easting[1]	Surface Elevation[2]	Top of Weathered Rock		Auger Refusal		Rock Core Advanced			Bottom of Hole		Riser Top	Top of Screen Elev.[2] (ft.)	Bottom of Screen Elev.[2] (ft.)	Screened Zone Media	Installation Type
				Depth (ft bgs[3])	Elevation (ft.)[2]	Depth (ft bgs[3])	Elevation (ft.)[2]	Depth (ft bgs[3])			Depth (ft bgs[3])	Elevation (ft.)[2]	Elevation (ft.)[2]				
2022 Temporary Piezometers																	
HRL-01	1,562,413.3	1,954,347.0	683.9	1.7	682.2	23.5	660.4	22.7	-	42.7	42.7	641.2	686.3	652.8	642.8	Competent shale, bedrock	1” Dia. PVC
HRL-02	1,562,668.3	1,955,591.9	659.7	0.3	659.4	--	--	--			70.0	589.7	661.7	629.4	619.4	Weathered shale	1” Dia. PVC
HRL-03	1,562,223.8	1,955,186.1	676.9	2.7	674.2	24.1	652.8	24.1	-	34.1	34.1	642.8	679.7	659.7	649.7	Competent shale, bedrock	1” Dia. PVC
HRL-04	1,561,884.0	1,952,536.1	650.3	0.2	650.1	28.4	621.9	28.4	-	40.4	40.4	609.9	653.5	620.8	610.8	Competent sandy shale, bedrock	1” Dia. PVC
HRL-05	1,561,251.2	1,954,719.1	733.2	0.1	733.1	23.0	710.2	24.5	-	44.5	44.5	688.7	736.0	700.2	690.2	Competent sandy shale, bedrock	1” Dia. PVC
HRL-06	1,561,521.4	1,955,298.6	724.5	0.0	724.5	51.2	673.3	50.9	-	61.2	60.9	663.6	727.2	674.6	664.6	Competent sandy shale, bedrock	1” Dia. PVC
HRL-07	1,561,612.8	1,955,708.5	715.7	0.0	715.7	--	--	--			50.2	665.5	718.6	676.5	666.5	Sandy clay (SC), residuum	1” Dia. PVC
HRL-08	1,561,661.7	1,953,518.4	680.6	4.1	676.5	--	--	--			45.3	635.3	683.0	646.3	636.3	Weathered sandy shale	1” Dia. PVC
HRL-09	1,562,711.7	1,953,980.1	681.3	8.9	672.4	11.1	670.2	10.8	-	45.9	45.9	635.4	684.1	646.1	636.1	Competent shale, bedrock	1” Dia. PVC
HRL-10	1,561,398.2	1,953,806.8	688.0	1.3	686.7	--	--	--			35.0	653.0	690.7	663.7	653.7	Weathered sandy shale	1” Dia. PVC
HRL-11	1,562,379.7	1,953,406.1	677.9	0.3	677.6	12.2	665.7	12.2	-	47.4	47.4	630.5	680.2	642.4	632.4	Competent shale, bedrock	1” Dia. PVC
HRL-12A[4]	1,561,983.1	1,954,002.4	680.7	9.8	670.8	36.0	644.7	--			36.0	644.7	683.4	655.7	645.7	Weathered shale	2” Dia. PVC, pre-pack
HRL-13	1,562,985.8	1,954,512.2	674.1	13.5	660.6	--	--	--			46.5	627.6	676.8	639.6	629.6	Weathered shale	1” Dia. PVC
HRL-14	1,562,585.5	1,954,893.1	700.4	29.4	671.0	--	--	--			56.0	644.4	703.0	654.7	644.7	Weathered shale	1” Dia. PVC
HRL-15	1,561,698.7	1,954,984.8	715.3	0.2	715.0	33.9	681.4	33.6	-	43.7	43.7	671.6	718.1	682.3	672.3	Competent shale, bedrock	1” Dia. PVC
HRL-16	1,561,604.3	1,954,231.4	713.2	8.7	704.5	--	--	--			45.0	668.2	716.1	679.0	669.0	Weathered shale	2” Dia. PVC, pre-pack
HRL-17	1,561,279.2	1,954,321.1	717.3	1.5	715.8	38.7	678.6	--			38.7	678.6	719.4	689.5	679.5	Weathered shale	2” Dia. PVC, pre-pack
HRL-18	1,561,337.0	1,953,149.7	666.6	0.0	666.6	19.4	647.2	19.2	-	31.0	31.0	635.6	669.2	646.3	636.3	Competent sandy shale, bedrock	1” Dia. PVC
HRL-19	1,561,497.2	1,952,792.9	662.7	0.0	662.7	--	--	--			39.7	623.0	665.4	633.7	623.7	Weathered shale	1” Dia. PVC
2021 Temporary Piezometers																	
BH-HS-01	1562184.25	1953484.32	703.3	0.5	702.8	54.0	649.3	--			54.0	649.3	706.3	659.8	649.8	Weathered sandstone and shale	1” Dia. PVC
PZ-HS-02	1562969.79	1955156.83	689.0	3.6	685.4	28.7	660.3	28.7	--	49.5	49.5	639.5	692.0	650.4	640.4	Competent mud-rich shale, bedrock	1” Dia. PVC
PZ-HS-03	1562163.74	1954674.21	691.8	14.3	677.5	48.5	643.3	48.5	--	62.0	62.0	629.8	694.8	653.4	643.4	Weathered shale	1” Dia. PVC
PZ-HS-04	1562384.82	1955746.85	662.9	6.7	656.2	6.9	656.0	6.9	--	26.9	26.9	636.0	665.9	646.5	636.5	Competent, mud-rich shale, bedrock	1” Dia. PVC
PZ-HS-05	1561328.89	1953638.17	687.5	6.0	681.5	70.1	617.4	70.1	--	80.1	80.1	607.4	690.5	618.1	608.1	Competent shale, bedrock	1” Dia. PVC
PZ-HS-06	1561324.42	1954856.06	729.6	6.0	723.6	51.5	678.1	51.5	--	62.6	62.6	667.0	732.6	677.6	667.6	Competent shale, bedrock	1” Dia. PVC

[1] Survey data collected by Steve Culberson of SCS, Georgia State Plane West
[2] Survey data collected by Steve Culberson of SCS, feet North American Vertical Datum (NAVD)88
[3] below ground surface (bgs)
[4] Rock coring performed in offset boring HRL-12

Piezometer screens were generally set at the bottom of a boring overlying a minimum of 6 inches of sand filter pack. After installation of the screen and riser, the field crew poured sand around the screen to construct a sand (20/40 mesh) filter pack, extending from the bottom of the boring to at least 2 feet above the top of the screen.

A minimum 2-foot bentonite seal was placed above the top of the sand filter pack using bentonite pellets. The bentonite seal was allowed to hydrate for at least four (4) hours. The remaining annular space was backfilled with a 30% solids bentonite grout using a tremie pipe, filling from the bottom of the hole up until reaching existing grade.

Appendix I contains piezometer installation logs from both 2021 and 2022 subsurface investigations.

2.3.5 Sampling Methods

Disturbed sample SPTs in the overburden were performed in accordance with ASTM D1586. The 2021 investigation included continuous SPT and split-spoon sampling for the first 10 feet below existing grade and at 5-foot intervals thereafter until auger refusal was encountered. The 2022 investigation included continuous SPT and split-spoon sampling for the first 10 feet below existing grade followed by 5-foot sampling intervals thereafter at seven (7) proposed boring locations; SPT and split-spoon sampling at 5-foot intervals was performed until auger refusal at remaining 13 borings. The soil samples were collected from each split-spoon sample, placed in plastic bags, labeled with boring number, depth, blow counts, recovery, sample number, job name, and date.

Bulk soil samples were collected from the drill cuttings at each boring (except HRL-19 due to shallow bedrock) during the 2021 and 2022 subsurface investigations. Samples were double-bagged in 5-gallon plastic, taped shut, labeled with boring number, depth, sample number, job name, and date.

The rock core samples were preserved and transported in accordance with ASTM D5079. The core was digitally photographed and placed in labeled, hinged, wooden core boxes. The field engineer/geologist measured the recovery length and determined the RQD for each core run.

Proposed Shelby tube samples were not collected in both 2021 and 2022 due to unfavorable subsurface conditions. As was the case in the 2002 SAR investigation, rock fragments in the soil precluded undisturbed sample collection, so remolded disturbed soil samples were tested instead.

2.3.6 Field and Laboratory Testing

Stantec's Lexington, Kentucky geotechnical laboratory performed geotechnical tests on selected soil samples using the following standards:

- Standard Test Method for Particle-Size Analysis of Soils - ASTM D422
- Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits Tests) - ASTM D4318, Method A
- Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System) - ASTM D2487
- Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer - ASTM D854

- Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass - ASTM D2216
- Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)) – ASTM D698, Method B
- Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter – ASTM D5084, Method C
- Consolidated Undrained (CU) Triaxial Compression Test for Cohesive Soils - ASTM D4767

Because rock fragments in the soil precluded undisturbed sample collection, remolded composite samples were used in the laboratory hydraulic conductivity vertical permeability (k_v) and triaxial shear strength tests of the overburden soil. Samples were remolded to 95% maximum dry density at optimum moisture content using the results of the standard Proctor compaction test (ASTM D698). Table 3 is a summary of the results in tabular format.

Table 3. HRL Parcel F Field and Laboratory Sample Data Summary

Boring No.	Split-spoon[1]	Bulk sample Interval[1,2]	Moisture Content (%)	Sieve Analysis			Atterberg Limits			Organic Matter (%)	USCS	G_s	Standard Proctor		CEC	K_v[3]	Triaxial Shear[3] C' (psf)	Triaxial Shear phi[3] (deg)
				% Gravel	% Sand	% Fines	LL	PL	PI				MDD (pcf)	Opt W (%)	meq/100g	cm/sec	Effective	Effective
2022 Temporary Piezometers																		
HRL-01	4.5-6.0	--	15.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HRL-01	--	5.0-10.0	19	1.7	25.2	73.1	40	21	19	--	CL	2.64	--	--	--	--	--	--
HRL-01	--	10.0-15.0	19.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HRL-02	3.0-4.5	--	--	--	--	--	--	--	--	--	--	--	--	--	18.8	--	--	--
HRL-02	4.5-6.0	--	13.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HRL-02	--	0.0-5.0	--	4.9	16.7	78.4	40	23	17	--	CL	--	--	--	--	--	--	--
HRL-02	7.5-9.0	--	--	--	--	--	--	--	--	--	--	--	--	--	14.8	--	--	--
HRL-03	3.0-4.5	--		--	--	--	--	--	--	--	--	--	--	--	18.0	--	--	--
HRL-03	4.5-5.4	--	10.4	0.0	23.6	76.4	34	23	11	--	CL	--	--	--	--	--	--	--
HRL-03	7.5-9.0	--		--	--	--	--	--	--	--	--	--	--	--	9.29	--	--	--
HRL-04	4.5-6.0	--	14.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HRL-04	--	0.0-5.0	--	9.7	42.6	47.7	32	19	13	--	SC	--	--	--	--	--	--	--
HRL-04	9.0-10.5	--	15.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HRL-05	--	0.0-5.0	--	22.7	38.6	38.7	32	19	13	--	SC	--	--	--	--	--	--	--
HRL-05	3.0-4.5	--	--	--	--	--	--	--	--	--	--	--	--	--	17.6	--	--	--
HRL-06	--	0.0-5.0	--	14.4	44.8	40.8	30	19	11	--	SC	2.70	--	--	--	--	--	--
HRL-06	6.0-7.5	--	--	--	--	--	--	--	--	--	--	--	--	--	18.3	--	--	--
HRL-07	--	0.0-5.0	--	12.8	29.4	57.8	36	20	16	--	CL	--	--	--	--	--	--	--
HRL-07	4.5-5.7	--	9.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HRL-08	--	0.0-5.0	15.7	7.0	20.1	72.9	35	21	14	--	CL	--	--	--	--	--	--	--
HRL-08	3.5-5.0	--	--	--	--	--	--	--	--	--	--	2.63	--	--	19.3	--	--	--
HRL-09	--	0.0-10.0	--	12.1	25.8	62.1	34	23	11	--	CL	--	--	--	--	--	--	--
HRL-10	--	0.0-10.0	--	37.6	28.0	34.4	27	17	10	--	GC	--	--	--	--	--	--	--
HRL-10	8.5-10.0	--	--	--	--	--	--	--	--	--	--	--	--	--	27.9	--	--	--
HRL-11	3.5-5.0	--	--	--	--	--	--	--	--	--	--	--	--	--	16.6	--	--	--
HRL-11	--	0.0-10.0	--	7.3	34.2	58.5	31	20	11	--	CL	--	--	--	--	--	--	--
HRL-11	8.5-10.0	--	--	--	--	--	--	--	--	--	--	--	--	--	18.8	--	--	--
HRL-12	0.0-1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	12.5	--	--	--
HRL-12	--	0.0-10.0	--	0.4	14.5	85.1	38	19	19	2.6	CL	--	--	--	--	--	--	--
HRL-12	8.5-10.0	--	--	--	--	--	--	--	--	--	--	--	--	--	16.9	--	--	--
HRL-12A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HRL-13	--	5.0-10.0	--	11.5	15.4	73.1	41	20	21	2.5	CL	--	--	--	--	--	--	--
HRL-13	--	10.0-15.0	--	1.8	22.9	75.3	42	20	22	3.7	CL	--	--	--	--	--	--	--
HRL-14	--	0.0-10.0	--	4.2	31.7	64.1	32	18	14	3.1	CL	--	--	--	--	--	--	--
HRL-15	--	0.0-10.0	--	4.8	18.6	76.6	49	25	24	--	CL	--	--	--	--	--	--	--
HRL-16	--	0.0-10.0	--	5.1	30.3	64.6	35	21	14	2.4	CL	--	--	--	--	--	--	--
HRL-17	--	0.0-10.0	--	7.8	30.3	61.9	34	22	12	--	CL	--	--	--	--	--	--	--
HRL-18	--	0.0-5.0	--	12.4	28.1	59.5	32	20	12	--	CL	--	--	--	--	--	--	--
HRL-19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CL Comp 1	--	0.0-10.0*	--	--	--	--	--	--	--	--	CL	2.74	110.3	16.6	--	8.46×10^{-8}	200	27.8
CL Comp 2	--	0.0-10.0*	--	--	--	--	--	--	--	--	CL	2.70	110.1	16.4	--	1.47×10^{-7}	200	32.1
SC Comp	--	0.0-5.0*	--	--	--	--	--	--	--	--	SC	2.69	120.0	12.1	--	1.50×10^{-7}	0	32.0

Table 3. HRL Parcel F Field and Laboratory Sample Data Summary

Boring No.	Split-spoon[1]	Bulk sample Interval[1,2]	Moisture Content (%)	Sieve Analysis			Atterberg Limits			Organic Matter (%)	USCS	G_s	Standard Proctor		CEC	K_v[3]	Triaxial Shear[3] C' (psf)	Triaxial Shear phi[3] (deg)
				% Gravel	% Sand	% Fines	LL	PL	PI				MDD (pcf)	Opt W (%)	meq/100g	cm/sec	Effective	Effective
2021 Temporary Piezometers																		
BH-HS-01	0.0-10.0		9.4	2.7	26	71.3	26	21	5	--	CL-ML	--	--	--	--	--	--	--
PZ-HS-02	0.0-10.0		15.1	3.9	31.4	64.7	33	17	16	--	CL	--	--	--	--	--	--	--
PZ-HS-03	0.0-10.0		11.5	22.3	44.3	33.4	24	16	8	--	SC	--	--	--	--	--	--	--
PZ-HS-04	0.0-10.0		17.4	0.6	20.4	79	27	20	7	--	CL-ML	--	--	--	--	--	--	--
PZ-HS-05	0.0-10.0		14.5	12	25.5	62.5	32	21	11	--	CL	--	--	--	--	--	--	--
PZ-HS-06	0.0-10.0		11.3	13.1	39.7	47.2	32	21	11	--	SC	--	--	--	--	--	--	--

Notes
[1] feet below ground surface (bgs)
[2] Bulks are composites for depth interval indicated. CL Comp 1 combined soil from HRL-1, HRL-2, HRL-13 and HRL-15; CL Comp 2 combined soil from HRL-7, HRL-8, HRL-9, HRL-14, HRL-16 AND HRL-17; SC Comp combined soil from HRL-4, HRL-5 and HRL-6
[3] Soil samples remolded to 95% of maximum dry density

Acronyms

CEC	Cation Exchange Capacity
cm/sec	Centimeters per second
Comp	Composite
deg	degrees (^{0})
G_s	Specific Gravity
k_v	Vertical hydraulic conductivity
MDD	Maximum Dry Density
meq/100	Milliequivalent per 100 grams soil
Opt W %	Optimum Moisture Content
pcf	Pounds per cubic foot
psf	Pounds per square foot
PI	Plasticity Index
LL	Liquid Limit
PL	Plastic Limit
USCS	Unified Soil Classification System

Environmental soil samples were collected for quantification of cation exchange capacity (CEC by EPA 9081) as per Circular 14 and Georgia EPD Rules of Solid Waste Management requirements for hydrogeological assessments. The samples were logged in the field, placed into clean glass jars to be stored in a cooler on ice, and transported to Pace Analytical laboratory in Norcross, Georgia for shipment to Pace Wyoming laboratory for CEC testing.

Data sheets for the laboratory tests from both Stantec and Pace Analytical are found in Appendix J.

Slug testing was also performed in the field to determine the in situ saturated horizontal saturated hydraulic conductivity (k_h) of the weathered rock and soil. Testing is discussed in more detail in forthcoming Section 2.5.4.

2.4 SOIL AND ROCK DESCRIPTIONS

2.4.1 Soil Description

Unconsolidated material extends to depths varying from 0 feet to about 30 feet below existing grade. Residual soil at the HRL F generally contains light gray lean clay to light tan clayey sand with highly weathered shale clasts present based on the boring logs in Appendix H.

Furthermore, laboratory testing was performed on both split-spoon samples and bulk samples mentioned in previous Section 2.3. Results of the tests, shown in Table 3, indicated most frequent soils in the unconsolidated soil profile of the HRL F consisted of CL and SC according to the Unified Soil Classification System (USCS). Occasional GC soil containing indurated clasts of interbedded sandstone and shale were also found during the drilling investigations.

Three (3) borings (BH-HS-04, PZ-HS-02, and HRL-14) partially characterize the stockpile from previous construction activities. Based on the boring logs at the location of the pile, the fill of the stockpile is a gray silty clay mixed with burned wood fragments, woody debris and indurated rock clasts.

Alluvial material was encountered in several areas during the 2021 subsurface investigation that coincided and/or correlated with mapped tributaries to Smith Creek and Cabin Creek. Soil in these lowland floodplains is a CL-ML. It is generally dark gray or orange brown, mostly soft, moist, and contains gray mottles from redoximorphic iron-bearing minerals.

2.4.2 Rock Description

Stantec personnel conducted geologic field mapping, in addition to drilling, in May 2022 to obtain structural and stratigraphic information from rock outcrops at the HRL F. The HRL F area was walked, and a Brunton compass was used to collect strike and dip data from observable rock outcrops. A Global Positioning System (GPS) unit was used to log the coordinates of each outcrop location in Georgia State Plane West. Observation of outcrops were limited due to the density of surface vegetation.

Results of the geologic field mapping at the HRL F are shown in Figure 2-3. Each outcrop of rock/weathered rock was given a description that included: station name, number, lithology of the rock present and any other geologic data that obtained, such as attitudes of the beds, foliation, mineral lineations, trend and plunge of folds, if a photograph was taken, and/or if a sample was collected.



2.4.2.1 Weathered Rock

Underlying material beneath the residual soil profile at the HRL F includes weathered rock. The weathered rock at HRL F is generally medium gray to dark gray and gray, heavily-weathered shale to partially weathered rock (PWR), occasionally interbedded with yellowish brown, fine sandstone, extending to auger refusal depths. SPT N-values of weathered shale are generally over 100 blows per foot.

Average depth of the weathered zone is 10-30 feet bgs, with localized depths up to 55 feet in upland areas. Weathered shale is exposed in a few areas of the HRL F. The average thickness of soil and PWR is, on average, 5 feet to 30 feet before reaching top of competent rock. The measured RQD of PWR is generally of “poor” quality; NQ-3 core advancement in rock is like that of advancement using hollow-stem augers in soil.

2.4.2.2 Bedrock Units

The Floyd Shale is the predominant rock formation at the HRL F. Competent rock at HRL F is generally dark gray, carbonaceous fractured shale occasionally interbedded with yellowish brown, fine sandstone.

Minor interbedded sandstone layers (80%/20% shale to sandstone, respectively) were noted during drilling, especially along ridgelines along the southern property line and higher topographic uplands. The sandstone layers are most likely localized units of the Floyd Sandstone; however, continuous massive beds of sandstone were neither confirmed via drilling nor geologic surveying of the HRL F.

Bedrock at the HRL F, on average, dips slightly to moderately at 30-45 degrees, but it was not uncommon to observe steep dip angles that exceeded 60 degrees. Pyrite nodules were commonly found in the gray shale as well as fractures filled with calcite. Orientation of bedding and fractures is discussed in the following Section 2.4.3. The measured RQD is generally in the “poor to fair” range based on the boring logs in Appendix H. However, “excellent” core that achieved at or near 100% RQD occurs infrequently, most notably HRL-6.

2.4.3 Structural Geology of Site

Stantec analyzed 48 bedding and fracture planes with lower hemisphere equal area stereonets to determine the prominent geologic trend in Figure 2-3. The prominent of S1 (bedding plane) observed in the mapping area dips towards the southeast, with secondary bedding planes dipping to the northwest. Recorded plane dips to the southeast suggest that HRL F is located on the western limb of a localized synform shown in Figure 2-2. The relationship between the bedding planes suggests small, localized folding on the HRL F. Based on the bedding plane analysis and structural map in Figure 2-3, the HRL F is on the northwestern limb of a syncline. This hinge line of the syncline, also known as the core of the syncline, is approximately 500 feet from the southeastern property boundary of HRL F in Figure 2-2. There are some small folds present in the northwestern section of the HRL F with a general strike to the northeast, dipping to either the northwest or southeast.

Fractures and small joint sets were observed at outcrops F3, F12A, F16A, F20 and F22. Joints were near vertical (except at F22), and the joint set orientation ranged from 115 to 140 degrees.

Three (3) subsurface geologic cross-sections, A-A', B-B' and C-C', depict the existing topographic grade, proposed limits of waste, CCR permit boundary, 200-foot buffer, piezometers with top of water and mapped geologic formations (Figure 2-4). Cross-section C-C' is approximately along the average strike for the Floyd Shale, and cross-sections A-A' and B-B' are perpendicular to strike as per requirements of Circular 14.

2.5 HYDROGEOLOGIC ASSESSMENT

2.5.1 Description of Unconfined Aquifer

The top of the uppermost, unconfined aquifer at HRL F generally occurs in the weathered Floyd Shale. Secondary porosity features in the shale, such as fractures or joints, are generally the pathways for groundwater flow in the uppermost aquifer. Bottom limit of the uppermost, unconfined aquifer is generally the competent Floyd Shale that no longer contains interconnected fractures.

Recharge of the uppermost aquifer is from infiltration of precipitation. Groundwater recharge from infiltration of rainfall occurs in the linear upland areas along the Chattooga and Floyd County boundary to the northwest of the HRL F. Discharge zones of groundwater are generally in the topographic low areas (Fetter, 2001) seen in Figure 2-1. Recent annual rainfall from August 2021 to July 2022 in Floyd County was 57.93 inches; average annual rainfall historically for same timeframe was 52.04 inches per year (National Oceanic and Atmospheric Administration (NOAA), 2022).

Conceptualization of the HRL F uppermost, unconfined aquifer potentiometric surface used groundwater measurements from the 25 piezometers onsite. Temporary piezometers, as mentioned previously in Section 2.3, were installed with the screened intervals either in the top of competent shale or within the PWR to heavily weathered shale. Depths to groundwater in 2021 piezometers were measured at the time of boring advancement, then routinely from February 2022 moving forward. Depths to groundwater in 2022 piezometers were measured at the time of boring advancement and routinely moving forward after the installation of each piezometer. The top of casing elevations, depths to groundwater, and groundwater elevations are summarized in Table 4 and Table 5 for 25 piezometers installed at the HRL F. Figure 2-5 contains graphs of the groundwater elevations over time since piezometer installation completion. Based on the hydrographs in Figure 2-5, the February 8, 2023, groundwater elevations at HRL F reach a seasonal high.

Table 4. Groundwater Gauging Data for 2021 Piezometers

PZ ID	Location	Ground Elevation (NAVD88, ft)	Top of Casing (NAVD88, ft)	PZ Tip Elevation (NAVD88, ft)	6/18/21		2/11/22		3/2/22		3/10/22		3/21/22		3/25/22		4/1/22		4/8/22		4/15/22		5/2/22		5/31/22	
					Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)
PZ-HS-02	1,562,969.79 N; 1,955,156.83 E	689.0	692.0	640.4	33.7	655.3	32.2	656.8	32.0	657.0	31.9	657.1	31.8	657.2	31.6	657.4	31.7	657.3	31.6	657.4	31.8	657.2	31.9	657.1	33.4	655.6
PZ-HS-03	1,562,163.74 N; 1,954,674.21 E	691.8	694.8	643.4	15.1	676.7	13.2	678.6	12.0	679.8	12.2	679.6	11.9	679.9	12.3	679.5	13.3	678.5	12.6	679.2	12.1	679.7	12.5	679.3	13.9	677.9
PZ-HS-04	1,562,384.82 N; 1,955,746.85 E	662.9	665.9	636.5	6.8	656.1	4.1	658.8	3.4	659.5*	3.3	659.6*	3.6	659.3	3.6	659.3	3.9	659.0	3.6	659.3	4.0	658.9	4.8	658.1	5.3	657.6
PZ-HS-05	1,561,328.89 N; 1,953,638.17 E	687.5	690.5	608.1	12.2	675.3	7.1	680.4	5.4	682.1	5.8	681.7	6.0	681.5	5.5	682.0	7.2	680.3	6.0	681.5	7.5	680.0	9.5	678.0	8.2	679.3
PZ-HS-06	1,561,324.42 N; 1,954,856.06 E	729.6	732.6	667.6	22.7	706.9	21.4	708.2	20.2	709.4	19.9	709.7	19.3	710.3	18.7	710.9	18.8	710.8	18.3	711.3	18.4	711.2	18.2	711.4	19.6	710.0
BH-HS-01	1,562,184.25 N; 1,953,484.32 E	703.3	706.3	649.8	47.6	655.7	42.4	660.9	39.1	664.2*	39.9	663.4*	40.7	662.6	43.4	659.9	43.4	659.9	43.6	659.7	43.6	659.7	44.2	659.1	47.3	656.0

PZ ID	Location	Ground Elevation (NAVD88, ft)	Top of Casing (NAVD88, ft)	PZ Tip Elevation (NAVD88, ft)	6/17/22		7/29/22		8/29/22		9/29/22		10/28/22		11/29/22		2/8/23		2/27/23		3/31/23		4/25/23	
					Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)
PZ-HS-02	1,562,969.79 N; 1,955,156.83 E	689.0	692.0	640.4	33.8	655.2	35.4	653.6	35.4	653.6	36.9	652.1	35.7	653.3	35.8	653.2	31.4	657.6	30.9	658.1	31.6	657.4	32.0	657.0
PZ-HS-03	1,562,163.74 N; 1,954,674.21 E	691.8	694.8	643.4	16.1	675.7	17.9	673.9	17.9	673.9	16.4	675.4	18.7	673.1	17.3	674.5	7.7	684.1	8.8	683.0	10.7	681.1	13.2	678.6
PZ-HS-04	1,562,384.82 N; 1,955,746.85 E	662.9	665.9	636.5	6.8	656.1	9.3	653.6	9.1	653.8	7.1	655.8	9.1	653.8	7.1	655.8	3.6	659.3	3.6	659.3	4.2	658.7	5.0	657.9
PZ-HS-05	1,561,328.89 N; 1,953,638.17 E	687.5	690.5	608.1	13.4	674.1	14.8	672.7	15.4	672.1	13.9	673.6	16.1	671.4	13.4	674.1	5.4	682.1	5.7	681.8	7.3	680.2	10.3	677.2
PZ-HS-06	1,561,324.42 N; 1,954,856.06 E	729.6	732.6	667.6	20.5	709.1	22.0	707.6	23.0	706.6	24.0	705.6	25.1	704.5	25.7	703.9	22.1	707.5	20.5	709.1	20.0	709.6	19.9	709.7
BH-HS-01	1,562,184.25 N; 1,953,484.32 E	703.3	706.3	649.8	48.1	655.2	49.7	653.6	50.2	653.1	50.1	653.2	50.4	652.9	50.5	652.8	40.6	662.7	42.5	660.8	41.8	661.5	44.9	658.4

*Readings excluded from the composite seasonal high phreatic surface since they do not occur within the 12-month review period.

Table 5. Groundwater Gauging Data for 2022 Piezometers

PZ ID	Location	Ground Elevation (NAVD88, ft)	Top of Casing (NAVD88, ft)	PZ Tip Elevation (NAVD88, ft)	5/31/22		6/16/22		7/29/22		8/29/22		9/29/22		10/28/22	
					Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)
HRL-01	1562413.311 N; 1954346.959 E	683.9	686.3	642.6	21.3	662.6	22.4	661.5	24.0	659.9	24.3	659.6	23.3	660.6	24.7	659.2
HRL-02	1562668.265 N; 1955591.874 E	659.7	661.7	619.2	5.7	654.0	6.9	652.8	8.8	650.9	9.2	650.5	8.0	651.7	9.7	650.0
HRL-03	1562223.768 N; 1955186.075 E	676.9	679.7	649.5	5.5	671.4	7.5	669.4	9.4	667.5	9.3	667.6	7.6	669.3	9.8	667.1
HRL-04	1561883.990 N; 1952536.047 E	650.3	653.5	610.6	14.9	635.4	15.9	634.4	17.2	633.1	17.3	633.0	16.3	634.0	17.6	632.7
HRL-05	1561251.200 N; 1954719.073 E	733.2	736.0	690.0	19.6	713.6	20.5	712.7	22.5	710.7	23.7	709.5	24.5	708.7	25.8	707.4
HRL-06	1561521.359 N; 1955298.624 E	724.5	727.2	664.4	24.0	700.5	24.7	699.8	25.7	698.8	26.3	698.2	26.8	697.7	27.6	696.9
HRL-07	1561612.785 N; 1955708.507 E	715.7	718.6	666.3	25.0	690.7	25.3	690.4	26.0	689.7	26.5	689.2	26.7	689.0	27.3	688.4
HRL-08	1561661.705 N; 1953518.389 E	680.6	683.0	636.1	17.7	662.9	18.4	662.2	19.6	661.0	19.7	660.9	18.7	661.9	20.2	660.4
HRL-09	1562711.663 N; 1953980.077 E	681.3	684.1	635.9	25.6	655.7	27.0	654.3	28.4	652.9	28.6	652.7	28.2	653.1	28.7	652.6
HRL-10	1561398.161 N; 1953806.789 E	688.0	690.7	653.5	5.2	682.8	9.2	678.8	10.8	677.2	10.4	677.6	10.4	677.6	11.7	676.3
HRL-11	1562379.655 N; 1953406.115 E	677.9	680.2	632.2	24.6	653.3	25.6	652.3	26.9	651.0	27.3	650.6	26.7	651.2	27.8	650.1
HRL-12A	1561983.055 N; 1954002.413 E	680.7	683.4	645.3	15.5	665.2	17.3	663.4	18.6	662.1	18.5	662.2	17.0	663.7	19.2	661.5
HRL-13	1562985.767 N; 1954512.221 E	674.1	676.8	629.4	21.5	652.6	23.2	650.9	24.5	649.6	24.5	649.6	24.6	649.5	25.0	649.1
HRL-14	1562585.536 N; 1954893.104 E	700.4	703.0	644.5	37.0	663.4	38.0	662.4	39.9	660.5	40.2	660.2	*		40.7	659.7
HRL-15	1561698.707 N; 1954984.843 E	715.2	718.1	672.0	16.6	698.6	17.5	697.7	18.2	697.0	18.5	696.7	18.5	696.7	19.2	696.0
HRL-16	1561604.289 N; 1954231.353 E	713.2	716.1	668.6	23.6	689.6	24.3	688.9	26.8	686.4	27.1	686.1	26.5	686.7	28.1	685.1
HRL-17	1561279.165 N; 1954321.055 E	717.3	719.4	679.1	21.7	695.6	21.7	695.6	23.3	694.0	23.5	693.8	23.2	694.1	23.9	693.4
HRL-18	1561336.950 N; 1953149.681 E	666.6	669.2	636.1	7.4	659.2	7.6	659.0	9.2	657.4	9.3	657.3	8.8	657.8	10.0	656.6
HRL-19	1561497.164 N; 1952792.874 E	662.7	665.4	623.5	15.2	647.5	16.6	646.1	17.6	645.1	17.5	645.2	17.1	645.6	18.1	644.6

*Reading of elevation 654.3 feet at HRL-14 on 09/29/2022 was erroneous.

Table 5. Groundwater Gauging Data for 2022 Piezometers (continued)

PZ ID	Location	Ground Elevation (NAVD88, ft)	Top of Casing (NAVD88, ft)	PZ Tip Elevation (NAVD88, ft)	11/29/22		2/8/23		2/27/23		3/31/23		4/25/23	
					Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)	Depth to GW (ft)	GW Elev. (ft)
HRL-01	1562413.311 N; 1954346.959 E	683.9	686.3	642.6	24.9	659.0	16.2	667.7	17.2	666.7	18.0	665.9	19.9	664.0
HRL-02	1562668.265 N; 1955591.874 E	659.7	661.7	619.2	8.1	651.6	3.6	656.1	3.5	656.2	4.4	655.3	5.4	654.3
HRL-03	1562223.768 N; 1955186.075 E	676.9	679.7	649.5	7.6	669.3	2.2	674.7	2.4	674.5	3.5	673.4	5.1	671.8
HRL-04	1561883.990 N; 1952536.047 E	650.3	653.5	610.6	17.2	633.1	11.7	638.6	12.3	638.0	12.7	637.6	14.2	636.1
HRL-05	1561251.200 N; 1954719.073 E	733.2	736.0	690.0	26.8	706.4	21.8	711.4	20.0	713.2	19.3	713.9	19.3	713.9
HRL-06	1561521.359 N; 1955298.624 E	724.5	727.2	664.4	28.1	696.4	24.9	699.6	24.3	700.2	23.4	701.1	23.7	700.8
HRL-07	1561612.785 N; 1955708.507 E	715.7	718.6	666.3	27.7	688.0	25.9	689.8	25.4	690.3	25.1	690.6	25.0	690.7
HRL-08	1561661.705 N; 1953518.389 E	680.6	683.0	636.1	19.6	661.0	14.5	666.1	15.0	665.6	15.5	665.1	17.0	663.6
HRL-09	1562711.663 N; 1953980.077 E	681.3	684.1	635.9	29.2	652.1	21.3	660.0	22.6	658.7	21.2	660.1	24.4	656.9
HRL-10	1561398.161 N; 1953806.789 E	688.0	690.7	653.5	9.7	678.3	1.9	686.1	2.7	685.3	4.5	683.5	8.3	679.7
HRL-11	1562379.655 N; 1953406.115 E	677.9	680.2	632.2	27.7	650.2	21.9	656.0	22.2	655.7	22.1	655.8	23.5	654.4
HRL-12A	1561983.055 N; 1954002.413 E	680.7	683.4	645.3	18.3	662.4	11.3	669.4	12.0	668.7	13.0	667.7	14.8	665.9
HRL-13	1562985.767 N; 1954512.221 E	674.1	676.8	629.4	25.5	648.6	19.4	654.7	20.6	653.5	20.6	653.5	22.4	651.7
HRL-14	1562585.536 N; 1954893.104 E	700.4	703.0	644.5	40.7	659.7	32.1	668.3	32.0	668.4	33.4	667.0	34.5	665.9
HRL-15	1561698.707 N; 1954984.843 E	715.2	718.1	672.0	19.2	696.0	14.4	700.8	14.9	700.3	15.0	700.2	16.4	698.8
HRL-16	1561604.289 N; 1954231.353 E	713.2	716.1	668.6	27.0	686.2	20.4	692.8	21.0	692.2	21.9	691.3	23.5	689.7
HRL-17	1561279.165 N; 1954321.055 E	717.3	719.4	679.1	23.7	693.6	16.4	700.9	18.0	699.3	17.6	699.7	21.1	696.2
HRL-18	1561336.950 N; 1953149.681 E	666.6	669.2	636.1	8.6	658.0	3.3	663.3	4.3	662.3	6.5	660.1	8.1	658.5
HRL-19	1561497.164 N; 1952792.874 E	662.7	665.4	623.5	17.4	645.3	12.7	650.0	12.8	649.9	13.8	648.9	15.4	647.3

The potentiometric surface map shown in Figure 2-6 depicts the seasonal high groundwater table in the uppermost aquifer during the February 8, 2023 gauging event. The composite potentiometric surface map shown in Figure 2-7 depicts the highest groundwater elevation at each piezometer location during the reference period (see Table 4 and Table 5). Shape of the potentiometric surface generally follows the topographic relief at HRL F. Upgradient flow at highest groundwater elevation is from north of Judy Mountain ridgeline at HRL-5 along the southern property boundary. Flow downgradient to the north diverges to either the northwest into Smith Creek or off the HRL F to the northeast as a function of a north-to-south hydrologic drainage divide. Discharge occurs in the tributaries of Smith Creek to the west and the intermittent stream on the eastern half of HRL F.

2.5.2 Description of Confined Aquifer(s)

Aquifers in the Valley and Ridge Province of Georgia are not confined according to Hydrologic Atlas 18. Piezometers HRL-6 and HRL-7 exhibit semi-confining subsurface conditions, such as irregular, intermittent shale layers. These intervals contain zones of shale with N-values exceeding 100 that contrast to other intervals containing shale with N-values less than 10, possibly from sandy, clay-filled fractures.

2.5.3 Uppermost Aquifer Gradient

Stantec used groundwater data from February 8, 2023, to calculate the hydraulic gradients of the uppermost, unconfined groundwater aquifer at the HRL F. Gradient calculations incorporate the following equation:

$$i = \frac{h_1 - h_2}{L}$$

Where:

i = Horizontal Hydraulic Gradient $\left(\frac{feet}{feet}\right)$

h_1 = Groundwater elevation at up-gradient well (feet NAVD88)

h_2 = Groundwater elevation at down-gradient well (feet NAVD88)

L = distance between h_1 and h_2

Table 6 shows the calculated gradients at the HRL F. Hydraulic gradients vary between 0.027 feet per feet and 0.041 feet per feet. 0.033 feet per feet is the average calculated hydraulic gradient across the HRL F.

Table 6. Hydraulic Gradient Calculations

Potentiometric Map Date	Location	Groundwater Elevations, Well Pairs (ft NAVD88 h_1, h_2)		Change in Elevation (Δ h)	Distance Measured (feet)	Hydraulic Gradient (i) (feet/feet)
8-Feb-23	PZ-HS-03 to HRL-2	684.06	656.10	27.96	1,048	2.67E-02
	HRL-5 to HRL-4	711.38	638.56	72.82	2,353	3.09E-02
	PZ-HS-03 TO HRL-13	684.06	654.66	29.40	841	3.49E-02
	HRL-5 to HRL-12A	711.38	669.44	41.94	1,025	4.09E-02
					Average i	**0.033**

2.5.4 Field Horizontal Hydraulic Conductivity (Slug) Tests

Slug testing was performed in 14 piezometers to measure k_h in accordance with ASTM D4044, "Standard Test Method for (Field Procedure) for Instantaneous Change in Head (Slug) Tests for Determining Hydraulic Properties of Aquifers." The piezometers tested include the following:

- HRL-1, HRL-2, HRL-3, HRL-4, HRL-6, HRL-7, HRL-8, HRL-11, HRL-12A, HRL-13, HRL-14, HRL-16, HRL-17, HRL-18

Slug testing was conducted using standard 5-foot solid slugs compatible to fit either 1-inch or 2-inch diameter piezometers. A LevelTroll 700® pressure transducer was lowered into each piezometer to record depth, pressure and temperature measurements and designated testing intervals. Minimum of two (2) slug-in tests and two (2) slug-out tests were conducted in each piezometer listed above. Piezometers were screened in either heavily weathered shale or bedrock shale as per Table 2.

Data were reduced using AQTESOLV aquifer analysis software to estimate the hydraulic conductivity of the in-situ material. Bouwer and Rice analysis method (Bouwer, 1989) for unconfined aquifers estimates the value of k_h for each of 14 piezometers tested. Data reduction sheets for tests conducted in each piezometer are found in Appendix K. For clarification in each data sheet, casing radius is the radius of the piezometer and well radius is the boring radius produced during drilling.

Table 7 includes a summary of the results from the k_h data sheets in Appendix K. Determination of average k_h used the arithmetic mean from the number of tests performed at each of the 14 piezometers tested. As the arithmetic mean weighs subsurface media permeability to a greater extent of the sample population than the geometric mean (Fetter, 2001), geometric means (number e raised to mean of the natural logs of each test value) were calculated sitewide and within each subunit of the HRL F aquifer. The uppermost, unconfined aquifer subunits for HRL F include the heavily weathered shale to PWR, fractured competent shale and a localized sandy clay-filled fracture in the southeastern corner of HRL F.

Geometric mean of k_h using 65 tests sitewide at HRL F was 2.8×10^{-4} cm/sec; geometric mean of weathered shale k_h was 9.83×10^{-5} cm/sec; geometric mean of the fractured shale bedrock k_h was 1.11×10^{-3} cm/sec; geometric mean of residual sandy shale k_h at HRL-6 and HRL-7 was 2.10×10^{-4} cm/sec (Table 7, Appendix K).

Table 7. Slug Test Results

Well ID	Test	Hydraulic Conductivity (ft/day)	Hydraulic Conductivity (cm/sec)
HRL-1	Falling Head 1	3.9	1.4E-03
	Falling Head 2	4.8	1.7E-03
	Falling Head 3	3.8	1.4E-03
	Rising Head 1	3.8	1.4E-03
	Rising Head 2	6.6	2.3E-03
	Rising Head 3	4.6	1.6E-03
HRL-2	Falling Head 1	0.071	2.5E-05
	Falling Head 2	0.11	3.8E-05
	Rising Head 1	0.39	1.4E-04
	Rising Head 2	0.48	1.7E-04
HRL-3	Falling Head 1	0.72	2.5E-04
	Falling Head 2	0.73	2.6E-04
	Falling Head 3	0.73	2.6E-04
	Rising Head 1	0.79	2.8E-04
	Rising Head 2	0.87	3.1E-04
	Rising Head 3	0.87	3.1E-04
HRL-4	Falling Head 1	3.2	1.1E-03
	Falling Head 2	2.5	8.9E-04
	Rising Head 1	5.1	1.8E-03
	Rising Head 2	5.1	1.8E-03
HRL-6	Falling Head 1	0.12	4.1E-05
	Falling Head 2	0.13	4.5E-05
	Rising Head 1	0.26	9.1E-05
	Rising Head 2	0.27	9.4E-05
HRL-7	Falling Head 1	1.8	6.2E-04
	Falling Head 2	2.2	7.6E-04
	Rising Head 1	2.2	7.6E-04
	Rising Head 2	1.9	6.6E-04
HRL-8	Falling Head 1	0.025	8.9E-06
	Falling Head 2	0.13	4.7E-05
	Falling Head 3	0.14	5.0E-05
	Rising Head 1	0.14	4.8E-05
	Rising Head 2	0.13	4.7E-05
HRL-11	Falling Head 1	2.9	1.0E-03
	Falling Head 2	2.0	7.2E-04
	Falling Head 3	2.3	8.1E-04
	Rising Head 1	3.3	1.2E-03
	Rising Head 2	2.9	1.0E-03
	Rising Head 3	3.5	1.2E-03
HRL-12A	Falling Head 1	0.046	1.6E-05
	Falling Head 2	0.045	1.6E-05
	Rising Head 1	0.042	1.5E-05
	Rising Head 2	0.050	1.8E-05
HRL-13	Falling Head 1	0.045	1.6E-05
	Falling Head 2	0.16	5.6E-05
	Falling Head 3	0.25	8.9E-05
	Rising Head 3	0.25	8.7E-05
HRL-14	Falling Head 1	0.013	4.5E-06
	Falling Head 2	0.0087	3.1E-06
	Rising Head 1	0.094	3.3E-05
	Rising Head 2	0.14	4.8E-05
HRL-16	Falling Head 1	0.86	3.0E-04
	Falling Head 2	1.5	5.2E-04
	Rising Head 1	1.7	5.9E-04
	Rising Head 2	2.2	7.6E-04

Table 7. Slug Test Results

Well ID	Test	Hydraulic Conductivity (ft/day)	Hydraulic Conductivity (cm/sec)
HRL-17	Falling Head 1	4.8	1.7E-03
	Falling Head 2	4.8	1.7E-03
	Falling Head 3	5.7	2.0E-03
	Rising Head 1	6.5	2.3E-03
	Rising Head 2	6.7	2.4E-03
	Rising Head 3	6.7	2.4E-03
HRL-18	Falling Head 1	13	4.6E-03
	Falling Head 2	12	4.4E-03
	Rising Head 1	16	5.7E-03
	Rising Head 2	17	6.1E-03
		Geometric mean for HRL F (ft/day)	Geometric mean for HRL F (cm/sec)
		0.81	2.8E-04

Notes

ft/day - feet per day

cm/sec - centimeters per second

Slug tests were conducted on August 23 through September 1, 2022.

Data analysis was completed using AQTESOLV™, Version 4.50 Professional.

Analysis was completed using the Bouwer-Rice (1976) solution.

2.5.5 Sorption, Attenuation Capacity (CEC) and Effective Porosity of Aquifer Materials

CEC is the quantity of exchangeable cations that a soil holds. Negatively charged clay particles in a soil attract cations, and the cations substitute, such as sodium replacing potassium, similar cations in solution while remaining bound to soil surface. Because higher percentages of clay in a soil attract more cations, CEC is an important measurement of a soil's ability to adsorb contaminants, especially cationic metals.

CEC tests (EPA 9081) were performed on designated SPT samples. Sample depths were selected based on soil conditions identified by the field engineer/geologist. Samples were collected within the overburden soil to ascertain variations in CEC from existing grade until encountering the top of weathered shale.

CEC results ranged from values of 9.29 milliequivalents per 100 grams (meq/100g) to 27.9 meq/100g (Appendix J). Average CEC for the HRL F was 17.3 meq/100g. CEC values greater 20 meq /100g generally indicate clayey soils; values less than 10 meq/100g are sandy; values between 10 meq/100g and 20 meq/100g indicate a silty soil or loam (Crites, 2000). Average CEC results for the HRL F are indicative of a silty loam with appreciable amounts of clay.

Mass transport processes from vadose zone to the phreatic zone, including but not limited to sorption and empirical dispersion coefficients, are discussed further in the previous 2002 SAR.

Effective porosity is the interconnected void space within a type of subsurface media. A value of 0.20 (Maidment, 1993) is the estimate of effective porosity for the overburden and weathered shale subsurface underlying the HRL F, generally a gravelly clayey silt.

2.6 POTENTIAL OF UNCONFINED AQUIFER AND CONFINED AQUIFER AS SOURCES OF DRINKING WATER

Groundwater at the HRL F flowing through the weathered shale zone is considered a source of drinking water even though Floyd County Geographic Information Systems (GIS) maps online indicate the delivery of potable water to the HRL F from a municipal water supply (Floyd County, 2023). The updated water resources survey in Section 1.11 indicates that the sparsely populated area near HRL F only has 15 known groundwater well locations within a two (2) mile radius. According to Cressler, wells installed in the Floyd Shale have sufficient yields of good to very poor-quality water to supply a home or farm, ranging from 3 gallons per minute to 20 gallons per minute (Cressler, 1970).

Results from the previous USGS and NWIS search of water resources (SCS, 2002) (Stantec, 2018) include wells installed in the Floyd Shale and vertical range of withdrawal from the unconfined aquifer:

- Thirty-six (36) wells completed in the Floyd Shale in Floyd County (SCS, 2002).
- Ten of these wells are greater than 100 feet deep.
- The remainder are between 50 and 96 feet deep (one is unknown).

2.7 DESCRIPTION OF SEISMIC IMPACT ZONES

EPD Solid Waste Rule 391-3-4-.10 requires evaluation of HRL F to see whether it lies within a seismic impact zone. Circular 14 defines a seismic impact zone as an area with a probability of 10% or greater that the maximum horizontal acceleration in lithified earth material will exceed 0.10 constant, gravitational acceleration (g) in 250 years. The previous 2002 SAR indicated that the maximum horizontal acceleration at the HRL F had a 10% chance of exceeding 0.22g in 250 years (Appendix B). The updated 2018 Addendum to the 2002 SAR indicated that the maximum horizontal acceleration at Parcels C and D is 0.24g for a return period of 2,475 years (equivalent to a 2% probability of exceeding in 50 years) (Stantec, page 6, 2018). A seismic hazard map, obtained from the current USGS website, is shown in Figure 2-8 (Shumway, 2019). This map corresponds to a 2% probability of exceeding in 50 years, which is essentially equivalent to (but slightly more conservative than) a 10% probability of exceeding in 250 years (return period of 2,373 years). Based on this map, the maximum horizontal acceleration at the HRL F is 0.24g.

2.8 DESCRIPTION OF GEOLOGIC AND/OR NATURAL HAZARDS

As defined in Circular 14, an “unstable area” is a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all the landfill structural components responsible for preventing releases from a landfill. Unstable areas can include karst terrains, shrink/swell soils that are susceptible to excess consolidation/expansion or areas susceptible to mass movements.

Karst is known to occur in the Valley and Ridge Paleozoic limestone formations; however, mappable extents of carbonate formations with karst topography are not within 1.5 miles of the HRL F as per Figure 2-2.

The Rome Fault, one of two major faults which cross Floyd County, trends generally east-west approximately three (3) miles south of the HRL F (Cressler, 1970).

Holocene faults in Georgia were searched in U.S. Geological Survey “Quaternary Fault and Fold Database of the United States” (USGS, 2022). Based on review of the USGS listing for Georgia, there are no active faults or fault zones in Floyd County, Georgia.

No faults, fault zones, unstable areas, karst topography or shear zones were encountered during the HRL F geological exploration in May 2022.

Human-made conditions at HRL F include areas previously excavated and disturbed during construction operations. Erosion and sediment control impoundments, check dams and planted grass are found at HRL F. Residual soil tested outside of either the impacted wetland areas or erosion and sedimentation control structures, delineated in Section 1.9 for mitigation, is lean clay and fine sandy clay that lacks appreciable organic content and does not tend to shrink or swell (Table 3, Appendix H). Furthermore, the remaining veneer of residual soil not affected by previous construction activities is thin, and exposed PWR closer to the existing grade forms a strong natural foundation for the proposed landfill.

3.0 GROUNDWATER POLLUTION POTENTIAL

3.1 OVERVIEW

2002 SAR for Parcels A-E contains a one-dimensional vertical fate and transport model of arsenic leaching through ash in the then-proposed waste unit until reaching the unsaturated soil beneath the landfill's compacted clay liner (SCS, 2002). Realistic and conservative model estimates used a range in simulated parameter inputs in the analyses. Model results provided vertical delineation information for the arsenic leachate from the CCR in terms of its vertical migration distance relative travel time.

Stantec updated groundwater pollution potential and pathway analyses from the previous 2002 SAR. Pollution potential analyses are for the proposed HRL F landfill in its natural and engineered (liner and leachate collection system from bottom of waste to top of groundwater: 60 mil HDPE geomembrane liner, 2 feet of compacted clay with option for GCL, and 5 feet of in situ material and/or permeable fill) states using the LeGrand (LeGrand, 1964) scoring method and pathway analysis as per criteria enumerated in Circular 14.

3.2 LEGRAND ANALYSIS

Stantec performed a LeGrand Analysis for the proposed landfill as described on pages 14 through 17 of Circular 14. The analysis is an "empirical point-count system" that provides semi-quantitative insight into the pollution potential of the unconfined aquifer materials underlying the proposed industrial landfill (McLemore and Perriello, 1997). Input parameters and results of the analysis are found in Table 8. A two-media analysis, modeling overburden of unconsolidated residual soil overlying weathered shale to PWR and competent fractured shale, was used and based upon the following characteristics of HRL F in its natural state:

- A minimum depth of 5 feet (0.5 points) below the proposed bottom of waste and the seasonal high groundwater table was established for HRL F.
- The maximum sorption rating of 4 (clay) was used in the analysis.
- Fractured rock of the Floyd Shale at HRL F provided a conservative estimate of permeability for the HRL F in its natural state (1 point).
- 0.033 feet per feet (Section 2.5.3) is the average calculated hydraulic gradient across the HRL F in an unfavorable direction downgradient (2.5 points).
- Distance to nearest documented receptor downgradient is Smith Creek. 200-foot buffer defined the distance from permit area to discharge off site (2.5 points).
- Average thickness of overburden assumed 5-10 feet of unconsolidated lean clay and sandy clay (0 points).

Two-media score for natural conditions is 10.5, meaning groundwater pollution potential is “possible” in the natural state of the HRL F. Because the LeGrand analysis only takes into consideration the natural state of the HRL F, page 16 of Circular 14 provides additional guidance for evaluation of an engineered facility with a composite liner and leachate collection system that are proposed for the HRL F. A second two-media analysis, modeling overburden of unconsolidated residual soil overlying weathered shale to PWR and competent fractured shale, was used and based upon the following characteristics of HRL F in its engineered state:

- From top to bottom, proposed bottom liner system at HRL F will consist of 60 mil HDPE geosynthetic layer that will overlie either 2 feet of compacted soil with a hydraulic conductivity of 1 $x10^{-7}$ cm/sec or lower, or a polymerized GCL which is in turn placed on 2 feet of compacted soil with a hydraulic conductivity of 1 $x10^{-5}$ cm/sec or lower. Continuing below the compacted clay base, a minimum depth of 5 feet will be maintained between the compacted clay liner bottom and the seasonal high groundwater table. Seven (7) total feet of offset from bottom of waste to seasonal high groundwater scored 0.7 points.
- The maximum sorption rating of 4 (clay) was used in the analysis.
- Proposed composite liner system receives a more favorable rating of 3 for permeability as per page 16 of Circular 14.
- Hydraulic gradient site average of 0.033 feet per feet (Section 2.5.3) used per Circular 14 recommendation for engineered composite liner installation (4.5 points for 0.033 feet per feet hydraulic gradient in favorable direction).
- Distance to nearest documented receptor downgradient is Smith Creek. 200-foot buffer defined the distance from permit area to discharge off site (2.5 points).
- Average thickness of overburden assumed 5-10 feet of unconsolidated lean clay and sandy clay (0 points).

Additional LeGrand two-media score for an engineered facility is 14.7, indicating "possible, but not likely" pollution potential (Table 8). The higher LeGrand score from the engineered facility indicates a modest decrease in the pollution potential of the HRL F.



Table 8. LeGrand Results

Parameter	Parameter Criteria	Site-Specific Input Value	Two-Media LeGrand Score, Natural	Two-Media LeGrand Score, Engineered[1,2]
Water Table	Distance below base of disposal unit - assume minimum groundwater separation requirement	5 feet/7 feet[1]	0.5	0.7
Sorption	Material below base of the liner- assumes maximum sorption for clay underlying waste unit per Circular 14	clay	4	4
Permeability	Material below base of the liner - use composite liner recommendation per Circular 14	Fractured rock/composite liner	1	3
Gradient	Hydraulic gradient - average uppermost aquifer gradient across waste unit in unfavorable direction toward Smith Creek	0.033	2.5	4.5
Distance	Distance of 200-foot buffer to nearest documented receptor, Smith Creek	200 feet	2.5	2.5
Thickness	Overburden thickness - average from boring logs	5-10 feet	0	0
		TOTAL	**10.5**	**14.7**
			"Possible"	"Possible, but not likely"

Notes

1. Proposed composite liner system's compacted clay base thickness of 2 feet added as per Circular 14, page 16, 1997.
2. Proposed composite liner system evaluated as per Circular 14, page 16, 1997.

Total Points	Pollution Potential of a Site in its Natural Condition
0-4	Imminent
4-8	Probable
8-12	Possible
12-25	Possible, but not likely
25+	Approaching impossible

3.3 PATHWAY ANALYSIS

3.3.1 Calculated Average and Highest Groundwater Flow Velocities

The horizontal groundwater flow velocity calculation at the HRL F uses a derivation of Darcy's Law. Specifically,

$$V = \frac{K * i}{n_e}$$

Where:

$$V = \text{Groundwater flow velocity } \left(\frac{feet}{day}\right)$$

$$K = \text{Average hydraulic conductivity of aquifer material } \left(\frac{feet}{day}\right)$$

$$i = \text{Horizontal hydraulic gradient } \left(\frac{feet}{feet}\right)$$

$$n_e = \text{Effective Porosity}$$

The general groundwater flow velocity calculated for proposed landfill uses the average calculated hydraulic gradient at HRL F (Table 6), average hydraulic conductivity from 65 HRL F-specific slug tests spanning 14 piezometers (Table 7, Appendix K), and an estimated effective porosity of the screened materials presented in Section 2.5.5. General horizontal groundwater flow velocity calculations are presented below.

Results for average groundwater flow incorporate gauging data from February 8, 2023. Geometric mean of hydraulic conductivity for the uppermost aquifer is 0.81 feet/day (2.8 x 10^{-4} cm/sec); average gradient at the HRL F is 0.033 feet/feet; effective porosity of weathered shale assumes value of 0.20 based on Section 2.5.5. Average horizonal flow velocity calculated across the HRL F is as follows:

$$V = \frac{0.81\frac{feet}{day} * \frac{0.033feet}{feet}}{0.20} = 0.13\frac{feet}{day}$$

Highest groundwater flow velocity calculation for the weathered shale in this section uses the most conservative HRL F-specific data (McLemore and Perriello, 1997). The maximum indicated hydraulic conductivity for the weathered shale is 17 feet/day (6.1 x 10^{-3} cm/sec) based on Appendix K data. Average hydraulic gradient at the HRL F from Table 6 remains 0.033 feet/feet, and effective porosity of uppermost aquifer retains value of 0.20 based on Section 2.5.5. Thus, the greatest horizontal flow velocity calculated across the HRL F is as follows:

$$Vhi = \frac{17\frac{feet}{day} * \frac{0.033feet}{feet}}{0.20} = 2.8\frac{feet}{day}$$

3.3.2 Description of the Inter-Relationship Between Groundwater Flow Directions and Potential Receptors Using Worst-Case Hydraulic Gradient

The groundwater flow directions depicted in seasonal high potentiometric map in Figure 2-6 are radial, starting from the highest groundwater elevations at Judy Mountain at the south property line of HRL F. A north-south drainage divide diverts flow to the west/northwest of the divide towards Smith Creek, and fate of flow east of the divide is to the Cabin Creek watershed. Primary natural downgradient receptor is Smith Creek; closest receptors identified in Section 1.11 are greater than 0.5-miles when measured radially from the HRL F.

3.3.3 Estimated Travel Time for Leachate to Reach Potential Receptors

Vertical travel time estimates consider a hypothetical breach of the proposed liner system, which includes the compacted clay subgrade. With the addition of a 60 mil HDPE geomembrane bottom liner that has a vertical hydraulic conductivity (k_v)of 1 x10^{-13} cm/sec, the travel time through the liner system from top to bottom is in excess of 48,000 years (Table 9).

Table 9. Travel Time Through Liner System

Component of Liner System	Thickness (cm)	Hydraulic Conductivity - Vertical (cm/sec)	Calculated Travel Time	
			(seconds)	(years)
Liner	0.15	1.00E-13	1.52E+12	48292.65
Clay	60.96	1.00E-07	6.10E+08	19.32
Compressed GCL	0.30	5.00E-09	6.00E+07	1.90
Subgrade	60.96	1.00E-05	6.10E+06	0.19

Horizontal travel time occurs after vertical transport of landfill leachate to the top of the water table is complete. Computed travel time is the quotient of the distance to the nearest downgradient receptor and the groundwater flow velocity from Section 3.3.1 in the uppermost aquifer. Calculation of typical horizontal travel time is found in Table 10. With respect to the nearest documented receptor downgradient (Smith Creek is a water consumption risk for animals), calculated travel time to reach the receptor from HRL F is approximately four (4) years.

An additional conservative travel time calculation accounts for subsurface variation in permeability of the interconnected fractured bedrock, weathered shale and overburden. Highest hydraulic conductivity for HRL F provides the basis of the conservative pathway analysis. Conservative calculated travel time to reach Smith Creek is 0.19 years. Consequently, the conservative estimate did not yield realistic results. Magnitude for the highest k_h is limited to the tests at HRL-18; the average k_h of 5.2 x10^{-3} cm/sec at HRL-18 is almost an order of magnitude greater than the HRL F geometric mean sitewide.

Table 10. Pathway Analysis – Travel Time to Nearest Receptor

Uppermost Aquifer (Unconfined Floyd Shale, weathered and fractured competent rock)	Distance Measured (feet) to Nearest Receptor[1]	Average Hydraulic Gradient at HRL F (i) (feet/feet)	HRL F Hydraulic Conductivity (k_h)(feet/day)[2]	Estimated HRL F Effective Porosity (n_e)	Calculated Groundwater Flow Velocity (V) (feet/day)	Travel Time (years)
Travel time to Smith Creek	200	3.3E-02	0.81	0.20	0.13	4.05
Conservative travel time to Smith Creek	200	3.3E-02	17.23	0.20	2.88	0.19

Notes
1. Nearest identified water resource receptor: Smith Creek (assumes travel from waste limits through proposed 200-foot buffer)
2. Geometric mean of the in-situ k_h and highest k_h slug test for the uppermost aquifer were used in respective calculations of travel time.

3.4 DESCRIPTION OF INTER-RELATIONSHIPS BETWEEN THE VADOSE ZONE, UPPERMOST AQUIFER

The vadose zone consists of CL and SC soils with weathered to partially weathered shale at the HRL F. Rainfall infiltration is the primary groundwater recharge mechanism. Stormwater percolates through the vadose zone of the overburden and weathered shale until reaching the top of groundwater of the uppermost, unconfined aquifer, generally in the PWR to heavily-weathered shale. Vadose zone thickness below grade ranges from as shallow as 6 feet bgs to as deep as 53 feet bgs based on boring logs from Appendix H. Vertical k_v of the overburden and heavily weathered shale in the vadose zone at HRL F ranges from 1.47 $x10^{-7}$ cm/sec to 8.46 $x10^{-8}$ cm/sec.

Aquifers of the Valley and Ridge are generally unconfined. Uppermost, unconfined aquifer at HRL F contains overburden, weathered shale to PWR, and fractured competent shale. Fractures connecting the overburden to the weathered and/or fractured shale with enhanced secondary porosity enable fluid flow. Groundwater stored in the overburden from recharge flows through these fractures into the weathered bedrock and fractured bedrock. Connectivity of the fractures ceases at the depth where the fractures are no longer present in competent bedrock. Aquifer therefore becomes less permeable with increasing depth below existing grade.

3.5 MITIGATION OF GEOLOGIC AND/OR NATURAL HAZARDS

Prior to construction of the proposed landfill, permitted area for construction will be reviewed. Potential unstable areas, such as soft, compressible floodplain soils of impacted streams documented in Appendix C or previously excavated areas, will be mitigated. Any fill placed to support the landfill will be placed in a controlled manner with appropriate quality control testing to verify compaction of the soils. Quality control testing will conform to the construction quality assurance (CQA) plan provided in permit application under separate cover.

HRL F was determined to be within a seismic impact zone. Given the information from Section 2.7, consistent with Georgia Rules of Solid Waste Management, containment structures, such as liners, leachate collection system, and surface water controls, will be designed to resist a maximum horizontal acceleration in lithified earth material of 0.24g (Georgia EPD, 2022a).



4.0 RECOMMENDATIONS FOR DESIGN

4.1 FAVORABLE AND UNFAVORABLE AREAS

Unfavorable areas as per Circular 14 generally include floodplains, wetlands, permanent and intermittent streams with setbacks, areas underlain by shallow ground water and shallow bedrock, karstic areas, excessively steep slopes and buffers around the perimeter of HRL F. Wetlands, permanent and intermittent streams with setbacks, shallow groundwater, steep slopes (25% or greater) and buffers currently limit the availability of favorable areas at the HRL F.

Delineated wetlands at HRL F have not received concurrence from appropriate regulatory agencies. Concurrence will occur prior to construction. Jurisdictional wetlands, if impacted, will be permitted as per the USACE 401/404 permitting process. Non-jurisdictional wetlands will be voluntarily mitigated on a 1:1 basis (SCS, 2002). Future mitigation activities will be determined for unavoidable impacts to wetlands to the greatest extent possible.

Cell development will require grading of the HRL F to meet both current EPD and federal criteria for new CCR landfills. Where necessary, fill material will be placed and compacted to provide the minimum 5-foot separation from the top of the seasonal high groundwater table.

Shallow groundwater and shallow and/or exposed rock are present in various areas of the HRL F. The minimum 5 feet of separation between the seasonal high groundwater level, competent bedrock and the bottom of the compacted clayey soil liner will be maintained across the HRL F. Competent bedrock is not anticipated to affect grading activities.

The stockpile material previously mentioned in Section 2.4.1 is unsuitable for use as embankment material or liner soils.

Buffer limitations are discussed in Section 4.5.

4.2 LINER AND LEACHATE COLLECTION SYSTEM

Two feet of compacted clayey material will underlie one of two proposed liner design options. The bottom liner system at HRL F is proposed to be built as follows:

- 60 mil HDPE geosynthetic layer overlying two feet of compacted soil with a hydraulic conductivity of 1 $x10^{-7}$ cm/sec or lower, or
- 60 mil HDPE geosynthetic layer overlying a polymerized geosynthetic clay liner which is in turn placed on two feet of compacted soil with a hydraulic conductivity of 1 $x10^{-5}$ cm/sec or lower.

Bulk samples were obtained from the overburden soil. Vertical hydraulic conductivity values for the samples, remolded to 95% maximum dry density at optimum moisture content, ranged from 1.47 $x10^{-7}$ cm/sec to 8.46 $x10^{-8}$ cm/sec.



Compacted clay base will be constructed from a borrow source near HRL F. A detailed investigation will be conducted to further define the characteristics of the proposed borrow materials to compare with placement, compaction, and hydraulic conductivity criteria of the compacted clay base and the fill material that will be for the 5-foot zone of separation above the observed groundwater table.

Proposed leachate collection system will include the following components from bottom to top:

- 24-inch-thick low permeability compacted clay or equivalent polymer enhanced GCL
- 60-mil HDPE geomembrane
- Double-sided geocomposite
- Washed stone aggregate
- Drainage sand

Leachate collection system proposed includes perforated collection pipes and mains to convey collected leachate to a sump where it will be pumped to an above-ground tank configuration, in which the number of tanks required for storage will be dependent on a Hydrologic Evaluation of Leachate Potential (HELP) model of the proposed landfill's rate of leachate generation and leachate head above the liner.

4.3 CELL DEPTHS

The entirety of the waste footprint will have a minimum 5 feet of separation established between the bottom of the compacted clay liner and the seasonal high groundwater elevations and/or bedrock (Figure 2-4). Continued monitoring of the temporary piezometers will establish groundwater elevations, and the drilling program established depth to the top of bedrock. Where necessary, 5 feet of separation will be established with compacted clayey soils. Anticipated flow paths for any leachate generated within the landfill waste cells would be through the 2 feet of compacted clay underlying the geosynthetic liner system components and the separation zone of compacted clayey soil prior to reaching groundwater.

If future data indicate a change in subsurface conditions at HRL F, excavation requirements for the proposed bottom liner will be reevaluated during detailed design of the HRL F.

4.4 SITE DRAINAGE AND EROSION CONTROL

HRL F will be designed and constructed to minimize soil erosion and sediment migration as required by Georgia Erosion Control Act and as per best management practices noted in the most recent edition of the Georgia Manual for Erosion and Sediment Control. Diversion ditches, berms, and culverts will be designed to contain storm water run-on and runoff generated from minimum of 24-hour, 25-year storm events. Areas where excavation and earth fill operations occur must be vegetated immediately. Sediment ponds will be designed to route the 25-year-24-hour storm event through the principal spillway and not overtop for the 100-year, 24-hour event. Underdrains will be designed to drain the 1.1 acres of impacted streams from Section 1.9 within the proposed waste footprint. The streambed would be excavated and then geotextile, crushed stone and piping placed as an underdrain system that will be part of detailed design package under separate cover. The first five feet of fill over the underdrain would be compacted by hand operated tamping devices. Additional fill would be compacted by heavy equipment.



4.5 BUFFER ZONES

There will be a minimum 200-foot buffer between the limits of the proposed waste unit boundary and the property boundary. Any water supply wells, if present, will require a minimum 500-foot buffer between the proposed waste unit boundary and adjacent residences. For all state waters as per OCGA 12-7-6-(b) -(15) (A-D), there will be a minimum 25-foot buffer between the limits of the storage facility and any state waters. No land disturbing activities are permitted within these buffer zones except for construction of groundwater monitoring wells and ingress and egress to proposed waste disposal facility.

Wetlands will require at least 50-foot undisturbed buffers between proposed waste boundary and delineated wetlands from Appendix C except those permitted by both USACE and EPD due to impact.

4.6 PROPOSED GROUNDWATER AND SURFACE WATER MONITORING SYSTEM

A groundwater and surface water monitoring plan for the proposed landfill will be designed as per Georgia EPD Rules of Solid Waste Management and EPA Region 4 guidance documents. Proposed monitoring well and underdrain locations will be submitted with the groundwater monitoring plan when the limits of the waste have been approved. Monitoring locations will be located around the permitted site and will adhere to EPD requirements.

Sampling will commence once the groundwater monitoring plan has been approved by EPD. Current EPA Region 4 guidance for groundwater monitoring, well installations, and development will also be used in design of the monitoring system. Monitoring will continue semiannually as per the approved plan. Eight (8) initial sampling events will be performed following approval of the plan to establish statistical base. Background data will be determined prior to placement of waste at the HRL F for the up-gradient and down-gradient wells as well as any surface water monitoring locations.

If additional water bodies, such as seeps or springs, are found following construction, groundwater monitoring plan protective designs for the water bodies will be implemented in the HRL F design and operation plans.

4.7 DISPOSITION OF PIEZOMETERS

Nineteen (19) piezometers from the 2022 investigation and six (6) piezometers from the 2021 investigation installed at the HRL F will be plugged and abandoned in accordance with Georgia's Water Well Standards Act and EPA Region 4 guidance upon approval of this report.

Piezometers screened in weathered shale located in the proposed waste area of the HRL F will be overdrilled from the top of grade to the bottom of each piezometer. Piezometers screened in competent shale located in the proposed waste area of HRL F will be tremie grouted with bentonite/cement inside the casing from its bottom to the top of bedrock prior to overdrilling the piezometer. After piezometer screen and rock interval is plugged and abandoned, the piezometer will be overdrilled from top of grade to the top of bedrock. Backfill will contain a non-shrinking cement/bentonite grout placed with a tremie pipe, starting from the bottom of the hole until within 10 feet below the proposed bottom of the waste unit. Remaining 10 feet of open boring will be backfilled with bentonite and allowed to hydrate.



Piezometers installed outside of the proposed HRL F waste limits, but in the proposed permit area at HRL F, will be plugged and abandoned with quarter inch-diameter bentonite pellets. Bentonite pellets will be poured into each piezometer until reaching existing top of casing, then hydrated with potable water. After pouring bentonite pellets, the first 10 feet of PVC casing will be removed from each in-situ piezometer, which will then be capped with bentonite pellets to existing grade.



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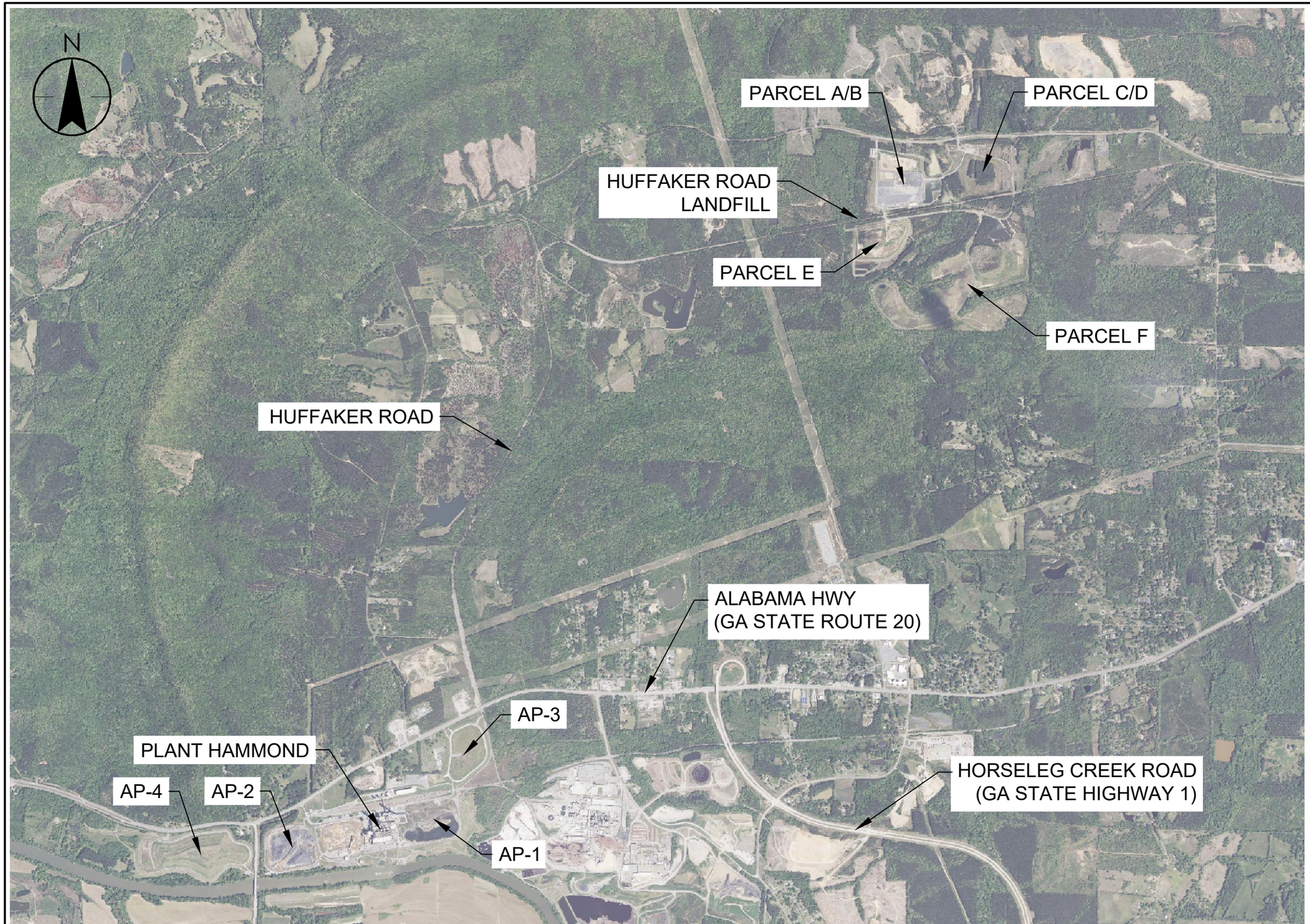
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FIGURES



1000 0 2000 4000 FEET

GRAPHIC SCALE: 1" = 2000'

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MAPPING SOURCE NOTE:

AERIAL PHOTOGRAPH FROM BING, MICROSOFT CORPORATION, 2023.

Client/Project
GEORGIA POWER -
HUFFAKER RD LANDFILL
FLOYD COUNTY, GA

PARCEL F SAR FIGURES

Project No.
175518236

Title
FIGURE 1-1
SITE LAYOUT

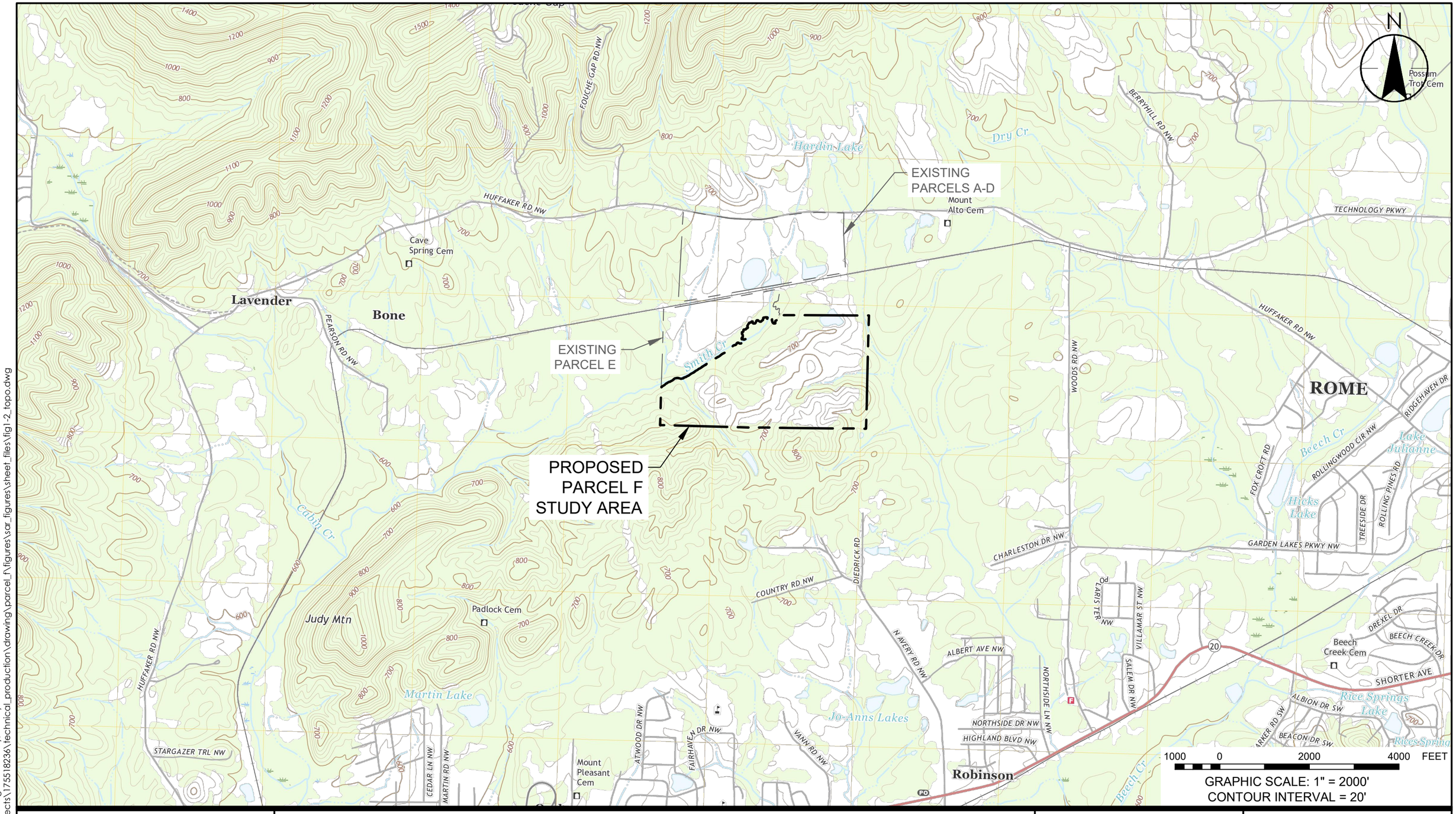
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03/31/2023

Reference Sheet
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Figure No.
FIG. 1-1

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MAPPING SOURCE NOTE:

UNITED STATES GEOLOGICAL SURVEY, ROCK MOUNTAIN, GEORGIA QUADRANGLE, 7.5-MINUTE SERIES, RESTON, VA; UNITED STATES DEPARTMENT OF THE INTERIOR, USGS, 2020.

LEGEND

- PROPOSED CCR PERMIT LIMITS
- EXISTING PROPERTY LIMITS

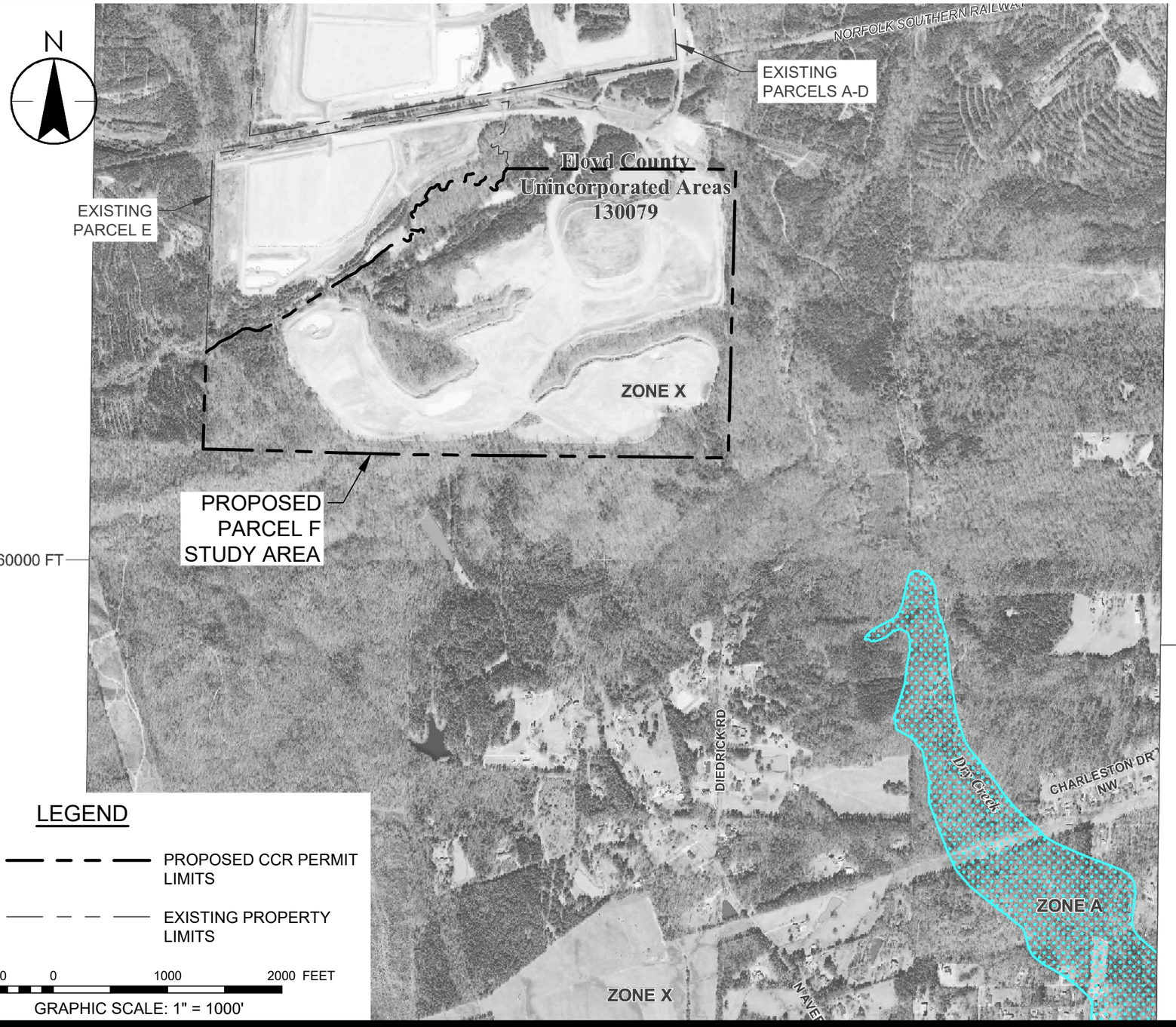
Client/Project
GEORGIA POWER - HUFFAKER RD LANDFILL
FLOYD COUNTY, GA

PARCEL F SAR FIGURES

Project No.
175518236

Title
FIGURE 1-2
TOPOGRAPHIC MAP

Revision	Date
0	03/31/2023
Reference Sheet	Figure No.
-	FIG. 1-2



LEGEND

PROPOSED CCR PERMIT LIMITS

EXISTING PROPERTY LIMITS

500 0 1000 2000 FEET

GRAPHIC SCALE: 1" = 1000'

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 45° 02' 08", 93° 02' 12" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4989000 FT — 5000-foot grid ticks: Georgia State Plane coordinate system, West zone (FIPS Zone 1002), Transverse Mercator
- 4989 000mN — 1000-meter Universal Transverse Mercator grid values, zone 16
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- FT1000 — River Station

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 9, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

September 25, 2009 - to change Base Flood Elevations; to add Special Flood Hazard Areas, roads and road names; to update corporate limits and map format; and to reflect updated topographic information.

For Community map revision history prior to countywide mapping, refer to the community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620

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MAPPING SOURCE NOTE:

NATIONAL FLOOD INSURANCE PROGRAM
FIRM MAP: FLOYD COUNTY, UNINCORPORATED AREAS, PANEL 130079
SEPTEMBER 25, 2009
FEDERAL EMERGENCY MANAGEMENT AGENCY.

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GEORGIA POWER - HUFFAKER RD LANDFILL
FLOYD COUNTY, GA

PARCEL F SAR FIGURES

Project No.
175518236

Title
FIGURE 1-3
FEMA FLOODPLAIN MAP

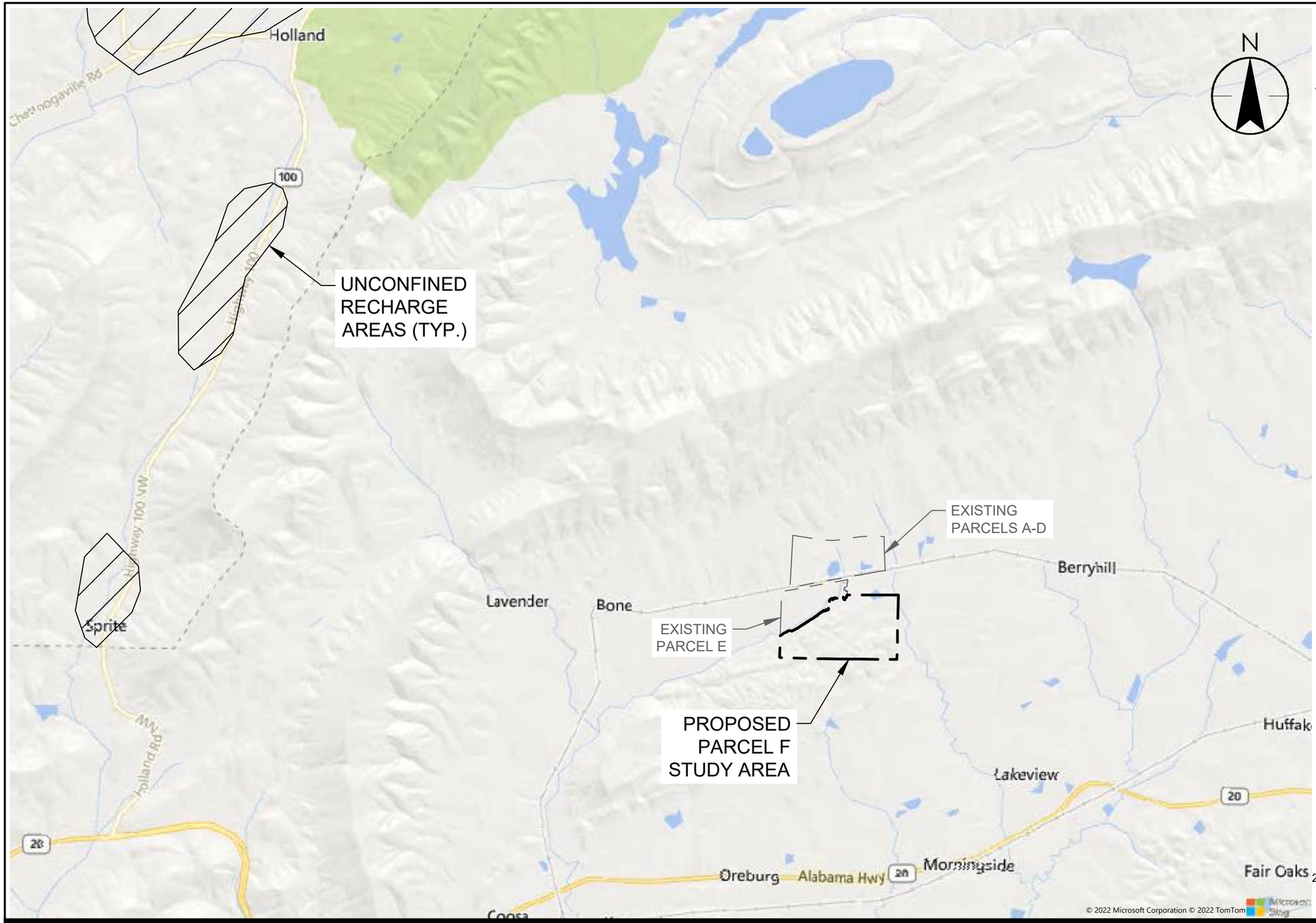
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03/31/2023

Reference Sheet
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Figure No.
FIG. 1-3

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LEGEND

PROPOSED CCR PERMIT LIMITS

EXISTING PROPERTY LIMITS

2000 0 4000 8000 FEET

GRAPHIC SCALE: 1" = 4000'

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MAPPING SOURCE NOTE:

DAVIS ET AL. HYDROLOGIC ATLAS 18, MOST SIGNIFICANT GROUNDWATER RECHARGE AREAS OF GEORGIA, GEORGIA DEPARTMENT OF NATURAL RESOURCES, ATLANTA 1992.

Client/Project
GEORGIA POWER - HUFFAKER RD LANDFILL
FLOYD COUNTY, GA

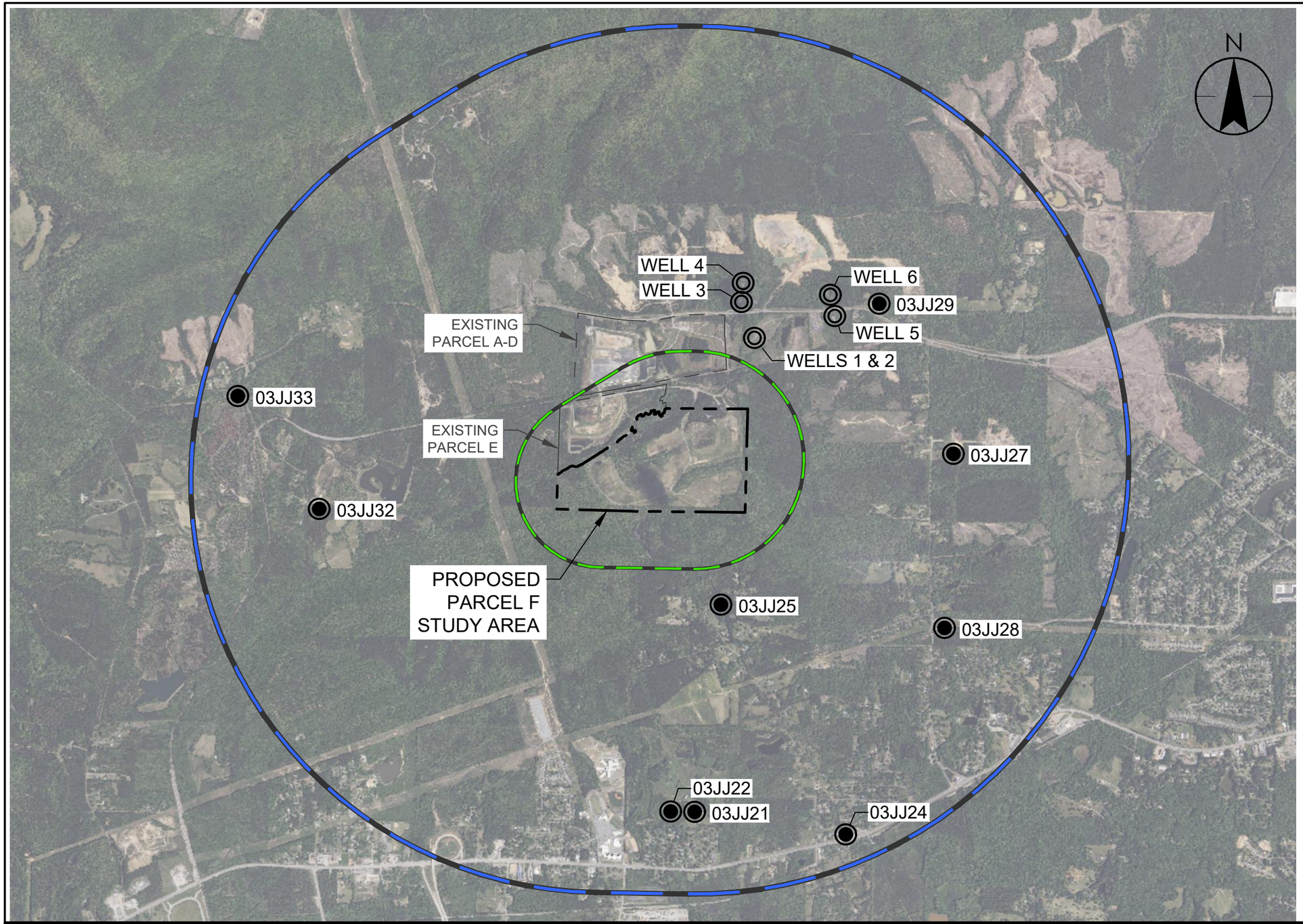
PARCEL F SAR FIGURES

Project No.
175518236

Title
FIGURE 1-4
GROUNDWATER RECHARGE AREAS MAP

Revision	Date
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Reference Sheet	Figure No.
-	FIG. 1-4

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LEGEND

- PRIVATE WELL
- USGS WATER WELL
- PROPOSED CCR PERMIT LIMITS
- EXISTING PROPERTY LIMITS
- ONE-HALF MILE RADIUS
- TWO MILE RADIUS

1000 0 2000 4000 FEET

GRAPHIC SCALE: 1" = 2000'

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MAPPING SOURCE NOTE:

AERIAL PHOTOGRAPH FROM BING, MICROSOFT CORPORATION, 2023.

WELL LOCATIONS OBTAINED FROM GEOCHECK REPORT PREPARED BY ENVRONMENTAL DATA RESOURCES, LLC, DATED FEBRUARY 9, 2023.

Client/Project
GEORGIA POWER - HUFFAKER RD LANDFILL
FLOYD COUNTY, GA

PARCEL F SAR FIGURES

Project No.
175518236

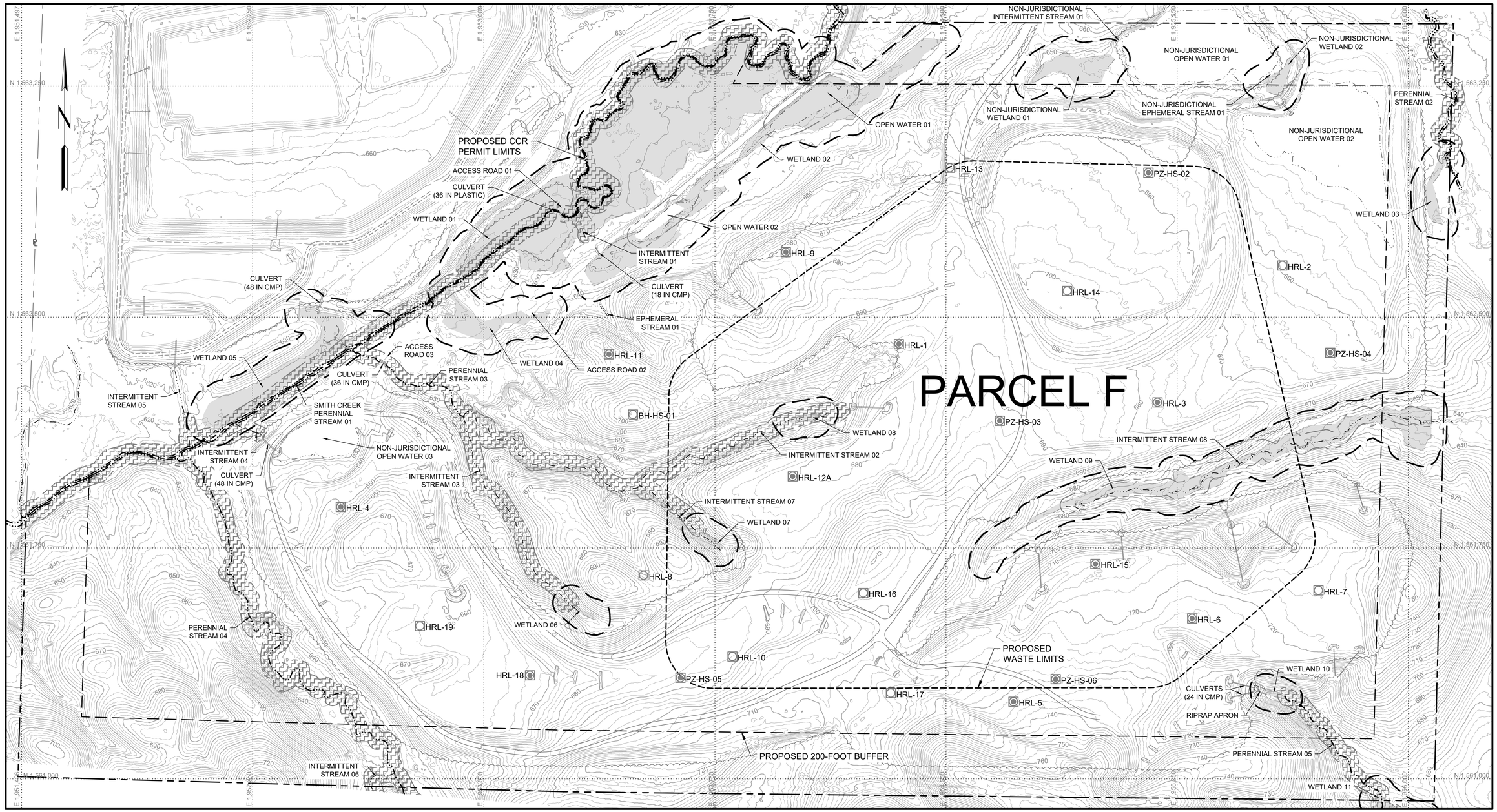
Title
FIGURE 1-5
WELL SURVEY

Revision
0

Date
03/31/2023

Reference Sheet
-

Figure No.
FIG. 1-5



MAPPING SOURCE NOTES:

1. TOPOGRAPHIC AND PLANIMETRIC SURVEY INFORMATION FOR THE PLANS WERE OBTAINED FROM SURVEYS PERFORMED BY SOUTHERN COMPANY SERVICES, INC. DATED MARCH 2008 AND JANUARY 2016 AND CONTOURS OBTAINED FROM DIGITAL TERRAIN MODELS OF AERIAL LIDAR SURVEYS DATED NOVEMBER 2019 AND FEBRUARY 2022, SUPPLEMENTED WITH AERIAL LIDAR SURVEYS DATED JANUARY 2021, APRIL 2022 AND AUGUST 2022.
2. PROVIDED STAMP IS FOR THE GENERAL ARRANGEMENT OF PLAN INFORMATION. THE TOPOGRAPHIC SURVEY WAS PERFORMED/PROVIDED BY SAM, LLC. AND CERTIFIED BY A REGISTERED LAND SURVEYOR. THIS INFORMATION IS PROVIDED IN APPENDIX F OF THE 2023 SITE ACCEPTABILITY REPORT ADDENDUM.
3. ALL COORDINATES ARE BASED ON NORTH AMERICAN DATUM 83 (NAD 83) GEORGIA STATE PLANE, WEST ZONE. ALL ELEVATIONS ARE BASED ON THE NORTH AMERICAN DATUM 88 (NAVDS 88).

NOTE:
WETLANDS DELINEATION DATA ARE FROM FIELD SURVEY CONDUCTED BY ECOLOGICAL SOLUTIONS INC IN JANUARY 2021.

LEGEND

- PROPOSED WASTE LIMITS
- PROPOSED CCR PERMIT LIMITS
- EXISTING PROPERTY LIMITS
- PROPOSED 200' BUFFER LIMITS
- 50' WETLAND BUFFER
- WETLAND ACCORDING TO ECO SOLUTIONS REPORT
- 25' STREAM BUFFER ACCORDING TO ECO SOLUTIONS REPORT
- 25' STREAM BUFFER
- TREE LINE
- EDGE OF WATER
- PERENNIAL STREAM
- INTERMITTENT STREAM
- EPHEMERAL STREAM
- 500 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING PIEZOMETER WITH ROCK CORE
- PIEZOMETER WITHOUT ROCK CORE

75 0 150 300 FEET

GRAPHIC SCALE: 1" = 150'
CONTOUR INTERVAL = 2'

REV	DATE	DESCRIPTION	DRN	CHK
1	12/14/23	ISSUED FOR REVIEW	JM	MV
0	03/31/23	ISSUED FOR REVIEW	JM	MV

EXISTING CONDITIONS TOPOGRAPHIC MAP, 2022

PROPOSED PARCEL F AREA

FOR
GEORGIA POWER
HUFFAKER ROAD COAL COMBUSTION
BY-PRODUCTS DISPOSAL FACILITY
FLOYD COUNTY, GEORGIA

GEORGIA REGISTERED No. PE014071 PROFESSIONAL ENGINEER MATTHEW C. VAUGHAN 12/14/23

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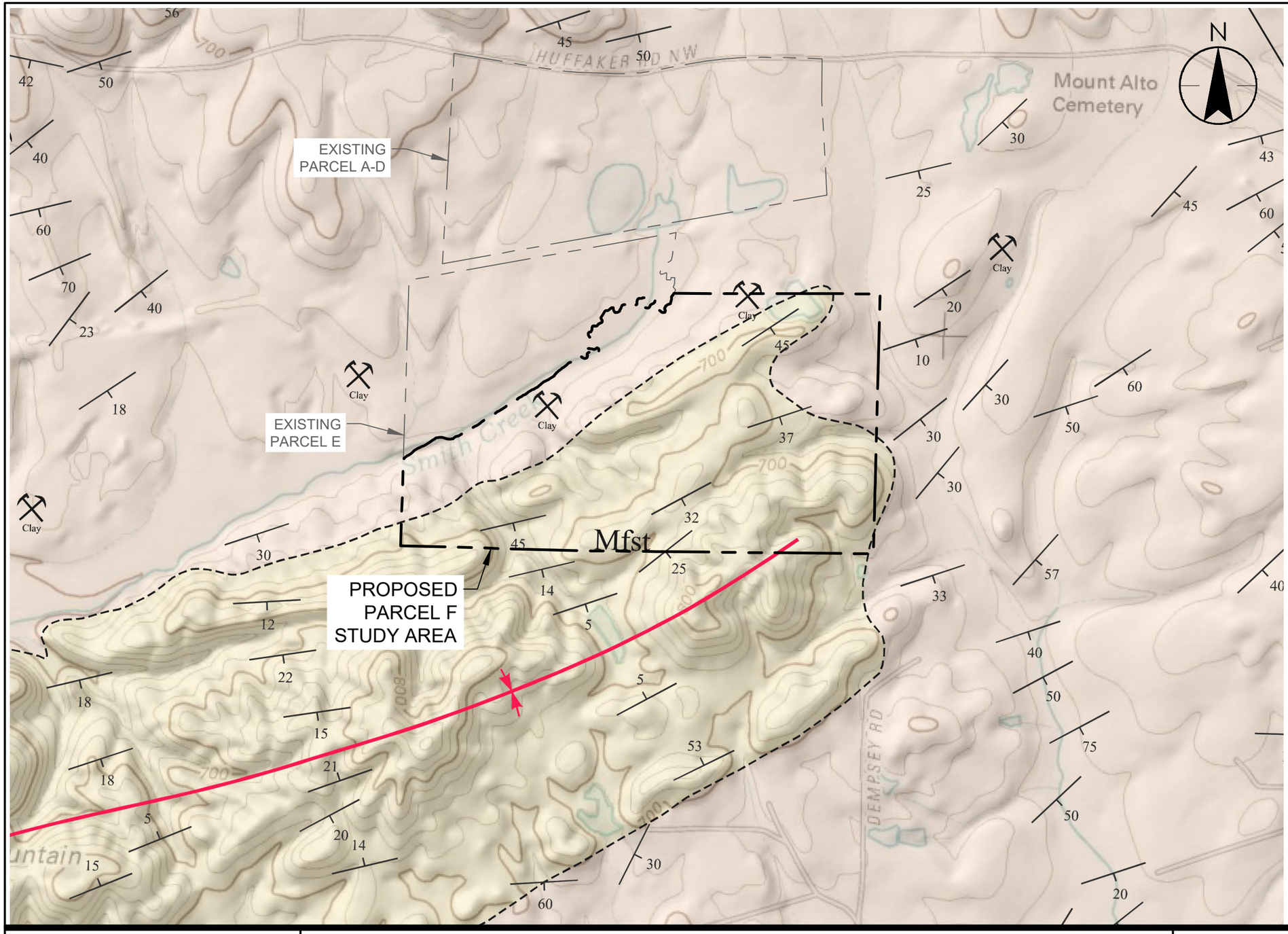
Stantec

PROJ. NO.	175518236
SCALE	1" = 150'
DATE	12/14/23

DWG. FIG2-1_EXISTING_CONDITIONS

FIGURE 2-1

ILLUSIS22.PPFSS01\SHARED_PROJECTS\175518236\TECHNICAL_PRODUCTION\DRAWING\PARCEL_F\FIGURES\SAR_FIGURES\SAR_FIG2-1_EXISTING_CONDITIONS.DWG



EXPLANATION OF MAP UNITS

Mfst — FLOYD SANDSTONE (upper member, UPPER MISSISSIPPIAN) - Floyd Shale sequence is capped by a mostly thin-bedded gray sandstone, interbedded with thin dark shale partings. Sandstone is locally calcareous and weathers to sandy orange soil leaving many thin pieces of fine sandstone. Thick-bedded sandstones - in sections 5'- 15' thick - emerge locally, resulting in thickening of the unit and steepened topography. Estimated thickness- 50 to 150 feet[1] at Rock Mountain, 300 feet[5] at Judy mountain.

Mfs — FLOYD SHALE (UPPER MISSISSIPPIAN) - Mainly shale, dark gray to black, with mm-scale lamination; interbedded with siltstone, fine-grained sandstone, and thin limestones; locally contains fossiliferous concretions; weathers pale gray to tan. Many close-spaced joints combined with thin bedding yield residuum of small shale/siltstone/sandstone fragments in a light-colored soil. Beds in lower half are calcareous, silty, and slabby; in upper half predominately clay shale with interbedded, thin fine sandstones increasing towards top. Drilling at Rock Mountain[1] showed a thickness of 950 feet. To the southwest, breadth of the Floyd Shale outcrop around Judy Mountain suggests it is much thicker. This maybe attributable to tectonic or stratigraphic thickening or both.

LEGEND

- PROPOSED CCR PERMIT LIMITS
- EXISTING PROPERTY LIMITS
- 25 — STRIKE AND DIP OF INCLINED BEDDING
- Clay — BORROW PIT SHOWING MATERIAL BEING EXTRACTED
- FOLD AXIS- SYNCLINE, SYNFORM; SHOWING PLUNGE DIRECTION

500 0 1000 2000 FEET

GRAPHIC SCALE: 1" = 1000'

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MAPPING SOURCE NOTE:

UNITED STATES GEOLOGICAL SURVEY, ROCK MOUNTAIN, GEORGIA QUADRANGLE, 7.5-MINUTE SERIES, RESTON, VA; UNITED STATES DEPARTMENT OF THE INTERIOR, USGS, 2009.

KATH, RANDY ET AL. (2021). "GEOLOGIC MAP OF THE ROCK MOUNTAIN 7.5-MINUTE QUADRANGLE, GEORGIA." UNIVERSITY OF WEST GEORGIA, 2021

Client/Project
GEORGIA POWER - HUFFAKER RD LANDFILL
FLOYD COUNTY, GA

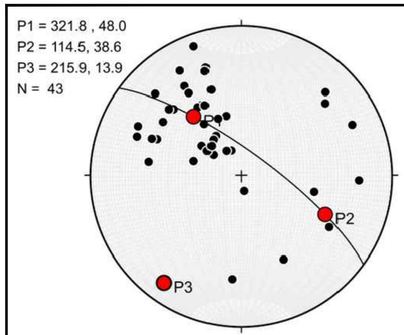
PARCEL F SAR FIGURES

Project No.
175518236

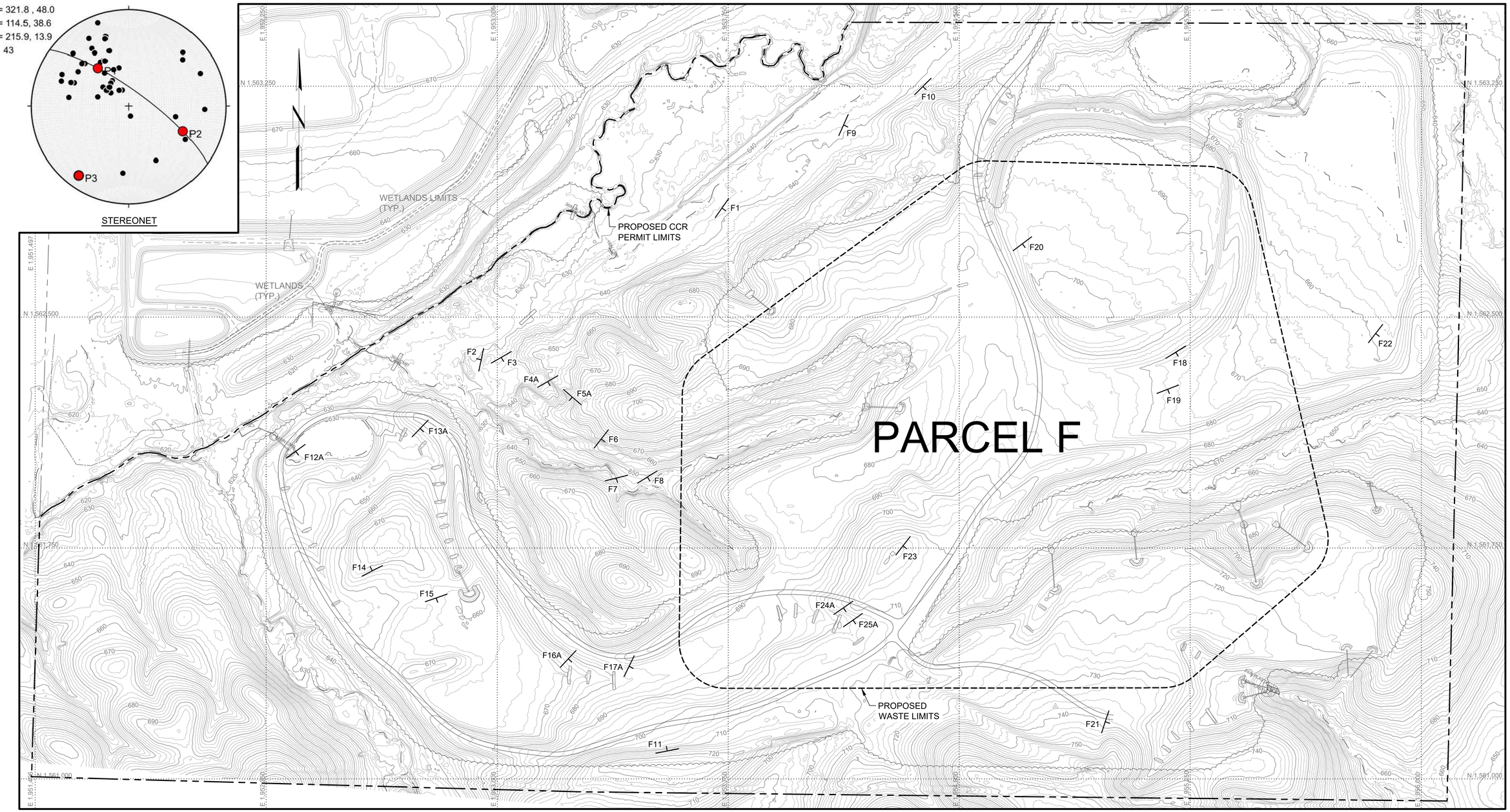
Title
FIGURE 2-2
GEOLOGIC MAP

Revision: 0
Date: 03/31/2023
Reference Sheet: -
Figure No.: FIG. 2-2

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STEREONET



MAPPING SOURCE NOTES:

1. TOPOGRAPHIC AND PLANIMETRIC SURVEY INFORMATION FOR THE PLANS WERE OBTAINED FROM SURVEYS PERFORMED BY SOUTHERN COMPANY SERVICES, INC. DATED MARCH 2008 AND JANUARY 2016 AND CONTOURS OBTAINED FROM DIGITAL TERRAIN MODELS OF AERIAL LIDAR SURVEYS DATED NOVEMBER 2019 AND FEBRUARY 2022, SUPPLEMENTED WITH AERIAL LIDAR SURVEYS DATED JANUARY 2021, APRIL 2022 AND AUGUST 2022.

2. ALL COORDINATES ARE BASED ON NORTH AMERICAN DATUM 83 (NAD 83) GEORGIA STATE PLANE, WEST ZONE. ALL ELEVATIONS ARE BASED ON THE NORTH AMERICAN DATUM 88 (NAVDS 88).

NOTE:
GEOLOGIC FIELD MAPPING WAS PERFORMED MAY 9-11, 2022 BY STANTEC PERSONNEL.

Location	Latitude	Longitude	Strike	Dip	Dip Direction
F1	34.29086	-85.301828	35	53	SE
F2	34.2897	-85.304391	12	40	NW
F3	34.28952	-85.304233	60	70	SE
F4A	34.28931	-85.303731	60	70	SE
F4B	-	-	280	57	SE
F4C	-	-	275	58	NE
F4D	-	-	2	67	NW
F5A	34.2893	-85.30351	319	63	SW
F5B	-	-	315	68	SW
F5C	-	-	335	70	SW
F5D	-	-	70	81	SE
F5E	-	-	72	65	SE
F6	34.28879	-85.303104	38	35	SE
F7	34.28848	-85.303008	76	34	SE
F8	34.28847	-85.302645	58	26	SE
F9	34.29161	-85.300505	24	51	SE
F10	34.29197	-85.299705	45	53	SE
F11	34.28618	-85.302209	79	8	NW
F12A	34.28866	-85.306419	54	41	SE
F12B	-	-	61	45	SE
F13A	34.28887	-85.305064	44	68	SE

Location	Latitude†	Longitude†	Strike	Dip	Dip Direction
F13A	34.28887	-85.305064	44	68	SE
F13C	-	-	9	52	SE
F13D	-	-	71	63	SE
F14	34.28778	-85.305425	63	52	NW
F15	34.28738	-85.304922	71	51	SE
F16A	34.28682	-85.303443	43	55	SE
F16B	-	-	63	44	SE
F16C	-	-	68	34	SE
F17A	34.28676	-85.302749	26	65	SE
F17B	-	-	58	60	SE
F17C	-	-	23	63	SE
F17D			23	54	SE
F18	34.28963	-85.296982	58	55	SE
F19	34.28932	-85.297083	69	14	SE
F20	34.29058	-85.298634	53	25	SE
F21	34.28631	-85.297607	18	27	SE
F22	34.2898	-85.294764	38	19	SE
F23	34.28786	-85.299848	38	27	SE
F24A	34.28732	-85.306517	55	35	SE
F24B			37	23	SE
F25A	34.28720	-85.300413	46	23	SE
F25B	-	-	60	16	SE

LEGEND

- PROPOSED WASTE LIMITS
- PROPOSED CCR PERMIT LIMITS
- EXISTING PROPERTY LIMITS
- STREAM / EDGE OF WATER
- TREE LINE
- 500 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- STRIKE AND DIP

75 0 150 300 FEET
GRAPHIC SCALE: 1" = 150'
CONTOUR INTERVAL = 2'

REV	DATE	DESCRIPTION	DRN	CHK
0	03/31/23	ISSUED FOR REVIEW	JJM	JBM

GEOLOGIC FIELD MAPPING RESULTS, MAY 2022

PROPOSED PARCEL F AREA

FOR
GEORGIA POWER
HUFFAKER ROAD COAL COMBUSTION
BY-PRODUCTS DISPOSAL FACILITY
FLOYD COUNTY, GEORGIA

JOSHUA BURK MASSEY
GEORGIA REGISTERED PROFESSIONAL GEOLOGIST
No. 2187
7/13/2023

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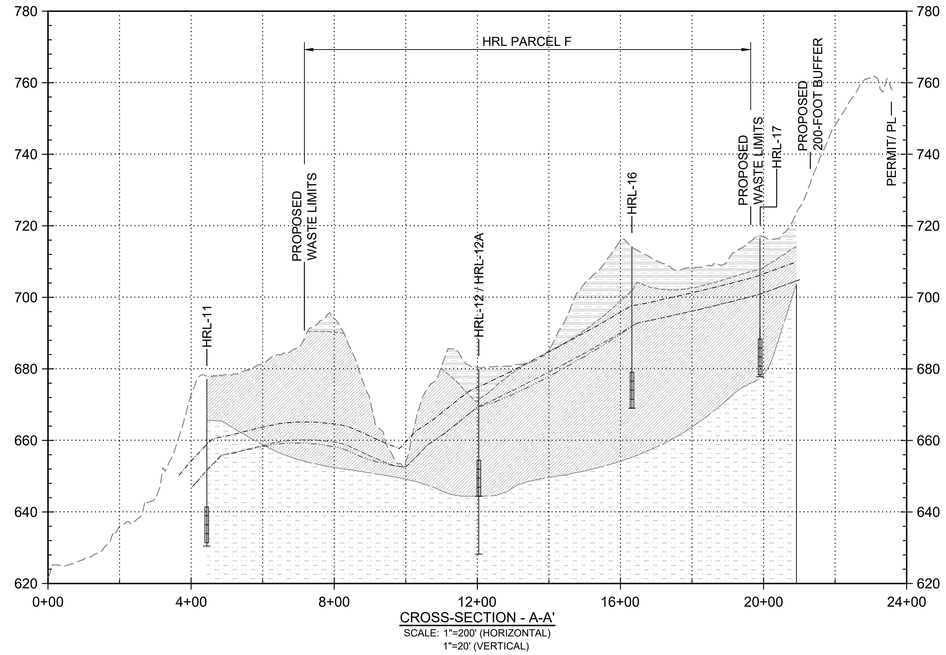
Stantec

PROJ. NO.	175518236
SCALE	1" = 150'
DATE	03/31/23

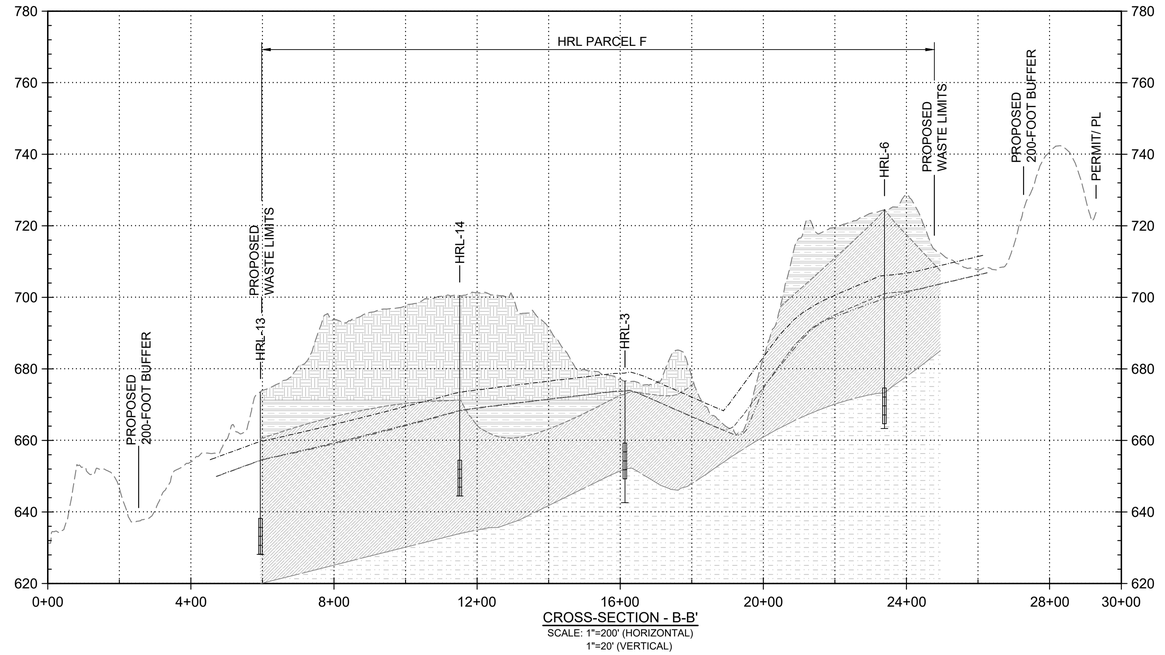
DWG. FIG2-3_GEOL

FIGURE 2-3

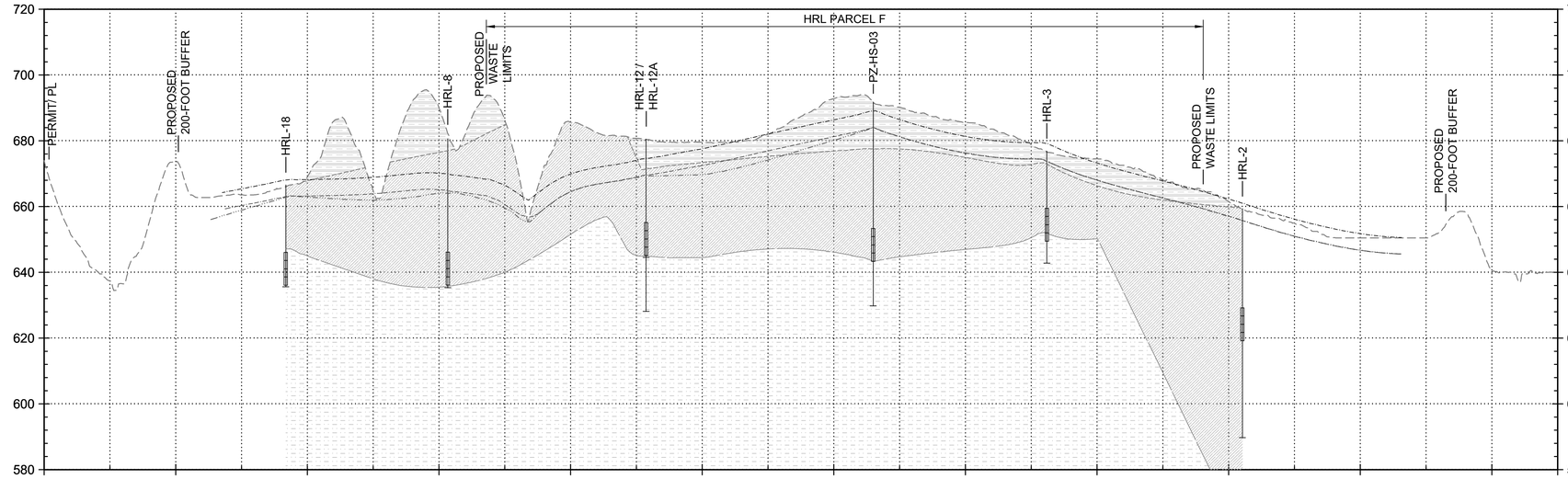
ILLUS\022-PPFSS01\SHARED_PROJECTS\175518236\TECHNICAL_PRODUCTION\DRAWING\PARCEL_F\FIGURES\SAR_FIGURES\SHEET_FILES\FIG2-3_GEOL.DWG



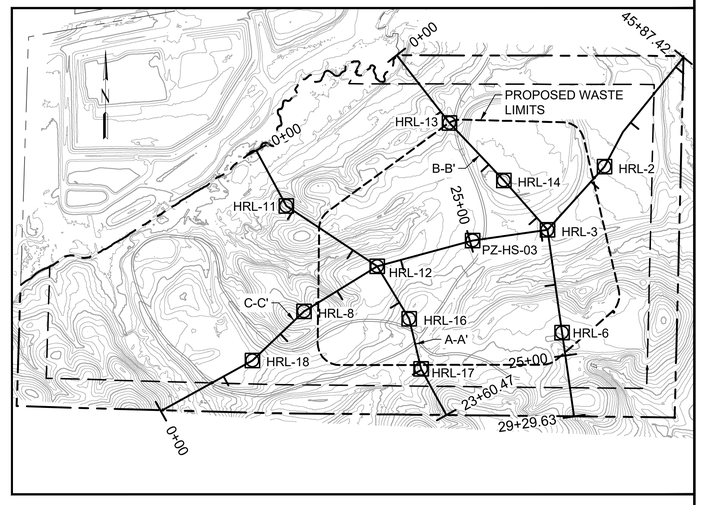
CROSS-SECTION - A-A'
SCALE: 1"=200' (HORIZONTAL)
1"=20' (VERTICAL)



CROSS-SECTION - B-B'
SCALE: 1"=200' (HORIZONTAL)
1"=20' (VERTICAL)



CROSS-SECTION - C-C'
SCALE: 1"=200' (HORIZONTAL)
1"=20' (VERTICAL)



ALIGNMENT PLAN
SCALE: 1"=500'

NOTES
1. HORIZONTAL COORDINATE SYSTEM IS 1983 NORTH AMERICAN DATUM (NAD), GEORGIA STATE PLANE WEST.
2. ELEVATION DATUM IS 1988 NORTH AMERICAN VERTICAL DATUM (NAVD88).
3. VERTICAL EXAGGERATION OF PROFILE VIEWS IS 10X.

CROSS-SECTION LEGEND
- PIEZOMETER SCREEN
- BORING EXTENT
- SOIL FILL
- UNCONSOLIDATED SOIL
- PARTIALLY WEATHERED FLOYD SHALE
- COMPETENT FLOYD SHALE
- EXISTING GROUNDLINE
- TOP OF WEATHERED ROCK
- TOP OF COMPETENT ROCK
- 5-FOOT VERTICAL SEPARATION
- TOP OF COMPOSITE GROUNDWATER
- TOP OF GROUNDWATER (FEBRUARY 8, 2023)

PLAN VIEW LEGEND
- PROPOSED CCR PERMIT LIMITS
- EXISTING PROPERTY LIMITS
- PROPOSED 200 FOOT BUFFER
- PROPOSED WASTE LIMITS
- EXISTING CONTOURS
- PROFILE LINES
- PIEZOMETER

REV	DATE	DESCRIPTION	DRN	CHK
1	12/14/23	ISSUED FOR REVIEW	JM	MV
0	03/31/23	ISSUED FOR REVIEW	JM	MV

GEOLOGIC CROSS-SECTIONS

PROPOSED PARCEL F AREA

FOR
GEORGIA POWER
HUFFAKER ROAD COAL COMBUSTION
BY-PRODUCTS DISPOSAL FACILITY
FLOYD COUNTY, GEORGIA

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PROJ. NO.	175518236
SCALE	AS NOTED
DATE	12/14/2023

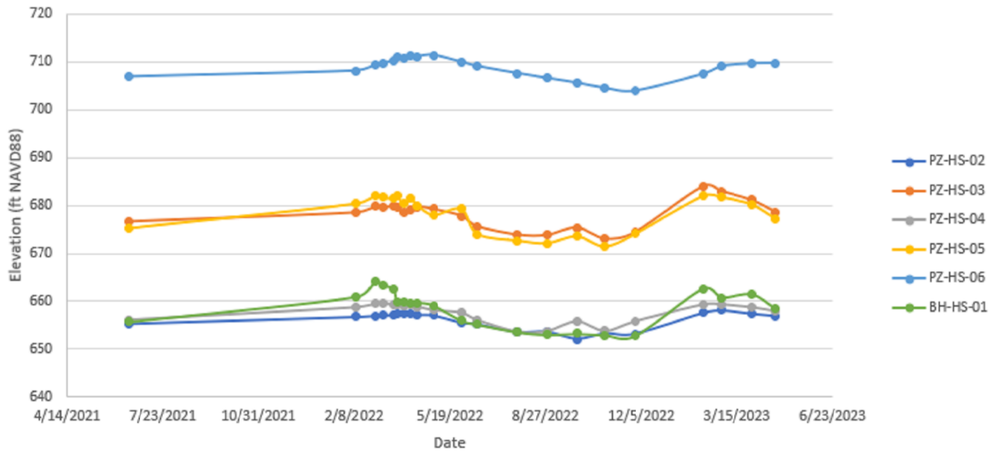
DWG. FIG2-4_XSEC

FIGURE 2-4

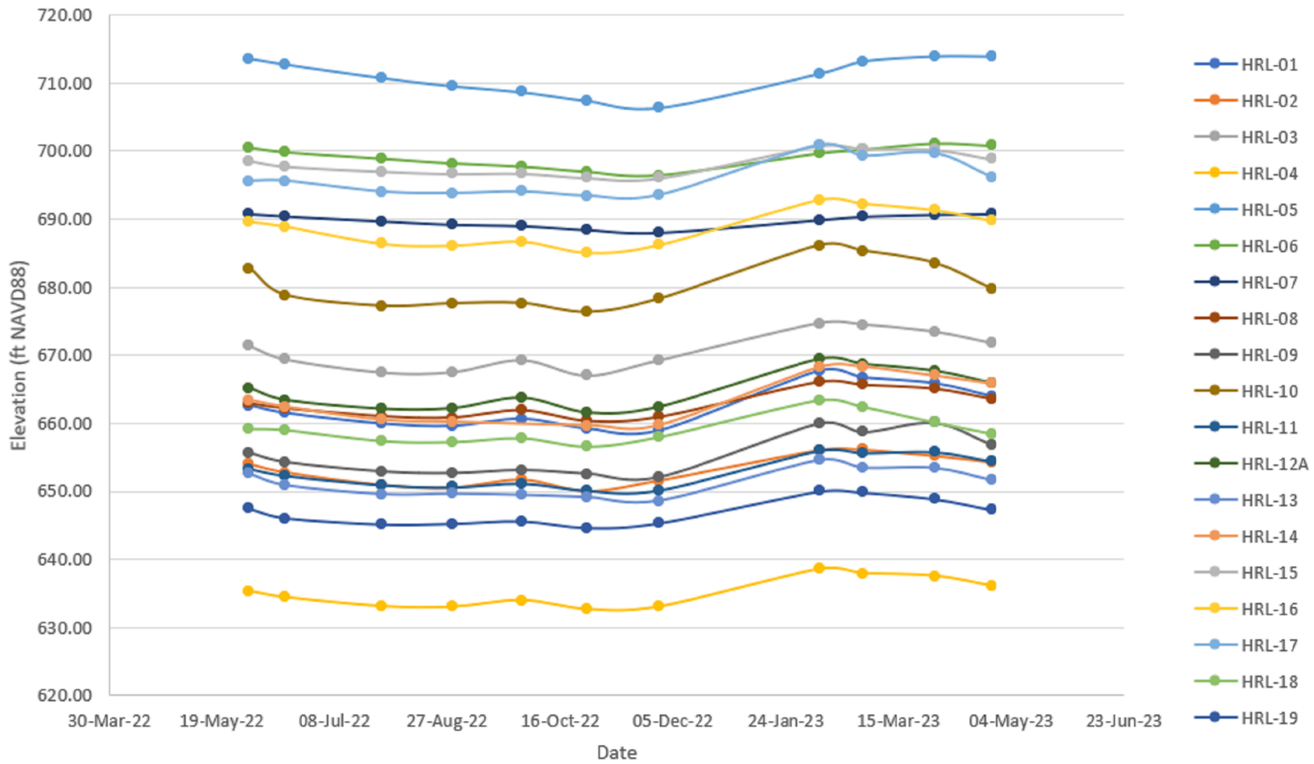
JOSHUA BURK MASSEY No. 2187 CERTIFIED REGISTERED PROFESSIONAL ECOLOGIST
GEORGIA REGISTERED No. PE044787 PROFESSIONAL ENGINEER MATTHEW C. VAUGHAN 12/14/23

\\US0522.PPFSS01\SHARED_PROJECTS\175518236\TECHNICAL_PRODUCTION\DRAWINGS\PARCEL_F\FIGURES\SAR_FIGURES\SHEET_FILES\FIG2-4_XSEC.DWG

2021 PIEZOMETER WATER LEVELS VS. TIME



2022 PIEZOMETER WATER LEVELS VS. TIME



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SOURCE NOTE:

HYDROGRAPHS FOR HUFFAKER ROAD, PARCEL F
PIEZOMETERS

Client/Project
GEORGIA POWER - HUFFAKER RD LANDFILL
FLOYD COUNTY, GA

PARCEL F SAR FIGURES

Project No.
175518236

Title
FIGURE 2-5
HYDROGRAPHS

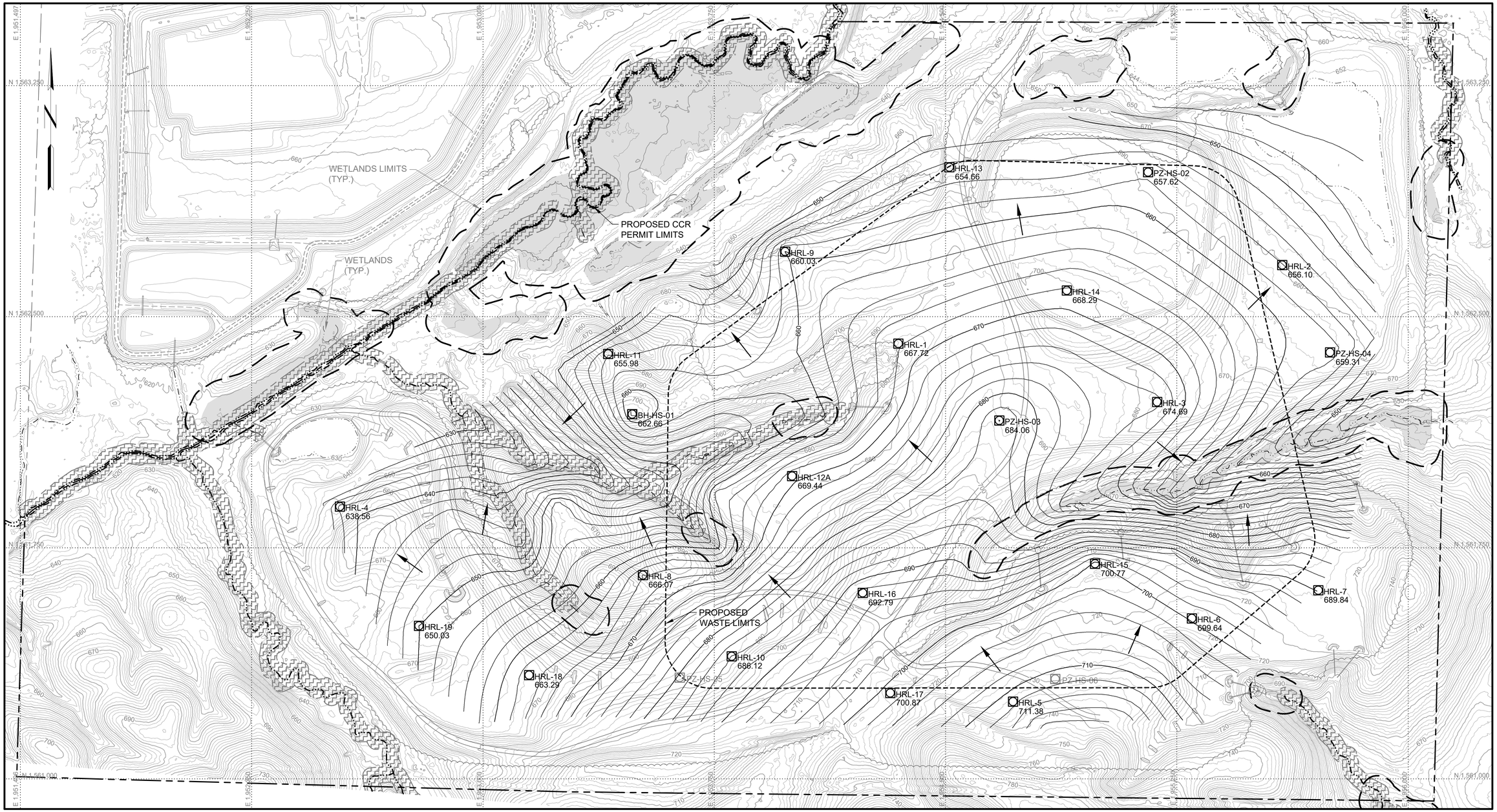
Revision
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Date
03/31/2023

Reference Sheet
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Figure No.
FIG. 2-5

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\\US0522-PPFSS01\SHARED_PROJECTS\175518236\TECHNICAL_PRODUCTION\DRAWING\PARCEL_F\FIGURES\SAR_FIGURES\SHEET_FILES\FIG2-6_PHREATIC_20230208.DWG

NOTES:

1. HORIZONTAL COORDINATE SYSTEM IS 1983 NORTH AMERICAN DATUM (NAD), GEORGIA STATE PLANE WEST.
2. ELEVATION DATUM IS 1988 NORTH AMERICAN VERTICAL DATUM (NAVD88).
3. GAUGING DATA COLLECTED ON FEBRUARY 8, 2023
4. POTENTIOMETRIC CONTOUR INTERVAL = 2 FEET.

LEGEND

- PROPOSED WASTE LIMITS
- PROPOSED CCR PERMIT LIMITS
- EXISTING PROPERTY LIMITS
- 50' WETLAND BUFFER
- WETLAND ACCORDING TO ECO SOLUTIONS REPORT
- 25' STREAM BUFFER ACCORDING TO ECO SOLUTIONS REPORT
- 25' STREAM BUFFER
- EDGE OF WATER
- TREE LINE
- PERENNIAL STREAM
- INTERMITTENT STREAM
- EPHEMERAL STREAM
- 500 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- 600 POTENTIOMETRIC MAJOR CONTOUR
- POTENTIOMETRIC MINOR CONTOUR
- POTENTIOMETRIC SURFACE FLOW DIRECTION
- PIEZOMETER
- PIEZOMETER (NOT USED)

75 0 150 300 FEET

GRAPHIC SCALE: 1" = 150'
CONTOUR INTERVAL = 2'

REV	DATE	DESCRIPTION	DRN	CHK
0	03/31/23	ISSUED FOR REVIEW	JM	MV

SEASONAL HIGH POTENTIOMETRIC SURFACE MAP

PROPOSED PARCEL F AREA

FOR

GEORGIA POWER
HUFFAKER ROAD COAL COMBUSTION BY-PRODUCTS DISPOSAL FACILITY
FLOYD COUNTY, GEORGIA

GEORGIA REGISTERED No. PEO.0041 PROFESSIONAL ENGINEER MATTHEW C. VAUGHAN 7/12/23

JOSHUA BURK WASLEY GEORGIA REGISTERED PROFESSIONAL GEOLOGIST No. 2187 7/13/2023

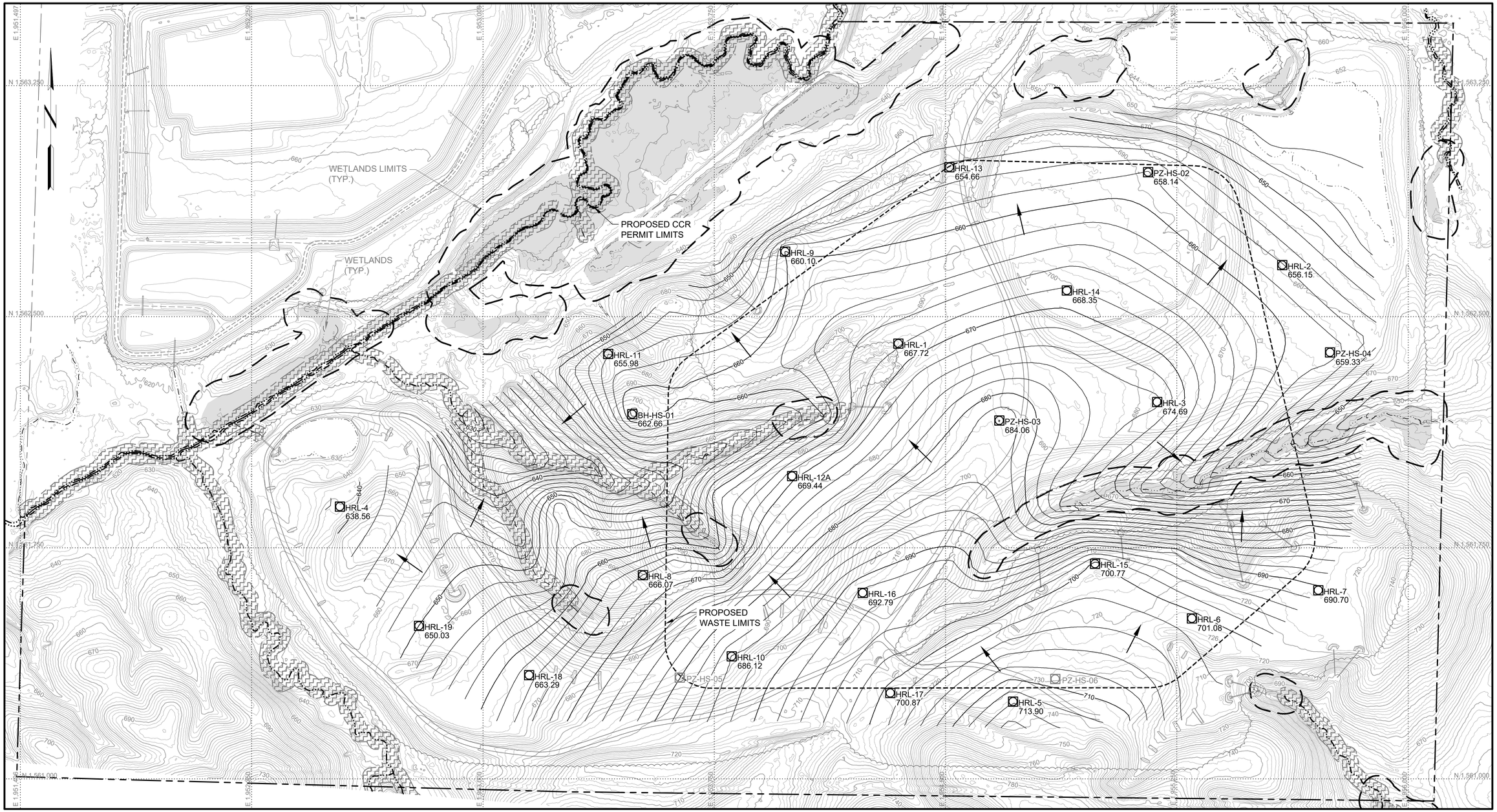
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PROJ. NO.	175518236
SCALE	1" = 150'
DATE	03/31/2023

DWG. FIG2-6_PHREATIC_20230208

FIGURE 2-6



LEGEND

- PROPOSED WASTE LIMITS
- PROPOSED CCR PERMIT LIMITS
- EXISTING PROPERTY LIMITS
- 50' WETLAND BUFFER
- WETLAND ACCORDING TO ECO SOLUTIONS REPORT
- 25' STREAM BUFFER ACCORDING TO ECO SOLUTIONS REPORT
- 25' STREAM BUFFER
- EDGE OF WATER
- TREE LINE
- PERENNIAL STREAM
- INTERMITTENT STREAM
- EPHEMERAL STREAM
- 500 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- 600 POTENTIOMETRIC MAJOR CONTOUR
- POTENTIOMETRIC MINOR CONTOUR
- POTENTIOMETRIC SURFACE FLOW DIRECTION
- PIEZOMETER
- PIEZOMETER (NOT USED)

75 0 150 300 FEET

GRAPHIC SCALE: 1" = 150'
CONTOUR INTERVAL = 2'

NOTES:

1. HORIZONTAL COORDINATE SYSTEM IS 1983 NORTH AMERICAN DATUM (NAD), GEORGIA STATE PLANE WEST.
2. ELEVATION DATUM IS 1988 NORTH AMERICAN VERTICAL DATUM (NAVD88).
3. GAUGING DATA COLLECTED FROM 5/31/22 TO 4/25/23.
4. POTENTIOMETRIC CONTOUR INTERVAL = 2 FEET.

REV	DATE	DESCRIPTION	DRN	CHK
0	11/9/23	ISSUED FOR REVIEW	JM	MV

COMPOSITE SEASONAL HIGH POTENTIOMETRIC SURFACE MAP

PROPOSED PARCEL F AREA

FOR
GEORGIA POWER
HUFFAKER ROAD COAL COMBUSTION BY-PRODUCTS DISPOSAL FACILITY
FLOYD COUNTY, GEORGIA

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Chattanooga, Tennessee 37402-2863
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PROJ. NO.	175518236
SCALE	1" = 150'
DATE	11/9/2023
DWG.	FIG2-7_COMP_PHREATIC

FIGURE 2-7

\\US0522-PPFSS01\SHARED_PROJECTS\175518236\TECHNICAL_PRODUCTION\DRAWING\PARCEL_F\FIGURES\AR_FIGURES\SHEET_FILES\FIG2-7_COMP_PHREATIC.DWG



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Tel: (423) 800-5350
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MAPPING SOURCE NOTE:

2014 USGS NATIONAL SEISMIC HAZARD MAPS FOR THE CONTERMINOUS US.
FTP://HAZARDS.CR.USGS.GOV/WEB/NSHM/CONTERMINOUS/2014/2014PGA2PCT.PDF, 2014

Client/Project
GEORGIA POWER -
HUFFAKER RD LANDFILL
FLOYD COUNTY, GA

PARCEL F SAR FIGURES

Project No.
175518236

Title
FIGURE 2-8
SEISMIC IMPACT
ZONE MAP

Revision
0

Date
11/9/2023

Reference Sheet
-

Figure No.
FIG. 2-8

PlotDate: 2023/11/09 11:16 AM Login: Mckinney, Jimmy
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APPENDIX A
TRACT 2 (PARCEL F) LEGAL DESCRIPTION

Appendix A
Legal Description
Plant Hammond Huffaker Road
CCB Disposal Facility
(aka Boral Bricks, Inc., Tract 2)

All that tract or parcel of land lying and being in Land Lots 79, 80, 101 and 102, 4th District, 4th Section, Floyd County, Georgia and being more particularly described by metes and bounds as follows;

BEGINNING at a 5/8" Rebar with blue cap on the southerly right-of-way line of Norfolk Southern Railroad successor to the Central of Georgia Railroad (100' Right-of-Way), said point having a coordinate value of North 1,563,586.40 and East 1,951,570.62, according to the Georgia State Plane Coordinate System, NAD83(1994), U.S. survey feet, Georgia West Zone and being the **TRUE POINT OF BEGINNING**;

THENCE leaving said Point of Beginning as thus established North 79°53'25" East a distance of 2,633.18 feet to a point on the centerline of a creek;

Thence 867.29 feet along centerline of said creek, having a chord tie line of South 01°59'34" West, 590.47 feet to a point on the centerline of said creek and the common line of Land Lots 80 and 101,

Thence leaving said creek centerline along said land lot line South 89°51'30" East a distance of 200.00 feet to a 1/2" Rebar with Yellow GPC Cap set,

Thence continuing along said land lot line South 89°51'30" East a distance of 1803.96 feet to a 5/8" Rebar found on the common corner of Land Lots 80, 81, 100 and 101,

Thence along the common line of Land Lots 100 and 101, South 01°25'02" West a distance of 1,536.37 feet to a 2-1/2" Open Top Pipe found,

Thence along said land lot line South 01°25'40" West a distance of 989.29 feet to a 1" Axle found at the common corner of Land Lots 100, 101, 116 and 117 and witnessed by a Railroad Iron 0.2 feet found southeast of corner,

Thence along the common line of Land Lots 101 and 116, North 89°24'32" West a distance of 1,409.10 feet to a 1" Axle found witnessed by a 1" Railroad Iron found 0.5 feet south of property line,

Thence continuing along said land lot line North 89°22'56" West a distance of 1,409.59 feet to a 1" Flat Iron found at the common corner of Land Lots 101, 102, 115 and 116 and witnessed by a Railroad Iron found,

Thence along the common line of Land Lots 102 and 115, North 88°25'03" West a distance of 1,777.77 feet to a Railroad Iron found,

Thence leaving said land lot line North 01°50'01" East a distance of 2,580.23 feet to the TRUE POINT OF BEGINNING, said tract containing 283.97 acres, more or less.

Said described property being as more fully shown as Boral Bricks, Inc., Tract 2 on that certain Plat of Survey dated December 13, 2001, last revised August 24, 2005, prepared by the Georgia Power Company Land Department, titled "Plant Hammond Huffaker Road CCB Disposal Facility", bearing the stamp and seal of Donald L. Dryden, Georgia Registered Land Surveyor No. 2800, and designated as GPC Drawing Number H-628-10, which plat is incorporated herein by reference.

Note: Wetlands shown on this plan are under the jurisdiction of the US Army Corps of Engineers. Lot owners may be subject to penalty by law for disturbance to these wetland areas without proper authorization.

Approx. Land Lot Line

Huffaker Road (40' R/W)

Iron Pin Found 5/8" Rebar

Iron Pin Set 1/2" Rebar w/ Yellow GPC Cap

L1 L2 L3 L4 L5

C1 C2 C3 C4

Geodetic Marker
Nail & Cap – Spur1
State Plane Coords.
N 1565605.71
E 1952986.07
Elev. 679.02

30' Wide Access Road Easement

Approx. 4.8 Acres
Temporary Stockpile Easement

New 30' Wide Entrance/Easement

13' Wide Access Road Easement

Dirt Road

Haul Road

S00°34'12"W
407.66'

S03°07'10"E 918.35'

Boral Bricks, Inc.

N/F
Sikes Corp.

NORTH ARROW
Georgia State Plane – West Zone

N03°11'43"E
2045.22'

LL 79

LL 80

Wetlands

C/L Haul Road

Geodetic Marker
1/2" Rebar w/ Cap
Huffaker
State Plane Coords.
N 1564873.76
E 1953128.38
Elev. 670.40

Boral Bricks, Inc.
Tract 1
134.45 Acres

Approx. Land Lot Line

MP 380

Central of Georgia Railroad (100' R/W)

S79°53'25"W

N79°53'25"E
3795.82'

C/L Railroad

Iron Pin Found 5/8" Rebar

Iron Pin Found 5/8" Rebar w/ Blue Cap

2633.18'

30' Wide Access Road Easement

Haul Road

Georgia Power Company Easement for Ingress/Egress

S 01°59'34" W
590.47'
867.29' Along C/L Creek

200.00'

Iron Pin Found 1/2" OTP

Iron Pin Set 1/2" Rebar w/ Yellow GPC Cap

2003.96'
1803.96' Land Lot Line

S89°51'30"E

Approx. Land Lot Line

Geodetic Marker
Nail & Cap – NC14
State Plane Coords.
N 1564363.05
E 1955692.91
Elev. 660.37

Iron Pin Set 1/2" Rebar w/ Yellow GPC Cap

Iron Pin Found 1 1/2" Rod
1.73' East P/L

226.10'

108.65'

Iron Pin Found Axle
0.6' East P/L

199.82'

Iron Pin Found 2 1/2" OTP
0.4' East P/L

398.76'

S01°25'02"W

Iron Pin Found 1" OTP
0.2' East P/L

1536.37'

598.03'

Iron Pin Found 2 1/2" OTP
5.01'

Iron Pin Found 1" OTP
RR Iron Witness Post
0.7' Northeast

Iron Pin Found Spindel Gear
1.2" West P/L

320.04'

72.99'

Iron Pin Found 2 1/2" OTP
0.1 East P/L

196.13'

Iron Pin Found 2 1/2" OTP
0.2' East P/L

400.13'

989.29'

S01°25'40"W

Iron Pin Found 5/8" Rebar

Boral Bricks, Inc.

N/F
Inland Container Corp.

N01°50'01"E
1737.88'

2580.23'

Haul Road

4022.94' Along C/L Creek

Boral Bricks, Inc.
Tract 2
283.97 Acres

Land Lot Line

LL 102

LL 101

Iron Pin Found 1" OTP
RR Iron Witness Post
1.4' East

Iron Pin Found 1 1/4" OTP
RR Iron Witness Post
0.7' Northeast

Iron Pin Found 1 1/4" OTP
RR Iron Witness Post
0.6' Southwest

Iron Pin Found 1" OTP 0.8' South P/L
3" Angle Iron Witness Post
0.3' Southwest

133.71'

Iron Pin Found 1" Flat Iron
RR Iron Witness Post
0.7' Southwest

Iron Pin Found 1" Axle
RR Iron Witness Post
0.5' Southwest

Iron Pin Found RR Iron
26.56' South P/L

Iron Pin Found 1" Axle
RR Iron Witness Post
0.2' Southeast

Iron Pin Found Railroad Track

Land Lot Line
1777.77'
N88°25'03"W
705.00'
1409.59'
N89°22'56"W
570.88'
Land Lot Line
1409.10'
N89°24'32"W

N/F
Vance G. Payne

N/F
John M. Gilreath

N/F
James E. Heard

LOCATION MAP – NOT TO SCALE

PLAT ABBREVIATIONS

IPF – Iron Pin Found
IPS – Iron Pin Set
FPS – Fence Post Set
OTP – Open Top Pipe
CTP – Crimp Top Pipe
Conc. – Concrete
Alumn. – Aluminum
P/L – Property Line
R/W – Right of Way
C/L – Centerline
F/L – Fence line
T/L – Transmission Line
N/F – Now or Formerly
DB – Deed Book
PB – Plat Book
MF – Map File No.

MONUMENTATION LEGEND

- Depicts Iron Pin Set
- Depicts Iron Pin Found
- Depicts Monument Set
- Depicts Monument Found

UTILITY LEGEND

- Electric Manhole
- Electric Meter
- Gas Manhole
- Gas Valve
- Gas Meter
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- Storm Sewer Manhole
- Telephone Manhole
- Water Manhole
- Water Valve
- Water Meter
- Fire Hydrant
- Well
- Power Pole
- Transmission Tower
- Guy Wire

Filed and Recorded in Plat Book , Page ,
This Day of , 19 , at M.

, Clerk

Surveyor: Donald L. Dryden
R.L.S. #2800
241 Ralph McGill Blvd., N.E.
BIN – 10151
Atlanta, Ga. 30308–3374
Phone (404) 506–2839

GEORGIA REGISTERED No. 2800 PROFESSIONAL LAND SURVEYOR DONALD L. DRYDEN

NOTE: THIS PLAT IS NOT VALID FOR RECORDING PURPOSES UNLESS SURVEYOR'S SIGNATURE APPEARS IN ORIGINAL BLACK INK OVER THE STAMP.

In my opinion this plat is a correct representation of the land platted and has been prepared in conformity with minimum standards and requirements of law.

Signed Donald L. Dryden

GPS Control Statement

I, Donald Dryden, declare that this map or report was prepared under my supervision on 10–10–2001 from an actual GPS survey made under my supervision; that this GPS survey was performed to category B specifications; that I used kinematic GPS field procedures. That this survey was performed using Trimble 4700 duel frequency receivers and all coordinates are based on Georgia State Plane – West Zone NAD83/94 and vertical datum of NAVD88.

All stations were double occupied and from this:
The minimum horizontal error is 0.01 feet.
The maximum horizontal error is 0.06 feet.
The average horizontal error is 0.03 feet.
All vertical control is less than 0.12 feet of error.

051384

LINE TABLE		
LINE	BEARING	LENGTH
L1	S80°41'37"E	969.07'
L2	S87°41'59"E	377.98'
L3	N79°10'28"E	363.51'
L4	S89°44'27"E	235.27'
L5	S87°13'01"E	138.72'

CURVE TABLE				
CURVE	RADIUS	LENGTH	CHORD DIRECTION	CHORD
C1	2000.00'	244.56'	S84°11'48"E	244.41'
C2	1500.00'	343.63'	N85°44'14"E	342.88'
C3	3675.00'	710.98'	N84°43'00"E	709.87'
C4	5000.00'	220.25'	S88°28'44"E	220.24'

PLAT CLOSURE STATEMENT

This plat has been calculated for closure and is found to be accurate within one foot in 722305 feet.

GRAPHIC SCALE
400 0 200 400 800 1200
(In Feet)
1 inch = 400 feet

Path – T:\Working\ASH\Hammond\20050613 Huffaker Road CCB Disposal Facility\Huffaker.dwg

No. 2 – Updated Easements & Name – JFW 08/24/05
No. 1 – Added Wetlands – JFW – 4/4/02
REVISION BLOCK

APPROVALS

GEORGIA POWER CO., ATLANTA, GA.
Land Department
Plant Hammond
Huffaker Road CCB Disposal Facility

Land lots 79, 80, 101 and 102 – 4th District – 4th Section
Floyd County, Georgia

DR.	TR.	Checked
JFW		
SCALE		DATE
1" = 400'		Dec. 13, 2001

DRAWING NUMBER

H–628–10

APPENDIX B
2002 SCS SAR AND 2018 ADDENDUM BY STANTEC (COPY)

APPENDIX C
2021 ECOLOGICAL SOLUTIONS HRL PARCEL F ENVIRONMENTAL ASSESSMENT MEMORANDUM

Ecological Solutions Inc.
630 Colonial Park Drive
Suite 200
Roswell, Georgia 30075
P 770.998.7848 • F 770.998.5606
www.ecologicalsolutions.net

E-MAIL MEMORANDUM

Date: January 15, 2021

To: Paul Jones, Georgia Power Company

From: Andrew Croy, Ecological Solutions

Re: Huffaker Land Fill (Cell F Site) - Initial Findings Memo

Ecological Solutions staff conducted an ecology survey on December 8 – 11, 2020 and January 13 – 14, 2021 within approximately 239 acres to support a project known as the Huffaker Land Fill (Cell F Site) project. Field surveys were conducted in order to assess the presence and location of jurisdictional wetlands/waters regulated by the U.S. Army Corps of Engineers (USACE), State Waters potentially requiring a buffer, and potential presence of protected species. As requested, Ecological Solutions has prepared a brief findings summary to identify jurisdictional features, State Waters requiring a buffer, structures within or near wetlands and/or state buffers, and other potential issues associated with the project.

Jurisdictional Features

Streams:

A total of fourteen stream features were identified during the field survey and include the following:

- One ephemeral stream (Ephemeral Stream 01),
- Eight intermittent streams (Intermittent Stream 01 – 08),
- Five perennial streams (Perennial Stream 01 – 05) including Smith Creek (Perennial Stream 01).

Wetlands:

A total of eleven forested wetland systems (Wetland 01 – 11) were identified within the survey area.

Open Waters:

A total of two open waters (Open Water 01 – 02) were identified within the survey area.

Non-Jurisdictional Features

Georgia Power Company (GPC) personnel have stated portions of the survey area fall within a National Pollutant Discharge Elimination System (NPDES) permit maintained for the Huffaker Road Land Fill facility. As a result, the open waters, wetlands, streams, and other features draining into this area are non-jurisdictional as they fall under the NPDES permits held by GPC and are not regulated under Section 404 of the Clean Water Act. This determination is consistent with guidance from GPC for other similar projects including Ash Pond Closure projects at Plant Brach, Plant Wansley, and Plant Scherer.

One non-jurisdictional ephemeral drainage features (Non-jurisdictional Ephemeral Stream 01) was identified within the survey area. Based on field conditions at the time of the survey, this feature does have an OHWM and/or bed and banks but lack groundwater contribution and/or baseflow and flow only during and immediately following rainfall events. This feature was determined to be non-jurisdictional based on their drainage association within the NPDES area. Additionally, the ephemeral stream was determined to be non-jurisdictional based on Ecological Solutions understanding of the new Waters of the U.S. Rule.

One non-jurisdictional intermittent drainage feature (Non-jurisdictional Intermittent Stream 01) was identified during the field survey. Based on field conditions at the time of the survey along with general characteristics of these features, it was determined that the drainage exhibit indicators of intermittent flow. This feature was determined to be non-jurisdictional based on its drainage association within the NPDES area.

Two non-jurisdictional wetlands that drain to the NPDES area were identified during the field survey.

Three non-jurisdictional open waters were identified in the NPDES area during the field survey.

State Waters Requiring a Buffer

Thirteen State Waters requiring a buffer were identified within the survey area and include all intermittent streams, perennial streams and open waters that are unassociated with the NPDES area.

The non-jurisdictional open waters and intermittent stream located in the NPDES area may be exempt from the 25-foot State Buffer. Most recently, all state buffers were removed from non-jurisdictional features within NPDES areas on the Plant Wansley Ash Pond project in 2018. Only the Georgia Environmental Protection Division can make a final determination regarding the 25-foot state buffer of these features.

Protected Species

Federal:

An EDGES (Effects Determination Guidance for Endangered and Threatened Species) was conducted for the specific project area. Review of the United States Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) indicates that the federally listed endangered gray bat (*Myotis grisescens*), the endangered Indiana bat (*Myotis sodalis*), the endangered northern long-eared bat (*Myotis septentrionalis*), the endangered southern clubshell (*Pleurobema decisum*), the endangered southern pigtoe (*Pleurobema georgianum*), the endangered Alabama leather flower (*Clematis socialis*), the endangered Tennessee yellow-eyed grass (*Xyris tennesseensis*), the endangered whorled sunflower (*Helianthus verticillatus*), the threatened Georgia rockcress (*Arabis georgiana*), the threatened large-flowered skullcap (*Scutellaria montana*), and the threatened Mohr's Barbara's buttons (*Marshallia mohrii*) are of potential occurrence in the project vicinity.

Potential foraging and roosting habitat for the gray bat, Indiana bat, and the northern long-eared bat is located within the survey area. The primary suitable habitat within the survey area is the forested areas, including both wetlands and uplands.

Clearing of forested habitat could potentially be required for project implementation. Current protected bat species management guidelines restrict clearing of bat habitat from mid-May to July 31. Should project clearing occur outside of this date range no coordination is required with the USFWS. Review of Georgia's Natural, Archaeological, and Historic Resources GIS (GNAHRGIS) on-line database did not identify any known federal listed bat occurrences within a 3-mile radius of the project. Based on no known captures/occurrences in the project vicinity, should clearing be required during the restricted period, coordination with USFWS is not required but recommended. Further, should the project require a non-notification Section 404 Nationwide Permit (NWP) from the USACE, it is recommended that early coordination be conducted with the USFWS to document compliance with NWP general conditions.

No suitable habitat for the large-flowered skullcap is located within the survey area.

State:

Review of the GNAHRGIS on-line database indicates that the rare Alabama map turtle (*Graptemys pulchra*), the rare northern map turtle (*Graptemys geographica*), the rare Fraser's loosestrife (*Lysimachia fraseri*), the threatened trailing meadowrue (*Thalictrum debile*), the rare purple milkweed (*Asclepias purpurascens*), the rare lined chub (*Hybopsis lineapunctata*), and the endangered royal catchfly (*Silene regia*) have been historically observed within a three-mile radius of the survey area.

Suitable habitat for the Alabama map turtle, the northern map turtle, trailing meadowrue, and lined chub is present within the survey area.

In addition, habitat for the state and federally listed aquatic species is located within larger streams identified in the survey area. No aquatic surveys were conducted in association with the field survey to determine presence or absence of these species. It is not anticipated project implementation will adversely affect any listed aquatic species.

A bald eagle (*Haliaeetus leucocephalus*) was observed within the maintained landfill area.

Should the project require a non-notification Section 404 Nationwide Permit (NWP) from the USACE for jurisdictional activities, it is recommended that early coordination be conducted with the USFWS to document compliance with NWP general conditions for listed species as three EDGES species, all listed bats, are of potential occurrence in the project vicinity. For this early coordination, typically, Georgia Power contacts the appropriate USFWS regional office regarding the project via email. The USFWS provides a response indicating if they have any concerns regarding the relevant EDGES species. If no concerns are raised, then a PCN is usually not submitted as this correspondence documents coordination with the USFWS for the EDGES species of concern. Should USFWS have concerns regarding the EDGES species, then a PCN would be required.

Superfund Sites

No known underground storage tanks or superfund sites are proximal to the survey area.

Protected Lands

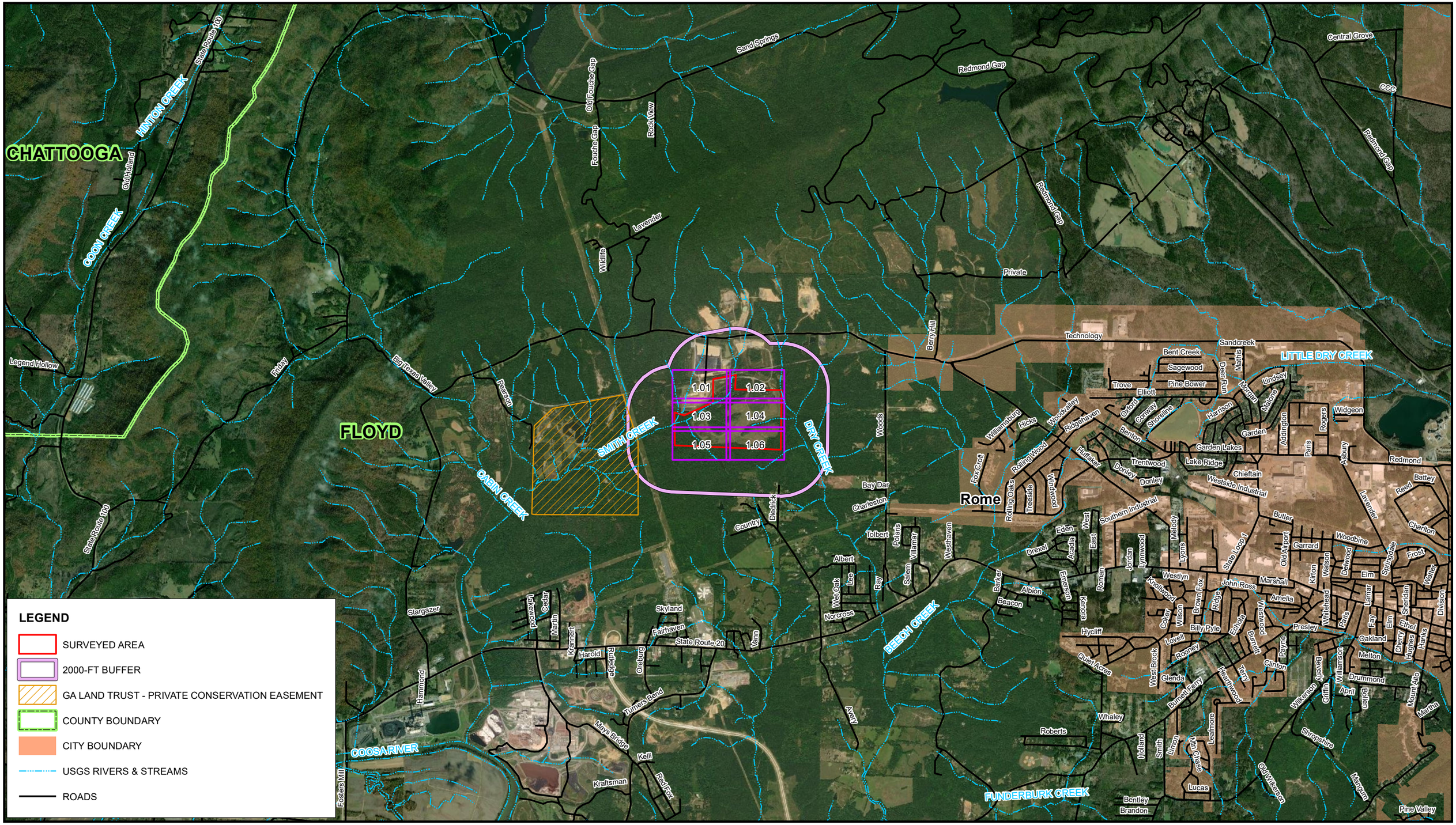
The project corridor is not located within 2,000 feet of a National Wildlife Refuge, National Park Service, National Estuarine Research Reserve, State Park, or mitigation bank.

No Section 10 Waters of the US were located within the survey area.

No trout waters were located within or near the survey area.

Other

No other ecological issues were identified by the field team that could potentially hinder project implementation.


CHATTOOGA
FLOYD
Rome
HINTON CREEK
COON CREEK
SMITH CREEK
DRY CREEK
CABIN CREEK
BEECH CREEK
FUNDERBURK CREEK
LITTLE DRY CREEK
COOSA RIVER
1.01
1.02
1.03
1.04
1.05
1.06
Old Holland
State Route 100
Legend Hollow
Friday
Big Texas Valley
Pearson
Old Fouche Gap
Fouche Gap
Rock View
Sand Springs
Redmond Gap
Central Grove
CCC
Lavender
Wildlife
Private
Berry Hill
Technology
Sandcreek
Bent Creek
Sagewood
Mathis
Deerfield
Lindsey
Trove
Elliott
Pine Bower
Morgan
Malone
Oxford
Conway
Shoreline
Harrison
Widgeon
Rogers
Addington
Garden
Benton
Ridgehaven
Woodvalley
Hicks
Williamsburg
Garden Lakes
Lake Ridge
Paris
Asbury
Redmond
Battey
Reed
Charlton
Lavender
Chieftain
Westside Industrial
Trentwood
Donley
Huffaker
Rolling Wood
Fox Croft
Rolling Oaks
Treeside
Windwood
Southern Industrial
Butler
Garrard
Old Airport
Woodbine
Deswood
Elm
Springdale
Frost
Walker
Division
Sheridan
Lamar
Fay
Ethel
Cherry
Hughes
Hanks
Oakland
Melton
Drummond
Mount Alto
Martha
Williamson
Bryant
Griffin
April
Gallant
Wilkerson
Shropshire
Old Wilkerson
Marquam
Pine Valley
Lucas
Bentley
Brandon
Whaley
Roberts
Holland
Smith
Union
Mc Cosh
Leafmore
Heartwood
Burnett Ferry
Glenda
West Brook
Quiet Acres
Clinton
Payne
Burnett
Eastside
Westwood
Billy Pyle
Hycliff
Cedar
Wilson
Lovell
Rooney
Knollwood
Westlyn
Brown Fox
Ridge
John Ross
Marshall
Amelia
Presley
Kirton
Watson
Whitehead
Paris
Jordan
Lynnwood
Melody
Lyons
State Loop 1
Eden
Acadia
East
West
Drexel
Emerson
Kenroe
Roman
Barker
Albion
Beacon
Bay Dar
Charleston
Tolbert
Polaris
Villamar
Westhaven
Salem
Ray
Lee
Wet Oak
Albert
Norcross
Country
Diedrick
Woods
Williamsburg
Hicks
Fox Croft
Rolling Oaks
Treeside
Windwood
Stargazer
Cedar
Lakewood
Martin
Kramert
Harold
Richedge
Oreburg
Fairhaven
Skyland
State Route 20
Vann
Hammond
Turners Bend
Mays Bridge
Kelli
Red Fox
Kraftsman
Foster Mill
Avery
Dry Creek
Bay Dar
Charleston
Tolbert
Polaris
Villamar
Westhaven
Salem
Ray
Lee
Wet Oak
Albert
Norcross
Country
Diedrick
Woods
Williamsburg
Hicks
Fox Croft
Rolling Oaks
Treeside
Windwood
Rolling Wood
Huffaker
Donley
Trentwood
Lake Ridge
Garden Lakes
Garden
Benton
Ridgehaven
Woodvalley
Oxford
Conway
Shoreline
Harrison
Widgeon
Rogers
Addington



Ecological Solutions Inc.

0 100 200 400 Feet

GEORGIA POWER COMPANY
HUFFAKER LAND FILL
(CELL F SITE)
FLOYD COUNTY, GA

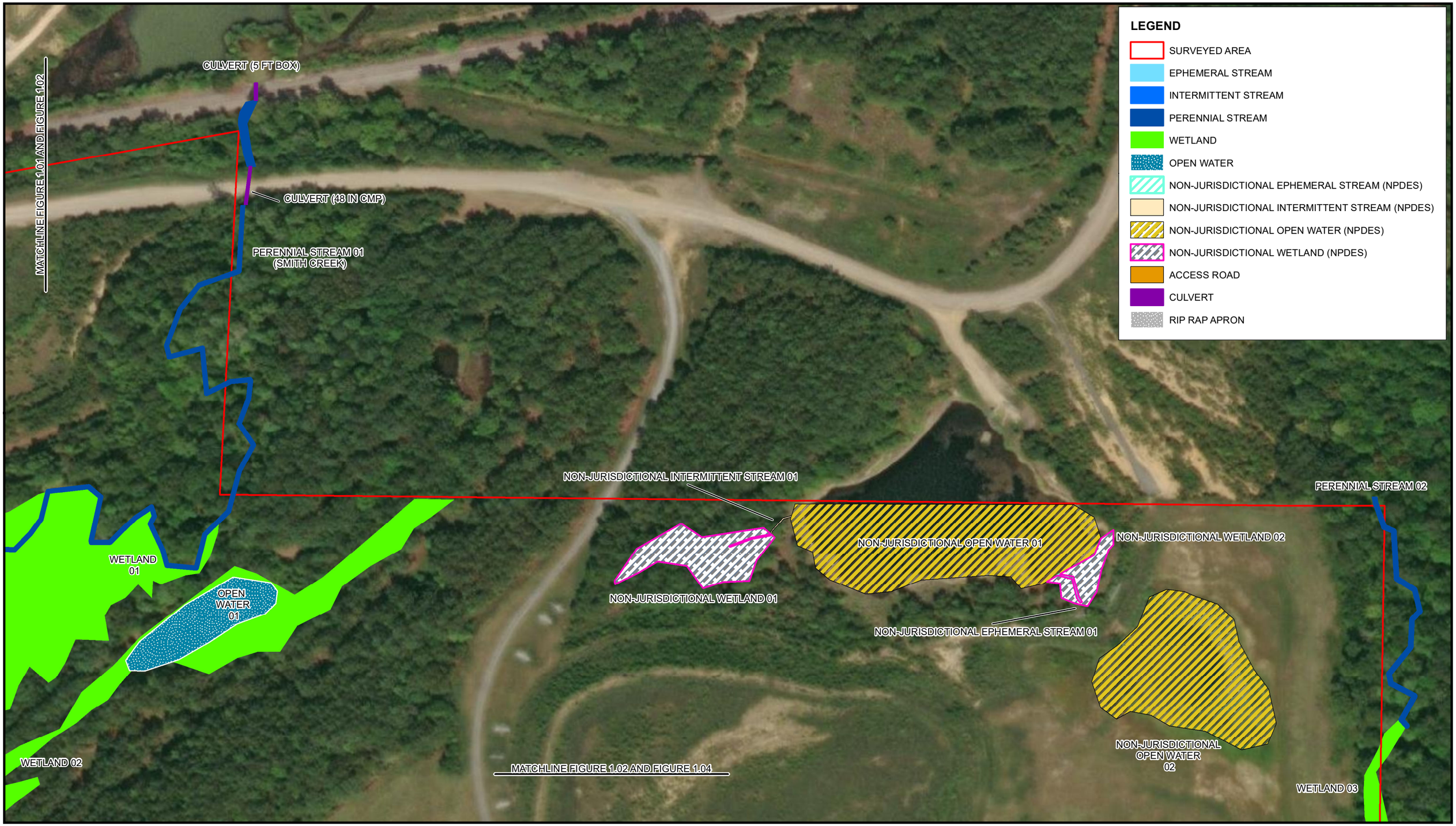
ENVIRONMENTAL SURVEY FINDINGS

N
W E
S

Georgia Power

JANUARY 2021
20236-750

FIGURE 1.01



Ecological Solutions Inc.

0 100 200 400 Feet

GEORGIA POWER COMPANY
HUFFAKER LAND FILL
(CELL F SITE)
FLOYD COUNTY, GA

ENVIRONMENTAL SURVEY FINDINGS

N
W E
S

Georgia Power

JANUARY 2021
20236-750

FIGURE 1.02

LEGEND

- SURVEYED AREA
- EPHEMERAL STREAM
- INTERMITTENT STREAM
- PERENNIAL STREAM
- WETLAND
- OPEN WATER
- NON-JURISDICTIONAL EPHEMERAL STREAM (NPDES)
- NON-JURISDICTIONAL INTERMITTENT STREAM (NPDES)
- NON-JURISDICTIONAL OPEN WATER (NPDES)
- NON-JURISDICTIONAL WETLAND (NPDES)
- ACCESS ROAD
- CULVERT
- RIP RAP APRON

MATCHLINE FIGURE 1.01 AND FIGURE 1.03

ACCESS ROAD 01

WETLAND 02

OPEN WATER 02

WETLAND 01

INTERMITTENT STREAM 01

CULVERT (36 IN PLASTIC)

CULVERT (18 IN CMP)

PERENNIAL STREAM 01 (SMITH CREEK)

CULVERT (48 IN CMP)

ACCESS ROAD 02

EPHEMERAL STREAM 01

WETLAND 04

ACCESS ROAD 03

PERENNIAL STREAM 03

CULVERT (36 IN CMP)

WETLAND 05

INTERMITTENT STREAM 04

INTERMITTENT STREAM 05

NON-JURISDICTIONAL OPEN WATER 03

PERENNIAL STREAM 01 (SMITH CREEK)

CULVERT (48 IN CMP)

INTERMITTENT STREAM 02

MATCHLINE FIGURE 1.03 AND FIGURE 1.04

PERENNIAL STREAM 04

INTERMITTENT STREAM 03

INTERMITTENT STREAM 07

WETLAND 07

MATCHLINE FIGURE 1.03 AND FIGURE 1.05

Ecological Solutions Inc.

0 100 200 400 Feet

GEORGIA POWER COMPANY
HUFFAKER LAND FILL
(CELL F SITE)
FLOYD COUNTY, GA

ENVIRONMENTAL SURVEY FINDINGS

N W E S

Georgia Power

JANUARY 2021
20236-750

FIGURE 1.03

LEGEND

- SURVEYED AREA
- EPHEMERAL STREAM
- INTERMITTENT STREAM
- PERENNIAL STREAM
- WETLAND
- OPEN WATER
- NON-JURISDICTIONAL EPHEMERAL STREAM (NPDES)
- NON-JURISDICTIONAL INTERMITTENT STREAM (NPDES)
- NON-JURISDICTIONAL OPEN WATER (NPDES)
- NON-JURISDICTIONAL WETLAND (NPDES)
- ACCESS ROAD
- CULVERT
- RIP RAP APRON

MATCHLINE FIGURE 1.02 AND FIGURE 1.04

NON-JURISDICTIONAL OPEN WATER 02

WETLAND 03

MATCHLINE FIGURE 1.03 AND FIGURE 1.04

INTERMITTENT STREAM 02

WETLAND 08

WETLAND 07

WETLAND 09

INTERMITTENT STREAM 08

WETLAND 09

MATCHLINE FIGURE 1.04 AND FIGURE 1.06

Ecological Solutions Inc.

0 100 200 400 Feet

GEORGIA POWER COMPANY
HUFFAKER LAND FILL
(CELL F SITE)
FLOYD COUNTY, GA

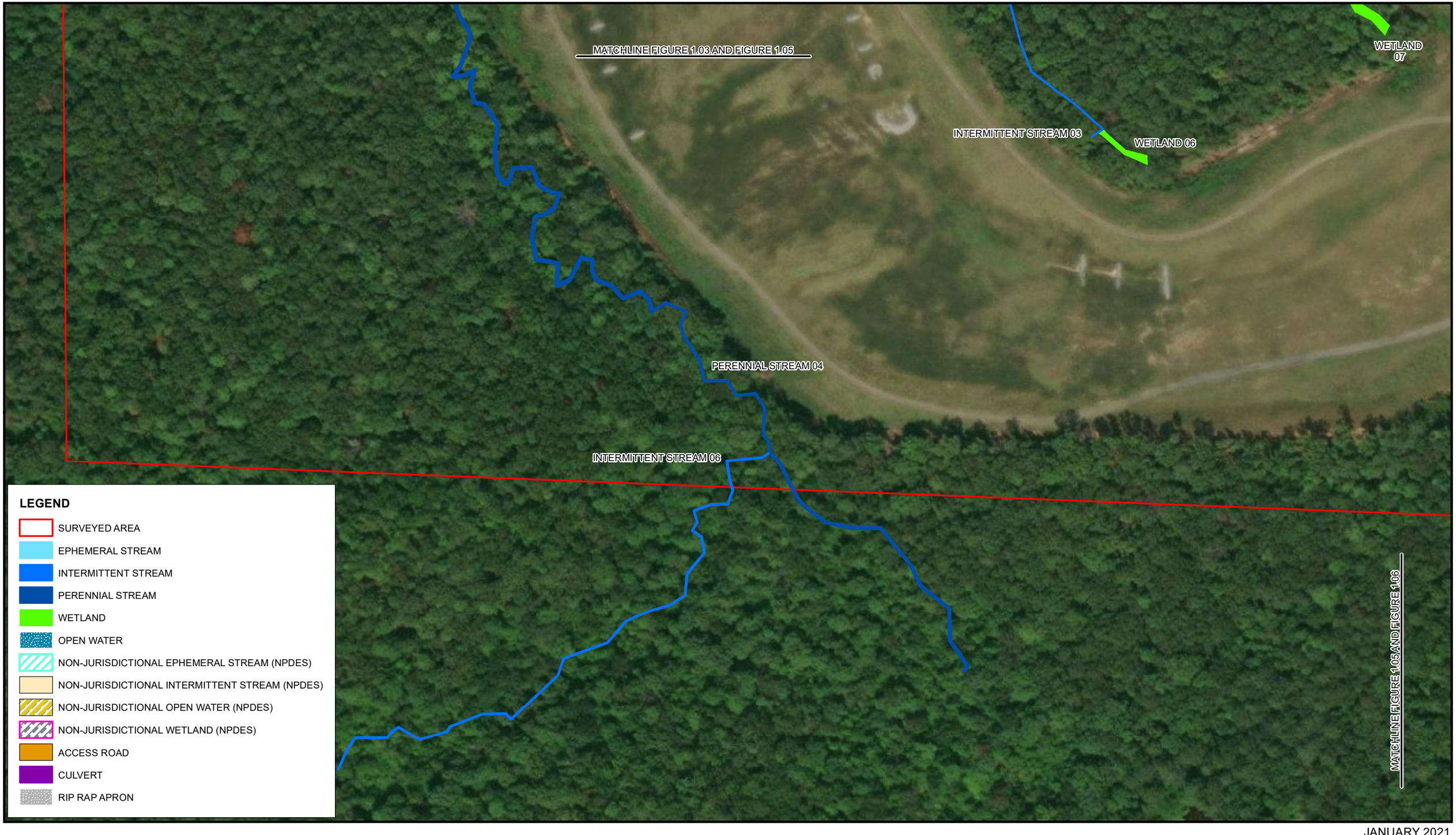
ENVIRONMENTAL SURVEY FINDINGS

N W E S

Georgia Power

JANUARY 2021
20236-750

FIGURE 1.04



Ecological Solutions Inc.

0 100 200 400 Feet

GEORGIA POWER COMPANY
HUFFAKER LAND FILL
(CELL F SITE)
FLOYD COUNTY, GA

ENVIRONMENTAL SURVEY FINDINGS

N
W E
S

Georgia Power

JANUARY 2021
20236-750

FIGURE 1.05



Ecological Solutions Inc.

0 100 200 400 Feet

GEORGIA POWER COMPANY
HUFFAKER LAND FILL
(CELL F SITE)
FLOYD COUNTY, GA

ENVIRONMENTAL SURVEY FINDINGS

N
W E
S

Georgia Power

JANUARY 2021
20236-750

FIGURE 1.06

APPENDIX D
EDR GEOCHECK

Huffaker Road Landfill
2181 Huffaker Road
Rome, GA 30165

Inquiry Number: 7248882.1s
February 09, 2023

The EDR GeoCheck® Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Physical Setting Source Summary ---- **A-2**

Physical Setting Source Map ---- **A-7**

Physical Setting Source Map Findings ---- **A-8**

Physical Setting Source Records Searched ---- **PSGR-1**

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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GEOCHECK® - PHYSICAL SETTING SOURCE REPORT

TARGET PROPERTY ADDRESS

HUFFAKER ROAD LANDFILL
2181 HUFFAKER ROAD
ROME, GA 30165

TARGET PROPERTY COORDINATES

Latitude (North):	34.289608 - 34ˆ 17’ 22.59’’
Longitude (West):	85.301778 - 85ˆ 18’ 6.40’’
Universal Tranverse Mercator:	Zone 16
UTM X (Meters):	656304.9
UTM Y (Meters):	3795377.8
Elevation:	701 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34085-C3 ROCK MOUNTAIN, GA
Version Date:	1985

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

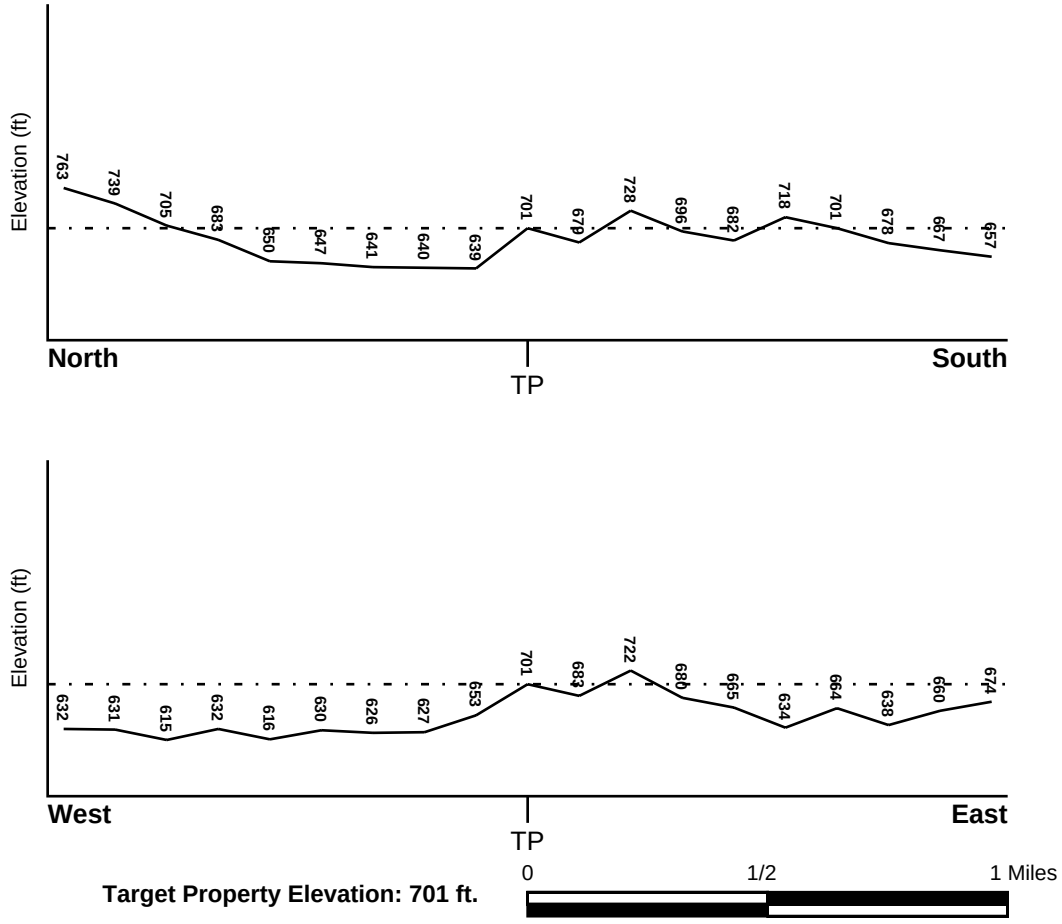
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General NW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
13115C0170E	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
13115C0165E	FEMA FIRM Flood data
13115C0164E	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
ROCK MOUNTAIN	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Era:	Paleozoic
System:	Mississippian
Series:	Mississippian
Code:	M *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name:	TOWNLEY
Soil Surface Texture:	silt loam
Hydrologic Group:	Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.
Soil Drainage Class:	Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel:	MODERATE
Depth to Bedrock Min:	> 20 inches
Depth to Bedrock Max:	> 40 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	6 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 2.00 Min: 0.60	Max: 5.50 Min: 3.60
2	6 inches	22 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.20 Min: 0.06	Max: 5.50 Min: 3.60
3	22 inches	35 inches	variable	Not reported	Not reported	Max: 0.20 Min: 0.00	Max: 0.00 Min: 0.00
4	35 inches	40 inches	weathered bedrock	Not reported	Not reported	Max: 0.06 Min: 0.00	Max: 0.00 Min: 0.00

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures: cherty - silt loam
channery - silt loam
loam
fine sandy loam
cherty - loam

Surficial Soil Types: cherty - silt loam
channery - silt loam
loam
fine sandy loam
cherty - loam

Shallow Soil Types: silt loam
sandy clay loam
clay
silty clay

Deeper Soil Types: cherty - clay
cherty - clay loam
clay
loam
clay loam
cherty - silty clay loam

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	2.000
Federal FRDS PWS	2.000
State Database	2.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS40000267016	1/2 - 1 Mile SSE
B3	USGS40000267075	1 - 2 Miles ENE
C5	USGS40000267052	1 - 2 Miles East
D8	USGS40000267041	1 - 2 Miles West
E10	USGS40000267007	1 - 2 Miles ESE
F12	USGS40000266986	1 - 2 Miles South
F14	USGS40000266985	1 - 2 Miles South
G15	USGS40000267056	1 - 2 Miles West
H18	USGS40000266980	1 - 2 Miles SSE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

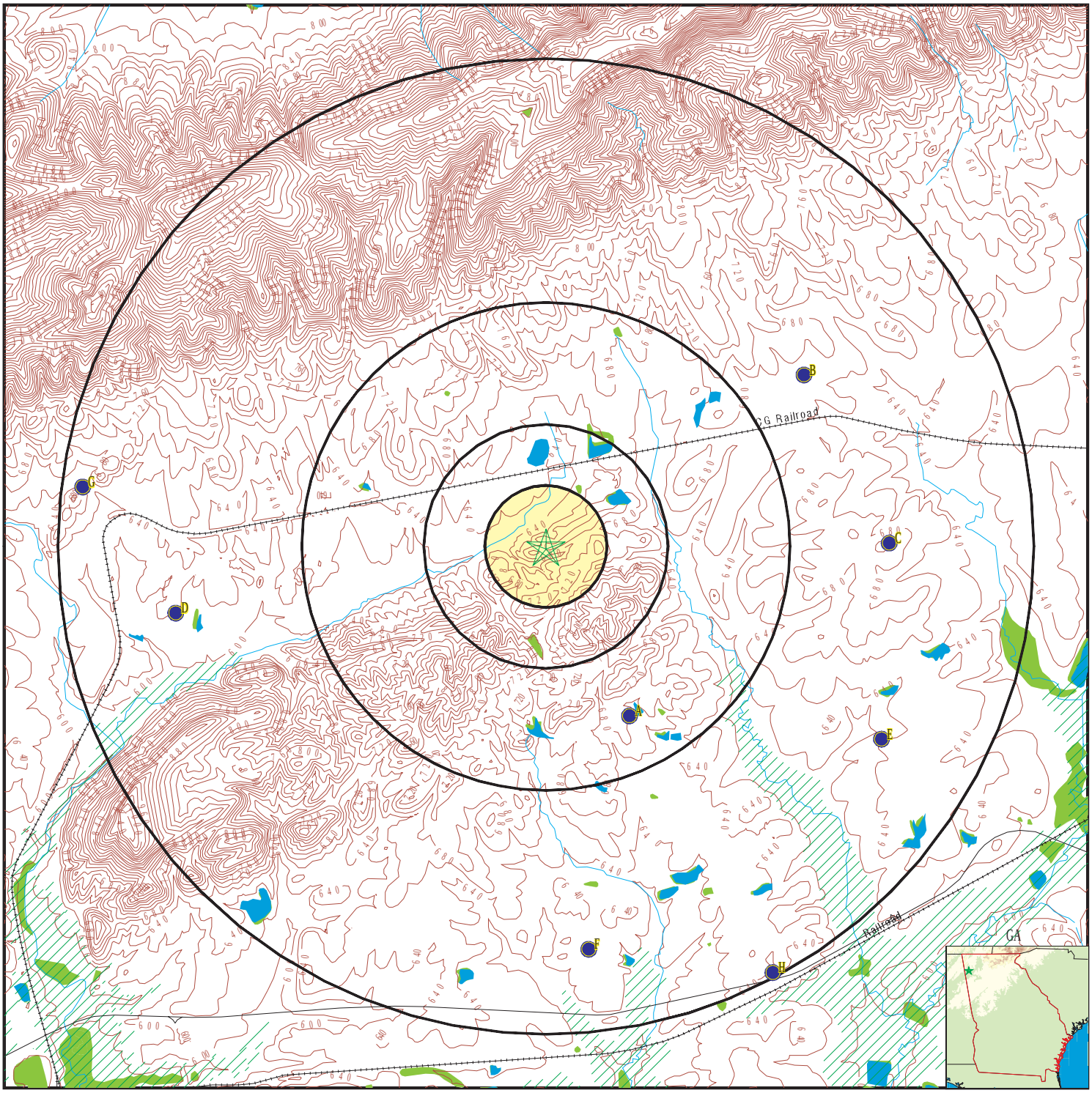
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	0000004204	1/2 - 1 Mile SSE
B4	0000004222	1 - 2 Miles ENE
C6	0000004215	1 - 2 Miles East
D7	0000004210	1 - 2 Miles West
E9	0000004202	1 - 2 Miles ESE
F11	0000004190	1 - 2 Miles South
F13	0000004189	1 - 2 Miles South
G16	0000004217	1 - 2 Miles West
H17	0000004187	1 - 2 Miles SSE

PHYSICAL SETTING SOURCE MAP - 7248882.1s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Wildlife Areas

SITE NAME:	Huffaker Road Landfill	CLIENT:	Wenck
ADDRESS:	2181 Huffaker Road Rome GA 30165	CONTACT:	Josh Massey
		INQUIRY #:	7248882.1s
LAT/LONG:	34.289608 / 85.301778	DATE:	February 09, 2023 1:33 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
SSE
1/2 - 1 Mile
Lower

FED USGS **USGS40000267016**

Organization ID:	USGS-GA	Organization Name:	USGS Georgia Water Science Center
Monitor Location:	03JJ25	Type:	Well
Description:	W.F. RILEY	HUC:	03150105
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Valley and Ridge aquifers	Formation Type:	Floyd Shale
Aquifer Type:	Not Reported	Construction Date:	1957
Well Depth:	71	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

Ground water levels,Number of Measurements:	1	Level reading date:	1957
Feet below surface:	20	Feet to sea level:	Not Reported
Note:	Not Reported		

A2
SSE
1/2 - 1 Mile
Lower

GA WELLS **0000004204**

County code:	115	Well num:	03JJ25
Remarks:	W.F. RILEY	Lat:	341646
Lon:	0851745	Latlon datum:	NAD27
Alt:	680	Alt datum:	NGVD29
Depth:	71	Depth to casing:	29
Casing dia:	6	Casing matl:	Not Reported
Depth to top:	20	Depth to bot:	71
Opening type:	X	Constr date:	1957
Discharge:	Not Reported	Prim use:	H
Aquifer code:	331FLYD	Edr id:	0000004204

B3
ENE
1 - 2 Miles
Lower

FED USGS **USGS40000267075**

Organization ID:	USGS-GA	Organization Name:	USGS Georgia Water Science Center
Monitor Location:	03JJ29	Type:	Well
Description:	OCONEE CLAY PRODUCTS CO.	HUC:	03150105
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Valley and Ridge aquifers	Formation Type:	Floyd Shale
Aquifer Type:	Not Reported	Construction Date:	1954
Well Depth:	74	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

Ground water levels,Number of Measurements:	1	Level reading date:	1954
Feet below surface:	30	Feet to sea level:	Not Reported
Note:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

B4
ENE
1 - 2 Miles
Lower

GA WELLS **0000004222**

County code:	115	Well num:	03JJ29
Remarks:	OCONEE CLAY PRODUCTS CO.	Lat:	341759
Lon:	0851700	Latlon datum:	NAD27
Alt:	670	Alt datum:	NGVD29
Depth:	74	Depth to casing:	21
Casing dia:	6	Casing matl:	Not Reported
Depth to top:	21	Depth to bot:	74
Opening type:	X	Constr date:	1954
Discharge:	9.0	Prim use:	H
Aquifer code:	331FLYD	Edr id:	0000004222

C5
East
1 - 2 Miles
Lower

FED USGS **USGS40000267052**

Organization ID:	USGS-GA	Organization Name:	USGS Georgia Water Science Center
Monitor Location:	03JJ27	Type:	Well
Description:	W.H. WOOD	HUC:	03150105
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Valley and Ridge aquifers	Formation Type:	Floyd Shale
Aquifer Type:	Not Reported	Construction Date:	1957
Well Depth:	79	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

Ground water levels,Number of Measurements:	1	Level reading date:	1957
Feet below surface:	30	Feet to sea level:	Not Reported
Note:	Not Reported		

C6
East
1 - 2 Miles
Lower

GA WELLS **0000004215**

County code:	115	Well num:	03JJ27
Remarks:	W.H. WOOD	Lat:	341723
Lon:	0851638	Latlon datum:	NAD27
Alt:	695	Alt datum:	NGVD29
Depth:	79	Depth to casing:	40
Casing dia:	6	Casing matl:	Not Reported
Depth to top:	40	Depth to bot:	79
Opening type:	X	Constr date:	1957
Discharge:	Not Reported	Prim use:	H
Aquifer code:	331FLYD	Edr id:	0000004215

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

D7
West
1 - 2 Miles
Lower

GA WELLS **0000004210**

County code:	115	Well num:	03JJ32
Remarks:	CLAUDE H. HAIRE	Lat:	341708
Lon:	0851942	Latlon datum:	NAD27
Alt:	620	Alt datum:	NGVD29
Depth:	121.	Depth to casing:	35
Casing dia:	6	Casing matl:	Not Reported
Depth to top:	35	Depth to bot:	121
Opening type:	X	Constr date:	1960
Discharge:	9.	Prim use:	H
Aquifer code:	331FLYD	Edr id:	0000004210

D8
West
1 - 2 Miles
Lower

FED USGS **USGS40000267041**

Organization ID:	USGS-GA	Organization Name:	USGS Georgia Water Science Center
Monitor Location:	03JJ32	Type:	Well
Description:	CLAUDE H. HAIRE	HUC:	03150105
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Valley and Ridge aquifers	Formation Type:	Floyd Shale
Aquifer Type:	Not Reported	Construction Date:	1960
Well Depth:	121	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

Ground water levels,Number of Measurements:	1	Level reading date:	1960
Feet below surface:	8	Feet to sea level:	Not Reported
Note:	Not Reported		

E9
ESE
1 - 2 Miles
Lower

GA WELLS **0000004202**

County code:	115	Well num:	03JJ28
Remarks:	ROY MYERS	Lat:	341641
Lon:	0851640	Latlon datum:	NAD27
Alt:	640	Alt datum:	NGVD29
Depth:	75	Depth to casing:	50
Casing dia:	6	Casing matl:	Not Reported
Depth to top:	50	Depth to bot:	75
Opening type:	X	Constr date:	1955
Discharge:	Not Reported	Prim use:	U
Aquifer code:	331FLYD	Edr id:	0000004202

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

E10
ESE
1 - 2 Miles
Lower

FED USGS **USGS40000267007**

Organization ID:	USGS-GA	Organization Name:	USGS Georgia Water Science Center
Monitor Location:	03JJ28	Type:	Well
Description:	ROY MYERS	HUC:	03150105
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Valley and Ridge aquifers	Formation Type:	Floyd Shale
Aquifer Type:	Not Reported	Construction Date:	1955
Well Depth:	75	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

Ground water levels,Number of Measurements:	1	Level reading date:	1955
Feet below surface:	12	Feet to sea level:	Not Reported
Note:	Not Reported		

F11
South
1 - 2 Miles
Lower

GA WELLS **0000004190**

County code:	115	Well num:	03JJ22
Remarks:	OLIVER MONTAGUE	Lat:	341556
Lon:	0851759	Latlon datum:	NAD27
Alt:	635	Alt datum:	NGVD29
Depth:	150	Depth to casing:	21
Casing dia:	6	Casing matl:	Not Reported
Depth to top:	21	Depth to bot:	150
Opening type:	X	Constr date:	1959
Discharge:	13.3	Prim use:	Not Reported
Aquifer code:	331FLYD	Edr id:	0000004190

F12
South
1 - 2 Miles
Lower

FED USGS **USGS40000266986**

Organization ID:	USGS-GA	Organization Name:	USGS Georgia Water Science Center
Monitor Location:	03JJ22	Type:	Well
Description:	OLIVER MONTAGUE	HUC:	03150105
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Valley and Ridge aquifers	Formation Type:	Floyd Shale
Aquifer Type:	Not Reported	Construction Date:	1959
Well Depth:	150	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

Ground water levels,Number of Measurements:	1	Level reading date:	1959
Feet below surface:	30	Feet to sea level:	Not Reported
Note:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

F13
South
1 - 2 Miles
Lower

GA WELLS **0000004189**

County code:	115	Well num:	03JJ21
Remarks:	GEORGE BENTON	Lat:	341556
Lon:	0851752	Latlon datum:	NAD27
Alt:	630.0	Alt datum:	NGVD29
Depth:	80.0	Depth to casing:	21.0
Casing dia:	6.0	Casing matl:	Not Reported
Depth to top:	21.0	Depth to bot:	80.0
Opening type:	X	Constr date:	1959
Discharge:	13.3	Prim use:	U
Aquifer code:	331FLYD	Edr id:	0000004189

F14
South
1 - 2 Miles
Lower

FED USGS **USGS40000266985**

Organization ID:	USGS-GA	Organization Name:	USGS Georgia Water Science Center
Monitor Location:	03JJ21	Type:	Well
Description:	GEORGE BENTON	HUC:	03150105
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Valley and Ridge aquifers	Formation Type:	Floyd Shale
Aquifer Type:	Not Reported	Construction Date:	1959
Well Depth:	80	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

Ground water levels,Number of Measurements:	1	Level reading date:	1959
Feet below surface:	30.0	Feet to sea level:	Not Reported
Note:	Not Reported		

G15
West
1 - 2 Miles
Lower

FED USGS **USGS40000267056**

Organization ID:	USGS-GA	Organization Name:	USGS Georgia Water Science Center
Monitor Location:	03JJ33	Type:	Well
Description:	O.S. UNDERWOOD	HUC:	03150105
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Valley and Ridge aquifers	Formation Type:	Floyd Shale
Aquifer Type:	Not Reported	Construction Date:	1951
Well Depth:	68.5	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

G16
West
1 - 2 Miles
Lower

GA WELLS **0000004217**

County code:	115	Well num:	03JJ33
Remarks:	O.S. UNDERWOOD	Lat:	341735
Lon:	0852006	Latlon datum:	NAD27
Alt:	655	Alt datum:	NGVD29
Depth:	68.5	Depth to casing:	Not Reported
Casing dia:	Not Reported	Casing matl:	Not Reported
Depth to top:	Not Reported	Depth to bot:	Not Reported
Opening type:	Not Reported	Constr date:	1951
Discharge:	5.8	Prim use:	H
Aquifer code:	331FLYD	Edr id:	0000004217

H17
SSE
1 - 2 Miles
Lower

GA WELLS **0000004187**

County code:	115	Well num:	03JJ24
Remarks:	HARDIN AND HOLDEN	Lat:	341551
Lon:	0851708	Latlon datum:	NAD27
Alt:	638	Alt datum:	NGVD29
Depth:	65	Depth to casing:	20
Casing dia:	6	Casing matl:	Not Reported
Depth to top:	20	Depth to bot:	65
Opening type:	X	Constr date:	1956
Discharge:	Not Reported	Prim use:	C
Aquifer code:	331FLYD	Edr id:	0000004187

H18
SSE
1 - 2 Miles
Lower

FED USGS **USGS40000266980**

Organization ID:	USGS-GA	Organization Name:	USGS Georgia Water Science Center
Monitor Location:	03JJ24	Type:	Well
Description:	HARDIN AND HOLDEN	HUC:	03150105
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Valley and Ridge aquifers	Formation Type:	Floyd Shale
Aquifer Type:	Not Reported	Construction Date:	1956
Well Depth:	65	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

Ground water levels,Number of Measurements:	1	Level reading date:	1956
Feet below surface:	15	Feet to sea level:	Not Reported
Note:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for FLOYD County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for FLOYD COUNTY, GA

Number of sites tested: 14

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.586 pCi/L	93%	7%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	1.767 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetlands Inventory
Source: Georgia GIS Clearinghouse
Telephone: 706-542-1581

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

OTHER STATE DATABASE INFORMATION

A listing of Private Water Well locations
Georgia Department of Public Health
Telephone: (404) 657-2700
A listing of Private Water Well locations

Georgia Public Supply Wells
Source: Georgia Department of Community Affairs
Telephone: 404-894-0127

USGS Georgia Water Wells
Source: USGS, Georgia District Office
Telephone: 770-903-9100

DNR Managed Lands
Source: Department of Natural Resources
Telephone: 706-557-3032
This dataset provides 1:24,000-scale data depicting boundaries of land parcels making up the public lands managed by the Georgia Department of Natural Resources (GDNR). It includes polygon representations of State Parks, State Historic Parks, State Conservation Parks, State Historic Sites, Wildlife Management Areas, Public Fishing Areas, Fish Hatcheries, Natural Areas and other specially-designated areas. The data were collected and located by the Georgia Department of Natural Resources. Boundaries were digitized from survey plats or other information.

RADON

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

STREET AND ADDRESS INFORMATION

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APPENDIX E
ZONING LETTER

OFFICE OF THE COUNTY MANAGER

TWELVE EAST 4TH AVENUE, SUITE 209 • ROME, GEORGIA 30161
PHONE: 706.291.5110 • FAX: 706.291.5248 • www.floydcountyga.gov

February 16, 2023

Mr. Chuck Mueller
Land Protection Branch Chief
Georgia Environmental Protection Division
2 Martin Luther King Jr. Drive, SE
East Floyd Tower, Suite 1456
Atlanta, GA 30334-9000

Re: Georgia Power, Plant Hammond – Huffaker Road CCR Landfill
Proposed Expansion

Dear Mr. Mueller:

The proposed expansion of the Georgia Power Plant Hammond – Huffaker Road CCR Landfill, located at 2131 Huffaker Road, Rome, Georgia complies with local zoning and land use ordinances.

Sincerely,

Jamie A. McCord
County Manager
Floyd County Government

C: Floyd County Commission
Bruce Ivey
Jeff Burns

Attachment

BOARD OF COMMISSIONERS
ALLISON WATTERS, *CHAIR*
LARRY MAXEY, *VICE-CHAIR*
RHONDA WALLACE
WRIGHT BAGBY
SCOTTY HANCOCK

ADMINISTRATION
JAMIE McCORD, *COUNTY MANAGER*
ERIN ELROD, *COMMUNITY SERVICES DIVISION DIRECTOR*
JOHN BLALOCK, *PUBLIC SAFETY DIVISION DIRECTOR*
BRUCE IVEY, *PUBLIC UTILITIES & TRANSPORTATION DIVISION DIRECTOR*
SUSIE GASS, *ADMINISTRATIVE SERVICES DIVISION DIRECTOR*

APPENDIX F
HRL PARCEL F SITE TOPOGRAPHY VALIDATION REPORT WITH GEORGIA RLS-SEALED TOPOGRAPHIC SITE MAP

115 Westridge Industrial Blvd, Suite 150
McDonough, Georgia 30253
(470) 737-1735

1020059533 Plant Hammond Parcel F

Floyd County, GA



Report Date: 5/5/2023
Date of Flight: 12/27/2020

AERIAL LiDAR and IMAGERY REPORT

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1. Prepared by

SAM, LLC.
115 Westridge Industrial Blvd, Suite150
McDonough, GA 30253
(470) 737-1735

2. Narrative

This LIDAR was collected and processed to support a project contracted with Southern Company Services. LiDAR was the primary elevation source for subsequent topographic mapping. LiDAR was collected using direct georeferencing systems that employ IMU (Inertial Measurement Unit) and GPS technology to solve for precise data location and orientation. LiDAR was collected using a Riegl VQ-480ii system.

The LiDAR was processed through an Exterior Orientation Refinement Process to remove any bias in the exterior orientations. Ground control points surveyed in the field were measured and an adjustment performed to improve the data accuracy. A total of 4 survey control points were used to control the aerial mapping. All four points were used for vertical control analysis only.

Upon completion of all measurements, an adjustment was performed to determine final, refined exterior orientations and any necessary coordinate bias removed. The result was a refined LiDAR point cloud and aerial photography in precise alignment with each other and with the ground control data, from which subsequent topographic mapping and orthophoto products were derived.

The final adjustment passed a quality control check so a final output was accepted and the data deemed suitable to generate mapping to support an absolute horizontal and vertical accuracy of 0.5’ for well- defined features.

3. LiDAR Accuracy

The final adjustment resulted in a ground control point RMSE of 0.04’ for Z:

Project File: 59533_SOCO_Hammond_NewAreas_LiDAR_Control_Report
Project Unit: NAD 83 - State Plane Coordinate System - Georgia West - NAVD 88 - US Survey Feet
Flight Date: 12/27/2020

Control Points in Report:	4
Average Control Error:	0.01
Maximum Control Error:	0.04
Minimum Control Error:	-0.03
RMSE for Control:	0.04

Control Point Id	Control Point X	Control Point Y	Coverage	Control Point Z	Z from LiDAR	Z Error
102	1938868.29	1549374.42	Yes	586.23	586.27	**0.04**
103	1933328.21	1549577.62	Yes	601.01	600.98	**-0.03**
104	1954210.35	1565674.83	Yes	664.87	664.84	**-0.03**
105	1952270.55	1565723.52	Yes	695.86	695.90	**0.04**

4. Topographic Verification Survey

A field verification study was conducted by SAM utilizing additional data surveyed in the field in May 2023. Established monumented control was surveyed to establish site localization resulting in the following residuals:

Point ID	Survey Check Values			Site Control Values			Residuals (Errors)		
	Easting (E)	Northing (N)	Elevation (H)	Easting (E)	Northing (N)	Elevation (H)	Δx Easting (E)	Δy Northing (N)	Δz Elevation (H)
	US feet	US feet	US feet	US feet	US feet	US feet	US feet	US feet	US feet
200	1952306.086	1565216.560	683.057	1952306.070	1565216.590	683.260	-0.016	0.030	0.203
201	1952410.335	1564025.288	662.447	1952410.320	1564025.320	662.680	-0.015	0.032	0.233
202	1953843.125	1564710.997	653.401	1953843.110	1564711.020	653.590	-0.015	0.023	0.189
Number of check points							**3**	**3**	**3**
Max Error (ft)							**-0.015**	**0.032**	**0.233**
Min Error (ft)							**-0.016**	**0.023**	**0.189**
Mean Error (ft)							**-0.015**	**0.028**	**0.208**
Standard Deviation (ft)							**0.001**	**0.005**	**0.022**
RMSE (ft)							**0.015**	**0.029**	**0.209**
RMSEr (ft)							**0.032**	**=SQRT(RMSEx^2+ RMSEy^2)**	
NSSDA Horizontal Accuracy$_r$ (ACCr) at 95% Confidence Level							**0.056**	**=RMSEr × 1.7308**	
NSSDA Vertical Accuracy$_z$ (ACCz) at 95% Confidence Level							**0.410**	**=RMSEz × 1.9600**	

Mapping control was then checked into to verify relative accuracy. Observed accuracies resulted in the following residuals:

Point ID	Verification Survey Values			Original Control Values			Residuals (Errors)		
	Easting (E)	Northing (N)	Elevation (H)	Easting (E)	Northing (N)	Elevation (H)	Δx Easting (E)	Δy Northing (N)	Δz Elevation (H)
	US feet	US feet	US feet	US feet	US feet	US feet	US feet	US feet	US feet
102	Not Found	Not Found	Not Found	1938868.293	1549374.419	586.232	-	-	-
103	1933328.224	1549577.592	600.948	1933328.213	1549577.616	601.011	-0.011	0.024	0.063
104	1954210.313	1565674.864	664.899	1954210.353	1565674.826	664.873	0.040	-0.038	-0.026
105	1952270.567	1565723.519	695.716	1952270.549	1565723.518	695.856	-0.018	-0.001	0.140
Number of check points							**3**	**3**	**3**
Max Error (ft)							**0.040**	**0.024**	**0.140**
Min Error (ft)							**-0.018**	**-0.038**	**-0.026**
Mean Error (ft)							**0.004**	**-0.005**	**0.059**
Standard Deviation (ft)							**0.032**	**0.031**	**0.083**
RMSE (ft)							**0.026**	**0.026**	**0.090**
RMSEr (ft)							**0.037**	**=SQRT(RMSEx^2+ RMSEy^2)**	
NSSDA Horizontal Accuracy$_r$ (ACCr) at 95% Confidence Level							**0.064**	**=RMSEr × 1.7308**	
NSSDA Vertical Accuracy$_z$ (ACCz) at 95% Confidence Level							**0.176**	**=RMSEz × 1.9600**	

Ground elevation shots were then collected across the site, in no particular pattern, and these observations were compared against the existing DTM surface from which the prior 1ft contours were generated from. This report generated the following results:

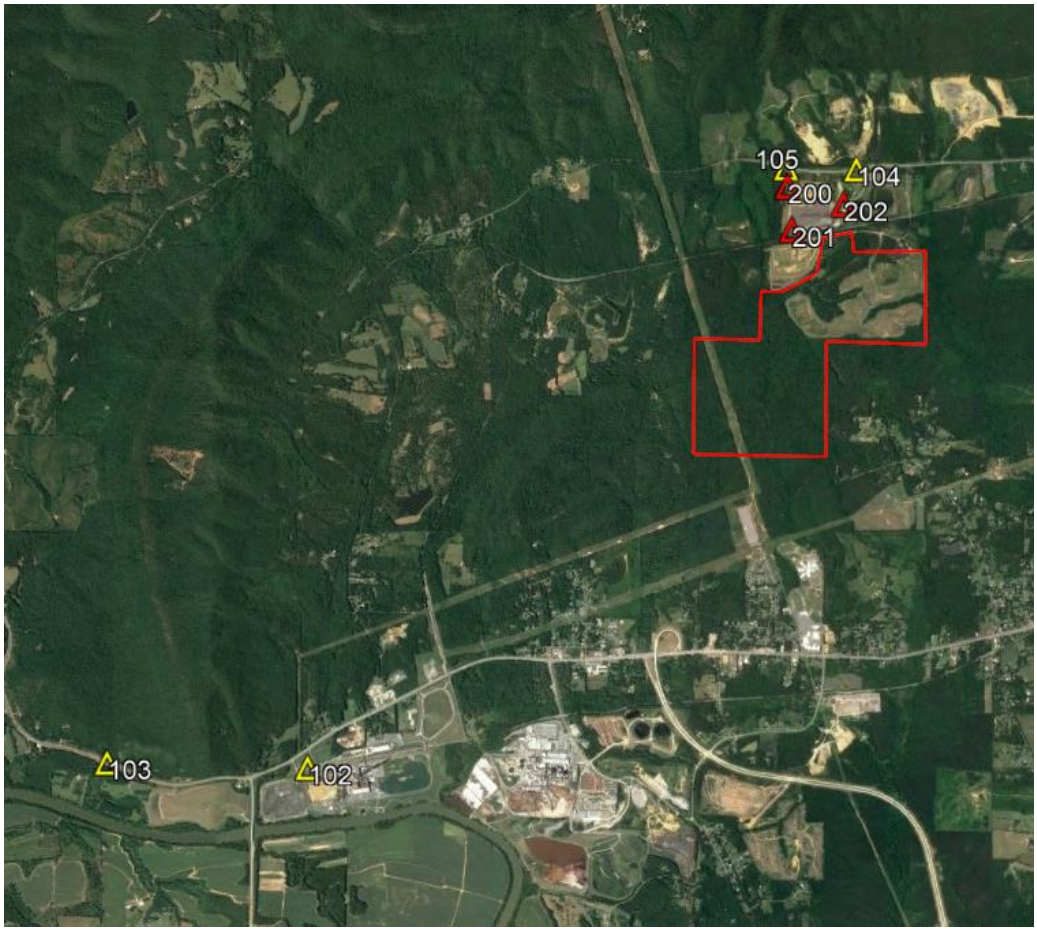
Points used	607
Average dz	-0.300873
Average magnitude	0.332339
Std deviation	0.263230
Root mean square	0.399625

These results lie within the acceptable tolerances established by the ASPRS standards for 1ft contour mapping. These results also meet the minimum requirements for topographic and vertical measurement as set forth by the State of Georgia and more specifically as stated in **Rule 180-7-.04**: **Topography and Vertical Measurements** of the Rules and Regulations of the State of Georgia.

5. Project Parameters

5.1. **Project Name**	10220059533 Plant Hammond Parcel F	
5.2. **Location**	Floyd County, GA	
5.3. **Laser Scanner**	Riegl VQ-480ii	
5.4. **Geo-referencing**	RiProcess, SBET generated with POSPAC	
5.5. **Photography**	Two iXU-1000RS 100MP cameras, downward looking with a 50mm lens and forward looking 45 degree with a 90mm lens	
5.6. **Control**	Horizontal Datum:	NAD 83 (2011)
	Vertical Datum:	NAVD 88
	Units:	U.S. Survey Feet
	Geoid Model:	Geoid 12B
	Coordinate System:	State Plane
	Coordinate Zone:	Georgia West (1002)

6. Ground Control Plan



Points shown above in yellow represent original mapping control. Points shown above in red represent control used by the field survey verification study

7. Verification Ground Control Values

ID	Easting	Northing	Elevation
200	1952306.07	1565216.59	683.057
201	1952410.32	1564025.32	662.447
202	1953843.11	1564711.02	653.401

8. Verification Ground Check Values

ID	Easting	Northing	Elevation
8000	1563355.153	1955940.6	659.214
8001	1563389.22	1955981.722	644.691
8002	1563427.708	1956025.342	644.651
8003	1563307.905	1955881.11	652.052
8004	1563325.958	1955658.1	657.841
8005	1563320.284	1955597.081	644.475
8006	1562767.553	1955995.507	657.087
8007	1562779.599	1956045.785	640.146
8008	1562772.662	1956070.285	637.229
8009	1562760.824	1955947.08	649.714
8010	1562736.657	1955789.186	653.339
8011	1562337.368	1955952.684	669.669
8012	1562374.474	1955877.014	658.844
8013	1562335.264	1955687.996	663.992
8014	1562459.418	1955637.137	663.436
8015	1562254.78	1955713.411	674.59
8016	1562180.241	1955739.45	652.766
8017	1562234.738	1956039.761	648.271
8018	1562185.997	1956069.18	641.581
8019	1562125.517	1956068.162	641.218
8020	1562105.961	1955304.066	682.893
8021	1562034.536	1955324.589	671.962
8022	1561998.346	1955349.404	660.875
8023	1562183.547	1955292.702	672.787
8024	1562304.663	1955285.117	673.48
8025	1561986.77	1954784.686	698.677
8026	1561921.487	1954798.711	680.771
8027	1561878.209	1954846.699	674.949
8028	1562070.763	1954781.851	691.204
8029	1562285.657	1954796.187	686.294
8030	1562725.758	1954916.103	695.554
8031	1562718.079	1955265.51	691.459
8032	1562912.539	1954563.37	678.362
8033	1562924.684	1954604.844	681.082
8034	1561410.608	1954277.039	708.541
8035	1561455.095	1954377.587	705.406
8036	1561269.075	1954681.843	729.496
8037	1561246.416	1955111.928	732.791
8038	1561605.274	1955172.041	718.869
8039	1561575.029	1955579.73	718.148
8040	1561724.327	1955519.34	714.625

8041	1561797.939	1955450.603	679.007
8042	1561886.947	1955547.183	689.443
8043	1561916.336	1955652.253	691.401
8044	1561983.974	1955651.207	671.901
8045	1561968.229	1955818.253	671.518
8046	1562035.044	1955886.356	663.037
8047	1562072.41	1955966.733	652.31
8048	1561860.232	1955979.085	703.427
8049	1561633.406	1955979.753	747.871
8050	1561618.34	1956031.385	748.514
8051	1561501.779	1955940.646	739.97
8052	1561422.297	1955910.844	728.185
8053	1561326.242	1955965.252	708.533
8054	1561284.252	1956002.457	697.409
8055	1561221.532	1956019.339	687.571
8056	1561108.016	1956033.104	669.07
8057	1560982.711	1956029.83	662.095
8058	1561010.386	1955887.635	658.679
8059	1561044.826	1955816.407	659.987
8060	1561155.642	1955769.358	668.346
8061	1561258.936	1955733.325	676.906
8062	1561338.004	1955665.51	707.294
8063	1561398.987	1955655.594	721.196
8064	1561506.276	1955650.316	717.153
8065	1561614.181	1955715.396	715.308
8066	1561699.371	1955764.132	715.377
8067	1561349.149	1955142.747	728.144
8068	1561190.011	1954913.953	740.731
8069	1561477.865	1954839.694	723.462
8070	1561356.668	1953977.659	706.07
8071	1561230.435	1953965.543	708.498
8072	1561156.514	1953976.504	715.981
8073	1561191.146	1954118.458	708.298
8074	1562498.345	1954700.753	687.058
8075	1562601.974	1954443.109	687.282
8076	1562553.006	1954301.987	687.926
8077	1562469.314	1954118.298	689.279
8078	1562295.464	1953823.09	691.075
8079	1562253.719	1953716.568	695.757
8080	1562240.465	1953631.825	691.662
8081	1562200.456	1953484.225	702.989
8082	1562191.661	1953391.534	695.41
8083	1562322.243	1953717.76	687.757
8084	1562404.393	1953693.03	681.98
8085	1562471.594	1953708.428	682.225

8086	1562523.339	1953713.358	680.999
8087	1562559.61	1953736.042	674.11
8088	1562594.486	1953771.92	659.127
8089	1562612.464	1953788.185	654.179
8090	1562538.854	1953777.315	674.773
8091	1561060.727	1949902.184	640.087
8092	1560873.548	1949956.194	639.611
8093	1560694.473	1950035.755	672.676
8094	1560548.554	1950113.354	700.18
8095	1560372.06	1950112.813	724.494
8096	1560162.829	1950173.946	666.593
8097	1560017.744	1950257.742	680.059
8098	1559761.039	1950310.98	720.739
8099	1559678.151	1950331.835	713.684
8100	1559532.074	1950366.336	740.929
8101	1559443.743	1950390.79	740.58
8102	1559231.923	1950481.667	784.839
8103	1559242.747	1950251.301	771.16
8104	1559193.326	1950041.522	745.795
8105	1559339.646	1949908.516	737.201
8106	1559300.938	1950558.52	793.911
8107	1559021.945	1950769.344	803.7
8108	1558728.849	1950810.11	796.43
8109	1558547.935	1950916.184	761.659
8110	1558181.515	1950912.439	777.036
8111	1557960.505	1950849.803	756.778
8112	1557831.815	1950765.493	729.894
8113	1557849.369	1950648.401	733.394
8114	1559132.988	1950849.516	803.743
8115	1559232.231	1951084.548	813.346
8116	1559328.638	1951321.153	827.26
8117	1559198.734	1951552.294	836.988
8118	1558884.698	1951622.256	816.692
8119	1558617.861	1951527.105	796.739
8120	1558372.831	1951733.189	745.828
8121	1558502.511	1952076.173	721.48
8122	1558368.952	1952353.614	712.5
8123	1558066.147	1952576.264	692.966
8124	1557861.564	1952754.205	685.171
8125	1558687.576	1952191.648	732.023
8126	1558759.342	1952277.94	720.95
8127	1558689.691	1952486.831	715.118
8128	1558742.686	1952694.232	712.197
8129	1558586.222	1952845.481	702.042
8130	1558229.848	1951856.365	728.75

8131	1558114.115	1951846.154	714.944
8132	1557919.952	1951632.603	697.53
8133	1559104.133	1951788.664	860.744
8134	1559285.069	1951913.716	837.471
8135	1559512.541	1952052.045	815.724
8136	1559786.549	1952214.728	822.638
8137	1559904.382	1952350.603	827.827
8138	1559929.538	1952528.316	803.413
8139	1559930.52	1952650.013	782.612
8140	1559947.333	1952899.303	788.582
8141	1559820.864	1952771.381	784.011
8142	1559695.726	1952934.72	733.413
8143	1559600.059	1953005.424	730.582
8144	1559472.444	1953045.907	709.958
8145	1559328.786	1953111.534	704.832
8146	1560133.698	1952491.345	776.372
8147	1560316.431	1952563.158	776.273
8148	1559494.234	1951422.796	819.962
8149	1559679.952	1951431.515	821.441
8150	1559248.682	1950781.108	794.336
8151	1559499.384	1950717.888	795.09
8152	1559675.327	1950751.754	767.873
8153	1559897.69	1950762.331	733.21
8154	1560093.876	1950854.594	714.71
8155	1560270.751	1950902.841	704.916
8156	1560493.438	1950929.96	730.769
8157	1560548.903	1951066.645	741.921
8158	1560600.342	1951205.085	743.47
8159	1560528.415	1951334.646	715.178
8160	1560455.293	1951469.425	704.441
8161	1560462.196	1951642.875	694.203
8162	1560662.13	1950943.988	708.657
8163	1560854.807	1950966.977	678.589
8164	1560875.566	1951017.325	671.312
8165	1560917.144	1951130.228	675.36
8166	1560973.756	1951174.525	691.941
8167	1560961.644	1951325.484	697.151
8168	1560979.31	1951403.869	677.521
8169	1561007.552	1951509.447	690.186
8170	1561039.803	1951668.147	695.02
8171	1561064.399	1951746.241	673.439
8172	1561067.397	1951897.832	681.027
8173	1561044.523	1952125.201	697.518
8174	1561037.36	1952287.461	723.529
8175	1561031.378	1952624.281	642.735

8176	1561074.841	1952687.054	634.601
8177	1561341.735	1954256.029	711.667
8178	1562204.633	1953292.275	681.419
8179	1562351.455	1953052.808	638.632
8180	1562267.137	1952986.038	631.691
8181	1562143.377	1953141.393	648.461
8182	1562072.364	1953362.025	662.162
8183	1562103.045	1953656.264	668.412
8184	1562229.952	1954049.414	670.26
8185	1562398.863	1954191.24	691.321
8186	1562407.08	1952914.768	627.087
8187	1562352.311	1952679.152	623.883
8188	1562492.033	1953045.012	627.016
8189	1562600.469	1953347.94	636.319
8190	1562676.465	1953500.357	635.659
8191	1562796.087	1953725.378	639.667
8192	1562909.119	1953851.639	637.376
8193	1563046.158	1954004.405	640.193
8194	1563152.78	1954310.721	651.857
8195	1563294.369	1954431.099	641.294
8196	1563474.038	1954582.81	641.216
8197	1563220.666	1954283.501	636.743
8198	1562788.949	1953469.286	638.121
8199	1562963.036	1953697.153	640.326
8200	1563122.851	1953890.534	641.02
8201	1563280.607	1954091.042	641.087
8202	1563417.93	1954298.355	656.334
8203	1563416.028	1954541.72	641.594
8204	1563904.132	1954039.118	645.668
8205	1563886.817	1953870.826	647.388
8206	1563855.458	1953650.684	649.724
8207	1563803.686	1953307.792	651.208
8208	1563695.539	1953336.71	663.353
8209	1563235.518	1953263.881	637.71
8210	1563342.763	1953421.309	637.644
8211	1563411.983	1953531.017	637.695
8212	1563489.695	1953715.707	638.552
8213	1563558.558	1953881.168	634.717
8214	1563704.936	1953868.34	636.279
8215	1563086.002	1953210.706	642.482
8216	1563349.231	1954725.837	656.887
8217	1563161.137	1954627.348	661.725
8218	1563132.257	1954695.632	672.127
8219	1563172.616	1954842.216	670.237
8220	1563162.982	1955028.375	669.701

8221	1563130.821	1955223.154	668.751
8222	1563066.579	1955355.169	669.202
8223	1563131.896	1955359.328	661.488
8224	1563171.015	1955538.089	656.311
8225	1563015.167	1954605.665	673.931
8226	1562889.22	1954643.598	695.199
8227	1563006.387	1954669.886	694.225
8228	1563077.613	1954774.462	691.274
8229	1563084.771	1954954.924	689.955
8230	1563058.145	1955112.125	687.977
8231	1562987.57	1955024.779	691.004
8232	1562920.778	1954890.132	693.168
8233	1562812.302	1954814.376	694.978
8234	1562830.148	1955314.155	687.696
8235	1562916.101	1955233.48	687.774
8236	1561290.711	1954197.767	711.037
8237	1561122.948	1954302.034	720.856
8238	1561042.26	1954527.679	777.845
8239	1561036.185	1954796.941	762.008
8240	1561041.727	1954957.744	771.27
8241	1561170.566	1955089.316	731.77
8242	1561118.133	1955182.86	719.865
8243	1561041.631	1955267.979	743.325
8244	1561144.967	1955436.254	729.219
8245	1561240.399	1955447.906	709.62
8246	1561410.041	1955456.848	723.655
8247	1561536.522	1955294.21	723.776
8248	1561728.006	1955101.634	715.843
8249	1561682.375	1954868.085	714.195
8250	1561492.646	1954665.447	720.789
8251	1561568.081	1954304.288	709.801
8252	1561666.369	1954236.87	717.865
8253	1561722.928	1954128.444	698.05
8254	1561759.978	1954026.11	682.473
8255	1561899.121	1954088.187	680.701
8256	1562088.51	1954250.459	678.644
8257	1562233.872	1954371.911	680.937
8258	1562393.214	1954508.037	687.561
8259	1562298.237	1954570.9	688.914
8260	1562092.361	1954526.761	691.554
8261	1561941.936	1954440.366	695.308
8262	1561905.795	1954419.266	700.999
8263	1561849.881	1954387.9	700.203
8264	1561749.46	1954328.041	717.188
8265	1561854.841	1954246.275	700.854

8266	1561986.249	1954201.856	679.934
8267	1562789.361	1953228.632	625.022
8268	1561868.599	1952221.461	624.139
8269	1562004.417	1952183.568	621.37
8270	1562099.2	1952244.881	622.722
8271	1561725.528	1952257.033	624.68
8272	1561549.642	1952387.86	643.398
8273	1561351.998	1952544.654	645.296
8274	1561173.669	1952698.845	643.424
8275	1563237.147	1954591.149	663.682
8276	1563425.9	1953169.358	646.49
8277	1562290.694	1951977.739	619.896
8278	1562160.262	1952002.945	618.358
8279	1562129.51	1951837.311	616.066
8280	1562054.016	1951752.266	616.06
8281	1562105.281	1951590.758	614.42
8282	1562159.59	1951549.869	613.34
8283	1561605.962	1954677.592	698.769
8284	1561720.328	1954753.057	692.498
8285	1561844.318	1955403.45	689.095
8286	1562478.861	1954845.556	696.277
8287	1562444.951	1954970.169	696.177
8288	1562511.341	1955257.809	687.633
8289	1562657.639	1955357.477	681.924
8290	1562879.272	1955397.435	674.451
8291	1561614.261	1953587.359	684.221
8292	1561665.969	1953526.027	679.089
8293	1561527.121	1953507.49	671.2
8294	1561463.544	1953351.024	669.123
8295	1561727.068	1953046.953	666.434
8296	1561903.782	1952953.001	647.883
8297	1561994.333	1952370.932	633.685
8298	1562002.931	1952524.57	635.254
8299	1562939.763	1955890.692	649.085
8300	1562971.773	1955809.871	648.917
8301	1563003.445	1955692.207	649.248
8302	1563055.029	1955580.32	649.676
8303	1563111.26	1955509.827	649.511
8304	1563150.339	1955614.667	649.287
8305	1563299.309	1955686.94	651.853
8306	1563265.504	1955802.717	650.113
8307	1563241.961	1955875.533	650.585
8308	1563117.684	1955882.356	649.13
8309	1562969.353	1955905.184	649.254
9000	1561087.116	1953058.781	682.612

9001	1561087.134	1953058.785	682.653
9002	1561090.058	1953033.711	681.186
9003	1561093.752	1953008.638	680.251
9004	1561098.322	1952983.627	679.508
9005	1561104.124	1952958.738	678.784
9006	1561111.267	1952934.696	678.215
9007	1561119.181	1952910.373	677.637
9008	1561127.206	1952885.967	676.393
9009	1561139.758	1952864.181	675.05
9010	1561153.392	1952843.174	673.715
9011	1561167.612	1952821.832	672.255
9012	1561183.38	1952801.572	671.052
9013	1561200.378	1952783.089	669.73
9014	1561218.551	1952765.094	668.357
9015	1561237.043	1952747.51	667.313
9016	1561255.503	1952730.615	666.272
9017	1561274.706	1952713.738	665.679
9018	1561293.387	1952697.035	665.427
9019	1561311.947	1952679.761	665.648
9020	1561329.656	1952661.592	665.674
9021	1561346.096	1952642.549	665.13
9022	1561362.064	1952622.912	663.482
9023	1561378.341	1952603.369	662.418
9024	1561395.153	1952584.323	661.718
9025	1561412.532	1952566.036	661.083
9026	1561431.325	1952548.613	660.239
9027	1561450.321	1952531.223	659.028
9028	1561469.682	1952514.585	657.95
9029	1561489.402	1952498.661	657.145
9030	1561509.345	1952482.92	656.324
9031	1561529.673	1952467.416	655.43
9032	1561550.144	1952452.123	655.468
9033	1561570.81	1952437.436	655.052
9034	1561592.29	1952423.337	654.664
9035	1561613.901	1952409.898	654.337
9036	1561635.698	1952397.162	653.989
9037	1561658.59	1952385.577	653.379
9038	1561681.03	1952374.309	652.822
9039	1561704.214	1952363.176	651.82
9040	1561726.735	1952352.264	650.479
9041	1561749.998	1952341.038	648.858
9042	1561772.968	1952330.333	646.752
9043	1561796.162	1952320.622	644.858
9044	1561820.467	1952311.93	643.196
9045	1561844.818	1952303.879	641.221

9046	1561869.155	1952297.043	639.924
9047	1561893.41	1952290.884	638.809
9048	1561918.285	1952284.777	637.67
9049	1561943.152	1952278.591	636.664
9050	1561968.228	1952273.31	636.178
9051	1561993.289	1952269.928	636.166
9052	1562018.47	1952270.563	635.933
9053	1562043.078	1952278.3	635.535
9054	1562066.236	1952289.64	635.19
9055	1562088.254	1952303.177	634.81
9056	1562107.881	1952319.22	634.258
9057	1562126.158	1952336.611	633.66
9058	1562143.104	1952355.336	633.201
9059	1562158.502	1952375.712	632.49
9060	1562171.458	1952397.427	632.386
9061	1562182.162	1952421.014	632.304
9062	1562189.935	1952445.478	632.268
9063	1562194.727	1952470.389	632.608
9064	1562197.692	1952495.723	633.141
9065	1562199.368	1952521.079	633.656
9066	1562199.33	1952546.213	634.338
9067	1562197.107	1952571.254	634.958
9068	1562193.094	1952596.156	635.389
9069	1562188.83	1952621.206	636.787
9070	1562185.709	1952646.627	638
9071	1562183.891	1952671.988	641.797
9072	1562182.42	1952697.007	647.157
9073	1562180.463	1952722.313	649.448
9074	1562174.426	1952746.973	650.465
9075	1562165.834	1952770.68	650.523
9076	1562153.711	1952792.607	650.645
9077	1562138.257	1952812.387	651.04
9078	1562120.345	1952830.075	652.212
9079	1562099.734	1952845.587	653.865
9080	1562077.598	1952857.331	655.951
9081	1562053.956	1952866.644	657.602
9082	1562029.51	1952872.575	659.115
9083	1562004.15	1952876.396	660.287
9084	1561978.576	1952878.753	661.344
9085	1561953.575	1952880.248	662.296
9086	1561928.033	1952882.898	663.392
9087	1561903.309	1952886.928	664.797
9088	1561879.072	1952893.155	666.255
9089	1561855.632	1952903.384	666.952
9090	1561834.096	1952916.819	667.76

9091	1561813.159	1952930.899	669.295
9092	1561792.365	1952945.447	671.2
9093	1561771.346	1952960.323	673.02
9094	1561750.209	1952974.282	674.063
9095	1561729.522	1952988.755	674.973
9096	1561708.171	1953003.769	675.557
9097	1561687.619	1953018.994	675.895
9098	1561667.586	1953034.109	676.419
9099	1561647.507	1953049.139	677.094
9100	1561627.17	1953065.172	678.01
9101	1561607.233	1953081.657	679.062
9102	1561588.525	1953098.824	680.042
9103	1561569.94	1953116.135	681.144
9104	1561551.44	1953134.045	682.162
9105	1561533.876	1953152.302	683.259
9106	1561515.965	1953170.739	685.028
9107	1561499.34	1953189.686	686.368
9108	1561482.755	1953209.688	687.003
9109	1561466.83	1953229.2	687.693
9110	1561452.125	1953250.204	686.801
9111	1561437.329	1953270.805	686.576
9112	1561424.468	1953292.44	686.761
9113	1561412.664	1953314.562	686.548
9114	1561404.727	1953338.625	686.965
9115	1561400.664	1953363.677	687.331
9116	1561401.775	1953388.908	687.759
9117	1561404.315	1953414.55	689.684
9118	1561405.963	1953424.392	689.874
9119	1561445.575	1953516.763	692.113
9120	1561503.861	1953598.737	691.797
9121	1561555.498	1953684.754	692.195
9122	1561591.904	1953777.908	691.946
9123	1561614.617	1953876.289	688.685
9124	1561609.396	1953976.667	692.821
9125	1561602.464	1954077.325	698.896
9126	1561601.047	1954177.634	713.989
9127	1561566.256	1954271.956	710.414
9128	1561467.929	1954292.214	708.385
9129	1561392.543	1954263.908	707.935
9130	1561289.25	1954244.68	711.666
9131	1561204.955	1954190.101	710.606
9132	1561187.862	1954091.003	711.761
9133	1561161.211	1953994.15	715.551
9134	1561139.533	1953895.936	715.816
9135	1561100.32	1953803.883	718.366

9136	1561060.909	1953711.867	722.388
9137	1561055.702	1953611.946	724.041
9138	1561055.8	1953511.93	723.374
9139	1561053.834	1953411.869	722.409
9140	1561054.381	1953311.37	713.754
9141	1561053.684	1953211.361	696.923
9142	1561058.455	1953111.158	688.41
9143	1561276.407	1952753.042	664.177
9144	1561222.183	1952837.188	662.708
9145	1561178.883	1952927.707	662.866
9146	1561159.8	1953026.245	663.726
9147	1561158.04	1953126.238	668.084
9148	1561155.574	1953226.729	686.048
9149	1561165.58	1953327.045	692.287
9150	1561182.89	1953426.299	695.888
9151	1561202.73	1953525.401	697.925
9152	1561217.701	1953624.36	700.817
9153	1561265.932	1953712.715	694.23
9154	1561346.085	1953773.32	688.497
9155	1561374.136	1953870.075	697.539
9156	1561398.276	1953968.038	703.131
9157	1561450.119	1954054.193	702.5
9158	1561473.965	1953956.845	691.496
9159	1561433.682	1953864.698	688.425
9160	1561370.675	1953786.73	688.255
9161	1561324.63	1953697.299	688.498
9162	1561295.391	1953601.158	688.508
9163	1561284.776	1953501.532	685.61
9164	1561274.95	1953401.1	684.298
9165	1561258.276	1953301.567	681.317
9166	1561257.467	1953201.12	670.623
9167	1561246.696	1953101.084	665.326
9168	1561250.527	1953000.464	663.418
9169	1561278.738	1952903.585	662.402
9170	1561362.451	1952959.532	661.231
9171	1561353.855	1953059.401	663.287
9172	1561345.327	1953109.84	664.548
9173	1561358.889	1953209.043	670.21
9174	1561428.835	1953136.691	670.733
9175	1561480.094	1953050.656	663.794
9176	1561554.525	1952982.396	660.516
9177	1561626.756	1952935.433	659.03
9178	1561653.145	1952913.425	664.928
9179	1561690.084	1952820.445	666.133
9180	1561783.833	1952783.224	664.287

9181	1561880.417	1952754.859	661.278
9182	1561980.773	1952750.905	651.603
9183	1562077.563	1952723.3	641.779
9184	1562027.92	1952635.911	645.947
9185	1561955.903	1952565.682	648.212
9186	1561933.81	1952467.513	646.581
9187	1561961.558	1952371.404	639.861
9188	1561862.504	1952388.442	640.892
9189	1561773.339	1952435.85	649.364
9190	1561680.389	1952473.543	658
9191	1561585.692	1952508.91	656.847
9192	1561506.182	1952571.161	657.577
9193	1561436.115	1952642.706	662.556
9194	1561417.053	1952741.333	663.088
9195	1561457.862	1952833.325	661.177
9196	1561546.048	1952784.887	663.79
9197	1561611.292	1952708.364	662.016
9198	1561689.085	1952645.121	666.39
9199	1561744.73	1952606.524	673.728
9200	1561835.119	1952563.198	662.148
9201	1562195.099	1952389.998	628.304
9202	1562272.815	1952539.395	622.924
9203	1562269.626	1952639.496	626.214
9204	1562229.656	1952744.419	638.149
9205	1562171.465	1952862.906	639.571
9206	1562076.787	1952897.489	649.964
9207	1561978.033	1952916.523	652.164
9208	1561588.22	1953614.892	681.996
9209	1561635.643	1953703.244	684.791
9210	1561627.542	1953844.828	689.707
9211	1561702.648	1953911.762	686.626
9212	1561801.424	1953894.508	684.457
9213	1561854.8	1953808.855	685.88
9214	1561948.066	1953772.325	683.9
9215	1561990.294	1953863.781	685.449
9216	1562025.596	1953957.856	685.176
9217	1562052.035	1954054.482	682.746
9218	1562076.684	1954152.39	682.743
9219	1562140.918	1954229.135	682.816
9220	1562224.277	1954285.291	682.467
9221	1562295.899	1954355.172	684.855
9222	1562364.566	1954428.496	686.794
9223	1562425.812	1954349.342	683.542
9224	1562420.353	1954249.329	688.096
9225	1562437.392	1954150.347	702.33

9226	1562368.811	1954076.554	701.262
9227	1562320.725	1953988.711	699.069
9228	1562288.431	1953893.453	698.171
9229	1562247.216	1953768.175	693.521
9230	1562337.602	1953709.198	685.366
9231	1562396.489	1953676.478	679.48
9232	1562476.824	1953736.476	681.028
9233	1562516.381	1953828.969	675.194
9234	1562595.438	1953890.791	674.211
9235	1562687.182	1953931.788	678.879
9236	1562747.018	1954012.201	678.754
9237	1562801.391	1954096.292	666.161
9238	1562828.048	1954207.552	665.136
9239	1562871.109	1954298.227	665.648
9240	1562932.609	1954377.415	663.802
9241	1562860.361	1954447.06	673.696
9242	1562765.163	1954414.443	685.792
9243	1562665.225	1954407.371	686.555
9244	1562619.672	1954317.423	684.807
9245	1562585.077	1954223.013	685.976
9246	1562551.472	1954127.964	686.242
9247	1562507.754	1954037.011	683.983
9248	1562461.767	1953947.754	679.249
9249	1562418.4	1953857.348	682.825
9250	1562503.026	1953912.34	671.879
9251	1562563.638	1953993.326	674.269
9252	1562617.983	1954077.369	681.663
9253	1562655.033	1954171.42	681.55
9254	1562695.999	1954263.185	681.184
9255	1562735.293	1954355.931	683.948
9256	1562403.973	1954757.014	685.518
9257	1562348.547	1954840.972	684.702
9258	1562322.079	1954938.032	683.566
9259	1562320.625	1955038.279	680.911
9260	1562332.993	1955138.21	679.008
9261	1562354.532	1955235.996	676.106
9262	1562406.986	1955322	673.318
9263	1562470.973	1955399.741	669.747
9264	1562559.098	1955449.464	666.45
9265	1562654.977	1955481.308	663.643
9266	1562753.204	1955500.602	659.546
9267	1562853.555	1955495.904	657.514
9268	1562888.738	1955590.422	654.023
9269	1562790.785	1955613.406	655.504
9270	1562689.82	1955608.627	658.304

9271	1562588.893	1955607.083	660.683
9272	1562488.238	1955613.62	663.067
9273	1562388.055	1955621.168	664.243
9274	1562371.092	1955720.66	662.735
9275	1562466.525	1955750.75	661.505
9276	1562566.731	1955751.449	658.674
9277	1562569.752	1955751.381	658.576
9278	1562669.98	1955749.83	656.331
9279	1562770.541	1955746.994	654.818
9280	1562870.52	1955736.543	651.943
9281	1562892.007	1955835.03	650.145
9282	1562799.245	1955873.321	650.693
9283	1562698.599	1955869.467	652.1
9284	1562598.028	1955863.542	655.161
9285	1562497.503	1955864.837	657.585
9286	1562397.357	1955863.539	659.39
9287	1562291.867	1955554.099	670.22
9288	1562269.213	1955456.149	673.398
9289	1562232.969	1955362.857	670.937
9290	1562199.078	1955267.627	673.312
9291	1562168.599	1955172.306	676.39
9292	1562150.121	1955073.47	680.794
9293	1562132.246	1954974.276	684.537
9294	1562109.254	1954875.955	687.888
9295	1562076.116	1954780.734	691.1
9296	1562007.917	1954707.343	694.57

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TOPOGRAPHIC SURVEY

OF

PLANT HAMMOND PARCEL F

LOCATED IN Floyd County Georgia

Processing of LiDAR and planimetrics was supervised by a Certified Photogrammetrist. The digital data meets the accuracy for 1' contour mapping defined by the American Society for Photogrammetry and Remote Sensing (ASPRS) Standards for Digital Geospatial Data as follows: Vertical: Absolute accuracy 0.33' RMSEz on open ground and non-vegetated surface. See supplied accuracy report.

SURVEYORS NOTES:

1. All distances shown on this plat are horizontal ground distances unless otherwise noted. Unit of measurement is US Survey Feet, by State Statute
2. Horizontal Datum is Georgia State Plane NAD 83 (Georgia West Zone). Datum was derived from RTK/VRS GPS Observations using a Trimble R12 GPS Unit.
3. No Boundary survey was performed on this Project
4. No Ground run survey was performed
5. Topographic survey derived from Aerial mapping (LiDAR), Site was flown on 12/27/2020 by SAM, Mapping Control Points surveyed in 2020 by other Firm.
   a. Initial Calibration Results:

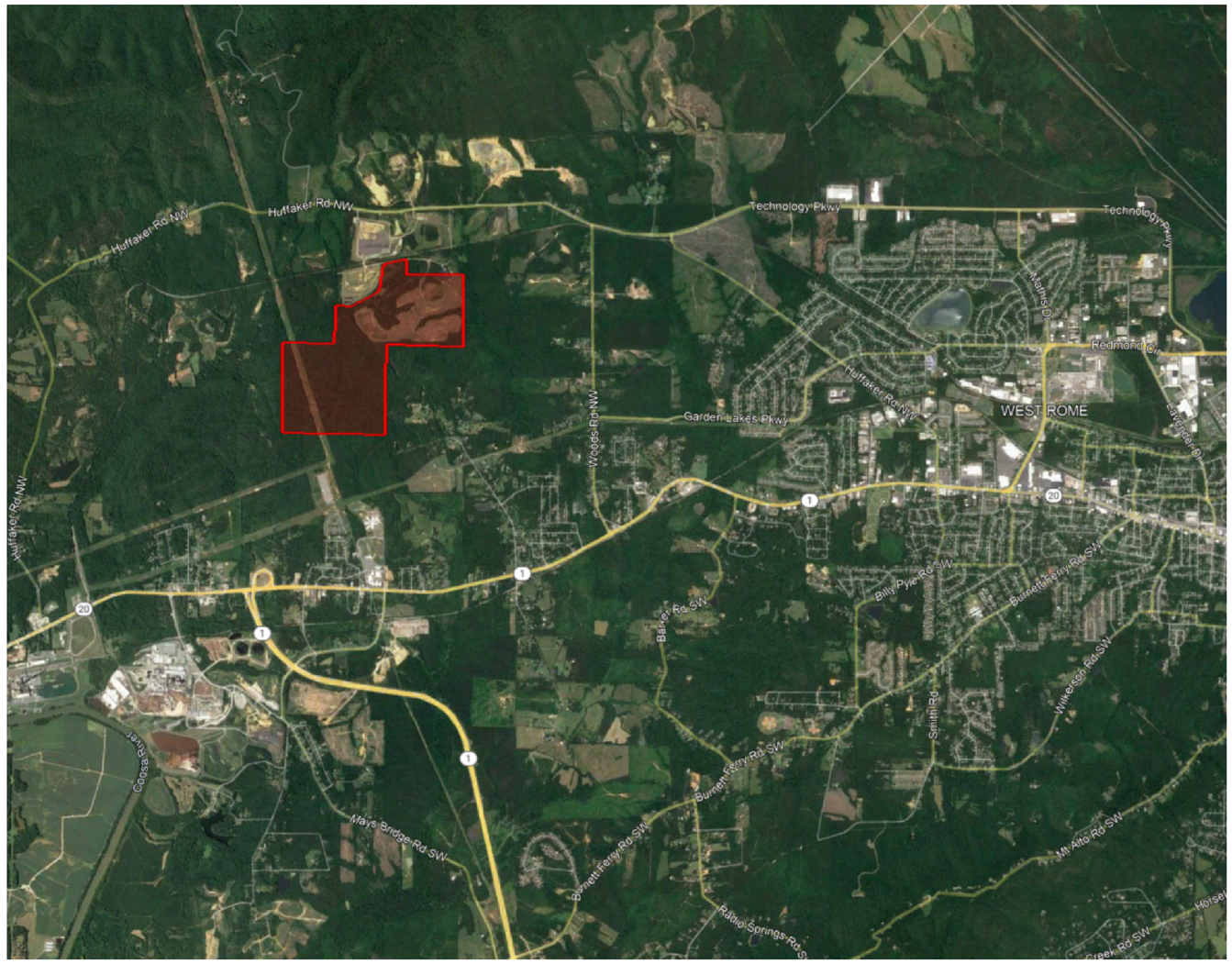
Control Points in Report:	4
Average Control Error:	0.01
Maximum Control Error:	0.04
Minimum Control Error:	-0.03
RMSE for Control:	0.04

Control Point Id	Control Point X	Control Point Y	Coverage	Control Point Z	Z from LiDAR	Z Error
102	1938868.29	1549374.42	Yes	586.23	586.27	**0.04**
103	1933328.21	1549577.62	Yes	601.01	600.98	**-0.03**
104	1954210.35	1565674.83	Yes	664.87	664.84	**-0.03**
105	1952270.55	1565723.52	Yes	695.86	695.90	**0.04**

   b. SAM verified Topo on 5/1/2022 with
      i. Survey of Mapping Control resulting in a vertical RMSE of 0.09'
      ii. LiDAR Verifications points resulting in a vertical RMSE of .4'
6. Contours are shown at 1 foot intervals
7. This survey is not complete without sheets 1-9

VERIFICATION SURVEY CONTROL:

Point ID	Survey Check Values			Site Control Values			Residuals (Errors)		
	Easting (E)	Northing (N)	Elevation (H)	Easting (E)	Northing (N)	Elevation (H)	Δx Easting (E)	Δy Northing (N)	Δz Elevation (H)
	US feet	US feet	US feet	US feet	US feet	US feet	US feet	US feet	US feet
200	1952306.086	1565216.560	683.057	1952306.070	1565216.590	683.260	-0.016	0.030	0.203
201	1952410.335	1564025.288	662.447	1952410.320	1564025.320	662.680	-0.015	0.032	0.233
202	1953843.125	1564710.997	653.401	1953843.110	1564711.020	653.590	-0.015	0.023	0.189
Number of check points							3	3	3
Max Error (ft)							-0.015	0.032	0.233
Min Error (ft)							-0.016	0.023	0.189
Mean Error (ft)							-0.015	0.028	0.208
Standard Deviation (ft)							0.001	0.005	0.022
RMSE (ft)							0.015	0.029	0.209
RMSEr (ft)							0.032	=SQRT(RMSEx²+ RMSEy²)	
NSSDA Horizontal Accuracy (ACCr) at 95% Confidence Level							0.056	=RMSEr × 1.7308	
NSSDA Vertical Accuracy (ACCz) at 95% Confidence Level							0.410	=RMSEz × 1.9600	



Imagery courtesy of Google Earth

MAPPING EQUIPMENT:

Laser Scanner: Riegl VQ-480ii

Camera: iXU-1000RS 100megapixel; 50mm Lens

Platform: Bell 206 Helicopter

Geo-referencing: RiProcess, SBET generated with POSPAC

THE UNDERSIGNED LAND SURVEYOR CERTIFIES THAT THIS PLAT OR MAP COMPLIES WITH THE MINIMUM TECHNICAL STANDARDS FOR PROPERTY SURVEYS IN GEORGIA AS SET FORTH IN THE RULES AND REGULATIONS OF THE GEORGIA BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS AND AS SET FORTH IN O.C.G.A. SECTION 15-6-67.

THE FIELD WORK WAS COMPLETED ON MAY 1, 2023.

SURVEYING AND MAPPING, LLC.

May 5th, 2023

SCOTT C. NORTH — DATE
GEORGIA REGISTERED LAND SURVEYOR
STATE OF GEORGIA LICENSE NO. 3176

GEORGIA REGISTERED No. 3176 PROFESSIONAL LAND SURVEYOR SCOTT C. NORTH

COVER SHEET
OF 9

TOPOGRAPHIC SURVEY OF
PLANT HAMMOND PARCEL F

PROJECT: Southern Company Services
Plant Hammond Parcel F

JOB NUMBER: 1020059533
DATE: 5/5/2023
SCALE: N/A
AERIAL SENSOR: Riegl VQ-480ii
ACQUISITION DATE: 12/27/2020
COORDINATES: NAD 83 SPCS_GA_WEST_NAVD88_USFT
NOTES:

Surveying and Mapping, LLC (SAM)
375 Northridge Road, Suite 100
Atlanta, Georgia 30350
Ofc: 678.342.2775
email: info@sam.biz

LSF No. 001114

SAM™

PATH:\\SAMINC\AUS\PROJECTS\1020059533\04DELIVERY\PRELIM\TO_DELIVER\SAM_PLANTHAMMOND_PARCELF_TOPOGRAPHICSURVEY.DWG

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GRID NORTH

SHEET 3

SHEET 4

SHEET 5

SHEET 6

SHEET 7

SHEET 8

SHEET 9

LEGEND:

- LIGHT POLE
- MISC POLE
- UTILITY POLE
- BUILDING
- CONTOUR INDEX (5FT)
- CONTOUR INTERVAL (1FT)
- HYDRO CONCRETE DRAIN
- HYDRO HEADWALL BOTTOM
- HYDRO HEADWALL TOP
- HYDRO LAKE/POND
- HYDRO RIVER
- HYDRO STREAM
- HYDRO SWAMP EDGE
- RETAINING WALL
- MISC FEATURE
- RUINS
- BRIDGE
- CEMETERY
- SIGN
- CONTROL
- SPOT ELEVATION
- TANK
- CONCRETE
- FENCE
- GATE
- SWIMMING POOL
- DRIVE PAVED
- DRIVE UNPAVED
- PARKING PAVEMENT EDGE
- SIDEWALK
- GUARDRAIL
- ROAD PAVED
- ROAD UNPAVED
- TRAIL
- TREELINE

INDEX SHEET

OF 9

TOPOGRAPHIC SURVEY OF

PLANT HAMMOND PARCEL F

PROJECT: Southern Company Services
Plant Hammond Parcel F

JOB NUMBER: 1020059533
DATE: 5/5/2023
SCALE: N/A
AERIAL SENSOR: Reigl VQ-480ii
ACQUISITION DATE: 12/27/2020
COORDINATES: NAD 83 SPCS_GA_WEST_NAVD88_USFT
NOTES:

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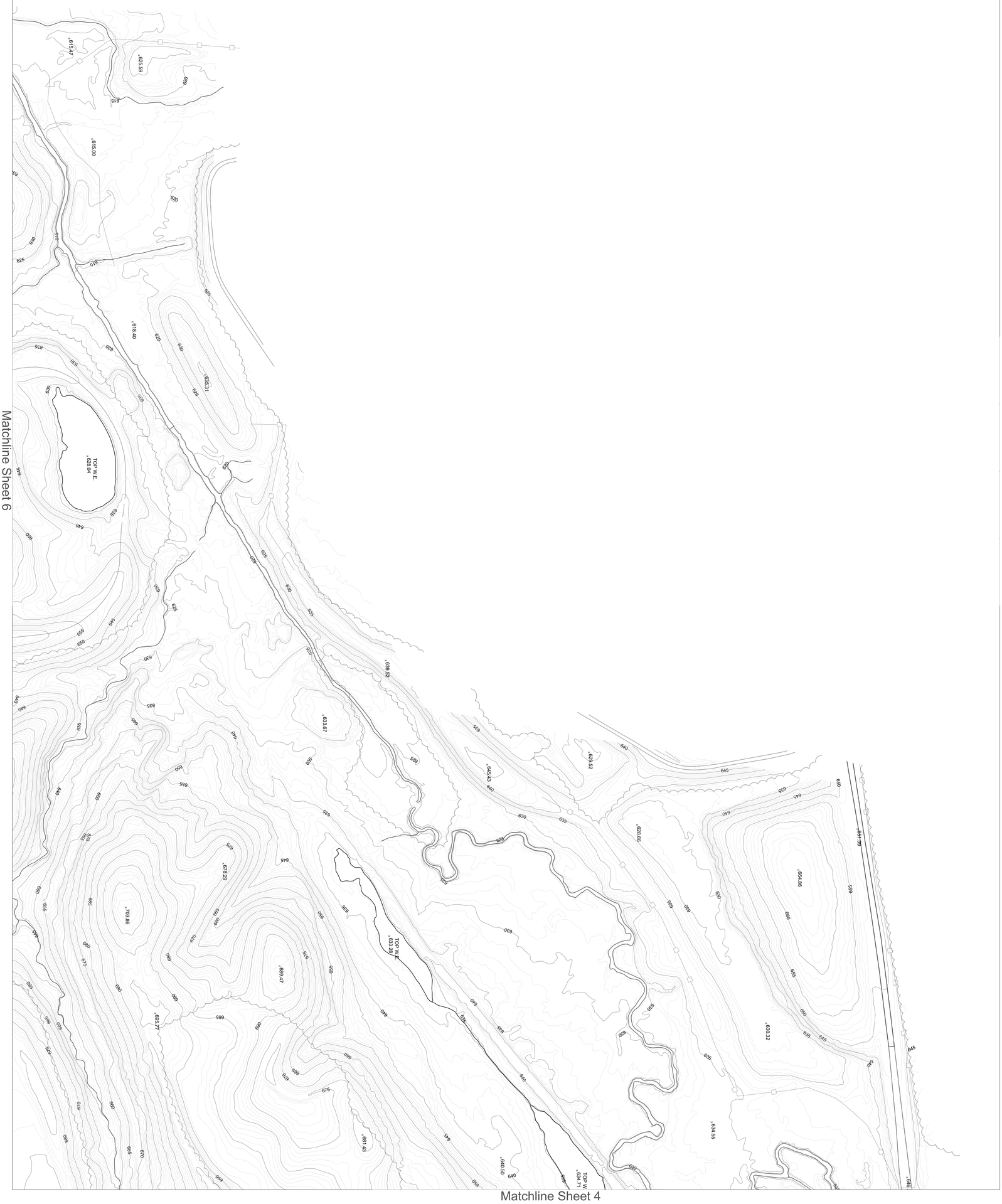
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SEE INDEX SHEET FOR LEGEND

GRID NORTH

1 INCH = 100 FEET



Surveying and Mapping, LLC (SAM)
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PROJECT:	Southern Company Services Plant Hammond Parcel F
JOB NUMBER:	1020059533
DATE:	5/5/2023
SCALE:	1"=100'
AERIAL SENSOR:	Reigl VQ-480ii
ACQUISITION DATE:	12/27/2020
COORDINATES:	NAD 83 SPCS_GA_WEST_NAVD88_USFT
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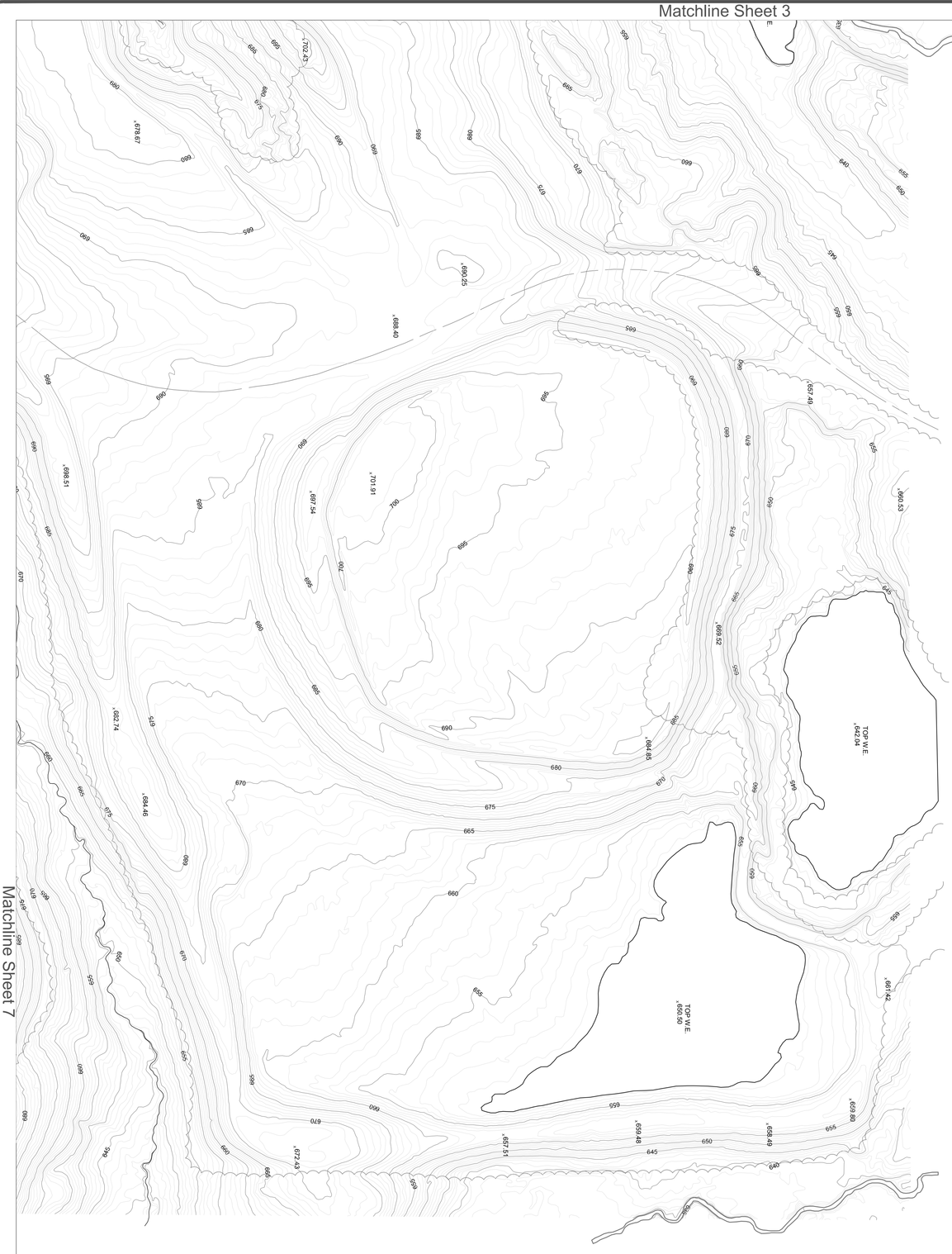
TOPOGRAPHIC SURVEY OF

PLANT HAMMOND PARCEL F

SHEET 03
OF 9

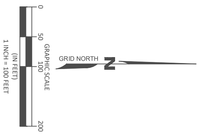
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Matchline Sheet 3



Matchline Sheet 7

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email: info@sam.biz

LSF No. 001114

PROJECT:	Southern Company Services Plant Hammond Parcel F
JOB NUMBER:	1020059533
DATE:	5/5/2023
SCALE:	1"=100'
AERIAL SENSOR:	Reigl VQ-480ii
ACQUISITION DATE:	12/27/2020
COORDINATES:	NAD 83 SPCS_GA_WEST_NAVD88_USFT
NOTES:	

TOPOGRAPHIC SURVEY OF

PLANT HAMMOND PARCEL F

PATH:\\SAMINC\AUS\PROJECTS\1020059533\04DELIVERY\PRELIM\TO_DELIVER\SAM_PLANTHAMMOND_PARCELF_TOPGRAPHICSURVEY.DWG

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SEE INDEX SHEET FOR LEGEND

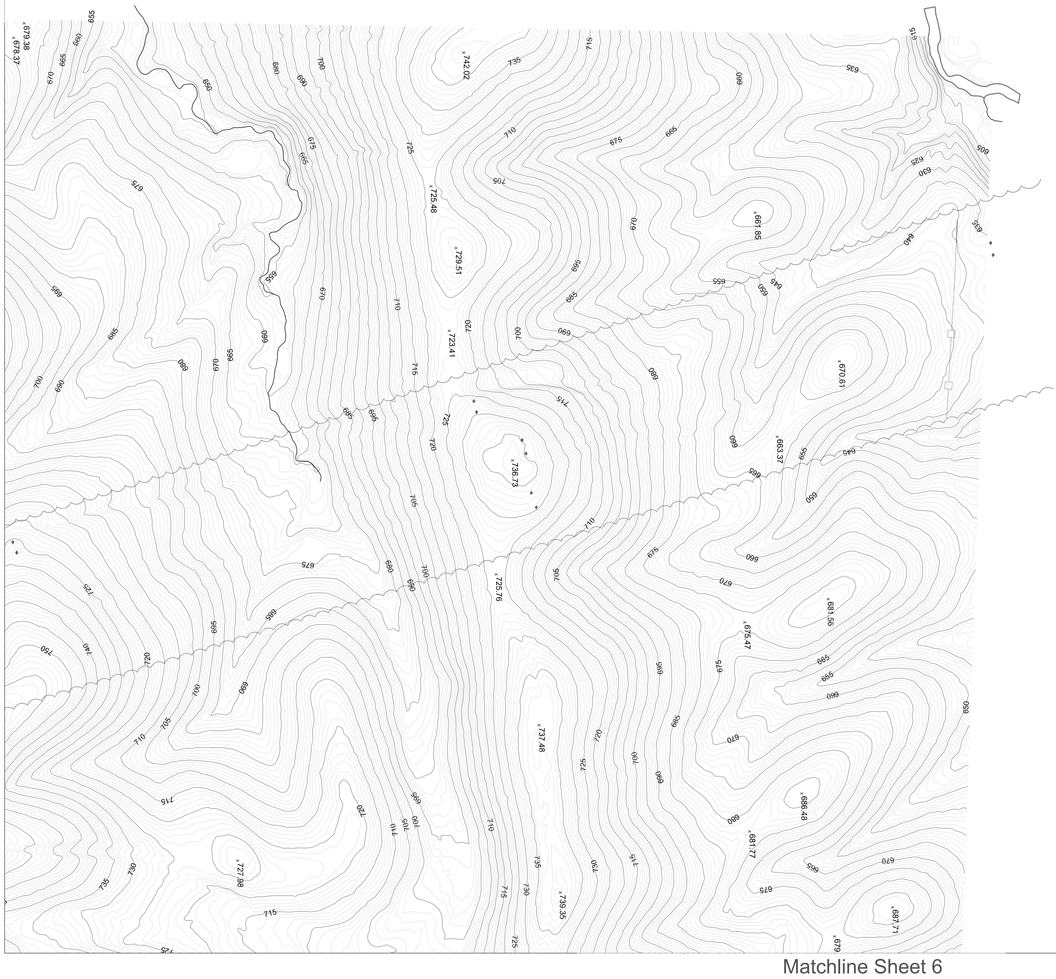
GRID NORTH

1 INCH = 100 FEET

0 50 100 200

GRAPHIC SCALE

Matchline Sheet 8



Matchline Sheet 6

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Atlanta, Georgia 30350
Ofc: 678.342.2775
email: info@sam.biz

LSF No. 001114

PROJECT:	Southern Company Services Plant Hammond Parcel F
JOB NUMBER:	1020059533
DATE:	5/5/2023
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AERIAL SENSOR:	Reigl VQ-480ii
ACQUISITION DATE:	12/27/2020
COORDINATES:	NAD 83 SPCS_GA_WEST_NAVD88_USFT
NOTES:	

TOPOGRAPHIC SURVEY OF

PLANT HAMMOND PARCEL F

SHEET 05

of 9

PATH:\\SAMINC\AUS\PROJECTS\1020059533\04DELIVERY\PRELIM\TO_DELIVER\SAM_PLANTHAMMOND_PARCELF_TOPGRAPHICSURVEY.DWG

Matchline Sheet 5

Matchline Sheet 9

Matchline Sheet 3

Matchline Sheet 7

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AERIAL SENSOR:	Reigl VQ-480ii
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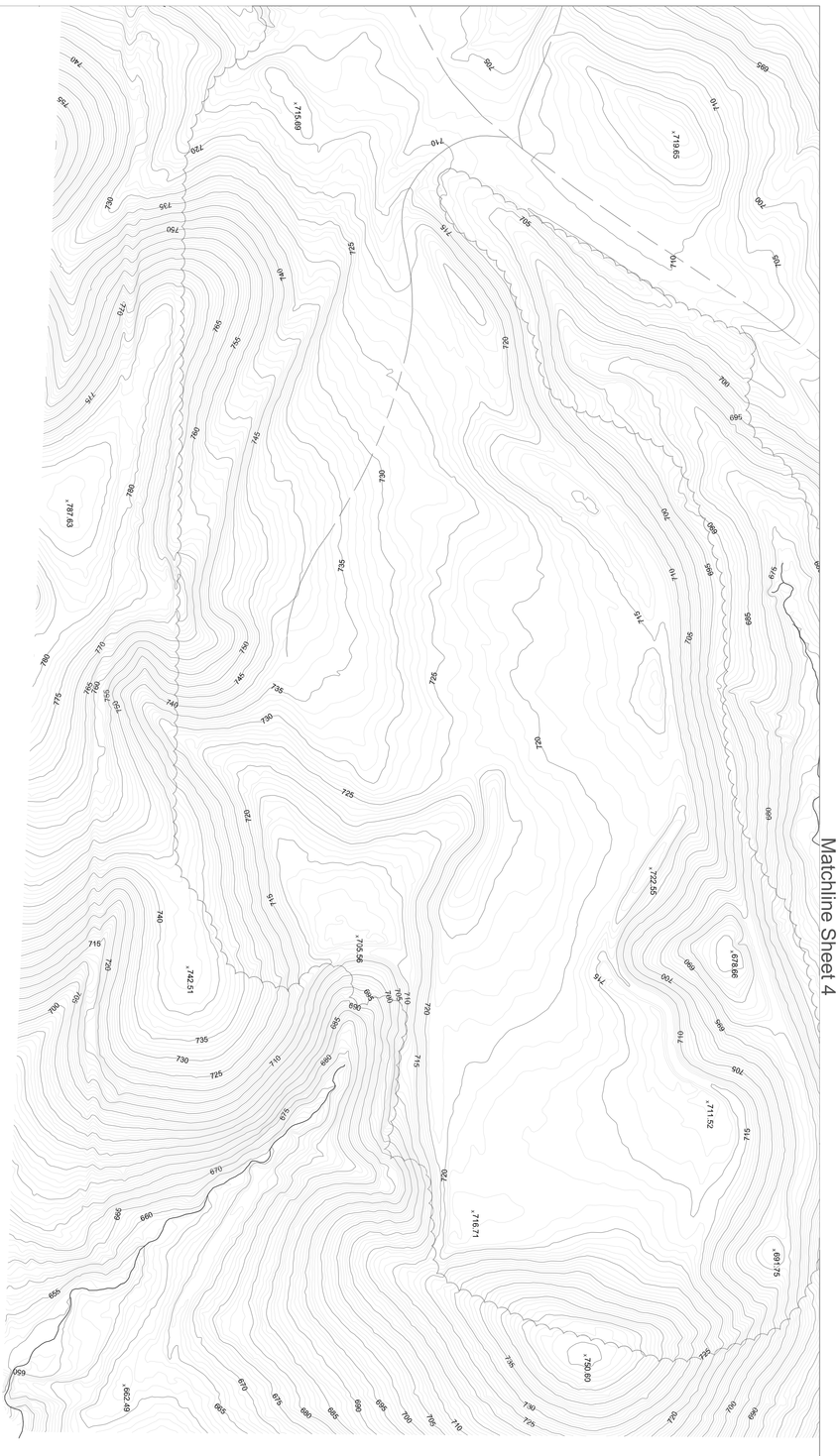
TOPOGRAPHIC SURVEY OF

PLANT HAMMOND PARCEL F

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Matchline Sheet 6



Matchline Sheet 4

Matchline Sheet 7

SEE INDEX SHEET FOR LEGEND

0 50 100 200
GRAPHIC SCALE
1 INCH = 100 FEET

GRID NORTH

N

Surveying and Mapping, LLC (SAM)
375 Northridge Road, Suite 100
Atlanta, Georgia 30350
Ofc: 678.342.2775
email: info@sam.biz

LSF No. 001114

PROJECT: Southern Company Services
Plant Hammond Parcel F

JOB NUMBER: 1020059533
DATE: 5/5/2023
SCALE: 1"=100'
AERIAL SENSOR: Reigl VQ-480ii
ACQUISITION DATE: 12/27/2020
COORDINATES: NAD 83 SPCS_GA_WEST_NAVD88_USFT
NOTES:

TOPOGRAPHIC SURVEY OF
PLANT HAMMOND PARCEL F

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Matchline Sheet 5

Matchline Sheet 9

SEE INDEX SHEET FOR LEGEND

SHEET 08
OF 9

TOPOGRAPHIC SURVEY OF
PLANT HAMMOND PARCEL F

PROJECT: Southern Company Services
Plant Hammond Parcel F

JOB NUMBER: 1020059533
DATE: 5/5/2023
SCALE: 1"=100'
AERIAL SENSOR: Reigl VQ-480ii
ACQUISITION DATE: 12/27/2020
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LSF No. 001114

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Matchline Sheet 8



SEE INDEX SHEET FOR LEGEND

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COORDINATES:	NAD 83 SPCS_GA_WEST_NAVD88_USFT
NOTES:	

TOPOGRAPHIC SURVEY OF

PLANT HAMMOND PARCEL F

SHEET 09

OF 9

APPENDIX G
DRILLER'S BONDS, 2021-2022

Water Well Standards Advisory Council

Georgia Environmental Protection Division
(Agent for Council)

531 Main St., Suite D
Tifton, Georgia 31794
229-391-2400

May 25, 2021

BENJAMIN HALADA
STANTEC CONSULTING SERVICES INC
3052 BEAUMONT CENTRE CIR
LEXINGTON, KY 40513

Re: Bonded Driller ID# 30
Bond or Irrevocable Letter of Credit Renewal for 2021-2023

Your bond, letter of credit, or continuation notice as required by O.C.G.A § 12-5-135 has been received and will expire on June 30, 2023.

Reminder:

O.C.G.A. § 12-5-125 License requirement; drilling under direction of professional geologist or engineer. Except as provided in subsection (f) of Code Section 12-5-127, no person shall drill a water well or geothermal borehole without first having a water well contractor's license issued by the council. No person, including licensed water well contractors, shall drill any kind of well, borehole, or corehole, other than a water well or geothermal borehole, unless such person is acting under the direction of a professional geologist or a professional engineer.

If you have any questions, please contact us at (229) 391-2400.

Sincerely,

J Edward Rooks

J. Edward Rooks

Bond Number K09640344

Performance Bond For Drillers

Name of Driller Benjamin Halada (of Stantec Consulting Services, Inc.)

Know All Men By These Presents

That we [NAME OF DRILLER] Benjamin Halada and [NAME OF DRILLER'S COMPANY] Stantec Consulting Services Inc. any and all employees, officers and partners (collectively hereinafter, **Principal**), **and we** [NAME OF SURETY] Westchester Fire Insurance Company, duly organized under the laws of the State of Pennsylvania (hereinafter, **Surety**), are held and firmly bound unto the Director of the Environmental Protection Division, Department of Natural Resources, State of Georgia (**Director**) and his or her Successor or Successors in office, as **Obligee**, in the full sum of **FIFTEEN THOUSAND DOLLARS ($15,000.00)** for the payment of which will and truly to be made, the Principal and Surety bind ourselves, our heirs, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, the Water Well Standards Act of 1985 (O.C.G.A. §§ 12-5-120 *et seq.*) (the Act) requires that a Driller, as that term is defined by the Act, have a performance bond with the Director to ensure compliance with the Act; and WHEREAS the above bound Principal is subject to the terms and provisions of said Act.

NOW, THEREFORE, the conditions of this obligation are such that if the above bound Principal shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the Act as now and hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise it shall remain in full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in anyway discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption or modification.

This bond shall be effective from the 30th day of June, 20 21 and shall continue in effect until June 30, 2023, unless sooner terminated by mutual agreement of Principal and Surety, provided that no such termination may be made unless sixty (60) days' prior written notice is made to the Director. In the event of such termination, the rights of the Director as Obligee and beneficiaries under this bond which arose prior to such termination shall continue.

IN WITNESS THEREOF the Principal and Surety have caused these present to be duly signed and sealed, this the 29th day of April, 20 21.

Principal
Stantec Consulting Services Inc.

Print name: PAUL ALAFRN

Title: SENIOR VICE PRESIDENT

Seal:

Surety
Westchester Fire Insurance Company

Print name: Debra J. Scarborough

Title: Attorney-in-Fact

Seal:

Revised 03.17.2021

CHUBB

Power of Attorney

Federal Insurance Company | Vigilant Insurance Company | Pacific Indemnity Company
Westchester Fire Insurance Company | ACE American Insurance Company

Know All by These Presents, that **FEDERAL INSURANCE COMPANY**, an Indiana corporation, **VIGILANT INSURANCE COMPANY**, a New York corporation, **PACIFIC INDEMNITY COMPANY**, a Wisconsin corporation, **WESTCHESTER FIRE INSURANCE COMPANY** and **ACE AMERICAN INSURANCE COMPANY** corporations of the Commonwealth of Pennsylvania, do each hereby constitute and appoint Christy M. Braile, Jeffrey C. Carey, Mary T. Flanigan, Tahitia M. Fry, C. Stephens Griggs, Veronica Lawver, Rebecca S. Leal, Charissa D. Lecuyer, Kellie A. Meyer, Patrick T. Pribyl, Debra J. Scarborough, Lauren Scott, Evan D. Sizemore and Charles R. Teter, III of Kansas City, Missouri ----------

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY** and **ACE AMERICAN INSURANCE COMPANY** have each executed and attested these presents and affixed their corporate seals on this **6th** day of **October, 2020.**

Dawn M. Chloros

Dawn M. Chloros, Assistant Secretary

Stephen M. Haney

Stephen M. Haney, Vice President

STATE OF NEW JERSEY
County of Hunterdon SS.

On this **6th** day of **October, 2020,** before me, a Notary Public of New Jersey, personally came Dawn M. Chloros and Stephen M. Haney, to me known to be Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY, the companies which executed the foregoing Power of Attorney, and the said Dawn M. Chloros and Stephen M. Haney, being by me duly sworn, severally and each for herself and himself did depose and say that they are Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY and know the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that their signatures as such officers were duly affixed and subscribed by like authority.

Notarial Seal

KATHERINE J. ADELAAR
NOTARY PUBLIC OF NEW JERSEY
No. 2316686
Commission Expires July 16, 2024

Notary Public

CERTIFICATION

Resolutions adopted by the Boards of Directors of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY on August 30, 2016; WESTCHESTER FIRE INSURANCE COMPANY on December 11, 2006; and ACE AMERICAN INSURANCE COMPANY on March 20, 2009:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

(1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.

(2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.

(3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, Dawn M. Chloros, Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY (the "Companies") do hereby certify that

(i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
(ii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this April 29, 2021.

Dawn M. Chloros

Dawn M. Chloros, Assistant Secretary

IN THE EVENT YOU WISH TO VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT:
Telephone (908) 903-3493 Fax (908) 903-3656 e-mail: surety@chubb.com

CONTINUATION
CERTIFICATE

SAFECO Insurance Company of America , Surety upon

a certain Bond No. **4993104**

dated effective June 30, 1987
(MONTH-DAY-YEAR)

on behalf of Southern Company Services, Inc.
(PRINCIPAL)

and in favor of Georgia Department of Natural Resources, Environmental Protection Division
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2021
(MONTH-DAY-YEAR)

and ending on June 30, 2022
(MONTH-DAY-YEAR)

Amount of bond Fifteen Thousand Dollars and 00/100 ($15,000.00)

Description of bond Water Well Contractors & Drillers

Premium: $100.00

PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on 05/06/2021
(MONTH-DAY-YEAR)
SAFECO Insurance Company of America
175 Berkeley Street, Boston, MA 02116

By
Attorney-in-Fact Jeffrey M. Wilson, Attorney-in-Fact

McGriff Insurance Services, Inc.
Agent
2211 7th Avenue South, Birmingham, AL 35233
Address of Agent
(205) 252-9871
Telephone Number of Agent

S-0157/GE 8/08

XDP

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual. SURETY

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

Certificate No: **8205019-016032**

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Alisa B. Ferris; Anna Childress; Jeffrey M. Wilson; Mark W. Edwards II; Richard H. Mitchell; Robert R. Freel; Sam Audia; William M. Smith

all of the city of Birmingham state of AL each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 11th day of March, 2021.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: David M. Carey
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 11th day of March, 2021 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

Commonwealth of Pennsylvania - Notary Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number 1126044
Member, Pennsylvania Association of Notaries

By: Teresa Pastella
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 6th day of May, 2021.

By: Renee C. Llewellyn
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.

APPENDIX H
2021 AND 2022 HRL PARCEL F BORING LOGS

APPENDIX H.1

Boring Logs

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **PZ-HS-01**
Client: Southern Company
Boring Location: Lat. 34.290173, Long. -85.300737
Project Number: 175518216
Surface Elevation: 678.2 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 6/14/21
Completed: 6/15/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: N/A
Date/Time: N/A
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	678.2	Top of Hole							
0.3	677.9	TOPSOIL							
		CLAYEY GRAVEL WITH SAND, GC, light brown yellow with pale gray, medium plasticity, soft to medium stiff, dry		SS1	0.0 - 1.5	1.2	1-2-2		
				SS2	1.5 - 3.0	1.2	2-2-3		
				SS3	3.0 - 4.5	1.5	3-5-7		
5.0	673.2								Bulk sample collected from first 9.0 feet bgs.
		CLAYEY WELL GRADED SAND LITTLE SILT, SW, light brown with dark orange red, very fine to medium, medium dense to dense, moist, Stratified, iron oxide stains on bedding planes, red and pale gray mottled clay **[WEATHERED SANDSTONE]**		SS4	4.5 - 6.0	1.5	8-14-13		Rough drilling
				SS5	6.0 - 7.5	1.5	6-11-12		
				SS6	7.5 - 9.0	1.3	10-15-22		
10.0	668.2			SS7	9.0 - 10.5	1.5	9-16-17		

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **PZ-HS-01**
Boring Location Lat. 34.290173, Long. -85.300737
Surface Elevation 678.2 ft Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample / Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
Depth Ft	Elevation									
10			CLAYEY WELL GRADED SAND WITH SILT, SW, dark orange brown with dark black white, very fine to medium, dense to very dense, moist, Stratified, iron oxide stains on bedding planes, red and pale gray mottled clay **[WEATHERED SANDSTONE]**							
11										
12	12.2	666.0								

Refusal /
Bottom of Hole at 12.2 Ft.

Top of Rock = 12.2 Ft.
Top of Rock Elevation = 666.0 Ft.

Boring backfilled with non-shrinking cement and 30% bentonite grout mixture.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **BH-HS-02**
Client: Southern Company
Boring Location: Lat. 34.291068, Long. -85.299207
Project Number: 175518216
Surface Elevation: 682.7 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 5/18/21
Completed: 5/18/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 24.4 ft
Date/Time: 5/19/21 08:35
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	682.7	Top of Hole							
0		ROCK FILL, limestone gravel fill in clay matrix		SS1	0.0 - 1.5	1.1	3-6-7		
1.5	681.2	LEAN CLAY WITH SAND, CL, dark red orange, low plasticity, soft to very stiff, moist, slight organic odor, iron oxide staining, woody debris, gray mottling, possible fill material from 1.5 to 10.0 feet bgs		SS2	1.5 - 3.0	0.9	7-7-7		
				SS3	3.0 - 4.5	1.3	4-3-5		
				SS4	4.5 - 6.0	1.5	2-1-1		Bulk sample collected from first 10.0 feet bgs.
				SS5	6.0 - 7.5	0.7	2-2-6		
				SS6	7.5 - 9.0	1.0	2-2-3		
				SS7	9.0 - 10.5	1.5	3-8-6		

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Client: Southern Company
Project Number: 175518216

Stantec Boring No.: **BH-HS-02**
Boring Location: Lat. 34.291068, Long. -85.299207
Surface Elevation: 682.7 ft
Elevation Datum: NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
15–19		LEAN CLAY WITH SAND, CL, dark red orange, low plasticity, soft to very stiff, moist, slight organic odor, iron oxide staining, woody debris, gray mottling, possible fill material from 1.5 to 10.0 feet bgs *(Continued)*		SS8	15.0 - 16.5	1.5	5-9-13		
20.0	662.7								Auger chatter
20–23		SILTY LEAN CLAY, CL-ML, dark gray, non to low plasticity, very hard, moist, **[SHALE RESIDUUM]**		SS9	20.0 - 21.5	1.5	9-16-31		
24 ▽									
25–26				SS10	25.0 - 26.5	0.6	12-50/0.1'		
27–31				SS11	30.0 - 31.5	1.2	24-39-50/0.2'		
32–33									

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATAT R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **BH-HS-02**
Boring Location Lat. 34.291068, Long. -85.299207
Surface Elevation 682.7 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation		Description	Overburden: / Rock Core:	Sample / Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
34			SILTY LEAN CLAY, CL-ML, dark gray, non to low plasticity, very hard, moist, **[SHALE RESIDUUM]** *(Continued)*							
35										
36	36.1	646.6			SS12	35.0 - 36.1	1.1	34-43-50/0.1'		

No Refusal /
Bottom of Hole at 36.1 Ft.

Boring terminated at 36.1 feet bgs due to three consecutive 50+ blow counts.
Boring backfilled with non-shrinking cement and 30% bentonite grout mixture.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC_1755 STD DATA.GDT R0 11-9-20 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **BH-HS-03**
Client: Southern Company
Boring Location: Lat. 34.291210, Long. -85.295206
Project Number: 175518216
Surface Elevation: 650.5 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 6/4/21
Completed: 6/4/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 2.7 ft
Date/Time: 6/4/21 12:58
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	650.5	Top of Hole							
0.2	650.3	TOPSOIL							
		LEAN CLAY, CL, dark red orange and pale olive gray, low plasticity, medium stiff, iron oxide staining, Stratified, bedding planes noted in soil fabric, fissile **[PARTIALLY WEATHERED SHALE with interbedded WEATHERED SANDSTONE]**		SS1	0.0 - 1.5	1.0	2-4-5		
				SS2	1.5 - 3.0	1.5	5-11-11		
				SS3	3.0 - 4.5	1.5	7-16-18		
4.0	646.5	LEAN CLAY TRACE SAND, CL, dark gray and pale orange gray, low plasticity, hard, Stratified, bedding planes with iron oxide staining **[PARTIALLY WEATHERED SHALE]**		SS4	4.5 - 6.0	1.5	11-25-28		Bulk sample collected from interval 2.0 to 10.0 feet bgs.
6.3	644.2	LEAN CLAY, CL, very dark gray black and, low plasticity, very hard, moist to wet, Stratified, whitish gray thin interbedding, very fissile, siliceous **[PARTIALLY WEATHERED SHALE]**		SS5	6.0 - 7.5	1.5	13-38-37		
				SS6	7.5 - 9.0	1.3	13-17-28		
				SS7	9.0 - 10.5	1.5	12-26-33		
15.0	635.5								

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC_1755 STD DATA(T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **BH-HS-03**
Boring Location Lat. 34.291210, Long. -85.295206
Surface Elevation 650.5 ft Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
Depth Ft	Elevation									
15			WELL GRADED GRAVEL WITH CLAY, GW-GC, very dark gray black with light olive white, very fine to medium, hard, wet, **[WEATHERED SHALE]**		SS8	15.0 - 16.5	1.5	10-17-17		Wet spoon at 16.5 feet bgs
16										
17										
17.5	633.0		Refusal / Bottom of Hole at 17.5 Ft.							

Top of Rock = 17.5 Ft.
Top of Rock Elevation = 633.0 Ft.

Boring backfilled with non-shrinking cement and 30% bentonite grout mixture.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA(T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **BH-HS-04**
Client: Southern Company
Boring Location: Lat. 34.290206, Long. -85.297598
Project Number: 175518216
Surface Elevation: 699.2 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 6/6/21
Completed: 6/6/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: N/A
Date/Time: N/A
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	699.2	Top of Hole							
0		TOPSOIL		SS1	0.0 - 1.5	0.1	2-5-9		
1.5	697.7	CLAYEY SAND, SC, dark brown black and dark orange red, very fine to medium, loose to medium dense, moist, iron oxide staining		SS2	1.5 - 3.0	1.3	7-6-6		
2.5	696.7	CLAYEY SAND, SC, very dark brown gray and dark orange red, very fine to medium, loose, moist, iron oxide staining, roots **[WEATHERED SHALE]**		SS3	3.0 - 4.5	0.7	2-1-2		
5.0	694.2	WELL GRADED GRAVEL WITH CLAY WITH SAND, GW-GC, very dark brown gray and dark orange, very fine to medium, loose, moist, roots **[WEATHERED SHALE]**		SS4	4.5 - 6.0	1.0	1-1-1		Bulk sample collected from interval 2.0 to 10.0 feet bgs.
				SS5	6.0 - 7.5	1.0	1-1-2		
8.1	691.1	SANDY LEAN CLAY, CL, dark brown orange with pale olive gray, low plasticity, medium stiff, moist, iron oxide staining, potential fill material		SS6	7.5 - 9.0	1.3	2-3-5		
				SS7	9.0 - 10.5	1.5	3-4-5		

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Client: Southern Company
Project Number: 175518216

Stantec Boring No.: **BH-HS-04**
Boring Location: Lat. 34.290206, Long. -85.297598
Surface Elevation: 699.2 ft
Elevation Datum: NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
15.5	683.7								
		CLAYEY SAND TRACE GRAVEL, SC, dark brown with pale olive gray, fine to medium, medium dense, moist, **[WEATHERED SANDSTONE]**		SS8	15.0 - 16.5	1.5	5-7-9		
21.0	678.2			SS9	20.0 - 21.5	1.3	2-2-2		
		SANDY LEAN CLAY TRACE GRAVEL, CL, light brown orange with pale olive gray, medium plasticity, soft, moist, iron oxide staining, very fine to medium-grained sands **[WEATHERED SHALE and WEATHERED SANDSTONE]**							
25.0	674.2								
		SANDY LEAN CLAY, CL, dark gray to pale olive gray, stiff, moist, very fine to medium-grained sands		SS10	25.0 - 26.5	1.5	3-7-6		
30.0	669.2								
		SANDY LEAN CLAY, CL, very dark gray to pale olive gray, non-plastic, very hard, moist, Stratified, very fissile, white siliceous stringers, some red orange iron oxide bedding plane staining at 35 ft bgs **[WEATHERED SHALE]**		SS11	30.0 - 31.5	0.7	32-50/0.2'		

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **BH-HS-04**
Boring Location Lat. 34.290206, Long. -85.297598
Surface Elevation 699.2 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation		Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
34			SANDY LEAN CLAY, CL, very dark gray to pale olive gray, non-plastic, very hard, moist, Stratified, very fissile, white siliceous stringers, some red orange iron oxide bedding plane staining at 35 ft bgs **[WEATHERED SHALE]** ***(Continued)***		SS12	35.0 - 36.5	0.7	40-50/0.2'		
35										
36										
37										
38										
39										
	39.6	659.6								

Refusal /
Bottom of Hole at 39.6 Ft.

Top of Rock = 39.6 Ft.
Top of Rock Elevation = 659.6 Ft.

Boring backfilled with non-shrinking cement and 30% bentonite grout mixture.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATAT R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **BH-HS-05**
Client: Southern Company
Boring Location: Lat. 34.288362, Long. -85.301112
Project Number: 175518216
Surface Elevation: 681.4 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 5/20/21
Completed: 5/21/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 21.1 ft
Date/Time: 5/21/21 09:18
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description (Overburden: / Rock Core:)	Sample	Depth Ft Run Ft	Rec. Ft Rec. Ft	Blows/PSI Rec. %	WC % RQD %	Remarks
0.0	681.4	Top of Hole						
0		TOPSOIL, red, gravelly chert in sandy clay soil	SS1	0.0 - 1.5	1.3	3-3-4		
1.5	679.9	SANDY LEAN CLAY SOME GRAVEL, CL, dark red orange and pale gray, non to low plasticity, soft, dry, iron oxide staining	SS2	1.5 - 3.0	0.8	2-2-4		
3.0	678.4	SANDY SILTY CLAY, CL-ML, light red orange and pale olive gray, low plasticity, medium stiff, moist, iron oxide staining, lensed, manganese staining, moist at 7.5 ft	SS3	3.0 - 4.5	1.5	3-3-3		
			SS4	4.5 - 6.0	1.5	2-2-11		Bulk sample collected from first 10.0 feet bgs.
			SS5	6.0 - 7.5	1.3	2-15-14		
7.5	673.9	LEAN CLAY, CL, dark orange brown and dark olive gray, very stiff to hard, moist, iron oxide staining, stratified	SS6	7.5 - 9.0	1.5	11-15-20		
10.0	671.4	LEAN CLAY, CL, dark orange brown and dark olive gray, very stiff to hard, moist, iron oxide staining, lensed, increased graying at 10.5 ft bgs **[PARTIALLY WEATHERED SHALE]**	SS7	9.0 - 10.5	1.3	13-33-50/0.3'		
15.0	666.4							

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC_1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **BH-HS-05**
Client: Southern Company
Boring Location: Lat. 34.288362, Long. -85.301112
Project Number: 175518216
Surface Elevation: 681.4 ft
Elevation Datum: NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
15		LEAN CLAY, CL, very dark gray and light orange white, moist, iron oxide staining, stratified, weak cementation, siliceous stringers, fissile **[PARTIALLY WEATHERED SHALE]**		SS8	15.0 - 16.5	0.7	25-50/0.2'		
16									
17									
18									
19									
20									
21 ▽				SS9	20.0 - 21.5	0.6	48-50/0.1'		
22									
23									
24									
25									
26		wet at 26 feet bgs		SS10	25.0 - 26.5	0.6	36-50/0.1'		
27									
28									
29									
30									
31				SS11	30.0 - 31.5	0.7	48-50/0.2'		
32									
33									

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATAT R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **BH-HS-05**
Boring Location Lat. 34.288362, Long. -85.301112
Surface Elevation 681.4 ft Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
Depth Ft	Elevation									
34 35 36 37	37.0	644.4	LEAN CLAY, CL, very dark gray and light orange white, moist, iron oxide staining, stratified, weak cementation, siliceous stringers, fissile **[PARTIALLY WEATHERED SHALE]** *(Continued)*		SS12	35.0 - 36.5	0.4	50/0.4'		

Refusal /
Bottom of Hole at 37.0 Ft.

Top of Rock = 37.0 Ft.
Top of Rock Elevation = 644.4 Ft.

Boring backfilled with non-shrinking cement and 30% bentonite grout mixture.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA(T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **BH-HS-06**
Client: Southern Company
Boring Location: Lat. 34.288921, Long. -85.296788
Project Number: 175518216
Surface Elevation: 684.2 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 6/5/21
Completed: 6/5/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 34.4 ft
Date/Time: 6/5/21 15:33
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	684.2	Top of Hole							
0.5	683.7	TOPSOIL							
		SANDY LEAN CLAY, CL, light brown yellow and dark orange red, low plasticity, medium stiff, some pale mottling features, possible fill		SS1	0.0 - 1.5	1.3	2-7-8		
				SS2	1.5 - 3.0	1.3	4-6-7		
3.0	681.2	SILTY LEAN CLAY WITH SAND, CL-ML, dark gray brown and dark brown, medium plasticity, soft, moist, iron oxide staining, some pale mottling features, black woody material, embankment fill material		SS3	3.0 - 4.5	1.5	3-2-2		
				SS4	4.5 - 6.0	1.3	2-1-2		Bulk sample collected from first 10.0 feet bgs.
				SS5	6.0 - 7.5	1.3	1-1-1		
				SS6	7.5 - 9.0	0.3	WH-WH-WH		
				SS7	9.0 - 10.5	1.0	WH-WH-1		
15.0	669.2								

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC_1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Client: Southern Company
Project Number: 175518216

Stantec Boring No.: **BH-HS-06**
Boring Location: Lat. 34.288921, Long. -85.296788
Surface Elevation: 684.2 ft
Elevation Datum: NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
15		SANDY POORLY GRADED GRAVEL WITH CLAY, GP-GC, dark gray and dark orange red, medium dense to very dense, moist, iron oxide staining, Lensed, interbedded red orange fine-grained sand, some pale gray white mottling features **[PARTIALLY WEATHERED SHALE]**		SS8	15.0 - 16.5	1.0	7-10-12		
20				SS9	20.0 - 21.5	1.5	8-11-18		
25	658.7								
25.5		GRAVELLY LEAN CLAY, GC, very dark gray black and light olive white, non-plastic to low plasticity, medium stiff to very hard, moist, iron oxide staining, Stratified, some pale gray white interbedding, fissile **[PARTIALLY WEATHERED SHALE]**		SS10	25.0 - 26.5	1.3	17-28-50		
30				SS11	30.0 - 31.5	0.4	50/0.3'		
33									

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **BH-HS-06**
Boring Location Lat. 34.288921, Long. -85.296788
Surface Elevation 684.2 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
34 ▽		GRAVELLY LEAN CLAY, GC, very dark gray black and light olive white, non-plastic to low plasticity, medium stiff to very hard, moist, iron oxide staining, Stratified, some pale gray white interbedding, fissile **[PARTIALLY WEATHERED SHALE]** ***(Continued)***		SS12	35.0 - 36.5	0.4	50/0.3'		
35									
36									
37									
38	645.9								
38.3		Refusal / Bottom of Hole at 38.3 Ft.							

Top of Rock = 38.3 Ft.
Top of Rock Elevation = 645.9 Ft.

Boring backfilled with non-shrinking cement and 30% bentonite grout mixture.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ_BC 1755 STD DATA(T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **BH-HS-07**
Client: Southern Company
Boring Location: Lat. 34.287808, Long. -85.299580
Project Number: 175518216
Surface Elevation: 711.3 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 5/21/21
Completed: 5/21/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 30.2 ft
Date/Time: 5/21/21 20:11
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	711.3	Top of Hole							
0		TOPSOIL, rocky, possible residuum very shallow		SS1	0.0 - 1.5	1.3	3-4-8		
1.5	709.8	LEAN CLAY WITH SAND, CL, pale olive gray with dark red orange, non to low plasticity, hard, dry to moist, Stratified, red orange manganese and iron oxide staining		SS2	1.5 - 3.0	1.3	9-13-17		
4.0	707.3	SANDY LEAN CLAY, CL, dark gray, non-plastic, very hard, moist, Stratified, very fissile **[WEATHERED SHALE]**		SS3	3.0 - 4.5	1.2	13-44-50/0.2'		
				SS4	4.5 - 6.0	1.2	20-47-50/0.2'		Bulk sample collected from first 10.0 feet bgs.
				SS5	6.0 - 7.5	0.6	30-50/0.1'		
				SS6	7.5 - 9.0	0.7	40-50/0.2'		
				SS7	9.0 - 10.5	0.8	27-50/0.3'		
15.0	696.3	SILTY LEAN CLAY, CL-ML, very dark gray with dark red orange, very hard, moist, Stratified, fissile, occasional iron oxide staining **[PARTIALLY WEATHERED SHALE]**		SS8	15.0 - 16.5	1.5	15-32-49		

STANTEC 1755 STD_LAB_175518216_HAMMOND_FIELD-CHECK.GPJ_BC_1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **BH-HS-07**
Boring Location Lat. 34.287808, Long. -85.299580
Surface Elevation 711.3 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
20–29		SILTY LEAN CLAY, CL-ML, very dark gray with dark red orange, very hard, moist, Stratified, fissile, occasional iron oxide staining **[PARTIALLY WEATHERED SHALE]** *(Continued)*		SS9	20.0 - 21.5	0.4	50/0.4'		
				SS10	25.0 - 26.5	0.2	50/0.2'		
30	681.3								Rough drilling
30–32		CLAYEY POORLY GRADED SAND, SP-SC, dark brown to light orange, fine, dense, wet, moderate cementation, arenite, **[WEATHERED SANDSTONE]**		SS11	30.0 - 31.5	1.5	14-14-40		
32.6	678.7								

Refusal /
Bottom of Hole at 32.6 Ft.

Top of Rock = 32.6 Ft.
Top of Rock Elevation = 678.7 Ft.

Boring backfilled with non-shrinking cement and 30% bentonite grout mixture.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATAT R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **BH-HS-08**
Client: Southern Company
Boring Location: Lat. 34.287729, Long. -85.297527
Project Number: 175518216
Surface Elevation: 715.6 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 5/23/21
Completed: 5/23/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: N/A
Date/Time: N/A
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	715.6	Top of Hole							
0		TOPSOIL, brown orange, very fine sandy silt		SS1	0.0 - 1.5	1.3	3-3-3		
1.5	714.1	SILTY POORLY GRADED SAND WITH CLAY, SP-SC, dark orange brown, very fine to fine, loose to medium dense, moist		SS2	1.5 - 3.0	1.3	3-5-6		
3.0	712.6	SANDY SILT, ML, very dark orange brown, fine, medium dense to dense, moist, iron oxide staining, homogeneous, very dark grey oxide staining, darkening brown hue with increased depth		SS3	3.0 - 4.5	1.5	2-3-4		
				SS4	4.5 - 6.0	1.5	3-4-13		Bulk sample collected from first 10.0 feet bgs.
6.9	708.7			SS5	6.0 - 7.5	1.5	13-20-14		
8.0	707.6	LEAN CLAY, CL, very dark brown orange with pale olive gray, low to medium plasticity, hard, moist, iron oxide staining, lensed, brown weathered surface with gravel noted at 6.9 ft		SS6	7.5 - 9.0	1.5	12-15-29		
		LEAN CLAY, CL, pale gray with dark orange, low plasticity, hard to very hard, moist, lensed		SS7	9.0 - 10.5	1.5	13-16-25		

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC_1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **BH-HS-08**
Boring Location Lat. 34.287729, Long. -85.297527
Surface Elevation 715.6 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
15		LEAN CLAY, CL, pale gray with dark orange, low plasticity, hard to very hard, moist, lensed *(Continued)*		SS8	15.0 - 16.5	1.5	13-30-33		
16.5	699.1	LEAN CLAY, CL, pale gray with dark orange, non-plastic to low plasticity, hard to very hard, moist, lensed, **[WEATHERED SHALE]**							
20				SS9	20.0 - 21.5	0.5	25-50/0.3'		
21		fissility increases at 21.5 feet bgs							
25				SS10	25.0 - 26.5	0.7	29-50/0.2'		
27.7	687.9	Refusal / Bottom of Hole at 27.7 Ft.							

Top of Rock = 27.7 Ft.
Top of Rock Elevation = 687.9 Ft.

Boring backfilled with non-shrinking cement and 30% bentonite grout mixture.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA(T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **BH-HS-09**
Client: Southern Company
Boring Location: Lat. 34.288029, Long. -85.294846
Project Number: 175518216
Surface Elevation: 714.9 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 5/22/21
Completed: 5/23/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: N/A
Date/Time: N/A
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	714.9	Top of Hole							
0		ROCK FILL, Dark brown orange, fine sandstone gravel with very weathered iron oxide bedding features		SS1	0.0 - 1.5	1.4	3-10-13		
1									
2				SS2	1.5 - 3.0	1.5	16-28-31		
3.0	711.9								
3		WELL GRADED SAND WITH CLAY, SW-SC, light olive gray and dark red orange mottling, fine, very dense, dry to moist, iron oxide staining, Blocky, manganese nodules at 4.2 feet		SS3	3.0 - 4.5	1.2	11-31-50/0.2'		
4.2	710.7								
4		SILTY CLAYEY SAND WITH GRAVEL, SC-SM, light olive gray and very dark red orange, non-plastic to low plasticity, very dense, dry to moist, iron oxide staining, Lensed, **[WEATHERED SHALE and interbedded WEATHERED SANDSTONE]**		SS4	4.5 - 6.0	1.3	20-46-50/0.3'		Bulk sample collected from first 10.0 feet bgs.
5									
6				SS5	6.0 - 7.5	1.5	10-20-45		
7									
8				SS6	7.5 - 9.0	1.5	17-29-42		
9									
10				SS7	9.0 - 10.5	0.9	14-50/0.4'		

STANTEC 1755 STD_LAB_175518216_HAMMOND_FIELD-CHECK.GPJ_BC_1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **BH-HS-09**
Boring Location Lat. 34.288029, Long. -85.294846
Surface Elevation 714.9 ft Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample / Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
Depth Ft	Elevation									
10			SILTY CLAYEY SAND WITH GRAVEL, SC-SM, light olive gray and very dark red orange, non-plastic to low plasticity, very dense, dry to moist, iron oxide staining, Lensed, **[WEATHERED SHALE and interbedded WEATHERED SANDSTONE]** *(Continued)*							
11										
12	12.3	702.6								

Refusal /
Bottom of Hole at 12.3 Ft.

Top of Rock = 12.3 Ft.
Top of Rock Elevation = 702.6 Ft.

Boring backfilled with non-shrinking cement and 30% bentonite grout mixture.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **BH-HS-10**
Client: Southern Company
Boring Location: Lat. 34.286344, Long. -85.299876
Project Number: 175518216
Surface Elevation: 716.9 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 5/25/21
Completed: 5/25/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 25.3 ft
Date/Time: 5/25/21 11:25
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	716.9	Top of Hole							
0		TOPSOIL, brown gray, gravelly		SS1	0.0 - 1.5	1.1	2-3-3		
2.0	714.9	SILTY CLAYEY SAND WITH GRAVEL, SC-SM, dark red orange and dark brown mottling, non to low plasticity, loose, dry to moist, iron oxide staining, fine-grained sands		SS2	1.5 - 3.0	1.0	5-3-3		
				SS3	3.0 - 4.5	0.9	2-1-2		
5.0	711.9	SANDY LEAN CLAY WITH GRAVEL, CL, dark red orange with pale olive gray mottling, low plasticity, stiff, dry to moist, iron oxide staining, fine-grained sands		SS4	4.5 - 6.0	1.5	3-7-7		Bulk sample collected from first 10.0 feet bgs.
6.0	710.9	SANDY LEAN CLAY WITH GRAVEL, CL, very dark red orange and dark brown, low plasticity, very stiff, dry to moist, iron oxide staining, stratified, fine-grained sands, manganese mottling		SS5	6.0 - 7.5	1.4	3-9-11		
8.0	708.9	SANDY LEAN CLAY TRACE GRAVEL, CL, dark red orange and pale brown mottling, low to medium plasticity, soft to hard, dry to moist, iron oxide staining, laminated		SS6	7.5 - 9.0	1.4	6-5-5		
		increase in more gray mottling at 10.5 feet bgs		SS7	9.0 - 10.5	1.5	2-3-5		

STANTEC 1755 STD_LAB_175518216_HAMMOND_FIELD-CHECK.GPJ_BC_1755 STD DATA(T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Client: Southern Company
Project Number: 175518216

Stantec Boring No.: **BH-HS-10**
Boring Location: Lat. 34.286344, Long. -85.299876
Surface Elevation: 716.9 ft
Elevation Datum: NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
15.2	701.7	LEAN CLAY TRACE SAND, CL, very dark red orange and dark gray, hard, moist, laminated, iron oxide and manganese staining on bedding planes **[PARTIALLY WEATHERED SHALE]**		SS8	15.0 - 16.5	1.5	16-27-20		
20.4	696.5	SANDY LEAN CLAY, CL, dark red orange and dark gray, medium stiff, moist, iron oxide staining, poorly graded, pale brown mottling		SS9	20.0 - 21.5	1.5	8-4-6		
25.4	691.5								
26.5	690.4	GRAVELLY LEAN CLAY TRACE SAND, CL, very dark gray and dark brown, hard, moist to wet, stratified, very fissile **[PARTIALLY WEATHERED SHALE]**		SS10	25.0 - 26.5	0.9	31-50/0.4'		Rough drilling

Refusal /
Bottom of Hole at 26.5 Ft.

Top of Rock = 26.5 Ft.
Top of Rock Elevation = 690.4 Ft.

Boring backfilled with non-shrinking cement and 30% bentonite grout mixture.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **BH-HS-11**
Client: Southern Company
Boring Location: Lat. 34.287033, Long. -85.295981
Project Number: 175518216
Surface Elevation: 723.4 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 5/22/21
Completed: 5/22/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: N/A
Date/Time: N/A
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	723.4	Top of Hole							
0		ROCK FILL, orange, fine sand gravel fill on bench, lensed		SS1	0.0 - 1.5	1.4	2-3-7		
2				SS2	1.5 - 3.0	1.4	10-15-24		
4				SS3	3.0 - 4.5	1.5	9-25-35		
5				SS4	4.5 - 6.0	1.4	14-33-50/0.4'		
7				SS5	6.0 - 7.5	1.5	17-22-28		
8				SS6	7.5 - 9.0	1.4	16-20-26		
10				SS7	9.0 - 10.5	1.5	10-19-24		
15									

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA(T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **BH-HS-11**
Client Southern Company
Boring Location Lat. 34.287033, Long. -85.295981
Project Number 175518216
Surface Elevation 723.4 ft
Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
Depth Ft	Elevation									
15			ROCK FILL, orange, fine sand gravel fill on bench, lensed *(Continued)*		SS8	15.0 - 16.5	1.5	11-13-17		Bulk sample collected from interval 15.0 to 20.0 feet bgs.
16										
17										
18										
19										
20					SS9	20.0 - 21.5	1.5	15-16-17		
21										
22										
23										
24										
25	25.0	698.4	CLAYEY SAND LITTLE SAND, SC, dark gray and very dark red orange, dense, moist, Stratified, fissile, with manganese and iron oxide staining on bedding planes. **[WEATHERED SHALE]**		SS10	25.0 - 26.5	1.5	23-38-38		
26										
27										
28										
29										
30					SS11	30.0 - 31.5	1.5	23-16-19		
31										
32										
33										

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC_1755 STD DATA(T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **BH-HS-11**
Client Southern Company
Boring Location Lat. 34.287033, Long. -85.295981
Project Number 175518216
Surface Elevation 723.4 ft
Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
Depth Ft	Elevation									
34			CLAYEY SAND LITTLE SAND, SC, dark gray and very dark red orange, dense, moist, Stratified, fissile, with manganese and iron oxide staining on bedding planes. **[WEATHERED SHALE]** *(Continued)*		SS12	35.0 - 36.5	1.5	14-36-34		
35										
36										
37										
38										
39	39.2	684.2								

Refusal /
Bottom of Hole at 39.2 Ft.

Top of Rock = 39.2 Ft.
Top of Rock Elevation = 684.2 Ft.

Boring backfilled with non-shrinking cement and 30% bentonite grout mixture.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ_BC 1755 STD DATAT R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **BH-HS-01**
Client: Southern Company
Boring Location: Lat. 34.289116, Long. -85.302585
Project Number: 175518216
Surface Elevation: 703.3 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 6/15/21
Completed: 6/16/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 52.7 ft
Date/Time: 6/16/21 15:15
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	703.3	Top of Hole							
0.5	702.8	TOPSOIL, pine straw, leaves							
		SANDY WELL GRADED GRAVEL WITH CLAY SOME SILT, GW, light brown orange and dark red, very fine to coarse, loose to medium dense, dry, iron oxide staining, red and pale olive mottled clay partings **[WEATHERED SANDSTONE]**		SS1	0.0 - 1.5	1.2	2-2-3		
				SS2	1.5 - 3.0	1.5	3-6-18		
2.5	700.8								
		SILTY LEAN CLAY WITH SAND, CL-ML, light brown orange and dark red olive, very fine to medium, medium dense to very dense, dry to moist, iron oxide staining, Lensed, red and pale olive clay partings, friable **[WEATHERED SANDSTONE]**		SS3	3.0 - 4.5	1.3	17-28-39		
				SS4	4.5 - 6.0	1.4	15-28-50/0.4'		Bulk sample collected from first 9.0 feet bgs.
5.9	697.4								
		SILTY WELL GRADED SAND WITH CLAY TRACE GRAVEL, SW-SM, dark brown orange and light pink olive, very fine to medium, dense to very dense, dry to moist, iron oxide staining, Lensed, black brown manganese staining, friable **[WEATHERED SHALE]**		SS5	6.0 - 7.5	1.4	14-31-37		
				SS6	7.5 - 9.0	1.5	17-26-36		
				SS7	9.0 - 10.5	1.3	16-46-50/0.3'		
15.0	688.3								

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC_1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Client: Southern Company
Project Number: 175518216

Stantec Boring No.: **BH-HS-01**
Boring Location: Lat. 34.289116, Long. -85.302585
Surface Elevation: 703.3 ft
Elevation Datum: NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
15		GRAVELLY LEAN CLAY TRACE SAND, CL, light brown orange and pale olive tan, low plasticity, medium stiff to hard, dry to moist, iron oxide staining, Lensed, shale comprised of planar dark oxide staining, fissile, sandstone comprised of quartz, feldspar and lithics **[WEATHERED SHALE and interbedded WEATHERED SANDSTONE]**		SS8	15.0 - 16.5	1.5	11-23-23		
16									
17									
18									
19									
20									
21	21.0 682.3			SS9	20.0 - 21.5	1.3	16-35-50/0.3'		
22		GRAVELLY LEAN CLAY TRACE SAND, CL, light gray and pale olive orange, low plasticity, stiff to very hard, dry to moist, Lensed, planar dark oxide staining, dark brown medium to fine sandy iron oxide fill fractures, fissile **[WEATHERED SHALE]**							
23									
24									
25	25.2 678.1								Sandstone gravel contact encountered at 25.2 feet bgs.
26		GRAVELLY LEAN CLAY TRACE SAND, SC, light gray and pale olive orange, low plasticity, stiff to very hard, moist, iron oxide staining, Lensed, Discontinuity at 25.2 ft bgs, planar dark oxide staining, dark brown sandy iron fractures, fissile **[WEATHERED SHALE]**		SS10	25.0 - 26.5	0.9	15-50/0.4'		
27									
28									
29									
30	30.0 673.3								
31		LEAN CLAY TRACE GRAVEL, CL, light gray and pale olive orange, low plasticity, stiff to very hard, dry, Lensed, planar dark oxide staining, dark brown sandy to gravelly iron oxide filled fractures, fissile **[WEATHERED SHALE]**		SS11	30.0 - 31.5	0.8	11-50/0.3'		
32									
33									

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATAT R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Client: Southern Company
Project Number: 175518216

Stantec Boring No.: **BH-HS-01**
Boring Location: Lat. 34.289116, Long. -85.302585
Surface Elevation: 703.3 ft
Elevation Datum: NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
34		LEAN CLAY TRACE GRAVEL, CL, light gray and pale olive orange, low plasticity, stiff to very hard, dry, Lensed, planar dark oxide staining, dark brown sandy to gravelly iron oxide filled fractures, fissile **[WEATHERED SHALE]** ***(Continued)***		SS12	35.0 - 36.5	1.5	16-36-36		
35									
36									
37									
38									
39									
40	40.0 663.3	GRAVELLY CLAYEY SAND, SC, light olive gray and dark red orange, low plasticity, stiff to very hard, moist, Lensed, shale comprised of planar dark oxide staining, fissile, sandstone comprised of quartz and lithics **[WEATHERED SHALE and interbedded WEATHERED SANDSTONE]**		SS13	40.0 - 41.5	0.2	50/0.2'		Sandstone gravel contact encountered at 40.0 feet bgs.
41									
42									
43									
44									
45									Water added to augers in boring to cool bit.
46				SS14	45.0 - 46.5	0.8	22-50/0.4'		
47									
48									
49									
50	50.0 653.3	SANDY WELL GRADED GRAVEL WITH CLAY, GW, dark brown orange and pale olive gray, very fine to coarse, dense to very dense, moist, iron oxide staining, Fissured, **[WEATHERED SHALE and interbedded WEATHERED SANDSTONE]**		SS15	50.0 - 51.5	0.7	36-50/0.2'		
51									
52									

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ_BC_1755 STD DATA(T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **BH-HS-01**
Boring Location Lat. 34.289116, Long. -85.302585
Surface Elevation 703.3 ft Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample / Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
Depth Ft	Elevation									
53										
54.0	649.3									
54			Refusal / Bottom of Hole at 54.0 Ft.							

Top of Rock = 54.0 Ft.
Top of Rock Elevation = 649.3 Ft.

Piezometer BH-HS-01 installed. See piezometer installation log for backfill details.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA.GDT R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **PZ-HS-02**
Client: Southern Company
Boring Location: Lat. 34.291325, Long. -85.297078
Project Number: 175518216
Surface Elevation: 689.0 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 6/7/21
Completed: 6/7/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 32.9 ft
Date/Time: 6/8/21 08:06
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Impregnated Bit
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	689.0	Top of Hole							
0.3	688.7	TOPSOIL, with pinestraw							
		SANDY LEAN CLAY, CL, light brown gray and dark orange brown, low plasticity, very soft to medium stiff, moist, iron oxide staining, red mottling, very fine to medium-grained sands		SS1	0.0 - 1.5	1.2	1-1-1		
2.3	686.7			SS2	1.5 - 3.0	1.3	5-6-6		
		SANDY LEAN CLAY SOME GRAVEL, CL, light brown gray and dark orange brown, medium plasticity, soft to medium stiff, moist, iron oxide staining, red orange mottling, very fine to medium-grained sands, roots		SS3	3.0 - 4.5	1.5	4-4-5		
3.6	685.4								
		GRAVELLY LEAN CLAY, CL, dark gray black, low to medium plasticity, firm to stiff, moist, weathered iron oxide staining on bedding features **[WEATHERED SHALE]**		SS4	4.5 - 6.0	0.8	4-2-3		Bulk sample collected from first 10.0 feet bgs.
5.2	683.8								
		SANDY LEAN CLAY, CL, light gray olive and dark orange brown, medium plasticity, soft, moist, iron oxide staining, red orange mottling, very fine to medium-grained sands, occasional roots **[WEATHERED SHALE and SANDSTONE]**		SS5	6.0 - 7.5	1.3	2-2-3		
8.5	680.5			SS6	7.5 - 9.0	1.4	1-2-2		
		SANDY LEAN CLAY SOME GRAVEL, CL, dark tan brown and dark orange gray, medium plasticity, soft, moist, iron oxide staining, red orange mottling, very fine to medium-grained sands, occasional roots **[RESIDUAL WEATHERED SHALE and SANDSTONE]**		SS7	9.0 - 10.5	0.9	1-1-2		

STANTEC 1755 STD_LAB_175518216_HAMMOND_FIELD-CHECK.GPJ_BC_1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **PZ-HS-02**
Boring Location Lat. 34.291325, Long. -85.297078
Surface Elevation 689.0 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
12		SANDY LEAN CLAY SOME GRAVEL, CL, dark tan brown and dark orange gray, medium plasticity, soft, moist, iron oxide staining, red orange mottling, very fine to medium-grained sands, occasional roots **[RESIDUAL WEATHERED SHALE and SANDSTONE]** ***(Continued)***							
15									
15.5	673.5								
		GRAVELLY LEAN CLAY, CL, dark gray black with dark brown, medium plasticity, soft, moist, Stratified, fissile **[WEATHERED SHALE]**		SS8	15.0 - 16.5	1.5	1-2-2		
20				SS9	20.0 - 21.5	1.5	1-2-3		
25.8	663.2			SS10	25.0 - 26.5	1.5	2-4-4		
27									

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **PZ-HS-02**
Boring Location Lat. 34.291325, Long. -85.297078
Surface Elevation 689.0 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
27		CLAYEY WELL GRADED GRAVEL, GW-GC, very dark gray black with pale white olive, stiff to very hard, moist, Stratified, fissile **[WEATHERED SHALE]** ***(Continued)***							
28.7	660.3								Began Core
29		Mud-Rich Shale Clay-Rich Shale, dark gray black with pale olive, thin bedded, slightly weathered, inclined, 45° bedding angle, Iron oxide fracture fill noted on weaker bedding planes, fissile		RC1	28.7 - 32.0	3.1	94	0	
32				RC2	32.0 - 37.0	5.0	100	0	
37				RC3	37.0 - 42.0	5.0	100	0	
42									

STANTEC 1755 STD_LAB_175518216_HAMMOND_FIELD-CHECK.GPJ_BC_1755 STD DATA(T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **PZ-HS-02**
Boring Location Lat. 34.291325, Long. -85.297078
Surface Elevation 689.0 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
42		Mud-Rich Shale Clay-Rich Shale, dark gray black with pale olive, thin bedded, slightly weathered, inclined, 45° bedding angle, Iron oxide fracture fill noted on weaker bedding planes, fissile *(Continued)*		RC4	42.0 - 47.0	2.2	44	0	
43									
44									
45									
46									
47	47.0 642.0								
47		Mud-Rich Shale (95%) With Sandstone (5%)							Sandstone washout zone
48		Mud-Rich Shale, dark gray black with pale olive, thin bedded, inclined, 45° bedding angle, Iron oxide fracture fill noted on weaker shale bedding planes, red orange medium to fine sandstone		RC5	47.0 - 49.5	1.9	76	40	
49	49.5 639.5								

Bottom of Hole at 49.5 Ft.

Top of Rock = 28.7 Ft.
Top of Rock Elevation = 660.3 Ft.
Begin Core = 28.7 Ft.

Piezometer PZ-HS-02 installed. See piezometer installation log for backfill details.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA(T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **PZ-HS-03**
Client: Southern Company
Boring Location: Lat. 34.289096, Long. -85.298646
Project Number: 175518216
Surface Elevation: 691.8 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 5/19/21
Completed: 5/21/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 11.6 ft
Date/Time: 5/20/21 07:54
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Impregnated Bit
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	691.8	Top of Hole							
0		TOPSOIL, orange and gray, silty sandy soil		SS1	0.0 - 1.5	0.8	1-2-3		
1.5	690.3	CLAYEY SAND WITH GRAVEL, SC, light orange gray to dark red, low plasticity, very stiff, dry to moist, iron oxide staining		SS2	1.5 - 3.0	1.4	8-9-12		
				SS3	3.0 - 4.5	1.5	5-12-14		
4.5	687.3	CLAYEY SILTY SAND TRACE GRAVEL, SC-SM, dark red orange, fine to medium, hard, moist to wet, iron oxide staining		SS4	4.5 - 6.0	1.5	8-19-27		Bulk sample collected from first 10.0 feet bgs.
6.0	685.8	CLAYEY GRAVEL WITH GRAVEL, SC, pale olive gray and light orange red, low plasticity, very stiff		SS5	6.0 - 7.5	1.5	7-11-20		
				SS6	7.5 - 9.0	1.5	6-10-12		
				SS7	9.0 - 10.5	1.5	14-24-50		
14.3	677.5								

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **PZ-HS-03**
Client Southern Company
Boring Location Lat. 34.289096, Long. -85.298646
Project Number 175518216
Surface Elevation 691.8 ft
Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
Depth Ft	Elevation									
15			Shale, dark gray to very dark gray, hard, moderately weathered, moist to wet, **[WEATHERED SHALE]** *(Continued)*		SS8	15.0 - 16.5	0.1	50/0.1'		
16										
17										
18										
19										
20										
21					SS9	20.0 - 21.5	0.0	50/0.0'		
22										
23										
24										
25			very wet at 25.2 feet bgs							
26					SS10	25.0 - 26.5	0.2	50/0.2'		
27										
28										
29										
30										
31					SS11	30.0 - 31.5	0.3	50/0.3'		
32										
33										

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATAT R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Client: Southern Company
Project Number: 175518216

Stantec Boring No.: **PZ-HS-03**
Boring Location: Lat. 34.289096, Long. -85.298646
Surface Elevation: 691.8 ft
Elevation Datum: NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
34		Shale, dark gray to very dark gray, hard, moderately weathered, moist to wet, **[WEATHERED SHALE]** *(Continued)*							
35		fine white siliceous lamination at 35.0 feet bgs		SS12	35.0 - 36.5	0.3	50/0.3'		
36									
37									
38									
39									
40									
41				SS13	40.0 - 41.5	0.1	50/0.1'		
42									
43									
44									
45									Rough drilling
46				SS14	45.0 - 46.5	0.2	50/0.2'		
47									
48									
48.5	643.3								Began Core
49		Shale, very dark gray black to light olive white, thin bedded, 30° to 45° bedding angle, steeply dipping							
50				RC1	48.5 - 52.0	0.0	0	0	
51									
52									

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC_1755 STD DATA(T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **PZ-HS-03**
Client Southern Company
Boring Location Lat. 34.289096, Long. -85.298646
Project Number 175518216
Surface Elevation 691.8 ft
Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
53		Shale, very dark gray black to light olive white, thin bedded, 30° to 45° bedding angle, steeply dipping *(Continued)*		RC2	52.0 - 57.0	0.8	16	0	
54									
55									
56									
57				RC3	57.0 - 59.5	1.6	64	0	
58									
59									
60				RC4	59.5 - 62.0	0.5	20	0	
61									
62	62.0	629.8							

Bottom of Hole at 62.0 Ft.

Top of Rock = 48.5 Ft.
Top of Rock Elevation = 643.3 Ft.
Begin Core = 48.5 Ft.

Piezometer PZ-HS-03 installed. See piezometer installation log for backfill details.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA(T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **PZ-HS-04**
Client: Southern Company
Boring Location: Lat. 34.289736, Long. -85.295103
Project Number: 175518216
Surface Elevation: 662.9 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 6/4/21
Completed: 6/5/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 6.5 ft
Date/Time: 6/5/21 07:58
Inspector: J. Massey
Logger: J. Massey
Depth to Water: 6.3 ft
Date/Time: 6/6/21 15:54
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Impregnated Bit
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	662.9	Top of Hole							
0		TOPSOIL		SS1	0.0 - 1.5	1.0	2-5-5		
1.0	661.9	SANDY LEAN CLAY LITTLE GRAVEL, CL, light brown gray and dark orange, low plasticity, medium stiff, dry, iron oxide staining, fine-grained sands		SS2	1.5 - 3.0	0.8	3-4-3		
2				SS3	3.0 - 4.5	1.5	2-2-4		Bulk sample collected from first 6.9 feet bgs.
4.3	658.6	SILTY LEAN CLAY WITH SAND, CL-ML, dark olive gray with dark orange brown, low to medium plasticity, stiff, moist, Lensed, fine-grained sands, iron oxide and manganese stains on bedding planes		SS4	4.5 - 6.0	1.1	3-3-12		
6.7	656.2			SS5	6.0 - 6.9	0.9	20-50/0.4'		
6.9	656.0	LEAN CLAY, CL, very dark brown gray with pale olive tan, non-plastic, very hard, moist, Stratified, thin bedded **[WEATHERED SHALE]**							Began Core
7		Mud-Rich Shale (90%) With Sandstone (10%)		RC1	6.9 - 11.9	1.8	36	0	
11.9	651.0	Mud-Rich Shale, dark gray with dark brown orange, fine grained, moderately hard, thin, highly weathered, interbedded, Clay rich gray shale mixed with brown orange fine sandstone							
12		Mud-Rich Shale, dark gray with light olive gray, hard, thin, moderately weathered, Clay rich gray shale with thin white laminar bedding.		RC2	11.9 - 16.9	3.1	62	0	
15									

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **PZ-HS-04**
Boring Location Lat. 34.289736, Long. -85.295103
Surface Elevation 662.9 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
15		Mud-Rich Shale, dark gray with light olive gray, hard, thin, moderately weathered, Clay rich gray shale with thin white laminar bedding. *(Continued)*							
16									
17									
18									
19				RC3	16.9 - 21.9	4.3	86	0	
20									
21									
22									
23									
24				RC4	21.9 - 26.9	4.0	80	8	
25									
26									
26.9	636.0								

Bottom of Hole at 26.9 Ft.

Top of Rock = 6.9 Ft.
Top of Rock Elevation = 656.0 Ft.
Begin Core = 6.9 Ft.

Piezometer PZ-HS-04 installed. See piezometer installation log for backfill details.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **PZ-HS-05**
Client: Southern Company
Boring Location: Lat. 34.289770, Long. -85.302044
Project Number: 175518216
Surface Elevation: 687.5 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 6/2/21
Completed: 6/4/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 16.7 ft
Date/Time: 6/2/21 14:54
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Impregnated Bit
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	687.5	Top of Hole							
0		TOPSOIL		SS1	0.0 - 1.5	1.0	3-4-6		
1.0	686.5	SANDY LEAN CLAY, CL, dark orange brown and pale olive gray, low to medium plasticity, medium stiff, dry to moist, iron oxide staining, fine-grained sands		SS2	1.5 - 3.0	1.5	4-4-4		
				SS3	3.0 - 4.5	1.0	3-2-4		
		residual parent rock fabric at 4.5 feet bgs		SS4	4.5 - 6.0	1.4	11-28-45		Bulk sample collected from first 10.0 feet bgs.
6.0	681.5	SANDY LEAN CLAY, CL, dark gray and very dark orange, low plasticity, hard, moist, Stratified, iron oxide/manganese staining on bedding planes, white siliceous stringers at 7.5 ft bgs **[WEATHERED SHALE]**		SS5	6.0 - 7.5	1.2	16-42-50/0.2'		
8.3	679.2	GRAVELLY LEAN CLAY, CL, very dark gray and very dark brown gray, non-plastic to low plasticity, very hard, moist, Stratified, fissile, iron oxide/manganese staining on bedding planes, white siliceous stringers **[WEATHERED SHALE]**		SS6	7.5 - 9.0	0.8	30-50/0.3'		
				SS7	9.0 - 10.5	1.1	19-41-50/0.1'		
15.0	672.5								

STANTEC 1755 STD_LAB 175518216 HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **PZ-HS-05**
Boring Location Lat. 34.289770, Long. -85.302044
Surface Elevation 687.5 ft Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
Depth Ft	Elevation									
15			GRAVELLY LEAN CLAY SOME SAND, CL, very dark gray to light black gray, non-plastic, very hard, wet, Stratified, very fissile, white siliceous stringers **[WEATHERED SHALE]**		SS8	15.0 - 16.5	0.3	50/0.3'		
16										
17										
18										
19										
20			wet spoon at 20 feet bgs		SS9	20.0 - 21.5	0.3	50/0.3'		
21										
22										
23										
24										
25										
26					SS10	25.0 - 26.5	0.1	50/0.1'		
27										
28										
29										
30										Rough drilling
31					SS11	30.0 - 31.5	0.2	50/0.2'		
32										
33										

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC_1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **PZ-HS-05**
Boring Location Lat. 34.289770, Long. -85.302044
Surface Elevation 687.5 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
34		GRAVELLY LEAN CLAY SOME SAND, CL, very dark gray to light black gray, non-plastic, very hard, wet, Stratified, very fissile, white siliceous stringers **[WEATHERED SHALE]** ***(Continued)***							
35									
36				SS12	35.0 - 36.5	0.2	50/0.2'		
37									
38									
39									
40									
41				SS13	40.0 - 41.5	0.2	50/0.2'		
42									
43									
44									
45									
46				SS14	45.0 - 46.5	0.2	50/0.2'		
47									
48									
49									
50									
51				SS15	50.0 - 51.5	0.1	50/0.1'		
52									

STANTEC 1755 STD_LAB_175518216_HAMMOND_FIELD-CHECK.GPJ_BC_1755 STD DATA(T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **PZ-HS-05**
Client Southern Company
Boring Location Lat. 34.289770, Long. -85.302044
Project Number 175518216
Surface Elevation 687.5 ft
Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
53		GRAVELLY LEAN CLAY SOME SAND, CL, very dark gray to light black gray, non-plastic, very hard, wet, Stratified, very fissile, white siliceous stringers **[WEATHERED SHALE]** ***(Continued)***							
54									
55									
56				SS16	55.0 - 56.5	0.2	50/0.2'		
57									
58									
59									
60	60.0 627.5	CLAYEY GRAVEL SOME SAND, GC, very dark gray to light black gray, very dense, wet, Blocky, white siliceous stringers **[WEATHERED SHALE]**		SS17	60.0 - 61.5	0.0	50/0.1'		
61									
62									
63									
64									
65									
66				SS18	65.0 - 66.5	0.2	50/0.2'		
67									
68									
69									
70	70.1 617.4			SS19	70.0 - 70.1	0.1	50/0.1'		Began Core
71		Shale, very dark gray black and light olive white, slightly weathered, 0° to 15° bedding angle		RC1	70.1 - 72.1	1.8	90	0	

STANTEC 1755 STD_LAB 175518216 HAMMOND_FIELD-CHECK GPJ BC 1755 STD DATAT R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **PZ-HS-05**
Boring Location Lat. 34.289770, Long. -85.302044
Surface Elevation 687.5 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
72		Shale, very dark gray black and light olive white, slightly weathered, 0° to 15° bedding angle *(Continued)*							
73									
74				RC2	72.1 - 77.1	2.7	54	0	
75									
76									
77									
78				RC3	77.1 - 80.1	0.6	20	0	
79									
80	80.1	607.4							

Bottom of Hole at 80.1 Ft.

Top of Rock = 70.1 Ft.
Top of Rock Elevation = 617.4 Ft.
Begin Core = 70.1 Ft.

Piezometer PZ-HS-05 installed. See piezometer installation log for backfill details.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **PZ-HS-06**
Client: Southern Company
Boring Location: Lat. 34.286795, Long. -85.298013
Project Number: 175518216
Surface Elevation: 729.6 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Geotechnical Drilling
Date Started: 5/23/21
Completed: 5/24/21
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 34.0 ft
Date/Time: 5/24/21 11:34
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: CME 55T#1, #709
Driller: A. Clements
Overburden Drilling and Sampling Tools (Type and Size): 4-1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Impregnated Bit
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	729.6	Top of Hole							
0		TOPSOIL, red orange, gravelly sand		SS1	0.0 - 1.5	1.0	3-5-6		
1.5	728.1	WELL GRADED GRAVEL WITH CLAY, GW-GC, dark orange red, fine, dry to moist, iron oxide staining		SS2	1.5 - 3.0	1.1	5-6-10		
3.5	726.1	GRAVELLY LEAN CLAY SOME SAND, CL, light gray with dark orange red, low to medium plasticity, very hard, moist, laminated		SS3	3.0 - 4.5	1.5	4-12-27		
				SS4	4.5 - 6.0	1.3	11-24-33		Bulk sample collected from first 10.0 feet bgs.
6.0	723.6	CLAYEY SAND, SC, light gray with dark orange red, low to medium plasticity, very hard, moist, fissile **[WEATHERED SHALE]**		SS5	6.0 - 7.5	1.4	15-29-50/0.4'		
				SS6	7.5 - 9.0	0.8	39-50/0.3'		
9.8	719.8			SS7	9.0 - 10.5	0.8	37-50/0.3'		
		SANDY WELL GRADED GRAVEL WITH CLAY SOME SILT, GW-GC, dark gray and light olive gray, fine, very dense, moist, laminated, red orange iron oxide staining on bedding planes, slightly friable **[WEATHERED SANDSTONE]**							
15.0	714.6								

STANTEC 1755 STD_LAB 175518216 HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Client: Southern Company
Project Number: 175518216

Stantec Boring No.: **PZ-HS-06**
Boring Location: Lat. 34.286795, Long. -85.298013
Surface Elevation: 729.6 ft
Elevation Datum: NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
Depth Ft	Elevation									
15			WELL GRADED GRAVEL WITH CLAY WITH SAND, GW-GC, orange brown and dark red orange, fine, very dense, moist, iron oxide staining, mottled **[WEATHERED SANDSTONE]**		SS8	15.0 - 16.5	1.2	17-32-50/0.2'		
16										
17										
18										
19										
20					SS9	20.0 - 21.5	1.3	17-23-50/0.3'		
21										
22										
23										
24										
25					SS10	25.0 - 26.5	0.8	15-50/0.3'		
26										
27										
28										
29										
30					SS11	30.0 - 31.5	0.4	50/0.4'		Spoon moist at 30.3 feet bgs
31										
32										
33										

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA(T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **PZ-HS-06**
Client: Southern Company
Boring Location: Lat. 34.286795, Long. -85.298013
Project Number: 175518216
Surface Elevation: 729.6 ft
Elevation Datum: NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
34		WELL GRADED GRAVEL WITH CLAY WITH SAND, GW-GC, orange brown and dark red orange, fine, very dense, moist, iron oxide staining, mottled **[WEATHERED SANDSTONE]** *(Continued)*		SS12	35.0 - 36.5	1.5	46-33-20		
35.9	693.7								
36		CLAYEY POORLY GRADED SAND LITTLE GRAVEL, SP, dark brown orange with pale olive orange, fine, dense, moist to wet, iron oxide staining, stratified, interbedding **[WEATHERED SANDSTONE and SHALE]**							
40.0	689.6								Wet spoon at 40 feet bgs
40		SANDY WELL GRADED GRAVEL WITH CLAY, GW-GC, dark brown and red orange, fine, medium dense, wet, blocky, siliceous **[WEATHERED SANDSTONE]**		SS13	40.0 - 41.5	1.1	6-11-19		
45.0	684.6								
45		CLAYEY POORLY GRADED SAND LITTLE GRAVEL, SP, dark gray red to very dark orange red, fine, medium dense to very dense, wet, laminated, interbedding, iron oxide staining on bedding planes, very fissile **[PARTIALLY WEATHERED SANDSTONE and SHALE]**		SS14	45.0 - 46.5	1.5	6-7-7		
50.0	679.6								
50		SILTY LEAN CLAY, CL-ML, dark gray and pale olive gray, non-plastic, very hard, wet, iron oxide staining, laminated, interbedded sandstone **[WEATHERED SHALE]**		SS15	50.0 - 51.5	0.7	42-50/0.2'		
51.5	678.1								Began Core
52		Shale, dark gray, very fine grained,		RC1	51.5 - 52.6	0.8	73	0	

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC_1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID N/A
Client Southern Company
Project Number 175518216

Stantec Boring No. **PZ-HS-06**
Boring Location Lat. 34.286795, Long. -85.298013
Surface Elevation 729.6 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
53		laminated, argillaceous Shale, dark gray, very fine grained, laminated, argillaceous *(Continued)*							
54									
55				RC2	52.6 - 57.6	4.8	96	68	
56									
57									
58									
59									
60				RC3	57.6 - 62.6	5.0	100	80	
61									
62									
62.6	667.0								

Bottom of Hole at 62.6 Ft.

Top of Rock = 51.5 Ft.
Top of Rock Elevation = 678.1 Ft.
Begin Core = 51.5 Ft.

Piezometer PZ-HS-06 installed. See piezometer installation log for backfill details.

STANTEC 1755 STD_LAB 175518216_HAMMOND_FIELD-CHECK.GPJ BC 1755 STD DATA T R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-1**
Client: Georgia Power
Boring Location: N 1562413.31, E 1954346.96
Project Number: 175518236
Surface Elevation: 683.9 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/12/22
Completed: 5/12/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 21.5 ft
Date/Time: 5/13/22 07:11
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: 21.7 ft
Date/Time: 5/17/22 08:01
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 2 1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Impregnated Bit
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	683.9	Top of Hole						
1.7	682.2	LEAN CLAY, CL, light brown and light gray, low to medium plasticity, stiff, dry, iron oxide staining		SS01	0.0 - 1.5	0.5	2-4-4	
				SS02	1.5 - 3.0	0.3	4-5-4	
3.2	680.7	SHALE, light gray, soft, dry, very thin, highly weathered		SS03	3.0 - 4.5	0.8	2-4-6	
		LEAN CLAY LITTLE SAND, CL, light red tan and light gray, low to medium plasticity, stiff to very hard, moist, mottled, completely weathered shale, some shale structure present throughout		SS04	4.5 - 6.0	1.2	4-5-9	Bulk Sample 1 at 5 feet bgs
				SS05	6.0 - 7.5	1.1	4-5-7	
				SS06	7.5 - 9.0	1.2	4-7-9	
				SS07	9.0 - 10.5	1.2	4-7-10	Bulk Sample 2 at 10 feet bgs
16.0	667.9			SS08	15.0 - 15.9	0.9	17-50/5"	Bulk Sample 3 at 15 feet bgs
		SHALE, light gray, soft, dry, iron oxide staining, highly weathered						
				SS09	20.0 - 20.4	0.4	50/5"	
22.7	661.2							Began Core
		SHALE, light gray, very hard, iron oxide staining, thin bedded, slightly weathered, micaceous, 30° bedding angle, 32.5- 32.6' bgs heavy iron oxide staining		18	22.7 - 27.7	4.5	90	
				20	27.7 - 32.7	3.2	64	
				0	32.7 - 37.7	2.1	42	
37.7	646.2							

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-1**
Boring Location N 1562413.31, E 1954346.96
Surface Elevation 683.9 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
38 39 40 41 42	42.7 641.2	SANDSTONE (70%) WITH SHALE (30%), light gray, very hard, slightly weathered, 38.1-39.3' bgs healed fractures at 60 degree angle *(Continued)*		38	37.7 - 42.7	4.6	92	

Bottom of Hole at 42.7 Ft.

Top of Rock = 23.5 Ft.
Top of Rock Elevation = 660.4 Ft.
Begin Core = 22.7 Ft.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-2**
Client: Georgia Power
Boring Location: N 1562668.27, E 1955591.87
Project Number: 175518236
Surface Elevation: 659.7 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/9/22
Completed: 5/9/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 14.9 ft
Date/Time: 5/9/22 15:56
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 2 1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	659.7	Top of Hole						
0.3	659.4	LEAN CLAY, CL, light gray and light brown, low to medium plasticity, very stiff, dry, iron oxide staining, very weathered shale		SS01	0.0 - 1.5	0.3	6-8-10	
				SS02	1.5 - 3.0	0.8	9-11-16	
		SHALE, light gray, soft, dry, iron oxide staining, very thin, highly weathered, GW encountered at approximately 18.5 ft bgs		SS03	3.0 - 4.5	1.0	7-14-19	
				SS04	4.5 - 6.0	1.0	8-15-24	Bulk Sample 1 at 5 feet bgs
				SS05	6.0 - 7.5	1.2	14-28-35	
				SS06	7.5 - 8.4	0.7	13-50/5"	
				SS07	9.0 - 9.6	0.5	43-50/1"	
				SS08	15.0 - 15.2	0.2	50/2"	
				SS09	20.0 - 20.5	0.2	50	
				SS10	25.0 - 25.2	0.1	50/2"	
35.0	624.7			SS11	35.0 - 35.2	0.1	50/2"	
		SHALE, light gray, hard, iron oxide staining, very thin, moderately weathered, saturated						

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-2**
Boring Location N 1562668.27, E 1955591.87
Surface Elevation 659.7 ft Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
Depth Ft	Elevation								
38									
39			SHALE, light gray, hard, iron oxide staining, very thin, moderately weathered, saturated *(Continued)*						
40									
41									
42									
43									
44									
45									
46									
47									
48									
49									
50									
51									
52									
53									
54									
55									
56									
57									
58									
59									
60									
61									
62									
63									
64									
65									
66									
67									
68									
69									
70	70.0	589.7	No Refusal / Bottom of Hole at 70.0 Ft.						Per communication with SCS, boring was terminated at 70ft bgs.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-3**
Client: Georgia Power
Boring Location: N 1562223.77, E 1955186.08
Project Number: 175518236
Surface Elevation: 676.9 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/10/22
Completed: 5/11/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 6.8 ft
Date/Time: 5/11/22 07:25
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 4.25 HSA, 2 Inch Split Spoons wo liners
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Impregnated Bit
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	676.9	Top of Hole						
0 – 2.7	676.9 – 674.2	LEAN CLAY, CL, light gray and light brown, low plasticity, stiff, dry, no odor, very weathered shale		SS01	0.0 - 1.5	0.7	5-8-6	
				SS02	1.5 - 3.0	0.7	4-14-17	
2.7 – 24.1	674.2 – 652.8	SHALE, light gray, thin, soft, dry, iron oxide staining, Moderately weathered to highly weathered, GW encountered at approximately 20.9' bgs		SS03	3.0 - 4.5	1.4	9-16-30	
				SS04	4.5 - 5.4	0.9	22-50/5"	BulkSample 1 at 5 feet bgs
				SS05	6.0 - 6.6	0.4	41-50/1"	
				SS06	7.5 - 7.9	0.4	50/5"	
				SS07	9.5 - 9.8	0.3	50/4"	Bulk Sample 2 at 10 feet bgs
				SS08	15.0 - 15.4	0.3	50/5"	
				SS09	20.0 - 20.9	0.9	41-50/5"	
24.1 – 34.1	652.8 – 642.8	SHALE, dark gray, very hard, freshly weathered, at 24.4' bgs 60° fracture with little iron oxide staining		24	24.1 - 27.5	2.6	76	Began Core
				8	27.5 - 32.5	4.2	84	
				0	32.5 - 34.1	1.6	100	

Bottom of Hole at 34.1 Ft.

Top of Rock = 24.1 Ft.
Top of Rock Elevation = 652.8 Ft.
Begin Core = 24.1 Ft.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-4**
Client: Georgia Power
Boring Location: N 1561883.99, E 1952536.05
Project Number: 175518236
Surface Elevation: 650.3 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/20/22
Completed: 5/25/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 16.5 ft
Date/Time: 5/20/22 12:00
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth/J. Massey
Depth to Water: 14.9 ft
Date/Time: 5/25/22 08:54
Drilling Contractor: Stantec Consulting Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 2 1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Impregnated Bit
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	650.3	Top of Hole						
0.2	650.1	Topsoil		SS01	0.0 - 1.5	0.7	5-7-10	
		CLAYEY SAND, SC, light gray and light brown, fine to coarse, very dense, dry, no odor, iron oxide staining, very weathered shale, heavy iron oxide staining 4.5-9.1 feet bs, interbedded intervals of heavily weathered shale/clay and weathered shale		SS02	1.5 - 3.0	1.2	15-26-32	
				SS03	3.0 - 4.5	1.3	20-30-45	
				SS04	4.5 - 6.0	1.5	17-28-31	Bulk Sample 1 at 5 feet bgs
				SS05	6.0 - 7.5	1.5	13-17-25	
				SS06	7.5 - 9.0	1.5	19-30-32	
9.1	641.2							
		SHALE, light gray, thin, dry, iron oxide staining, moderately weathered, GW encountered at approx. 18.5 ft bgs		SS07	9.0 - 10.5	1.5	17-28-40	
				SS08	15.0 - 15.6	0.4	35-50/1"	
				SS09	20.0 - 20.3	0.2	50/4"	
				SS10	25.0 - 25.1	0.1	50/1"	
28.4	621.9							Began Core
		SHALE, light gray with pale white, thin, soft, iron oxide staining, slightly weathered, inclined, 45° bedding angle, calcite fracture fill, pyrite nodules at 32.3 ft bgs; jointing at 34.4' bgs and 38.3' bgs		0	28.4 - 32.3	1.9	49	
				0	32.3 - 37.3	2.9	58	

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-4**
Boring Location N 1561883.99, E 1952536.05
Surface Elevation 650.3 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation		Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
38 39 40	40.4	609.9			13	37.3 - 40.4	3.1	100	

Bottom of Hole at 40.4 Ft.

Top of Rock = 28.4 Ft.
Top of Rock Elevation = 621.9 Ft.
Begin Core = 28.4 Ft.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-5**
Client: Georgia Power
Boring Location: N 1561251.20, E 1954719.07
Project Number: 175518236
Surface Elevation: 733.2 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/5/22
Completed: 5/5/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 17.6 ft
Date/Time: 5/6/22 07:01
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 4.25 HSA, 2 Inch Split Spoons wo liners
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Impregnated Bit
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	733.2	Top of Hole						
0.1	733.1	Topsoil		SS01	0.0 - 1.2	1.1	14-39-50/2"	
		SHALE, light gray, soft, dry, iron oxide staining, thick bedded, highly weathered		SS02	1.5 - 2.6	0.7	18-48-50/1"	
				SS03	3.0 - 3.7	0.6	41-50/2"	
				SS04	4.5 - 5.1	0.5	42-50/1"	Bulk Sample 1 at 5 feet bgs
				SS05	6.0 - 6.4	0.3	50/5"	
				SS06	7.5 - 7.9	0.2	50/5"	
				SS07	9.0 - 9.4	0.3	50/5"	Bulk Sample 2 at 10 feet bgs
23.0	710.2	SHALE, dark gray, very hard, hydrocarbon staining, slightly weathered						Began Core
26.4	706.8	Washout. Water return appears to be a similar layer like the SC layer from HRL-7		0	24.5 - 32.2	2.0	26	
				0	32.2 - 42.2	0.0	0	

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-5**
Boring Location N 1561251.20, E 1954719.07
Surface Elevation 733.2 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation		Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
38			Washout. Water return appears to be a similar layer like the SC layer from HRL-7 *(Continued)*						
39									
40									
41									
42									
43	43.6	689.6			0	42.2 - 44.5	0.9	39	
44	44.5	688.7	SHALE, dark gray, very hard, iron oxide staining, slightly weathered						

Bottom of Hole at 44.5 Ft.

Top of Rock = 23.0 Ft.
Top of Rock Elevation = 710.2 Ft.
Begin Core = 24.5 Ft.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-6**
Client: Georgia Power
Boring Location: N 1561521.36, E 1955298.62
Project Number: 175518236
Surface Elevation: 724.5 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/3/22
Completed: 5/4/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 38.2 ft
Date/Time: 5/4/22 07:52
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: 22.9 ft
Date/Time: 5/5/22 07:07
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 2 1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Impregnated Bit
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft Run Ft	Rec. Ft Rec. Ft	Blows/PSI Rec. %	Remarks
0.0	724.5	Top of Hole						
0		SHALE, light brown and light gray, soft to moderately hard, dry, no odor, iron oxide staining, very thin bedded, highly weathered		SS01	0.0 - 1.5	0.8	11-25-25	
2				SS02	1.5 - 2.9	1.0	32-42-50/5"	
3				SS03	3.0 - 3.7	0.5	46-50/2"	
5				SS04	4.5 - 5.1	0.6	47-50/1"	Bulk Sample 1 at 5 feet bgs
6				SS05	6.0 - 6.9	0.7	41-50/5"	
8				SS06	7.5 - 8.2	0.5	47-50/2"	
9				SS07	9.0 - 9.4	0.3	50/5"	
10								Bulk Sample 2 at 10 feet bgs
15				SS08	15.0 - 15.9	0.5	17-50/5"	Bulk Sample 3 at 15 feet bgs
20				SS09	20.0 - 20.4	0.4	50/5"	
23								
25				SS10	25.0 - 25.4	0.4	50/5"	
30				SS11	30.0 - 31.5	1.2	21-34-40	
35				SS12	35.0 - 36.2	0.6	5-30-50/2"	

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-6**
Boring Location N 1561521.36, E 1955298.62
Surface Elevation 724.5 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
40.0	684.5	CLAYEY SAND, SC, light brown, very fine, loose, wet, no odor, no staining, poorly graded, GW encountered at approx. 40ft bgs		SS13	40.0 - 41.5	1.0	4-8-8	
				SS14	45.0 - 46.5	1.5	2-3-4	
50.0	674.5			SS15	50.0 - 50.4	0.3	50/5"	
50.9	673.6	SHALE, light gray, hard, dry, no odor, iron oxide staining, very thin bedded, moderately weathered		85	50.9 - 52.2	1.3	100	Began Core
		SHALE, dark gray, very hard, freshly weathered, 30° bedding angle, calcite filled fractures at 54 ft bgs, 54.2 ft		94	52.2 - 57.2	5.0	100	
				100	57.2 - 60.9	3.7	100	
60.9	663.6							

Bottom of Hole at 60.9 Ft.

Top of Rock = 51.2 Ft.
Top of Rock Elevation = 673.3 Ft.
Begin Core = 50.9 Ft.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-7**
Client: Georgia Power
Boring Location: N 1561612.79, E 1955708.51
Project Number: 175518236
Surface Elevation: 715.7 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/2/22
Completed: 5/2/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 28.9 ft
Date/Time: 5/2/22 18:31
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 2 1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	715.7	Top of Hole						
0		LEAN CLAY, CL, light brown and light gray, low plasticity, stiff to very hard, dry, no odor, iron oxide staining, Very weathered shale		SS01	0.0 - 1.5	0.4	5-8-5	
1				SS02	1.5 - 3.0	0.7	3-5-16	
2				SS03	3.0 - 4.5	1.2	9-35-45	
3				SS04	4.5 - 5.7	0.5	25-48-50/2"	Bulk Sample 1 at 5 feet bgs
3.5	712.2							
4		SHALE, light brown and light gray, soft, dry, no odor, iron oxide staining, completely weathered, GW encountered at approximately 30 ft bgs		SS05	6.0 - 6.8	0.7	32-50/4"	
5				SS06	7.5 - 8.4	0.3	28-50/5"	
6				SS07	9.0 - 9.9	0.8	11-50/5"	Bulk Sample 2 at 10 feet bgs
7								
8								
9								
10								
11								
12								
13								
14								
15				SS08	15.0 - 16.4	1.3	17-37-50/5"	Bulk Sample 3 at 15 feet bgs
16								
17								
18								
19								
20				SS09	20.0 - 20.9	0.6	23-50/5"	
21								
22								
23								
24								
25				SS10	25.0 - 26.5	1.0	20-26-46	
26								
27								
28								
29								
30				SS11	30.0 - 30.7	0.7	49-50/2"	
31								
32								
33								
34								
35.0	680.7							
35		CLAYEY SAND, SC, light red brown, very fine, loose, wet, no odor, no staining, Angular gravel pieces at 46.0 to 50.2 bgs		SS12	35.0 - 36.5	0.4	14-11-12	
36								
37								
38								

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-7**
Boring Location N 1561612.79, E 1955708.51
Surface Elevation 715.7 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation		Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
38			CLAYEY SAND, SC, light red brown, very fine, loose, wet, no odor, no staining, Angular gravel pieces at 46.0 to 50.2 bgs *(Continued)*		SS13	40.0 - 41.5	0.8	2-2-3	
39									
40									
41									
42									
43									
44									
45					SS14	45.0 - 46.5	1.5	WH-WH-WH	
46									
47									
48									
49									
50	50.2	665.5			SS15	50.0 - 50.2	0.2	50/2"	

No Refusal /
Bottom of Hole at 50.2 Ft.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-8**
Client: Georgia Power
Boring Location: N 1561661.70, E 1953518.40
Project Number: 175518236
Surface Elevation: 680.6 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/18/22
Completed: 5/18/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 19.8 ft
Date/Time: 5/18/22 12:02
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 2 1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A. Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	680.6	Top of Hole						
0.2	680.4	Topsoil		SS01	0.0 - 1.5	0.6	3-4-7	
		LEAN CLAY, CL, light tan, very fine, low plasticity, loose, moist, no odor, iron oxide staining, poorly graded						
4.1	676.5			SS02	3.5 - 5.0	0.7	9-12-20	Bulk Sample 1 at 5 feet bgs
		SHALE (90%) WITH SANDSTONE (10%), light gray and light red brown, very soft, dry, no odor, iron oxide staining, highly weathered, thin lenses of sandstone observed in 8.5-15 ft bgs, GW encountered at approximately 23.5 ft bgs		SS03	8.5 - 10.0	1.0	13-30-25	Bulk Sample 2 at 10 feet bgs
				SS04	13.5 - 14.4	0.9	21-50/5"	Bulk Sample 3 at 15 feet bgs
				SS05	18.5 - 18.8	0.3	50/4"	
				SS06	23.5 - 23.9	0.4	50/5"	
				SS07	28.5 - 29.1	0.6	43-50/1"	
				SS08	33.5 - 33.6	0.1	50/1"	

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-8**
Boring Location N 1561661.70, E 1953518.40
Surface Elevation 680.6 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation		Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
38			SHALE (90%) WITH SANDSTONE (10%), light gray and light red brown, very soft, dry, no odor, iron oxide staining, highly weathered, thin lenses of sandstone observed in 8.5-15 ft bgs, GW encountered at approximately 23.5 ft bgs *(Continued)*		SS09	38.5 - 38.6	0.1	50/1"	
39									
40									
41									
42									
43									
44					SS10	43.5 - 43.6	0.1	50/1"	
45	45.3	635.3							

No Refusal /
Bottom of Hole at 45.3 Ft.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-9**
Client: Georgia Power
Boring Location: N 1562711.66, E 1953980.08
Project Number: 175518236
Surface Elevation: 681.3 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/12/22
Completed: 5/13/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 25.1 ft
Date/Time: 5/13/22 07:14
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: 22.4 ft
Date/Time: 5/17/22 08:54
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 2 1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Impregnated Bit
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	681.3	Top of Hole						
0.1	681.2	Topsoil		SS01	0.0 - 1.5	0.1	5-6-8	
		LEAN CLAY SOME SAND, CL, light orange brown and light gray, non to low plasticity, stiff to very stiff, moist		SS02	3.5 - 5.0	0.7	8-11-19	
8.9	672.4							
9.3	672.0	Shale, light gray, thin, highly weathered, damp		SS03	8.5 - 10.0	0.9	15-18-19	Bulk Sample 1 at 10 feet bgs
10.8	670.5	LEAN CLAY SOME SAND, CL, light orange brown and light gray, non to low plasticity, hard, moist, Very weathered shale		0	10.8 - 12.2	0.9	64	Began Core
		SHALE (80%) WITH SANDSTONE (20%), light gray and light brown, very hard, thin bedded, freshly weathered, 30° bedding angle		0	12.2 - 22.2	5.9	59	Driller remarked a soft zone was encountered while coring RC02 run, clay is observed in RC02
21.4	659.9							
		SHALE, light gray and dark gray, very hard, very thin to thin, freshly weathered, water staining, 30°bedding angle; 30 ft bgs iron oxide stained 90°fracture; 30.9 ft bgs to 45.9 ft bgs, pyrite clusters observed along bedding planes; at 34.7 ft bgs calcite crystal filled fracture		10	22.2 - 27.2	4.5	90	
				27	27.2 - 30.9	3.3	89	
				27	30.9 - 37.2	6.1	97	

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-9**
Boring Location N 1562711.66, E 1953980.08
Surface Elevation 681.3 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
38 39 40 41 42 43 44 45		SHALE, light gray and dark gray, very hard, very thin to thin, freshly weathered, water staining, 30°bedding angle; 30 ft bgs iron oxide stained 90°fracture; 30.9 ft bgs to 45.9 ft bgs, pyrite clusters observed along bedding planes; at 34.7 ft bgs calcite crystal filled fracture *(Continued)*		38	37.2 - 42.2	4.6	92	
				95	42.2 - 45.9	3.7	100	
45.9	635.4							

Bottom of Hole at 45.9 Ft.

Top of Rock = 11.1 Ft.
Top of Rock Elevation = 670.2 Ft.
Begin Core = 10.8 Ft.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-10**
Client: Georgia Power
Boring Location: N 1561398.16, E 1953806.79
Project Number: 175518236
Surface Elevation: 688.0 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/16/22
Completed: 5/16/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 13.7 ft
Date/Time: 5/16/22 13:14
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: 10.4 ft
Date/Time: 5/17/22 07:15
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 2 1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	688.0	Top of Hole						
0.3	687.7	Topsoil		SS01	0.0 - 1.5	1.0	5-12-45	
1.3	686.7	LEAN CLAY, CL, light gray, non-plastic, hard, dry, no odor, iron oxide staining						
		SHALE, light gray, soft to moderately hard, dry, no odor, iron oxide staining, thin bedded, highly weathered, wet at 13.7 ft bgs		SS02	3.5 - 4.4	0.6	19-50/5"	
				SS03	8.5 - 8.9	0.3	50/5"	Bulk Sample 1 at 10 feet bgs
				SS04	13.5 - 13.7	0.1	50/2"	
				SS05	18.5 - 18.6	0.1	50/1"	
35.0	653.0	No Refusal / Bottom of Hole at 35.0 Ft.						

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-11**
Client: Georgia Power
Boring Location: N 1562379.66, E 1953406.12
Project Number: 175518236
Surface Elevation: 677.9 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/18/22
Completed: 5/19/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 24.6 ft
Date/Time: 5/20/22 07:09
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: 24.6 ft
Date/Time: 5/25/22 11:15
Drilling Contractor: Stantec Consulting Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 2 1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Impregnated Bit
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	677.9	Top of Hole						
0.3	677.6	Topsoil		SS01	0.0 - 1.5	0.3	3-6-9	
		SHALE, light gray and light brown, thin, soft, dry, iron oxide staining, highly weathered		SS02	3.5 - 5.0	1.2	16-31-50	
				SS03	8.5 - 10.0	0.8	13-17-18	Bulk Sample 1 at 10 feet bgs
12.2	665.7							Began Core
		SHALE, light gray and dark gray, thin, very hard, freshly weathered, 30° bedding angle, soft material encountered in RC01, calcite filled fracture at 32.2 ft bgs, pyrite clusters present along bedding planes starting at 43.5 ft bgs, interbedded sandstone interval 43.7-44.4 ft bgs		38	12.2 - 17.5	3.3	62	
				68	17.5 - 22.5	5.0	100	
				50	22.5 - 27.5	5.0	100	
				66	27.5 - 32.5	5.0	100	
				58	32.5 - 37.5	5.0	100	

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-11**
Boring Location N 1562379.66, E 1953406.12
Surface Elevation 677.9 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
38		SHALE, light gray and dark gray, thin, very hard, freshly weathered, 30° bedding angle, soft material encountered in RC01, calcite filled fracture at 32.2 ft bgs, pyrite clusters present along bedding planes starting at 43.5 ft bgs, interbedded sandstone interval 43.7-44.4 ft bgs *(Continued)*		72	37.5 - 42.5	5.0	100	
39								
40								
41								
42								
43								
44				31	42.5 - 47.4	4.9	100	
45								
46								
47	47.4	630.5						

Bottom of Hole at 47.4 Ft.

Top of Rock = 12.2 Ft.
Top of Rock Elevation = 665.7 Ft.
Begin Core = 12.2 Ft.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-12**
Client: Georgia Power
Boring Location: N 1561979.87, E 1953992.96
Project Number: 175518236
Surface Elevation: 680.6 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 4/26/22
Completed: 4/27/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 22.5 ft
Date/Time: 4/27/22 07:02
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 2 1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Impregnated Bit
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	680.6	Top of Hole						
0		CLAY, CL, light gray, low to medium plasticity, medium stiff to hard, dry, iron oxide staining, trace organics, very weathered shale		SS01	0.0 - 1.5	0.9	6-9-14	
4				SS02	3.5 - 5.0	0.9	13-22-37	
9.8	670.8			SS03	8.5 - 10.0	1.2	6-27-47	Bulk Sample 1 at 10 feet bgs
10		SHALE, light gray, soft to hard, dry, iron oxide staining, thin bedded, moderately weathered, 45° bedding angle, moist at 24.7 ft bgs, water at approximately 27 ft bgs, hardness increases at 33.5 ft bgs		SS04	13.5 - 14.2	0.6	26-50/2"	
18				SS05	18.5 - 18.9	0.2	50/5"	
22 ▽				SS06	23.5 - 23.9	0.4	50/5"	
28				SS07	28.5 - 28.7	0.0	50/2"	
33				SS08	33.5 - 33.9	0.4	50/5"	
38								

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-12**
Boring Location N 1561979.87, E 1953992.96
Surface Elevation 680.6 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
38								
39				SS09	38.5 - 38.8	0.3	50/4"	
40								
41								
42	638.2							Began Core
43		SHALE, light gray to dark gray, very hard, dry, no odor, no staining, very thin bedded, 15° bedding angle, clay filled fracture at 50 ft bgs, calcite filled fracture at 51.2 ft bgs		0	42.4 - 47.4	4.0	80	
44								
45								
46								
47								
48				0	47.4 - 52.4	4.2	84	
49								
50								
51								
52	628.2							

Bottom of Hole at 52.4 Ft.

Top of Rock = 42.4 Ft.
Top of Rock Elevation = 638.2 Ft.
Begin Core = 42.4 Ft.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	**HRL-12A**
Client	Georgia Power	Boring Location	N 1561983.10, E 1954002.40
Project Number	175518236	Surface Elevation	680.7 ft
Project Name	Plant Hammond Phase 2	Date Started	5/24/22
Project Location	Floyd Co, Rome, Georgia	Depth to Water	21.9 ft
Inspector	Josh Massey	Logger	Vicki Bierwirth
Drilling Contractor	Southern Company Services	Drill Rig	CME550X

Elevation Datum: NAVD88 | Completed: 5/24/22 | Date/Time: 5/24/22 16:15 | Depth to Water: 16.7 ft | Date/Time: 5/25/22 11:30 | Driller: S. Denty

Overburden Drilling and Sampling Tools (Type and Size): 4.25 HSA, 2 Inch Split Spoons wo liners

Rock Drilling and Sampling Tools (Type and Size): N/A

Sampler Hammer Type: Automatic | Weight: 140 lb | Drop: 30" | Efficiency: N/A

Reviewed By: J.Massey | Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	680.7	Top of Hole						
		Refer to boring log HRL-12 for statigraphy. See HRL-12A Field Well Installation Log for additional details						
36.0	644.7	Refusal / Bottom of Hole at 36.0 Ft.						

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-13**
Client: Georgia Power
Boring Location: N 1562985.77, E 1954512.22
Project Number: 175518236
Surface Elevation: 674.1 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/24/22
Completed: 5/24/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 22.9 ft
Date/Time: 5/24/22 12:28
Inspector: J.Massey
Logger: J.Massey
Depth to Water: 22.9 ft
Date/Time: 5/24/22 12:28
Drilling Contractor: Stantec Consulting Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 2 1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: Vicki Bierwirth
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	674.1	Top of Hole							
0.1	674.0	Topsoil		SS01		0.0 - 1.5	1.1	4-5-9	
3.5	670.6	CLAYEY LEAN CLAY LITTLE GRAVEL, CL, dark yellow to light orange white, low to medium plasticity, medium stiff to stiff, dry, no odor, iron oxide staining, lensed, [FILL]		SS02		3.5 - 5.0	1.2	5-3-5	Bulk Sample 1 at 5 feet bgs
4.2	669.9	ORGANIC SILT, dark brown to light orange white, low to medium plasticity, moist, no odor, blocky, spongy, root matter, [FILL]							
8.5	665.6	SILTY LEAN CLAY, CL, dark yellow to light orange white, low to medium plasticity, medium stiff to stiff, dry, no odor, iron oxide staining, lensed, [FILL]		SS03		8.5 - 10.0	0.6	2-3-4	Bulk Sample 2 at 10 feet bgs
13.5	660.6	LEAN CLAY WITH SAND, CL, dark yellow to light orange white, moist, no odor, lensed, plastic to spongy, burned wood, greenish brown clay, [FILL]		SS04		13.5 - 15.0	1.1	13-26-50	Bulk Sample 3 at 15 feet bgs
18.5	655.6	SHALE, light gray with dark red orange, moderately hard, dry to damp, iron oxide staining, interbedded, highly weathered		SS05		18.5 - 18.9	0.4	50/5"	
		SHALE, light gray to dark gray, dry to wet, thin bedded, weathered to moderately weathered, fissile, wet at 33.5 feet bgs		SS06		23.5 - 23.8	0.3	50/4"	
				SS07		28.5 - 28.6	0.1	50/1"	
				SS08		33.5 - 33.7	0.2	50/2"	

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-13**
Boring Location N 1562985.77, E 1954512.22
Surface Elevation 674.1 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation		Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
38									
39			SHALE, light gray to dark gray, dry to wet, thin bedded, weathered to moderately weathered, fissile, wet at 33.5 feet bgs *(Continued)*						
40									
41									
42									
43									
44									
45	45.3	628.8			SS09	45.2 - 45.3	0.1	50/1"	

No Refusal /
Bottom of Hole at 45.3 Ft.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-14**
Client: Georgia Power
Boring Location: N 1562585.54, E 1954893.10
Project Number: 175518236
Surface Elevation: 700.4 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/11/22
Completed: 5/12/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 35.1 ft
Date/Time: 5/12/22 07:06
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: 37.1 ft
Date/Time: 5/17/22 09:50
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 2 1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	700.4	Top of Hole						
0		LEAN CLAY SOME GRAVEL, CL, light brown and light gray, low to medium plasticity, soft to stiff, dry to moist, 0-5.0' bgs brick fragments and burned wood fragments, moist at 8.5' bgs, [FILL]		SS01	0.0 - 1.5	0.9	4-8-8	
4				SS02	3.5 - 5.0	0.6	3-3-2	
9				SS03	8.5 - 10.0	0.6	2-2-4	Bulk Sample 1 at 10 feet bgs
14				SS04	13.5 - 15.0	0.3	2-2-3	
19				SS05	18.5 - 20.0	1.3	3-7-8	
24				SS06	23.5 - 25.0	0.8	3-5-8	
29.1	671.3			SS07	28.5 - 29.4	0.9	13-50/5"	
29.4	671.0	SANDY LEAN CLAY, SC, light gray, very dense, dry, iron oxide staining, very weathered shale						
		SHALE, light gray, moderately hard, dry, moderately weathered to highly weathered, GW encountered at 43.5' bgs		SS08	33.5 - 33.8	0.3	50/4"	

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-14**
Boring Location N 1562585.54, E 1954893.10
Surface Elevation 700.4 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation		Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
38									
39			SHALE, light gray, moderately hard, dry, moderately weathered to highly weathered, GW encountered at 43.5' bgs *(Continued)*		SS09	38.5 - 39.2	0.5	41-50/2"	
40									
41									
42									
43					SS10	43.5 - 43.6	0.1	50/1"	
44									
45									
46									
47									
48									
49					SS11	48.5 - 49.1	0.5	42-50/1"	
50									
51									
52									
53									
54					SS12	53.5 - 53.7	0.2	50/2"	
55									
56	56.0	644.4	No Refusal / Bottom of Hole at 56.0 Ft.						

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-15**
Client: Georgia Power
Boring Location: N 1561698.71, E 1954984.84
Project Number: 175518236
Surface Elevation: 715.2 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/5/22
Completed: 5/6/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 20.0 ft
Date/Time: 5/6/22 07:15
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: 16.7 ft
Date/Time: 5/9/22 09:37
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 2 1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Impregnated Bit
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	715.2	Top of Hole						
0.2	715.0	Topsoil		SS01	0.0 - 1.5	0.4	5-10-15	
3.5	711.7	LEAN CLAY, CL, light brown, medium plasticity, very stiff, dry, no odor, iron oxide staining, Very weathered shale		SS02	3.5 - 5.0	1.2	18-30-42	
		SHALE, light gray and light brown, hard, dry, iron oxide staining, thin bedded, highly weathered, moist at 18.9' bgs, completely weathered shale from 18.5-20.0' bgs, wet at 23.5' bgs		SS03	8.5 - 10.0	1.3	17-21-42	Bulk Sample 1 at 10 feet bgs
				SS04	13.5 - 15.0	1.2	16-25-34	
				SS05	18.5 - 20.0	0.4	13-19-16	
				SS06	23.5 - 25.0	0.7	6-19-26	
				SS07	28.5 - 29.9	1.2	20-31-50/5"	
33.6	681.6			SS08	33.5 - 33.8	0.3	50/4"	Began Core
		SHALE, dark gray, very hard, thin to medium bedded, freshly weathered, 30° bedding angle, weathered fractured zone from 35.5' to 35.7' bgs and 36.5' to 36.6' bgs		11	33.6 - 37.1	3.4	97	

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-15**
Boring Location N 1561698.71, E 1954984.84
Surface Elevation 715.2 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation		Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
38 39 40 41 42 43	43.7	671.5	SHALE, dark gray, very hard, thin to medium bedded, freshly weathered, 30° bedding angle, weathered fractured zone from 35.5' to 35.7' bgs and 36.5' to 36.6' bgs *(Continued)*		26	37.1 - 43.7	5.8	88	

Bottom of Hole at 43.7 Ft.

Top of Rock = 33.9 Ft.
Top of Rock Elevation = 681.3 Ft.
Begin Core = 33.6 Ft.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-16**
Client: Georgia Power
Boring Location: N 1561604.29, E 1954231.35
Project Number: 175518236
Surface Elevation: 713.2 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 4/26/22
Completed: 4/26/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 23.5 ft
Date/Time: 4/26/22 12:03
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 2 1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	713.2	Top of Hole						
0		LEAN CLAY SOME SILT, CL, light gray and light brown, low plasticity, medium stiff, dry, no odor, iron oxide staining, [FILL]		SS01	0.0 - 1.5	1.2	4-8-14	
4				SS02	3.5 - 4.9	1.5	16-43-50/5"	
8.7	704.5			SS03	8.5 - 9.2	0.7	47-50/2"	Bulk Sample 1 at 10 feet bgs
9		SHALE, light gray, soft, dry, very thin bedded, moderately weathered						
14				SS04	13.5 - 14.4	0.7	29-50/5"	
19				SS05	18.5 - 18.9	0.4	50/5"	
▽23.5	689.7							
24.2	689.0			SS06	23.5 - 24.3	0.7	22-50/4"	
24		SHALE, dark red brown, very soft, wet, no odor, iron oxide staining, completely weathered						
27		SHALE, light gray, soft, wet, very thin bedded, moderately weathered						
29				SS07	28.5 - 28.9	0.4	50/5"	
34				SS08	33.5 - 33.9	0.4	50/5"	

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-16**
Boring Location N 1561604.29, E 1954231.35
Surface Elevation 713.2 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation		Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
38									
39			SHALE, light gray, soft, wet, very thin bedded, moderately weathered *(Continued)*		SS09	38.5 - 38.7	0.2	50/2"	
40									
41									
42									
43									
44					SS10	43.5 - 43.8	0.3	50/4"	
45	45.0	668.2							

No Refusal /
Bottom of Hole at 45.0 Ft.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-17**
Client: Georgia Power
Boring Location: N 1561279.17, E 1954321.06
Project Number: 175518236
Surface Elevation: 717.3 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/2/22
Completed: 5/2/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 21.7 ft
Date/Time: 5/3/22 07:22
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 4.25 HSA, 2 Inch Split Spoons wo liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description (Overburden: / Rock Core:)	Sample	Depth Ft Run Ft	Rec. Ft Rec. Ft	Blows/PSI Rec. %	Remarks
0.0	717.3	Top of Hole					
1.5	715.8	Topsoil	SS01	0.0 - 1.5	0.2	2-3-2	
		LEAN CLAY, CL, light brown to light gray, low to medium plasticity, soft to medium stiff, dry to moist, no odor, iron oxide staining, Very weathered shale, very little organic material at 4.4ft bgs	SS02	3.5 - 5.0	0.8	2-2-8	
9.5	707.8		SS03	8.5 - 10.0	1.0	8-20-40	Bulk Sample 1 at 10 feet bgs
		SHALE, light gray, soft, dry, no odor, iron oxide staining, highly weathered, highly weathered reddish brown shale with iron oxide staining at SS04 interval, wet at 38.5 ft bgs	SS04	13.5 - 15.0	1.4	9-9-24	
			SS05	18.5 - 20.0	1.5	11-27-40	
			SS06	23.5 - 24.3	0.6	26-50/4"	
			SS07	28.5 - 30.0	0.9	15-28-26	
			SS08	33.5 - 35.0	0.8	24-34-47	

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-17**
Boring Location N 1561279.17, E 1954321.06
Surface Elevation 717.3 ft Elevation Datum NAVD88

Lithology Depth Ft	Lithology Elevation		Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. %	Blows/PSI	Remarks
38 38.7	678.6				SS09	38.5 - 38.7	0.0	50/2"	
			Refusal / Bottom of Hole at 38.7 Ft.						

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-18**
Client: Georgia Power
Boring Location: N 1561336.95, E 1953149.68
Project Number: 175518236
Surface Elevation: 666.6 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/17/22
Completed: 5/17/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 9.9 ft
Date/Time: 5/17/22 12:48
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 2 1/4" HSA, 2" SS w/o liners
Rock Drilling and Sampling Tools (Type and Size): NQ-3 Wireline, Split Barrel, Impregnated Bit
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description (Overburden: / Rock Core:)	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	666.6	Top of Hole					
0		SHALE, light gray and light brown, thin, soft, dry, iron oxide staining, moist at 13.5 ft bgs, wet at 17.9 ft bgs	SS01	0.0 - 1.5	0.4	7-14-9	
4			SS02	3.5 - 4.9	1.2	13-32-50/5"	Bulk Sample 1 at 5 feet bgs
9			SS03	8.5 - 8.9	0.4	50/5"	
13			SS04	13.5 - 13.7	0.2	50/2"	
19			SS05	18.5 - 18.7	0.2	50/2"	Began Core
19.4	647.2	SHALE, light gray and dark gray, thin, hard, no odor, iron oxide staining, moderately weathered	0	19.2 - 22.0	1.1	39	
22			0	22.0 - 27.0	1.6	32	
27			0	27.0 - 31.0	0.8	20	
31.0	635.6						

Bottom of Hole at 31.0 Ft.

Top of Rock = 19.4 Ft.
Top of Rock Elevation = 647.2 Ft.
Begin Core = 19.2 Ft.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **HRL-19**
Client: Georgia Power
Boring Location: N 1561497.20, E 1952792.90
Project Number: 175518236
Surface Elevation: 662.7 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Phase 2
Date Started: 5/19/22
Completed: 5/19/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: 18.2 ft
Date/Time: 5/19/22 14:26
Inspector: Vicki Bierwirth
Logger: Vicki Bierwirth
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Southern Company Services
Drill Rig: CME550X
Driller: S. Denty
Overburden Drilling and Sampling Tools (Type and Size): 4.25 HSA, 2 Inch Split Spoons wo liners
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: Automatic
Weight: 140 lb
Drop: 30"
Efficiency: N/A
Reviewed By: J.Massey
Approved By: A.Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. %	Blows/PSI	Remarks
0.0	662.7	Top of Hole						
		SHALE, light gray and light brown, soft, dry, no odor, iron oxide staining, highly weathered, GW encountered at approximately 18.2 ft bgs		SS01	0.0 - 1.5	0.3	10-15-12	
				SS02	3.5 - 4.9	0.8	20-35-50/5"	
				SS03	8.5 - 8.9	0.4	50/5"	
				SS04	13.5 - 13.7	0.1	50/2"	
				SS05	18.5 - 18.7	0.2	50/2"	
				SS06	23.5 - 23.7	0.2	50/2"	

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power
Project Number 175518236

Stantec Boring No. **HRL-19**
Boring Location N 1561497.20, E 1952792.90
Surface Elevation 662.7 ft Elevation Datum NAVD88

Lithology				Overburden:	Sample	Depth Ft	Rec. Ft	Blows/PSI	
Depth Ft		Elevation	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %	Remarks
38									
39	39.7	623.0							

No Refusal /
Bottom of Hole at 39.7 Ft.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATAT R0.GDT 4/28/23

APPENDIX H.2

Test Pits Logs

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **TP-HS-01**
Client: Southern Company
Boring Location: Lat. 34.288330, Long. -85.306058
Project Number: 175518216
Surface Elevation: 643.6 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Drilling Services
Date Started: 4/28/21
Completed: 4/28/21
Project Location: Floyd County, Georgia
Depth to Water: N/A
Date/Time: N/A
Inspector: J. Ottolino
Logger: J. Ottolino
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig:
Driller: Evans Construction Co.
Overburden Drilling and Sampling Tools (Type and Size):
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	643.6	Top of Hole							
0.4	643.2	Topsoil							Surface vegetation includes grass and wildflowers.
		Sandy Lean Clay with Gravel, CL, gray/tan/orange, moist, fissile, breaks apart easily, **with lean clay [WEATHERED SHALE]**		BAG1	2.0 - 3.0	1.0			No seepage and no caving observed.
3.5	640.1	Refusal / Bottom of Hole at 3.5 Ft.							

Top of Rock = 0.4 Ft.
Top of Rock Elevation = 643.2 Ft.

Backfilled with soil spoils.

STANTEC 1755 STD_LAB_HAMMOND_TEST_PITS.GPJ BC_1755 STD DATAT R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **TP-HS-02**
Client: Southern Company
Boring Location: Lat. 34.288005, Long. -85.305135
Project Number: 175518216
Surface Elevation: 671.0 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Drilling Services
Date Started: 4/28/21
Completed: 4/28/21
Project Location: Floyd County, Georgia
Depth to Water: N/A
Date/Time: N/A
Inspector: J. Ottolino
Logger: J. Ottolino
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig:
Driller: Evans Construction Co.
Overburden Drilling and Sampling Tools (Type and Size):
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	671.0	Top of Hole							
0.3	670.7	Topsoil							Surface vegetation includes grass and wildflowers.
		Gravelly Lean Clay, CL, tan to orange, moist, breaks apart easily **[WEATHERED SHALE]**		BAG1	1.0 - 2.0	1.0			
4.5	666.5								No seepage and no caving observed.

Refusal /
Bottom of Hole at 4.5 Ft.

Top of Rock = 0.3 Ft.
Top of Rock Elevation = 670.7 Ft.

Backfilled with soil spoils.

STANTEC 1755 STD_LAB_HAMMOND_TEST_PITS.GPJ BC 1755 STD DATAT R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **TP-HS-03**
Client: Southern Company
Boring Location: Lat. 34.287030, Long. -85.305214
Project Number: 175518216
Surface Elevation: 664.8 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Drilling Services
Date Started: 4/28/21
Completed: 4/28/21
Project Location: Floyd County, Georgia
Depth to Water: N/A
Date/Time: N/A
Inspector: J. Ottolino
Logger: J. Ottolino
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig:
Driller: Evans Construction Co.
Overburden Drilling and Sampling Tools (Type and Size):
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. %	Blows/PSI	WC % / RQD %	Remarks
0.0	664.8	Top of Hole							
0.5	664.3	Topsoil							Surface vegetation includes grass and wildflowers.
		Shale, orange to tan, weathered, moist, fissile, breaks easily, with some tan lean clay and some roots							
				BAG1	3.0 - 4.0	1.0			No seepage and no caving observed.
4.0	660.8	Refusal / Bottom of Hole at 4.0 Ft.							

Top of Rock = 0.5 Ft.
Top of Rock Elevation = 664.3 Ft.

Backfilled with soil spoils

STANTEC 1755 STD_LAB_HAMMOND_TEST_PITS.GPJ BC 1755 STD DATAT R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **TP-HS-04**
Client: Southern Company
Boring Location: Lat. 34.286608, Long. -85.303979
Project Number: 175518216
Surface Elevation: 663.3 ft
Elevation Datum: NAVD88
Project Name: Plant Hammond Drilling Services
Date Started: 4/28/21
Completed: 4/28/21
Project Location: Floyd County, Georgia
Depth to Water: N/A
Date/Time: N/A
Inspector: J. Ottolino
Logger: J. Ottolino
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig:
Driller: Evans Construction Co.
Overburden Drilling and Sampling Tools (Type and Size):
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Borehole Azimuth: N/A
Borehole Inclination (from Vertical): N/A

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	WC % / RQD %	Remarks
0.0	663.3	Top of Hole							
0.4	662.9	Topsoil		BAG1	0.0 - 1.0	1.0			Surface vegetation includes grass and wildflowers.
1.0	662.3	Clayey Sand with Gravel, SC, orange to tan, low plasticity, moist to wet, with silt and weathered shale fragments (1"-6")							
2.5	660.8	Shale, black, moderately hard, weathered, moist							
4.5	658.8	Shale, dark gray to black, heavily weathered, wet, with tan to brown fat clay							Moisture observed at 4.5 feet bgs.
7.5	655.8	Shale, black to tan, weathered, with silty clay							No seepage or caving observed.

Refusal /
Bottom of Hole at 7.5 Ft.

Top of Rock = 1.0 Ft.
Top of Rock Elevation = 662.3 Ft.

Backfilled with soil spoils.

STANTEC 1755 STD_LAB_HAMMOND_TEST_PITS.GPJ BC 1755 STD DATAT R0 11-9-20.GDT 7/28/21

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **TP-01**
Client: Georgia Power
Boring Location: N 1562752.5, E 1954867.4
Project Number: 175518236
Surface Elevation: 696.0
Elevation Datum: TBD
Project Name: Plant Hammond Phase 2
Date Started: 4/19/22
Completed: 4/19/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: N/A
Date/Time: N/A
Inspector: M. Vaughan
Logger: M. Vaughan
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Southern Company Services
Drill Rig:
Driller: Evans Construction
Overburden Drilling and Sampling Tools (Type and Size):
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: A. Welshans

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0		Top of Hole						
0.0 – 2.3		Orange and tan, organics, [FILL]						
2.3 – 7.0		Grey and brown, [FILL]		Bucket 1	2.3 - 7.0	4.7		Slight sidewall collapse
7.0 – 13.5		Orange and brown, [FILL]						
13.5 – 19.0		Orange and brown, [FILL]		Bucket 2	13.5 - 19.0	5.5		
19.0		No Refusal / Bottom of Hole at 19.0 Ft.						

Backfilled with soil spoils.

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATA T R0.GDT 8/3/22

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **TP-02**
Client: Georgia Power
Boring Location: N 1563085.7, E 1954903.9
Project Number: 175518236
Surface Elevation: 692.0
Elevation Datum: TBD
Project Name: Plant Hammond Phase 2
Date Started: 4/19/22
Completed: 4/19/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: N/A
Date/Time: N/A
Inspector: M. Vaughan
Logger: M. Vaughan
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Southern Company Services
Drill Rig:
Driller: Evans Construction
Overburden Drilling and Sampling Tools (Type and Size):
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: A. Welshans

Lithology Depth Ft	Elevation		Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0			Top of Hole						
0 – 8.0			Orange, [FILL]						
8.0 – 15.0			Organic material at 10.5'. Apparent burn pit at 14'-15'. [FILL]						
15.0 – 19.5			(Burn pit), [FILL]						
19.5			No Refusal / Bottom of Hole at 19.5 Ft.						

Backfilled with soil spoils.

STANTEC 1755.STD 175518236.GPJ BC 1755 STD DATA T R0.GDT 8/3/22

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **TP-03**
Client: Georgia Power
Boring Location: N 1561401.4, E 1,955,080.7
Project Number: 175518236
Surface Elevation: 727.0
Elevation Datum: TBD
Project Name: Plant Hammond Phase 2
Date Started: 4/19/22
Completed: 4/19/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: N/A
Date/Time: N/A
Inspector: M. Vaughan
Logger: M. Vaughan
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Southern Company Services
Drill Rig:
Driller: Evans Construction
Overburden Drilling and Sampling Tools (Type and Size):
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: A. Welshans

Lithology Depth Ft	Lithology Elevation		Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0			Top of Hole						
0 – 13			Orange to tan, Shale, weathered						
13.0			No Refusal / Bottom of Hole at 13.0 Ft. Backfilled with soil spoils						

STANTEC 1755 STD 175518236.GPJ BC 1755 STD DATA T R0.GDT 8/3/22

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **TP-04**
Client: Georgia Power
Boring Location: N 1561500.9, E 1955593.7
Project Number: 175518236
Surface Elevation: 719.0
Elevation Datum: TBD
Project Name: Plant Hammond Phase 2
Date Started: 4/19/22
Completed: 4/19/22
Project Location: Floyd Co, Rome, Georgia
Depth to Water: N/A
Date/Time: N/A
Inspector: M.Vaughan
Logger: M.Vaughan
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Southern Company Services
Drill Rig:
Driller: Evans Construction
Overburden Drilling and Sampling Tools (Type and Size):
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: A. Welshans

Lithology Depth Ft	Lithology Elevation		Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0			Top of Hole						
0 – 13			Orange to tan, Shale, weathered						
13.0			No Refusal / Bottom of Hole at 13.0 Ft. Backfilled with soil spoils						

STANTEC 1755.STD 175518236.GPJ BC 1755.STD DATAT R0.GDT 8/3/22

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **TP-05**
Client Georgia Power
Boring Location N 156191.5, E 1954605.6
Project Number 175518236
Surface Elevation 724.0
Elevation Datum TBD
Project Name Plant Hammond Phase 2
Date Started 4/19/22
Completed 4/19/22
Project Location Floyd Co, Rome, Georgia
Depth to Water N/A
Date/Time N/A
Inspector M. Vaughan
Logger M.Vaughan
Depth to Water N/A
Date/Time N/A
Drilling Contractor Southern Company Services
Drill Rig
Driller Evans Construction
Overburden Drilling and Sampling Tools (Type and Size)
Rock Drilling and Sampling Tools (Type and Size) N/A
Sampler Hammer Type N/A
Weight N/A
Drop N/A
Efficiency N/A
Reviewed By J. Massey
Approved By A. Welshans

Lithology			Description	Overburden:	Sample	Depth Ft	Rec. Ft	Blows/PSI	Remarks
Depth Ft	Elevation			Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %	
0.0			Top of Hole						
0			Dark orange brown, Shale, weathered						
1									
2									
3									
4									
5									
6									
7									
8									
9									
10 10.0									

No Refusal /
Bottom of Hole at 10.0 Ft.
Backfilled with soil spoils

STANTEC 1755.STD 175518236.GPJ BC 1755.STD DATAT R0.GDT 8/3/22

APPENDIX H.3

Geotechnical Boring Abandonment Form

Southern Company

Geotechnical Boring Abandonment Form

General Information

Project Name: Huffaker South – Geotechnical Exploration

Boring Number: PZ-HS-01

Plant Name: Plant Hammond

Plant Address: 5963 Alabama Hwy, Rome, GA 30165

Abandoned by: Josh Massey, PG

Project & Task Number: 175518216

Date: 6/16/2021

Goal/Task: Geotechnical Testing

Well Details (Check one per section):

Casing Diameter		Borehole Diameter		Well Type	
n/a	2"	n/a	6"	n/a	Permanent
n/a	4"	n/a	7"	**X**	Temporary **- Soil boring. No well installed.**
n/a	6"	n/a	12"	n/a	Geoprobe® Screen Point (GSP) or Equiv.
n/a	Other/NA	**X**	Other - **8.25"**	12.2	Measured Total Depth (feet below ground surface (bgs))
				DRY	Measured Static Water Level (feet bgs)

Casing Material

n/a	PVC
n/a	Steel
X	Other - **No casing. Open soil boring.**

Abandonment Details (Check one per section):

Abandonment Method (as detailed in SOW)

n/a	Overdrill and Grout
n/a	Well Extraction
X	Grout in Place
n/a	Bentonite Sealing-Pellets and Neat Cement
n/a	Bentonite Sealing-Pellets only
n/a	Probe Hole Grouting
n/a	Re-proved for through-the-rod grouting

Materials and Quantity Used

n/a	Type 1 Portland Cement mixed with 3-5% bentonite
n/a	Bentonite Pellets
n/a	Neat Cement
x	Other **(20 gallons of water, two 47-pound bags Type I Portland cement and one half of a 50-pound bag Cetco bentonite grout)**

Overdrilled Well Cuttings and Debris

n/a	Staged Onsite for Disposal (covered top and bottom with poly-sheeting)
n/a	Drummed for Disposal

Prepared By: Josh Massey Date: 7/13/2021

Reviewed By: Chris Jones Date: 7/16/2021

Southern Company

Geotechnical Boring Abandonment Form

General Information

Project Name: Huffaker South – Geotechnical Exploration

Boring Number: BH-HS-02

Plant Name: Plant Hammond

Plant Address: 5963 Alabama Hwy, Rome, GA 30165

Abandoned by: Josh Massey, PG

Project & Task Number: 175518216

Date: 5/19/2021

Goal/Task: Geotechnical Testing

Well Details (Check one per section):

Casing Diameter		Borehole Diameter		Well Type	
n/a	2"	n/a	6"	n/a	Permanent
n/a	4"	n/a	7"	**X**	Temporary **- Soil boring. No well installed.**
n/a	6"	n/a	12"	n/a	Geoprobe® Screen Point (GSP) or Equiv.
n/a	Other/NA	**X**	Other - **8.25"**	36.1	Measured Total Depth (feet below ground surface (bgs))
				24.4	Measured Static Water Level (feet bgs)

Casing Material

n/a	PVC
n/a	Steel
X	Other - **No casing. Open soil boring.**

Abandonment Details (Check one per section):

Abandonment Method (as detailed in SOW)

n/a	Overdrill and Grout
n/a	Well Extraction
X	Grout in Place
n/a	Bentonite Sealing-Pellets and Neat Cement
n/a	Bentonite Sealing-Pellets only
n/a	Probe Hole Grouting
n/a	Re-proved for through-the-rod grouting

Materials and Quantity Used

n/a	Type 1 Portland Cement mixed with 3-5% bentonite
n/a	Bentonite Pellets
n/a	Neat Cement
x	Other **(40 gallons of water, four 47-pound bags Type I Portland cement and two 50-pound bags Cetco bentonite grout)**

Overdrilled Well Cuttings and Debris

n/a	Staged Onsite for Disposal (covered top and bottom with poly-sheeting)
n/a	Drummed for Disposal

Prepared By: Josh Massey Date: 7/13/2021

Reviewed By: Chris Jones Date: 7/16/2021

Southern Company

Geotechnical Boring Abandonment Form

General Information

Project Name: Huffaker South – Geotechnical Exploration

Boring Number: BH-HS-03

Plant Name: Plant Hammond

Plant Address: 5963 Alabama Hwy, Rome, GA 30165

Abandoned by: Josh Massey, PG

Project & Task Number: 175518216

Date: 6/4/2021

Goal/Task: Geotechnical Testing

Well Details (Check one per section):

Casing Diameter		Borehole Diameter		Well Type	
n/a	2"	n/a	6"	n/a	Permanent
n/a	4"	n/a	7"	**X**	Temporary **- Soil boring. No well installed.**
n/a	6"	n/a	12"	n/a	Geoprobe® Screen Point (GSP) or Equiv.
n/a	Other/NA	**X**	Other - **8.25"**	17.5	Measured Total Depth (feet below ground surface (bgs))
				2.7	Measured Static Water Level (feet bgs)

Casing Material

n/a	PVC
n/a	Steel
X	Other - **No casing. Open soil boring.**

Abandonment Details (Check one per section):

Abandonment Method (as detailed in SOW)

n/a	Overdrill and Grout
n/a	Well Extraction
X	Grout in Place
n/a	Bentonite Sealing-Pellets and Neat Cement
n/a	Bentonite Sealing-Pellets only
n/a	Probe Hole Grouting
n/a	Re-proved for through-the-rod grouting

Materials and Quantity Used

n/a	Type 1 Portland Cement mixed with 3-5% bentonite
n/a	Bentonite Pellets
n/a	Neat Cement
x	Other **(20 gallons of water, two 47-pound bags Type I Portland cement and one 50-pound bag Cetco bentonite grout)**

Overdrilled Well Cuttings and Debris

n/a	Staged Onsite for Disposal (covered top and bottom with poly-sheeting)
n/a	Drummed for Disposal

Prepared By: Josh Massey Date: 7/13/2021

Reviewed By: Chris Jones Date: 7/16/2021

Southern Company

Geotechnical Boring Abandonment Form

General Information

Project Name: Huffaker South – Geotechnical Exploration

Boring Number: BH-HS-04

Plant Name: Plant Hammond

Plant Address: 5963 Alabama Hwy, Rome, GA 30165

Abandoned by: Josh Massey, PG

Project & Task Number: 175518216

Date: 6/6/2021

Goal/Task: Geotechnical Testing

Well Details (Check one per section):

Casing Diameter		Borehole Diameter		Well Type	
n/a	2"	n/a	6"	n/a	Permanent
n/a	4"	n/a	7"	**X**	Temporary **- Soil boring. No well installed.**
n/a	6"	n/a	12"	n/a	Geoprobe® Screen Point (GSP) or Equiv.
n/a	Other/NA	**X**	Other - **8.25"**	39.6	Measured Total Depth (feet below ground surface (bgs))
				DRY	Measured Static Water Level (feet bgs)

Casing Material

n/a	PVC
n/a	Steel
X	Other - **No casing. Open soil boring.**

Abandonment Details (Check one per section):

Abandonment Method (as detailed in SOW)

n/a	Overdrill and Grout
n/a	Well Extraction
X	Grout in Place
n/a	Bentonite Sealing-Pellets and Neat Cement
n/a	Bentonite Sealing-Pellets only
n/a	Probe Hole Grouting
n/a	Re-proved for through-the-rod grouting

Materials and Quantity Used

n/a	Type 1 Portland Cement mixed with 3-5% bentonite
x	Bentonite Pellets **(grout settled to 2.5 feet bgs, add three-quarters of one 50-pound bucket to 1 feet bgs, backfill with soil to grade)**
n/a	Neat Cement
x	Other **(60 gallons of water, seven 47-pound bags Type I Portland cement and two and a half 50-pound bags Cetco bentonite grout)**

Overdrilled Well Cuttings and Debris

n/a	Staged Onsite for Disposal (covered top and bottom with poly-sheeting)
n/a	Drummed for Disposal

Prepared By: Josh Massey Date: 7/13/2021

Reviewed By: Chris Jones Date: 7/16/2021

Southern Company

Geotechnical Boring Abandonment Form

General Information

Project Name: Huffaker South – Geotechnical Exploration

Boring Number: BH-HS-05

Plant Name: Plant Hammond

Plant Address: 5963 Alabama Hwy, Rome, GA 30165

Abandoned by: Josh Massey, PG

Project & Task Number: 175518216

Date: 5/21/2021

Goal/Task: Geotechnical Testing

Well Details (Check one per section):

Casing Diameter		Borehole Diameter		Well Type	
n/a	2"	n/a	6"	n/a	Permanent
n/a	4"	n/a	7"	**X**	Temporary **- Soil boring. No well installed.**
n/a	6"	n/a	12"	n/a	Geoprobe® Screen Point (GSP) or Equiv.
n/a	Other/NA	**X**	Other - **8.25"**	37.0	Measured Total Depth (feet below ground surface (bgs))
				21.1	Measured Static Water Level (feet bgs)

Casing Material

n/a	PVC
n/a	Steel
X	Other - **No casing. Open soil boring.**

Abandonment Details (Check one per section):

Abandonment Method (as detailed in SOW)

n/a	Overdrill and Grout
n/a	Well Extraction
X	Grout in Place
n/a	Bentonite Sealing-Pellets and Neat Cement
n/a	Bentonite Sealing-Pellets only
n/a	Probe Hole Grouting
n/a	Re-proved for through-the-rod grouting

Materials and Quantity Used

n/a	Type 1 Portland Cement mixed with 3-5% bentonite
x	Bentonite Pellets **(grout settled to 5.3 feet bgs, add two 50-pound buckets to 1.3 feet bgs)**
n/a	Neat Cement
x	Other **(40 gallons of water, four 47-pound bags Type I Portland cement and three 50-pound bags Cetco bentonite grout)**

Overdrilled Well Cuttings and Debris

n/a	Staged Onsite for Disposal (covered top and bottom with poly-sheeting)
n/a	Drummed for Disposal

Prepared By: Josh Massey Date: 7/13/2021

Reviewed By: Chris Jones Date: 7/16/2021

Southern Company

Geotechnical Boring Abandonment Form

General Information

Project Name: Huffaker South – Geotechnical Exploration

Boring Number: BH-HS-06

Plant Name: Plant Hammond

Plant Address: 5963 Alabama Hwy, Rome, GA 30165

Abandoned by: Josh Massey, PG

Project & Task Number: 175518216

Date: 6/5/2021

Goal/Task: Geotechnical Testing

Well Details (Check one per section):

Casing Diameter		Borehole Diameter		Well Type	
n/a	2"	n/a	6"	n/a	Permanent
n/a	4"	n/a	7"	**X**	Temporary **- Soil boring. No well installed.**
n/a	6"	n/a	12"	n/a	Geoprobe® Screen Point (GSP) or Equiv.
n/a	Other/NA	**X**	Other - **8.25"**	38.3	Measured Total Depth (feet below ground surface (bgs))
				34.4	Measured Static Water Level (feet bgs)

Casing Material

n/a	PVC
n/a	Steel
X	Other - **No casing. Open soil boring.**

Abandonment Details (Check one per section):

Abandonment Method (as detailed in SOW)

n/a	Overdrill and Grout
n/a	Well Extraction
X	Grout in Place
n/a	Bentonite Sealing-Pellets and Neat Cement
n/a	Bentonite Sealing-Pellets only
n/a	Probe Hole Grouting
n/a	Re-proved for through-the-rod grouting

Materials and Quantity Used

n/a	Type 1 Portland Cement mixed with 3-5% bentonite
n/a	Bentonite Pellets
n/a	Neat Cement
x	Other **(40 gallons of water, four 47-pound bags Type I Portland cement and two and a half 50-pound bags Cetco bentonite grout)**

Overdrilled Well Cuttings and Debris

n/a	Staged Onsite for Disposal (covered top and bottom with poly-sheeting)
n/a	Drummed for Disposal

Prepared By: Josh Massey Date: 7/13/2021

Reviewed By: Chris Jones Date: 7/16/2021

Southern Company

Geotechnical Boring Abandonment Form

General Information

Project Name: Huffaker South – Geotechnical Exploration

Boring Number: BH-HS-07

Plant Name: Plant Hammond

Plant Address: 5963 Alabama Hwy, Rome, GA 30165

Abandoned by: Josh Massey, PG

Project & Task Number: 175518216

Date: 5/21/2021

Goal/Task: Geotechnical Testing

Well Details (Check one per section):

Casing Diameter		Borehole Diameter		Well Type	
n/a	2"	n/a	6"	n/a	Permanent
n/a	4"	n/a	7"	**X**	Temporary **- Soil boring. No well installed.**
n/a	6"	n/a	12"	n/a	Geoprobe® Screen Point (GSP) or Equiv.
n/a	Other/NA	**X**	Other - **8.25"**	32.6	Measured Total Depth (feet below ground surface (bgs))
				30.2	Measured Static Water Level (feet bgs)

Casing Material

n/a	PVC
n/a	Steel
X	Other - **No casing. Open soil boring.**

Abandonment Details (Check one per section):

Abandonment Method (as detailed in SOW)

n/a	Overdrill and Grout
n/a	Well Extraction
X	Grout in Place
n/a	Bentonite Sealing-Pellets and Neat Cement
n/a	Bentonite Sealing-Pellets only
n/a	Probe Hole Grouting
n/a	Re-proved for through-the-rod grouting

Materials and Quantity Used

n/a	Type 1 Portland Cement mixed with 3-5% bentonite
n/a	Bentonite Pellets
n/a	Neat Cement
x	Other **(40 gallons of water, four 47-pound bags Type I Portland cement and four 50-pound bags Cetco bentonite grout)**

Overdrilled Well Cuttings and Debris

n/a	Staged Onsite for Disposal (covered top and bottom with poly-sheeting)
n/a	Drummed for Disposal

Prepared By: Josh Massey Date: 7/13/2021

Reviewed By: Chris Jones Date: 7/16/2021

Southern Company

Geotechnical Boring Abandonment Form

General Information

Project Name: Huffaker South – Geotechnical Exploration

Boring Number: BH-HS-08

Plant Name: Plant Hammond

Plant Address: 5963 Alabama Hwy, Rome, GA 30165

Abandoned by: Josh Massey, PG

Project & Task Number: 175518216

Date: 5/23/2021

Goal/Task: Geotechnical Testing

Well Details (Check one per section):

Casing Diameter		Borehole Diameter		Well Type	
n/a	2"	n/a	6"	n/a	Permanent
n/a	4"	n/a	7"	**X**	Temporary **- Soil boring. No well installed.**
n/a	6"	n/a	12"	n/a	Geoprobe® Screen Point (GSP) or Equiv.
n/a	Other/NA	**X**	Other - **8.25"**	27.7	Measured Total Depth (feet below ground surface (bgs))
				DRY	Measured Static Water Level (feet bgs)

Casing Material

n/a	PVC
n/a	Steel
X	Other - **No casing. Open soil boring.**

Abandonment Details (Check one per section):

Abandonment Method (as detailed in SOW)

n/a	Overdrill and Grout
n/a	Well Extraction
X	Grout in Place
n/a	Bentonite Sealing-Pellets and Neat Cement
n/a	Bentonite Sealing-Pellets only
n/a	Probe Hole Grouting
n/a	Re-proved for through-the-rod grouting

Materials and Quantity Used

n/a	Type 1 Portland Cement mixed with 3-5% bentonite
n/a	Bentonite Pellets
n/a	Neat Cement
x	Other **(40 gallons of water, four 47-pound bags Type I Portland cement and two 50-pound bags Cetco bentonite grout)**

Overdrilled Well Cuttings and Debris

n/a	Staged Onsite for Disposal (covered top and bottom with poly-sheeting)
n/a	Drummed for Disposal

Prepared By: Josh Massey Date: 7/13/2021

Reviewed By: Chris Jones Date: 7/16/2021

Southern Company

Geotechnical Boring Abandonment Form

General Information

Project Name: Huffaker South – Geotechnical Exploration

Boring Number: BH-HS-09

Plant Name: Plant Hammond

Plant Address: 5963 Alabama Hwy, Rome, GA 30165

Abandoned by: Josh Massey, PG

Project & Task Number: 175518216

Date: 5/23/2021

Goal/Task: Geotechnical Testing

Well Details (Check one per section):

Casing Diameter		Borehole Diameter		Well Type	
n/a	2"	n/a	6"	n/a	Permanent
n/a	4"	n/a	7"	**X**	Temporary **- Soil boring. No well installed.**
n/a	6"	n/a	12"	n/a	Geoprobe® Screen Point (GSP) or Equiv.
n/a	Other/NA	**X**	Other - **8.25"**	12.3	Measured Total Depth (feet below ground surface (bgs))
				DRY	Measured Static Water Level (feet bgs)

Casing Material

n/a	PVC
n/a	Steel
X	Other - **No casing. Open soil boring.**

Abandonment Details (Check one per section):

Abandonment Method (as detailed in SOW)

n/a	Overdrill and Grout
n/a	Well Extraction
X	Grout in Place
n/a	Bentonite Sealing-Pellets and Neat Cement
n/a	Bentonite Sealing-Pellets only
n/a	Probe Hole Grouting
n/a	Re-proved for through-the-rod grouting

Materials and Quantity Used

n/a	Type 1 Portland Cement mixed with 3-5% bentonite
n/a	Bentonite Pellets
n/a	Neat Cement
x	Other **(20 gallons of water, two 47-pound bags Type I Portland cement and one 50-pound bag Cetco bentonite grout)**

Overdrilled Well Cuttings and Debris

n/a	Staged Onsite for Disposal (covered top and bottom with poly-sheeting)
n/a	Drummed for Disposal

Prepared By: Josh Massey Date: 7/13/2021

Reviewed By: Chris Jones Date: 7/16/2021

Southern Company

Geotechnical Boring Abandonment Form

General Information

Project Name: Huffaker South – Geotechnical Exploration

Boring Number: BH-HS-10

Plant Name: Plant Hammond

Plant Address: 5963 Alabama Hwy, Rome, GA 30165

Abandoned by: Josh Massey, PG

Project & Task Number: 175518216

Date: 5/25/2021

Goal/Task: Geotechnical Testing

Well Details (Check one per section):

Casing Diameter		Borehole Diameter		Well Type	
n/a	2"	n/a	6"	n/a	Permanent
n/a	4"	n/a	7"	**X**	Temporary **- Soil boring. No well installed.**
n/a	6"	n/a	12"	n/a	Geoprobe® Screen Point (GSP) or Equiv.
n/a	Other/NA	**X**	Other - **8.25"**	26.5	Measured Total Depth (feet below ground surface (bgs))
				25.3	Measured Static Water Level (feet bgs)

Casing Material

n/a	PVC
n/a	Steel
X	Other - **No casing. Open soil boring.**

Abandonment Details (Check one per section):

Abandonment Method (as detailed in SOW)

n/a	Overdrill and Grout
n/a	Well Extraction
X	Grout in Place
n/a	Bentonite Sealing-Pellets and Neat Cement
n/a	Bentonite Sealing-Pellets only
n/a	Probe Hole Grouting
n/a	Re-proved for through-the-rod grouting

Materials and Quantity Used

n/a	Type 1 Portland Cement mixed with 3-5% bentonite
n/a	Bentonite Pellets
n/a	Neat Cement
x	Other **(40 gallons of water, four 47-pound bags Type I Portland cement and one 50-pound bag Cetco bentonite grout)**

Overdrilled Well Cuttings and Debris

n/a	Staged Onsite for Disposal (covered top and bottom with poly-sheeting)
n/a	Drummed for Disposal

Prepared By: Josh Massey Date: 7/13/2021

Reviewed By: Chris Jones Date: 7/16/2021

Southern Company

Geotechnical Boring Abandonment Form

General Information

Project Name: Huffaker South – Geotechnical Exploration

Boring Number: BH-HS-11

Plant Name: Plant Hammond

Plant Address: 5963 Alabama Hwy, Rome, GA 30165

Abandoned by: Josh Massey, PG

Project & Task Number: 175518216

Date: 5/22/2021

Goal/Task: Geotechnical Testing

Well Details (Check one per section):

Casing Diameter		Borehole Diameter		Well Type	
n/a	2"	n/a	6"	n/a	Permanent
n/a	4"	n/a	7"	**X**	Temporary **- Soil boring. No well installed.**
n/a	6"	n/a	12"	n/a	Geoprobe® Screen Point (GSP) or Equiv.
n/a	Other/NA	**X**	Other - **8.25"**	39.2	Measured Total Depth (feet below ground surface (bgs))
				DRY	Measured Static Water Level (feet bgs)

Casing Material

n/a	PVC
n/a	Steel
X	Other - **No casing. Open soil boring.**

Abandonment Details (Check one per section):

Abandonment Method (as detailed in SOW)

n/a	Overdrill and Grout
n/a	Well Extraction
X	Grout in Place
n/a	Bentonite Sealing-Pellets and Neat Cement
n/a	Bentonite Sealing-Pellets only
n/a	Probe Hole Grouting
n/a	Re-proved for through-the-rod grouting

Materials and Quantity Used

n/a	Type 1 Portland Cement mixed with 3-5% bentonite
x	Bentonite Pellets **(grout settled to 5.75 feet bgs, add one and a half 50-pound buckets to 2 feet bgs)**
n/a	Neat Cement
x	Other **(60 gallons of water, six 47-pound bags Type I Portland cement and three 50-pound bags Cetco bentonite grout)**

Overdrilled Well Cuttings and Debris

n/a	Staged Onsite for Disposal (covered top and bottom with poly-sheeting)
n/a	Drummed for Disposal

Prepared By: Josh Massey Date: 7/13/2021

Reviewed By: Chris Jones Date: 7/16/2021

Southern Company

Geotechnical Boring Abandonment Form

General Information

Project Name: Judy Mountain – Geotechnical Exploration

Boring Number: BH-JM-03

Plant Name: Plant Hammond

Plant Address: 5963 Alabama Hwy, Rome, GA 30165

Abandoned by: Josh Massey, PG

Project & Task Number: 175518216

Date: 6/2/2021

Goal/Task: Geotechnical Testing

Well Details (Check one per section):

Casing Diameter		Borehole Diameter		Well Type	
n/a	2"	n/a	6"	n/a	Permanent
n/a	4"	n/a	7"	**X**	Temporary **- Soil boring. No well installed.**
n/a	6"	n/a	12"	n/a	Geoprobe® Screen Point (GSP) or Equiv.
n/a	Other/NA	**X**	Other - **8.25"**	12.5	Measured Total Depth (feet below ground surface (bgs))
				10.0	Measured Static Water Level (feet bgs)

Casing Material

n/a	PVC
n/a	Steel
X	Other - **No casing. Open soil boring.**

Abandonment Details (Check one per section):

Abandonment Method (as detailed in SOW)

n/a	Overdrill and Grout
n/a	Well Extraction
X	Grout in Place
n/a	Bentonite Sealing-Pellets and Neat Cement
n/a	Bentonite Sealing-Pellets only
n/a	Probe Hole Grouting
n/a	Re-proved for through-the-rod grouting

Materials and Quantity Used

n/a	Type 1 Portland Cement mixed with 3-5% bentonite
n/a	Bentonite Pellets
n/a	Neat Cement
x	Other **(20 gallons of water, two 47-pound bags Type I Portland cement and one 50-pound bag Cetco bentonite grout)**

Overdrilled Well Cuttings and Debris

n/a	Staged Onsite for Disposal (covered top and bottom with poly-sheeting)
n/a	Drummed for Disposal

Prepared By: Josh Massey Date: 7/14/2021

Reviewed By: Chris Jones Date: 7/16/2021

Southern Company

Geotechnical Boring Abandonment Form

General Information

Project Name: Huffaker South – Parcel F SAR Drilling

Boring Number: HRL-12

Plant Name: Plant Hammond

Plant Address: 5963 Alabama Hwy, Rome, GA 30165

Abandoned by: Vicki Bierwirth

Project & Task Number: 175518236

Date: 4/28/2022

Goal/Task: Geotechnical exploration

Well Details (Check one per section):

Casing Diameter		Borehole Diameter		Well Type	
n/a	2"	X	6"	n/a	Permanent
n/a	4"	n/a	7"	X	Temporary **- Soil boring. No well installed.**
n/a	6"	n/a	12"	n/a	Geoprobe® Screen Point (GSP) or Equiv.
n/a	Other/NA	n/a	Other -	52.4	Measured Total Depth (feet below ground surface (bgs))
				22.5	Measured Static Water Level (feet bgs)

Casing Material

n/a	PVC
n/a	Steel
X	Other - **No casing. Open soil boring.**

Abandonment Details (Check one per section):

Abandonment Method (as detailed in SOW)

n/a	Overdrill and Grout
n/a	Well Extraction
n/a	Grout in Place
n/a	Bentonite Sealing-Pellets and Neat Cement
n/a	Bentonite Sealing-Pellets only
X	Probe Hole Grouting
n/a	Re-proved for through-the-rod grouting

Materials and Quantity Used

n/a	Type 1 Portland Cement mixed with 3-5% bentonite
n/a	Bentonite Pellets
n/a	Neat Cement
x	Other **(56 gallons of water, 4 50-pound bags Aqua Guard 30% solids bentonite grout)**

Overdrilled Well Cuttings and Debris

n/a	Staged Onsite for Disposal (covered top and bottom with poly-sheeting)
n/a	Drummed for Disposal

Prepared By: Josh Massey Date: 6/29/2022

Reviewed By: _____ Date: _____

APPENDIX I
HRL PARCEL F PIEZOMETER INSTALLATION LOGS

APPENDIX I.1
2021 HRL PARCEL F PIEZOMETER INSTALLATION LOGS

HUFFAKER PARCEL F PZ AS-BUILT JULY 22-23, 2021

NAD 83 GEORGIA WEST ZONE, NAVD 88

FIELD WORK BY STEVE CULBERSON, CHRIS RICHARDSON & DAVE SELF-T&PS CFS

LOCATION	LATITUDE DD	LONGITUDE DD	NAD 83 NORTHING	NAD 83 EASTING	GROUND ELEVATION	TOP CASING ELEVATION
BH-HS-01	34.2891158	-85.3025852	1562184.25	1953484.32	703.30	706.25
PZ-HS-02	34.2913253	-85.2970778	1562969.79	1955156.83	688.95	691.95
PZ-HS-03	34.2890959	-85.2986457	1562163.74	1954674.21	691.80	694.82
PZ-HS-04	34.2897361	-85.2951032	1562384.82	1955746.85	662.92	665.92
PZ-HS-05	34.2897704	-85.3020443	1561328.89	1953638.17	687.47	690.47
PZ-HS-06	34.2867954	-85.2980128	1561324.42	1954856.06	729.60	732.60



06.22.2023

SURVEY DATA CERTIFICATION FOR SOUTHERN COMPANY TO DETERMINE NORTHING, EASTING, AND VERTICAL ELEVATION OF THE PVC WELL CASING AS MEASURED FROM THE GROUND

DATES OF FIELD SURVEYS AND INSPECTION: JULY 22-23, 2021

FIELD SURVEY GROUND POSITIONAL TOLERANCE=0.5 FEET HORIZONTAL-NAD'83, 0.20 FEET VERTICAL-NAVD'88

THE VERTICAL LOCATION OF THE TOP OF THE PVC WELL WAS DETERMINED BY MEASURING FROM THE GROUND TO THE TOP OF THE WELL WITH A LUFKIN STEEL TAPE TO A TOLERANCE OF 0.01'

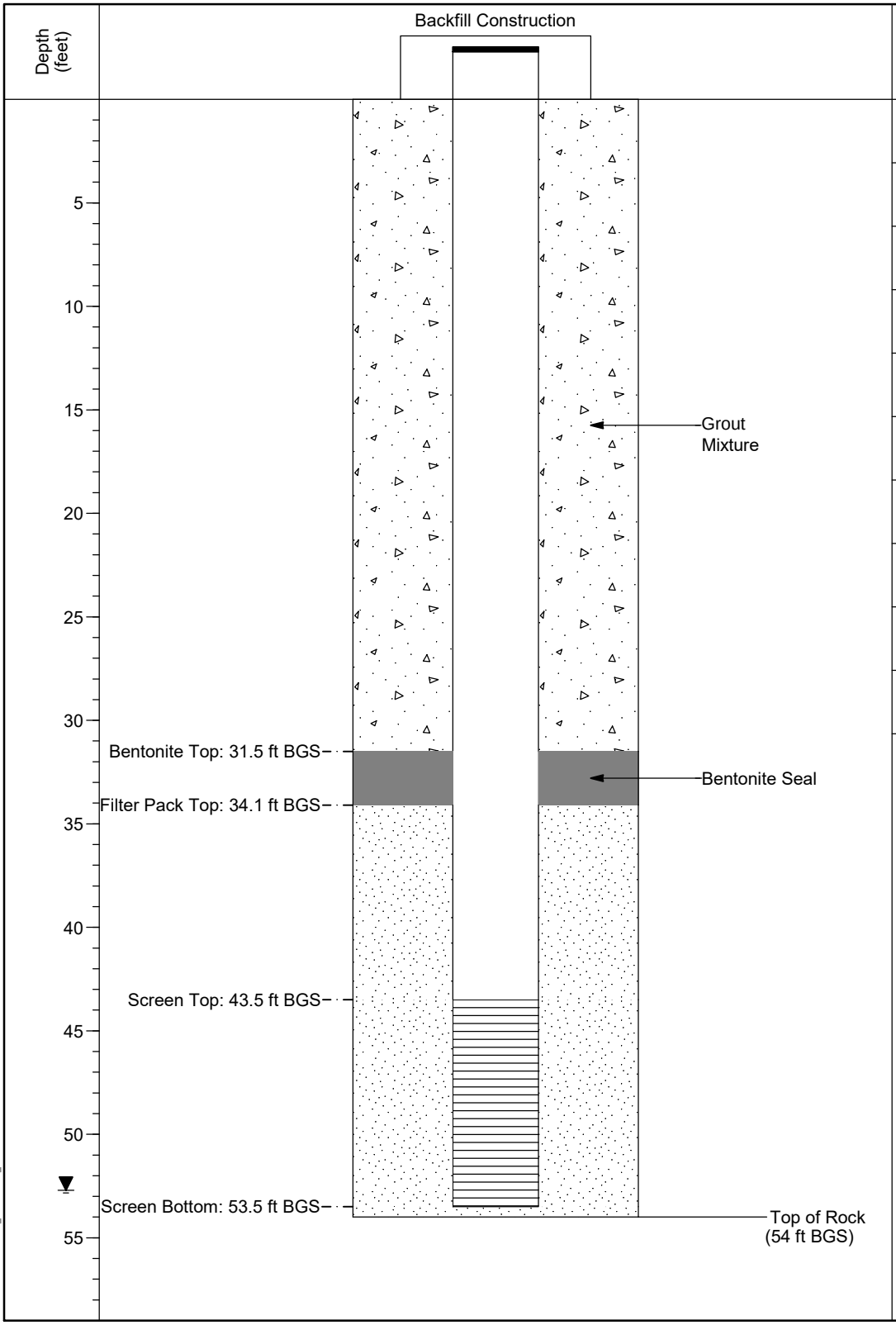
EQUIPMENT USED FOR HORIZONTAL LOCATION: LIECA TS-13 ROBOTIC TOTAL STATION AND LIECA GS 14 & 18 GPS

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **BH-HS-01** PAGE 1 OF 1

PROJECT: **Plant Hammond Geotechnical Drilling**
PROJECT NUMBER: **175518216**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 55T#1, #709**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **J. Massey**
REVIEWED BY: **V. Bierwirth**
APPROVED BY: **C. Jones**

INSTALLATION: STARTED: **6/15/21** COMPLETED: **6/16/21**
LOCATION: **1,562,184.25 N; 1,953,484.32 E**
LOC. DESCRIPTION: **Floyd County, Rome, Georgia**
LATITUDE: **34.2891158** LONGITUDE: **-85.3025852**
GROUND ELEV (ft): **703.30** TOC ELEV (ft): **706.25**
ELEVATION DATUM: **NAVD88**
BOREHOLE DEPTH (ft): **54.0** RISER DEPTH (ft): **54.0**
DTW AT COMPLETION (ft, bgs): **52.7**
BOREHOLE DIA. (in): **8.3** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):

GROUT TYPE:
30% High Solids Bentonite - Cetco

GROUT INITIAL DENSITY (lbs/gal):

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
31.5

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
Refer to boring log for additional details

Coated bentonite pellet seal - Pel Plug 0.25" TR30

PZ DETAILS 175518216_HAMMOND_FIELD-CHECK.GPJ TDEC SUBSURF DT 20190530.GDT 7/28/21

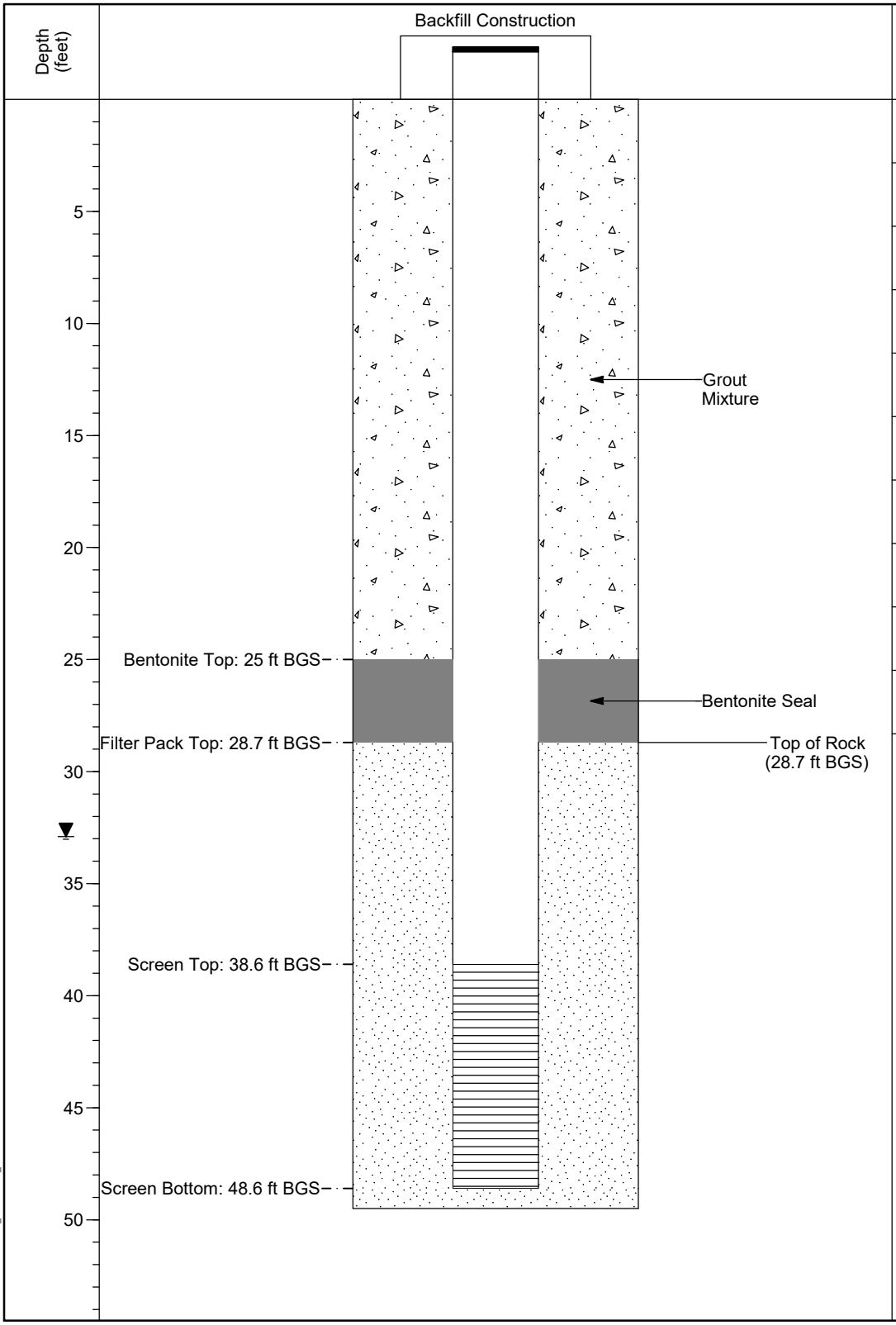
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **PZ-HS-02** PAGE 1 OF 1

PROJECT: **Plant Hammond Geotechnical Drilling**
PROJECT NUMBER: **175518216**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 55T#1, #709**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **J. Massey**
REVIEWED BY: **V. Bierwirth**
APPROVED BY: **C. Jones**

INSTALLATION: STARTED: **6/7/21** COMPLETED: **6/7/21**
LOCATION: **1,562,969.79 N; 1,955,156.83 E**
LOC. DESCRIPTION: **Floyd County, Rome, Georgia**
LATITUDE: **34.2913253** LONGITUDE: **-85.2970778**
GROUND ELEV (ft): **688.95** TOC ELEV (ft): **691.95**
ELEVATION DATUM: **NAVD88**
BOREHOLE DEPTH (ft): **49.5** RISER DEPTH (ft): **48.6**
DTW AT COMPLETION (ft, bgs): **32.9**
BOREHOLE DIA. (in): **8.3** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):

GROUT TYPE:
30% High Solids Bentonite - Cetco

GROUT INITIAL DENSITY (lbs/gal):

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
25

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
Refer to boring log for additional details

Coated bentonite pellet seal - Pel Plug 0.25" TR30

PZ DETAILS 175518216_HAMMOND_FIELD-CHECK.GPJ TDEC SUBSURF DT 20190530.GDT 7/28/21

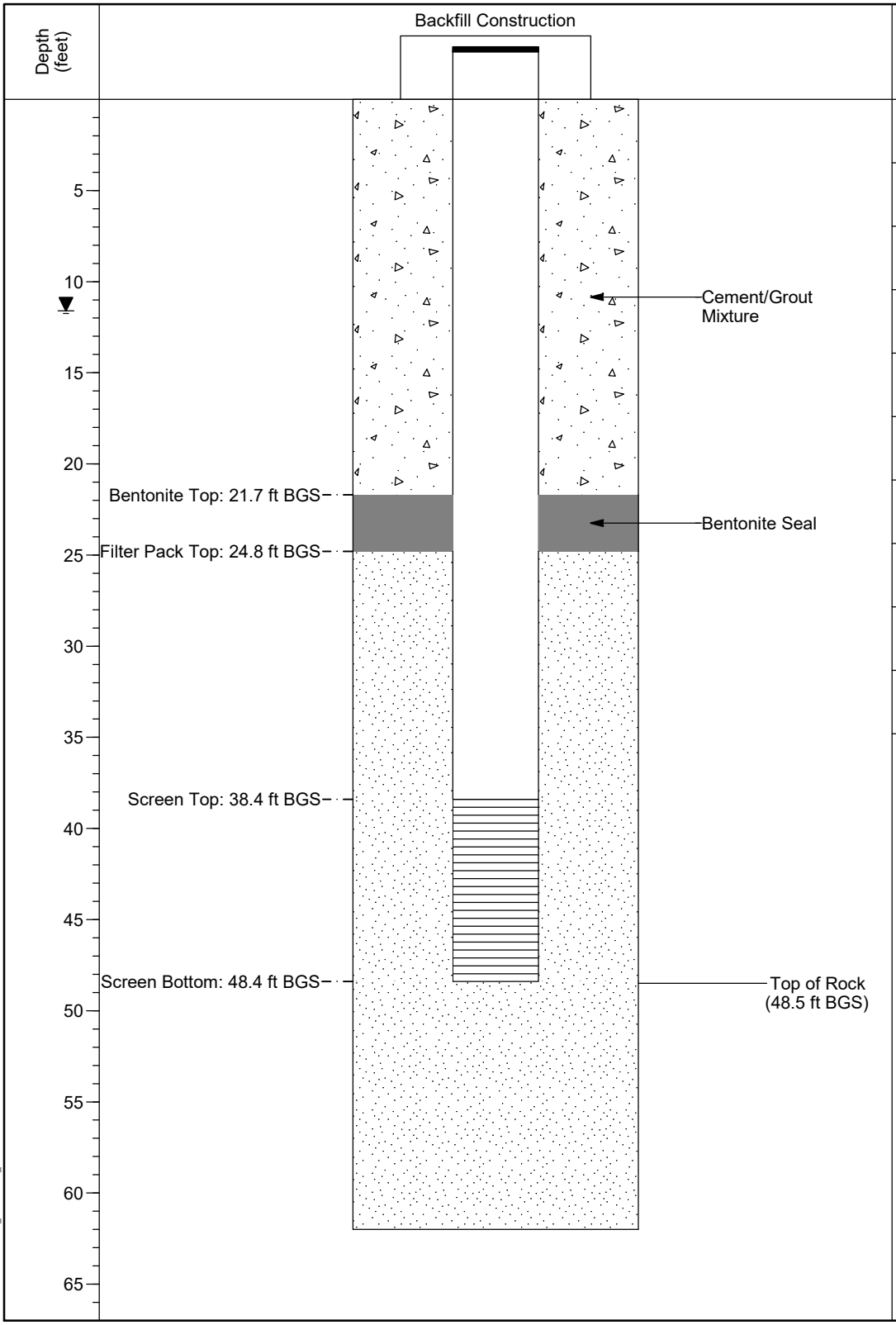
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **PZ-HS-03** PAGE 1 OF 1

PROJECT: **Plant Hammond Geotechnical Drilling**
PROJECT NUMBER: **175518216**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 55T#1, #709**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **J. Massey**
REVIEWED BY: **V. Bierwirth**
APPROVED BY: **C. Jones**

INSTALLATION: STARTED: **5/20/21** COMPLETED: **5/20/21**
LOCATION: **1,562,163.74 N; 1,954,674.21 E**
LOC. DESCRIPTION: **Floyd County, Rome, Georgia**
LATITUDE: **34.2890959** LONGITUDE: **-85.2986457**
GROUND ELEV (ft): **691.80** TOC ELEV (ft): **694.82**
ELEVATION DATUM: **NAVD88**
BOREHOLE DEPTH (ft): **62.0** RISER DEPTH (ft): **48.4**
DTW AT COMPLETION (ft, bgs): **11.6**
BOREHOLE DIA. (in): **8.3** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):

GROUT TYPE: **Portland cement / 30% High Solids Bentonite - Cetco**

GROUT INITIAL DENSITY (lbs/gal):

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
21.7

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
Refer to boring log for additional details

Coated bentonite pellet seal - Pel Plug 0.25" TR30

PZ DETAILS 175518216_HAMMOND_FIELD-CHECK.GPJ TDEC SUBSURF DT 20190530.GDT 7/28/21

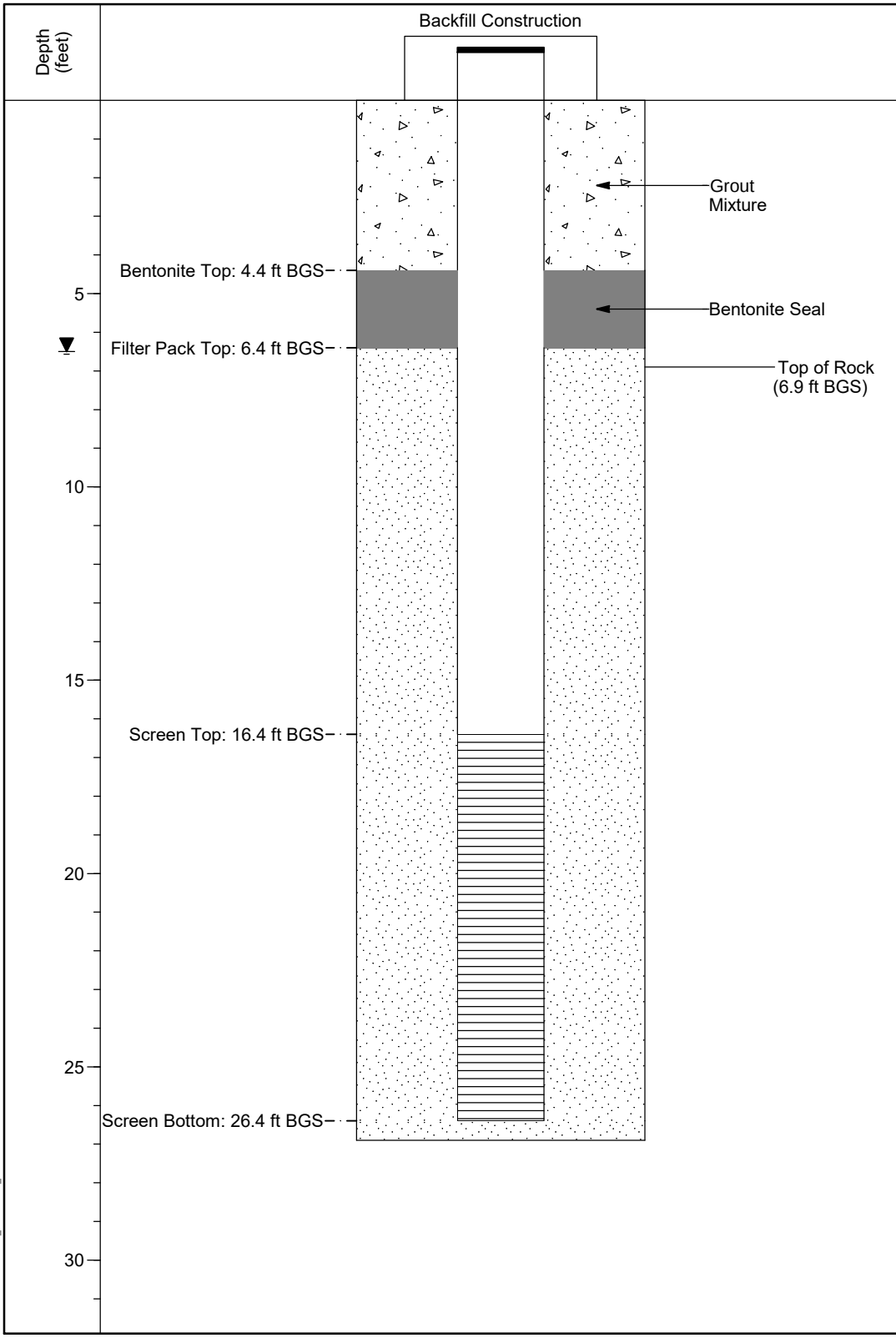
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **PZ-HS-04** PAGE 1 OF 1

PROJECT: **Plant Hammond Geotechnical Drilling**
PROJECT NUMBER: **175518216**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 55T#1, #709**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **J. Massey**
REVIEWED BY: **V. Bierwirth**
APPROVED BY: **C. Jones**

INSTALLATION: STARTED: **6/4/21** COMPLETED: **6/5/21**
LOCATION: **1,562,384.82 N; 1,955,746.85 E**
LOC. DESCRIPTION: **Floyd County, Rome, Georgia**
LATITUDE: **34.2897361** LONGITUDE: **-85.2951032**
GROUND ELEV (ft): **662.92** TOC ELEV (ft): **665.92**
ELEVATION DATUM: **NAVD88**
BOREHOLE DEPTH (ft): **26.9** RISER DEPTH (ft): **26.4**
DTW AT COMPLETION (ft, bgs): **6.5**
BOREHOLE DIA. (in): **8.3** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):

GROUT TYPE:
30% High Solids Bentonite - Cetco

GROUT INITIAL DENSITY (lbs/gal):

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
4.4

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
Refer to boring log for additional details

Coated bentonite pellet seal - Pel Plug 0.25" TR30

PZ DETAILS 175518216_HAMMOND_FIELD-CHECK.GPJ TDEC SUBSURF DT 20190530.GDT 7/28/21

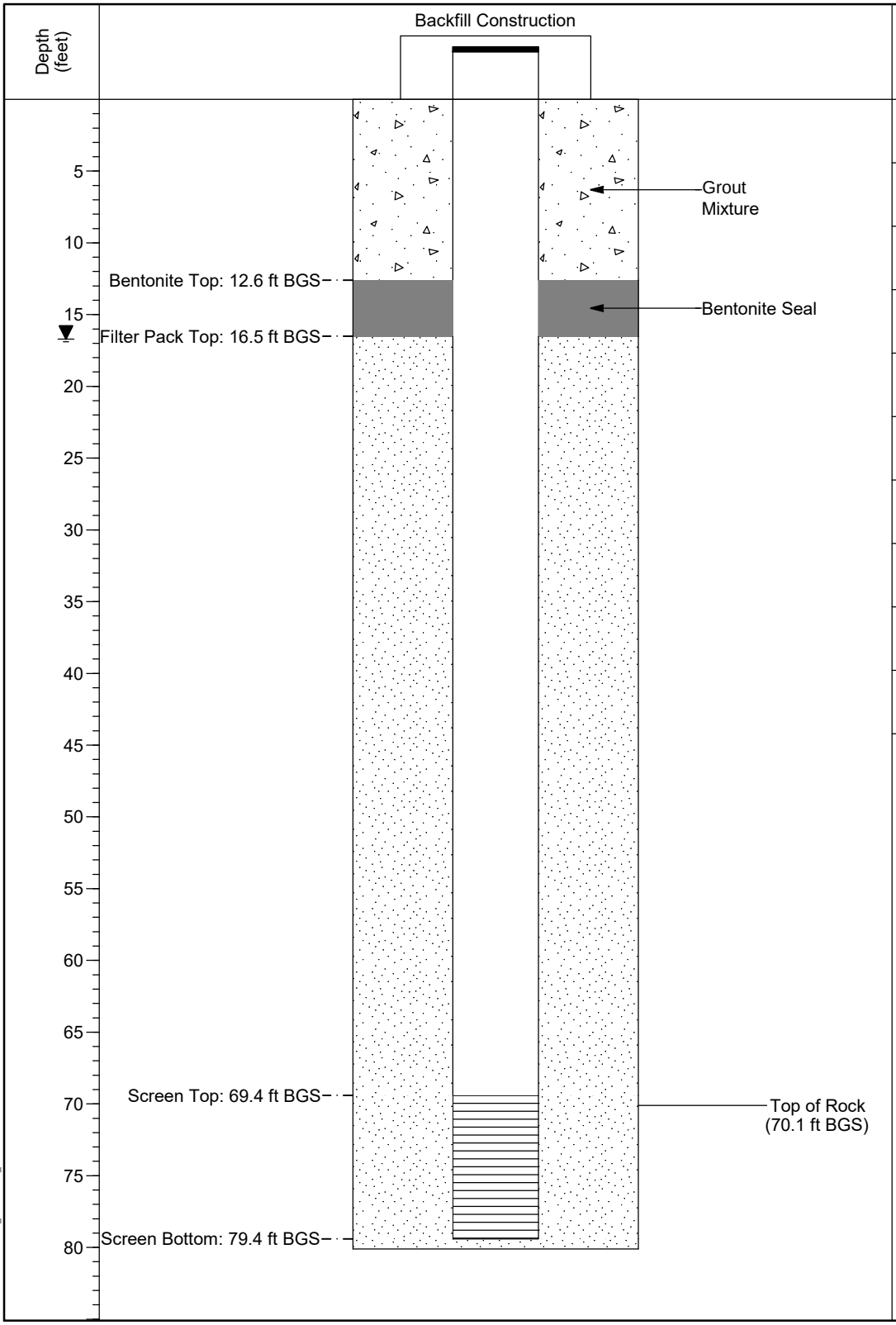
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **PZ-HS-05**

PROJECT: **Plant Hammond Geotechnical Drilling**
PROJECT NUMBER: **175518216**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 55T#1, #709**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **J. Massey**
REVIEWED BY: **V. Bierwirth**
APPROVED BY: **C. Jones**

INSTALLATION: STARTED: **6/3/21** COMPLETED: **6/4/21**
LOCATION: **1,561,328.89 N; 1,953,638.17 E**
LOC. DESCRIPTION: **Floyd County, Rome, Georgia**
LATITUDE: **34.2897704** LONGITUDE: **-85.3020443**
GROUND ELEV (ft): **687.47** TOC ELEV (ft): **690.47**
ELEVATION DATUM: **NAVD88**
BOREHOLE DEPTH (ft): **80.1** RISER DEPTH (ft): **79.4**
DTW AT COMPLETION (ft, bgs): **16.7**
BOREHOLE DIA. (in): **8.3** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):

GROUT TYPE:
30% High Solids Bentonite - Cetco

GROUT INITIAL DENSITY (lbs/gal):

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
12.6

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
Refer to boring log for additional details

Coated bentonite pellet seal - Pel Plug 0.25" TR30

PZ DETAILS 175518216_HAMMOND_FIELD-CHECK.GPJ TDEC SUBSURF DT 20190530.GDT 7/28/21

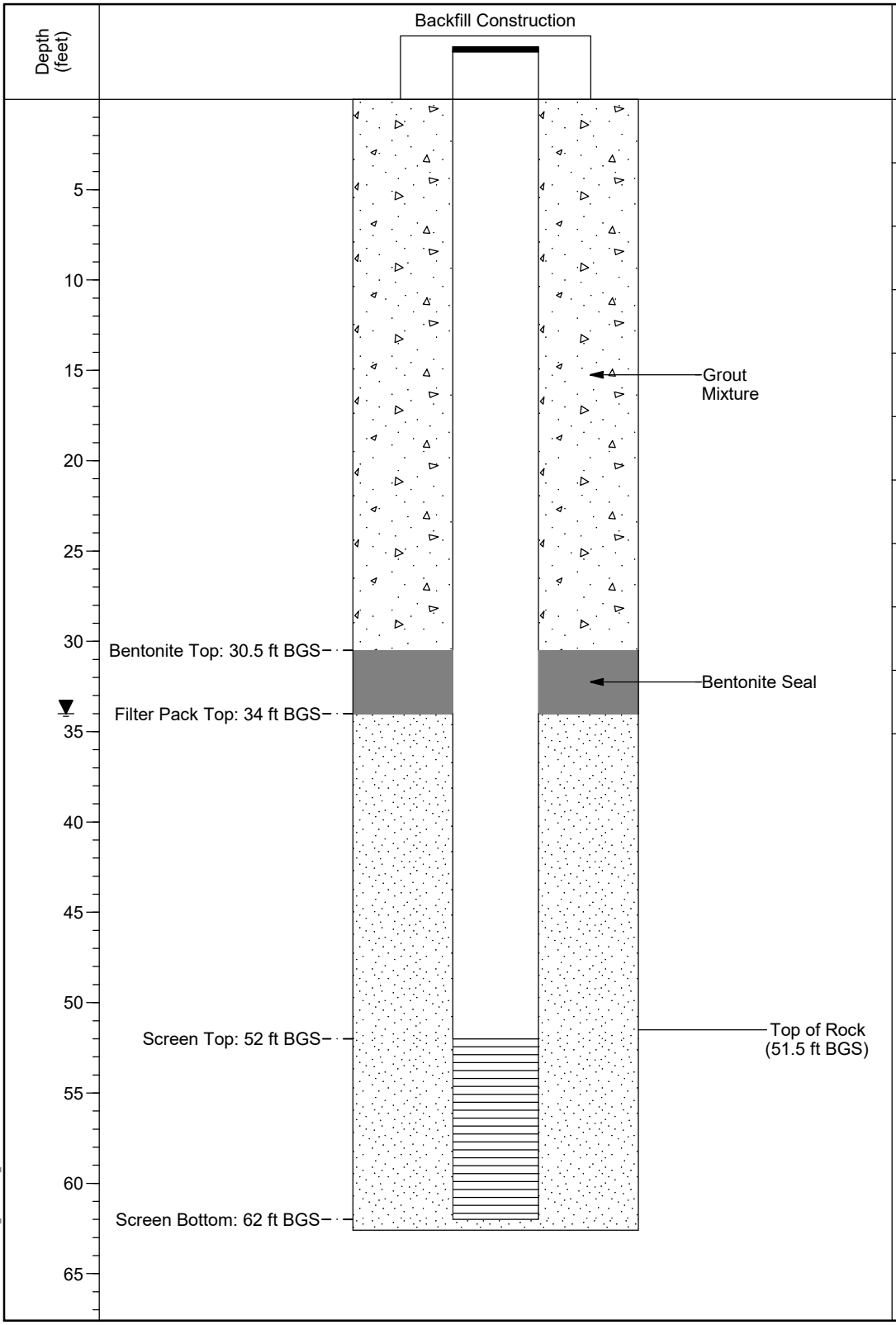
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **PZ-HS-06** PAGE 1 OF 1

PROJECT: **Plant Hammond Geotechnical Drilling**
PROJECT NUMBER: **175518216**
DRILLING COMPANY: **Stantec Consulting Services Inc.**
DRILLING EQUIPMENT: **CME 55T#1, #709**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **J. Massey**
REVIEWED BY: **V. Bierwirth**
APPROVED BY: **C. Jones**

INSTALLATION: STARTED: **5/24/21** COMPLETED: **5/24/21**
LOCATION: **1,561,324.42 N; 1,954,856.06 E**
LOC. DESCRIPTION: **Floyd County, Rome, Georgia**
LATITUDE: **34.2867954** LONGITUDE: **-85.2980128**
GROUND ELEV (ft): **729.60** TOC ELEV (ft): **732.60**
ELEVATION DATUM: **NAVD88**
BOREHOLE DEPTH (ft): **62.6** RISER DEPTH (ft): **62.0**
DTW AT COMPLETION (ft, bgs): **34.0**
BOREHOLE DIA. (in): **8.3** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):

GROUT TYPE:
30% High Solids Bentonite - Cetco

GROUT INITIAL DENSITY (lbs/gal):

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
30.5

FILTER PACK TYPE:
20/40 Mesh (Global #7)

NOTES:
Refer to boring log for additional details

Coated bentonite pellet seal - Pel Plug 0.25" TR30

PZ DETAILS 175518216_HAMMOND_FIELD-CHECK.GPJ TDEC SUBSURF DT 20190530.GDT 7/28/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

APPENDIX I.2
2022 HRL PARCEL F PIEZOMETER INSTALLATION LOGS

HUFFAKER PARCEL F PZ AS-BUILT MAY 20-30, 2022

NAD 83 GEORGIA WEST ZONE, NAVD 88

FIELD WORK BY STEVE CULBERSON

LOCATION	NAD 83 NORTHING	NAD 83 EASTING	GROUND ELEVATION	TOP CASING ELEVATION
HRL-1	1562413.31	1954346.96	683.88	686.34
HRL-2	1562668.27	1955591.87	659.73	661.65
HRL-3	1562223.77	1955186.08	676.89	679.74
HRL-4	1561883.99	1952536.05	650.29	653.47
HRL-5	1561251.20	1954719.07	733.24	736.00
HRL-6	1561521.36	1955298.62	724.52	727.18
HRL-7	1561612.79	1955708.51	715.66	718.61
HRL-8	1561661.71	1953518.39	680.63	682.96
HRL-9	1562711.66	1953980.08	681.27	684.05
HRL-10	1561398.16	1953806.79	687.96	690.73
HRL-11	1562379.66	1953406.12	677.86	680.20
HRL-12A	1561983.06	1954002.41	680.67	683.39
HRL-13	1562985.77	1954512.22	674.14	676.77
HRL-14	1562585.54	1954893.10	700.43	703.00
HRL-15	1561698.71	1954984.84	715.25	718.14
HRL-16	1561604.29	1954231.35	713.16	716.06
HRL-17	1561279.17	1954321.06	717.28	719.39
HRL-18	1561336.95	1953149.68	666.59	669.24
HRL-19	1561497.16	1952792.87	662.65	665.35



06.22.2023

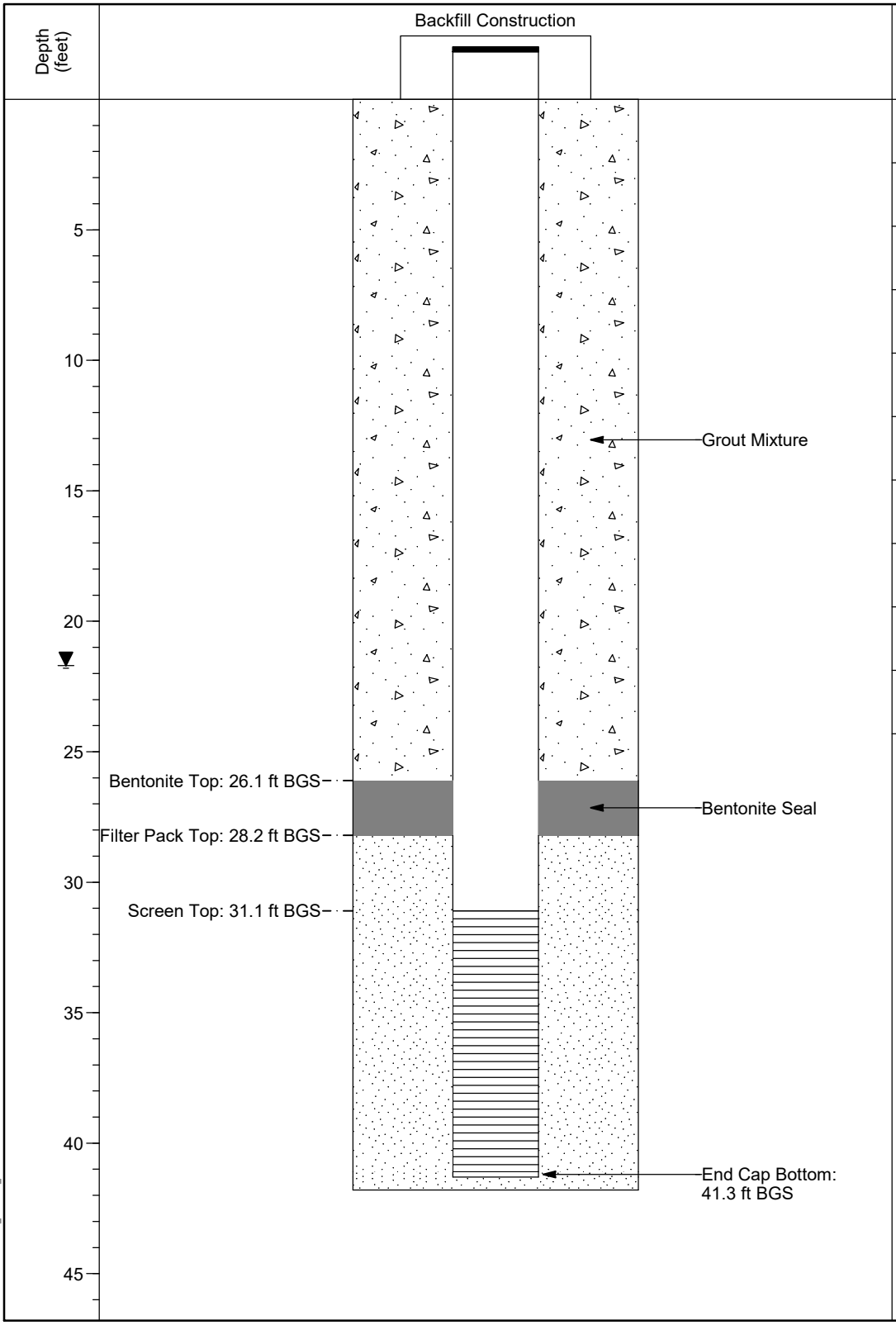
SURVEY DATA CERTIFICATION FOR SOUTHERN COMPANY TO DETERMINE NORTHING, EASTING, AND VERTICAL ELEVATION
DATES OF FIELD SURVEYS AND INSPECTION: MAY 20-30, 2022
FIELD SURVEY GROUND POSITIONAL TOLERANCE=0.5 FEET HORIZONTAL-NAD'83, 0.20 FEET VERTICAL-NAVD'88
THE VERTICAL LOCATION OF THE TOP OF THE PVC CASING WAS DETERMINED BY MEASURING FROM THE GROUND TO THE TOP OF THE WELL WITH A LUFKIN STEEL TAPE TO A TOLERANCE OF 0.01'
EQUIPMENT USED FOR HORIZONTAL LOCATION: LIECA GS 14 & 18 GPS

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-01**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/13/22** COMPLETED: **5/17/22**
LOCATION: **1,562,413.30 N; 1,954,347.00 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **683.9** TOC ELEV (ft): **686.4**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **41.8** RISER DEPTH (ft): **41.3**
DTW AT COMPLETION (ft, bgs): **21.7**
BOREHOLE DIA. (in): **6.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
35

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10.1

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
26.1

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

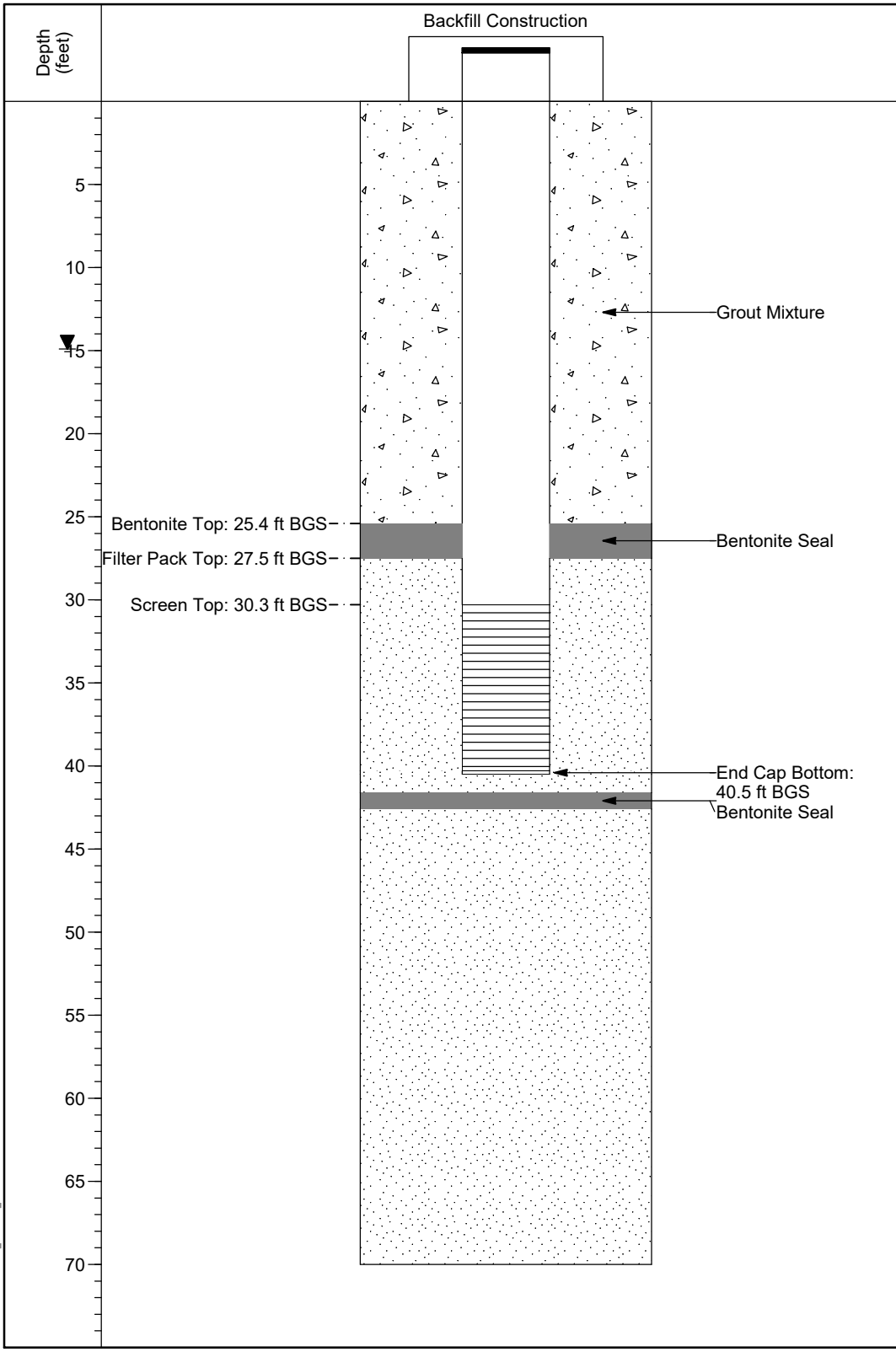
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-02**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/9/22** COMPLETED: **5/10/22**
LOCATION: **1,562,668.30 N; 1,955,591.90 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **659.7** TOC ELEV (ft): **661.6**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **70.0** RISER DEPTH (ft): **40.5**
DTW AT COMPLETION (ft, bgs): **14.9**
BOREHOLE DIA. (in): **6.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
35

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10.1

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
25.4

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

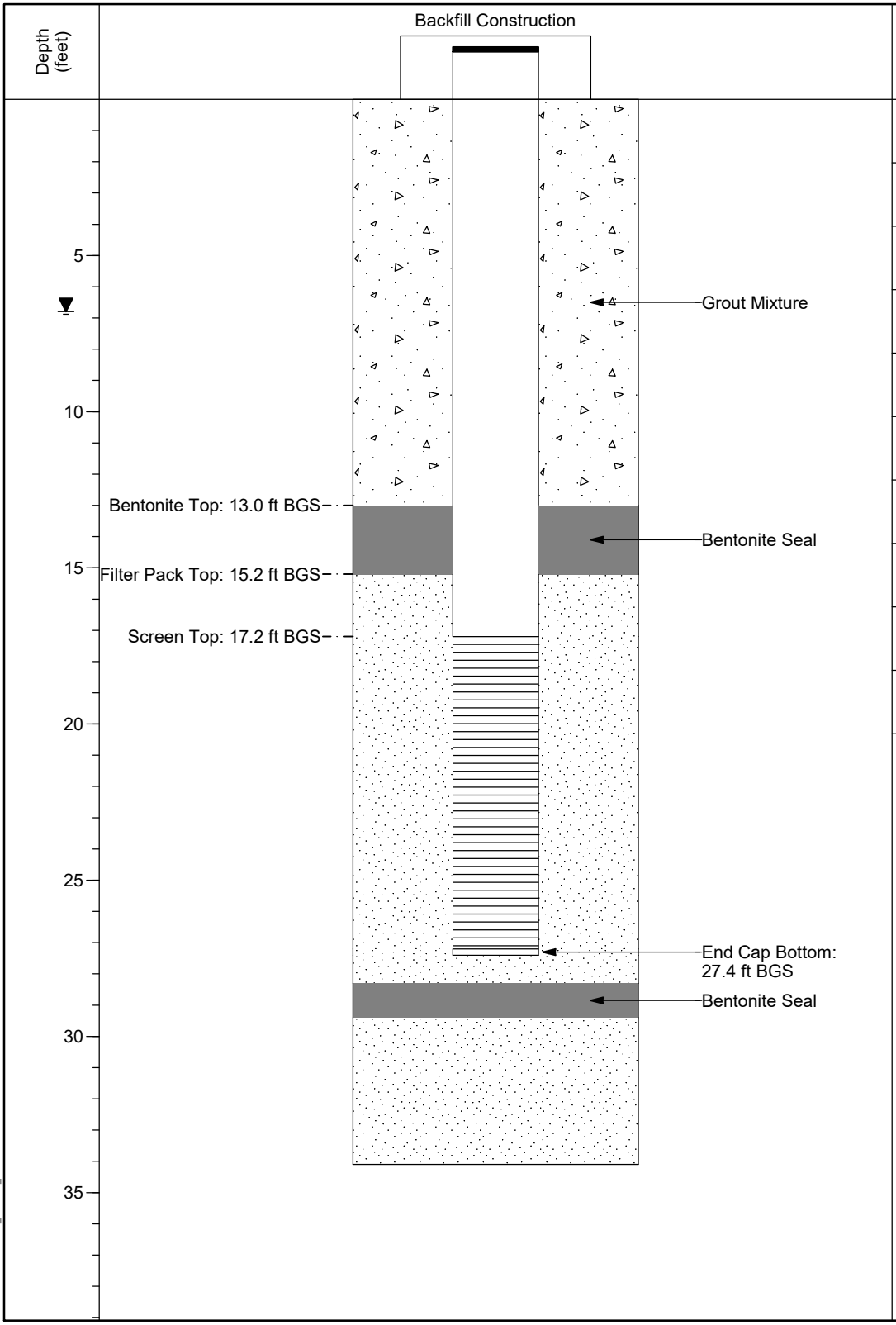
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-03**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/11/22** COMPLETED: **5/11/22**
LOCATION: **1,562,223.80 N; 1,955,186.10 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **676.9** TOC ELEV (ft): **679.8**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **34.1** RISER DEPTH (ft): **27.4**
DTW AT COMPLETION (ft, bgs): **6.8**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
45

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
13

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

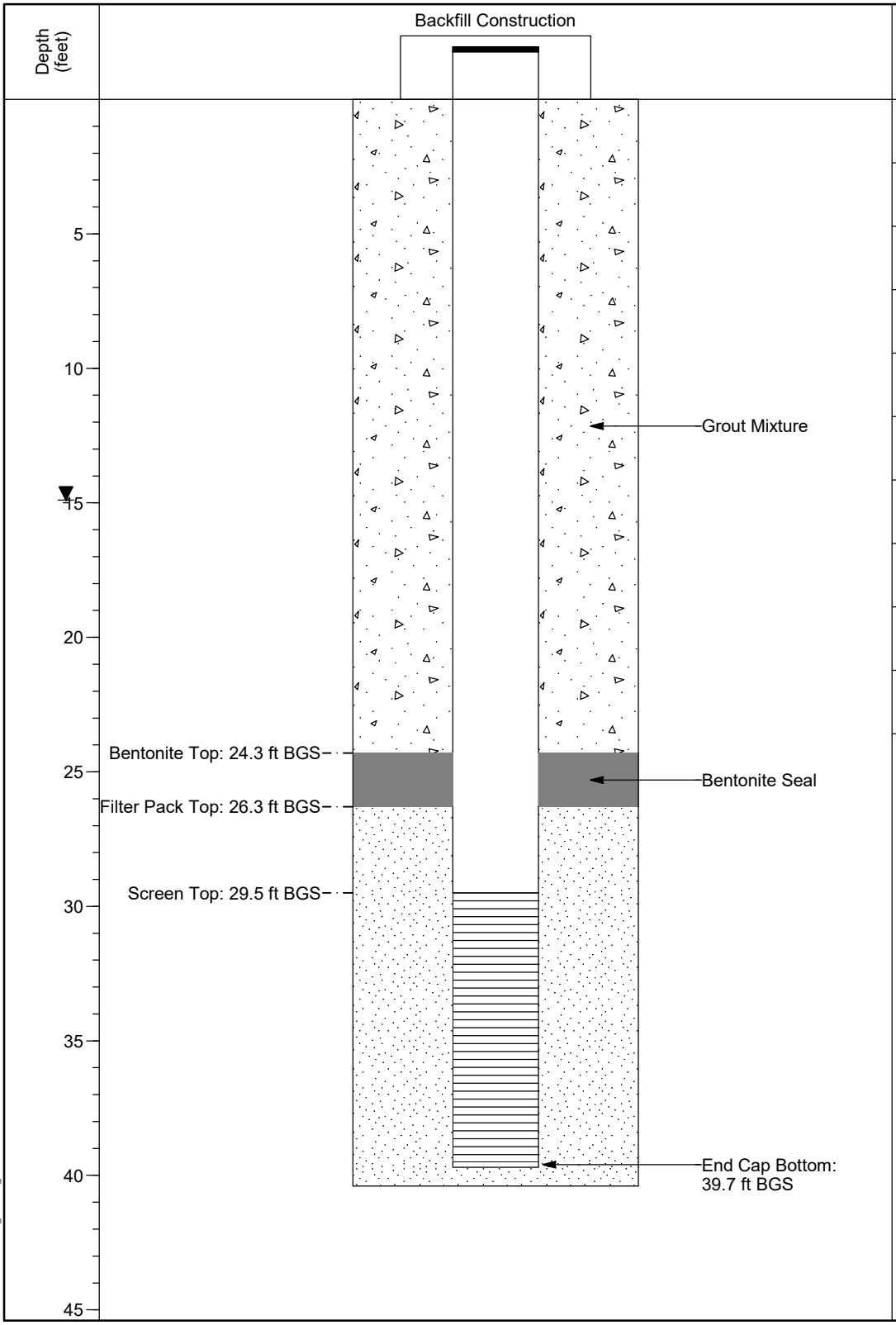
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-04**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **J. Massey**
REVIEWED BY: **V. Bierwirth**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/20/22** COMPLETED: **5/25/22**
LOCATION: **1,561,884.00 N; 1,952,536.00 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **650.3** TOC ELEV (ft): **653.5**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **40.4** RISER DEPTH (ft): **39.7**
DTW AT COMPLETION (ft, bgs): **14.9**
BOREHOLE DIA. (in): **6.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
35

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10.2

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
24.3

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

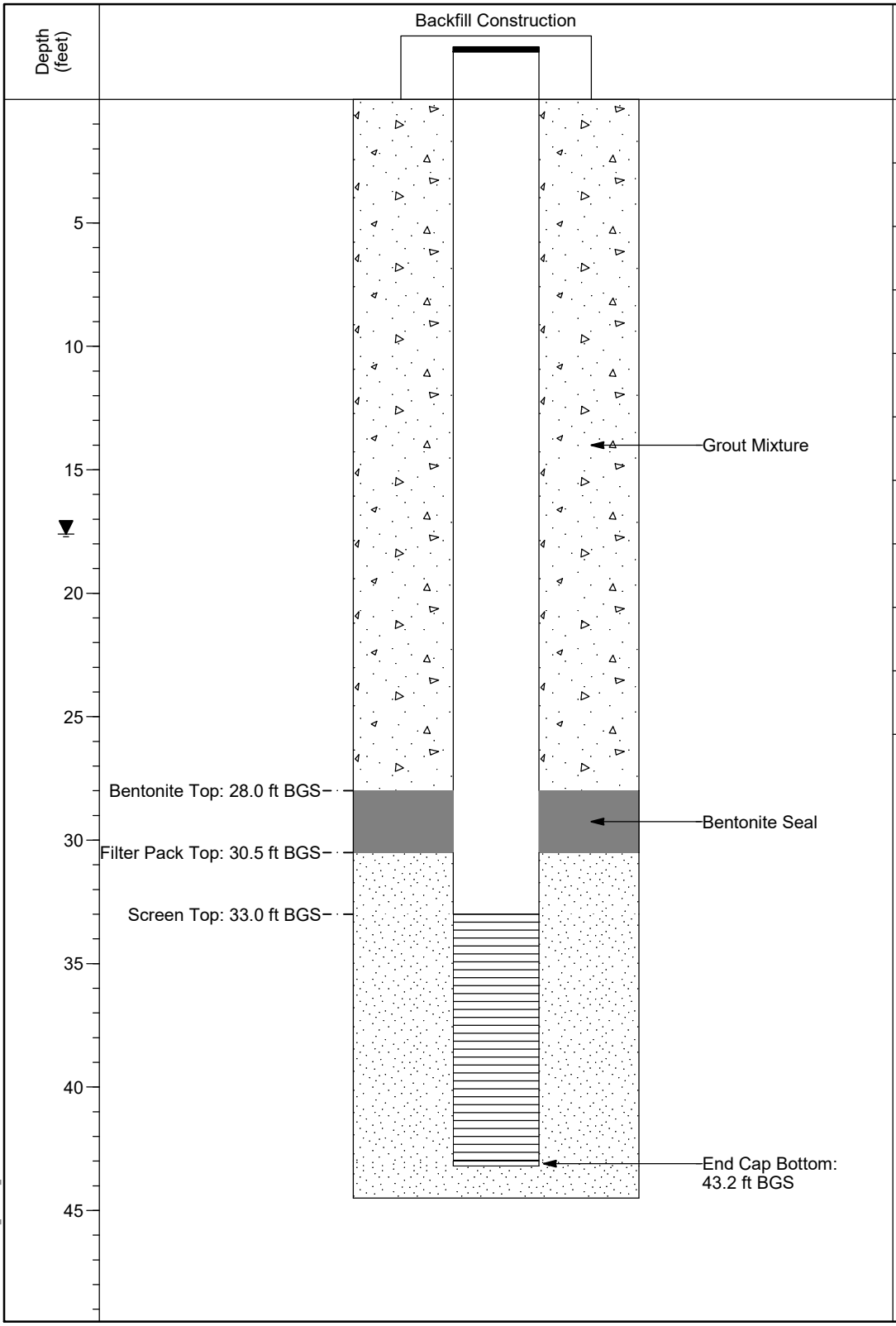
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-05**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/9/22** COMPLETED: **5/10/22**
LOCATION: **1,561,251.20 N; 1,954,719.10 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **733.2** TOC ELEV (ft): **736.0**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **44.5** RISER DEPTH (ft): **43.2**
DTW AT COMPLETION (ft, bgs): **17.6**
BOREHOLE DIA. (in): **6.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
35

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
28

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

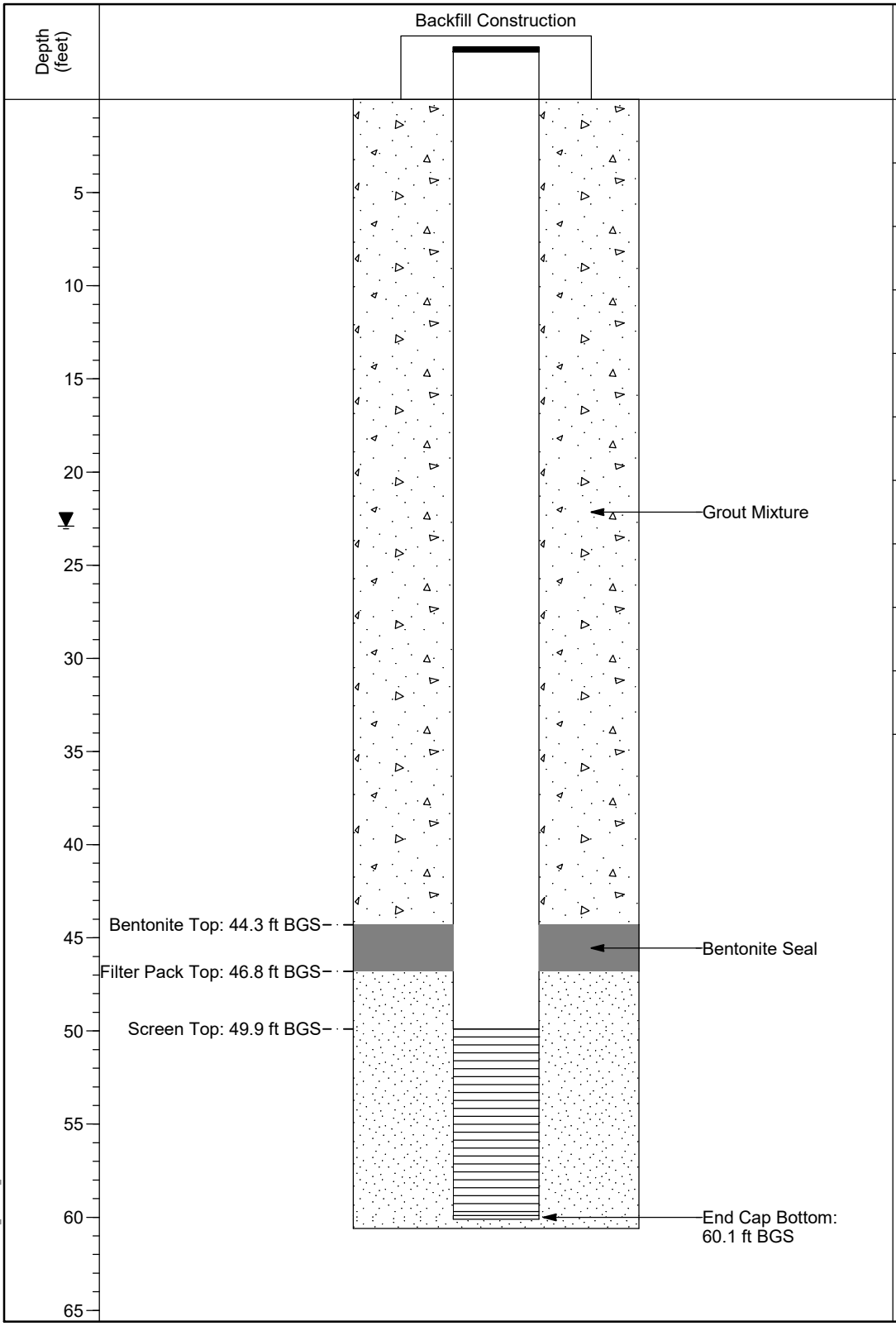
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-06**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/4/22** COMPLETED: **5/4/22**
LOCATION: **1,561,521.40 N; 1,955,298.60 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **724.5** TOC ELEV (ft): **727.2**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **60.6** RISER DEPTH (ft): **60.1**
DTW AT COMPLETION (ft, bgs): **22.9**
BOREHOLE DIA. (in): **6.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
65

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
44.3

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

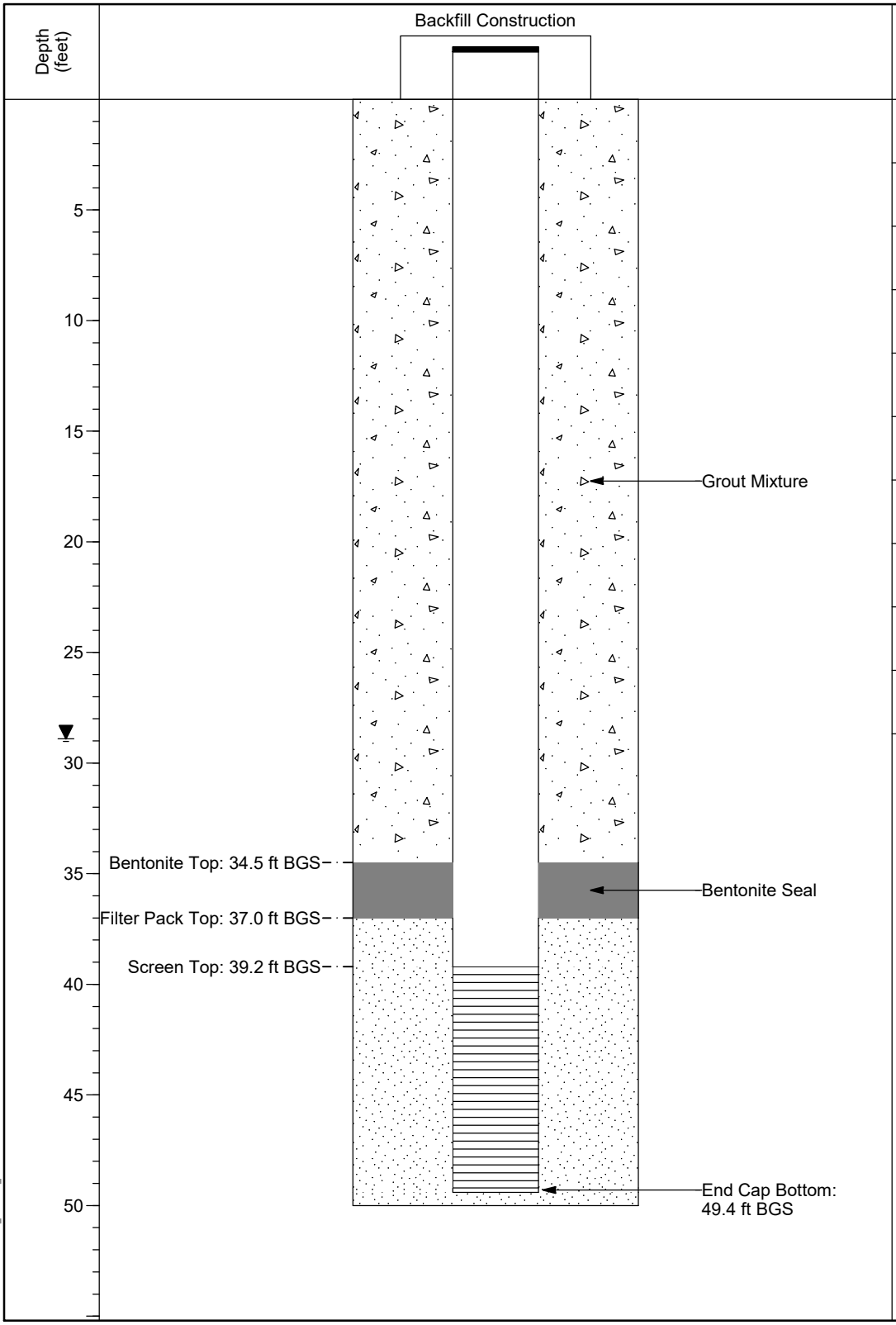
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-07**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/3/22** COMPLETED: **5/3/22**
LOCATION: **1,561,612.80 N; 1,955,708.50 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **715.7** TOC ELEV (ft): **718.7**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **50.2** RISER DEPTH (ft): **49.4**
DTW AT COMPLETION (ft, bgs): **28.9**
BOREHOLE DIA. (in): **6.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
50

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10.2

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
34.5

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

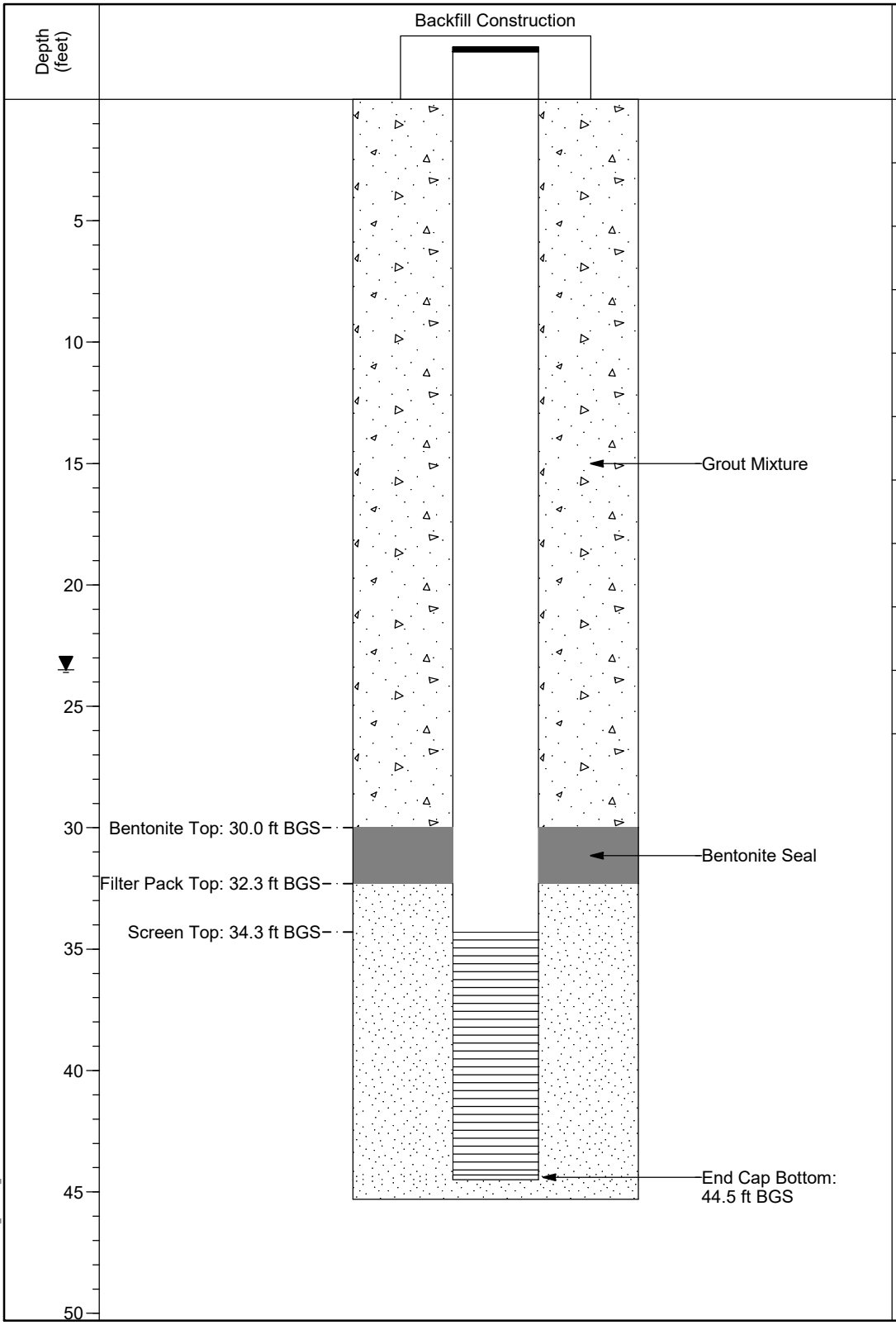
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-08**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/18/22** COMPLETED: **5/19/22**
LOCATION: **1,561,661.70 N; 1,953,518.40 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **680.6** TOC ELEV (ft): **682.9**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **45.3** RISER DEPTH (ft): **44.5**
DTW AT COMPLETION (ft, bgs): **23.5**
BOREHOLE DIA. (in): **6.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
45

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
30

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

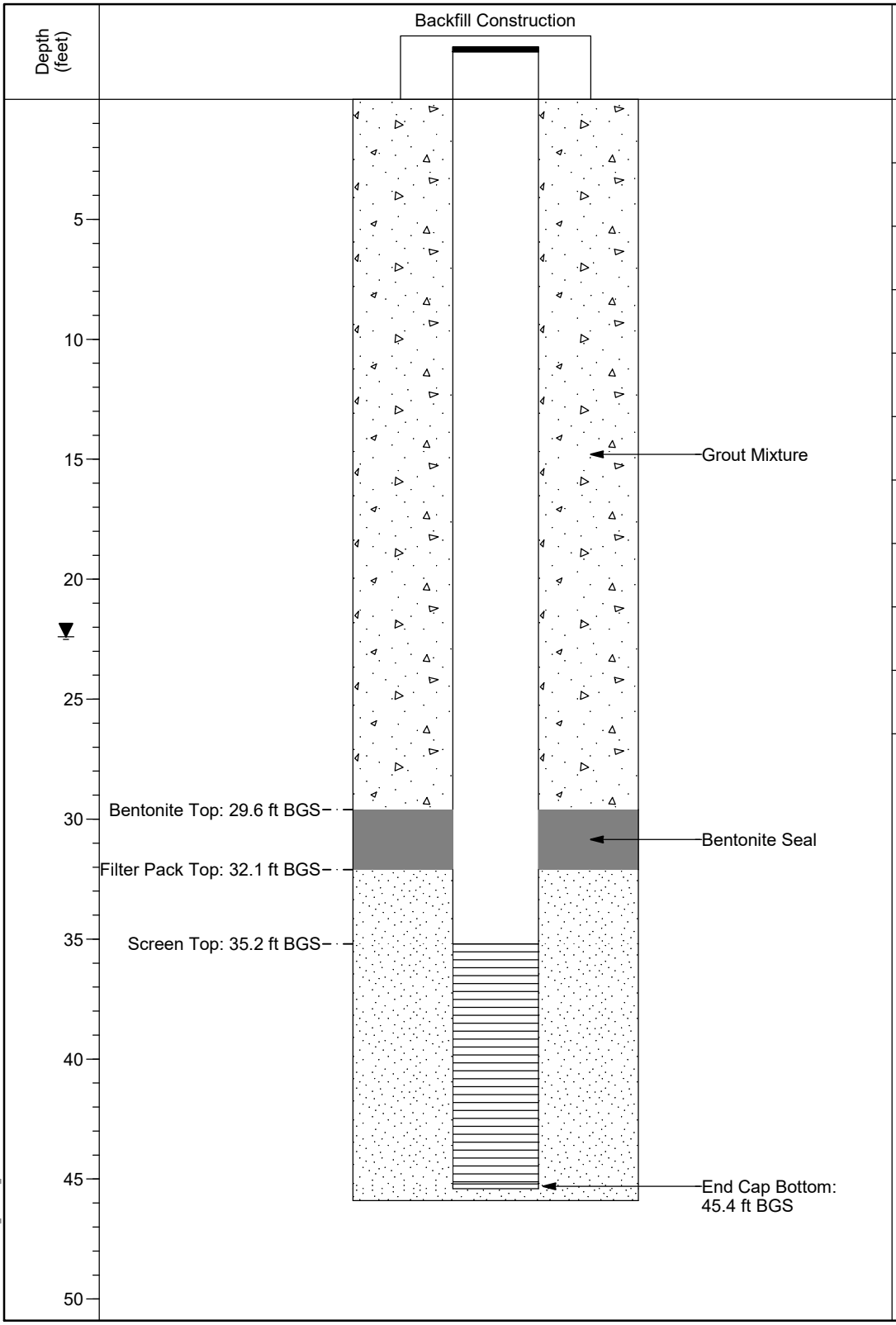
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-09**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/16/22** COMPLETED: **5/17/22**
LOCATION: **1,562,711.70 N; 1,953,980.10 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **681.3** TOC ELEV (ft): **684.1**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **45.9** RISER DEPTH (ft): **45.4**
DTW AT COMPLETION (ft, bgs): **22.4**
BOREHOLE DIA. (in): **6.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
20

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
29.6

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

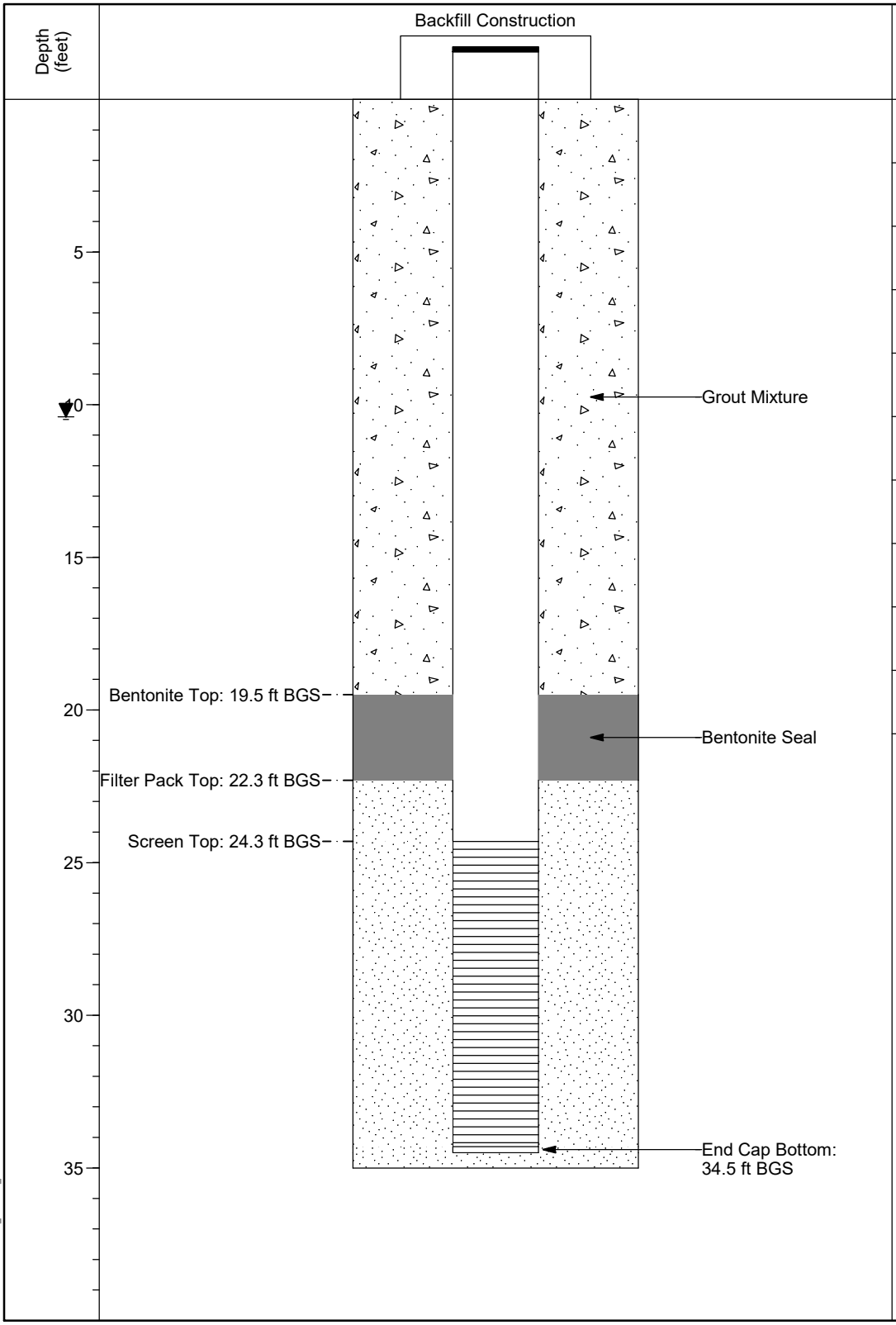
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-10**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/16/22** COMPLETED: **5/17/22**
LOCATION: **1,561,398.20 N; 1,953,806.80 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **688.0** TOC ELEV (ft): **690.8**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **35.0** RISER DEPTH (ft): **34.5**
DTW AT COMPLETION (ft, bgs): **10.4**
BOREHOLE DIA. (in): **6.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
30

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10.1

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
19.5

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

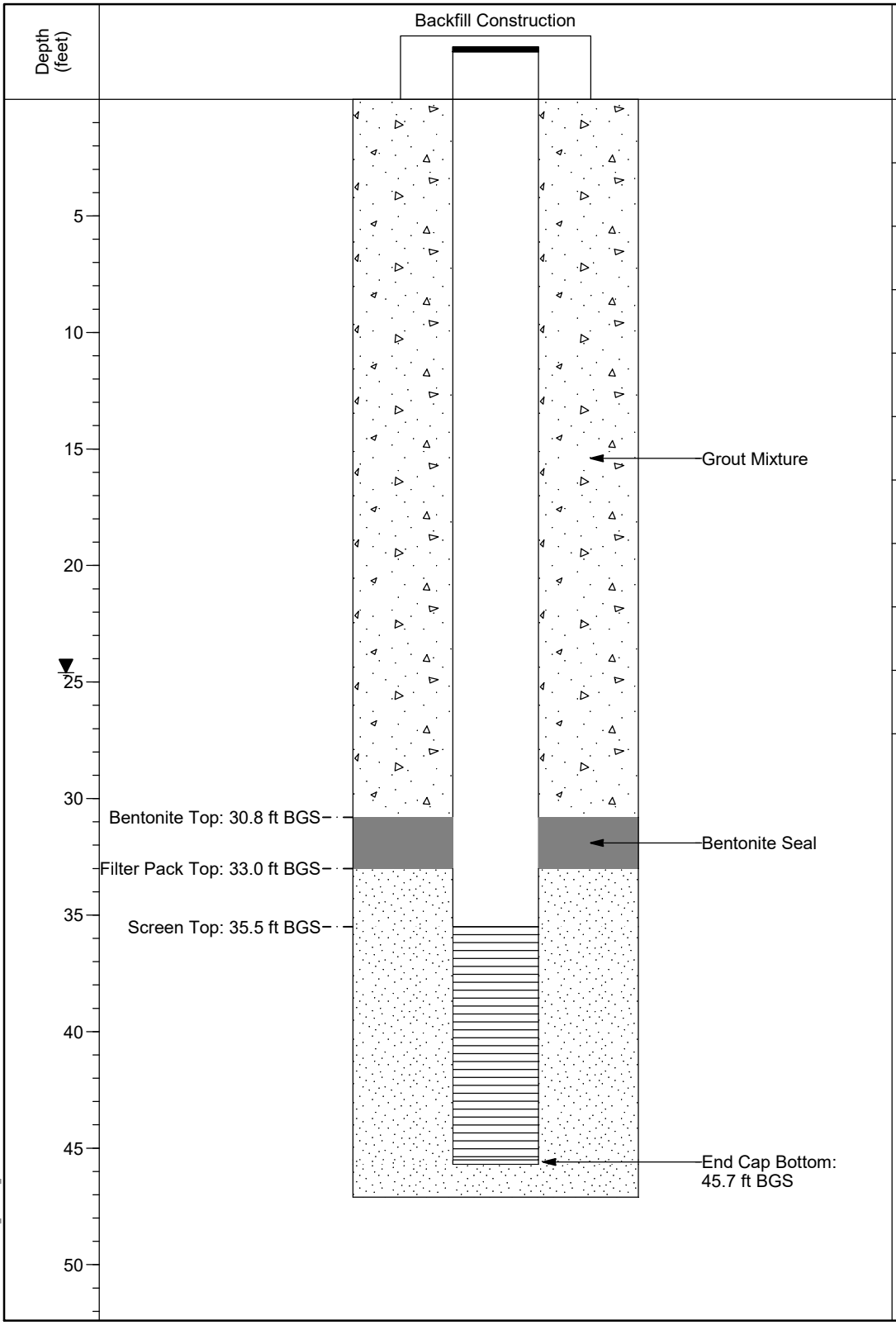
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-11**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/20/22** COMPLETED: **5/25/22**
LOCATION: **1,562,379.70 N; 1,953,406.10 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **677.9** TOC ELEV (ft): **680.2**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **47.4** RISER DEPTH (ft): **45.7**
DTW AT COMPLETION (ft, bgs): **24.6**
BOREHOLE DIA. (in): **6.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
25

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10.1

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
30.8

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

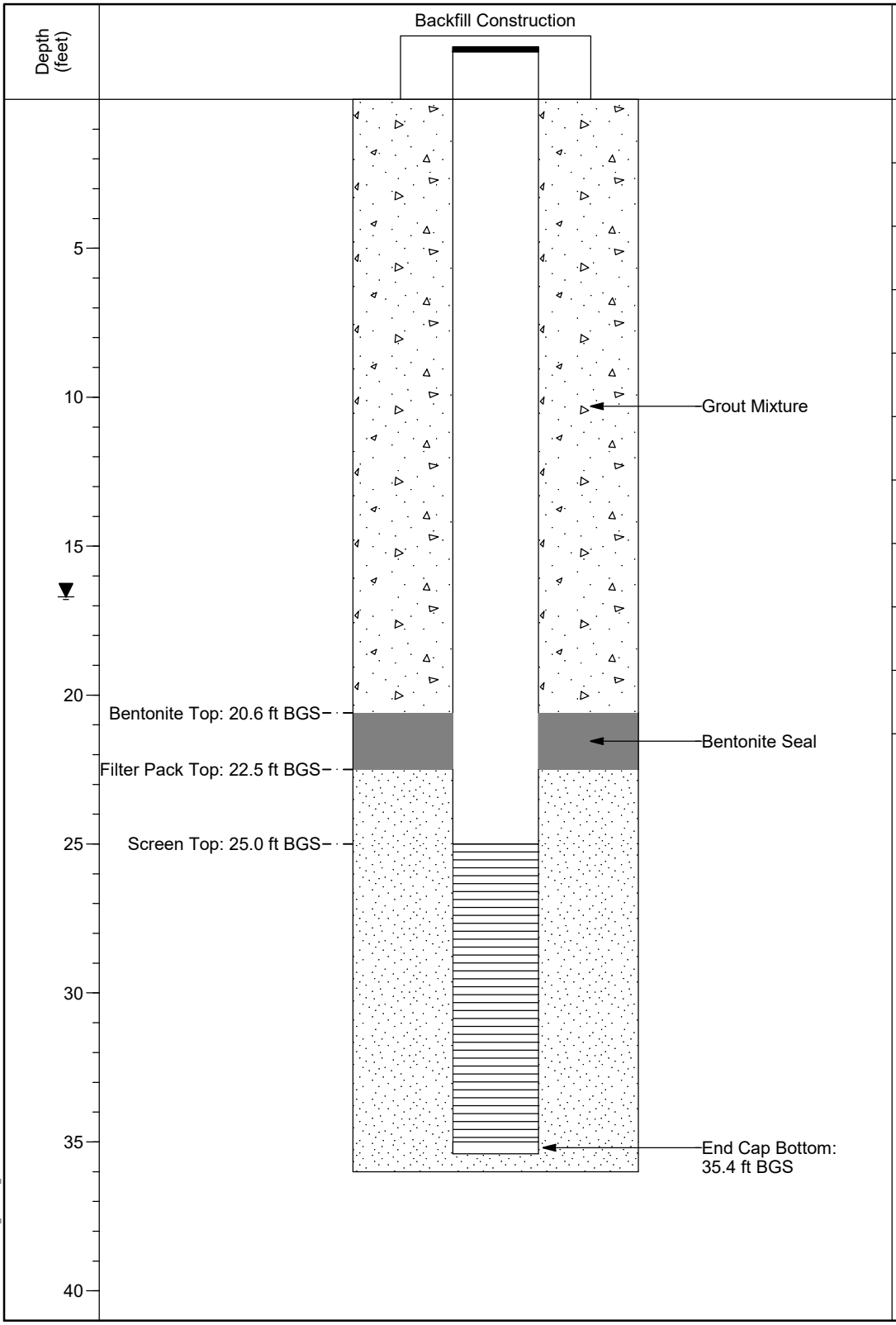
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-12A**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **J. Massey**
REVIEWED BY: **V. Bierwirth**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/24/22** COMPLETED: **5/25/22**
LOCATION: **1,561,983.10 N; 1,954,002.40 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **680.7** TOC ELEV (ft): **683.4**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **36.0** RISER DEPTH (ft): **35.4**
DTW AT COMPLETION (ft, bgs): **16.7**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
U-Pack - Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
65

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10.3

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
20.6

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log HRL-12 for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

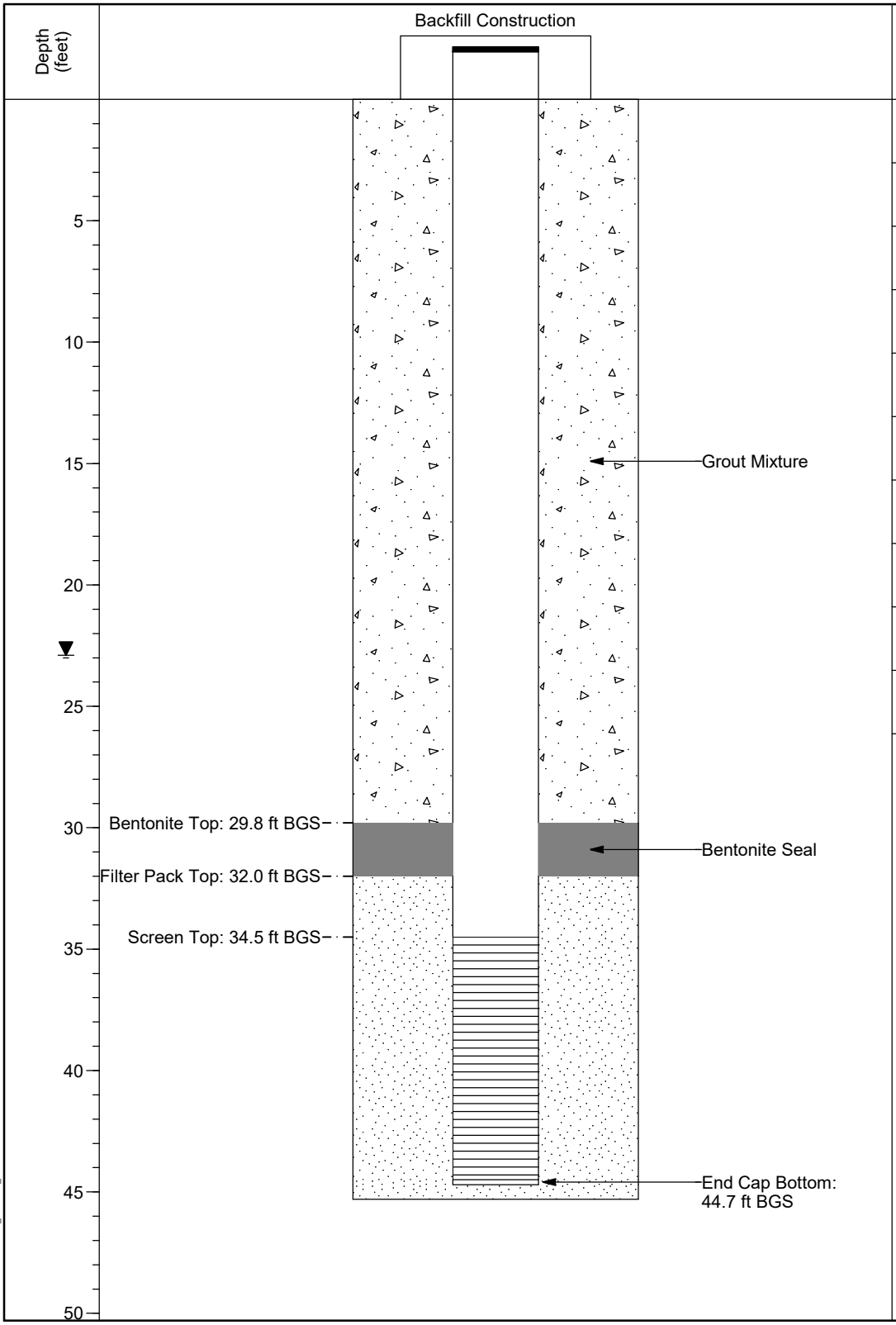
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-13**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **J. Massey**
REVIEWED BY: **V. Bierwirth**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/24/22** COMPLETED: **5/25/22**
LOCATION: **1,562,985.80 N; 1,954,512.20 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **674.1** TOC ELEV (ft): **676.7**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **45.3** RISER DEPTH (ft): **44.7**
DTW AT COMPLETION (ft, bgs): **22.9**
BOREHOLE DIA. (in): **6.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
45

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10.5

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
29.8

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

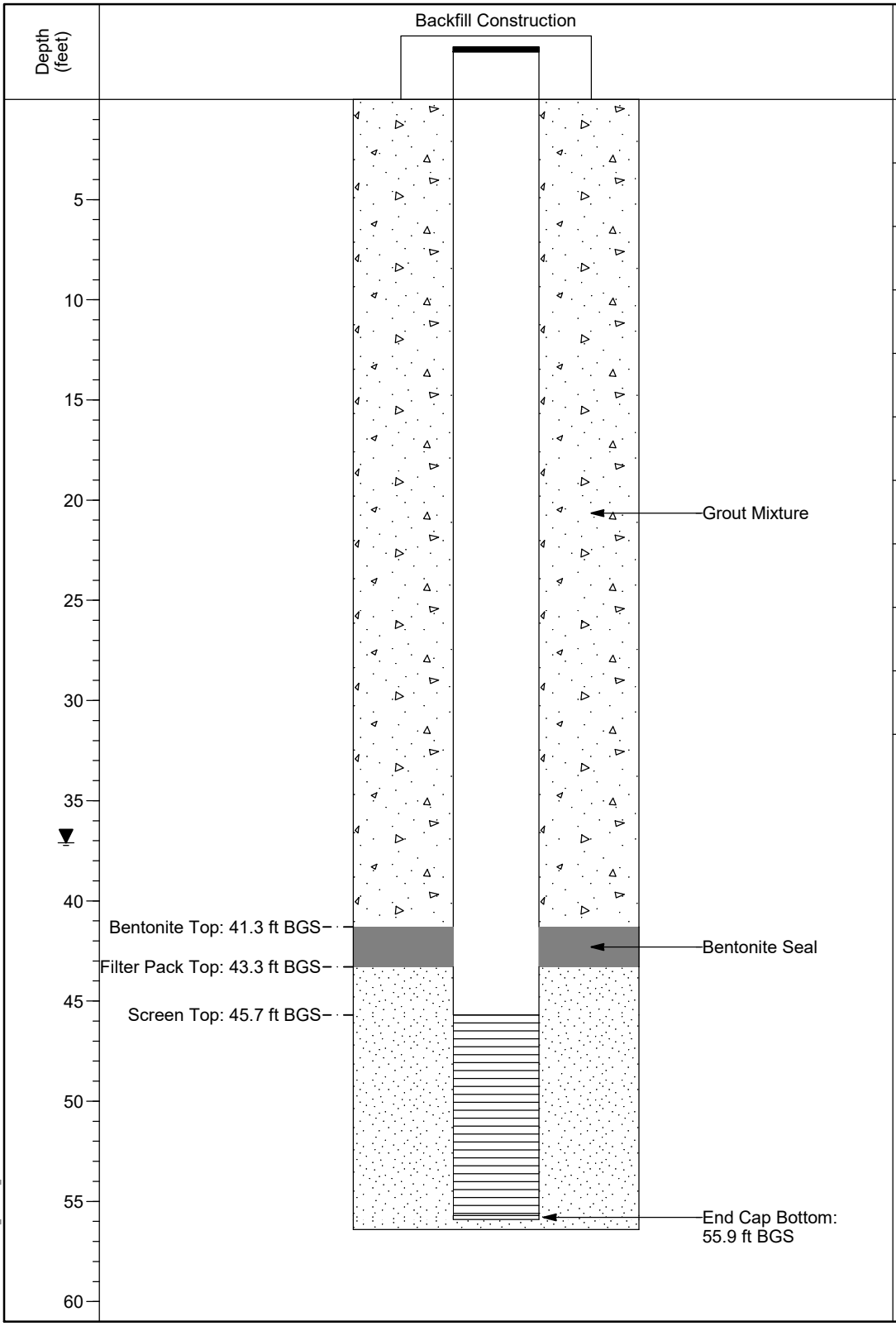
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-14**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/13/22** COMPLETED: **5/17/22**
LOCATION: **1,562,585.50 N; 1,954,893.10 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **700.4** TOC ELEV (ft): **703.0**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **56.0** RISER DEPTH (ft): **55.9**
DTW AT COMPLETION (ft, bgs): **37.1**
BOREHOLE DIA. (in): **6.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
60

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
41.3

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

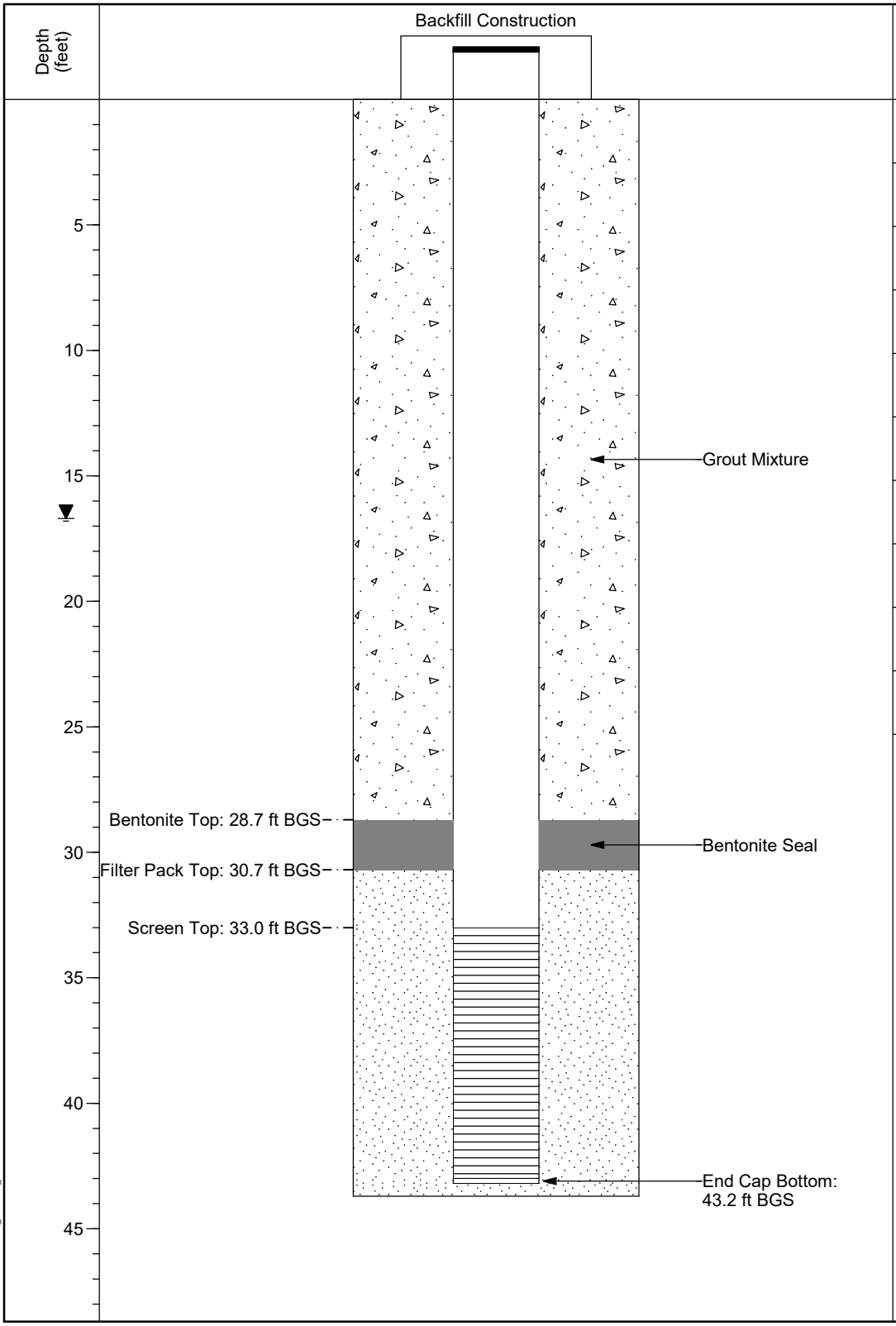
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-15**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/6/22** COMPLETED: **5/9/22**
LOCATION: **1,561,698.70 N; 1,954,984.80 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **715.3** TOC ELEV (ft): **718.1**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **43.7** RISER DEPTH (ft): **43.2**
DTW AT COMPLETION (ft, bgs): **16.7**
BOREHOLE DIA. (in): **6.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
40

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
28.7

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

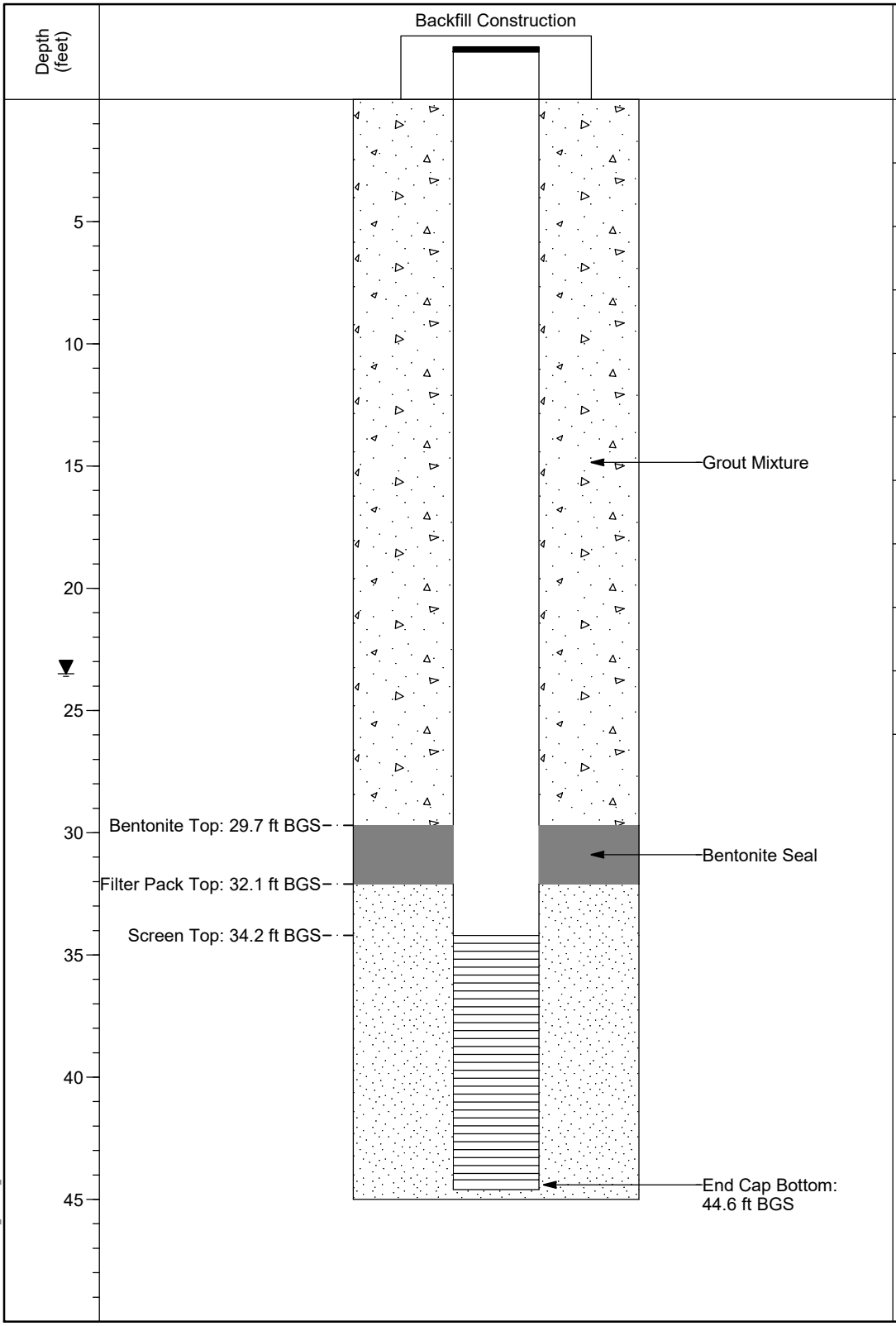
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-16**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **4/28/22** COMPLETED: **5/2/22**
LOCATION: **1,561,604.30 N; 1,954,231.40 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **713.2** TOC ELEV (ft): **716.1**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **45.0** RISER DEPTH (ft): **44.6**
DTW AT COMPLETION (ft, bgs): **23.5**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
U-Pack - Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
95

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10.3

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
29.7

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

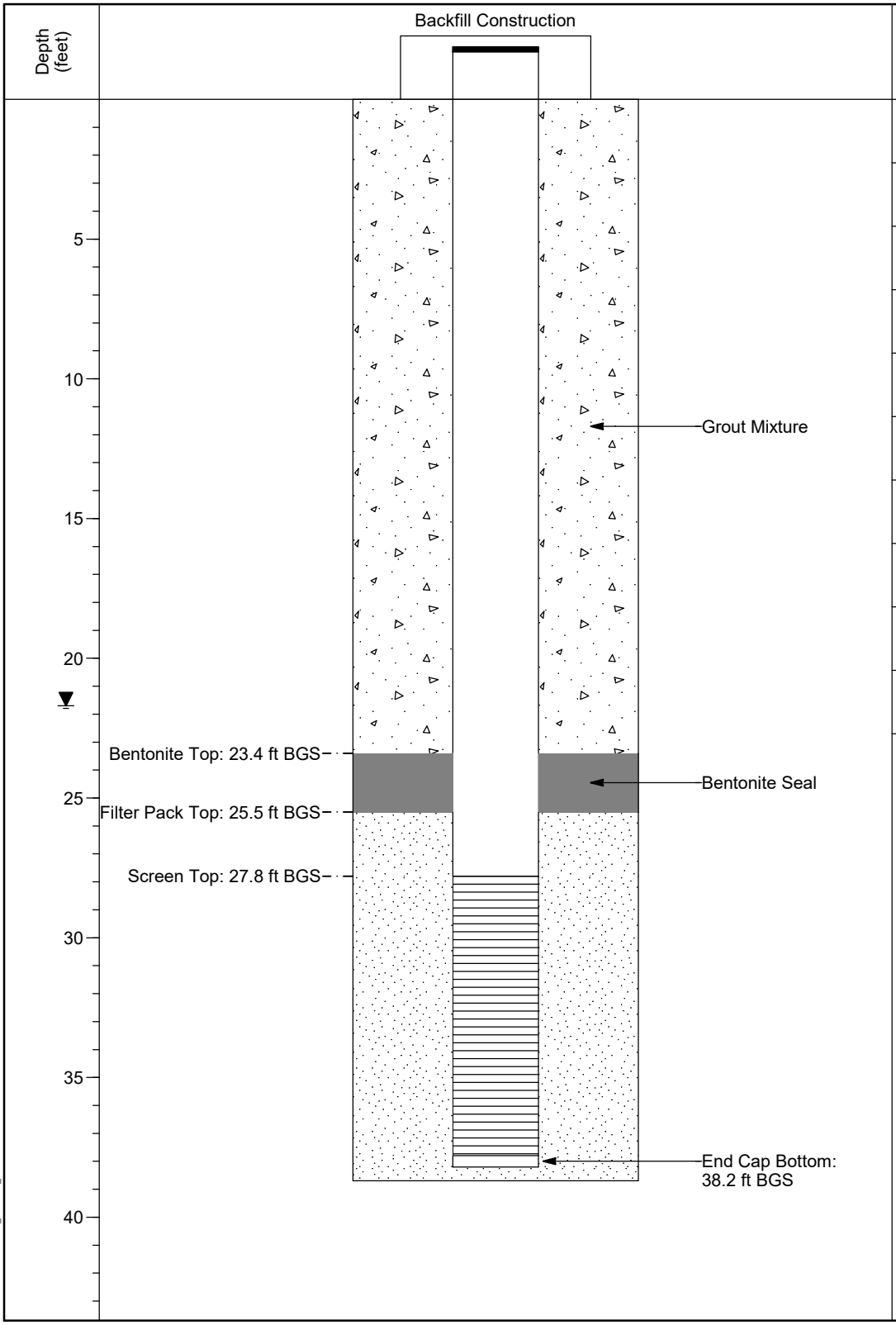
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-17**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/3/22** COMPLETED: **5/5/22**
LOCATION: **1,561,279.20 N; 1,954,321.10 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **717.3** TOC ELEV (ft): **719.4**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **38.7** RISER DEPTH (ft): **38.2**
DTW AT COMPLETION (ft, bgs): **21.7**
BOREHOLE DIA. (in): **9.0** RISER DIA. (in): **2.0**



Materials Inventory

RISER TYPE:
2" Sch 40 PVC Riser

SCREEN TYPE:
U-Pack - Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
75

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10.1

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
23.4

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

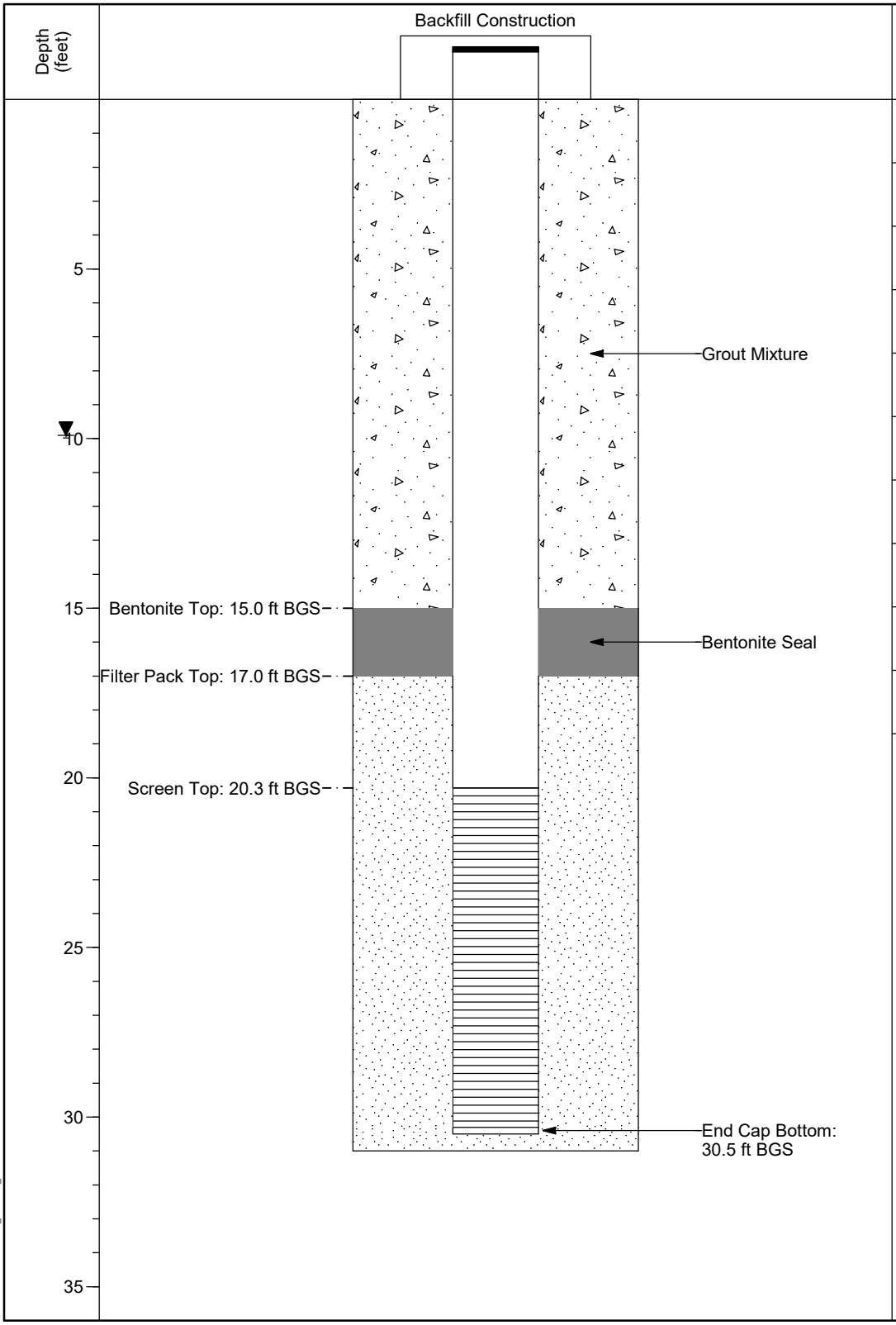
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-18**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/17/22** COMPLETED: **5/18/22**
LOCATION: **1,561,337.00 N; 1,953,149.70 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **666.6** TOC ELEV (ft): **669.3**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **31.0** RISER DEPTH (ft): **30.5**
DTW AT COMPLETION (ft, bgs): **9.9**
BOREHOLE DIA. (in): **6.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
25

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
15

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

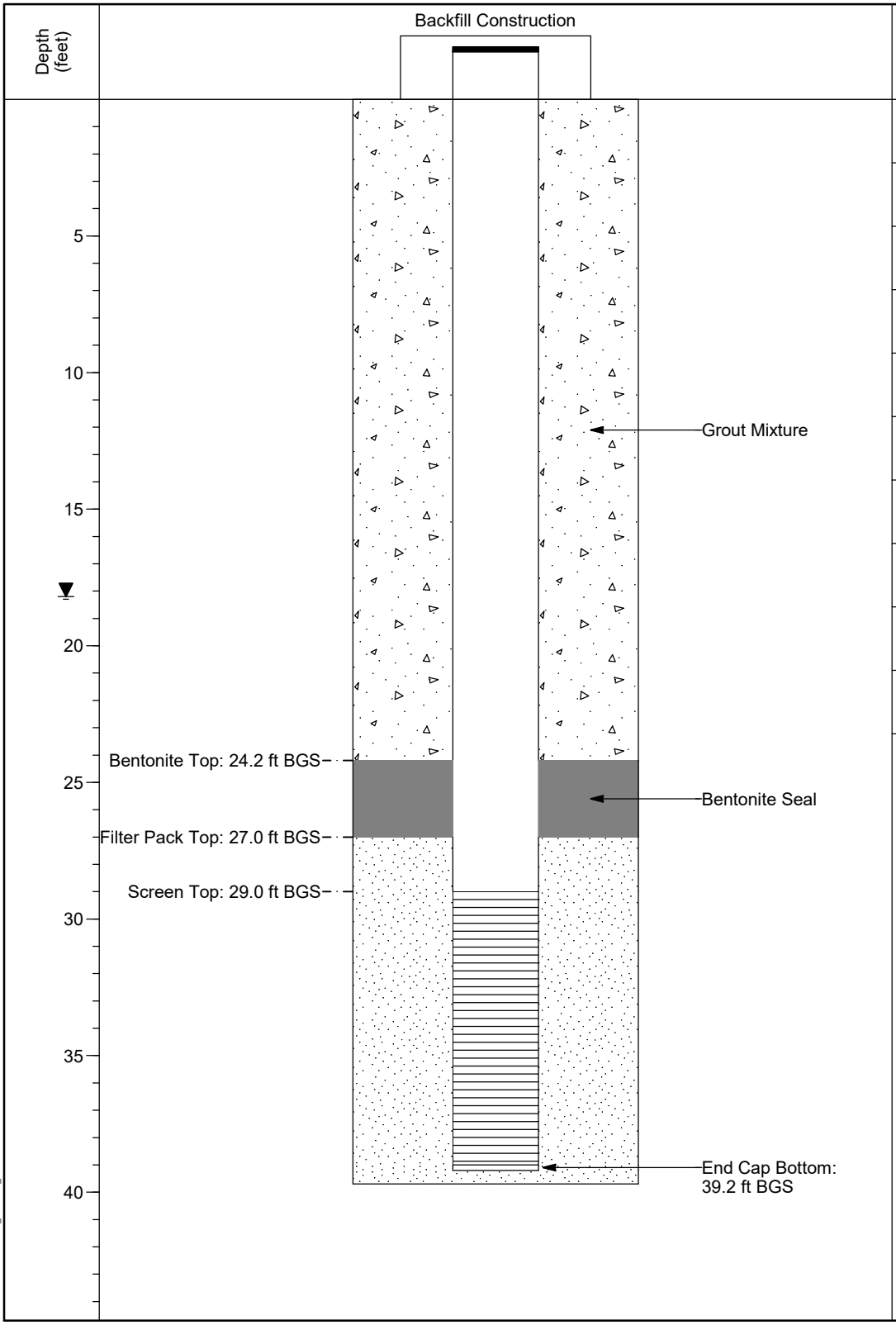
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

Stantec PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO: **-HRL-19**

PROJECT: **Huffaker Road Landfill Phase II Drilling**
PROJECT NUMBER: **175518236**
DRILLING COMPANY: **Southern Company Services**
DRILLING EQUIPMENT: **CME 550**
DRILLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
SAMPLING METHOD: **2-1/4" HSA, 2" SS w/o liners**
OBSERVED BY: **V. Bierwirth**
REVIEWED BY: **J. Massey**
APPROVED BY: **M. Vaughan**

INSTALLATION: STARTED: **5/19/22** COMPLETED: **5/20/22**
LOCATION: **1,561,497.20 N; 1,952,792.90 E**
LOC. DESCRIPTION:
LATITUDE: LONGITUDE:
GROUND ELEV (ft): **662.7** TOC ELEV (ft): **665.4**
ELEVATION DATUM:
BOREHOLE DEPTH (ft): **39.7** RISER DEPTH (ft): **39.2**
DTW AT COMPLETION (ft, bgs): **18.2**
BOREHOLE DIA. (in): **6.0** RISER DIA. (in): **1.0**



Materials Inventory

RISER TYPE:
1" Sch 40 PVC Riser

SCREEN TYPE:
Factory Machine Slotted

SCREEN SLOT SIZE (in):
0.010

GROUT QUANTITY (gal):
35

GROUT TYPE:
30% Solids Bentonite Grout

GROUT INITIAL DENSITY (lbs/gal):
10

GROUT RETURN DENSITY (lbs/gal):

GROUT TOP (ft BGS):
0

GROUT BOTTOM (ft BGS):
24.2

FILTER PACK TYPE:
20/40 Mesh (Filtersil)

NOTES:
Bentonite seal hydrated a minimum of 4-hours prior to grout backfill placement.

Refer to boring log for additional details.

Refer to boring log and piezometer installation log for additional details.

Coated bentonite pellet seal - Pel Plug 3/8" TR30

PZ DETAILS 175518236_BORING_LOGS.GPJ TDEC SUBSURF DT 20190530.GDT 10/20/22

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

APPENDIX J
HRL PARCEL F GEOTECHNICAL INVESTIGATION LABORATORY RESULTS

HRL PARCEL F GEOTECHNICAL INVESTIGATION LABORATORY RESULTS (REDACTED*)

* The 2021 Geotechnical Investigation scope of work included data collection from the proposed Huffaker Parcel F permit area, Huffaker West, Judy Mountain, and Plant Hammond where drilling activities and test pit excavations were conducted. This 2021 Geotechnical Investigation Report has been redacted to present only the data from the proposed Huffaker Road Landfill Parcel F permit area presented in this SAR.

APPENDIX J.1
2021 HRL PARCEL F GEOTECHNICAL INVESTIGATION LABORATORY RESULTS

Appendix J.1.1

NATURAL MOISTURE CONTENT

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name: Plant Hammond Exploration

Project Number: 175518216

Tested By: ES/SKS

Test Method: ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
TP-HS-01, 2.0'-3.0'	1	6/1/21	Dist	3/4"			No	29.98	183.41	162.90	15.4
TP-HS-02, 1.0'-2.0'	2	6/1/21	Dist	1 1/2"			No	31.44	184.42	165.64	14.0
TP-HS-04, 0.0'-1.0'	3	6/1/21	Dist	1 1/2"			No	30.63	179.88	161.85	13.7

Comments: _____

Reviewed By: RHB

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Plant Hammond Exploration

Project Number 175518216

Tested By MW

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded		Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
					Amount	Size					
BH-HS-01, 4.5'-6.0'	25	6/23/21	Dist	No. 4			No	31.53	133.24	124.53	9.4
BH-HS-01, 25.0'-26.5'	31	6/23/21	Dist	3/8"			No	31.54	147.06	133.40	13.4
BH-HS-02, 4.5'-6.0'	35	6/23/21	Dist	3/4"			No	29.93	116.02	103.79	16.6
BH-HS-02, 20.0'-21.5' No Sample	39										
BH-HS-03, 0.0'-1.5'	42	6/23/21	Dist	No. 4			No	31.55	127.50	113.67	16.8
BH-HS-03, 9.0'-10.5'	48	6/23/21	Dist	No. 4			Yes	29.97	163.28	154.40	7.1
BH-HS-04, 3.0'-4.5'	51	6/23/21	Dist	No. 4			No	30.02	64.63	60.86	12.2
BH-HS-05, 1.5'-3.0'	56	6/23/21	Dist	No. 4			Yes	30.12	153.02	137.64	14.3
BH-HS-05, 4.5'-6.0'	59	6/23/21	Dist	1 1/2"			No	30.08	132.88	119.38	15.1
BH-HS-06, 4.5'-6.0'	67	6/23/21	Dist	3/4"			No	30.05	123.27	107.05	21.1
BH-HS-06, 9.0'-10.5'	70	6/23/21	Dist	3/8"			No	29.97	163.77	140.79	20.7
BH-HS-07, 1.5'-3.0'	72	6/23/21	Dist	No. 10			Yes	31.83	122.08	110.37	14.9
BH-HS-07, 7.5'-8.2'	77	6/23/21	Dist	No. 4			No	31.49	106.95	101.56	7.7
BH-HS-08, 1.5'-3.0'	79	6/23/21	Dist	No. 4			Yes	29.69	155.14	132.78	21.7
BH-HS-08, 4.5'-6.0'	82	6/23/21	Dist	3/8"			No	30.48	95.48	80.70	29.4
BH-HS-08, 9.0'-10.5'	86	6/23/21	Dist	No. 4			No	31.00	134.41	121.55	14.2
BH-HS-09, 3.0'-4.5'	88	6/23/21	Dist	3/8"			No	30.94	171.54	161.64	7.6
BH-HS-09, 6.0'-7.5'	91	6/23/21	Dist	No. 4			Yes	31.44	141.49	131.51	10.0
BH-HS-10, 3.0'-4.5'	95	6/23/21	Dist	3/4"			No	30.17	121.90	112.76	11.1
BH-HS-10, 6.0'-7.5'	97	6/23/21	Dist	3/8"			No	29.98	180.88	161.88	14.4
BH-HS-10, 9.0'-10.5'	99	6/23/21	Dist	No. 4			Yes	30.65	152.10	135.65	15.7
BH-HS-11, 30.0'-31.5'	103	6/23/21	Dist	3/8"			No	30.25	133.13	121.64	12.6
PZ-HS-01, 3.0'-4.5'	108	6/23/21	Dist	No. 4			No	30.36	134.88	126.80	8.4
PZ-HS-01, 9.0'-9.3'	111	6/23/21	Dist	No. 10			Yes	30.63	146.32	141.33	4.5
PZ-HS-02, 1.5'-3.0'	112	6/23/21	Dist	No. 4			Yes	30.30	150.86	135.06	15.1
PZ-HS-02, 6.0'-7.5'	116	6/23/21	Dist	No. 4			No	31.63	110.49	100.72	14.1
PZ-HS-03, 1.5'-1.9'	120	6/23/21	Dist	No. 10			Yes	30.15	78.85	76.18	5.8
PZ-HS-03, 7.5'-9.0'	124	6/23/21	Dist	No. 4			No	31.59	132.53	122.10	11.5

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name Plant Hammond Exploration

Project Number 175518216

Tested By MW

Test Method ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & CanWeight (g)	Moisture Content (%)
PZ-HS-04, 4.5'-6.0'	128	6/25/21	Dist	No. 4			No	31.53	57.90	54.00	17.4
PZ-HS-04, 6.0'-7.5'	129	6/25/21	Dist	No. 4			Yes	29.85	147.05	133.64	12.9
PZ-HS-05, 1.5'-3.0'	131	6/25/21	Dist	3/4"			No	30.08	118.22	107.07	14.5
PZ-HS-05, 4.5'-6.0'	133	6/25/21	Dist	No. 10			Yes	31.90	141.05	129.56	11.8
PZ-HS-06, 1.5'-3.0'	137	6/25/21	Dist	No. 4			Yes	30.03	157.83	145.08	11.1
PZ-HS-06, 4.5'-6.0'	139	6/25/21	Dist	No. 4			Yes	31.96	158.56	145.71	11.3
PZ-HS-06, 7.5'-8.3'	142	6/25/21	Dist	No. 4			No	30.98	89.73	85.86	7.1

Appendix J.1.2
SOIL CLASSIFICATION

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-01, 3.0'-4.5', 4.5'-6.0'	Lab ID	23
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.3
No. 4	4.75	97.3
No. 10	2	94.0
No. 40	0.425	87.7
No. 200	0.075	71.3
	0.02	35.0
	0.005	19.7
	0.002	13.3
estimated	0.001	9.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	2.7	6.0
Coarse Sand	3.3	6.3
Medium Sand	6.3	---
Fine Sand	16.4	16.4
Silt	51.6	58.0
Clay	19.7	13.3

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	26
Plastic Limit:	21
Plasticity Index:	5
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL-ML
Group Name: Silty clay with sand

AASHTO Classification: A-4 (2)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-01, 3.0'-4.5', 4.5'-6.0'	Lab ID	23

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Soft
Tested By	DW
Test Date	06-25-2021
Date Received	06-23-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.3
No. 4	97.3
No. 10	94.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

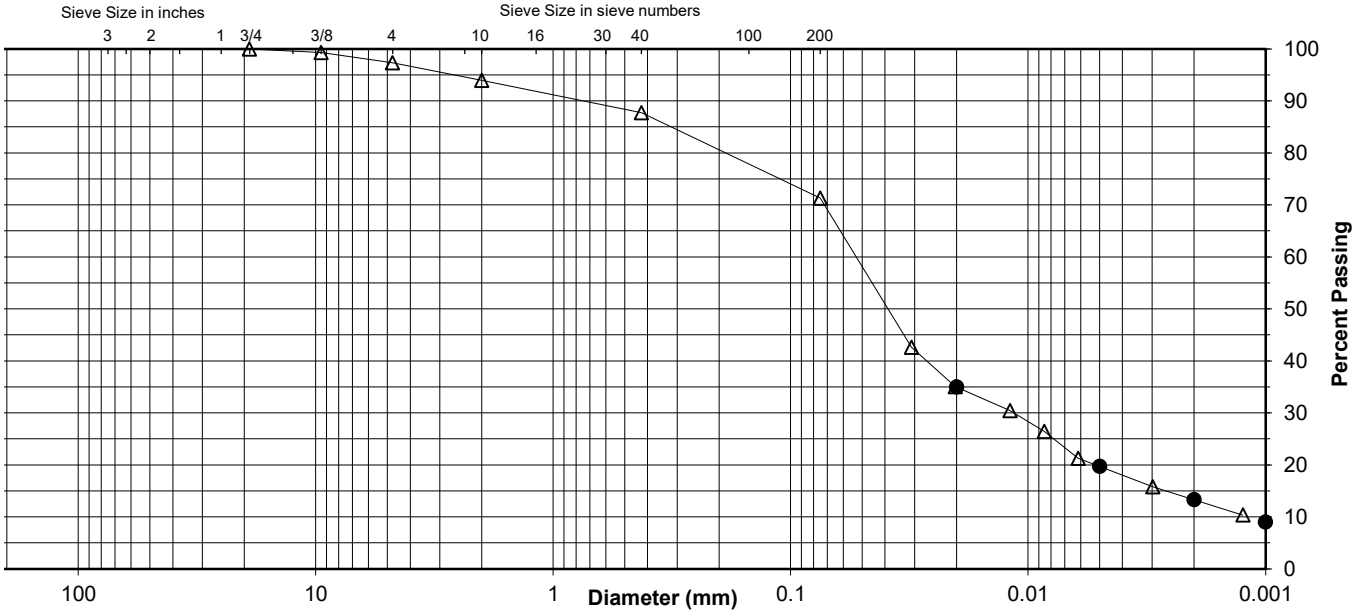
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	87.7
No. 200	71.3
0.02 mm	35.0
0.005 mm	19.7
0.002 mm	13.3
0.001 mm	9.0

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	2.7	3.3	6.3	16.4	51.6	19.7

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	6.0	6.3	16.4	58.0	13.3



Comments

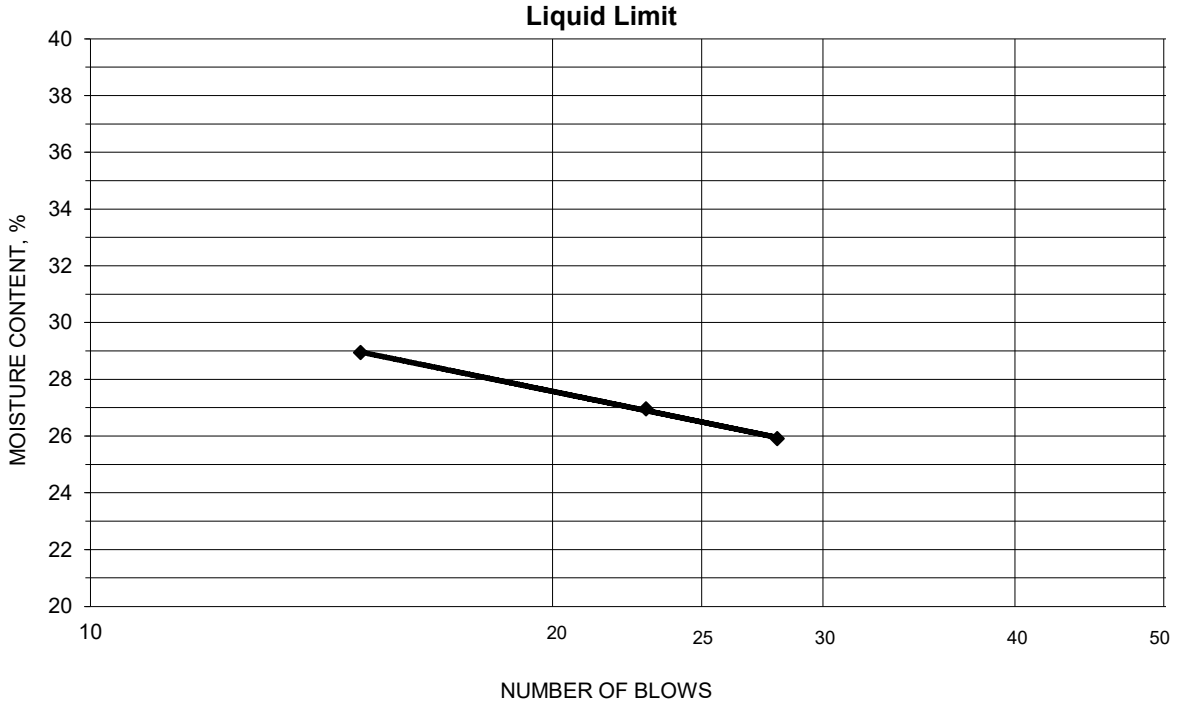
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration	Project No.	175518216
Source	BH-HS-01, 3.0'-4.5', 4.5'-6.0'	Lab ID	23
		% + No. 40	12
Tested By	JMB	Test Method	ASTM D 4318 Method A
Test Date	06-29-2021	Prepared	Dry
		Date Received	06-23-2021

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
19.40	17.70	11.14	28	25.9	
18.96	17.34	11.33	23	27.0	
20.18	18.07	10.78	15	28.9	26



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.20	16.17	11.21	20.8	21	5
18.05	16.78	10.78	21.2		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-02, 3.0'-4.5', 4.5'-6.0', 6.0'-7.5'	Lab ID	33
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	99.5
3/8"	9.5	96.0
No. 4	4.75	91.1
No. 10	2	88.4
No. 40	0.425	83.8
No. 200	0.075	73.9
	0.02	44.6
	0.005	34.1
	0.002	26.0
estimated	0.001	22.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	8.9	11.6
Coarse Sand	2.7	4.6
Medium Sand	4.6	---
Fine Sand	9.9	9.9
Silt	39.8	47.9
Clay	34.1	26.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	32
Plastic Limit:	19
Plasticity Index:	13
Activity Index:	0.5

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL
Group Name: Lean clay with sand

AASHTO Classification: A-6 (8)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-02, 3.0'-4.5', 4.5'-6.0', 6.0'-7.5'	Lab ID	33

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Soft
Tested By	DW
Test Date	06-28-2021
Date Received	06-23-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	99.5
3/8"	96.0
No. 4	91.1
No. 10	88.4

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

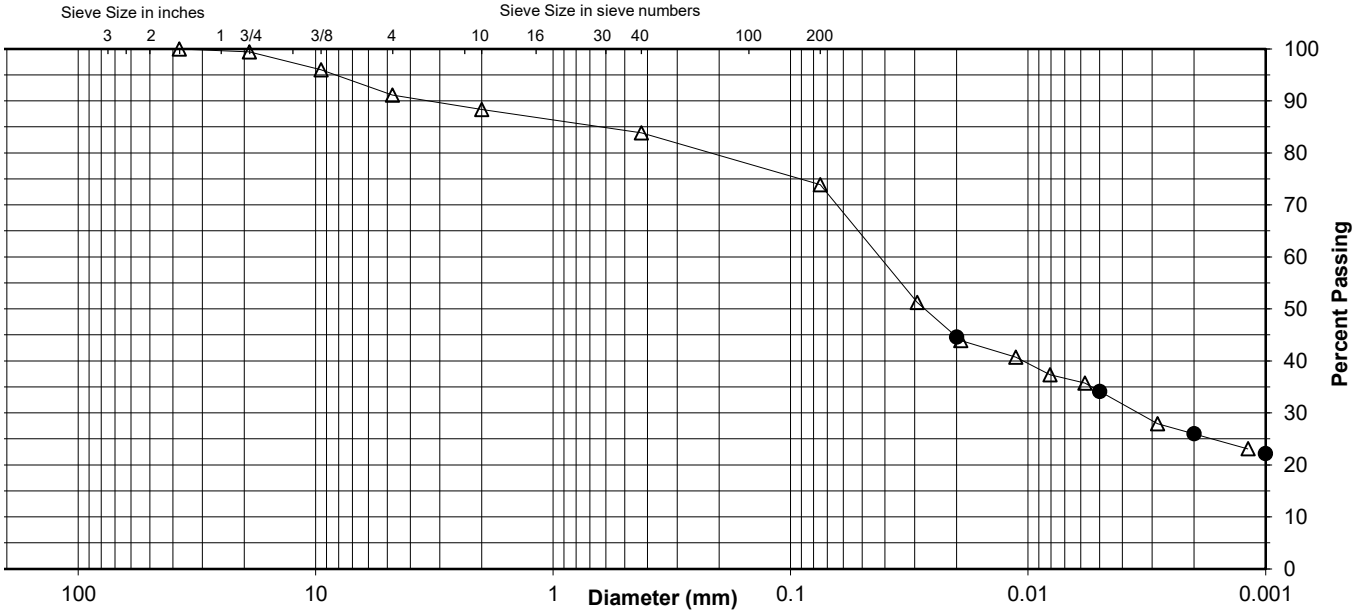
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	83.8
No. 200	73.9
0.02 mm	44.6
0.005 mm	34.1
0.002 mm	26.0
0.001 mm	22.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.5	8.4	2.7	4.6	9.9	39.8	34.1
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	11.6			4.6	9.9	47.9	26.0



Comments

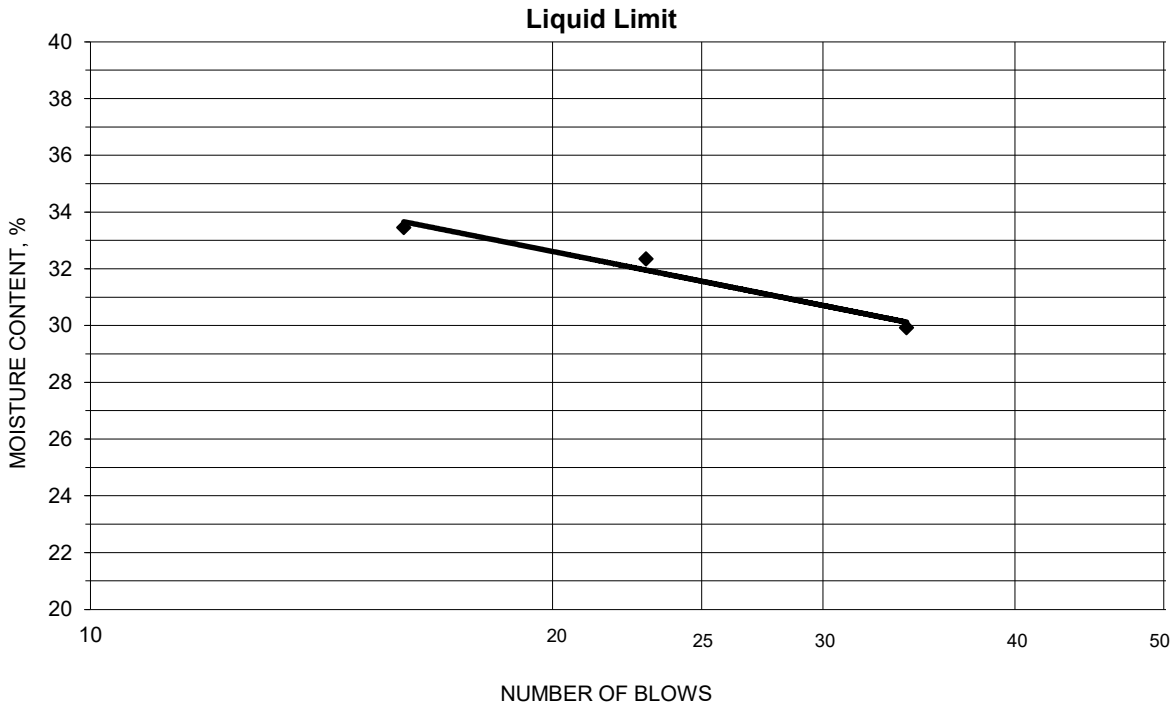
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration	Project No.	175518216
Source	BH-HS-02, 3.0'-4.5', 4.5'-6.0', 6.0'-7.5'	Lab ID	33
		% + No. 40	16
Tested By	JMB	Test Method	ASTM D 4318 Method A
Test Date	06-29-2021	Prepared	Dry
		Date Received	06-23-2021

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
18.16	16.46	10.78	34	29.9	
18.26	16.50	11.06	23	32.4	
18.30	16.44	10.88	16	33.5	32



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.23	16.19	10.62	18.7	19	13
17.60	16.58	11.04	18.4		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-03, 0.0'-1.5', 1.5'-3.0'	Lab ID	41
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.8
No. 10	2	98.6
No. 40	0.425	95.1
No. 200	0.075	86.4
	0.02	54.3
	0.005	32.9
	0.002	20.2
estimated	0.001	13.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.2	1.4
Coarse Sand	1.2	3.5
Medium Sand	3.5	---
Fine Sand	8.7	8.7
Silt	53.5	66.2
Clay	32.9	20.2

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	34
Plastic Limit:	23
Plasticity Index:	11
Activity Index:	0.5

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL
Group Name: Lean clay

AASHTO Classification: A-6 (9)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-03, 0.0'-1.5', 1.5'-3.0'	Lab ID	41

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	06-28-2021
Date Received	06-23-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.8
No. 10	98.6

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

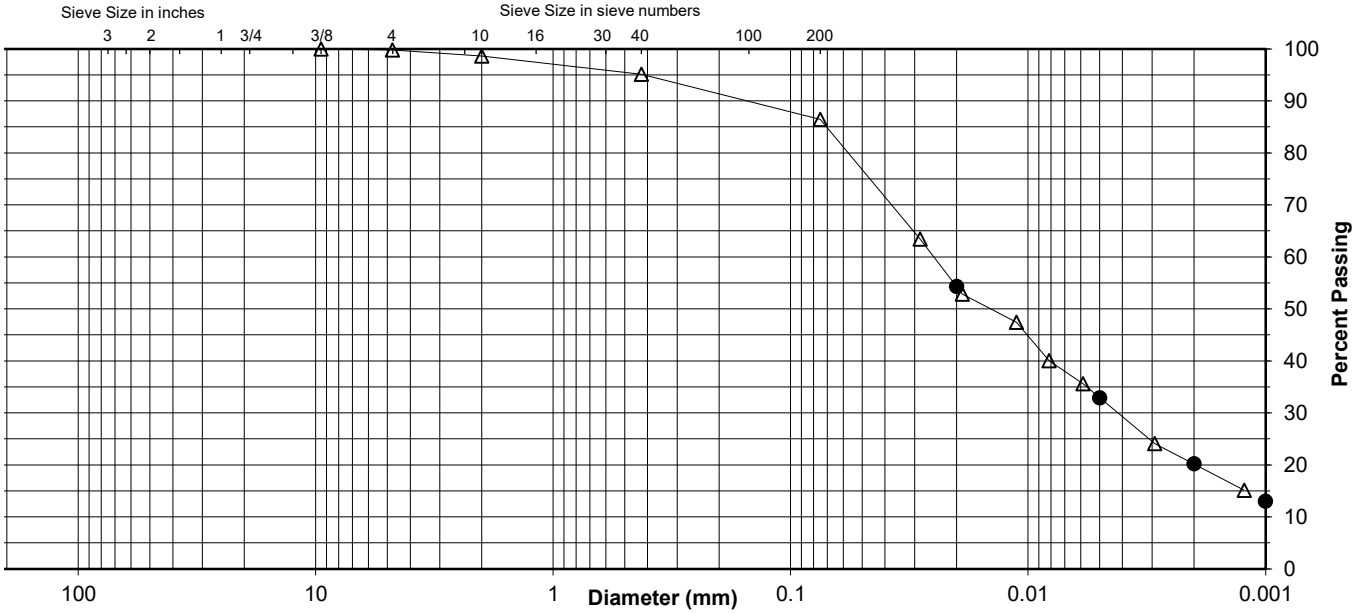
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	95.1
No. 200	86.4
0.02 mm	54.3
0.005 mm	32.9
0.002 mm	20.2
0.001 mm	13.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.2	1.2	3.5	8.7	53.5	32.9
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	1.4			3.5	8.7	66.2	20.2



Comments

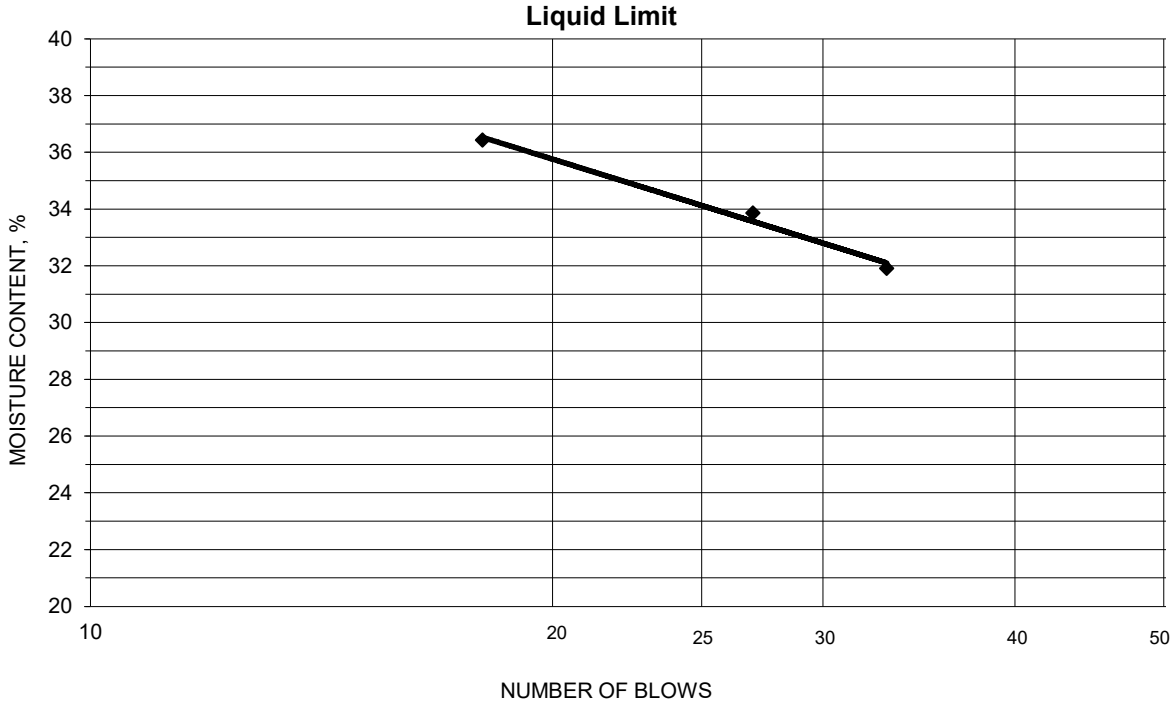
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	BH-HS-03, 0.0'-1.5', 1.5'-3.0'			Lab ID	41
				% + No. 40	5
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-23-2021
Test Date	06-29-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
17.48	15.84	10.70	33	31.9	
17.73	16.01	10.93	27	33.9	
18.28	16.36	11.09	18	36.4	34



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.68	17.28	11.16	22.9	23	11
17.85	16.59	11.10	23.0		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-04, 1.5'-3.0', 3.0'-4.5'	Lab ID	49
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	97.8
3/8"	9.5	94.8
No. 4	4.75	91.6
No. 10	2	85.7
No. 40	0.425	66.9
No. 200	0.075	47.8
	0.02	38.4
	0.005	26.9
	0.002	18.5
estimated	0.001	14.4

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	8.4	14.3
Coarse Sand	5.9	18.8
Medium Sand	18.8	---
Fine Sand	19.1	19.1
Silt	20.9	29.3
Clay	26.9	18.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	33
Plastic Limit:	20
Plasticity Index:	13
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC
Group Name:	Clayey sand
AASHTO Classification:	A-6 (3)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-04, 1.5'-3.0', 3.0'-4.5'	Lab ID	49

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	06-28-2021
Date Received	06-23-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	97.8
3/8"	94.8
No. 4	91.6
No. 10	85.7

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

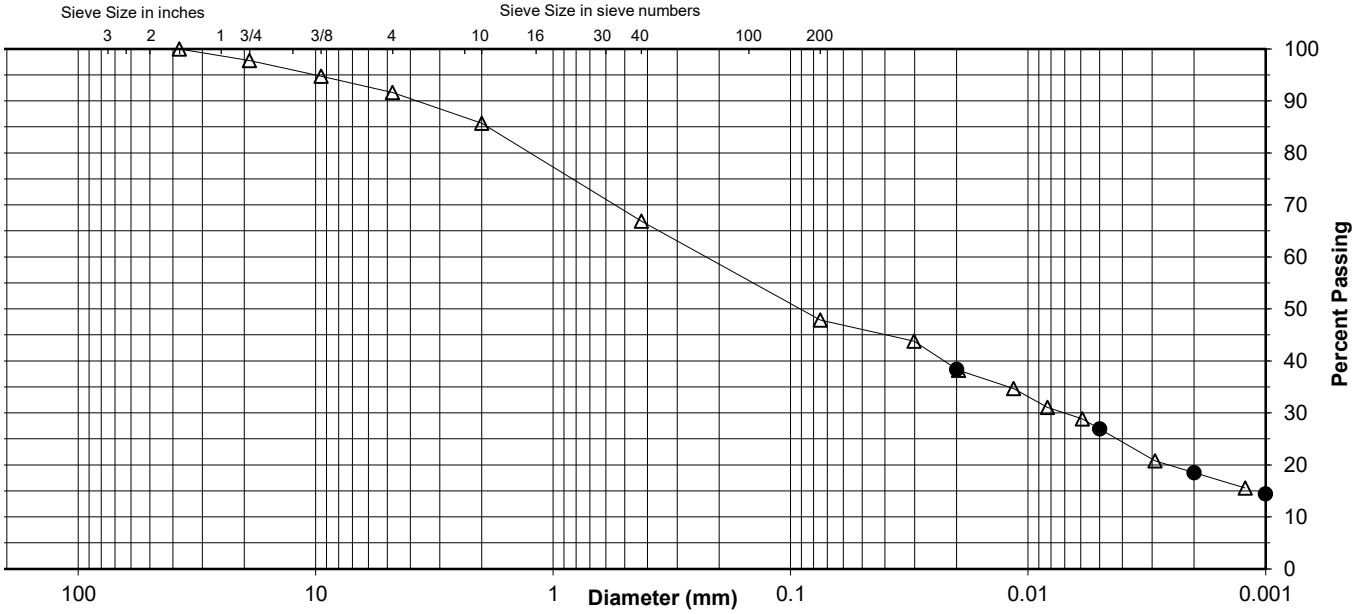
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	66.9
No. 200	47.8
0.02 mm	38.4
0.005 mm	26.9
0.002 mm	18.5
0.001 mm	14.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	2.2	6.2	5.9	18.8	19.1	20.9	26.9
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	14.3			18.8	19.1	29.3	18.5



Comments

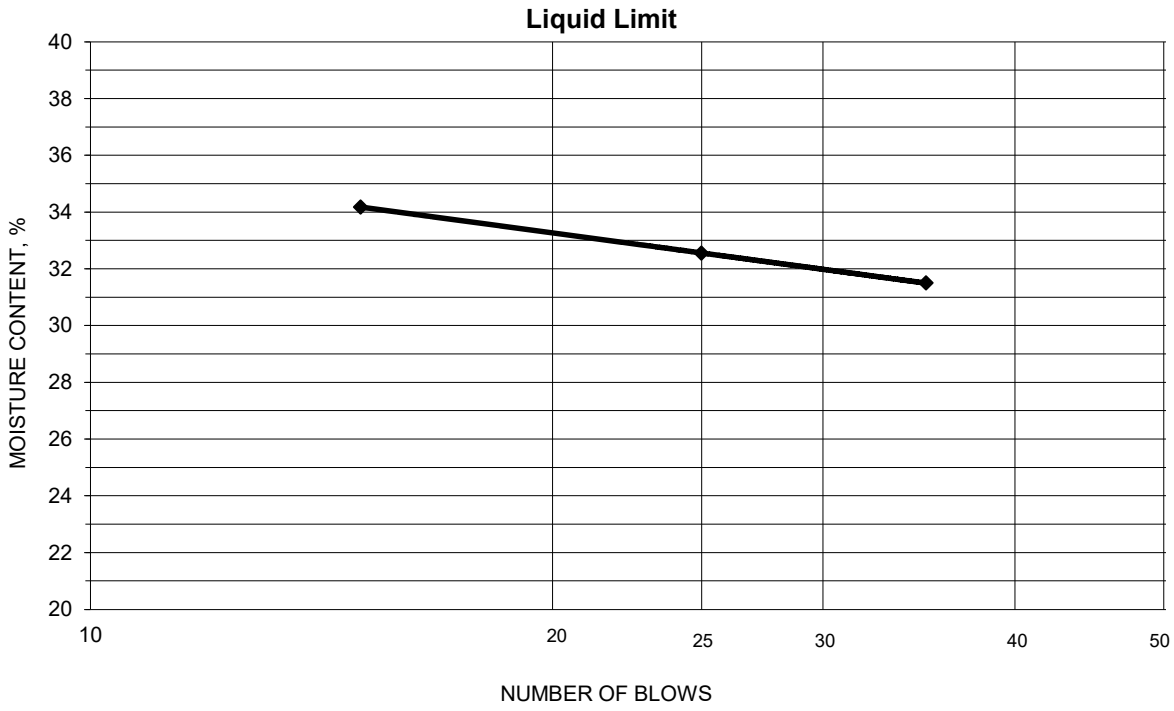
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	BH-HS-04, 1.5'-3.0', 3.0'-4.5'			Lab ID	49
				% + No. 40	33
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-23-2021
Test Date	06-29-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
17.55	16.06	11.33	35	31.5	
18.80	17.00	11.47	25	32.5	
18.48	16.73	11.61	15	34.2	33



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.48	16.44	11.27	20.1	20	13
17.70	16.66	11.59	20.5		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-05, 3.0'-4.5', 4.5'-6.0', 6.0'-7.5'	Lab ID	57
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	98.0
3/8"	9.5	95.9
No. 4	4.75	92.6
No. 10	2	87.9
No. 40	0.425	80.0
No. 200	0.075	69.7
	0.02	35.5
	0.005	20.4
	0.002	12.5
estimated	0.001	8.7

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	7.4	12.1
Coarse Sand	4.7	7.9
Medium Sand	7.9	---
Fine Sand	10.3	10.3
Silt	49.3	57.2
Clay	20.4	12.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	29
Plastic Limit:	22
Plasticity Index:	7
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL-ML
Group Name:	Sandy silty clay
AASHTO Classification:	A-4 (3)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-05, 3.0'-4.5', 4.5'-6.0', 6.0'-7.5'	Lab ID	57

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	06-28-2021
Date Received	06-23-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	98.0
3/8"	95.9
No. 4	92.6
No. 10	87.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

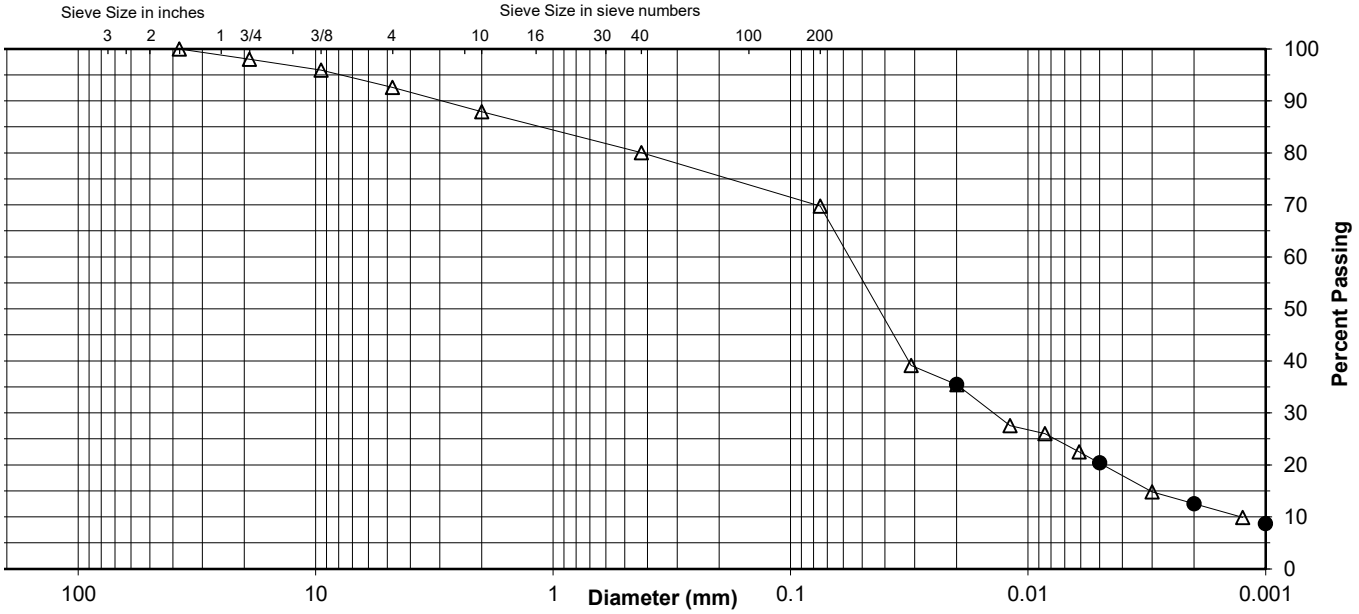
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	80.0
No. 200	69.7
0.02 mm	35.5
0.005 mm	20.4
0.002 mm	12.5
0.001 mm	8.7

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	2.0	5.4	4.7	7.9	10.3	49.3	20.4
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	12.1			7.9	10.3	57.2	12.5



Comments

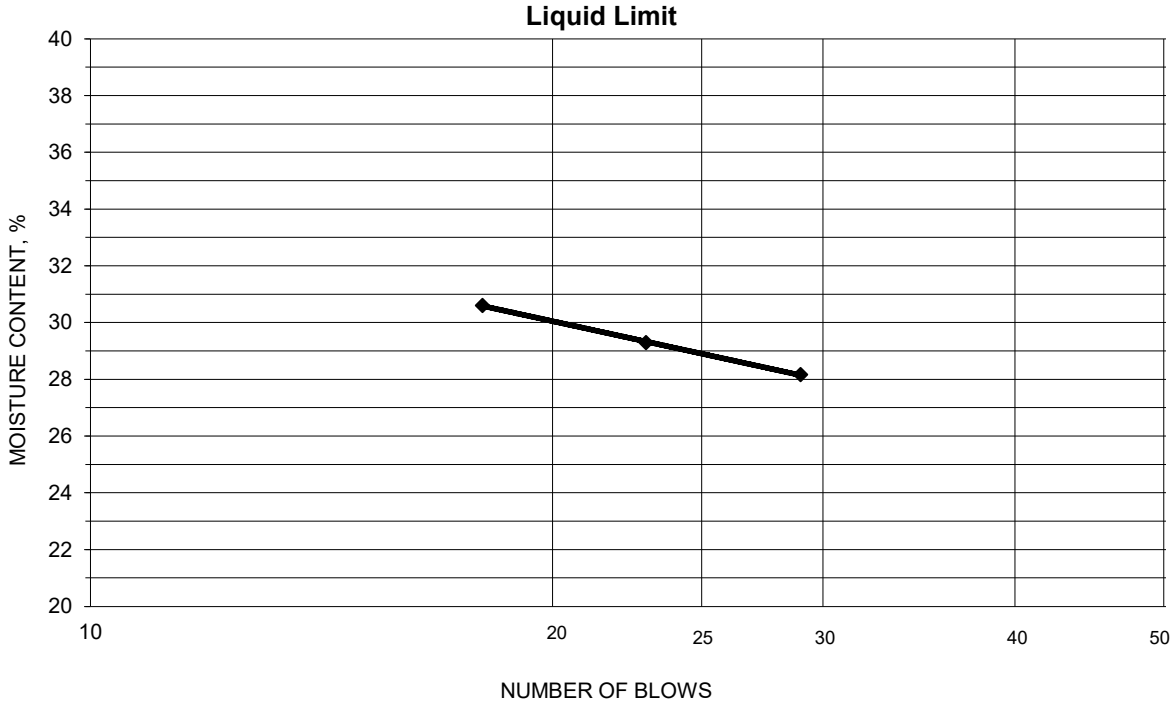
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration	Project No.	175518216
Source	BH-HS-05, 3.0'-4.5', 4.5'-6.0', 6.0'-7.5'	Lab ID	57
		% + No. 40	20
Tested By	JMB	Test Method	ASTM D 4318 Method A
Test Date	06-29-2021	Prepared	Dry
		Date Received	06-23-2021

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
18.19	16.52	10.59	29	28.2	
17.18	15.80	11.09	23	29.3	
17.70	16.13	11.00	18	30.6	29



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.03	15.97	11.04	21.5	22	7
17.80	16.55	10.83	21.9		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-06, 4.5'-6.0', 6.0'-7.5'	Lab ID	66
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.0
No. 4	4.75	97.6
No. 10	2	95.9
No. 40	0.425	93.2
No. 200	0.075	80.1
	0.02	42.5
	0.005	26.7
	0.002	19.9
estimated	0.001	15.5

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	2.4	4.1
Coarse Sand	1.7	2.7
Medium Sand	2.7	---
Fine Sand	13.1	13.1
Silt	53.4	60.2
Clay	26.7	19.9

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	24
Plastic Limit:	18
Plasticity Index:	6
Activity Index:	0.3

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL-ML
Group Name: Silty clay with sand

AASHTO Classification: A-4 (3)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-06, 4.5'-6.0', 6.0'-7.5'	Lab ID	66

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	06-28-2021
Date Received	06-23-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.0
No. 4	97.6
No. 10	95.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

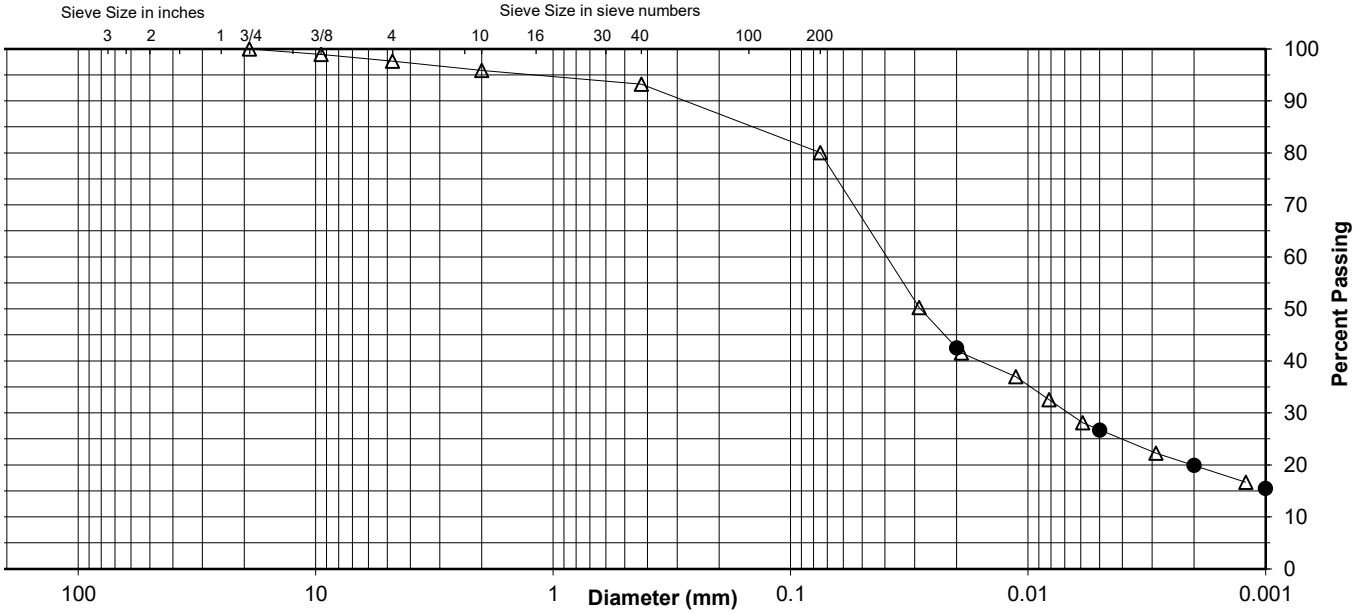
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	93.2
No. 200	80.1
0.02 mm	42.5
0.005 mm	26.7
0.002 mm	19.9
0.001 mm	15.5

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	2.4	1.7	2.7	13.1	53.4	26.7
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	4.1			2.7	13.1	60.2	19.9



Comments

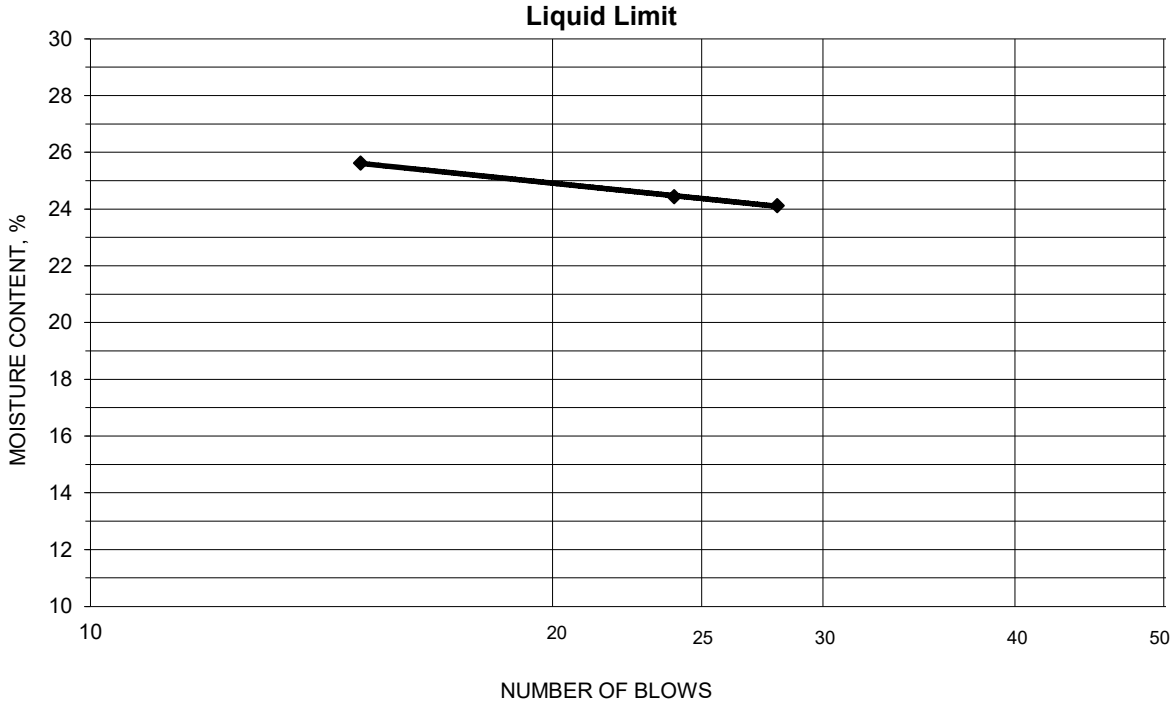
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Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration	Project No.	175518216
Source	BH-HS-06, 4.5'-6.0', 6.0'-7.5'	Lab ID	66
		% + No. 40	7
Tested By	JMB	Test Method	ASTM D 4318 Method A
Test Date	06-30-2021	Prepared	Dry
		Date Received	06-23-2021

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
12.73	11.15	4.60	28	24.1	
10.44	9.24	4.33	24	24.4	
12.45	10.79	4.31	15	25.6	24



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
9.93	9.07	4.31	18.1	18	6
12.09	10.91	4.28	17.8		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-07, 1.5'-3.0', 3.0'-4.5'	Lab ID	71
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.8
No. 4	4.75	99.4
No. 10	2	96.6
No. 40	0.425	91.5
No. 200	0.075	84.2
	0.02	70.1
	0.005	40.6
	0.002	25.6
estimated	0.001	15.8

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.6	3.4
Coarse Sand	2.8	5.1
Medium Sand	5.1	---
Fine Sand	7.3	7.3
Silt	43.6	58.6
Clay	40.6	25.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	42
Plastic Limit:	25
Plasticity Index:	17
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Lean clay with sand
AASHTO Classification:	A-7-6 (15)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-07, 1.5'-3.0', 3.0'-4.5'	Lab ID	71

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Soft
Tested By	DW
Test Date	06-28-2021
Date Received	06-23-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.8
No. 4	99.4
No. 10	96.6

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

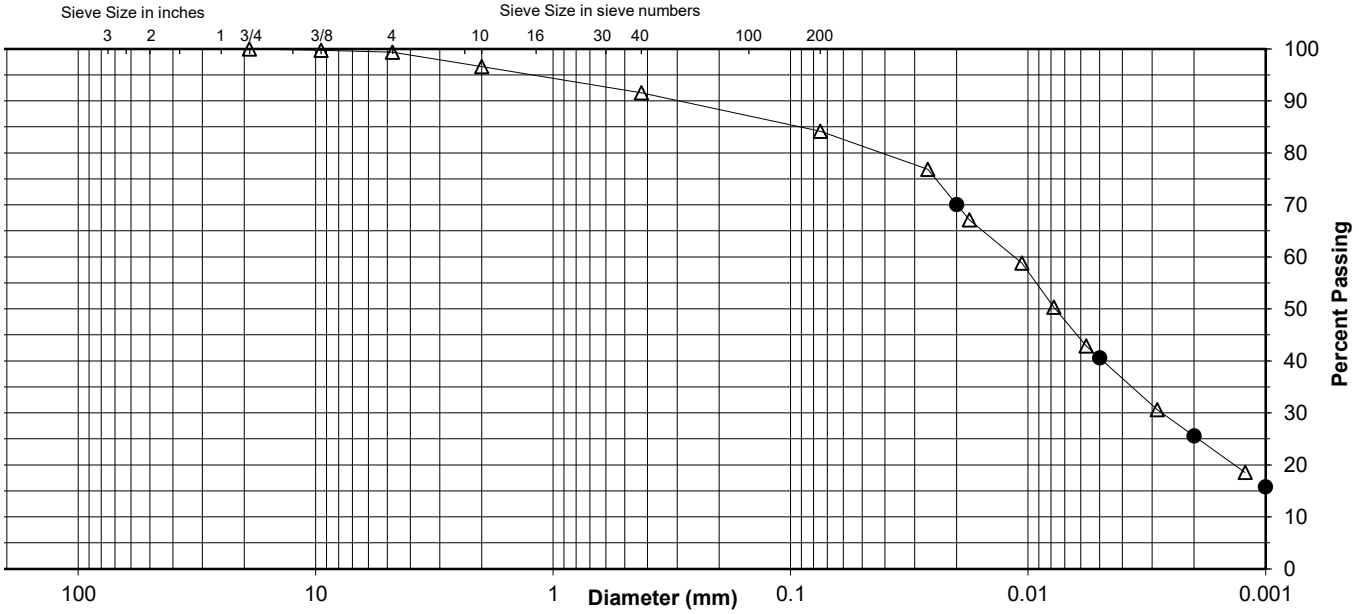
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	91.5
No. 200	84.2
0.02 mm	70.1
0.005 mm	40.6
0.002 mm	25.6
0.001 mm	15.8

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.6	2.8	5.1	7.3	43.6	40.6
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	3.4			5.1	7.3	58.6	25.6



Comments

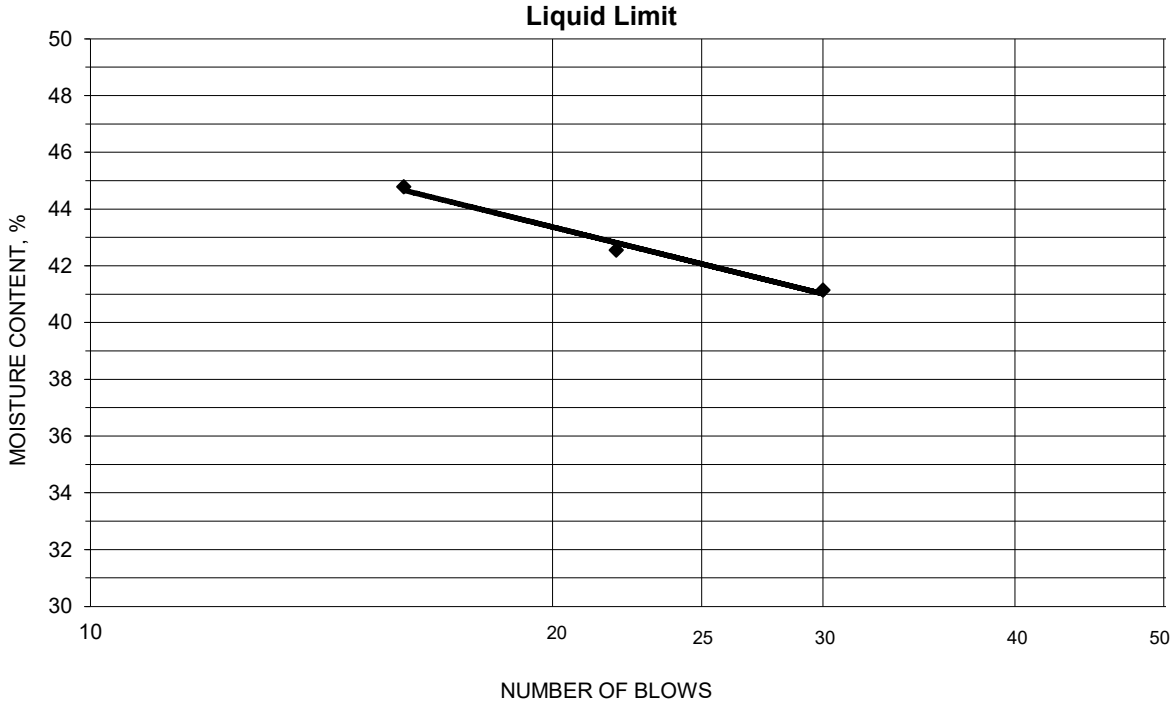
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	BH-HS-07, 1.5'-3.0', 3.0'-4.5'			Lab ID	71
				% + No. 40	8
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-23-2021
Test Date	06-30-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
18.10	16.01	10.93	30	41.1	
17.67	15.64	10.87	22	42.6	
17.58	15.56	11.05	16	44.8	42



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.87	16.47	10.85	24.9	25	17
17.58	16.21	10.73	25.0		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-07, 6.0'-7.5', 7.5'-8.2', 9.0'-9.8'	Lab ID	75
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	95.8
No. 4	4.75	92.2
No. 10	2	75.8
No. 40	0.425	69.9
No. 200	0.075	61.1
	0.02	44.3
	0.005	25.4
	0.002	15.8
estimated	0.001	11.5

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	7.8	24.2
Coarse Sand	16.4	5.9
Medium Sand	5.9	---
Fine Sand	8.8	8.8
Silt	35.7	45.3
Clay	25.4	15.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	33
Plastic Limit:	19
Plasticity Index:	14
Activity Index:	0.9

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (6)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-07, 6.0'-7.5', 7.5'-8.2', 9.0'-9.8'	Lab ID	75

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Soft
Tested By	DW
Test Date	06-28-2021
Date Received	06-23-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	95.8
No. 4	92.2
No. 10	75.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

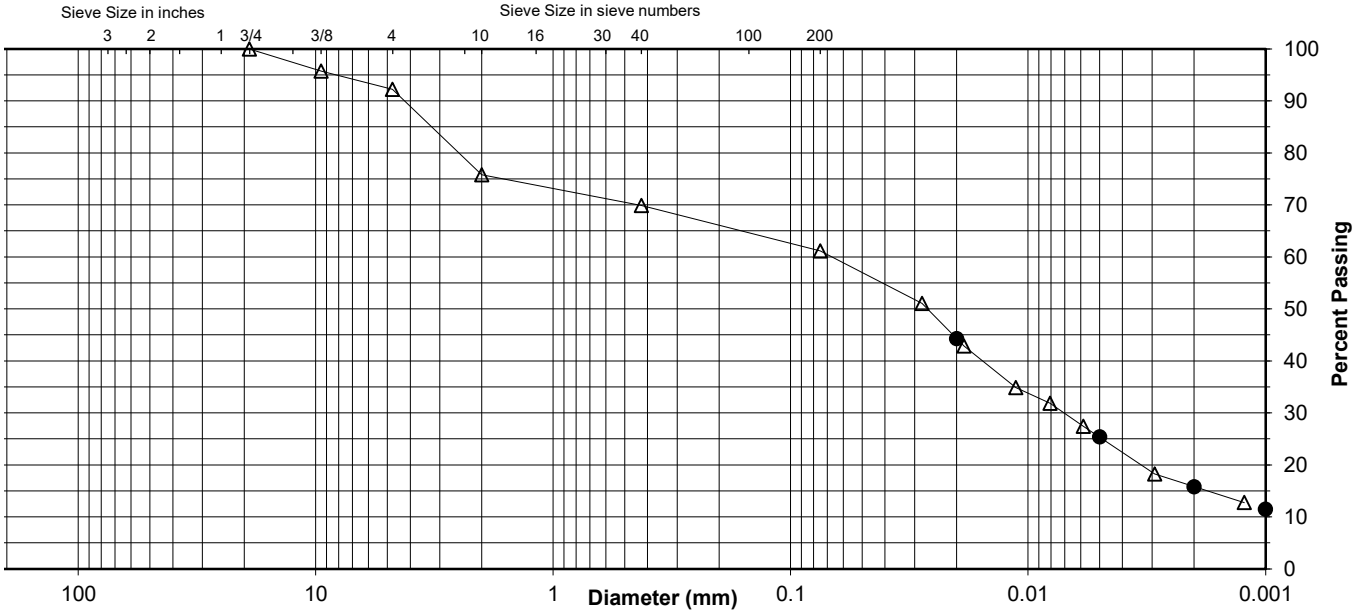
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	69.9
No. 200	61.1
0.02 mm	44.3
0.005 mm	25.4
0.002 mm	15.8
0.001 mm	11.5

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	7.8	16.4	5.9	8.8	35.7	25.4

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	24.2	5.9	8.8	45.3	15.8



Comments

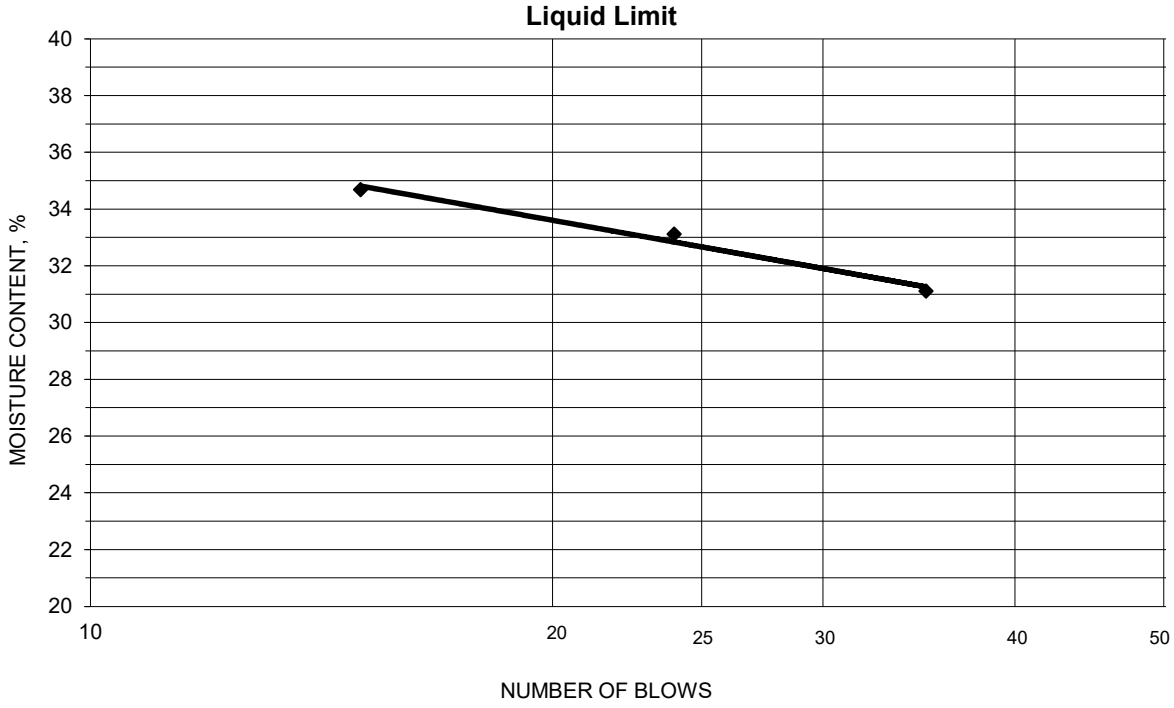
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration	Project No.	175518216
Source	BH-HS-07, 6.0'-7.5', 7.5'-8.2', 9.0'-9.8'	Lab ID	75
		% + No. 40	30
Tested By	JMB	Test Method	ASTM D 4318 Method A
Date Received	06-23-2021		
Test Date	06-29-2021	Prepared	Dry

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
17.05	15.56	10.77	35	31.1	
16.62	15.12	10.59	24	33.1	
17.33	15.71	11.04	15	34.7	33



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.38	16.38	11.11	19.0	19	14
17.59	16.52	10.92	19.1		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-08, 3.0'-4.5', 4.5'-6.0'	Lab ID	80
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	98.9
No. 40	0.425	94.5
No. 200	0.075	62.4
	0.02	51.4
	0.005	33.2
	0.002	23.3
estimated	0.001	16.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	1.1
Coarse Sand	1.1	4.4
Medium Sand	4.4	---
Fine Sand	32.1	32.1
Silt	29.2	39.1
Clay	33.2	23.3

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	40
Plastic Limit:	31
Plasticity Index:	9
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: ML
Group Name: Sandy silt

AASHTO Classification: A-4 (5)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-08, 3.0'-4.5', 4.5'-6.0'	Lab ID	80

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	06-28-2021
Date Received	06-23-2021

Maximum Particle size: No. 4 Sieve

Sieve Size	% Passing
No. 4	100.0
No. 10	98.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

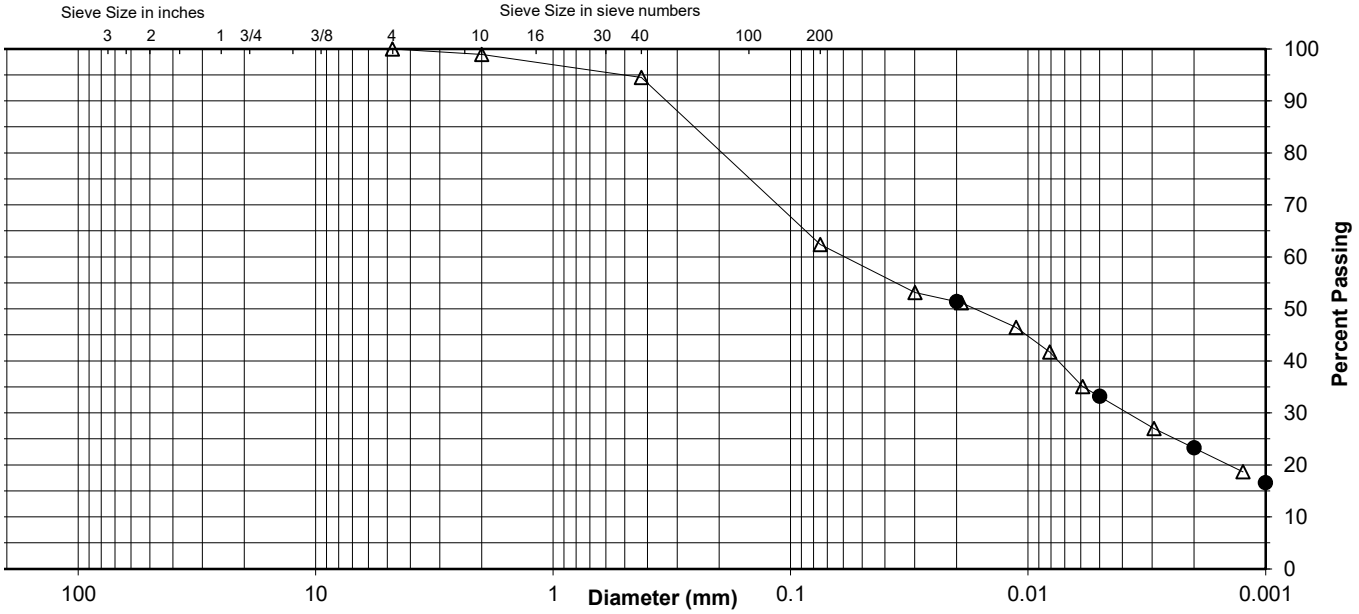
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	94.5
No. 200	62.4
0.02 mm	51.4
0.005 mm	33.2
0.002 mm	23.3
0.001 mm	16.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	1.1	4.4	32.1	29.2	33.2
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	1.1			4.4	32.1	39.1	23.3



Comments

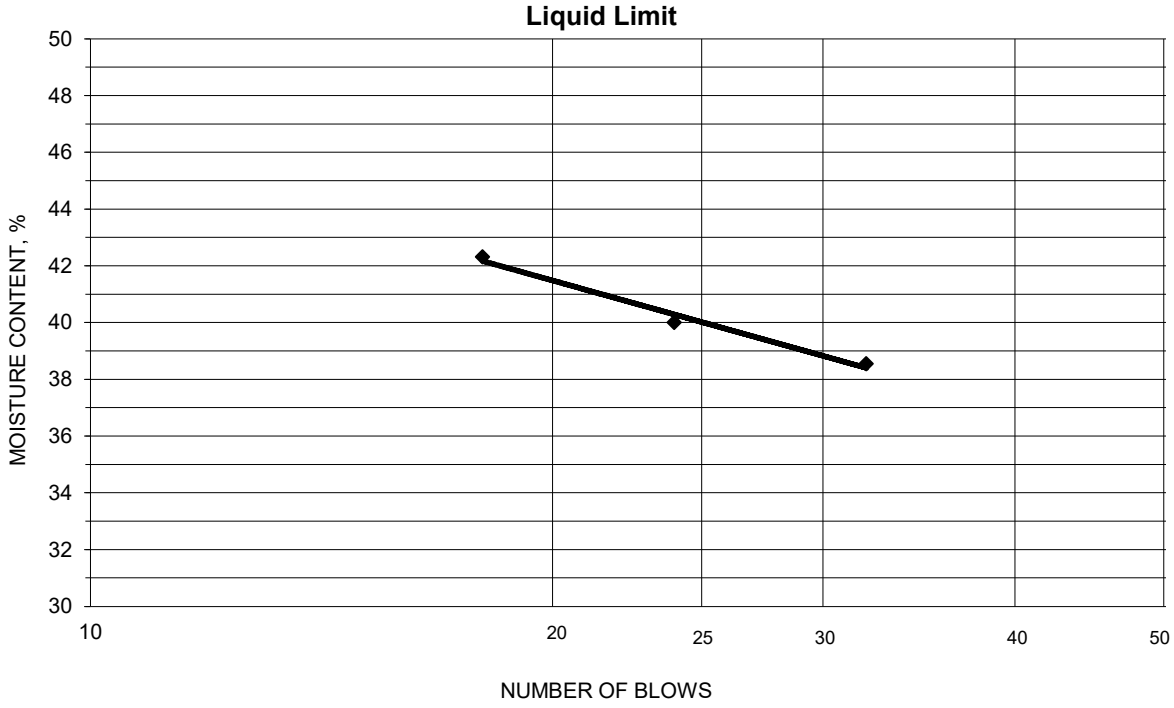
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	BH-HS-08, 3.0'-4.5', 4.5'-6.0'			Lab ID	80
				% + No. 40	6
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-23-2021
Test Date	06-30-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
17.64	15.89	11.35	32	38.5	
17.78	15.98	11.48	24	40.0	
17.76	15.86	11.37	18	42.3	40



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.60	16.80	11.01	31.1	31	9
17.11	15.56	10.56	31.0		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-08, 9.0'-10.5', 15.0'-16.5'	Lab ID	85
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	97.3
3/8"	9.5	97.3
No. 4	4.75	97.2
No. 10	2	96.3
No. 40	0.425	95.1
No. 200	0.075	89.7
	0.02	60.5
	0.005	31.3
	0.002	20.2
estimated	0.001	14.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	2.8	3.7
Coarse Sand	0.9	1.2
Medium Sand	1.2	---
Fine Sand	5.4	5.4
Silt	58.4	69.5
Clay	31.3	20.2

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	35
Plastic Limit:	22
Plasticity Index:	13
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Lean clay
AASHTO Classification:	A-6 (12)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-08, 9.0'-10.5', 15.0'-16.5'	Lab ID	85

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Soft
Tested By	DW
Test Date	06-29-2021
Date Received	06-23-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	97.3
3/8"	97.3
No. 4	97.2
No. 10	96.3

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

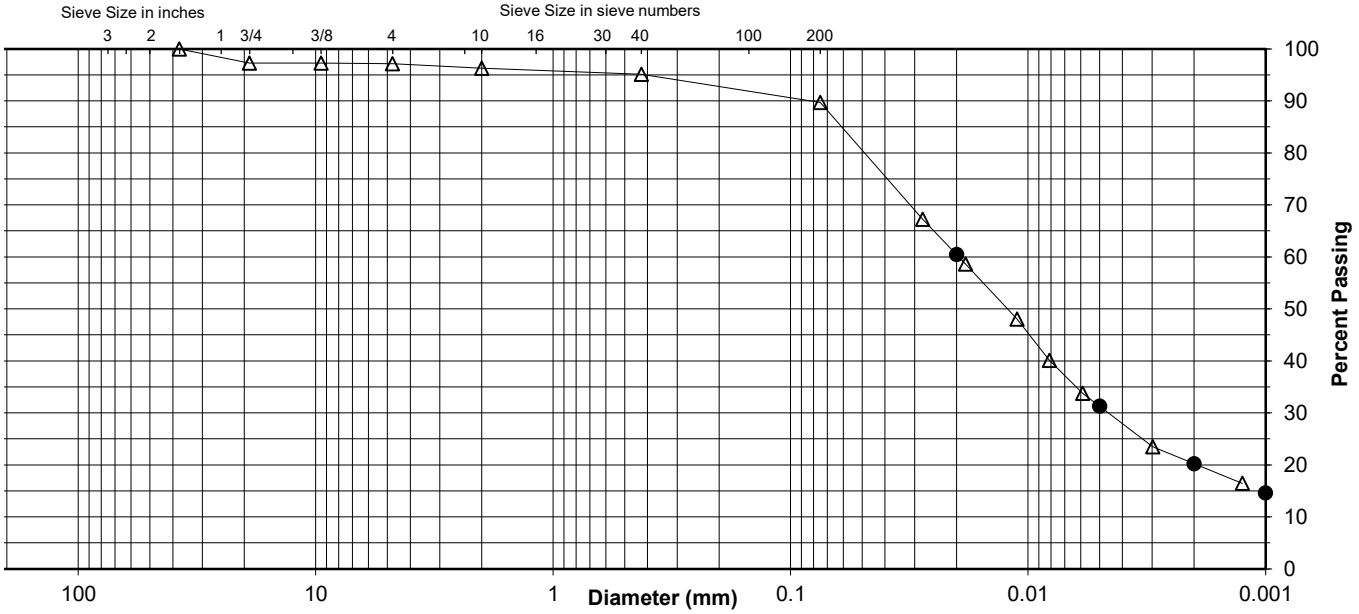
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	95.1
No. 200	89.7
0.02 mm	60.5
0.005 mm	31.3
0.002 mm	20.2
0.001 mm	14.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	2.7	0.1	0.9	1.2	5.4	58.4	31.3
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	3.7			1.2	5.4	69.5	20.2



Comments

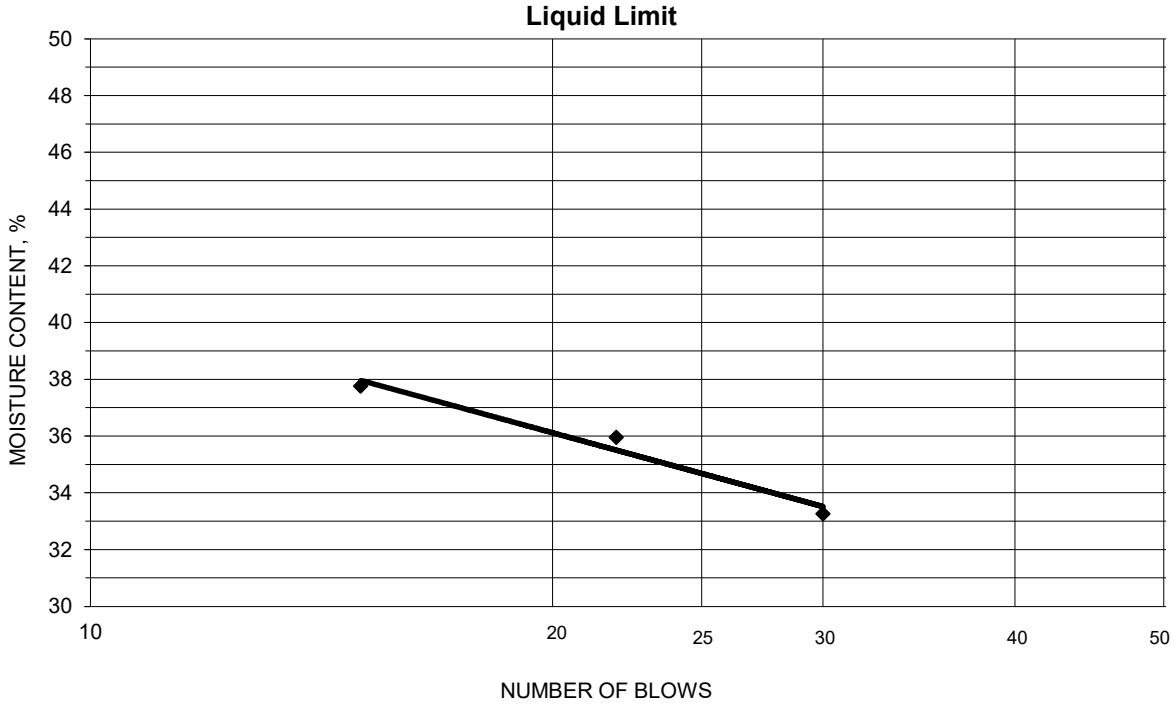
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	BH-HS-08, 9.0'-10.5', 15.0'-16.5'			Lab ID	85
				% + No. 40	5
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-23-2021
Test Date	06-30-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
10.60	9.03	4.31	30	33.3	
11.05	9.27	4.32	22	36.0	
12.25	10.06	4.26	15	37.8	35



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
11.60	10.27	4.29	22.2	22	13
11.13	9.87	4.32	22.7		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-09, 6.0'-7.5', 7.5'-9.0'	Lab ID	90
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	97.7
No. 4	4.75	85.0
No. 10	2	74.3
No. 40	0.425	67.7
No. 200	0.075	40.2
	0.02	26.2
	0.005	14.8
	0.002	9.4
estimated	0.001	6.9

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	15.0	25.7
Coarse Sand	10.7	6.6
Medium Sand	6.6	---
Fine Sand	27.5	27.5
Silt	25.4	30.8
Clay	14.8	9.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	27
Plastic Limit:	20
Plasticity Index:	7
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SC-SM
Group Name: Silty, clayey sand with gravel

AASHTO Classification: A-4 (0)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-09, 6.0'-7.5', 7.5'-9.0'	Lab ID	90

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	06-29-2021
Date Received	06-23-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	97.7
No. 4	85.0
No. 10	74.3

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

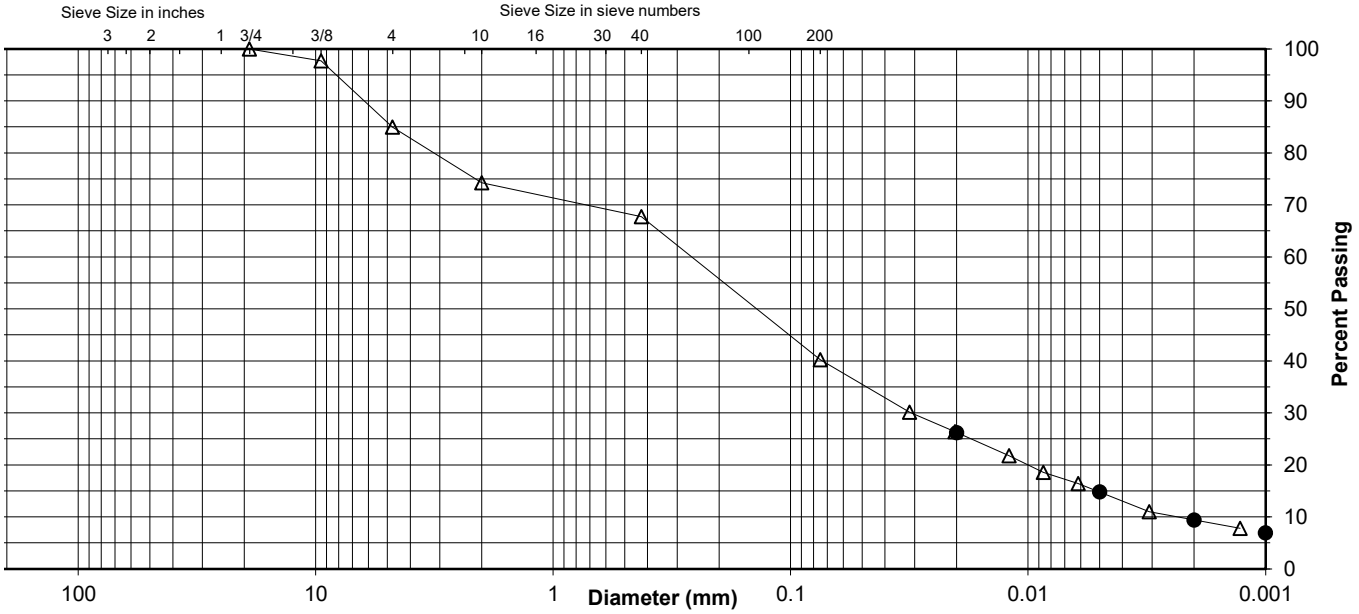
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	67.7
No. 200	40.2
0.02 mm	26.2
0.005 mm	14.8
0.002 mm	9.4
0.001 mm	6.9

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	15.0	10.7	6.6	27.5	25.4	14.8

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	25.7	6.6	27.5	30.8	9.4



Comments

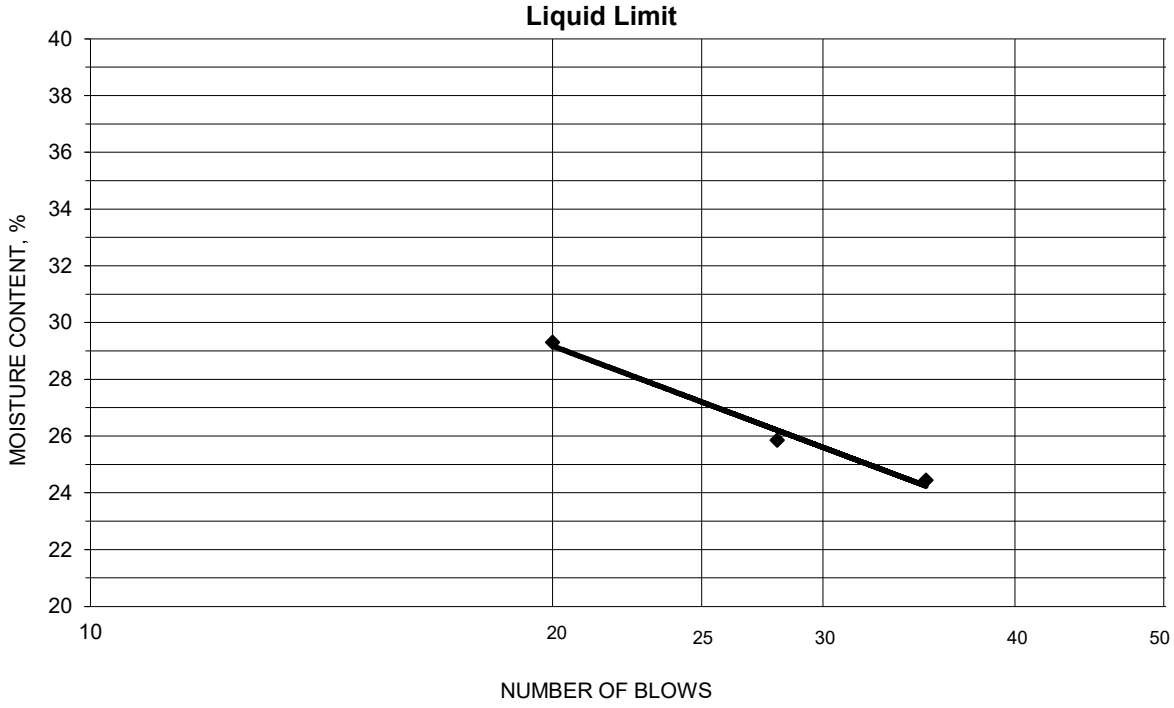
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration	Project No.	175518216
Source	BH-HS-09, 6.0'-7.5', 7.5'-9.0'	Lab ID	90
		% + No. 40	32
Tested By	JMB	Test Method	ASTM D 4318 Method A
Test Date	06-30-2021	Prepared	Dry
		Date Received	06-23-2021

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
9.97	8.86	4.32	35	24.4	
12.75	11.02	4.33	28	25.9	
11.05	9.52	4.30	20	29.3	27



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
11.40	10.21	4.33	20.2	20	7
11.61	10.37	4.33	20.5		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-10, 1.5'-3.0', 3.0'-4.5'	Lab ID	93
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	93.0
No. 4	4.75	83.5
No. 10	2	74.5
No. 40	0.425	71.1
No. 200	0.075	47.3
	0.02	29.3
	0.005	16.8
	0.002	12.1
estimated	0.001	9.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	16.5	25.5
Coarse Sand	9.0	3.4
Medium Sand	3.4	---
Fine Sand	23.8	23.8
Silt	30.5	35.2
Clay	16.8	12.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	24
Plastic Limit:	17
Plasticity Index:	7
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SC-SM

Group Name: Silty, clayey sand with gravel

AASHTO Classification: A-4 (0)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-10, 1.5'-3.0', 3.0'-4.5'	Lab ID	93

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Rounded and Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	06-29-2021
Date Received	06-23-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	93.0
No. 4	83.5
No. 10	74.5

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

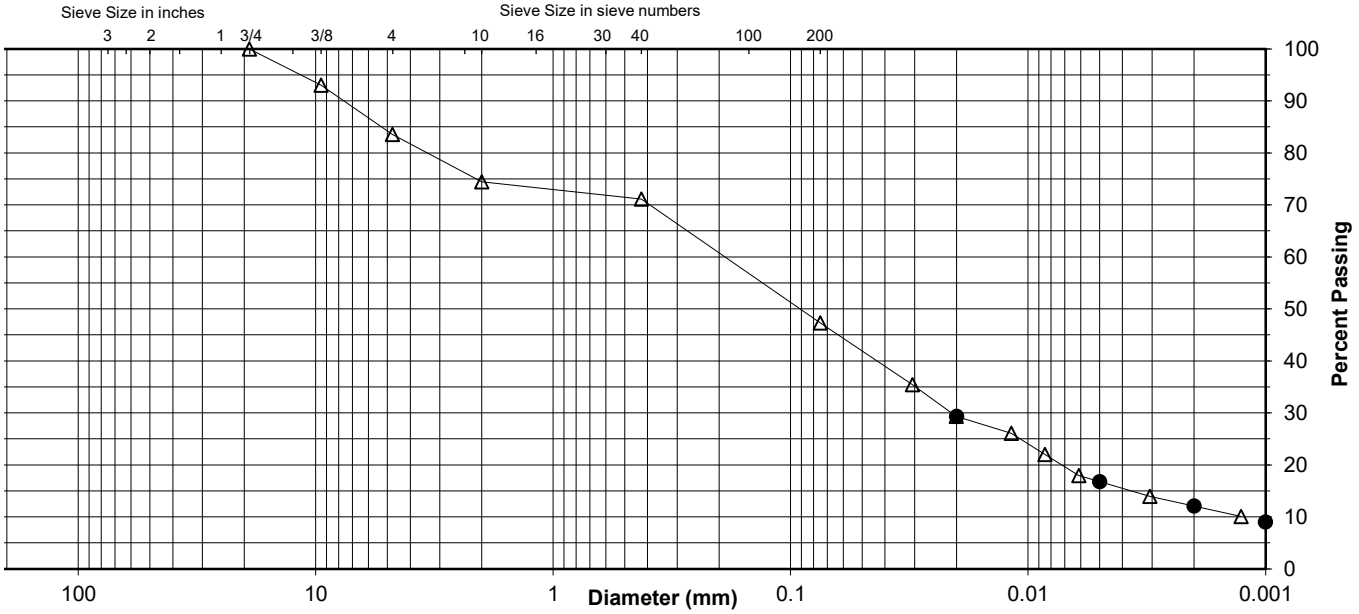
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	71.1
No. 200	47.3
0.02 mm	29.3
0.005 mm	16.8
0.002 mm	12.1
0.001 mm	9.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	16.5	9.0	3.4	23.8	30.5	16.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	25.5			3.4	23.8	35.2	12.1



Comments

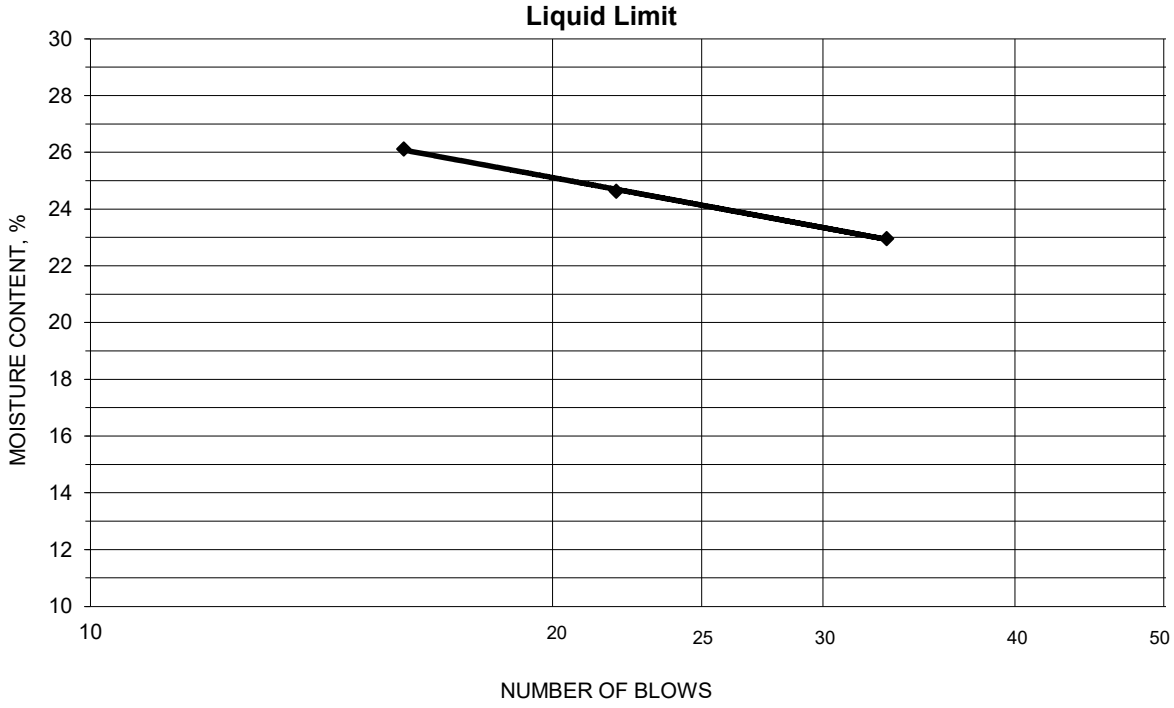
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	BH-HS-10, 1.5'-3.0', 3.0'-4.5'			Lab ID	93
				% + No. 40	29
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-23-2021
Test Date	06-30-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
18.66	17.31	11.43	33	23.0	
19.17	17.66	11.53	22	24.6	
19.03	17.45	11.40	16	26.1	24



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.70	17.64	11.43	17.1	17	7
18.07	17.08	11.55	17.9		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-11, 30.0'-31.5', 35.0'-36.5'	Lab ID	102
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	95.9
No. 4	4.75	86.8
No. 10	2	69.1
No. 40	0.425	56.1
No. 200	0.075	38.3
	0.02	24.3
	0.005	12.8
	0.002	8.3
estimated	0.001	6.0

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	13.2	30.9
Coarse Sand	17.7	13.0
Medium Sand	13.0	---
Fine Sand	17.8	17.8
Silt	25.5	30.0
Clay	12.8	8.3

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	27
Plastic Limit:	19
Plasticity Index:	8
Activity Index:	1.0

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC
Group Name:	Clayey sand
AASHTO Classification:	A-4 (0)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-HS-11, 30.0'-31.5', 35.0'-36.5'	Lab ID	102

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	06-29-2021
Date Received	06-23-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	95.9
No. 4	86.8
No. 10	69.1

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

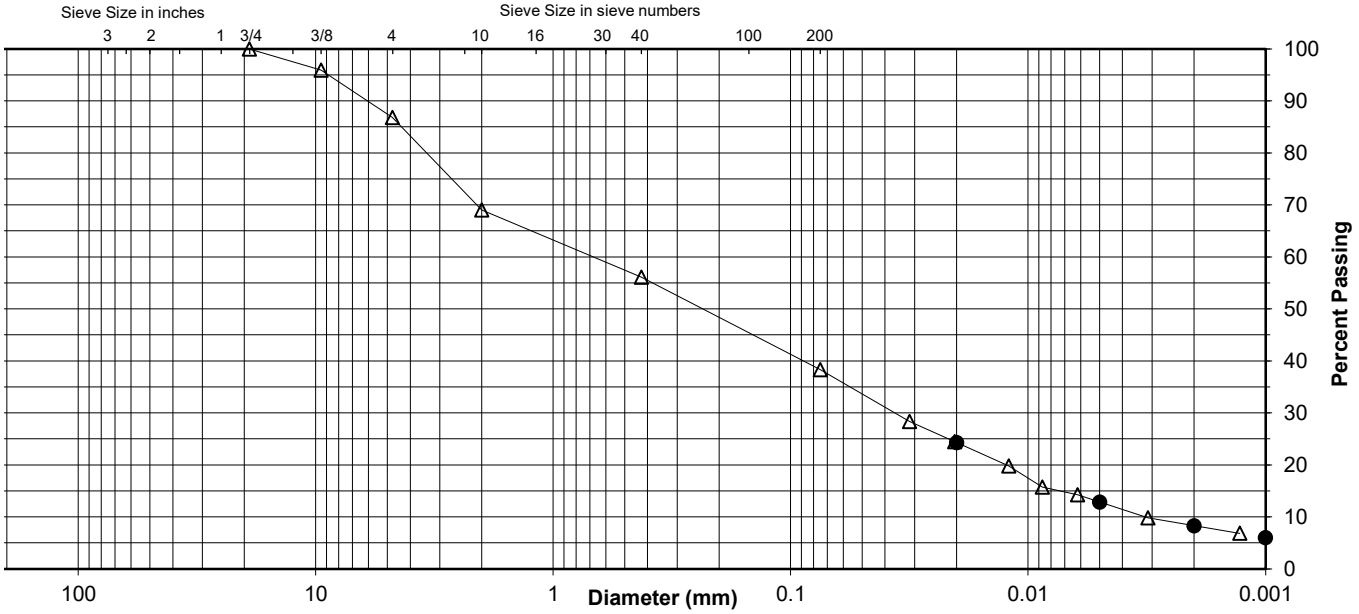
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	56.1
No. 200	38.3
0.02 mm	24.3
0.005 mm	12.8
0.002 mm	8.3
0.001 mm	6.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	13.2	17.7	13.0	17.8	25.5	12.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	30.9			13.0	17.8	30.0	8.3



Comments

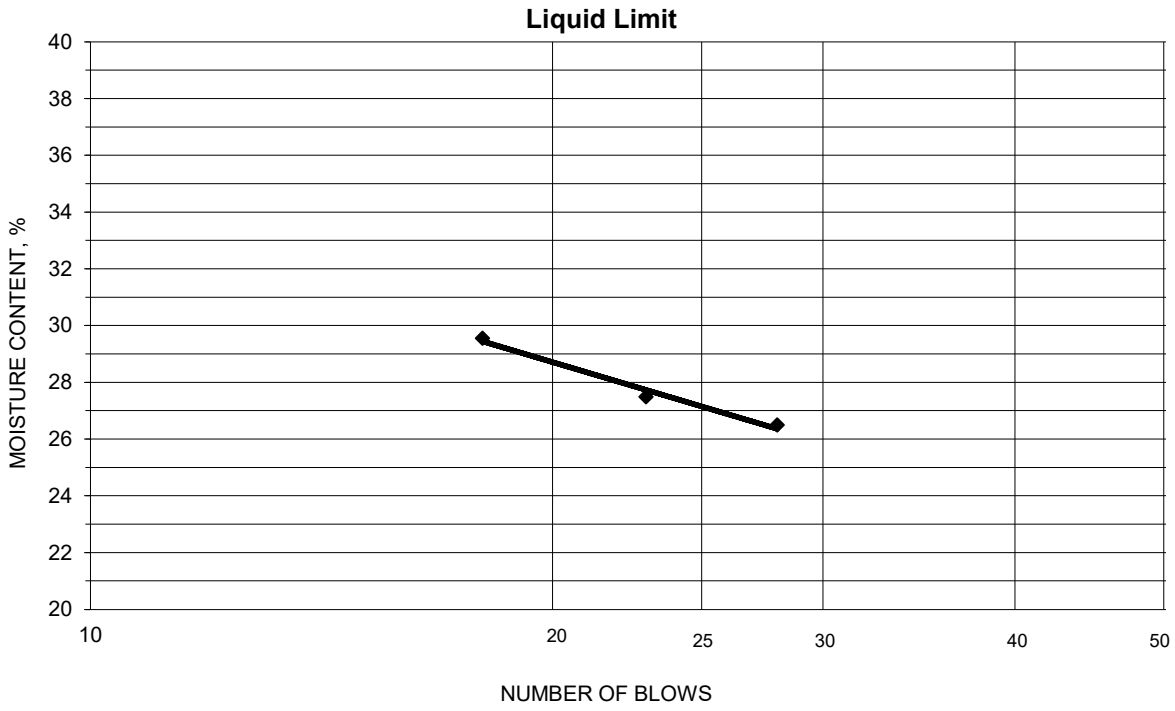
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration	Project No.	175518216
Source	BH-HS-11, 30.0'-31.5', 35.0'-36.5'	Lab ID	102
		% + No. 40	44
Tested By	JMB	Test Method	ASTM D 4318 Method A
Test Date	07-02-2021	Prepared	Dry
		Date Received	06-23-2021

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
10.64	9.31	4.29	28	26.5	
10.57	9.22	4.31	23	27.5	
12.41	10.56	4.30	18	29.6	27



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
11.89	10.69	4.31	18.8	19	8
11.27	10.16	4.31	19.0		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	PZ-HS-01, 1.5'-2.8', 3.0'-4.5'	Lab ID	106
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	93.0
3/8"	9.5	83.1
No. 4	4.75	69.0
No. 10	2	57.6
No. 40	0.425	48.8
No. 200	0.075	43.5
	0.02	30.6
	0.005	14.9
	0.002	9.3
estimated	0.001	5.5

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	31.0	42.4
Coarse Sand	11.4	8.8
Medium Sand	8.8	---
Fine Sand	5.3	5.3
Silt	28.6	34.2
Clay	14.9	9.3

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	33
Plastic Limit:	21
Plasticity Index:	12
Activity Index:	1.3

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: GC
Group Name: Clayey gravel with sand

AASHTO Classification: A-6 (2)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	PZ-HS-01, 1.5'-2.8', 3.0'-4.5'	Lab ID	106

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Soft
Tested By	DW
Test Date	06-29-2021
Date Received	06-23-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	93.0
3/8"	83.1
No. 4	69.0
No. 10	57.6

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

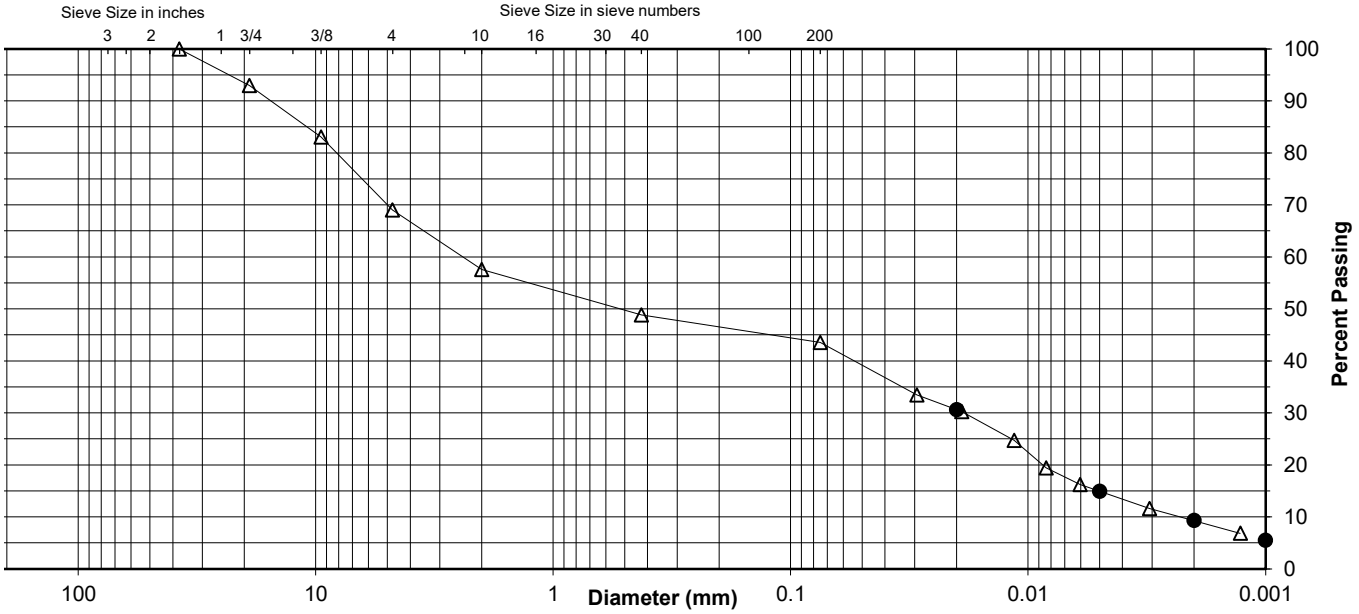
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	48.8
No. 200	43.5
0.02 mm	30.6
0.005 mm	14.9
0.002 mm	9.3
0.001 mm	5.5

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	7.0	24.0	11.4	8.8	5.3	28.6	14.9

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	42.4	8.8	5.3	34.2	9.3



Comments

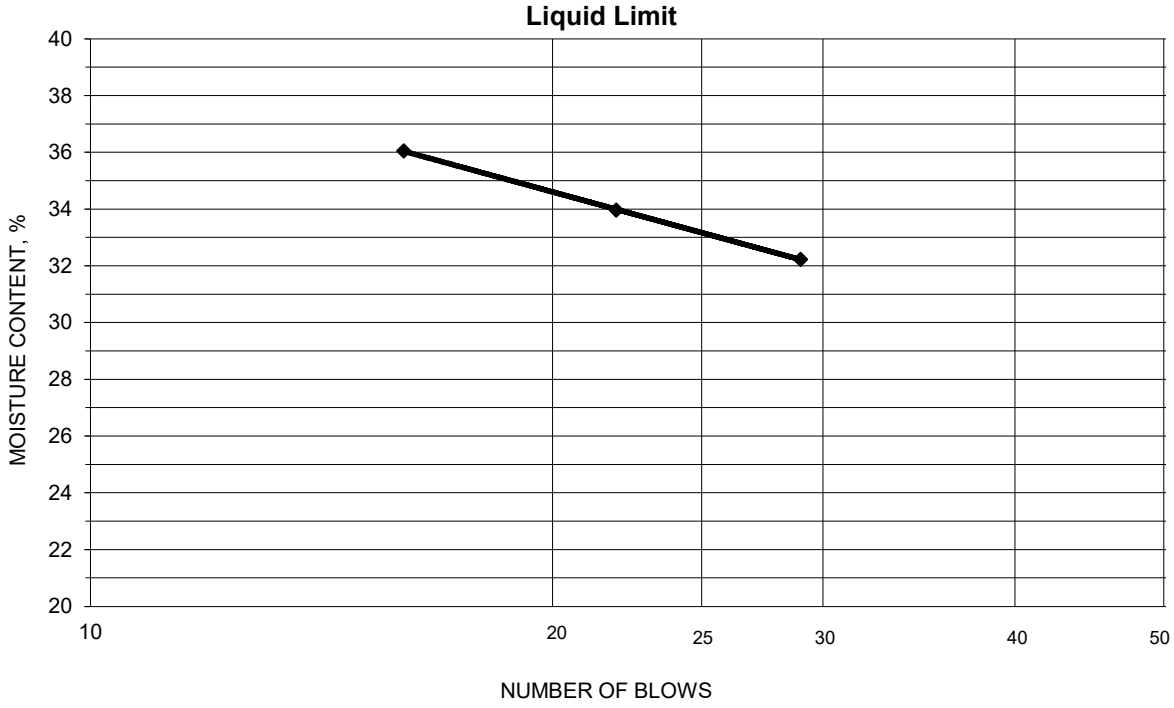
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration	Project No.	175518216
Source	PZ-HS-01, 1.5'-2.8', 3.0'-4.5'	Lab ID	106
		% + No. 40	51
Tested By	JMB	Test Method	ASTM D 4318 Method A
Test Date	07-02-2021	Prepared	Dry
		Date Received	06-23-2021

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
10.71	9.15	4.31	29	32.2	
10.70	9.09	4.35	22	34.0	
11.81	9.82	4.30	16	36.1	33



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
12.00	10.64	4.35	21.6	21	12
11.32	10.11	4.34	21.0		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	PZ-HS-02, 6.0'-7.5', 7.5'-9.0'	Lab ID	115
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	97.4
3/8"	9.5	97.1
No. 4	4.75	96.1
No. 10	2	89.9
No. 40	0.425	80.1
No. 200	0.075	64.7
	0.02	50.2
	0.005	34.5
	0.002	25.6
estimated	0.001	19.2

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	3.9	10.1
Coarse Sand	6.2	9.8
Medium Sand	9.8	---
Fine Sand	15.4	15.4
Silt	30.2	39.1
Clay	34.5	25.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	33
Plastic Limit:	17
Plasticity Index:	16
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (8)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	PZ-HS-02, 6.0'-7.5', 7.5'-9.0'	Lab ID	115

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Rounded and Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	06-29-2021
Date Received	06-23-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	97.4
3/8"	97.1
No. 4	96.1
No. 10	89.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

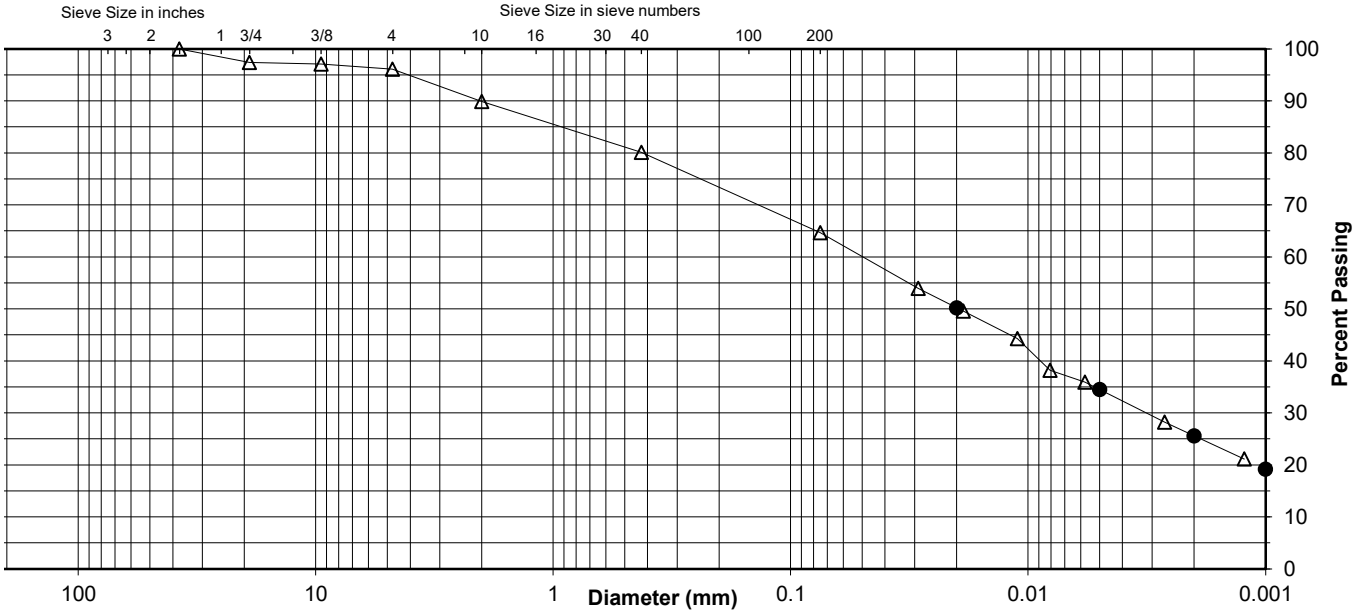
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	80.1
No. 200	64.7
0.02 mm	50.2
0.005 mm	34.5
0.002 mm	25.6
0.001 mm	19.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	2.6	1.3	6.2	9.8	15.4	30.2	34.5
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	10.1			9.8	15.4	39.1	25.6



Comments

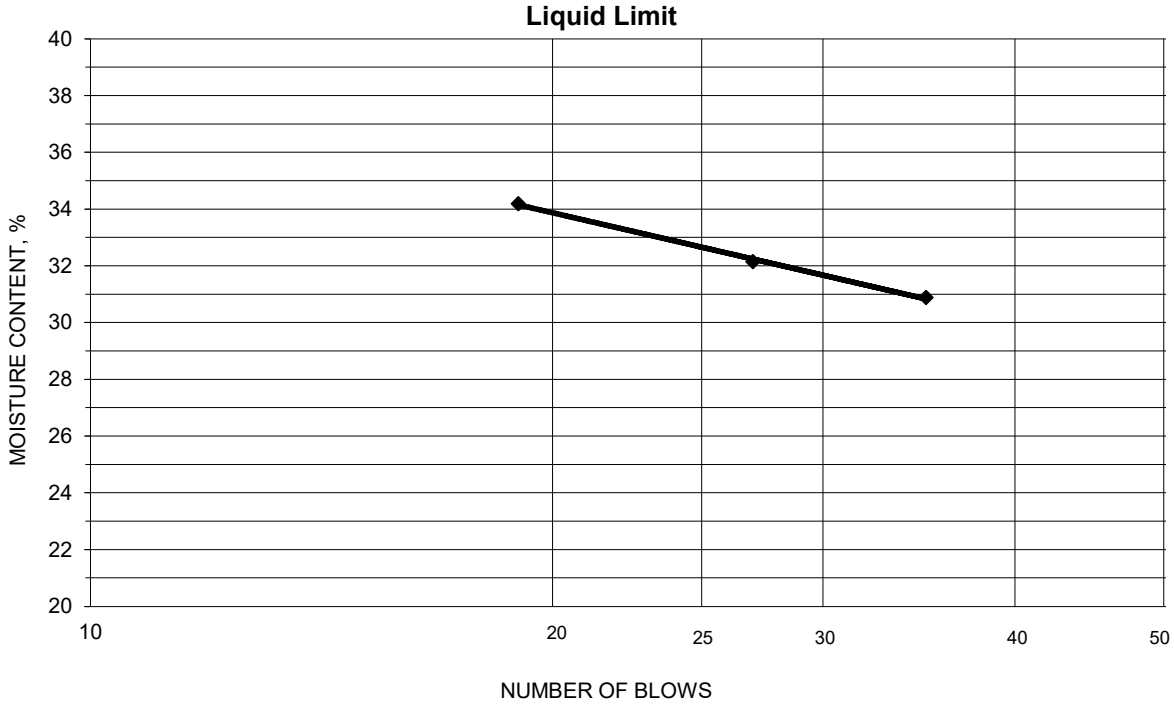
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	PZ-HS-02, 6.0'-7.5', 7.5'-9.0'			Lab ID	115
				% + No. 40	20
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-23-2021
Test Date	07-06-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
11.06	9.46	4.28	35	30.9	
10.22	8.78	4.30	27	32.1	
11.10	9.37	4.31	19	34.2	33



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
11.26	10.27	4.34	16.7	17	16
10.64	9.73	4.30	16.8		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	PZ-HS-03, 1.5'-1.9', 3.0'-4.3'	Lab ID	119
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	95.3
3/8"	9.5	84.1
No. 4	4.75	77.7
No. 10	2	63.0
No. 40	0.425	44.1
No. 200	0.075	33.4
	0.02	21.9
	0.005	10.8
	0.002	6.8
estimated	0.001	3.9

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	22.3	37.0
Coarse Sand	14.7	18.9
Medium Sand	18.9	---
Fine Sand	10.7	10.7
Silt	22.6	26.6
Clay	10.8	6.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	24
Plastic Limit:	16
Plasticity Index:	8
Activity Index:	1.2

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC
Group Name:	Clayey sand with gravel
AASHTO Classification:	A-2-4 (0)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	PZ-HS-03, 1.5'-1.9', 3.0'-4.3'	Lab ID	119

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	06-30-2021
Date Received	06-23-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	95.3
3/8"	84.1
No. 4	77.7
No. 10	63.0

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

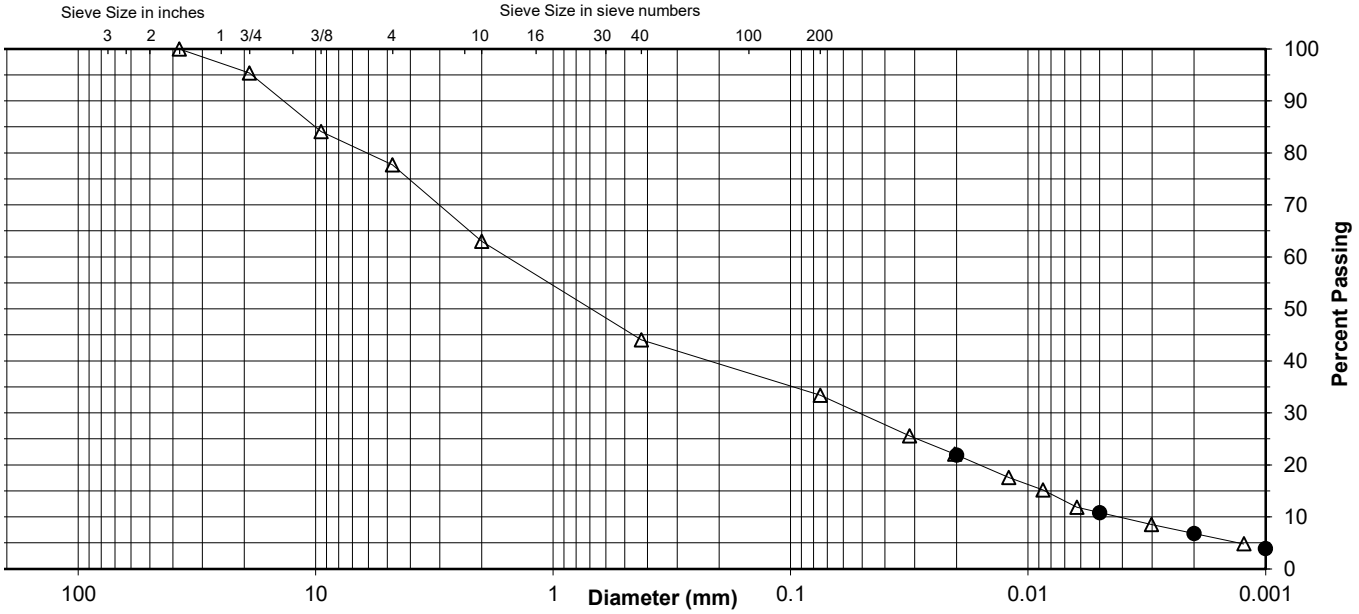
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	44.1
No. 200	33.4
0.02 mm	21.9
0.005 mm	10.8
0.002 mm	6.8
0.001 mm	3.9

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	4.7	17.6	14.7	18.9	10.7	22.6	10.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	37.0			18.9	10.7	26.6	6.8



Comments

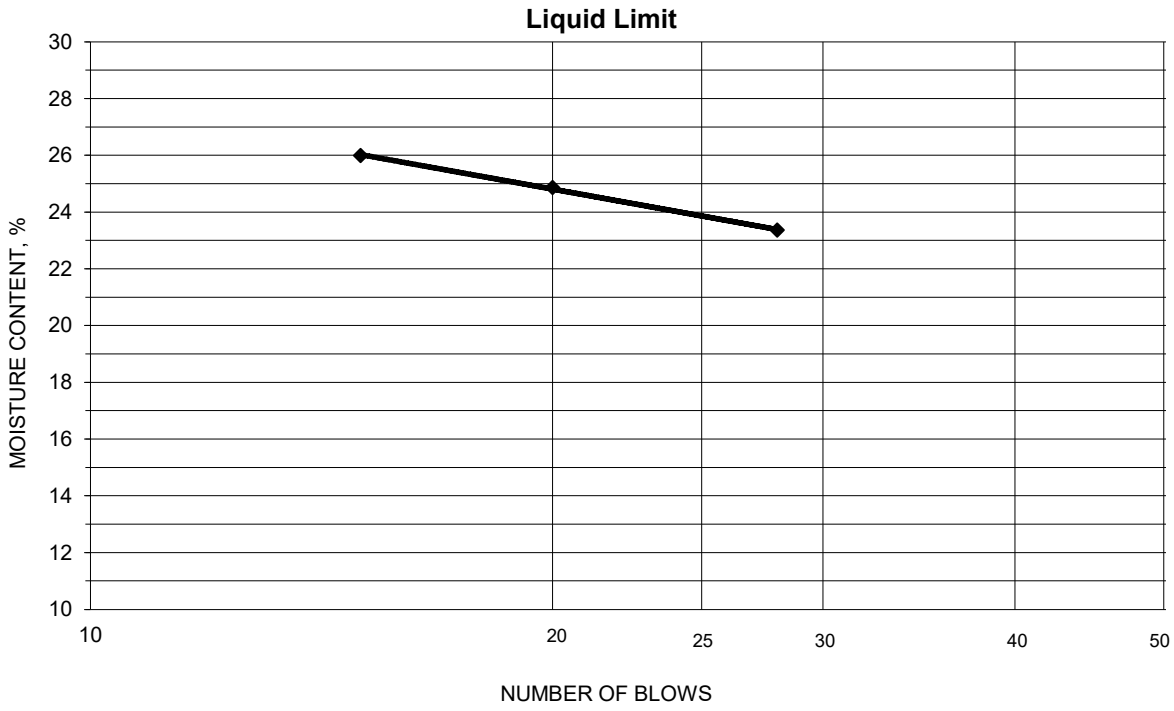
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	PZ-HS-03, 1.5'-1.9', 3.0'-4.3'			Lab ID	119
				% + No. 40	56
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-23-2021
Test Date	07-06-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
19.89	18.50	12.55	28	23.4	
19.55	18.21	12.82	20	24.9	
21.31	19.55	12.78	15	26.0	24



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.69	18.67	12.48	16.5	16	8
18.58	17.78	12.92	16.5		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	PZ-HS-03, 7.5'-9.0', 9.0'-9.5'	Lab ID	123
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	87.2
No. 4	4.75	75.5
No. 10	2	55.6
No. 40	0.425	37.3
No. 200	0.075	28.0
	0.02	18.9
	0.005	9.2
	0.002	5.8
estimated	0.001	3.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	24.5	44.4
Coarse Sand	19.9	18.3
Medium Sand	18.3	---
Fine Sand	9.3	9.3
Silt	18.8	22.2
Clay	9.2	5.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	25
Plastic Limit:	17
Plasticity Index:	8
Activity Index:	1.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC
Group Name:	Clayey sand with gravel
AASHTO Classification:	A-2-4 (0)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	PZ-HS-03, 7.5'-9.0', 9.0'-9.5'	Lab ID	123

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	06-30-2021
Date Received	06-23-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	87.2
No. 4	75.5
No. 10	55.6

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

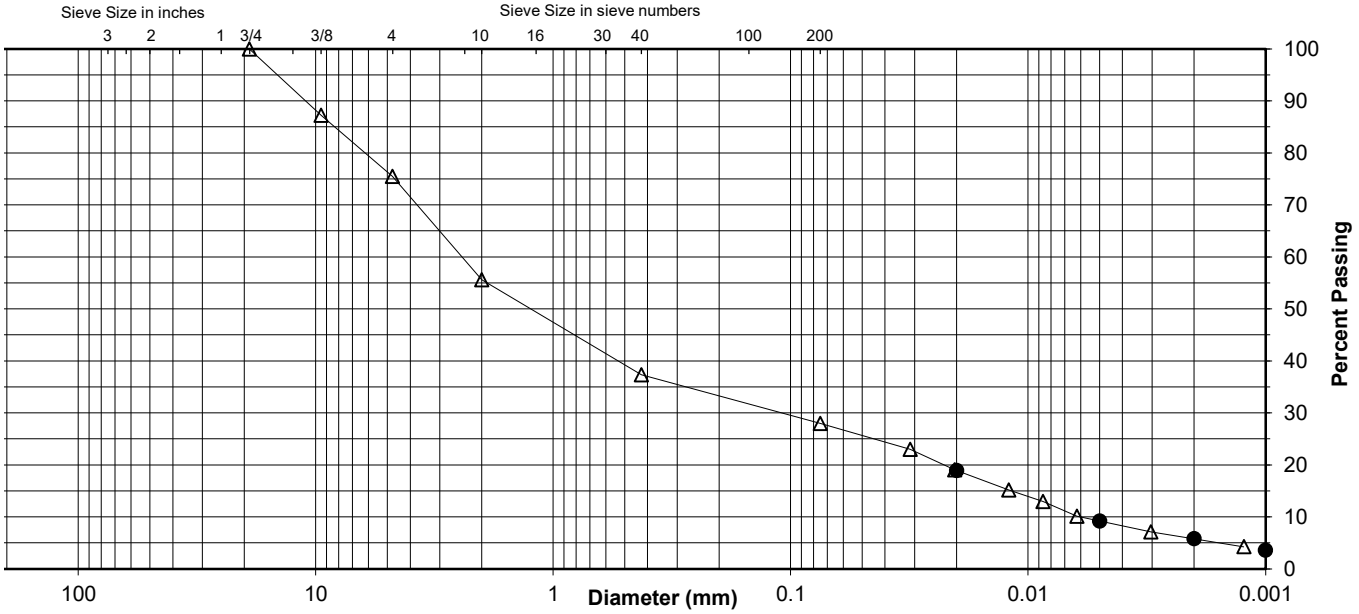
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	37.3
No. 200	28.0
0.02 mm	18.9
0.005 mm	9.2
0.002 mm	5.8
0.001 mm	3.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	24.5	19.9	18.3	9.3	18.8	9.2
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	44.4			18.3	9.3	22.2	5.8



Comments

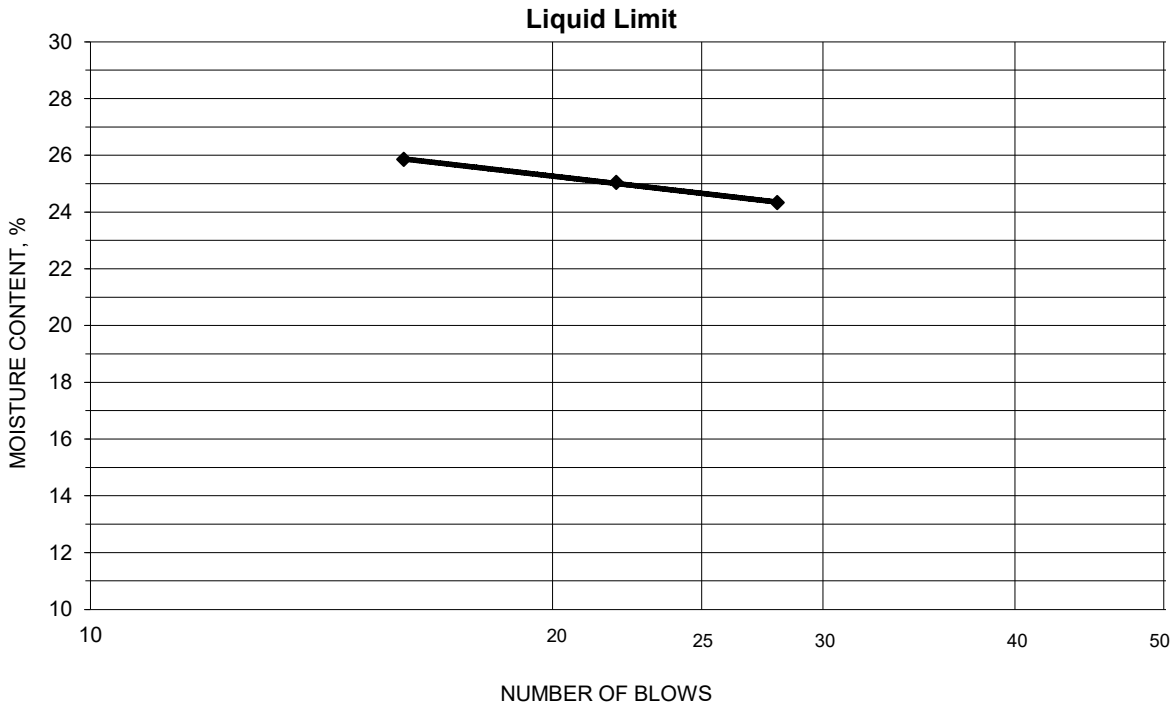
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	PZ-HS-03, 7.5'-9.0', 9.0'-9.5'			Lab ID	123
				% + No. 40	63
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-23-2021
Test Date	07-02-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
17.02	15.83	10.94	28	24.3	
18.39	16.86	10.75	22	25.0	
19.33	17.60	10.91	16	25.9	25



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.04	17.04	11.18	17.1	17	8
16.69	15.85	10.93	17.1		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	PZ-HS-04, 4.5'-6.0'	Lab ID	128
Sample Type	SPT	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 17.4

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.4
No. 10	2	96.9
No. 40	0.425	95.3
No. 200	0.075	79.0
	0.02	39.5
	0.005	20.5
	0.002	11.4
estimated	0.001	6.3

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.6	3.1
Coarse Sand	2.5	1.6
Medium Sand	1.6	---
Fine Sand	16.3	16.3
Silt	58.5	67.6
Clay	20.5	11.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	27
Plastic Limit:	20
Plasticity Index:	7
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL-ML

Group Name: Silty clay with sand

AASHTO Classification: A-4 (4)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	PZ-HS-04, 4.5'-6.0'	Lab ID	128

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	07-01-2021
Date Received	06-23-2021

Maximum Particle size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.4
No. 10	96.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

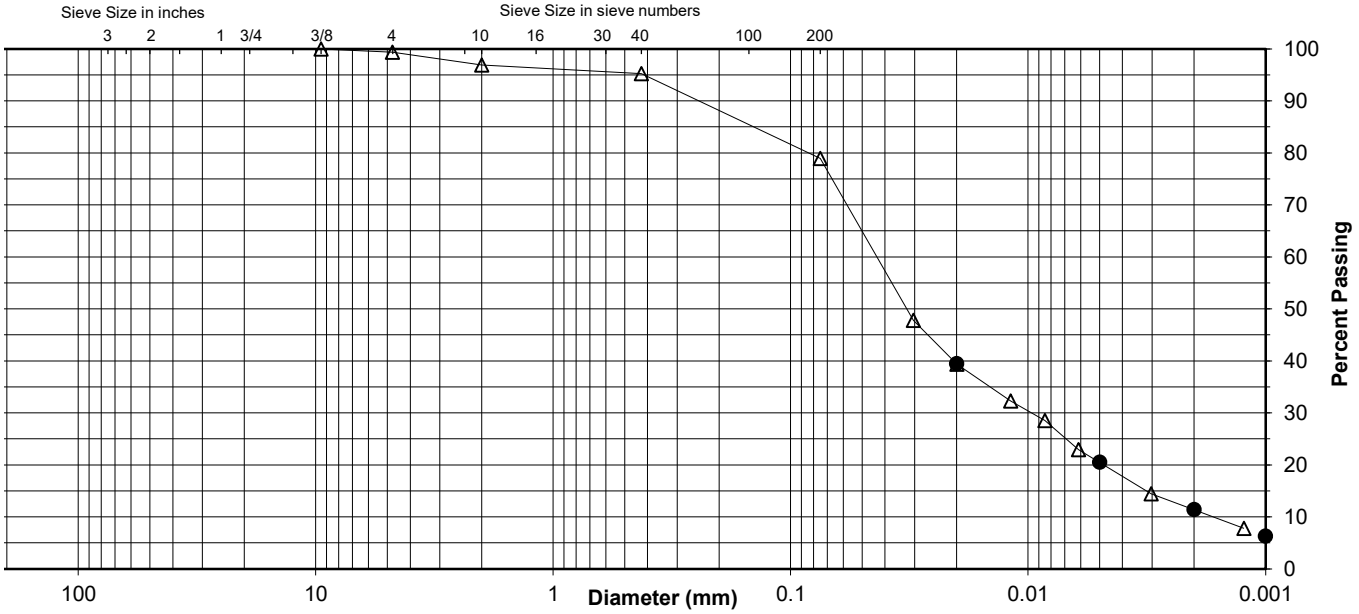
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	95.3
No. 200	79.0
0.02 mm	39.5
0.005 mm	20.5
0.002 mm	11.4
0.001 mm	6.3

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.6	2.5	1.6	16.3	58.5	20.5
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	3.1			1.6	16.3	67.6	11.4



Comments

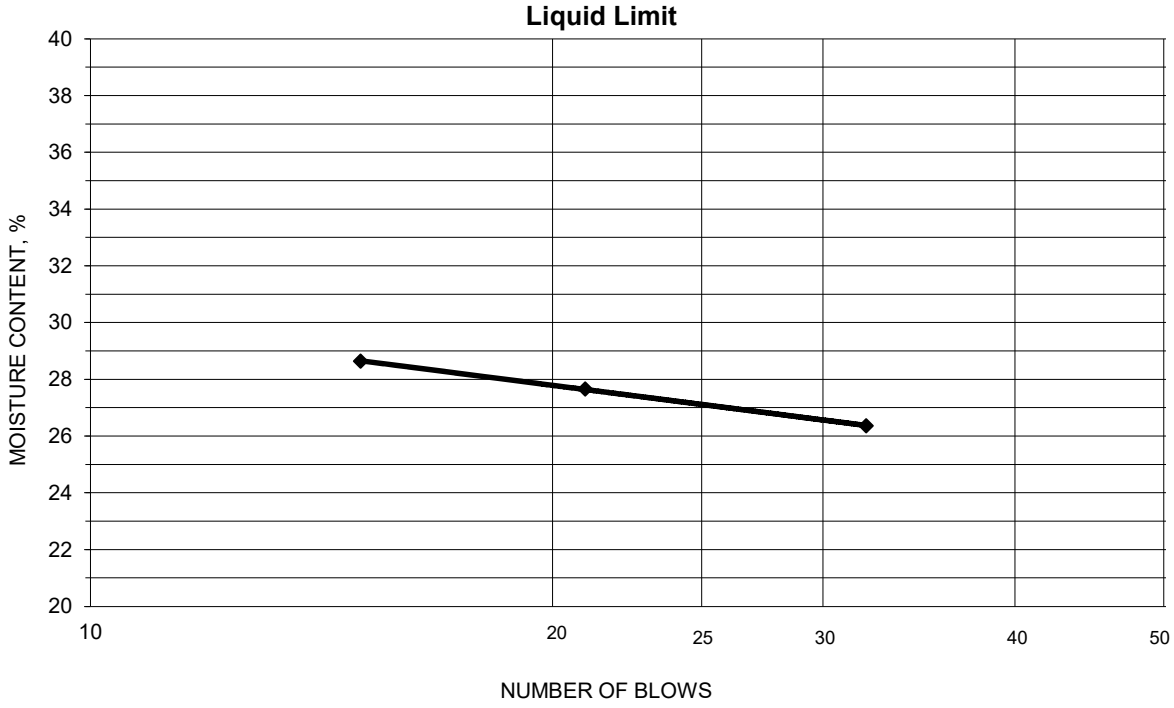
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	PZ-HS-04, 4.5'-6.0'			Lab ID	128
				% + No. 40	5
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-23-2021
Test Date	07-06-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
10.97	9.57	4.26	32	26.4	
13.65	11.62	4.28	21	27.7	
11.78	10.11	4.28	15	28.6	27



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.14	17.03	11.44	19.9	20	7
16.85	15.90	11.13	19.9		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	PZ-HS-05, 1.5'-3.0', 3.0'-4.5'	Lab ID	130
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	95.9
No. 4	4.75	88.0
No. 10	2	77.4
No. 40	0.425	72.2
No. 200	0.075	62.5
	0.02	39.1
	0.005	22.2
	0.002	14.8
estimated	0.001	10.5

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	12.0	22.6
Coarse Sand	10.6	5.2
Medium Sand	5.2	---
Fine Sand	9.7	9.7
Silt	40.3	47.7
Clay	22.2	14.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	32
Plastic Limit:	21
Plasticity Index:	11
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (5)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	PZ-HS-05, 1.5'-3.0', 3.0'-4.5'	Lab ID	130

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	07-01-2021
Date Received	06-23-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	95.9
No. 4	88.0
No. 10	77.4

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

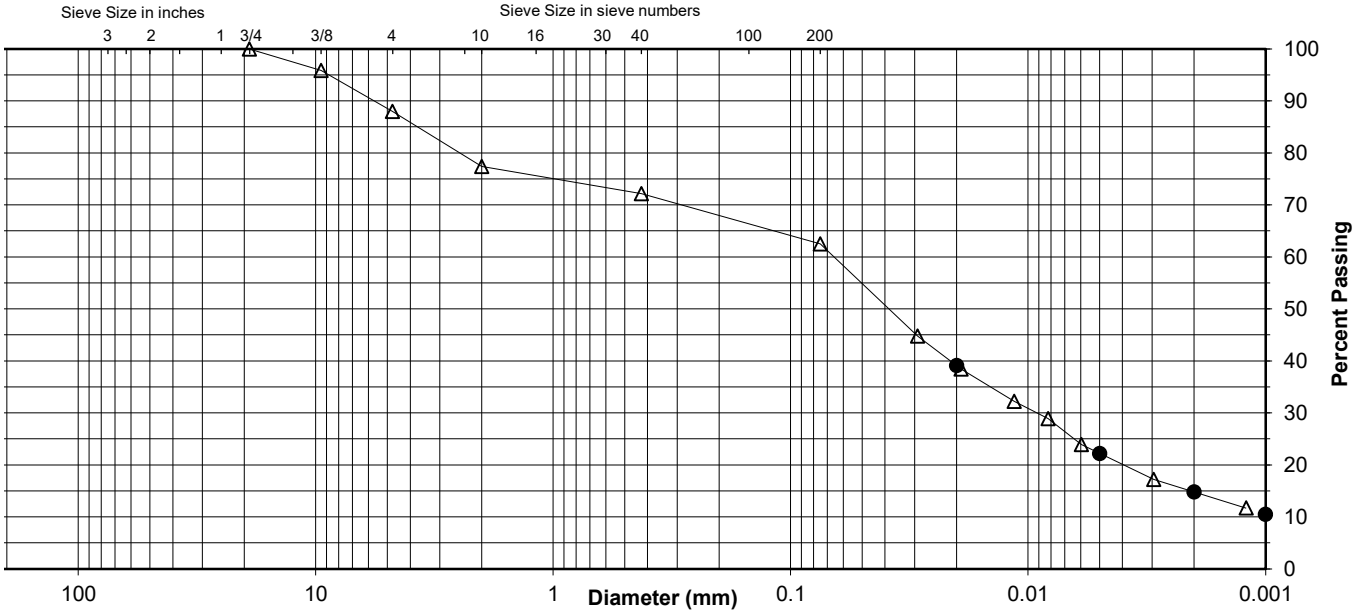
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	72.2
No. 200	62.5
0.02 mm	39.1
0.005 mm	22.2
0.002 mm	14.8
0.001 mm	10.5

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	12.0	10.6	5.2	9.7	40.3	22.2
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	22.6			5.2	9.7	47.7	14.8



Comments

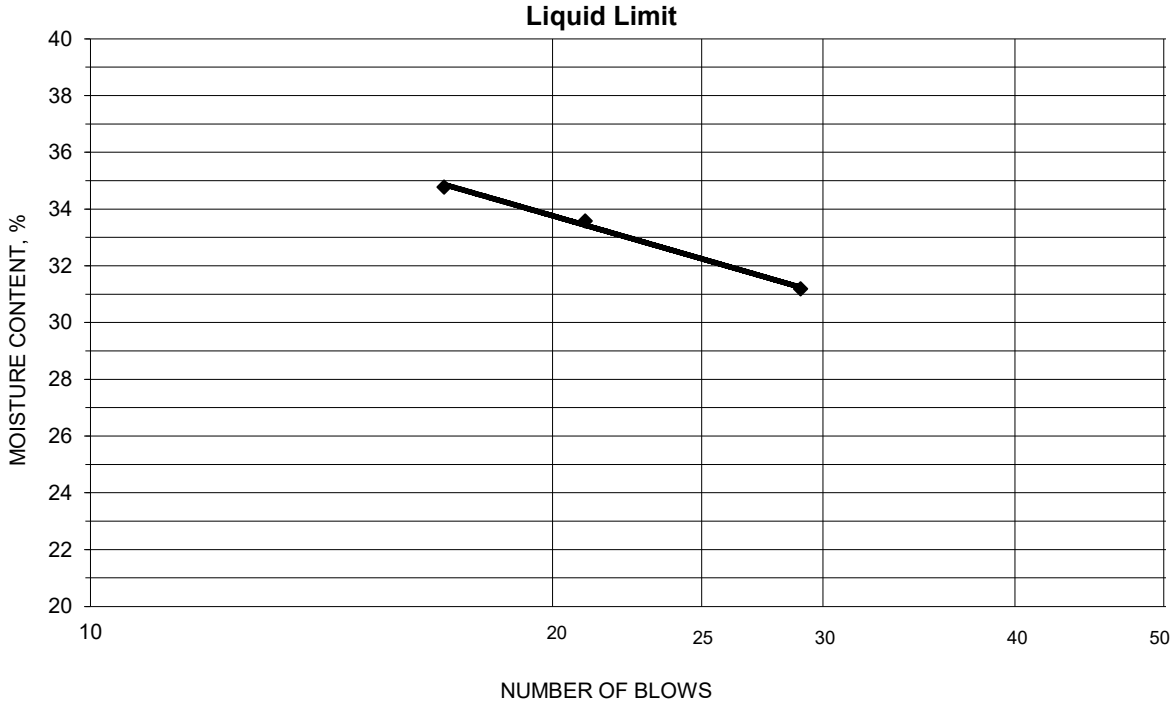
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	PZ-HS-05, 1.5'-3.0', 3.0'-4.5'			Lab ID	130
				% + No. 40	28
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-23-2021
Test Date	07-06-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
17.19	15.69	10.88	29	31.2	
18.13	16.35	11.05	21	33.6	
18.94	17.01	11.46	17	34.8	32



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.58	16.42	10.79	20.6	21	11
16.91	15.91	11.17	21.1		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	PZ-HS-06, 6.0'-7.5', 7.5'-8.3'	Lab ID	140
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	98.7
3/8"	9.5	94.7
No. 4	4.75	86.9
No. 10	2	70.9
No. 40	0.425	61.6
No. 200	0.075	47.2
	0.02	30.9
	0.005	18.3
	0.002	12.3
estimated	0.001	8.5

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	13.1	29.1
Coarse Sand	16.0	9.3
Medium Sand	9.3	---
Fine Sand	14.4	14.4
Silt	28.9	34.9
Clay	18.3	12.3

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	32
Plastic Limit:	21
Plasticity Index:	11
Activity Index:	0.9

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC
Group Name:	Clayey sand
AASHTO Classification:	A-6 (2)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	PZ-HS-06, 6.0'-7.5', 7.5'-8.3'	Lab ID	140

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	07-01-2021
Date Received	06-23-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	98.7
3/8"	94.7
No. 4	86.9
No. 10	70.9

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

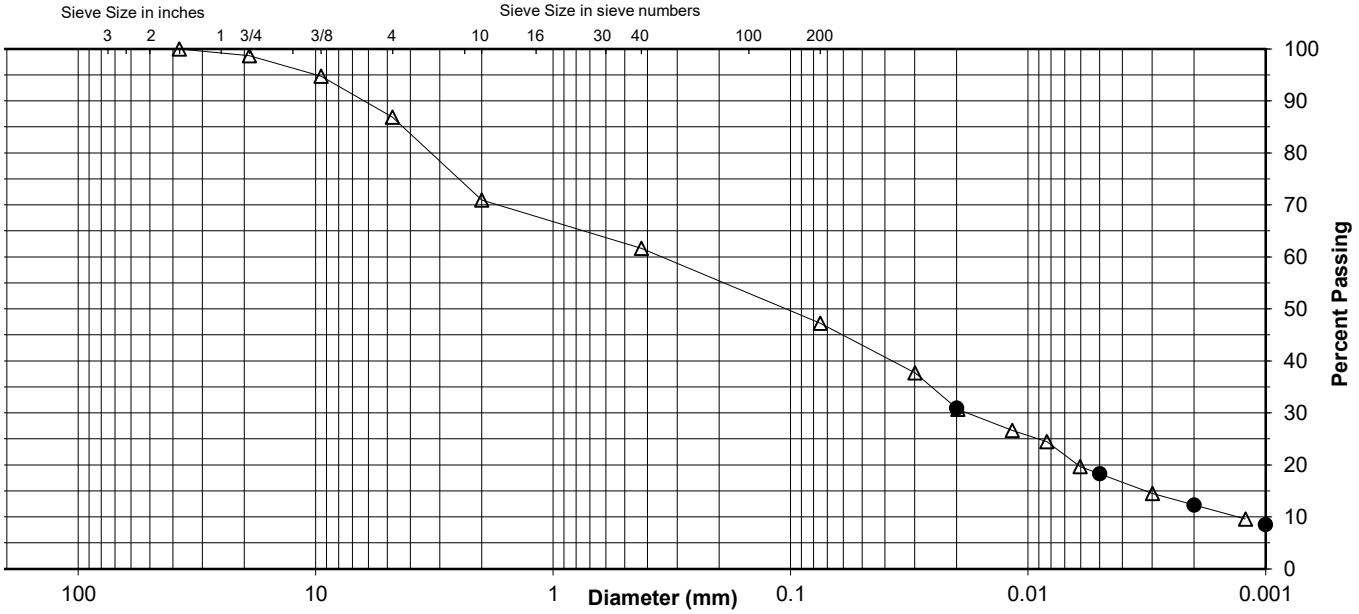
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	61.6
No. 200	47.2
0.02 mm	30.9
0.005 mm	18.3
0.002 mm	12.3
0.001 mm	8.5

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	1.3	11.8	16.0	9.3	14.4	28.9	18.3
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	29.1			9.3	14.4	34.9	12.3



Comments

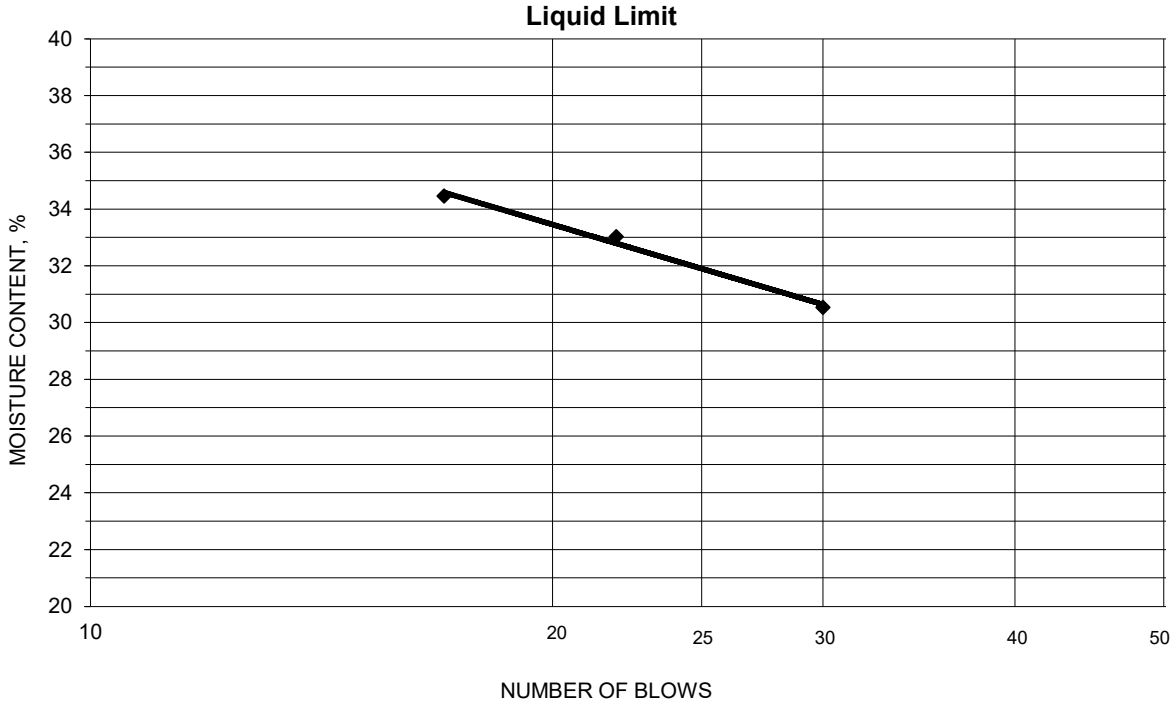
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	PZ-HS-06, 6.0'-7.5', 7.5'-8.3'			Lab ID	140
				% + No. 40	38
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-23-2021
Test Date	07-06-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
12.71	10.75	4.33	30	30.5	
10.02	8.59	4.26	22	33.0	
11.51	9.67	4.33	17	34.5	32



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
11.08	9.93	4.32	20.5	21	11
11.45	10.22	4.28	20.7		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-JM-03, 1.5'-3.0', 3.0'-4.5', 4.5'-6.0'	Lab ID	155
Sample Type	SPT Composite	Date Received	6-23-21
		Date Reported	7-9-21

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.9
No. 4	4.75	99.6
No. 10	2	96.8
No. 40	0.425	94.5
No. 200	0.075	78.5
	0.02	50.3
	0.005	28.7
	0.002	20.9
estimated	0.001	17.3

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.4	3.2
Coarse Sand	2.8	2.3
Medium Sand	2.3	---
Fine Sand	16.0	16.0
Silt	49.8	57.6
Clay	28.7	20.9

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	28
Plastic Limit:	19
Plasticity Index:	9
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL
Group Name: Lean clay with sand

AASHTO Classification: A-4 (5)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	BH-JM-03, 1.5'-3.0', 3.0'-4.5', 4.5'-6.0'	Lab ID	155

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	07-02-2021
Date Received	06-23-2021

Maximum Particle size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	99.9
No. 4	99.6
No. 10	96.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

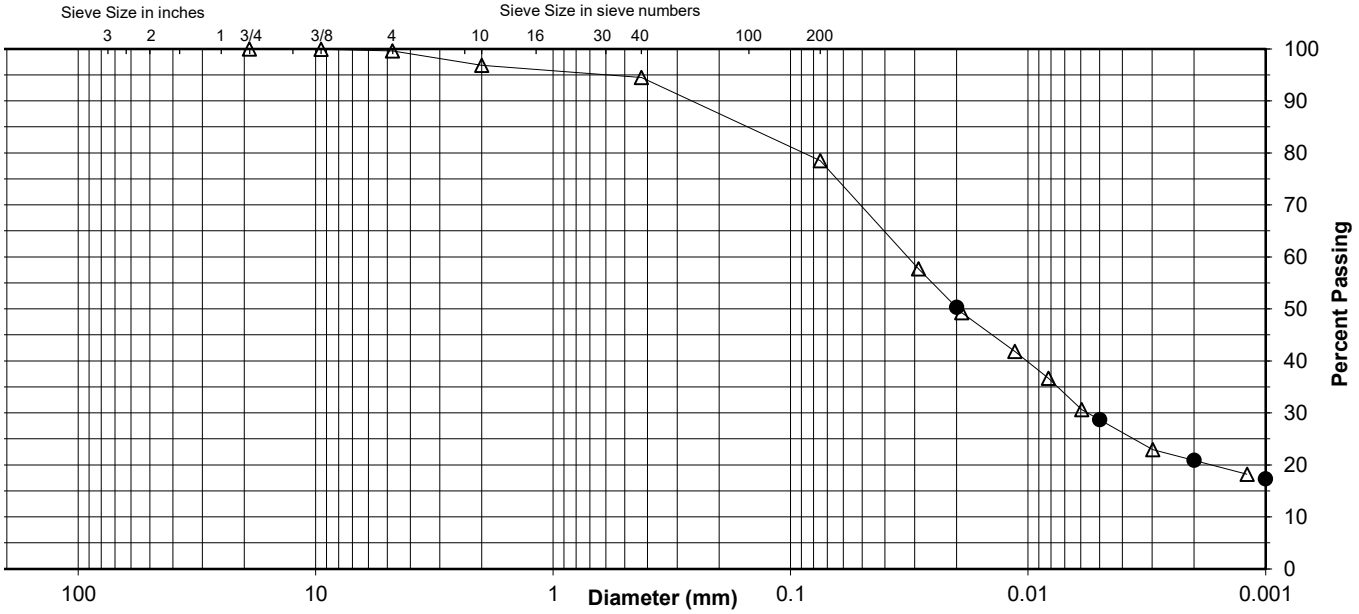
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	94.5
No. 200	78.5
0.02 mm	50.3
0.005 mm	28.7
0.002 mm	20.9
0.001 mm	17.3

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	0.4	2.8	2.3	16.0	49.8	28.7

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	3.2	2.3	16.0	57.6	20.9



Comments

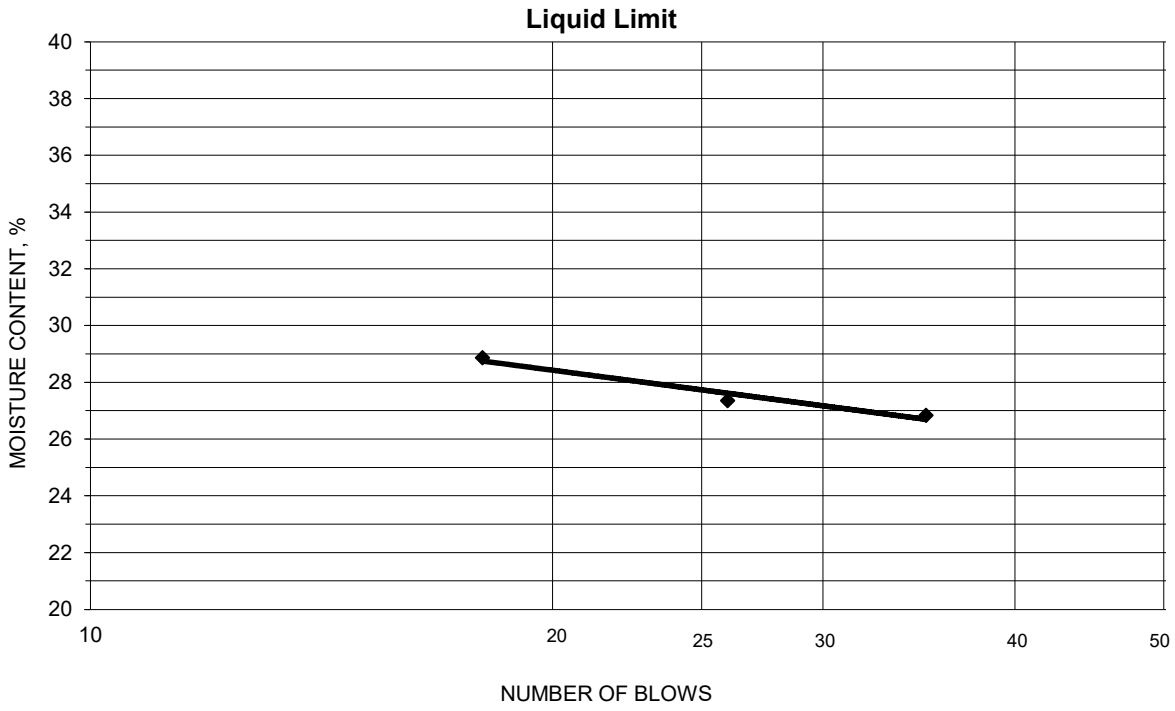
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	BH-JM-03, 1.5'-3.0', 3.0'-4.5', 4.5'-6.0'			Lab ID	155
				% + No. 40	6
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-23-2021
Test Date	07-06-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
18.31	16.85	11.41	35	26.8	
20.22	18.16	10.63	26	27.4	
18.51	16.83	11.01	18	28.9	28



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.58	16.50	10.83	19.0	19	9
17.94	16.85	11.17	19.2		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	TP-HS-01, 2.0'-3.0'	Lab ID	1
Sample Type	Bag	Date Received	5-21-21
		Date Reported	6-17-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 15.4

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	91.7
3/8"	9.5	87.5
No. 4	4.75	83.5
No. 10	2	75.3
No. 40	0.425	71.6
No. 200	0.075	61.3
	0.02	37.8
	0.005	24.0
	0.002	16.1
estimated	0.001	10.8

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	16.5	24.7
Coarse Sand	8.2	3.7
Medium Sand	3.7	---
Fine Sand	10.3	10.3
Silt	37.3	45.2
Clay	24.0	16.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	31
Plastic Limit:	18
Plasticity Index:	13
Activity Index:	0.8

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Sandy lean clay with gravel

AASHTO Classification: A-6 (5)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	TP-HS-01, 2.0'-3.0'	Lab ID	1

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	MW
Test Date	06-08-2021
Date Received	05-21-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	91.7
3/8"	87.5
No. 4	83.5
No. 10	75.3

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

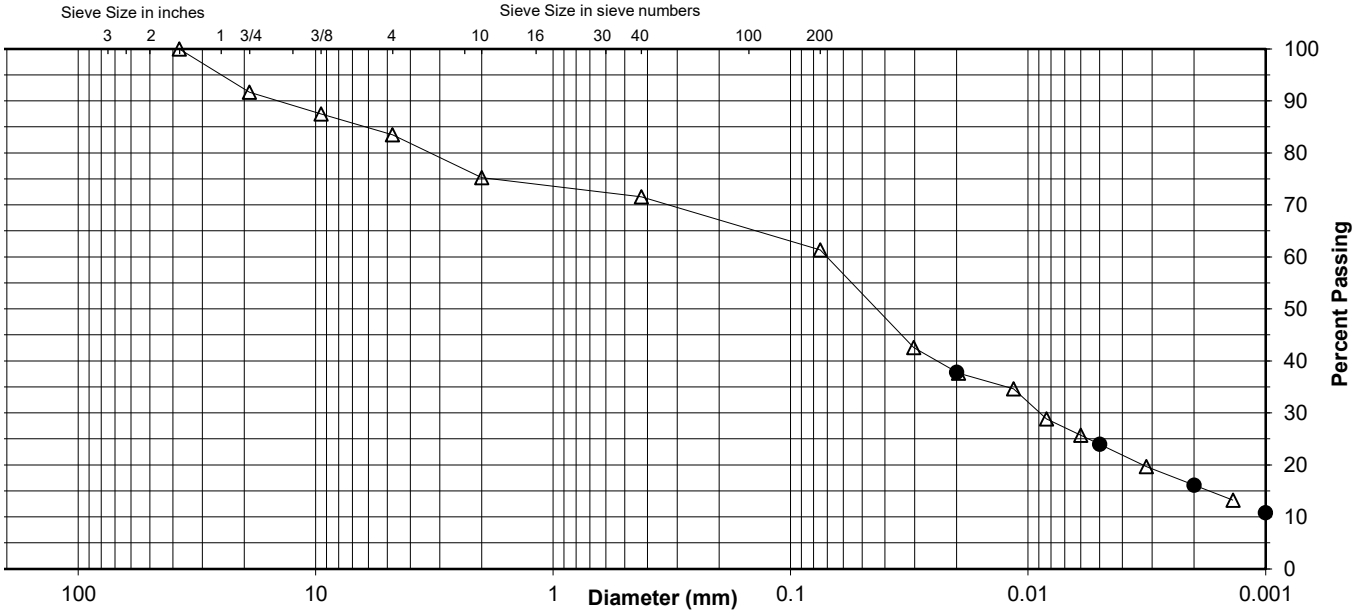
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	71.6
No. 200	61.3
0.02 mm	37.8
0.005 mm	24.0
0.002 mm	16.1
0.001 mm	10.8

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	8.3	8.2	8.2	3.7	10.3	37.3	24.0
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	24.7			3.7	10.3	45.2	16.1



Comments

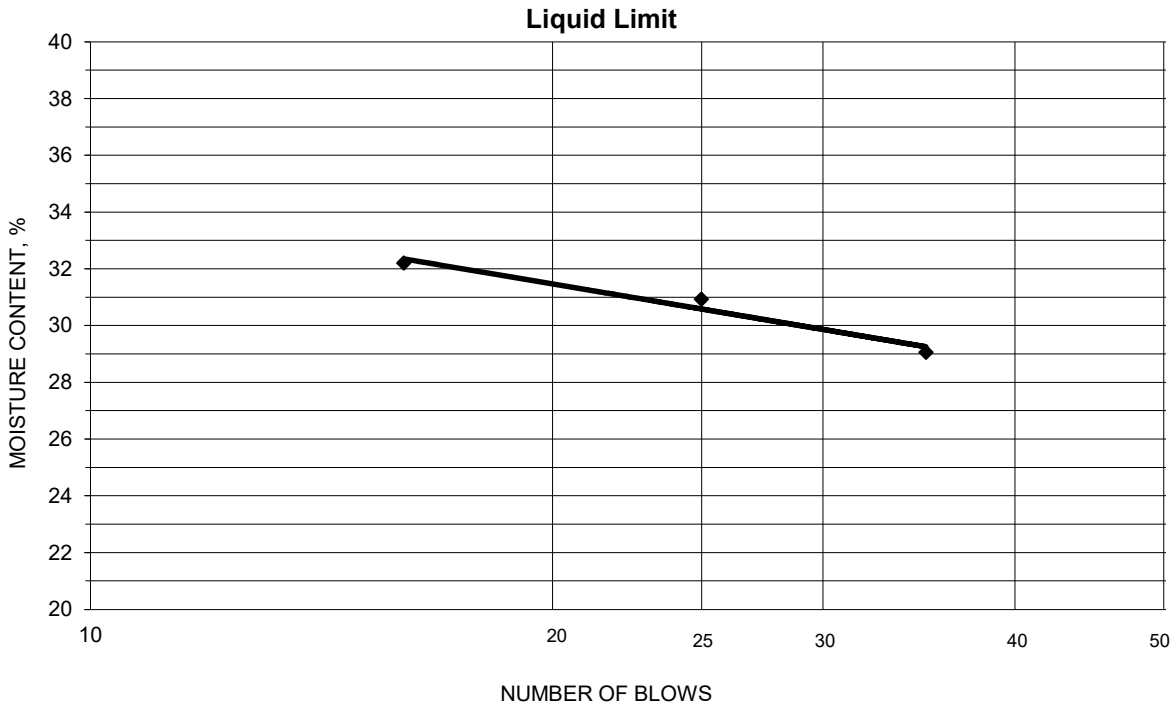
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	TP-HS-01, 2.0'-3.0'			Lab ID	1
				% + No. 40	28
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	05-21-2021
Test Date	06-11-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
19.08	17.36	11.44	35	29.1	
17.44	15.85	10.71	25	30.9	
18.22	16.42	10.83	16	32.2	31



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.55	18.22	10.99	18.4	18	13
18.23	17.17	11.31	18.1		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	TP-HS-02, 1.0'-2.0'	Lab ID	2
Sample Type	Bag	Date Received	5-21-21
		Date Reported	6-17-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 14.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	85.9
3/8"	9.5	80.7
No. 4	4.75	78.5
No. 10	2	74.8
No. 40	0.425	73.3
No. 200	0.075	64.7
	0.02	32.1
	0.005	17.6
	0.002	10.0
estimated	0.001	5.6

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	21.5	25.2
Coarse Sand	3.7	1.5
Medium Sand	1.5	---
Fine Sand	8.6	8.6
Silt	47.1	54.7
Clay	17.6	10.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	30
Plastic Limit:	20
Plasticity Index:	10
Activity Index:	1.0

Moisture-Density Relationship

ASTM D 698 - Method B

Maximum Dry Density (lb/ft^3):	115.3
Maximum Dry Density (kg/m^3):	1847
Optimum Moisture Content (%):	13.0
Over Size Correction %:	19.3

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Gravelly lean clay

AASHTO Classification: A-4 (5)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	TP-HS-02, 1.0'-2.0'	Lab ID	2

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	06-11-2021
Date Received	05-21-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	85.9
3/8"	80.7
No. 4	78.5
No. 10	74.8

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity 2.7

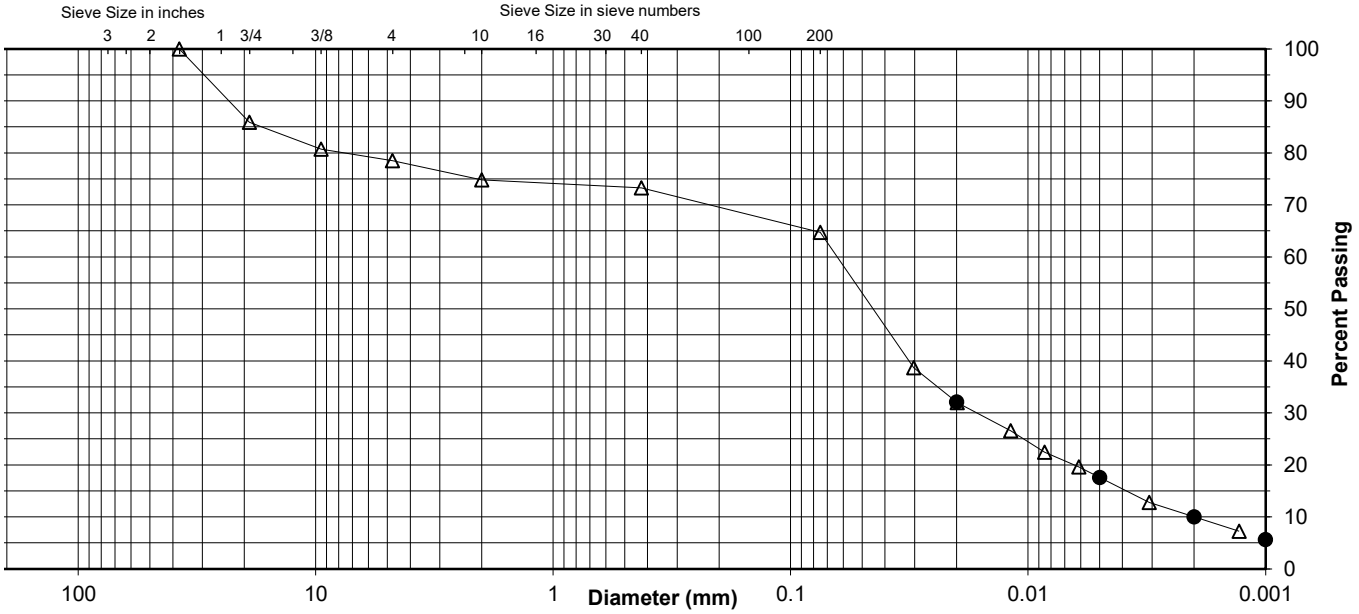
Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	73.3
No. 200	64.7
0.02 mm	32.1
0.005 mm	17.6
0.002 mm	10.0
0.001 mm	5.6

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	14.1	7.4	3.7	1.5	8.6	47.1	17.6

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	25.2	1.5	8.6	54.7	10.0



Comments

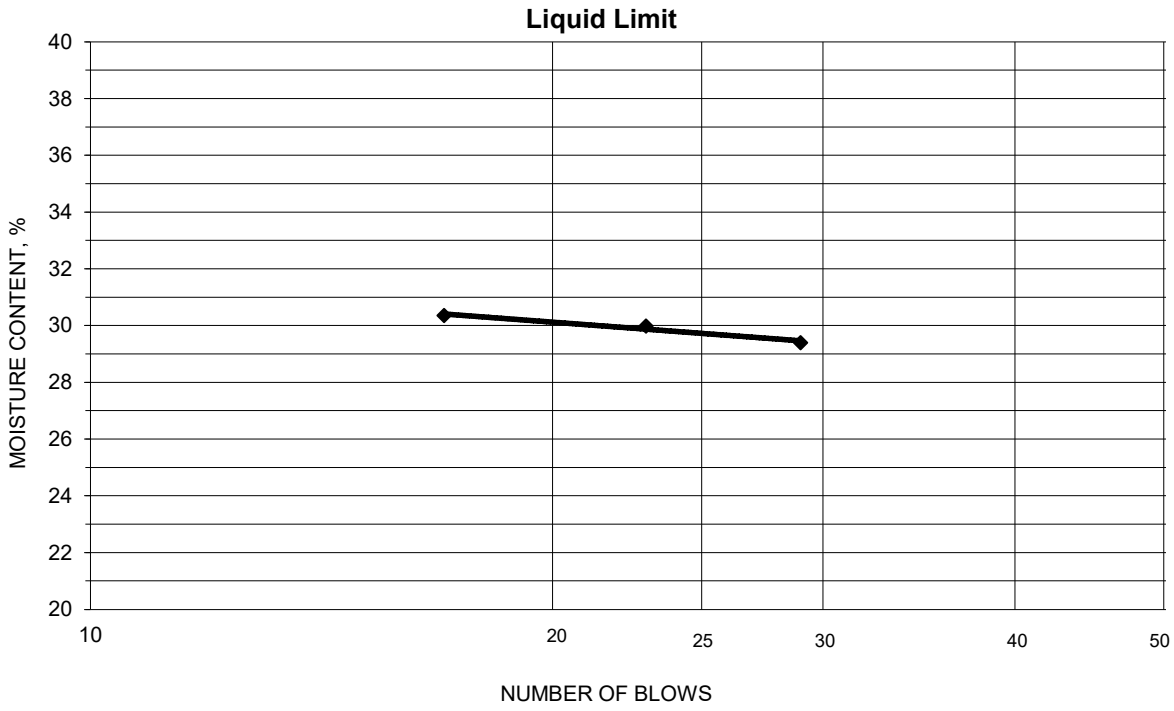
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	TP-HS-02, 1.0'-2.0'			Lab ID	2
				% + No. 40	27
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	05-21-2021
Test Date	06-11-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
18.08	16.56	11.39	29	29.4	
19.19	17.31	11.04	23	30.0	
17.91	16.39	11.38	17	30.4	30



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
22.58	20.76	11.47	19.6	20	10
19.68	18.29	11.14	19.4		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	TP-HS-04, 0.0'-1.0'	Lab ID	3
Sample Type	Bag	Date Received	5-21-21
		Date Reported	6-17-21

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 13.7

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	92.2
3/8"	9.5	81.7
No. 4	4.75	76.9
No. 10	2	57.1
No. 40	0.425	50.7
No. 200	0.075	41.2
	0.02	17.9
	0.005	9.4
	0.002	5.5
estimated	0.001	3.7

Plus 3 in. material, not included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	23.1	42.9
Coarse Sand	19.8	6.4
Medium Sand	6.4	---
Fine Sand	9.5	9.5
Silt	31.8	35.7
Clay	9.4	5.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	28
Plastic Limit:	20
Plasticity Index:	8
Activity Index:	1.5

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: SC

Group Name: Clayey sand with gravel

AASHTO Classification: A-4 (0)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Exploration	Project Number	175518216
Source	TP-HS-04, 0.0'-1.0'	Lab ID	3

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared using	ASTM D 421
Particle Shape	Angular
Particle Hardness:	Hard and Durable
Tested By	DW
Test Date	06-08-2021
Date Received	05-21-2021

Maximum Particle size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	92.2
3/8"	81.7
No. 4	76.9
No. 10	57.1

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

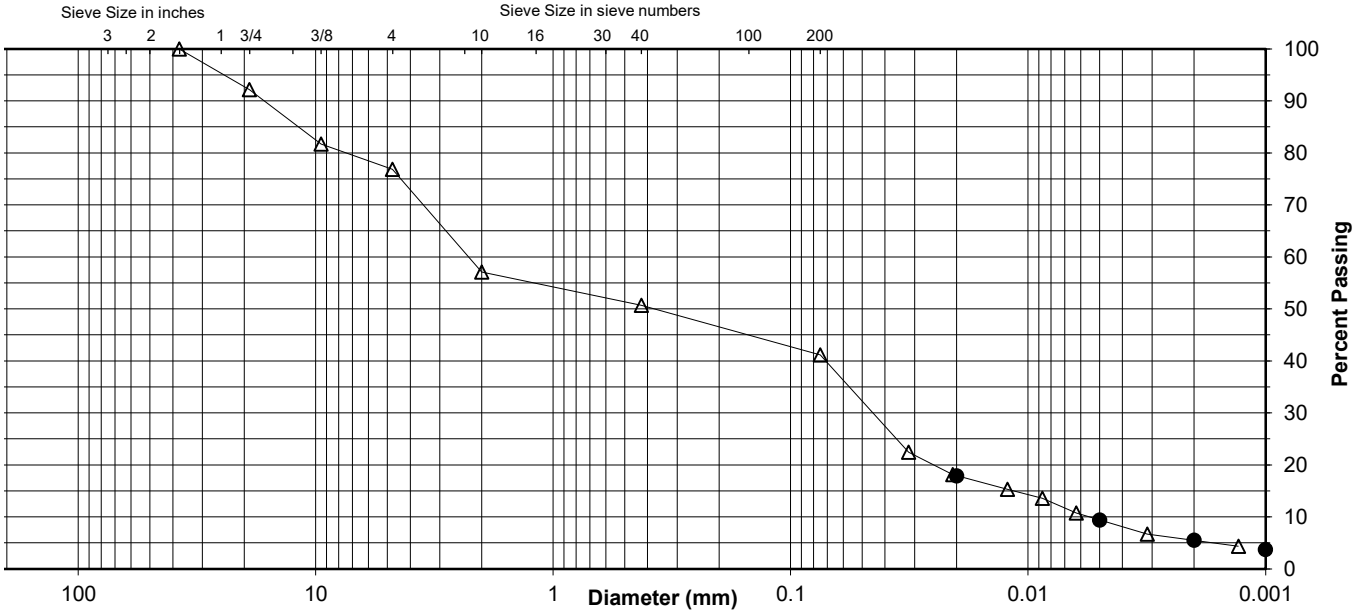
Specific Gravity 2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	50.7
No. 200	41.2
0.02 mm	17.9
0.005 mm	9.4
0.002 mm	5.5
0.001 mm	3.7

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	7.8	15.3	19.8	6.4	9.5	31.8	9.4
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	42.9			6.4	9.5	35.7	5.5



Comments

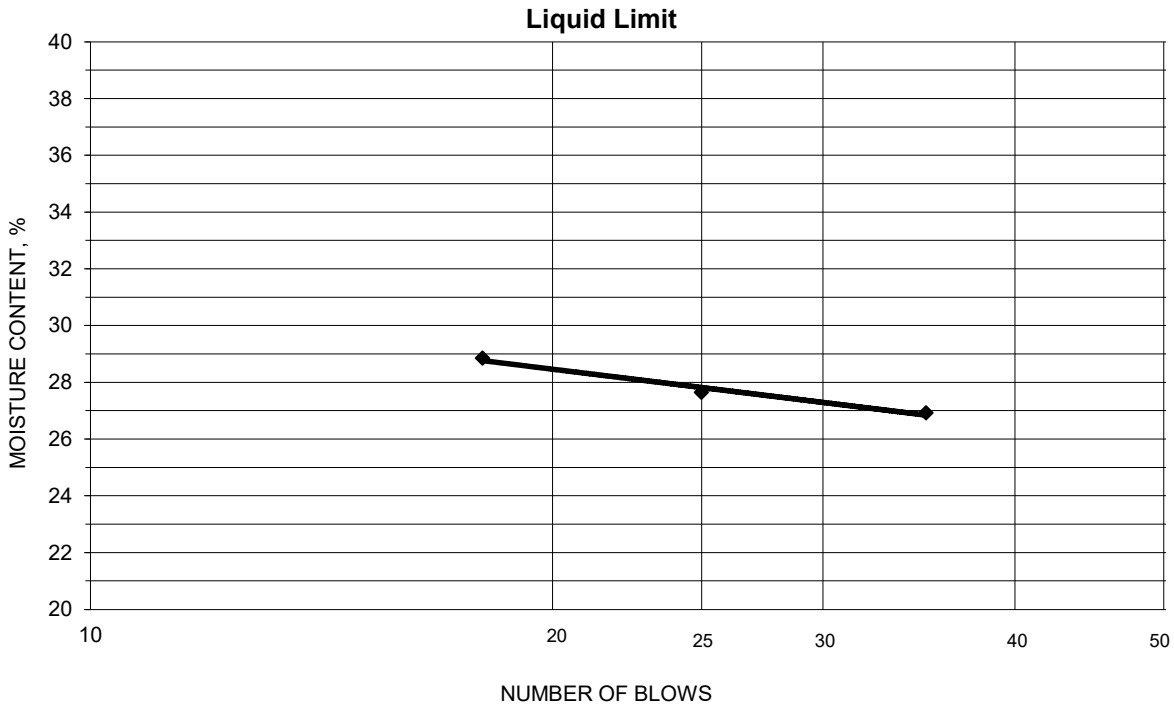
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Exploration			Project No.	175518216
Source	TP-HS-04, 0.0'-1.0'			Lab ID	3
				% + No. 40	49
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	05-21-2021
Test Date	06-11-2021	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
18.03	16.53	10.96	35	26.9	
16.68	15.40	10.77	25	27.6	
17.69	16.23	11.17	18	28.9	28



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.67	17.40	10.96	19.7	20	8
19.11	17.77	10.92	19.6		

Remarks: _____

Reviewed By RHB

Appendix J.1.3
STANDARD PROCTOR RESULTS

Stantec

Compaction Characteristics of Soil Using Standard Effort

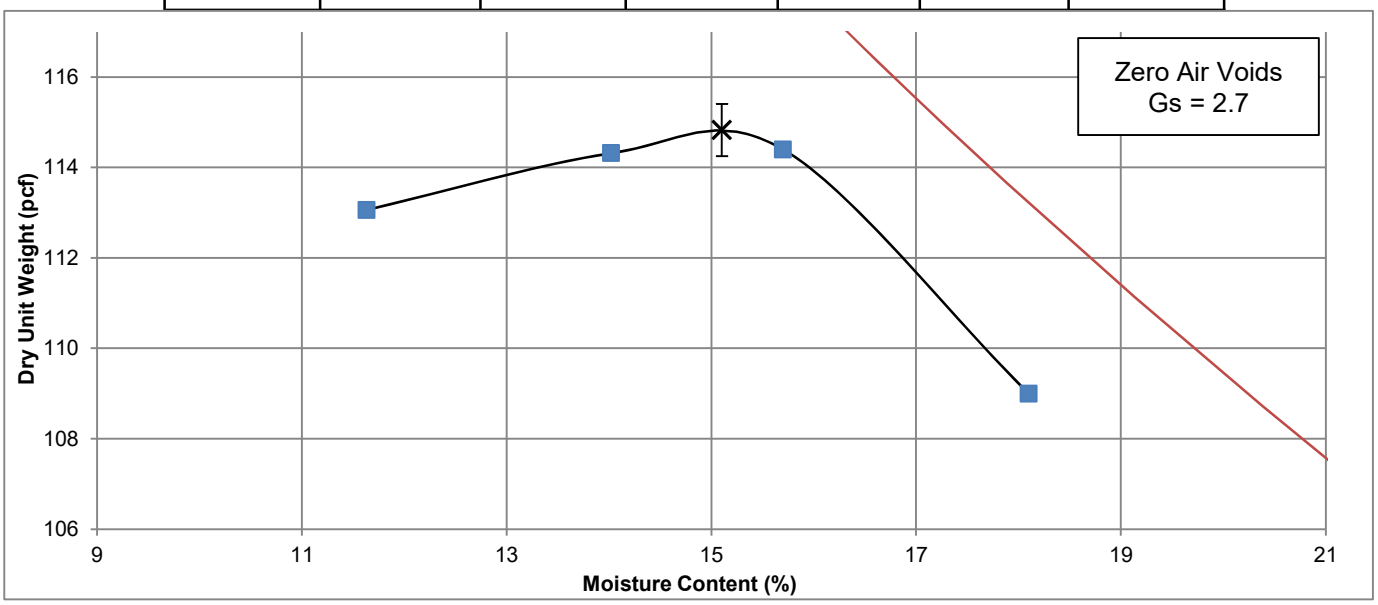
ASTM D 698 - Method B

Project	Plant Hammond Exploration	Project No.	175518216
Source	TP-HS-02, 1.0'-2.0'	Sample ID	2
Description	Gravelly Lean Clay (CL), brown	Date Received	05/21/2021
Visual Notes		Date Tested	06/03/2021

Test Fraction (%)	80.7		Oversized Fraction (%)	19.3	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	1.88	
Oversized Fraction Sieve	3/8"		MC of Oversized Fraction (%)	4.0	

Mold Weight (g)	4242.1	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6143	1901	639.41	580.27	71.90	11.6	113.1
6205	1963	482.49	431.47	67.57	14.0	114.3
6235	1993	518.02	457.19	69.71	15.7	114.4
6181	1939	517.02	448.41	69.29	18.1	109.0



Maximum Dry Unit Weight (pcf)	**114.8**
Optimum Moisture Content (%)	**15.1**
Corrected Maximum Dry Unit Weight (pcf)	**115.3**
Corrected Optimum Moisture Content (%)	**13.0**

Reviewed By RHB

Comments

Stantec

Density, Relative Density and Absorption of Coarse Aggregate

ASTM C 127

Project Plant Hammond Exploration — Project No. 175518216
Source TP-HS-02, 1.0'-2.0' — Lab ID 2
Material Sandstone
Retained Particle Size + 3/8" — Nominal Maximum Particle Size 1 1/2"

Preparation Method: Tested at as received moisture content. — Preparation Date 06-14-2021

Test Date 06-14-2021

Water Temperature (°C)	21.5
Tare Mass (g)	133.2
Saturated Surface Dry Sample + Tare Mass (g)	7243.5
Basket Mass in Water (g)	820.1
Sample + Mass Basket in Water (g)	4291.4
Oven Dry Sample Mass (g)	6839.7
SSD Sample Mass (g)	7110.3
Sample Mass in Water (g)	3471.3
Relative Density (OD)	1.88
Relative Density (SSD)	1.95
Apparent Relative Density	2.03
Absorption (%)	4.0
Density (OD), kg/m³, @ 23 °C	1870
Density (OD), lb/ft³, @ 23 °C	117
Density (SSD), kg/m³, @ 23 °C	1950
Density (SSD), lb/ft³, @ 23 °C	121.5
Apparent Density, kg/m³, @ 23 °C	2030
Apparent Density, lb/ft³, @ 23 °C	126.5

Comments

Reviewed By RHB

Stantec

Compaction Characteristics of Soil Using Standard Effort

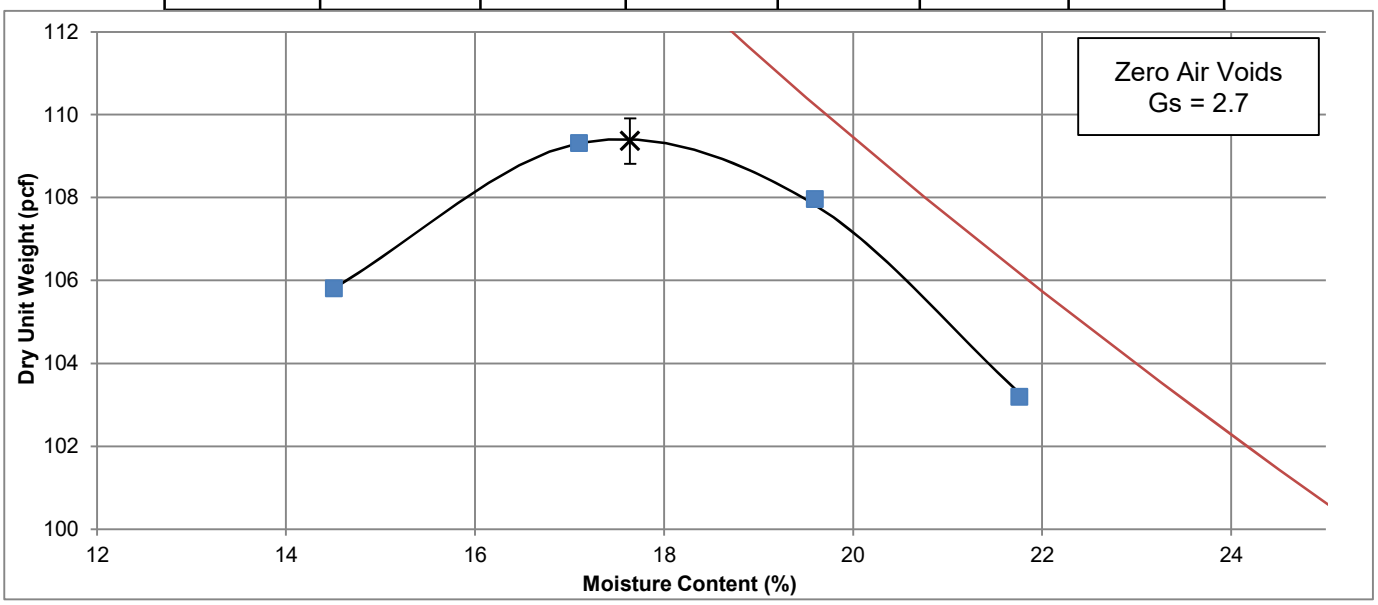
ASTM D 698 - Method B

Project	Plant Hammond Exploration	Project No.	175518216
Source	BH-HS-02, 0.0'-10.0'	Sample ID	40
Description	Lean Clay (CL), brown	Date Received	06/23/2021
Visual Notes		Date Tested	07/02/2021

Test Fraction (%)	100.0		Oversized Fraction (%)	N/A	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	3/8"		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4245	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6070	1825	434.70	388.68	71.43	14.5	105.8
6173	1928	552.00	481.57	69.70	17.1	109.3
6189	1944	633.50	541.76	73.55	19.6	108.0
6137	1892	536.40	453.54	72.71	21.8	103.2



Maximum Dry Unit Weight (pcf)	**109.4**
Optimum Moisture Content (%)	**17.6**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments

Stantec

Compaction Characteristics of Soil Using Standard Effort

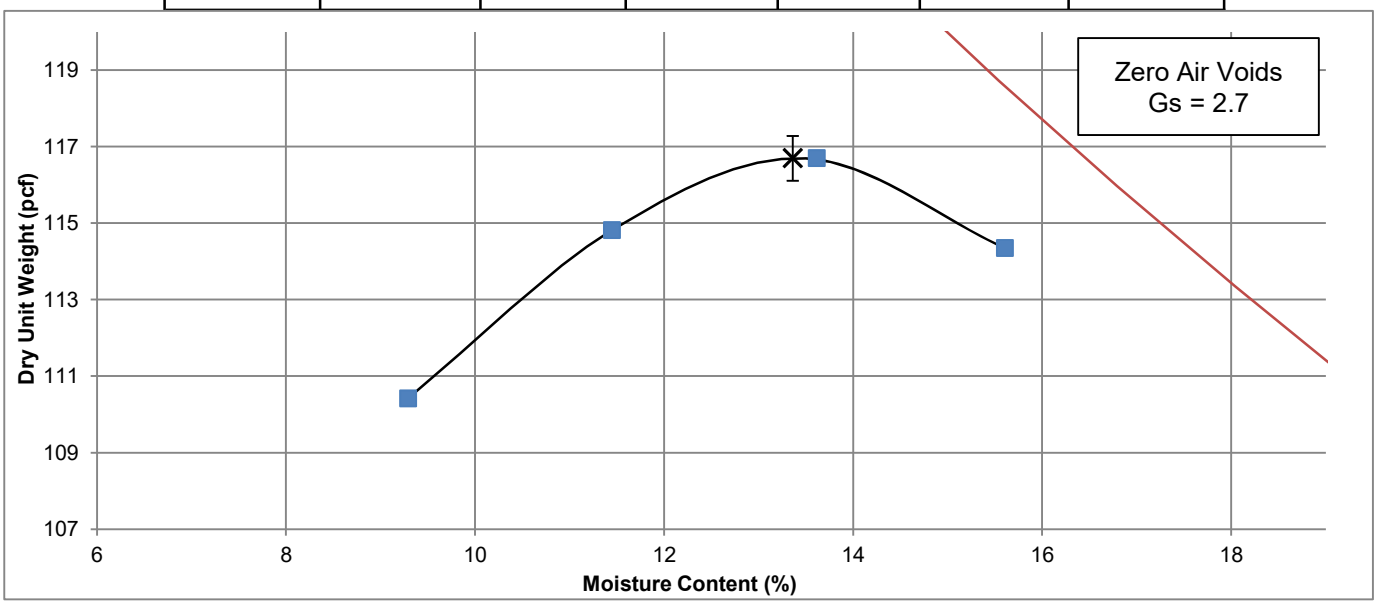
ASTM D 698 - Method B

Project	Plant Hammond Exploration	Project No.	175518216
Source	BH-HS-05, 3.0'-10.0'	Sample ID	63
Description	Lean Clay (CL), light brown	Date Received	06/23/2021
Visual Notes		Date Tested	07/02/2021

Test Fraction (%)	97.4		Oversized Fraction (%)	2.6	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	3/8"		MC of Oversized Fraction (%)	6.5	

Mold Weight (g)	4245.6	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6063	1817	580.70	537.16	68.51	9.3	110.4
6173	1927	587.40	534.26	70.10	11.4	114.8
6242	1997	539.90	483.56	69.78	13.6	116.7
6236	1991	615.50	542.59	75.40	15.6	114.4



Maximum Dry Unit Weight (pcf)	**116.7**
Optimum Moisture Content (%)	**13.4**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments

Stantec

Compaction Characteristics of Soil Using Standard Effort

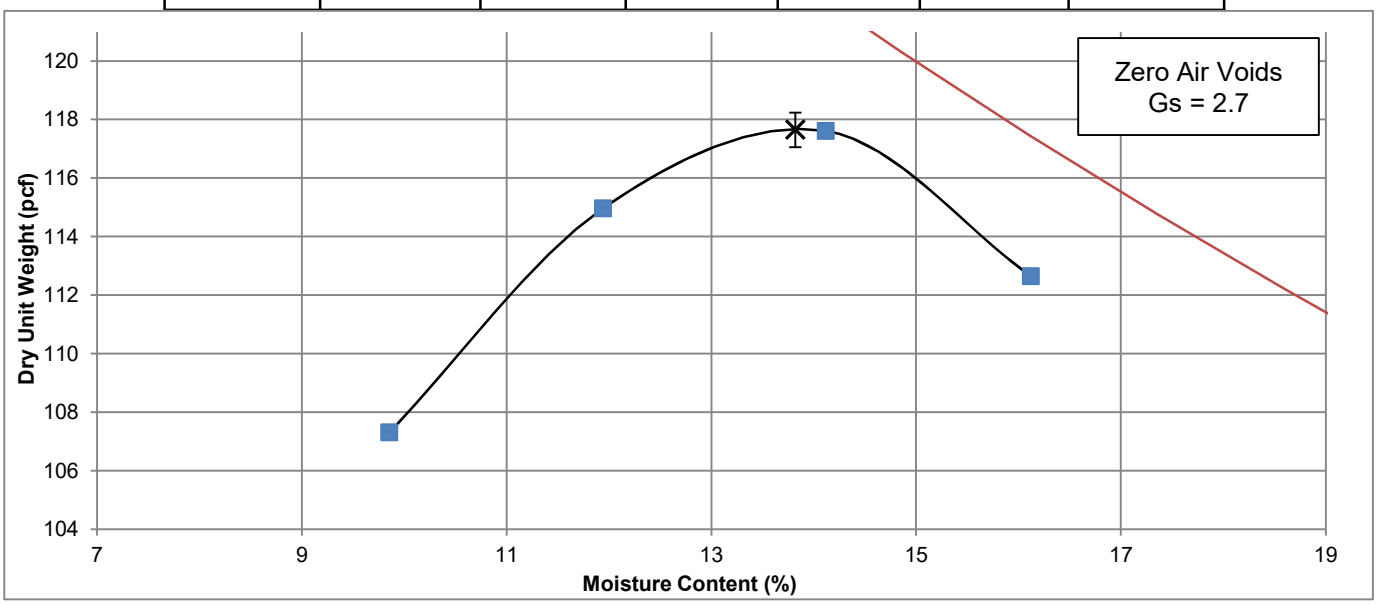
ASTM D 698 - Method B

Project	Plant Hammond Exploration	Project No.	175518216
Source	BH-HS-10, 3.0'-10.0'	Sample ID	100
Description	Lean Clay with Sand (CL), red brown	Date Received	06/23/2021
Visual Notes		Date Tested	07/02/2021

Test Fraction (%)	95.1		Oversized Fraction (%)	4.9	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	3/8"		MC of Oversized Fraction (%)	7.0	

Mold Weight (g)	4244.6	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6020	1775	717.70	659.53	69.30	9.9	107.3
6183	1938	597.70	541.81	73.79	11.9	115.0
6266	2021	623.60	554.80	67.48	14.1	117.6
6214	1970	506.00	445.42	69.64	16.1	112.6



Maximum Dry Unit Weight (pcf)	**117.7**
Optimum Moisture Content (%)	**13.8**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments

APPENDIX J.2
2022 HRL PARCEL F GEOTECHNICAL INVESTIGATION LABORATORY RESULTS

Appendix J.2.1
Natural Moisture Content

Stantec

Moisture Content of Soil

ASTM D 2216

Project Name: Plant Hammond Phase 2

Project Number: 175518236

Tested By: TRH

Test Method: ASTM

Maximum Particle Size in Sample	No. 10	No. 4	3/8"	3/4"	1 1/2"	3"
Recommended Minimum Mass (g)	20	100	500	2,500	10,000	50,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Material Excluded Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & Can Weight (g)	Moisture Content (%)
HRL-1, 4.5'-6.0'	4	6/14/22	Dist	No. 4			Yes	30.06	171.87	152.59	15.7
HRL-1, 15.0'-15.9'	8	6/14/22	Hom	1 1/2"			No	31.49	194.01	167.43	19.6
HRL-2, 4.5'-6.0'	14	6/14/22	Dist	3/8"			No	30.39	182.50	164.59	13.3
HRL-3, 4.5'-5.4'	26	6/14/22	Lam	3/4"			No	31.50	172.86	159.54	10.4
HRL-4, 4.5'-6.0'	36	6/14/22	Dist	No. 10			Yes	30.20	185.12	165.02	14.9
HRL-4, 9.0'-10.5'	39	6/14/22	Dist	No. 4			Yes	31.42	193.25	171.87	15.2
HRL-7, 4.5'-5.7'	71	6/14/22	Dist	No. 4			Yes	30.03	144.02	133.72	9.9
HRL-1, 5.0'-10.0'	178	6/14/22	Dist	No. 4			Yes	31.74	170.53	148.35	19.0
HRL-8, 0.0'-5.0'	192	6/14/22	Dist	3/8"			No	30.64	152.92	136.30	15.7

Comments

Reviewed By: RHB

Appendix J.2.2

Specific Gravity

Stantec

Specific Gravity of Soils

ASTM D 854

Project Name Plant Hammond Phase 2

Project Number 175518236

Lab ID	Assoc. Test	Max. Particle Size	Method	Test Date	Oven Dry Soil & Tare (g)	Flask ID	Flask Weight (g)	Flask & Soil Weight (g)	Flask, Soil & Water Weight (g)	Temp. (°C)	Flask Calibration Weight (g)	Flask Calibration Volume (ml)	Test Temp. (°C)	Water Density @ Test Temp. (g/ml)	Flask & Water Weight @Test Temp. (g)	Oven Dry Soil Weight (g)	Specific Gravity @ Test Temp. (g//ml)	Temp. Coeff., K	Specific Gravity @ 20 °C (g//ml)
178	PSA	No. 10	Dry	06/28/2022		LX-24	110.23	133.11	373.79	19.7	110.23	249.7721	19.7	0.99827	359.57	22.88	2.64	1.00006	2.64
186		No. 10	Dry	06/28/2022		LX-88	90.25	110.81	352.36	19.7	90.24	249.59678	19.7	0.99827	339.41	20.56	2.70	1.00006	2.70
192	PSA	No. 10	Dry	06/28/2022		LX-21	87.76	109.5	350.54	19.7	87.78	249.74204	19.7	0.99827	337.07	21.74	2.63	1.00006	2.63

Comments

Reviewed By RHB

Appendix J.2.3
Organic Matter

Stantec

Moisture, Ash and Organic Matter of Peat and Other Organic Soils

ASTM D 2974

Project Name Plant Hammond Phase 2

Project Number 175518236

Lab ID	Source	Depth	Test Date	Time In Oven (hh:mm)	Moisture Content Method A, % of Oven-Dried Mass: Tare Weight (g)	Wet Wt. & Tare (g)	Dry Wt. & Tare (g)	Moisture Content (%)	Organic Matter Method C, 440°C Furnace Temperature: Tare Weight (g)	Dry Wt. & Tare (g)	Ashed Wt. & Tare (g)	Ash Content (%)	Organic Matter (%)
198	HRL-12	0.0'-10.0'	06/15/2022	05:11	44.16	280.55	255.34	11.9	86.20	208.95	205.78	97.4	2.6
200	HRL-13	5.0'-10.0'	06/24/2022	05:11	43.96	346.36	293.04	21.4	86.20	205.48	202.44	97.5	2.5
201	HRL-13	10.0'-15.0'	06/15/2022	05:11	43.90	333.87	283.91	20.8	87.58	217.24	212.46	96.3	3.7
202	HRL-14	0.0'-10.0'	06/13/2022	05:11	44.87	348.63	307.31	15.7	102.20	245.52	241.03	96.9	3.1
204	HRL-16	0.0'-10.0'	06/24/2022	05:11	44.16	258.98	234.90	12.6	87.58	206.16	203.27	97.6	2.4

Comments

Reviewed By RHB

Appendix J.2.4

Atterberg Limits

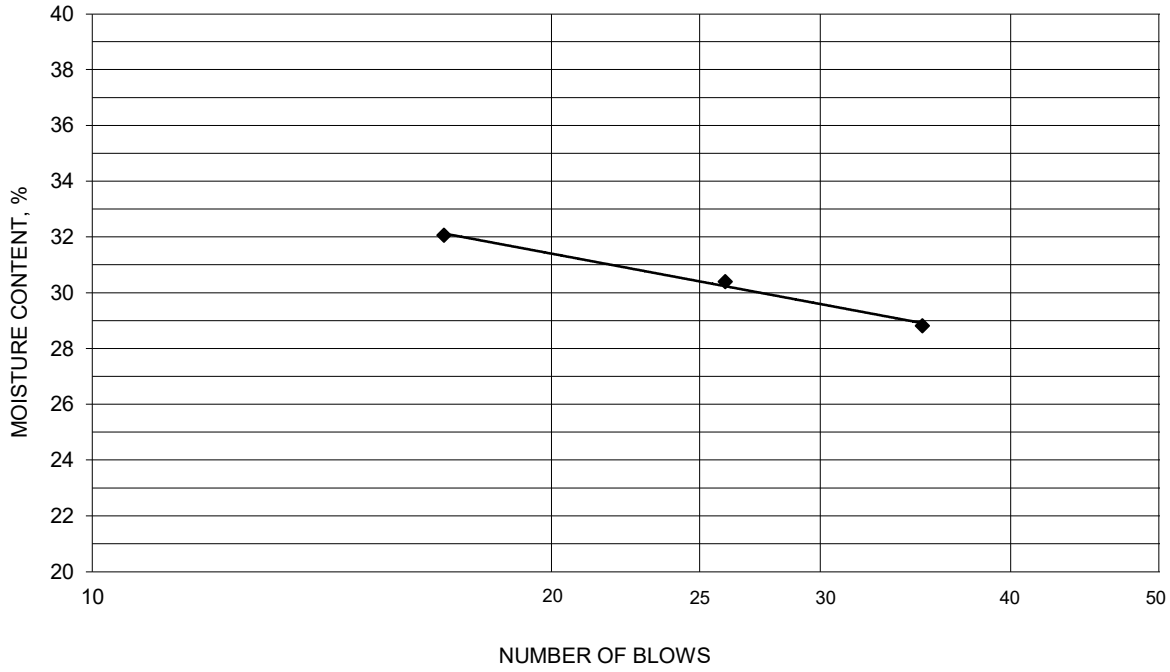
Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-6, 0.0'-5.0'			Lab ID	186
Tested By	JMB	Test Method	ASTM D 4318 Method A	% + No. 40	74
Test Date	06-21-2022	Prepared	Dry	Date Received	06-14-2022

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
17.02	15.81	11.61	35	28.8	
17.28	15.76	10.76	26	30.4	
15.82	14.65	11.00	17	32.1	30

Liquid Limit



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.10	17.03	11.53	19.5	19	11
17.28	16.30	11.23	19.3		

Comments _____

Reviewed By RHB

Appendix J.2.5

Proctor Test

Stantec

Compaction Characteristics of Soil Using Standard Effort

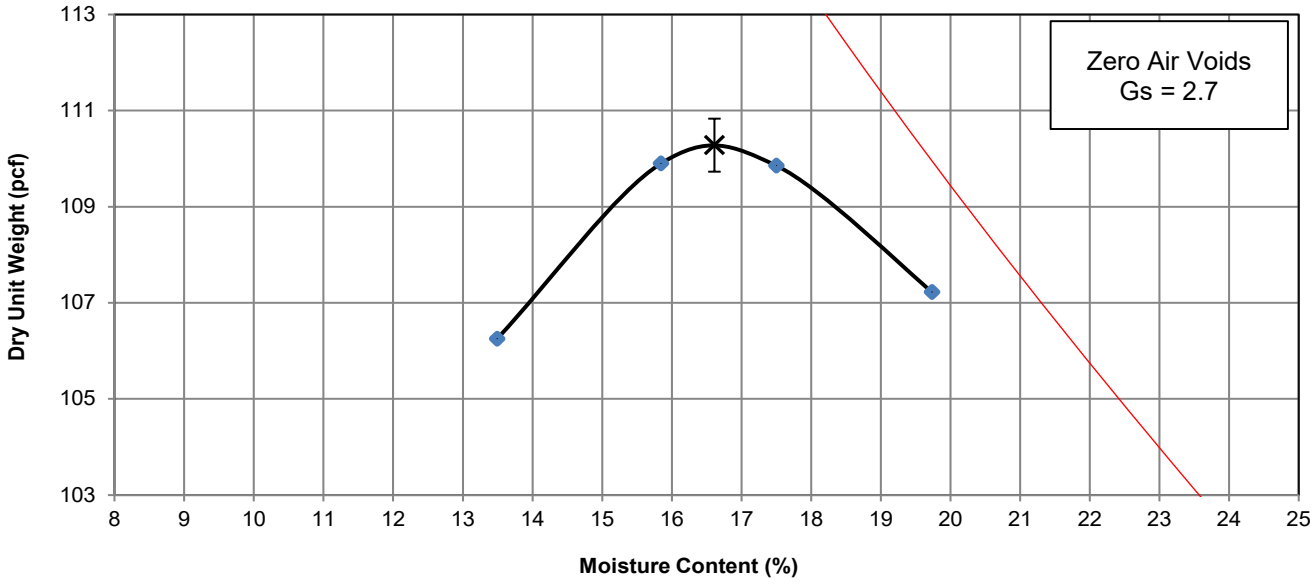
ASTM D 698 - Method B

Project	Plant Hammond Phase 2	Project No.	175518236
Source	HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & HRL-15, 0.0'-10.0'	Sample ID	207
Description	Lean Clay with Sand (CL), light brown	Date Received	09/26/2022
Visual Notes		Date Tested	09/28/2022

Test Fraction (%)	98.2		Oversized Fraction (%)	1.8	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	3/8"		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4239.7	Preparation Method	Moist	Rammer Type	Manual	

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6055.7	1816.0	542.3	486.5	72.8	13.5	106.3
6157.0	1917.3	547.2	482.3	72.8	15.8	109.9
6183.5	1943.8	593.7	515.3	67.3	17.5	109.9
6173.1	1933.4	559.5	479.8	75.7	19.7	107.2



Maximum Dry Unit Weight (pcf)	**110.3**
Optimum Moisture Content (%)	**16.6**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments

Stantec

Compaction Characteristics of Soil Using Standard Effort

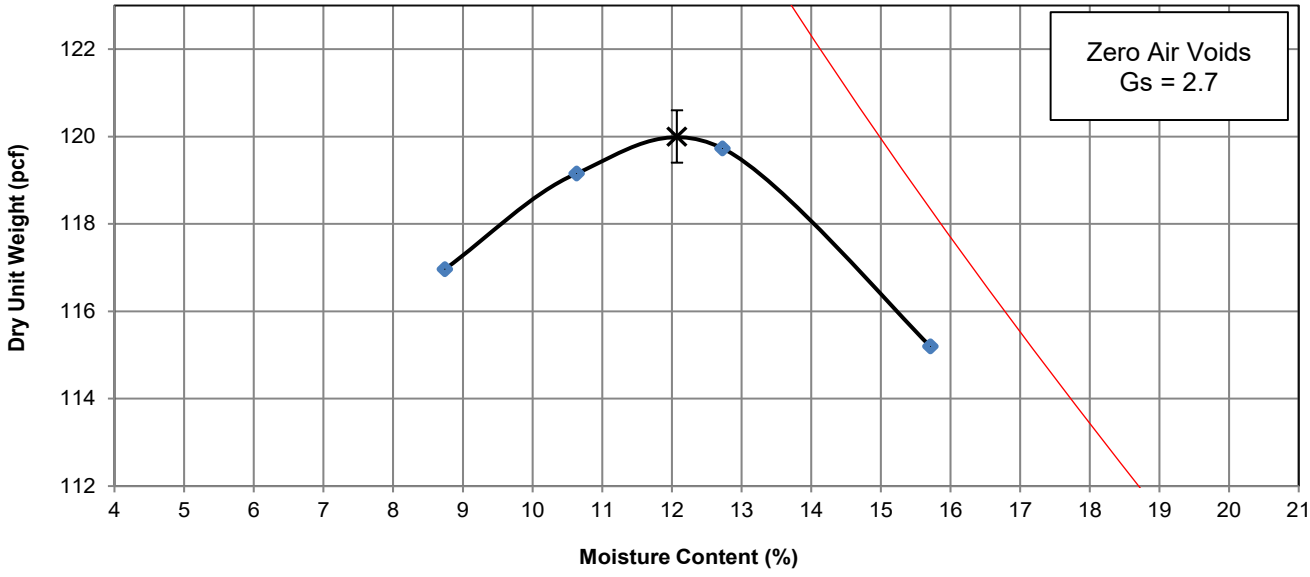
ASTM D 698 - Method B

Project	Plant Hammond Phase 2	Project No.	175518236
Source	HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0'	Sample ID	211
Description	Clayey Sand with Gravel (SC), light brown	Date Received	09/26/2022
Visual Notes		Date Tested	09/28/2022

Test Fraction (%)	95.8		Oversized Fraction (%)	4.2	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	3/8"		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4239.7	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6155.1	1915.4	701.1	650.5	71.4	8.7	117.0
6224.8	1985.1	594.9	542.8	53.0	10.6	119.2
6272.2	2032.5	645.3	580.7	73.6	12.7	119.7
6247.1	2007.4	537.4	474.8	75.8	15.7	115.2



Maximum Dry Unit Weight (pcf)	**120.0**
Optimum Moisture Content (%)	**12.1**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments

Stantec

Compaction Characteristics of Soil Using Standard Effort

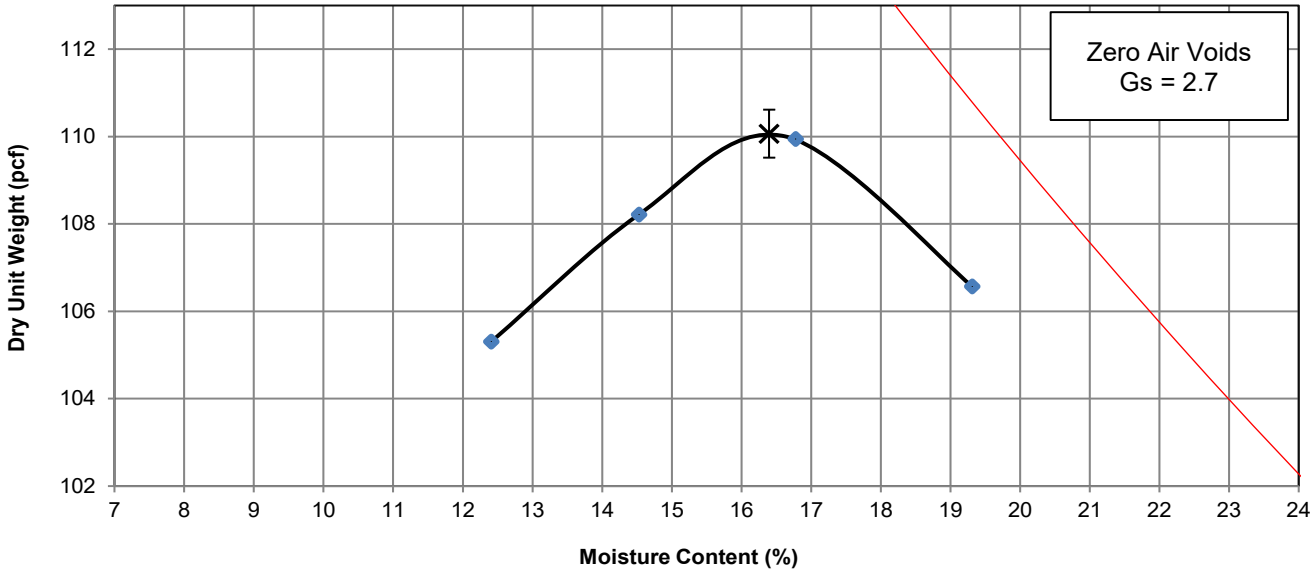
ASTM D 698 - Method B

Project	Plant Hammond Phase 2	Project No.	175518236
Source	HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' & HRL-16, 0.0'-10.0'	Sample ID	215
Description	Sandy Lean Clay (CL), brown	Date Received	09/26/2022
Visual Notes		Date Tested	09/29/2022

Test Fraction (%)	96.2		Oversized Fraction (%)	3.8	
Gs of Test Fraction	2.7	Assumed	Gs of Oversized Fraction	N/A	
Oversized Fraction Sieve	3/8"		MC of Oversized Fraction (%)	N/A	

Mold Weight (g)	4239.5	Preparation Method	Moist	Rammer Type	Manual

Wet Soil & Mold Weight (g)	Wet Soil Weight (g)	Moisture Content Determination: Wet Soil & Tare (g)	Dry Soil & Tare (g)	Tare (g)	Water Content (%)	Dry Unit Weight (pcf)
6022.1	1782.6	536.6	484.8	67.5	12.4	105.3
6105.9	1866.4	574.8	510.6	68.9	14.5	108.2
6173.0	1933.5	615.2	537.0	70.7	16.8	109.9
6154.3	1914.8	501.5	431.9	71.6	19.3	106.6



Maximum Dry Unit Weight (pcf)	**110.1**
Optimum Moisture Content (%)	**16.4**
Corrected Maximum Dry Unit Weight (pcf)	**N/A**
Corrected Optimum Moisture Content (%)	**N/A**

Reviewed By RHB

Comments

Appendix J.2.6

USCS Classification

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-1, 5.0'-10.0'	Lab ID	178
Sample Type	BULK	Date Received	6-14-22
		Date Reported	7-8-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 19.0

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	98.3
No. 10	2	90.9
No. 40	0.425	87.8
No. 200	0.075	73.1
	0.02	42.6
	0.005	30.5
	0.002	25.1
Estimated	0.001	21.6

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	1.7	9.1
Coarse Sand	7.4	3.1
Medium Sand	3.1	---
Fine Sand	14.7	14.7
Silt	42.6	48.0
Clay	30.5	25.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	40
Plastic Limit:	21
Plasticity Index:	19
Activity Index:	0.8

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Test Method: ASTM D 854
Prepared: Dry

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.64

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-6 (13)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-1, 5.0'-10.0'	Lab ID	178

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Rounded and Angular
Particle Hardness:	Hard and Durable
Tested By	MW
Test Date	06-28-2022
Date Received	06-14-2022

Maximum Particle Size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	98.3
No. 10	90.9

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

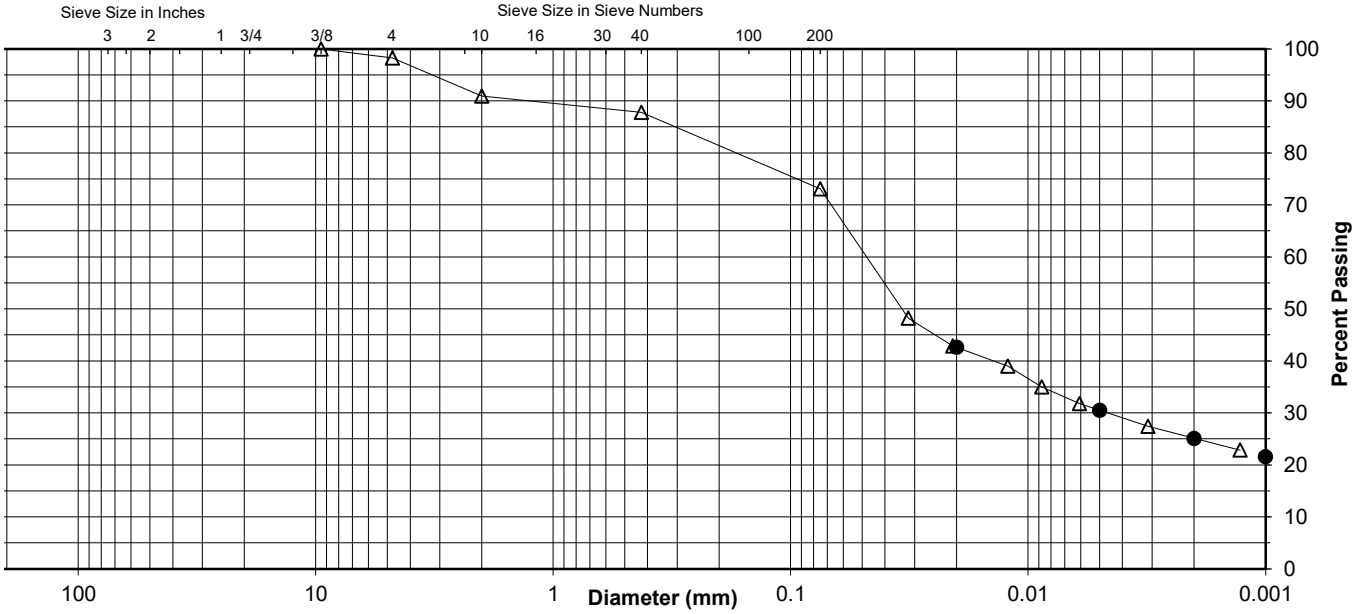
Specific Gravity 2.64

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	87.8
No. 200	73.1
0.02 mm	42.6
0.005 mm	30.5
0.002 mm	25.1
0.001 mm	21.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	1.7	7.4	3.1	14.7	42.6	30.5
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	9.1			3.1	14.7	48.0	25.1



Comments

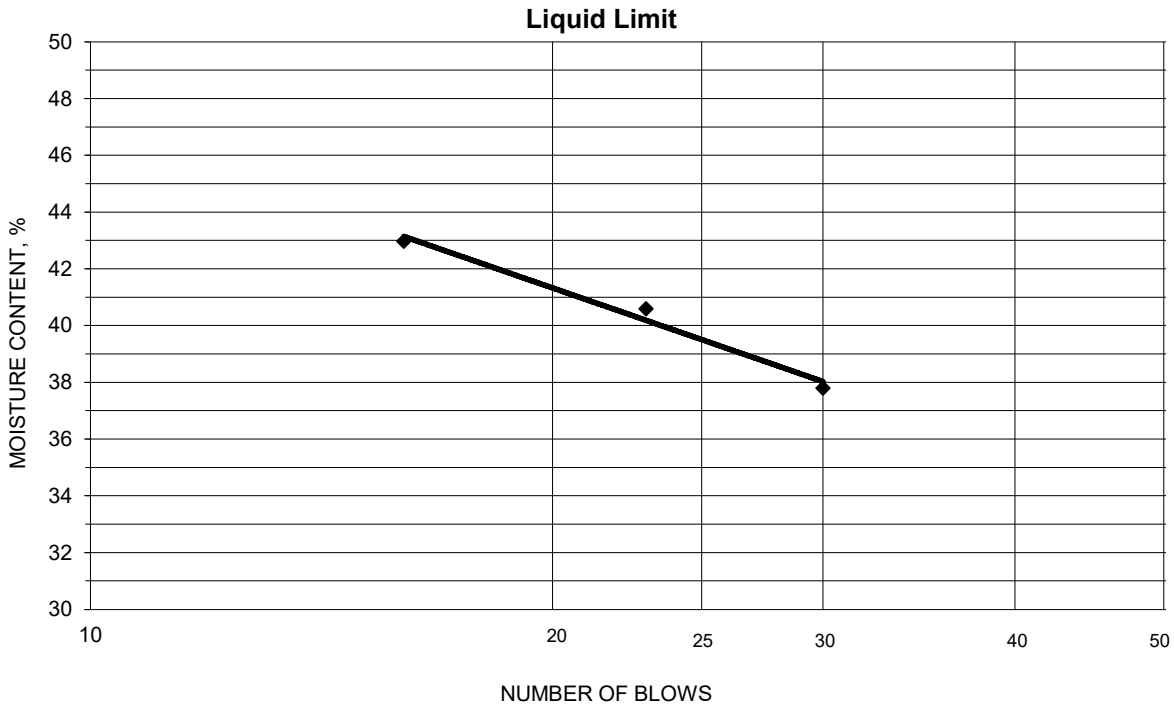
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-1, 5.0'-10.0'			Lab ID	178
				% + No. 40	12
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	06-29-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
16.46	14.99	11.10	30	37.8	
17.08	15.31	10.95	23	40.6	
16.47	14.82	10.98	16	43.0	40



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
16.56	15.59	10.90	20.7	21	19
15.42	14.61	10.72	20.8		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-2, 0.0'-5.0'	Lab ID	180
Sample Type	BULK	Date Received	6-14-22
		Date Reported	7-8-22

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	97.6
No. 4	4.75	95.1
No. 10	2	92.4
No. 40	0.425	87.1
No. 200	0.075	78.4
	0.02	53.4
	0.005	35.0
	0.002	23.6
Estimated	0.001	6.2

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	4.9	7.6
Coarse Sand	2.7	5.3
Medium Sand	5.3	---
Fine Sand	8.7	8.7
Silt	43.4	54.8
Clay	35.0	23.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	40
Plastic Limit:	23
Plasticity Index:	17
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Lean clay with sand
AASHTO Classification:	A-6 (13)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-2, 0.0'-5.0'	Lab ID	180

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	MW
Test Date	06-28-2022
Date Received	06-14-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	97.6
No. 4	95.1
No. 10	92.4

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

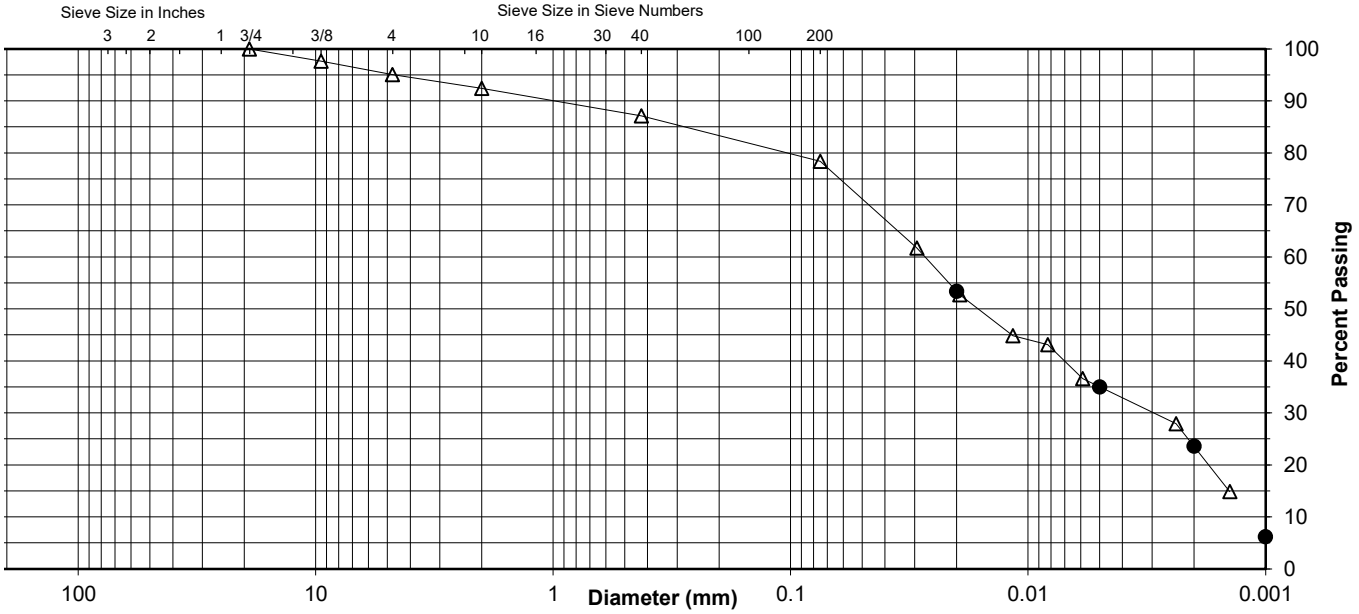
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	87.1
No. 200	78.4
0.02 mm	53.4
0.005 mm	35.0
0.002 mm	23.6
0.001 mm	6.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	4.9	2.7	5.3	8.7	43.4	35.0
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	7.6			5.3	8.7	54.8	23.6



Comments

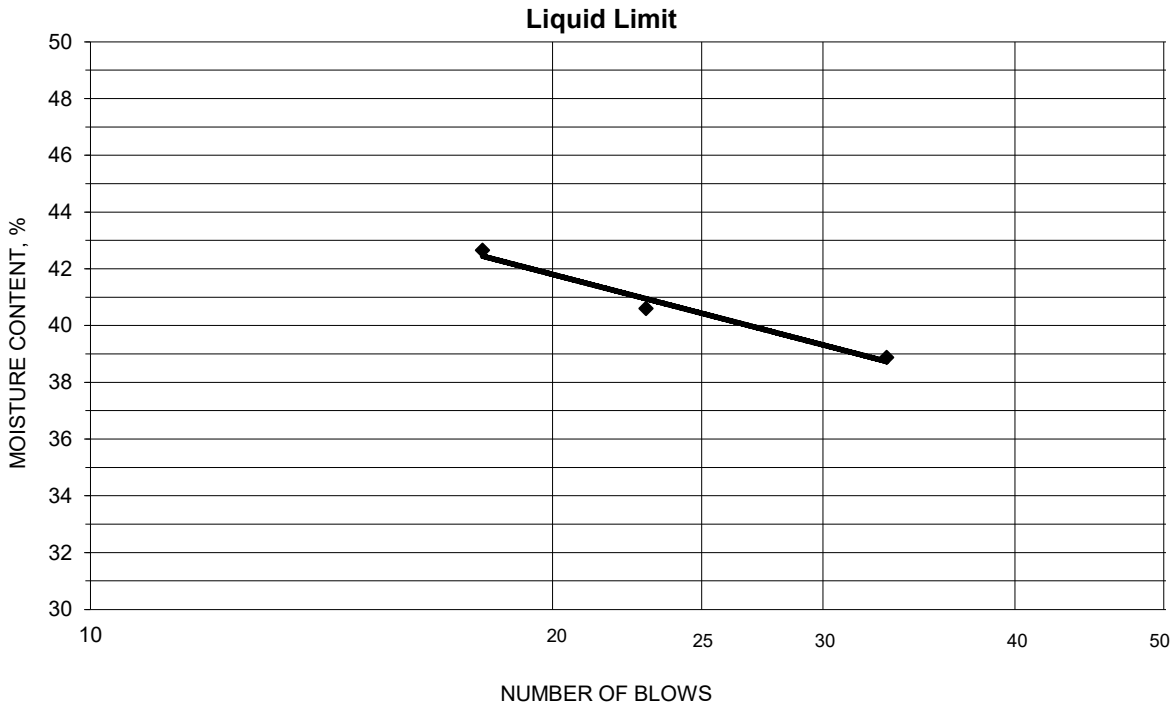
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-2, 0.0'-5.0'			Lab ID	180
				% + No. 40	13
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	06-22-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
16.55	15.10	11.37	33	38.9	
16.19	14.70	11.03	23	40.6	
16.08	14.57	11.03	18	42.7	40



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.13	16.78	10.90	23.0	23	17
18.02	16.76	11.30	23.1		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-3, 4.5'-5.4'	Lab ID	26
Sample Type	SS04	Date Received	6-14-22
		Date Reported	7-8-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 10.4

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 10	2	100.0
No. 40	0.425	95.2
No. 200	0.075	76.4
	0.02	44.5
	0.005	21.4
	0.002	12.1
Estimated	0.001	0.3

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.0	0.0
Coarse Sand	0.0	4.8
Medium Sand	4.8	---
Fine Sand	18.8	18.8
Silt	55.0	64.3
Clay	21.4	12.1

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	34
Plastic Limit:	23
Plasticity Index:	11
Activity Index:	0.9

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-6 (8)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-3, 4.5'-5.4'	Lab ID	26

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	N/A
Particle Hardness:	N/A
Tested By	MW
Test Date	06-28-2022
Date Received	06-14-2022

Maximum Particle Size: No. 10 Sieve

Sieve Size	% Passing
No. 10	100.0

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

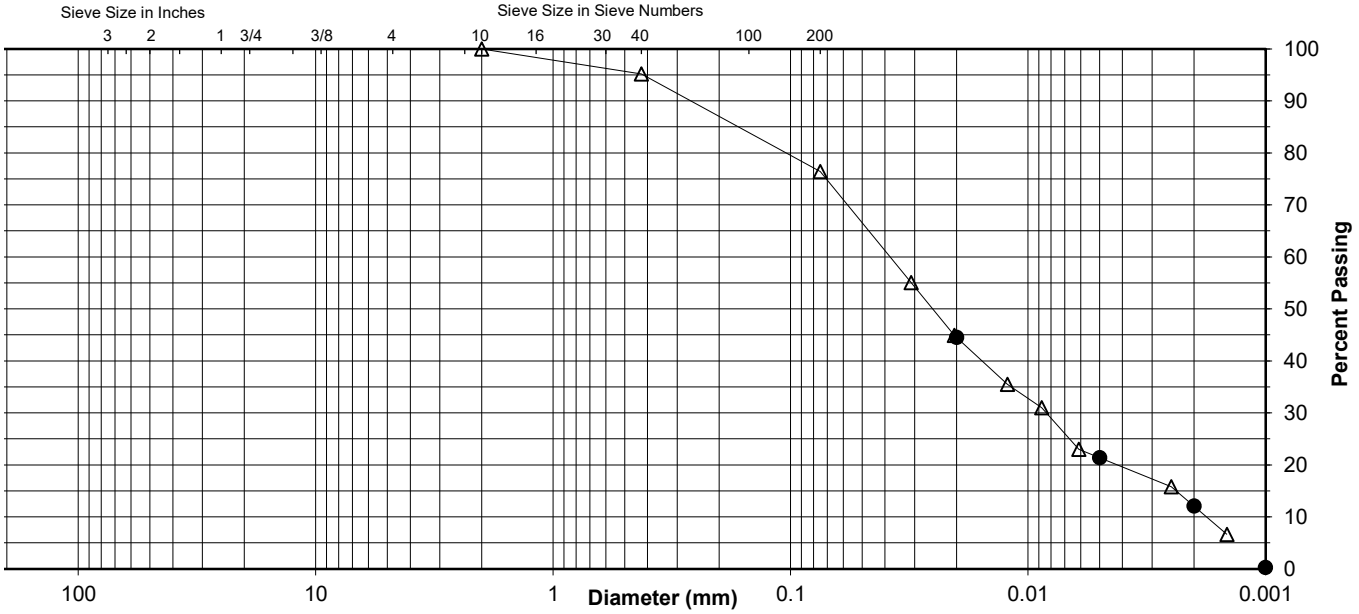
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	95.2
No. 200	76.4
0.02 mm	44.5
0.005 mm	21.4
0.002 mm	12.1
0.001 mm	0.3

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.0	4.8	18.8	55.0	21.4
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	0.0			4.8	18.8	64.3	12.1



Comments

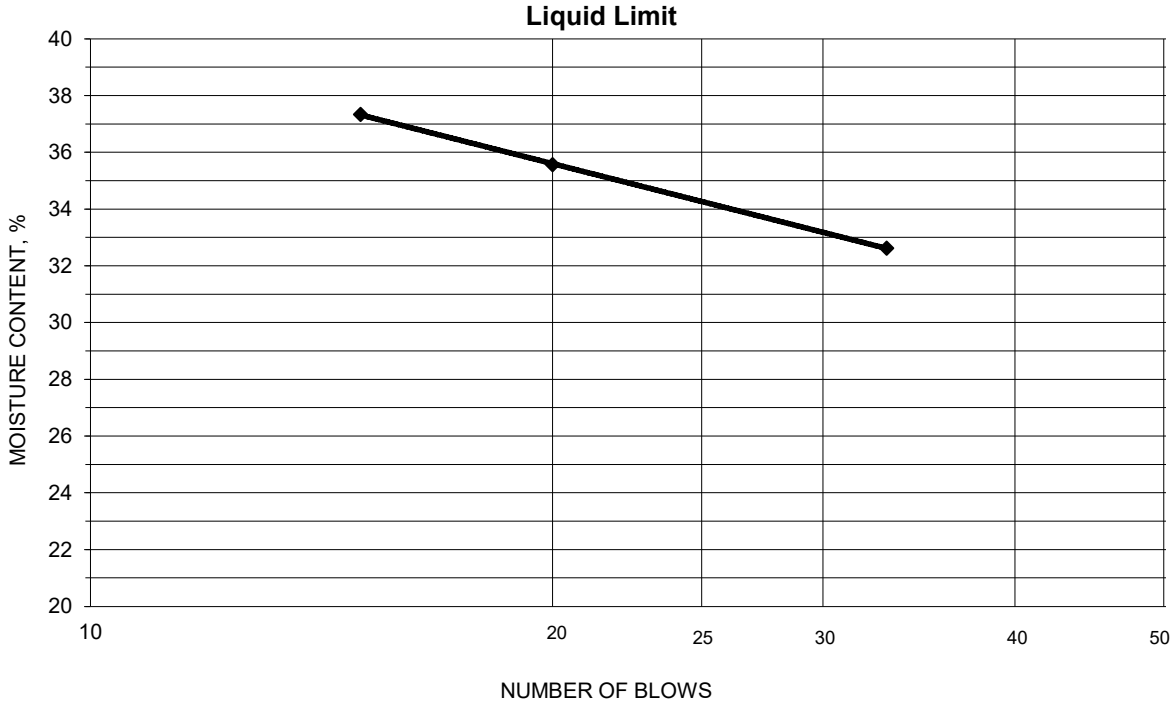
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-3, 4.5'-5.4'			Lab ID	26
				% + No. 40	5
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	06-29-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
17.50	15.97	11.28	33	32.6	
16.02	14.80	11.37	20	35.6	
16.44	15.01	11.18	15	37.3	34



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.42	17.90	11.32	23.1	23	11
19.66	18.04	11.08	23.3		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-4, 0.0'-5.0'	Lab ID	183
Sample Type	BULK	Date Received	6-14-22
		Date Reported	7-8-22

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	95.5
No. 4	4.75	90.3
No. 10	2	72.4
No. 40	0.425	67.8
No. 200	0.075	47.7
	0.02	28.5
	0.005	18.2
	0.002	12.4
Estimated	0.001	7.9

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	9.7	27.6
Coarse Sand	17.9	4.6
Medium Sand	4.6	---
Fine Sand	20.1	20.1
Silt	29.5	35.3
Clay	18.2	12.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	32
Plastic Limit:	19
Plasticity Index:	13
Activity Index:	1.0

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC
Group Name:	Clayey sand
AASHTO Classification:	A-6 (3)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-4, 0.0'-5.0'	Lab ID	183

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	JMB
Test Date	06-27-2022
Date Received	06-14-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	95.5
No. 4	90.3
No. 10	72.4

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

Specific Gravity 2.7

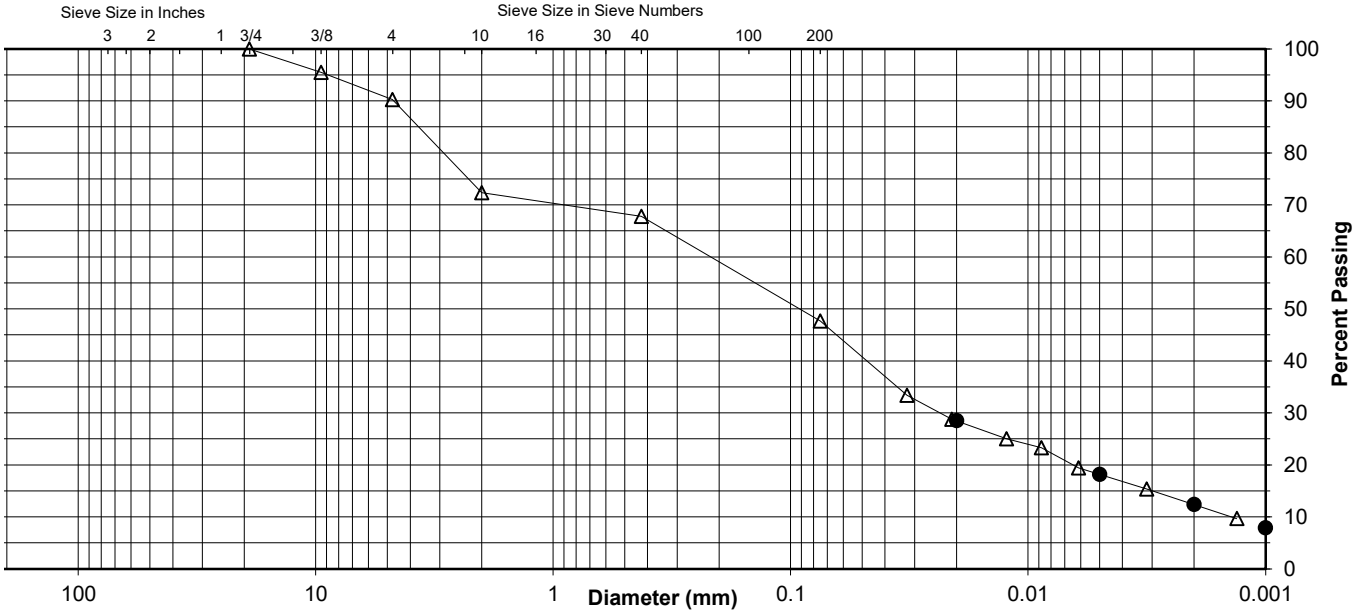
Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	67.8
No. 200	47.7
0.02 mm	28.5
0.005 mm	18.2
0.002 mm	12.4
0.001 mm	7.9

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	9.7	17.9	4.6	20.1	29.5	18.2

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	27.6	4.6	20.1	35.3	12.4



Comments

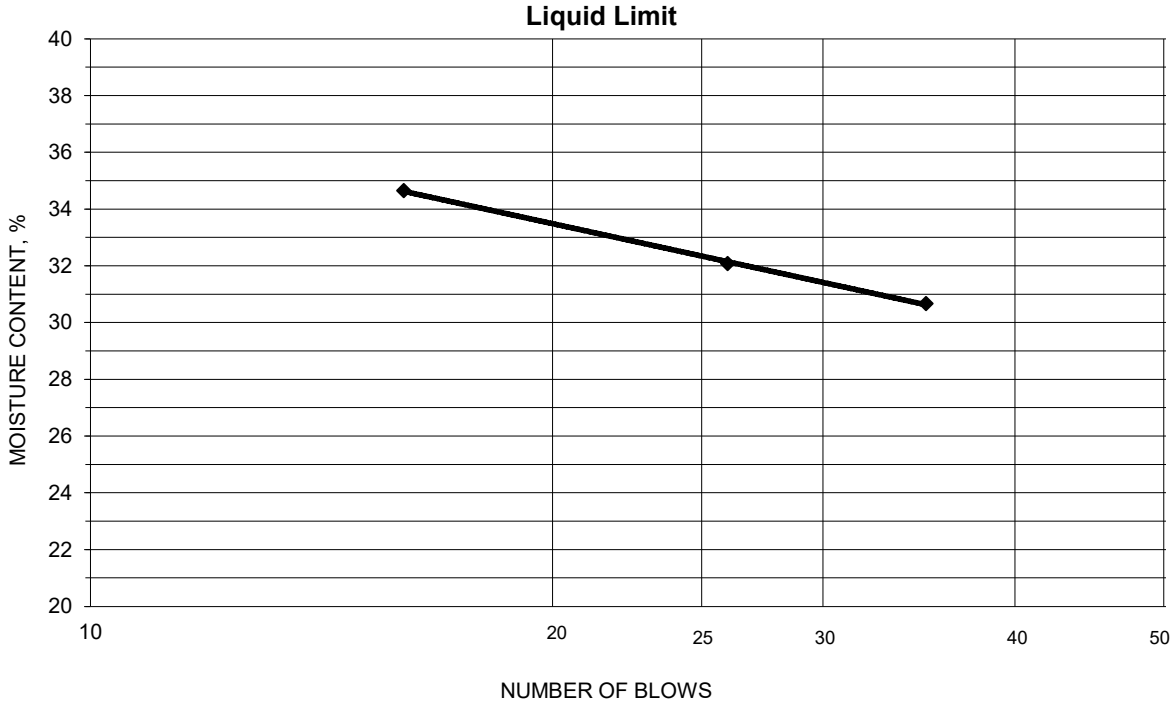
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-4, 0.0'-5.0'			Lab ID	183
				% + No. 40	32
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	06-21-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
15.96	14.81	11.06	35	30.7	
15.70	14.59	11.13	26	32.1	
15.17	14.03	10.74	16	34.7	32



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.01	17.73	11.07	19.2	19	13
19.25	17.89	10.82	19.2		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-5, 0.0'-5.0'	Lab ID	184
Sample Type	BULK	Date Received	6-14-22
		Date Reported	8-25-22

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	93.7
No. 4	4.75	77.3
No. 10	2	60.8
No. 40	0.425	51.5
No. 200	0.075	38.7
	0.02	25.5
	0.005	16.9
	0.002	12.4
Estimated	0.001	10.2

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	22.7	39.2
Coarse Sand	16.5	9.3
Medium Sand	9.3	---
Fine Sand	12.8	12.8
Silt	21.8	26.3
Clay	16.9	12.4

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	32
Plastic Limit:	19
Plasticity Index:	13
Activity Index:	1.0

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	SC
Group Name:	Clayey sand with gravel
AASHTO Classification:	A-6 (1)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-5, 0.0'-5.0'	Lab ID	184

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Rounded and Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	08-11-2022
Date Received	06-14-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	93.7
No. 4	77.3
No. 10	60.8

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

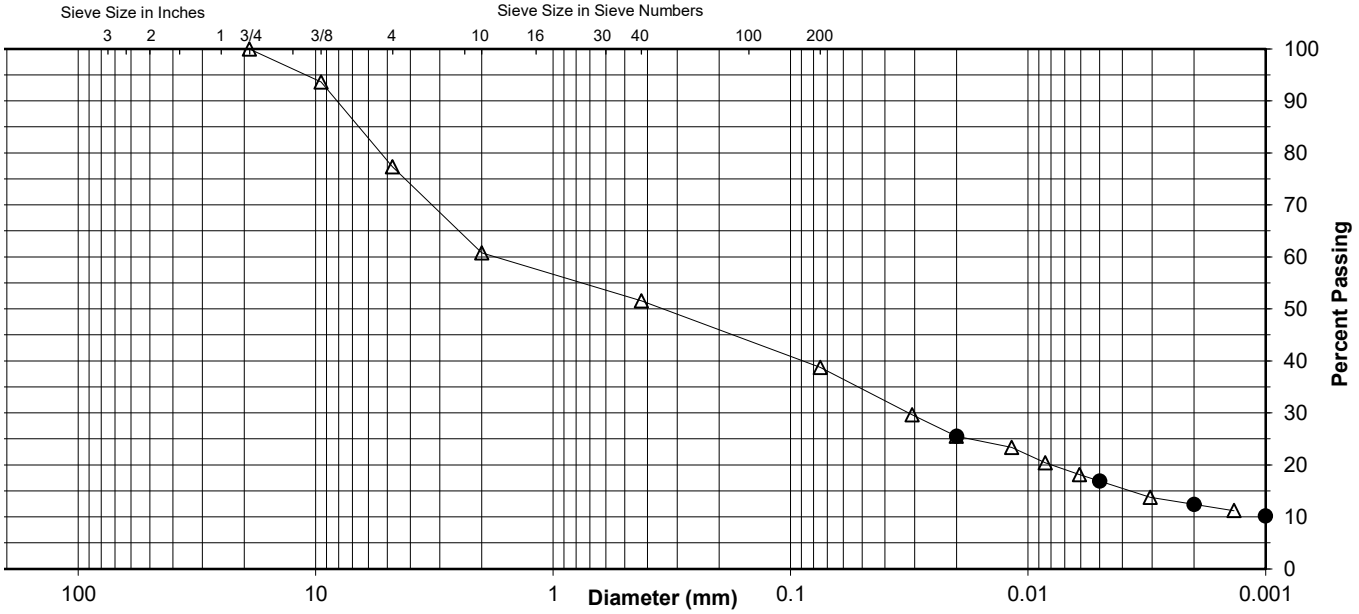
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	51.5
No. 200	38.7
0.02 mm	25.5
0.005 mm	16.9
0.002 mm	12.4
0.001 mm	10.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	22.7	16.5	9.3	12.8	21.8	16.9
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	39.2			9.3	12.8	26.3	12.4



Comments

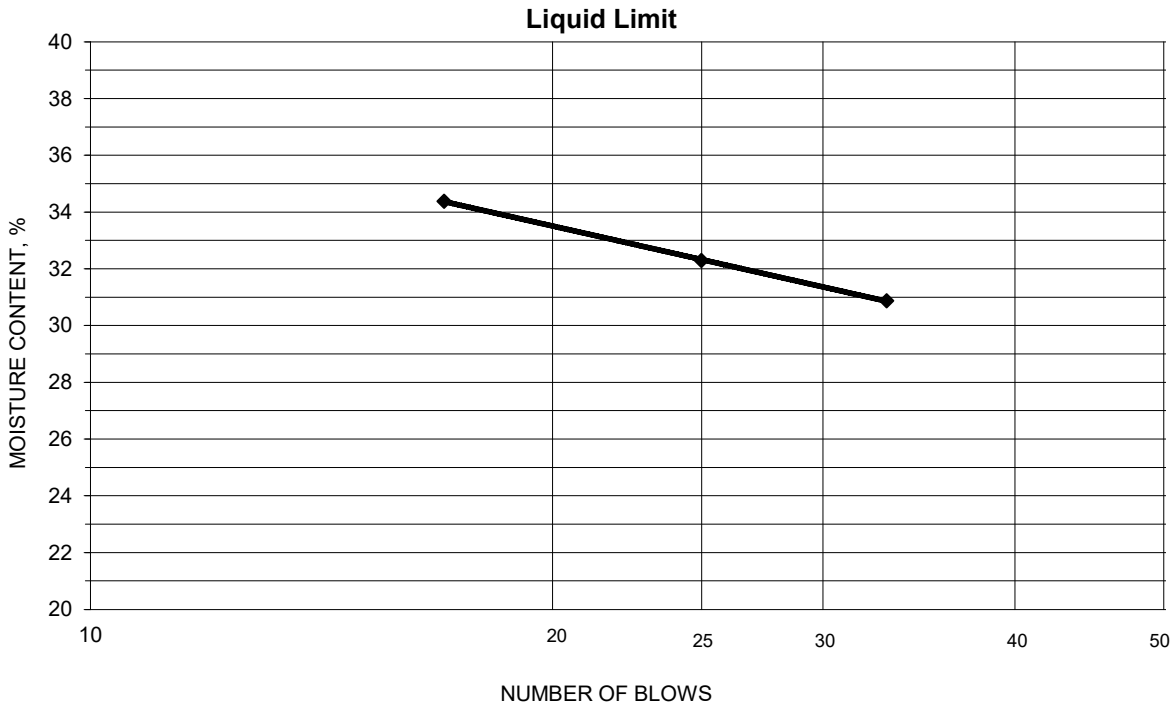
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-5, 0.0'-5.0'			Lab ID	184
				% + No. 40	48
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	08-16-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
19.02	17.05	10.67	33	30.9	
18.95	16.99	10.92	25	32.3	
19.61	17.43	11.09	17	34.4	32



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.95	16.84	10.92	18.8	19	13
18.85	17.58	10.75	18.6		

Remarks: _____

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-6, 0.0'-5.0'	Lab ID	186

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	08-11-2022
Date Received	06-14-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.4
No. 4	85.6
No. 10	67.5

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

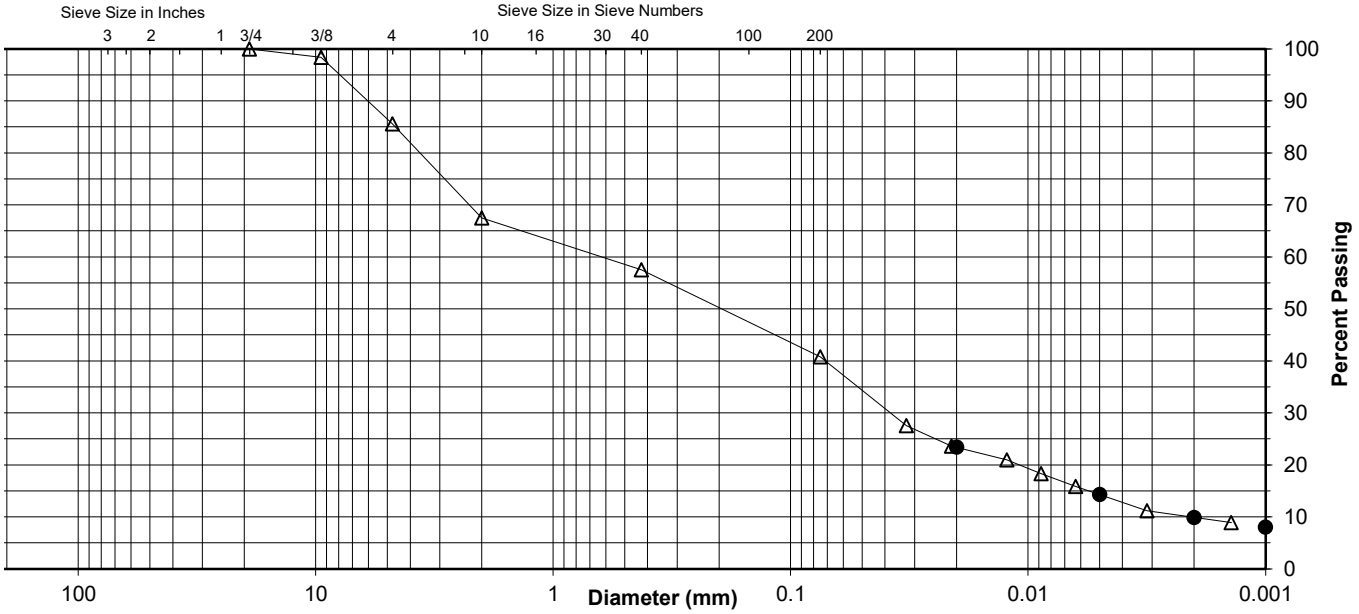
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	57.5
No. 200	40.8
0.02 mm	23.4
0.005 mm	14.3
0.002 mm	9.9
0.001 mm	8.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	14.4	18.1	10.0	16.7	26.5	14.3
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	32.5			10.0	16.7	30.9	9.9



Comments

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-7, 0.0'-5.0'	Lab ID	189
Sample Type	BULK	Date Received	6-14-22
		Date Reported	7-8-22

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	93.4
No. 4	4.75	87.2
No. 10	2	79.7
No. 40	0.425	74.3
No. 200	0.075	57.8
	0.02	39.1
	0.005	25.6
	0.002	16.9
Estimated	0.001	5.6

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	12.8	20.3
Coarse Sand	7.5	5.4
Medium Sand	5.4	---
Fine Sand	16.5	16.5
Silt	32.2	40.9
Clay	25.6	16.9

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	36
Plastic Limit:	20
Plasticity Index:	16
Activity Index:	0.9

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (7)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-7, 0.0'-5.0'	Lab ID	189

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	RJ/EK
Test Date	06-28-2022
Date Received	06-14-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	93.4
No. 4	87.2
No. 10	79.7

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

Specific Gravity 2.7

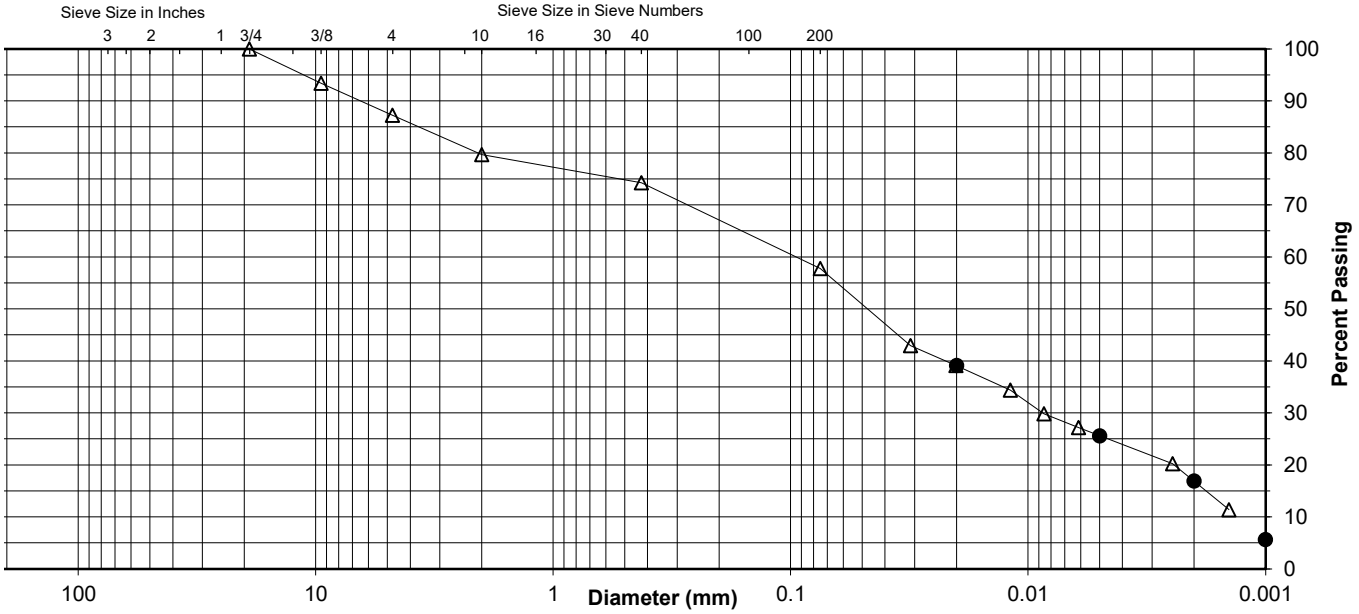
Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	74.3
No. 200	57.8
0.02 mm	39.1
0.005 mm	25.6
0.002 mm	16.9
0.001 mm	5.6

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	12.8	7.5	5.4	16.5	32.2	25.6

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	20.3	5.4	16.5	40.9	16.9



Comments

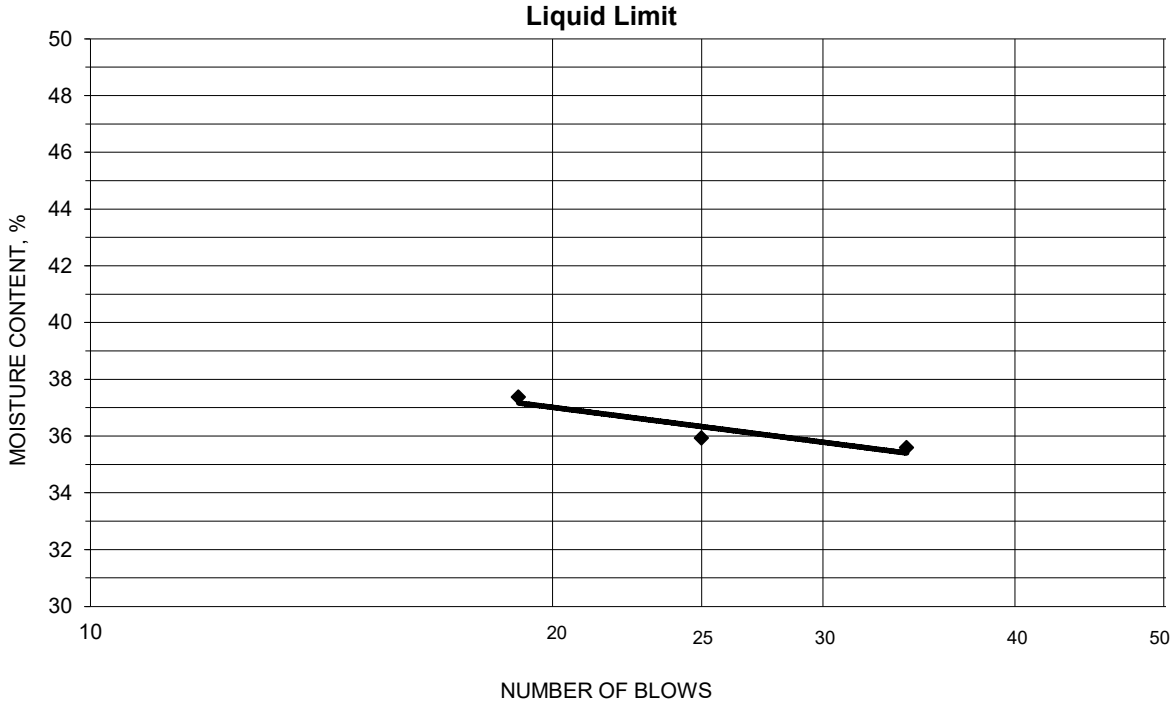
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-7, 0.0'-5.0'			Lab ID	189
				% + No. 40	26
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	06-30-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
14.22	13.38	11.02	34	35.6	
15.85	14.56	10.97	25	35.9	
15.32	14.15	11.02	19	37.4	36



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.00	15.99	10.90	19.8	20	16
19.01	17.65	10.90	20.1		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-8, 0.0'-5.0'	Lab ID	192
Sample Type	BULK	Date Received	6-14-22
		Date Reported	7-8-22

Test Results

Natural Moisture Content

Test Method: ASTM D 2216

Moisture Content (%): 15.7

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	96.3
No. 4	4.75	93.0
No. 10	2	89.3
No. 40	0.425	80.2
No. 200	0.075	72.9
	0.02	47.4
	0.005	34.8
	0.002	27.8
Estimated	0.001	22.9

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	7.0	10.7
Coarse Sand	3.7	9.1
Medium Sand	9.1	---
Fine Sand	7.3	7.3
Silt	38.1	45.1
Clay	34.8	27.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	35
Plastic Limit:	21
Plasticity Index:	14
Activity Index:	0.5

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Test Method: ASTM D 854
Prepared: Dry

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.63

Classification

Unified Group Symbol: CL

Group Name: Lean clay with sand

AASHTO Classification: A-6 (9)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-8, 0.0'-5.0'	Lab ID	192

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	06-16-2022
Date Received	06-14-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	96.3
No. 4	93.0
No. 10	89.3

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

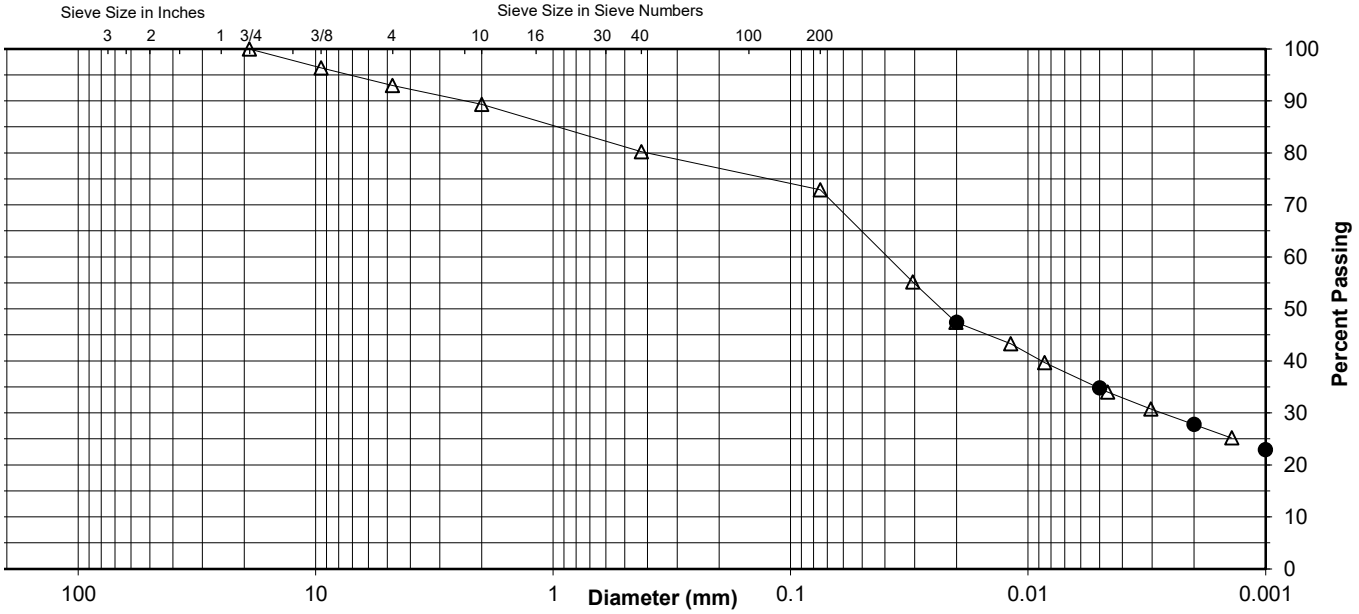
Specific Gravity 2.63

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	80.2
No. 200	72.9
0.02 mm	47.4
0.005 mm	34.8
0.002 mm	27.8
0.001 mm	22.9

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	7.0	3.7	9.1	7.3	38.1	34.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	10.7			9.1	7.3	45.1	27.8



Comments

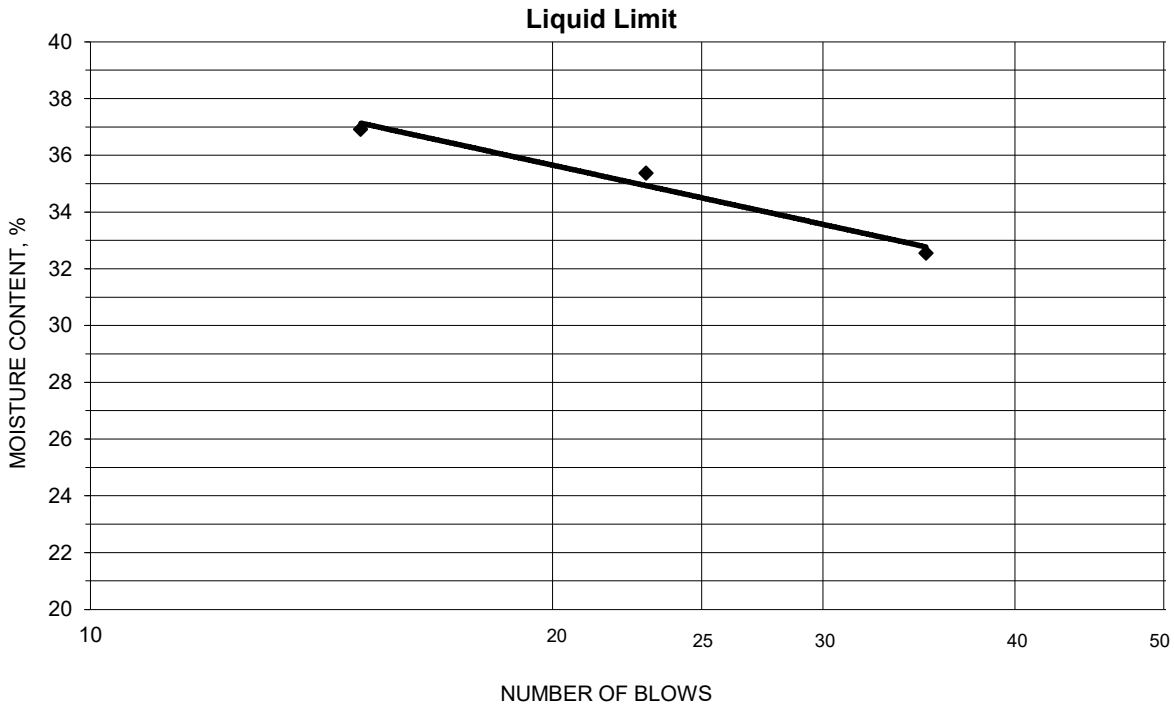
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-8, 0.0'-5.0'			Lab ID	192
				% + No. 40	20
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	06-21-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
16.31	15.06	11.22	35	32.6	
15.97	14.64	10.88	23	35.4	
17.78	15.96	11.03	15	36.9	35



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.48	17.15	10.77	20.8	21	14
20.03	18.55	11.40	20.7		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-9, 0.0'-10.0'	Lab ID	195
Sample Type	BULK	Date Received	6-14-22
		Date Reported	7-8-22

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	97.1
3/8"	9.5	92.1
No. 4	4.75	87.9
No. 10	2	82.9
No. 40	0.425	72.0
No. 200	0.075	62.1
	0.02	50.4
	0.005	33.8
	0.002	25.7
Estimated	0.001	20.6

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	12.1	17.1
Coarse Sand	5.0	10.9
Medium Sand	10.9	---
Fine Sand	9.9	9.9
Silt	28.3	36.4
Clay	33.8	25.7

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	34
Plastic Limit:	23
Plasticity Index:	11
Activity Index:	0.4

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (5)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-9, 0.0'-10.0'	Lab ID	195

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	06-16-2022
Date Received	06-14-2022

Maximum Particle Size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	97.1
3/8"	92.1
No. 4	87.9
No. 10	82.9

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

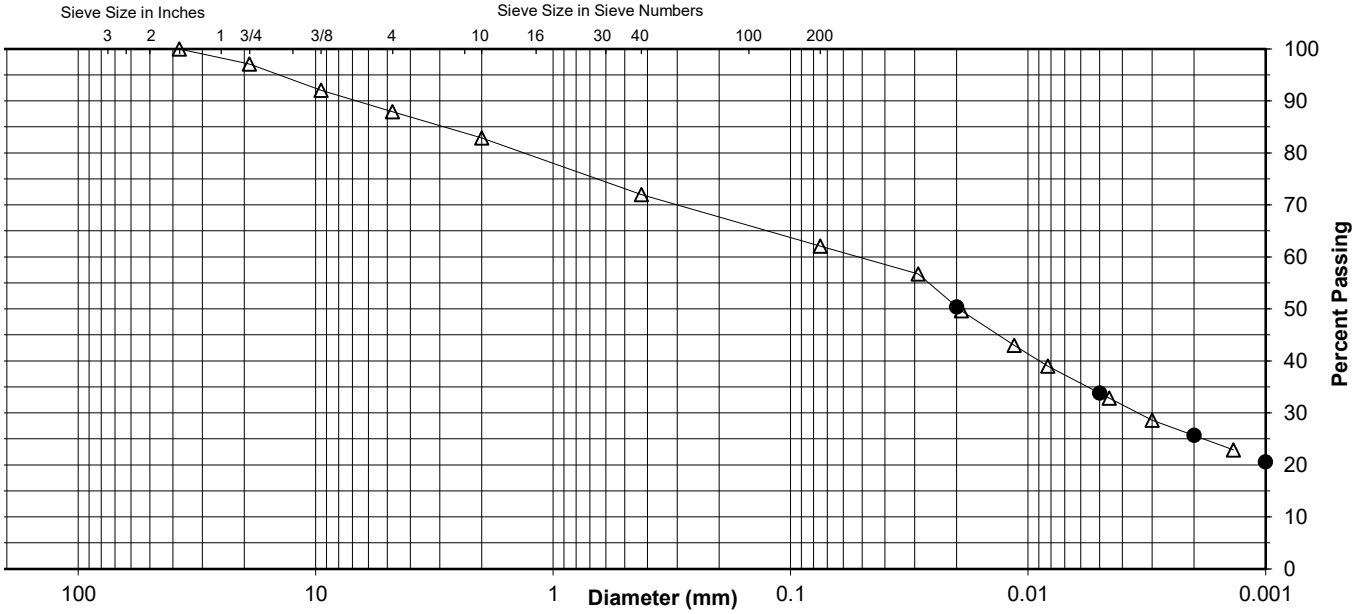
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	72.0
No. 200	62.1
0.02 mm	50.4
0.005 mm	33.8
0.002 mm	25.7
0.001 mm	20.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	2.9	9.2	5.0	10.9	9.9	28.3	33.8
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	17.1			10.9	9.9	36.4	25.7



Comments

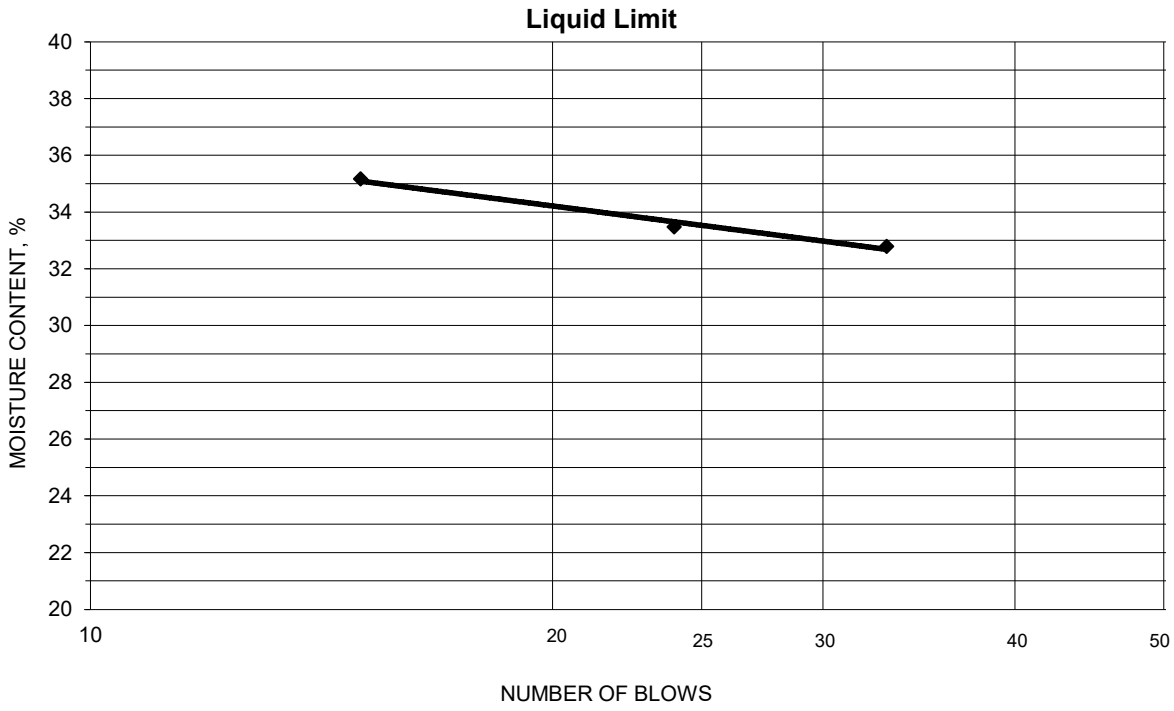
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-9, 0.0'-10.0'			Lab ID	195
				% + No. 40	28
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	06-21-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
14.93	13.92	10.84	33	32.8	
17.63	16.10	11.53	24	33.5	
16.27	14.99	11.35	15	35.2	34



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.75	18.22	11.65	23.3	23	11
19.25	17.80	11.57	23.3		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-10, 0.0'-10.0'	Lab ID	196
Sample Type	BULK	Date Received	6-14-22
		Date Reported	8-29-22

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	92.1
3/8"	9.5	75.8
No. 4	4.75	62.4
No. 10	2	50.7
No. 40	0.425	40.8
No. 200	0.075	34.4
	0.02	17.7
	0.005	10.2
	0.002	6.6
Estimated	0.001	5.0

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	37.6	49.3
Coarse Sand	11.7	9.9
Medium Sand	9.9	---
Fine Sand	6.4	6.4
Silt	24.2	27.8
Clay	10.2	6.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	27
Plastic Limit:	17
Plasticity Index:	10
Activity Index:	1.5

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Test Method: ASTM D 854
Prepared: Dry

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol: GC

Group Name: Clayey gravel with sand

AASHTO Classification: A-2-4 (0)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-10, 0.0'-10.0'	Lab ID	196

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	08-12-2022
Date Received	06-14-2022

Maximum Particle Size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	92.1
3/8"	75.8
No. 4	62.4
No. 10	50.7

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

Specific Gravity 2.7

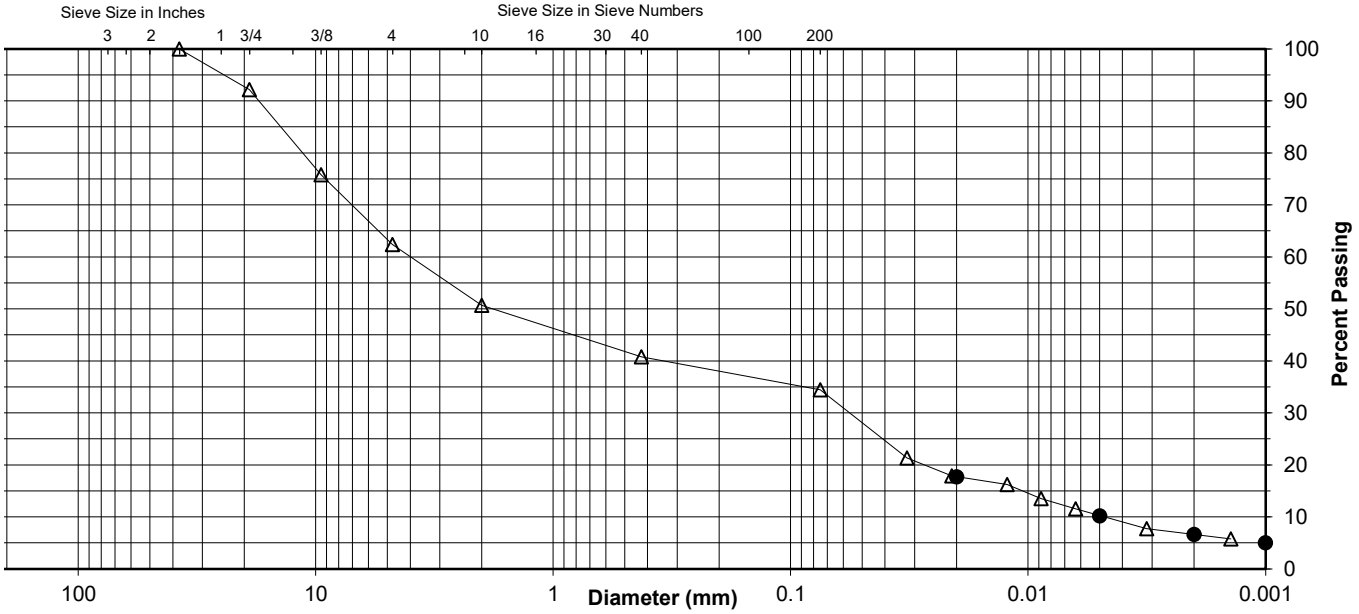
Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	40.8
No. 200	34.4
0.02 mm	17.7
0.005 mm	10.2
0.002 mm	6.6
0.001 mm	5.0

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	7.9	29.7	11.7	9.9	6.4	24.2	10.2

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	49.3	9.9	6.4	27.8	6.6



Comments

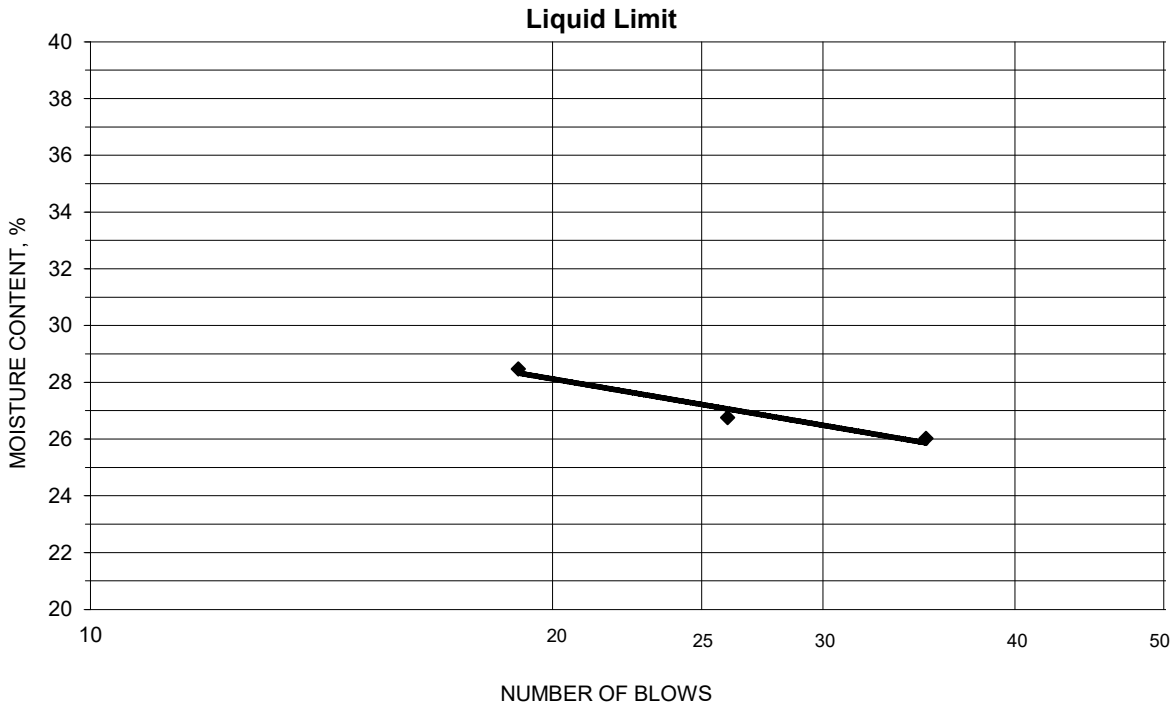
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-10, 0.0'-10.0'			Lab ID	196
				% + No. 40	59
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	08-26-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
17.54	16.14	10.76	35	26.0	
16.83	15.61	11.05	26	26.8	
18.83	17.13	11.16	19	28.5	27



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.52	16.65	11.38	16.5	17	10
17.71	16.83	11.54	16.6		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-11, 0.0'-10.0'	Lab ID	197
Sample Type	BULK	Date Received	6-14-22
		Date Reported	8-25-22

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	95.7
No. 4	4.75	92.7
No. 10	2	85.4
No. 40	0.425	79.2
No. 200	0.075	58.5
	0.02	37.6
	0.005	24.2
	0.002	16.0
Estimated	0.001	10.6

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	7.3	14.6
Coarse Sand	7.3	6.2
Medium Sand	6.2	---
Fine Sand	20.7	20.7
Silt	34.3	42.5
Clay	24.2	16.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	31
Plastic Limit:	20
Plasticity Index:	11
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (4)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-11, 0.0'-10.0'	Lab ID	197

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	08-11-2022
Date Received	06-14-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	95.7
No. 4	92.7
No. 10	85.4

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

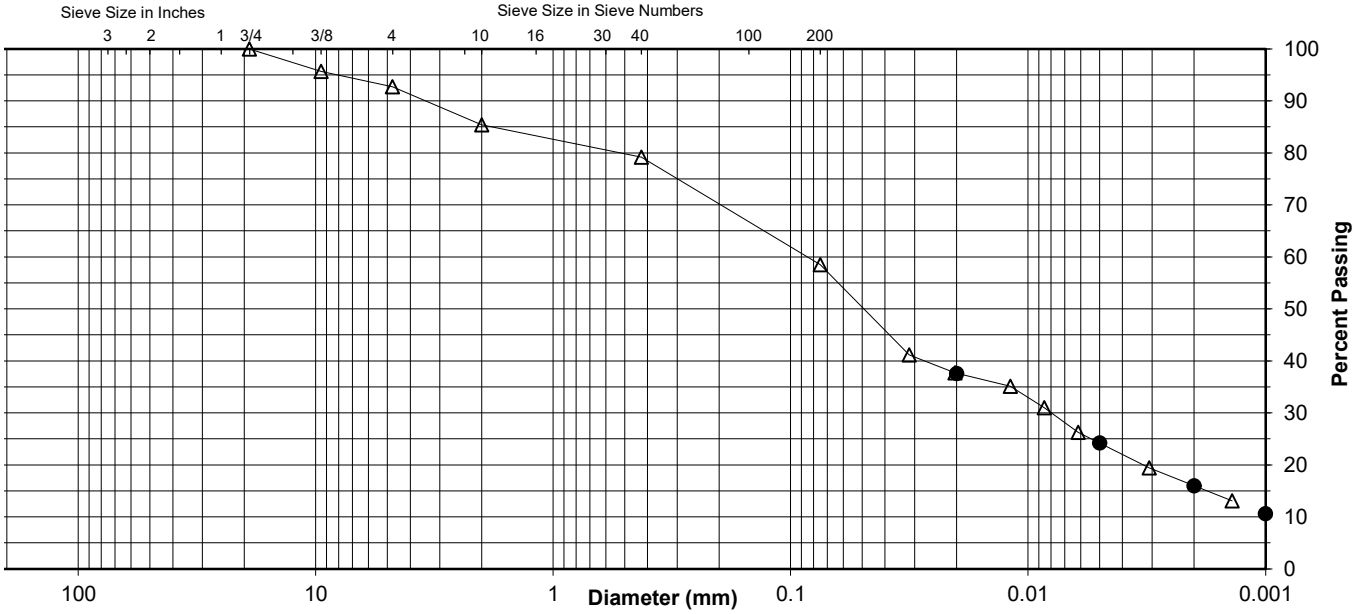
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	79.2
No. 200	58.5
0.02 mm	37.6
0.005 mm	24.2
0.002 mm	16.0
0.001 mm	10.6

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	7.3	7.3	6.2	20.7	34.3	24.2
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	14.6			6.2	20.7	42.5	16.0



Comments

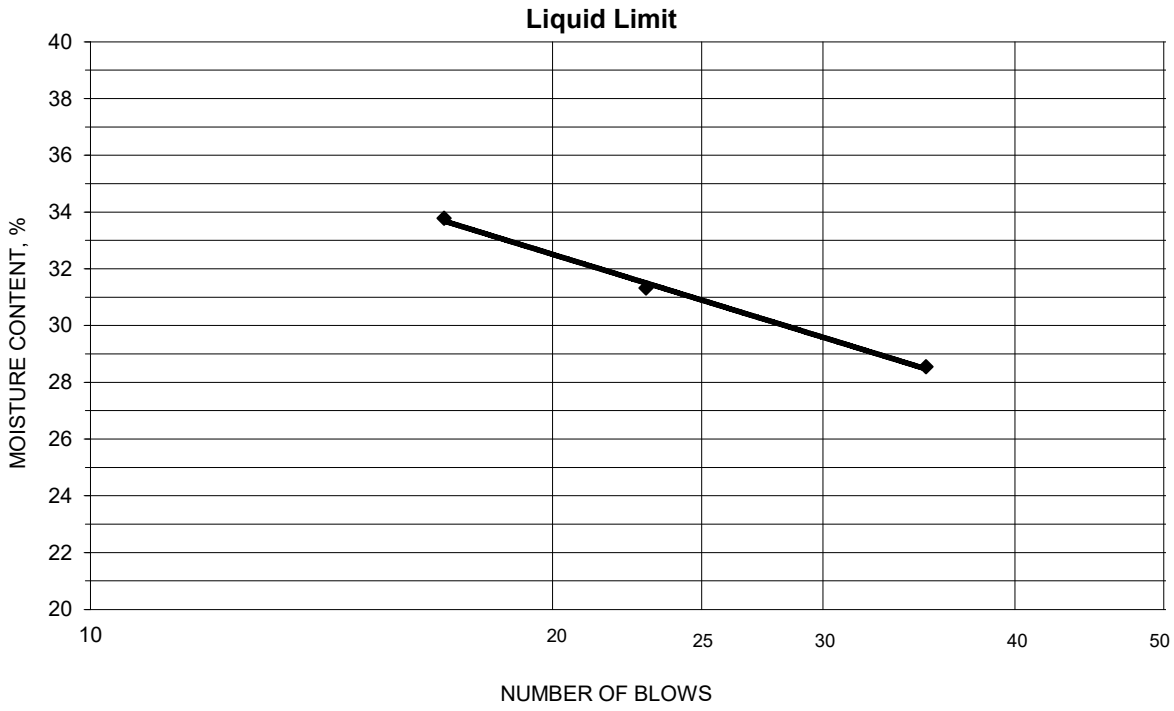
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-11, 0.0'-10.0'			Lab ID	197
				% + No. 40	21
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	08-15-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
19.01	17.30	11.31	35	28.5	
18.91	17.09	11.28	23	31.3	
19.26	17.27	11.38	17	33.8	31



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
20.14	18.68	11.20	19.5	20	11
19.16	17.84	11.08	19.5		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-12, 0.0'-10.0'	Lab ID	198
Sample Type	BULK	Date Received	6-14-22
		Date Reported	8-25-22

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	99.6
No. 10	2	97.6
No. 40	0.425	91.7
No. 200	0.075	85.1
	0.02	50.6
	0.005	37.0
	0.002	28.5
Estimated	0.001	22.4

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	0.4	2.4
Coarse Sand	2.0	5.9
Medium Sand	5.9	---
Fine Sand	6.6	6.6
Silt	48.1	56.6
Clay	37.0	28.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	38
Plastic Limit:	19
Plasticity Index:	19
Activity Index:	0.7

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Lean clay
AASHTO Classification:	A-6 (16)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-12, 0.0'-10.0'	Lab ID	198

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	08-11-2022
Date Received	06-14-2022

Maximum Particle Size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	99.6
No. 10	97.6

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

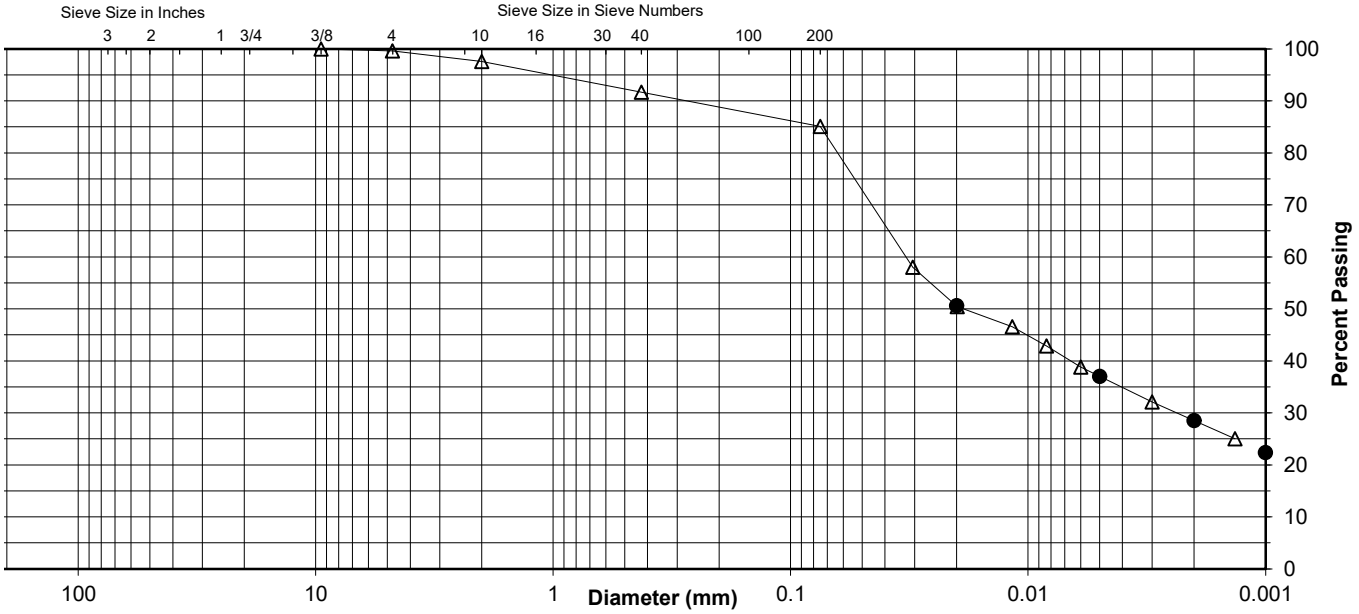
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	91.7
No. 200	85.1
0.02 mm	50.6
0.005 mm	37.0
0.002 mm	28.5
0.001 mm	22.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.4	2.0	5.9	6.6	48.1	37.0
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	2.4			5.9	6.6	56.6	28.5



Comments

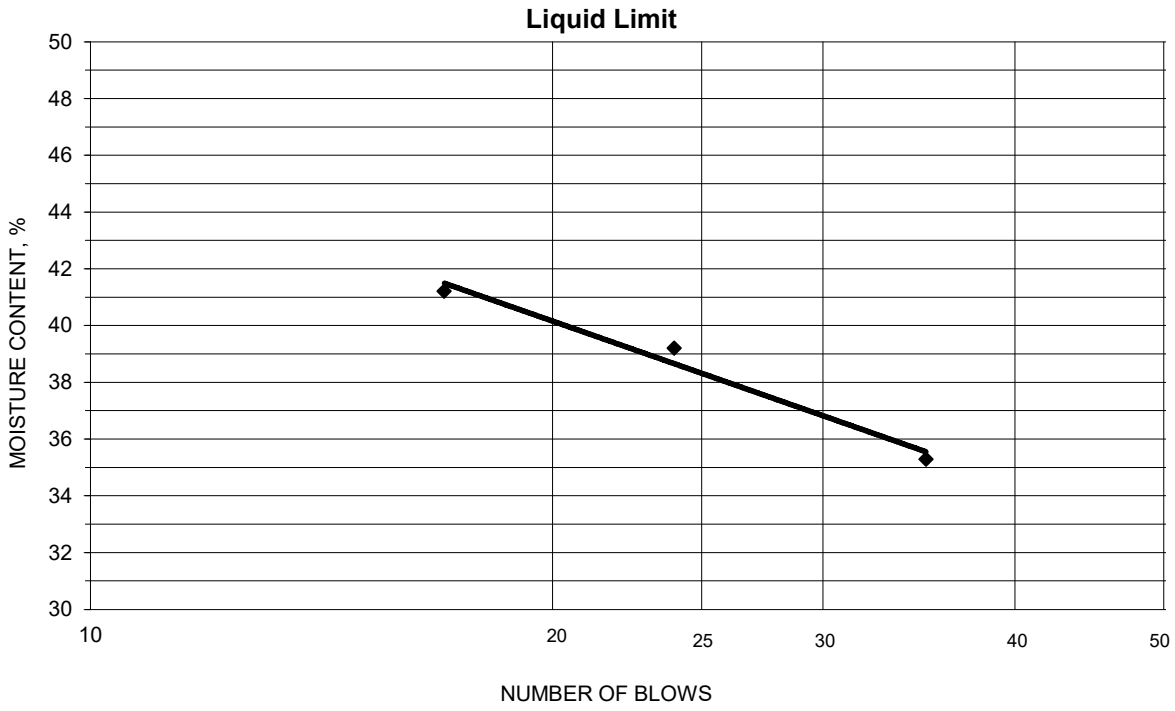
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-12, 0.0'-10.0'			Lab ID	198
				% + No. 40	8
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	08-16-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
18.83	16.79	11.01	35	35.3	
18.91	16.66	10.92	24	39.2	
18.73	16.62	11.50	17	41.2	38



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.76	17.58	11.47	19.3	19	19
18.27	17.14	11.33	19.4		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-13, 5.0'-10.0'	Lab ID	200
Sample Type	BULK	Date Received	6-14-22
		Date Reported	7-8-22

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	97.9
No. 4	4.75	88.5
No. 10	2	84.1
No. 40	0.425	82.5
No. 200	0.075	73.1
	0.02	39.3
	0.005	29.4
	0.002	22.8
Estimated	0.001	13.0

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	11.5	15.9
Coarse Sand	4.4	1.6
Medium Sand	1.6	---
Fine Sand	9.4	9.4
Silt	43.7	50.3
Clay	29.4	22.8

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	41
Plastic Limit:	20
Plasticity Index:	21
Activity Index:	0.9

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Lean clay with sand
AASHTO Classification:	A-7-6 (14)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-13, 5.0'-10.0'	Lab ID	200

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	EK
Test Date	06-28-2022
Date Received	06-14-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	97.9
No. 4	88.5
No. 10	84.1

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

Specific Gravity 2.7

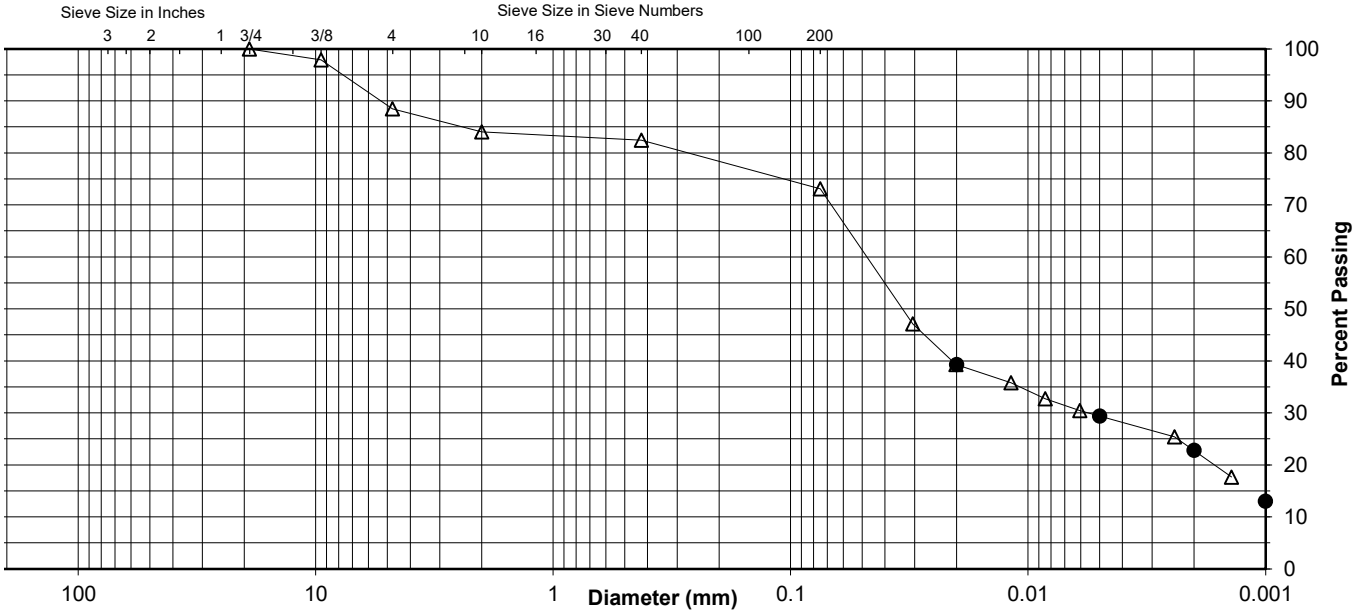
Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	82.5
No. 200	73.1
0.02 mm	39.3
0.005 mm	29.4
0.002 mm	22.8
0.001 mm	13.0

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	0.0	11.5	4.4	1.6	9.4	43.7	29.4

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	15.9	1.6	9.4	50.3	22.8



Comments

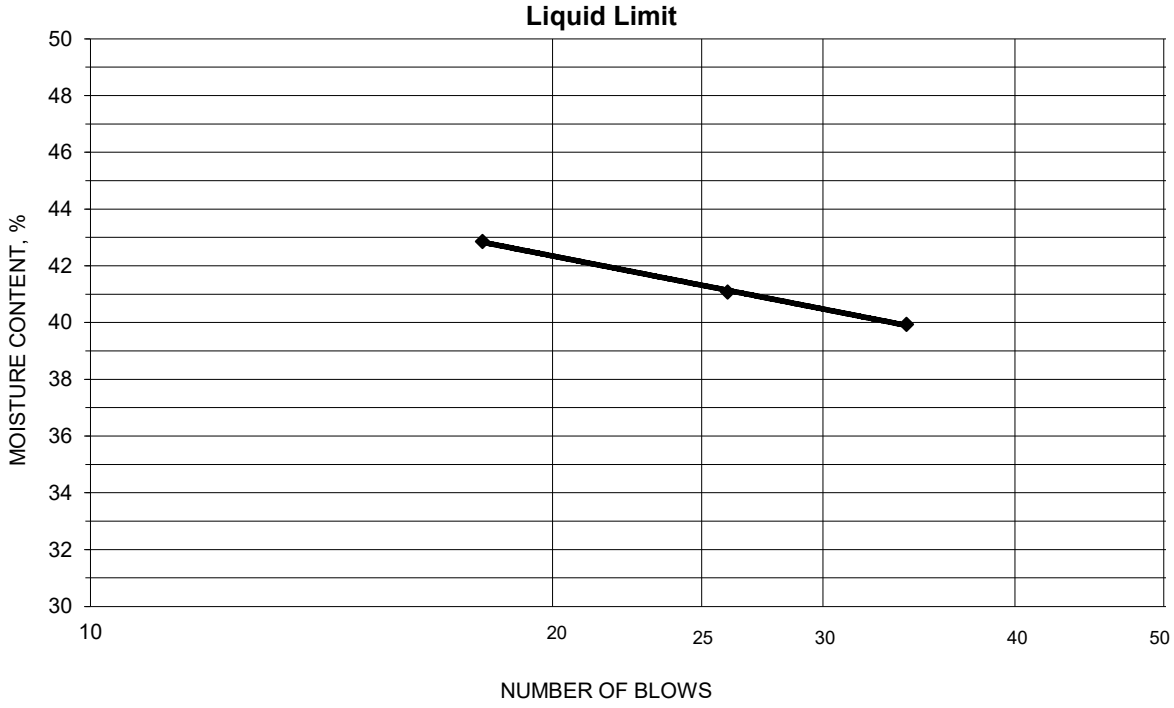
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-13, 5.0'-10.0'			Lab ID	200
				% + No. 40	18
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	06-30-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
15.20	14.01	11.03	34	39.9	
16.22	14.70	11.00	26	41.1	
16.49	14.90	11.19	18	42.9	41



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.87	17.61	11.42	20.4	20	21
18.74	17.38	10.62	20.1		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-13, 10.0'-15.0'	Lab ID	201
Sample Type	BULK	Date Received	6-14-22
		Date Reported	7-8-22

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
3/8"	9.5	100.0
No. 4	4.75	98.2
No. 10	2	89.5
No. 40	0.425	86.8
No. 200	0.075	75.3
	0.02	46.2
	0.005	32.3
	0.002	24.6
Estimated	0.001	12.3

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	1.8	10.5
Coarse Sand	8.7	2.7
Medium Sand	2.7	---
Fine Sand	11.5	11.5
Silt	43.0	50.7
Clay	32.3	24.6

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	42
Plastic Limit:	20
Plasticity Index:	22
Activity Index:	0.9

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Lean clay with sand
AASHTO Classification:	A-7-6 (16)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-13, 10.0'-15.0'	Lab ID	201

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Rounded and Angular
Particle Hardness:	Hard and Durable
Tested By	EK
Test Date	06-28-2022
Date Received	06-14-2022

Maximum Particle Size: 3/8" Sieve

Sieve Size	% Passing
3/8"	100.0
No. 4	98.2
No. 10	89.5

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

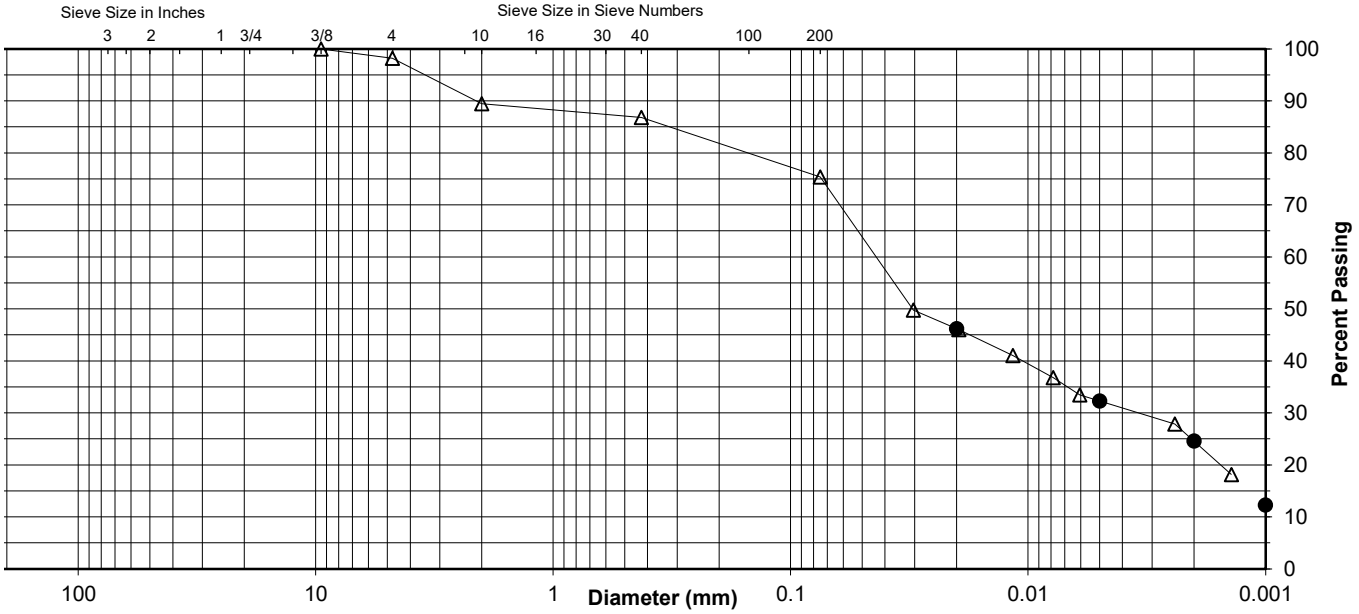
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	86.8
No. 200	75.3
0.02 mm	46.2
0.005 mm	32.3
0.002 mm	24.6
0.001 mm	12.3

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	1.8	8.7	2.7	11.5	43.0	32.3
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	10.5			2.7	11.5	50.7	24.6



Comments

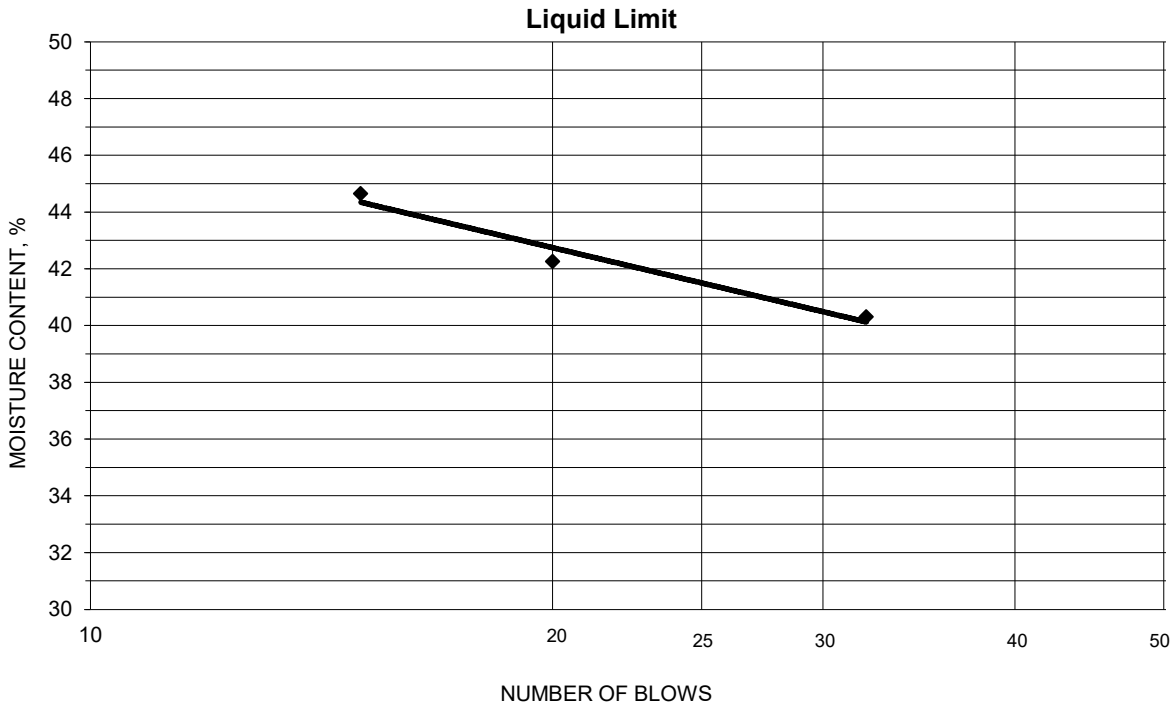
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-13, 10.0'-15.0'			Lab ID	201
				% + No. 40	13
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	06-21-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
16.52	14.98	11.16	32	40.3	
16.53	14.92	11.11	20	42.3	
15.00	13.79	11.08	15	44.6	42



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.05	17.72	11.20	20.4	20	22
17.44	16.38	11.11	20.1		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-14, 0.0'-10.0'	Lab ID	202
Sample Type	BULK	Date Received	6-14-22
		Date Reported	7-8-22

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	97.7
No. 4	4.75	95.8
No. 10	2	93.9
No. 40	0.425	85.1
No. 200	0.075	64.1
	0.02	44.4
	0.005	25.5
	0.002	18.3
Estimated	0.001	13.0

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	4.2	6.1
Coarse Sand	1.9	8.8
Medium Sand	8.8	---
Fine Sand	21.0	21.0
Silt	38.6	45.8
Clay	25.5	18.3

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	32
Plastic Limit:	18
Plasticity Index:	14
Activity Index:	0.8

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (7)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-14, 0.0'-10.0'	Lab ID	202

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	MW
Test Date	06-16-2022
Date Received	06-14-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	97.7
No. 4	95.8
No. 10	93.9

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

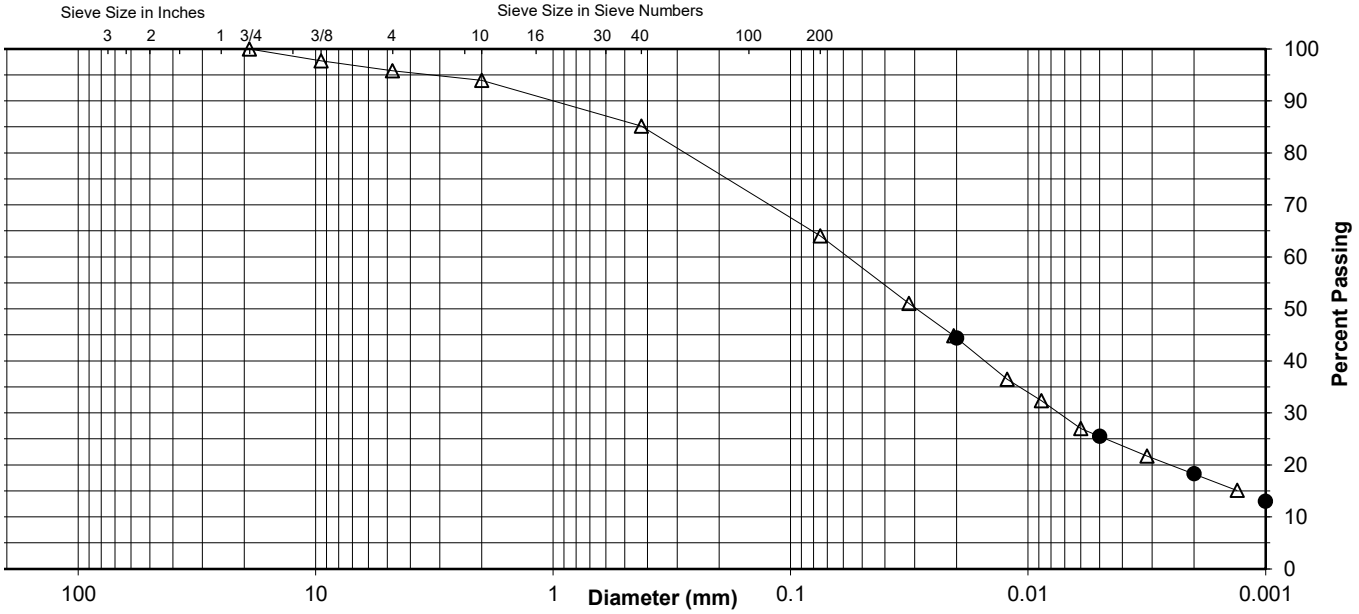
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	85.1
No. 200	64.1
0.02 mm	44.4
0.005 mm	25.5
0.002 mm	18.3
0.001 mm	13.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	4.2	1.9	8.8	21.0	38.6	25.5
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	6.1			8.8	21.0	45.8	18.3



Comments

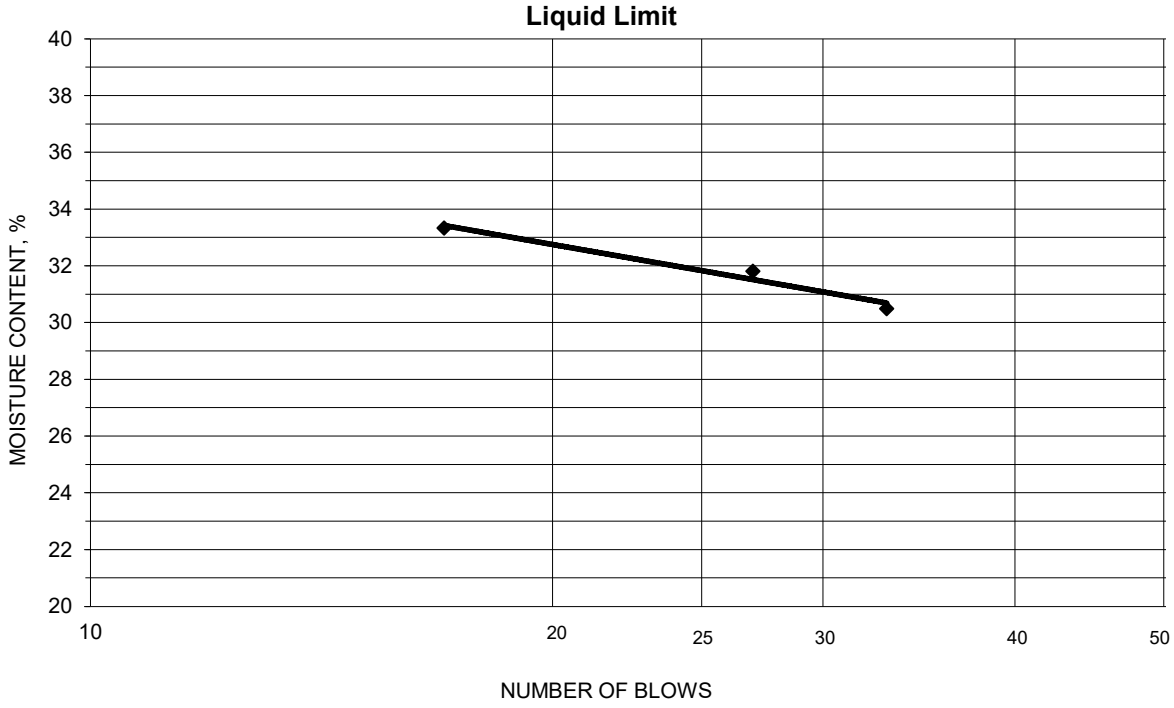
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-14, 0.0'-10.0'			Lab ID	202
				% + No. 40	15
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	06-20-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
15.08	14.08	10.80	33	30.5	
15.33	14.29	11.02	27	31.8	
15.73	14.53	10.93	17	33.3	32



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.62	16.59	10.77	17.7	18	14
17.29	16.41	11.36	17.4		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-15, 0.0'-10.0'	Lab ID	203
Sample Type	BULK	Date Received	6-14-22
		Date Reported	7-8-22

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	97.9
3/8"	9.5	97.1
No. 4	4.75	95.2
No. 10	2	89.4
No. 40	0.425	83.5
No. 200	0.075	76.6
	0.02	62.5
	0.005	38.6
	0.002	25.9
Estimated	0.001	16.4

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	4.8	10.6
Coarse Sand	5.8	5.9
Medium Sand	5.9	---
Fine Sand	6.9	6.9
Silt	38.0	50.7
Clay	38.6	25.9

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	49
Plastic Limit:	25
Plasticity Index:	24
Activity Index:	0.9

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Lean clay with sand
AASHTO Classification:	A-7-6 (19)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-15, 0.0'-10.0'	Lab ID	203

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Weathered and Friable
Tested By	EK
Test Date	06-27-2022
Date Received	06-14-2022

Maximum Particle Size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	97.9
3/8"	97.1
No. 4	95.2
No. 10	89.4

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

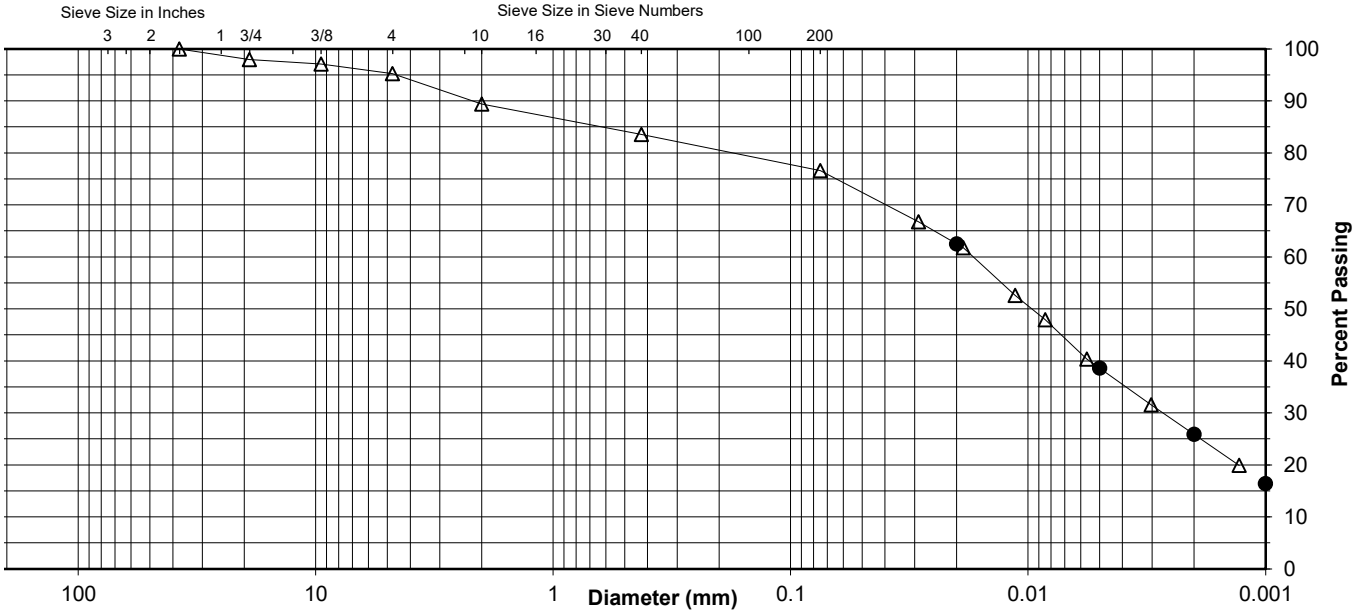
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	83.5
No. 200	76.6
0.02 mm	62.5
0.005 mm	38.6
0.002 mm	25.9
0.001 mm	16.4

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	2.1	2.7	5.8	5.9	6.9	38.0	38.6
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	10.6			5.9	6.9	50.7	25.9



Comments

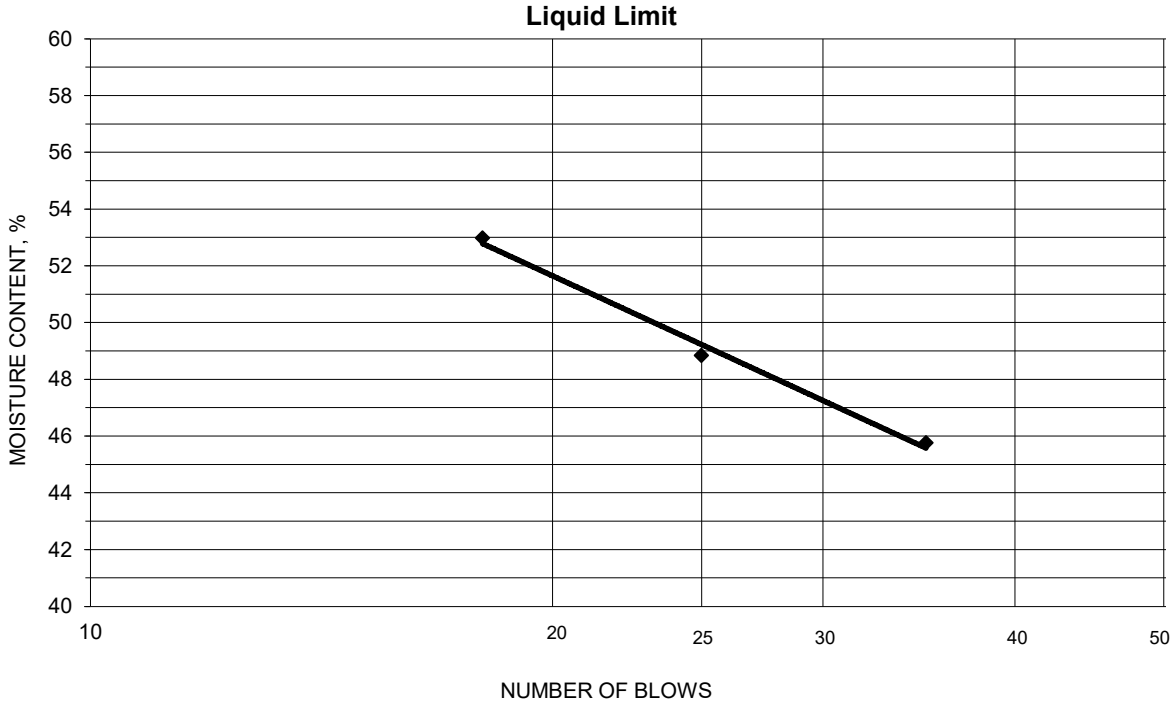
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-15, 0.0'-10.0'			Lab ID	203
				% + No. 40	16
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	06-29-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
16.06	14.60	11.41	35	45.8	
15.42	13.94	10.91	25	48.8	
15.19	13.68	10.83	18	53.0	49



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.11	16.66	10.88	25.1	25	24
17.39	16.24	11.65	25.1		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-16, 0.0'-10.0'	Lab ID	204
Sample Type	BULK	Date Received	6-14-22
		Date Reported	7-8-22

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	98.9
No. 4	4.75	94.9
No. 10	2	82.8
No. 40	0.425	76.7
No. 200	0.075	64.6
	0.02	45.0
	0.005	26.1
	0.002	13.0
Estimated	0.001	1.1

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	5.1	17.2
Coarse Sand	12.1	6.1
Medium Sand	6.1	---
Fine Sand	12.1	12.1
Silt	38.5	51.6
Clay	26.1	13.0

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	35
Plastic Limit:	21
Plasticity Index:	14
Activity Index:	1.1

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (7)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-16, 0.0'-10.0'	Lab ID	204

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	TRH
Test Date	06-29-2022
Date Received	06-14-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	98.9
No. 4	94.9
No. 10	82.8

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

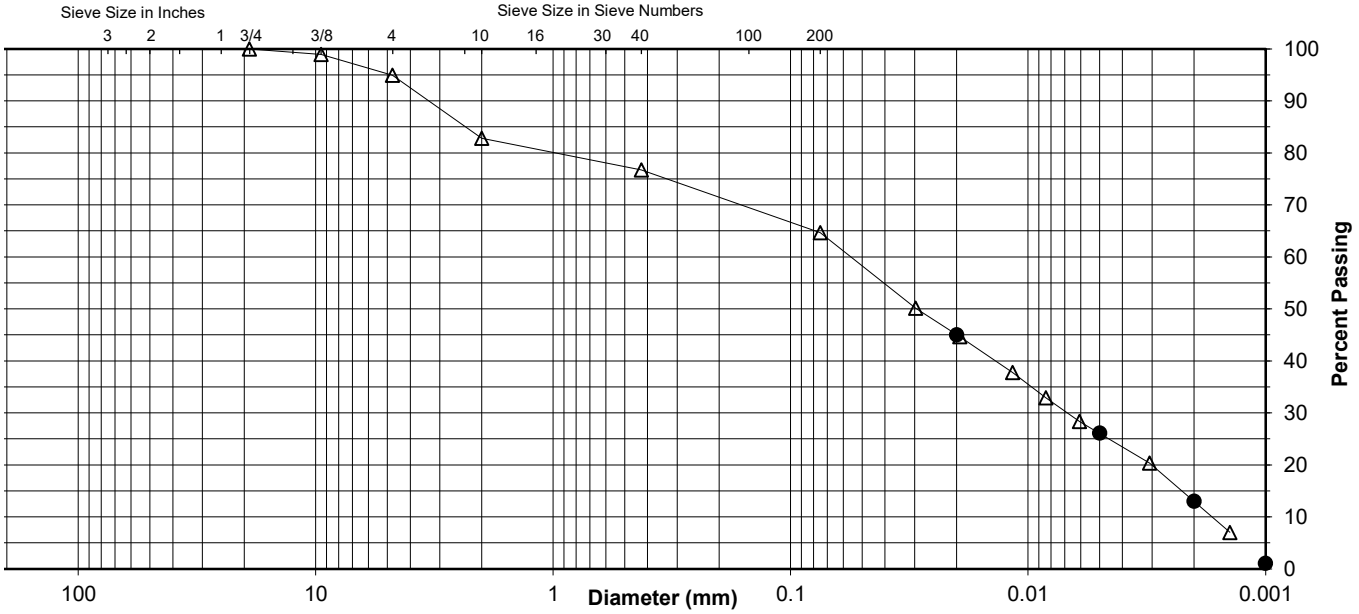
Specific Gravity 2.7

Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	76.7
No. 200	64.6
0.02 mm	45.0
0.005 mm	26.1
0.002 mm	13.0
0.001 mm	1.1

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	5.1	12.1	6.1	12.1	38.5	26.1
AASHTO	Gravel			Coarse Sand	Fine Sand	Silt	Clay
	17.2			6.1	12.1	51.6	13.0



Comments

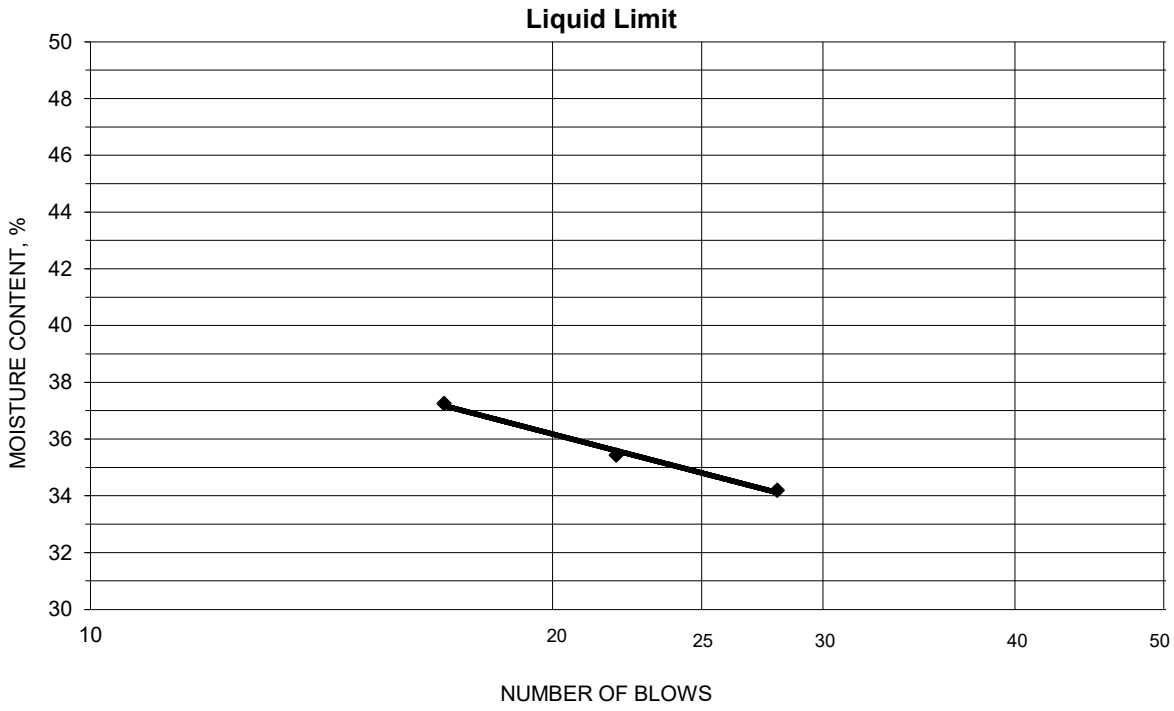
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-16, 0.0'-10.0'			Lab ID	204
				% + No. 40	23
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	06-22-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
16.00	14.77	11.17	28	34.2	
15.64	14.46	11.13	22	35.4	
15.81	14.51	11.02	17	37.2	35



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
18.74	17.40	10.98	20.9	21	14
20.04	18.59	11.56	20.6		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-17, 0.0'-10.0'	Lab ID	205
Sample Type	BULK	Date Received	6-14-22
		Date Reported	7-8-22

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	97.9
No. 4	4.75	92.2
No. 10	2	87.1
No. 40	0.425	82.4
No. 200	0.075	61.9
	0.02	41.5
	0.005	26.8
	0.002	20.5
Estimated	0.001	16.3

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	7.8	12.9
Coarse Sand	5.1	4.7
Medium Sand	4.7	---
Fine Sand	20.5	20.5
Silt	35.1	41.4
Clay	26.8	20.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	34
Plastic Limit:	22
Plasticity Index:	12
Activity Index:	0.6

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (6)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-17, 0.0'-10.0'	Lab ID	205

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Angular
Particle Hardness:	Hard and Durable
Tested By	NK
Test Date	06-29-2022
Date Received	06-14-2022

Maximum Particle Size: 3/4" Sieve

Sieve Size	% Passing
3/4"	100.0
3/8"	97.9
No. 4	92.2
No. 10	87.1

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

Specific Gravity 2.7

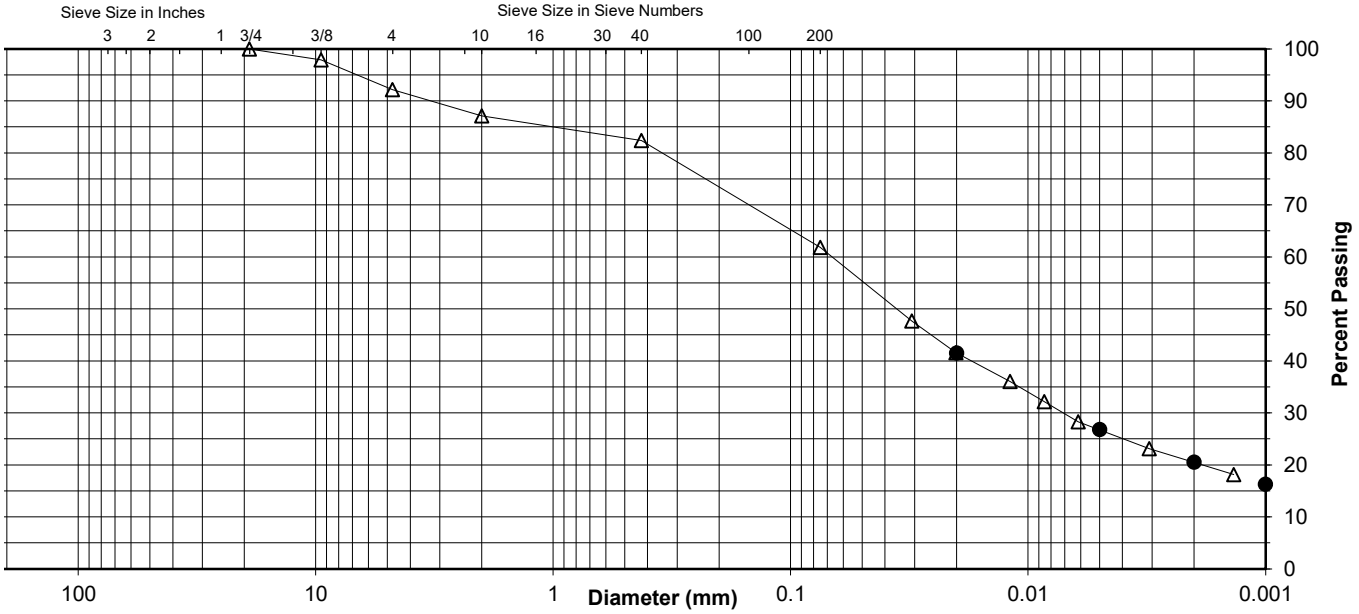
Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	82.4
No. 200	61.9
0.02 mm	41.5
0.005 mm	26.8
0.002 mm	20.5
0.001 mm	16.3

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	7.8	5.1	4.7	20.5	35.1	26.8

AASHTO	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	12.9	4.7	20.5	41.4	20.5



Comments

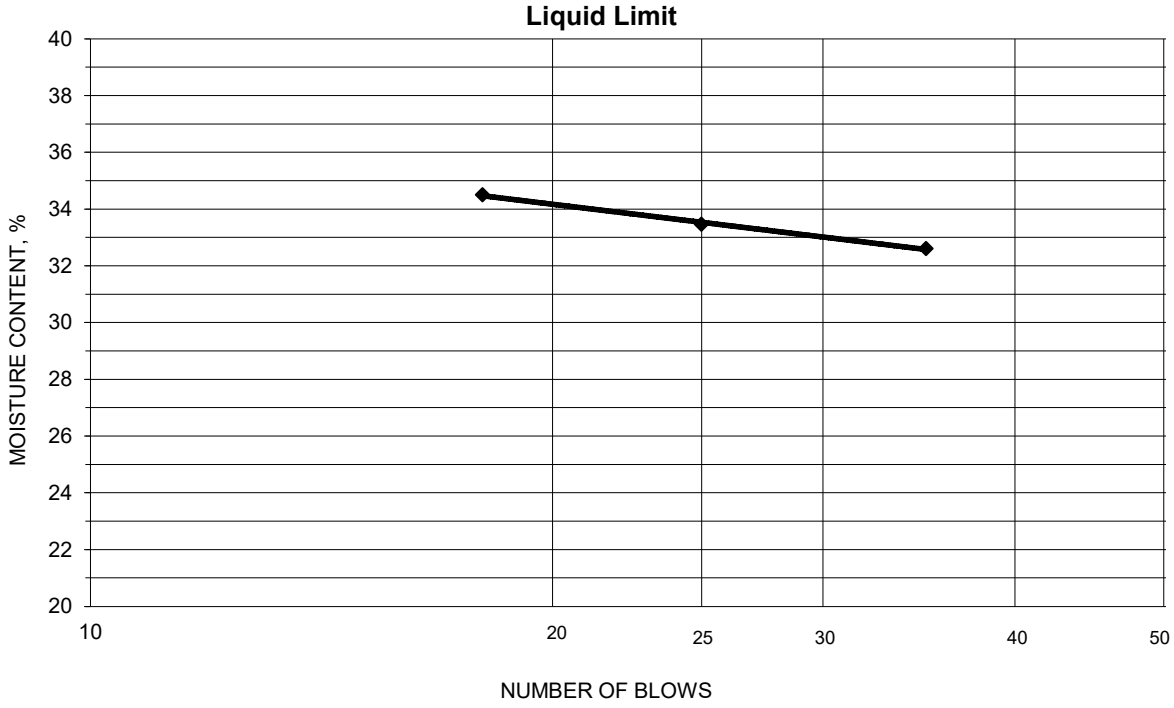
Reviewed By RHB

Stantec

ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-17, 0.0'-10.0'			Lab ID	205
				% + No. 40	18
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	07-06-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
15.48	14.43	11.21	35	32.6	
14.38	13.54	11.03	25	33.5	
14.94	13.86	10.73	18	34.5	34



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.10	15.97	10.77	21.7	22	12
17.56	16.46	11.40	21.7		

Remarks: _____

Reviewed By RHB

Stantec

Summary of Soil Tests

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-18, 0.0'-5.0'	Lab ID	206
Sample Type	BULK	Date Received	6-14-22
		Date Reported	8-25-22

Test Results

Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

Particle Size Analysis

Preparation Method: ASTM D 421
Gradation Method: ASTM D 422
Hydrometer Method: ASTM D 422

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
1 1/2"	37.5	100.0
3/4"	19	97.5
3/8"	9.5	94.2
No. 4	4.75	87.6
No. 10	2	73.6
No. 40	0.425	68.7
No. 200	0.075	59.5
	0.02	32.4
	0.005	21.8
	0.002	14.5
Estimated	0.001	9.5

Plus 3 in. Material, Not Included: 0 (%)

	ASTM	AASHTO
Range	(%)	(%)
Gravel	12.4	26.4
Coarse Sand	14.0	4.9
Medium Sand	4.9	---
Fine Sand	9.2	9.2
Silt	37.7	45.0
Clay	21.8	14.5

Atterberg Limits

Test Method: ASTM D 4318 Method A
Prepared: Dry

Liquid Limit:	32
Plastic Limit:	20
Plasticity Index:	12
Activity Index:	0.8

Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft^3):	N/A
Maximum Dry Density (kg/m^3):	N/A
Optimum Moisture Content (%):	N/A
Over Size Correction %:	N/A

California Bearing Ratio

Test Not Performed

Bearing Ratio (%):	N/A
Compacted Dry Density (lb/ft^3):	N/A
Compacted Moisture Content (%):	N/A

Specific Gravity

Estimated

Particle Size:	No. 10
Specific Gravity at 20° Celsius:	2.70

Classification

Unified Group Symbol:	CL
Group Name:	Sandy lean clay
AASHTO Classification:	A-6 (5)

Comments:

Reviewed By RHB

Stantec

Particle-Size Analysis of Soils
ASTM D 422

Project Name	Plant Hammond Phase 2	Project Number	175518236
Source	HRL-18, 0.0'-5.0'	Lab ID	206

Sieve Analysis for the Portion Coarser than the No. 10 Sieve

Test Method	ASTM D 422
Prepared Using	ASTM D 421
Particle Shape:	Rounded
Particle Hardness:	Soft
Tested By	TRH
Test Date	08-11-2022
Date Received	06-14-2022

Maximum Particle Size: 1 1/2" Sieve

Sieve Size	% Passing
1 1/2"	100.0
3/4"	97.5
3/8"	94.2
No. 4	87.6
No. 10	73.6

Analysis for the Portion Finer than the No. 10 Sieve

Analysis Based on -3 inch Fraction Only

Specific Gravity 2.7

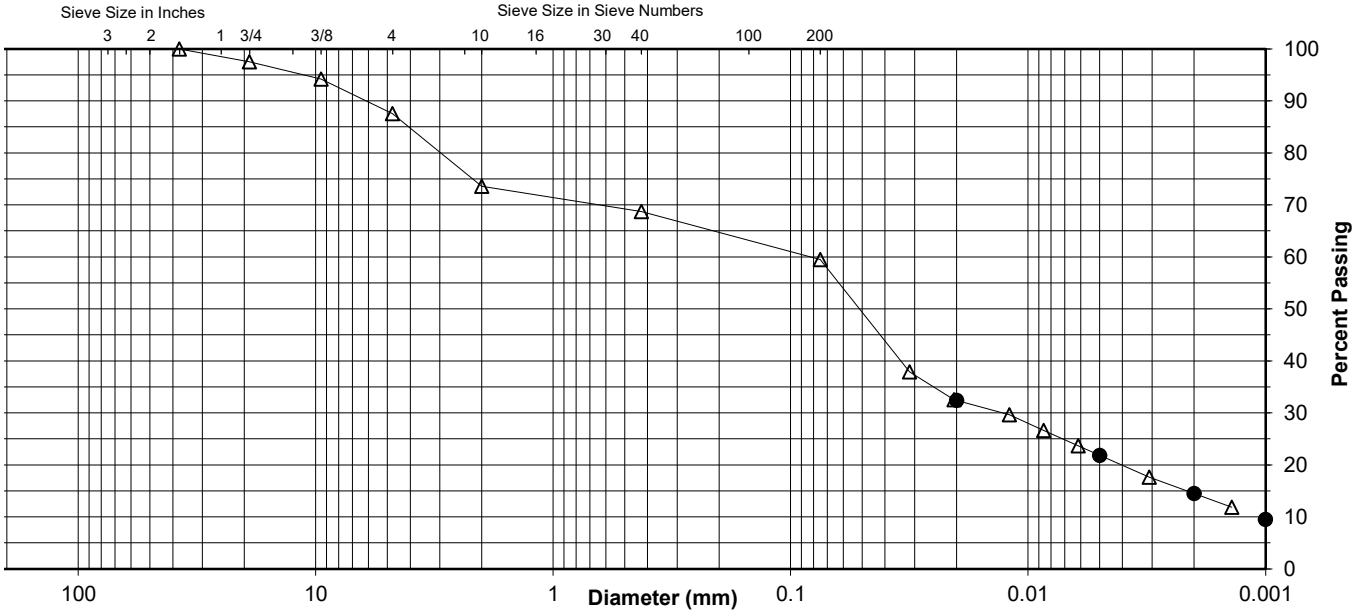
Dispersed Using Apparatus A - Mechanical, for 1 Minute

No. 40	68.7
No. 200	59.5
0.02 mm	32.4
0.005 mm	21.8
0.002 mm	14.5
0.001 mm	9.5

Particle Size Distribution

	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
ASTM	2.5	9.9	14.0	4.9	9.2	37.7	21.8

	Gravel	Coarse Sand	Fine Sand	Silt	Clay
AASHTO	26.4	4.9	9.2	45.0	14.5



Comments

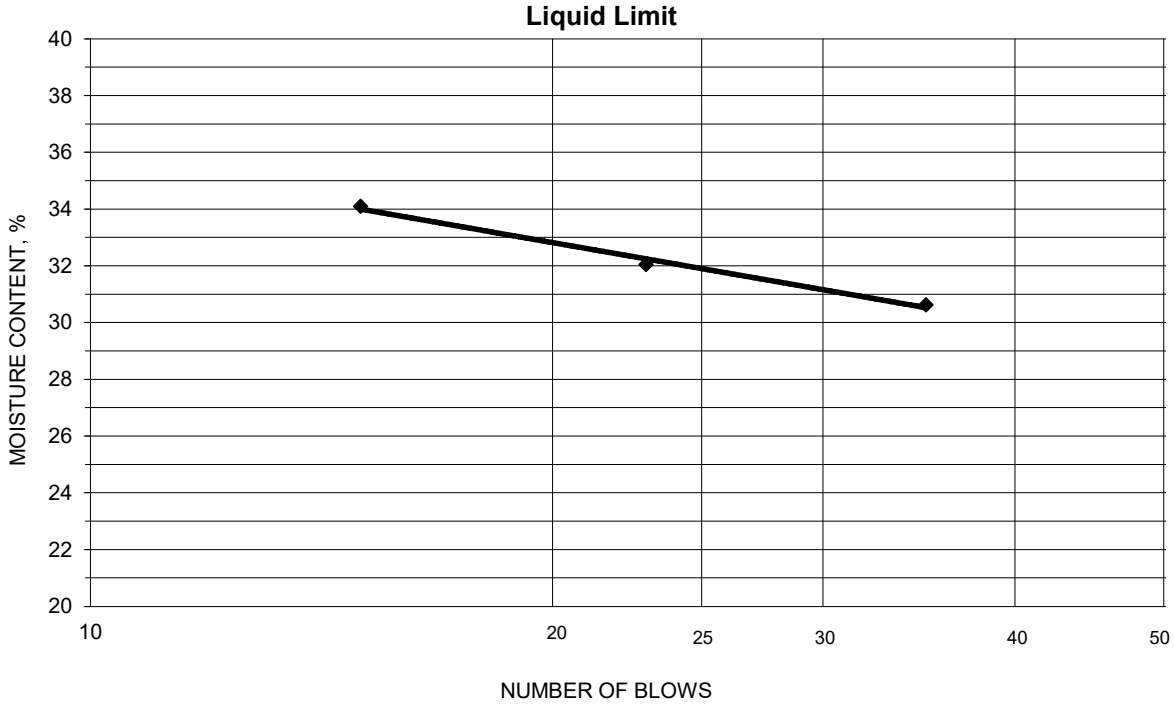
Reviewed By RHB

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ATTERBERG LIMITS

Project	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-18, 0.0'-5.0'			Lab ID	206
				% + No. 40	31
Tested By	JMB	Test Method	ASTM D 4318 Method A	Date Received	06-14-2022
Test Date	08-17-2022	Prepared	Dry		

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
17.28	15.81	11.01	35	30.6	
18.22	16.47	11.01	23	32.1	
18.85	16.76	10.63	15	34.1	32



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.32	17.99	11.51	20.5	20	12
17.16	16.12	10.65	19.0		

Remarks: _____

Reviewed By RHB

Appendix J.2.7

FLEXIBLE HEAD PERMEAMETER

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084, Method C

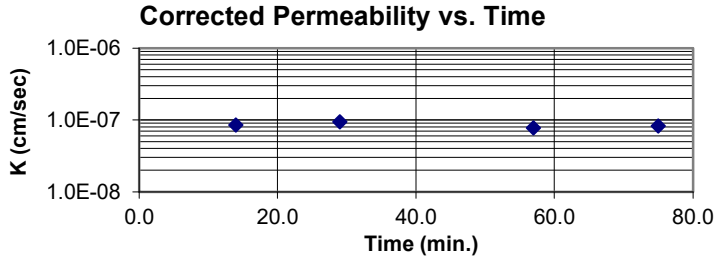
Project Name	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & HRL-15, 0.0'-10.0'			Test ID	207
Description	Lean Clay with Sand (CL), light brown			Prepared By	KG
		Specific Gravity	2.74 ASTM D854, Dry	Date	10-27-22
Specimen	Compacted	LL			
Preparation	Moisture Conditioned	PL		Maximum Dry Density (pcf)	110.3
Permeant	De-aired Tap Water	PI		Percent of Maximum	97.2

Specimens (if compacted) were compacted in a Proctor Mold as follows: The Maximum Dry Density was converted to Wet Density, this mass was divided by 4 (layers) and 3 of the 4 layers were compacted into the mold using a Proctor Hammer using 25 blows per layer. The density was varied by reducing the height of the drop by the amount listed beside "Compacted".

The specimen was trimmed from the bottom two layers.

	Initial Specimen Data	After Consolidation Data	After Test Data	Final Pressures (psi)			
Height (in.)	2.4481	2.4428	2.4600	Chamber	45		
Diameter (in.)	2.8033		2.8292	Influent	42		
Moisture Content (%)	18.5		22.3	Effluent	40	Applied Head Difference (psi)	2
Dry Unit Weight (pcf)	107.2		104.7			Back Pressure Saturated to (psi)	40
Void Ratio	0.596		0.633			Maximum Effective Consolidation Stress (psi)	5
Degree of Saturation (%)	85.2		96.5			Minimum Effective Consolidation Stress (psi)	3

						Hydraulic Conductivity			
Date	Clock (24H:M)	Temp. (°F)	Bottom Head (in)	Top Head (in)	Test Time (sec)	k (m/s)	k (cm/s)	k @ 20° C (m/s)	k @ 20° C (cm/s)
11-7-22	14:06	72.9	21.10	3.70	0	---	---	---	---
11-7-22	14:20	72.9	20.99	3.81	8.40E+02	9.0E-10	9.0E-08	8.5E-10	8.5E-08
11-7-22	14:35	72.9	20.87	3.95	9.00E+02	1.0E-09	1.0E-07	9.4E-10	9.4E-08
11-7-22	15:03	72.9	20.66	4.14	1.68E+03	8.3E-10	8.3E-08	7.8E-10	7.8E-08
11-7-22	15:21	72.9	20.52	4.27	1.08E+03	8.7E-10	8.7E-08	8.2E-10	8.2E-08



A gradient of approximately 22.6 was used for this test.

Average Hydraulic Conductivity @ 20° C (last 4 determinations)	m/s	8.46E-10	cm/s	8.46E-08
Average Hydraulic Conductivity @ 20° C (last run)	m/s	8.46E-10	cm/s	8.46E-08

Comments

Reviewed By KG

Stantec

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084, Method C

Project Name	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0'			Test ID	211
Description	Clayey Sand with Gravel (SC), light brown			Prepared By	KG
		Specific Gravity	2.69 ASTM D854, Dry	Date	10-27-22
Specimen	Compacted	LL			
Preparation	Moisture Conditioned	PL		Maximum Dry Density (pcf)	120
Permeant	De-aired Tap Water	PI		Percent of Maximum	97.3

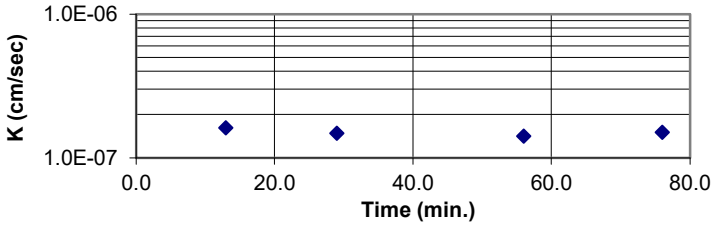
Specimens (if compacted) were compacted in a Proctor Mold as follows: The Maximum Dry Density was converted to Wet Density, this mass was divided by 4 (layers) and 3 of the 4 layers were compacted into the mold using a Proctor Hammer using 25 blows per layer. The density was varied by reducing the height of the drop by the amount listed beside "Compacted".

The specimen was trimmed from the bottom two layers.

	Initial Specimen Data	After Consolidation Data	After Test Data	Final Pressures (psi)			
Height (in.)	2.4446	2.4230	2.4297	Chamber	45		
Diameter (in.)	2.8060		2.8024	Influent	42		
Moisture Content (%)	13.7		16.3	Effluent	40	Applied Head Difference (psi)	2
Dry Unit Weight (pcf)	116.8		117.8			Back Pressure Saturated to (psi)	40
Void Ratio	0.438		0.426			Maximum Effective Consolidation Stress (psi)	5
Degree of Saturation (%)	84.4		103.3			Minimum Effective Consolidation Stress (psi)	3

						Hydraulic Conductivity			
Date	Clock (24H:M)	Temp. (°F)	Bottom Head (in)	Top Head (in)	Test Time (sec)	k (m/s)	k (cm/s)	k @ 20° C (m/s)	k @ 20° C (cm/s)
11-7-22	14:07	72.9	22.13	4.09	0	---	---	---	---
11-7-22	14:20	72.9	21.93	4.29	7.80E+02	1.7E-09	1.7E-07	1.6E-09	1.6E-07
11-7-22	14:36	72.9	21.70	4.51	9.60E+02	1.6E-09	1.6E-07	1.5E-09	1.5E-07
11-7-22	15:03	72.9	21.34	4.87	1.62E+03	1.5E-09	1.5E-07	1.4E-09	1.4E-07
11-7-22	15:23	72.9	21.06	5.15	1.20E+03	1.6E-09	1.6E-07	1.5E-09	1.5E-07

Corrected Permeability vs. Time



A gradient of approximately 22.7 was used for this test.

Average Hydraulic Conductivity @ 20° C (last 4 determinations)	m/s	1.50E-09	cm/s	1.50E-07
Average Hydraulic Conductivity @ 20° C (last run)	m/s	1.50E-09	cm/s	1.50E-07

Comments

Reviewed By KG

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084, Method C

Project Name	Plant Hammond Phase 2			Project No.	175518236
Source	HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' & HRL-16, 0.0'-10.0' & HRL-17, 0.0'-10.0'			Test ID	215
Description	Sandy Lean Clay (CL), brown			Prepared By	KG
		Specific Gravity	2.7 ASTM D854, Dry	Date	10-27-22
Specimen	Compacted	LL			
Preparation	Moisture Conditioned	PL		Maximum Dry Density (pcf)	110.1
Permeant	De-aired Tap Water	PI		Percent of Maximum	98.5

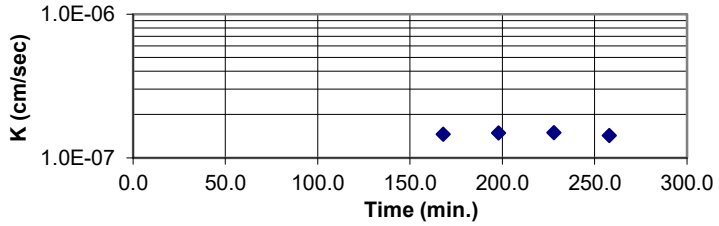
Specimens (if compacted) were compacted in a Proctor Mold as follows: The Maximum Dry Density was converted to Wet Density, this mass was divided by 4 (layers) and 3 of the 4 layers were compacted into the mold using a Proctor Hammer using 25 blows per layer. The density was varied by reducing the height of the drop by the amount listed beside "Compacted".

The specimen was trimmed from the bottom two layers.

	Initial Specimen Data	After Consolidation Data	After Test Data	Final Pressures (psi)			
Height (in.)	2.4415	2.4273	2.4315	Chamber	45		
Diameter (in.)	2.7810		2.8101	Influent	42		
Moisture Content (%)	18.1		20.8	Effluent	40	Applied Head Difference (psi)	2
Dry Unit Weight (pcf)	108.5		106.7			Back Pressure Saturated to (psi)	40
Void Ratio	0.554		0.580			Maximum Effective Consolidation Stress (psi)	5
Degree of Saturation (%)	88.2		96.8			Minimum Effective Consolidation Stress (psi)	3

						Hydraulic Conductivity			
Date	Clock (24H:M)	Temp. (°F)	Bottom Head (in)	Top Head (in)	Test Time (sec)	k (m/s)	k (cm/s)	k @ 20° C (m/s)	k @ 20° C (cm/s)
11-7-22	10:44	72.9	21.80	3.99	0	---	---	---	---
11-7-22	13:32	72.9	21.20	4.55	1.01E+04	1.6E-09	1.6E-07	1.5E-09	1.5E-07
11-7-22	14:02	72.9	21.09	4.65	1.80E+03	1.6E-09	1.6E-07	1.5E-09	1.5E-07
11-7-22	14:32	72.9	20.98	4.75	1.80E+03	1.6E-09	1.6E-07	1.5E-09	1.5E-07
11-7-22	15:02	72.9	20.87	4.84	1.80E+03	1.5E-09	1.5E-07	1.4E-09	1.4E-07

Corrected Permeability vs. Time



A gradient of approximately 22.7 was used for this test.

Average Hydraulic Conductivity @ 20° C (last 4 determinations)	m/s	1.47E-09	cm/s	1.47E-07
Average Hydraulic Conductivity @ 20° C (last run)	m/s	1.47E-09	cm/s	1.47E-07

Comments

Reviewed By KG

Template: tmp_fhp_input.xlsm
Version: 20170216
Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: KG
Report Date: 11/08/2022

Appendix J.2.8

TRIAXIAL COMPRESSION (CU)

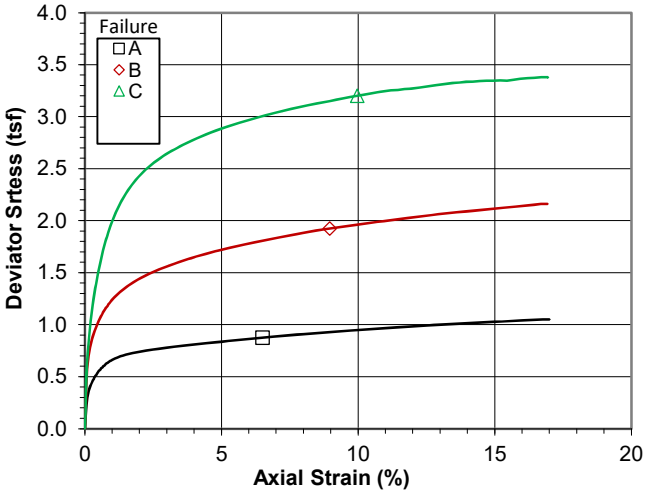
Consolidated Undrained Triaxial Compression

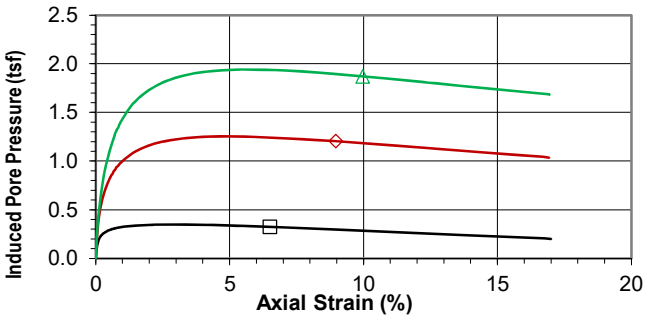
ASTM D 4767

Project Name Plant Hammond Phase 2

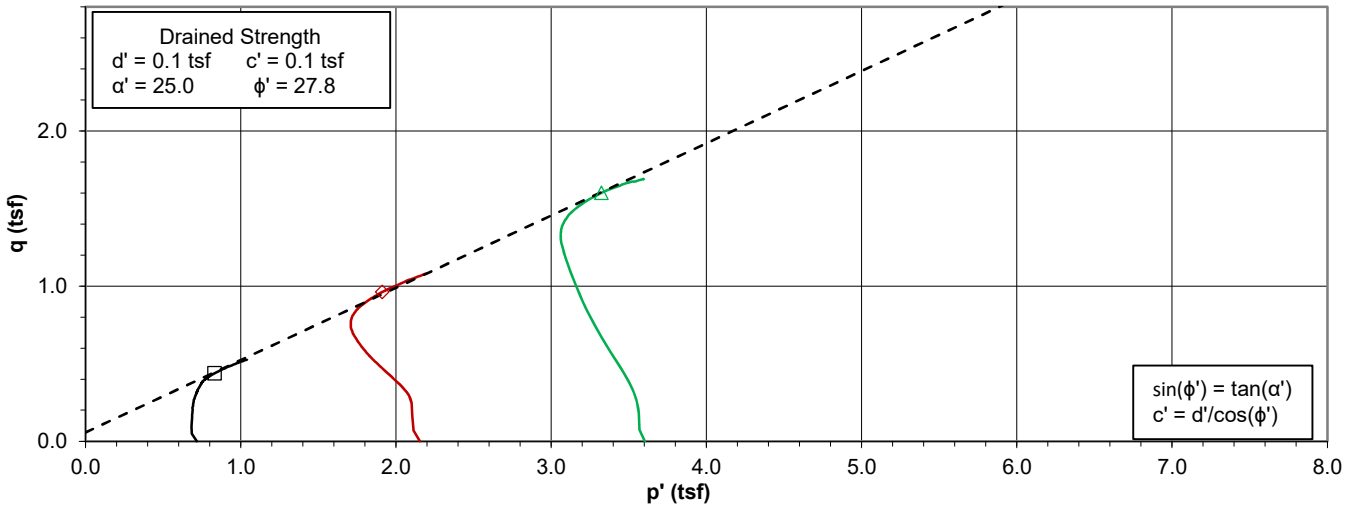
Project 175518236
Set ID 207

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	207	HRL-1 & HRL-2 & HRL-13 & HRL-15	Lean Clay with Sand (CL), light brown	2.74			
B	207	HRL-1 & HRL-2 & HRL-13 & HRL-15	Lean Clay with Sand (CL), light brown	2.74			
C	207	HRL-1 & HRL-2 & HRL-13 & HRL-15	Lean Clay with Sand (CL), light brown	2.74			





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	5.985	6.057	5.998		
Average Diameter (in)	2.897	2.888	2.892		
Moist Unit Weight (pcf)	124.0	121.0	124.7		
Moisture Content (%)	16.2	16.2	16.1		
Dry Unit Weight (pcf)	106.7	104.1	107.4		
Void Ratio	0.601	0.641	0.590		
Degree of Saturation (%)	73.9	69.4	74.9		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	129.0	131.1	132.6		
Moisture Content (%)	22.9	21.1	19.8		
Dry Unit Weight (pcf)	105.0	108.2	110.6		
Void Ratio	0.626	0.577	0.544		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	0.718	2.155	3.604		
	At Drained Failure				
Failure Criterion	Max. Eff. Prin. Stress Ratio				
Axial Strain (%)	6.504	8.963	9.965		
Deviator Stress (tsf)	0.875	1.924	3.201		
Induced Pore Press. (tsf)	0.324	1.205	1.871		
Minor Eff. Stress, σ_3' (tsf)	0.394	0.950	1.724		
Major Eff. Stress, σ_1' (tsf)	1.268	2.874	4.925		
Eff. Stress Ratio, σ_1'/σ_3'	3.222	3.026	2.857		
p' (tsf)	0.831	1.912	3.324		
q (tsf)	0.437	0.962	1.601		



Comments

Reviewed By KG

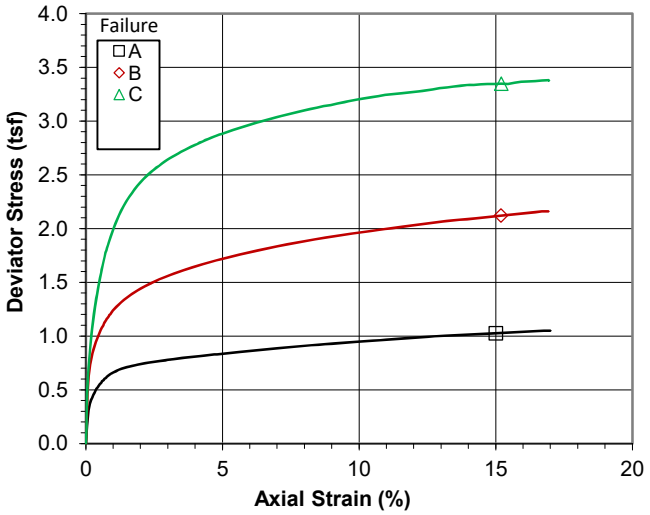
Consolidated Undrained Triaxial Compression

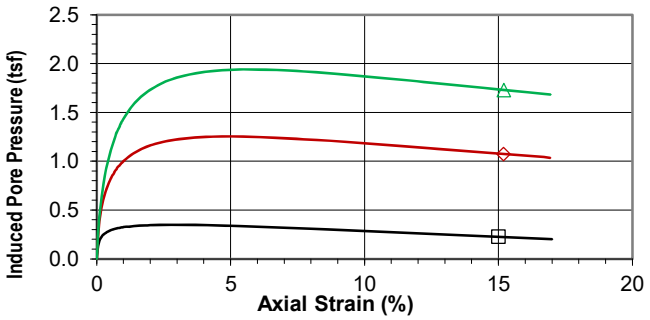
ASTM D 4767

Project Name Plant Hammond Phase 2

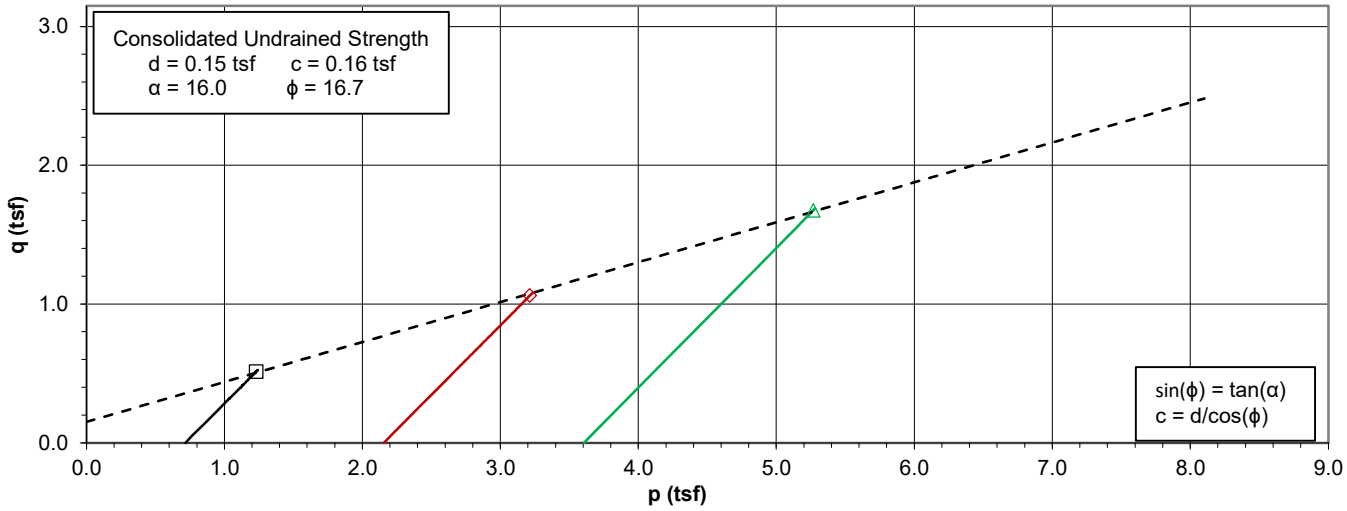
Project 175518236
Set ID 207

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	207	HRL-1 & HRL-2 & HRL-13 & HRL-15	Lean Clay with Sand (CL), light brown	2.74			
B	207	HRL-1 & HRL-2 & HRL-13 & HRL-15	Lean Clay with Sand (CL), light brown	2.74			
C	207	HRL-1 & HRL-2 & HRL-13 & HRL-15	Lean Clay with Sand (CL), light brown	2.74			





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	5.985	6.057	5.998		
Average Diameter (in)	2.897	2.888	2.892		
Moist Unit Weight (pcf)	124.0	121.0	124.7		
Moisture Content (%)	16.2	16.2	16.1		
Dry Unit Weight (pcf)	106.7	104.1	107.4		
Void Ratio	0.601	0.641	0.590		
Degree of Saturation (%)	73.9	69.4	74.9		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	129.0	131.1	132.6		
Moisture Content (%)	22.9	21.1	19.8		
Dry Unit Weight (pcf)	105.0	108.2	110.6		
Void Ratio	0.626	0.577	0.544		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	0.718	2.155	3.604		
	At Consolidated Undrained Failure				
Failure Criterion	Max. σ_D or 15% Strain				
Axial Strain (%)	15.000	15.191	15.202		
Deviator Stress (tsf)	1.027	2.121	3.349		
Min. Prin. Stress, σ_3 (tsf)	0.717	2.154	3.593		
Maj. Prin. Stress, σ_1 (tsf)	1.744	4.274	6.942		
p (tsf)	1.231	3.214	5.267		
q (tsf)	0.514	1.060	1.675		



Comments

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Plant Hammond Phase 2	Project No.	175518236
Source	HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & HRL-15, 0.0'-10.0'	Lab ID	207
Description	Lean Clay with Sand (CL), light brown	Test ID	207-A
Specimen Type	Compacted		
Preparation	Wet Mounting	Date Received	09/26/2022
		Date Tested	10/20/2021

Specific Gravity	2.74
	ASTM D 854, Dry
Liquid Limit	
Plastic Limit	
Plasticity Index	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	80
Nominal Consolidation Pressure (psi)	10

Saturation / Consolidation Results

Pore Pressure Parameter B	0.98
Measured Effective Consol. Stress (tsf)	0.718
Time to 50% Consolidation (min)	4.30
Actual Axial Strain Rate of Test (%/min)	0.070

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	129.0
Moisture Content (%)	22.9
Dry Unit Weight (pcf)	105.0
Void Ratio	0.626
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criterion: Max. Eff. Prin. Stress Ratio

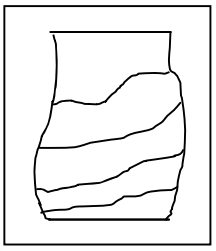
Axial Strain (%)	6.504
Deviator Stress (tsf)	0.875
Induced Pore Pressure (tsf)	0.324
Minor Effective Stress, σ_3' (tsf)	0.394
Major Effective Stress, σ_1' (tsf)	1.268
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.222
p' (tsf)	0.831
q (tsf)	0.437

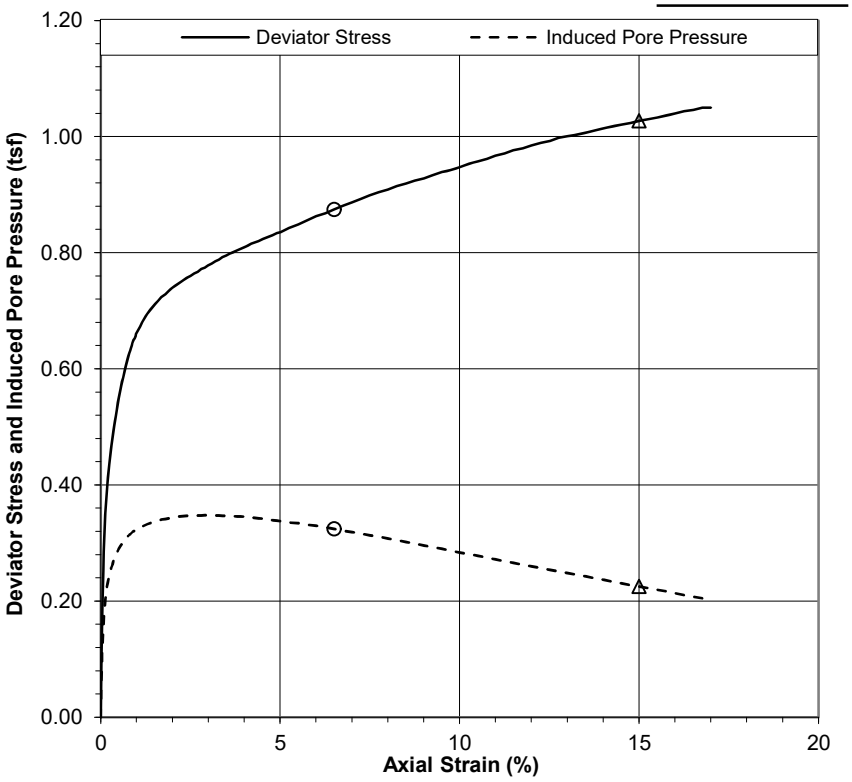
At Consolidated Undrained Failure

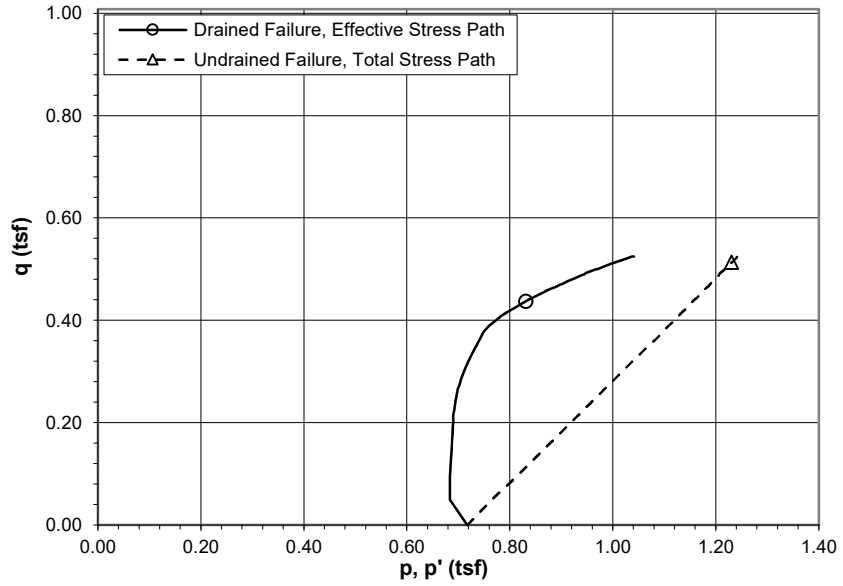
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.000
Deviator Stress (tsf)	1.027
Minor Principal Stress, σ_3 (tsf)	0.717
Major Principal Stress, σ_1 (tsf)	1.744
p (tsf)	1.231
q (tsf)	0.514

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Plant Hammond Phase 2 | Project No.: 175518236
Source: HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & HRL-15, 0.0'-10.0' | Lab ID: 207
Description: Lean Clay with Sand (CL), light brown | Test ID: 207-A

Initial Specimen Conditions		Consolidated Specimen Conditions			
Average Height (in)	5.985	Calculated Height (in)	5.992	Specific Gravity	2.74
Average Diameter (in)	2.897	Calculated Diameter (in)	2.918		ASTM D 854, Dry
Calculated Area (in^2)	6.593	Calculated Area (in^2)	6.689	Liquid Limit	
Moist Weight (lb)	2.830	Moist Weight (lb)	2.992	Plastic Limit	
Moist Unit Weight (pcf)	124.0	Moist Unit Weight (pcf)	129.0	Plasticity Index	
Moisture Content (%)	16.2	Moisture Content (%)	22.9		
Dry Weight (lb)	2.435	Dry Weight (lb)	2.435		
Dry Unit Weight (pcf)	106.7	Dry Unit Weight (pcf)	105.0	Confining Stress	
Void Ratio	0.601	Void Ratio	0.626	σ_3 (tsf)	0.718
Degree of Saturation (%)	73.9	Degree of Saturation (%)	100.0		
				Effective Consolidation Stress	
				σ_3' (tsf)	0.718

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 175518236			Source: HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & I												
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.689	0.000	0.000	5.765	0.000	0.718	0.718	0.718	0.718	0.718	0.000	1.000
0.4	9.1	0.002	0.03	6.691	0.098	0.098	5.846	0.081	0.814	0.733	0.634	0.765	0.684	0.049	1.155
0.7	17.6	0.003	0.05	6.693	0.189	0.189	5.894	0.129	0.907	0.778	0.589	0.812	0.684	0.095	1.321
1.1	23.3	0.005	0.08	6.695	0.251	0.251	5.923	0.158	0.969	0.811	0.560	0.843	0.685	0.125	1.448
1.5	28.0	0.006	0.10	6.696	0.301	0.301	5.946	0.181	1.019	0.838	0.537	0.869	0.687	0.151	1.561
1.8	31.5	0.008	0.13	6.698	0.338	0.338	5.964	0.199	1.056	0.857	0.519	0.887	0.688	0.169	1.652
2.2	34.0	0.009	0.15	6.699	0.366	0.365	5.977	0.212	1.083	0.872	0.506	0.901	0.689	0.183	1.721
2.5	35.9	0.010	0.17	6.701	0.386	0.386	5.987	0.222	1.104	0.882	0.496	0.911	0.689	0.193	1.777
2.9	38.0	0.012	0.19	6.702	0.408	0.407	5.996	0.231	1.126	0.895	0.487	0.922	0.691	0.204	1.837
3.3	39.2	0.013	0.22	6.704	0.422	0.421	6.003	0.238	1.139	0.901	0.480	0.928	0.690	0.210	1.878
3.6	40.6	0.015	0.25	6.706	0.436	0.436	6.011	0.246	1.154	0.908	0.473	0.936	0.690	0.218	1.921
4.0	42.0	0.016	0.27	6.708	0.451	0.451	6.016	0.251	1.169	0.918	0.467	0.944	0.693	0.225	1.964
4.3	43.3	0.017	0.29	6.709	0.465	0.464	6.022	0.257	1.182	0.925	0.461	0.950	0.693	0.232	2.007
4.7	44.6	0.020	0.33	6.711	0.478	0.478	6.028	0.263	1.196	0.933	0.455	0.957	0.694	0.239	2.049
5.0	45.6	0.021	0.35	6.713	0.489	0.488	6.033	0.268	1.206	0.939	0.450	0.962	0.695	0.244	2.084
5.4	46.7	0.022	0.37	6.714	0.500	0.499	6.037	0.272	1.218	0.946	0.446	0.968	0.696	0.250	2.119
5.8	47.6	0.024	0.40	6.716	0.510	0.509	6.041	0.276	1.228	0.952	0.442	0.973	0.697	0.255	2.152
6.1	48.5	0.025	0.42	6.718	0.520	0.519	6.045	0.280	1.237	0.957	0.438	0.977	0.698	0.259	2.183
6.5	49.4	0.027	0.45	6.719	0.530	0.529	6.049	0.284	1.247	0.963	0.434	0.982	0.699	0.264	2.218
6.8	50.4	0.029	0.48	6.721	0.540	0.539	6.052	0.287	1.257	0.970	0.431	0.988	0.701	0.269	2.250
7.2	51.2	0.030	0.50	6.723	0.549	0.547	6.055	0.290	1.265	0.976	0.428	0.992	0.702	0.274	2.278
7.6	52.1	0.031	0.52	6.724	0.558	0.556	6.058	0.293	1.274	0.982	0.425	0.996	0.703	0.278	2.308
7.9	52.7	0.033	0.55	6.726	0.564	0.563	6.060	0.295	1.280	0.985	0.423	0.999	0.704	0.281	2.330
8.3	53.5	0.034	0.57	6.728	0.572	0.571	6.062	0.297	1.288	0.991	0.420	1.003	0.706	0.285	2.359
8.6	54.2	0.036	0.59	6.729	0.579	0.578	6.065	0.300	1.296	0.996	0.418	1.007	0.707	0.289	2.383
9.0	54.8	0.038	0.63	6.732	0.586	0.585	6.067	0.302	1.302	1.000	0.415	1.010	0.708	0.292	2.407
9.4	55.4	0.039	0.66	6.733	0.592	0.591	6.069	0.304	1.308	1.004	0.414	1.013	0.709	0.295	2.428
9.7	56.2	0.041	0.68	6.735	0.600	0.599	6.071	0.306	1.317	1.010	0.411	1.017	0.711	0.299	2.456
10.1	56.7	0.042	0.70	6.737	0.606	0.605	6.073	0.308	1.323	1.015	0.410	1.020	0.712	0.302	2.476
10.5	57.2	0.044	0.73	6.738	0.612	0.610	6.074	0.309	1.327	1.018	0.408	1.023	0.713	0.305	2.494
10.8	57.8	0.045	0.75	6.740	0.617	0.616	6.076	0.311	1.333	1.022	0.406	1.025	0.714	0.308	2.516
11.2	58.4	0.046	0.77	6.741	0.624	0.622	6.078	0.313	1.340	1.027	0.405	1.029	0.716	0.311	2.537
11.5	58.9	0.048	0.80	6.743	0.629	0.627	6.079	0.314	1.345	1.030	0.403	1.031	0.717	0.314	2.555
11.9	59.3	0.049	0.82	6.745	0.633	0.631	6.081	0.316	1.349	1.033	0.402	1.033	0.718	0.316	2.571
12.3	59.7	0.051	0.85	6.746	0.637	0.635	6.082	0.317	1.353	1.036	0.401	1.035	0.719	0.318	2.584
12.6	60.2	0.052	0.87	6.748	0.643	0.640	6.083	0.318	1.358	1.040	0.399	1.038	0.720	0.320	2.604
13.0	60.6	0.054	0.89	6.750	0.647	0.645	6.084	0.319	1.363	1.043	0.399	1.040	0.721	0.322	2.618
13.3	61.1	0.055	0.92	6.751	0.652	0.649	6.086	0.321	1.367	1.046	0.397	1.042	0.722	0.325	2.635
13.7	61.4	0.057	0.95	6.753	0.655	0.653	6.086	0.321	1.371	1.049	0.397	1.044	0.723	0.326	2.645

Project: 175518236			Source: HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & I						Lab ID: 207				Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
14.1	61.8	0.058	0.97	6.755	0.659	0.657	6.088	0.322	1.374	1.052	0.395	1.046	0.724	0.328	2.660
14.4	62.2	0.059	0.99	6.756	0.663	0.660	6.089	0.324	1.378	1.055	0.395	1.048	0.725	0.330	2.674
15.9	63.4	0.066	1.10	6.764	0.675	0.673	6.092	0.327	1.391	1.064	0.391	1.055	0.727	0.336	2.721
17.3	64.7	0.072	1.20	6.771	0.688	0.685	6.095	0.330	1.403	1.073	0.389	1.061	0.731	0.342	2.763
18.7	65.7	0.078	1.30	6.777	0.697	0.694	6.098	0.333	1.413	1.081	0.386	1.066	0.733	0.347	2.798
20.2	66.6	0.084	1.39	6.784	0.707	0.703	6.100	0.335	1.422	1.087	0.384	1.071	0.736	0.352	2.830
21.6	67.3	0.090	1.50	6.791	0.714	0.710	6.102	0.337	1.430	1.093	0.382	1.075	0.737	0.355	2.858
23.0	68.0	0.096	1.60	6.798	0.721	0.717	6.104	0.339	1.436	1.098	0.381	1.078	0.739	0.358	2.883
24.5	68.7	0.101	1.69	6.804	0.727	0.723	6.106	0.341	1.443	1.103	0.379	1.081	0.741	0.362	2.907
25.9	69.3	0.108	1.80	6.812	0.733	0.729	6.107	0.342	1.449	1.107	0.378	1.084	0.743	0.364	2.926
27.4	69.9	0.114	1.90	6.819	0.738	0.734	6.108	0.343	1.454	1.111	0.377	1.087	0.744	0.367	2.946
28.8	70.5	0.120	2.00	6.825	0.744	0.739	6.109	0.344	1.459	1.115	0.376	1.089	0.745	0.370	2.968
30.2	71.0	0.126	2.10	6.833	0.749	0.744	6.110	0.345	1.463	1.118	0.374	1.092	0.746	0.372	2.986
31.7	71.6	0.132	2.20	6.840	0.754	0.748	6.111	0.346	1.468	1.122	0.373	1.093	0.747	0.374	3.005
33.1	72.1	0.138	2.30	6.847	0.758	0.752	6.112	0.347	1.471	1.125	0.372	1.095	0.748	0.376	3.021
34.5	72.6	0.144	2.40	6.854	0.762	0.757	6.112	0.347	1.475	1.129	0.372	1.097	0.750	0.378	3.035
36.0	73.0	0.150	2.50	6.861	0.766	0.760	6.112	0.347	1.479	1.131	0.371	1.099	0.751	0.380	3.046
37.4	73.5	0.156	2.60	6.868	0.770	0.764	6.112	0.347	1.483	1.135	0.371	1.100	0.753	0.382	3.060
38.9	73.9	0.162	2.71	6.875	0.773	0.767	6.113	0.348	1.486	1.138	0.371	1.102	0.754	0.384	3.069
40.3	74.4	0.168	2.80	6.882	0.778	0.772	6.113	0.348	1.490	1.142	0.370	1.104	0.756	0.386	3.084
41.7	74.7	0.174	2.91	6.889	0.781	0.774	6.113	0.348	1.492	1.144	0.371	1.105	0.757	0.387	3.088
43.2	75.2	0.180	3.00	6.896	0.785	0.778	6.113	0.348	1.497	1.149	0.371	1.108	0.760	0.389	3.099
44.6	75.6	0.186	3.10	6.903	0.789	0.781	6.113	0.348	1.500	1.152	0.371	1.109	0.762	0.391	3.107
46.1	76.1	0.192	3.20	6.911	0.793	0.785	6.113	0.348	1.504	1.156	0.371	1.111	0.764	0.393	3.116
47.5	76.5	0.198	3.30	6.918	0.796	0.788	6.113	0.348	1.507	1.160	0.372	1.113	0.766	0.394	3.120
48.9	77.0	0.203	3.40	6.924	0.800	0.792	6.112	0.347	1.511	1.164	0.372	1.115	0.768	0.396	3.129
50.4	77.3	0.210	3.50	6.932	0.803	0.795	6.112	0.347	1.515	1.168	0.373	1.117	0.770	0.397	3.133
51.8	77.8	0.216	3.60	6.939	0.807	0.798	6.112	0.347	1.518	1.171	0.373	1.119	0.772	0.399	3.141
53.3	78.1	0.222	3.70	6.946	0.810	0.801	6.112	0.347	1.521	1.174	0.373	1.120	0.774	0.400	3.146
54.7	78.5	0.228	3.81	6.954	0.813	0.804	6.111	0.346	1.524	1.178	0.374	1.122	0.776	0.402	3.152
56.1	78.9	0.234	3.90	6.961	0.816	0.807	6.111	0.346	1.527	1.180	0.374	1.123	0.777	0.403	3.160
57.6	79.2	0.240	4.01	6.969	0.819	0.809	6.110	0.345	1.529	1.183	0.374	1.124	0.779	0.405	3.162
59.0	79.6	0.246	4.11	6.976	0.822	0.812	6.110	0.345	1.531	1.186	0.374	1.125	0.780	0.406	3.169
60.4	80.0	0.251	4.20	6.982	0.825	0.815	6.109	0.344	1.534	1.190	0.375	1.126	0.782	0.408	3.177
63.3	80.7	0.264	4.40	6.997	0.831	0.820	6.108	0.343	1.538	1.196	0.376	1.128	0.786	0.410	3.183
64.8	81.2	0.270	4.51	7.005	0.834	0.823	6.107	0.342	1.542	1.200	0.376	1.130	0.788	0.412	3.189
66.2	81.5	0.276	4.61	7.013	0.836	0.825	6.106	0.341	1.543	1.202	0.377	1.131	0.790	0.413	3.190
67.6	81.8	0.282	4.70	7.019	0.839	0.828	6.106	0.341	1.546	1.206	0.378	1.132	0.792	0.414	3.194
69.1	82.2	0.288	4.80	7.027	0.842	0.830	6.104	0.339	1.549	1.209	0.379	1.133	0.794	0.415	3.192
70.5	82.6	0.294	4.91	7.035	0.845	0.834	6.104	0.339	1.552	1.213	0.379	1.135	0.796	0.417	3.198
71.9	82.9	0.300	5.01	7.042	0.847	0.835	6.103	0.338	1.554	1.216	0.380	1.136	0.798	0.418	3.195
75.5	83.8	0.315	5.25	7.060	0.855	0.842	6.101	0.336	1.561	1.226	0.383	1.140	0.805	0.421	3.197
79.1	84.7	0.330	5.51	7.079	0.861	0.848	6.099	0.334	1.568	1.234	0.385	1.144	0.810	0.424	3.201
82.7	85.7	0.345	5.76	7.098	0.869	0.856	6.097	0.332	1.575	1.243	0.388	1.147	0.816	0.428	3.207
86.3	86.7	0.360	6.01	7.117	0.877	0.863	6.095	0.330	1.582	1.252	0.389	1.151	0.821	0.431	3.217
89.9	87.5	0.375	6.26	7.136	0.883	0.868	6.092	0.327	1.587	1.260	0.392	1.153	0.826	0.434	3.216
93.5	88.4	0.390	6.50	7.155	0.890	0.875	6.089	0.324	1.592	1.268	0.394	1.155	0.831	0.437	3.222
97.1	89.4	0.405	6.76	7.174	0.897	0.881	6.086	0.321	1.599	1.278	0.397	1.159	0.837	0.441	3.221
100.7	90.2	0.420	7.00	7.193	0.903	0.887	6.084	0.319	1.605	1.287	0.400	1.162	0.843	0.443	3.218
104.2	91.1	0.435	7.26	7.213	0.910	0.893	6.081	0.316	1.612	1.296	0.403	1.165	0.849	0.446	3.215
107.9	92.0	0.449	7.50	7.231	0.916	0.899	6.079	0.314	1.618	1.305	0.406	1.169	0.855	0.449	3.214
111.4	92.9	0.465	7.76	7.252	0.922	0.904	6.076	0.311	1.624	1.313	0.409	1.172	0.861	0.452	3.211
115.0	93.7	0.480	8.00	7.271	0.928	0.909	6.073	0.308	1.628	1.320	0.411	1.173	0.866	0.454	3.209
118.6	94.6	0.494	8.25	7.291	0.934	0.915	6.070	0.305	1.633	1.328	0.413	1.175	0.870	0.457	3.216
122.2	95.4	0.510	8.51	7.312	0.939	0.919	6.067	0.302	1.636	1.335	0.416	1.177	0.875	0.459	3.211
125.8	96.2	0.525	8.75	7.331	0.945	0.924	6.064	0.299	1.642	1.343	0.419	1.180	0.881	0.462	3.206
129.4	96.9	0.540	9.01	7.352	0.949	0.928	6.061	0.296	1.646	1.350	0.422	1.182	0.886	0.464	3.199
133.0	97.8	0.554	9.25	7.371	0.955	0.933	6.058	0.293	1.652	1.359	0.425	1.185	0.892	0.467	3.194
136.6	98.7	0.570	9.51	7.392	0.961	0.939	6.055	0.290	1.657	1.367	0.428	1.188	0.898	0.469	3.192
140.1	99.4	0.584	9.75	7.412	0.965	0.942	6.052	0.287	1.660	1.373	0.431	1.189	0.902	0.471	3.186
143.8	100.2	0.600	10.01	7.433	0.971	0.947	6.049	0.284	1.664	1.380	0.433	1.191	0.907	0.474	3.186
147.3	101.2	0.615	10.26	7.454	0.977	0.953	6.046	0.281	1.670	1.389	0.436	1.193	0.912	0.477	3.188
150.9	102.0	0.630	10.51	7.475	0.982	0.957	6.043	0.278	1.674	1.396	0.439	1.195	0.917	0.479	3.182
154.5	102.8	0.645	10.76	7.496	0.987	0.962	6.040	0.275	1.679	1.404	0.442	1.198	0.923	0.481	3.174
158.1	103.7	0.659	11.00	7.516	0.993	0.967	6.037	0.272	1.685	1.413	0.446	1.201	0.929	0.483	3.169
161.7	104.5	0.674	11.26	7.538	0.998	0.971	6.034	0.269	1.689	1.420	0.449	1.204	0.935	0.486	3.162
165.3	105.3	0.689	11.50	7.558	1.003	0.976	6.031	0.266	1.694	1.428	0.452	1.206	0.940	0.488	3.161
168.9	106.1	0.705	11.76	7.581	1.008	0.980	6.028	0.263	1.697	1.434	0.454	1.207	0.944	0.490	3.157
172.5	107.0	0.720	12.01	7.602	1.013	0.985	6.025	0.260	1.701	1.441	0.456	1.208	0.949	0.492	3.159

Project: 175518236			Source: HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & I						Lab ID: 207				Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
176.1	107.8	0.735	12.26	7.624	1.018	0.989	6.022	0.257	1.705	1.448	0.459	1.211	0.953	0.495	3.156
179.7	108.6	0.750	12.52	7.647	1.022	0.993	6.019	0.254	1.709	1.455	0.463	1.213	0.959	0.496	3.145
183.3	109.5	0.765	12.77	7.668	1.028	0.998	6.016	0.251	1.715	1.464	0.466	1.217	0.965	0.499	3.139
186.8	110.2	0.780	13.01	7.690	1.031	1.001	6.013	0.248	1.719	1.471	0.470	1.219	0.971	0.500	3.127
190.4	110.8	0.794	13.25	7.711	1.034	1.003	6.011	0.245	1.722	1.476	0.473	1.220	0.975	0.501	3.118
194.0	111.6	0.810	13.51	7.735	1.039	1.007	6.008	0.243	1.725	1.482	0.476	1.222	0.979	0.503	3.116
197.6	112.3	0.824	13.76	7.756	1.043	1.010	6.005	0.240	1.728	1.488	0.478	1.223	0.983	0.505	3.113
201.2	113.2	0.840	14.02	7.780	1.048	1.014	6.002	0.237	1.731	1.494	0.480	1.224	0.987	0.507	3.113
204.8	113.9	0.855	14.27	7.802	1.051	1.017	5.998	0.233	1.733	1.500	0.483	1.225	0.991	0.509	3.107
208.4	114.6	0.869	14.51	7.825	1.055	1.021	5.996	0.231	1.736	1.506	0.485	1.226	0.995	0.510	3.104
212.0	115.4	0.884	14.76	7.848	1.058	1.023	5.993	0.228	1.740	1.512	0.489	1.228	1.000	0.512	3.095
215.6	116.2	0.899	15.00	7.870	1.063	1.027	5.990	0.225	1.744	1.519	0.492	1.231	1.005	0.514	3.089
219.2	116.9	0.915	15.27	7.894	1.066	1.030	5.987	0.222	1.747	1.525	0.495	1.232	1.010	0.515	3.078
222.7	117.6	0.929	15.51	7.917	1.069	1.033	5.985	0.220	1.751	1.531	0.499	1.235	1.015	0.516	3.070
226.4	118.5	0.945	15.76	7.941	1.074	1.037	5.982	0.217	1.755	1.538	0.501	1.236	1.019	0.518	3.069
229.9	119.2	0.959	16.01	7.964	1.078	1.040	5.979	0.214	1.758	1.544	0.504	1.238	1.024	0.520	3.062
233.5	120.0	0.974	16.26	7.988	1.082	1.043	5.976	0.211	1.761	1.550	0.507	1.239	1.029	0.522	3.058
237.1	120.7	0.990	16.51	8.013	1.085	1.046	5.973	0.208	1.763	1.555	0.509	1.240	1.032	0.523	3.054
240.7	121.6	1.005	16.77	8.037	1.090	1.050	5.970	0.205	1.767	1.562	0.512	1.242	1.037	0.525	3.051
244.2	122.0	1.019	17.00	8.060	1.090	1.050	5.965	0.200	1.766	1.566	0.516	1.242	1.041	0.525	3.032

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Plant Hammond Phase 2	Project No.	175518236
Source	HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & HRL-15, 0.0'-10.0'	Lab ID	207
Description	Lean Clay with Sand (CL), light brown	Test ID	207-B
Specimen Type	Compacted		
Preparation	Wet Mounting	Date Received	09/26/2022
		Date Tested	10/21/2022

Specific Gravity	2.74
ASTM D 854, Dry	
Liquid Limit	
Plastic Limit	
Plasticity Index	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	60
Nominal Consolidation Pressure (psi)	30

Saturation / Consolidation Results

Pore Pressure Parameter B	0.95
Measured Effective Consol. Stress (tsf)	2.155
Time to 50% Consolidation (min)	5.30
Actual Axial Strain Rate of Test (%/min)	0.056

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	131.1
Moisture Content (%)	21.1
Dry Unit Weight (pcf)	108.2
Void Ratio	0.577
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

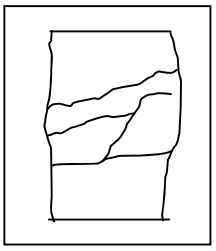
Axial Strain (%)	8.963
Deviator Stress (tsf)	1.924
Induced Pore Pressure (tsf)	1.205
Minor Effective Stress, σ_3' (tsf)	0.950
Major Effective Stress, σ_1' (tsf)	2.874
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.026
p' (tsf)	1.912
q (tsf)	0.962

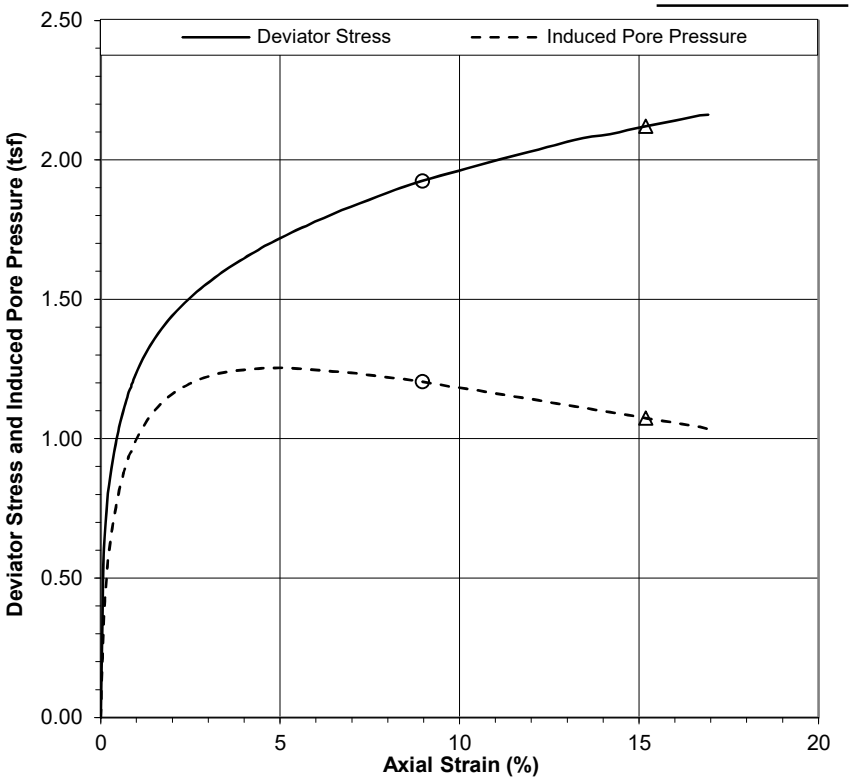
At Consolidated Undrained Failure

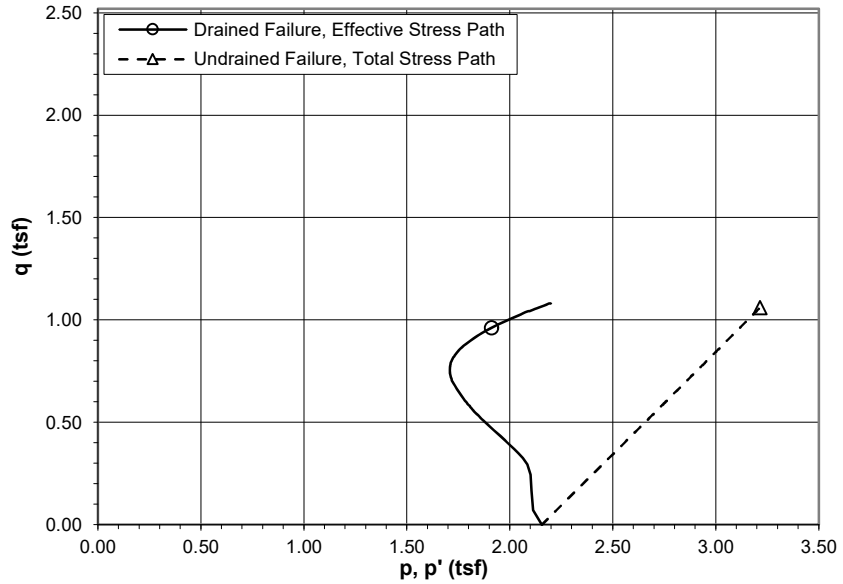
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.191
Deviator Stress (tsf)	2.121
Minor Principal Stress, σ_3 (tsf)	2.154
Major Principal Stress, σ_1 (tsf)	4.274
p (tsf)	3.214
q (tsf)	1.060

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Plant Hammond Phase 2 — Project No.: 175518236
Source: HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & HRL-15, 0.0'-10.0' — Lab ID: 207
Description: Lean Clay with Sand (CL), light brown — Test ID: 207-B

Initial Specimen Conditions		Consolidated Specimen Conditions	
Height (in)	6.057	Height (in)	5.980
Diameter (in)	2.888	Calculated Diameter (in)	2.850
Area (in^2)	6.551	Calculated Area (in^2)	6.379
Moist Weight (lb)	2.777	Moist Weight (lb)	2.893
Moist Unit Weight (pcf)	121.0	Moist Unit Weight (pcf)	131.1
Moisture Content (%)	16.2	Moisture Content (%)	21.1
Dry Weight (lb)	2.390	Dry Weight (lb)	2.390
Dry Unit Weight (pcf)	104.1	Dry Unit Weight (pcf)	108.2
Void Ratio	0.641	Void Ratio	0.577
Degree of Saturation (%)	69.4	Degree of Saturation (%)	100.0

Specific Gravity: 2.74
ASTM D 854, Dry

Liquid Limit:
Plastic Limit:
Plasticity Index:

Confining Stress
σ_3 (tsf): 2.155

Effective Consolidation Stress
σ_3' (tsf): 2.155

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 175518236			Source: HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & I								Lab ID: 207		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.379	0.000	0.000	4.325	0.000	2.155	2.155	2.155	2.155	2.155	0.000	1.000
0.5	12.3	0.002	0.03	6.381	0.139	0.139	4.437	0.112	2.295	2.183	2.044	2.225	2.113	0.070	1.068
0.9	29.0	0.003	0.05	6.383	0.327	0.327	4.539	0.214	2.483	2.268	1.941	2.319	2.105	0.164	1.169
1.3	43.3	0.004	0.07	6.384	0.488	0.488	4.623	0.298	2.644	2.345	1.857	2.400	2.101	0.244	1.263
1.8	52.1	0.005	0.08	6.385	0.587	0.587	4.689	0.364	2.742	2.379	1.792	2.449	2.085	0.294	1.328
2.2	57.7	0.007	0.11	6.387	0.651	0.651	4.742	0.417	2.806	2.389	1.738	2.481	2.063	0.325	1.374
2.7	62.0	0.009	0.14	6.388	0.698	0.698	4.788	0.463	2.854	2.390	1.692	2.504	2.041	0.349	1.413
3.1	65.6	0.010	0.16	6.390	0.739	0.739	4.829	0.504	2.895	2.391	1.652	2.525	2.021	0.370	1.447
3.6	68.7	0.011	0.19	6.391	0.774	0.773	4.864	0.539	2.929	2.390	1.617	2.542	2.003	0.387	1.478
4.0	71.4	0.012	0.21	6.393	0.804	0.804	4.896	0.571	2.959	2.388	1.585	2.557	1.987	0.402	1.507
4.5	74.1	0.014	0.24	6.395	0.834	0.834	4.925	0.600	2.989	2.388	1.555	2.572	1.972	0.417	1.536
4.9	76.4	0.016	0.26	6.396	0.860	0.859	4.953	0.628	3.015	2.387	1.528	2.585	1.957	0.430	1.562
5.3	78.6	0.017	0.29	6.398	0.884	0.883	4.978	0.653	3.039	2.385	1.502	2.597	1.944	0.442	1.588
5.8	80.6	0.019	0.32	6.400	0.906	0.906	5.002	0.677	3.061	2.384	1.479	2.608	1.931	0.453	1.612
6.2	82.4	0.021	0.35	6.402	0.926	0.925	5.023	0.698	3.081	2.383	1.458	2.618	1.920	0.463	1.635
6.7	84.1	0.022	0.36	6.403	0.945	0.944	5.043	0.718	3.100	2.382	1.437	2.628	1.910	0.472	1.657
7.1	85.8	0.024	0.40	6.405	0.965	0.964	5.062	0.737	3.119	2.382	1.418	2.637	1.900	0.482	1.680
7.6	87.4	0.025	0.42	6.406	0.982	0.981	5.080	0.755	3.136	2.382	1.400	2.646	1.891	0.491	1.701
8.0	88.8	0.027	0.44	6.408	0.998	0.997	5.096	0.772	3.152	2.380	1.384	2.654	1.882	0.498	1.720
8.5	90.2	0.028	0.47	6.409	1.013	1.012	5.112	0.787	3.168	2.381	1.368	2.662	1.874	0.506	1.740
8.9	91.5	0.030	0.50	6.411	1.028	1.027	5.127	0.802	3.182	2.380	1.353	2.669	1.867	0.513	1.759
9.4	92.8	0.031	0.52	6.412	1.042	1.041	5.142	0.817	3.196	2.379	1.338	2.676	1.859	0.521	1.778
9.8	94.1	0.032	0.54	6.414	1.057	1.055	5.156	0.831	3.210	2.380	1.325	2.683	1.852	0.528	1.797
10.2	95.3	0.034	0.57	6.416	1.070	1.068	5.169	0.844	3.224	2.380	1.312	2.689	1.846	0.534	1.814
10.7	96.4	0.036	0.59	6.418	1.081	1.080	5.181	0.856	3.235	2.379	1.299	2.695	1.839	0.540	1.831
11.1	97.5	0.037	0.62	6.419	1.094	1.092	5.193	0.868	3.247	2.380	1.287	2.701	1.833	0.546	1.849
11.6	98.6	0.038	0.64	6.421	1.106	1.105	5.204	0.879	3.260	2.380	1.276	2.707	1.828	0.552	1.866
12.0	99.6	0.040	0.66	6.422	1.117	1.116	5.215	0.890	3.270	2.380	1.265	2.713	1.823	0.558	1.882
12.5	100.6	0.041	0.69	6.424	1.127	1.126	5.225	0.900	3.281	2.381	1.255	2.718	1.818	0.563	1.896
12.9	101.7	0.043	0.72	6.425	1.140	1.138	5.236	0.911	3.293	2.382	1.245	2.724	1.814	0.569	1.914
13.4	102.6	0.045	0.74	6.427	1.150	1.148	5.245	0.920	3.303	2.383	1.235	2.729	1.809	0.574	1.929
13.8	103.6	0.046	0.76	6.428	1.161	1.159	5.254	0.929	3.314	2.384	1.225	2.734	1.805	0.579	1.946
14.3	104.4	0.047	0.79	6.430	1.169	1.167	5.263	0.938	3.322	2.384	1.217	2.738	1.800	0.584	1.959
14.7	105.3	0.049	0.82	6.432	1.179	1.177	5.272	0.947	3.332	2.385	1.208	2.743	1.796	0.588	1.974
15.2	106.1	0.051	0.85	6.434	1.188	1.185	5.280	0.955	3.341	2.386	1.200	2.748	1.793	0.593	1.988
15.6	107.0	0.052	0.86	6.435	1.197	1.195	5.288	0.963	3.350	2.387	1.192	2.753	1.790	0.597	2.002
16.0	107.7	0.053	0.89	6.437	1.205	1.203	5.295	0.970	3.357	2.387	1.184	2.756	1.786	0.601	2.016
16.5	108.5	0.055	0.92	6.438	1.213	1.211	5.303	0.978	3.366	2.388	1.177	2.761	1.783	0.606	2.029
16.9	109.2	0.057	0.95	6.440	1.221	1.219	5.311	0.986	3.374	2.388	1.169	2.765	1.779	0.610	2.042

Project: 175518236			Source: HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & I					Lab ID: 207					Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
17.4	110.1	0.058	0.97	6.442	1.230	1.228	5.318	0.993	3.383	2.391	1.163	2.769	1.777	0.614	2.056
17.8	110.8	0.059	0.99	6.443	1.238	1.236	5.324	0.999	3.391	2.392	1.156	2.773	1.774	0.618	2.069
19.6	113.5	0.066	1.10	6.450	1.267	1.264	5.348	1.024	3.419	2.395	1.131	2.787	1.763	0.632	2.117
21.3	116.0	0.072	1.20	6.457	1.293	1.290	5.371	1.046	3.445	2.399	1.109	2.800	1.754	0.645	2.163
23.1	118.3	0.077	1.29	6.463	1.317	1.314	5.390	1.065	3.469	2.404	1.090	2.812	1.747	0.657	2.206
24.9	120.3	0.083	1.39	6.469	1.338	1.335	5.408	1.083	3.490	2.408	1.073	2.823	1.740	0.668	2.245
26.6	122.3	0.089	1.49	6.476	1.360	1.356	5.425	1.100	3.511	2.411	1.055	2.833	1.733	0.678	2.285
28.4	124.1	0.095	1.59	6.483	1.378	1.374	5.439	1.114	3.529	2.415	1.041	2.842	1.728	0.687	2.320
30.2	125.8	0.101	1.69	6.489	1.396	1.391	5.453	1.128	3.547	2.419	1.027	2.851	1.723	0.696	2.354
31.9	127.4	0.107	1.78	6.495	1.413	1.408	5.465	1.140	3.564	2.424	1.015	2.860	1.719	0.704	2.387
33.7	129.1	0.113	1.89	6.502	1.429	1.425	5.476	1.151	3.580	2.429	1.005	2.868	1.717	0.712	2.418
35.5	130.6	0.119	1.99	6.509	1.444	1.439	5.485	1.160	3.594	2.434	0.995	2.875	1.714	0.720	2.447
37.2	131.9	0.125	2.09	6.515	1.457	1.452	5.494	1.169	3.607	2.438	0.986	2.881	1.712	0.726	2.473
39.0	133.3	0.131	2.19	6.522	1.471	1.466	5.503	1.178	3.621	2.443	0.977	2.888	1.710	0.733	2.500
40.8	134.6	0.137	2.29	6.529	1.484	1.479	5.510	1.185	3.634	2.449	0.970	2.895	1.709	0.739	2.525
42.5	135.9	0.143	2.38	6.535	1.497	1.491	5.516	1.191	3.646	2.455	0.964	2.901	1.709	0.746	2.547
44.3	137.1	0.148	2.48	6.541	1.509	1.503	5.523	1.198	3.658	2.460	0.957	2.907	1.709	0.752	2.571
46.1	138.4	0.155	2.59	6.549	1.521	1.515	5.528	1.204	3.670	2.467	0.951	2.913	1.709	0.758	2.592
47.8	139.7	0.160	2.68	6.555	1.534	1.528	5.534	1.209	3.683	2.473	0.946	2.919	1.710	0.764	2.615
49.6	140.8	0.167	2.78	6.562	1.545	1.538	5.540	1.215	3.693	2.479	0.941	2.924	1.710	0.769	2.635
51.4	141.9	0.172	2.88	6.568	1.555	1.548	5.544	1.219	3.704	2.485	0.937	2.930	1.711	0.774	2.653
53.1	142.9	0.179	2.99	6.576	1.564	1.557	5.548	1.223	3.712	2.489	0.932	2.934	1.711	0.778	2.670
54.9	144.0	0.185	3.09	6.582	1.575	1.567	5.551	1.226	3.723	2.496	0.929	2.939	1.713	0.784	2.687
56.7	145.0	0.190	3.18	6.589	1.585	1.577	5.556	1.231	3.732	2.502	0.924	2.944	1.713	0.789	2.706
58.4	146.1	0.196	3.28	6.596	1.594	1.586	5.559	1.234	3.742	2.507	0.921	2.948	1.714	0.793	2.723
60.2	147.2	0.202	3.38	6.603	1.605	1.597	5.562	1.237	3.752	2.516	0.919	2.954	1.717	0.798	2.738
61.9	148.1	0.208	3.48	6.610	1.613	1.605	5.565	1.240	3.760	2.520	0.915	2.957	1.718	0.802	2.753
63.7	149.0	0.214	3.58	6.616	1.621	1.613	5.566	1.241	3.767	2.527	0.914	2.961	1.720	0.806	2.765
65.5	150.1	0.220	3.68	6.623	1.632	1.623	5.569	1.244	3.778	2.534	0.912	2.967	1.723	0.811	2.780
67.2	151.0	0.226	3.78	6.630	1.640	1.631	5.570	1.245	3.786	2.541	0.910	2.970	1.725	0.815	2.792
69.0	151.9	0.232	3.89	6.637	1.647	1.638	5.571	1.246	3.793	2.547	0.909	2.974	1.728	0.819	2.802
70.8	152.7	0.238	3.99	6.644	1.655	1.645	5.572	1.247	3.800	2.553	0.908	2.977	1.731	0.823	2.812
72.5	153.7	0.244	4.08	6.651	1.664	1.654	5.574	1.249	3.809	2.560	0.906	2.982	1.733	0.827	2.826
74.3	154.6	0.250	4.18	6.658	1.672	1.662	5.575	1.250	3.817	2.567	0.906	2.986	1.736	0.831	2.835
76.1	155.4	0.256	4.28	6.665	1.679	1.668	5.575	1.251	3.823	2.573	0.905	2.989	1.739	0.834	2.844
77.8	156.3	0.262	4.39	6.672	1.687	1.676	5.576	1.251	3.831	2.580	0.903	2.993	1.741	0.838	2.855
79.6	157.2	0.268	4.48	6.679	1.695	1.684	5.578	1.253	3.839	2.586	0.903	2.997	1.744	0.842	2.866
81.4	158.1	0.273	4.57	6.685	1.702	1.691	5.579	1.254	3.847	2.593	0.902	3.001	1.748	0.846	2.875
83.1	158.7	0.279	4.67	6.692	1.708	1.696	5.578	1.253	3.852	2.599	0.902	3.004	1.750	0.848	2.880
84.9	159.6	0.286	4.77	6.699	1.715	1.704	5.579	1.254	3.859	2.605	0.901	3.007	1.753	0.852	2.891
86.7	160.4	0.292	4.88	6.706	1.722	1.710	5.579	1.254	3.865	2.611	0.900	3.010	1.756	0.855	2.899
88.4	161.3	0.298	4.98	6.714	1.729	1.717	5.580	1.255	3.873	2.618	0.901	3.014	1.759	0.859	2.906
92.8	163.1	0.312	5.22	6.731	1.745	1.732	5.579	1.254	3.888	2.634	0.902	3.022	1.768	0.866	2.921
97.2	165.2	0.328	5.48	6.749	1.762	1.749	5.577	1.252	3.904	2.652	0.903	3.030	1.778	0.875	2.937
101.7	167.0	0.343	5.73	6.767	1.777	1.763	5.574	1.249	3.918	2.669	0.906	3.036	1.787	0.881	2.945
106.1	169.0	0.357	5.97	6.785	1.793	1.778	5.572	1.247	3.933	2.686	0.908	3.044	1.797	0.889	2.959
110.5	170.6	0.372	6.22	6.803	1.806	1.791	5.570	1.245	3.946	2.701	0.910	3.051	1.806	0.895	2.967
114.9	172.4	0.386	6.46	6.820	1.820	1.804	5.567	1.242	3.959	2.717	0.913	3.057	1.815	0.902	2.977
119.3	174.4	0.402	6.72	6.839	1.836	1.819	5.565	1.240	3.974	2.735	0.915	3.064	1.825	0.910	2.988
123.7	176.1	0.417	6.97	6.857	1.849	1.832	5.562	1.237	3.987	2.750	0.918	3.071	1.834	0.916	2.995
128.1	177.8	0.432	7.22	6.876	1.861	1.844	5.558	1.233	3.999	2.765	0.921	3.077	1.843	0.922	3.001
132.6	179.4	0.446	7.46	6.894	1.874	1.856	5.554	1.229	4.010	2.781	0.925	3.082	1.853	0.928	3.006
137.0	181.3	0.462	7.73	6.914	1.888	1.869	5.550	1.225	4.023	2.798	0.929	3.089	1.864	0.934	3.012
141.4	182.9	0.476	7.97	6.932	1.900	1.880	5.546	1.221	4.035	2.814	0.934	3.095	1.874	0.940	3.014
145.8	184.7	0.492	8.22	6.951	1.914	1.894	5.542	1.217	4.048	2.831	0.938	3.101	1.884	0.947	3.020
150.2	186.2	0.506	8.46	6.969	1.924	1.904	5.538	1.213	4.059	2.845	0.942	3.107	1.893	0.952	3.021
154.6	187.9	0.521	8.71	6.988	1.936	1.915	5.534	1.209	4.070	2.860	0.946	3.112	1.903	0.957	3.025
159.0	189.4	0.536	8.96	7.007	1.946	1.924	5.530	1.205	4.079	2.874	0.950	3.117	1.912	0.962	3.026
163.4	190.9	0.550	9.20	7.026	1.956	1.934	5.524	1.199	4.088	2.889	0.955	3.121	1.922	0.967	3.025
167.9	192.4	0.566	9.46	7.046	1.966	1.943	5.519	1.194	4.098	2.904	0.960	3.126	1.932	0.972	3.024
172.3	193.7	0.580	9.71	7.065	1.974	1.951	5.513	1.188	4.105	2.917	0.966	3.129	1.942	0.975	3.019
176.7	195.3	0.596	9.96	7.085	1.984	1.960	5.509	1.184	4.114	2.930	0.970	3.134	1.950	0.980	3.021
181.1	196.7	0.610	10.20	7.104	1.994	1.969	5.505	1.180	4.123	2.944	0.975	3.139	1.959	0.985	3.020
185.5	198.2	0.626	10.46	7.125	2.003	1.978	5.500	1.175	4.132	2.957	0.979	3.143	1.968	0.989	3.020
189.9	199.7	0.640	10.70	7.144	2.013	1.987	5.494	1.169	4.141	2.972	0.985	3.148	1.979	0.993	3.017
194.3	201.1	0.655	10.95	7.164	2.021	1.995	5.489	1.164	4.149	2.986	0.991	3.152	1.988	0.997	3.014
198.7	202.6	0.670	11.20	7.184	2.031	2.004	5.483	1.158	4.158	2.999	0.996	3.156	1.998	1.002	3.012
203.2	204.2	0.685	11.45	7.204	2.040	2.013	5.478	1.153	4.167	3.014	1.002	3.161	2.008	1.006	3.009
207.6	205.6	0.699	11.69	7.224	2.049	2.021	5.473	1.148	4.175	3.027	1.006	3.164	2.016	1.010	3.009

Project: 175518236			Source: HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & I						Lab ID: 207				Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
212.0	207.1	0.714	11.95	7.245	2.058	2.029	5.469	1.144	4.183	3.039	1.010	3.168	2.025	1.014	3.008
216.4	208.5	0.729	12.20	7.266	2.067	2.037	5.463	1.138	4.191	3.053	1.016	3.173	2.034	1.018	3.005
220.8	210.1	0.744	12.45	7.286	2.076	2.046	5.457	1.132	4.199	3.067	1.021	3.177	2.044	1.023	3.003
225.2	211.6	0.760	12.70	7.308	2.085	2.054	5.452	1.127	4.208	3.081	1.027	3.181	2.054	1.027	3.000
229.6	213.2	0.774	12.95	7.328	2.094	2.063	5.447	1.122	4.217	3.095	1.032	3.186	2.064	1.031	2.998
234.0	214.7	0.789	13.20	7.349	2.104	2.072	5.442	1.117	4.225	3.109	1.037	3.190	2.073	1.036	2.997
238.5	216.0	0.804	13.45	7.370	2.110	2.078	5.436	1.111	4.232	3.120	1.042	3.193	2.081	1.039	2.993
242.9	217.3	0.819	13.69	7.391	2.117	2.084	5.431	1.106	4.238	3.132	1.048	3.196	2.090	1.042	2.988
247.3	218.4	0.834	13.95	7.414	2.121	2.087	5.426	1.101	4.241	3.140	1.053	3.197	2.097	1.043	2.981
251.7	219.5	0.849	14.19	7.435	2.126	2.092	5.420	1.095	4.245	3.150	1.058	3.199	2.104	1.046	2.976
256.1	221.0	0.864	14.45	7.457	2.134	2.099	5.415	1.090	4.252	3.162	1.063	3.203	2.112	1.049	2.974
260.5	222.5	0.878	14.68	7.477	2.143	2.107	5.410	1.085	4.261	3.176	1.069	3.207	2.122	1.053	2.971
264.9	224.1	0.894	14.94	7.500	2.151	2.115	5.404	1.080	4.268	3.189	1.074	3.211	2.132	1.057	2.969
269.3	225.4	0.908	15.19	7.522	2.157	2.121	5.399	1.074	4.274	3.200	1.080	3.214	2.140	1.060	2.964
273.8	226.7	0.924	15.45	7.545	2.163	2.126	5.393	1.068	4.279	3.211	1.086	3.217	2.148	1.063	2.958
278.2	228.0	0.938	15.68	7.566	2.170	2.132	5.388	1.063	4.285	3.222	1.090	3.219	2.156	1.066	2.956
282.6	229.6	0.954	15.94	7.590	2.178	2.140	5.383	1.058	4.293	3.235	1.095	3.223	2.165	1.070	2.954
287.0	231.0	0.968	16.19	7.612	2.185	2.146	5.378	1.053	4.299	3.246	1.100	3.226	2.173	1.073	2.951
291.4	232.5	0.983	16.44	7.635	2.192	2.152	5.373	1.048	4.306	3.258	1.106	3.229	2.182	1.076	2.947
295.8	233.9	0.998	16.69	7.658	2.200	2.159	5.368	1.043	4.312	3.269	1.110	3.233	2.190	1.080	2.945
300.1	235.0	1.012	16.93	7.680	2.204	2.162	5.360	1.035	4.316	3.281	1.118	3.234	2.199	1.081	2.934

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Plant Hammond Phase 2	Project No.	175518236
Source	HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & HRL-15, 0.0'-10.0'	Lab ID	207
Description	Lean Clay with Sand (CL), light brown	Test ID	207-C
Specimen Type	Compacted		
Preparation	Wet Mounting	Date Received	09/26/2022
		Date Tested	10/20/2022

Specific Gravity	2.74
ASTM D 854, Dry	
Liquid Limit	
Plastic Limit	
Plasticity Index	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	40
Nominal Consolidation Pressure (psi)	50

Saturation / Consolidation Results

Pore Pressure Parameter B	0.98
Measured Effective Consol. Stress (tsf)	3.598
Time to 50% Consolidation (min)	5.60
Actual Axial Strain Rate of Test (%/min)	0.053

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	132.6
Moisture Content (%)	19.8
Dry Unit Weight (pcf)	110.6
Void Ratio	0.544
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

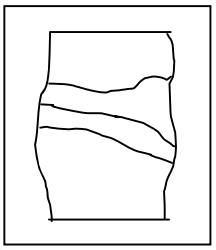
Axial Strain (%)	9.965
Deviator Stress (tsf)	3.201
Induced Pore Pressure (tsf)	1.871
Minor Effective Stress, σ_3' (tsf)	1.724
Major Effective Stress, σ_1' (tsf)	4.925
Eff. Principal Stress Ratio, σ_1'/σ_3'	2.857
p' (tsf)	3.324
q (tsf)	1.601

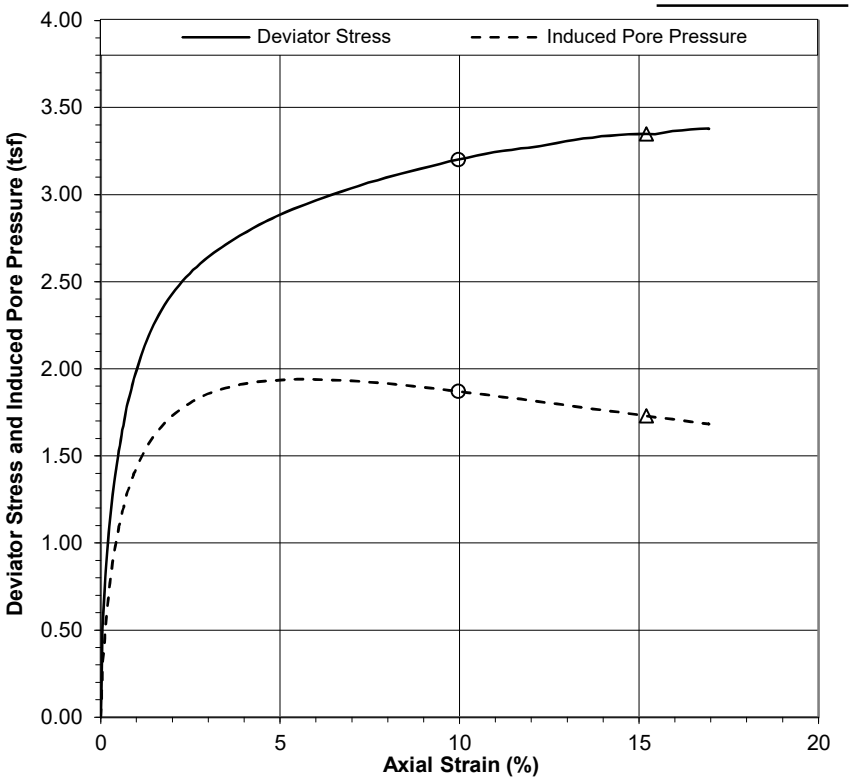
At Consolidated Undrained Failure

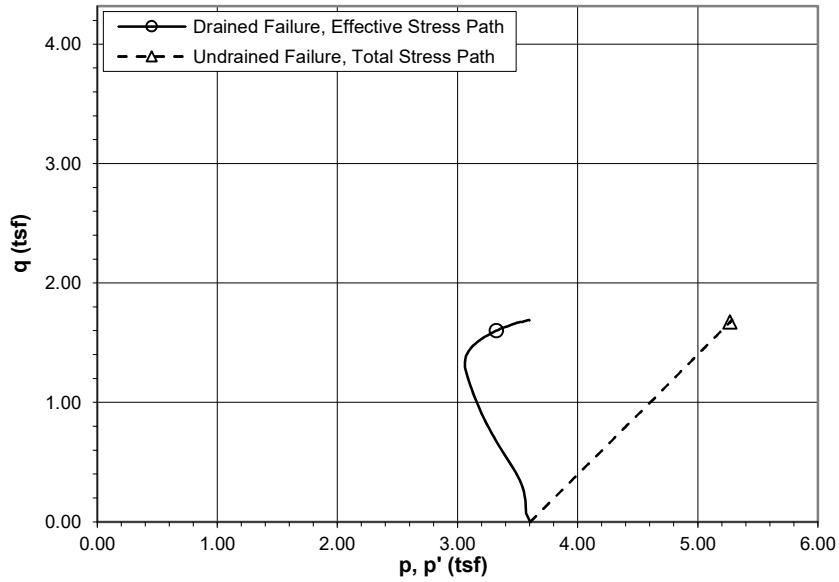
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.202
Deviator Stress (tsf)	3.349
Minor Principal Stress, σ_3 (tsf)	3.593
Major Principal Stress, σ_1 (tsf)	6.942
p (tsf)	5.267
q (tsf)	1.675

Failure Sketch







Comments

Reviewed KG

Template: tmp_cu_input.xlsm
Version: 20170216
Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: KG
Report Date: 11/02/2022

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Plant Hammond Phase 2 | Project No.: 175518236
Source: HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & HRL-15, 0.0'-10.0' | Lab ID: 207
Description: Lean Clay with Sand (CL), light brown | Test ID: 207-C

Initial Specimen Conditions		Consolidated Specimen Conditions			
Height (in)	5.998	Height (in)	5.916	Specific Gravity	2.74
Diameter (in)	2.892	Calculated Diameter (in)	2.869		ASTM D 854, Dry
Area (in^2)	6.569	Calculated Area (in^2)	6.467	Liquid Limit	
Moist Weight (lb)	2.844	Moist Weight (lb)	2.935	Plastic Limit	
Moist Unit Weight (pcf)	124.7	Moist Unit Weight (pcf)	132.6	Plasticity Index	
Moisture Content (%)	16.1	Moisture Content (%)	19.8		
Dry Weight (lb)	2.449	Dry Weight (lb)	2.449		
Dry Unit Weight (pcf)	107.4	Dry Unit Weight (pcf)	110.6	Confining Stress	
Void Ratio	0.590	Void Ratio	0.544	σ_3 (tsf)	3.604
Degree of Saturation (%)	74.9	Degree of Saturation (%)	100.0		
				Effective Consolidation Stress	
				σ_3' (tsf)	3.604

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 175518236			Source: HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & I								Lab ID: 207		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.467	0.000	0.000	2.877	0.000	3.604	3.604	3.604	3.604	3.604	0.000	1.000
0.5	13.0	0.002	0.03	6.469	0.144	0.144	2.983	0.106	3.748	3.642	3.498	3.676	3.570	0.072	1.041
1.0	32.0	0.003	0.04	6.470	0.356	0.356	3.093	0.216	3.959	3.743	3.388	3.781	3.566	0.178	1.105
1.4	45.8	0.003	0.05	6.470	0.509	0.509	3.183	0.306	4.113	3.807	3.298	3.858	3.552	0.255	1.154
1.9	56.3	0.005	0.09	6.473	0.627	0.627	3.259	0.382	4.230	3.847	3.221	3.916	3.534	0.313	1.195
2.4	65.1	0.007	0.11	6.474	0.724	0.724	3.330	0.453	4.327	3.874	3.150	3.965	3.512	0.362	1.230
2.8	72.5	0.008	0.13	6.475	0.806	0.806	3.393	0.516	4.409	3.893	3.087	4.006	3.490	0.403	1.261
3.3	79.3	0.009	0.16	6.477	0.881	0.881	3.453	0.576	4.484	3.908	3.027	4.044	3.468	0.440	1.291
3.8	85.5	0.011	0.18	6.479	0.951	0.950	3.508	0.631	4.553	3.922	2.972	4.078	3.447	0.475	1.320
4.2	91.1	0.012	0.21	6.480	1.013	1.012	3.558	0.681	4.615	3.933	2.921	4.109	3.427	0.506	1.347
4.7	96.2	0.014	0.23	6.482	1.069	1.068	3.604	0.727	4.670	3.943	2.875	4.136	3.409	0.534	1.371
5.2	101.1	0.015	0.25	6.483	1.123	1.122	3.648	0.771	4.725	3.954	2.832	4.164	3.393	0.561	1.396
5.7	105.7	0.017	0.28	6.485	1.173	1.173	3.688	0.812	4.775	3.963	2.790	4.188	3.377	0.586	1.420
6.1	110.0	0.018	0.31	6.487	1.221	1.221	3.728	0.851	4.823	3.972	2.751	4.213	3.362	0.610	1.444
6.6	114.2	0.020	0.33	6.488	1.267	1.267	3.764	0.888	4.869	3.981	2.714	4.235	3.348	0.633	1.467
7.1	118.2	0.021	0.35	6.490	1.311	1.310	3.799	0.923	4.912	3.990	2.680	4.257	3.335	0.655	1.489
7.5	121.8	0.023	0.38	6.492	1.351	1.350	3.831	0.954	4.952	3.997	2.648	4.277	3.323	0.675	1.510
8.0	125.2	0.024	0.41	6.493	1.389	1.388	3.861	0.985	4.990	4.005	2.617	4.296	3.311	0.694	1.530
8.5	128.7	0.026	0.44	6.495	1.427	1.426	3.890	1.014	5.028	4.014	2.589	4.315	3.302	0.713	1.551
8.9	132.0	0.027	0.46	6.497	1.462	1.461	3.918	1.041	5.063	4.022	2.561	4.333	3.291	0.731	1.571
9.4	135.1	0.029	0.48	6.498	1.497	1.496	3.944	1.068	5.097	4.029	2.533	4.349	3.281	0.748	1.590
9.9	138.2	0.030	0.51	6.500	1.531	1.529	3.970	1.094	5.131	4.037	2.508	4.366	3.273	0.765	1.610
10.3	141.0	0.032	0.54	6.502	1.561	1.560	3.994	1.118	5.161	4.044	2.484	4.382	3.264	0.780	1.628
10.8	143.8	0.033	0.56	6.503	1.592	1.591	4.018	1.141	5.192	4.051	2.460	4.397	3.256	0.795	1.647
11.3	146.4	0.034	0.58	6.505	1.620	1.619	4.039	1.163	5.220	4.057	2.439	4.411	3.248	0.809	1.664
11.8	149.1	0.036	0.61	6.506	1.650	1.648	4.061	1.185	5.250	4.066	2.417	4.426	3.241	0.824	1.682
12.2	151.5	0.038	0.64	6.508	1.676	1.675	4.082	1.205	5.276	4.071	2.396	4.439	3.234	0.837	1.699
12.7	153.9	0.039	0.65	6.509	1.703	1.701	4.101	1.224	5.303	4.078	2.377	4.452	3.228	0.851	1.716
13.2	156.3	0.040	0.68	6.511	1.729	1.727	4.121	1.244	5.328	4.085	2.358	4.465	3.221	0.863	1.732
13.6	158.7	0.042	0.70	6.513	1.755	1.753	4.139	1.263	5.354	4.092	2.339	4.478	3.215	0.876	1.749
14.1	160.9	0.043	0.72	6.514	1.778	1.776	4.157	1.280	5.378	4.098	2.321	4.489	3.210	0.888	1.765
14.6	162.8	0.044	0.75	6.516	1.799	1.797	4.173	1.296	5.399	4.103	2.305	4.500	3.204	0.899	1.780
15.0	165.0	0.046	0.78	6.518	1.823	1.821	4.189	1.312	5.422	4.109	2.288	4.511	3.199	0.911	1.796
15.5	167.1	0.048	0.81	6.519	1.845	1.843	4.206	1.329	5.445	4.116	2.273	4.523	3.194	0.922	1.811
16.0	169.1	0.049	0.83	6.521	1.867	1.865	4.221	1.344	5.466	4.122	2.257	4.534	3.190	0.932	1.826
16.5	171.0	0.051	0.86	6.523	1.887	1.885	4.235	1.359	5.487	4.128	2.243	4.544	3.185	0.943	1.841
16.9	172.9	0.052	0.88	6.524	1.908	1.906	4.250	1.373	5.507	4.134	2.228	4.554	3.181	0.953	1.856
17.4	174.7	0.054	0.91	6.526	1.927	1.925	4.264	1.387	5.526	4.139	2.214	4.564	3.177	0.962	1.869
17.9	176.4	0.055	0.93	6.527	1.946	1.943	4.277	1.400	5.545	4.145	2.201	4.573	3.173	0.972	1.883

Project: 175518236			Source: HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & I						Lab ID: 207				Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
18.3	178.1	0.057	0.96	6.530	1.964	1.962	4.290	1.413	5.563	4.150	2.188	4.582	3.169	0.981	1.896
18.8	179.8	0.058	0.98	6.531	1.982	1.980	4.303	1.426	5.581	4.155	2.175	4.591	3.165	0.990	1.910
20.7	186.1	0.064	1.09	6.538	2.049	2.047	4.349	1.473	5.648	4.175	2.128	4.624	3.152	1.023	1.962
22.6	191.6	0.070	1.18	6.544	2.108	2.106	4.390	1.514	5.707	4.193	2.087	4.654	3.140	1.053	2.009
24.4	196.7	0.076	1.28	6.551	2.162	2.159	4.428	1.551	5.760	4.209	2.050	4.680	3.130	1.080	2.053
26.3	201.5	0.082	1.38	6.557	2.213	2.209	4.462	1.585	5.810	4.225	2.016	4.706	3.120	1.105	2.096
28.2	205.7	0.088	1.48	6.564	2.256	2.253	4.491	1.615	5.854	4.239	1.986	4.727	3.112	1.126	2.134
30.0	209.7	0.094	1.59	6.571	2.298	2.294	4.519	1.642	5.894	4.252	1.958	4.747	3.105	1.147	2.172
31.9	213.2	0.100	1.69	6.578	2.334	2.330	4.543	1.666	5.930	4.264	1.934	4.765	3.099	1.165	2.205
33.8	216.7	0.105	1.78	6.584	2.369	2.365	4.565	1.689	5.965	4.276	1.911	4.783	3.094	1.183	2.237
35.7	219.8	0.111	1.88	6.591	2.401	2.396	4.586	1.710	5.996	4.286	1.890	4.798	3.088	1.198	2.268
37.5	222.5	0.117	1.98	6.597	2.428	2.424	4.605	1.728	6.023	4.295	1.872	4.812	3.083	1.212	2.295
39.4	225.5	0.123	2.08	6.604	2.459	2.454	4.623	1.746	6.053	4.307	1.853	4.826	3.080	1.227	2.324
41.3	228.1	0.129	2.19	6.611	2.484	2.479	4.639	1.763	6.079	4.316	1.837	4.839	3.076	1.239	2.349
43.1	230.6	0.135	2.28	6.618	2.509	2.503	4.654	1.778	6.103	4.325	1.822	4.851	3.073	1.252	2.374
45.0	232.9	0.141	2.38	6.624	2.531	2.525	4.668	1.791	6.124	4.333	1.807	4.861	3.070	1.263	2.397
46.9	235.0	0.147	2.48	6.631	2.552	2.546	4.681	1.804	6.145	4.340	1.795	4.872	3.068	1.273	2.418
48.8	237.2	0.152	2.57	6.638	2.573	2.567	4.694	1.817	6.165	4.349	1.782	4.882	3.065	1.283	2.441
50.6	239.1	0.159	2.68	6.645	2.591	2.584	4.704	1.827	6.183	4.355	1.771	4.891	3.063	1.292	2.459
52.5	241.2	0.165	2.78	6.652	2.611	2.604	4.715	1.838	6.203	4.365	1.760	4.900	3.063	1.302	2.479
54.4	243.0	0.170	2.88	6.658	2.628	2.621	4.724	1.847	6.220	4.372	1.751	4.909	3.062	1.310	2.496
56.3	245.0	0.176	2.98	6.665	2.646	2.639	4.733	1.857	6.238	4.382	1.742	4.919	3.062	1.320	2.515
58.1	246.7	0.182	3.08	6.672	2.662	2.654	4.741	1.864	6.253	4.389	1.734	4.926	3.061	1.327	2.530
60.0	248.4	0.188	3.18	6.679	2.678	2.670	4.748	1.871	6.268	4.397	1.727	4.933	3.062	1.335	2.546
61.9	250.1	0.194	3.28	6.686	2.693	2.685	4.755	1.878	6.283	4.405	1.720	4.940	3.062	1.342	2.561
63.8	251.6	0.200	3.38	6.693	2.706	2.698	4.760	1.884	6.296	4.413	1.715	4.947	3.064	1.349	2.574
65.6	253.3	0.206	3.48	6.700	2.722	2.714	4.767	1.890	6.311	4.421	1.707	4.954	3.064	1.357	2.589
67.5	254.7	0.212	3.58	6.707	2.734	2.725	4.771	1.895	6.323	4.428	1.702	4.960	3.065	1.363	2.601
69.4	256.2	0.218	3.68	6.714	2.748	2.739	4.778	1.901	6.337	4.436	1.697	4.968	3.067	1.370	2.614
71.2	257.7	0.224	3.78	6.721	2.761	2.752	4.782	1.905	6.349	4.444	1.692	4.973	3.068	1.376	2.626
73.1	259.2	0.229	3.88	6.728	2.774	2.764	4.787	1.910	6.362	4.453	1.688	4.980	3.070	1.382	2.637
75.0	260.5	0.235	3.98	6.735	2.785	2.776	4.791	1.914	6.373	4.459	1.683	4.985	3.071	1.388	2.649
76.9	261.8	0.241	4.08	6.742	2.796	2.787	4.794	1.917	6.384	4.467	1.681	4.991	3.074	1.393	2.658
78.7	263.3	0.247	4.17	6.748	2.810	2.800	4.797	1.920	6.397	4.476	1.676	4.997	3.076	1.400	2.670
80.6	264.7	0.253	4.27	6.756	2.821	2.810	4.799	1.923	6.408	4.485	1.675	5.003	3.080	1.405	2.678
82.5	266.1	0.259	4.38	6.763	2.833	2.823	4.803	1.926	6.420	4.494	1.671	5.009	3.083	1.411	2.689
84.3	267.4	0.265	4.48	6.770	2.844	2.833	4.805	1.928	6.430	4.502	1.669	5.014	3.085	1.416	2.697
86.2	268.7	0.271	4.58	6.777	2.855	2.843	4.806	1.930	6.441	4.511	1.667	5.019	3.089	1.422	2.705
88.1	270.0	0.277	4.68	6.784	2.866	2.854	4.809	1.932	6.451	4.519	1.665	5.024	3.092	1.427	2.715
90.0	271.0	0.282	4.77	6.791	2.874	2.862	4.809	1.933	6.459	4.526	1.664	5.028	3.095	1.431	2.720
91.9	272.5	0.289	4.89	6.799	2.886	2.874	4.811	1.935	6.471	4.536	1.662	5.034	3.099	1.437	2.729
93.7	273.6	0.295	4.98	6.806	2.894	2.882	4.812	1.936	6.479	4.543	1.661	5.038	3.102	1.441	2.735
98.4	276.6	0.309	5.22	6.823	2.918	2.906	4.816	1.939	6.503	4.563	1.657	5.050	3.110	1.453	2.753
103.1	279.2	0.324	5.47	6.841	2.939	2.926	4.817	1.941	6.522	4.581	1.656	5.059	3.119	1.463	2.767
107.8	281.8	0.339	5.72	6.859	2.958	2.945	4.818	1.941	6.541	4.599	1.655	5.068	3.127	1.472	2.779
112.4	284.6	0.353	5.97	6.877	2.979	2.965	4.817	1.940	6.561	4.621	1.656	5.079	3.139	1.482	2.790
117.1	287.0	0.368	6.22	6.895	2.997	2.982	4.815	1.938	6.579	4.641	1.658	5.088	3.149	1.491	2.799
121.8	289.8	0.383	6.48	6.915	3.018	3.002	4.813	1.936	6.598	4.662	1.660	5.097	3.161	1.501	2.809
126.5	292.2	0.398	6.72	6.933	3.034	3.018	4.811	1.934	6.615	4.681	1.662	5.106	3.172	1.509	2.815
131.1	294.8	0.413	6.97	6.952	3.053	3.036	4.809	1.932	6.633	4.701	1.664	5.115	3.183	1.518	2.824
135.8	297.1	0.427	7.21	6.969	3.069	3.052	4.805	1.929	6.648	4.719	1.668	5.122	3.193	1.526	2.830
140.5	299.6	0.441	7.46	6.988	3.086	3.068	4.802	1.925	6.665	4.739	1.671	5.130	3.205	1.534	2.837
145.1	301.8	0.457	7.72	7.008	3.101	3.082	4.797	1.921	6.678	4.757	1.675	5.137	3.216	1.541	2.840
149.8	304.2	0.471	7.96	7.026	3.117	3.098	4.793	1.916	6.694	4.777	1.679	5.145	3.228	1.549	2.844
154.5	306.5	0.486	8.21	7.045	3.132	3.112	4.788	1.911	6.708	4.797	1.684	5.152	3.241	1.556	2.847
159.2	308.6	0.501	8.46	7.065	3.145	3.124	4.782	1.906	6.720	4.814	1.690	5.157	3.252	1.562	2.849
163.8	310.9	0.515	8.71	7.083	3.160	3.139	4.777	1.900	6.734	4.834	1.695	5.165	3.265	1.569	2.852
168.5	312.8	0.530	8.96	7.103	3.171	3.150	4.771	1.894	6.745	4.850	1.701	5.170	3.276	1.575	2.852
173.2	315.1	0.545	9.21	7.123	3.185	3.163	4.767	1.890	6.758	4.868	1.706	5.177	3.287	1.581	2.854
177.9	317.3	0.560	9.46	7.142	3.198	3.175	4.760	1.884	6.771	4.887	1.711	5.183	3.299	1.588	2.855
182.5	319.6	0.574	9.71	7.162	3.213	3.189	4.754	1.877	6.784	4.907	1.718	5.190	3.313	1.595	2.857
187.2	321.8	0.590	9.97	7.183	3.225	3.201	4.748	1.871	6.796	4.925	1.724	5.195	3.324	1.601	2.857
191.9	323.5	0.604	10.21	7.202	3.234	3.210	4.740	1.864	6.804	4.941	1.731	5.199	3.336	1.605	2.855
196.6	325.8	0.619	10.46	7.222	3.248	3.223	4.736	1.859	6.818	4.959	1.736	5.206	3.347	1.612	2.857
201.3	327.8	0.633	10.70	7.242	3.259	3.233	4.729	1.852	6.827	4.975	1.742	5.211	3.359	1.616	2.856
205.9	329.8	0.648	10.95	7.262	3.270	3.244	4.722	1.845	6.838	4.993	1.749	5.216	3.371	1.622	2.854
210.6	331.6	0.663	11.20	7.283	3.278	3.251	4.715	1.838	6.845	5.007	1.756	5.220	3.382	1.626	2.851
215.3	333.1	0.678	11.45	7.303	3.284	3.256	4.709	1.832	6.851	5.019	1.763	5.223	3.391	1.628	2.848
220.0	335.0	0.693	11.71	7.324	3.293	3.265	4.703	1.826	6.860	5.033	1.769	5.227	3.401	1.632	2.846

Project: 175518236			Source: HRL-1, 0.0'-5.0', 5.0'-10.0' & HRL-2, 0.0'-5.0' & HRL-13, 0.0'-5.0', 5.0'-10.0' & I						Lab ID: 207				Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
224.6	336.3	0.707	11.95	7.344	3.297	3.268	4.696	1.820	6.863	5.044	1.775	5.229	3.409	1.634	2.841
229.3	338.2	0.722	12.20	7.365	3.306	3.277	4.689	1.812	6.871	5.059	1.782	5.233	3.420	1.638	2.839
234.0	340.2	0.736	12.44	7.386	3.316	3.286	4.681	1.805	6.880	5.076	1.790	5.237	3.433	1.643	2.836
238.6	342.1	0.751	12.70	7.408	3.325	3.295	4.676	1.799	6.889	5.091	1.796	5.242	3.443	1.647	2.835
243.3	344.3	0.766	12.95	7.429	3.337	3.306	4.669	1.793	6.900	5.108	1.802	5.247	3.455	1.653	2.835
248.0	346.1	0.780	13.19	7.449	3.345	3.313	4.662	1.785	6.908	5.123	1.809	5.251	3.466	1.657	2.831
252.7	348.1	0.796	13.45	7.472	3.354	3.322	4.655	1.778	6.916	5.138	1.816	5.255	3.477	1.661	2.829
257.3	349.6	0.810	13.70	7.493	3.359	3.326	4.647	1.770	6.919	5.149	1.823	5.256	3.486	1.663	2.824
262.0	351.6	0.826	13.95	7.515	3.369	3.335	4.641	1.765	6.929	5.164	1.829	5.261	3.496	1.668	2.824
266.7	352.8	0.840	14.20	7.537	3.371	3.336	4.634	1.758	6.930	5.172	1.836	5.262	3.504	1.668	2.817
271.4	354.7	0.855	14.45	7.559	3.378	3.343	4.628	1.752	6.937	5.185	1.842	5.265	3.513	1.672	2.815
276.0	356.0	0.870	14.70	7.581	3.381	3.346	4.621	1.744	6.939	5.195	1.849	5.266	3.522	1.673	2.809
280.7	357.1	0.884	14.95	7.603	3.382	3.346	4.613	1.737	6.939	5.203	1.857	5.266	3.530	1.673	2.802
285.4	358.6	0.899	15.20	7.626	3.386	3.349	4.607	1.730	6.942	5.212	1.863	5.267	3.538	1.675	2.798
290.1	359.4	0.914	15.45	7.648	3.383	3.346	4.600	1.723	6.939	5.216	1.870	5.266	3.543	1.673	2.790
294.8	361.6	0.929	15.70	7.671	3.394	3.356	4.594	1.718	6.949	5.231	1.875	5.271	3.553	1.678	2.789
299.4	363.6	0.943	15.94	7.693	3.403	3.364	4.587	1.711	6.957	5.246	1.882	5.275	3.564	1.682	2.788
304.1	365.2	0.958	16.20	7.717	3.408	3.369	4.581	1.705	6.961	5.257	1.888	5.277	3.572	1.684	2.784
308.8	366.8	0.973	16.44	7.739	3.413	3.373	4.573	1.697	6.966	5.269	1.896	5.279	3.582	1.687	2.780
313.5	368.6	0.988	16.70	7.763	3.419	3.378	4.567	1.690	6.971	5.281	1.903	5.282	3.592	1.689	2.776
318.1	370.1	1.003	16.95	7.786	3.422	3.381	4.561	1.685	6.974	5.290	1.908	5.284	3.599	1.691	2.772
318.2	369.5	1.003	16.95	7.786	3.417	3.376	4.560	1.683	6.969	5.286	1.910	5.281	3.598	1.688	2.768

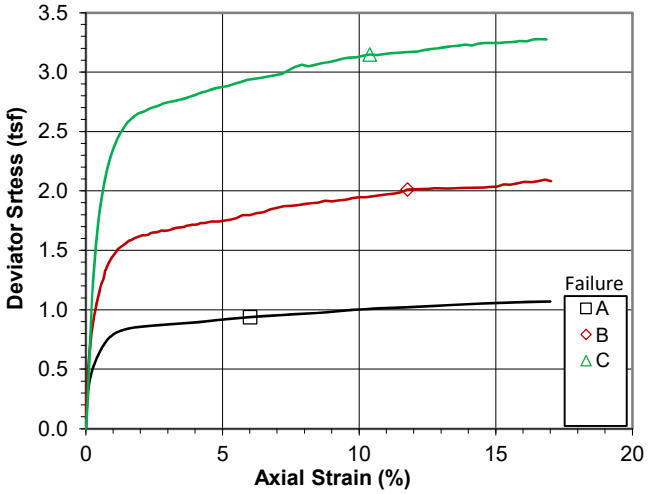
Consolidated Undrained Triaxial Compression

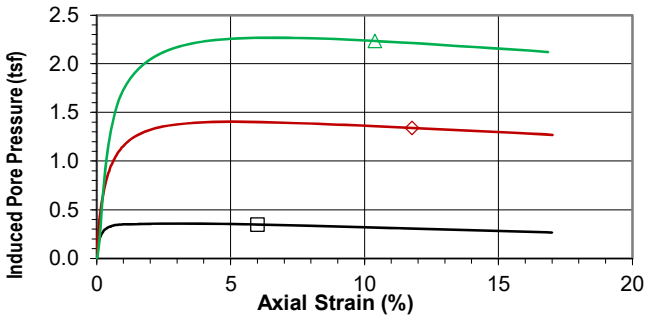
ASTM D 4767

Project Name Plant Hammond Phase 2

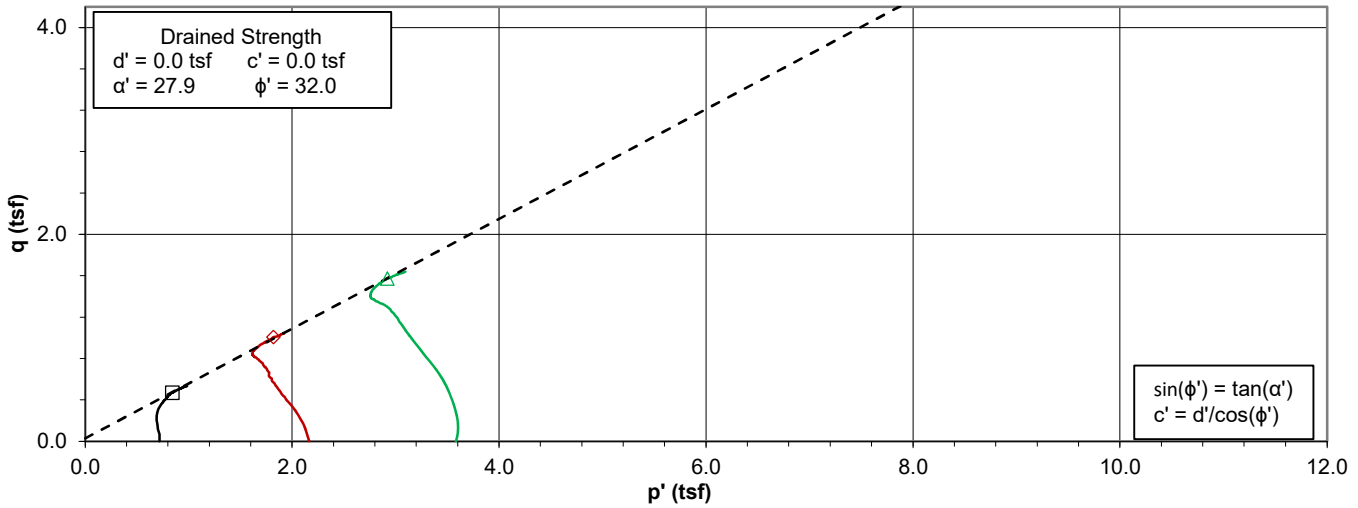
Project 175518236
Set ID 211

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	211	HRL-4 & HRL-5 & HRL-6	Clayey Sand with Gravel (SC), light brown	2.69			
B	211	HRL-4 & HRL-5 & HRL-6	Clayey Sand with Gravel (SC), light brown	2.69			
C	211	HRL-4 & HRL-5 & HRL-6	Clayey Sand with Gravel (SC), light brown	2.69			





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	6.026	5.989	6.004		
Average Diameter (in)	2.893	2.898	2.894		
Moist Unit Weight (pcf)	129.6	128.2	129.8		
Moisture Content (%)	11.2	11.7	11.7		
Dry Unit Weight (pcf)	116.6	114.8	116.3		
Void Ratio	0.438	0.460	0.442		
Degree of Saturation (%)	68.8	68.2	71.0		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	134.7	135.7	137.0		
Moisture Content (%)	16.9	16.1	15.3		
Dry Unit Weight (pcf)	115.2	116.9	118.8		
Void Ratio	0.454	0.434	0.411		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	0.720	2.164	3.583		
	At Drained Failure				
Failure Criterion	Max. Eff. Prin. Stress Ratio				
Axial Strain (%)	6.006	11.775	10.392		
Deviator Stress (tsf)	0.939	2.012	3.147		
Induced Pore Press. (tsf)	0.348	1.341	2.234		
Minor Eff. Stress, σ_3' (tsf)	0.372	0.813	1.348		
Major Eff. Stress, σ_1' (tsf)	1.311	2.826	4.496		
Eff. Stress Ratio, σ_1'/σ_3'	3.521	3.474	3.334		
p' (tsf)	0.842	1.820	2.922		
q (tsf)	0.469	1.006	1.574		



Comments

Reviewed By KG

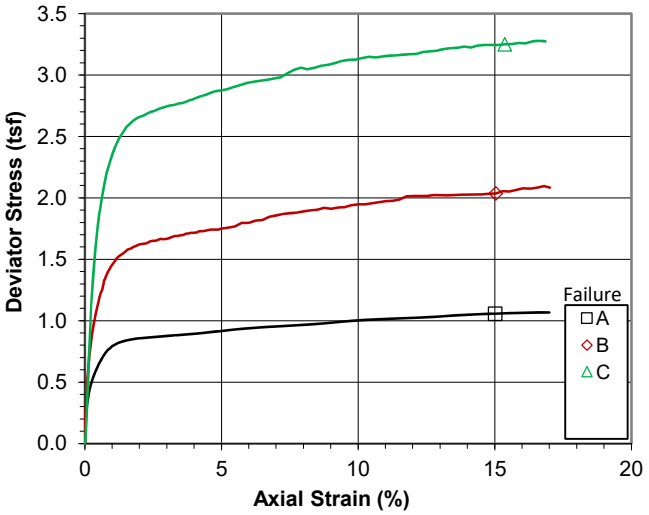
Consolidated Undrained Triaxial Compression

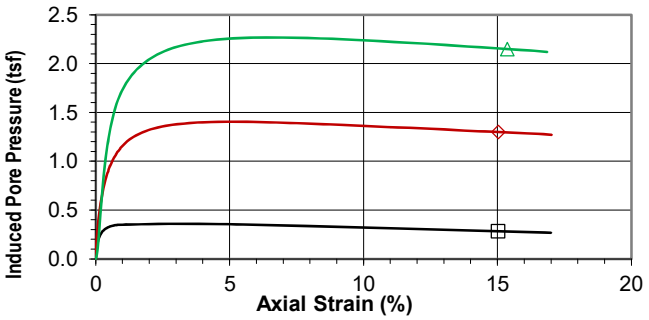
ASTM D 4767

Project Name Plant Hammond Phase 2

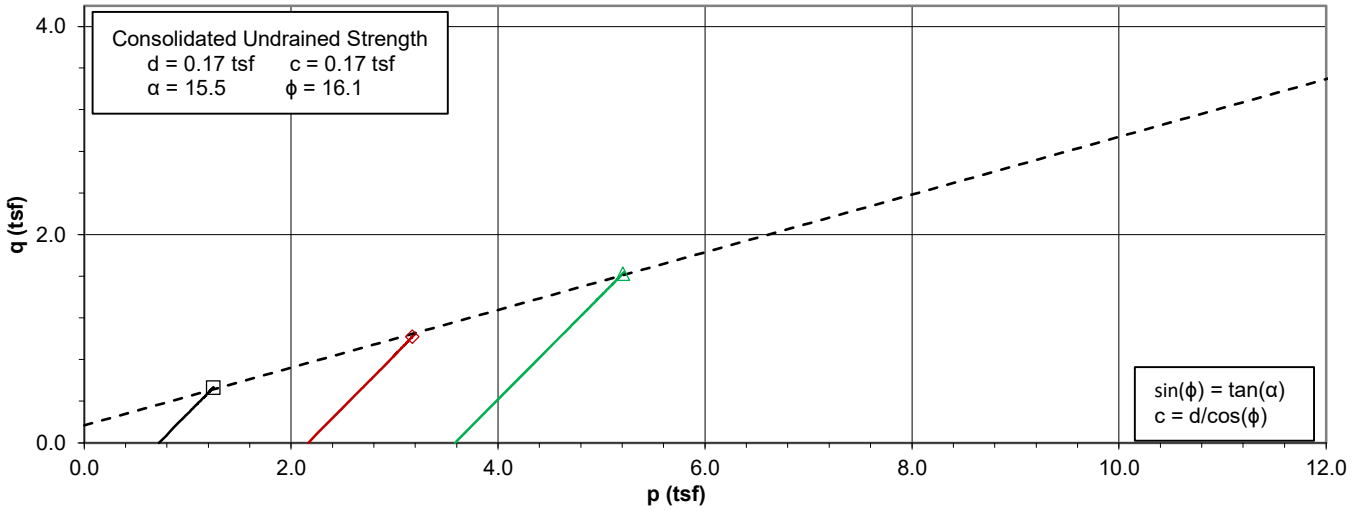
Project 175518236
Set ID 211

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	211	HRL-4 & HRL-5 & HRL-6	Clayey Sand with Gravel (SC), light brown	2.69			
B	211	HRL-4 & HRL-5 & HRL-6	Clayey Sand with Gravel (SC), light brown	2.69			
C	211	HRL-4 & HRL-5 & HRL-6	Clayey Sand with Gravel (SC), light brown	2.69			





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	6.026	5.989	6.004		
Average Diameter (in)	2.893	2.898	2.894		
Moist Unit Weight (pcf)	129.6	128.2	129.8		
Moisture Content (%)	11.2	11.7	11.7		
Dry Unit Weight (pcf)	116.6	114.8	116.3		
Void Ratio	0.438	0.460	0.442		
Degree of Saturation (%)	68.8	68.2	71.0		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	134.7	135.7	137.0		
Moisture Content (%)	16.9	16.1	15.3		
Dry Unit Weight (pcf)	115.2	116.9	118.8		
Void Ratio	0.454	0.434	0.411		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	0.720	2.164	3.583		
	At Consolidated Undrained Failure				
Failure Criterion	Max. σ_D or 15% Strain				
Axial Strain (%)	15.020	15.040	15.370		
Deviator Stress (tsf)	1.057	2.036	3.251		
Min. Prin. Stress, σ_3 (tsf)	0.718	2.152	3.581		
Maj. Prin. Stress, σ_1 (tsf)	1.775	4.189	6.832		
p (tsf)	1.247	3.170	5.207		
q (tsf)	0.528	1.018	1.625		



Comments

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Plant Hammond Phase 2	Project No.	175518236
Source	HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0'	Lab ID	211
Description	Clayey Sand with Gravel (SC), light brown	Test ID	211-A
Specimen Type	Compacted		
Preparation	Wet Mounting	Date Received	09/26/2022
		Date Tested	10/24/2022

Specific Gravity	2.69
ASTM D 854, Dry	
Liquid Limit	
Plastic Limit	
Plasticity Index	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	80
Nominal Consolidation Pressure (psi)	10

Saturation / Consolidation Results

Pore Pressure Parameter B	0.99
Measured Effective Consol. Stress (tsf)	0.721
Time to 50% Consolidation (min)	1.69
Actual Axial Strain Rate of Test (%/min)	0.100

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	134.7
Moisture Content (%)	16.9
Dry Unit Weight (pcf)	115.2
Void Ratio	0.454
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criterion: Max. Eff. Prin. Stress Ratio

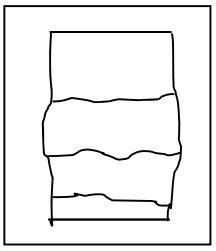
Axial Strain (%)	6.006
Deviator Stress (tsf)	0.939
Induced Pore Pressure (tsf)	0.348
Minor Effective Stress, σ_3' (tsf)	0.372
Major Effective Stress, σ_1' (tsf)	1.311
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.521
p' (tsf)	0.842
q (tsf)	0.469

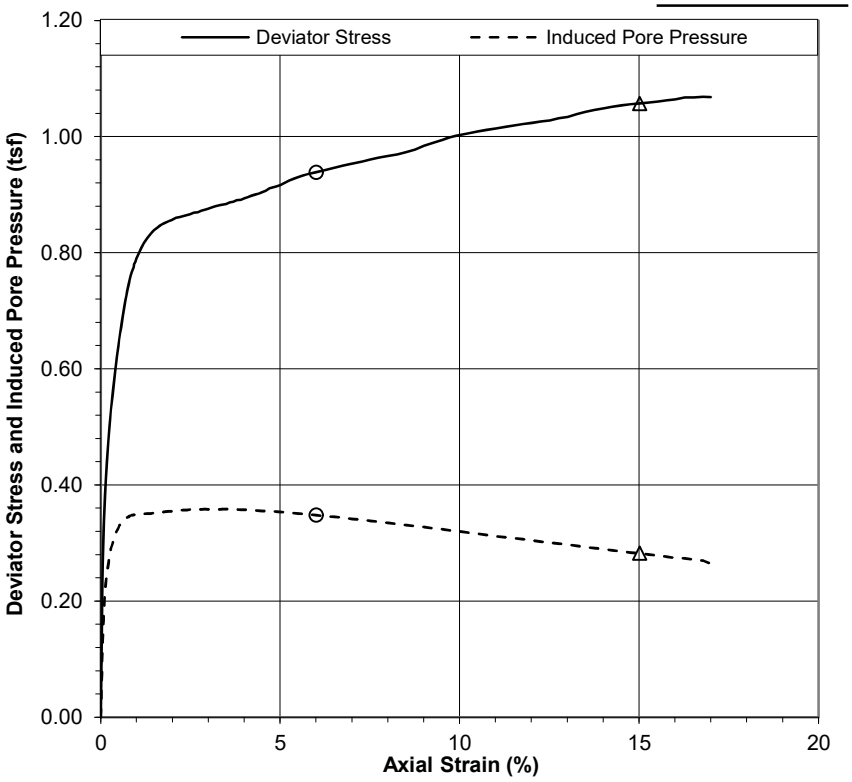
At Consolidated Undrained Failure

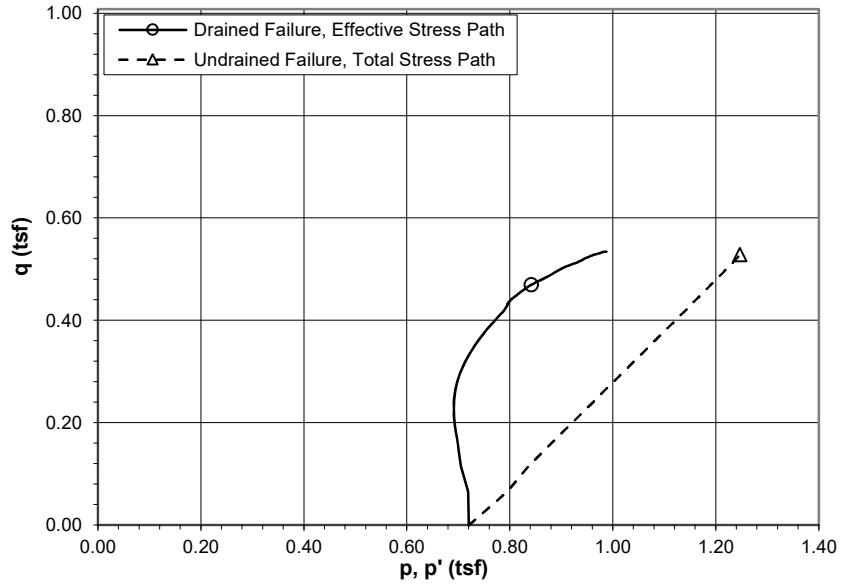
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.020
Deviator Stress (tsf)	1.057
Minor Principal Stress, σ_3 (tsf)	0.718
Major Principal Stress, σ_1 (tsf)	1.775
p (tsf)	1.247
q (tsf)	0.528

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Plant Hammond Phase 2
Source: HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0'
Description: Clayey Sand with Gravel (SC), light brown

Project No.: 175518236
Lab ID: 211
Test ID: 211-A

Initial Specimen Conditions		Consolidated Specimen Conditions	
Average Height (in)	6.026	Calculated Height (in)	6.010
Average Diameter (in)	2.893	Calculated Diameter (in)	2.914
Calculated Area (in^2)	6.575	Calculated Area (in^2)	6.667
Moist Weight (lb)	2.972	Moist Weight (lb)	3.124
Moist Unit Weight (pcf)	129.6	Moist Unit Weight (pcf)	134.7
Moisture Content (%)	11.2	Moisture Content (%)	16.9
Dry Weight (lb)	2.672	Dry Weight (lb)	2.672
Dry Unit Weight (pcf)	116.6	Dry Unit Weight (pcf)	115.2
Void Ratio	0.438	Void Ratio	0.454
Degree of Saturation (%)	68.8	Degree of Saturation (%)	100.0

Specific Gravity: 2.69
ASTM D 854, Dry

Liquid Limit:
Plastic Limit:
Plasticity Index:

Confining Stress
σ_3 (tsf): 0.720

Effective Consolidation Stress
σ_3' (tsf): 0.720

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 175518236			Source: HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0'								Lab ID: 211		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.667	0.000	0.000	5.763	0.000	0.720	0.720	0.720	0.720	0.720	0.000	1.000
0.3	12.1	0.002	0.03	6.669	0.131	0.131	5.838	0.075	0.859	0.785	0.654	0.794	0.719	0.065	1.200
0.5	21.5	0.003	0.05	6.671	0.232	0.232	5.895	0.132	0.952	0.821	0.589	0.837	0.705	0.116	1.393
0.7	27.3	0.004	0.07	6.672	0.295	0.294	5.930	0.167	1.015	0.848	0.554	0.868	0.701	0.147	1.532
1.0	31.5	0.005	0.09	6.673	0.340	0.340	5.956	0.193	1.060	0.867	0.528	0.891	0.698	0.170	1.644
1.2	34.8	0.007	0.12	6.675	0.375	0.375	5.977	0.214	1.096	0.882	0.507	0.908	0.694	0.188	1.740
1.5	37.6	0.009	0.14	6.677	0.406	0.405	5.994	0.231	1.126	0.895	0.490	0.923	0.693	0.203	1.827
1.8	39.9	0.010	0.17	6.679	0.431	0.430	6.008	0.245	1.151	0.907	0.476	0.936	0.691	0.215	1.903
2.0	42.1	0.012	0.19	6.680	0.454	0.454	6.020	0.256	1.175	0.918	0.464	0.948	0.691	0.227	1.977
2.3	44.1	0.013	0.22	6.682	0.475	0.474	6.030	0.267	1.195	0.929	0.454	0.958	0.691	0.237	2.045
2.5	45.9	0.014	0.24	6.683	0.495	0.494	6.039	0.276	1.215	0.939	0.445	0.968	0.692	0.247	2.111
2.8	47.6	0.016	0.26	6.685	0.513	0.512	6.047	0.284	1.233	0.949	0.437	0.977	0.693	0.256	2.172
3.0	49.1	0.017	0.29	6.686	0.529	0.528	6.054	0.291	1.250	0.959	0.430	0.985	0.695	0.264	2.228
3.3	50.7	0.019	0.31	6.688	0.546	0.545	6.060	0.297	1.266	0.969	0.424	0.993	0.696	0.272	2.285
3.5	52.1	0.021	0.34	6.690	0.561	0.560	6.066	0.303	1.281	0.978	0.418	1.001	0.698	0.280	2.340
3.7	53.4	0.022	0.37	6.692	0.575	0.574	6.071	0.308	1.295	0.987	0.413	1.008	0.700	0.287	2.391
4.0	54.7	0.024	0.39	6.694	0.589	0.588	6.076	0.313	1.309	0.996	0.408	1.015	0.702	0.294	2.440
4.2	55.9	0.025	0.42	6.695	0.602	0.601	6.080	0.317	1.322	1.005	0.405	1.022	0.705	0.300	2.485
4.5	57.2	0.027	0.44	6.697	0.615	0.614	6.083	0.320	1.336	1.015	0.401	1.028	0.708	0.307	2.532
4.7	58.4	0.028	0.47	6.699	0.628	0.627	6.086	0.323	1.348	1.024	0.398	1.034	0.711	0.313	2.577
5.0	59.6	0.030	0.50	6.701	0.640	0.639	6.090	0.327	1.360	1.033	0.394	1.041	0.714	0.319	2.620
5.3	60.7	0.031	0.52	6.702	0.652	0.651	6.093	0.330	1.372	1.042	0.392	1.047	0.717	0.325	2.662
5.5	61.7	0.032	0.54	6.703	0.663	0.661	6.095	0.332	1.383	1.050	0.389	1.052	0.720	0.331	2.700
5.8	62.7	0.035	0.58	6.706	0.673	0.672	6.097	0.334	1.393	1.059	0.387	1.057	0.723	0.336	2.736
6.0	63.7	0.036	0.59	6.707	0.683	0.682	6.099	0.336	1.403	1.067	0.385	1.062	0.726	0.341	2.770
6.3	64.5	0.037	0.62	6.709	0.693	0.691	6.101	0.338	1.412	1.074	0.383	1.067	0.729	0.346	2.804
6.5	65.4	0.039	0.64	6.711	0.702	0.700	6.103	0.340	1.421	1.082	0.382	1.071	0.732	0.350	2.834
6.8	66.2	0.040	0.67	6.712	0.710	0.709	6.104	0.341	1.430	1.089	0.380	1.076	0.735	0.354	2.864
7.0	67.2	0.042	0.69	6.714	0.720	0.718	6.106	0.343	1.440	1.097	0.378	1.080	0.738	0.359	2.899
7.2	67.9	0.043	0.72	6.716	0.728	0.726	6.106	0.343	1.447	1.104	0.378	1.084	0.741	0.363	2.922
7.5	68.6	0.044	0.74	6.717	0.735	0.733	6.107	0.344	1.455	1.110	0.377	1.088	0.743	0.367	2.947
7.7	69.4	0.046	0.76	6.719	0.744	0.742	6.108	0.345	1.463	1.118	0.376	1.092	0.747	0.371	2.973
8.0	69.9	0.047	0.79	6.720	0.749	0.747	6.109	0.346	1.468	1.122	0.376	1.094	0.749	0.373	2.988
8.3	70.5	0.049	0.81	6.722	0.755	0.753	6.110	0.347	1.474	1.127	0.374	1.098	0.751	0.377	3.013
8.5	71.1	0.050	0.84	6.724	0.762	0.760	6.111	0.348	1.480	1.133	0.373	1.101	0.753	0.380	3.034
8.8	71.7	0.052	0.86	6.726	0.767	0.765	6.111	0.348	1.487	1.139	0.373	1.104	0.756	0.383	3.050
9.0	72.1	0.053	0.89	6.727	0.772	0.770	6.111	0.348	1.491	1.143	0.373	1.106	0.758	0.385	3.064
9.3	72.7	0.056	0.92	6.730	0.777	0.775	6.111	0.348	1.496	1.148	0.373	1.109	0.760	0.388	3.080
9.5	73.1	0.056	0.94	6.730	0.782	0.780	6.112	0.349	1.501	1.153	0.373	1.111	0.763	0.390	3.094

Project: 175518236			Source: HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0'								Lab ID: 211		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
9.8	73.5	0.058	0.97	6.733	0.787	0.784	6.112	0.349	1.505	1.156	0.372	1.113	0.764	0.392	3.109
10.0	74.1	0.060	0.99	6.734	0.792	0.790	6.112	0.349	1.511	1.162	0.372	1.116	0.767	0.395	3.122
11.0	75.5	0.066	1.10	6.741	0.807	0.804	6.113	0.350	1.525	1.175	0.371	1.123	0.773	0.402	3.165
12.0	76.8	0.072	1.20	6.748	0.819	0.816	6.114	0.351	1.537	1.187	0.371	1.129	0.779	0.408	3.202
13.0	77.7	0.078	1.30	6.755	0.828	0.825	6.114	0.351	1.546	1.195	0.370	1.134	0.783	0.412	3.227
14.0	78.5	0.084	1.39	6.762	0.836	0.833	6.114	0.351	1.554	1.203	0.370	1.138	0.787	0.416	3.249
15.0	79.1	0.089	1.49	6.768	0.842	0.838	6.115	0.352	1.560	1.208	0.369	1.141	0.789	0.419	3.269
16.0	79.8	0.096	1.60	6.776	0.848	0.844	6.116	0.353	1.565	1.213	0.369	1.143	0.791	0.422	3.286
17.0	80.3	0.102	1.70	6.783	0.853	0.848	6.116	0.353	1.570	1.217	0.368	1.146	0.792	0.424	3.305
18.0	80.7	0.108	1.80	6.789	0.855	0.851	6.117	0.354	1.573	1.218	0.367	1.147	0.793	0.426	3.317
19.0	81.0	0.114	1.89	6.796	0.859	0.854	6.118	0.355	1.576	1.221	0.367	1.149	0.794	0.427	3.330
20.0	81.4	0.119	1.99	6.802	0.861	0.856	6.118	0.355	1.578	1.223	0.366	1.150	0.795	0.428	3.337
21.0	81.8	0.126	2.10	6.810	0.865	0.860	6.119	0.356	1.581	1.225	0.365	1.151	0.795	0.430	3.355
22.0	82.0	0.132	2.20	6.817	0.866	0.861	6.119	0.356	1.582	1.226	0.365	1.152	0.796	0.431	3.359
23.1	82.3	0.138	2.30	6.824	0.868	0.863	6.120	0.357	1.584	1.227	0.365	1.153	0.796	0.431	3.367
24.1	82.6	0.144	2.39	6.831	0.870	0.865	6.120	0.357	1.586	1.229	0.364	1.153	0.796	0.432	3.375
25.0	82.8	0.150	2.50	6.838	0.872	0.866	6.121	0.358	1.587	1.230	0.363	1.154	0.797	0.433	3.383
26.1	83.2	0.156	2.60	6.845	0.875	0.869	6.121	0.358	1.590	1.232	0.363	1.156	0.798	0.434	3.393
27.1	83.4	0.163	2.70	6.853	0.876	0.869	6.121	0.358	1.590	1.233	0.363	1.156	0.798	0.435	3.393
28.1	83.7	0.169	2.81	6.860	0.879	0.872	6.121	0.358	1.593	1.235	0.363	1.157	0.799	0.436	3.404
29.1	84.0	0.174	2.90	6.867	0.881	0.874	6.122	0.359	1.595	1.236	0.362	1.158	0.799	0.437	3.412
30.1	84.3	0.180	3.00	6.873	0.883	0.876	6.121	0.358	1.597	1.238	0.363	1.159	0.800	0.438	3.415
31.1	84.6	0.186	3.09	6.880	0.885	0.878	6.121	0.358	1.599	1.240	0.363	1.160	0.801	0.439	3.421
32.1	84.9	0.192	3.20	6.888	0.887	0.880	6.121	0.358	1.601	1.242	0.363	1.161	0.802	0.440	3.426
33.1	85.2	0.199	3.30	6.895	0.890	0.882	6.121	0.358	1.603	1.244	0.363	1.162	0.804	0.441	3.431
34.1	85.4	0.204	3.40	6.902	0.891	0.883	6.122	0.359	1.604	1.245	0.363	1.162	0.804	0.441	3.435
35.1	85.6	0.211	3.50	6.909	0.892	0.884	6.121	0.358	1.605	1.246	0.363	1.163	0.804	0.442	3.439
36.1	86.0	0.216	3.60	6.916	0.895	0.886	6.121	0.358	1.607	1.249	0.363	1.164	0.806	0.443	3.445
37.1	86.2	0.222	3.70	6.924	0.896	0.888	6.121	0.358	1.609	1.251	0.363	1.165	0.807	0.444	3.444
38.1	86.6	0.228	3.79	6.930	0.899	0.890	6.121	0.358	1.611	1.254	0.363	1.166	0.808	0.445	3.450
39.1	86.8	0.235	3.91	6.939	0.900	0.891	6.121	0.358	1.612	1.255	0.364	1.167	0.809	0.446	3.450
40.1	87.1	0.241	4.01	6.946	0.903	0.894	6.120	0.357	1.615	1.257	0.364	1.168	0.811	0.447	3.456
41.1	87.4	0.247	4.10	6.953	0.905	0.895	6.121	0.358	1.617	1.259	0.364	1.169	0.812	0.448	3.462
42.1	87.8	0.252	4.20	6.960	0.908	0.898	6.120	0.357	1.619	1.263	0.365	1.170	0.814	0.449	3.462
43.1	88.1	0.259	4.31	6.968	0.910	0.900	6.120	0.357	1.621	1.265	0.364	1.171	0.815	0.450	3.470
44.1	88.3	0.264	4.40	6.974	0.912	0.902	6.119	0.356	1.623	1.267	0.365	1.172	0.816	0.451	3.471
45.1	88.7	0.271	4.50	6.982	0.915	0.904	6.119	0.356	1.625	1.270	0.365	1.173	0.818	0.452	3.475
46.1	89.1	0.277	4.60	6.989	0.917	0.907	6.119	0.356	1.627	1.272	0.365	1.174	0.819	0.453	3.482
47.1	89.6	0.283	4.70	6.996	0.922	0.911	6.118	0.355	1.632	1.276	0.366	1.176	0.821	0.455	3.491
48.1	89.8	0.289	4.80	7.004	0.924	0.912	6.118	0.354	1.633	1.279	0.366	1.177	0.822	0.456	3.490
49.1	90.2	0.295	4.90	7.011	0.926	0.914	6.117	0.354	1.635	1.281	0.367	1.178	0.824	0.457	3.492
50.1	90.5	0.301	5.01	7.019	0.928	0.917	6.117	0.354	1.638	1.284	0.367	1.179	0.826	0.458	3.494
52.6	91.5	0.316	5.25	7.037	0.936	0.924	6.115	0.352	1.645	1.292	0.369	1.183	0.831	0.462	3.506
55.1	92.4	0.331	5.50	7.056	0.943	0.930	6.114	0.351	1.651	1.300	0.370	1.186	0.835	0.465	3.515
57.6	93.2	0.345	5.75	7.074	0.949	0.935	6.113	0.350	1.656	1.306	0.371	1.188	0.839	0.468	3.519
60.1	93.9	0.361	6.01	7.093	0.953	0.939	6.111	0.348	1.659	1.311	0.372	1.190	0.842	0.469	3.521
62.6	94.5	0.376	6.25	7.112	0.957	0.942	6.109	0.346	1.662	1.316	0.374	1.191	0.845	0.471	3.516
65.2	95.2	0.391	6.50	7.131	0.962	0.946	6.108	0.345	1.667	1.322	0.376	1.194	0.849	0.473	3.519
67.7	96.0	0.406	6.76	7.151	0.966	0.950	6.107	0.344	1.671	1.327	0.377	1.196	0.852	0.475	3.520
70.2	96.6	0.421	7.00	7.169	0.970	0.953	6.105	0.342	1.674	1.333	0.379	1.198	0.856	0.477	3.515
72.6	97.2	0.436	7.26	7.189	0.974	0.956	6.103	0.340	1.678	1.337	0.381	1.199	0.859	0.478	3.511
75.1	98.0	0.451	7.51	7.209	0.978	0.961	6.101	0.338	1.682	1.344	0.383	1.201	0.863	0.480	3.508
77.7	98.6	0.466	7.76	7.228	0.982	0.963	6.100	0.337	1.684	1.348	0.384	1.203	0.866	0.482	3.508
80.2	99.2	0.481	8.00	7.247	0.985	0.966	6.098	0.335	1.687	1.352	0.386	1.204	0.869	0.483	3.504
82.7	99.8	0.497	8.27	7.268	0.989	0.969	6.096	0.333	1.690	1.357	0.388	1.205	0.872	0.485	3.501
85.2	100.5	0.511	8.51	7.287	0.993	0.973	6.094	0.331	1.694	1.362	0.389	1.207	0.876	0.487	3.499
87.7	101.3	0.526	8.76	7.308	0.998	0.977	6.093	0.330	1.698	1.368	0.391	1.209	0.879	0.489	3.502
90.2	102.3	0.541	9.01	7.328	1.005	0.984	6.091	0.328	1.705	1.377	0.393	1.213	0.885	0.492	3.506
92.7	103.2	0.557	9.26	7.348	1.011	0.989	6.088	0.325	1.710	1.384	0.395	1.215	0.890	0.495	3.504
95.2	104.0	0.572	9.52	7.369	1.017	0.994	6.087	0.324	1.714	1.390	0.396	1.217	0.893	0.497	3.508
97.7	104.9	0.586	9.75	7.388	1.022	0.999	6.085	0.322	1.719	1.397	0.398	1.219	0.898	0.499	3.507
100.2	105.6	0.602	10.01	7.409	1.026	1.003	6.083	0.320	1.722	1.402	0.400	1.221	0.901	0.501	3.509
102.7	106.3	0.617	10.26	7.430	1.030	1.005	6.081	0.318	1.725	1.407	0.402	1.222	0.904	0.503	3.504
105.2	107.0	0.632	10.52	7.451	1.034	1.009	6.079	0.316	1.728	1.412	0.403	1.224	0.908	0.505	3.501
107.7	107.6	0.646	10.76	7.471	1.037	1.012	6.077	0.314	1.731	1.417	0.405	1.225	0.911	0.506	3.495
110.2	108.2	0.662	11.01	7.492	1.040	1.014	6.075	0.312	1.733	1.422	0.408	1.226	0.915	0.507	3.487
112.7	108.9	0.677	11.27	7.514	1.043	1.016	6.073	0.310	1.736	1.426	0.410	1.228	0.918	0.508	3.481
115.2	109.5	0.692	11.52	7.535	1.046	1.019	6.071	0.308	1.738	1.430	0.412	1.229	0.921	0.509	3.474
117.7	110.2	0.707	11.77	7.556	1.050	1.022	6.070	0.307	1.742	1.435	0.414	1.231	0.924	0.511	3.470

Project: 175518236			Source: HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0'								Lab ID: 211		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
120.2	110.7	0.722	12.02	7.578	1.052	1.023	6.068	0.305	1.744	1.439	0.416	1.232	0.927	0.512	3.462
122.7	111.4	0.737	12.27	7.600	1.055	1.026	6.066	0.302	1.746	1.444	0.418	1.233	0.931	0.513	3.456
125.2	111.9	0.752	12.51	7.621	1.057	1.028	6.064	0.301	1.748	1.447	0.419	1.234	0.933	0.514	3.452
127.7	112.7	0.767	12.76	7.643	1.062	1.031	6.062	0.299	1.751	1.452	0.421	1.236	0.936	0.516	3.452
130.2	113.3	0.782	13.02	7.665	1.064	1.033	6.061	0.298	1.753	1.455	0.422	1.236	0.939	0.517	3.449
132.7	114.3	0.797	13.27	7.687	1.070	1.039	6.058	0.295	1.758	1.463	0.424	1.239	0.943	0.519	3.450
135.2	115.1	0.812	13.52	7.709	1.075	1.042	6.056	0.293	1.762	1.469	0.426	1.241	0.947	0.521	3.446
137.7	115.8	0.827	13.76	7.731	1.078	1.046	6.054	0.291	1.765	1.474	0.428	1.242	0.951	0.523	3.443
140.2	116.5	0.842	14.02	7.754	1.082	1.048	6.052	0.289	1.767	1.478	0.429	1.243	0.954	0.524	3.442
142.7	117.2	0.857	14.26	7.776	1.085	1.051	6.050	0.287	1.770	1.483	0.431	1.244	0.957	0.526	3.437
145.2	117.9	0.873	14.52	7.800	1.088	1.054	6.049	0.286	1.772	1.486	0.433	1.245	0.959	0.527	3.435
147.7	118.5	0.887	14.76	7.822	1.091	1.056	6.047	0.284	1.774	1.490	0.434	1.246	0.962	0.528	3.430
150.2	119.0	0.903	15.02	7.846	1.092	1.057	6.045	0.282	1.775	1.493	0.436	1.247	0.964	0.528	3.425
152.8	119.6	0.918	15.27	7.869	1.094	1.058	6.043	0.280	1.777	1.497	0.438	1.248	0.967	0.529	3.414
155.2	120.3	0.932	15.52	7.892	1.097	1.060	6.042	0.279	1.780	1.501	0.441	1.249	0.971	0.530	3.407
157.8	120.9	0.948	15.78	7.916	1.100	1.062	6.040	0.277	1.782	1.505	0.443	1.251	0.974	0.531	3.398
160.3	121.5	0.962	16.01	7.939	1.102	1.064	6.038	0.275	1.784	1.509	0.445	1.252	0.977	0.532	3.389
162.8	122.3	0.978	16.27	7.963	1.106	1.067	6.037	0.274	1.787	1.513	0.446	1.253	0.980	0.534	3.391
165.2	122.7	0.993	16.52	7.987	1.106	1.067	6.035	0.272	1.787	1.515	0.448	1.253	0.982	0.534	3.381
167.8	123.4	1.008	16.78	8.012	1.109	1.069	6.033	0.270	1.788	1.518	0.449	1.254	0.984	0.534	3.379
170.1	123.6	1.022	17.00	8.033	1.108	1.068	6.028	0.265	1.786	1.522	0.454	1.252	0.988	0.534	3.353

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Plant Hammond Phase 2	Project No.	175518236
Source	HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0'	Lab ID	211
Description	Clayey Sand with Gravel (SC), light brown	Test ID	211-B
Specimen Type	Compacted		
Preparation	Wet Mounting	Date Received	09/26/2022
		Date Tested	10/20/2022

Specific Gravity	2.69
ASTM D 854, Dry	
Liquid Limit	
Plastic Limit	
Plasticity Index	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	60
Nominal Consolidation Pressure (psi)	30

Saturation / Consolidation Results

Pore Pressure Parameter B	0.97
Measured Effective Consol. Stress (tsf)	2.159
Time to 50% Consolidation (min)	
Actual Axial Strain Rate of Test (%/min)	0.100

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	135.7
Moisture Content (%)	16.1
Dry Unit Weight (pcf)	116.9
Void Ratio	0.434
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

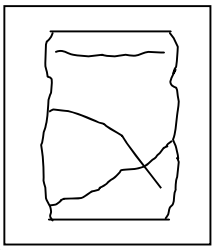
Axial Strain (%)	11.775
Deviator Stress (tsf)	2.012
Induced Pore Pressure (tsf)	1.341
Minor Effective Stress, σ_3' (tsf)	0.813
Major Effective Stress, σ_1' (tsf)	2.826
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.474
p' (tsf)	1.820
q (tsf)	1.006

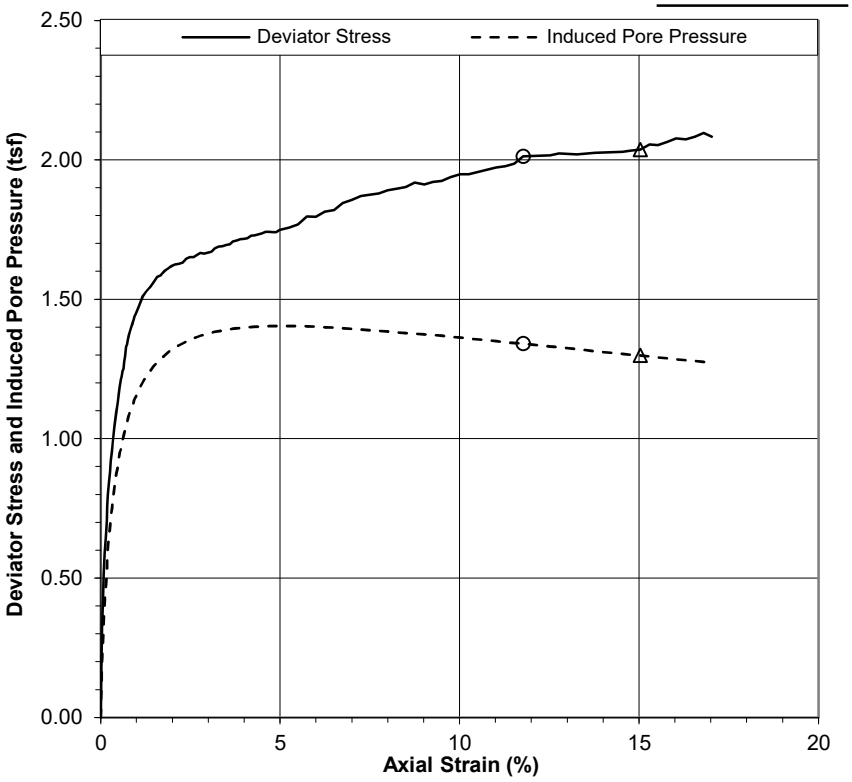
At Consolidated Undrained Failure

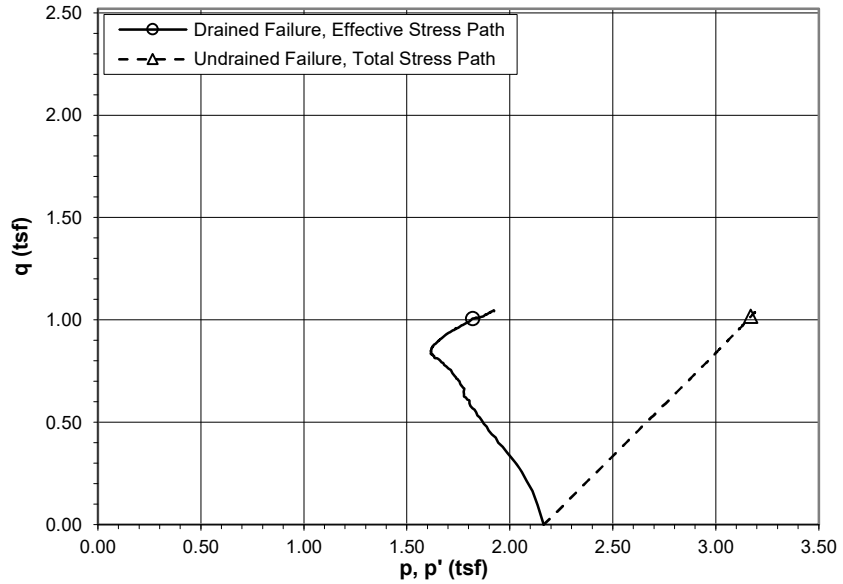
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.040
Deviator Stress (tsf)	2.036
Minor Principal Stress, σ_3 (tsf)	2.152
Major Principal Stress, σ_1 (tsf)	4.189
p (tsf)	3.170
q (tsf)	1.018

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Plant Hammond Phase 2 | Project No.: 175518236
Source: HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0' | Lab ID: 211
Description: Clayey Sand with Gravel (SC), light brown | Test ID: 211-B

Initial Specimen Conditions		Consolidated Specimen Conditions	
Height (in)	5.989	Height (in)	5.922
Diameter (in)	2.898	Calculated Diameter (in)	2.889
Area (in^2)	6.598	Calculated Area (in^2)	6.553
Moist Weight (lb)	2.931	Moist Weight (lb)	3.048
Moist Unit Weight (pcf)	128.2	Moist Unit Weight (pcf)	135.7
Moisture Content (%)	11.7	Moisture Content (%)	16.1
Dry Weight (lb)	2.625	Dry Weight (lb)	2.625
Dry Unit Weight (pcf)	114.8	Dry Unit Weight (pcf)	116.9
Void Ratio	0.460	Void Ratio	0.434
Degree of Saturation (%)	68.2	Degree of Saturation (%)	100.0

Specific Gravity: 2.69 (ASTM D 854, Dry)

Liquid Limit:
Plastic Limit:
Plasticity Index:

Confining Stress σ_3 (tsf): 2.164

Effective Consolidation Stress σ_3' (tsf): 2.164

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 175518236			Source: HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0'								Lab ID: 211		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.553	0.000	0.000	4.320	0.000	2.164	2.164	2.164	2.164	2.164	0.000	1.000
0.3	17.5	0.001	0.02	6.555	0.192	0.192	4.446	0.126	2.356	2.230	2.038	2.260	2.134	0.096	1.094
0.5	30.0	0.003	0.04	6.556	0.329	0.329	4.537	0.217	2.493	2.275	1.946	2.328	2.111	0.164	1.169
0.8	38.6	0.004	0.07	6.558	0.424	0.424	4.614	0.294	2.588	2.294	1.870	2.376	2.082	0.212	1.227
1.0	46.7	0.005	0.09	6.559	0.513	0.513	4.682	0.362	2.677	2.315	1.802	2.421	2.059	0.256	1.285
1.3	53.7	0.007	0.12	6.561	0.589	0.589	4.744	0.424	2.753	2.329	1.740	2.459	2.034	0.294	1.338
1.5	59.3	0.009	0.14	6.563	0.651	0.651	4.800	0.480	2.814	2.334	1.684	2.489	2.009	0.325	1.386
1.8	64.5	0.010	0.17	6.565	0.707	0.707	4.851	0.531	2.870	2.339	1.632	2.517	1.986	0.354	1.433
2.0	69.2	0.011	0.18	6.565	0.759	0.759	4.897	0.577	2.922	2.345	1.587	2.543	1.966	0.379	1.478
2.3	73.0	0.012	0.20	6.567	0.800	0.800	4.939	0.619	2.963	2.344	1.544	2.564	1.944	0.400	1.518
2.5	77.5	0.014	0.24	6.569	0.850	0.849	4.976	0.656	3.012	2.356	1.507	2.588	1.932	0.425	1.563
2.8	80.6	0.016	0.26	6.571	0.883	0.883	5.012	0.692	3.046	2.354	1.471	2.604	1.912	0.441	1.600
3.0	83.9	0.017	0.29	6.572	0.919	0.918	5.044	0.724	3.081	2.357	1.439	2.622	1.898	0.459	1.638
3.3	87.3	0.019	0.31	6.574	0.956	0.955	5.073	0.753	3.118	2.365	1.410	2.641	1.888	0.478	1.677
3.5	89.9	0.020	0.34	6.575	0.984	0.984	5.101	0.781	3.147	2.366	1.382	2.655	1.874	0.492	1.711
3.8	92.9	0.021	0.36	6.577	1.016	1.016	5.127	0.807	3.179	2.372	1.356	2.671	1.864	0.508	1.749
4.0	95.7	0.023	0.39	6.579	1.047	1.046	5.151	0.831	3.209	2.377	1.331	2.686	1.854	0.523	1.786
4.3	97.6	0.024	0.41	6.580	1.067	1.067	5.174	0.854	3.230	2.377	1.310	2.697	1.843	0.533	1.814
4.5	100.4	0.026	0.44	6.582	1.098	1.097	5.195	0.875	3.260	2.385	1.288	2.712	1.837	0.549	1.852
4.8	102.6	0.028	0.47	6.584	1.122	1.121	5.215	0.895	3.284	2.389	1.268	2.723	1.828	0.561	1.885
5.0	104.2	0.029	0.48	6.585	1.140	1.138	5.234	0.914	3.301	2.387	1.249	2.732	1.818	0.569	1.912
5.3	106.2	0.030	0.51	6.587	1.160	1.159	5.253	0.933	3.321	2.388	1.229	2.741	1.809	0.580	1.943
5.5	108.7	0.031	0.53	6.588	1.188	1.186	5.272	0.952	3.349	2.397	1.211	2.756	1.804	0.593	1.980
5.8	111.2	0.033	0.56	6.591	1.215	1.214	5.285	0.965	3.377	2.412	1.198	2.770	1.805	0.607	2.014
6.0	112.0	0.035	0.58	6.592	1.224	1.222	5.301	0.981	3.385	2.405	1.182	2.774	1.793	0.611	2.034
6.3	113.9	0.036	0.61	6.594	1.244	1.242	5.316	0.996	3.405	2.409	1.166	2.784	1.787	0.621	2.066
6.5	114.7	0.038	0.64	6.595	1.252	1.250	5.330	1.010	3.413	2.402	1.152	2.787	1.777	0.625	2.086
6.8	116.9	0.039	0.66	6.597	1.276	1.274	5.342	1.022	3.437	2.414	1.140	2.800	1.777	0.637	2.118
7.0	118.9	0.040	0.68	6.598	1.298	1.296	5.355	1.035	3.459	2.424	1.128	2.811	1.776	0.648	2.150
7.3	122.0	0.042	0.71	6.600	1.331	1.330	5.368	1.048	3.492	2.444	1.114	2.827	1.779	0.665	2.193
7.5	122.8	0.044	0.74	6.602	1.339	1.337	5.379	1.059	3.500	2.441	1.104	2.832	1.772	0.669	2.211
7.8	124.1	0.045	0.76	6.603	1.353	1.351	5.390	1.070	3.514	2.444	1.092	2.838	1.768	0.676	2.237
8.0	125.1	0.046	0.78	6.605	1.364	1.362	5.401	1.081	3.525	2.445	1.082	2.844	1.764	0.681	2.258
8.3	126.5	0.047	0.80	6.606	1.379	1.377	5.411	1.091	3.539	2.448	1.071	2.851	1.760	0.688	2.285
8.5	127.7	0.049	0.83	6.608	1.391	1.389	5.420	1.100	3.552	2.452	1.063	2.858	1.758	0.695	2.307
8.8	129.0	0.051	0.86	6.610	1.405	1.403	5.430	1.110	3.566	2.456	1.053	2.864	1.754	0.702	2.333
9.0	129.8	0.052	0.89	6.612	1.414	1.411	5.439	1.119	3.575	2.456	1.044	2.869	1.750	0.706	2.351
9.3	130.8	0.054	0.91	6.614	1.424	1.421	5.447	1.127	3.584	2.457	1.036	2.873	1.746	0.711	2.373
9.5	131.3	0.055	0.93	6.615	1.429	1.427	5.455	1.135	3.590	2.454	1.027	2.876	1.741	0.713	2.389

Project: 175518236			Source: HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0'								Lab ID: 211		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
9.8	132.3	0.056	0.95	6.616	1.440	1.437	5.463	1.143	3.600	2.457	1.019	2.881	1.738	0.719	2.410
10.0	133.2	0.058	0.98	6.618	1.449	1.447	5.471	1.151	3.609	2.458	1.012	2.886	1.735	0.723	2.430
11.0	136.2	0.064	1.08	6.625	1.480	1.478	5.499	1.179	3.640	2.461	0.984	2.901	1.722	0.739	2.502
12.0	139.4	0.070	1.18	6.631	1.514	1.511	5.524	1.204	3.673	2.470	0.959	2.918	1.714	0.755	2.576
13.0	141.0	0.075	1.27	6.638	1.530	1.527	5.544	1.224	3.689	2.465	0.938	2.926	1.701	0.763	2.628
14.0	142.7	0.082	1.38	6.645	1.547	1.543	5.562	1.242	3.705	2.463	0.920	2.934	1.692	0.772	2.677
15.0	144.4	0.087	1.47	6.651	1.563	1.560	5.579	1.259	3.721	2.462	0.902	2.941	1.682	0.780	2.729
16.0	146.4	0.093	1.58	6.658	1.583	1.580	5.594	1.274	3.741	2.467	0.887	2.951	1.677	0.790	2.780
17.1	147.2	0.099	1.67	6.665	1.590	1.586	5.607	1.287	3.748	2.461	0.875	2.955	1.668	0.793	2.812
18.1	148.8	0.105	1.78	6.672	1.606	1.601	5.619	1.299	3.763	2.464	0.863	2.962	1.663	0.801	2.856
19.1	149.8	0.111	1.88	6.679	1.614	1.610	5.630	1.310	3.772	2.462	0.852	2.967	1.657	0.805	2.889
20.1	150.7	0.117	1.97	6.685	1.623	1.619	5.639	1.319	3.780	2.461	0.842	2.971	1.652	0.809	2.922
21.1	151.5	0.123	2.07	6.692	1.630	1.625	5.648	1.328	3.787	2.458	0.833	2.974	1.646	0.813	2.950
22.0	151.8	0.129	2.18	6.700	1.632	1.626	5.656	1.336	3.787	2.452	0.825	2.974	1.638	0.813	2.971
23.1	152.4	0.135	2.29	6.707	1.636	1.631	5.663	1.343	3.792	2.449	0.818	2.977	1.634	0.815	2.993
24.1	153.9	0.141	2.38	6.713	1.651	1.645	5.670	1.350	3.806	2.456	0.811	2.983	1.634	0.823	3.028
25.1	154.6	0.147	2.48	6.720	1.657	1.651	5.676	1.356	3.812	2.456	0.805	2.986	1.631	0.825	3.050
26.1	154.9	0.154	2.59	6.728	1.657	1.651	5.681	1.361	3.812	2.451	0.800	2.986	1.626	0.826	3.063
27.1	155.8	0.159	2.69	6.734	1.666	1.659	5.686	1.366	3.820	2.455	0.795	2.991	1.625	0.830	3.086
28.1	156.6	0.165	2.78	6.741	1.673	1.666	5.690	1.370	3.827	2.457	0.791	2.994	1.624	0.833	3.106
29.1	156.6	0.171	2.89	6.748	1.671	1.664	5.694	1.374	3.825	2.451	0.787	2.993	1.619	0.832	3.114
30.1	157.1	0.177	2.99	6.755	1.674	1.667	5.697	1.377	3.828	2.451	0.784	2.994	1.617	0.834	3.127
31.1	157.6	0.183	3.09	6.762	1.678	1.671	5.700	1.380	3.831	2.451	0.780	2.995	1.616	0.835	3.142
32.1	158.9	0.189	3.19	6.769	1.691	1.683	5.704	1.384	3.842	2.459	0.776	3.001	1.617	0.841	3.169
33.1	159.7	0.195	3.30	6.777	1.697	1.689	5.706	1.386	3.849	2.463	0.774	3.005	1.619	0.845	3.182
34.1	160.0	0.201	3.39	6.783	1.699	1.691	5.708	1.388	3.851	2.463	0.772	3.006	1.618	0.845	3.189
35.1	160.6	0.207	3.50	6.791	1.703	1.694	5.711	1.391	3.854	2.463	0.769	3.007	1.616	0.847	3.203
36.1	161.0	0.213	3.59	6.798	1.705	1.697	5.712	1.392	3.856	2.464	0.767	3.008	1.615	0.848	3.212
37.1	162.2	0.218	3.69	6.804	1.717	1.708	5.715	1.395	3.867	2.472	0.765	3.013	1.619	0.854	3.233
38.1	162.7	0.225	3.80	6.812	1.719	1.710	5.716	1.396	3.870	2.474	0.763	3.015	1.618	0.855	3.240
39.1	163.3	0.231	3.90	6.819	1.724	1.715	5.718	1.398	3.874	2.477	0.762	3.017	1.619	0.857	3.251
40.1	163.6	0.236	3.99	6.826	1.726	1.716	5.719	1.399	3.876	2.477	0.761	3.017	1.619	0.858	3.257
41.1	164.1	0.242	4.09	6.833	1.729	1.719	5.720	1.400	3.879	2.479	0.760	3.019	1.619	0.859	3.262
42.1	165.1	0.249	4.20	6.840	1.738	1.728	5.721	1.401	3.887	2.486	0.758	3.023	1.622	0.864	3.279
43.1	165.4	0.254	4.30	6.848	1.740	1.729	5.722	1.402	3.888	2.486	0.757	3.024	1.622	0.865	3.285
44.1	165.9	0.260	4.39	6.854	1.743	1.732	5.722	1.402	3.891	2.489	0.757	3.025	1.623	0.866	3.289
45.1	166.5	0.266	4.49	6.862	1.747	1.736	5.723	1.403	3.896	2.493	0.756	3.027	1.625	0.868	3.295
46.1	167.2	0.272	4.59	6.869	1.752	1.741	5.724	1.404	3.901	2.497	0.756	3.030	1.626	0.871	3.304
47.1	167.4	0.278	4.70	6.876	1.753	1.742	5.724	1.404	3.901	2.497	0.755	3.030	1.626	0.871	3.307
48.1	167.6	0.284	4.80	6.884	1.753	1.741	5.724	1.404	3.900	2.496	0.755	3.029	1.626	0.871	3.306
49.1	167.7	0.290	4.89	6.890	1.753	1.741	5.724	1.404	3.900	2.496	0.755	3.030	1.626	0.871	3.306
50.1	168.6	0.296	4.99	6.898	1.760	1.748	5.724	1.404	3.907	2.503	0.755	3.033	1.629	0.874	3.317
52.7	169.9	0.311	5.25	6.916	1.769	1.756	5.724	1.404	3.915	2.510	0.754	3.037	1.632	0.878	3.328
55.2	171.5	0.325	5.50	6.934	1.781	1.768	5.724	1.404	3.926	2.523	0.755	3.043	1.639	0.884	3.342
57.7	174.9	0.340	5.75	6.953	1.811	1.797	5.723	1.403	3.956	2.553	0.756	3.058	1.655	0.899	3.377
60.2	175.2	0.355	6.00	6.971	1.810	1.795	5.722	1.402	3.954	2.552	0.757	3.056	1.654	0.898	3.372
62.7	177.5	0.370	6.25	6.990	1.828	1.813	5.720	1.400	3.971	2.571	0.758	3.065	1.664	0.907	3.393
65.2	178.7	0.385	6.50	7.009	1.836	1.820	5.718	1.398	3.978	2.579	0.759	3.067	1.669	0.910	3.398
67.7	181.6	0.399	6.74	7.027	1.861	1.845	5.717	1.397	4.003	2.606	0.761	3.080	1.683	0.922	3.424
70.2	183.4	0.415	7.00	7.047	1.874	1.857	5.714	1.394	4.014	2.620	0.763	3.086	1.691	0.929	3.435
72.7	185.2	0.430	7.26	7.066	1.888	1.870	5.712	1.392	4.028	2.636	0.766	3.093	1.701	0.935	3.443
75.2	186.2	0.444	7.51	7.085	1.893	1.875	5.710	1.390	4.032	2.643	0.768	3.095	1.705	0.937	3.441
77.7	187.3	0.459	7.76	7.104	1.898	1.880	5.707	1.387	4.037	2.649	0.770	3.097	1.710	0.940	3.441
80.2	189.0	0.474	8.01	7.124	1.910	1.891	5.705	1.385	4.048	2.663	0.772	3.103	1.718	0.945	3.448
82.7	190.1	0.489	8.26	7.143	1.916	1.897	5.702	1.382	4.053	2.672	0.775	3.105	1.723	0.948	3.447
85.2	191.2	0.503	8.50	7.162	1.923	1.902	5.699	1.379	4.059	2.680	0.778	3.108	1.729	0.951	3.446
87.7	193.4	0.518	8.75	7.182	1.939	1.918	5.697	1.377	4.075	2.698	0.779	3.115	1.739	0.959	3.461
90.2	193.4	0.534	9.02	7.203	1.933	1.911	5.695	1.375	4.068	2.693	0.782	3.112	1.738	0.956	3.444
92.7	194.8	0.548	9.26	7.222	1.942	1.920	5.692	1.372	4.076	2.705	0.785	3.116	1.745	0.960	3.448
95.2	195.8	0.563	9.50	7.242	1.947	1.924	5.689	1.369	4.081	2.711	0.787	3.118	1.749	0.962	3.445
97.7	197.8	0.577	9.75	7.261	1.962	1.938	5.686	1.366	4.095	2.729	0.791	3.126	1.760	0.969	3.451
100.2	199.4	0.593	10.02	7.283	1.972	1.948	5.683	1.363	4.103	2.740	0.792	3.129	1.766	0.974	3.458
102.7	200.0	0.607	10.26	7.302	1.972	1.948	5.679	1.359	4.103	2.744	0.796	3.130	1.770	0.974	3.446
110.2	204.4	0.653	11.02	7.365	1.999	1.972	5.670	1.350	4.127	2.777	0.805	3.141	1.791	0.986	3.449
112.7	205.6	0.668	11.27	7.386	2.004	1.977	5.666	1.346	4.131	2.785	0.808	3.143	1.797	0.988	3.446
115.2	207.1	0.682	11.52	7.407	2.013	1.986	5.664	1.344	4.141	2.797	0.811	3.148	1.804	0.993	3.449
117.7	210.5	0.697	11.78	7.428	2.041	2.012	5.661	1.341	4.167	2.826	0.813	3.160	1.820	1.006	3.474
120.2	211.4	0.712	12.02	7.449	2.043	2.014	5.658	1.338	4.168	2.830	0.816	3.161	1.823	1.007	3.467
125.2	212.9	0.741	12.52	7.491	2.046	2.016	5.651	1.331	4.170	2.839	0.823	3.162	1.831	1.008	3.449

Project: 175518236			Source: HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0'								Lab ID: 211		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
127.7	214.2	0.756	12.77	7.513	2.053	2.023	5.648	1.328	4.176	2.848	0.826	3.165	1.837	1.011	3.450
132.8	215.3	0.786	13.27	7.556	2.051	2.020	5.642	1.322	4.173	2.852	0.832	3.163	1.842	1.010	3.428
137.8	217.3	0.816	13.78	7.601	2.059	2.026	5.633	1.313	4.179	2.866	0.840	3.166	1.853	1.013	3.411
145.3	219.7	0.861	14.54	7.668	2.063	2.029	5.625	1.305	4.181	2.876	0.847	3.167	1.862	1.014	3.394
147.8	221.0	0.875	14.78	7.690	2.069	2.034	5.621	1.301	4.185	2.884	0.850	3.168	1.867	1.017	3.391
150.3	222.0	0.891	15.04	7.713	2.072	2.036	5.619	1.299	4.189	2.890	0.854	3.170	1.872	1.018	3.385
152.8	224.7	0.906	15.29	7.736	2.091	2.055	5.615	1.295	4.206	2.911	0.857	3.179	1.884	1.027	3.398
155.3	225.1	0.920	15.53	7.758	2.089	2.052	5.612	1.292	4.204	2.913	0.861	3.178	1.887	1.026	3.384
157.8	227.2	0.935	15.79	7.782	2.102	2.064	5.608	1.288	4.215	2.927	0.864	3.183	1.895	1.032	3.390
160.3	229.3	0.950	16.04	7.805	2.115	2.077	5.605	1.285	4.227	2.943	0.866	3.189	1.905	1.038	3.397
162.8	229.8	0.965	16.30	7.830	2.113	2.074	5.602	1.282	4.225	2.944	0.870	3.188	1.907	1.037	3.384
165.3	231.5	0.980	16.56	7.854	2.122	2.082	5.599	1.279	4.233	2.953	0.871	3.191	1.912	1.041	3.391
167.8	233.8	0.995	16.80	7.877	2.137	2.097	5.595	1.275	4.247	2.972	0.875	3.199	1.923	1.049	3.397
170.1	232.9	1.008	17.03	7.898	2.123	2.083	5.588	1.268	4.233	2.964	0.882	3.191	1.923	1.041	3.362

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name	Plant Hammond Phase 2	Project No.	175518236
Source	HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0'	Lab ID	211
Description	Clayey Sand with Gravel (SC), light brown	Test ID	211-C
Specimen Type	Compacted		
Preparation	Wet Mounting	Date Received	09/26/2022
		Date Tested	10/24/2022

Specific Gravity	2.69
ASTM D 854, Dry	
Liquid Limit	
Plastic Limit	
Plasticity Index	

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	40
Nominal Consolidation Pressure (psi)	50

Saturation / Consolidation Results

Pore Pressure Parameter B	0.99
Measured Effective Consol. Stress (tsf)	3.583
Time to 50% Consolidation (min)	3.70
Actual Axial Strain Rate of Test (%/min)	0.081

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	137.0
Moisture Content (%)	15.3
Dry Unit Weight (pcf)	118.8
Void Ratio	0.411
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

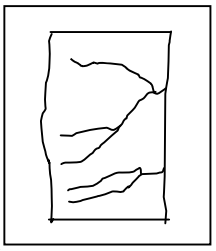
Axial Strain (%)	10.392
Deviator Stress (tsf)	3.147
Induced Pore Pressure (tsf)	2.234
Minor Effective Stress, σ_3' (tsf)	1.348
Major Effective Stress, σ_1' (tsf)	4.496
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.334
p' (tsf)	2.922
q (tsf)	1.574

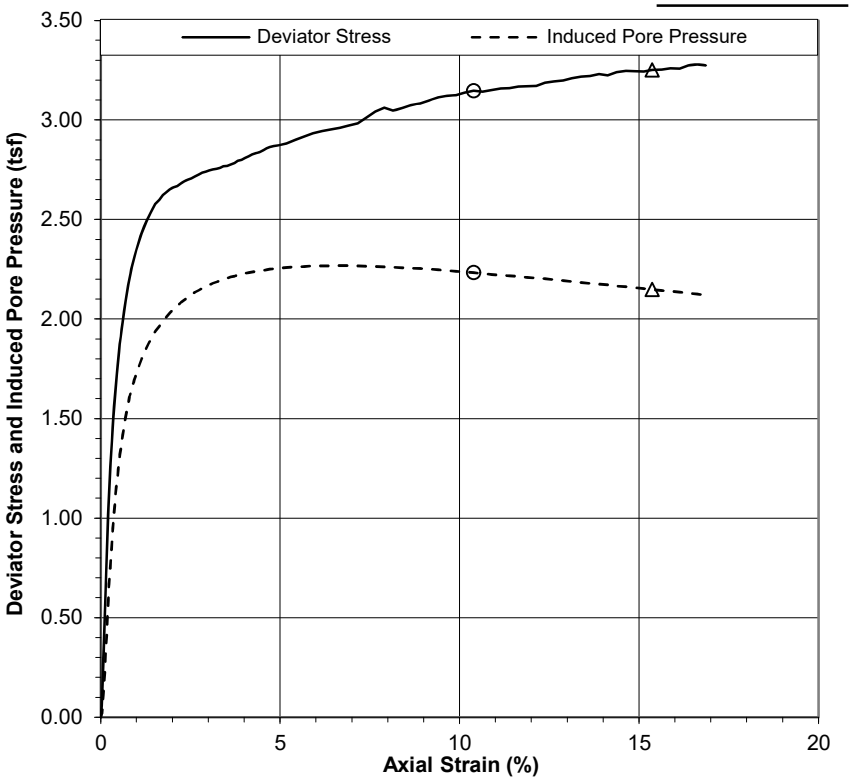
At Consolidated Undrained Failure

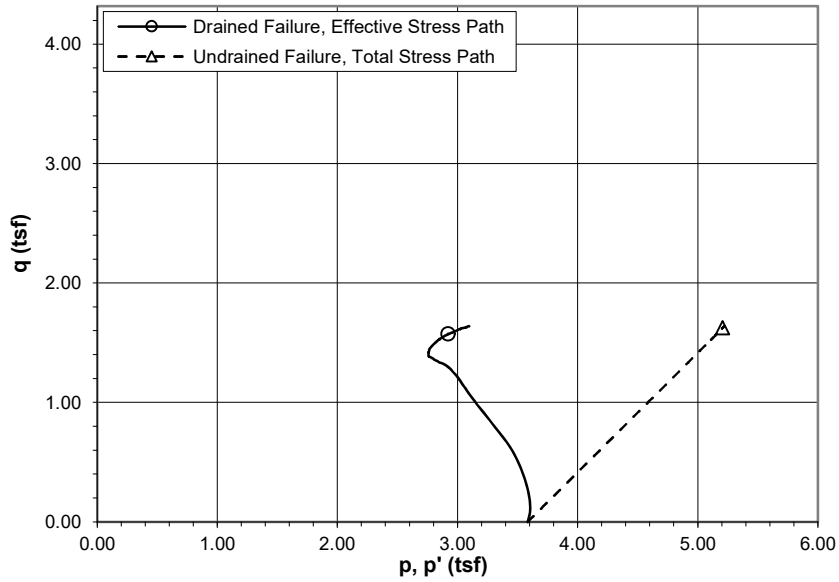
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.370
Deviator Stress (tsf)	3.251
Minor Principal Stress, σ_3 (tsf)	3.581
Major Principal Stress, σ_1 (tsf)	6.832
p (tsf)	5.207
q (tsf)	1.625

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Plant Hammond Phase 2 | Project No.: 175518236
Source: HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0' | Lab ID: 211
Description: Clayey Sand with Gravel (SC), light brown | Test ID: 211-C

Initial Specimen Conditions		Consolidated Specimen Conditions	
Height (in)	6.004	Height (in)	5.935
Diameter (in)	2.894	Calculated Diameter (in)	2.880
Area (in^2)	6.579	Calculated Area (in^2)	6.514
Moist Weight (lb)	2.968	Moist Weight (lb)	3.064
Moist Unit Weight (pcf)	129.8	Moist Unit Weight (pcf)	137.0
Moisture Content (%)	11.7	Moisture Content (%)	15.3
Dry Weight (lb)	2.658	Dry Weight (lb)	2.658
Dry Unit Weight (pcf)	116.3	Dry Unit Weight (pcf)	118.8
Void Ratio	0.442	Void Ratio	0.411
Degree of Saturation (%)	71.0	Degree of Saturation (%)	100.0

Specific Gravity: 2.69 (ASTM D 854, Dry)

Liquid Limit:
Plastic Limit:
Plasticity Index:

Confining Stress σ_3 (tsf): 3.583

Effective Consolidation Stress σ_3' (tsf): 3.583

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 175518236			Source: HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0'								Lab ID: 211		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.514	0.000	0.000	2.901	0.000	3.583	3.583	3.583	3.583	3.583	0.000	1.000
0.3	5.1	0.002	0.03	6.516	0.057	0.057	2.921	0.020	3.640	3.621	3.564	3.612	3.592	0.028	1.016
0.6	13.6	0.003	0.05	6.517	0.150	0.150	2.958	0.057	3.733	3.677	3.527	3.658	3.602	0.075	1.042
0.9	23.5	0.004	0.07	6.518	0.260	0.260	3.011	0.110	3.843	3.733	3.473	3.713	3.603	0.130	1.075
1.2	35.5	0.006	0.10	6.520	0.392	0.391	3.081	0.179	3.975	3.795	3.404	3.779	3.600	0.196	1.115
1.5	46.9	0.007	0.12	6.522	0.517	0.517	3.155	0.254	4.101	3.847	3.329	3.842	3.588	0.259	1.155
1.8	58.2	0.008	0.14	6.523	0.642	0.642	3.234	0.332	4.225	3.893	3.251	3.904	3.572	0.321	1.197
2.2	69.7	0.010	0.17	6.524	0.770	0.769	3.317	0.416	4.353	3.937	3.168	3.968	3.553	0.385	1.243
2.5	81.0	0.011	0.19	6.526	0.894	0.894	3.403	0.502	4.477	3.975	3.081	4.030	3.528	0.447	1.290
2.8	92.0	0.012	0.21	6.527	1.014	1.014	3.489	0.588	4.597	4.009	2.996	4.090	3.502	0.507	1.338
3.1	101.9	0.014	0.23	6.529	1.124	1.123	3.571	0.670	4.707	4.038	2.914	4.145	3.476	0.562	1.386
3.4	110.8	0.016	0.26	6.531	1.222	1.221	3.647	0.746	4.805	4.059	2.838	4.194	3.448	0.611	1.430
3.7	118.7	0.017	0.29	6.532	1.309	1.308	3.719	0.818	4.891	4.073	2.765	4.237	3.419	0.654	1.473
4.0	126.0	0.019	0.32	6.534	1.388	1.387	3.787	0.886	4.970	4.084	2.697	4.277	3.391	0.694	1.514
4.3	132.3	0.020	0.34	6.536	1.457	1.456	3.851	0.950	5.040	4.090	2.634	4.312	3.362	0.728	1.553
4.6	138.4	0.022	0.36	6.537	1.524	1.524	3.909	1.008	5.107	4.099	2.575	4.345	3.337	0.762	1.592
4.9	144.1	0.023	0.39	6.539	1.587	1.586	3.964	1.063	5.169	4.106	2.521	4.376	3.313	0.793	1.629
5.3	149.2	0.024	0.41	6.540	1.642	1.641	4.015	1.114	5.224	4.111	2.470	4.404	3.290	0.821	1.665
5.6	154.1	0.026	0.44	6.542	1.695	1.694	4.062	1.161	5.278	4.117	2.422	4.430	3.270	0.847	1.699
5.9	158.5	0.028	0.47	6.544	1.744	1.743	4.106	1.205	5.327	4.122	2.379	4.455	3.250	0.872	1.733
6.2	162.8	0.029	0.48	6.545	1.791	1.790	4.147	1.246	5.373	4.126	2.337	4.478	3.232	0.895	1.766
6.5	166.8	0.030	0.51	6.547	1.835	1.833	4.186	1.285	5.417	4.132	2.299	4.500	3.216	0.917	1.798
6.8	170.5	0.032	0.53	6.548	1.875	1.874	4.222	1.321	5.458	4.136	2.262	4.521	3.199	0.937	1.828
7.1	174.2	0.034	0.57	6.551	1.914	1.913	4.257	1.356	5.496	4.140	2.227	4.540	3.184	0.956	1.859
7.4	177.5	0.035	0.59	6.552	1.950	1.949	4.289	1.388	5.532	4.144	2.195	4.558	3.169	0.974	1.888
7.7	180.6	0.036	0.61	6.554	1.984	1.982	4.319	1.418	5.565	4.147	2.165	4.574	3.156	0.991	1.916
8.0	183.7	0.038	0.64	6.556	2.018	2.016	4.348	1.447	5.600	4.153	2.137	4.592	3.145	1.008	1.943
8.4	186.6	0.039	0.66	6.557	2.049	2.047	4.375	1.474	5.630	4.156	2.109	4.607	3.132	1.024	1.971
8.7	189.4	0.040	0.68	6.558	2.080	2.078	4.401	1.500	5.661	4.161	2.083	4.622	3.122	1.039	1.998
9.0	192.0	0.042	0.71	6.560	2.107	2.106	4.426	1.525	5.689	4.164	2.059	4.636	3.111	1.053	2.023
9.3	194.4	0.044	0.74	6.562	2.133	2.131	4.448	1.547	5.714	4.167	2.036	4.649	3.101	1.065	2.047
9.6	196.7	0.045	0.76	6.563	2.157	2.156	4.470	1.569	5.739	4.170	2.014	4.661	3.092	1.078	2.070
9.9	199.0	0.046	0.78	6.565	2.183	2.181	4.491	1.590	5.764	4.174	1.993	4.674	3.084	1.091	2.094
10.2	201.2	0.047	0.80	6.566	2.206	2.205	4.511	1.610	5.788	4.178	1.974	4.686	3.076	1.102	2.117
10.5	203.5	0.049	0.83	6.568	2.231	2.229	4.530	1.629	5.812	4.183	1.954	4.698	3.069	1.114	2.140
10.8	205.5	0.051	0.86	6.570	2.252	2.250	4.547	1.646	5.833	4.187	1.937	4.708	3.062	1.125	2.162
11.1	207.3	0.052	0.88	6.571	2.271	2.269	4.565	1.664	5.852	4.188	1.919	4.718	3.054	1.134	2.182
11.5	209.1	0.054	0.91	6.574	2.290	2.288	4.582	1.681	5.871	4.190	1.903	4.727	3.046	1.144	2.202
11.8	210.6	0.056	0.94	6.575	2.306	2.304	4.596	1.695	5.887	4.192	1.888	4.735	3.040	1.152	2.221

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Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
13.0	217.4	0.062	1.04	6.582	2.378	2.376	4.653	1.752	5.959	4.206	1.831	4.771	3.019	1.188	2.298
14.2	222.6	0.068	1.14	6.589	2.432	2.430	4.701	1.800	6.013	4.213	1.783	4.798	2.998	1.215	2.362
15.5	227.0	0.073	1.23	6.595	2.478	2.475	4.743	1.842	6.058	4.217	1.742	4.821	2.979	1.238	2.421
16.7	230.6	0.079	1.34	6.602	2.515	2.512	4.780	1.878	6.095	4.216	1.704	4.839	2.960	1.256	2.474
18.0	234.4	0.086	1.44	6.609	2.553	2.550	4.812	1.911	6.133	4.222	1.672	4.858	2.947	1.275	2.525
19.2	237.2	0.091	1.53	6.614	2.582	2.578	4.840	1.939	6.161	4.222	1.644	4.872	2.933	1.289	2.568
20.4	239.4	0.097	1.64	6.622	2.603	2.599	4.867	1.966	6.182	4.217	1.618	4.883	2.917	1.299	2.606
21.7	241.8	0.103	1.74	6.629	2.626	2.622	4.891	1.990	6.205	4.215	1.593	4.894	2.904	1.311	2.646
22.9	243.4	0.109	1.84	6.635	2.641	2.637	4.913	2.012	6.220	4.209	1.572	4.902	2.890	1.318	2.678
24.1	245.0	0.115	1.93	6.642	2.656	2.652	4.933	2.032	6.235	4.203	1.551	4.909	2.877	1.326	2.710
25.4	246.1	0.121	2.03	6.649	2.665	2.661	4.951	2.050	6.244	4.194	1.533	4.913	2.863	1.330	2.735
26.6	247.1	0.127	2.13	6.655	2.673	2.668	4.968	2.067	6.251	4.185	1.516	4.917	2.850	1.334	2.760
27.9	248.5	0.133	2.23	6.662	2.685	2.680	4.985	2.084	6.263	4.179	1.499	4.923	2.839	1.340	2.787
29.1	249.9	0.139	2.34	6.669	2.697	2.692	4.998	2.097	6.275	4.178	1.486	4.929	2.832	1.346	2.811
30.3	250.9	0.144	2.43	6.676	2.706	2.700	5.012	2.111	6.283	4.173	1.473	4.933	2.823	1.350	2.833
31.6	251.8	0.150	2.52	6.682	2.713	2.707	5.024	2.123	6.290	4.167	1.460	4.937	2.814	1.353	2.853
32.8	252.9	0.156	2.63	6.689	2.722	2.715	5.036	2.135	6.298	4.163	1.448	4.941	2.806	1.358	2.875
34.0	254.1	0.162	2.73	6.697	2.732	2.726	5.046	2.145	6.308	4.164	1.438	4.946	2.801	1.363	2.895
35.3	255.3	0.168	2.84	6.704	2.742	2.735	5.056	2.155	6.318	4.164	1.428	4.951	2.796	1.368	2.915
36.5	256.1	0.174	2.93	6.710	2.748	2.741	5.065	2.164	6.323	4.159	1.419	4.953	2.789	1.370	2.932
37.8	256.9	0.180	3.03	6.717	2.754	2.747	5.073	2.172	6.330	4.158	1.411	4.957	2.785	1.373	2.946
39.0	257.6	0.186	3.13	6.724	2.759	2.751	5.081	2.180	6.334	4.154	1.403	4.959	2.778	1.376	2.961
40.2	258.3	0.192	3.23	6.731	2.763	2.755	5.088	2.187	6.338	4.151	1.396	4.961	2.774	1.377	2.973
41.5	259.0	0.198	3.33	6.738	2.768	2.760	5.095	2.194	6.343	4.149	1.389	4.963	2.769	1.380	2.987
42.7	260.0	0.203	3.42	6.744	2.775	2.767	5.101	2.200	6.350	4.150	1.383	4.967	2.767	1.384	3.001
44.0	260.5	0.209	3.53	6.752	2.778	2.770	5.107	2.206	6.353	4.147	1.377	4.968	2.762	1.385	3.011
45.2	261.3	0.215	3.62	6.758	2.784	2.776	5.112	2.211	6.358	4.147	1.372	4.970	2.759	1.388	3.024
46.4	262.4	0.221	3.73	6.766	2.793	2.784	5.117	2.216	6.367	4.151	1.367	4.975	2.759	1.392	3.036
47.7	263.7	0.227	3.82	6.773	2.803	2.794	5.123	2.222	6.377	4.155	1.361	4.980	2.758	1.397	3.053
48.9	264.5	0.233	3.93	6.780	2.809	2.799	5.126	2.225	6.382	4.157	1.358	4.983	2.757	1.400	3.062
50.1	265.7	0.239	4.03	6.787	2.819	2.809	5.131	2.230	6.392	4.162	1.353	4.987	2.758	1.405	3.077
51.4	266.8	0.245	4.12	6.794	2.828	2.818	5.134	2.233	6.400	4.167	1.349	4.991	2.758	1.409	3.088
52.6	267.9	0.251	4.22	6.801	2.837	2.826	5.138	2.237	6.410	4.173	1.346	4.996	2.760	1.413	3.099
53.9	268.9	0.257	4.33	6.808	2.844	2.834	5.141	2.240	6.416	4.176	1.343	4.999	2.760	1.417	3.110
55.1	269.7	0.263	4.43	6.815	2.849	2.839	5.143	2.242	6.422	4.180	1.341	5.002	2.760	1.419	3.117
56.3	271.0	0.269	4.53	6.823	2.859	2.849	5.147	2.246	6.431	4.186	1.337	5.007	2.761	1.424	3.130
57.6	272.1	0.275	4.63	6.830	2.868	2.857	5.149	2.248	6.440	4.192	1.335	5.011	2.763	1.429	3.141
58.8	272.9	0.280	4.72	6.836	2.875	2.863	5.152	2.251	6.446	4.196	1.332	5.015	2.764	1.432	3.150
60.0	273.7	0.286	4.82	6.843	2.880	2.868	5.154	2.253	6.451	4.198	1.330	5.017	2.764	1.434	3.157
61.3	274.4	0.292	4.93	6.851	2.883	2.871	5.156	2.255	6.454	4.199	1.328	5.019	2.764	1.436	3.162
64.4	276.1	0.307	5.18	6.869	2.894	2.882	5.160	2.259	6.464	4.205	1.323	5.023	2.764	1.441	3.178
67.5	278.6	0.322	5.42	6.887	2.913	2.900	5.164	2.263	6.483	4.220	1.320	5.033	2.770	1.450	3.197
70.5	281.0	0.337	5.67	6.905	2.930	2.916	5.166	2.265	6.499	4.234	1.318	5.041	2.776	1.458	3.213
73.6	283.5	0.351	5.92	6.923	2.948	2.934	5.168	2.267	6.517	4.249	1.316	5.050	2.783	1.467	3.230
76.7	285.3	0.366	6.17	6.942	2.959	2.944	5.169	2.268	6.527	4.259	1.315	5.055	2.787	1.472	3.239
79.8	286.9	0.381	6.42	6.960	2.968	2.952	5.169	2.268	6.535	4.267	1.315	5.059	2.791	1.476	3.246
82.9	288.5	0.396	6.67	6.979	2.977	2.961	5.170	2.269	6.544	4.275	1.314	5.063	2.795	1.480	3.253
86.0	290.4	0.410	6.91	6.997	2.988	2.972	5.170	2.269	6.554	4.285	1.314	5.068	2.799	1.486	3.262
89.1	292.3	0.425	7.17	7.016	3.000	2.983	5.169	2.268	6.566	4.298	1.315	5.074	2.807	1.491	3.267
92.1	296.0	0.440	7.41	7.035	3.029	3.012	5.167	2.266	6.594	4.328	1.317	5.088	2.822	1.506	3.288
95.2	299.8	0.454	7.65	7.053	3.061	3.042	5.166	2.265	6.625	4.360	1.318	5.104	2.839	1.521	3.309
98.3	302.6	0.469	7.91	7.073	3.080	3.061	5.163	2.262	6.643	4.381	1.320	5.113	2.851	1.530	3.319
101.4	302.1	0.483	8.15	7.091	3.067	3.048	5.162	2.261	6.630	4.369	1.322	5.107	2.846	1.524	3.306
104.5	304.3	0.499	8.41	7.111	3.081	3.061	5.159	2.258	6.643	4.385	1.324	5.113	2.855	1.530	3.311
107.6	306.5	0.513	8.65	7.130	3.095	3.074	5.157	2.256	6.657	4.401	1.326	5.120	2.863	1.537	3.318
110.7	308.3	0.529	8.91	7.150	3.104	3.083	5.155	2.254	6.666	4.412	1.329	5.124	2.870	1.542	3.321
113.8	310.5	0.543	9.15	7.169	3.119	3.097	5.152	2.251	6.679	4.428	1.331	5.131	2.880	1.548	3.326
116.8	313.1	0.558	9.40	7.189	3.136	3.113	5.149	2.248	6.695	4.448	1.335	5.139	2.891	1.557	3.333
119.9	314.9	0.573	9.65	7.209	3.145	3.122	5.145	2.243	6.703	4.460	1.338	5.143	2.899	1.561	3.332
123.0	316.0	0.588	9.90	7.229	3.147	3.124	5.141	2.240	6.706	4.466	1.342	5.145	2.904	1.562	3.327
126.1	318.3	0.602	10.14	7.249	3.162	3.137	5.138	2.237	6.720	4.483	1.346	5.151	2.915	1.569	3.331
129.2	320.2	0.617	10.39	7.269	3.172	3.147	5.135	2.234	6.729	4.496	1.348	5.156	2.922	1.574	3.334
132.3	320.7	0.632	10.64	7.289	3.168	3.142	5.130	2.229	6.724	4.495	1.353	5.153	2.924	1.571	3.323
135.4	322.5	0.646	10.89	7.310	3.177	3.151	5.126	2.225	6.733	4.508	1.358	5.158	2.933	1.575	3.321
138.5	324.3	0.662	11.15	7.331	3.185	3.159	5.122	2.221	6.741	4.520	1.361	5.162	2.940	1.579	3.321
141.5	325.4	0.676	11.39	7.350	3.187	3.160	5.118	2.217	6.742	4.525	1.365	5.162	2.945	1.580	3.315
144.6	327.1	0.691	11.64	7.371	3.195	3.167	5.115	2.214	6.750	4.536	1.368	5.166	2.952	1.584	3.315
147.7	328.3	0.705	11.88	7.392	3.198	3.170	5.111	2.210	6.751	4.541	1.371	5.167	2.956	1.585	3.311
150.8	329.6	0.720	12.14	7.413	3.201	3.172	5.108	2.207	6.754	4.547	1.376	5.168	2.961	1.586	3.306

Project: 175518236			Source: HRL-4, 0.0'-5.0' & HRL-5, 0.0'-5.0' & HRL-6, 0.0'-5.0'								Lab ID: 211		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
153.9	332.0	0.735	12.38	7.434	3.216	3.186	5.104	2.203	6.769	4.566	1.380	5.176	2.973	1.593	3.310
157.0	333.7	0.750	12.63	7.455	3.223	3.193	5.099	2.198	6.775	4.577	1.384	5.179	2.981	1.596	3.306
160.1	335.3	0.765	12.89	7.477	3.229	3.198	5.094	2.193	6.779	4.586	1.388	5.180	2.987	1.599	3.304
163.2	337.6	0.779	13.13	7.498	3.242	3.210	5.089	2.188	6.792	4.603	1.393	5.187	2.998	1.605	3.304
166.2	339.5	0.795	13.39	7.520	3.250	3.218	5.085	2.184	6.800	4.616	1.398	5.191	3.007	1.609	3.302
169.3	340.9	0.809	13.64	7.542	3.254	3.221	5.081	2.180	6.803	4.623	1.402	5.192	3.013	1.611	3.298
172.4	342.9	0.824	13.88	7.564	3.264	3.231	5.077	2.176	6.813	4.637	1.406	5.197	3.021	1.616	3.298
175.5	343.2	0.839	14.13	7.585	3.257	3.224	5.073	2.172	6.805	4.633	1.409	5.193	3.021	1.612	3.287
178.6	345.9	0.853	14.38	7.607	3.274	3.240	5.068	2.167	6.821	4.654	1.415	5.201	3.035	1.620	3.290
181.7	347.7	0.868	14.63	7.630	3.281	3.246	5.064	2.163	6.827	4.664	1.418	5.204	3.041	1.623	3.289
184.8	348.7	0.883	14.88	7.652	3.281	3.245	5.059	2.158	6.826	4.669	1.423	5.204	3.046	1.623	3.280
187.9	349.7	0.898	15.13	7.675	3.280	3.244	5.055	2.154	6.825	4.672	1.428	5.203	3.050	1.622	3.272
190.9	351.4	0.912	15.37	7.696	3.288	3.251	5.050	2.149	6.832	4.683	1.432	5.207	3.058	1.625	3.269
194.0	352.8	0.928	15.63	7.720	3.290	3.252	5.046	2.145	6.834	4.689	1.437	5.207	3.063	1.626	3.264
197.1	354.6	0.942	15.87	7.742	3.298	3.259	5.041	2.140	6.840	4.700	1.441	5.211	3.071	1.630	3.262
200.2	355.6	0.957	16.13	7.766	3.297	3.258	5.036	2.135	6.838	4.703	1.445	5.209	3.074	1.629	3.255
203.3	358.4	0.972	16.38	7.789	3.313	3.274	5.033	2.132	6.855	4.723	1.449	5.218	3.086	1.637	3.259
206.4	360.1	0.986	16.62	7.812	3.319	3.279	5.028	2.127	6.860	4.733	1.454	5.220	3.093	1.640	3.256
209.2	360.7	1.000	16.86	7.834	3.315	3.274	5.021	2.120	6.855	4.735	1.461	5.218	3.098	1.637	3.241

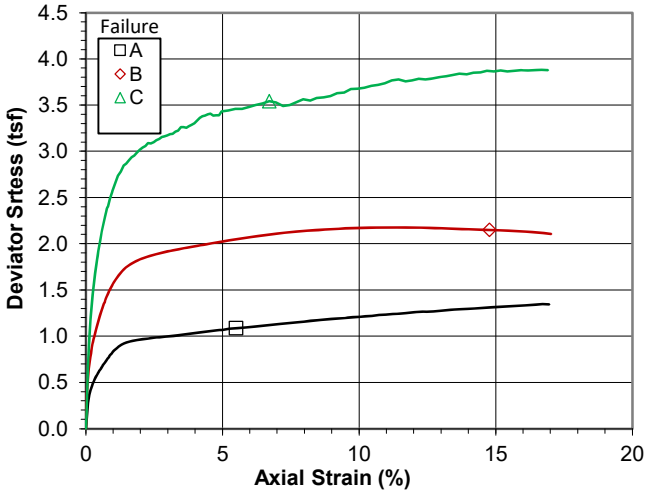
Consolidated Undrained Triaxial Compression

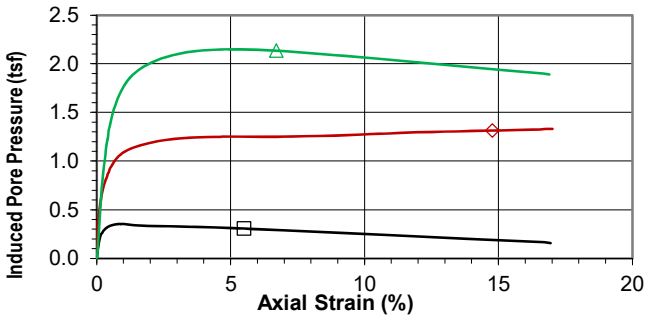
ASTM D 4767

Project Name Plant Hammond Phase 2

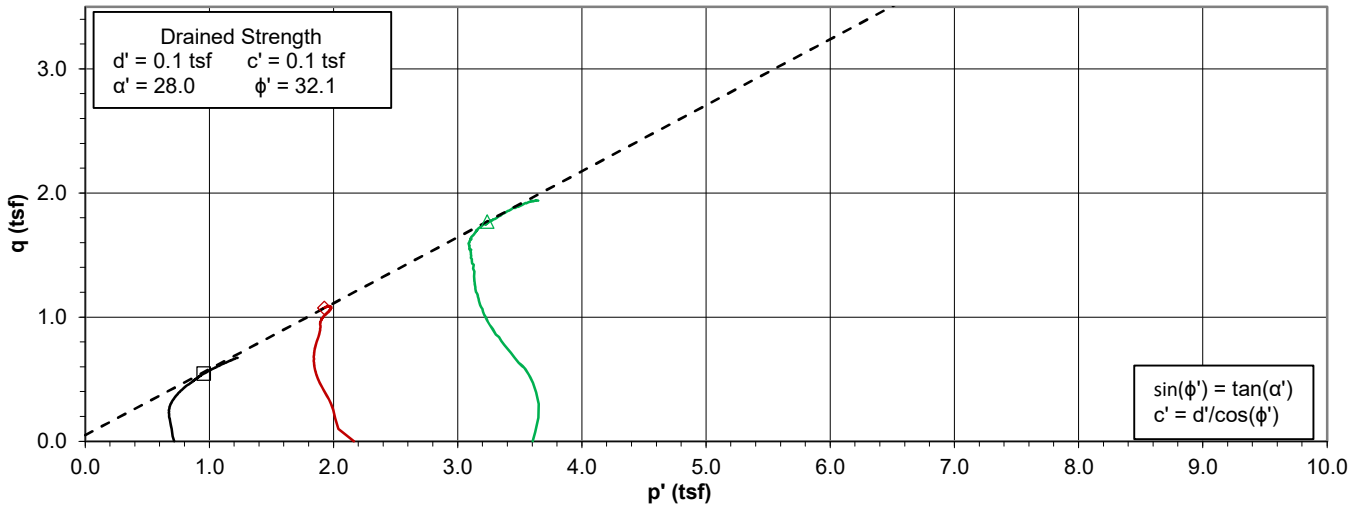
Project 175518236
Set ID 215

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	215	HRL-7&HRL-8&HRL-9&HRL-14&HRL-16&HRL-17	Sandy Lean Clay (CL), brown	2.70			
B	215	HRL-7&HRL-8&HRL-9&HRL-14&HRL-16&HRL-17	Sandy Lean Clay (CL), brown	2.70			
C	215	HRL-7&HRL-8&HRL-9&HRL-14&HRL-16&HRL-17	Sandy Lean Clay (CL), brown	2.70			





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	6.030	5.976	6.003		
Average Diameter (in)	2.885	2.893	2.894		
Moist Unit Weight (pcf)	124.7	124.8	125.3		
Moisture Content (%)	16.2	16.1	16.1		
Dry Unit Weight (pcf)	107.3	107.5	107.9		
Void Ratio	0.568	0.565	0.559		
Degree of Saturation (%)	76.9	76.8	77.8		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	129.7	130.7	132.5		
Moisture Content (%)	21.2	20.3	18.9		
Dry Unit Weight (pcf)	107.0	108.7	111.4		
Void Ratio	0.572	0.548	0.510		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	0.717	2.164	3.603		
	At Drained Failure				
Failure Criterion	Max. Eff. Prin. Stress Ratio				
Axial Strain (%)	5.494	14.768	6.711		
Deviator Stress (tsf)	1.089	2.149	3.542		
Induced Pore Press. (tsf)	0.307	1.314	2.134		
Minor Eff. Stress, σ_3' (tsf)	0.410	0.851	1.468		
Major Eff. Stress, σ_1' (tsf)	1.499	3.000	5.010		
Eff. Stress Ratio, σ_1'/σ_3'	3.653	3.527	3.413		
p' (tsf)	0.955	1.925	3.239		
q (tsf)	0.544	1.075	1.771		



Comments

Reviewed By KG

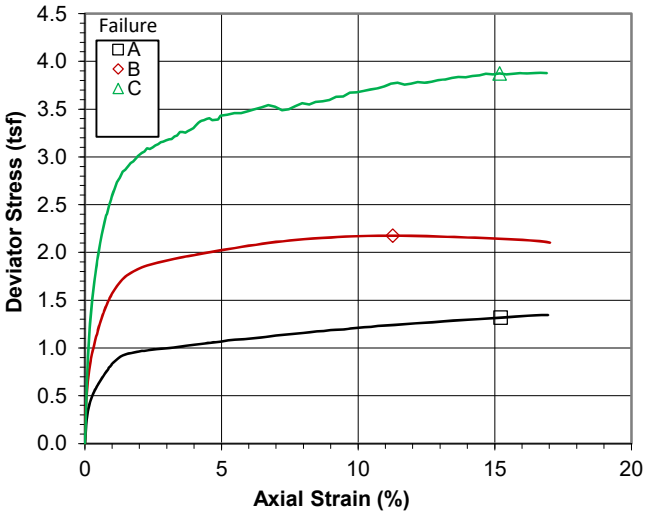
Consolidated Undrained Triaxial Compression

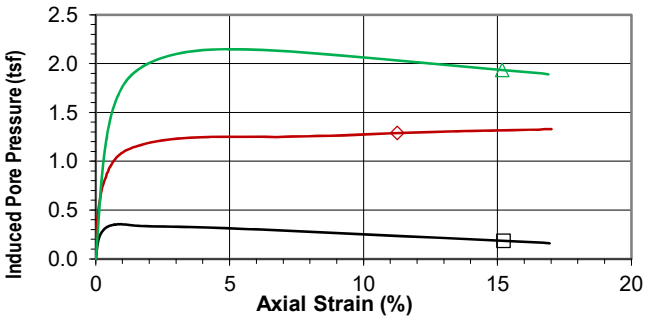
ASTM D 4767

Project Name Plant Hammond Phase 2

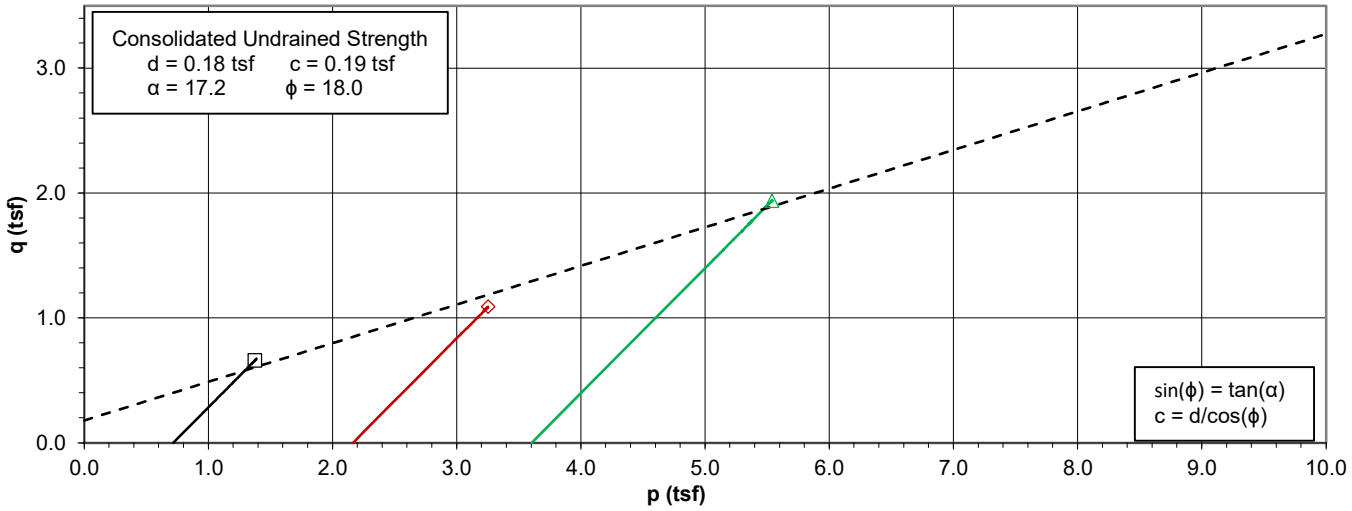
Project 175518236
Set ID 215

Test	Lab ID	Source	Description	Gs	LL	PL	PI
A	215	HRL-7&HRL-8&HRL-9&HRL-14&HRL-16&HRL-17	Sandy Lean Clay (CL), brown	2.70			
B	215	HRL-7&HRL-8&HRL-9&HRL-14&HRL-16&HRL-17	Sandy Lean Clay (CL), brown	2.70			
C	215	HRL-7&HRL-8&HRL-9&HRL-14&HRL-16&HRL-17	Sandy Lean Clay (CL), brown	2.70			





Specimen	A	B	C		
	Initial Specimen Conditions				
Average Height (in)	6.030	5.976	6.003		
Average Diameter (in)	2.885	2.893	2.894		
Moist Unit Weight (pcf)	124.7	124.8	125.3		
Moisture Content (%)	16.2	16.1	16.1		
Dry Unit Weight (pcf)	107.3	107.5	107.9		
Void Ratio	0.568	0.565	0.559		
Degree of Saturation (%)	76.9	76.8	77.8		
	Consolidated Specimen Conditions				
Moist Unit Weight (pcf)	129.7	130.7	132.5		
Moisture Content (%)	21.2	20.3	18.9		
Dry Unit Weight (pcf)	107.0	108.7	111.4		
Void Ratio	0.572	0.548	0.510		
Degree of Saturation (%)	100.0	100.0	100.0		
Eff. Con. Stress, σ_3' (tsf)	0.717	2.164	3.603		
	At Consolidated Undrained Failure				
Failure Criterion	Max. σ_D or 15% Strain				
Axial Strain (%)	15.221	11.264	15.178		
Deviator Stress (tsf)	1.318	2.177	3.875		
Min. Prin. Stress, σ_3 (tsf)	0.717	2.165	3.601		
Maj. Prin. Stress, σ_1 (tsf)	2.035	4.342	7.476		
p (tsf)	1.376	3.254	5.539		
q (tsf)	0.659	1.088	1.938		



Comments

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Plant Hammond Phase 2
Source: HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' & HRL-16, 0.0'-10.0' & HRL-17, 0.0'-10.0'
Description: Sandy Lean Clay (CL), brown
Specimen Type: Intact
Preparation: Wet Mounting

Project No.: 175518236
Lab ID: 215
Test ID: 215-A

Date Received: 09/26/2022
Date Tested: 10/26/2022

Specific Gravity: 2.70
ASTM D 854, Dry

Liquid Limit:
Plastic Limit:
Plasticity Index:

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	80
Nominal Consolidation Pressure (psi)	10

Saturation / Consolidation Results

Pore Pressure Parameter B	0.96
Measured Effective Consol. Stress (tsf)	0.717
Time to 50% Consolidation (min)	1.06
Actual Axial Strain Rate of Test (%/min)	0.100

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	129.7
Moisture Content (%)	21.2
Dry Unit Weight (pcf)	107.0
Void Ratio	0.572
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criterion: Max. Eff. Prin. Stress Ratio

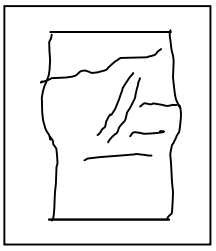
Axial Strain (%)	5.494
Deviator Stress (tsf)	1.089
Induced Pore Pressure (tsf)	0.307
Minor Effective Stress, σ_3' (tsf)	0.410
Major Effective Stress, σ_1' (tsf)	1.499
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.653
p' (tsf)	0.955
q (tsf)	0.544

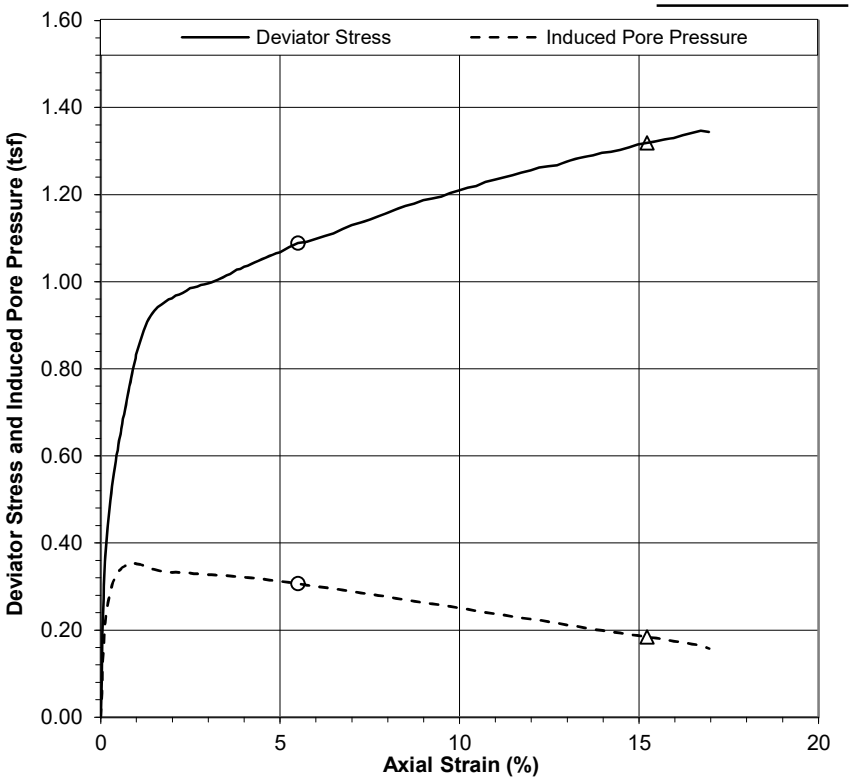
At Consolidated Undrained Failure

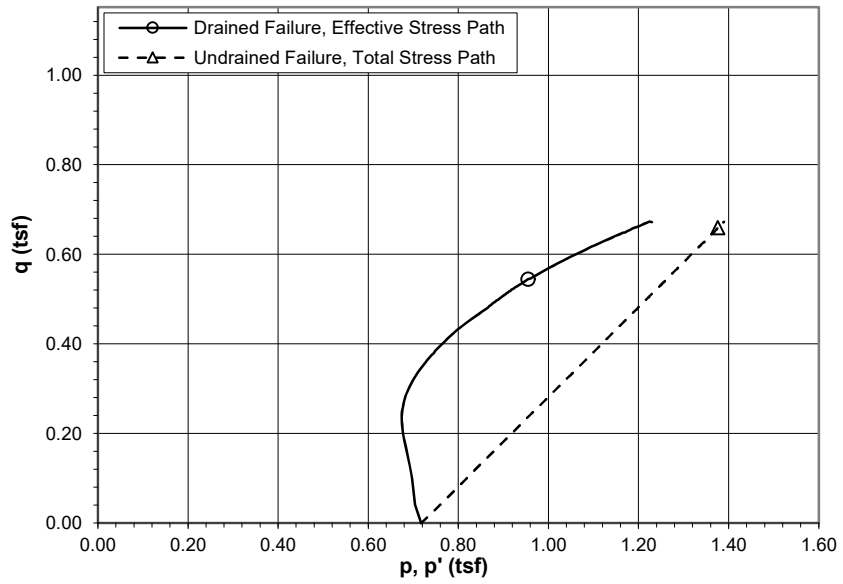
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.221
Deviator Stress (tsf)	1.318
Minor Principal Stress, σ_3 (tsf)	0.717
Major Principal Stress, σ_1 (tsf)	2.035
p (tsf)	1.376
q (tsf)	0.659

Failure Sketch







Comments

Reviewed KG

Template: tmp_cu_input.xlsm
Version: 20170216
Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: KG
Report Date: 11/02/2022

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Plant Hammond Phase 2 — Project No.: 175518236

Source: HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' & HRL-16, 0.0'-1 — Lab ID: 215

Description: Sandy Lean Clay (CL), brown — Test ID: 215-A

Initial Specimen Conditions		Consolidated Specimen Conditions			
Average Height (in)	6.030	Calculated Height (in)	6.027	Specific Gravity	2.70
Average Diameter (in)	2.885	Calculated Diameter (in)	2.890		ASTM D 854, Dry
Calculated Area (in^2)	6.539	Calculated Area (in^2)	6.559	Liquid Limit	
Moist Weight (lb)	2.845	Moist Weight (lb)	2.967	Plastic Limit	
Moist Unit Weight (pcf)	124.7	Moist Unit Weight (pcf)	129.7	Plasticity Index	
Moisture Content (%)	16.2	Moisture Content (%)	21.2		
Dry Weight (lb)	2.449	Dry Weight (lb)	2.449		
Dry Unit Weight (pcf)	107.3	Dry Unit Weight (pcf)	107.0	Confining Stress	
Void Ratio	0.568	Void Ratio	0.572	σ_3 (tsf)	0.717
Degree of Saturation (%)	76.9	Degree of Saturation (%)	100.0		
				Effective Consolidation Stress	
				σ_3' (tsf)	0.717

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 175518236			Source: HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' &								Lab ID: 215		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.559	0.000	0.000	5.763	0.000	0.717	0.717	0.717	0.717	0.717	0.000	1.000
0.3	7.5	0.002	0.03	6.561	0.082	0.082	5.818	0.055	0.800	0.745	0.663	0.759	0.704	0.041	1.124
0.5	17.9	0.003	0.05	6.562	0.197	0.196	5.881	0.119	0.914	0.796	0.599	0.816	0.697	0.098	1.328
0.8	24.8	0.005	0.08	6.564	0.272	0.272	5.926	0.163	0.989	0.826	0.555	0.853	0.691	0.136	1.490
1.0	29.5	0.006	0.10	6.565	0.323	0.323	5.957	0.194	1.041	0.847	0.524	0.879	0.685	0.162	1.617
1.3	32.9	0.007	0.12	6.567	0.361	0.361	5.980	0.217	1.079	0.862	0.501	0.898	0.681	0.180	1.721
1.5	35.7	0.009	0.15	6.568	0.392	0.391	5.999	0.236	1.109	0.873	0.482	0.914	0.678	0.196	1.812
1.8	38.2	0.011	0.18	6.570	0.418	0.418	6.013	0.251	1.136	0.885	0.467	0.927	0.676	0.209	1.894
2.0	40.3	0.012	0.21	6.572	0.442	0.441	6.026	0.263	1.159	0.896	0.455	0.939	0.675	0.221	1.970
2.3	42.2	0.014	0.23	6.574	0.462	0.461	6.037	0.274	1.179	0.905	0.444	0.948	0.674	0.231	2.040
2.5	44.0	0.015	0.25	6.575	0.482	0.481	6.047	0.284	1.199	0.915	0.434	0.958	0.674	0.240	2.109
2.8	45.6	0.016	0.27	6.577	0.499	0.498	6.055	0.292	1.216	0.924	0.426	0.967	0.675	0.249	2.170
3.0	47.1	0.018	0.30	6.578	0.515	0.514	6.061	0.298	1.232	0.934	0.420	0.975	0.677	0.257	2.226
3.3	48.6	0.019	0.32	6.580	0.531	0.531	6.068	0.305	1.248	0.943	0.413	0.983	0.678	0.265	2.285
3.5	50.0	0.021	0.35	6.582	0.547	0.546	6.074	0.311	1.264	0.952	0.407	0.991	0.680	0.273	2.342
3.8	51.3	0.022	0.37	6.583	0.561	0.561	6.079	0.316	1.278	0.963	0.402	0.998	0.682	0.280	2.394
4.1	52.6	0.024	0.40	6.585	0.575	0.574	6.083	0.321	1.292	0.971	0.397	1.005	0.684	0.287	2.445
4.3	53.9	0.026	0.43	6.587	0.589	0.588	6.088	0.325	1.306	0.981	0.393	1.012	0.687	0.294	2.497
4.6	55.1	0.027	0.45	6.588	0.603	0.602	6.091	0.328	1.319	0.991	0.390	1.019	0.690	0.301	2.544
4.8	56.2	0.029	0.47	6.590	0.614	0.613	6.094	0.331	1.331	1.000	0.387	1.025	0.693	0.306	2.585
5.0	57.4	0.030	0.50	6.591	0.627	0.626	6.097	0.334	1.344	1.009	0.383	1.031	0.696	0.313	2.632
5.3	58.6	0.032	0.53	6.593	0.640	0.638	6.100	0.338	1.356	1.019	0.380	1.037	0.699	0.319	2.680
5.6	59.7	0.034	0.56	6.595	0.652	0.650	6.103	0.340	1.368	1.028	0.378	1.043	0.703	0.325	2.721
5.8	60.8	0.035	0.58	6.597	0.663	0.662	6.105	0.342	1.380	1.038	0.376	1.049	0.707	0.331	2.760
6.1	61.9	0.036	0.60	6.598	0.675	0.674	6.107	0.344	1.392	1.047	0.374	1.055	0.711	0.337	2.802
6.3	62.9	0.038	0.62	6.600	0.687	0.685	6.108	0.345	1.403	1.057	0.372	1.060	0.715	0.343	2.840
6.6	63.9	0.039	0.65	6.602	0.697	0.695	6.110	0.347	1.413	1.066	0.371	1.065	0.718	0.348	2.874
6.8	65.0	0.041	0.68	6.604	0.708	0.707	6.111	0.348	1.425	1.076	0.370	1.071	0.723	0.353	2.912
7.1	65.9	0.043	0.71	6.605	0.719	0.717	6.112	0.349	1.435	1.086	0.369	1.077	0.727	0.359	2.946
7.3	66.9	0.044	0.73	6.607	0.729	0.728	6.113	0.350	1.446	1.095	0.367	1.082	0.731	0.364	2.980
7.6	68.0	0.046	0.76	6.609	0.740	0.739	6.114	0.351	1.457	1.106	0.367	1.087	0.736	0.369	3.013
7.8	69.0	0.047	0.78	6.610	0.751	0.749	6.115	0.352	1.467	1.115	0.366	1.093	0.740	0.375	3.049
8.1	69.9	0.048	0.80	6.612	0.761	0.759	6.115	0.352	1.477	1.125	0.366	1.098	0.746	0.380	3.075
8.3	70.8	0.050	0.83	6.614	0.771	0.769	6.116	0.353	1.487	1.134	0.364	1.102	0.749	0.385	3.110
8.6	71.8	0.051	0.85	6.615	0.781	0.779	6.116	0.353	1.497	1.144	0.364	1.107	0.754	0.390	3.137
8.9	72.7	0.053	0.88	6.617	0.791	0.789	6.116	0.354	1.507	1.153	0.364	1.112	0.759	0.394	3.166
9.1	73.5	0.054	0.89	6.618	0.800	0.798	6.116	0.354	1.516	1.162	0.364	1.117	0.763	0.399	3.189
9.3	74.4	0.056	0.92	6.620	0.809	0.807	6.116	0.353	1.525	1.171	0.365	1.121	0.768	0.403	3.213
9.6	75.2	0.057	0.95	6.621	0.818	0.815	6.116	0.353	1.533	1.180	0.365	1.126	0.772	0.408	3.237

Project: 175518236			Source: HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' &						Lab ID: 215				Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
9.8	76.0	0.059	0.97	6.623	0.826	0.824	6.116	0.353	1.542	1.189	0.365	1.130	0.777	0.412	3.260
10.1	76.8	0.060	0.99	6.624	0.835	0.832	6.115	0.353	1.550	1.197	0.365	1.134	0.781	0.416	3.281
11.1	79.7	0.066	1.10	6.632	0.865	0.863	6.114	0.351	1.581	1.230	0.367	1.149	0.798	0.431	3.350
12.1	82.1	0.072	1.20	6.638	0.890	0.888	6.111	0.348	1.605	1.257	0.370	1.162	0.814	0.444	3.399
13.1	84.1	0.078	1.30	6.645	0.911	0.908	6.107	0.345	1.626	1.281	0.373	1.172	0.827	0.454	3.434
14.1	85.5	0.084	1.40	6.652	0.926	0.922	6.104	0.342	1.640	1.299	0.376	1.179	0.838	0.461	3.450
15.1	86.6	0.090	1.49	6.658	0.937	0.933	6.102	0.339	1.652	1.313	0.379	1.185	0.846	0.467	3.460
16.1	87.5	0.096	1.60	6.665	0.945	0.942	6.100	0.337	1.659	1.322	0.381	1.188	0.851	0.471	3.474
17.1	88.2	0.103	1.70	6.672	0.952	0.948	6.099	0.336	1.665	1.329	0.382	1.192	0.856	0.474	3.482
18.1	88.9	0.108	1.80	6.679	0.958	0.954	6.098	0.335	1.672	1.336	0.383	1.195	0.860	0.477	3.491
19.1	89.5	0.114	1.90	6.686	0.964	0.959	6.096	0.334	1.677	1.343	0.384	1.197	0.864	0.480	3.498
20.1	89.8	0.120	1.98	6.691	0.967	0.962	6.096	0.333	1.680	1.347	0.385	1.199	0.866	0.481	3.501
21.1	90.6	0.126	2.09	6.699	0.973	0.968	6.096	0.333	1.686	1.353	0.385	1.202	0.869	0.484	3.518
22.1	90.8	0.132	2.19	6.705	0.975	0.970	6.095	0.332	1.688	1.355	0.385	1.203	0.870	0.485	3.518
23.1	91.3	0.138	2.29	6.713	0.979	0.974	6.095	0.332	1.691	1.360	0.386	1.204	0.873	0.487	3.525
24.1	92.0	0.144	2.40	6.720	0.985	0.980	6.095	0.332	1.697	1.365	0.386	1.207	0.875	0.490	3.540
25.1	92.6	0.150	2.49	6.727	0.991	0.985	6.094	0.331	1.702	1.371	0.386	1.210	0.879	0.493	3.551
26.1	92.8	0.156	2.59	6.733	0.993	0.986	6.093	0.330	1.704	1.374	0.388	1.211	0.881	0.493	3.544
27.1	93.1	0.162	2.69	6.740	0.995	0.989	6.092	0.330	1.706	1.376	0.388	1.212	0.882	0.494	3.550
28.1	93.7	0.168	2.80	6.747	0.999	0.993	6.092	0.329	1.710	1.381	0.388	1.214	0.885	0.496	3.557
29.1	93.9	0.175	2.90	6.754	1.001	0.994	6.091	0.329	1.712	1.383	0.389	1.214	0.886	0.497	3.557
30.1	94.2	0.181	3.00	6.762	1.003	0.996	6.090	0.328	1.714	1.386	0.390	1.216	0.888	0.498	3.554
31.1	94.6	0.187	3.10	6.768	1.006	0.999	6.090	0.327	1.716	1.389	0.390	1.217	0.889	0.499	3.560
32.1	95.0	0.193	3.20	6.776	1.010	1.002	6.089	0.327	1.719	1.393	0.390	1.218	0.892	0.501	3.567
33.1	95.5	0.199	3.30	6.782	1.014	1.006	6.089	0.326	1.723	1.397	0.391	1.220	0.894	0.503	3.573
34.1	96.0	0.205	3.40	6.789	1.018	1.010	6.089	0.326	1.727	1.401	0.392	1.222	0.896	0.505	3.577
35.1	96.6	0.211	3.51	6.797	1.023	1.015	6.088	0.325	1.732	1.407	0.392	1.225	0.899	0.507	3.589
36.1	96.9	0.217	3.60	6.804	1.026	1.017	6.088	0.325	1.735	1.410	0.393	1.226	0.901	0.509	3.590
37.1	97.5	0.222	3.69	6.810	1.031	1.022	6.086	0.324	1.739	1.416	0.394	1.228	0.905	0.511	3.594
38.1	98.2	0.229	3.79	6.817	1.037	1.028	6.086	0.323	1.745	1.422	0.394	1.231	0.908	0.514	3.608
39.1	98.5	0.235	3.89	6.824	1.039	1.030	6.085	0.322	1.747	1.425	0.395	1.232	0.910	0.515	3.606
40.1	99.1	0.241	4.00	6.832	1.044	1.034	6.085	0.322	1.752	1.430	0.396	1.235	0.913	0.517	3.612
41.2	99.4	0.247	4.10	6.839	1.047	1.037	6.083	0.321	1.755	1.434	0.397	1.236	0.916	0.518	3.610
42.2	100.0	0.253	4.20	6.847	1.051	1.041	6.083	0.320	1.759	1.439	0.397	1.238	0.918	0.521	3.621
43.1	100.4	0.259	4.30	6.853	1.055	1.044	6.082	0.319	1.762	1.443	0.399	1.240	0.921	0.522	3.621
44.2	100.8	0.265	4.39	6.860	1.058	1.047	6.081	0.318	1.765	1.447	0.400	1.242	0.924	0.524	3.620
45.2	101.4	0.271	4.50	6.868	1.063	1.052	6.080	0.318	1.769	1.452	0.400	1.243	0.926	0.526	3.632
46.1	101.8	0.277	4.60	6.875	1.066	1.055	6.080	0.317	1.773	1.456	0.401	1.245	0.928	0.528	3.632
47.1	102.3	0.283	4.70	6.882	1.070	1.059	6.078	0.315	1.777	1.462	0.403	1.247	0.932	0.530	3.631
48.2	102.7	0.289	4.79	6.889	1.073	1.062	6.077	0.314	1.779	1.465	0.403	1.248	0.934	0.531	3.634
49.2	103.2	0.295	4.90	6.896	1.077	1.065	6.076	0.314	1.783	1.469	0.404	1.250	0.936	0.533	3.638
50.1	103.5	0.301	5.00	6.904	1.080	1.068	6.075	0.312	1.785	1.473	0.405	1.251	0.939	0.534	3.635
52.6	105.0	0.317	5.25	6.922	1.092	1.079	6.072	0.310	1.797	1.487	0.408	1.257	0.948	0.540	3.645
55.2	106.2	0.331	5.49	6.940	1.102	1.089	6.070	0.307	1.806	1.499	0.410	1.262	0.955	0.544	3.653
57.7	106.9	0.347	5.75	6.959	1.106	1.092	6.066	0.303	1.809	1.506	0.414	1.263	0.960	0.546	3.635
60.2	107.8	0.361	6.00	6.977	1.113	1.098	6.063	0.301	1.816	1.515	0.417	1.267	0.966	0.549	3.634
62.7	108.8	0.377	6.25	6.996	1.120	1.105	6.061	0.298	1.823	1.525	0.420	1.270	0.972	0.553	3.634
65.2	109.7	0.391	6.49	7.014	1.126	1.111	6.058	0.295	1.828	1.532	0.422	1.272	0.977	0.555	3.635
67.7	111.1	0.406	6.74	7.033	1.137	1.121	6.055	0.292	1.839	1.546	0.425	1.278	0.986	0.561	3.638
70.2	112.3	0.421	6.99	7.052	1.147	1.130	6.052	0.289	1.847	1.558	0.428	1.282	0.993	0.565	3.641
72.7	113.2	0.437	7.25	7.071	1.153	1.136	6.049	0.286	1.853	1.567	0.432	1.285	1.000	0.568	3.631
75.2	114.3	0.452	7.50	7.090	1.161	1.143	6.046	0.283	1.860	1.577	0.434	1.289	1.005	0.571	3.633
77.7	115.3	0.466	7.73	7.108	1.168	1.150	6.042	0.280	1.867	1.588	0.438	1.293	1.013	0.575	3.626
80.2	116.5	0.481	7.99	7.128	1.177	1.158	6.040	0.277	1.875	1.598	0.440	1.296	1.019	0.579	3.633
82.7	117.7	0.496	8.23	7.147	1.185	1.166	6.036	0.273	1.883	1.610	0.444	1.300	1.027	0.583	3.626
85.2	118.9	0.512	8.50	7.168	1.194	1.174	6.033	0.270	1.891	1.621	0.447	1.304	1.034	0.587	3.626
87.7	119.8	0.527	8.74	7.187	1.200	1.179	6.029	0.267	1.896	1.630	0.451	1.307	1.040	0.590	3.616
90.2	121.0	0.542	8.99	7.207	1.209	1.187	6.026	0.263	1.904	1.641	0.454	1.311	1.048	0.594	3.614
92.7	121.7	0.556	9.23	7.226	1.213	1.191	6.024	0.261	1.908	1.647	0.456	1.312	1.051	0.595	3.611
95.2	122.6	0.572	9.49	7.247	1.218	1.196	6.020	0.258	1.913	1.655	0.460	1.315	1.057	0.598	3.602
97.7	123.8	0.586	9.73	7.266	1.227	1.203	6.017	0.255	1.920	1.666	0.462	1.319	1.064	0.602	3.603
100.2	124.8	0.601	9.98	7.286	1.233	1.210	6.014	0.251	1.927	1.676	0.466	1.323	1.071	0.605	3.594
102.7	125.9	0.617	10.23	7.306	1.241	1.216	6.011	0.248	1.934	1.686	0.469	1.325	1.078	0.608	3.590
105.2	126.7	0.631	10.47	7.325	1.245	1.220	6.007	0.244	1.937	1.693	0.473	1.327	1.083	0.610	3.578
107.7	128.1	0.646	10.73	7.347	1.255	1.229	6.004	0.241	1.946	1.705	0.476	1.332	1.091	0.615	3.584
110.2	129.0	0.662	10.98	7.368	1.260	1.234	6.001	0.238	1.951	1.713	0.479	1.334	1.096	0.617	3.576
112.7	129.9	0.677	11.23	7.388	1.266	1.239	5.998	0.235	1.956	1.721	0.482	1.337	1.102	0.620	3.571
115.2	130.9	0.692	11.48	7.409	1.272	1.244	5.994	0.231	1.961	1.730	0.486	1.339	1.108	0.622	3.562
117.7	131.9	0.707	11.72	7.430	1.278	1.250	5.991	0.228	1.967	1.739	0.489	1.342	1.114	0.625	3.558

Project: 175518236			Source: HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' &						Lab ID: 215				Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
120.2	132.9	0.722	11.98	7.451	1.284	1.255	5.988	0.225	1.973	1.747	0.492	1.345	1.120	0.628	3.552
122.7	134.0	0.737	12.22	7.472	1.292	1.262	5.986	0.223	1.979	1.756	0.494	1.348	1.125	0.631	3.556
125.2	134.8	0.752	12.48	7.494	1.295	1.265	5.983	0.220	1.983	1.763	0.497	1.350	1.130	0.633	3.544
127.7	135.5	0.767	12.72	7.515	1.298	1.267	5.979	0.216	1.984	1.768	0.501	1.351	1.134	0.634	3.532
130.2	136.7	0.782	12.98	7.537	1.306	1.275	5.975	0.213	1.992	1.780	0.504	1.355	1.142	0.638	3.528
132.7	137.9	0.797	13.23	7.558	1.313	1.282	5.972	0.210	1.999	1.789	0.507	1.358	1.148	0.641	3.526
135.2	138.9	0.812	13.48	7.581	1.319	1.287	5.968	0.206	2.004	1.798	0.511	1.360	1.155	0.643	3.517
137.7	139.7	0.827	13.72	7.602	1.323	1.290	5.965	0.202	2.007	1.805	0.515	1.362	1.160	0.645	3.507
140.2	140.8	0.842	13.97	7.624	1.329	1.296	5.962	0.199	2.013	1.813	0.517	1.365	1.165	0.648	3.505
142.7	141.5	0.857	14.22	7.646	1.332	1.298	5.959	0.196	2.016	1.819	0.521	1.366	1.170	0.649	3.492
145.2	142.4	0.873	14.48	7.669	1.337	1.303	5.956	0.194	2.020	1.826	0.524	1.368	1.175	0.651	3.488
147.7	143.6	0.887	14.72	7.691	1.344	1.309	5.953	0.190	2.026	1.836	0.527	1.372	1.181	0.654	3.483
150.2	144.7	0.902	14.97	7.713	1.351	1.315	5.951	0.188	2.031	1.843	0.529	1.374	1.186	0.657	3.487
152.7	145.6	0.917	15.22	7.736	1.355	1.318	5.947	0.184	2.035	1.851	0.532	1.376	1.192	0.659	3.477
155.2	146.5	0.932	15.47	7.759	1.359	1.322	5.945	0.182	2.039	1.857	0.535	1.378	1.196	0.661	3.472
157.7	147.5	0.947	15.72	7.782	1.364	1.327	5.941	0.178	2.044	1.866	0.539	1.380	1.202	0.663	3.462
160.2	148.3	0.962	15.97	7.805	1.368	1.330	5.938	0.175	2.047	1.872	0.542	1.382	1.207	0.665	3.455
162.7	149.6	0.978	16.22	7.829	1.375	1.337	5.935	0.172	2.053	1.880	0.544	1.385	1.212	0.668	3.458
165.2	150.6	0.993	16.47	7.852	1.381	1.342	5.931	0.168	2.058	1.891	0.549	1.388	1.220	0.671	3.445
167.7	151.7	1.008	16.72	7.875	1.387	1.347	5.928	0.165	2.064	1.899	0.551	1.390	1.225	0.674	3.444
170.1	151.8	1.022	16.95	7.898	1.384	1.343	5.921	0.158	2.060	1.902	0.559	1.388	1.230	0.672	3.405

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Plant Hammond Phase 2
Source: HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' & HRL-16, 0.0'-10.0' & HRL-17, 0.0'-10.0'
Description: Sandy Lean Clay (CL), brown
Specimen Type: Intact
Preparation: Wet Mounting

Project No.: 175518236
Lab ID: 215
Test ID: 215-B

Date Received: 09/26/2022
Date Tested: 10/25/2022

Specific Gravity: 2.70
ASTM D 854, Dry

Liquid Limit:
Plastic Limit:
Plasticity Index:

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	60
Nominal Consolidation Pressure (psi)	30

Saturation / Consolidation Results

Pore Pressure Parameter B	0.95
Measured Effective Consol. Stress (tsf)	2.165
Time to 50% Consolidation (min)	1.70
Actual Axial Strain Rate of Test (%/min)	0.100

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	130.7
Moisture Content (%)	20.3
Dry Unit Weight (pcf)	108.7
Void Ratio	0.548
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

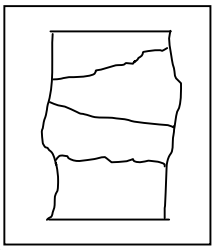
Axial Strain (%)	14.768
Deviator Stress (tsf)	2.149
Induced Pore Pressure (tsf)	1.314
Minor Effective Stress, σ_3' (tsf)	0.851
Major Effective Stress, σ_1' (tsf)	3.000
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.527
p' (tsf)	1.925
q (tsf)	1.075

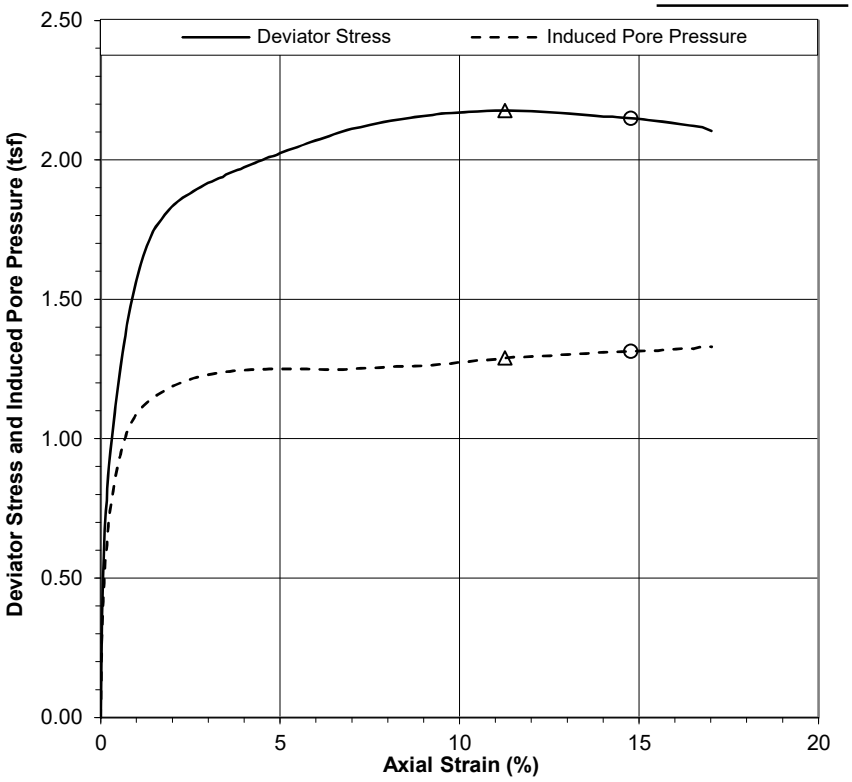
At Consolidated Undrained Failure

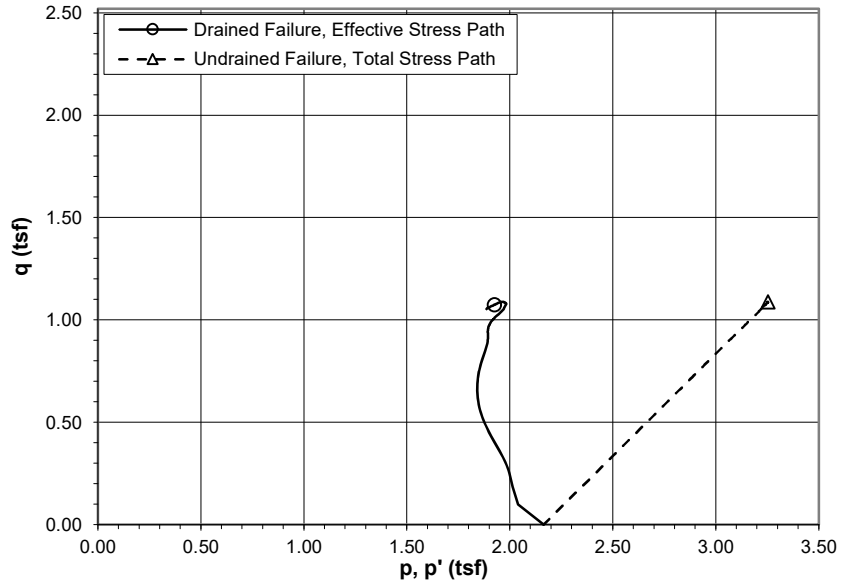
Failure Criterion: Peak Deviator Stress

Axial Strain (%)	11.264
Deviator Stress (tsf)	2.177
Minor Principal Stress, σ_3 (tsf)	2.165
Major Principal Stress, σ_1 (tsf)	4.342
p (tsf)	3.254
q (tsf)	1.088

Failure Sketch







Comments

Reviewed KG

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Plant Hammond Phase 2 — Project No.: 175518236

Source: HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' & HRL-16, 0.0'-1 — Lab ID: 215

Description: Sandy Lean Clay (CL), brown — Test ID: 215-B

Initial Specimen Conditions		Consolidated Specimen Conditions			
Height (in)	5.976	Height (in)	5.886	Specific Gravity	2.70
Diameter (in)	2.893	Calculated Diameter (in)	2.899		ASTM D 854, Dry
Area (in^2)	6.575	Calculated Area (in^2)	6.602	Liquid Limit	
Moist Weight (lb)	2.837	Moist Weight (lb)	2.940	Plastic Limit	
Moist Unit Weight (pcf)	124.8	Moist Unit Weight (pcf)	130.7	Plasticity Index	
Moisture Content (%)	16.1	Moisture Content (%)	20.3		
Dry Weight (lb)	2.444	Dry Weight (lb)	2.444		
Dry Unit Weight (pcf)	107.5	Dry Unit Weight (pcf)	108.7	Confining Stress	
Void Ratio	0.565	Void Ratio	0.548	σ_3 (tsf)	2.164
Degree of Saturation (%)	76.8	Degree of Saturation (%)	100.0		
				Effective Consolidation Stress	
				σ_3' (tsf)	2.164

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 175518236			Source: HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' &								Lab ID: 215		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.602	0.000	0.000	4.322	0.000	2.164	2.164	2.164	2.164	2.164	0.000	1.000
0.2	18.1	0.002	0.03	6.604	0.198	0.198	4.543	0.221	2.360	2.139	1.941	2.261	2.040	0.099	1.102
0.5	33.9	0.003	0.04	6.605	0.369	0.369	4.655	0.334	2.533	2.199	1.830	2.348	2.015	0.184	1.202
0.7	46.0	0.004	0.07	6.606	0.502	0.501	4.738	0.416	2.665	2.249	1.748	2.415	1.998	0.251	1.287
1.0	55.0	0.006	0.10	6.608	0.599	0.599	4.804	0.482	2.763	2.281	1.682	2.463	1.981	0.299	1.356
1.2	61.7	0.007	0.11	6.609	0.673	0.672	4.858	0.536	2.836	2.300	1.628	2.500	1.964	0.336	1.413
1.5	66.9	0.008	0.14	6.611	0.729	0.729	4.902	0.581	2.893	2.312	1.583	2.528	1.948	0.364	1.460
1.8	71.4	0.010	0.17	6.613	0.778	0.777	4.941	0.619	2.941	2.322	1.545	2.553	1.933	0.389	1.503
2.0	75.4	0.011	0.19	6.614	0.821	0.821	4.976	0.654	2.985	2.331	1.510	2.575	1.921	0.410	1.543
2.3	79.4	0.012	0.21	6.616	0.864	0.863	5.007	0.686	3.027	2.341	1.478	2.595	1.910	0.432	1.584
2.5	82.8	0.014	0.23	6.617	0.901	0.900	5.037	0.715	3.064	2.349	1.449	2.614	1.899	0.450	1.621
2.8	86.1	0.015	0.26	6.619	0.937	0.936	5.063	0.741	3.101	2.359	1.423	2.632	1.891	0.468	1.658
3.0	89.3	0.017	0.29	6.621	0.972	0.971	5.088	0.767	3.135	2.368	1.398	2.650	1.883	0.485	1.695
3.2	92.4	0.019	0.32	6.623	1.005	1.004	5.112	0.790	3.168	2.378	1.374	2.666	1.876	0.502	1.731
3.5	95.2	0.020	0.34	6.624	1.035	1.034	5.133	0.811	3.198	2.387	1.353	2.681	1.870	0.517	1.765
3.7	98.0	0.022	0.37	6.626	1.065	1.064	5.153	0.832	3.228	2.396	1.333	2.696	1.864	0.532	1.798
4.0	100.6	0.023	0.39	6.628	1.093	1.092	5.172	0.850	3.257	2.406	1.314	2.711	1.860	0.546	1.831
4.2	103.2	0.024	0.42	6.629	1.121	1.120	5.190	0.868	3.285	2.416	1.296	2.724	1.856	0.560	1.864
4.5	105.6	0.026	0.44	6.631	1.146	1.145	5.206	0.885	3.310	2.425	1.280	2.737	1.852	0.573	1.895
4.7	108.0	0.028	0.47	6.633	1.172	1.171	5.222	0.900	3.336	2.435	1.264	2.750	1.850	0.586	1.926
5.0	110.3	0.029	0.49	6.634	1.197	1.196	5.237	0.916	3.361	2.445	1.249	2.763	1.847	0.598	1.958
5.3	112.5	0.030	0.51	6.636	1.221	1.220	5.251	0.929	3.384	2.455	1.235	2.774	1.845	0.610	1.988
5.5	114.8	0.032	0.55	6.638	1.245	1.243	5.264	0.942	3.408	2.466	1.222	2.786	1.844	0.622	2.017
5.8	116.9	0.033	0.56	6.639	1.268	1.266	5.276	0.955	3.431	2.476	1.210	2.798	1.843	0.633	2.047
6.0	118.9	0.035	0.59	6.641	1.289	1.288	5.288	0.966	3.452	2.486	1.198	2.808	1.842	0.644	2.075
6.2	120.9	0.036	0.62	6.643	1.310	1.309	5.299	0.977	3.473	2.496	1.188	2.819	1.842	0.654	2.102
6.5	122.9	0.038	0.64	6.644	1.331	1.330	5.310	0.988	3.495	2.507	1.177	2.830	1.842	0.665	2.130
6.7	124.8	0.039	0.66	6.646	1.352	1.351	5.319	0.998	3.515	2.517	1.167	2.840	1.842	0.675	2.158
7.0	126.6	0.041	0.69	6.648	1.371	1.369	5.328	1.007	3.533	2.527	1.158	2.849	1.842	0.685	2.183
7.2	128.3	0.042	0.71	6.649	1.389	1.387	5.337	1.015	3.552	2.537	1.149	2.858	1.843	0.694	2.207
7.5	130.1	0.043	0.73	6.651	1.408	1.407	5.345	1.024	3.571	2.547	1.141	2.868	1.844	0.703	2.233
7.7	131.8	0.045	0.76	6.652	1.426	1.424	5.353	1.032	3.589	2.557	1.132	2.877	1.845	0.712	2.258
8.0	133.5	0.046	0.78	6.654	1.444	1.442	5.361	1.039	3.607	2.568	1.125	2.886	1.846	0.721	2.282
8.3	135.0	0.048	0.81	6.656	1.460	1.458	5.368	1.046	3.623	2.576	1.118	2.894	1.847	0.729	2.305
8.5	136.7	0.049	0.84	6.658	1.478	1.476	5.375	1.053	3.640	2.587	1.111	2.902	1.849	0.738	2.329
8.8	138.1	0.051	0.86	6.659	1.493	1.491	5.381	1.060	3.655	2.595	1.105	2.909	1.850	0.745	2.350
9.0	139.6	0.053	0.89	6.661	1.509	1.507	5.387	1.065	3.671	2.606	1.099	2.918	1.852	0.754	2.372
9.2	140.9	0.054	0.91	6.663	1.523	1.521	5.393	1.071	3.685	2.614	1.093	2.925	1.853	0.760	2.392
9.5	142.3	0.055	0.94	6.664	1.538	1.535	5.399	1.077	3.700	2.623	1.087	2.932	1.855	0.768	2.412

Project: 175518236			Source: HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' &						Lab ID: 215				Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
9.7	143.8	0.057	0.96	6.666	1.553	1.551	5.404	1.082	3.715	2.633	1.082	2.940	1.857	0.775	2.433
10.0	145.1	0.058	0.99	6.668	1.567	1.565	5.409	1.087	3.729	2.642	1.077	2.947	1.859	0.782	2.453
11.0	149.8	0.064	1.09	6.675	1.616	1.614	5.426	1.104	3.778	2.674	1.060	2.971	1.867	0.807	2.522
12.0	154.0	0.070	1.19	6.682	1.659	1.656	5.440	1.118	3.820	2.702	1.046	2.992	1.874	0.828	2.584
13.0	157.3	0.076	1.29	6.688	1.694	1.691	5.452	1.130	3.855	2.725	1.034	3.010	1.879	0.845	2.635
14.0	160.3	0.082	1.39	6.695	1.724	1.721	5.462	1.141	3.886	2.745	1.024	3.025	1.885	0.861	2.681
15.0	162.9	0.087	1.48	6.701	1.751	1.747	5.472	1.150	3.912	2.762	1.015	3.038	1.888	0.874	2.722
16.0	165.2	0.094	1.59	6.709	1.773	1.769	5.480	1.159	3.934	2.775	1.006	3.049	1.891	0.885	2.759
17.0	167.0	0.100	1.70	6.716	1.791	1.787	5.488	1.166	3.952	2.785	0.999	3.058	1.892	0.893	2.789
18.0	168.7	0.105	1.79	6.722	1.807	1.803	5.495	1.173	3.968	2.795	0.992	3.066	1.893	0.902	2.818
19.0	170.3	0.111	1.88	6.729	1.822	1.818	5.502	1.180	3.983	2.803	0.985	3.074	1.894	0.909	2.846
20.0	171.8	0.116	1.98	6.735	1.836	1.832	5.509	1.187	3.997	2.810	0.978	3.081	1.894	0.916	2.872
21.0	173.1	0.123	2.09	6.743	1.848	1.843	5.515	1.193	4.009	2.816	0.973	3.087	1.894	0.922	2.895
22.0	174.3	0.129	2.19	6.749	1.859	1.854	5.520	1.199	4.020	2.821	0.967	3.093	1.894	0.927	2.917
23.1	175.5	0.135	2.29	6.757	1.870	1.864	5.526	1.204	4.031	2.827	0.962	3.099	1.894	0.932	2.938
24.0	176.3	0.141	2.39	6.763	1.877	1.872	5.530	1.209	4.038	2.829	0.958	3.102	1.893	0.936	2.955
25.0	177.2	0.146	2.49	6.770	1.885	1.879	5.535	1.213	4.045	2.832	0.954	3.106	1.893	0.939	2.970
26.1	178.3	0.152	2.59	6.777	1.894	1.888	5.539	1.217	4.054	2.837	0.950	3.111	1.893	0.944	2.988
27.0	179.2	0.158	2.69	6.784	1.902	1.895	5.543	1.221	4.062	2.841	0.946	3.115	1.894	0.948	3.004
28.0	180.0	0.165	2.79	6.792	1.909	1.902	5.546	1.224	4.069	2.844	0.943	3.118	1.893	0.951	3.018
29.1	181.0	0.170	2.89	6.799	1.917	1.910	5.549	1.227	4.076	2.849	0.939	3.121	1.894	0.955	3.034
30.1	181.9	0.176	3.00	6.806	1.924	1.917	5.552	1.230	4.084	2.854	0.937	3.126	1.896	0.958	3.045
31.1	182.6	0.182	3.10	6.813	1.929	1.922	5.554	1.232	4.089	2.857	0.935	3.128	1.896	0.961	3.056
32.1	183.3	0.188	3.19	6.819	1.935	1.928	5.556	1.235	4.095	2.860	0.932	3.131	1.896	0.964	3.067
33.1	184.2	0.194	3.30	6.827	1.942	1.934	5.558	1.237	4.101	2.864	0.930	3.134	1.897	0.967	3.080
34.1	184.8	0.200	3.40	6.834	1.947	1.938	5.560	1.239	4.105	2.867	0.928	3.136	1.898	0.969	3.088
35.1	185.8	0.206	3.49	6.841	1.955	1.947	5.562	1.240	4.113	2.873	0.926	3.140	1.900	0.973	3.101
36.1	186.5	0.212	3.60	6.848	1.961	1.952	5.563	1.241	4.119	2.877	0.925	3.143	1.901	0.976	3.111
37.1	187.2	0.217	3.69	6.855	1.966	1.957	5.565	1.243	4.123	2.880	0.923	3.145	1.902	0.979	3.120
38.1	187.9	0.224	3.80	6.863	1.972	1.963	5.566	1.245	4.129	2.884	0.922	3.148	1.903	0.981	3.129
39.1	188.6	0.230	3.90	6.870	1.976	1.967	5.567	1.245	4.133	2.888	0.921	3.150	1.905	0.983	3.135
40.1	189.4	0.236	4.00	6.877	1.982	1.973	5.568	1.246	4.139	2.892	0.919	3.152	1.906	0.986	3.146
41.1	190.0	0.241	4.10	6.884	1.987	1.978	5.568	1.247	4.143	2.897	0.919	3.155	1.908	0.989	3.152
42.1	190.8	0.247	4.19	6.891	1.994	1.984	5.570	1.248	4.150	2.902	0.918	3.158	1.910	0.992	3.161
43.1	191.5	0.253	4.30	6.898	1.999	1.988	5.570	1.248	4.154	2.906	0.917	3.160	1.912	0.994	3.168
44.1	192.3	0.259	4.40	6.905	2.005	1.994	5.570	1.249	4.160	2.912	0.917	3.163	1.915	0.997	3.174
45.1	192.9	0.265	4.50	6.913	2.010	1.999	5.571	1.249	4.165	2.916	0.917	3.166	1.916	0.999	3.180
46.1	193.7	0.271	4.60	6.920	2.015	2.004	5.571	1.250	4.170	2.921	0.917	3.168	1.919	1.002	3.186
47.1	194.5	0.276	4.69	6.927	2.022	2.010	5.572	1.250	4.177	2.927	0.917	3.172	1.922	1.005	3.193
48.1	194.9	0.282	4.80	6.934	2.024	2.013	5.572	1.250	4.179	2.929	0.916	3.173	1.922	1.006	3.197
49.1	195.6	0.288	4.90	6.942	2.029	2.017	5.572	1.251	4.184	2.934	0.916	3.176	1.925	1.009	3.202
50.1	196.4	0.294	5.00	6.949	2.035	2.023	5.573	1.251	4.190	2.939	0.916	3.178	1.927	1.012	3.210
52.6	198.1	0.308	5.24	6.967	2.047	2.035	5.573	1.251	4.202	2.951	0.916	3.185	1.934	1.017	3.221
55.1	199.7	0.323	5.49	6.985	2.059	2.045	5.572	1.251	4.213	2.962	0.917	3.190	1.939	1.023	3.231
57.6	201.5	0.338	5.75	7.004	2.072	2.058	5.572	1.250	4.226	2.975	0.917	3.197	1.946	1.029	3.243
60.1	203.3	0.353	5.99	7.023	2.085	2.070	5.571	1.249	4.238	2.988	0.918	3.203	1.953	1.035	3.256
62.6	204.9	0.368	6.25	7.042	2.094	2.080	5.570	1.249	4.247	2.998	0.919	3.207	1.959	1.040	3.263
65.1	206.6	0.382	6.49	7.060	2.107	2.091	5.570	1.249	4.258	3.010	0.918	3.212	1.964	1.046	3.278
67.6	208.2	0.398	6.75	7.080	2.118	2.101	5.570	1.248	4.268	3.019	0.918	3.217	1.969	1.051	3.289
70.1	209.8	0.412	7.00	7.099	2.128	2.111	5.572	1.250	4.277	3.027	0.916	3.222	1.972	1.056	3.305
72.6	210.9	0.427	7.25	7.118	2.134	2.116	5.575	1.253	4.282	3.029	0.913	3.224	1.971	1.058	3.318
75.1	212.5	0.442	7.50	7.137	2.143	2.125	5.575	1.254	4.291	3.037	0.912	3.228	1.975	1.063	3.331
77.6	213.7	0.456	7.75	7.157	2.150	2.131	5.577	1.255	4.297	3.043	0.911	3.232	1.977	1.066	3.339
80.2	215.1	0.472	8.01	7.177	2.158	2.139	5.579	1.258	4.305	3.047	0.909	3.236	1.978	1.069	3.353
82.7	216.2	0.486	8.25	7.195	2.163	2.144	5.581	1.259	4.311	3.051	0.908	3.239	1.980	1.072	3.362
85.2	217.3	0.501	8.51	7.216	2.168	2.148	5.581	1.260	4.315	3.055	0.907	3.241	1.981	1.074	3.368
87.7	218.5	0.515	8.75	7.235	2.175	2.154	5.583	1.261	4.321	3.060	0.906	3.244	1.983	1.077	3.378
90.2	219.5	0.530	9.01	7.256	2.178	2.157	5.584	1.262	4.323	3.061	0.904	3.245	1.982	1.079	3.386
92.7	220.6	0.545	9.25	7.275	2.183	2.161	5.586	1.265	4.327	3.062	0.901	3.246	1.982	1.080	3.398
95.2	221.8	0.559	9.50	7.295	2.189	2.167	5.589	1.268	4.332	3.065	0.898	3.249	1.981	1.083	3.412
97.7	222.6	0.575	9.76	7.316	2.191	2.168	5.592	1.270	4.333	3.063	0.895	3.249	1.979	1.084	3.421
100.2	223.5	0.589	10.01	7.336	2.193	2.170	5.596	1.274	4.335	3.061	0.891	3.250	1.976	1.085	3.435
102.7	224.4	0.604	10.26	7.356	2.196	2.172	5.598	1.277	4.337	3.060	0.889	3.251	1.975	1.086	3.444
105.2	225.3	0.618	10.50	7.377	2.199	2.174	5.603	1.281	4.339	3.058	0.884	3.252	1.971	1.087	3.458
107.7	226.1	0.633	10.76	7.398	2.201	2.175	5.604	1.282	4.341	3.059	0.883	3.253	1.971	1.088	3.463
110.2	226.9	0.648	11.01	7.418	2.203	2.176	5.606	1.284	4.342	3.057	0.881	3.253	1.969	1.088	3.471
112.7	227.7	0.663	11.26	7.440	2.204	2.177	5.612	1.290	4.342	3.052	0.876	3.254	1.964	1.088	3.486
115.2	228.3	0.678	11.52	7.461	2.203	2.176	5.614	1.293	4.341	3.048	0.873	3.253	1.961	1.088	3.493
117.7	229.0	0.693	11.77	7.483	2.204	2.176	5.615	1.293	4.340	3.047	0.871	3.253	1.959	1.088	3.497

Project: 175518236			Source: HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' &						Lab ID: 215				Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
120.2	229.6	0.707	12.01	7.503	2.203	2.174	5.617	1.296	4.339	3.044	0.870	3.252	1.957	1.087	3.500
122.7	230.1	0.722	12.26	7.524	2.202	2.173	5.619	1.297	4.338	3.041	0.868	3.251	1.954	1.086	3.503
125.2	230.7	0.737	12.52	7.547	2.201	2.171	5.620	1.298	4.336	3.038	0.867	3.250	1.952	1.086	3.505
127.7	231.1	0.751	12.76	7.568	2.199	2.168	5.622	1.301	4.333	3.032	0.864	3.249	1.948	1.084	3.509
130.2	231.6	0.766	13.01	7.589	2.197	2.166	5.624	1.303	4.331	3.028	0.862	3.248	1.945	1.083	3.512
132.7	232.0	0.781	13.27	7.612	2.195	2.163	5.626	1.305	4.328	3.023	0.860	3.246	1.941	1.082	3.516
135.2	232.5	0.796	13.52	7.634	2.193	2.161	5.627	1.306	4.326	3.020	0.859	3.245	1.939	1.080	3.515
137.7	233.0	0.810	13.76	7.656	2.191	2.158	5.630	1.309	4.323	3.015	0.856	3.244	1.936	1.079	3.520
140.2	233.4	0.825	14.01	7.677	2.189	2.155	5.632	1.310	4.320	3.010	0.855	3.242	1.932	1.078	3.522
142.7	234.1	0.840	14.27	7.700	2.189	2.155	5.633	1.312	4.319	3.008	0.853	3.242	1.930	1.077	3.526
145.2	234.4	0.854	14.51	7.723	2.186	2.151	5.634	1.312	4.315	3.003	0.852	3.240	1.928	1.075	3.524
147.7	235.0	0.869	14.77	7.746	2.184	2.149	5.635	1.314	4.314	3.000	0.851	3.239	1.925	1.075	3.527
150.2	235.4	0.884	15.01	7.768	2.182	2.146	5.637	1.315	4.311	2.996	0.849	3.238	1.923	1.073	3.527
152.7	235.7	0.898	15.26	7.791	2.178	2.142	5.637	1.316	4.306	2.991	0.849	3.235	1.920	1.071	3.523
155.2	236.1	0.914	15.53	7.815	2.176	2.138	5.638	1.316	4.303	2.987	0.848	3.234	1.918	1.069	3.521
157.7	236.6	0.928	15.77	7.838	2.173	2.136	5.642	1.321	4.300	2.979	0.844	3.232	1.912	1.068	3.531
160.3	236.9	0.943	16.03	7.862	2.169	2.131	5.643	1.322	4.295	2.973	0.842	3.230	1.908	1.066	3.530
162.8	237.0	0.958	16.27	7.884	2.164	2.125	5.645	1.324	4.289	2.965	0.840	3.227	1.903	1.063	3.529
165.2	237.4	0.973	16.53	7.909	2.161	2.122	5.645	1.323	4.285	2.962	0.840	3.225	1.901	1.061	3.524
167.7	237.6	0.987	16.77	7.932	2.156	2.116	5.653	1.331	4.281	2.950	0.833	3.223	1.891	1.058	3.540
170.2	236.9	1.002	17.02	7.956	2.144	2.103	5.651	1.330	4.267	2.937	0.834	3.216	1.886	1.052	3.522

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name: Plant Hammond Phase 2
Source: HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' & HRL-16, 0.0'-10.0' & HRL-17, 0.0'-10.0'
Description: Sandy Lean Clay (CL), brown
Specimen Type: Intact
Preparation: Wet Mounting

Project No.: 175518236
Lab ID: 215
Test ID: 215-C

Date Received: 09/26/2022
Date Tested: 10/25/2022

Specific Gravity: 2.70
ASTM D 854, Dry

Liquid Limit:
Plastic Limit:
Plasticity Index:

Target Test Parameters

Nominal Chamber Pressure (psi)	90
Nominal Back Pressure (psi)	40
Nominal Consolidation Pressure (psi)	50

Saturation / Consolidation Results

Pore Pressure Parameter B	0.98
Measured Effective Consol. Stress (tsf)	3.603
Time to 50% Consolidation (min)	2.30
Actual Axial Strain Rate of Test (%/min)	0.099

Consolidated Specimen Conditions

Moist Unit Weight (pcf)	132.5
Moisture Content (%)	18.9
Dry Unit Weight (pcf)	111.4
Void Ratio	0.510
Degree of Saturation (%)	100.0

At Drained Failure

Failure Criteria: Max. Eff. Prin. Stress Ratio

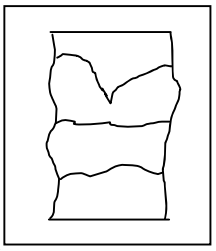
Axial Strain (%)	6.711
Deviator Stress (tsf)	3.542
Induced Pore Pressure (tsf)	2.134
Minor Effective Stress, σ_3' (tsf)	1.468
Major Effective Stress, σ_1' (tsf)	5.010
Eff. Principal Stress Ratio, σ_1'/σ_3'	3.413
p' (tsf)	3.239
q (tsf)	1.771

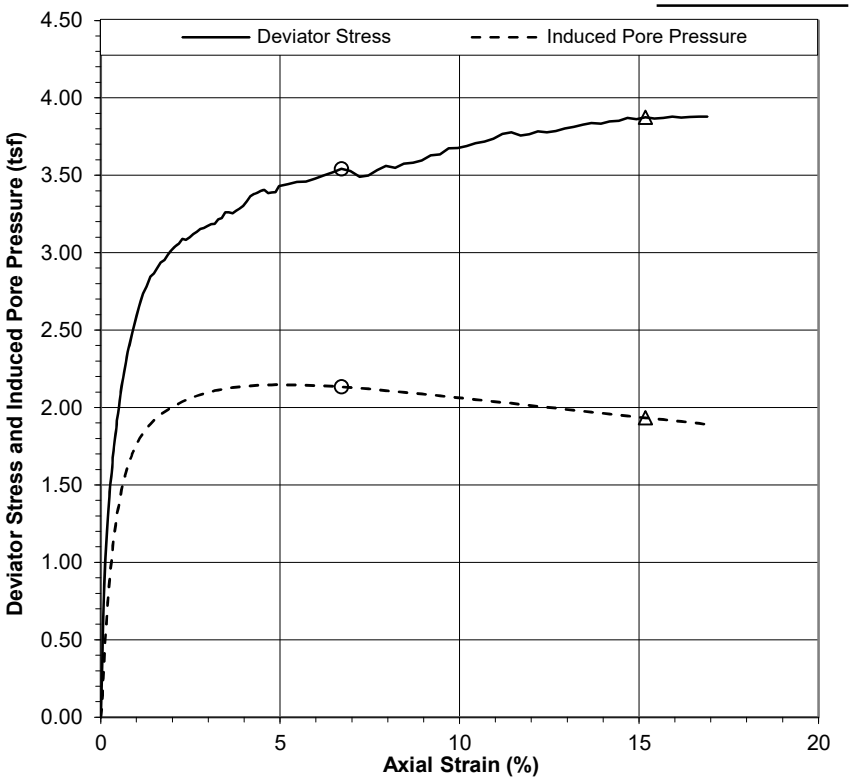
At Consolidated Undrained Failure

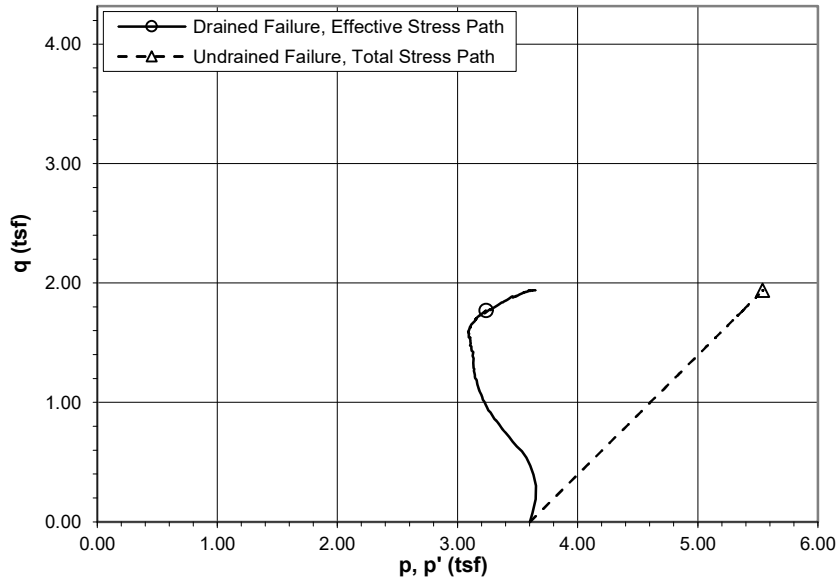
Failure Criterion: 15% Axial Strain

Axial Strain (%)	15.178
Deviator Stress (tsf)	3.875
Minor Principal Stress, σ_3 (tsf)	3.601
Major Principal Stress, σ_1 (tsf)	7.476
p (tsf)	5.539
q (tsf)	1.938

Failure Sketch







Comments

Reviewed KG

Template: tmp_cu_input.xlsm
Version: 20170216
Approved By: RJ

Stantec Consulting Services Inc.
Lexington, Kentucky

Reported By: KG
Report Date: 11/02/2022

Stantec

Consolidated Undrained Triaxial Compression

ASTM D 4767

Project Name Plant Hammond Phase 2 — Project No. 175518236

Source HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' & HRL-16, 0.0'-1 — Lab ID 215

Description Sandy Lean Clay (CL), brown — Test ID 215-C

Initial Specimen Conditions		Consolidated Specimen Conditions	
Height (in)	6.003	Height (in)	5.883
Diameter (in)	2.894	Calculated Diameter (in)	2.877
Area (in^2)	6.576	Calculated Area (in^2)	6.499
Moist Weight (lb)	2.863	Moist Weight (lb)	2.931
Moist Unit Weight (pcf)	125.3	Moist Unit Weight (pcf)	132.5
Moisture Content (%)	16.1	Moisture Content (%)	18.9
Dry Weight (lb)	2.466	Dry Weight (lb)	2.466
Dry Unit Weight (pcf)	107.9	Dry Unit Weight (pcf)	111.4
Void Ratio	0.559	Void Ratio	0.510
Degree of Saturation (%)	77.8	Degree of Saturation (%)	100.0

Specific Gravity 2.70
ASTM D 854, Dry

Liquid Limit
Plastic Limit
Plasticity Index

Confining Stress
σ_3 (tsf) 3.603

Effective Consolidation Stress
σ_3' (tsf) 3.603

Moisture contents obtained using whole specimen.
Specimen consolidated cross-sectional area determined using method B.
Membrane corrections have been applied,where Em = 200 lbf/in and t = 0.012 in.
All other tests performed in association with this specimen are reported separately.

Project: 175518236			Source: HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' &								Lab ID: 215		Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
0.0	0.0	0.000	0.00	6.499	0.000	0.000	2.879	0.000	3.603	3.603	3.603	3.603	3.603	0.000	1.000
0.3	13.1	0.001	0.02	6.501	0.145	0.145	2.930	0.050	3.748	3.697	3.553	3.675	3.625	0.072	1.041
0.5	34.2	0.003	0.05	6.502	0.379	0.379	3.021	0.142	3.982	3.840	3.461	3.792	3.650	0.189	1.110
0.8	54.3	0.004	0.07	6.504	0.601	0.601	3.132	0.252	4.204	3.952	3.351	3.904	3.652	0.301	1.179
1.0	71.2	0.006	0.10	6.506	0.788	0.788	3.244	0.364	4.391	4.027	3.239	3.997	3.633	0.394	1.243
1.3	85.1	0.007	0.12	6.507	0.942	0.941	3.348	0.468	4.545	4.076	3.135	4.074	3.606	0.471	1.300
1.5	97.3	0.008	0.14	6.509	1.076	1.076	3.447	0.567	4.679	4.112	3.035	4.141	3.574	0.538	1.355
1.8	107.1	0.010	0.17	6.511	1.184	1.184	3.537	0.658	4.787	4.129	2.945	4.195	3.537	0.592	1.402
2.0	114.1	0.011	0.19	6.512	1.261	1.261	3.621	0.741	4.864	4.123	2.862	4.234	3.492	0.630	1.441
2.3	121.5	0.013	0.22	6.514	1.343	1.343	3.696	0.816	4.946	4.130	2.787	4.275	3.458	0.671	1.482
2.5	128.8	0.015	0.25	6.515	1.424	1.423	3.765	0.885	5.026	4.141	2.718	4.315	3.430	0.712	1.524
2.8	135.2	0.016	0.26	6.517	1.494	1.493	3.828	0.948	5.096	4.148	2.655	4.350	3.401	0.746	1.562
3.1	140.8	0.018	0.30	6.519	1.555	1.554	3.885	1.006	5.158	4.152	2.598	4.381	3.375	0.777	1.598
3.3	146.5	0.019	0.32	6.520	1.617	1.617	3.939	1.059	5.220	4.161	2.544	4.412	3.352	0.808	1.635
3.6	151.9	0.020	0.34	6.521	1.677	1.676	3.989	1.109	5.279	4.170	2.494	4.441	3.332	0.838	1.672
3.8	156.0	0.021	0.36	6.523	1.722	1.721	4.036	1.156	5.324	4.168	2.446	4.463	3.307	0.861	1.704
4.0	161.2	0.023	0.39	6.525	1.779	1.778	4.081	1.201	5.381	4.180	2.402	4.492	3.291	0.889	1.740
4.3	166.0	0.025	0.42	6.527	1.831	1.830	4.122	1.242	5.433	4.191	2.361	4.518	3.276	0.915	1.775
4.5	169.5	0.026	0.44	6.528	1.869	1.868	4.159	1.280	5.472	4.192	2.323	4.537	3.257	0.934	1.804
4.8	173.8	0.026	0.45	6.529	1.916	1.915	4.195	1.315	5.519	4.204	2.288	4.561	3.246	0.958	1.837
5.0	178.0	0.028	0.48	6.531	1.962	1.961	4.228	1.349	5.564	4.216	2.255	4.584	3.235	0.981	1.870
5.3	182.0	0.030	0.51	6.533	2.006	2.004	4.260	1.381	5.608	4.227	2.222	4.605	3.225	1.002	1.902
5.6	185.5	0.031	0.53	6.534	2.044	2.042	4.291	1.412	5.645	4.234	2.191	4.624	3.212	1.021	1.932
5.8	189.4	0.033	0.56	6.536	2.087	2.085	4.320	1.440	5.689	4.248	2.163	4.646	3.205	1.043	1.964
6.1	193.5	0.034	0.58	6.537	2.131	2.129	4.349	1.469	5.733	4.263	2.134	4.668	3.199	1.065	1.998
6.3	196.3	0.036	0.61	6.539	2.162	2.160	4.374	1.494	5.764	4.270	2.109	4.684	3.189	1.080	2.024
6.6	199.3	0.037	0.63	6.541	2.194	2.192	4.397	1.518	5.796	4.278	2.086	4.699	3.182	1.096	2.051
6.8	202.6	0.038	0.65	6.542	2.230	2.228	4.420	1.541	5.832	4.291	2.063	4.718	3.177	1.114	2.080
7.1	205.9	0.040	0.68	6.544	2.265	2.263	4.442	1.563	5.866	4.303	2.040	4.734	3.171	1.132	2.110
7.3	208.9	0.042	0.71	6.546	2.298	2.296	4.463	1.584	5.899	4.315	2.019	4.751	3.167	1.148	2.137
7.6	211.6	0.043	0.73	6.547	2.327	2.325	4.483	1.603	5.929	4.325	2.000	4.766	3.163	1.163	2.163
7.8	214.7	0.044	0.75	6.549	2.361	2.359	4.502	1.622	5.963	4.340	1.981	4.783	3.161	1.180	2.191
8.1	217.2	0.046	0.78	6.550	2.387	2.386	4.520	1.641	5.989	4.348	1.962	4.796	3.155	1.193	2.216
8.3	218.8	0.048	0.81	6.552	2.404	2.403	4.537	1.657	6.006	4.349	1.946	4.804	3.147	1.201	2.235
8.6	221.3	0.049	0.83	6.554	2.431	2.429	4.552	1.673	6.033	4.360	1.931	4.818	3.145	1.214	2.258
8.8	224.0	0.051	0.86	6.556	2.460	2.458	4.568	1.688	6.061	4.373	1.915	4.832	3.144	1.229	2.284
9.1	226.4	0.052	0.88	6.557	2.486	2.484	4.583	1.703	6.087	4.384	1.900	4.845	3.142	1.242	2.307
9.3	228.6	0.053	0.91	6.559	2.509	2.507	4.596	1.717	6.110	4.394	1.886	4.857	3.140	1.254	2.329
9.6	230.5	0.055	0.94	6.561	2.530	2.527	4.610	1.731	6.131	4.400	1.873	4.867	3.136	1.264	2.350

Project: 175518236			Source: HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' &						Lab ID: 215				Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
9.8	233.3	0.056	0.96	6.562	2.560	2.558	4.623	1.743	6.161	4.417	1.860	4.882	3.138	1.279	2.375
10.1	234.8	0.058	0.98	6.564	2.575	2.573	4.635	1.755	6.175	4.420	1.847	4.889	3.134	1.286	2.393
11.1	242.9	0.064	1.08	6.570	2.662	2.659	4.680	1.800	6.262	4.461	1.802	4.932	3.132	1.330	2.475
12.1	250.1	0.069	1.18	6.577	2.737	2.735	4.716	1.837	6.338	4.501	1.766	4.971	3.134	1.367	2.548
13.1	254.5	0.075	1.28	6.584	2.784	2.781	4.748	1.869	6.384	4.516	1.735	4.994	3.125	1.390	2.603
14.1	260.8	0.081	1.38	6.591	2.849	2.846	4.775	1.895	6.449	4.554	1.708	5.026	3.131	1.423	2.666
15.1	262.9	0.087	1.48	6.597	2.869	2.865	4.798	1.919	6.469	4.550	1.685	5.036	3.117	1.433	2.701
16.1	266.6	0.093	1.58	6.604	2.907	2.903	4.819	1.939	6.506	4.567	1.664	5.055	3.115	1.452	2.745
17.1	270.0	0.099	1.68	6.610	2.941	2.937	4.835	1.956	6.540	4.584	1.647	5.071	3.115	1.468	2.783
18.1	271.7	0.105	1.78	6.617	2.957	2.952	4.853	1.974	6.555	4.582	1.629	5.079	3.105	1.476	2.812
19.1	275.2	0.111	1.88	6.624	2.992	2.987	4.868	1.988	6.591	4.603	1.616	5.098	3.109	1.494	2.848
20.1	278.1	0.116	1.98	6.630	3.020	3.016	4.883	2.003	6.618	4.615	1.599	5.110	3.107	1.508	2.885
21.1	280.8	0.122	2.08	6.637	3.046	3.041	4.894	2.015	6.643	4.628	1.587	5.122	3.108	1.520	2.916
22.1	282.6	0.128	2.18	6.644	3.062	3.057	4.907	2.028	6.660	4.632	1.575	5.131	3.103	1.529	2.941
23.1	285.8	0.134	2.28	6.651	3.094	3.089	4.919	2.039	6.692	4.652	1.564	5.147	3.108	1.544	2.976
24.1	285.6	0.140	2.38	6.658	3.089	3.083	4.929	2.050	6.686	4.637	1.553	5.145	3.095	1.542	2.985
25.1	287.4	0.146	2.48	6.665	3.105	3.099	4.938	2.059	6.701	4.642	1.544	5.152	3.093	1.549	3.007
26.1	289.7	0.152	2.58	6.672	3.127	3.120	4.947	2.067	6.723	4.655	1.535	5.163	3.095	1.560	3.033
27.1	291.3	0.158	2.68	6.678	3.141	3.134	4.956	2.076	6.737	4.661	1.526	5.170	3.093	1.567	3.054
28.1	293.5	0.163	2.78	6.685	3.161	3.154	4.963	2.083	6.756	4.672	1.518	5.179	3.095	1.577	3.077
29.1	294.3	0.169	2.88	6.692	3.167	3.160	4.969	2.090	6.762	4.672	1.512	5.182	3.092	1.580	3.089
30.1	295.8	0.175	2.98	6.699	3.180	3.172	4.976	2.097	6.775	4.678	1.506	5.189	3.092	1.586	3.107
31.1	297.2	0.181	3.08	6.706	3.191	3.184	4.982	2.103	6.787	4.684	1.500	5.195	3.092	1.592	3.123
32.1	297.8	0.187	3.18	6.713	3.195	3.187	4.988	2.109	6.790	4.681	1.494	5.196	3.088	1.593	3.133
33.1	300.7	0.193	3.28	6.720	3.222	3.214	4.992	2.113	6.817	4.704	1.490	5.210	3.097	1.607	3.157
34.1	301.8	0.198	3.37	6.726	3.231	3.223	4.997	2.118	6.825	4.708	1.485	5.214	3.096	1.611	3.171
35.1	305.6	0.205	3.48	6.733	3.268	3.260	5.001	2.122	6.862	4.740	1.481	5.232	3.110	1.630	3.202
36.1	306.0	0.210	3.58	6.740	3.269	3.260	5.005	2.126	6.863	4.737	1.477	5.233	3.107	1.630	3.207
37.1	305.9	0.216	3.68	6.747	3.264	3.255	5.009	2.129	6.858	4.729	1.474	5.230	3.101	1.628	3.209
38.1	307.7	0.222	3.78	6.755	3.280	3.271	5.012	2.133	6.874	4.742	1.470	5.239	3.106	1.636	3.225
39.1	309.3	0.228	3.87	6.761	3.294	3.285	5.014	2.135	6.888	4.753	1.468	5.245	3.110	1.642	3.238
40.1	311.2	0.234	3.97	6.768	3.311	3.301	5.017	2.137	6.904	4.767	1.466	5.254	3.116	1.651	3.253
41.1	314.3	0.240	4.07	6.775	3.340	3.330	5.018	2.139	6.933	4.794	1.464	5.268	3.129	1.665	3.275
42.1	317.7	0.246	4.17	6.782	3.373	3.363	5.021	2.141	6.966	4.825	1.462	5.285	3.143	1.681	3.300
43.1	319.4	0.251	4.27	6.789	3.388	3.377	5.023	2.143	6.980	4.837	1.460	5.292	3.149	1.689	3.314
44.1	320.6	0.257	4.37	6.796	3.396	3.386	5.024	2.144	6.989	4.844	1.459	5.296	3.152	1.693	3.321
45.1	322.1	0.263	4.47	6.803	3.409	3.398	5.025	2.145	7.001	4.855	1.457	5.302	3.156	1.699	3.333
46.1	323.1	0.269	4.56	6.810	3.416	3.405	5.026	2.147	7.008	4.861	1.456	5.305	3.158	1.703	3.339
47.1	321.5	0.275	4.67	6.818	3.396	3.385	5.026	2.146	6.987	4.841	1.456	5.295	3.149	1.692	3.324
48.1	322.2	0.280	4.77	6.825	3.399	3.388	5.027	2.147	6.991	4.843	1.455	5.297	3.149	1.694	3.328
49.1	322.9	0.287	4.87	6.832	3.403	3.391	5.027	2.148	6.994	4.846	1.455	5.298	3.151	1.695	3.330
50.1	327.0	0.293	4.97	6.839	3.442	3.430	5.028	2.148	7.033	4.884	1.454	5.317	3.169	1.715	3.359
52.6	329.1	0.307	5.22	6.857	3.455	3.443	5.026	2.147	7.045	4.898	1.455	5.323	3.176	1.721	3.366
55.1	331.4	0.322	5.47	6.876	3.471	3.457	5.026	2.146	7.060	4.914	1.456	5.331	3.185	1.729	3.374
57.6	332.4	0.337	5.72	6.894	3.472	3.458	5.024	2.144	7.060	4.916	1.458	5.332	3.187	1.729	3.371
60.1	335.2	0.351	5.97	6.912	3.492	3.478	5.022	2.143	7.080	4.938	1.460	5.341	3.199	1.739	3.382
62.6	338.2	0.365	6.21	6.930	3.513	3.499	5.019	2.140	7.101	4.961	1.462	5.351	3.212	1.749	3.392
65.1	341.0	0.380	6.47	6.949	3.534	3.518	5.017	2.137	7.122	4.984	1.466	5.362	3.225	1.759	3.400
67.6	344.3	0.395	6.71	6.967	3.558	3.542	5.014	2.134	7.144	5.010	1.468	5.373	3.239	1.771	3.413
70.1	343.7	0.409	6.96	6.985	3.543	3.526	5.009	2.129	7.130	5.001	1.474	5.367	3.237	1.763	3.392
72.6	341.2	0.425	7.22	7.005	3.507	3.490	5.005	2.126	7.093	4.967	1.477	5.348	3.222	1.745	3.363
75.1	343.0	0.439	7.46	7.023	3.517	3.499	5.000	2.121	7.101	4.980	1.481	5.351	3.230	1.749	3.362
77.6	347.4	0.454	7.71	7.042	3.551	3.533	4.995	2.116	7.135	5.020	1.487	5.369	3.253	1.766	3.376
80.2	351.1	0.468	7.95	7.061	3.580	3.561	4.990	2.110	7.163	5.053	1.492	5.383	3.272	1.780	3.387
82.7	350.8	0.483	8.21	7.080	3.567	3.547	4.984	2.104	7.150	5.046	1.498	5.376	3.272	1.774	3.368
85.1	354.4	0.497	8.45	7.099	3.595	3.575	4.979	2.099	7.177	5.078	1.503	5.390	3.291	1.787	3.378
87.6	356.2	0.512	8.71	7.119	3.603	3.582	4.972	2.093	7.183	5.091	1.509	5.393	3.300	1.791	3.374
90.1	358.7	0.526	8.95	7.138	3.618	3.596	4.968	2.088	7.198	5.110	1.514	5.400	3.312	1.798	3.375
92.7	362.9	0.541	9.20	7.158	3.650	3.628	4.962	2.083	7.230	5.148	1.520	5.416	3.334	1.814	3.387
95.1	364.5	0.556	9.45	7.178	3.656	3.634	4.956	2.076	7.236	5.159	1.526	5.419	3.342	1.817	3.382
97.7	369.5	0.570	9.70	7.197	3.696	3.673	4.951	2.071	7.276	5.204	1.531	5.439	3.368	1.837	3.399
100.2	370.8	0.585	9.95	7.218	3.699	3.676	4.944	2.064	7.278	5.213	1.538	5.440	3.376	1.838	3.390
102.7	373.2	0.600	10.19	7.237	3.713	3.689	4.939	2.059	7.291	5.232	1.543	5.447	3.387	1.844	3.390
105.2	376.2	0.614	10.44	7.257	3.733	3.707	4.932	2.052	7.309	5.257	1.550	5.456	3.403	1.854	3.393
107.7	378.3	0.629	10.69	7.278	3.743	3.717	4.927	2.047	7.320	5.272	1.555	5.461	3.414	1.859	3.390
110.2	381.4	0.644	10.94	7.298	3.763	3.736	4.919	2.040	7.338	5.299	1.562	5.470	3.431	1.868	3.391
112.7	385.7	0.659	11.20	7.319	3.795	3.768	4.913	2.033	7.369	5.336	1.568	5.485	3.452	1.884	3.402
115.2	387.8	0.673	11.44	7.339	3.804	3.777	4.908	2.028	7.379	5.351	1.574	5.491	3.463	1.888	3.399
117.7	386.9	0.688	11.70	7.361	3.784	3.756	4.900	2.020	7.358	5.338	1.582	5.480	3.460	1.878	3.375

Project: 175518236			Source: HRL-7, 0.0'-5.0' & HRL-8, 0.0'-5.0' & HRL-9, 0.0'-10.0' & HRL-14, 0.0'-10.0' &						Lab ID: 215				Test ID		
Test Time (min)	Corr. Axial Load (lbf)	Axial Deform. (in)	Axial Strain (%)	Corr. Area (in^2)	Deviator Stress (tsf)	Corr. Deviator Stress (tsf)	Pore Pressure (tsf)	Induced Pore Pressure (tsf)	σ_1 (tsf)	σ_1' (tsf)	σ_3' (tsf)	p (tsf)	p' (tsf)	q (tsf)	Eff. Princ. Stress Ratio σ_1'/σ_3'
120.2	388.9	0.702	11.94	7.381	3.794	3.766	4.894	2.015	7.368	5.353	1.587	5.485	3.470	1.883	3.373
122.7	391.8	0.717	12.19	7.401	3.812	3.782	4.888	2.009	7.385	5.376	1.593	5.493	3.485	1.891	3.374
125.2	392.4	0.731	12.43	7.422	3.807	3.777	4.882	2.003	7.379	5.377	1.600	5.491	3.488	1.888	3.361
127.7	394.5	0.746	12.68	7.443	3.816	3.786	4.876	1.997	7.388	5.391	1.605	5.495	3.498	1.893	3.359
130.2	397.4	0.761	12.93	7.465	3.833	3.802	4.870	1.990	7.404	5.414	1.612	5.503	3.513	1.901	3.359
132.7	399.6	0.776	13.19	7.487	3.843	3.812	4.863	1.984	7.414	5.430	1.618	5.508	3.524	1.906	3.356
135.2	402.3	0.791	13.44	7.508	3.858	3.826	4.858	1.978	7.428	5.450	1.624	5.515	3.537	1.913	3.356
137.7	404.8	0.804	13.67	7.529	3.871	3.838	4.851	1.972	7.439	5.467	1.629	5.520	3.548	1.919	3.356
140.2	405.5	0.820	13.94	7.552	3.866	3.833	4.844	1.965	7.435	5.470	1.637	5.518	3.553	1.916	3.341
142.7	408.4	0.834	14.19	7.574	3.882	3.848	4.838	1.958	7.450	5.492	1.644	5.526	3.568	1.924	3.341
145.2	410.1	0.849	14.44	7.596	3.887	3.852	4.832	1.953	7.454	5.501	1.649	5.528	3.575	1.926	3.336
147.7	413.2	0.864	14.68	7.618	3.906	3.871	4.826	1.946	7.472	5.526	1.656	5.537	3.591	1.935	3.338
150.2	413.6	0.878	14.93	7.640	3.898	3.862	4.820	1.941	7.464	5.524	1.661	5.533	3.592	1.931	3.325
152.7	416.3	0.893	15.18	7.662	3.912	3.875	4.814	1.934	7.476	5.542	1.667	5.539	3.605	1.938	3.324
155.2	416.5	0.907	15.42	7.685	3.902	3.865	4.807	1.928	7.466	5.538	1.673	5.534	3.606	1.933	3.310
157.7	418.4	0.923	15.68	7.708	3.909	3.871	4.802	1.923	7.473	5.550	1.679	5.538	3.615	1.935	3.305
160.2	420.6	0.937	15.93	7.731	3.917	3.879	4.794	1.915	7.480	5.565	1.687	5.541	3.626	1.939	3.300
162.7	421.3	0.952	16.18	7.754	3.912	3.873	4.790	1.910	7.474	5.564	1.691	5.538	3.628	1.936	3.290
165.2	423.0	0.966	16.42	7.776	3.916	3.877	4.784	1.904	7.478	5.574	1.697	5.540	3.636	1.938	3.284
167.7	424.6	0.981	16.68	7.801	3.919	3.879	4.778	1.898	7.480	5.582	1.703	5.541	3.642	1.940	3.278
170.1	425.9	0.995	16.91	7.822	3.920	3.880	4.769	1.889	7.481	5.591	1.712	5.541	3.651	1.940	3.266

APPENDIX J.3
HRL PARCEL F GEOTECHNICAL INVESTIGATION LABORATORY RESULTS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

May 24, 2022

Josh Massey
Stantec Consulting Services, Inc
1110 Market Street
Suite 214A
Chattanooga, TN 37402

RE: Project: HRL/175518236
Pace Project No.: 92604090

Dear Josh Massey:

Enclosed are the analytical results for sample(s) received by the laboratory on May 11, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Maiya Parks
maiya.parks@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: April Welshans, Stantec Consulting Services, Inc

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Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: HRL/175518236
Pace Project No.: 92604090

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92604090001	**HRL12-0.0-1.5**	Solid	04/26/22 14:36	05/11/22 13:55
92604090002	**HRL12-8.5-10**	Solid	04/26/22 14:51	05/11/22 13:55
92604090003	**HRL6-6.0-7.5**	Solid	05/03/22 17:36	05/11/22 13:55
92604090004	**HRL5-3.0-4.5**	Solid	05/05/22 13:49	05/11/22 13:55
92604090005	**HRL2-3.0-4.5**	Solid	05/09/22 12:58	05/11/22 13:55
92604090006	**HRL2-7.5-9.0**	Solid	05/09/22 13:11	05/11/22 13:55
92604090007	**HRL3-3.0-4.5**	Solid	05/10/22 17:03	05/11/22 13:55
92604090008	**HRL3-7.5-9.0**	Solid	05/10/22 17:25	05/11/22 13:55

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical®

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

WO# : 92604090

92604090

Company: STANTEC	Billing Information:
Address: 1113 MARKET ST. SUITE 214A, CHATTANOOGA, TN 37402	
Report To: JOSH.MASSEY@STANTEC.COM	Email To: Josh.Massey@stantec.com
Copy To: APRIL.WELSHANS@STANTEC.COM	Site Collection Info/Address: HUFFAKER
Customer Project Name/Number: HRL 1755182360	State: GA / County/City: ROME / Time Zone Collected: [ ]PT [ ]MT [ ]CT [X]ET
Phone: 859-457-1127 Email: VICTORIA.BIERWIRTH@STANTEC.COM	Site/Facility ID #: HRL / Compliance Monitoring? [ ] Yes [X] No
Collected By (print): V. BIERWIRTH	Purchase Order #: / Quote #: / DW PWS ID #: / DW Location Code:
Collected By (signature): Victoria Bierwirth	Turnaround Date Required: STANDARD / Immediately Packed on Ice: [X] Yes [ ] No
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: ____ [ ] Hold: ____	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply) / Field Filtered (if applicable): [ ] Yes [X] No / Analysis: ____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	EPA 9081
HRL12-0.0-1.5	SL	G	4/26/22	1436				1	X
HRL17-8.5-10.0	SL	G	4/27/22	1451				1	X
HRL6-6.0-7.5	SL	G	5/3/22	1730				1	X
HRL5-3.0-4.5	SL	G	5/5/22	1349				1	X
HRL2-3.0-4.5	SL	G	5/9/22	1258				1	X
HRL2-7.5-9.0	SL	G	5/9/22	1311				1	X
HRL3-3.0-4.5	SL	G	5/10/22	1703				1	X
HRL3-7.5-9.0	SL	G	5/10/22	1725				1	X

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other ____

Analyses

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	NA
Custody Signatures Present	Y	N	NA
Collector Signature Present	Y	N	NA
Bottles Intact	Y	N	NA
Correct Bottles	Y	N	NA
Sufficient Volume	Y	N	NA
Samples Received on Ice	Y	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips: ____			
Sample pH Acceptable	Y	N	NA
pH Strips: ____			
Sulfide Present	Y	N	NA
Lead Acetate Strips: ____			

LAB USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2656044

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: ____
Cooler 1 Temp Upon Receipt: ____oC
Cooler 1 Therm Corr. Factor: ____oC
Cooler 1 Corrected Temp: ____oC
Comments:

Relinquished by/Company: (Signature) Victoria Bierwirth / STANTEC	Date/Time: 5/11/22 1007	Received by/Company: (Signature) Josh Massey / Stantec	Date/Time: 5/11/22 1007
Relinquished by/Company: (Signature)	Date/Time: 5/11/22 1355	Received by/Company: (Signature) Received PACE	Date/Time: 51122 1355
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: ____ of:

Pace Analytical	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: November 15, 2021 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.08	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☐ Raleigh ☐ Mechanicsville ☐ Atlanta ☑ Kernersville ☐

Sample Condition Upon Receipt

Client Name: Stantec

Project #

WO#: 92604090

PM: MP Due Date: 05/23/22
CLIENT: GA-KMStantec

Courier: ☐ Commercial ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Pace ☐ Other:____

Custody Seal Present? ☑ Yes ☐ No **Seals Intact?** ☑ Yes ☐ No

Date/Initials Person Examining Contents:_____

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

Thermometer: ☐ IR Gun ID: 214 **Type of Ice:** ☑ Wet ☐ Blue ☐ None

Cooler Temp: 4.4 **Correction Factor:** Add/Subtract (°C) +0.1

Cooler Temp Corrected (°C): 4.5

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☐ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☐ No	☑ N/A	8.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: Soil				
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☐ No	☑ N/A	10.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	11.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: _____ **Date:** _____

Project Manager SRF Review: _____ **Date:** _____

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

Project # **WO# : 92604090**

PM: MP **Due Date: 05/23/22**

CLIENT: GA-KMStantec

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

****Bottom half of box is to list number of bottles**

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4B-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unpreserved (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (3 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1	\				\	\	\	\	1		\		\	\	\										\	\			
2	\				\	\	\	\	1		\		\	\	\										\	\			
3	\				\	\	\	\	1		\		\	\	\										\	\			
4	\				\	\	\	\	1		\		\	\	\										\	\			
5	\				\	\	\	\	1		\		\	\	\										\	\			
6	\				\	\	\	\	1		\		\	\	\										\	\			
7	\				\	\	\	\	1		\		\	\	\										\	\			
8	\				\	\	\	\	\		\		\	\	\										\	\			
9	\				\	\	\	\			\		\	\	\										\	\			
10	\				\	\	\	\			\		\	\	\										\	\			
11	\				\	\	\	\			\		\	\	\										\	\			
12	\				\	\	\	\			\		\	\	\										\	\			

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers.

Pace Analytical
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Date: 5/24/2022

CLIENT: Pace Analytical Atlanta
Project: 92604090 HRL/175518236
Lab Order: S2205285

CASE NARRATIVE

Report ID: S2205285001

Entire Report Reviewed by: Crystal Herman

Crystal Herman, Mining Supervisor

Samples HRL 12-0.0-1.5, HRL 12-8.5-10, HRL2-3.0-4.5, HRL2-7.5-9.0, HRL3-3.0-4.5, HRL3-7.5-9.0, HRL5-3.0-4.5 and HRL6-6.0-7.5 were received on May 13, 2022.

Samples were analyzed using the methods outlined in the following references:

U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
American Society of Agronomy, Number 9, Part 2, 1982
USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
State of Nevada Modified Sobek Procedure
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Pace Analytical (Formerly Inter-Mountain Laboratories) except as indicated in this case narrative.

Date: 5/24/2022

Definitions

RL	Reporting Limit

Qualifiers

*	Value exceeds Maximum Contaminant Level
A	Check MSA specifications
B	Analyte detected in the associated Method Blank
C	Calculated Value
D	Report limit raised due to dilution
E	Value above quantitation range
G	Analyzed at Pace Gillette, WY laboratory
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
L	Analyzed by another laboratory
M	Value exceeds Monthly Ave or MCL or is less than LCL
ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
U	Analyte below method detection limit
X	Matrix Effect

Pace Analytical
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Soil Analysis Report

Pace Analytical Atlanta
110 Technology Parkway
Peachtree Corners, GA 30092

Report ID: S2205285001

Project: 92604090 HRL/175518236
Date Received: 5/13/2022

Date Reported: 5/24/2022
Work Order: S2205285

Lab ID	Sample ID	CEC meq/100g
S2205285-001	HRL 12-0.0-1.5	12.5
S2205285-002	HRL 12-8.5-10	16.9
S2205285-003	HRL6-6.0-7.5	18.3
S2205285-004	HRL5-3.0-4.5	17.6
S2205285-005	HRL2-3.0-4.5	18.8
S2205285-006	HRL2-7.5-9.0	14.8
S2205285-007	HRL3-3.0-4.5	18.0
S2205285-008	HRL3-7.5-9.0	9.29

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, TOC=Total Organic Carbon

Page 8 of 10

Reviewed by: Crystal Herman
Crystal Herman, Mining Supervisor

Pace Analytical
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: Pace Analytical Atlanta
Work Order: S2205285
Project: 92604090 HRL/175518236

Date: 5/24/2022
Report ID: S2205285001

Cation Exchange Capacity Sample Type **MBLK** Units: meq/100g

CEC BLK (05/21/22 12:22) RunNo: 200056

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Cation Exchange Capacity	ND	0.05					

Cation Exchange Capacity Sample Type **LCS** Units: meq/100g

CEC QC (05/21/22 12:19) RunNo: 200056

Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Cation Exchange Capacity	22.0	0.05	19.1		115	60.7 - 124	

Cation Exchange Capacity Sample Type **DUP** Units: meq/100g

S2205285-005AD (05/21/22 11:48) RunNo: 200056

Analyte	Result	RL	Ref Samp	%RPD	%REC	% RPD Limits	Qual
Cation Exchange Capacity	19.3	0.05	18.8	2.80		20	

Internal Transfer Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples Pre-Logged into eCOC.

State Of Origin: GA
Cert. Needed: ☐ Yes ☐ No

Workorder: 92604090 **Workorder Name:** HRL/175518236
Owner Received Date: 5/11/2022 **Results Requested By:** 5/23/2022

Report To	Subcontract To
Maiya Parks Pace Analytical Atlanta 110 Technology Parkway Peachtree Corners, GA 30092 Phone (770)734-4200	Pace Analytical Sheridan WY 1673 Terra Avenue Sheridan, WY 82801 Phone (307)672-8945

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	9081 Cation Exchange Capacity	LAB USE ONLY
1	HRL12-0.0-1.5	PS	4/26/2022 14:36	92604090001	Solid	1	X	S22052585 -
2	HRL12-8.5-10	PS	4/26/2022 14:51	92604090002	Solid	1	X	
3	HRL6-6.0-7.5	PS	5/3/2022 17:36	92604090003	Solid	1	X	
4	HRL5-3.0-4.5	PS	5/5/2022 13:49	92604090004	Solid	1	X	
5	HRL2-3.0-4.5	PS	5/9/2022 12:58	92604090005	Solid	1	X	
6	HRL2-7.5-9.0	PS	5/9/2022 13:11	92604090006	Solid	1	X	
7	HRL3-3.0-4.5	PS	5/10/2022 17:03	92604090007	Solid	1	X	
8	HRL3-7.5-9.0	PS	5/10/2022 17:25	92604090008	Solid	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1			Crystal Herman	5/13/22 1305
2				
3				

Comments
IR54: CEC
Dry Weight if needed

Cooler Temperature on Receipt _____ °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Date: 6/13/2022

CLIENT: Stantec
Project: HRL 175518236
Lab Order: S2205427

CASE NARRATIVE

Report ID: S2205427001

Entire Report Reviewed by: Crystal Herman

Crystal Herman, Mining Supervisor

Samples HRL-10-8.5-10.0, HRL-11-3.5-5.0, HRL-11-8.5-10.0 and HRL-8-3.5-5.0 were received on May 23, 2022.

Samples were analyzed using the methods outlined in the following references:

U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
American Society of Agronomy, Number 9, Part 2, 1982
USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
State of Nevada Modified Sobek Procedure
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Pace Analytical (Formerly Inter-Mountain Laboratories) except as indicated in this case narrative.

Pace Analytical
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Date: 6/13/2022

Definitions

RL	Reporting Limit

Qualifiers

*	Value exceeds Maximum Contaminant Level
A	Check MSA specifications
B	Analyte detected in the associated Method Blank
C	Calculated Value
D	Report limit raised due to dilution
E	Value above quantitation range
G	Analyzed at Pace Gillette, WY laboratory
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
L	Analyzed by another laboratory
M	Value exceeds Monthly Ave or MCL or is less than LCL
ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
U	Analyte below method detection limit
X	Matrix Effect

Pace Analytical
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

Soil Analysis Report

Stantec
1110 Market St. Suite 214A
Chattanooga, TN 37402

Report ID: S2205427001

Project: HRL 175518236
Date Received: 5/23/2022

Date Reported: 6/13/2022
Work Order: S2205427

Lab ID	Sample ID	CEC meq/100g
S2205427-001	HRL-10-8.5-10.0	27.9
S2205427-002	HRL-8-3.5-5.0	19.3
S2205427-003	HRL-11-3.5-5.0	16.6
S2205427-004	HRL-11-8.5-10.0	18.8

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, TOC=Total Organic Carbon

Reviewed by: Crystal Herman
Crystal Herman, Mining Supervisor

Pace Analytical
1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: Stantec
Work Order: S2205427
Project: HRL 175518236

Date: 6/13/2022
Report ID: S2205427001

Cation Exchange Capacity Sample Type **MBLK** Units: meq/100g

CEC BLK (06/06/22 13:53)	RunNo: 200570						
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Cation Exchange Capacity	ND	0.05					

CEC BLK (06/06/22 14:25)	RunNo: 200570						
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Cation Exchange Capacity	ND	0.05					

Cation Exchange Capacity Sample Type **LCS** Units: meq/100g

CEC QC (06/06/22 13:51)	RunNo: 200570						
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Cation Exchange Capacity	21.7	0.05	19.1		114	60.7 - 124	

CEC QC (06/06/22 14:23)	RunNo: 200570						
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Cation Exchange Capacity	22.5	0.05	19.1		118	60.7 - 124	

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical®

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

ALL SHADED AREAS are for LAB USE ONLY

Company: STANTEC	Billing Information:
Address: 1110 MARKET ST SUITE 214A CHATTANOOGA, TN 37402	
Report To: JOSH.MASSEY@STANTEC.COM	Email To:
Copy To: APRIL.WELSHANS@STANTEC.COM	Site Collection Info/Address: HUFFAKER
Customer Project Name/Number: HRL 175518236	State: GA County/City: ROME Time Zone Collected: [ ] PT [ ] MT [ ] CT [X] ET
Phone: 8594571127 Email: VICTORIA.BIERWIRTH@STANTEC.COM	Site/Facility ID #: HRL
Collected By (print): V. BIERWIRTH	Purchase Order #: Quote #:
Collected By (signature):	Turnaround Date Required: STANDARD
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: _____ [ ] Hold: _____	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply)

Compliance Monitoring? [ ] Yes [X] No	
DW PWS ID #: DW Location Code:	
Immediately Packed on Ice: [X] Yes [ ] No	
Field Filtered (if applicable): [ ] Yes [X] No Analysis: _____	

Container Preservative Type **: U

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Analyses: EPA 9056 CEC

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y N NA
Custody Signatures Present	Y N NA
Collector Signature Present	Y N NA
Bottles Intact	Y N NA
Correct Bottles	Y N NA
Sufficient Volume	Y N NA
Samples Received on Ice	Y N NA
VOA - Headspace Acceptable	Y N NA
USDA Regulated Soils	Y N NA
Samples in Holding Time	Y N NA
Residual Chlorine Present	Y N NA
Cl Strips: _____	
Sample pH Acceptable	Y N NA
pH Strips: _____	
Sulfide Present	Y N NA
Lead Acetate Strips: _____	

LAB USE ONLY:
Lab Sample # / Comments:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	EPA 9056 CEC
HRL-10-8.5-10.0	SL	G	5/16/22	1258				1	X
HRL-8-3.5-5.0	SL	G	5/18/22	0908				1	X
HRL-11-3.5-5.0	SL	G	5/18/22	1541				1	X
HRL-11-8.5-10.0	SL	G	5/18/22	1553				1	X

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2656045

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: _____oC
Cooler 1 Therm Corr. Factor: _____oC
Cooler 1 Corrected Temp: _____oC
Comments:

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Victoria Bierwirth STANTEC	5/20/22 1408		5/20/22 1408
Stantec	5/20/22 1800	Crystal Herman	5/23/22 845

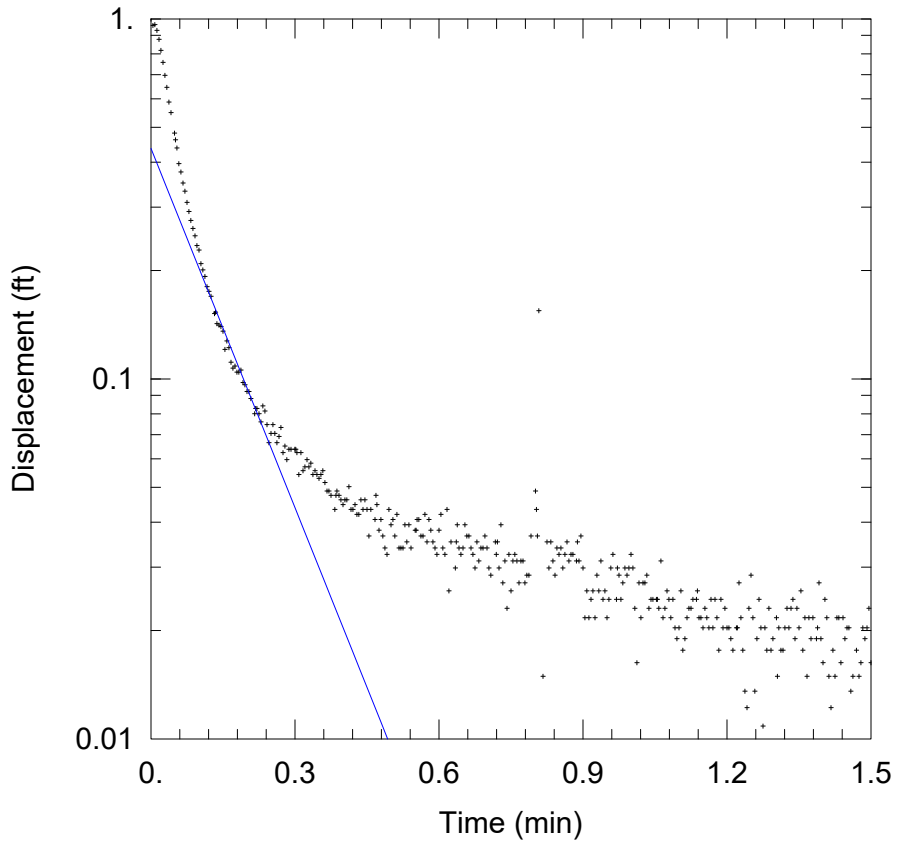
MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____ of: _____

APPENDIX K
SLUG TEST DATA SHEETS FOR HRL PARCEL F



HRL-1 FH1

Data Set: C:\...\HRL-1_FH1.aqt
Date: 09/20/22 Time: 11:40:03

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-1
Test Date: 08/29/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

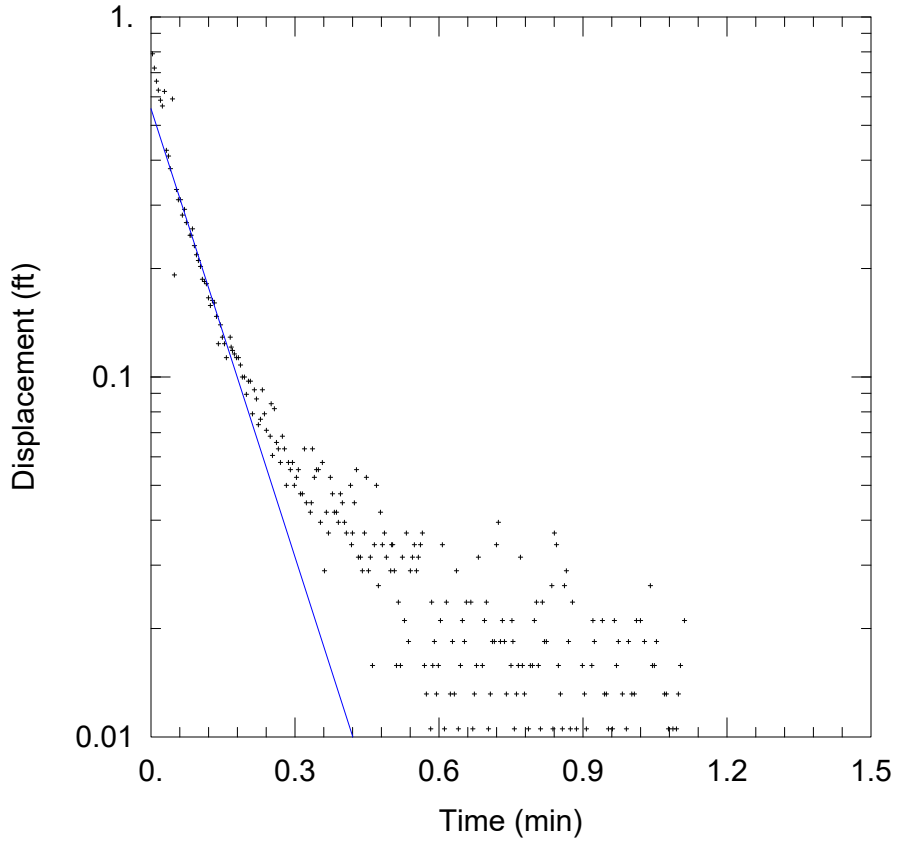
K = 3.879 ft/day
y0 = 0.4367 ft

AQUIFER DATA

Saturated Thickness: 17. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-1)

Initial Displacement: 1. ft
Total Well Penetration Depth: 16.8 ft
Casing Radius: 0.042 ft
Static Water Column Height: 16.8 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-1 FH2

Data Set: C:\...\HRL-1_FH2.aqt
Date: 09/16/22 Time: 14:22:47

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-1
Test Date: 08/29/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

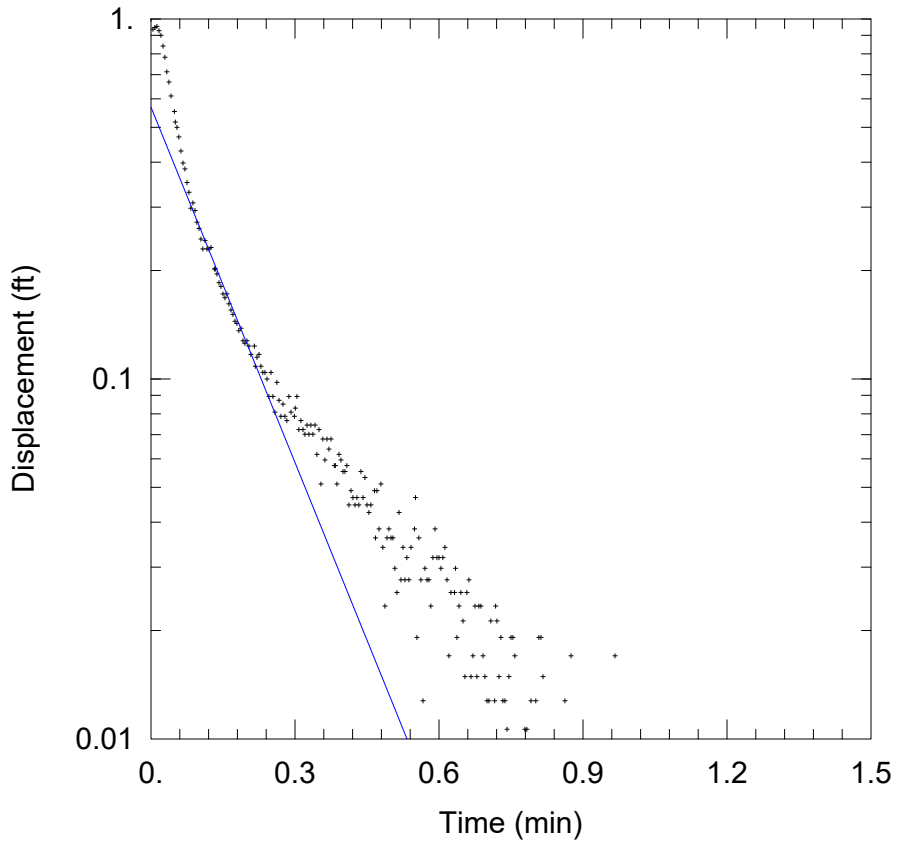
K = 4.841 ft/day
y0 = 0.5563 ft

AQUIFER DATA

Saturated Thickness: 17. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-1)

Initial Displacement: 1. ft
Total Well Penetration Depth: 16.8 ft
Casing Radius: 0.042 ft
Static Water Column Height: 16.8 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-1 FH3

Data Set: C:\...\HRL-1_FH3.aqt
Date: 09/16/22 Time: 14:22:42

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-1
Test Date: 08/29/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

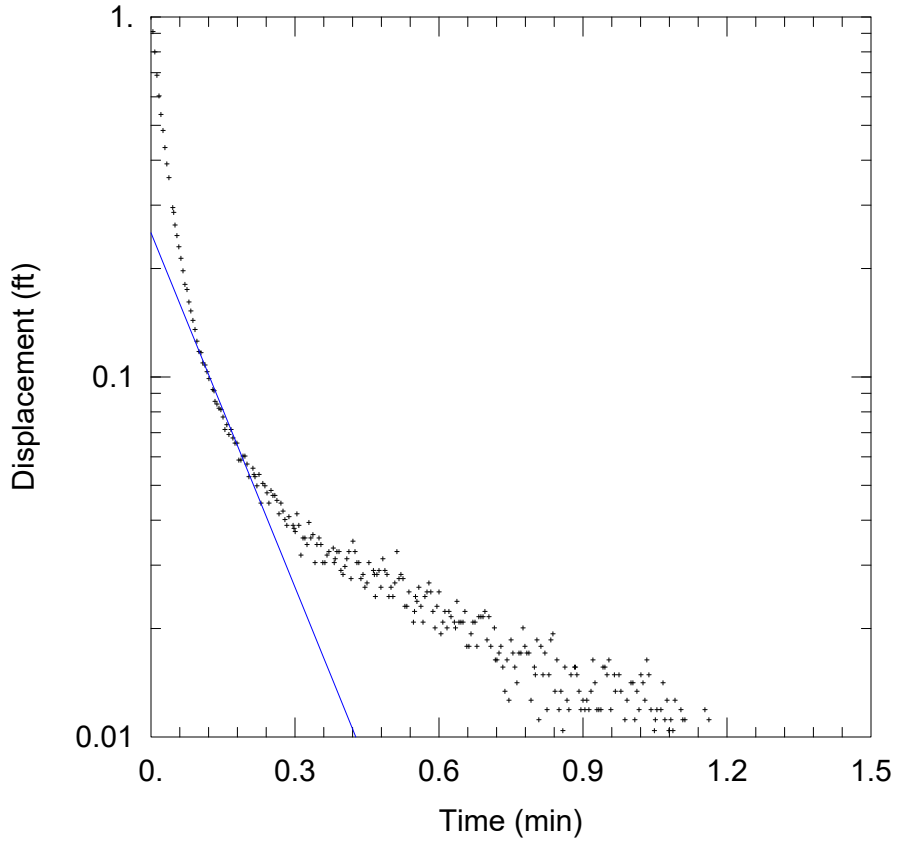
K = 3.838 ft/day
y0 = 0.5689 ft

AQUIFER DATA

Saturated Thickness: 17. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-1)

Initial Displacement: 1. ft
Total Well Penetration Depth: 16.8 ft
Casing Radius: 0.042 ft
Static Water Column Height: 16.8 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-1 RH1

Data Set: C:\...\HRL-1_RH1.aqt
Date: 09/20/22 Time: 11:39:35

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-1
Test Date: 08/29/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

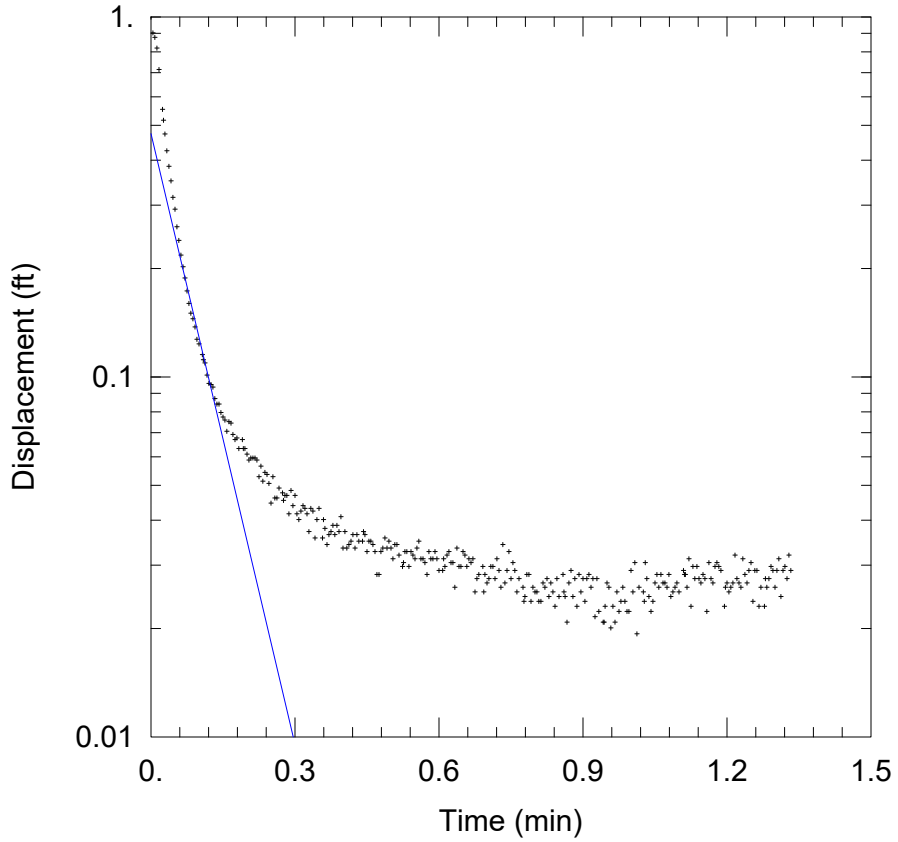
K = 3.827 ft/day
y0 = 0.2513 ft

AQUIFER DATA

Saturated Thickness: 17. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-1)

Initial Displacement: 1. ft
Total Well Penetration Depth: 16.8 ft
Casing Radius: 0.042 ft
Static Water Column Height: 16.8 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-1 RH2

Data Set: C:\...\HRL-1_RH2.aqt
Date: 09/20/22 Time: 11:38:57

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-1
Test Date: 08/29/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

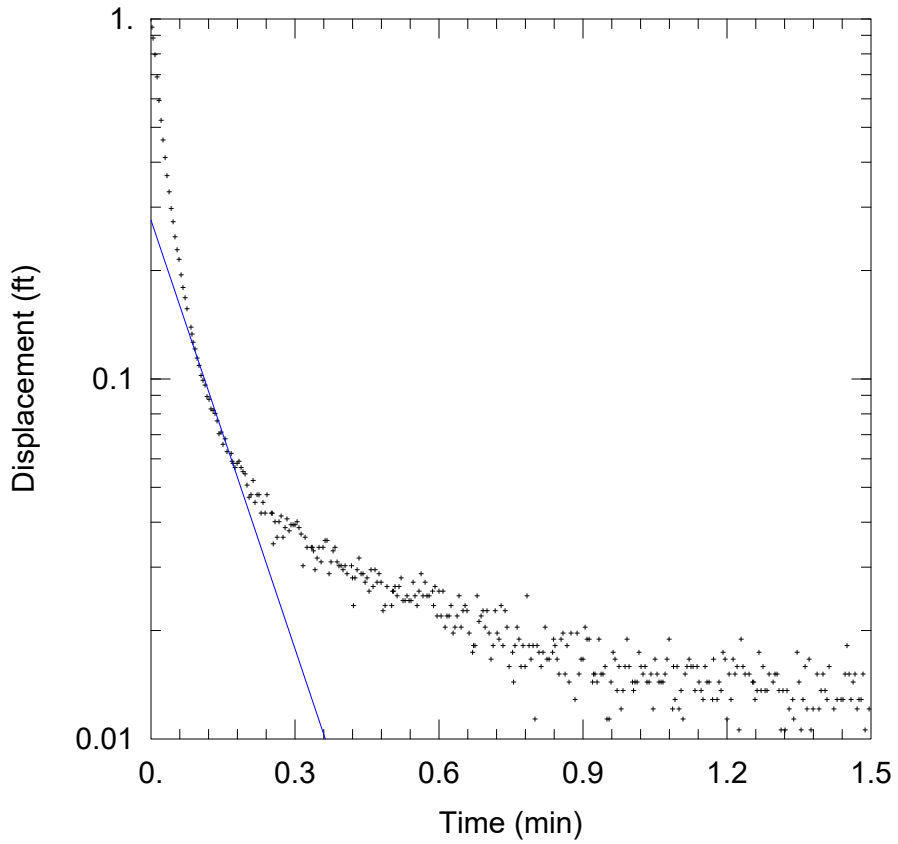
K = 6.594 ft/day
y0 = 0.4738 ft

AQUIFER DATA

Saturated Thickness: 17. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-1)

Initial Displacement: 1. ft
Total Well Penetration Depth: 16.8 ft
Casing Radius: 0.042 ft
Static Water Column Height: 16.8 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-1 RH3

Data Set: C:\...\HRL-1_RH3.aqt
Date: 09/20/22 Time: 11:40:18

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-1
Test Date: 08/29/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

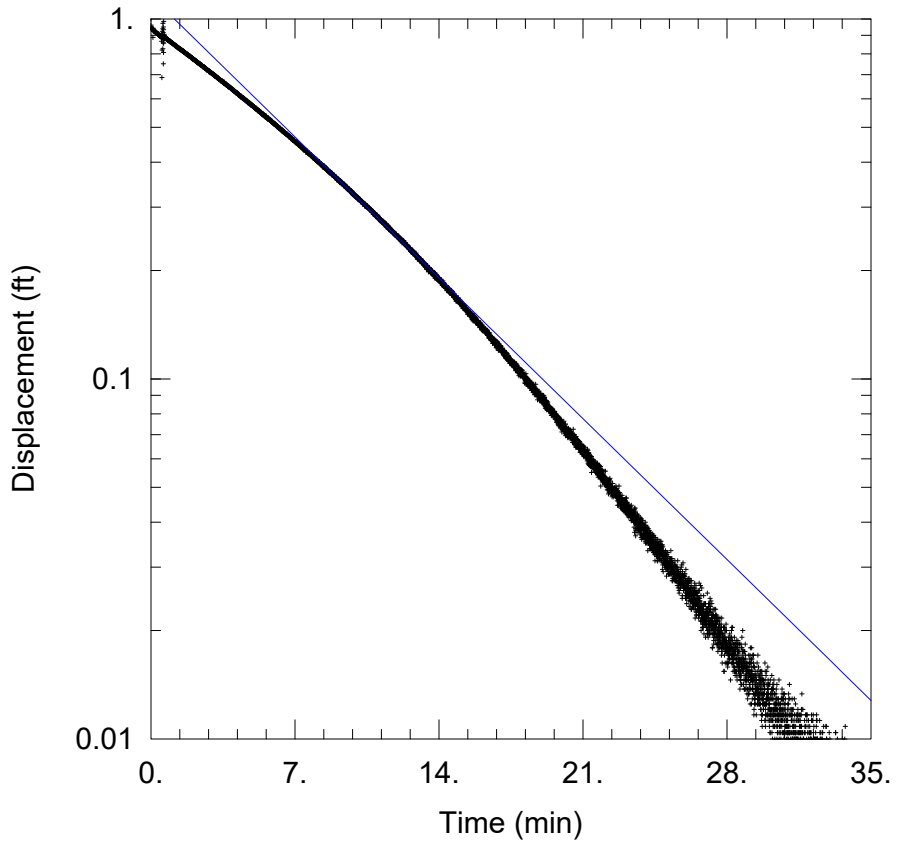
K = 4.629 ft/day
y0 = 0.2762 ft

AQUIFER DATA

Saturated Thickness: 17. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-1)

Initial Displacement: 1. ft
Total Well Penetration Depth: 16.8 ft
Casing Radius: 0.042 ft
Static Water Column Height: 16.8 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-2 FH1

Data Set: C:\...\HRL-2_FH1.aqt
Date: 09/16/22 Time: 14:22:25

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-2
Test Date: 08/24/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

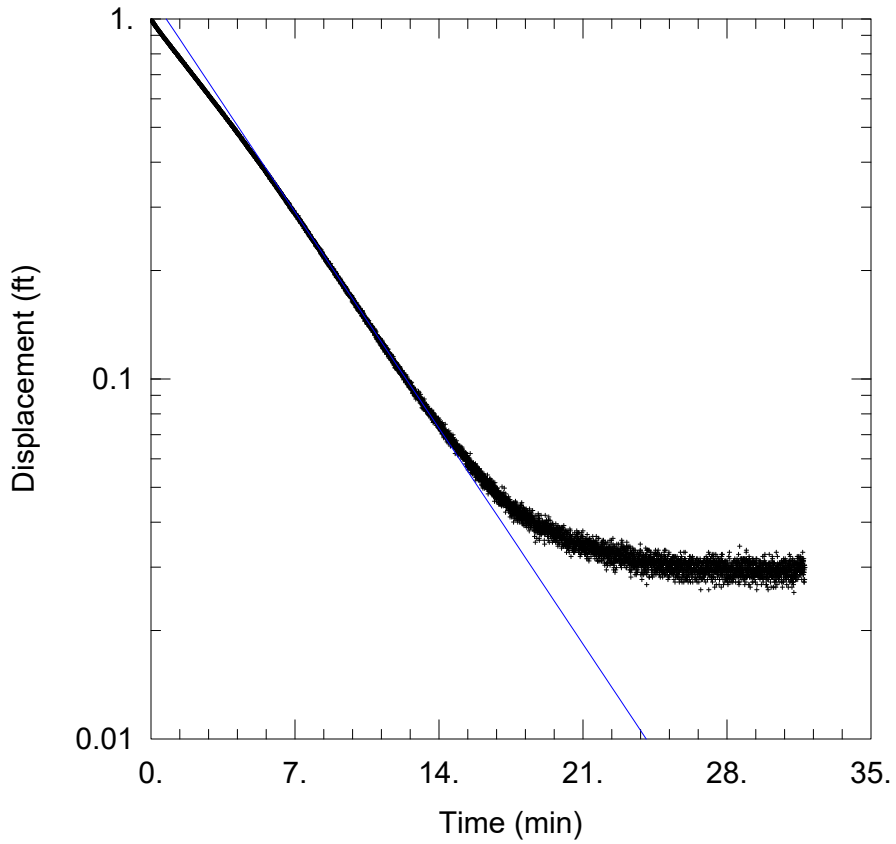
K = 0.0711 ft/day
y0 = 1.158 ft

AQUIFER DATA

Saturated Thickness: 31.62 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-2)

Initial Displacement: 1. ft
Total Well Penetration Depth: 31.4 ft
Casing Radius: 0.042 ft
Static Water Column Height: 31.4 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-2 FH2

Data Set: C:\...\HRL-2_FH2.aqt
Date: 09/16/22 Time: 14:22:19

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-2
Test Date: 08/24/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

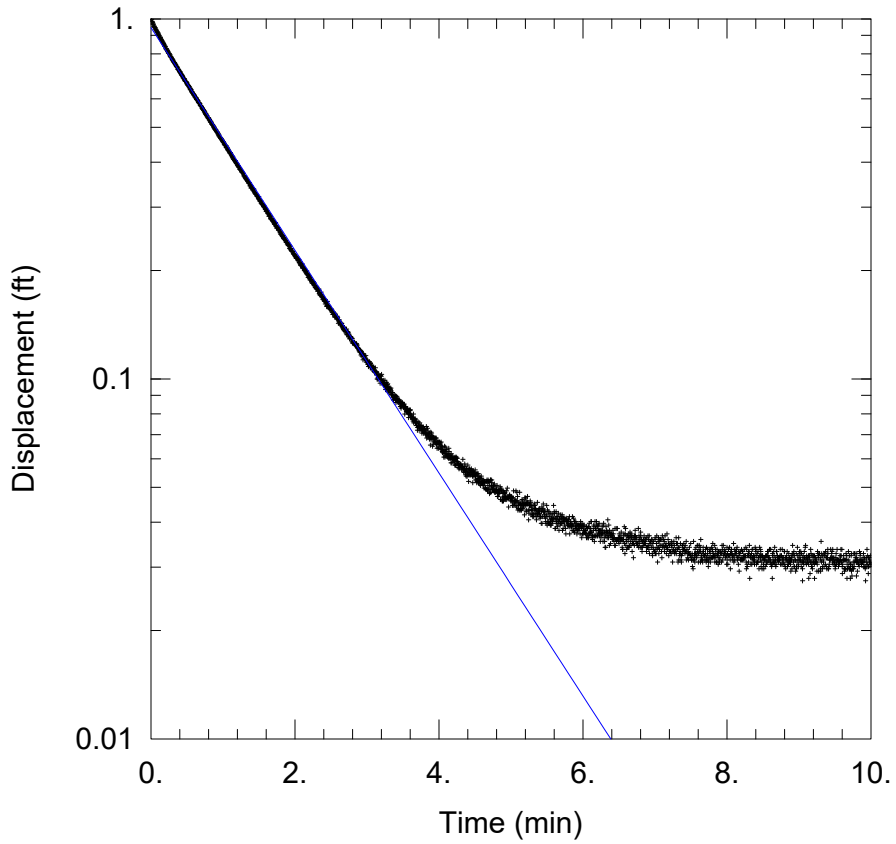
K = 0.109 ft/day
y0 = 1.158 ft

AQUIFER DATA

Saturated Thickness: 31.62 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-2)

Initial Displacement: 1. ft
Total Well Penetration Depth: 31.4 ft
Casing Radius: 0.042 ft
Static Water Column Height: 31.4 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-2 RH1

Data Set: C:\...\HRL-2_RH1.aqt
Date: 09/16/22 Time: 14:22:12

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-2
Test Date: 08/24/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

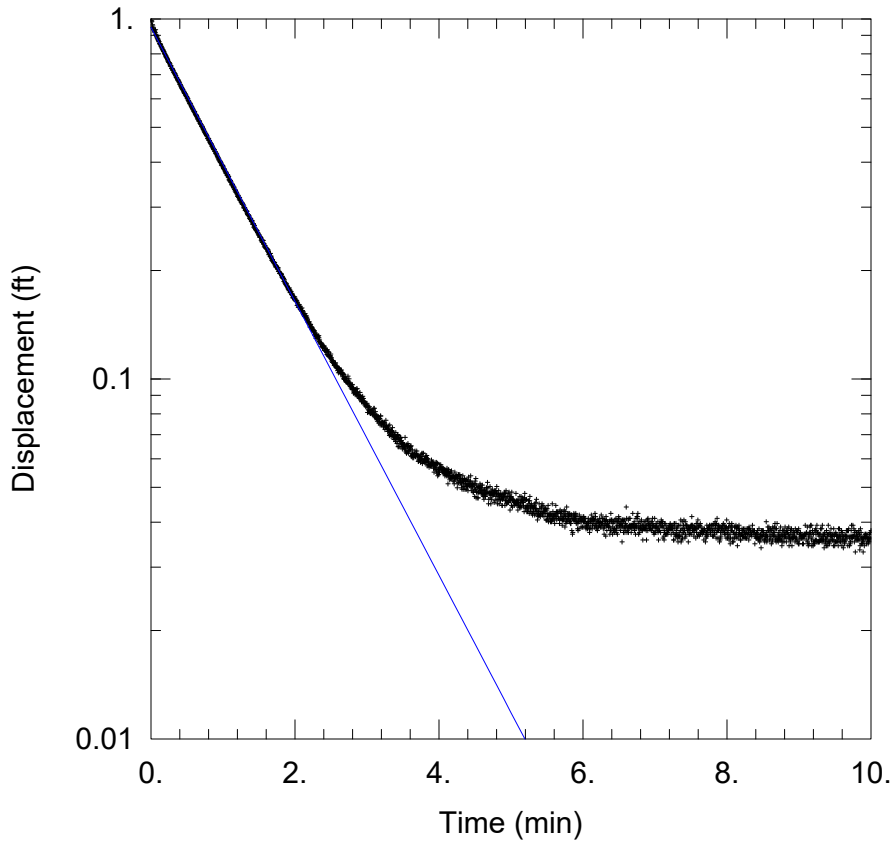
K = 0.3935 ft/day
y0 = 0.9462 ft

AQUIFER DATA

Saturated Thickness: 31.62 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-2)

Initial Displacement: 1. ft
Total Well Penetration Depth: 31.4 ft
Casing Radius: 0.042 ft
Static Water Column Height: 31.4 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-2 RH2

Data Set: C:\...\HRL-2_RH2.aqt
Date: 09/16/22 Time: 14:22:57

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-2
Test Date: 08/24/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

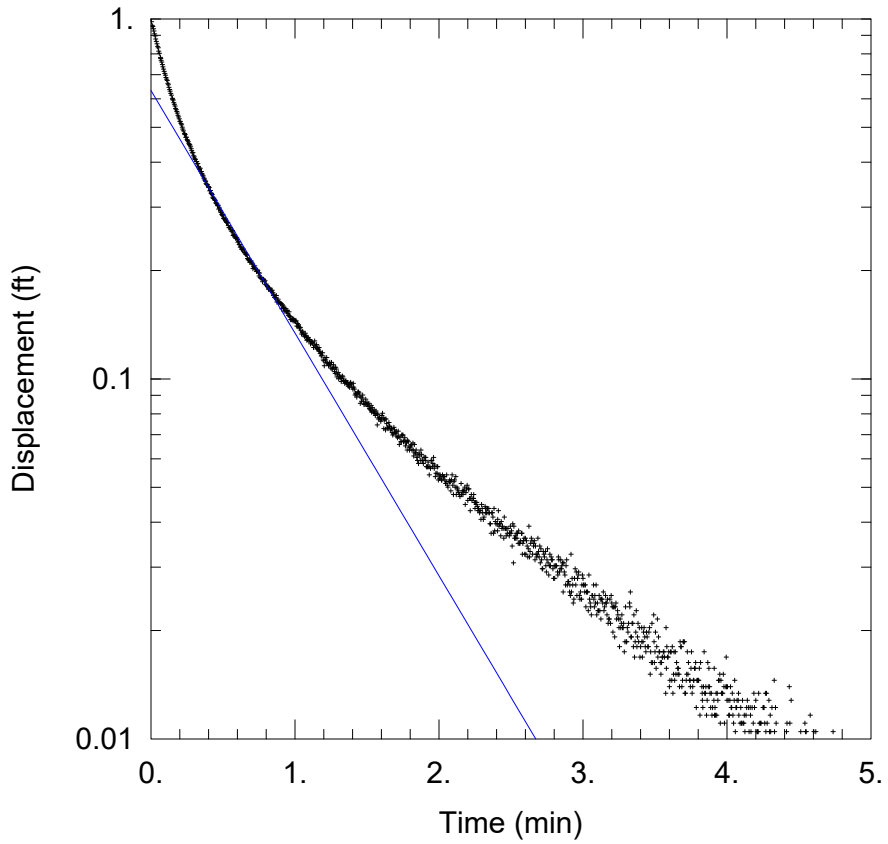
K = 0.484 ft/day
y0 = 0.9474 ft

AQUIFER DATA

Saturated Thickness: 31.62 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-2)

Initial Displacement: 1. ft
Total Well Penetration Depth: 31.4 ft
Casing Radius: 0.042 ft
Static Water Column Height: 31.4 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-3 FH1

Data Set: C:\...\HRL-3_FH1.aqt
Date: 09/16/22 Time: 14:25:08

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-3
Test Date: 09/01/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

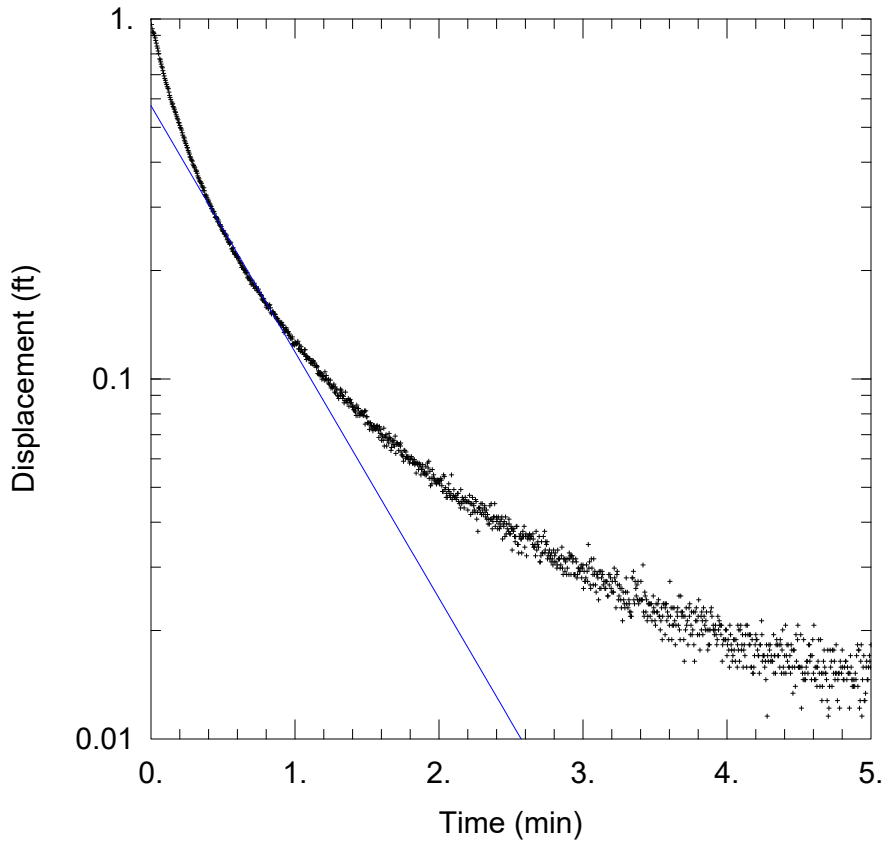
K = 0.7216 ft/day
y0 = 0.6326 ft

AQUIFER DATA

Saturated Thickness: 17.94 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-3)

Initial Displacement: 1. ft
Total Well Penetration Depth: 17.7 ft
Casing Radius: 0.042 ft
Static Water Column Height: 17.7 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-3 FH2

Data Set: C:\...\HRL-3_FH2.aqt
Date: 09/16/22 Time: 14:24:05

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-3
Test Date: 09/01/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

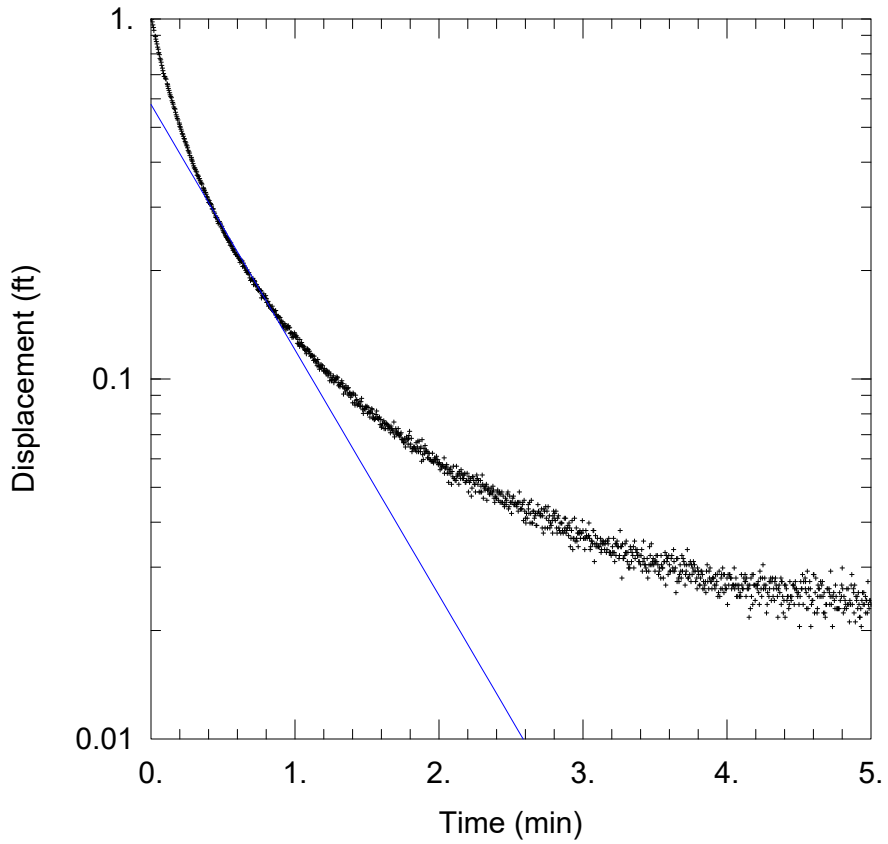
K = 0.7325 ft/day
y0 = 0.574 ft

AQUIFER DATA

Saturated Thickness: 17.94 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-3)

Initial Displacement: 1. ft
Total Well Penetration Depth: 17.7 ft
Casing Radius: 0.042 ft
Static Water Column Height: 17.7 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-3 FH3

Data Set: C:\...\HRL-3_FH3.aqt
Date: 09/16/22 Time: 14:24:01

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-3
Test Date: 09/01/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

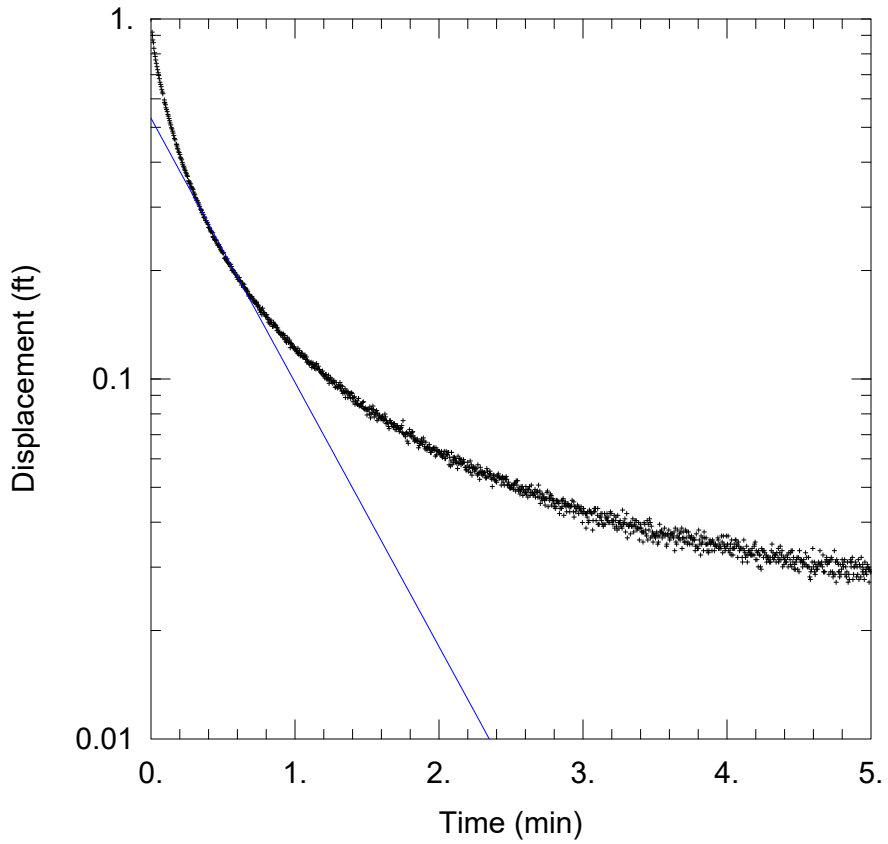
K = 0.7301 ft/day
y0 = 0.5787 ft

AQUIFER DATA

Saturated Thickness: 17.94 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-3)

Initial Displacement: 1. ft
Total Well Penetration Depth: 17.7 ft
Casing Radius: 0.042 ft
Static Water Column Height: 17.7 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-3 RH1

Data Set: C:\...\HRL-3_RH1.aqt
Date: 09/16/22 Time: 14:23:57

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-3
Test Date: 09/01/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

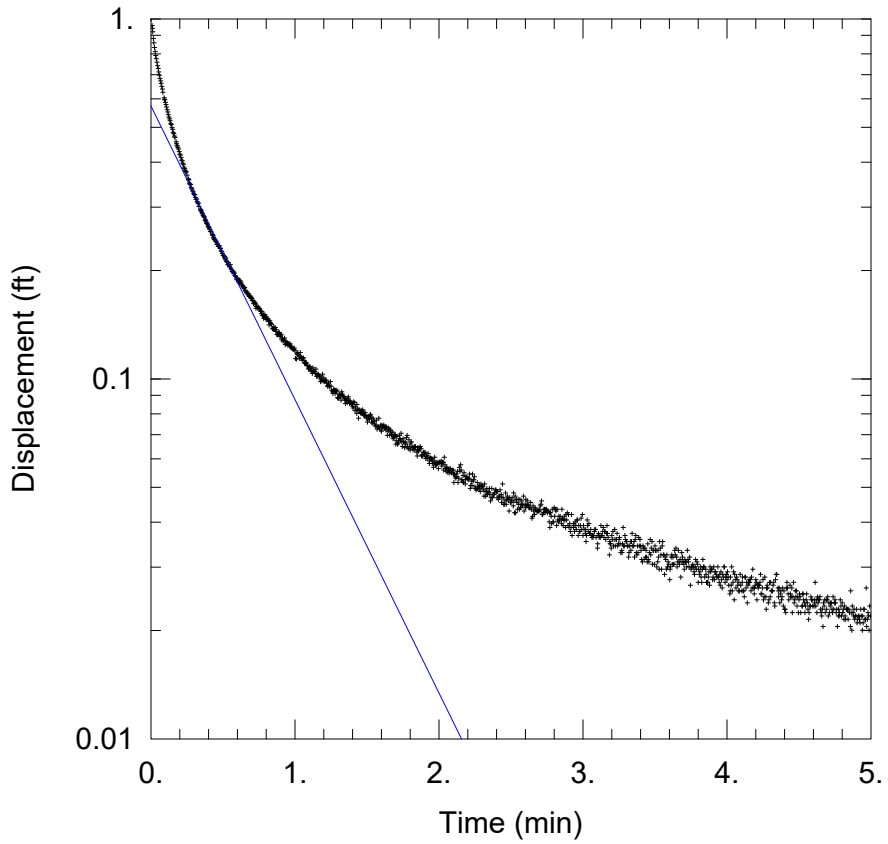
K = 0.7857 ft/day
y0 = 0.5297 ft

AQUIFER DATA

Saturated Thickness: 17.94 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-3)

Initial Displacement: 1. ft
Total Well Penetration Depth: 17.7 ft
Casing Radius: 0.042 ft
Static Water Column Height: 17.7 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-3 RH2

Data Set: C:\...\HRL-3_RH2.aqt
Date: 09/16/22 Time: 14:23:53

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-3
Test Date: 09/01/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

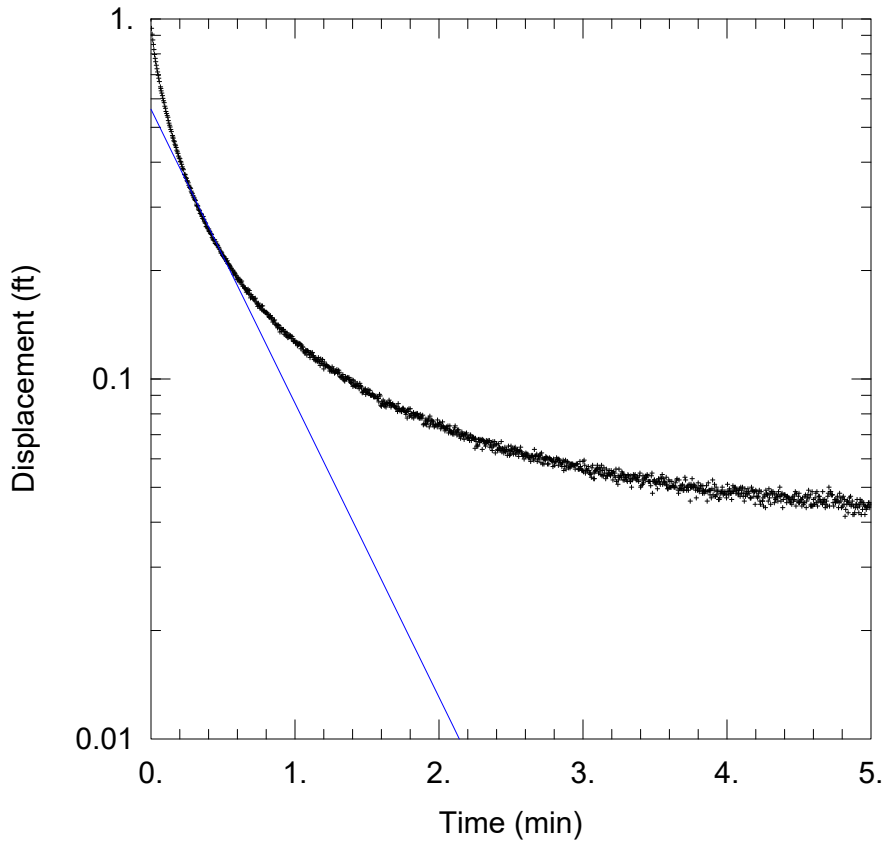
K = 0.8728 ft/day
y0 = 0.5726 ft

AQUIFER DATA

Saturated Thickness: 17.94 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-3)

Initial Displacement: 1. ft
Total Well Penetration Depth: 17.7 ft
Casing Radius: 0.042 ft
Static Water Column Height: 17.7 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-3 RH3

Data Set: C:\...\HRL-3_RH3.aqt
Date: 09/16/22 Time: 14:23:49

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-3
Test Date: 09/01/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

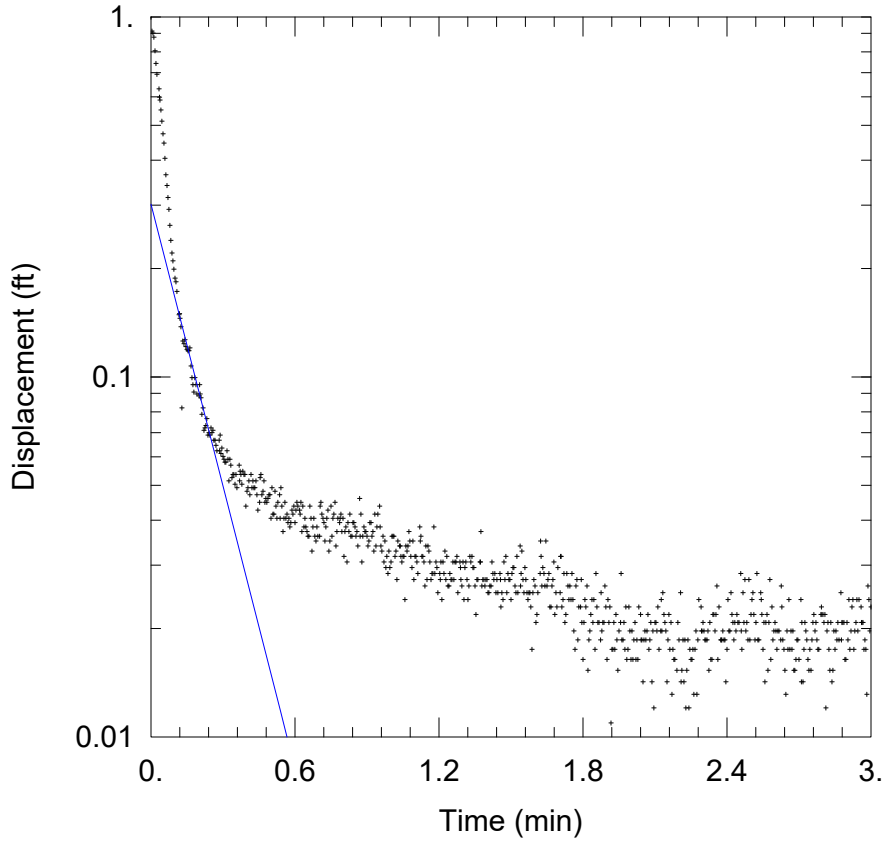
K = 0.8745 ft/day
y0 = 0.5613 ft

AQUIFER DATA

Saturated Thickness: 17.94 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-3)

Initial Displacement: 1. ft
Total Well Penetration Depth: 17.7 ft
Casing Radius: 0.042 ft
Static Water Column Height: 17.7 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-4 FH1

Data Set: C:\...\HRL-4_FH1.aqt
Date: 09/16/22 Time: 14:23:45

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-4
Test Date: 08/29/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

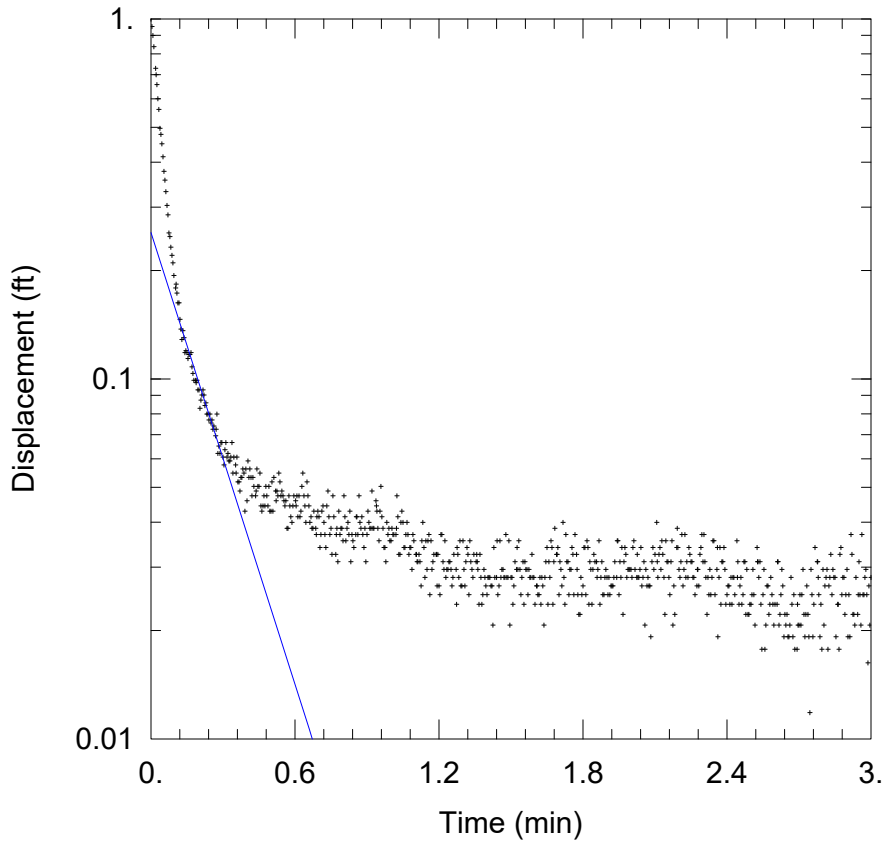
K = 3.159 ft/day
y0 = 0.3018 ft

AQUIFER DATA

Saturated Thickness: 22.43 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-4)

Initial Displacement: 1. ft
Total Well Penetration Depth: 22.2 ft
Casing Radius: 0.042 ft
Static Water Column Height: 22.2 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-4 FH2

Data Set: C:\...\HRL-4_FH2.aqt
Date: 09/16/22 Time: 14:23:41

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-4
Test Date: 08/29/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

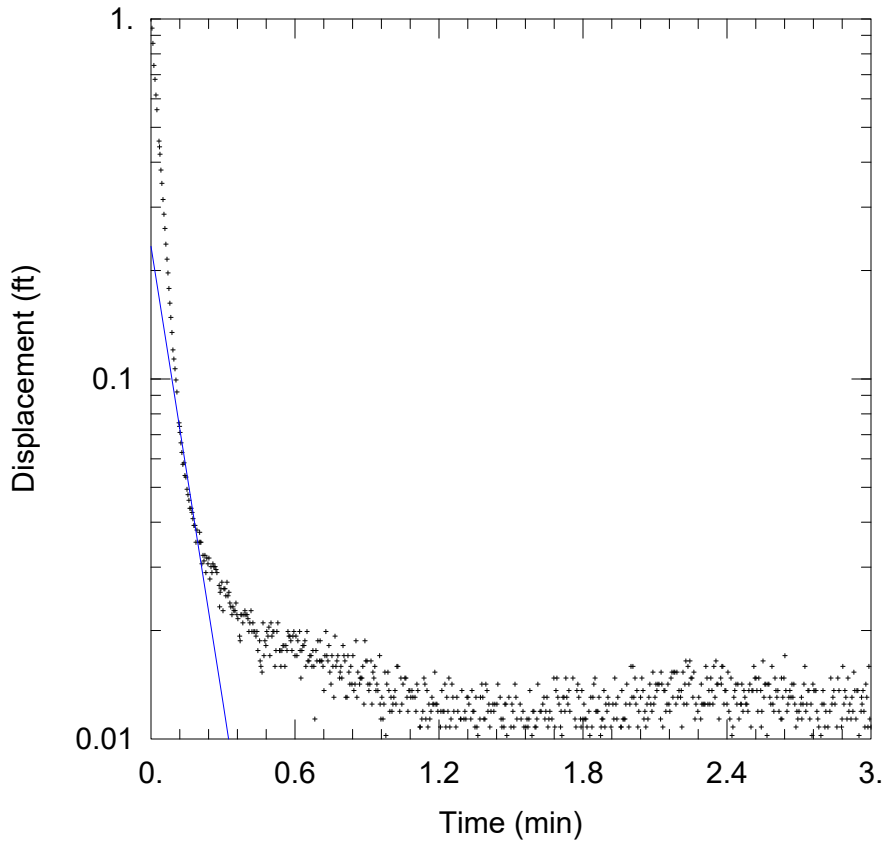
K = 2.532 ft/day
y0 = 0.2551 ft

AQUIFER DATA

Saturated Thickness: 22.43 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-4)

Initial Displacement: 1. ft
Total Well Penetration Depth: 22.2 ft
Casing Radius: 0.042 ft
Static Water Column Height: 22.2 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-4 RH1

Data Set: C:\...\HRL-4_RH1.aqt
Date: 09/16/22 Time: 14:23:37

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-4
Test Date: 08/29/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

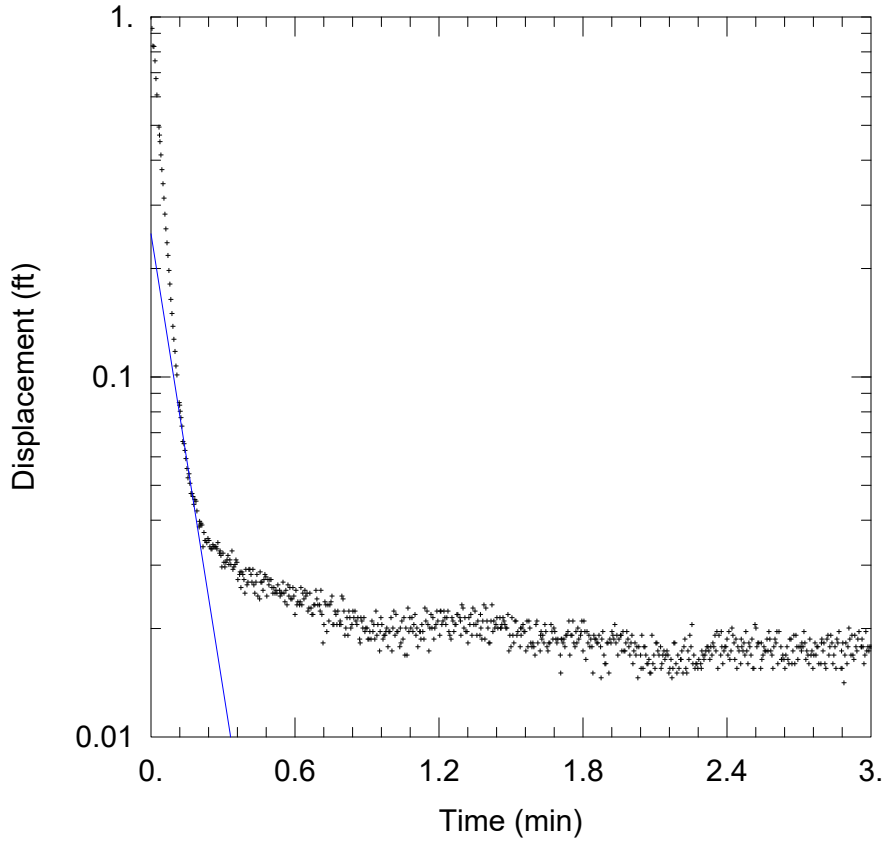
K = 5.113 ft/day
y0 = 0.2334 ft

AQUIFER DATA

Saturated Thickness: 22.43 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-4)

Initial Displacement: 1. ft
Total Well Penetration Depth: 22.2 ft
Casing Radius: 0.042 ft
Static Water Column Height: 22.2 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-4 RH2

Data Set: C:\...\HRL-4_RH2.aqt
Date: 09/16/22 Time: 14:23:33

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-4
Test Date: 08/29/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

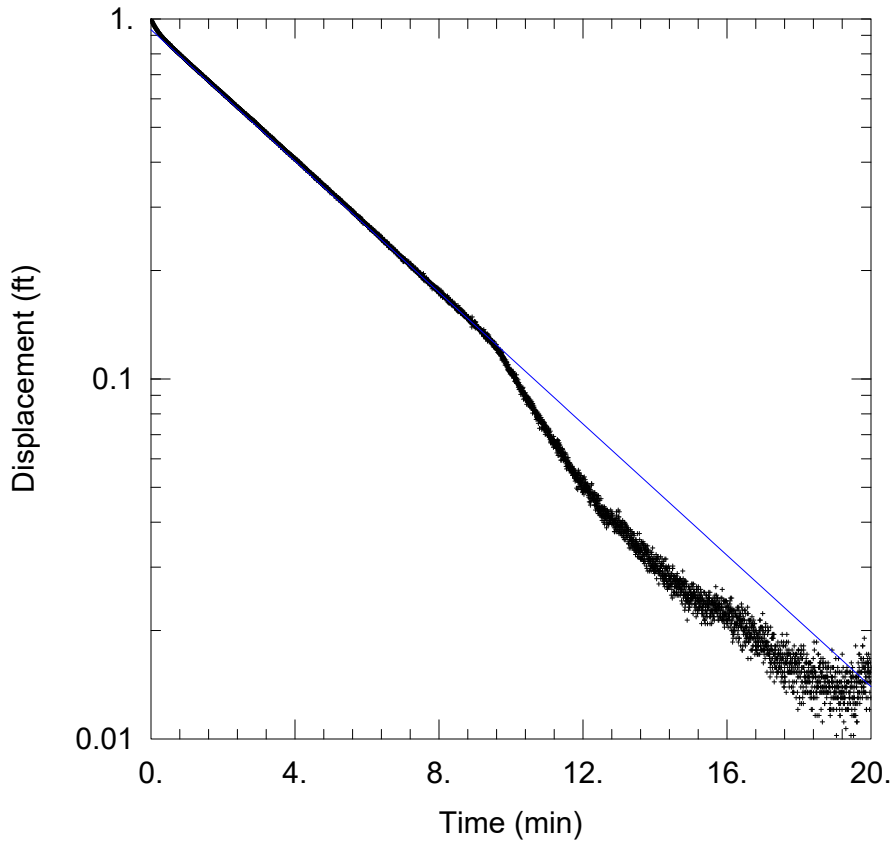
K = 5.099 ft/day
y0 = 0.2499 ft

AQUIFER DATA

Saturated Thickness: 22.43 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-4)

Initial Displacement: 1. ft
Total Well Penetration Depth: 22.2 ft
Casing Radius: 0.042 ft
Static Water Column Height: 22.2 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-6 FH1

Data Set: C:\...\HRL-6_FH1.aqt
Date: 09/16/22 Time: 14:23:29

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-6
Test Date: 08/23/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

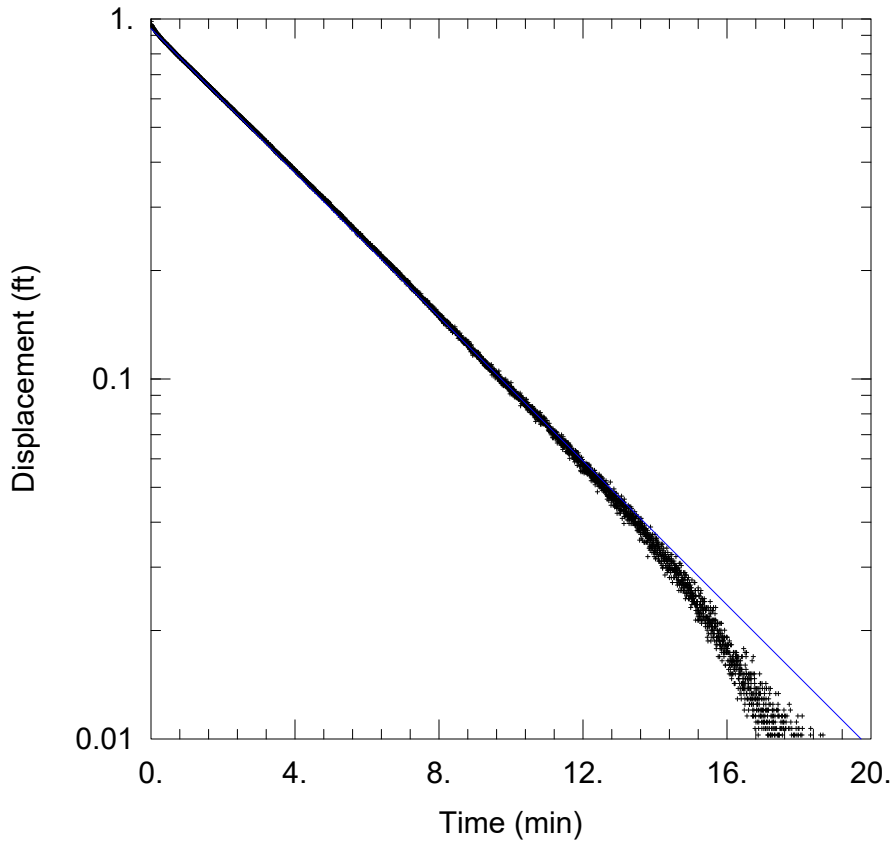
K = 0.1175 ft/day
y0 = 0.9336 ft

AQUIFER DATA

Saturated Thickness: 34. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-6)

Initial Displacement: 1. ft
Total Well Penetration Depth: 33.8 ft
Casing Radius: 0.042 ft
Static Water Column Height: 33.8 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-6 FH2

Data Set: C:\...\HRL-6_FH2.aqt
Date: 09/16/22 Time: 14:23:15

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-6
Test Date: 08/23/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

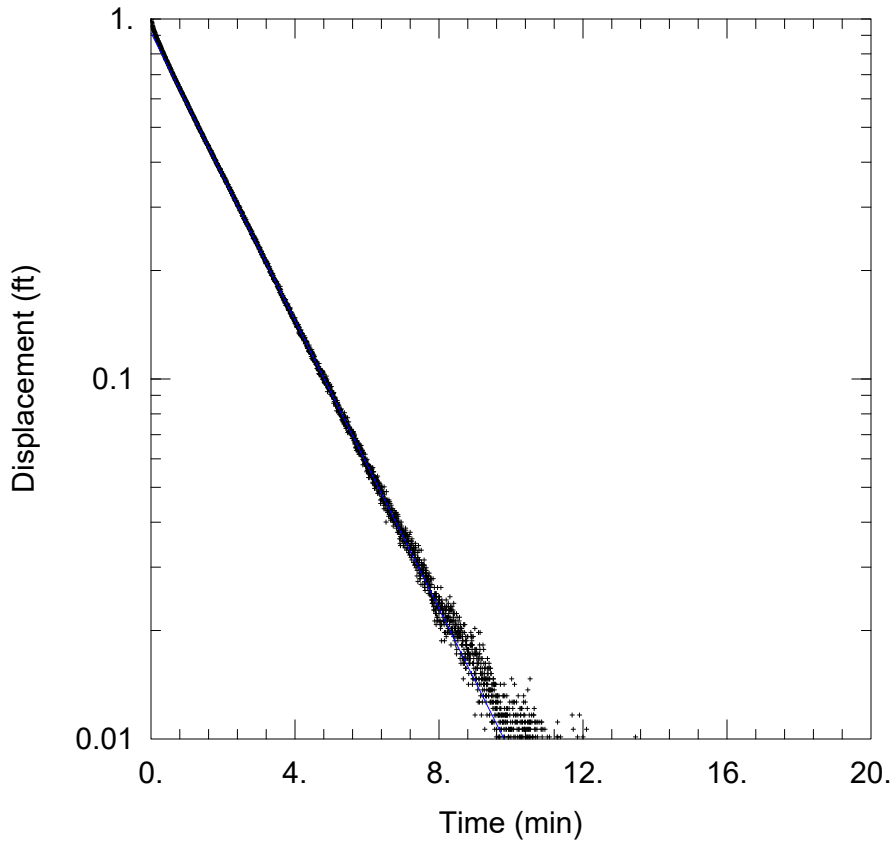
K = 0.1288 ft/day
y0 = 0.9397 ft

AQUIFER DATA

Saturated Thickness: 34. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-6)

Initial Displacement: 1. ft
Total Well Penetration Depth: 33.8 ft
Casing Radius: 0.042 ft
Static Water Column Height: 33.8 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-6 RH1

Data Set: C:\...\HRL-6_RH1.aqt
Date: 09/16/22 Time: 14:23:10

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-6
Test Date: 08/23/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

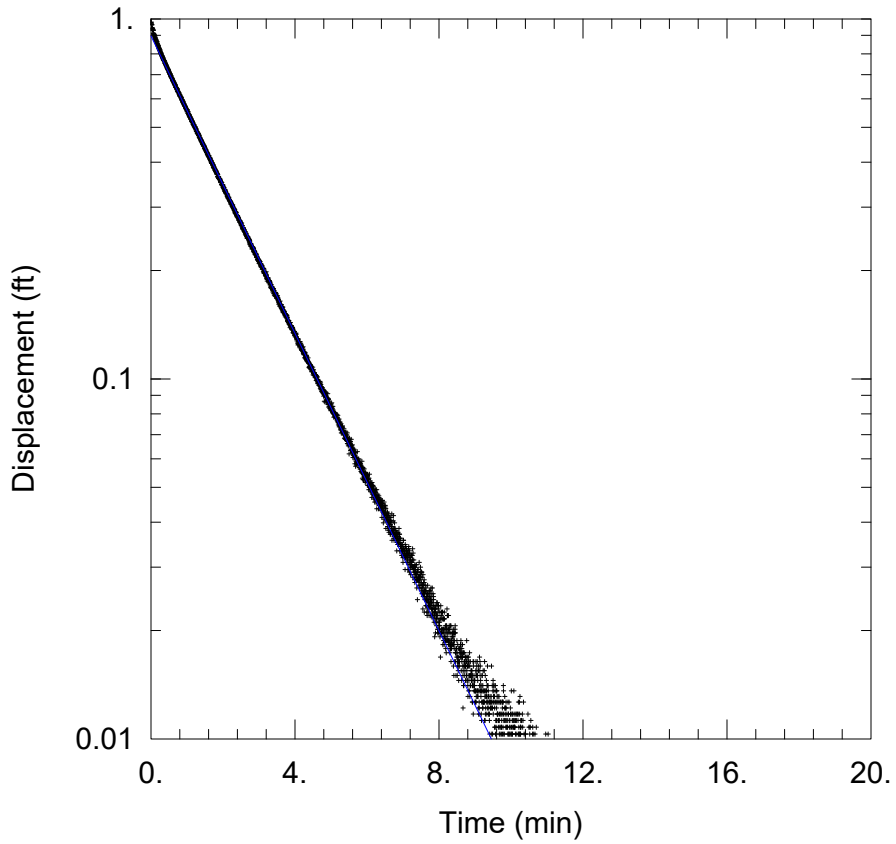
K = 0.2576 ft/day
y0 = 0.9149 ft

AQUIFER DATA

Saturated Thickness: 34. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-6)

Initial Displacement: 1. ft
Total Well Penetration Depth: 33.8 ft
Casing Radius: 0.042 ft
Static Water Column Height: 33.8 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-6 RH2

Data Set: C:\...\HRL-6_RH2.aqt
Date: 09/16/22 Time: 14:25:13

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-6
Test Date: 08/23/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

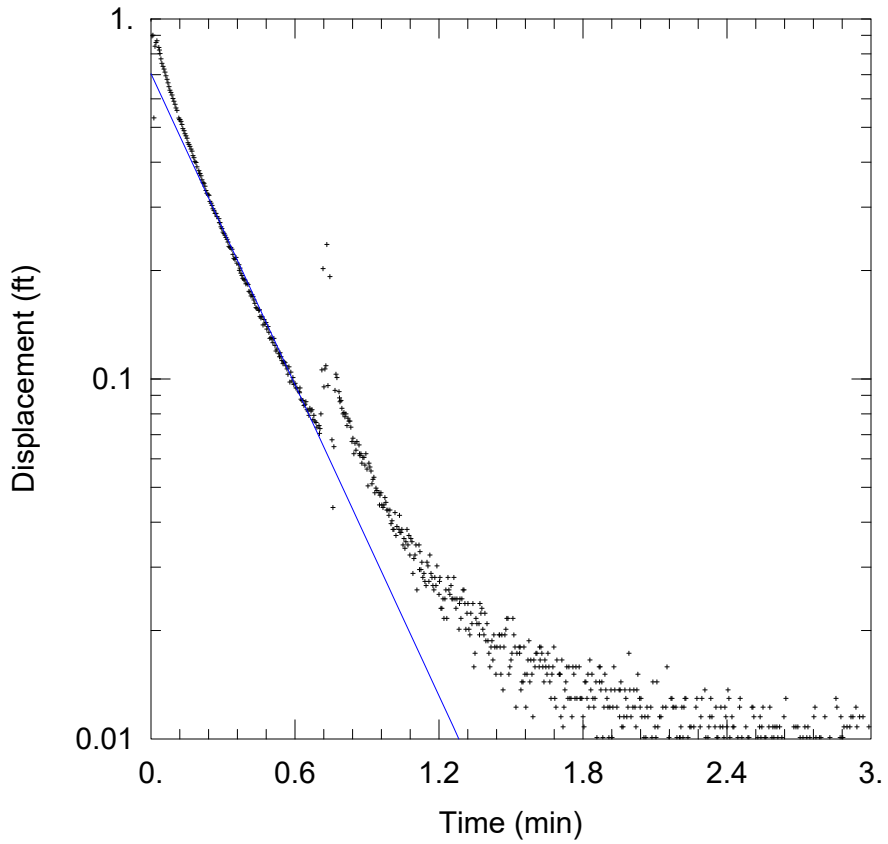
K = 0.266 ft/day
y0 = 0.8969 ft

AQUIFER DATA

Saturated Thickness: 34. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-6)

Initial Displacement: 1. ft
Total Well Penetration Depth: 33.8 ft
Casing Radius: 0.042 ft
Static Water Column Height: 33.8 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-7 FH1

Data Set: C:\...\HRL-7_FH1.aqt
Date: 09/16/22 Time: 14:25:33

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-7
Test Date: 08/24/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

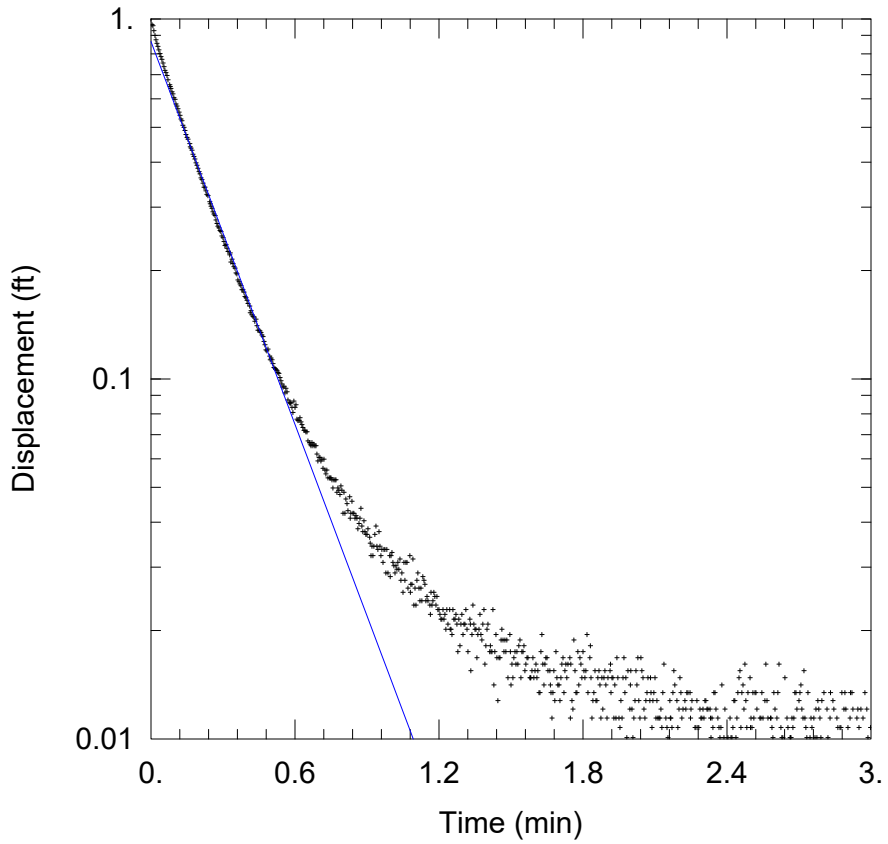
K = 1.757 ft/day
y0 = 0.7044 ft

AQUIFER DATA

Saturated Thickness: 23. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-7)

Initial Displacement: 1. ft
Total Well Penetration Depth: 22.8 ft
Casing Radius: 0.042 ft
Static Water Column Height: 22.8 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-7 FH2

Data Set: C:\...\HRL-7_FH2.aqt
Date: 09/16/22 Time: 14:25:29

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-7
Test Date: 08/24/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

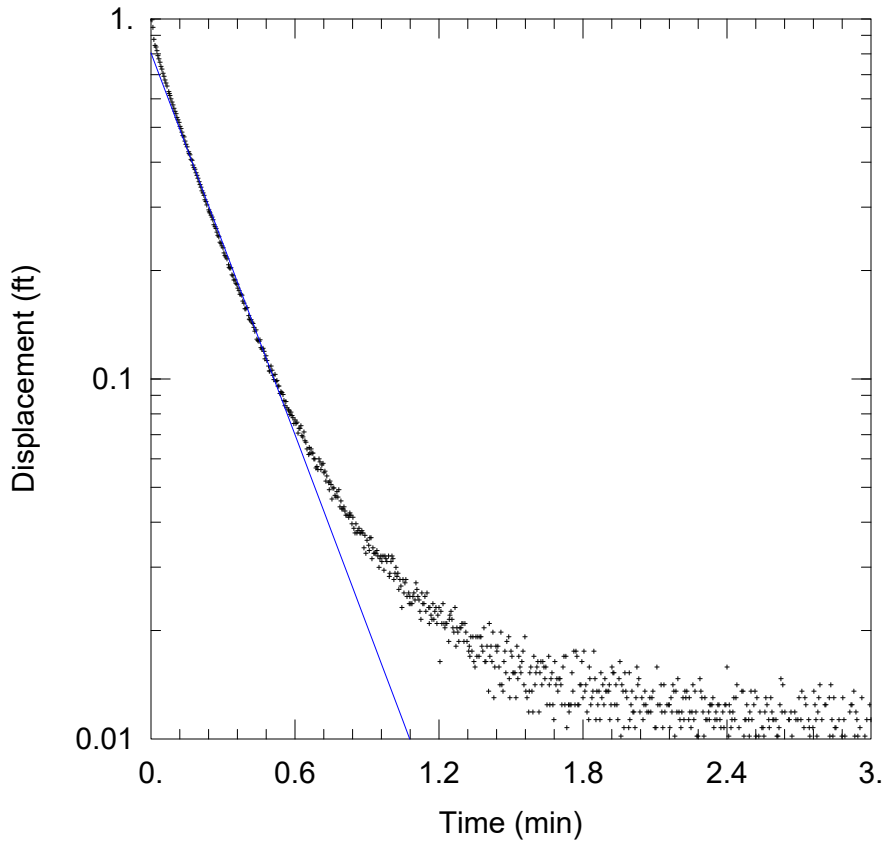
K = 2.163 ft/day
y0 = 0.8651 ft

AQUIFER DATA

Saturated Thickness: 23. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-7)

Initial Displacement: 1. ft
Total Well Penetration Depth: 22.8 ft
Casing Radius: 0.042 ft
Static Water Column Height: 22.8 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-7 RH1

Data Set: C:\...\HRL-7_RH1.aqt
Date: 09/16/22 Time: 14:25:25

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-7
Test Date: 08/24/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

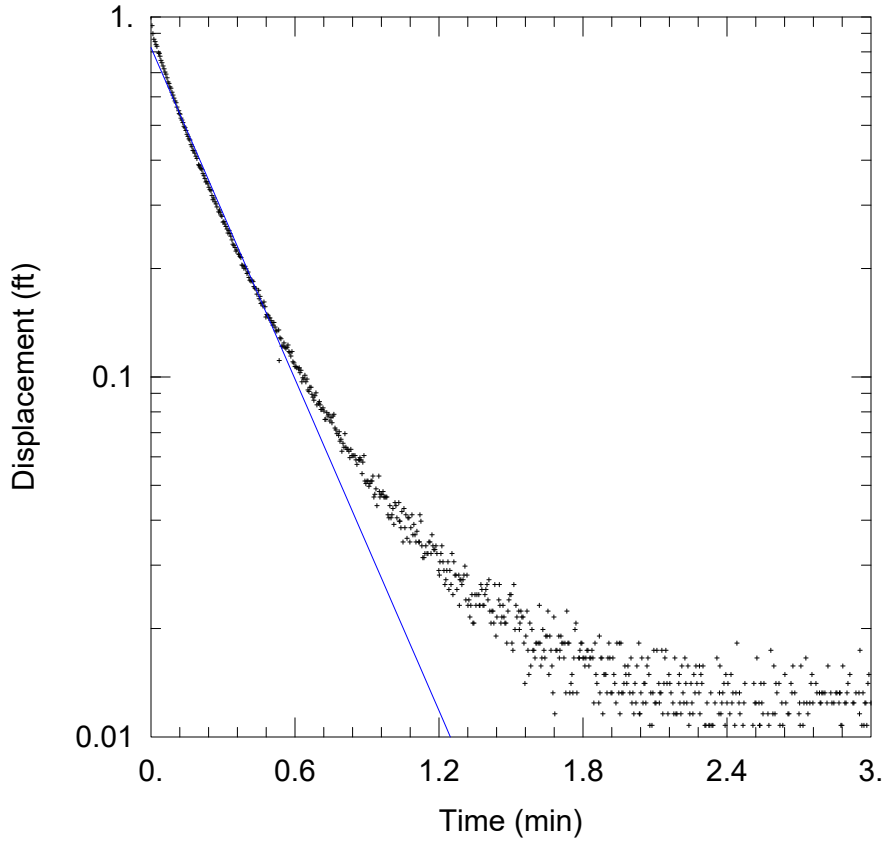
K = 2.156 ft/day
y0 = 0.8044 ft

AQUIFER DATA

Saturated Thickness: 23. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-7)

Initial Displacement: 1. ft
Total Well Penetration Depth: 22.8 ft
Casing Radius: 0.042 ft
Static Water Column Height: 22.8 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-7 RH2

Data Set: C:\...\HRL-7_RH2.aqt
Date: 09/16/22 Time: 14:25:37

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-7
Test Date: 08/24/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

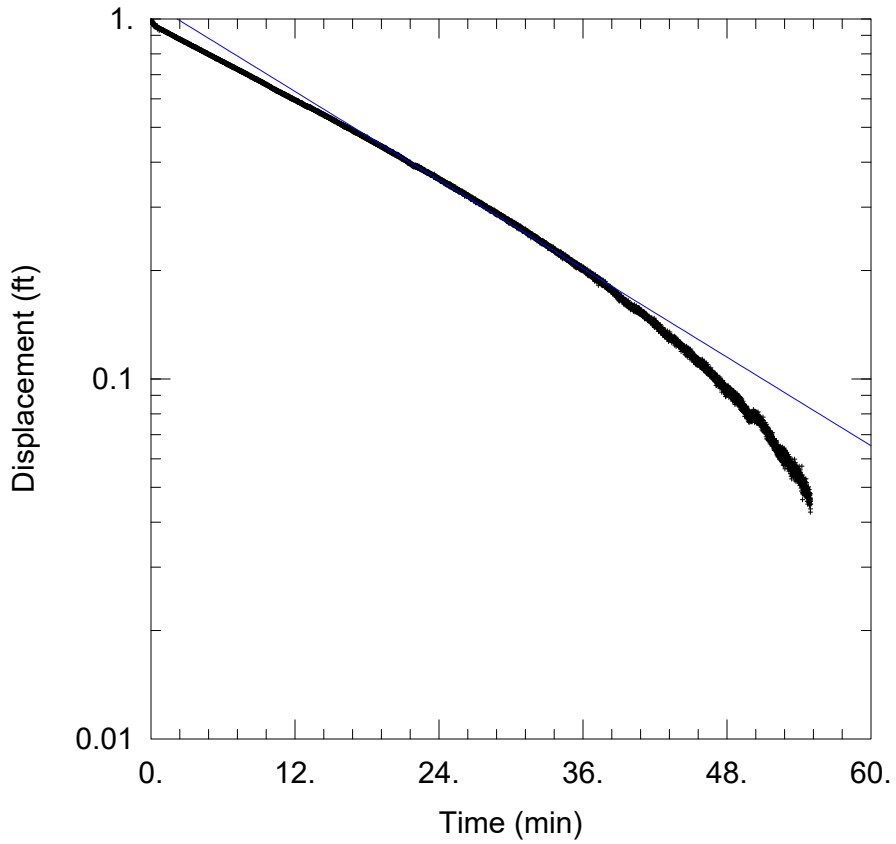
K = 1.873 ft/day
y0 = 0.8219 ft

AQUIFER DATA

Saturated Thickness: 23. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-7)

Initial Displacement: 1. ft
Total Well Penetration Depth: 22.8 ft
Casing Radius: 0.042 ft
Static Water Column Height: 22.8 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-8 FH1

Data Set: C:\...\HRL-8_FH1.aqt
Date: 09/16/22 Time: 14:27:59

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-8
Test Date: 08/26/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

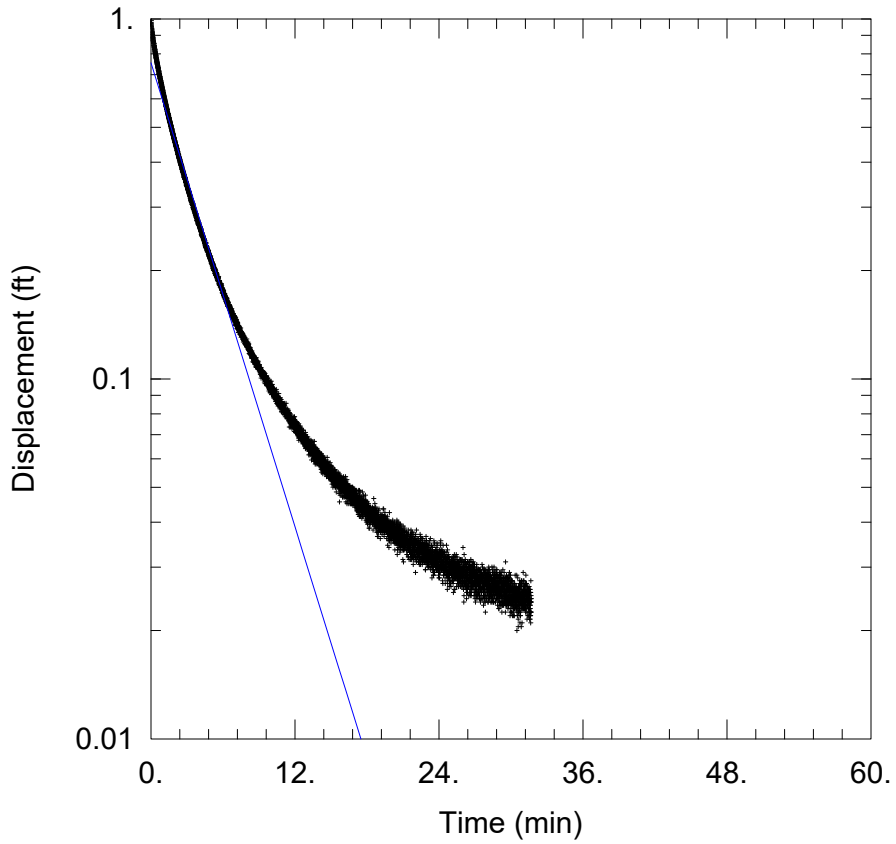
K = 0.02536 ft/day
y0 = 1.108 ft

AQUIFER DATA

Saturated Thickness: 25.3 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-8)

Initial Displacement: 1. ft
Total Well Penetration Depth: 25.1 ft
Casing Radius: 0.042 ft
Static Water Column Height: 25.1 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-8 FH2

Data Set: C:\...\HRL-8_FH2.aqt
Date: 09/16/22 Time: 14:31:21

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-8
Test Date: 08/26/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

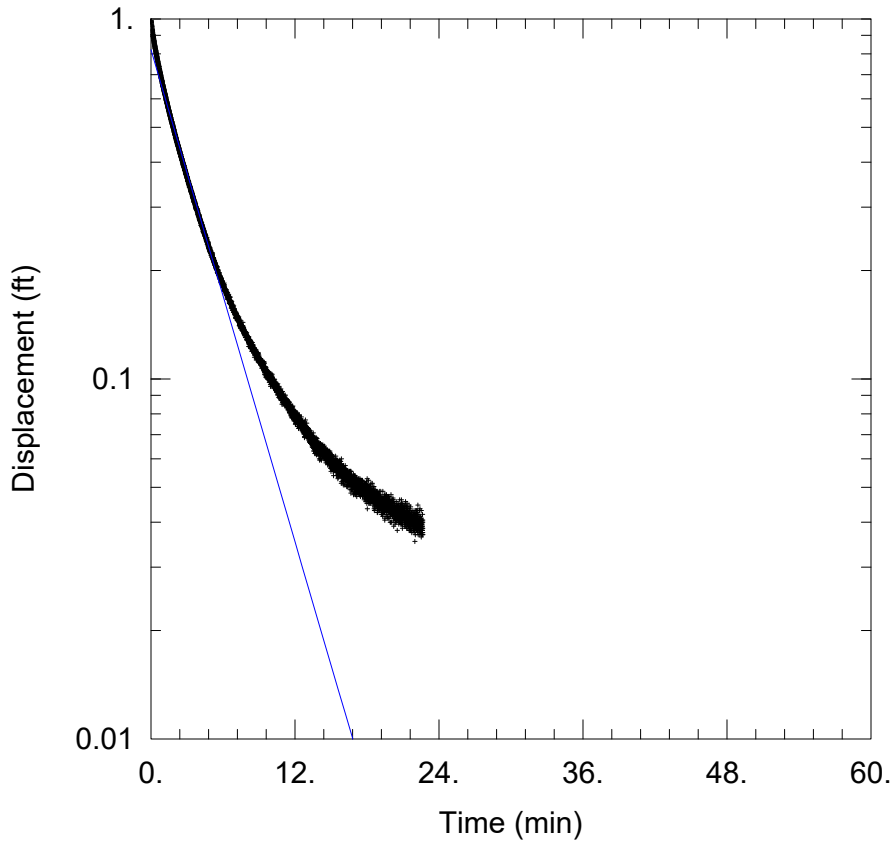
K = 0.1328 ft/day
y0 = 0.7551 ft

AQUIFER DATA

Saturated Thickness: 25.3 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-8)

Initial Displacement: 1. ft
Total Well Penetration Depth: 25.1 ft
Casing Radius: 0.042 ft
Static Water Column Height: 25.1 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-8 FH3

Data Set: C:\...\HRL-8_FH3.aqt
Date: 09/16/22 Time: 14:32:46

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-8
Test Date: 08/26/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

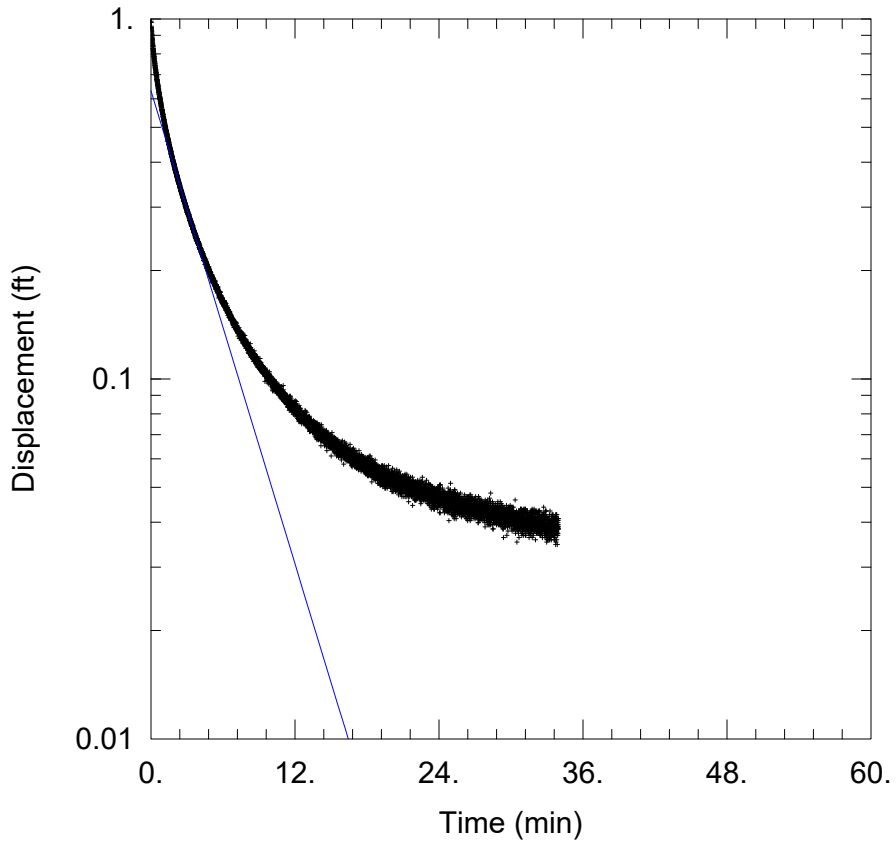
K = 0.1408 ft/day
y0 = 0.8209 ft

AQUIFER DATA

Saturated Thickness: 25.3 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-8)

Initial Displacement: 1. ft
Total Well Penetration Depth: 25.1 ft
Casing Radius: 0.042 ft
Static Water Column Height: 25.1 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-8 RH1

Data Set: C:\...\HRL-8_RH1.aqt
Date: 09/16/22 Time: 14:34:09

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-8
Test Date: 08/25/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

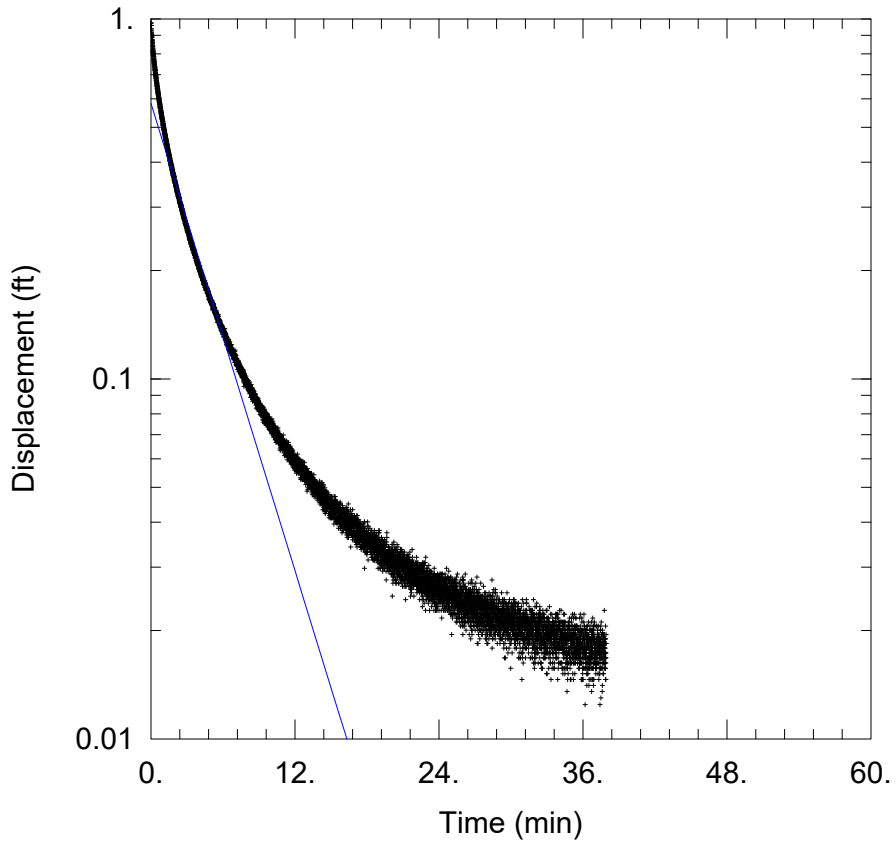
K = 0.1354 ft/day
y0 = 0.6312 ft

AQUIFER DATA

Saturated Thickness: 25.3 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-8)

Initial Displacement: 1. ft
Total Well Penetration Depth: 25.1 ft
Casing Radius: 0.042 ft
Static Water Column Height: 25.1 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-8 RH2

Data Set: C:\...\HRL-8_RH2.aqt
Date: 09/16/22 Time: 14:36:40

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-8
Test Date: 08/26/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

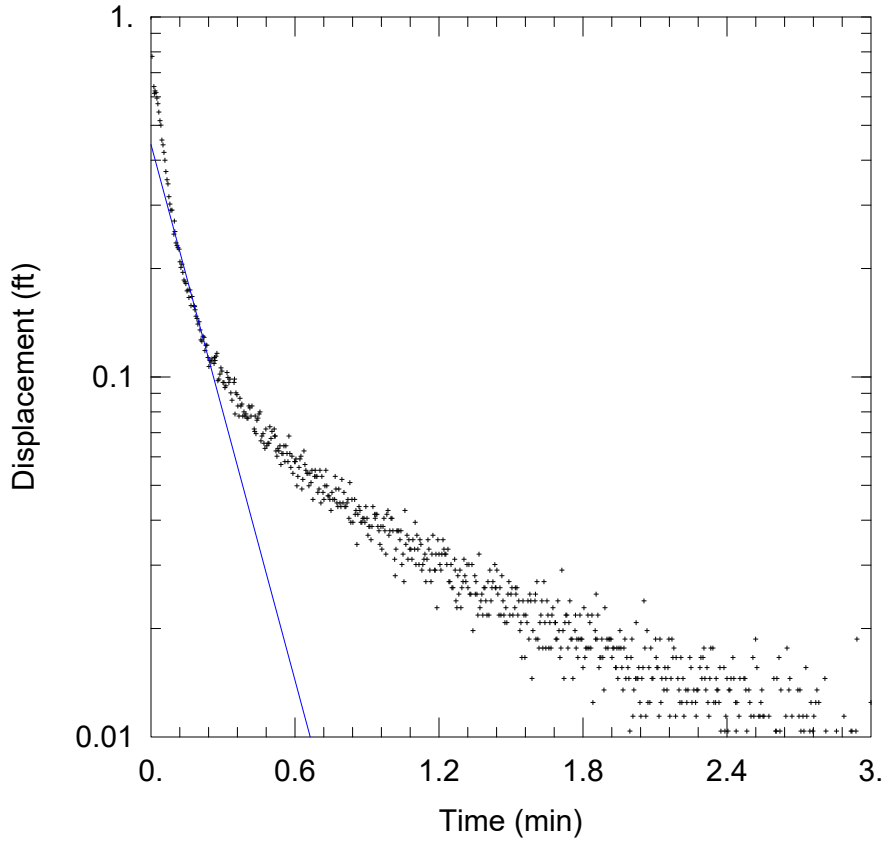
K = 0.1337 ft/day
y0 = 0.5821 ft

AQUIFER DATA

Saturated Thickness: 25.3 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-8)

Initial Displacement: 1. ft
Total Well Penetration Depth: 25.1 ft
Casing Radius: 0.042 ft
Static Water Column Height: 25.1 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-11 FH1

Data Set: C:\...\HRL-11_FH1.aqt
Date: 09/16/22 Time: 14:39:07

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-11
Test Date: 09/01/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

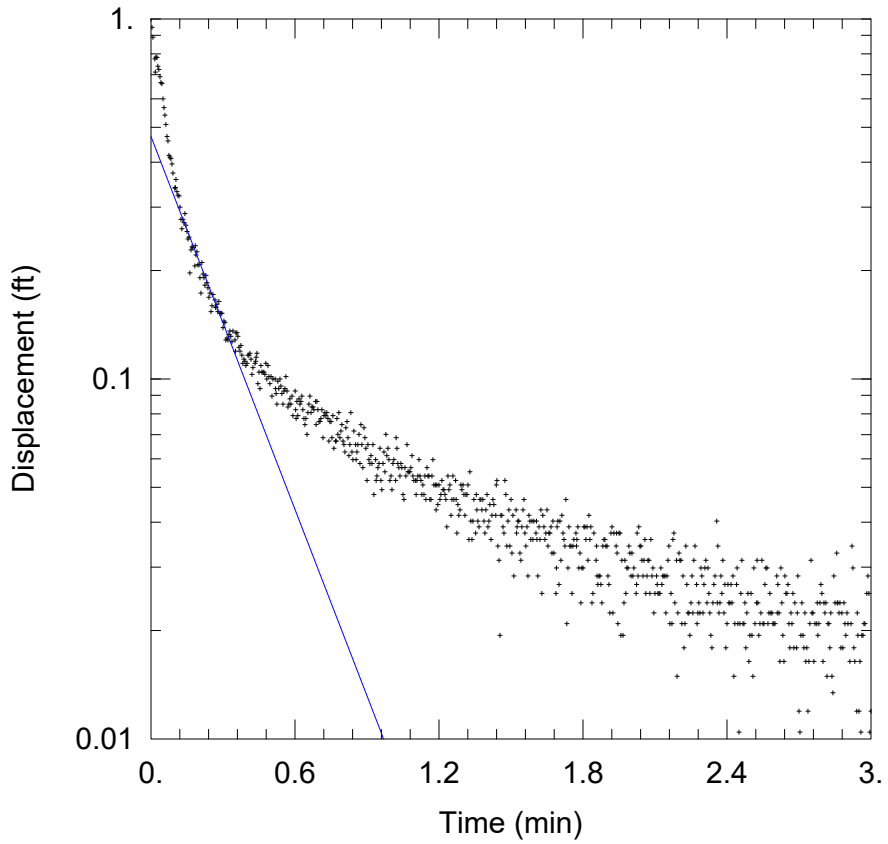
K = 2.926 ft/day
y0 = 0.4423 ft

AQUIFER DATA

Saturated Thickness: 18.3 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-11)

Initial Displacement: 1. ft
Total Well Penetration Depth: 18.1 ft
Casing Radius: 0.042 ft
Static Water Column Height: 18.1 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-11 FH2

Data Set: C:\...\HRL-11_FH2.aqt
Date: 09/16/22 Time: 14:40:18

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-11
Test Date: 09/01/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

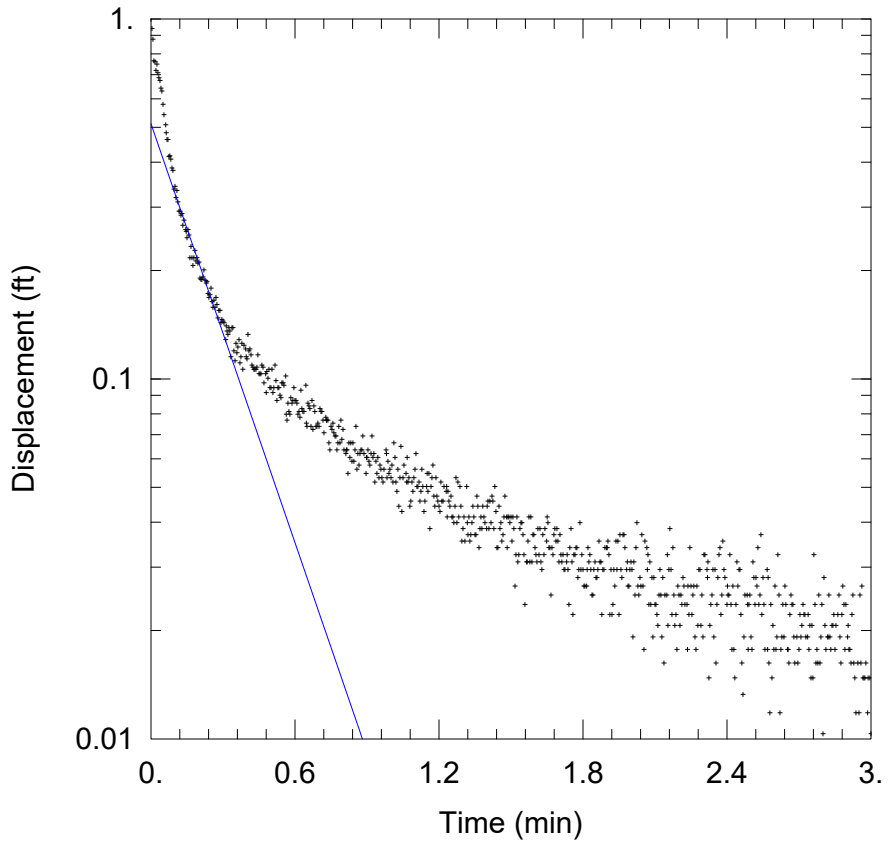
K = 2.036 ft/day
y0 = 0.4712 ft

AQUIFER DATA

Saturated Thickness: 18.3 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-11)

Initial Displacement: 1. ft
Total Well Penetration Depth: 18.1 ft
Casing Radius: 0.042 ft
Static Water Column Height: 18.1 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-11 FH3

Data Set: C:\...\HRL-11_FH3.aqt
Date: 09/16/22 Time: 14:40:56

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-11
Test Date: 09/01/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

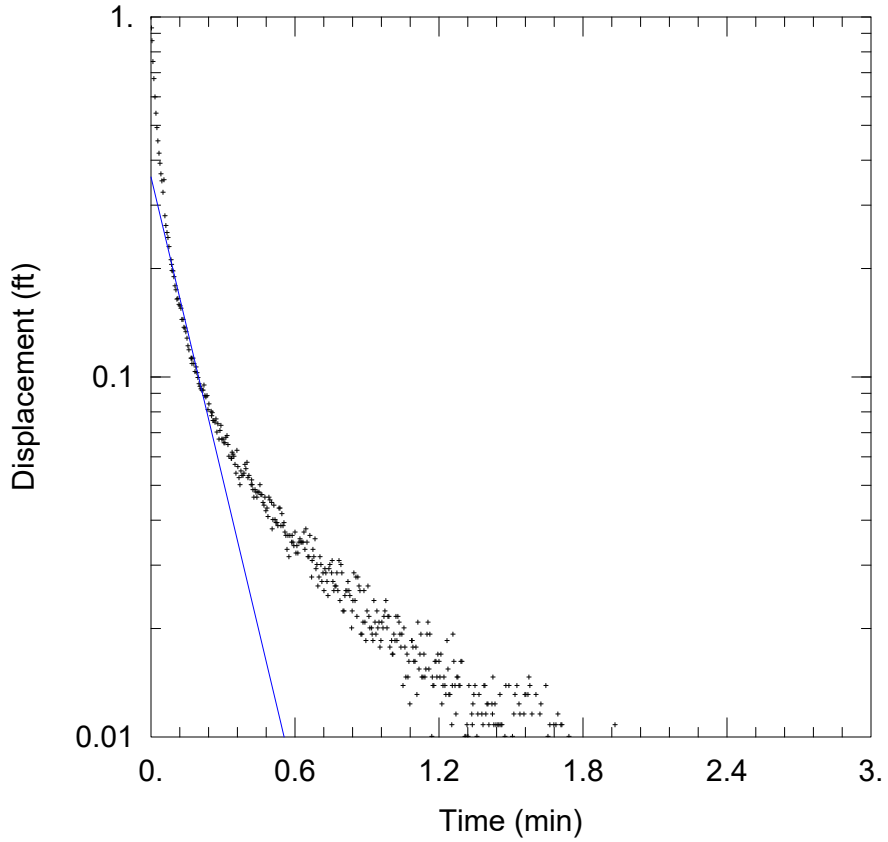
K = 2.287 ft/day
y0 = 0.5112 ft

AQUIFER DATA

Saturated Thickness: 18.3 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-11)

Initial Displacement: 1. ft
Total Well Penetration Depth: 18.1 ft
Casing Radius: 0.042 ft
Static Water Column Height: 18.1 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-11 RH1

Data Set: C:\...\HRL-11_RH1.aqt
Date: 09/16/22 Time: 14:41:42

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-11
Test Date: 09/01/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

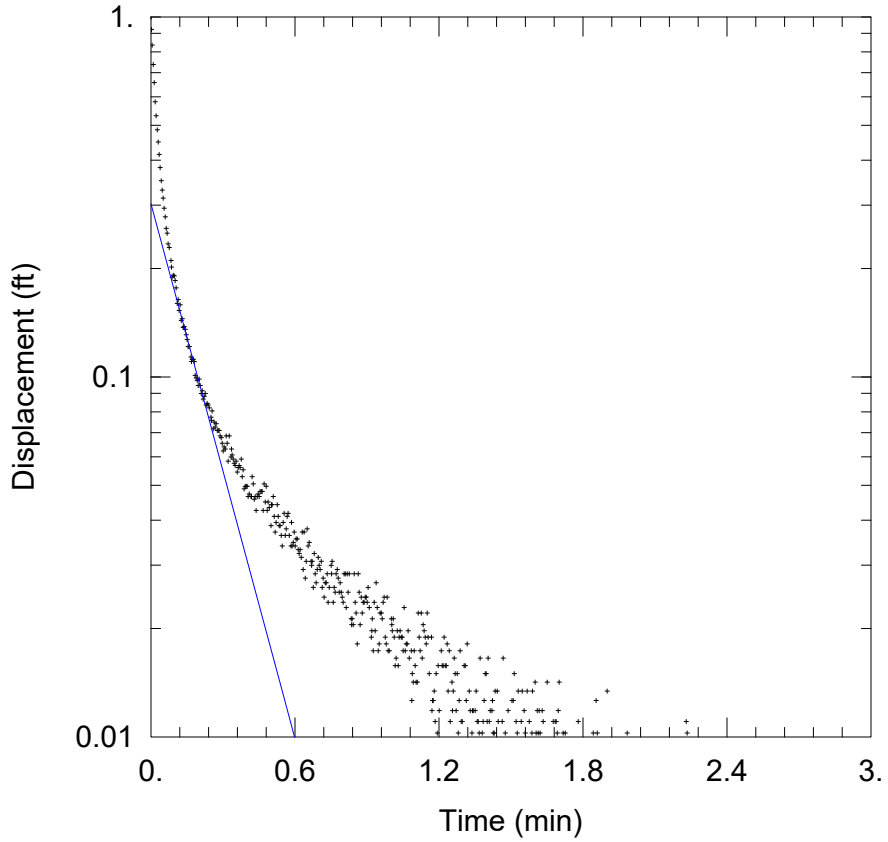
K = 3.307 ft/day
y0 = 0.3593 ft

AQUIFER DATA

Saturated Thickness: 18.3 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-11)

Initial Displacement: 1. ft
Total Well Penetration Depth: 18.1 ft
Casing Radius: 0.042 ft
Static Water Column Height: 18.1 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-11 RH2

Data Set: C:\...\HRL-11_RH2.aqt
Date: 09/16/22 Time: 14:42:40

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-11
Test Date: 09/01/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

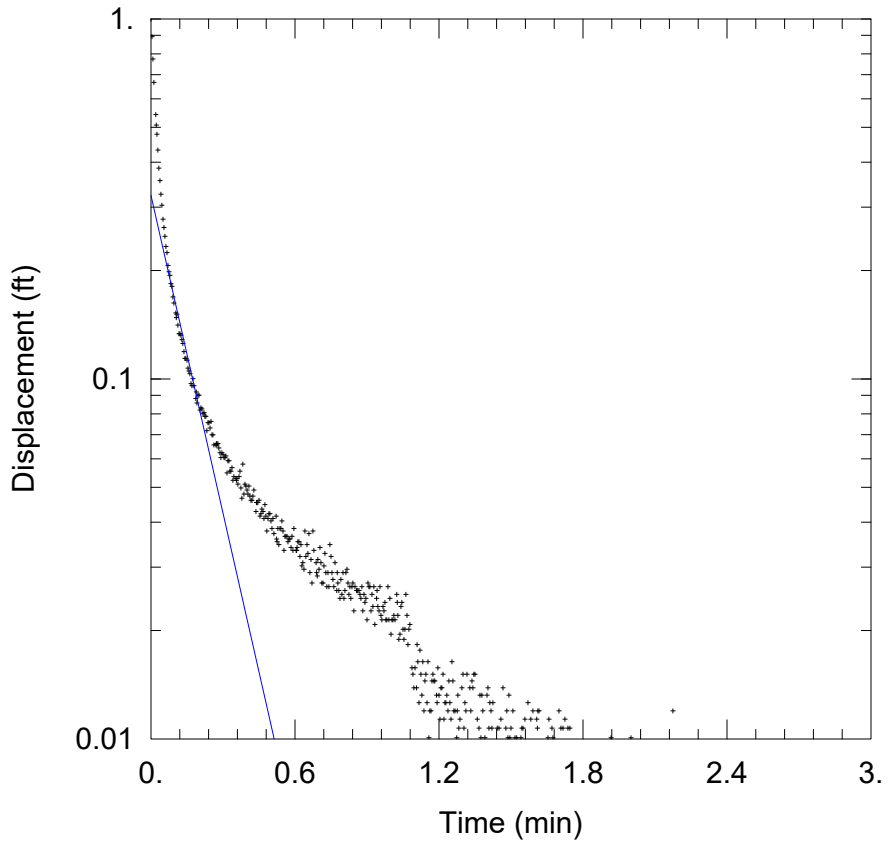
K = 2.919 ft/day
y0 = 0.3026 ft

AQUIFER DATA

Saturated Thickness: 18.3 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-11)

Initial Displacement: 1. ft
Total Well Penetration Depth: 18.1 ft
Casing Radius: 0.042 ft
Static Water Column Height: 18.1 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-11 RH3

Data Set: C:\...\HRL-11_RH3.aqt
Date: 09/16/22 Time: 14:43:16

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-11
Test Date: 09/01/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

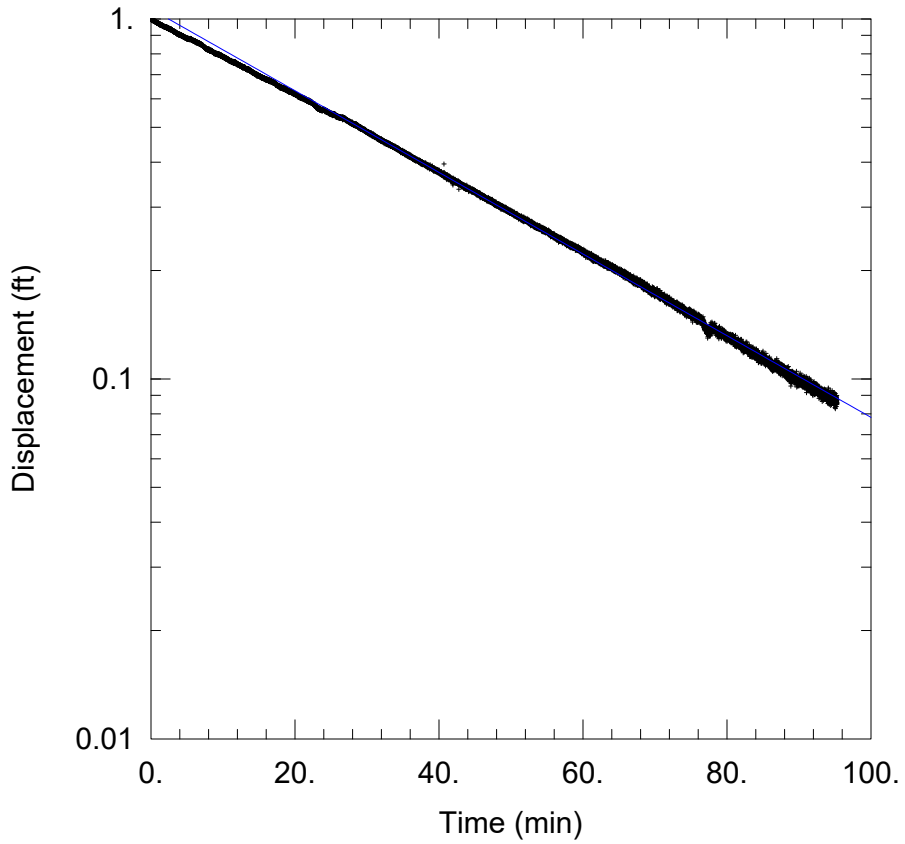
K = 3.469 ft/day
y0 = 0.3231 ft

AQUIFER DATA

Saturated Thickness: 18.3 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-11)

Initial Displacement: 1. ft
Total Well Penetration Depth: 18.1 ft
Casing Radius: 0.042 ft
Static Water Column Height: 18.1 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-12A FH1

Data Set: C:\...\HRL-12A_FH1.aqt
Date: 09/16/22 Time: 14:45:47

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-12A
Test Date: 08/30/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

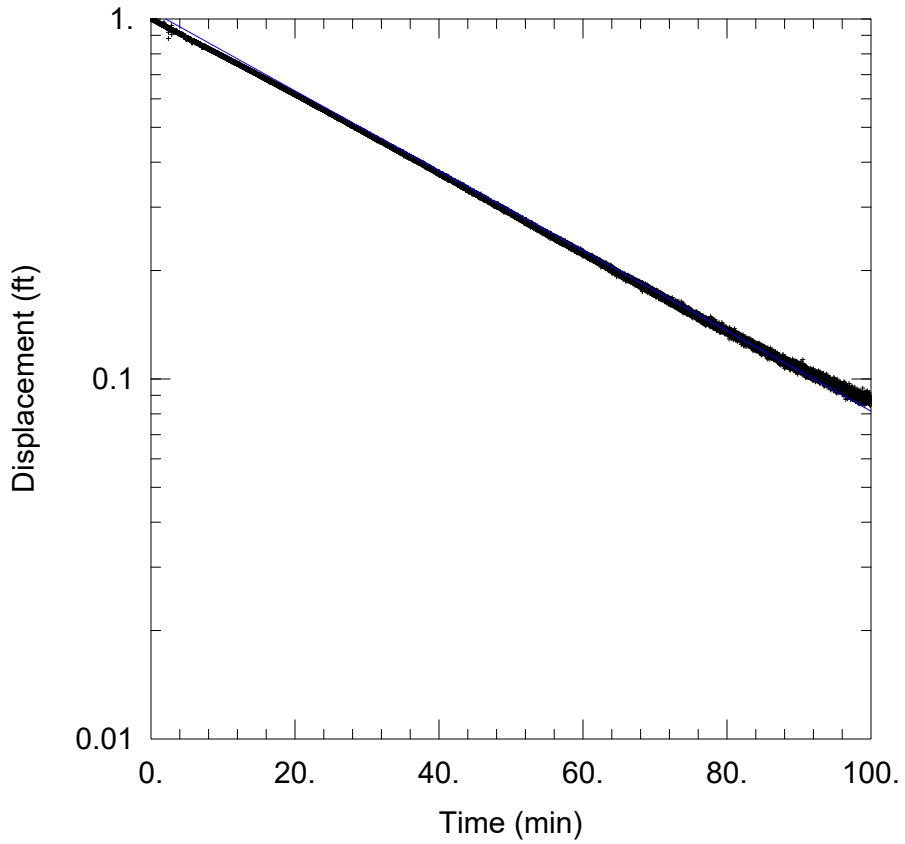
K = 0.04619 ft/day
y0 = 1.065 ft

AQUIFER DATA

Saturated Thickness: 16.8 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-12A)

Initial Displacement: 1. ft
Total Well Penetration Depth: 16.4 ft
Casing Radius: 0.083 ft
Static Water Column Height: 16.4 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-12A FH2

Data Set: C:\...\HRL-12A_FH2.aqt
Date: 09/16/22 Time: 14:46:42

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-12A
Test Date: 08/31/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

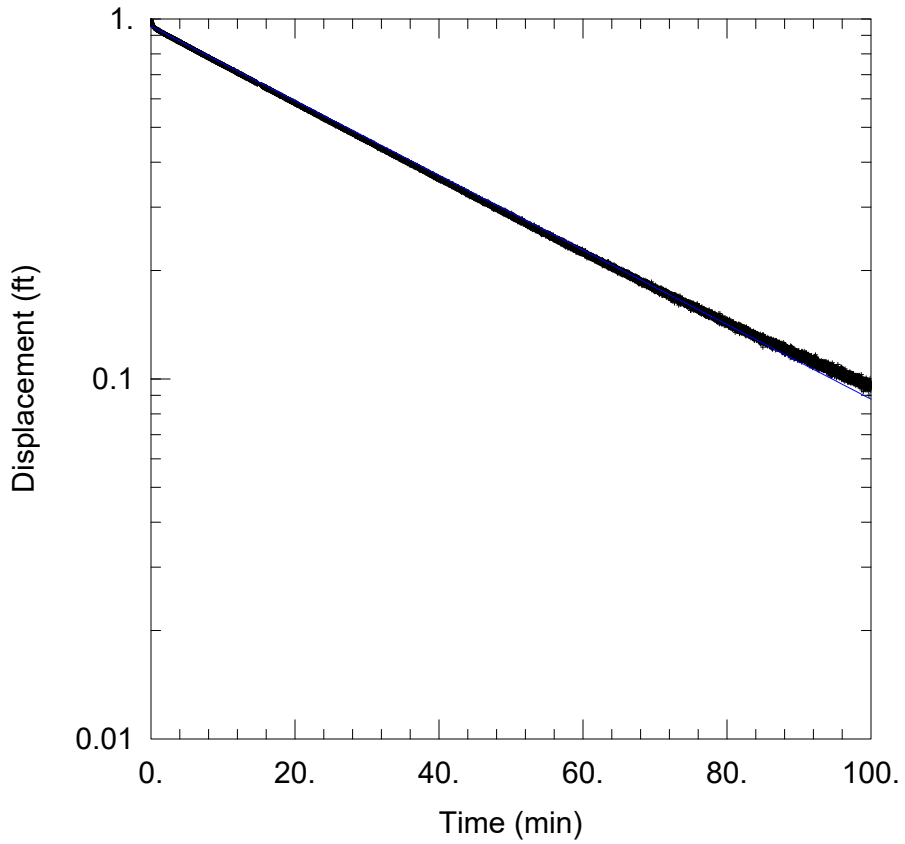
K = 0.04528 ft/day
y0 = 1.053 ft

AQUIFER DATA

Saturated Thickness: 16.8 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-12A)

Initial Displacement: 1. ft
Total Well Penetration Depth: 16.4 ft
Casing Radius: 0.083 ft
Static Water Column Height: 16.4 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-12A RH1

Data Set: C:\...\HRL-12A_RH1.aqt
Date: 09/16/22 Time: 14:47:44

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-12A
Test Date: 08/30/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

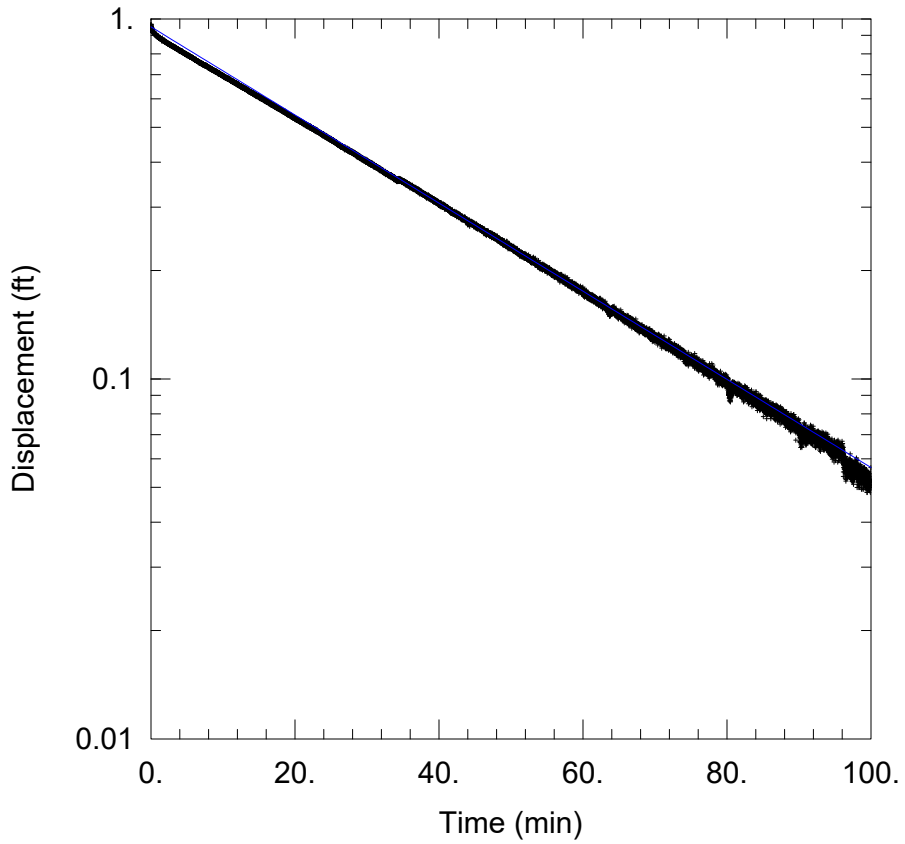
K = 0.04219 ft/day
y0 = 0.9546 ft

AQUIFER DATA

Saturated Thickness: 16.8 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-12A)

Initial Displacement: 1. ft
Total Well Penetration Depth: 16.4 ft
Casing Radius: 0.083 ft
Static Water Column Height: 16.4 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-12A RH2

Data Set: C:\...\HRL-12A_RH2.aqt
Date: 09/16/22 Time: 14:48:40

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-12A
Test Date: 08/31/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

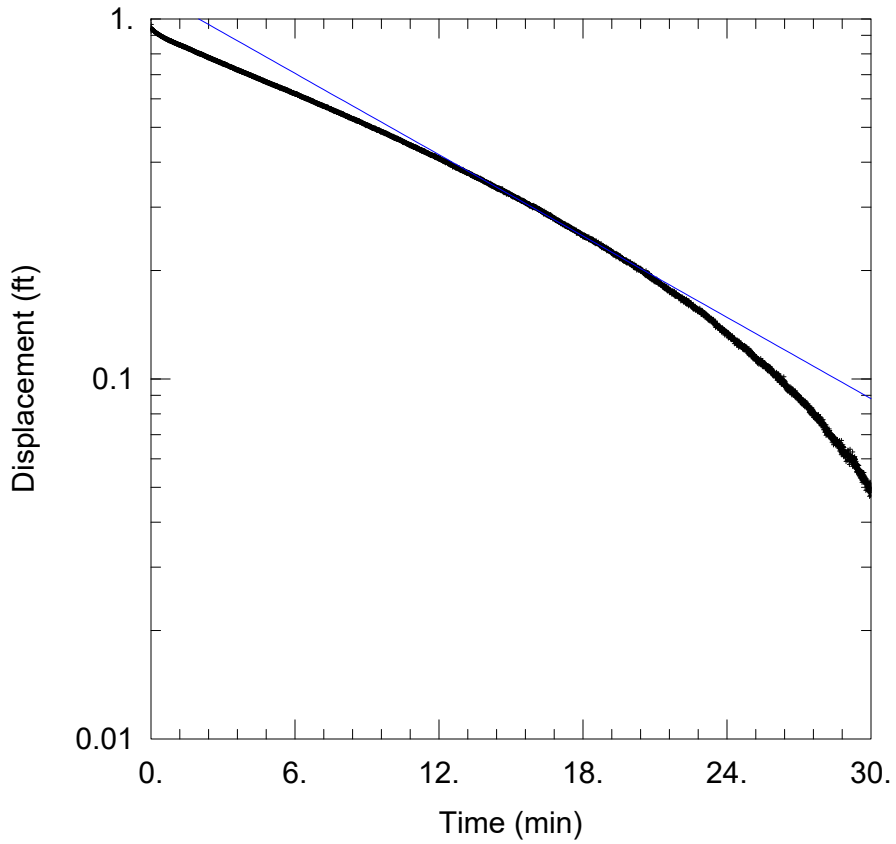
K = 0.04985 ft/day
y0 = 0.9507 ft

AQUIFER DATA

Saturated Thickness: 16.8 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-12A)

Initial Displacement: 1. ft
Total Well Penetration Depth: 16.4 ft
Casing Radius: 0.083 ft
Static Water Column Height: 16.4 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-13 FH1

Data Set: C:\...\HRL-13_FH1.aqt
Date: 09/16/22 Time: 14:52:10

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-12A
Test Date: 08/29/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

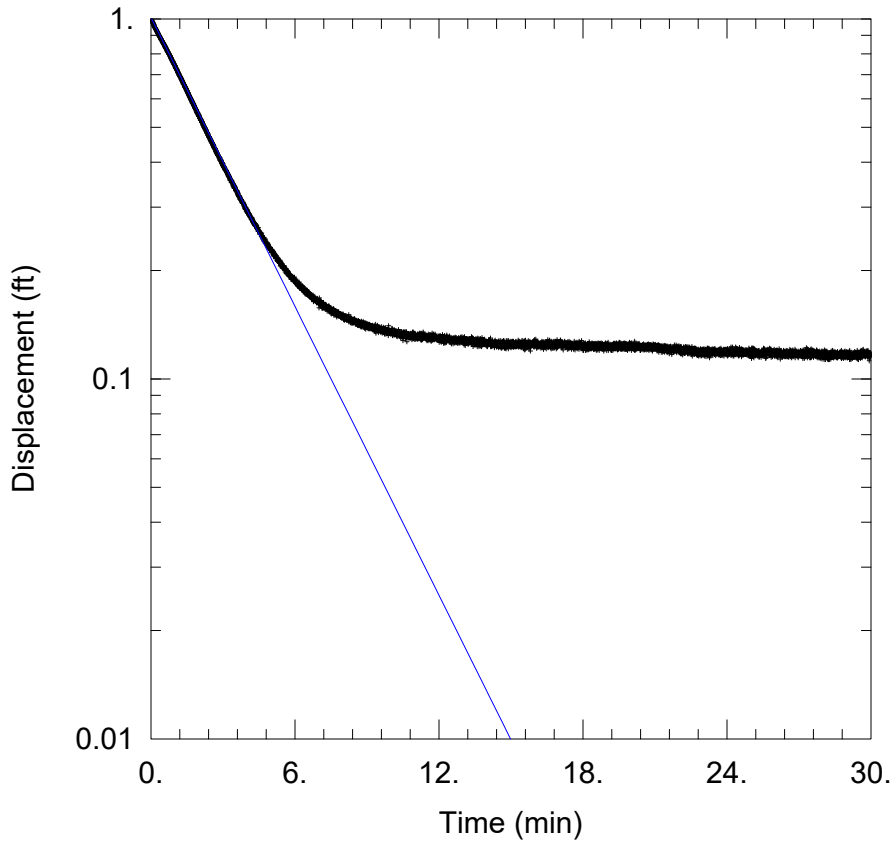
K = 0.04498 ft/day
y0 = 1.188 ft

AQUIFER DATA

Saturated Thickness: 19.9 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-13)

Initial Displacement: 1. ft
Total Well Penetration Depth: 19.7 ft
Casing Radius: 0.042 ft
Static Water Column Height: 19.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-13 FH2

Data Set: C:\...\HRL-13_FH2.aqt
Date: 09/16/22 Time: 14:53:16

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-12A
Test Date: 08/30/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

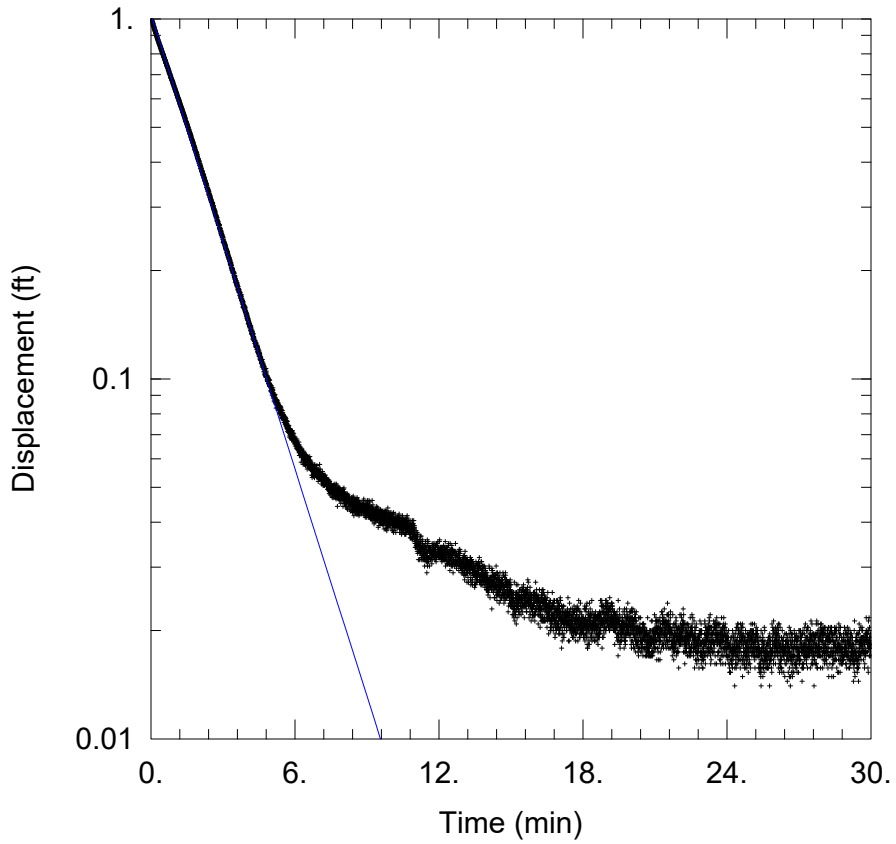
K = 0.1598 ft/day
y0 = 1.01 ft

AQUIFER DATA

Saturated Thickness: 19.9 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-13)

Initial Displacement: 1. ft
Total Well Penetration Depth: 19.7 ft
Casing Radius: 0.042 ft
Static Water Column Height: 19.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-13 FH3

Data Set: C:\...\HRL-13_FH3.aqt
Date: 09/16/22 Time: 14:53:49

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-12A
Test Date: 08/30/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

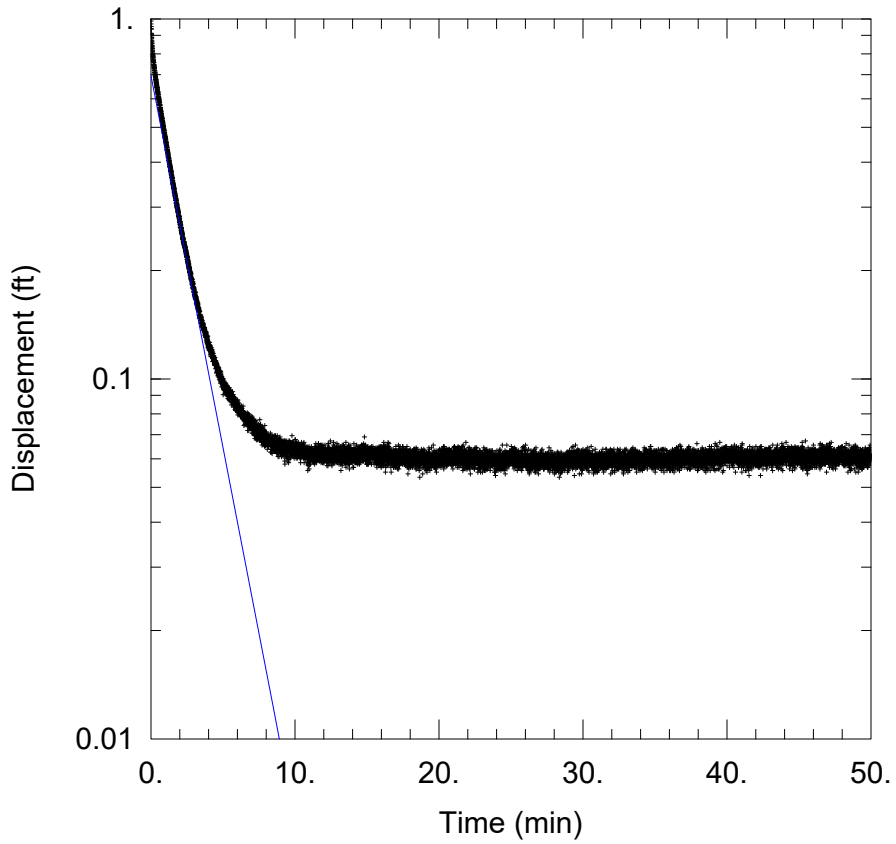
K = 0.2513 ft/day
y0 = 1.029 ft

AQUIFER DATA

Saturated Thickness: 19.9 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-13)

Initial Displacement: 1. ft
Total Well Penetration Depth: 19.7 ft
Casing Radius: 0.042 ft
Static Water Column Height: 19.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-13 RH3

Data Set: C:\...\HRL-13_RH3.aqt
Date: 09/16/22 Time: 14:57:12

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-12A
Test Date: 08/30/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

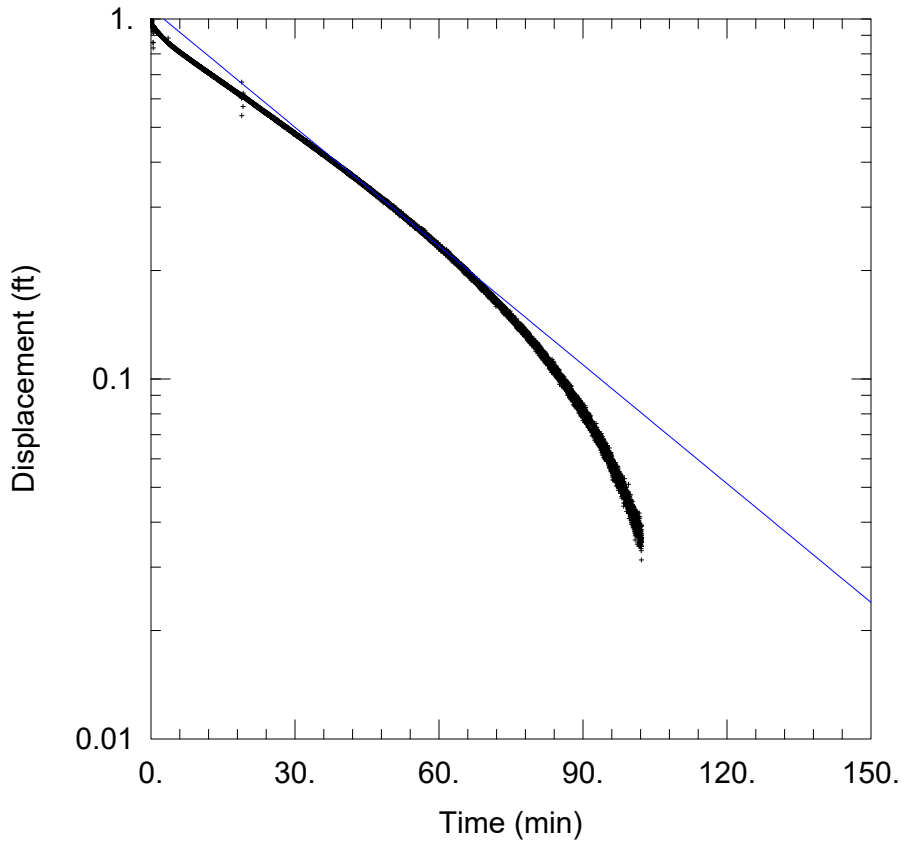
K = 0.2467 ft/day
y0 = 0.6953 ft

AQUIFER DATA

Saturated Thickness: 19.9 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-13)

Initial Displacement: 1. ft
Total Well Penetration Depth: 19.7 ft
Casing Radius: 0.042 ft
Static Water Column Height: 19.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-14 FH1

Data Set: C:\...\HRL-14_FH1.aqt
Date: 09/16/22 Time: 15:01:23

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-14
Test Date: 08/24/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

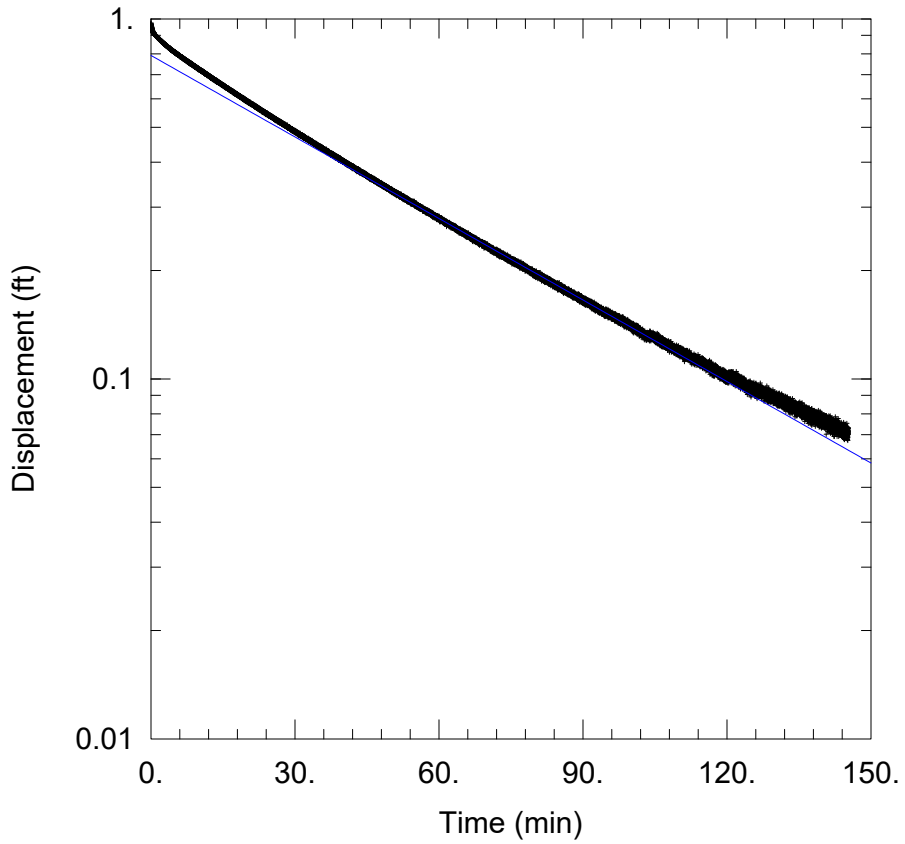
K = 0.01269 ft/day
y0 = 1.069 ft

AQUIFER DATA

Saturated Thickness: 15.9 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-14)

Initial Displacement: 1. ft
Total Well Penetration Depth: 15.7 ft
Casing Radius: 0.042 ft
Static Water Column Height: 15.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-14 FH2

Data Set: C:\...\HRL-14_FH2.aqt
Date: 09/16/22 Time: 15:00:55

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-14
Test Date: 08/25/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

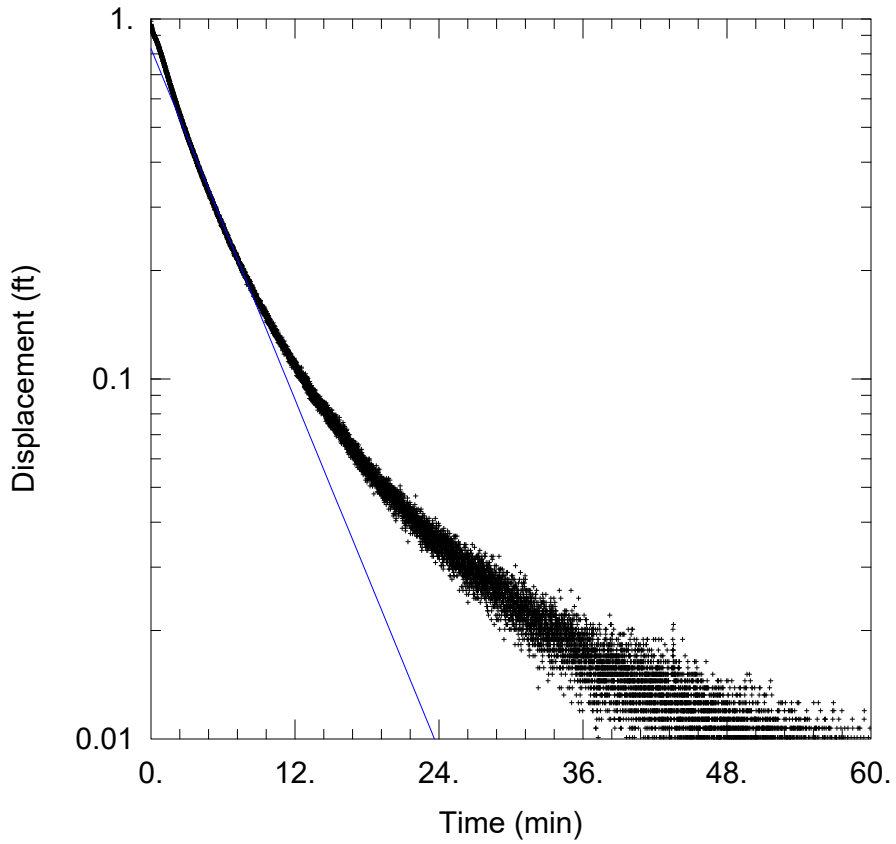
K = 0.008711 ft/day
y0 = 0.7915 ft

AQUIFER DATA

Saturated Thickness: 15.9 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-14)

Initial Displacement: 1. ft
Total Well Penetration Depth: 15.7 ft
Casing Radius: 0.042 ft
Static Water Column Height: 15.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-14 RH1

Data Set: C:\...\HRL-14_RH1.aqt
Date: 09/16/22 Time: 15:02:49

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-14
Test Date: 08/24/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

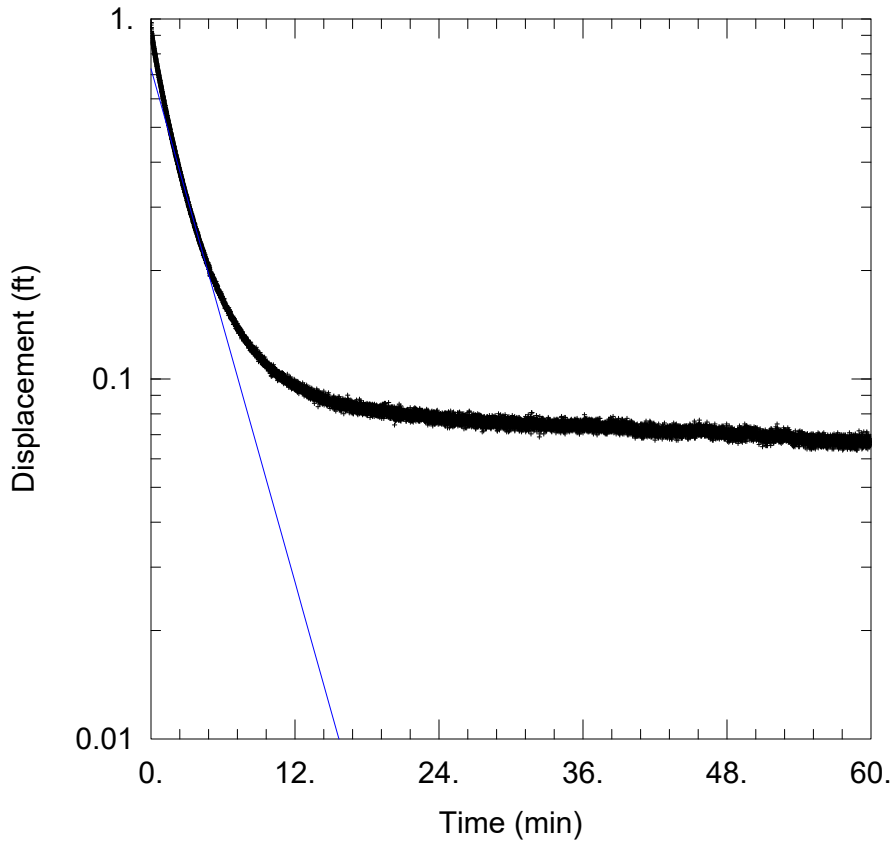
K = 0.09367 ft/day
y0 = 0.8267 ft

AQUIFER DATA

Saturated Thickness: 15.9 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-14)

Initial Displacement: 1. ft
Total Well Penetration Depth: 15.7 ft
Casing Radius: 0.042 ft
Static Water Column Height: 15.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-14 RH2

Data Set: C:\...\HRL-14_RH2.aqt
Date: 09/16/22 Time: 15:03:48

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-14
Test Date: 08/25/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

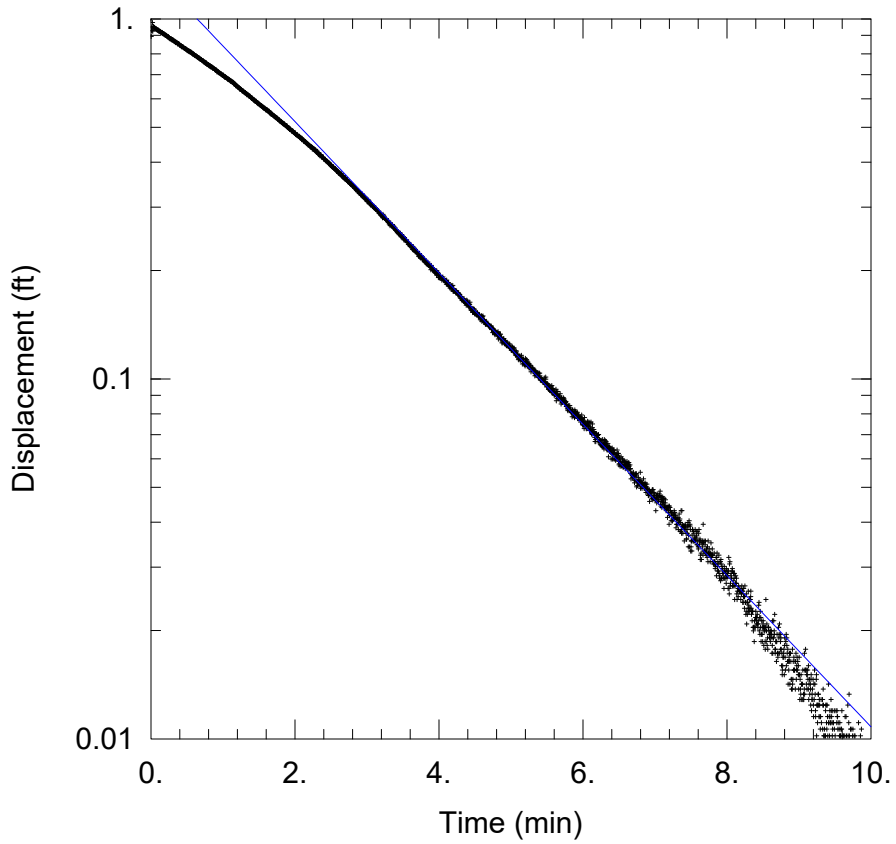
K = 0.1371 ft/day
y0 = 0.7269 ft

AQUIFER DATA

Saturated Thickness: 15.9 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-14)

Initial Displacement: 1. ft
Total Well Penetration Depth: 15.7 ft
Casing Radius: 0.042 ft
Static Water Column Height: 15.7 ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-16 FH1

Data Set: C:\...\HRL-16_FH1.aqt
Date: 09/16/22 Time: 15:06:07

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-16
Test Date: 08/31/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

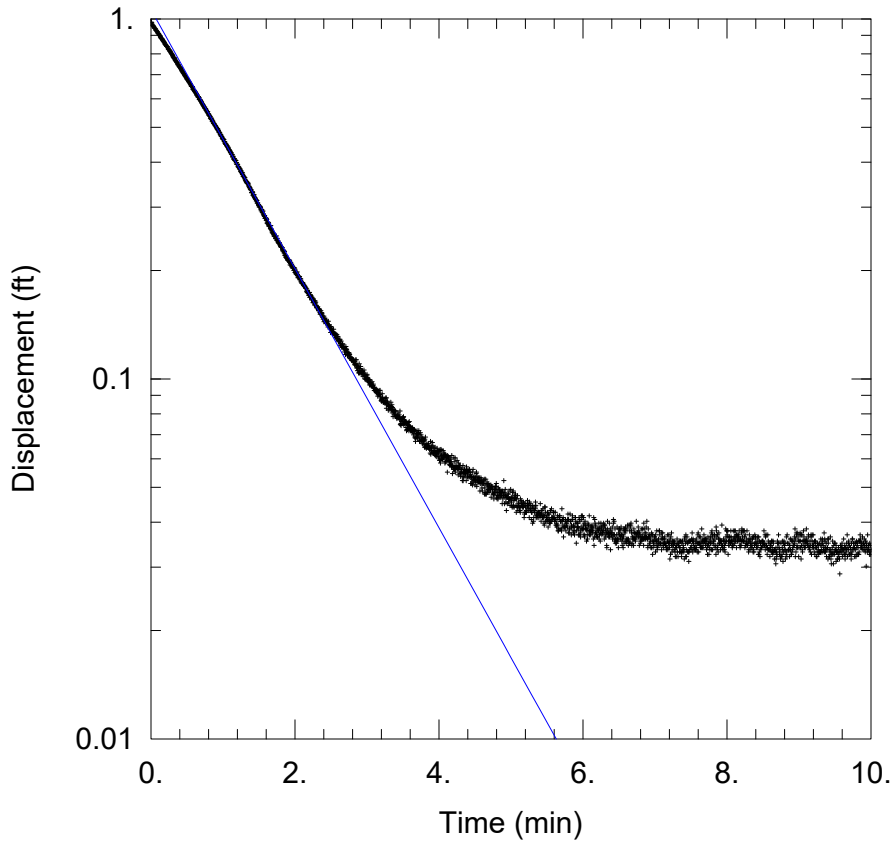
K = 0.8604 ft/day
y0 = 1.364 ft

AQUIFER DATA

Saturated Thickness: 17.4 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-16)

Initial Displacement: 1. ft
Total Well Penetration Depth: 17. ft
Casing Radius: 0.083 ft
Static Water Column Height: 17. ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-16 FH2

Data Set: C:\...\HRL-16_FH2.aqt
Date: 09/16/22 Time: 15:06:52

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-16
Test Date: 08/31/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

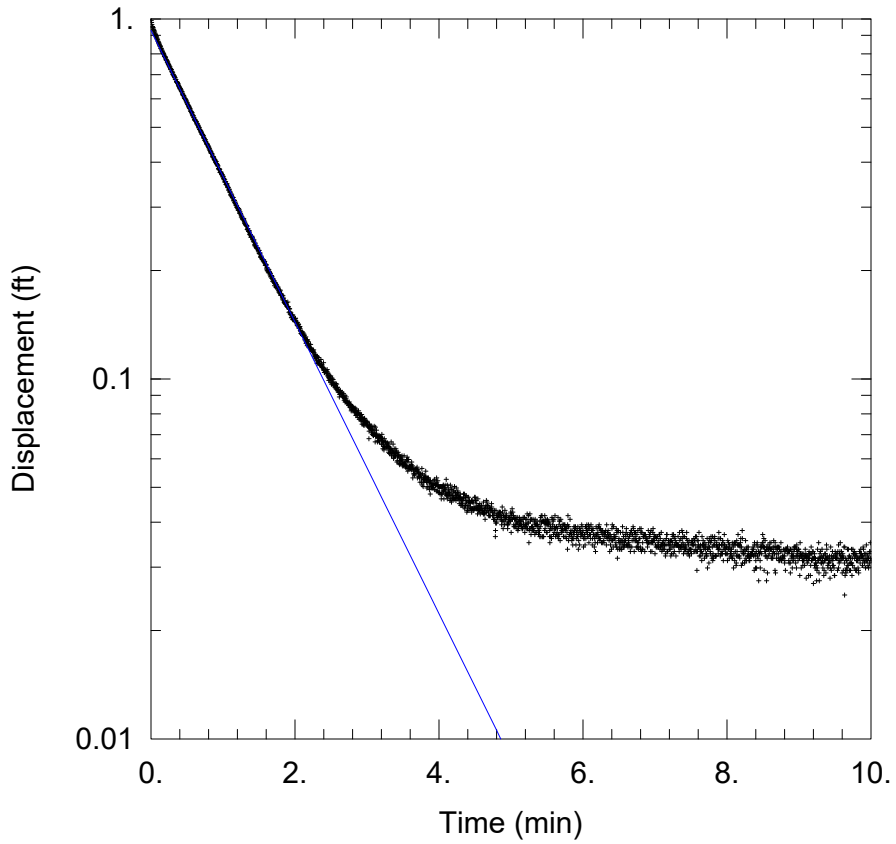
K = 1.474 ft/day
y0 = 1.062 ft

AQUIFER DATA

Saturated Thickness: 17.4 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-16)

Initial Displacement: 1. ft
Total Well Penetration Depth: 17. ft
Casing Radius: 0.083 ft
Static Water Column Height: 17. ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-16 RH1

Data Set: C:\...\HRL-16_RH1.aqt
Date: 09/16/22 Time: 15:14:11

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-16
Test Date: 08/31/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

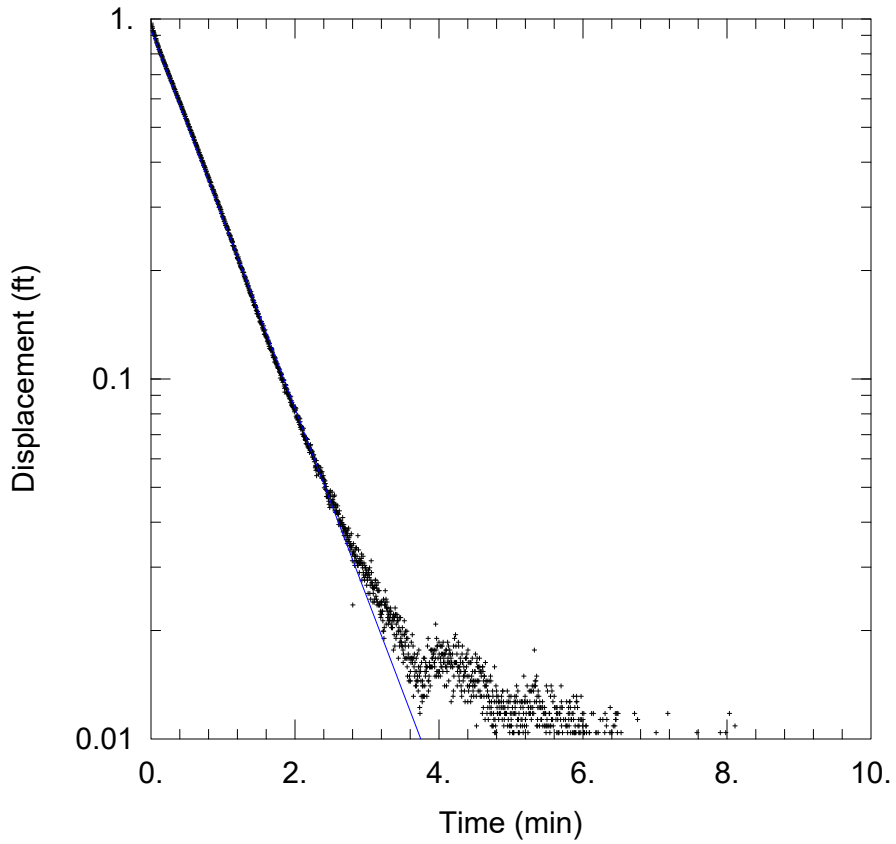
K = 1.659 ft/day
y0 = 0.9285 ft

AQUIFER DATA

Saturated Thickness: 17.4 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-16)

Initial Displacement: 1. ft
Total Well Penetration Depth: 17. ft
Casing Radius: 0.083 ft
Static Water Column Height: 17. ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-16 RH2

Data Set: C:\...\HRL-16_RH2.aqt
Date: 09/16/22 Time: 15:14:59

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-16
Test Date: 08/31/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

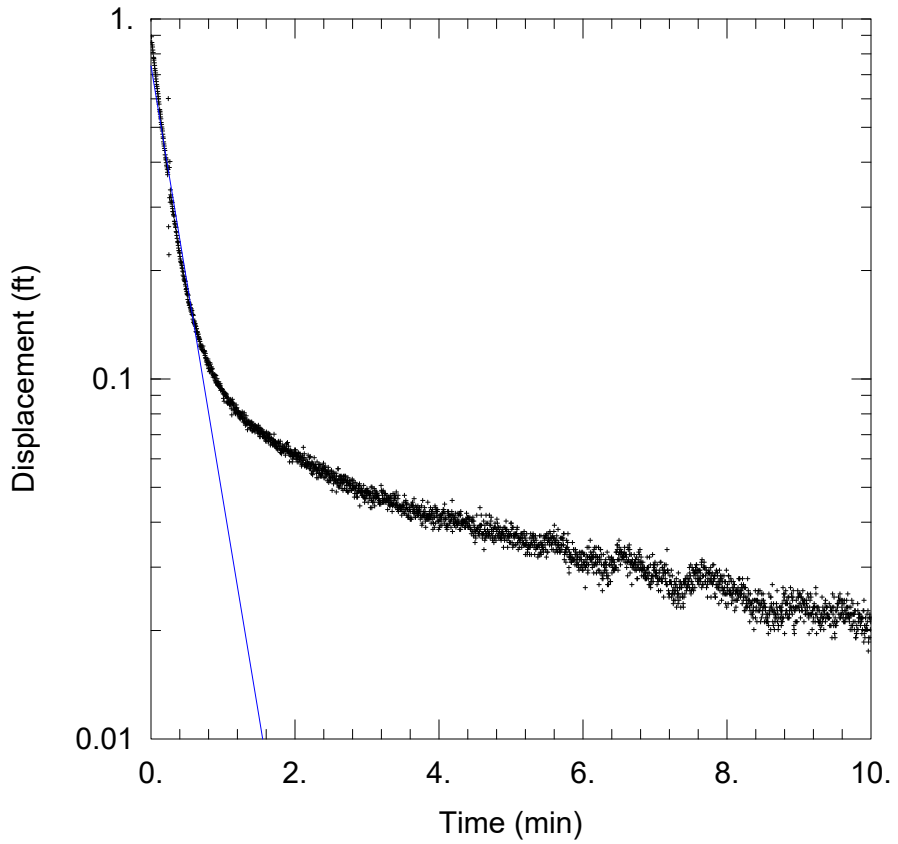
K = 2.153 ft/day
y0 = 0.9332 ft

AQUIFER DATA

Saturated Thickness: 17.4 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-16)

Initial Displacement: 1. ft
Total Well Penetration Depth: 17. ft
Casing Radius: 0.083 ft
Static Water Column Height: 17. ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-17 FH1

Data Set: C:\...\HRL-17_FH1.aqt
Date: 09/16/22 Time: 15:16:56

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-17
Test Date: 08/31/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

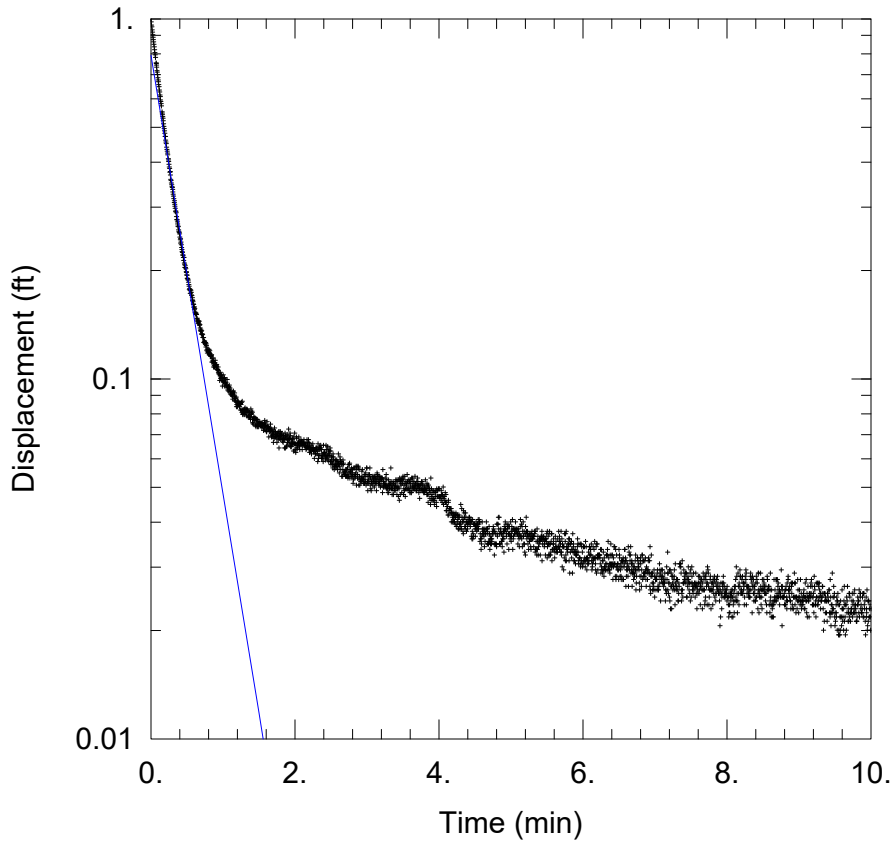
K = 4.797 ft/day
y0 = 0.7406 ft

AQUIFER DATA

Saturated Thickness: 14.7 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-17)

Initial Displacement: 1. ft
Total Well Penetration Depth: 14.3 ft
Casing Radius: 0.083 ft
Static Water Column Height: 14.3 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-17 FH2

Data Set: C:\...\HRL-17_FH2.aqt
Date: 09/16/22 Time: 15:17:33

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-17
Test Date: 08/31/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

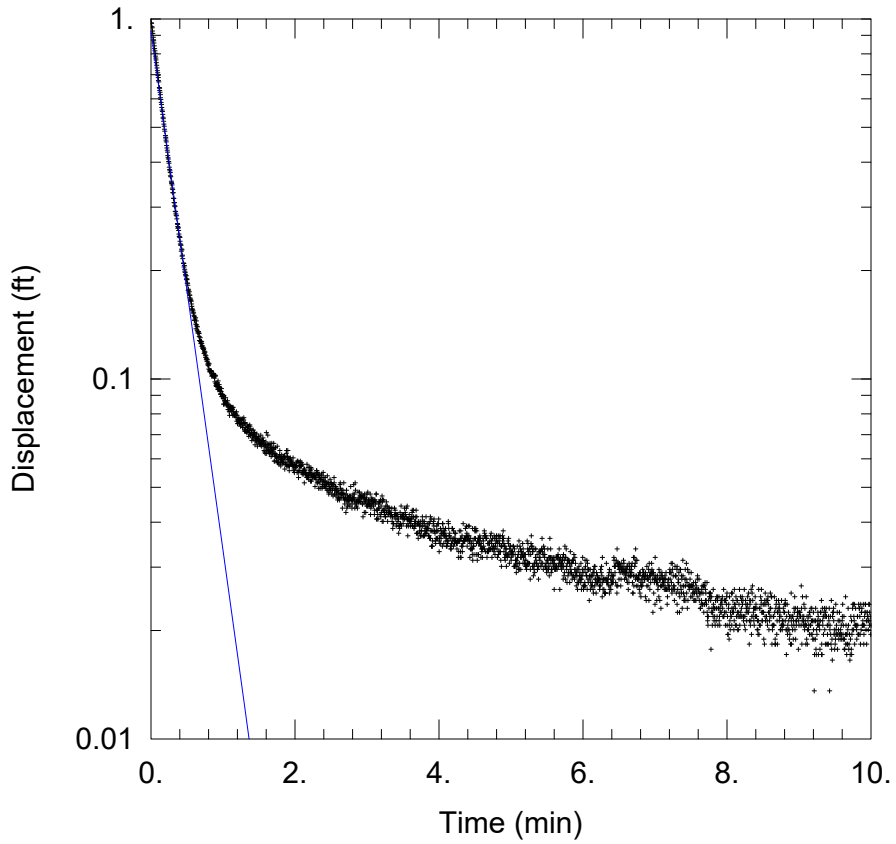
K = 4.847 ft/day
y0 = 0.792 ft

AQUIFER DATA

Saturated Thickness: 14.7 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-17)

Initial Displacement: 1. ft
Total Well Penetration Depth: 14.3 ft
Casing Radius: 0.083 ft
Static Water Column Height: 14.3 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-17 FH3

Data Set: C:\...\HRL-17_FH3.aqt
Date: 09/16/22 Time: 15:18:10

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-17
Test Date: 08/31/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

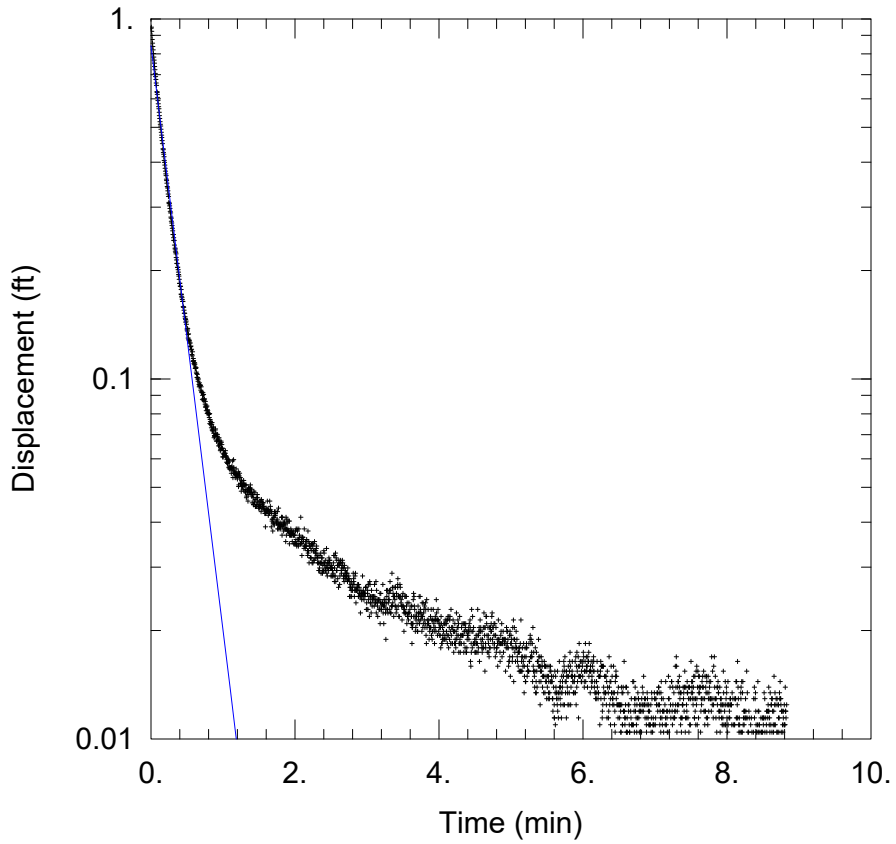
K = 5.743 ft/day
y0 = 0.9257 ft

AQUIFER DATA

Saturated Thickness: 14.7 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-17)

Initial Displacement: 1. ft
Total Well Penetration Depth: 14.3 ft
Casing Radius: 0.083 ft
Static Water Column Height: 14.3 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-17 RH1

Data Set: C:\...\HRL-17_RH1.aqt
Date: 09/16/22 Time: 15:19:03

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-17
Test Date: 08/31/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

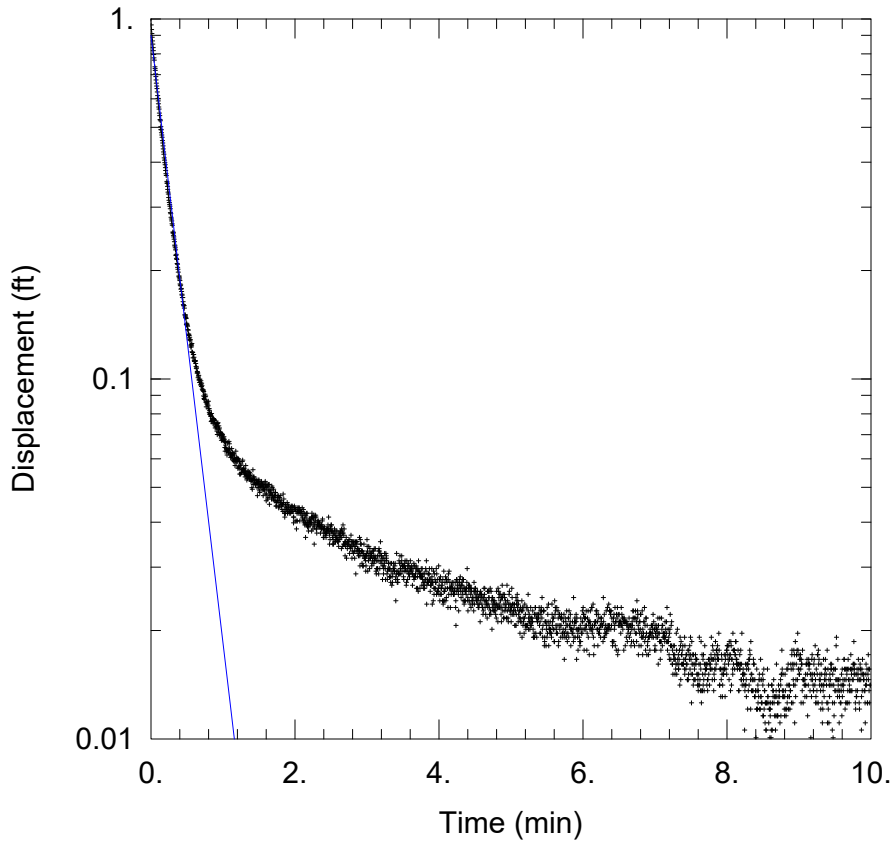
K = 6.462 ft/day
y0 = 0.8422 ft

AQUIFER DATA

Saturated Thickness: 14.7 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-17)

Initial Displacement: 1. ft
Total Well Penetration Depth: 14.3 ft
Casing Radius: 0.083 ft
Static Water Column Height: 14.3 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-17 RH2

Data Set: C:\...\HRL-17_RH2.aqt
Date: 09/16/22 Time: 15:19:34

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-17
Test Date: 08/31/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

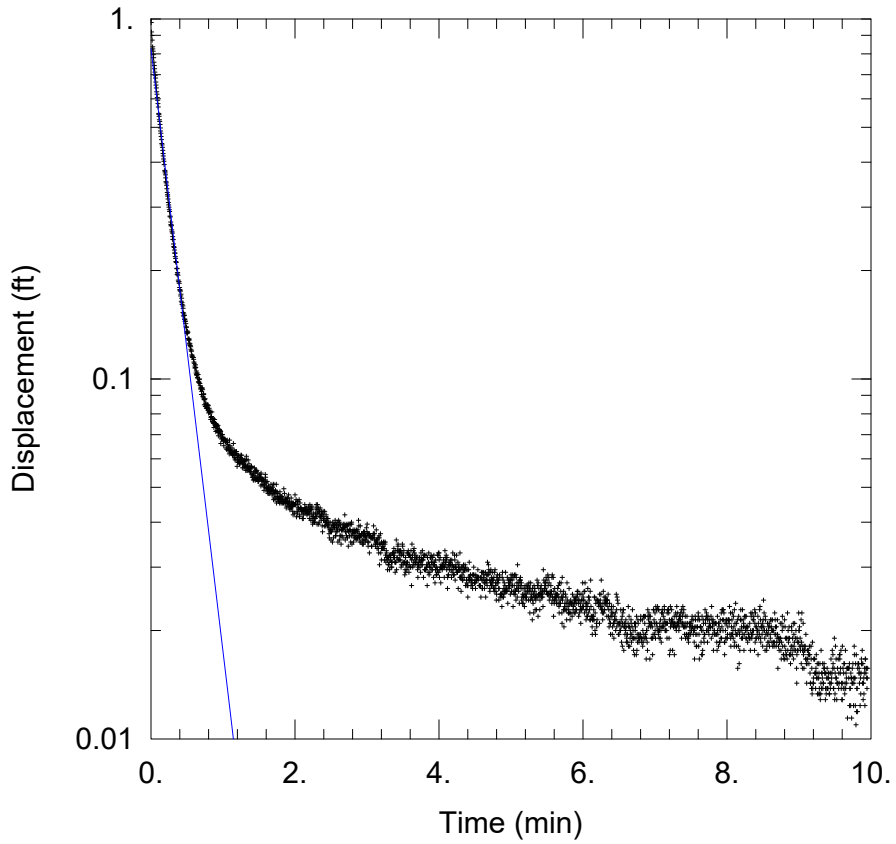
K = 6.718 ft/day
y0 = 0.8992 ft

AQUIFER DATA

Saturated Thickness: 14.7 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-17)

Initial Displacement: 1. ft
Total Well Penetration Depth: 14.3 ft
Casing Radius: 0.083 ft
Static Water Column Height: 14.3 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-17 RH3

Data Set: C:\...\HRL-17_RH3.aqt
Date: 09/16/22 Time: 15:20:10

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-17
Test Date: 08/31/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

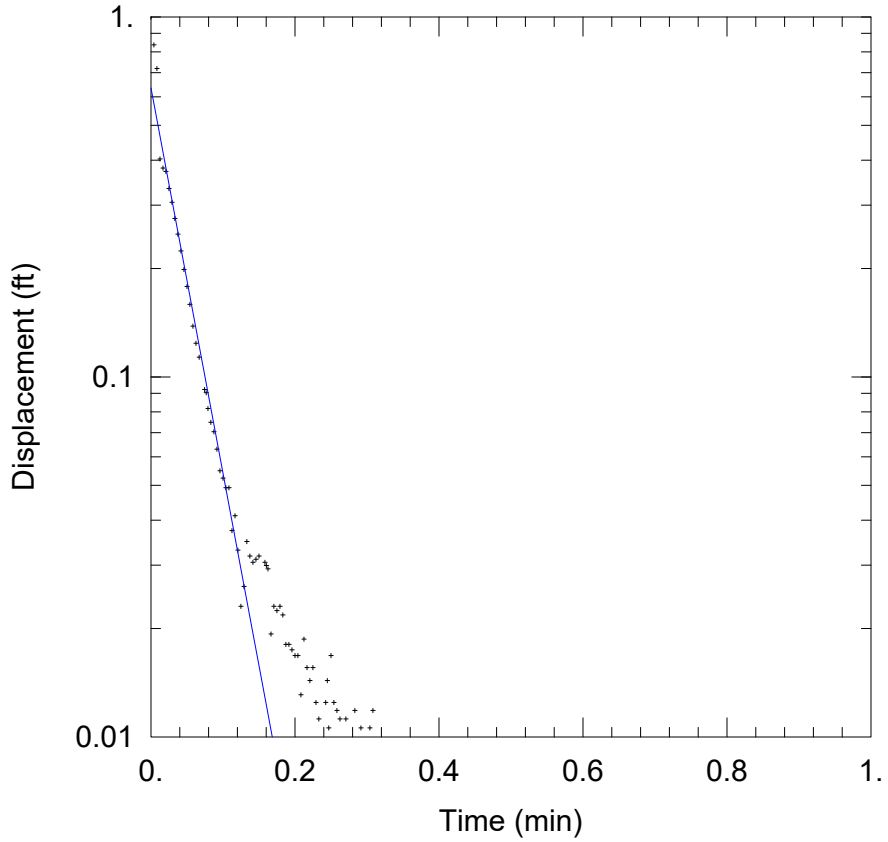
K = 6.666 ft/day
y0 = 0.8267 ft

AQUIFER DATA

Saturated Thickness: 14.7 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-17)

Initial Displacement: 1. ft
Total Well Penetration Depth: 14.3 ft
Casing Radius: 0.083 ft
Static Water Column Height: 14.3 ft
Screen Length: 10. ft
Well Radius: 0.375 ft



HRL-18 FH1

Data Set: C:\...\HRL-18_FH1.aqt
Date: 09/16/22 Time: 15:22:08

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-18
Test Date: 08/30/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

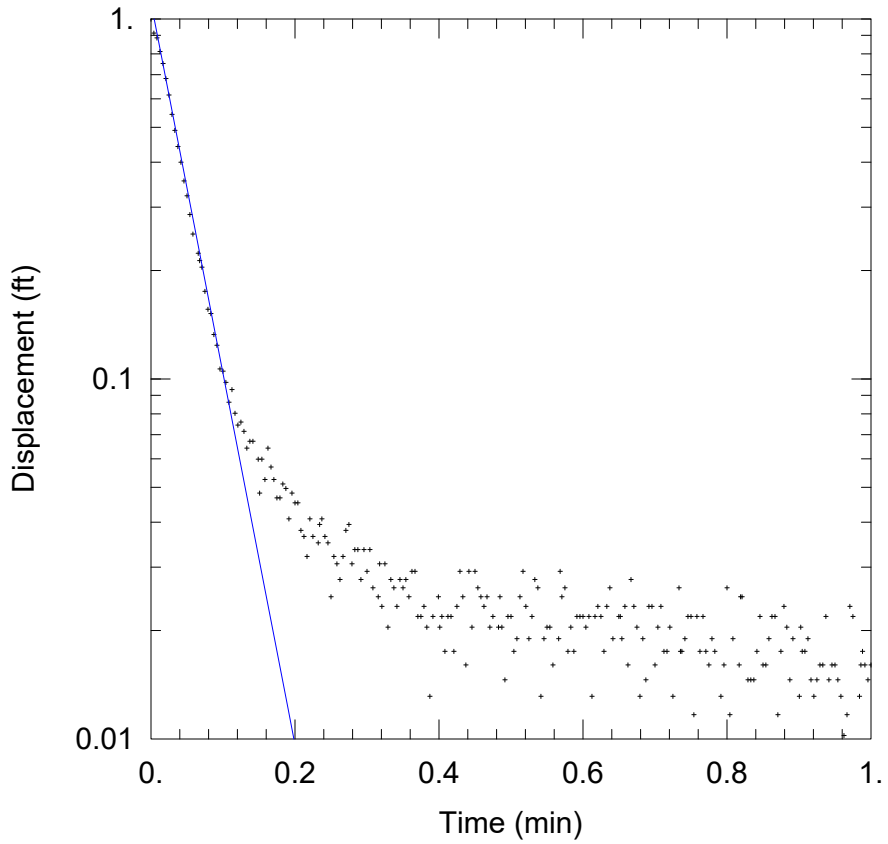
K = 12.9 ft/day
y0 = 0.6348 ft

AQUIFER DATA

Saturated Thickness: 21.2 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-18)

Initial Displacement: 1. ft
Total Well Penetration Depth: 21. ft
Casing Radius: 0.042 ft
Static Water Column Height: 21. ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-18 FH2

Data Set: C:\...\HRL-18_FH2.aqt
Date: 09/16/22 Time: 15:22:43

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-18
Test Date: 08/30/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

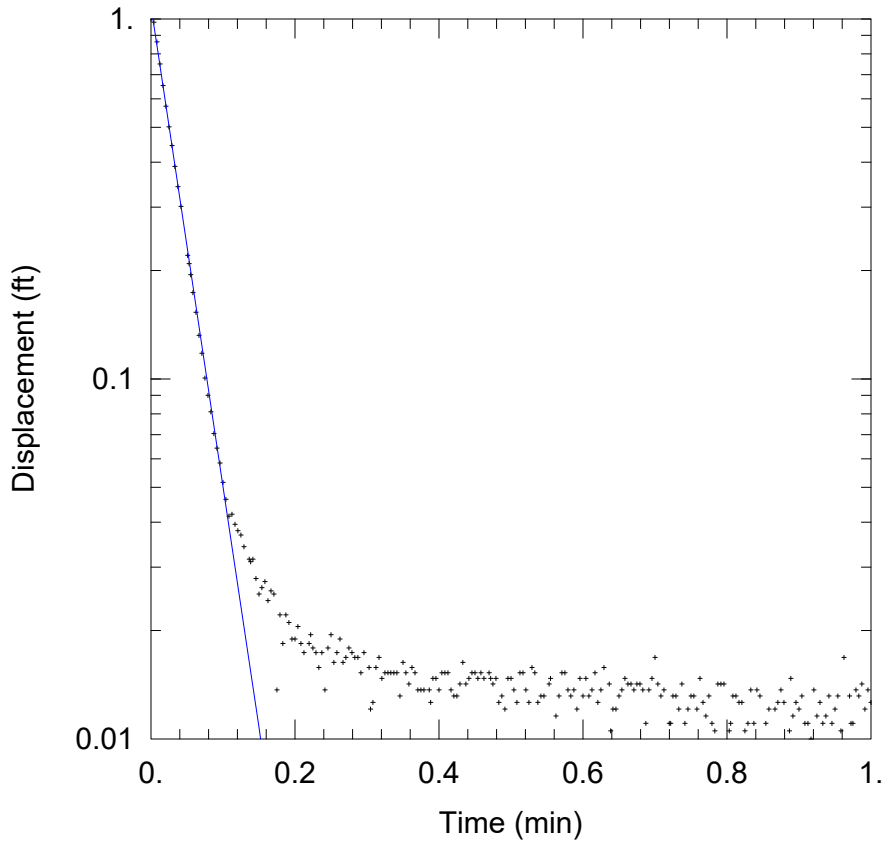
K = 12.42 ft/day
y0 = 1.111 ft

AQUIFER DATA

Saturated Thickness: 21.2 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-18)

Initial Displacement: 1. ft
Total Well Penetration Depth: 21. ft
Casing Radius: 0.042 ft
Static Water Column Height: 21. ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-18 RH1

Data Set: C:\...\HRL-18_RH1.aqt
Date: 09/16/22 Time: 15:23:20

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-18
Test Date: 08/30/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

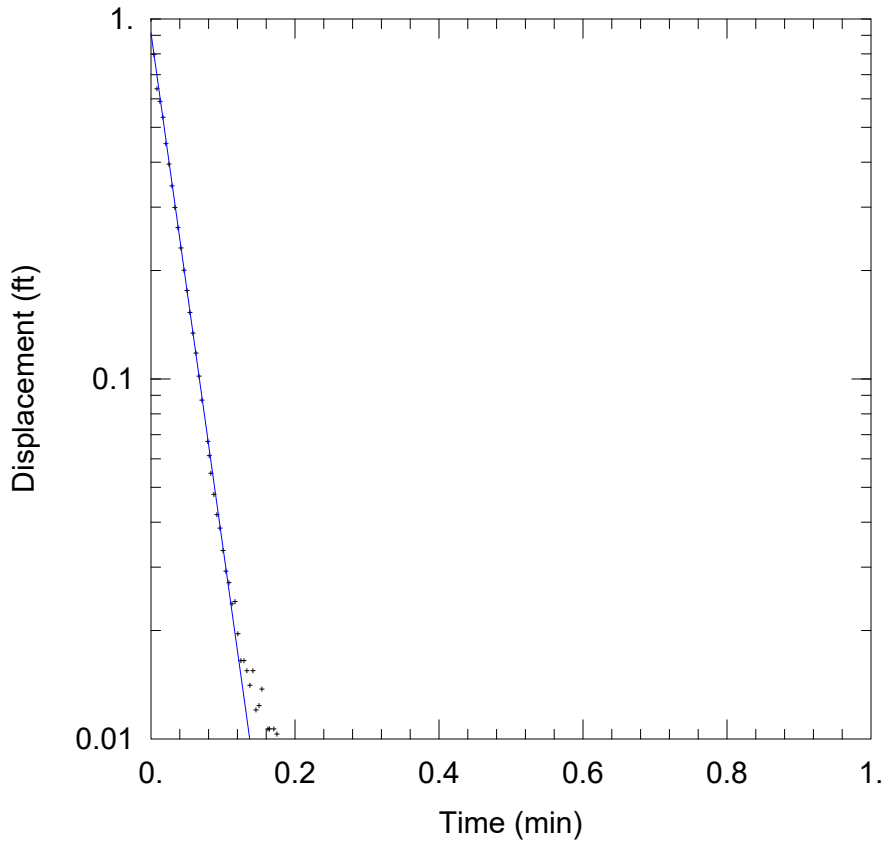
K = 16.11 ft/day
y0 = 1.089 ft

AQUIFER DATA

Saturated Thickness: 21.2 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-18)

Initial Displacement: 1. ft
Total Well Penetration Depth: 21. ft
Casing Radius: 0.042 ft
Static Water Column Height: 21. ft
Screen Length: 10. ft
Well Radius: 0.25 ft



HRL-18 RH2

Data Set: C:\...\HRL-18_RH2.aqt
Date: 09/16/22 Time: 15:24:17

PROJECT INFORMATION

Company: Stantec
Client: Georgia Power Company
Location: Rome, Georgia
Test Well: HRL-18
Test Date: 08/30/2022

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 17.23 ft/day
y0 = 0.914 ft

AQUIFER DATA

Saturated Thickness: 21.2 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (HRL-18)

Initial Displacement: 1. ft
Total Well Penetration Depth: 21. ft
Casing Radius: 0.042 ft
Static Water Column Height: 21. ft
Screen Length: 10. ft
Well Radius: 0.25 ft

Stantec

Slug Test Results
Georgia Power Company

Heavily-Partially Weathered Shale

Well ID	Test	Hydraulic Conductivity (ft/day)	Hydraulic Conductivity (cm/sec)	Arithmetic Mean (cm/sec)
HRL-2	Falling Head 1	0.07	2.5E-05	9.3E-05
	Falling Head 2	0.11	3.8E-05	
	Rising Head 1	0.39	1.4E-04	
	Rising Head 2	0.48	1.7E-04	
HRL-8	Falling Head 1	0.03	8.9E-06	4.0E-05
	Falling Head 2	0.13	4.7E-05	
	Falling Head 3	0.14	5.0E-05	
	Rising Head 1	0.14	4.8E-05	
	Rising Head 2	0.13	4.7E-05	
HRL-12A	Falling Head 1	0.05	1.6E-05	1.6E-05
	Falling Head 2	0.05	1.6E-05	
	Rising Head 1	0.04	1.5E-05	
	Rising Head 2	0.05	1.8E-05	
HRL-13^	Falling Head 1	0.04	1.6E-05	6.2E-05
	Falling Head 2	0.16	5.6E-05	
	Falling Head 3	0.25	8.9E-05	
	Rising Head 3	0.25	8.7E-05	
HRL-14	Falling Head 1	0.01	4.5E-06	2.2E-05
	Falling Head 2	0.01	3.1E-06	
	Rising Head 1	0.09	3.3E-05	
	Rising Head 2	0.14	4.8E-05	
HRL-16	Falling Head 1	0.86	3.0E-04	5.4E-04
	Falling Head 2	1.47	5.2E-04	
	Rising Head 1	1.66	5.9E-04	
	Rising Head 2	2.15	7.6E-04	
HRL-17	Falling Head 1	4.80	1.7E-03	2.1E-03
	Falling Head 2	4.85	1.7E-03	
	Falling Head 3	5.74	2.0E-03	
	Rising Head 1	6.46	2.3E-03	
	Rising Head 2	6.72	2.4E-03	
	Rising Head 3	6.67	2.4E-03	
		Geometric mean 2.79E-01	Geometric mean 9.83E-05	

Notes
ft/day - feet per day
cm/sec - centimeters per second
Slug tests were conducted on August 23 through September 1, 2022.
Data analysis was completed using AQTESOLV™, Version 4.50 Professional
Analysis was completed using the Bouwer-Rice (1976) solution
^ 2 rising head tests omitted from dataset due to recoveries of less than 90% and poor curve matching

Stantec

Slug Test Results
Georgia Power Company

Sandy Clay Fracture Feature

Well ID	Test	Hydraulic Conductivity (ft/day)	Hydraulic Conductivity (cm/sec)	Arithmetic Mean (cm/sec)
HRL-6	Falling Head 1	0.12	4.1E-05	6.8E-05
	Falling Head 2	0.13	4.5E-05	
	Rising Head 1	0.26	9.1E-05	
	Rising Head 2	0.27	9.4E-05	
HRL-7	Falling Head 1	1.76	6.2E-04	7.0E-04
	Falling Head 2	2.16	7.6E-04	
	Rising Head 1	2.16	7.6E-04	
	Rising Head 2	1.87	6.6E-04	
		Geometric mean 5.96E-01	Geometric mean 2.10E-04	

Notes
ft/day - feet per day
cm/sec - centimeters per second
Slug tests were conducted on August 23 through September 1, 2022.
Data analysis was completed using AQTESOLV™, Version 4.50 Professional
Analysis was completed using the Bouwer-Rice (1976) solution

Stantec

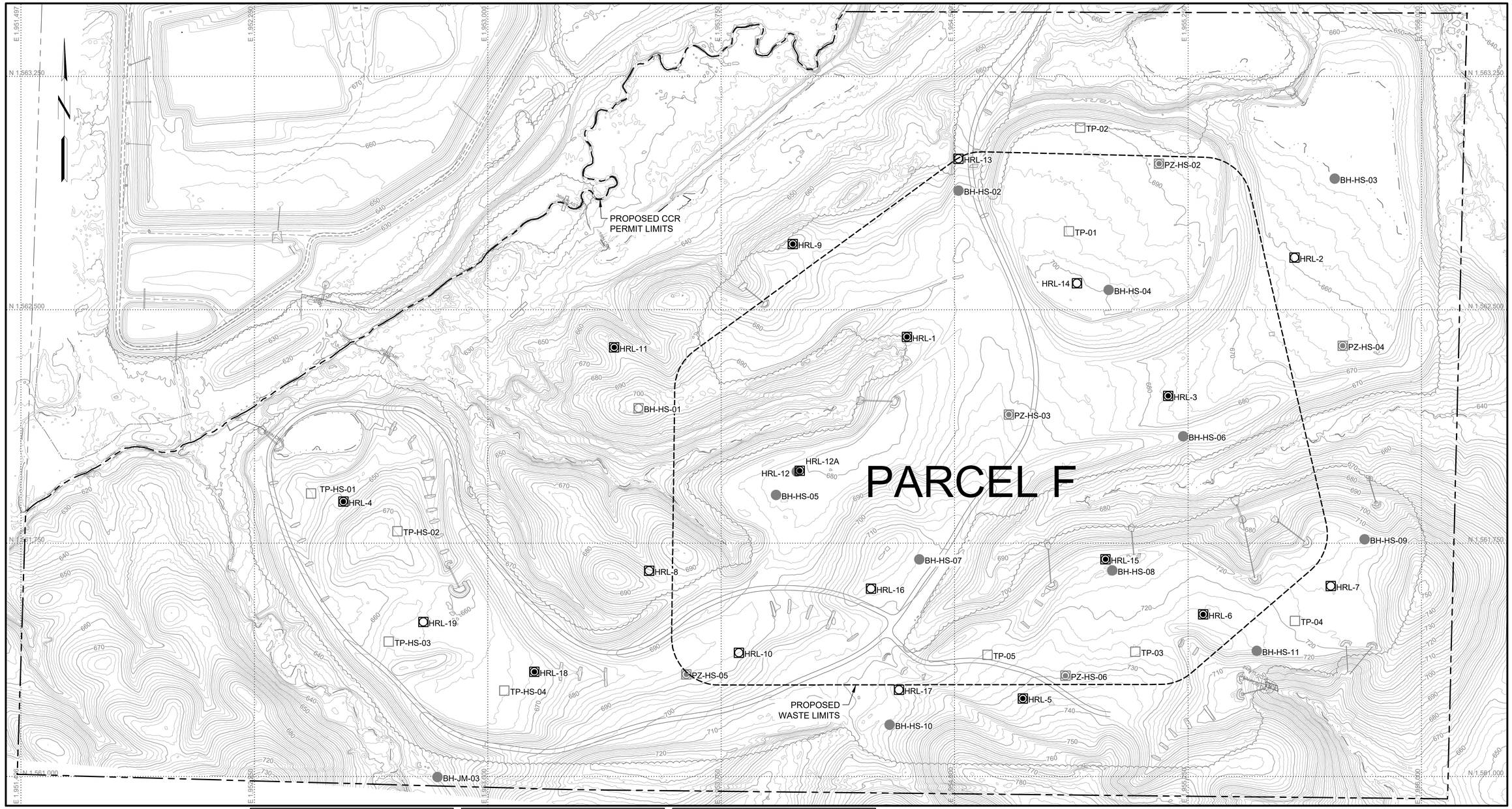
Slug Test Results
Georgia Power Company

Fractured Competent Shale

Well ID	Test	Hydraulic Conductivity (ft/day)	Hydraulic Conductivity (cm/sec)	Arithmetic Mean (cm/sec)
HRL-1	Falling Head 1	3.88	1.4E-03	1.6E-03
	Falling Head 2	4.84	1.7E-03	
	Falling Head 3	3.84	1.4E-03	
	Rising Head 1	3.83	1.4E-03	
	Rising Head 2	6.59	2.3E-03	
	Rising Head 3	4.63	1.6E-03	
HRL-3	Falling Head 1	0.72	2.5E-04	2.8E-04
	Falling Head 2	0.73	2.6E-04	
	Falling Head 3	0.73	2.6E-04	
	Rising Head 1	0.79	2.8E-04	
	Rising Head 2	0.87	3.1E-04	
	Rising Head 3	0.87	3.1E-04	
HRL-4	Falling Head 1	3.16	1.1E-03	1.4E-03
	Falling Head 2	2.53	8.9E-04	
	Rising Head 1	5.11	1.8E-03	
	Rising Head 2	5.10	1.8E-03	
HRL-11	Falling Head 1	2.93	1.0E-03	1.0E-03
	Falling Head 2	2.04	7.2E-04	
	Falling Head 3	2.29	8.1E-04	
	Rising Head 1	3.31	1.2E-03	
	Rising Head 2	2.92	1.0E-03	
	Rising Head 3	3.47	1.2E-03	
HRL-18	Falling Head 1	12.90	4.6E-03	5.2E-03
	Falling Head 2	12.42	4.4E-03	
	Rising Head 1	16.11	5.7E-03	
	Rising Head 2	17.23	6.1E-03	
		Geometric mean 3.14E+00	Geometric mean 1.11E-03	

Notes
ft/day - feet per day
cm/sec - centimeters per second
Slug tests were conducted on August 23 through September 1, 2022.
Data analysis was completed using AQTESOLV™, Version 4.50 Professional
Analysis was completed using the Bouwer-Rice (1976) solution

EXHIBITS



MAPPING SOURCE NOTES:

1. TOPOGRAPHIC AND PLANIMETRIC SURVEY INFORMATION FOR THE PLANS WERE OBTAINED FROM SURVEYS PERFORMED BY SOUTHERN COMPANY SERVICES, INC. DATED MARCH 2008 AND JANUARY 2016 AND CONTOURS OBTAINED FROM DIGITAL TERRAIN MODELS OF AERIAL LIDAR SURVEYS DATED NOVEMBER 2019 AND FEBRUARY 2022, SUPPLEMENTED WITH AERIAL LIDAR SURVEYS DATED JANUARY 2021, APRIL 2022 AND AUGUST 2022.

2. ALL COORDINATES ARE BASED ON NORTH AMERICAN DATUM 83 (NAD 83) GEORGIA STATE PLANE, WEST ZONE. ALL ELEVATIONS ARE BASED ON THE NORTH AMERICAN DATUM 88 (NAVDS 88).

LOCATION TABLE		
NAME	NORTHING	EASTING
BH-HS-01	1,562,184.2	1,953,484.3
BH-HS-02	1,562,883.3	1,954,512.7
BH-HS-03	1,562,921.4	1,955,721.7
BH-HS-04	1,562,564.3	1,954,995.2
BH-HS-05	1,561,905.0	1,953,926.3
BH-HS-06	1,562,093.7	1,955,234.7
BH-HS-08	1,561,662.6	1,955,006.7
BH-HS-09	1,561,762.7	1,955,817.7
BH-HS-10	1,561,166.5	1,954,291.6
BH-HS-11	1,561,404.1	1,955,470.9
BH-JM-03	1,560,998.8	1,952,838.5
HRL-1	1,562,413.3	1,954,347.0
HRL-2	1,562,668.3	1,955,591.9
HRL-3	1,562,223.8	1,955,186.1
HRL-4	1,561,884.0	1,952,536

LOCATION TABLE		
NAME	NORTHING	EASTING
HRL-5	1,561,251.2	1,954,719.1
HRL-6	1,561,521.4	1,955,298.6
HRL-7	1,561,612.8	1,955,708.5
HRL-8	1,561,661.7	1,953,518.4
HRL-9	1,562,711.7	1,953,980.1
HRL-10	1,561,398.2	1,953,806.8
HRL-11	1,562,379.7	1,953,406.1
HRL-12	1,561,979.9	1,953,993.0
HRL-12A	1,561,983.1	1,954,002.4
HRL-13	1,562,985.8	1,954,512.2
HRL-14	1,562,585.5	1,954,893.1
HRL-15	1,561,698.7	1,954,984.8
HRL-16	1,561,604.3	1,954,231.4
HRL-17	1,561,279.2	1,954,321.1
HRL-18	1,561,337.0	1,953,14

LOCATION TABLE		
NAME	NORTHING	EASTING
HRL-19	1,561,497.2	1,952,792.9
PZ-HS-02	1,562,969.8	1,955,156.8
PZ-HS-03	1,562,163.7	1,954,674.2
PZ-HS-04	1,562,384.8	1,955,746.8
PZ-HS-05	1,561,328.9	1,953,638.2
PZ-HS-06	1,561,324.4	1,954,856.1
TP-01	1,562,752.5	1,954,867.4
TP-02	1,563,085.7	1,954,903.9
TP-03	1,561,401.4	1,955,080.7
TP-04	1,561,500.9	1,955,593.7
TP-05	1,561,391.5	1,954,605.6
TP-HS-01	1,561,910.2	1,952,432.2
TP-HS-02	1,561,788.7	1,952,709.6
TP-HS-03	1,561,434.0	1,952,681.9
TP-HS-04	1,561,276.4	1,953,053.1

LEGEND

- PROPOSED WASTE LIMITS
- PROPOSED CCR PERMIT LIMITS
- EXISTING PROPERTY LIMITS
- STREAM / EDGE OF WATER
- TREE LINE
- 500 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- ABANDONED SOIL BORING
- EXISTING PIEZOMETER WITHOUT ROCK CORE
- EXISTING PIEZOMETER WITH ROCK CORE
- EXISTING TEST PIT
- 2022 PIEZOMETER WITH ROCK CORE
- 2022 PIEZOMETER WITHOUT ROCK CORE

75 0 150 300 FEET
GRAPHIC SCALE: 1" = 150'
CONTOUR INTERVAL = 2'

REV	DATE	DESCRIPTION	DRN	CHK
0	03/31/23	ISSUED FOR REVIEW	JM	MV

2021 AND 2022 BORING AND PIEZOMETER LAYOUT

PROPOSED PARCEL F AREA

FOR

GEORGIA POWER
HUFFAKER ROAD COAL COMBUSTION BY-PRODUCTS DISPOSAL FACILITY
FLOYD COUNTY, GEORGIA

GEORGIA REGISTERED No. PEO004766 PROFESSIONAL ENGINEER MATTHEW C. VAUGHAN 7/12/23

JOSHUA BURK MASSEY GEORGIA REGISTERED PROFESSIONAL GEOLOGIST No. 2187 7/12/2023

1110 Market Street, Suite 214A
Chattanooga, Tennessee 37402-2863
www.stantec.com

Stantec

PROJ. NO.	175518236
SCALE	1" = 150'
DATE	03/31/2023

DWG. EXHIBIT_1

EXHIBIT 1

\\US0522-PPFSS01\SHARED_PROJECTS\175518236\TECHNICAL_PRODUCTION\DRAWING\PARCEL_F\FIGURES\SAR_FIGURES\SHEET_FILES\EXHIBIT_1.DWG