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EXPERT REPORT

Gastal and Hoffpauir
versus
Petrodome Operating, LLC, et al.
Case No. 202210495-A, 15th Judicial District Court
Acadia Parish, Louisiana

April 21, 2025

Prepared for:

Veron Bice, LLC
721 Kirby Street
Lake Charles, Louisiana 70601

April 21, 2025

Mr. J. Michael Veron
Veron Bice, LLC
721 Kirby Street
Lake Charles, Louisiana 70601

RE: EXPERT REPORT
Danny Paul Gastal and Ignatius Hoffpauir vs
Petrodome Operating, LLC, et al.
Case No. 202210495-A, 15th Judicial District Court
Acadia Parish, Louisiana

Dear Mr. Veron:

RBB Consulting, LLC (RBBC) and Southland Environmental, LLC (Southland) have conducted environmental site assessment activities on the Danny Paul Gastal (Gastal) tract in Acadia Parish, Louisiana. This report presents a description of assessment activities, findings of the site assessment, documentation of environmental impacts, and estimated costs for remediation.

With regards to qualifications, R. Brent Bray has over 35 years consulting experience within the environmental industry including design, implementation, and management of site investigation/remediation activities at industrial, manufacturing and biomedical facilities, oil/gas properties, petroleum refineries, as well as Brownfield and National Priority List sites. He has offered expert testimony in the areas of geology and hydrogeology as well as soil and groundwater investigation/remediation. Mr. Bray's professional history is included with this report in Attachment A. A list of cases in which he has prepared an expert report and/or testified in deposition or trial as an expert in the last five years is included within Attachment A.

Mr. Piranio has more than 35 years of geological work experience applying investigative and remedial strategies in industrial, government, and litigation settings at sites across the southern United States. He has offered expert testimony in the areas of geology, hydrogeology, and soil and groundwater investigation/remediation. Mr. Piranio's professional history is included with this report in Attachment A. A list of cases in which he has testified in deposition or trial as an expert in the last five years is included within Attachment A.

This environmental assessment included review of historical aerial photographs, Louisiana Department of Environmental Quality (LDEQ)/Louisiana Department of Energy and Natural Resources (LDENR) online databases, as well as published reports regarding geology and

groundwater quality in the region. Field activities included site inspections to evaluate current conditions, geophysical investigations, and soil sampling/analysis.

The findings and opinions expressed in this case include, without limitation, the following:

1. The Gastal tract is within the Morse Oil and Gas Field in Acadia Parish, Louisiana. There is one active oil well with associated tanks, pumps and other infrastructure located near the southwest boundary of the tract. This well, the Gastal Number 1, or LDENR Well Serial Number (SN) 195102, began producing in early 1985. Produced water from well SN 195102 was transferred to an adjacent tract for disposal in saltwater disposal well (SWD) SN 200132 via an underground pipeline which, prior to the 2021 spill event, ran beneath a series of three, hydraulically interconnected aquaculture (crawfish)/agriculture (rice) ponds encompassing approximately 15 acres.

2. On December 26, 2021, the operator of SN 195102 and SN 200132 notified state regulatory officials of a produced water release to the surface of agricultural/aquacultural ponds. The source of the discharging water was identified as a leak in the pipeline transferring produced water from SN 195102 to SN 200132. Reports indicate the leak was found in the pipeline approximately 12 to 16 feet below ground surface (ft-bgs) and repaired. The pipeline was subsequently abandoned, and a replacement pipeline was re-routed around the aquaculture/agriculture ponds. Neither the length of time the pipeline had been leaking before reporting on December 26, 2021, nor the volume of produced water released are known. To date, no soil remediation has been implemented by the current or former operator and the three-pond complex has remained fallow as a result of soil impacts associated with the spill event.

3. The site assessment confirms oilfield waste constituents are present on the Gastal tract in surface and subsurface soil with indicator constituent concentrations in soil extending below geologic zones visibly identified as saturated during site investigation activities.

4. Oilfield waste constituents were identified in surface and subsurface soils in concentrations that exceed natural conditions and are in excess of LDENR Office of Conservation 29-B standards that were developed to protect soil, surface water, and groundwater resources. The greatest concentrations of contaminants on the tract are immediately beneath and adjacent to the produced water pipeline and confirms exploration and production (E&P) activities as the source of soil and, more likely than not, groundwater contamination. Based on field investigation activities, the depth of impacted soil is at least 60 ft-bgs. The area of impacted soil encompasses approximately 8 acres.

5. Salt (i.e. sodium chloride) from produced water associated with oil/gas production is a persistent contaminant in the environment impacting soil and groundwater quality for years/decades after release as evidenced by the presence of salt scars on historical oil/gas sites throughout Louisiana which have been in-active for decades. Aquaculture/ Agricultural publications discussing crawfish and rice production indicate elevated salt concentrations in soil and water will negatively impact crop productivity. Soil electrical conductivity (EC), a measure of soil salinity, is more than eight times above LDENR regulatory standards and more than 29 times above site-specific background conditions.

6. The Gastal tract is underlain by the Chicot Aquifer which is an extensive regional aquifer underlying 15 Louisiana parishes, including Acadia Parish, in southwestern and south-central Louisiana (Milner 2009). The Chicot Aquifer is utilized extensively throughout the region for public, domestic, agricultural, and industrial water supply. Within less than one-half mile of the Gastal tract, multiple water supply wells servicing the Village of Morse and the Morse Elementary School are registered in the LDENR on-line water well database. The Chicot Aquifer is also used for agricultural/aquacultural water supply to the Gastal tract.
7. Regional publications indicate the top of the sand and gravel portion of the Chicot Aquifer used for water supply in the vicinity of the Gastal tract is 100 ft-bgs or less (Milner 2009). However, site investigation activities and water well records indicate shallower sands are present beneath the Gastal tract at depths of less than 50 ft-bgs. Impacts from the flowline spill event to these shallower sands were documented in the Gastal tract investigation. Based on a review of regional, parish, and site-specific data, it is more likely than not that contamination originating from the pipeline spill event extends to sediments and saturated zones hydraulically connected to the sands and gravels of the Chicot Aquifer system.
8. Remediation is required to return the affected areas of the Gastal tract to their pre-oil & gas conditions consistent with the "all damages" provision in the relevant 1984 mineral lease covering the Gastal tract, and to comply with LDENR 29-B regulations. Remediation is necessary to remove surface salt contaminants, to restore soil quality, to protect groundwater resources, to protect surface water resources, and to allow unimpeded use of the property.
9. This report represents the available soil and groundwater sampling activities through April 17, 2025. The conclusions presented in this report may be revised depending upon the results of further site investigation activities or the receipt of additional information.

A remediation plan and cost estimate are presented at the conclusion of this document. The remediation plan recommends excavation of contaminated soil to a depth of 30 ft-bgs, a groundwater investigation to assess impacts to groundwater quality, and soil flushing/groundwater recovery to remove of oilfield constituents below 30 ft-bgs. Excavated soils and recovered water will be disposed off-site and the excavation backfilled to restore the remediation areas.

1.0 INTRODUCTION

A soil and groundwater investigation to assess impacts from E&P activities was conducted on the Gastal tract in Acadia Parish, Louisiana. The property is currently the focus of litigation (Danny Paul Gastal and Ignatius Hoffpauir Versus Petrodome Operating, LLC, et al., Case No. 202210495-A, 15th Judicial District Court, Acadia Parish, Louisiana) to address the impact from E&P operations.

The Gastal tract includes approximately 80 acres located within the Morse Oil and Gas Field. The area of investigation is focused on a series of three hydraulically connected ponds utilized for both aquaculture (crawfish) and agriculture (rice) production and which overlie a former pipeline transporting produced water from oil and gas production facilities to a SWD well.

On December 26, 2021, a surface discharge of water was identified by the Gastal tract farmer within Pond 1 due to a lack of observed crawfish while setting out traps. The oil and gas operator of LDENR SN 195102, at that time, Petrodome Operating, LLC, subsequently reported a spill of produced water from this flowline to the Louisiana Single Point of Contact (SPOC) hot line. The resulting report indicated *"the release affected an area encompassing approximately 15-20 acres of flooded rice field/crawfish ponds"* on the Gastal tract (LDEQ Field Interview Form, December 30, 2021). (Attachment B)

Based on comments by the Gastal tract farmer, Ignatius Hoffpauir, the LDEQ Field Interview Form, dated December 30, 2021, and information provided by the operator's response contractor, three ponds were affected by the flowline leak. These ponds are referred to as Pond 1, Pond 2, and Pond 3 in this report. The flowline leak daylighted in Pond 1, which gravity drains to Pond 2 and Pond 3 before discharging to a drainage lateral at the south boundary of the Gastal tract. As part of the spill response, impacted pond water was pumped out of the ponds and disposed by injection into SWD SN 200132. Sometime between January 24, and February 7, 2022, the leak in the flow line was excavated and repaired according to the LDEQ Field Interview Form. The flowline leak was found in the pipeline at a depth of no less than 12 ft-bgs. Since the release discovery, the leaking flow line has been abandoned in place and a new flow line has been installed along the southern perimeter of the Gastal property from the production facility to the SWD well.

A site location map is presented as Figure 1. An aerial photograph indicating the approximate tract boundary, well locations, and other site features are included on Figure 2.

Preliminary assessment activities, including review of historical aerial photographs, LDENR SONRIS records, and available literature, as well as site inspections were conducted. Following preliminary assessment, detailed soil and groundwater investigations were performed to determine the lateral and vertical extent of the area impacted by the produced water spill event on the Gastal tract. Based on the investigation results, soil (and likely groundwater) has been impacted by oilfield constituents. A remediation plan and cost estimate to remove contaminants has been prepared. Both are presented at the conclusion of this report.

2.0 SITE DESCRIPTION AND HISTORY

2.1 SITE DESCRIPTION

The Gastal tract includes approximately 80 acres of agricultural/aquacultural fields within the southwest quarter of Sections 32 of Township 10 South, Range 01 West. An operating oil and gas well, the B Gastal Number 1 (SN 195102) is located in the southwest portion of the Gastal tract and comprises less than two acres. Residential development is present immediately south of the Gastal tract and is part of the north extent of the Village of Morse. The tract is bordered by Louisiana Highway 91 (North Jackson Street) on the west side and agricultural fields to the north and east. A retail commercial store is located along North Jackson Street between the residences and south of the SN 195102 facility (Figure 2).

A Permit to Drill was issued by the Louisiana Office of Conservation for SN 195102 in 1984 and records indicate this well commenced production in early 1985. Produced water from the production facility is injected into a SWD well, the Foreman Estate SWD Number 1 (SN 200132), located approximately 1,600 feet to the southeast from the producing well and off of the Gastal tract. A buried flowline from the well SN 195102 production facility to the SWD SN 200132 traverses agricultural fields on the southern portion of the Gastal tract. The production facility is accessed from State Highway 91 (North Jackson Avenue). The SWD SN 200132 was completed in 1985. (LDENR SONRIS).

The agricultural/aquacultural area of the Gastal tract is separated into ten terraced and impounded fields. These fields are utilized for crawfish and rice production. Three fields in the south-central portion of the tract were affected by the late-2021 release. These fields have remained dormant and out of production since this time.

United States Geological Survey (USGS) topographic maps and FEMA LIDAR data indicate the elevation of the tract ranges from approximately 10 to 16 feet above mean sea level (msl) (U.S.G.S. Crowley West, 2004 & Watershed Concepts, 2004). Surface water drainage on the Gastal tract has been modified as part of agricultural development activities to promote crawfish aquaculture, rice farming, and site drainage.

Review of United States Department of Agriculture Natural Resource Conservation Service (USDA-NRCS) soil survey data indicates soils within the Gastal tract are classified as Crowley-Midland complex and Mowata silt loam. The Crowley-Midland complex is limited to the southeast portion of the tract, including Ponds 2 and 3. Pond 1 soils are classified as Mowata silt loam. Each of these soils is described as silt loam to silty clay and are classified as prime farmland. The expected EC in both soil types ranges from 0.0 to 2.0 mmhos/cm. A USDA-NRCS soil report describing soils within the Gastal tract is included in Attachment C.

2.2 PREVIOUS LAND USE

The earliest historical aerial photography in 1940 indicates the Gastal tract is in agricultural use, and based on the available photography, has remained in agricultural use to present. LDENR

SONRIS records indicate production well SN 195102 was permitted and drilled in late 1984 and well SN 200132 was permitted to drill in 1985 and converted for injection in 1986. Both well sites are visible in the 1985 aerial photograph. The Village of Morse is also present in aerial photography beginning with the 1940 photo. Historical aerial photographs are included in Attachment D.

2.3 CURRENT LAND USE

The entirety of the current Gastal tract is utilized for rice or crawfish production. At the time of the spill event, the three affected ponds were in use for crawfish production. Since the spill event, approximately two acres at the southwest corner of the Gastal tract have been sold for commercial development, and the tract is currently in use as a "Dollar General" retail store. The oil and gas facility for the B Gastal No. 1 (SN 195102) is adjacent to the Dollar General property to the north.

Agricultural and aquacultural production on the tract is supplemented by an irrigation water supply well (Louisiana registered water well number 001-519) located less than 500 feet from the northwest corner of the Gastal tract. This irrigation well utilizes groundwater from the Chicot Aquifer, which is the primary aquifer for domestic, agricultural, and industrial purposes in the area (Stuart 1994 and Milner 2009).

2.4 FUTURE LAND USE

Future use of the Gastal tract will be a return of the impacted areas to agricultural and aquacultural production. Current commercial development of a portion of the Gastal tract emphasizes the necessity for site remediation because the anticipated current agricultural/aquacultural land use may be revised to residential, municipal, and/or commercial as the Village of Morse and commercial development expands toward the Gastal tract.

2.5 RESULTS OF THE PRELIMINARY EVALUATION

A preliminary evaluation of the tract was performed as part of the initial assessment to identify historical and current land use, areas of E&P activities, regional geologic/hydrogeologic conditions as well as current site-specific conditions. A summary of preliminary evaluation activities conducted on the Gastal tract are listed below.

- Review historical aerial photography,
- LDENR and LDEQ data review,
- Literature review, and
- Site inspections.

Historical aerial photographs were obtained from the following sources: The Banks Group, the United States Department of Agriculture, USGS website (http://earthexplorer.usgs.gov), Google Earth (www.earth.google.com), and default Environmental Systems Research Institute (ESRI) ArcGIS Aerial Background Imagery. Aerial photographs were reviewed to identify historical land

use, historical locations of oil field E&P infrastructure, such as pipelines, pits and tanks, as well as disturbed soil and areas of stressed vegetation. Aerial photographs are included as Attachment D.

The LDENR SONRIS database was reviewed to identify active/inactive/plugged/abandoned oil and gas wells on and immediately surrounding the Gastal tract (Table 1, Figure 3). The LDENR SONRIS search was expanded to include registered water wells within one mile of the Gastal tract (Table 2, Figure 4).

The LDEQ – Electronic Data Management System (EDMS) was reviewed to obtain information regarding the scope of the initial spill reporting and response. The Gastal spill event has been assigned LDEQ Agency Interest No. 171651.

The results of the preliminary evaluation of the Gastal tract reveal an agricultural/aquacultural tract dating back to at least 1940 at the edge of the Village of Morse. The presence of the producing well site is confirmed in the 1985 aerial photograph. As a result of the 2021 spill event, surface scarring is visible in the area of the flowline leak in the 2023 image.

Following the preliminary evaluation, additional investigations were performed at select locations of the tract to identify and delineate the E&P waste constituents.

3.0 INVESTIGATION DESCRIPTION

This section describes the procedures used to collect soil quality data during the RBBC/Southland investigation. The area where the produced water line leak daylighted and the three ponds where impacted water was reportedly released were initially assessed by performing a Terrain Conductivity survey. Based on survey results and field observations, soil samples were collected for laboratory analysis from areas where potentially impacted soil was indicated and from areas of no apparent impacts to evaluate natural (background) conditions. Soil cores/samples were obtained from borings advanced to depths ranging from 4 to 46 ft-bgs. Two monitor wells were installed to investigate groundwater conditions. Boring and monitor well locations are presented in Figure 5.

In January through March 2025, Southland's investigation was supplemented by Hydro Environmental Technologies (HET) of Scott, Louisiana, with a root study and additional soil boring/sampling activities, which were focused on providing additional horizontal and vertical delineation of impacted soil on the Gastal tract.

3.1 EXPLORATORY METHODS

A summary of field activities conducted as part of the investigation are listed below.

- Perform Terrain Conductivity surveys;
- Install and sample direct-push soil borings;
- Perform Cone Penetrometer Tests (CPT); and
- Install and monitor direct-push groundwater monitor wells.

The Southland field activities were performed from March through February 2024. Field activities were documented in bound field logbooks. Representatives of historical oil field operators accompanied Southland personnel during most of the field investigation and collected split samples. A discussion of field procedures implemented during the site investigation is presented in the following sections.

3.2.1 Terrain Conductivity Surveys

Produced water from E&P activities contains high concentrations of total dissolved solids (TDS). High TDS in soils increases the relative EC of the soil. The American Petroleum Institute (API) recognizes the value of electromagnetic-imaging devices, also known as terrain conductivity meters, for delineating the areal extent of produced water spills (API 1997). Terrain conductivity meters induce an electrical current and measure apparent conductivity of the shallow subsurface. Areas impacted by produced water from E&P activities yield higher responses on the terrain conductivity meter than un-impacted areas.

A Geonics, Ltd., model EM-31 MK II (EM-31) terrain conductivity meter was used to collect conductivity data from investigated areas. The EM-31 transmitter coil at one end of the instrument

produces an electromagnetic current that penetrates the shallow subsurface. A receiver coil located at the opposite end of the EM-31 detects the electromagnetic signal which is proportional to the conductivity in the vicinity of the instrument. The EM-31 in the vertical dipole configuration provides evidence for produced water impacts at depths up to six meters (approximately 18 feet) below the surface.

Target areas were traversed with the EM-31 collecting conductivity measurements. At each data point location, the response of the EM-31 was recorded for instrument orientations at ninety-degree angles (for example, one reading was recorded with the instrument in a north-south orientation and a second reading was recorded with the instrument in an east-west orientation). Deviations in readings collected at the two instrument orientations is an indication that readings are affected by surface or buried conductor objects. When such a situation was encountered, either the data from the location was not recorded, or if recorded, the data from that observation were not honored in the data processing. The two instrument responses were manually input onto a Trimble Geo 7X GPS receiver and associated with the location of the measurements. These geophysical data were downloaded from the GPS and converted into a spreadsheet format.

The collected terrain conductivity data were plotted and contoured using *Surfer* software by Golden Software, and overlain onto georeferenced aerial photographs. Using data locations and EM-31 responses, data contours were developed and are presented on Figure 6.

3.2.2 Cone Penetration Testing

Cone Penetration Testing (CPT) was conducted to provide deeper geophysical data in the investigation area. The cone, vertically advanced into the subsurface by the rig, was fitted with a Hydraulic Profiling Tool (HPT) and an EC sensor. Elevated CPT EC response is indicative of impacts from produced water, while the HPT estimates permeability and hydraulic conductivity of the saturated formation near the cone. A Geoprobe 2060 CPT tracked rig with 20 tons of downforce was utilized to advance CPT borings at ten locations (CPT-Series) within the investigation area of the Gastal tract.

As the cone is advanced, instrument response is recorded every 0.05 feet in depth, providing a detailed vertical profile of the penetrated subsurface. The total depth of each CPT boring on the Gastal tract ranged from 28.30 to 50.85 ft-bgs. Each CPT profile is reported as graphical plots of the conductivity, HPT pressure, and estimated formation hydraulic conductivity versus depth. Each of the ten CPT logs advanced on the site is presented in Attachment E.

3.2.3 Soil Sampling

This section describes the procedures used to collect soil quality data during the investigation. Soil cores (SE-SB Series) were obtained from borings advanced to a maximum depth of 46 ft-bgs. All downhole materials were either new or decontaminated prior to use. Southland personnel directed and observed all boring activities, logged soil cores, and collected samples for testing at Element Materials Technology Lafayette, LLC (Element) in Lafayette, Louisiana. Soil sample locations are presented on Figures 5 and 7.

3.2.3.1 Soil Sample Collection and Field Screening

Direct push technology, including Geoprobe® Dual Tube tooling with acetate liners (4-foot cores), were used to advance soil borings. Sample cores were generated for field description, field testing, and laboratory testing. Once collection of a sampling interval was completed by the drilling crew, the soil core was placed horizontally on a sample table and cut to expose the soil core for lithologic logging and sampling. Soil cores were field screened with an EC probe to estimate soil conductivity. The field screening results were recorded and included on boring logs. Logging of soil core descriptions included a lithologic description and identification of any notable features such as wetness, odors, staining, sedimentary structures and/or variations in sand, silt, or clay content. Soil boring logs are included in Attachment F.

Samples were split between Southland/RBBC and oil field operator representatives and placed into laboratory-supplied containers. Samples were assigned a unique identification number. When required by the test method, samples were immediately placed in an ice chest with sufficient ice to cool the sample to 4 degrees Celsius (°C). At a minimum, the sample label included sample number, date, time, sample location, sampler's name, sample type, analysis to be performed, and preservatives used. Clean nitrile gloves were worn during soil sampling to promote sample integrity and dermal protection. Samples selected for laboratory analysis were retained by Southland personnel until transported by laboratory personnel to Element in Lafayette, Louisiana under standard chain-of-custody procedures.

3.2.3.2 Groundwater Well Installation and Monitoring

Two permanent groundwater monitor wells (MW-01 & MW-01D) were installed during the investigation using direct push technology to construct one-inch diameter wells. Temporary wells were constructed inside a cased borehole completed using Geoprobe® Dual Tube tooling and drilling methods. Temporary wells were composed of pre-pack PVC well screens and PVC casing. The wells were converted to permanent status and registered within 30 days of installation. Well construction diagrams are included on the boring logs in Attachment F. Well registration forms are included in Attachment G. Each well was gauged with an electronic water level meter seven times from September 6, 2023, through February 20, 2024. Neither well has exhibited any measurable accumulation of groundwater.

3.2.3.1 Quality Assurance/Quality Control

During the course of the investigation, quality assurance/quality control (QA/QC) samples were analyzed with results included in the laboratory reports. QA/QC procedures used during the site investigation activities included split sampling and analysis by a Louisiana accredited laboratory for almost every soil sample. As a result of split sampling, each sample was analyzed twice by a Louisiana accredited laboratory. Evaluation of the split sample results indicates general agreement between the results.

3.2.3.2 Decontamination Procedures

All borehole installation and soil sampling equipment employed by Southland was decontaminated prior to beginning work and prior to demobilizing from the site. Down-hole sample collection equipment such as dual tubes and push rods were decontaminated between boreholes. All sampling equipment was decontaminated after each use. Decontamination was completed using a Liquinox and water solution with a potable/distilled water rinse. When possible, dedicated, single use equipment was used to minimize the potential for cross contamination of samples.

3.2.3.3 Laboratory Analytical Testing

All laboratory analyses were conducted in accordance with Environmental Protection Agency (EPA) SW-846, Test Methods for Evaluating Solid Waste, and other pertinent EPA methods or LDENR analytical methods. Laboratory analyses were completed by Element in Lafayette, Louisiana. Laboratory accreditation documents and analytical reports are included on a USB jump drive in Attachment H.

Soil samples were analyzed for the parameters identified in the data summary tables using the analytical methods presented in the laboratory analytical reports.

3.2.3.4 Plug and Abandon Boreholes

All boreholes were plugged and abandoned in accordance with Chapter 3 of the *"Water Well Rules, Regulations, and Standards, State of Louisiana"* or Section 9 of the LDEQ/LDENR *"Guidance Manual for Environmental Boreholes and Monitoring Systems" (November 2021)*.

3.3 Field Activities Directed by Others

Additional field activities were conducted by and at the direction of HET, from January 28, 2025, through March 13, 2025. Southland personnel observed and, when provided the opportunity, collected split samples. Work conducted by HET consisted of root studies and soil boring installation and sampling.

Southland personnel observed root study activities conducted by HET on January 28, 2025. No samples were collected.

HET installed soil borings employing direct push technology and using a combination of Dual Tube and Macrocore tooling from Geoprobe. Borings were installed at a total of eight locations (B-Series) at depths up to 64 feet bgs. Southland personnel or contracted personnel observed, logged and photographed cores, and collected a total of four split soil samples. Soil boring logs from HET-directed work are presented in Attachment F. Southland samples from HET work were submitted under standard chain-of-custody procedures to Element Laboratories for EC, sodium adsorption ratio (SAR), exchangeable sodium percentage (ESP) and soluble chlorides analyses. Laboratory analytical reports are presented in Attachment H.

4.0 GEOLOGY/HYDROGEOLOGY DISCUSSION

The geology and hydrogeology of Acadia Parish (including the Gastal tract) correlates to published descriptions of regional geologic and hydrogeologic conditions. Where site-specific geologic or hydrogeologic information is available, it is included in the following discussion. Several sources were available for review to determine geologic and hydrogeologic conditions including:

- Technical reports prepared by the Louisiana Geological Survey (LGS), US Geological Survey (USGS), US Department of Agriculture (USDA), Louisiana Department of Transportation and Development (LDOTD), and other peer reviewed technical publications listed at the end of this report,
- LDENR Water Well registration records, and
- Soil boring data associated with the investigation of the Gastal tract.

4.1 GEOLOGY

The geology of the north-central Gulf of Mexico is dominated by a southward progradation of sedimentary deposits by alluvial systems originating within the North American continent. The sedimentary deposits are composed of a complex sequence of interbedded alluvial and near-shore marine sediments. Near the surface, finer grained sediments composed of clays and silts with some sand interbeds dominate the lithology. These finer grained, near surface sediments represent a complex sequence of coastal plain deposits referred to as the Prairie Allogroup (LGS 2002). Underlying the surface sediments is alluvium identified as the Chicot Aquifer, and composed of a generally downward coarsening sequence of Holocene/Pleistocene-age silt, sand, and gravel sediments.

4.2 REGIONAL GROUNDWATER CHARACTERISTICS

The regional hydrogeology of southwest Louisiana is dominated by the Chicot Aquifer that underlies parts of eastern Texas and southwestern/southcentral Louisiana. The Chicot Aquifer is the principal source for fresh groundwater in the area (Lovelace 1999) and is the most heavily pumped aquifer in the state of Louisiana (Stuart 1994).

The top of the Chicot Aquifer is composed of clay, silt, and sand and identified as the Chicot Aquifer System Surficial Confining Unit. These sediments and the Prairie Allogroup are identified in this report as the Topstratum that overlies the more permeable sands of the Chicot Aquifer. Interbedded sands and silts are present within the Topstratum unit and vary in areal extent and thickness. These interbedded permeable zones are collectively identified in literature as the Shallow Sands of the Chicot Aquifer System. These shallow sands occur throughout the surficial unit and are present in thicknesses of 10 feet or more in 12 (including Acadia Parish) of 15 parishes where the Chicot Aquifer is present. The sands may be hydraulically connected to the underlying aquifer and produce sufficient groundwater via small-diameter wells for domestic, irrigation, or petroleum rig-supply purposes. More than 3,000 small-diameter water supply wells for domestic, irrigation, or rig-supply are screened in the shallow sands of the Chicot Aquifer. (Sargent 2004a, Sargent 2004b)

The thickness of the Surficial Confining Unit of the Chicot Aquifer varies from 80 to 160 feet in Acadia Parish with an estimated thickness of 80 to 120 feet in the Gastal tract area (Sargent 2004b and Milner 2009). This is consistent with water supply well logs from the tract. More than 80 water wells in Acadia Parish are screened in the shallow sands (Sargent 2004b). Within and near the Gastal tract, shallow sand units are identified in both water supply well logs and site investigation boring logs at depths ranging from 36 to 87 ft-bgs. Saturated silt intervals were logged above the shallow sands in site investigation soil borings on the Gastal tract.

The surficial confining unit was believed to restrict vertical groundwater flow, although many studies indicate the permeability of this unit may be greater than originally estimated, and at a minimum, the potential exists for aquifer recharge from the overlying sediments (Lovelace 1999, Jones 1954 and Sargent 2004b). Groundwater modeling completed by Nyman (1990) simulating 1981 hydrogeologic conditions indicated that throughout southwest Louisiana, the greatest component of aquifer recharge originated from downward vertical leakage of groundwater from the overlying water table.

With the reduction of water levels in the deeper portions of the Chicot Aquifer as a result of groundwater usage, the vertical hydraulic gradient from surface water to the underlying Chicot sands would be increased resulting in a greater potential for downward migration of freshwater via erosional features such as channel-fill sands, interconnected sands associated with regressive/transgressive events, faulting or secondary porosity (Jones 1954, Lovelace 2002).

4.2.2 Louisiana Department of Energy and Natural Resources Water Well Database

The LDENR maintains a database of water wells installed throughout the state. However, the database is incomplete with respect to historical water wells drilled and P&A prior to promulgation of state regulations requiring water well registration. The database was searched within a one-mile buffer of the Gastal tract flow line release to determine aquifer usage in the area. The results of the database search are included in Table 2 and Figure 4.

The LDENR database of water wells indicates approximately 20 water supply wells screened in the Chicot Aquifer within a 1-mile radius of the release. These nearby, active water supply wells include two municipal supply wells for the Village of Morse, an institutional public supply well for Morse Elementary School, and at least six domestic supply wells, in addition to irrigation wells. Water supply wells extend to depths ranging from 145 to 283 ft-bgs and are screened in the Chicot Aquifer (Table 2 and Figure 4). Water well registration forms, including driller's logs, for SN 195102 and SN 200132 rig supply wells, site monitor wells, and the irrigation well utilized for the Gastal tract are presented in Attachment G.

4.3 SOIL AND GROUNDWATER CHARACTERISTICS

The geology and hydrogeology of the Gastal tract correlates closely to the regional geologic and hydrogeologic conditions described above. Soil sampling activities confirm surficial soils composed of clay, silt, and fine sand and identified as Topstratum, overlie the Chicot Aquifer.

Based on water supply well logs, surface soil/sediments transition vertically to coarser grained silty sand and gravel that comprise the deeper portions of the Chicot Aquifer. These coarser grained sands and gravels of the Chicot Aquifer are the more commonly used portions for irrigation and public water supply due to increased well yield.

In the investigated area of the Gastal tract, surficial soils are primarily composed of clay/silty clay with some clayey silt, silt/fine sand, and sand. Where borings penetrated to sufficient depths, the top of a permeable zone was encountered between 20 and 27 feet. The base of this permeable zone was not encountered in investigation borings. Water supply well logs also indicate the presence of sand units within the Topstratum. The overall permeability of surficial soil/sediment is confirmed by the presence of elevated concentrations of indicator constituents (i.e. chloride) extending vertically to depths of at least 60 ft-bgs.

5.0 DISTRIBUTION OF E&P INDICATOR CONSTITUENTS

Investigation results for the Gastal tract include the following items:

- Historical Aerial Photographs,
- Sample Location Maps,
- Soil Laboratory Analytical Data Summary Tables,
- Cone Penetration Test Logs, and
- Soil Boring Logs/Well Completion Diagrams.

Laboratory analytical results for samples collected within the Gastal tract are summarized in Tables 3 and 4. All laboratory reports for soil samples collected by Southland are located on an USB jump drive in Attachment H of this report.

The greatest EC concentrations reported by laboratory analysis for Southland samples in each site investigation boring were compiled, gridded and plotted on Figure 7. For HET directed borings (B-series) where Southland results are unavailable, HET laboratory results were utilized. The EC contours and data plotted on Figure 7 illustrate the extent and severity of the E&P Waste impacts to the Gastal tract.

5.1 SITE-SPECIFIC BACKGROUND CONCENTRATIONS

In order to develop a remediation plan that would result in restoration of the property to meet background/original condition, site-specific background concentrations were determined for EC and petroleum hydrocarbons.

Soil samples collected away from the apparent impacts were selected as representative of background conditions. Select indicator constituents that are present under natural (i.e. background) conditions in soil (i.e. EC) were evaluated as described in U.S. EPA Guidance (U.S. EPA 2009) to determine a background concentration.

The resulting soil background EC concentrations (mean plus 1 standard deviation) in the investigation area is 1.2 millimhos per centimeter (mmhos/cm) (Attachment I).

Total Petroleum Hydrocarbon Diesel and Oil Range Organics (TPH-DRO, TPH-ORO) and Oil and Grease (O&G) are indicator constituents that do not occur naturally in nature within the area and depth of investigation. As a result, petroleum hydrocarbons are assumed to have no background concentration.

5.2 DISCUSSION OF E&P IMPACTS

Site investigation activities performed by Southland through February 2024 and supplemented by HET in 2025 confirm the presence of petroleum and elevated indicators of salt in surface and subsurface soil within the Gastal tract.

The greatest concentrations of E&P constituents (i.e. EC, SAR and ESP) in soil are located in Pond 1 and Pond 2 in the immediate vicinity of the produced water pipeline. E&P impacts are observed from the surface to depths of 60 ft-bgs. (Table 3 and Figures 7 through 9). The location and elevated concentrations of indicator constituents in soil are consistent with a release/spill of produced water from an underground pipeline leak that eventually breached the surface.

Activities and facilities associated with petroleum E&P have been identified as sources of soil and groundwater contamination in published literature dating back to the 1920's and 1930's (Schmidt and Devine 1929 and Martin 1939) and more recent published literature (Whitfield 1975 & 1980, and LDEQ 1989, and Saucier 1994).

5.2.1 Contaminant Migration

Site investigation data indicates contaminants indicative of E&P waste extend from surface soils to depths of 60 ft-bgs. Contaminants released in the shallow subsurface have migrated horizontally and vertically (upward and downward) through soil. The lateral and vertical extent of impacts are summarized in Tables 3 and 4 and Figure 7. Cross-Sections illustrating geologic conditions and documented distribution of contamination indicated by soil EC are presented in Figures 8 and 9.

Based on the results of the investigation activities, impacts from the pipeline spill event are present in soil both above and beneath the flowline leak found within Pond 1 of the Gastal tract. Lateral subsurface migration is also indicated by the distribution of contaminants, primarily along the pipeline path, and encompassing approximately eight acres. Once the produced water migrated vertically upward and breached the surface in Pond 1 on or about December 26, 2021, contaminants spread laterally within the surface water of the hydraulically connected Ponds 1, 2, and 3 and migrated from surface water into the pond bottoms. Investigation data further indicates contaminant migration occurred vertically beneath the pipeline to a depths of at least 60 ft-bgs and toward the groundwater resources of the Chicot Aquifer. The time the leak began and volume of produced water released are unknown.

The contamination extends to sediments, some of which are visually saturated. These sediments are more likely than not, hydraulically connected to the saturated sand and gravels of the Chicot Aquifer System, as indicated by driller's logs on nearby registered water supply wells, regional Chicot Aquifer studies, and site-specific soil boring data from the Gastal investigation. The primary contaminant in the produced water release, sodium chloride, does not bio-degrade. Given the current dataset and site conditions documented by investigation activities, it is more likely than not that the E&P Waste will continue to migrate, and the area of contamination will continue to expand.

There is no evidence at this time suggesting that the constituents of concern are in declining concentration conditions.

6.0 REMEDIATION PLAN AND COST ESTIMATE

Remediation costs were estimated for the following remediation scenarios:

1. Soil remediation in conjunction with groundwater investigation to achieve compliance with LDENR Office of Conservation Order 29-B Standards.
2. Remediation to restore the soil and groundwater to pre-oil and gas (background/original) condition. Restoration to background/original condition is required under the operative mineral lease between Gastal and Trade Exploration Corporations, dated February 18, 1984. Specifically, Section 8 of that lease says: "The Lessee shall be responsible for all damages caused by Lessee's operations."

Remediation costs were estimated for the excavation and off-site disposal of salt and petroleum contaminated soil, as well as the investigation of the saturated zone below 30 ft-bgs. Currently, soil analysis indicates E&P impacts are present to a depth of 60 ft-bgs which, based on field observations, is below the top of the saturated zone. Estimated costs have been included for the off-site disposal of one pore volume of groundwater from 30 to 60 ft-bgs within the area of deepest contamination (Remediation Area 3) via wells installed as part of the proposed groundwater investigation. Pending the results of the groundwater investigation, further groundwater remediation may be necessary. The full scope of groundwater remediation is currently unknown. Thus, this remediation plan cost estimate should be considered a minimum cost estimate for achieving restoration of the Gastal tract.

It should be noted the groundwater remediation goal is "background/original" condition for both remediation scenarios. Site figures indicating the areas of soil/aquifer remediation for each scenario and cost summary tables are included as Attachment J.

The scope of the remediation plan includes the removal of clean overburden, excavation/ transportation of contaminated soil to an approved commercial disposal facility, confirmation sampling, and backfilling of the excavation. Once backfilling is complete, the groundwater investigation will be implemented in the vicinity of the deepest soil contamination (Remediation Area 3) with investigation wells installed to determine the horizontal and vertical extent of groundwater contamination. Investigation wells will subsequently be used to remove E&P waste from soils and groundwater from 30-60 ft-bgs.

Recovered fluids (water) will be transported off-site to an approved commercial injection well facility.

6.1 SOIL REMEDIATION

6.1.1 Soil Remediation Plan

The soil remediation plan is based on implementation of two possible remediation scenarios including compliance with LDENR 29-B pit closure standards and restoration to background/original conditions. Natural soil EC was calculated for soil at the tract and used to

define the areas of remediation in the background/original condition remediation scenario. The site-specific soil background EC is calculated to be 1.2 mmhos/cm. The clean-up standard utilized for the background soil remediation estimate is also 1.2 mmhos/cm.

The area to be excavated is determined based on the horizontal extent of soil measurements in excess of the LDENR 29-B standards (EC <4 mmhos/cm, ESP <15, and SAR <12) or the background soil EC action standard of 1.2 mmhos/cm for the site. The depth of remediation is determined based on depth of soils exceeding the standard. In the deepest impacted soil areas (i.e., E&P impacts below a depth of approximately 30 ft-bgs), soil excavation activities will be terminated. The remaining contaminated soil will be addressed via groundwater recovery and potentially supplemented by soil flushing depending upon groundwater elevations in the aquifer. The maximum depth of excavation for both LDENR 29-B and background/original condition scenarios is 30 ft-bgs. The total area of soil remediation is:

- LDENR 29-B Remediation – 5.7 acres (approximate)
- Background/Original Remediation – 8.0 acres (approximate)

Tables summarizing the area and depth of excavation, as well as the average thickness of impacted soil, are included in Attachment J.

6.1.2 Soil Remediation Estimated Cost

The soil remediation cost is based on excavation and transportation of impacted soils to a solid waste facility permitted to accept such waste. For this estimate, the cost for soil transportation and disposal is based on utilizing the R360 landfill near Mermentau, Louisiana. The other costs involved are excavation, loading trucks, confirmation sampling, and backfill. The remediation plan assumes:

- 10% of confirmation samples will not achieve remediation criteria in the initial confirmation sampling event requiring supplemental excavation of an additional 10% of impacted soil.
- Two-inches of precipitation will accumulate within each remediation excavation. Accumulated precipitation will be collected and disposed off-site.
- Access roads into the sites will be improved and maintained to facilitate truck traffic during remediation activities.
- A project design and management cost of 5% is included for remediation design and planning, administration, regulatory interaction, and documentation of remediation activities.

Remediation pricing information is obtained from LDEQ Underground Storage Tank Trust Fund Cost Control Guidance Document (January 1, 2025) and local contractors.

6.2 GROUNDWATER INVESTIGATION

6.2.1 Groundwater Investigation Plan

The groundwater investigation plan is focused on determining the presence and extent of E&P waste indicator constituents in groundwater within the first laterally continuous saturated zone beneath the Gastal tract. Based on the results of field observations and water level monitoring obtained during site investigation activities, it is anticipated the first laterally continuous saturated zone will be at a depth greater than 30 ft-bgs.

6.2.2 Groundwater Investigation Estimated Cost

Groundwater investigation will initially be accomplished with the installation of groundwater monitor wells to determine the presence of impacted groundwater in the area of deepest soil contamination beneath the Gastal tract (Remediation Area 3). Once completed, a supplemental investigation will be implemented to determine the horizontal and vertical extent of groundwater contamination. This cost estimate assumes a total of 12 wells will be installed to a maximum depth of 75 ft-bgs. Once the investigation is complete, it is assumed that the wells installed in the investigation will be repurposed to remove E&P waste constituents from the 30 to 60 ft-bgs interval. As previously noted, the horizontal and vertical extent of contamination is unknown. As a result, estimated costs for investigation/remediation of contaminated groundwater represent minimum estimated costs.

6.3 REMEDIATION COST SUMMARY

The total estimated cost of site remediation to meet LDENR 29-B standards is: **$15,362,407**.

The total estimated cost of site remediation to achieve background/original conditions is: **$31,163,915**.

It is important to note that estimated remediation costs presented above should be considered a minimum cost estimate. A breakdown of estimated costs are presented in Attachment J.

This expert report has been prepared for use in the litigation of Danny Paul Gastal and Ignatius Hoffpauir vs Petrodome Operating, LLC, et al. Case No. 202210495-A, 15th Judicial District Court, Acadia Parish. Any reproduction or use of this report for any other purpose outside of the above litigation requires prior written consent of the authors.

If you have any questions or need additional information, please do not hesitate to contact us. We reserve the right to modify this report and cost estimate should additional information be made available.

Sincerely,

Duane A. Piranio
Southland Environmental, LLC

R. Brent Bray
RBB Consulting, LLC

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ADDITIONAL RELIANCE MATERIALS

LDENR Well Files for SN 195102 and SN 200132.

Oil, Gas and Mineral Lease between Beulah Weekly Gastal, et al. and Trade Exploration Corporation, dated February 18, 1984.

Plaintiffs' Petition for Damages dated June 15, 2022, and amendments thereto.

All documents produced in this litigation by all parties.

Field notes and photographs of site conditions and investigations.

All documents available under LDEQ Agency Interest No. 171651.

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TABLE 1
LDNR SONRIS OIL AND GAS WELLS

GASTAL AND HOFFPAUIR VS. PETRODOME OPERATING, LLC, ET AL.
ACADIA PARISH

WELL SERIAL NUMBER	ORGANIZATION ID	ORGANIZATION NAME	WELL NAME	WELL NUMBER	WELL STATUS CODE	PERMIT DATE	STATUS	FIELD NAME
82224	9999	INACTIVE OPERATOR	ANGELAS CHIASSON	1	29	11/16/1960	DRY AND PLUGGED NO PRODUCT SPECIFIED	WILDCAT-SO LA LAFAYETTE DIST
94324	4124	MIDWEST OIL CORP.	C HAMIC	1	29	1/21/1963	DRY AND PLUGGED NO PRODUCT SPECIFIED	WILDCAT-SO LA LAFAYETTE DIST
100014	5330	SECURE TRUSTS	E HUNDLEY	1	29	11/27/1963	DRY AND PLUGGED NO PRODUCT SPECIFIED	WILDCAT-SO LA LAFAYETTE DIST
115595	6134	UNION EXPL. PARTNERS, LTD.	DAN FEITEL	1	29	6/22/1966	DRY AND PLUGGED NO PRODUCT SPECIFIED	WILDCAT-SO LA LAFAYETTE DIST
157753	4008	MCMORAN EXPLORATION COMPANY	C HAMIC	1	29	11/29/1977	DRY AND PLUGGED NO PRODUCT SPECIFIED	WILDCAT-SO LA LAFAYETTE DIST
159096	4008	MCMORAN EXPLORATION COMPANY	C HAMIC	2	29	4/20/1978	DRY AND PLUGGED NO PRODUCT SPECIFIED	WILDCAT-SO LA LAFAYETTE DIST
177148	9999	INACTIVE OPERATOR	C HAMIC ET AL	1	28	8/28/1981	UNABLE TO LOCATE WELL-NO PLUGGED AND ABANDONED NO PRODUCT SPECIFIED	WILDCAT-SO LA LAFAYETTE DIST
195102	60067	OLIPDP II, LLC	MIOGYP RA SUA;GASTAL	1	10	9/24/1984	ACTIVE - PRODUCING OIL	MORSE
198581	3082	J. P. M. INVESTMENTS, LTD.	EFFIE THIBODEAUX	1	29	3/13/1985	DRY AND PLUGGED NO PRODUCT SPECIFIED	MORSE
200132	60067	OLIPDP II, LLC	FOREMAN ESTATE SWD	1	9	6/10/1986	ACTIVE- INJECTION PRODUCED SALT WATER	MORSE

TABLE 2
LDNR SONRIS WATER WELLS

GASTAL AND HOFFPAUIR VS. PETRODOME OPERATING, LLC, ET AL.
ACADIA PARISH

WATER WELL NUMBER	OWNERS NAME	OWNERS NUMBER	USE DESCRIPTION	WELL STATUS	DRILLERS NAME	WELL DEPTH	GEOLOGIC UNIT	LONGITUDE (DMS)	LATITUDE (DMS)
001-666	COMMUNITY FEED	NULL	commercial public supply	ACTIVE	LOUVIERE	190	112CHCTU	922901	300726
001-7658Z	HENRY, MIKE	NULL	COMMERCIAL PUBLIC SUPPLY	ACTIVE	LOUVIERE	195	112CHCTU	922905	300727
001-5761Z	EMERY BENOIT	NULL	DOMESTIC	ACTIVE	MAXIM'S	145	112CHCTU	922911	300726
001-5551Z	BILLY GRAUTREAUX	NULL	DOMESTIC	ACTIVE	NOLAN'S	166	112CHCTU	922904	300726
001-9390Z	LEWIS BROUSSARD	NULL	DOMESTIC	ACTIVE	MAXIM'S WATER WELL SERVICE, INC.	150	112CHCTU	922859	300727
001-9449Z	TYLER CARLSON	NULL	DOMESTIC	ACTIVE	MAXIM'S WATER WELL SERVICE, INC.	145	112CHCTU	922849	300755
001-173	UNKNOWN	NULL	DOMESTIC	ACTIVE	UNKNOWN	213	112CHCTU	922958	300725
001-5550Z	BROUSSARD, LEW	NULL	DOMESTIC	ACTIVE	LOUVIERE	180	112CHCTU	922856	300723
001-244	AC SCHOOL BOARD	MORSE ELEM	INSTITUTION PUBLIC SUPPLY	ACTIVE	UNKNOWN	0	112CHCTU	922957	300737
001-657	HENRY, MICHAEL	NULL	IRRIGATION	ACTIVE	MAXIM'S	145	112CHCTU	922908	300725
001-426	THIBODEAUX, T	NULL	IRRIGATION	ACTIVE	MAXIM'S	192	112CHCTU	922859	300725
001-1354	MATTHEW TAYLOR	NULL	IRRIGATION	ACTIVE	MAXIM'S WATER WELL SERVICE, INC.	162	112CHCTU	922935.3	300730.4
001-324	ISTRE, LEROY	NULL	IRRIGATION	ACTIVE	CARNES	245	112CHCTU	922947	300824
001-363	SIMON, ALPHE	1	IRRIGATION	ACTIVE	LAYNE (LA)	258	112CHCTU	923029	300726

TABLE 2
LDNR SONRIS WATER WELLS

GASTAL AND HOFFPAUIR VS. PETRODOME OPERATING, LLC, ET AL.
ACADIA PARISH

WATER WELL NUMBER	OWNERS NAME	OWNERS NUMBER	USE DESCRIPTION	WELL STATUS	DRILLERS NAME	WELL DEPTH	GEOLOGIC UNIT	LONGITUDE (DMS)	LATITUDE (DMS)
001-178	HOMMIR, COSHY	NULL	IRRIGATION	ACTIVE	UNKNOWN	0	112CHCTU	922958	300739
001-519	SIMON, HOWARD	NULL	IRRIGATION	ACTIVE	STAMM-SCHEELE	251	112CHCTU	922955	300825
001-901	HUNDLEY, KATHY	NULL	IRRIGATION	ACTIVE	MAXIM'S	235	112CHCTU	922931	300702
001-10035Z	DANNY GASTAL C/O SOUTHLAND ENVIRONMENTAL,	MW-01D	MONITOR	ACTIVE	WALKER-HILL ENVIRONMENTAL, INC.	32	112CHCTC	922941.46	300744.17
001-10036Z	DANNY GASTAL C/O SOUTHLAND ENVIRONMENTAL,	MW-01	MONITOR	ACTIVE	WALKER-HILL ENVIRONMENTAL, INC.	16	112CHCTC	922941.46	300744.17
001-7763Z	T B CITGO	MW-3	MONITOR	ACTIVE	JESCO	19	112CHCTC	922954	300719
001-7761Z	T B CITGO	MW-1	MONITOR	ACTIVE	JESCO	19	112CHCTC	922954	300719
001-7762Z	T B CITGO	MW-2	MONITOR	ACTIVE	JESCO	19	112CHCTC	922954	300719
001-8391Z	DAIGLE PETRO	MW-2	MONITOR	ACTIVE	ENVIRONMENTAL'	15	112CHCTC	922954	300719
001-8392Z	DAIGLE PETRO	MW-3	MONITOR	ACTIVE	ENVIRONMENTAL'	15	112CHCTC	922954	300719
001-8390Z	DAIGLE PETRO	MW-1	MONITOR	ACTIVE	ENVIRONMENTAL'	15	112CHCTC	922954	300719
001-8394Z	DAIGLE PETRO	MW-5	MONITOR	ACTIVE	ENVIRONMENTAL'	15	112CHCTC	922954	300719
001-8393Z	DAIGLE PETRO	MW-4	MONITOR	ACTIVE	ENVIRONMENTAL'	15	112CHCTC	922954	300719
001-331	MORSE, LA	2	MUNICIPAL PUBLIC SUPPLY	ACTIVE	STAMM-SCHEELE	283	112CHCTU	922949	300719

TABLE 2
LDNR SONRIS WATER WELLS

GASTAL AND HOFFPAUIR VS. PETRODOME OPERATING, LLC, ET AL.
ACADIA PARISH

WATER WELL NUMBER	OWNERS NAME	OWNERS NUMBER	USE DESCRIPTION	WELL STATUS	DRILLERS NAME	WELL DEPTH	GEOLOGIC UNIT	LONGITUDE (DMS)	LATITUDE (DMS)
001-330	MORSE, LA	1	MUNICIPAL PUBLIC SUPPLY	ACTIVE	STAMM-SCHEELE	280	112CHCTU	922949	300719
001-9120Z	HELENA CHEMICAL	NULL	NULL	ACTIVE	MAXIM'S WATER WELL SERVICE, INC.	180	NULL	923000	300828
001-5624Z	CHAMPLIN PETRO	FOREMAN 1	OIL/GAS WELL RIG SUPPLY	ACTIVE	GUICHARD	181	112CHCTU	922937	300735
001-5568Z	TRITON TURNKEY	GASTON 1	OIL/GAS WELL RIG SUPPLY	ACTIVE	GUICHARD	187	112CHCTU	922946	300745
001-9964Z	GLW LAND LLC	NULL	REWORKED INDUSTRIAL	ACTIVE	SIMON LAND & IRRIGATION	150	112CHCT	922905	300732
001-1200	LEWIS BROUSSARD	NULL	TEST HOLE	ACTIVE	AMY, M. E. , DRILLING CO., INC.	265	11200NWM	922924	300811
001-228	UNKNOWN	NULL	UNKNOWN	ACTIVE	UNKNOWN	0	112CHCTU	922959	300829

TABLE 3
COMPREHENSIVE ANALYTICAL DATA - SOIL

GASTAL AND HOFFPAUIR VS. PETRODOME OPERATING, LLC, ET. AL.
ACADIA PARISH

Sample ID	Sample Date	Sample Interval (Ft BGS)	Laboratory Analytical Results						
			Electrical Conductivity (mmhos/cm)	Soluble Chloride (mg/kg)	Sodium Adsorption Ratio	Exchangeable Sodium Percentage	Cation Exchange Capacity (meq/100g)	SPLP Chloride (mg/L)	SPLP Sodium (mg/L)
Background:			**1.2**	N/A	N/A	N/A	N/A	N/A	N/A
29-B Comparative Standard:			**4**	N/A	**12**	**15**	N/A	N/A	N/A
SE SB-01 (0-2)	05/02/23	0-2	**2.46**	415	**29.4**	**33.8**	16.6	--	--
SE SB-01 (2-4)		2-4	**5.03**	1,350	**45.0**	**52.5**	17.1	--	--
SE SB-01 (4-6)		4-6	**4.33**	1,120	**43.2**	**57.7**	25.7	--	--
			12.1	2,950	--	--	--	--	--
SE SB-01 (6-8)		6-8	**1.74**	631	**26.5**	**43.9**	32.2	--	--
			3.96	1,390	--	--	--	--	--
SE SB-01 (8-10)		8-10	**2.23**	727	**28.9**	**48.8**	32.6	--	--
			5.07	2,450	--	--	--	--	--
SE SB-01 (10-12)		10-12	1.01	319	8.91	**51.5**	31.6	--	--
			3.56	875	--	--	--	--	--
SE SB-01 (12-14)		12-14	**4.21**	738	**74.9**	**71.8**	24.1	--	--
			7.49	1,910	--	--	--	--	--
SE SB-01 (14-16)		14-16	**8.29**	2,640	**94.2**	**70.2**	27.7	--	--
			16.8	4,140	--	--	--	--	--
SE SB-01 (16-18)		16-18	**10.5**	3,360	**74.4**	**>99**	29.4	--	--
			10.4	5,940	--	--	--	--	--
SE SB-01 (18-20)		18-20	**8.34**	3,000	**66.6**	**>99**	17.2	--	--
			17.7	5,770	--	--	--	--	--
SE SB-01 (20-22)		20-22	**11.3**	2,430	**75.3**	**49.6**	25.2	--	--
			12.8	4,100	--	--	--	--	--
SE SB-01 (22-24)		22-24	**17.1**	3,760	**73.4**	**34.2**	20.5	--	--
			21.6	4,170	--	--	--	--	--
SE SB-01 (24-26)		24-26	**15.8**	2,720	**45.5**	**56.4**	23.0	--	--
			20.5	4,690	--	--	--	--	--
SE SB-01 (26-28)		26-28	**13.2**	2,350	**27.2**	**42.5**	13.0	--	--
			22.2	3,690	--	--	--	--	--
SE SB-01 (28-30)		28-30	**14.7**	2,920	**39.9**	**35.8**	22.0	--	--
			24.3	4,290	--	--	--	222	157
SE SB-01 (30-32)		30-32	**17.0**	3,170	**32.0**	**17.1**	11.0	--	--
			17.9	3,390	--	--	--	--	--
SE SB-01 (32-34)		32-34	**21.6**	5,780	**58.9**	<0.10	11.4	--	--
			19.7	4,190	--	--	--	--	--
SE SB-01 (34-35)		34-35	**18.2**	2,770	**46.9**	**34.2**	11.0	--	--
			28.3	4,540	--	--	--	201	130
SE SB-01 (34-36)	06/16/23	34-36	**19.2**	2,600	**29.5**	**40.0**	--	--	--
			26.1	4,310	--	--	--	204	125
SE SB-01 (38-40)		38-40	**8.73**	1,270	8.48	13.3	--	--	--
			10.8	1,570	--	--	--	--	--
SE SB-01 (40-42)		40-42	**7.05**	841	6.82	9.55	--	--	--
SE SB-01 (42-44)		42-44	**5.65**	655	4.26	3.7	--	--	--
			6.11	609	--	--	--	--	--
SE SB-01 (44-46)		44-46	**5.51**	688	5.96	7.08	--	--	--
			5.09	713	--	--	--	32.4	36.9
SE SB-02 (0-2)	05/02/23	0-2	**3.43**	694	**13.8**	7.77	20.4	--	--
			4.74	506	**13.5**	5.66	18.0	--	--
SE SB-02 (2-4)		2-4	**1.88**	511	7.47	5.95	27.9	--	--
			1.99	206	7.38	3.18	36.4	--	--
SE SB-02 (4-6)		4-6	0.31	46.6	5.20	7.20	29.6	--	--
			0.761	30.8	--	--	--	--	--
SE SB-02 (6-8)		6-8	0.64	119	8.56	6.24	33.2	--	--
			0.404	18.8	--	--	--	--	--
SE SB-02 (8-10)		8-10	0.52	50.6	5.84	6.46	27.8	--	--
			0.762	50.9	--	--	--	--	--
SE SB-02 (10-12)		10-12	**1.23**	238	**18.7**	**18.8**	9.44	--	--
			1.74	383	--	--	--	--	--
SE SB-02 (12-14)		12-14	**24.1**	4,680	**156**	**>99**	12.4	--	--
			32.7	5,640	--	--	--	275	220

TABLE 3
COMPREHENSIVE ANALYTICAL DATA - SOIL

GASTAL AND HOFFPAUIR VS. PETRODOME OPERATING, LLC, ET. AL.
ACADIA PARISH

Sample ID	Sample Date	Sample Interval (Ft BGS)	Laboratory Analytical Results						
			Electrical Conductivity (mmhos/cm)	Soluble Chloride (mg/kg)	Sodium Adsorption Ratio	Exchangeable Sodium Percentage	Cation Exchange Capacity (meq/100g)	SPLP Chloride (mg/L)	SPLP Sodium (mg/L)
Background:			**1.2**	N/A	N/A	N/A	N/A	N/A	N/A
29-B Comparative Standard:			**4**	N/A	**12**	**15**	N/A	N/A	N/A
SE SB-02 (14-16)	05/02/23	14-16	**14.4**	4,120	**45.8**	**53.1**	32.4	--	--
			28.5	7,260	--	--	--	--	--
SE SB-02 (16-18)		16-18	**3.80**	1,120	9.32	14.9	37.7	--	--
			6.99	1,460	--	--	--	--	--
SE SB-02 (18-20)		18-20	**1.82**	519	6.75	9.33	36.7	--	--
			3.21	963	--	--	--	--	--
SE SB-02 (20-22)		20-22	**6.43**	1,440	**17.8**	**40.9**	20.3	--	--
			10.9	2,320	--	--	--	--	--
SE SB-02 (22-24)		22-24	**8.7**	1,620	**19.6**	**20.8**	14.6	--	--
			13.6	2,480	--	--	--	115	79.9
SE SB-02 (24-26)		24-26	**9.89**	1,220	**53.2**	**62.9**	13.7	--	--
			12.1	2,030	--	--	--	--	--
SE SB-03 (0-2)	05/03/23	0-2	0.46	41.1	5.51	4.16	25.4	--	--
			0.668	29.3	6.33	3.44	20.9	--	--
SE SB-03 (2-4)		2-4	0.38	40.6	6.30	5.27	36.8	--	--
			0.666	37.0	8.21	4.39	27.4	--	--
SE SB-03 (4-6)		4-6	0.87	134	**14.0**	6.97	35.7	--	--
			0.798	38.8	--	--	--	--	--
SE SB-03 (6-8)		6-8	0.41	46.7	5.28	7.85	40.7	--	--
			1.03	37.3	--	--	--	--	--
SE SB-03 (8-10)		8-10	0.77	64.6	6.66	6.65	25.8	--	--
			0.931	30.9	--	--	--	--	--
SE SB-03 (10-12)		10-12	0.56	50.7	6.31	8.00	27.9	--	--
			0.917	37.7	--	--	--	--	--
SE SB-03 (12-14)		12-14	**1.22**	114	8.48	7.59	32.5	--	--
			1.4	89.1	--	--	--	--	--
SE SB-03 (14-16)		14-16	0.82	97.7	8.12	7.21	39.6	--	--
			1.17	86.6	--	--	--	--	--
SE SB-03 (16-18)		16-18	1.08	86.9	8.05	6.29	18.9	--	--
			1.01	71.6	--	--	--	--	--
SE SB-03 (18-20)		18-20	0.90	74.4	6.50	5.26	25.9	--	--
			0.834	86.1	--	--	--	--	--
SE SB-04 (0-2)	05/03/23	0-2	**1.67**	231	**13.6**	**15.2**	18.0	--	--
			2.36	230	**22.1**	9.77	15.4	--	--
SE SB-04 (2-4)		2-4	**1.96**	317	4.73	5.86	29.4	--	--
			2.41	594	5.00	2.81	27.5	--	--
SE SB-04 (4-6)		4-6	0.58	57.7	2.58	4.16	27.4	--	--
			0.809	103	--	--	--	--	--
SE SB-04 (6-8)		6-8	0.43	60.5	3.08	4.90	32.5	--	--
			0.735	80.6	--	--	--	--	--
SE SB-04 (8-10)	05/03/23	8-10	0.91	133	5.36	4.80	31.5	--	--
			0.939	104	--	--	--	--	--
SE SB-04 (10-12)		10-12	**2.16**	248	7.29	7.73	15.6	--	--
			1.39	158	--	--	--	--	--
SE SB-04 (12-14)		12-14	**2.54**	290	4.47	6.12	17.4	--	--
			3.25	400	--	--	--	--	--
SE SB-04 (14-16)		14-16	**1.38**	201	3.73	4.32	28.5	--	--
			1.31	187	--	--	--	--	--
SE SB-04 (16-18)		16-18	0.45	70.3	2.56	4.54	40.7	--	--
			0.47	22.3	--	--	--	--	--
SE SB-04 (18-20)		18-20	0.29	28.6	1.77	3.16	39.8	--	--
			0.424	17.2	--	--	--	--	--
SE SB-04 (20-22)		20-22	0.16	21.2	1.66	3.52	30.7	--	--
			0.544	26.6	--	--	--	--	--
SE SB-04 (22-24)		22-24	0.97	141	5.56	3.92	29.2	--	--
			0.502	27.8	--	--	--	--	--

TABLE 3
COMPREHENSIVE ANALYTICAL DATA - SOIL

GASTAL AND HOFFPAUIR VS. PETRODOME OPERATING, LLC, ET. AL.
ACADIA PARISH

Sample ID	Sample Date	Sample Interval (Ft BGS)	Laboratory Analytical Results						
			Electrical Conductivity (mmhos/cm)	Soluble Chloride (mg/kg)	Sodium Adsorption Ratio	Exchangeable Sodium Percentage	Cation Exchange Capacity (meq/100g)	SPLP Chloride (mg/L)	SPLP Sodium (mg/L)
Background:			**1.2**	N/A	N/A	N/A	N/A	N/A	N/A
29-B Comparative Standard:			**4**	N/A	**12**	**15**	N/A	N/A	N/A
SE SB-05 (0-2)	05/03/23	0-2	**2.39**	315	**16.9**	**18.7**	19.8	--	--
			3.71	399	**29.1**	**16.2**	16.7	--	--
SE SB-05 (2-4)		2-4	**3.59**	643	6.76	**15.4**	17.9	--	--
			4.37	895	8.25	4.56	25.1	--	--
SE SB-05 (4-6)		4-6	**1.87**	261	3.92	4.09	30.0	--	--
			1.58	297	--	--	--	--	--
SE SB-05 (6-8)		6-8	1.06	165	3.59	3.40	34.9	--	--
			1.2	205	--	--	--	--	--
SE SB-05 (8-10)		8-10	**2.35**	310	6.14	3.77	32.1	--	--
			1.28	243	--	--	--	--	--
SE SB-05 (10-12)		10-12	**1.66**	178	3.57	1.65	14.3	--	--
			1.6	186	--	--	--	--	--
SE SB-05 (12-14)		12-14	**9.36**	1,280	10.2	9.73	18.0	--	--
			12.8	2,180	--	--	--	98.1	51.3
SE SB-05 (14-16)		14-16	**14.7**	2,740	11.4	14.3	25.2	--	--
			17.7	3,180	--	--	--	--	--
SE SB-05 (16-18)		16-18	**2.96**	753	2.44	4.18	35.8	--	--
			3.41	1,360	--	--	--	--	--
SE SB-05 (18-20)		18-20	0.95	208	3.07	4.79	32.8	--	--
			0.9	137	--	--	--	--	--
SE SB-05 (20-22)		20-22	**1.98**	330	3.69	2.63	25.9	--	--
			2.28	381	--	--	--	--	--
SE SB-05 (22-24)		22-24	**1.88**	263	2.23	3.51	14.0	--	--
			2.69	197	--	--	--	--	--
SE SB-06 (0-2)	05/04/23	0-2	**5.07**	760	**38.9**	**61.6**	14.1	--	--
			13.6	2,160	**112**	**27.6**	10.0	--	--
SE SB-06 (2-4)		2-4	**5.78**	1,590	**54.4**	**100**	26.1	--	--
			9.44	4,020	--	**38.9**	15.0	--	--
SE SB-06 (4-6)		4-6	**3.92**	1,220	**53.7**	**>99**	22.0	--	--
			6.72	3,800	--	--	--	--	--
SE SB-06 (6-8)		6-8	**3.62**	1,120	**39.0**	**69.4**	32.8	--	--
			9.02	2,970	--	--	--	--	--
SE SB-06 (8-10)		8-10	**9.03**	2,600	**56.2**	**57.6**	30.8	--	--
			15.8	3,620	--	--	--	--	--
SE SB-06 (10-12)		10-12	**15.2**	1,950	**62.9**	**92.6**	10.0	--	--
			14.6	3,040	--	--	--	--	--
SE SB-06 (12-14)		12-14	**25.0**	3,490	**88.9**	**>99**	10.6	--	--
			35.9	4,850	--	--	--	274	201
SE SB-06 (14-16)		14-16	**12.2**	3,220	**55.1**	**90.8**	36.1	--	--
			28.8	5,040	--	--	--	--	--
SE SB-06 (16-18)		16-18	**7.04**	1,670	**54.8**	**100**	31.0	--	--
			10.7	4,710	--	--	--	--	--
SE SB-06 (18-20)		18-20	**12.4**	4,420	**61.4**	**58.1**	40.0	--	--
			14.1	5,740	--	--	--	--	--
SE SB-06 (20-22)		20-22	**7.75**	2,470	**63.2**	**83.1**	28.5	--	--
			11.9	4,280	--	--	--	--	--
SE SB-06 (22-24)		22-24	**16.8**	4,470	**99.3**	**84.9**	13.8	--	--
			20.6	4,080	--	--	--	--	--
SE SB-06 (24-26)		24-26	**18.3**	4,100	**92.4**	**63.7**	16.0	--	--
			22.0	3,500	--	--	--	--	--
SE SB-06 (26-27)		26-27	**17.9**	2,910	**59.8**	**73.8**	16.2	--	--
			23.9	943	--	--	--	206	179

TABLE 3
COMPREHENSIVE ANALYTICAL DATA - SOIL

GASTAL AND HOFFPAUIR VS. PETRODOME OPERATING, LLC, ET. AL.
ACADIA PARISH

Sample ID	Sample Date	Sample Interval (Ft BGS)	Laboratory Analytical Results						
			Electrical Conductivity (mmhos/cm)	Soluble Chloride (mg/kg)	Sodium Adsorption Ratio	Exchangeable Sodium Percentage	Cation Exchange Capacity (meq/100g)	SPLP Chloride (mg/L)	SPLP Sodium (mg/L)
Background:			**1.2**	N/A	N/A	N/A	N/A	N/A	N/A
29-B Comparative Standard:			**4**	N/A	**12**	**15**	N/A	N/A	N/A
SE SB-07 (0-2)	05/04/23	0-2	**2.03**	363	10.0	7.40	20.5	--	--
			2.63	372	10.1	**36.4**	9.61	--	--
SE SB-07 (2-4)		2-4	**1.50**	268	11.6	8.50	34.4	--	--
			0.932	57.6	11.4	**44.6**	14.7	--	--
SE SB-07 (4-6)		4-6	1.04	171	**12.8**	9.58	29.6	--	--
			0.899	51.7	--	--	--	--	--
SE SB-07 (6-8)		6-8	**1.80**	341	**16.0**	6.90	42.7	--	--
			0.707	54.1	--	--	--	--	--
SE SB-07 (8-10)		8-10	0.37	47.6	5.06	9.14	37.7	--	--
			1.11	99.4	--	--	--	--	--
SE SB-07 (10-12)		10-12	0.67	62.4	6.36	**25.4**	4.08	--	--
			0.943	78.0	--	--	--	--	--
SE SB-07 (12-14)		12-14	**2.90**	386	4.01	5.03	19.1	--	--
			2.48	450	--	--	--	--	--
SE SB-07 (14-16)		14-16	**13.5**	1,970	6.24	9.90	19.8	--	--
			15.5	451	--	--	--	--	--
SE SB-07 (16-18)		16-18	**4.14**	888	4.35	3.58	39.6	--	--
			3.56	765	--	--	--	--	--
SE SB-07 (18-20)		18-20	0.68	135	7.42	2.65	41.1	--	--
			0.793	108	--	--	--	--	--
SE SB-07 (20-22)		20-22	0.85	142	8.30	2.10	37.2	--	--
			0.469	26.6	--	--	--	--	--
SE SB-07 (22-23)		22-23	0.39	27.8	5.37	2.67	39.7	--	--
			0.567	22.5	--	--	--	--	--
SE SB-08 (0-2)	05/04/23	0-2	**4.56**	635	**22.5**	14.1	19.3	--	--
			7.55	619	**18.3**	13.7	9.09	--	--
SE SB-08 (2-4)		2-4	**3.06**	581	6.66	11.8	32.0	--	--
			5.62	973	8.07	**24.4**	13.1	--	--
SE SB-08 (4-6)	05/04/23	4-6	0.92	151	6.51	3.23	32.3	--	--
			1.38	208	--	--	--	--	--
SE SB-08 (6-8)		6-8	0.79	125	7.45	4.03	36.8	--	--
			0.865	162	--	--	--	--	--
SE SB-08 (8-10)		8-10	**2.03**	196	8.95	7.92	19.0	--	--
			2.31	267	--	--	--	--	--
SE SB-08 (10-12)		10-12	**3.94**	361	8.51	4.72	12.0	--	--
			3.68	524	--	--	--	--	--
SE SB-08 (12-14)		12-14	**4.60**	498	7.28	2.47	9.01	--	--
			4.14	525	--	--	--	--	--
SE SB-08 (14-16)		14-16	**8.74**	1,150	7.10	6.51	21.7	--	--
			8.34	1,090	--	--	--	--	--
SE SB-08 (16-18)		16-18	1.08	165	9.42	0.92	42.4	--	--
			0.622	75.3	--	--	--	--	--
SE SB-08 (18-20)		18-20	0.52	52.9	5.36	1.98	39.6	--	--
			0.346	27.2	--	--	--	--	--
SE SB-08 (20-22)		20-22	0.39	31.7	4.63	2.22	37.7	--	--
			0.398	15.0	--	--	--	--	--
SE SB-08 (22-24)		22-24	0.14	10.2	2.53	3.96	34.3	--	--
			0.309	10.2	--	--	--	--	--
SE SB-09 (0-2)	05/04/23	0-2	**2.76**	351	**17.9**	14.6	14.0	--	--
			3.88	400	**17.5**	**27.2**	6.57	--	--
SE SB-09 (2-4)		2-4	**3.97**	604	7.83	7.83	24.0	--	--
			5.20	954	7.72	**25.0**	12.5	--	--
SE SB-09 (4-6)		4-6	0.40	51.0	6.36	5.45	27.6	--	--
			0.700	67.8	--	--	--	--	--
SE SB-09 (6-8)		6-8	0.43	57.3	3.55	6.33	27.7	--	--
			0.437	41.1	--	--	--	--	--

TABLE 3
COMPREHENSIVE ANALYTICAL DATA - SOIL

GASTAL AND HOFFPAUIR VS. PETRODOME OPERATING, LLC, ET. AL.
ACADIA PARISH

Sample ID	Sample Date	Sample Interval (Ft BGS)	Laboratory Analytical Results						
			Electrical Conductivity (mmhos/cm)	Soluble Chloride (mg/kg)	Sodium Adsorption Ratio	Exchangeable Sodium Percentage	Cation Exchange Capacity (meq/100g)	SPLP Chloride (mg/L)	SPLP Sodium (mg/L)
Background:			**1.2**	N/A	N/A	N/A	N/A	N/A	N/A
29-B Comparative Standard:			**4**	N/A	**12**	**15**	N/A	N/A	N/A
SE SB-09 (8-10)	05/04/23	8-10	0.68	90.6	6.04	6.73	27.8	--	--
			0.677	82.8	--	--	--	--	--
SE SB-09 (10-12)		10-12	**1.89**	207	11.1	10.1	20.5	--	--
			2.18	312	--	--	--	--	--
SE SB-09 (12-14)		12-14	**9.99**	1,280	**83.5**	**75.4**	18.0	--	--
			12.4	2,160	--	--	--	--	--
SE SB-09 (14-16)		14-16	**12.6**	2,180	**48.9**	**63.6**	27.0	--	--
			20.2	3,590	--	--	--	--	--
SE SB-09 (16-18)		16-18	**5.22**	1,450	9.11	13.7	40.6	--	--
			5.84	2,020	--	--	--	--	--
SE SB-09 (18-20)		18-20	**2.31**	637	5.04	7.25	38.3	--	--
			3.21	964	--	--	--	--	--
SE SB-09 (20-22)		20-22	**1.89**	405	**17.1**	**36.4**	25.9	--	--
			5.50	1,140	--	--	--	--	--
SE SB-09 (22-24)		22-24	**6.13**	841	**20.4**	**26.2**	19.3	--	--
			7.36	1,200	--	--	--	--	--
SE SB-09 (24-26)		24-26	**7.27**	974	**46.4**	**57.9**	13.0	--	--
			9.67	1,760	--	--	--	--	--
SE-SB10 (0-2)	09/05/23	0-2	**1.95**	375	**12.1**	6.76	21.4	--	--
SE SB-10 (2-4)	06/15/23	2-4	0.57	95.9	6.08	10.5	--	--	--
			1.57	157	11.9	8.19	25.2	--	--
SE SB-10 (6-8)	06/15/23	6-8	**2.19**	224	**24.5**	**19.5**	--	--	--
			2.00	124	--	--	--	--	--
SE SB-10 (10-12)		10-12	**2.35**	360	**13.9**	**20.9**	--	--	--
			2.21	229	--	--	--	--	--
SE SB-10 (14-16)		14-16	**3.62**	726	6.46	**25.6**	--	--	--
			10.8	2,420	--	--	--	--	--
SE SB-10 (18-20)		18-20	**1.49**	160	10.2	6.39	--	--	--
			1.32	219	--	--	--	--	--
SE SB-10 (22-24)		22-24	**4.69**	1,250	9.90	9.13	--	--	--
			6.53	854	--	--	--	--	--
SE SB-10 (26-28)		26-28	**5.12**	767	6.32	14.5	--	--	--
			6.72	1,040	--	--	--	--	--
SE SB-10 (30-32)		30-32	**7.15**	1,140	**13.9**	**16.5**	--	--	--
			9.00	1,210	--	--	--	--	--
SE SB-10 (34-36)		34-36	**9.26**	950	10.8	11.6	--	--	--
			12.0	1,600	--	--	--	--	--
SE SB-10 (36-38)		36-38	**1.25**	114	4.43	9.38	--	--	--
			1.86	116	--	--	--	--	--
SE SB-10 (38-40)		38-40	1.08	93.5	7.58	<0.10	--	--	--
			1.41	21.2	--	--	--	--	--
SE SB-11 (0-2)	09/05/23	0-2	**1.40**	459	**12.4**	3.69	--	--	--
			1.88	401	**13.9**	9.46	29.4	--	--
SE SB-11 (2-4)	06/15/23	2-4	0.37	48.5	3.18	14.9	--	--	--
SE SB-11 (6-8)		6-8	0.62	58.7	6.47	10.8	--	--	--
			1.51	158.0	--	--	--	--	--
SE SB-11 (10-12)		10-12	0.55	66.2	5.04	4.79	--	--	--
			1.20	67.0	--	--	--	--	--
SE SB-11 (14-16)		14-16	0.99	83.7	5.32	4.37	--	--	--
			0.686	36.9	--	--	--	--	--
SE SB-11 (18-20)		18-20	0.37	33.6	3.51	3.18	--	--	--
			0.611	19.3	--	--	--	--	--
SE SB-11 (22-24)		22-24	0.13	8.78	1.89	3.59	--	--	--
			0.471	17.8	--	--	--	--	--
SE SB-11 (26-28)		26-28	0.62	53.4	6.29	1.37	--	--	--
			0.466	15.5	--	--	--	--	--

TABLE 3
COMPREHENSIVE ANALYTICAL DATA - SOIL

GASTAL AND HOFFPAUIR VS. PETRODOME OPERATING, LLC, ET. AL.
ACADIA PARISH

Sample ID	Sample Date	Sample Interval (Ft BGS)	Laboratory Analytical Results						
			Electrical Conductivity (mmhos/cm)	Soluble Chloride (mg/kg)	Sodium Adsorption Ratio	Exchangeable Sodium Percentage	Cation Exchange Capacity (meq/100g)	SPLP Chloride (mg/L)	SPLP Sodium (mg/L)
Background:			**1.2**	N/A	N/A	N/A	N/A	N/A	N/A
29-B Comparative Standard:			**4**	N/A	**12**	**15**	N/A	N/A	N/A
SE-SB-12 (0-2)	09/05/23	0-2	**1.38**	224	11.4	10.6	--	--	--
			3.28	362	**17.5**	4.14	25.0	--	--
SE SB-12 (2-4)	06/15/23	2-4	0.41	55.3	3.75	**19.1**	--	--	--
			1.35	196	**16.4**	11.6	22.7	--	--
SE SB-12 (6-8)		6-8	0.88	103	9.91	14.5	--	--	--
			1.66	254	--	--	--	--	--
SE SB-12 (10-12)		10-12	0.56	73.4	5.23	7.22	--	--	--
			1.05	121	--	--	--	--	--
SE SB-12 (14-16)	06/15/23	14-16	0.20	25.0	2.69	1.25	--	--	--
			0.518	39.9	--	--	--	--	--
SE SB-12 (18-20)		18-20	0.19	14.9	2.70	4.39	--	--	--
			0.739	18.4	--	--	--	--	--
SE-SB-13 (0-2)	09/05/23	0-2	**6.01**	1,090	**23.0**	14.2	--	--	--
			5.83	856	**29.3**	14.3	15.5	--	--
SE SB-13 (2-4)	06/15/23	2-4	**1.82**	305	6.18	7.58	--	--	--
			4.37	1,010	7.96	3.78	32.4	--	--
SE SB-13 (6-8)		6-8	0.63	83.1	4.12	4.65	--	--	--
			0.816	132	--	--	--	--	--
SE SB-13 (10-12)		10-12	**1.61**	199	6.65	4.61	--	--	--
			1.71	324	--	--	--	--	--
SE SB-13 (14-16)		14-16	**1.26**	96.6	3.59	6.34	--	--	--
			1.87	106	--	--	--	--	--
SE SB-13 (18-20)		18-20	0.69	87.8	2.10	2.92	--	--	--
			0.790	114	--	--	--	--	--
SE-SB-14 (0-2)	09/05/23	0-2	**2.66**	439	**16.2**	14.1	--	--	--
			4.37	879	**14.5**	8.25	22.0	--	--
SE SB-14 (2-4)	06/16/23	2-4	**2.45**	397	7.15	4.70	--	--	--
			2.25	542	6.20	3.91	28.4	--	--
SE SB-14 (6-8)		6-8	1.11	169	5.04	6.24	--	--	--
			0.895	136	--	--	--	--	--
SE SB-14 (10-12)		10-12	1.19	170	4.39	4.13	--	--	--
			1.33	186	--	--	--	--	--
SE SB-14 (14-16)		14-16	0.77	74.6	2.40	2.90	--	--	--
			1.22	141	--	--	--	--	--
SE SB-14 (18-20)		18-20	0.23	33.3	3.05	2.61	--	--	--
			0.476	11.2	--	--	--	--	--
SE SB-15 (2-4)	06/16/23	2-4	**2.34**	24.7	1.98	10.4	--	--	--
			0.653	27.2	5.79	3.5	15.9	--	--
SE SB-15 (6-8)		6-8	**1.51**	260	**16.0**	10.7	--	--	--
			1.14	71.9	--	--	--	--	--
SE SB-15 (10-12)		10-12	1.10	165	**19.6**	6.89	--	--	--
			1.08	103	--	--	--	--	--
SE SB-15 (14-16)		14-16	0.42	38.3	5.23	3.62	--	--	--
			0.555	35.2	--	--	--	--	--
SE SB-15 (18-20)		18-20	0.25	29.3	3.27	2.98	--	--	--
			0.454	33.9	--	--	--	--	--
SE-SB-16 (0-2)	09/06/23	0-2	1.01	154	6.39	5.32	--	--	--
			1.45	243	6.18	4.57	24.6	--	--
SE SB-16 (2-4)	06/16/23	2-4	1.05	153	3.56	4.05	--	--	--
			1.78	242	4.16	2.1	27.6	--	--
SE SB-16 (6-8)		6-8	1.03	71.0	3.42	3.78	--	--	--
			0.952	119.0	--	--	--	--	--
SE SB-16 (10-12)		10-12	1.16	128	4.08	3.36	--	--	--
			1.67	200	--	--	--	--	--
SE SB-16 (14-16)	06/16/23	14-16	0.39	55.6	4.39	3.17	--	--	--
			0.399	23.2	--	--	--	--	--

TABLE 3
COMPREHENSIVE ANALYTICAL DATA - SOIL

GASTAL AND HOFFPAUIR VS. PETRODOME OPERATING, LLC, ET. AL.
ACADIA PARISH

Sample ID	Sample Date	Sample Interval (Ft BGS)	Laboratory Analytical Results						
			Electrical Conductivity (mmhos/cm)	Soluble Chloride (mg/kg)	Sodium Adsorption Ratio	Exchangeable Sodium Percentage	Cation Exchange Capacity (meq/100g)	SPLP Chloride (mg/L)	SPLP Sodium (mg/L)
Background:			**1.2**	N/A	N/A	N/A	N/A	N/A	N/A
29-B Comparative Standard:			**4**	N/A	**12**	**15**	N/A	N/A	N/A
SE-SB-17 (0-2)	09/06/23	0-2	**1.40**	172	**15.0**	13.7	--	--	--
			2.45	403	**14.0**	8.01	20.8	--	--
SE-SB-18 (0-2)	09/06/23	0-2	0.56	74.3	5.32	4.29	--	--	--
			1.21	113	6.71	4.00	17.8	--	--
SE-SB-19 (0-2)	09/06/23	0-2	**1.60**	254	9.47	6.77	--	--	--
			1.58	317	9.86	5.36	17.2	--	--
SE-SB-19 (2-4)		2-4	0.53	96.1	8.08	9.12	--	--	--
			0.347	77.0	8.31	8.94	26.6	--	--
SE-SB-19 (6-8)		6-8	0.57	79.8	7.06	11.0	--	--	--
			0.849	75.3	--	--	--	--	--
SE-SB-19 (10-12)		10-12	0.58	42.7	7.06	8.85	--	--	--
			0.936	68.7	--	--	--	--	--
SE-SB-19 (14-16)		14-16	0.32	35.2	3.95	6.26	--	--	--
			0.685	51.2	--	--	--	--	--
SE-SB-19 (18-20)		18-20	0.48	51.8	6.16	5.28	--	--	--
			0.783	55.6	--	--	--	--	--
SE-SB-20 (0-2)	09/06/23	0-2	1.03	152	5.81	4.44	--	--	--
			1.20	234	5.69	3.09	31.6	--	--
SE-SB-20 (2-4)		2-4	1.00	180	4.13	2.43	--	--	--
			0.952	159	3.61	2.24	28.5	--	--
SE-SB-20 (6-8)		6-8	0.45	69.7	5.56	4.26	--	--	--
			0.741	57.0	--	--	--	--	--
SE-SB-20 (10-12)		10-12	0.41	46.7	5.68	5.71	--	--	--
			0.567	58.5	--	--	--	--	--
SE-SB-20 (14-16)		14-16	0.20	13.4	3.05	8.74	--	--	--
			0.257	8.14	--	--	--	--	--
SE-SB-20 (18-20)		18-20	0.24	12.9	2.28	6.21	--	--	--
			0.446	8.58	--	--	--	--	--
SE-SB-21 (0-2)	09/06/23	0-2	0.62	22.3	4.66	1.79	--	--	--
			0.891	34.4	4.88	2.82	19.0	--	--
SE-SB-21 (2-4)		2-4	0.23	14.9	4.46	7.20	--	--	--
			0.497	15.8	7.22	4.01	25.6	--	--
SE-SB-21 (6-8)		6-8	0.11	3.35	1.04	11.4	--	--	--
			0.548	15.8	--	--	--	--	--
SE-SB-21 (10-12)		10-12	0.94	106	7.74	5.65	--	--	--
			1.05	105	--	--	--	--	--
SE-SB-21 (12-14)		12-14	0.34	67.8	4.56	5.04	--	--	--
			0.501	80.7	--	--	--	--	--
SE-SB-21 (14-16)		14-16	0.51	44.6	4.67	3.66	--	--	--
			0.598	59.1	--	--	--	--	--
SE-SB-21 (18-20)		18-20	0.20	28.6	3.36	4.87	--	--	--
			0.494	44.0	--	--	--	--	--
SE-SB-21 (20-22)		20-22	0.30	52.2	2.85	3.62	--	--	--
			0.706	63.1	--	--	--	--	--
B-1 (0-1')	02/25/25	0-1	**5.83**	--	**39.0**	**20.4**	16.3	--	--
B-1 (1-2')		1-2	**9.70**	--	**78.3**	**29.7**	16.4	--	--
B-1 (14-16')		14-16	**21.2**	5,160	--	--	--	257	187
B-1 (24-26')		24-26	**22.1**	4,480	--	--	--	218	171
B-1 (38-40')		38-40	**3.24**	401	--	--	--	--	--
B-1 (42-44')		42-44	**1.72**	122	--	--	--	--	--
B-1 (48-50')	03/03/25	48-50	1.05	167	--	--	--	--	--
B-1 (50-52')		50-52	0.481	<20.0	--	--	--	--	--
B-1 (58-60")	03/13/25	58-60	**6.41**	746	9.56	**18.9**	--	51.0	35.4
			9.14	1,510	--	--	--	--	--
B-1 (62-64')		62-64	0.82	30.3	3.02	6.19	--	--	--
			0.872	28.5	--	--	--	--	--

TABLE 3
COMPREHENSIVE ANALYTICAL DATA - SOIL

GASTAL AND HOFFPAUIR VS. PETRODOME OPERATING, LLC, ET. AL.
ACADIA PARISH

Sample ID	Sample Date	Sample Interval (Ft BGS)	Laboratory Analytical Results						
			Electrical Conductivity (mmhos/cm)	Soluble Chloride (mg/kg)	Sodium Adsorption Ratio	Exchangeable Sodium Percentage	Cation Exchange Capacity (meq/100g)	SPLP Chloride (mg/L)	SPLP Sodium (mg/L)
Background:			**1.2**	N/A	N/A	N/A	N/A	N/A	N/A
29-B Comparative Standard:			**4**	N/A	**12**	**15**	N/A	N/A	N/A
B-2 (0-1')	02/25/25	0-1	**1.74**	--	**18.8**	14.8	14.6	--	--
B-2 (1-2')		1-2	**1.94**	--	**20.0**	10.6	19.3	--	--
B-3 (0-1')	02/25/25	0-1	**1.46**	--	**15.0**	6.18	27.5	--	--
B-3 (1-2')		1-2	**1.88**	--	11.1	6.02	32.5	--	--
B-4 (6-8')	02/27/25	6-8	**1.47**	96.3	--	--	--	--	--
B-4 (14-16')		14-16	0.728	67	--	--	--	--	--
B-4 (16-18')		16-18	0.650	55.6	--	--	--	--	--
B-4 (30-32')		30-32	0.669	26.8	--	--	--	--	--
B-4 (36-38.5')		36-38.5	0.516	<20.0	--	--	--	--	--
B-5 (0-1')	02/25/25	0-1	**3.43**	--	**31.9**	14.7	18.6	--	--
B-5 (1-2')		1-2	**4.10**	--	**18.9**	9.17	21.4	--	--
B-5 (14-16')	02/27/25	14-16	**8.79**	2,830	--	--	--	--	--
B-5 (18-20')		18-20	**9.98**	5,680	--	--	--	--	--
B-5 (34-36')		34-36	**29.1**	4,390	--	--	--	216	131
B-5 (48-50')		48-50	**10.1**	1,960	--	--	--	--	--
B-5 (52-54)	03/03/25	52-54	**5.24**	492	10.4	**27.2**	--	--	--
B-5 (54-56)		54-56	**1.33**	109	3.65	**24.0**	--	--	--
B-5 (58-60')	03/11/25	58-60	0.859	24.2	--	--	--	--	--
B-6 (12-14')	02/26/25	12-14	**3.61**	541	--	--	--	--	--
B-6 (14-16')		14-16	**2.63**	460	--	--	--	--	--
B-6 (32-34')		32-34	**2.70**	194	--	--	--	--	--
B-6 (46-48')		46-48	0.740	46.5	--	--	--	--	--
B-7 (2-4')	02/26/25	2-4	**1.65**	190	--	--	--	--	--
B-7 (18-20')		18-20	0.928	62.7	--	--	--	--	--
B-7 (30-32')		30-32	1.10	53.2	--	--	--	--	--
B-7 (44-46')		44-46	**1.48**	87.8	--	--	--	--	--
B-8 (10-12')	02/28/25	10-12	1.15	53.9	--	--	--	--	--
B-8 (16-18')		16-18	0.950	90.0	--	--	--	--	--
B-8 (34-36')		34-36	0.665	40.4	--	--	--	--	--
B-8 (42-44')		42-44	1.02	<20.0	--	--	--	--	--

Notes:
FT BGS = *feet below ground surface;* **N/A** = *Not Applicable;* **--** = *Not Analyzed*
mg/kg = *milligrams per kilograms or parts per million (ppm);*
mMhos/cm = *milliMhos per centimeter;* **meq** = *milliequivalents*
29-B = *Louisiana Department of Natural Resources Office of Conservation Order 29-B*
RECAP = *Louisiana Department of Environmental Quality Risk Evaluation/Corrective Action Program*
Concentrations shaded and/or bolded where detected above comparative standard and/or background
HET Data

TABLE 4
COMPREHENSIVE ANALYTICAL DATA - SOIL: METALS AND TPH
GASTAL AND HOFFPAUIR VS. PETRODOME OPERATING, LLC, ET AL
ACADIA PARISH

Sample ID	Sample Date	Sample Interval (Ft BGS)	Laboratory Analytical Results (mg/kg)											
			TPH-D	TPH-O	Arsenic	Barium	True Total Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Zinc
29-B Comparative Standard:			N/A	N/A	10	N/A	20,000	10	500	500	10	10	200	500
SE SB-01 (0-2)	05/02/23	0-2	**20.8**	<10.0	4.74	72.3	189	<0.0249	8.86	7.36	<0.102	<1.99	<0.249	13.5
SE SB-01 (2-4)		2-4	**14.9**	**10.2**	6.55	137	250	<0.250	12.0	16.2	<0.0983	<2.00	<0.250	15.8
SE SB-01 (4-6)		4-6	<10.0	<10.0	3.37	78.0	187	<0.251	8.93	8.53	<0.105	<2.01	<0.251	11.2
			--	--	3.54	127.0	204	0.608	14.2	11.6	<0.0160	<0.500	<0.250	19.5
SE SB-01 (6-8)		6-8	<10.0	<10.0	2.61	50.1	237	<0.243	5.54	8.41	<0.104	<1.95	<0.243	13.3
			--	--	1.97	140	297	0.437	8.72	8.22	<0.0160	<0.500	<0.250	27.0
SE SB-06 (0-2)	05/04/23	0-2	<10.0	**33.4**	3.88	45.6	77.8	<0.242	10.2	9.33	<0.0936	<1.94	<0.242	10.7
			--	--	4.80	68.7	127	1.05	21.1	13.3	0.0172	<0.500	<0.250	15.8
SE SB-06 (2-4)		2-4	<10.0	**22.7**	3.62	49.9	120	<0.248	8.93	8.18	<0.0992	<1.98	<0.248	12.1
			--	--	2.98	97.0	224	0.709	18.7	10.1	0.0232	<0.500	<0.250	21.9
SE SB-06 (4-6)		4-6	**19.0**	**37.5**	**10.8**	465	500	<0.240	8.18	14.5	<0.102	<1.92	<0.240	16.9
			--	--	2.36	357	623	0.617	16.1	8.21	0.0214	<0.500	<0.250	22.4
SE SB-06 (6-8)		6-8	<10.0	**25.3**	**12.7**	240	229	0.353	7.04	23.8	<0.0941	<1.92	<0.240	22.5
			--	--	2.91	143	240	0.587	14.6	9.62	<0.0160	<0.500	<0.250	22.2
SE SB-06 (8-10)		8-10	<10.0	**24.3**	2.72	73.7	150	<0.238	7.66	3.48	<0.0974	<1.91	<0.238	18.0
			--	--	2.72	100	177	0.372	9.66	5.17	<0.0160	<0.500	<0.250	17.6
SE SB-06 (10-12)		10-12	<10.0	**27**	2.99	37.1	74.5	<0.243	6.99	3.42	<0.0930	<1.94	<0.243	12.6
			--	--	2.17	66.7	144	0.314	8.26	4.26	<0.0160	<0.500	<0.250	15.4
SE SB-06 (12-14)		12-14	<10.0	**15.4**	3.03	41.9	101	<0.244	6.71	4.38	<0.0996	<1.95	<0.244	17.7
			--	--	2.15	70.6	146	0.513	8.90	5.28	<0.0160	<0.500	<0.250	21.9
SE SB-06 (14-16)		14-16	<10.0	<10.0	1.85	53.2	205	<0.244	10.8	7.70	<0.0978	<1.95	<0.244	30.3
			--	--	2.05	90.7	191	0.628	13.4	6.83	<0.0160	<0.500	<0.250	31.5
SE-SB-06R (4-6')	02/25/25	4-6	--	--	5.75	--	--	--	--	--	--	--	--	--
SE-SB-06R (6-8')		6-8	--	--	5.07	--	--	--	--	--	--	--	--	--

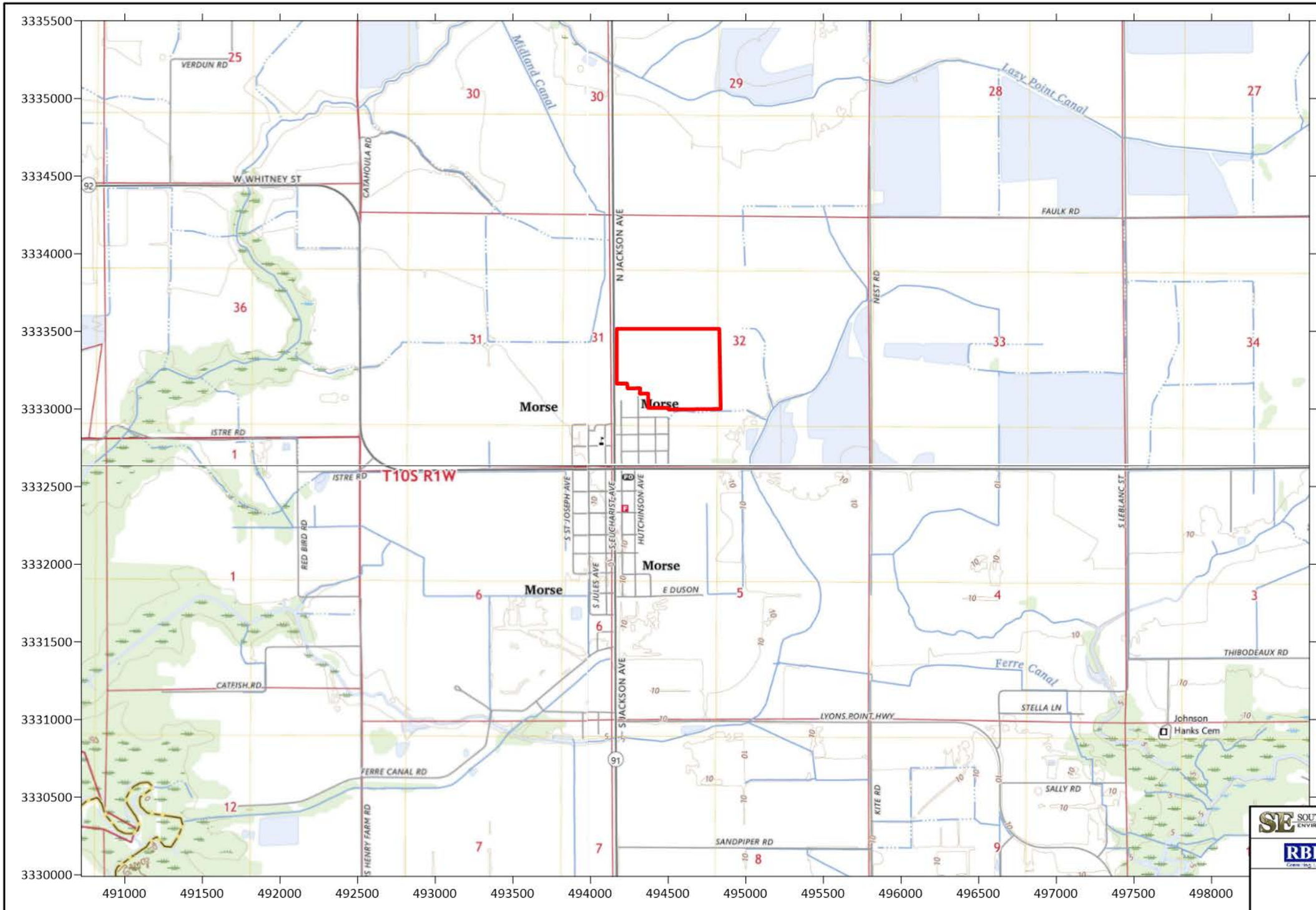
Notes:

FT BGS = *feet below ground surface;* **N/A =** *Not Applicable;* **--** *= Not Analyzed*
mg/kg *= milligrams per kilograms or parts per million (ppm);*
TPH = *Total Petroleum Hydrocarbons* **; TPH-D =** *Diesel range TPH* **; TPH-O =** *Oil Range TPH*
29-B *= Louisiana Department of Natural Resources Office of Conservation Order 29-B*
RECAP *= Louisiana Department of Environmental Quality Risk Evaluation/Corrective Action Program*
Concentrations **bolded** *where detected above comparative standard*
HET Data

FIGURES

Expert Report

Danny Paul Gastal and Ignatius Hoffpauir vs.
Petrodome Operating, LLC, et al.
Case No. 202210495-A, 15th Judicial District Court
Acadia Parish, Louisiana



USGS 1:24,000 TOPOQUAD COMPOSITE: CROWLEY, MERMENTAU, GUEYDAN, & WRIGHT

SOUTHLAND ENVIRONMENTAL

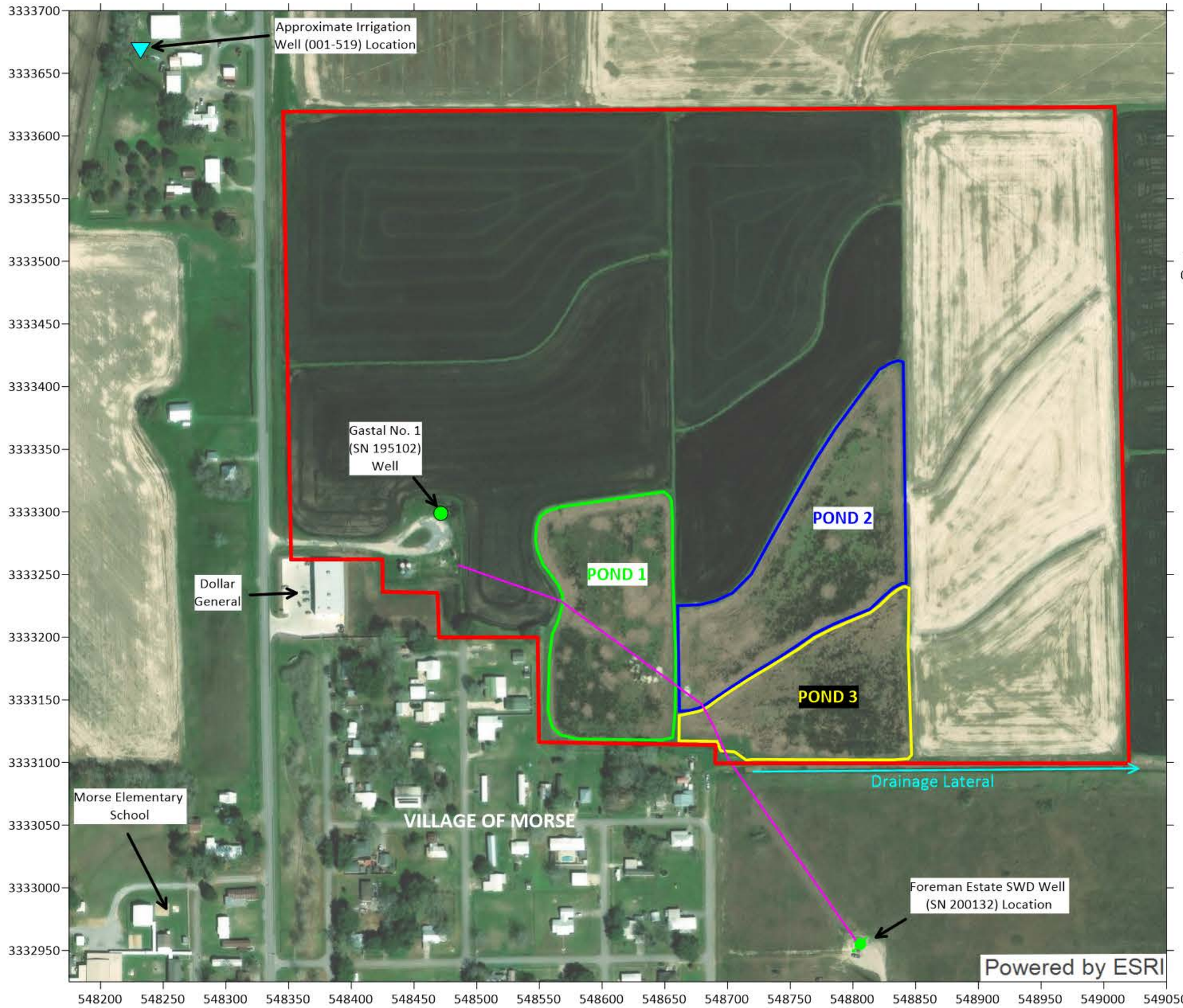
RBB Consulting, LLC

GASTAL & HOFFPAUIR vs. PETRODOME OPERATING, LLC, et al ACADIA PARISH

FIGURE 1

SITE LOCATION MAP

Drawn By: DAP	Date: 04/10/2025	Project #12010
Checked By: RBB	Date: 04/17/2025	Revised:



0 250 500 750 1000

MAP SCALE IN FEET
NAD83 UTM ZONE 15N COORDINATES

Legend:

- Pond 1 Extents
- Pond 2 Extents
- Pond 3 Extents
- Approximate Extent of Gastal Tract
- Approximate Former Flowline Path

Note:
Recent Aerial Imagery

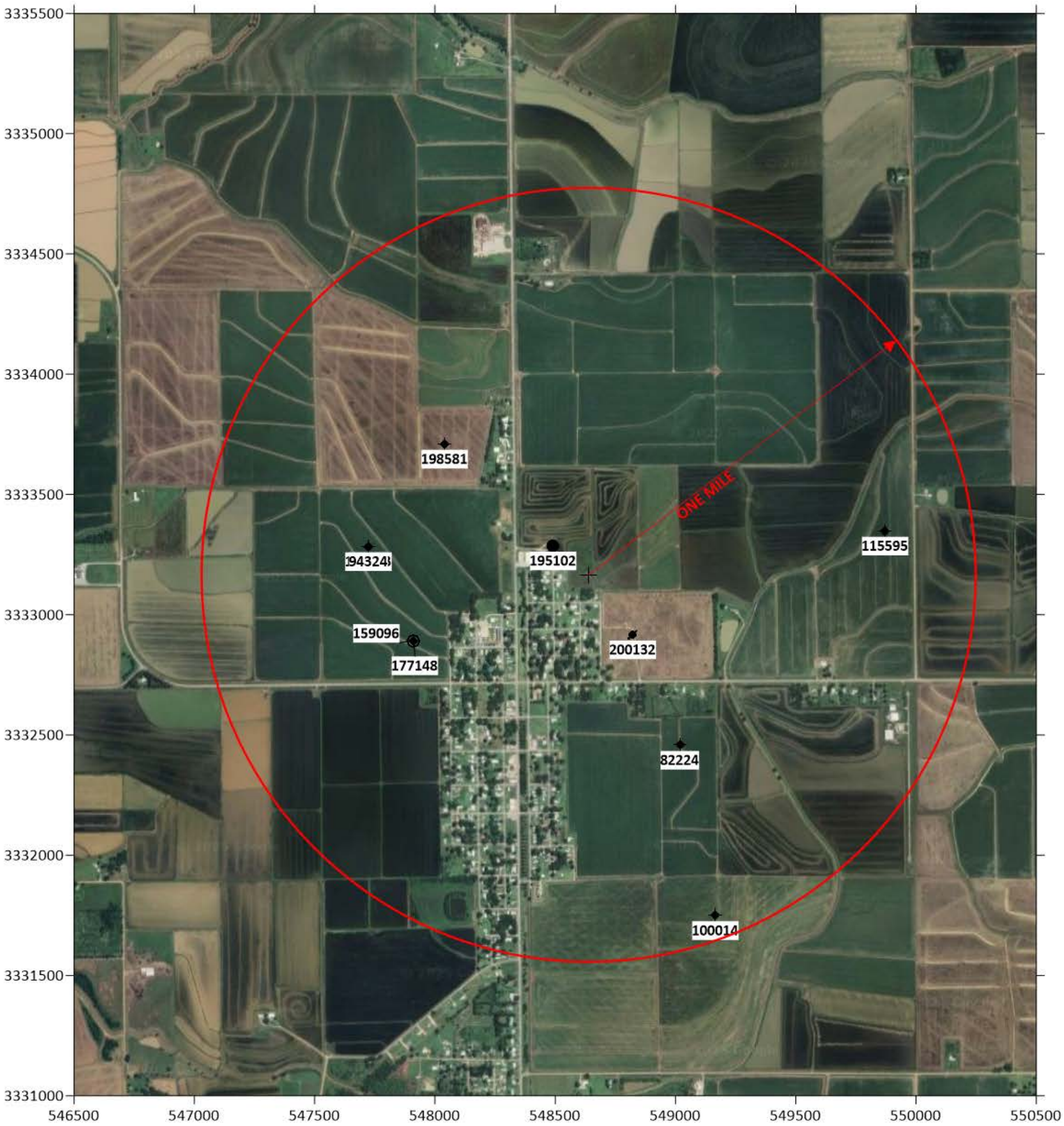
SOUTHLAND ENVIRONMENTAL
RBB

GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING, LLC, et al
ACADIA PARISH

FIGURE 2

SITE MAP

Drawn By: DAP	Date: 04/10/2025	Project #12010
Checked By: RBB	Date: 04/17/2025	Revised: 04/17/2025



0 1500 3000 4500 6000

MAP SCALE IN FEET
NAD83 UTM ZONE 15N COORDINATES

N

Legend:

82224 SONRIS Well Serial Number

✦ Well Location & Status: Dry & Plugged

● Well Location & Status: Active - Producing Oil

Well Location & Status: Active - Injection Produced Salt Water

○ Well Location & Status: Uable to Locate Well...

Note:
· E&P Data from LDENR SONRIS
· Recent Aerial Imagery

SOUTHLAND ENVIRONMENTAL

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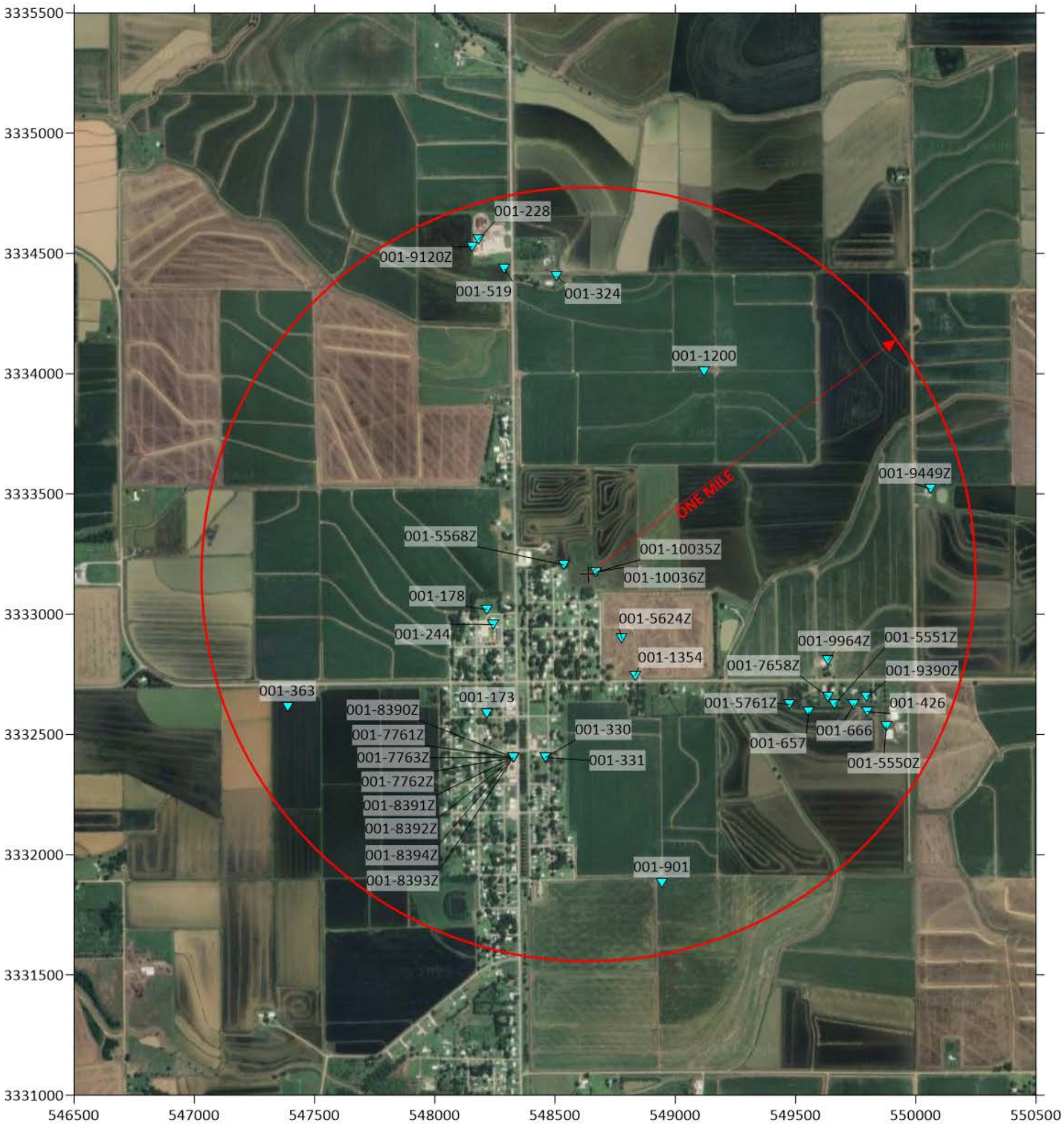
FIGURE 3
EXPLORATION & PRODUCTION WELL LOCATION MAP - 1-MILE RADIUS

Drawn By: DAP	Date: 04/11/2025	Project #12010
Checked By: RBB	Date: 04/17/2025	Revised:



0 1500 3000 4500 6000

MAP SCALE IN FEET
NAD83 UTM ZONE 15N COORDINATES

N

Legend:

001-331 LDENR Registered Water Well Location & No.

Note:
- Plotted Locations and numbers are from the LDENR Registered Water Wells database.
- Recent Aerial Imagery

SOUTHLAND ENVIRONMENTAL

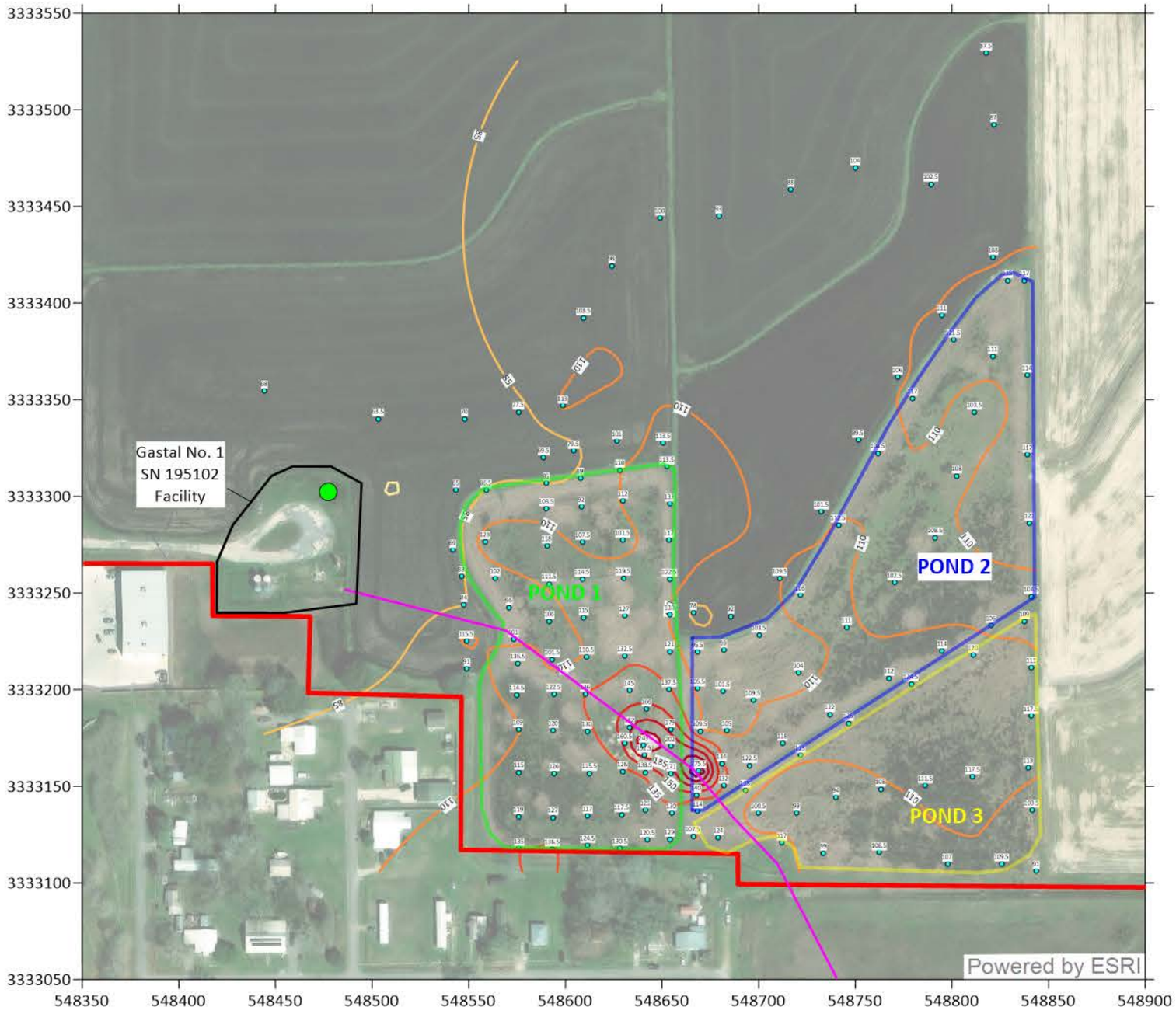
RBB Consulting, LLC

GASTAL & HOFFPAUIR vs. PETRODOME OPERATING, LLC, et al ACADIA PARISH

FIGURE 4
WATER WELL LOCATION MAP
1-MILE RADIUS

Drawn By: DAP	Date: 03/26/2025	Project #12010
Checked By: RBB	Date: 04/17/2025	Revised: 04/11/2025


3333400
3333350
3333300
3333250
3333200
3333150
3333100
SE-SB 15
SE-CPT08
SE-CPT07
SE-SB14
SE-SB 16
SE-SB-16
SE-CPT10
SE-SB-21
B-8
SE-SB03
SE-SB 13
B-2
SE-CPT02
SE-CPT06
SE-SB10
SE-SB-20
SE-SB08
SE-SB02
SE-SB11
B-3
SE-CPT05
SE-SB09
SE-SB04
SE-SB 01 (D)
SE-SB01
MW-01D
MW-01
B-5
SE-CPT09
B-6
SE-SB-17
SE-SB07
SE-CPT01
SE-SB06
B-1
SE-SB05
SE-SB-19
B-4
SE-CPT04
SE-SB 12
SE-CPT03
SE-SB-18
Powered by ESRI
548340 548360 548380 548400 548420 548440 548460 548480 548500 548520 548540 548560 548580 548600 548620 548640 548660 548680 548700 548720 548740 548760 548780 548800 548820 548840 548860 548880
0 130 260 390 520
MAP SCALE IN FEET
NAD83 UTM ZONE 15N COORDINATES
Legend:
SE-SB01 Soil Boring Location & ID
SE-CPT03 Cone Pentration Test Boring Location & ID
MW-01 Monitor Well Location & ID
B-3 HET Boring Location & ID
Recent Aerial Imagery
SE SOUTHLAND ENVIRONMENTAL
RBB
GASTAL & HOFFPAUIR vs. PETRODOME OPERATING, LLC, et al ACADIA PARISH
FIGURE 5
SAMPLE LOCATION MAP
Drawn By: DAP
Date: 10/02/2023
Project #12010
Checked By: RBB
Date: 04/17/2025
Revised: 04/11/2025



0 200 400 600 800

MAP SCALE IN FEET
CONTOUR INTERVAL: 20 MILLISIEMENS/METER
NAD83 UTM ZONE 15N COORDINATES

N

Legend:

- EM31 Data Point and Value (mS/cm)
- Terrain Conductivity Contour and Value (mS/cm)
- Pond 1 Extents
- Pond 2 Extents
- Pond 3 Extents
- Approximate Southern Extent of Gastal Tract
- Producing Oil Well Location
- Approximate Flowline Path

Note:
Recent Aerial Imagery

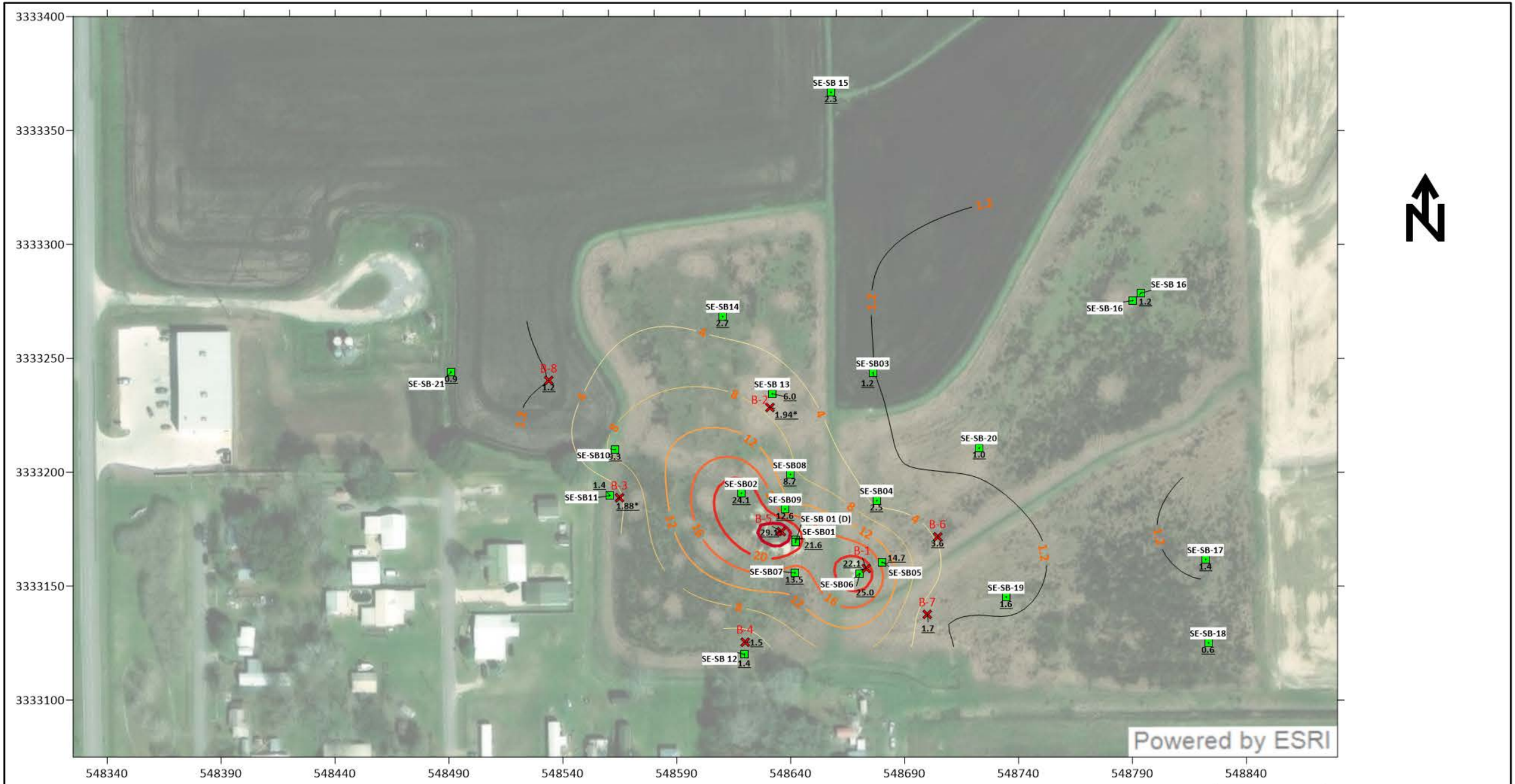
SOUTHLAND ENVIRONMENTAL
RBB Consulting, LLC

GASTAL & HOFFPAUIR vs. PETRODOME OPERATING, LLC, et al
ACADIA PARISH

FIGURE 6

TERRAIN CONDUCTIVITY CONTOUR MAP

Drawn By: DAP	Date: 04/10/2025	Project #12010
Checked By: RBB	Date: 04/17/2025	Revised:



Legend:

- SE-SB01 — Soil Boring Location & ID
- B-3 — HET Boring Location & ID
- 14.7 — Maximum Laboratory Soil Electrical Conductivity (mmhos/cm)
- 1.9* — Not Honored for Contouring Due to Shallow Boring Depth
- 16 — EC Contour & Value (mmhos/cm)
- Recent Aerial Imagery

0 130 260 390 520

MAP SCALE IN FEET
NAD83 UTM ZONE 15N COORDINATES

SOUTHLAND ENVIRONMENTAL
RBB

GASTAL & HOFFPAUIR versus
PETRODOME OPERATING, LLC, et al
ACADIA PARISH

FIGURE 7
SOIL ELECTRICAL CONDUCTIVITY CONTOUR MAP

Drawn By: DAP	Date: 04/15/2025	Project #12010
Checked By: RBB	Date: 04/17/2025	Revised: 04/16/2025

West A

A' East

SE-CPT10/SE-SB21 GROUND SURFACE B-8 SE-CPT06/SE-SB10 SE-CPT05/SE-SB02 SE SB-09 B-5 SE SB-01 MW-01 MW-01D SE-CPT01/SE-SB06/B-1 B-7 SE-CPT03

Clay-Dominant

Silt-Dominant (1st Permeable Zone)

Clay-Dominant

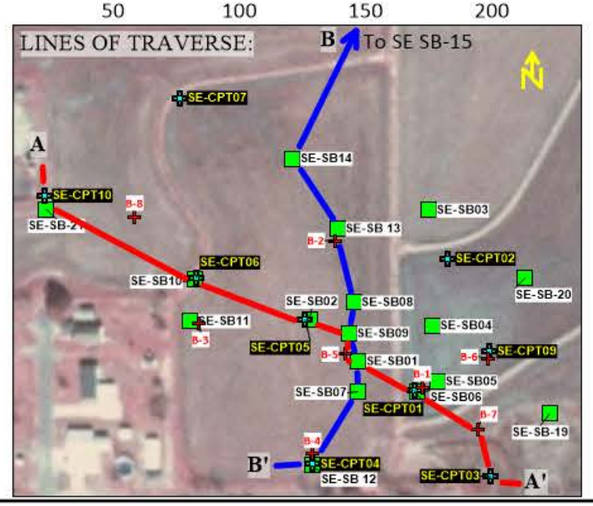
Silt & Sand Dominant (2nd Permeable Zone)

Clay-Dominant

DEPTH BELOW GROUND SURFACE

DEPTH BELOW GROUND SURFACE

CUMMULATIVE DISTANCE (FEET)



LEGEND:

SE SB-09

2.76 — Soil Electrical Conductivity (mmhos/cm): SE

Soil Boring — CPT Conductivity Profile

2.70 — Soil Electrical Conductivity (mmhos/cm): 2025 HET

HORIZONTAL SCALE: 1" = 60'
VERTICAL SCALE: 1" = 10'
(VERTICAL EXAGGERATION: 6)

X AXES = ACCUMULATED DISTANCE
Y AXES = DEPTH BELOW GROUND SURFACE
ALL AXIS UNITS IN FEET

(SE: Southland Environmental Data;
HET: Hydro Environmental Technology Data)

SOUTHLAND ENVIRONMENTAL

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GASTAL & HOFFPAUIR vs. PETRODOME OPERATING, LLC, et al
ACADIA PARISH

FIGURE 8
GEOLOGIC CROSS SECTION
A - A'

Drawn By: DAP	Date: 05/15/23	Project #12010
Checked By: RBB	Date: 04/17/2025	Revised: DAP 04/15/2025

North **B** — **B'** South

SE-SB 15 | GROUND SURFACE | SE-SB14 | SE-SB 13 | B-2 | SE-SB08 | SE-SB09 | B-5 | SE-SB01 | MW-01 | MW-01D | SE-SB07 | B-4 | SE-SB 12/SE-CPT04

Clay-Dominant

Silt-Dominant
(1st Permeable Zone)

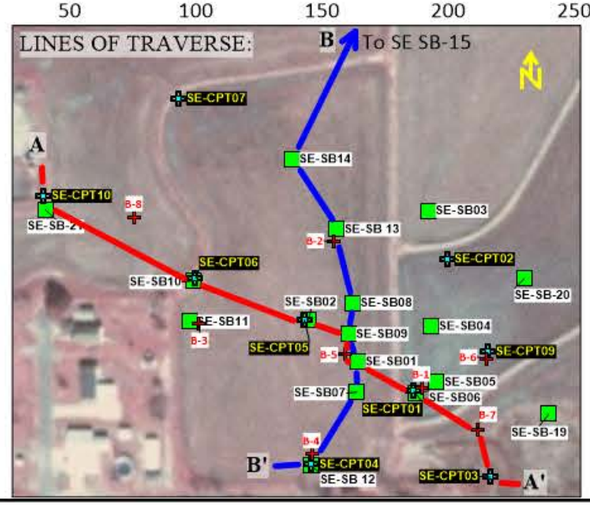
Clay-Dominant

Silt & Sand
Dominant
(2nd Permeable Zone)

Clay-Dominant

DEPTH BELOW GROUND SURFACE

CUMMULATIVE DISTANCE (FEET)



LEGEND:

SE SB-09 — Soil Electrical Conductivity (mmhos/cm): SE

2.76

Soil Boring — CPT Conductivity Profile

2.70 — Soil Electrical Conductivity (mmhos/cm): 2025 HET

HORIZONTAL SCALE: 1" = 60'
VERTICAL SCALE: 1" = 10'
(VERTICAL EXAGGERATION: 6)

X AXES = ACCUMULATED DISTANCE
Y AXES = DEPTH BELOW GROUND SURFACE
ALL AXIS UNITS IN FEET

(SE: Southland Environmental Data;
HET: Hydro Environmental Technology Data)

SOUTHLAND ENVIRONMENTAL | RBB

GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING, LLC, et al
ACADIA PARISH

FIGURE 9
GEOLOGIC CROSS SECTION
B - B'

Drawn By: DAP	Date: 05/15/23	Project #12010
Checked By: RBB	Date: 04/17/2025	Revised: DAP 10/26/23

ATTACHMENT A

Curriculum Vitae

Expert Report

Danny Paul Gastal and Ignatius Hoffpauir vs.
Petrodome Operating, LLC, et al.
Case No. 202210495-A, 15th Judicial District Court
Acadia Parish, Louisiana

4040 Desoto Street
Mandeville, LA 70471

P.O. Box 2108
Mandeville, LA 70470

Office: (985) 264-6464
Email: rbbray@bellsouth.net

RBB Consulting, LLC

Richard Brent Bray, P.G.

Title

Principal, RBB Consulting, LLC

Fields of Competence

Project management
Strategic planning
Geologic and hydrogeologic investigation
Groundwater monitoring and recovery systems
In-situ and ex-situ groundwater treatment systems
Soil remediation
RCRA and CERCLA compliance
Property redevelopment (Brownfields)
Risk assessment
Construction remediation/demolition
Litigation support

Professional Registrations & Affiliations

Registered Professional Geologist in the States of Louisiana (#400), Arkansas (#1722), Mississippi (#0375), and Tennessee (#TN1916, inactive)
National Ground Water Association

Academic Background

Louisiana State University, Baton Rouge, Louisiana, 1989
Master of Science in Geology, specializing in Hydrogeology
Virginia Polytechnic Institute and State University, Blacksburg, Virginia, 1985
Bachelor of Science in Geology, Cum Laude

Professional Employment History

March 2014-Present:	RBB Consulting, LLC, Principal
July 2006-March 2014:	Sigma Environmental, Inc., Sr. Geologist
Aug. 2005-July 2006:	Benoit, Bray and Associates, Inc., Principal
Jul. 2004-Aug. 2005:	Sigma Engineers and Constructors, Inc., Sr. Geologist
Feb. 2003-Jul. 2004:	Ranger Environmental, Inc., Consultant
Apr. 2001-Feb. 2003:	Sabbatical: Self-Employed
Jan. 1991-Apr. 2001:	Environmental Resources Management Sept. 2000-Mar. 2001: Managing Partner, Mexico Operations Jan. 1996-Mar. 2001: Partner Jan. 1991-Dec. 1995: Senior Geologist
May 1987-Jan. 1991:	Dames & Moore, Staff Hydrogeologist

Environmental Consulting Experience

Litigation Support

Primary investigator supporting plaintiffs and defendants in litigation involving oil/gas exploration and production, petroleum refining, and petrochemical/manufacturing industries. Litigation support projects include:

- Principal for assessment, investigation and remediation design of oil/gas exploration/production properties in southwest Louisiana. Developed strategic plan for compiling historical and technical data to assess the impact of site activities on soil and groundwater conditions. Strategic planning included interpretation of aerial photography, identification of areas of concern, utilization of a Geographic Information System, design

and implementation of field investigative programs, data analysis, and preparation of expert reports. Investigation results were compared to applicable regulatory standards as well as background conditions.

- Expert witness in geology, hydrogeology and site investigation to assess the impact of gas plant and separation station activities on soil, sediment and groundwater. Prepared expert report discussing geologic and hydrogeologic conditions including an assessment of the potential for contaminant migration into the Chicot Aquifer, a sole source drinking water aquifer in southwest Louisiana. Expert report also included a compilation of data regarding the installation and operation of two salt water disposal wells at the facility. Supervised field investigation activities and assisted in the preparation of a separate expert report addressing site investigation activities, delineation of contaminants (metals, petroleum hydrocarbon, chloride and Radium) in soil, groundwater, and sediment.

- Fact witness for a specialty chemical manufacturing facility in an insurance claim to recover investigation and remediation costs for chemical releases at a facility in Baton Rouge, Louisiana. Provided testimony in deposition regarding site conditions as well as current and historical remediation activities. Participation included presentation of soil, groundwater, and remediation data to corporate attorneys and legal staff to promote an understanding of technical strengths/weaknesses of datasets to be used in trial. Litigation resulted in a settlement in favor of the client.

- Designated expert witness for plaintiff in a claim regarding the extent and severity of environmental soil and groundwater contamination from historical railroad activities. Reviewed site investigation reports and risk assessment prepared by the defendants. Identified inconsistencies in site investigation techniques and reporting which led to inaccurate conclusions regarding site conditions.

- Prepared remediation scope of work and cost estimate as the designated expert for a property damage suit involving a former oil/gas pit and approximately 28 acres of canals containing contaminated sediment from oil/gas production activities. The remediation cost estimate included production pit excavation; dredging, dewatering, solidification, and off-site disposal of approximately 98,000 cubic yards of contaminated sediment and groundwater remediation to remove inorganic contaminants.

- Provided technical assistance to defendant counsel in assessing the adequacy of site investigation activities and remediation scoping/cost estimation for an oil/gas property containing production wells and storage facilities.

- Designated expert in litigation regarding property damage associated with the migration of groundwater contaminated with hazardous constituents (organic compounds) from a National Priorities List site onto the plaintiff's property as a result of a regulatory approved remediation program based on natural attenuation.

- Performed initial site inspections of 3 oil/gas properties in south Louisiana focused on documenting current site conditions, providing an inventory of the visible impacts to the property and collection of soil samples in areas potentially affected by site activities for comparison to regulatory standards. Prepared a preliminary site inspection report for each site and provided deposition on current conditions at one of the properties.

- Prepared remedial scope of work and cost estimate as the designated expert for property affected by petroleum spills from an adjacent fuel storage facility. The cost estimate included soil remediation of pastureland and residential properties as well as remediation of sediments within a pond affected by the petroleum spill.

- Provided technical support to a refinery in southeast Louisiana defending a suit claiming damage to adjacent properties as a result of historical waste disposal practices. Tasks included compilation/interpretation of historical aerial photographs documenting the growth of the refinery and adjacent neighborhoods over more than 50 years, assessment of plaintiff site characterization data and evaluation of supplemental data collected as part of the defense process.

- Litigation support and deposition for the former owner of a metal manufacturing facility in defense of a claim by a subsequent owner regarding the representation of environmental conditions at the time of purchase. Provided technical support regarding soil and groundwater investigation activities as well as remedial action planning for the facility maintenance shop which had been identified as a source of solvent contamination.

- Provided technical and environmental compliance support for corporate counsel of a shipyard/marine construction company in southeast Louisiana addressing violations of the Clean Water Act as well as solid and hazardous waste regulations.

Oil and Gas Industry

Provided environmental consulting, site investigation, and construction remediation services to clients involved in the exploration and production aspects of the petroleum industry. Projects included:

- Soil and groundwater investigation of an inactive brine pit associated with oil/gas production in Jennings, Louisiana. Investigation activities included the use of geophysics and cone penetrometer technology in conjunction with standard drilling techniques to define the limits and migration direction of brine contamination in soil and ground water.

- Investigation of a drilling fluid mixing facility in Dulac, Louisiana to assess the presence of site constituents in soil as part of a facility upgrade program. The project included identification of areas affected with organic (petroleum hydrocarbon) and inorganic (metals including hexavalent chromium) constituents. Developed a remediation plan to remove affected soil and concrete associated with mixing and storage areas.

- Assessment of an inactive pipe yard used for cleaning, maintenance and storage of drilling rods and pipe in Harvey, Louisiana. Investigation included completion of a survey for naturally occurring radioactive material (NORM) which was the primary constituent of concern at the facility as well as an assessment of soil affected with solvents, lubricants and petroleum hydrocarbons.

- Closure of a sunken barge associated with historical drilling fluid mixing activities in Dulac, Louisiana. Developed and implemented a closure plan including demolition and disposal of the overlying concrete pad contaminated by historical use of hexavalent chromium, removal of the barge deck, decontamination of the hull, backfilling of the barge hull, and construction of a concrete pavement over the barge to provide additional equipment and material storage area for the facility.

- Preparation of SPCC plans for drilling fluid mixing facilities in Louisiana and Alabama. Plans were submitted to the U.S. Coast Guard and when necessary, USEPA for approval.

- Performed an evaluation of air emissions from drilling fluid mixing facilities in Louisiana and Alabama to determine the necessity for obtaining air permits/exemptions for each facility.

Petroleum Refining Industry

Principal-in-Charge for environmental consulting, site investigation, risk assessment and construction remediation to clients involved in the refining aspects of the petroleum industry. Projects in southeast Louisiana have included:

- Inspection and upgrade of the facility ground water monitoring network including well replacement and repair to achieve compliance with well construction regulations. Prepared and obtained regulatory approval of ground water monitoring plans for solid and hazardous waste units. Implemented the ground water monitoring program in accordance with the facility solid waste permit, hazardous waste regulations, and facility monitoring plans.

- Performed investigations to evaluate the historical affect of site operations on soil and ground water quality prior to construction activities. At required locations, a remedial plan involving removal of affected soil, confirmation sampling, and ground water monitoring was prepared and approved by the regulatory agency. Supervised all remediation operations and prepared reports for submittal to the regulating agency.

- Completed soil, sludge and groundwater characterization activities within and surrounding a wastewater basin as well as performed a leachability study of lead affected soil stockpiled within the facility. A risk-based closure plan utilizing the stockpiled soil as backfill material was prepared and approved by the regulatory agency. Implementation of the plan saved more than $1,000,000 in waste disposal fees.

- Designed and implemented a sludge, soil and ground water investigation program at the inactive hazardous waste land treatment unit to evaluate waste depth/degradation, underlying soil conditions and shallow ground water quality. Once completed, a risk based closure plan was prepared focusing on relocating waste material to a single unit. This allowed re-use of the remediated area for future refinery construction. In addition, the plan included the installation of a cap over the new waste area that would be in compliance with applicable regulations and allow re-use of the area once the project was complete.

- Sludge sampling of a non-contact cooling water pond to evaluate the regulatory status of the unit and development of construction plans/costs for sludge removal and disposal.

Petrochemical Industry

Principal-in-Charge for strategic assessment of remediation activities at a specialty chemical facility in Baton Rouge, Louisiana which was utilizing pump & treat technology and aerobic wastewater treatment to address multi-aquifer organic contamination. Developed an aggressive plan to refocus the remediation program and bring activities to a cost effective conclusion via risk-based closure. Tasks completed in this project included:

- Successful negotiation with state regulatory agency to reduce the groundwater monitoring program by 80%. This resulted in a cost savings of approximately $100,000/year.

- Assessment of historical remediation actions and the existing ground water monitoring database for use in a risk-based closure of the facility.

- Design and implementation of a soil and groundwater investigative program to collect additional data for evaluating current site conditions and supplementing the database for risk based closure.

- Successful negotiation with the regulating agency to shutdown the groundwater recovery system and wastewater treatment plant to evaluate groundwater quality and flow under natural conditions. System was subsequently decommissioned which resulted in project savings of more than $100,000/year.

- Supplemental soil and groundwater investigation activities to delineate areas of elevated contaminant concentrations ("hotspots") and address an off-site area of affected groundwater identified in the initial investigation.

- Design and implementation of a pilot study utilizing in-situ aerobic biodegradation to address hotspots. The pilot study was based on air sparging techniques and utilized piping associated with the historical ground water recovery system to reduce costs by more than 85%. Successful completion of the pilot study resulted in full deployment of two air sparge systems with one system addressing multi-aquifer contamination and utilizing fractures within the soil to increase the degradation rate of site constituents. Remediation costs associated with full system deployment were significantly reduced by re-conditioning the existing groundwater recovery system for use in the air sparge system. The success of the in-situ treatment system resulted in the development of a risk-based closure for the facility.

- Interfaced with the regulatory agency to obtain approval of the revised remedial program. Maintained open communications with updates on current results and upcoming activities. Successfully maintained voluntary action status for the remedial program and avoided any administrative actions.

Principal-in-Charge for site assessment activities at a lubricant blending facility in Mexico City, Mexico. Assessment activities included investigation and delineation of soil and groundwater affected with petroleum hydrocarbons, identification of source areas, and risk assessment to evaluate the potential risk to human health and the environment.

Site supervisor of closure construction activities for solid waste impoundments at an inactive plastics manufacturing facility in Baton Rouge, Louisiana. Remediation activities included dewatering and solidification of sludge with subsequent on-site landfilling, monitoring of stormwater/wastewater quality prior to discharge, and final grading of impoundments encompassing more than fifteen acres.

Property Redevelopment (Brownfields)

Provided senior consulting services to identify and resolve environmental issues associated with Brownfield redevelopment of commercial/industrial properties. Redevelopment projects have included:

- Senior technical manager responsible for addressing environmental and construction issues associated with the commercial redevelopment of a former battery recycling facility within the Central Business District of New Orleans, Louisiana. Responsibilities included strategic planning using risk based programs, management of investigation/remediation activities, interaction with client and regulatory representatives, and quality assurance/quality control.

- Project manager for investigation, risk assessment, remediation, and closure of a former metals recycling facility affected with inorganic and organic constituents including PCBs. The facility encompassed three city blocks adjacent to the Central Business District of New Orleans, Louisiana with the project focused on commercial redevelopment of the area by a Fortune 500 Company.

- Project manager for evaluating soil and groundwater contamination associated with historical underground storage tanks beneath a new commercial building constructed as part of a property redevelopment program in Metairie, Louisiana. Regulatory agency concerns regarding the affect of soil and groundwater contamination on indoor air quality prohibited the facility opening. Supplemental sampling confirmed the lack of risk to customers and employees and identified an adjacent auto service station as the off-site source for petroleum contamination. The facility subsequently received approval from the regulatory agency to open.

- Project manager for assessing the impact of redeveloping property formerly used as an auto service center with known soil and groundwater contamination from underground storage tanks. Because petroleum hydrocarbon concentrations were sufficient to warrant groundwater and indoor air quality concerns, construction had been stopped by the regulatory agency. The project involved the re-design of the building foundation to include an impermeable barrier beneath the new structure as an engineered control to prevent hydrocarbon vapors from entering the building. The plan was approved by the regulatory agency allowing construction to continue.

- Project manager for assessment of property formerly containing underground storage tanks and being redeveloped for commercial use. Designed and implemented a soil investigation to evaluate current site conditions. Interfaced with the regulatory agency to address residual contamination which could not be removed due to the proximity of the contamination to a state highway and utilities. Obtained LDEQ RECAP closure with no further action at this time.

CERCLA Sites

Principal-in-Charge for investigation, risk assessment, closure and post-closure design, and compliance monitoring of the Alsco Anaconda NPL site in Gnadenhutten, Ohio, a former aluminum recycling facility affected by metals and PCB contamination. Activities included:

- Design and implementation of an investigative program to identify site constituents in soil, groundwater, sludge, and the adjacent Tuscarawas River. Activities included preparation of project documents such as the Field Sampling Plan, Health and Safety Plan, Quality Assurance Program Plans, etc. for U.S. EPA Region V review and approval. Investigation results provided a basis for risk-based closure of the site.

- Completion and EPA approval of a human and ecological risk assessment in order to establish clean-up standards.

- Design and implementation of a geophysical investigation to identify buried drums within a portion of the site which had been used for waste disposal. Developed and implemented a drum handling program for the excavation, overpacking, characterization, and off-site disposal of buried drums.

- Design and regulatory approval of a Remedial Action Program including all supporting documentation such as construction specifications, construction bid documents, Remedial Work Plan, Field Sampling Plan, Health and Safety Plan, Quality Assurance Plan, and Post-Closure Monitoring Plan.

- Implementation of the approved remedial action which included:

    - Excavation, dewatering, solidification and off-site disposal of more than 49,200 tons of hazardous and solid waste,
    - Treatment and discharge of 360,000 gallons of wastewater,
    - Excavation, characterization and disposal of more than 90 drums,
    - Confirmation sampling,
    - Placement and compaction of almost 11,000 cubic yards of backfill and
    - Final grading and seeding of the site for use as a wildlife area.

- Prepared and received regulatory approval of the Closure Certification Report documenting the successful completion of the risk-based closure.

- Designed and implemented a post-closure monitoring program for installation/sampling of monitor wells and ecological monitoring of the Tuscarawas River.

Staff hydrogeologist performing site investigation and data management for investigation/remediation activities at the Petro Processors NPL Site in Scotlandville, Louisiana.

Biomedical Research Facility

Senior manager for investigation and remediation of former waste disposal areas. Activities included identification, classification, and disposal of surface material composed of office and laboratory equipment including primate cages which were handled as potentially infectious biomedical waste. Subsurface investigation activities utilized geophysics and test trenching to identify locations where laboratory waste was buried on-site. Waste was excavated, sorted and either disposed off-site as potentially infectious biomedical waste or disinfected on-site following state health regulations and disposed off-site as solid waste.

Project manager for investigation, characterization, and remediation of incinerator ash commingled with office, laboratory, and building demolition debris in an area designated for future construction activities. Debris was located on a river bank and immediately adjacent to structures currently in use at the facility. Investigation included waste delineation and characterization for disposal. Remediation included plan development and implementation to remove waste material without endangering the structural integrity of adjacent buildings.

Assisted in the preparation of facility LPDES Permit addressing wastewater outfalls associated with research facility operation as well as stormwater discharges from a primate breeding facility with a population in excess of 3,000 primates. To achieve LPDES requirements, identified alternative disposal methods for liquids generated by the research facility and worked with facility personnel and state regulators in the characterization and classification of wastewater impoundments.

Project manager developing the scope of work and estimated cost for maintenance of the primary wastewater sump and three wastewater ponds within the wastewater treatment system. The primary focus of sump maintenance was to inspect the integrity of the sump and associated piping as well as removal of sludge and any medical sharps (i.e. needles, scalpels, etc.) which accumulated in the bottom of the structure. Pond maintenance focused on sludge removal including the excavation, disinfection and dewatering of approximately 2,500 cubic yards of sludge while controlling sludge odor to limit the impact on adjacent property owners including an elementary and secondary school.

Project manager for repair and assessment of historical water supply wells discovered during facility expansion. Repaired well heads to eliminate leakage resulting from artesian conditions and upgraded surface completions to comply with state regulatory standards. Performed flow testing to determine well discharge under artesian conditions, sampling to determine water quality, identified the water supply aquifer, and evaluated suitability of the wells for integration into the facility water supply system.

Project manager of initial assessment activities for demolition of a radiation building associated with nuclear research activities. Assessment activities included review of historical aerial photography and site walkover to identify/inspect the radiation building and remaining support structures. Developed scope of work with subcontractors licensed to dismantle and handle radiation affected waste materials.

Shipyard/Marine Construction

Senior manager providing permitting and compliance monitoring to a shipyard/marine construction company. Activities include development of Spill Prevention Control and Countermeasure, Facility Response and Storm Water Pollution Prevention Plans, implementation and documentation of LPDES monitoring activities, preparation of site investigation plans, preparation of air permits, and interaction with the regulatory agency.

Manufacturing Industry

Principal-in-Charge for demolition of a transite manufacturing facility in New Orleans, Louisiana. Activities included asbestos removal/disposal, building demolition, steel recycling, PCB/petroleum hydrocarbon affected soil remediation, air monitoring, remediation of an off-site asbestos waste disposal area and successful negotiation with state and federal agencies to expedite project implementation and completion.

Project manager for soil/groundwater investigation and remedial action planning of solvent contamination associated with maintenance shop activities at a metal fabricating facility in Shreveport, Louisiana.

Principal-in-Charge for assessment of site investigation and facility decommissioning activities at a former battery manufacturing facility in Naucalpan, Mexico. Activities included a review of historical investigation activities, soil and groundwater sampling, confirmation sampling after building decontamination and delineation of remaining remediation activities in order to complete facility closure.

Project manager for soil and groundwater assessment of a forklift maintenance/repair facility in Metairie, Louisiana to evaluate the accuracy of historical investigation results and assess the limits of affected soil and groundwater using risk based standards identified in the Louisiana Department of Environmental Quality Risk Evaluation Corrective Action Program.

Project manager for groundwater monitoring program at a paper products facility in north Louisiana. Project was implemented as part of the facility solid waste permit and included groundwater sampling, historical data review and statistical data analysis.

Site project manager for the installation of a groundwater recovery system in northern Illinois. Responsibilities included characterization of the glacial aquifer affected by facility operations, recovery well design, air rotary drilling and well construction.

Commercial Airline Industry

Site manager for field operations at an aircraft maintenance facility in Tulsa, Oklahoma. Responsibilities included the planning and implementation of a soil and groundwater investigation for an inactive metal plating and hazardous waste facility as well as completion of a facility wastewater study. Performed assessment of existing facility ground water monitoring network including data management and interpretation of historical groundwater quality records.

Publications:

Hanor, J.S., Bray, R.B. and Nunn, J.A., 2007 *"Interaction Between Topographic, Thermohaline, and Overpressured Flow Regimes in the South Louisiana Gulf Coast"* Geological Society of America Abstracts with Programs, Vol. 39, No. 6, p. 267.

"Spatial Variations in Subsurface Pore Fluid Properties in a Portion of Southeast Louisiana: Implications for Fluid Migration and Solute Transport", Gulf Coast Association of Geological Societies, 1990, p. 53-64.

Cambro-Ordivician Passive Margin for the U.S. Appalachians Isopach Map Illustrations, Geology of North America, Appalachian – Ouachita Orogen of the United States, Volume F2.

2020 - 2025 Litigation Case List
R. Brent Bray, P.G.

Case	Year	Description
Barnes et al vs. Dresses LLC et al U.S. District Court, Western District of Louisiana	2024-Present	MFP Comments
Wil-O's, LLC, et al vs. Boardwalk Louisiana Midstream, et al 18th J.D.C., Parish of Iberville, State of Louisiana Docket No. 082639, Division C	2023-Present	Affadavit, Deposition
Sam R. Aertker vs. Dresser, LLC, et al 19th J.D.C., Parish of East Baton Rouge, State of Louisiana Docket No. C-702370, Division 21	2021-Present	Expert Report, Affadavit
H.C. Drew Estate vs. Neumin Production Company,et al 14th J.D.C., Parish of Calcasieu, State of Louisiana Docket No. 2019-4925-F	2021-2024	Expert Report, Deposition
Woodbrook, Inc, et al vs. Anadarko Petroleum Corporation, et al 14th J.D.C., Parish of Calcasieu, State of Louisiana Docket No. 2018-5201	2018-2022	Expert Report, Deposition
The Salvation Army et al vs. Union Pacific Railroad Company, et al 15th J.D.C., Parish of Lafayette, State of Louisiana Docket No. 2016-0548-F,	2016-Present	Expert Report

DUANE PIRANIO, P.G.

EDUCATION

Louisiana Tech University, B.S., Geology, 1985
U. S. Naval Oceanographic Office Hydrographic Training, 1987

PROFESSIONAL HISTORY

2003-Date	Geologist, Arabie Environmental Solutions, LLC/Southland Environmental, LLC
1995-2003	Geologist/Project Manager, Handex Group, Inc.
1987-1994	Seismologist, Halliburton Geophysical Services, Inc.
1987	Hydrologist, U.S. Naval Oceanographic Office

PROFESSIONAL REGISTRATION

- Louisiana Licensed Geoscientist No. 273
- North Carolina Licensed Geologist No. 1659
- Texas Licensed Professional Geoscientist – Geology No. 10093
- Tennessee Registered Geologist No. 4394

PROFESSIONAL ORGANIZATIONS

- Gulf Coast Association of Geological Societies
- Baton Rouge Geological Society

COMMUNITY SERVICE

- Lake Charles Happy Hour Rotary Club – 2021 – Present; Immediate Past President
- Southwest Louisiana Law Center – Board Member, 2021- Present; Chair-Elect
- Volunteer Center of Southwest Louisiana – Board Member and Committee Chair, 2010-2012
- Leadership Southwest Louisiana – Graduate, 2010
- Southwest Louisiana Economic Development Alliance Environmental Affairs Committee Volunteer – 2010-Present

REPRESENTATIVE EXPERIENCE

Mr. Piranio has more than 36 years of geological work experience in industrial, government and litigation settings. He has designed and managed soil/groundwater investigation and remediation projects related to bulk fuel terminals, port facilities, interstate pipelines, petroleum exploration/production sites, and underground storage tank facilities. Mr. Piranio has completed these projects in the states of Florida, Louisiana, North Carolina, South Carolina, Tennessee, Texas, and Virginia. His investigation experience includes monitor/recovery well design and installation, as well as design and implementation of aquifer characterization studies. His remediation experience includes pilot testing and system operation, maintenance and monitoring using a variety of technologies, including in-situ chemical oxidation, monitored natural

attenuation, groundwater pump and treat, soil vapor extraction, air sparging, contaminant modeling, as well as soil excavation and disposal. Mr. Piranio has performed American Society for Testing and Materials' (ASTM) Phase I and Phase II Environmental Site Assessments, ASTM Risk Based Corrective Action evaluations, Louisiana Department of Environmental Quality Risk Evaluation/Corrective Action Program evaluations, and Louisiana Department of Natural Resources Statewide Order 29-B compliance in a variety of geologic settings. His involvement in these projects has been from the planning and budgeting phase through data analysis and report preparation, including expert testimony when requested.

Mr. Piranio has held responsibility for the operation, maintenance and monitoring of numerous soil and groundwater remediation systems, including a RCRA Superfund groundwater remediation site in North Carolina. He has managed regional portfolios of UST and bulk fuel terminal sites for multiple clients, with turn-key responsibilities from initial planning to site closure.

Mr. Piranio performed risk assessments and developed Emergency Response Plans for local parish and city water supply and wastewater treatment facilities for U. S. Environmental Protection Agency compliance. His permitting experience ranges from preparation of an underground injection/commercial saltwater disposal facility application, Coastal Use Permits, and surface water discharge permits in Florida, Louisiana, North Carolina, and Virginia. His work often includes interpretation and application of regulatory requirements.

Prior to entering the environmental industry, Mr. Piranio acquired over seven years of petroleum geophysical industry experience in 2-D and 3-D reflection and refraction seismic data acquisition, processing, and interpretation in the Gulf of Mexico and Middle East.

LITIGATION CASE LIST

Case	Year	Description
Domatti M.A. Management Trust vs Lessley Services, LLC, et al 38th Judicial District Court, Cameron Parish, Louisiana Docket No. 10-20432	2019-2021	Expert Report, Deposition, Trial Testimony
James Steven Broussard, et al, vs Mayne & Mertz, Inc, et al 14th Judicial District Court, Calcasieu Parish, Louisiana Docket No. 2018-2721	2020-2021	Expert Report, Deposition
H. C. Drew Estate vs. Neumin Production Company, et. al. 14th Judicial District Court, Calcasieu Parish, Louisiana Case No. 2019-4925-F	2019-2022	Expert Report, Deposition
Woodbrook, Inc., et. al. vs. Anadarko Petroleum Corporation, et. al. 14th Judicial District Court, Calcasieu Parish, Louisiana Case No. 2018-5201,	2022	Expert Report, Deposition
Danny Paul Gastal, et al vs. Petrodome Operating, LLC, et. al. 15th Judicial District Court, Acadia Parish, Louisiana Case No. 202210495-A	2022	Ongoing Investigation

The Lacassane Co., Inc vs. BP America Production Co., et. al. 38th Judicial District Court, Cameron Parish, Louisiana Case No. 10-20196	2018	Ongoing Investigation
Twin Creeks Drilling, LLC vs Darren Noel and Jena DuRousseau Lake Charles City Court – No. 23-345	2023-2024	Report, Trial Testimony

ATTACHMENT B

LDEQ Field Interview Form

Expert Report

Danny Paul Gastal and Ignatius Hoffpauir vs.
Petrodome Operating, LLC, et al.
Case No. 202210495-A, 15th Judicial District Court
Acadia Parish, Louisiana

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
FIELD INTERVIEW FORM

AGENCY INTEREST#: 171651 INSPECTION DATE: 12/30/2021 TIME OF ARRIVAL: _____

ALTERNATE ID#: T206464 (ID Type/Number) DEPARTURE DATE: on-going TIME OF DEPARTURE: _____
Petrodome

FACILITY NAME: Gastal Production Facility incident PHONE #: ( ) _____

LOCATION: Hwy 91, just N of town of Morse

PARISH: Acadia

RECEIVING STREAM (BASIN/SUBSEGMENT): local - Bayou Queue de Tortue - Mermentau (050501)

MAILING ADDRESS: 15159 Katy Freeway Ste. 450 (Street/P.O. Box), Houston (City), TX (State) 77094 (Zip)

FACILITY REPRESENTATIVE: Shannon Betrand TITLE: Reporting person parts for Petrodome

FACILITY REPRESENTATIVE PHONE NUMBER: 337-275-0069

NAME, TITLE, ADDRESS and TELEPHONE of RESPONSIBLE OFFICIAL (if different from above): _____

INSPECTION TYPE: incident PROGRAM INVOLVED: AIR ☐ WASTE ☐ WATER ☑ OTHER: _____

INSPECTOR'S OBSERVATIONS: (e.g. AREAS AND EQUIPMENT INSPECTED, PROBLEMS, DEFICIENCIES, REMARKS, VERBAL COMMITMENTS FROM FACILITY REPRESENTATIVES)

An incident (T206464) investigation was conducted regarding a self reported release of produced water from a flowline connected to the Gastal #1 Production Facility, located in Morse, in Acadia Parish. The release affected an area encompassing approximately 15-20 acres of flooded rice field/crawfish ponds. The release was contained within 3 leved ponds and did not reach waters of the state.

The following is a timeline and communication log of the on-going investigation from the reported release date (12/26/2021) to the present (03/25/202

AREAS OF CONCERN:

REGULATION	EXPLANATION	CORRECTED?
		YES ☐ NO ☐
		YES ☐ NO ☐

PHOTOS TAKEN: YES ☑ NO ☐ SAMPLES TAKEN: YES ☐ NO ☑ (Attach Chain-of-Custody)

RECEIVED BY SIGNATURE: _____

PRINT NAME: _____

(NOTE: SIGNATURE DOES NOT INDICATE AGREEMENT WITH INSPECTOR'S NOTES)

INSPECTOR(S): Carrick Boffy CROSS REFERENCE: _____

REVIEWER: Carey Stewart Jr. ATTACHMENTS: _____

NOTE: The information contained on this form reflects only the preliminary observations of the inspector(s). It should not be interpreted as a final determination by the Department of Environmental Quality or any of its officers or personnel as to any matter, including, but not limited to, a determination of compliance or lack thereof by the facility operator with any requirements of statutes regulations or permits. Each day of non-compliance constitutes a separate violation of the regulations and/or the Louisiana Environmental Quality Act.

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
INSPECTOR OBSERVATIONS (cont'd)

AGENCY INTEREST#: 171651 ALTERNATE ID#: T2064/64 INSPECTION DATE: 12/30/2021 – Ongoing

FACILITY NAME: Petrodome Gastal Production Facility incident

INSPECTOR OBSERVATIONS CONT'd:

- 12/26/2021: Release self reported to hotline.
- 12/28/2021: AHO received incident from SPOC.
- 12/29/2021: Incident assigned to inspector.
- 12/30/2021: Left phone message for Shannon Bertrand (Petrodome reporter)
- 01/04/2022: Spoke with Shannon Bertrand via phone and he stated that the plan was to dewater the 3 affected ponds, flush with fresh water, and test the soil.
- 01/04/2022: Received email from consultant Trey Chiarazza III with NTG Environmental detailing chloride levels in the 3 ponds.
- 01/14/2022: Site visit conducted. RP continues to remove affected water from the ponds and is disposing of water back into the facility injection well. Water has been removed from the western, more affected pond. There were 2 contracted personnel on site running the pump.
- 01/24/2022: Spoke with Shannon Bertrand via phone and he stated that they continue to dewater the other 2 ponds. Affected water continues to be disposed of via the injection well.
- 01/24/2022: EDMS submittal 10176328 created as a Record of Communication for previous email received from NTG Environmental on 01/04/2022.
- 02/07/2022: Spoke with Shannon Bertrand via phone and he stated that they continue to dewater the ponds. He also stated that they found and repaired the flow line leak, which was located in the western-most pond.
- 02/14/2022: Received call from LDNR representative Mr. Ray Richard inquiring about incident. I forwarded email from NTG Environmental to Mr. Richard.
- 02/15/2022: I made a call to local LDAF office in Crowley to make sure they were aware of the incident. I spoke with Mr. Craig Callahan and he stated that they do not regulate this type of incident.

INITIALS OF RECEIPT _____

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
INSPECTOR OBSERVATIONS (cont'd)

AGENCY INTEREST#: 171651 ALTERNATE ID#: T2064 64 INSPECTION DATE: 12/30/2021 - on-going

FACILITY NAME: Petrodome Coastal Production Facility incident

INSPECTOR OBSERVATIONS CONT'd:

02/25/2022: Spoke with Shannon Bertrand via phone and he stated that all operations were halted by LDNR since 02/18/2022 due to the pressure test on line not being at acceptable levels. He stated that Petrodome will likely put a rig on location to correct the problem.

03/25/2022: Notified by Shannon Bertrand that the facility has commenced pumping operations again.

Performed site visit & the affected ponds still had water. At the time of the visit, the pump was not running and no one was on site.
A neighbor to the property stated that the rig had been on site earlier that week (3/21, 3/22).

INITIALS OF RECEIPT _____

ATTACHMENT C

Custom Soil Resource Report

Expert Report

Danny Paul Gastal and Ignatius Hoffpauir vs.
Petrodome Operating, LLC, et al.
Case No. 202210495-A, 15th Judicial District Court
Acadia Parish, Louisiana

United States Department of Agriculture

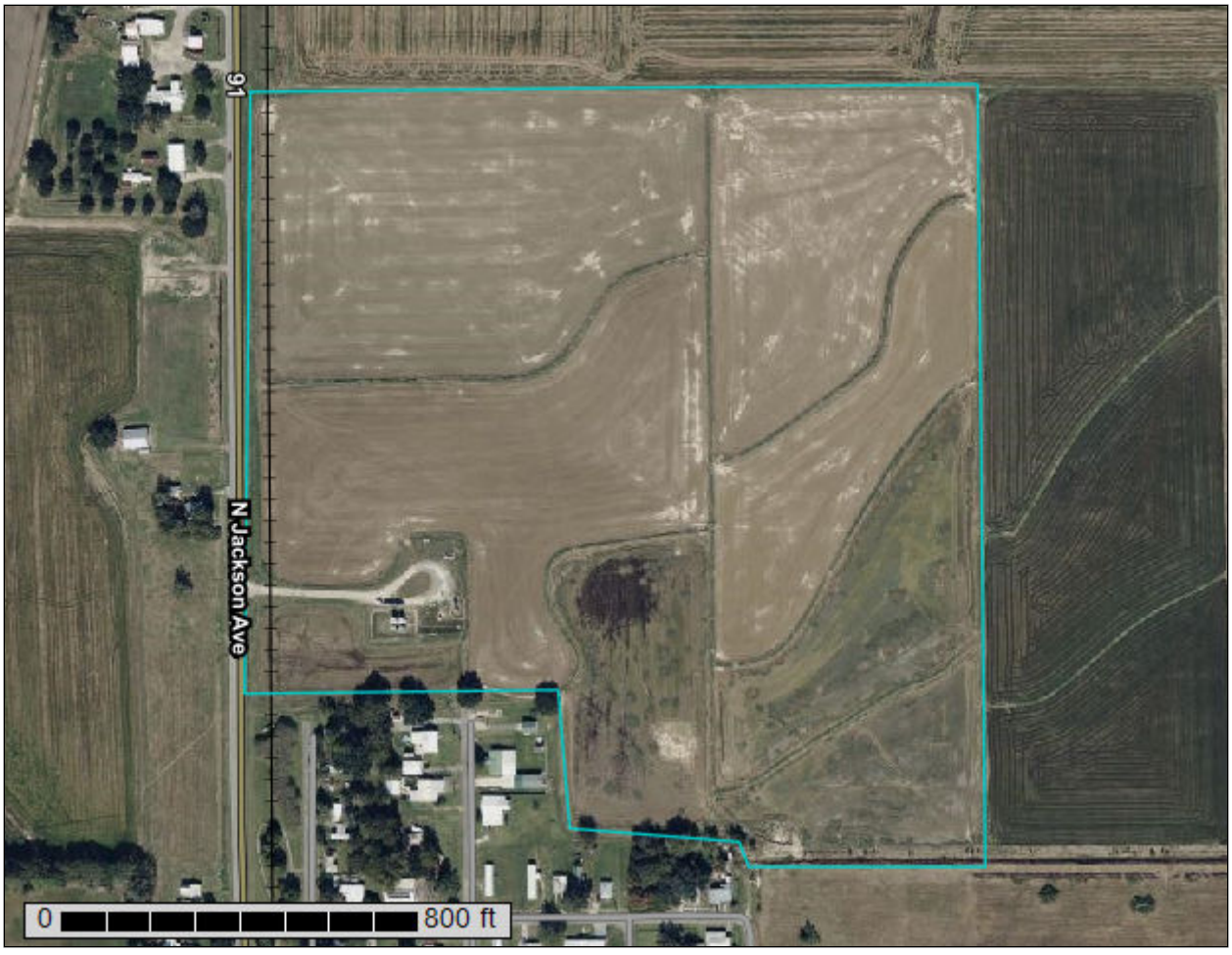
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Acadia Parish, Louisiana

Gastal Tract



July 21, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:3,930 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Acadia Parish, Louisiana
Survey Area Data: Version 17, Sep 7, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 9, 2022—Nov 23, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CwA	Crowley-Midland, rarely flooded complex, 0 to 1 percent slopes	43.6	73.9%
MtA	Mowata silt loam, 0 to 1 percent slopes, rarely flooded	15.4	26.1%
Totals for Area of Interest		**59.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Acadia Parish, Louisiana

CwA—Crowley-Midland, rarely flooded complex, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2zn4r
Elevation: 0 to 80 feet
Mean annual precipitation: 61 to 63 inches
Mean annual air temperature: 66 to 68 degrees F
Frost-free period: 271 to 300 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Crowley and similar soils: 55 percent
Midland and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Crowley

Setting

Landform: Terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Late pleistocene clayey fluviomarine deposits derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 6 inches: silt loam
Eg - 6 to 14 inches: silt loam
Btg1 - 14 to 27 inches: silty clay
Btg2 - 27 to 80 inches: silty clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.57 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: R150AY014LA - Loamy Terrace Ridge
Hydric soil rating: No

Description of Midland

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Microfeatures of landform position: Open depressions
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Late pleistocene age loamy alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 6 inches: silty clay loam
Btg - 6 to 41 inches: silty clay
Btkssg - 41 to 80 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.57 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: NoneRare
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Ecological site: R150AY013LA - Clayey Terrace Prairie
Hydric soil rating: Yes

Minor Components

Mowata

Percent of map unit: 5 percent
Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R150AY013LA - Clayey Terrace Prairie
Hydric soil rating: Yes

Kaplan

Percent of map unit: 5 percent
Landform: Meander scrolls
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R150AY014LA - Loamy Terrace Ridge

Hydric soil rating: No

MtA—Mowata silt loam, 0 to 1 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: 2thq4
Elevation: 10 to 80 feet
Mean annual precipitation: 59 to 66 inches
Mean annual air temperature: 67 to 72 degrees F
Frost-free period: 245 to 304 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Mowata and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mowata

Setting

Landform: Drainageways
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Late pleistocene age loamy fluviomarine deposits derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 5 inches: silt loam
Eg - 5 to 14 inches: silt loam
Btg/E - 14 to 51 inches: silty clay
BCssg - 51 to 80 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 24 inches
Frequency of flooding: NoneRare
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: D
Ecological site: R150AY013LA - Clayey Terrace Prairie
Hydric soil rating: Yes

Minor Components

Midland

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Microfeatures of landform position: Open depressions
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R150AY013LA - Clayey Terrace Prairie
Hydric soil rating: Yes

Crowley

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Riser
Microfeatures of landform position: Bars
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R150AY014LA - Loamy Terrace Ridge
Hydric soil rating: No

Frost

Percent of map unit: 5 percent
Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F134XY302LA - West Central Swales/Depressions Wet Flats - PROVISIONAL
Hydric soil rating: Yes

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ATTACHMENT D

Historical Aerial Photographs

Expert Report

Danny Paul Gastal and Ignatius Hoffpauir vs.
Petrodome Operating, LLC, et al.
Case No. 202210495-A, 15th Judicial District Court
Acadia Parish, Louisiana

1940_ASCS.tif

SE SOUTHLAND ENVIRONMENTAL

RBB Consulting, LLC

GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING LLC, et al
ACADIA PARISH

1940 AERIAL PHOTOGRAPH

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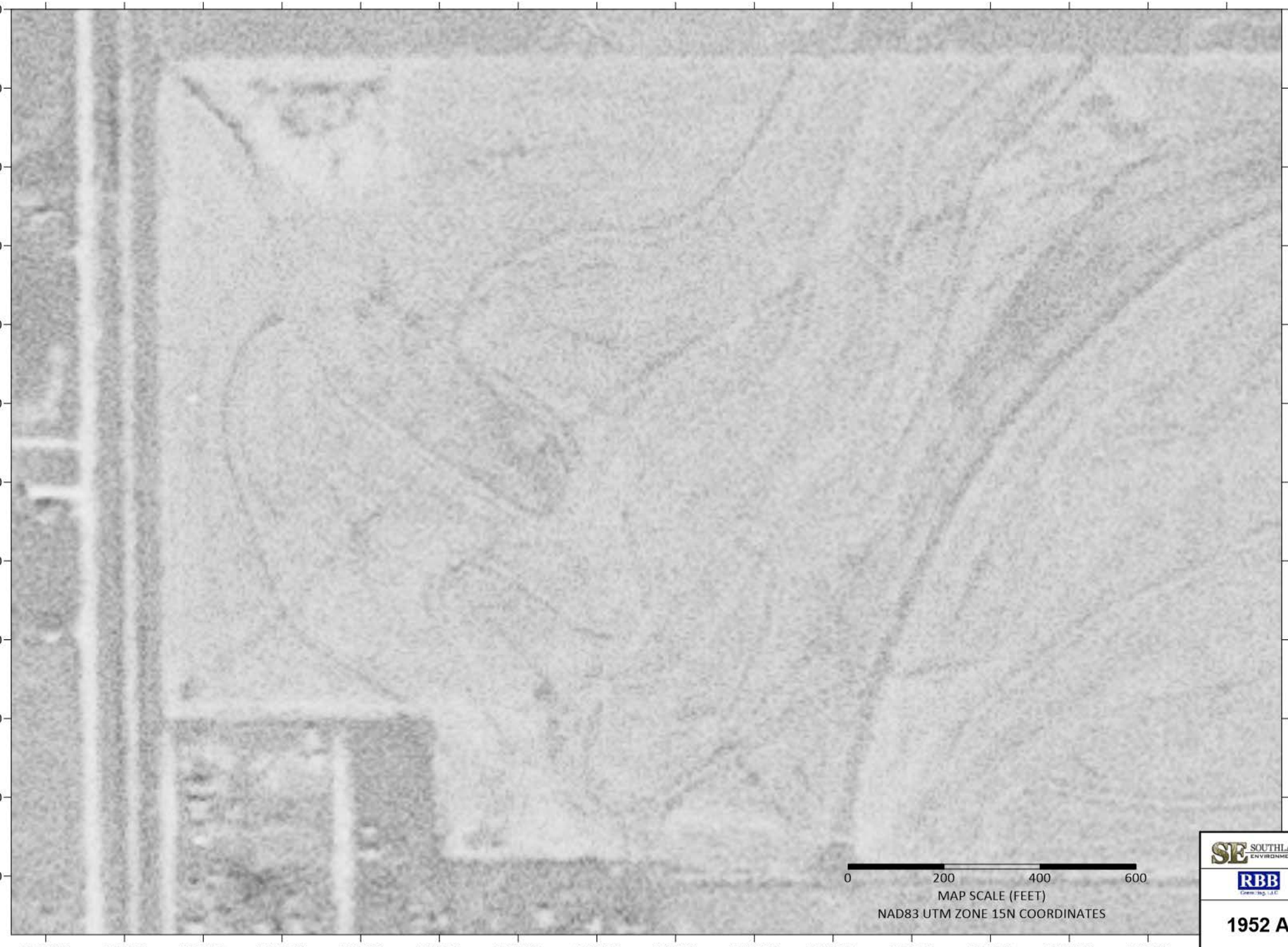
Checked By: DAP	Date: 4/15/2025	Revised: 4/04/2025



1952_AMS.tif

SOUTHLAND ENVIRONMENTAL

RBB

GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING LLC, et al
ACADIA PARISH

1952 AERIAL PHOTOGRAPH

Drawn By: DAB	Date: 3/20/2025	Project # 12010
Checked By: DAP	Date: 4/15/2025	Revised: 4/04/2025

1963_ASCS.tif

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GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING LLC, et al
ACADIA PARISH

1963 AERIAL PHOTOGRAPH

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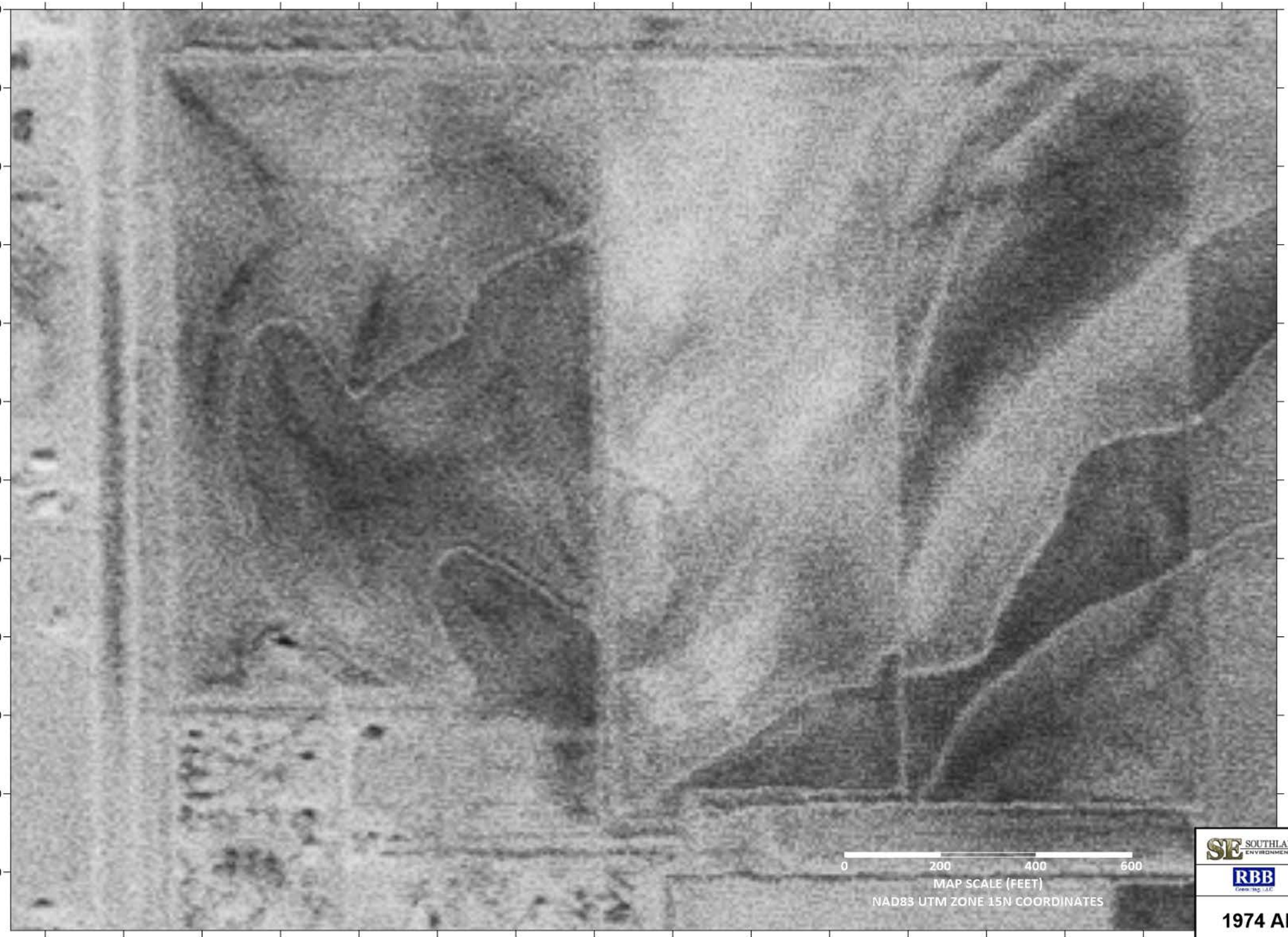

1974_USGS.tif

SOUTHLAND ENVIRONMENTAL

RBB Consulting, LLC

GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING LLC, et al
ACADIA PARISH

1974 AERIAL PHOTOGRAPH

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Checked By: DAP	Date: 4/15/2025	Revised: 4/04/2025

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GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING LLC, et al
ACADIA PARISH

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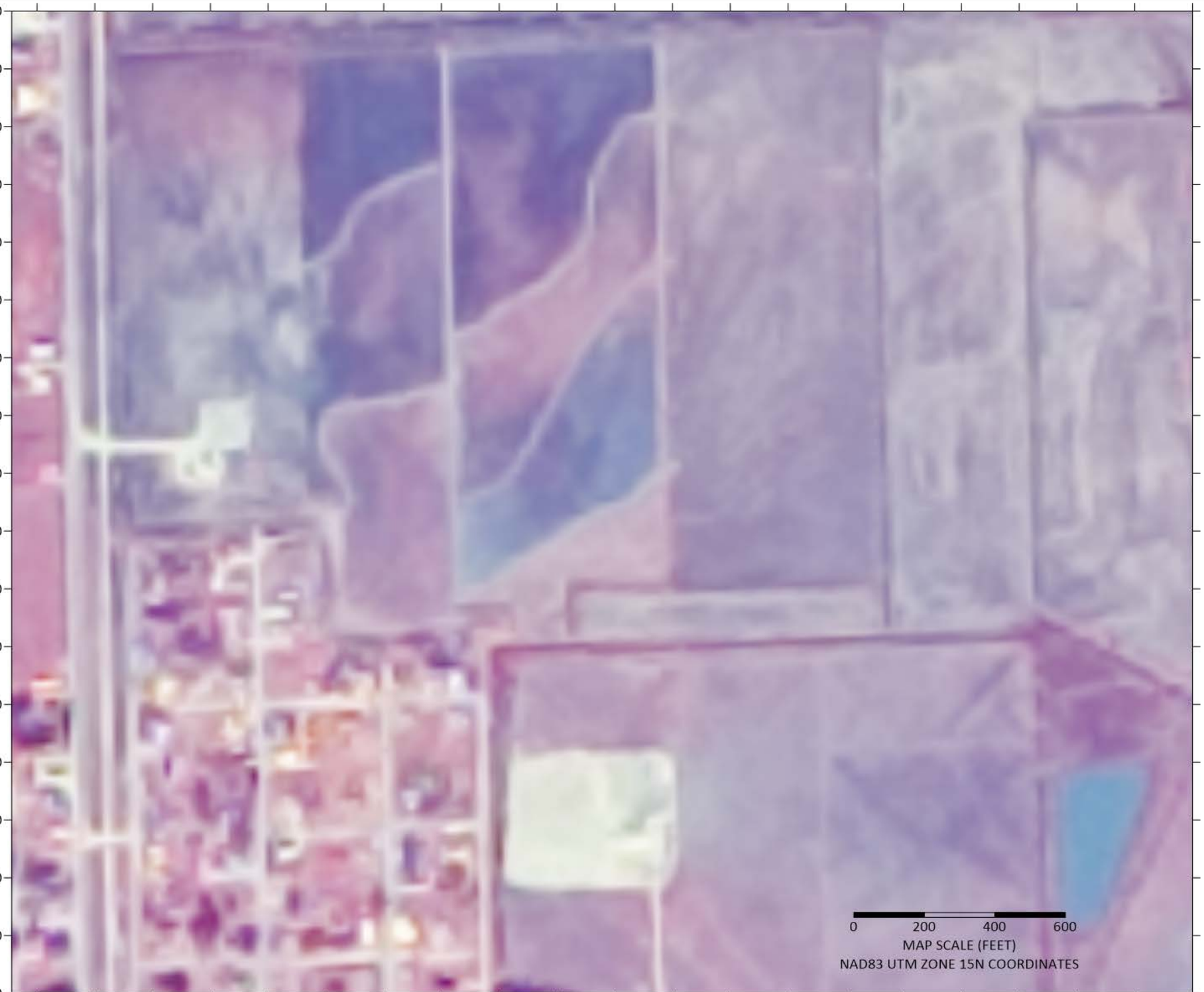
Checked By: DAP	Date: 4/15/2025	Revised: 4/04/2025



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SOUTHLAND ENVIRONMENTAL

RBB Consulting, LLC

GASTAL & HOFFPAUIR vs. PETRODOME, et al ACADIA PARISH

1985 AERIAL PHOTOGRAPH

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Checked By: DAP	Date: 4/15/2025	Revised: 4/04/2025

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GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING LLC, et al
ACADIA PARISH

1998 AERIAL PHOTOGRAPH

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Checked By: DAP	Date: 4/15/2025	Revised: 4/04/2025

2004_USDA.tif

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GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING LLC, et al
ACADIA PARISH

2004 AERIAL PHOTOGRAPH

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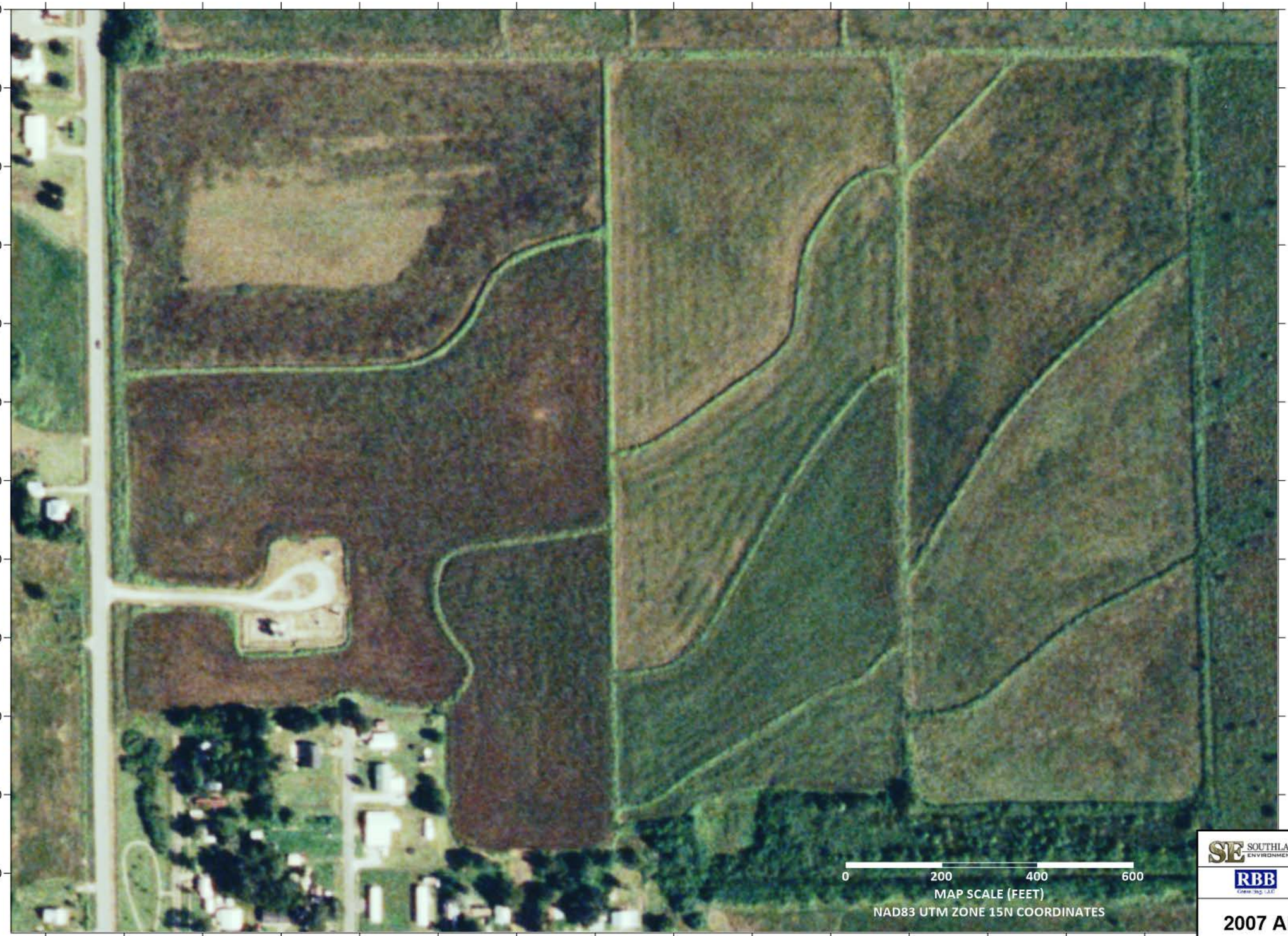

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SOUTHLAND ENVIRONMENTAL

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GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING LLC, et al
ACADIA PARISH

2007 AERIAL PHOTOGRAPH

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Checked By: DAP	Date: 4/15/2025	Revised: 4/04/2025

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GASTAL & HOFFPAUIR vs. PETRODOME OPERATING LLC, et al
ACADIA PARISH

2010 AERIAL PHOTOGRAPH

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Checked By: DAP	Date: 4/15/2025	Revised: 4/04/2025

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SOUTHLAND ENVIRONMENTAL

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GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING LLC, et al
ACADIA PARISH

2013 AERIAL PHOTOGRAPH

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Checked By: DAP	Date: 4/15/2025	Revised: 4/04/2025

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GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING LLC, et al
ACADIA PARISH

2015 AERIAL PHOTOGRAPH

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Checked By: DAP	Date: 4/15/2025	Revised: 4/04/2025

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GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING LLC, et al
ACADIA PARISH

2017 AERIAL PHOTOGRAPH

Drawn By: DAB	Date: 3/20/2025	Project # 12010
Checked By: DAP	Date: 4/15/2025	Revised: 4/04/2025

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SOUTHLAND ENVIRONMENTAL

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GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING LLC, et al
ACADIA PARISH

2019 AERIAL PHOTOGRAPH

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GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING LLC, et al
ACADIA PARISH

2021 AERIAL PHOTOGRAPH

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SOUTHLAND ENVIRONMENTAL

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GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING LLC, et al
ACADIA PARISH

2023 AERIAL PHOTOGRAPH

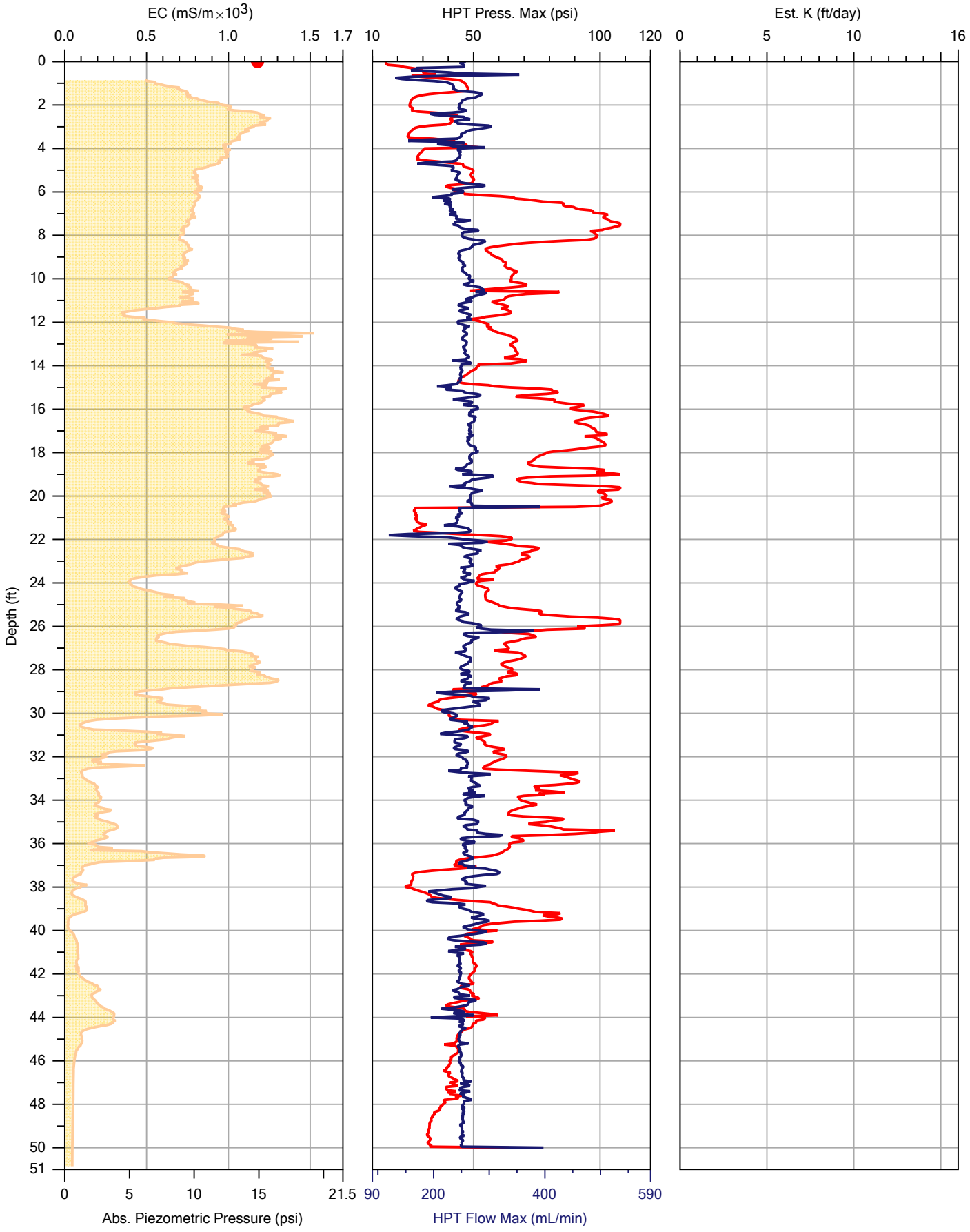
Drawn By: DAB	Date: 3/20/2025	Project # 12010
Checked By: DAP	Date: 4/15/2025	Revised: 4/04/2025

ATTACHMENT E

Cone Penetration Tests

Expert Report

Danny Paul Gastal and Ignatius Hoffpauir vs.
Petrodome Operating, LLC, et al.
Case No. 202210495-A, 15th Judicial District
Court Acadia Parish, Louisiana



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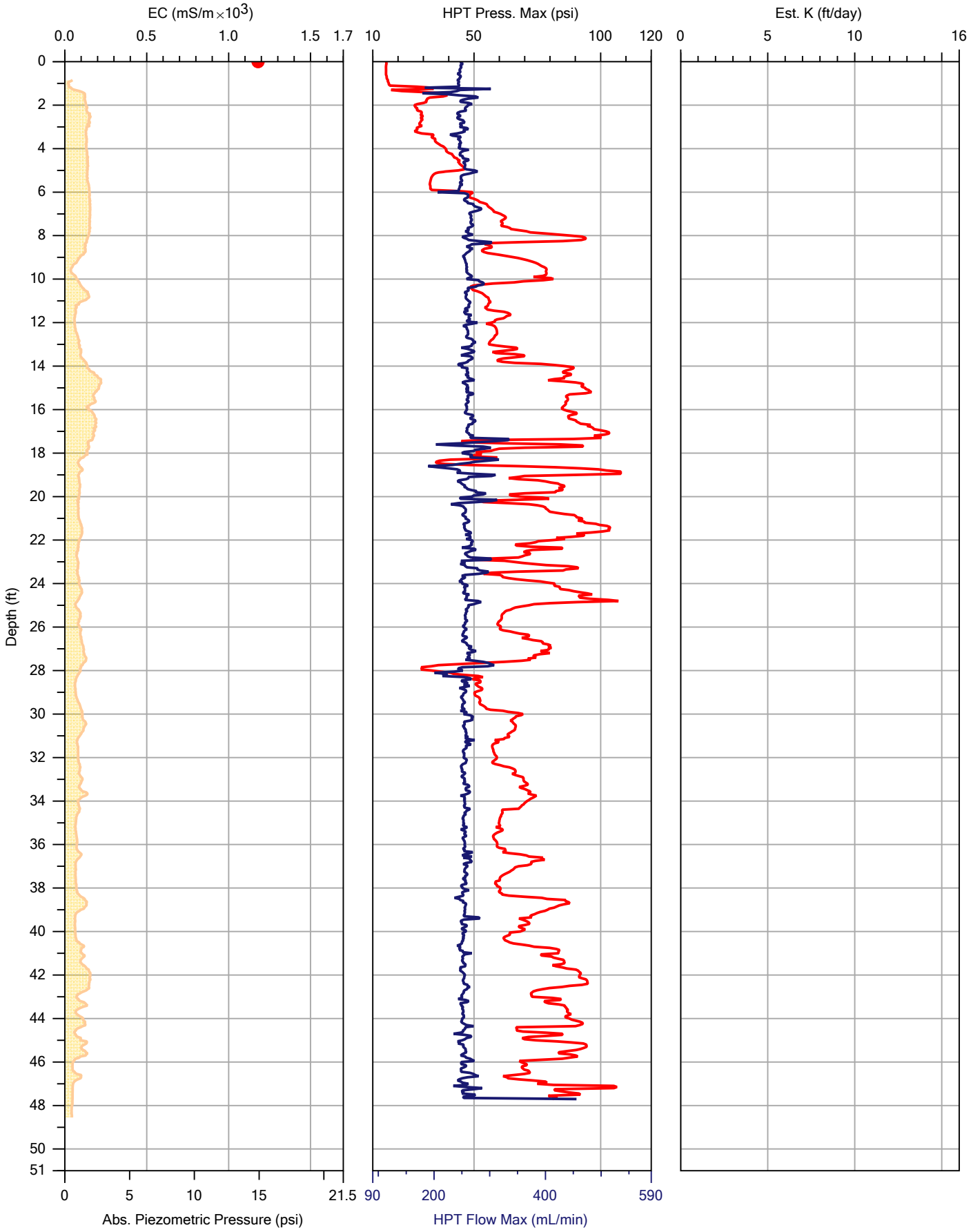

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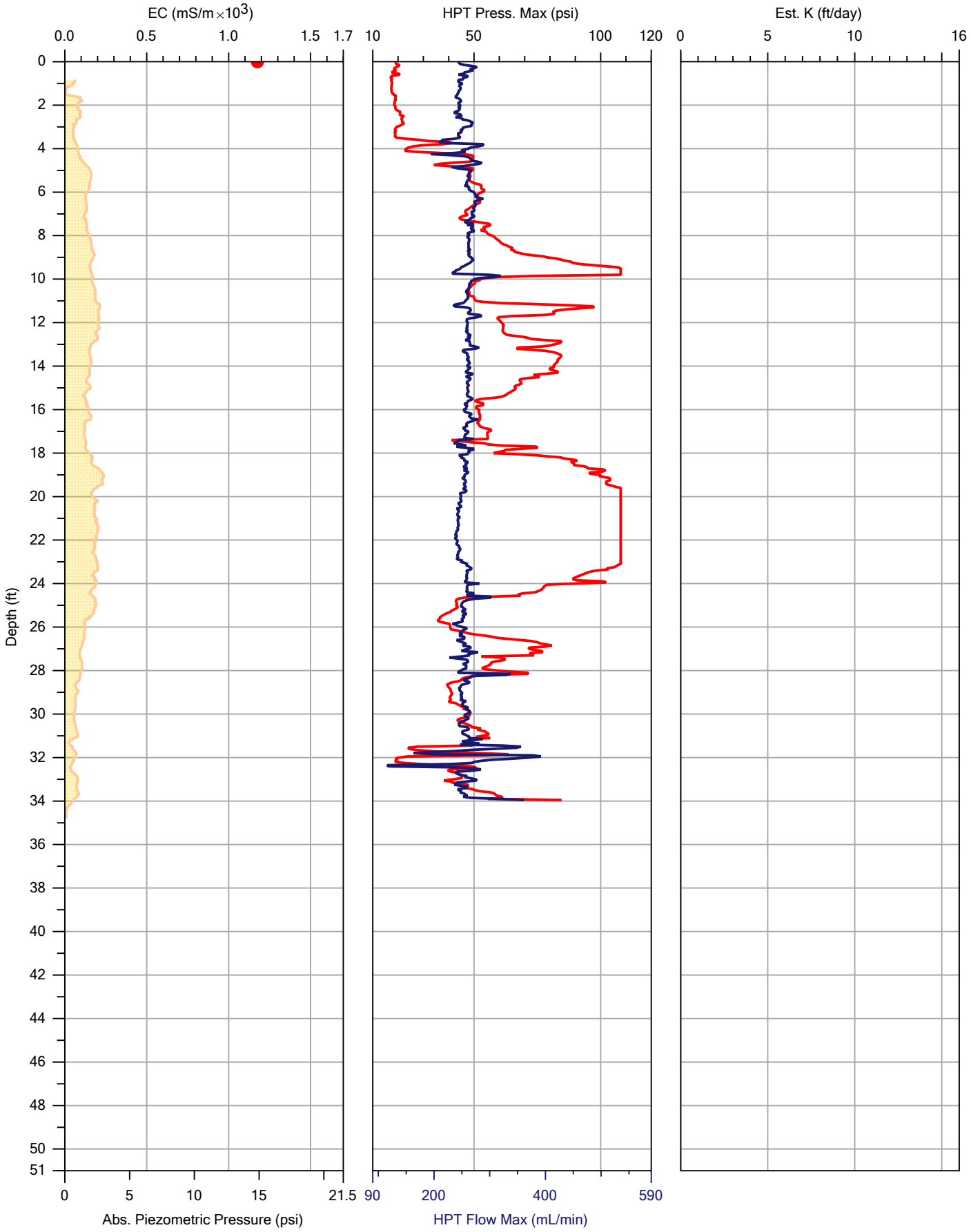

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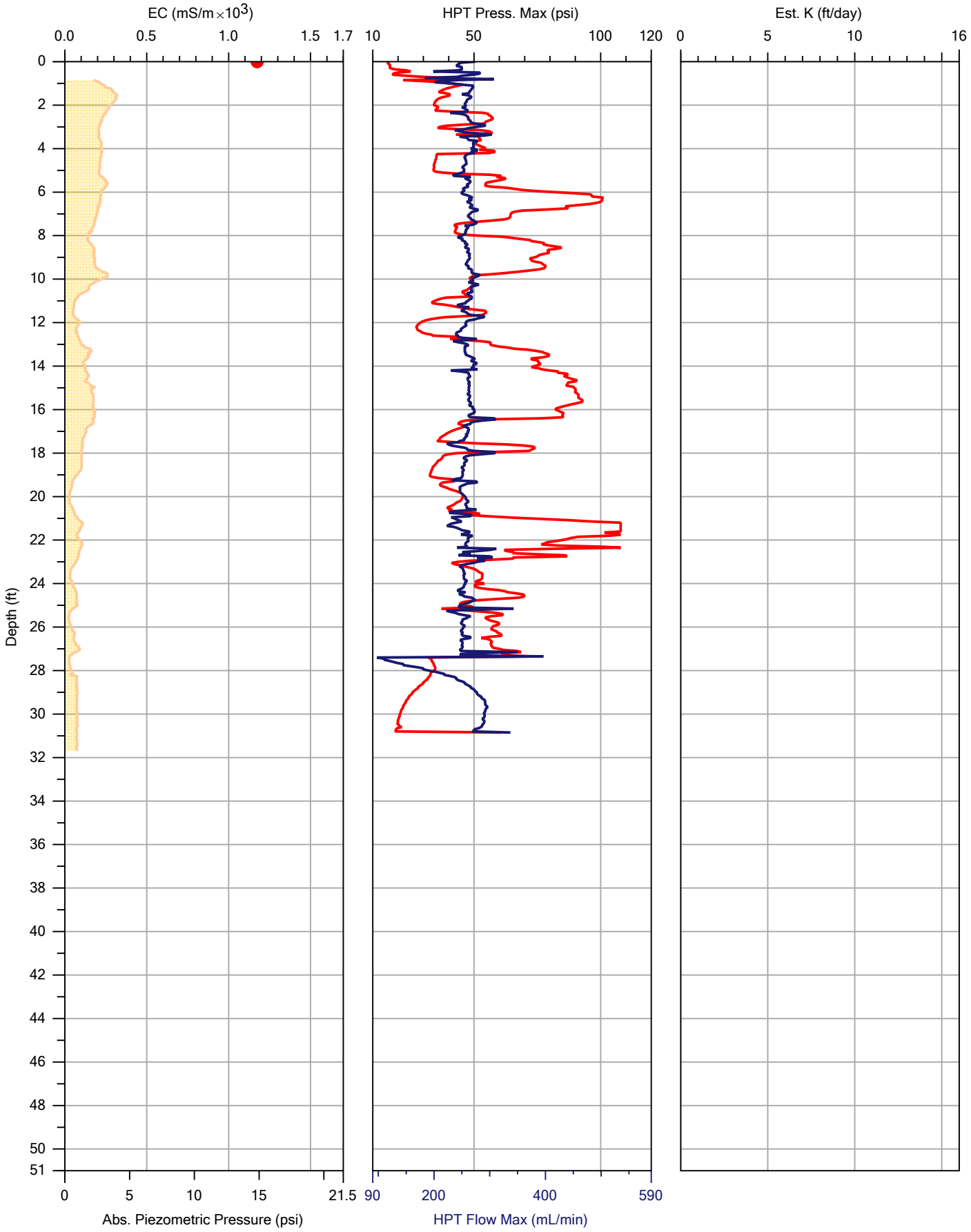

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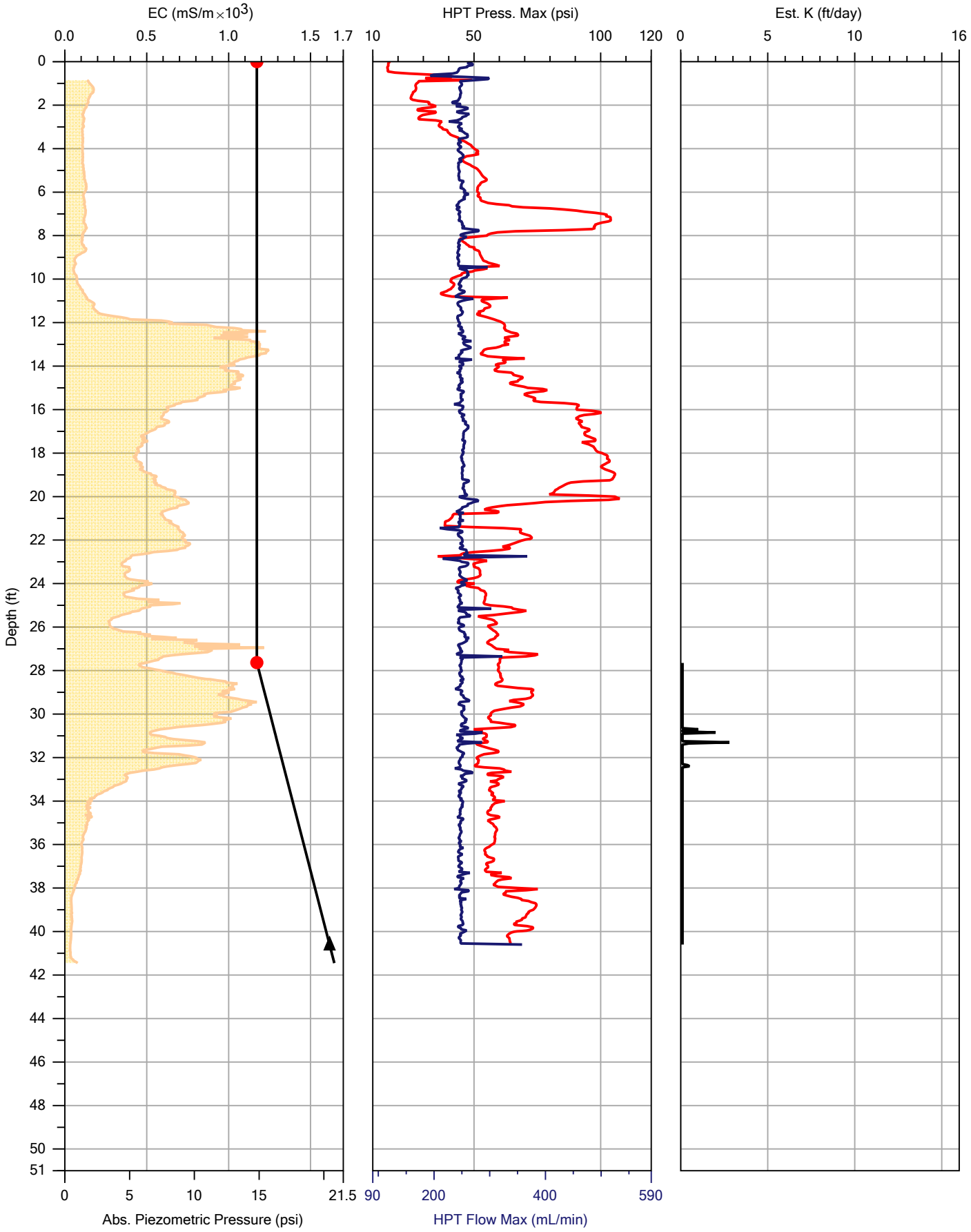

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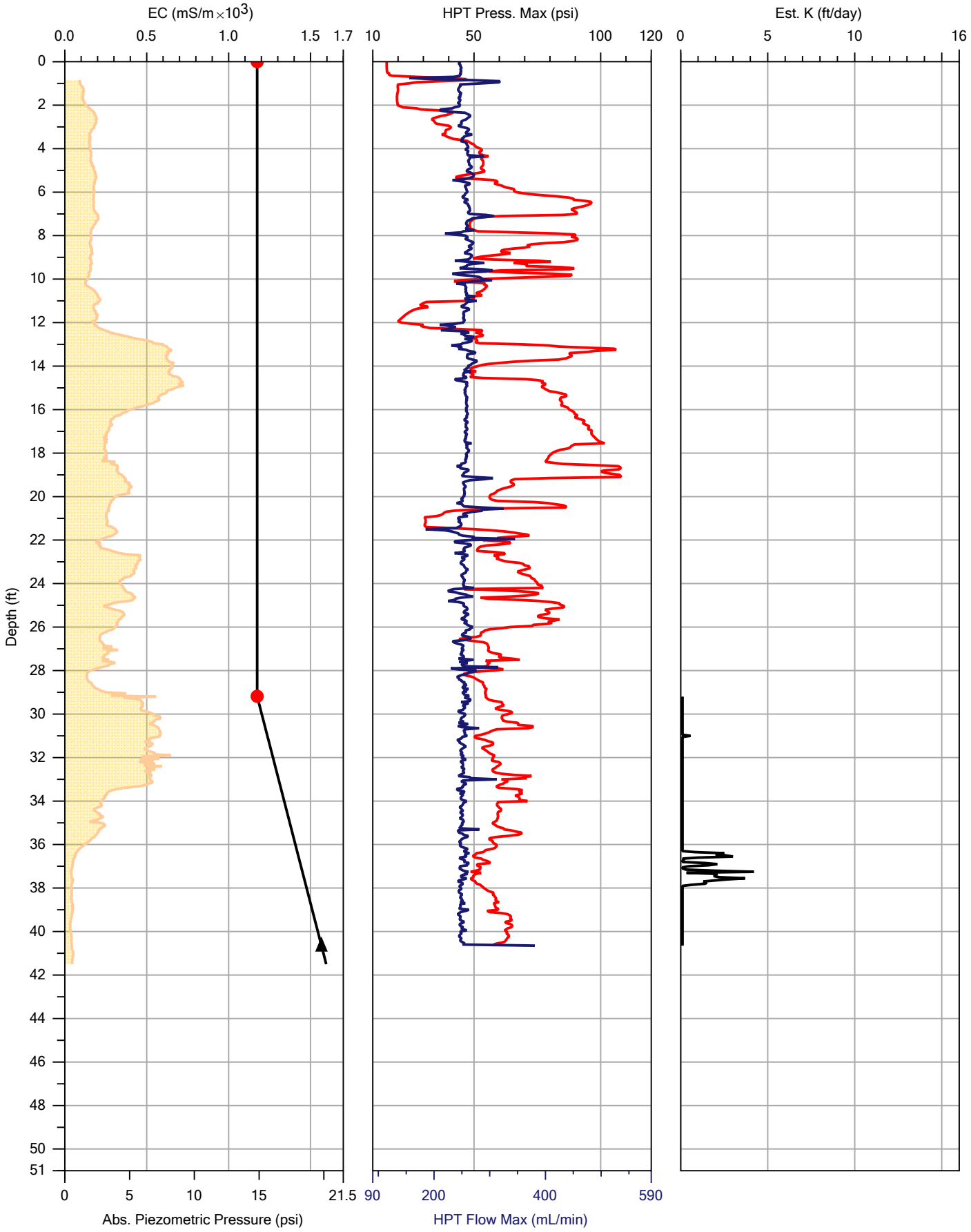

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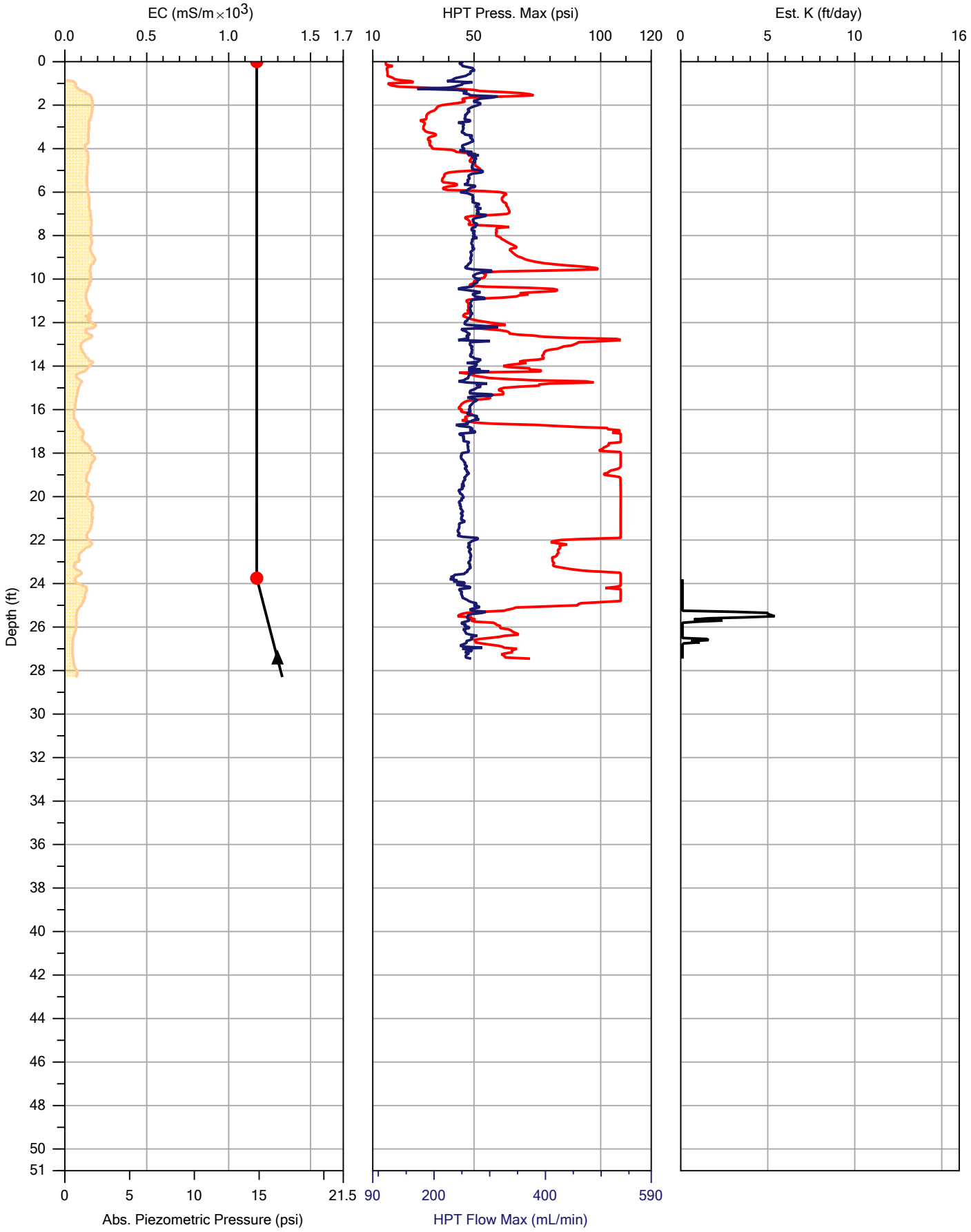

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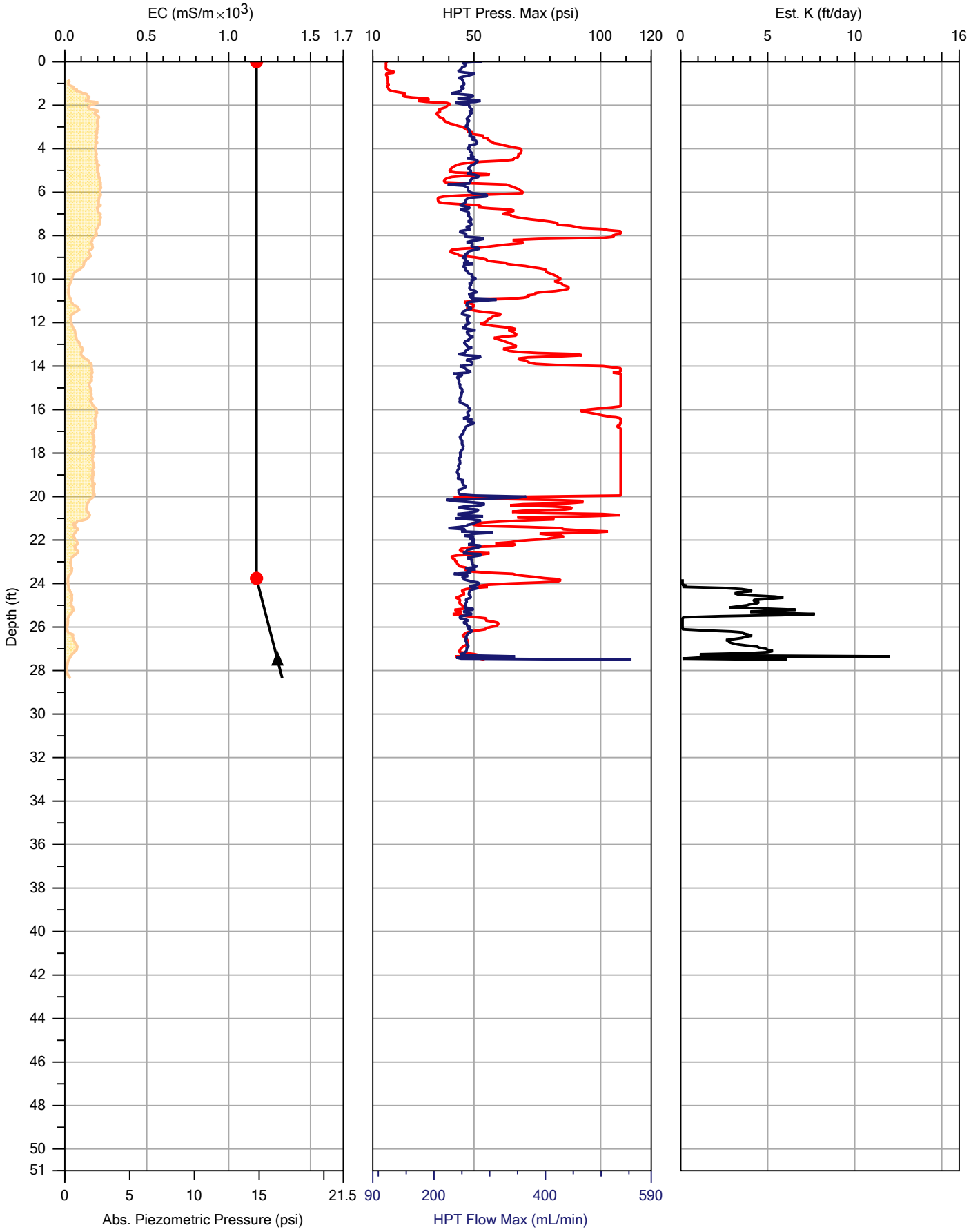

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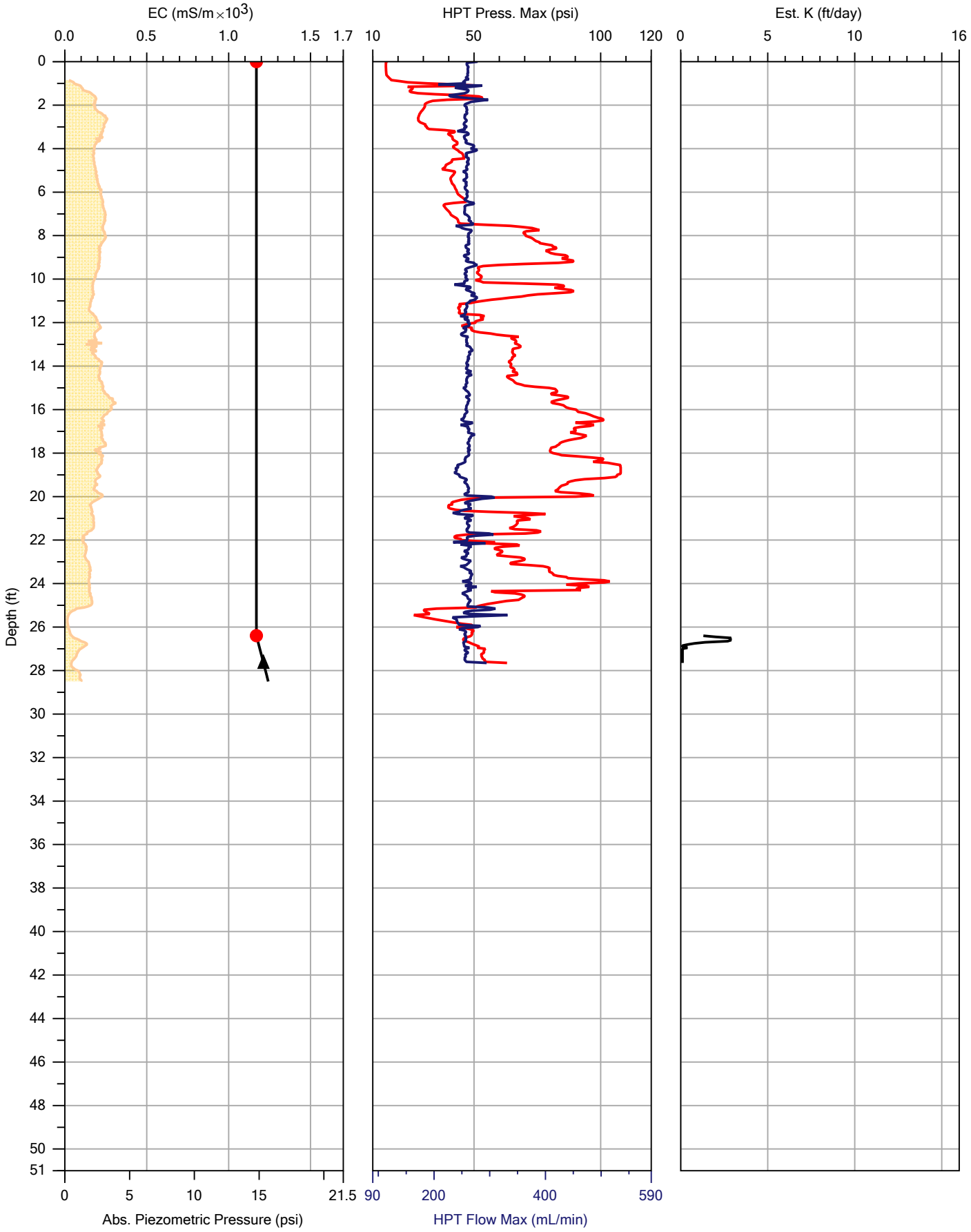

WALKER-HILL ENVIRONMENTAL

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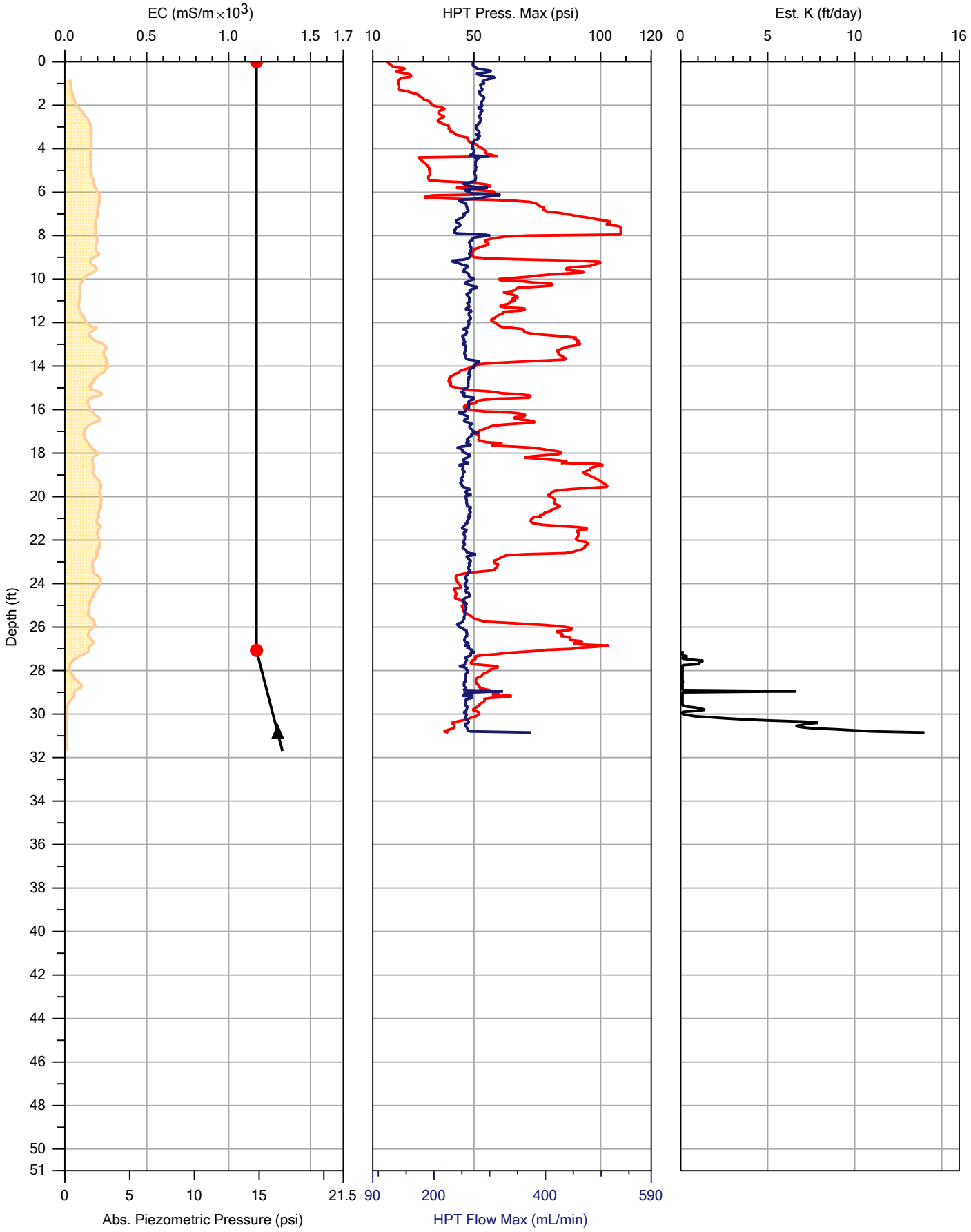
Company: WHE	Operator: Jack	Date: 6/14/2023
Project ID: 12010-Gastal	Client: Southland	Location: Morse,LA



WALKER-HILL ENVIRONMENTAL

		File: SE-CPT10.HPT
Company: WHE	Operator: Jack	Date: 6/14/2023
Project ID: 12010-Gastal	Client: Southland	Location: Morse,LA

ATTACHMENT F

Soil Boring Logs and Well Diagrams

Expert Report

Danny Paul Gastal and Ignatius Hoffpauir vs.
Petrodome Operating, LLC, et al.
Case No. 202210495-A, 15th Judicial District Court
Acadia Parish, Louisiana

BORING LOG

Project: GASTAL / 12010 | **Drilling Method:** GEOPROBE DUAL TUBE | **Parish:** ACADIA

Borehole No: SE SB-01 | **Drilled By:** WALKER HILL | **UTM Easting:** 548642.051

Date Drilled: 5/02/23 | **Logged By:** D. PIRANIO | **UTM Northing:** 3333170.372

Total Depth: 35' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology		Description of Stratum
0		1.8	2.82	CL		From 0-1.8':	Mix SILTY CLAY; Tan (orange-brown), gray & black, moist, slight petroleum odor
-1			>4.0				
-2			>4.0				
-3							
-4		2.3	>4.0	CL		From 4-5.1':	SILTY CLAY; As above, moist, slight petroleum odor
-5			>4.0	CL		From 5.1-6.3':	SILTY CLAY; Yellow-brown w/black mineral concretions, no petroleum odor; gray SILTY pocket from 5.3-5.7'; stiffens w/depth
-6			>4.0				
-7							
-8		3.2	>4.0	CL		From 8-9.4':	SILTY CLAY; Yellow-brown w/orange & black stains
-9			>4.0	CL		From 9.4-11.2':	SILTY CLAY; Olive tan, ~friable
-10			>4.0				
-11							
-12		4.0	>4.0	CL		From 12-13':	Very SILTY CLAY; Dark olive w/heavy black stains from 12.4-12.8', stiff, friable, no odor
-13				CL		From 13-13.9':	Very SILTY CLAY; Dark olive w/orange, softer than above, very moist
-14			>4.0	ML		From 13.9-14.8':	CLAYEY SILT; Dark orange-brown, medium soft, visible water from 14.2-14.4'
-15			>4.0	CL		From 14.8-16':	CLAY; Yellow-brown & red, olive & gray, stiff
-16		4.0	>4.0	CL		From 16-20':	CLAY; Orange-brown w/olive-gray, very stiff; minor SILT; concretions @ 18.7' (3/4" dia./white); less orange below concretions; SILTY seam @ 19.1'
-17							
-18			>4.0				
-19							
-20			>4.0				

BORING LOG

Project: GASTAL / 12010 | **Drilling Method:** GEOPROBE DUAL TUBE | **Parish:** ACADIA

Borehole No: SE SB-01 | **Drilled By:** WALKER HILL | **UTM Easting:** 548642.051

Date Drilled: 5/02/23 | **Logged By:** D. PIRANIO | **UTM Northing:** 3333170.372

Total Depth: 35' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology		Description of Stratum
-20							
-21			>4.0	CL		From 20-21.8':	CLAY to SILTY CLAY; Olive, mineral stains & concretions, stiff Grades to:
-22		4.0	>4.0				
-23			>4.0	CL/ML		From 21.8-24':	SILTY CLAY to SILT; Orange-brown, miineral stains, low moisture (not wet)
-24				CL		From 24-24.3':	SILTY CLAY; Dark orange-brown to olive, medium soft, low moisture
-25		3.9	>4.0	ML		From 24.3-25':	SILT; Olive, moist, Grades to:
-26			>4.0	CL		From 25-25.8':	SILTY CLAY; Orange-brown w/mineral staining, stiff Grades to:
-27			>4.0	CL		From 25.8-26.4':	SILTY CLAY; Orange-brown, soft, moist
-28				ML		From 26.4-27.9':	SILTY; Orange-brown; friable from 27.4-27.9'; increasing CLAY
-29		3.7	>4.0	CL		From 28-29.2':	SILTY CLAY; Orange-brown, soft, very moist
-30			>4.0	CL		From 29.2-30.2	Very SILTY CLAY; Dark olive, soft, moist
-31			1.53	ML		From 30.2-31.7':	SILT; Orange-brown, moist (not wet)
-32							
-33			1.17	ML		From 32-33':	SILT; Tan, dry to moist
-34		3.1	>4.0	ML/CL		From 33-34':	SILT & SILTY CLAY; Dark olive & olive, bedded, very moist
-35			>4.0	ML		From 34-34.3':	SILT; Light tan, low moisture
-36				CL		From 34.3-34.6':	SILTY CLAY; Dark gray, very moist
-37				ML		From 34.6-35':	SILT; Orange-brown, friable, very moist
-38							
-39							
-40							

SOUTHLAND ENVIRONMENTAL

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	GEOPROBE DUAL TUBE	Parish:	ACADIA
Borehole No:	SE SB-01	Drilled By:	WALKER HILL	UTM Easting:	548,642.055
Date Drilled:	6/16/23	Logged By:	D. PIRANIO	UTM Northing:	3,333,169.346
Total Depth:	46' BGS				

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum	
30							0-32' LOGGED ON 5/02/23
31							
32		3.8	>4.0	ML		From 32-32.4':	CLAYEY SILT; Dark orange-brown, firm, moist
33				ML		From 32.4-34.1':	CLAYEY SILT; Dark olive-brown, soft, very moist
34			>4.0				
35			>4.0	ML		From 34.1-35.8':	SILT; Dark orange-brown, moist not wet; dark olive CLAYEY SILT from 34.9-35.1'
36		4.0	>4.0 (SILT)	ML/SW		From 36-37':	SILT to SAND; Dark brown, fine grained, moist
37				CL		From 37-37.3':	Very SILTY CLAY; Very dark olive, saturated
38			>4.0 (CLAY)	ML		From 37.3-38.2':	SILT to CLAYEY SILT; Very dark olive & very dark brown, soft, saturated
39			3.38	CL		From 38.2-39':	SILTY CLAY to CLAY; Very dark browns & greens (polychromatic), soft, moist
40				CL/SW		From 39-40':	Very SILTY CLAY to CLAYEY SILT; Dark brown, soft
41		4.0	3.10	CL		From 40-40.8':	SILTY CLAY; Very dark brown w/some loose SILT, medium stiff
42			3.06	ML		From 40.8-43.4':	SILT & CLAYEY SILT; Very dark brown & gray, bedded, soft to medium stiff, saturated; wood from 41.6-42.2'; very SILTY/SANDY w/depth
43			2.90				
44				CL		From 43.4-44':	CLAY; Dark blue-gray & brown, medium stiff, moist
45		3.5	2.14	CL/SW		From 44-46':	0-0.4' of 3.5' recovery; CLAY to SILTY CLAY; Very dark gray-blue, soft 0.4-1.1' of 3.5' recovery; SAND; Dark brown, saturated, visible water 1.1-2.1' of 3.5' recovery; CLAY; Gray, medium stiff 2.1-3.1' of 3.5' recovery; CLAY; Dark brown, medium stiff 3.1-3.5' of 3.5' recovery; SAND; Very dark brown, wet
			3.51				
46			3.37				

SOUTHLAND ENVIRONMENTAL

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	GEOPROBE DUAL TUBE	Parish:	ACADIA
Borehole No:	SE SB-02	Drilled By:	WALKER HILL	UTM Easting:	548,618.364
Date Drilled:	5/02/23	Logged By:	D. PIRANIO	UTM Northing:	3,333,190.681
Total Depth:	26' BGS				

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum	
0						From 0-0.3':	LOAM; Tan w/grass, dry
1		3.3	1.58	CH		From 0.3-3.3':	SILTY CLAY; Dark brown grading to yellow-brown, damp stiff, plastic; heavy mineral stains from 0.8-2.1'
2			2.26				
3			1.01				
4							
5		4.0	1.04	CL		From 4-8':	SILTY CLAY; Gray & yellow brown w/mineral stains, stiff
6			1.35				
7			1.12				
8		4.0	1.22	CL		From 8-9.2':	Very SILTY CLAY; Orange-tan w/mineral stains
9							
10			0.23	ML		From 9.2-12':	SILT; Light orange, moist (not wet) unconsolidated
11			1.27				
12		4.0	>4.0	ML/SM		From 12-15.3':	SILT to very fine grained SAND; Brown from 12-12.7', orange-brown from 12.7-15.3', wet; visible water from 12.8-13.5'
13							
14			>4.0				
15			>4.0				
16				CL		From 15.3-16':	CLAY; Yellow to orange w/mineral stains, stiff
17		4.0	>4.0	CH		From 16-20':	CLAY to SILTY CLAY; Orange, red & yellow-brown w/some mineral stains, very stiff, plastic
18			>4.0				
19			>4.0				
20		4.0	>4.0	CL		From 20-21.8':	CLAY to SILTY CLAY; Light olive grading to orange, mineral stains
21							
22			>4.0	CL/ML		From 21.8-24':	SILTY CLAY grading to SILT; Orange-brown, moist, unconsolidated
23			2.01				
24		2.3	2.46	ML		From 24-26':	CLAYEY SILT; Pink-brown w/orange, unconsolidated; low CLAY content
25			2.40				
26							
27							

SOUTHLAND ENVIRONMENTAL

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	GEOPROBE DUAL TUBE	Parish:	ACADIA
Borehole No:	SE SB-03	Drilled By:	WALKER HILL	UTM Easting:	548,676.098
Date Drilled:	5/03/23	Logged By:	C. CARY	UTM Northing:	3,333,243.447
Total Depth:	20' BGS				

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum	
0		3.4	0.35	ML		From 0-0.5':	LOAM/SILT; Light brown, dry
1				ML		From 0.5-1.2':	CLAYEY SILT; Brown w/orange mottling, firm, friable, moist
2			0.48	CH		From 1.2-3.4':	SILTY CLAY; Light brown/yellow, firm, plastic, damp
3			1.23				
4							
5		4.0	1.15	CH		From 4-8':	SILTY CLAY; Light Gray/orange-brown, mineral staining throughout, firm, plastic; intermittent dark mineral nodules @ 4.2, 5.3, 6.5, & 6.7'
6			1.60				
7			1.46				
8		4.0	1.43	ML		From 8-10.3':	CLAYEY SILT; Light brown w/orange-brown mottling, very friable, damp
9							
10			0.86	CL/ML		From 10.3-12':	Mix of SILTY CLAY/CLAYEY SILT; Light brown, dark gray, & red-brown
11			1.42				
12		4.0	1.29	ML		From 12-13.1':	SILT; Brown, saturated
13							
14			2.19.			From 15.3-16':	SILTY CLAY/CLAY; Light brown, light gray & red-brown, firm, plastic
15			2.01				
16				CH			
17		4.0	1.94	CL/ML		From 16-20':	SILTY CLAY grading to CLAYEY SILT; Red-brown, mineral concretions @ 16.1-16.5', 16.8, 16.9', 18.6-19.1' damp/moisture @ 17.3-18.1' & 19.1-20'
18			1.20				
19			1.05				
20							

BORING LOG

Project: GASTAL / 12010 | **Drilling Method:** GEOPROBE DUAL TUBE | **Parish:** ACADIA

Borehole No: SE SB-04 | **Drilled By:** WALKER HILL | **UTM Easting:** 548677.754

Date Drilled: 5/03/23 | **Logged By:** C. CARY | **UTM Northing:** 3333187.527

Total Depth: 24' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
0						
-1			0.58	ML/CL		From 0-2.4': CLAYEY SILT grading to SILTY CLAY; Brown, friable, damp; orange mottling, mineral staining & nodules from 0.8-2.4'; CLAY increasing w/depth
-2		3.4	2.11			
-3			1.38	CL		From 2.4-3.4': SILTY CLAY/CLAY; Light gray w/yellow mottling, firm
-4						
-5			1.38			From 4-8': SILTY CLAY/CLAY; Light gray w/yellow mottling; numerous mineral nodules throughout core, predominant from 4.2-5.6'
-6		4.0	1.50	CL		
-7			1.52			
-8			1.86	CL		From 8-9.1': SILTY CLAY/CLAY; Light gray w/yellow mottling; numerous mineral nodules throughout core
-9						
-10		4.0	1.49	ML		From 9.1-10.5': CLAYEY SILT; Light gray/red-brown, damp, friable; SILT increasing w/depth
-11			0.94	ML/SM		From 10.5-12': SILT & very fine grained SAND; Red-brown, danp
-12				ML/SM		From 12-12.4': SILT & very fine grained SAND; Red-brown, wet
-13			1.34	ML		From 12.4-14.6: SILT; Red-brown, saturated; CLAYEY SILT @ 12.8-13'
-14		4.0	1.48			
-15			1.99	ML		From 14.6-15.5': CLAYEY SILT; Brown, damp
-16				CH		From 15.5-16': SILTY CLAY/CLAY; Brown, firm, plastic
-17			2.00			SILTY CLAY/CLAY; Brown & light gray w/red mottling, firm, plastic; 1" concretion @ 19.4'
-18		4.0	1.97	CH		From 16-20':
-19			1.53			
-20			1.89	CH		From 20-21.4': CLAY/SILTY CLAY; Light gray, firm, plastic; red fine grained SAND pocket @ 20.3'
-21						
-22		4.0	1.43	CL/ML		From 21.4-23.7': CLAY grading to CLAYEY SILT; Red-brown, mineral concretions @ 22.8-23.2'
-23			0.90			
-24				ML		From 23.7-24': CLAYEY SILT; Red-brown, friable
-25						

BORING LOG

Project: GASTAL / 12010 | **Drilling Method:** GEOPROBE DUAL TUBE | **Parish:** ACADIA

Borehole No: SE SB-05 | **Drilled By:** WALKER HILL | **UTM Easting:** 548680.287

Date Drilled: 5/03/23 | **Logged By:** C. CARY | **UTM Northing:** 3333160.494

Total Depth: 24' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
0						
-1			1.20	ML		From 0-0.3': SILT; Gray, friable, dry
				ML		From 0.3-1.3': CLAYEY SILT; Dark brown w/orange mottling
-2		3.2	3.43	CH		From 1.3-3.4': SILTY CLAY/CLAY; Red-brown/brown, dark mineral staining & nodules, firm, plastic
-3			2.11			
-4						
-5		4.0	1.60	ML		From 4-8': SILT; Light gray & yellow-orange; dark mineral nodules from 4-5.8'
-6			1.94			
-7			1.83			
-8						
-9		4.0	2.21	ML		From 8-9.2': SILT; Light gray & yellow-orange w/dark mineral nodules
-10			1.18	ML		From 9.2-10': CLAYEY SILT; Light gray & orange, friable, damp
				ML		From 10-10.9': SILT; Red-brown, wet/saturated; grading to CLAYEY SILT
-11			0.56	ML		From 10.9-11.3': CLAYEY SILT; Red-brown & light gray, damp
				ML/SM		From 11.3-12: SILT & very fine grained SAND; Red-brown
-12		4.0		ML/SM		From 12-12.4': SILT & very fine grained SAND; Red-brown
			1.18	ML		From 12.4-12.9': CLAYEY SILT; Red-brown
-13				ML		From 12.9-14.5': SILT grading to CLAYEY SILT; Red-brown, wet/saturated
-14			>4.0			
-15			>4.0	ML		From 14.5-16': CLAYEY SILT; Brown, friable, damp
-16						
-17		4.0	>4.0	CH		From 16-20': CLAY/SILTY CLAY; Red-brown to light gray, very firm, plastic; concretions from 17.1-17.3'
-18			2.56			
-19			2.22			
-20				CL		From 20-20.5': CLAY/SILTY CLAY; Light gray, firm
-21			2.58	ML		From 20.5-22.9': CLAYEY SILT; Red-brown, light gray, friable
-22		4.0	2.13			
-23			0.92	ML/SM		From 22.9-24': SILT/very fine grained SAND; Light brown, dry
-24						
-25						

BORING LOG

Project: GASTAL / 12010 | **Drilling Method:** GEOPROBE DUAL TUBE | **Parish:** ACADIA

Borehole No: SE SB-06 | **Drilled By:** WALKER HILL | **UTM Easting:** 548670.336

Date Drilled: 5/04/23 | **Logged By:** C. CARY | **UTM Northing:** 3333155.444

Total Depth: 27' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
0		3.1	2.78	ML		From 0-0.3': LOAM/SILT; Light brown, friable, dry
-1			>4.0	ML		From 0.3-1.8': CLAYEY SILT; Brown, friable, damp
-2			>4.0	CL		From 1.8-3.1': SILTY CLAY; Light brown w/yellow mottling, drk gray to black staining, firm, friable, damp, weathered petroleum odor
-3						
-4		4.0	>4.0	CH		From 4-8': SILTY CLAY/CLAY; Light brown w/light orange mottling, firm, plastic;black staining from 4-4.8'; petroleum odor from 4-5'; nodules from 5-7'; tacky gray SILT from 6-6.6'; SILT increasing w/depth
-5						
-6			>4.0			
-7			>4.0			
-8		3.5	>4.0	ML		From 8-9.4': CLAYEY SILT; Light brown & light gray w/orange mottling, damp
-9						
-10			>4.0	ML/SM		From 9.4-11.5': SILT & very fine grained SAND; Damp, no free water
-11			2.55			
-12		4.0	>4.0	ML		From 12-13.5': SILT; Brown, dark staining throughout, wet/saturated, weathered petroleum odor
-13						
-14			>4.0	ML		From 13.5-15.1': CLAYEY SILT; Damp to wet, weathered petroleum odor
-15			>4.0	ML		From 15.1-16': SILTY CLAY; Light brown & orange, friable, damp
-16		4.0	>4.0	CL		From 16-19.7': SILTY CLAY/CLAY; Light brown/red-brown, firm, plastic; fractures @ 16.4, 17.5, 19.1 & 19.5'; concretions (~1") from 19.7-19.8'
-17						
-18			>4.0			
-19			>4.0			
-20				ML/SM		From 19.7-20': SILT & fine grained SAND; Brown, damp
-21		4.0	>4.0	ML		From 20-22.1': CLAYEY SILT; Light gray w/orange mottling; fracture w/fine grained SAND @ 20.2'
-22			>4.0			
-23			>4.0	ML		From 22.1-23.2': CLAYEY SILT grading to SILT; Brown, damp throughout
-24				ML		From 23.2-24': SILT; Brown, damp
-25		3.4	2.63	ML		From 24-25.5': SILT; Brown, damp
-26			>4.0	ML		From 25.5-26': CLAYEY SILT; Brown, damp
-27			3.68	CL/ML		From 26-26.8': SILY CLAY grading to CLAYEY SILT; red-brown, firm
-28				ML		From 26.8-27': SILT; Brown, damp REFUSAL @ 27' BGS
-29						

BORING LOG

Project: GASTAL / 12010 | **Drilling Method:** GEOPROBE DUAL TUBE | **Parish:** ACADIA

Borehole No: SE SB-07 | **Drilled By:** WALKER HILL | **UTM Easting:** 548641.712

Date Drilled: 5/04/23 | **Logged By:** C. CARY | **UTM Northing:** 3333155.769

Total Depth: 23' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum	
0			1.06	ML		From 0-1.4':	CLAYEY SILT; Light brown/dark brown; light brown SILT @ top 0.1'; CLAY increasing w/depth
-1							
-2		3.3?	1.48	CL		From 1.4-3.3':	SILTY CLAY/CLAY; Light brown w/ orange mottling, firm; few dark mineral nodules
-3			1.44				
-4							
-5		4.0	1.59	CH		From 4-7.5':	SILTY CLAY/CLAY; Light gray w/orange mottling; numerous dark mineral nodules from 4-6'; few from 6-6.8'; SILT increasing w/depth
-6			1.84				
-7			1.72				
-8				ML		From 7.5-8':	CLAYEY SILT & SILT; SILT-tacky damp
-9		4.0	1.31	CL		From 8-10':	SILTY CLAY w/CLAYEY SILTY pockets; Light brown w/red-brown mottling
-10			1.47	ML		From 10-10.4':	CLAYEY SILT; Light brown, damp
-11			1.00	SM		From 10.4-12':	Very fine grained SAND & SILT; Light brown; damp from 10.4'-12'; saturated @ 11.2'; SILT increasing w/depth
-12			1.20	ML/SM		From 12-16':	CLAYEY SILT/SILT/very fine grained SAND; Red-brown, wet throughout
-13		4.0					
-14			3.94				
-15			>4.0				
-16			>4.0	CH		From 16-20':	SILTY CLAY/CLAY; Firm, plastic; CLAYEY SILT lenses @ 16.7'; concretions @ 17.7--17.9', & 18.5-19.2'
-17							
-18		4.0	2.21				
-19			1.77				
-20			1.57	CH		From 20-23':	SILTY CLAY/CLAY; Light gray/red-brown, stiff, firm, plastic, damp; CLAYEY SILT soft @ 21.8-22' REFUSAL @ 23' BGS
-21		4.0					
-22			1.69				
-23			1.14				
-24							
-25							

BORING LOG

Project: GASTAL / 12010 | **Drilling Method:** GEOPROBE DUAL TUBE | **Parish:** ACADIA

Borehole No: SE SB-08 | **Drilled By:** WALKER HILL | **UTM Easting:** 548639.693

Date Drilled: 5/04/23 | **Logged By:** C. CARY | **UTM Northing:** 3333198.858

Total Depth: 24' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology		Description of Stratum
0		3.3	0.47	ML		From 0-0.5':	CLAYEY SILT/SILT; Dark gray/light brown, damp
-1				ML		From 0.5-2.2':	CLAYEY SILT; Gray w/orange mottling, firm, friable, damp
-2			3.70				
-3			1.57	CH		From 2.2-3.3':	SILTY CLAY/CLAY; Light gray w/orange mottling, firm, plastic
-4				CH			SILTY CLAY/CLAY; Light gray w/orange mottling, firm, plastic; gray SILT pocket @ 4.9'
-5		3.9	1.60			From 4-7.9':	
-6			1.75				
-7			1.43				
-8		4.0	1.53	ML		From 8-10.8':	CLAYEY SILT/SILT; Light brown & orange-brown, damp
-9							
-10			1.85				
-11			1.27	ML		From 10.8-12':	SILT; Red-brown
-12		4.0		ML		From 12-12.6':	SILT; Red-brown
-13			0.93	CL/ML		From 12.6-16':	SILT grading to CLAYEY SILT @ 15.6'; Red-brown, wet throughout
-14			2.89				
-15			3.95				
-16		4.0	2.15	CH		From 16-20':	SILTY CLAY/CLAY; Light brown/brown/brown-orange, firm, plastic; small SILT lens @ 17.8'
-17							
-18			1.98				
-19			1.72				
-20		4.0	1.52	CH		From 20-24':	SILTY CLAY/CLAY; Light gray to red-brown; void @ 21-21.1' w/SILT; wet SILT to CLAYEY SILT @ 22.5-22.6' REFUSAL @ 24' BGS
-21							
-22			1.68				
-23			1.51				
-24							
-25							

SOUTHLAND ENVIRONMENTAL

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	GEOPROBE DUAL TUBE	Parish:	ACADIA
Borehole No:	SE SB-09	Drilled By:	WALKER HILL	UTM Easting:	548,637.571
Date Drilled:	5/04/23	Logged By:	C. CARY	UTM Northing:	3,333,183.764
Total Depth:	26' BGS				

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum	
0			1.13	ML		From 0-1.7':	CLAYEY SILT; Gray w/orange mottling
1			1.96				
2		2.8	1.59	CL		From 1.7-2.8':	SILTY CLAY/CLAY; Light brown w/orange mottling; gray SILT pockets from 1.9-2.1'
3							
4			1.28	CH		From 4-7.8':	SILTY CLAY/CLAY; Firm, plastic, damp; pockets of gray CLAYEY SILT/SILT
5		3.8					
6			1.37				
7			1.32				
8			1.50	ML		From 8-10.5':	CLAYEY SILT/SILT; Light brown, damp
9		3.8					
10			1.20				
11			1.50	ML		From 10.5-11.8':	SILT; Brown, damp
12				ML		From 12-12.5':	SILT; Brown, damp
13			3.27	ML		From 12.5-14.1':	SILT; Brown/red-brown, wet
14		4.0	>4.00				
15			>4.00	ML		From 14.3-15.5':	CLAYEY SILT; Red-brown, damp
16				CH		From 15.5-16':	SILTY CLAY/CLAY; Brown, firm, plastic
17			>4.00	CH		From 16-19.9':	SILTY CLAY/CLAY; Light brown/orange-brown, firm, plastic; SILT lens/fracture @ 16.5'
18		3.9	>4.00				
19			>4.00				
20			>4.00	CH		From 20-22.1':	SILTY CLAY/CLAY; Light gray/brown, firm, plastic
21							
22		4.0	3.64				
23			1.26	ML		From 22.1-23.4':	CLAYEY SILT; Red-brown, damp
24				ML		From 23.4-24':	SILT; Red-brown, damp
25			1.60	ML		From 24-24.8':	SILT; Red-brown, dry
26		2.7	>4.0	ML		From 24.8-25.4':	CLAYEY SILT; gray, damp
27			3.26	ML		From 25.4-26':	SILT; Red-brown/brown, dry, crumbles REFUSAL @ 26' BGS
28							

SOUTHLAND ENVIRONMENTAL

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	GEOPROBE DUAL TUBE	Parish:	ACADIA
Borehole No:	SE SB-10	Drilled By:	WALKER HILL	UTM Easting:	548,562.91
Date Drilled:	6/15/23	Logged By:	D. PIRANIO	UTM Northing:	3,333,209.809
Total Depth:	40' BGS				

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum	
0		3.3	0.97	CL		From 0-3.3':	Very SILTY CLAY to SILTY CLAY; Yellow-brown, orange w/mineral stains, stiff to soft w/depth; increased moisture & CLAY w/depth
1							
2			1.32				
3			1.27				
4							
5		4.0	1.48	CL		From 4-8':	SILTY CLAY; Yellow-brown & orange w/dark brown mineral stains, soft w/brown burrow from 4-5'; stiff > 5'
6			1.65				
7			1.25				
8		4.0	1.65	CL		From 8-9.6':	SILTY CLAY; Yellow brown & orange-brown, stiff; varying SILT content
9							
10			1.44	CL/ML		From 9.6-12':	SILTY CLAY grading to SILT; Yellow-brown, moist; no visible water
11			1.45				
12		3.5	2.20	ML		From 12-12.95':	SILT; Orange w/black staining, wet/saturated
13							
14			>4.0	CL		From 12.95-14.5':	CLAY to SILTY CLAY; Tan & orange-brown, stiff
15			>4.00	CL		From 14.5-15.5':	Very SILTY CLAY; Orange-brown, soft, very moist
16							
17		4.0	3.68	CH		From 16-20':	CLAY; Orange-brown & light olive, stiff, plastic; few SILT pockets
18			2.84				
19			2.36				
20							

SOUTHLAND ENVIRONMENTAL

BORING LOG

Project: GASTAL / 12010
Drilling Method: GEOPROBE DUAL TUBE
Parish: ACADIA
Borehole No: SE SB-10
Drilled By: WALKER HILL
UTM Easting: 548,562.91
Date Drilled: 6/15/23
Logged By: D. PIRANIO
UTM Northing: 3,333,209.809
Total Depth: 40' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum	
21		4.0	3.90	CH		From 20-22.3':	CLAY; Olive & orange-brown, stiff, as above
22			2.52				
23			>4.0	CL		From 22.3-24':	SILTY CLAY; Orange-brown, friable
24		3.7	3.01	CL		From 24-25.8':	Very SILTY CLAY; Orange-brown, moist
25							
26			>4.0	CL		From 25.8-26.5':	SILTY CLAY; Yellow-brown; little SILT
27			0.77 (loose SILT)	ML		From 26.5-27.7':	SILT; Brown, moist, no visible water; some CLAY
28		4.0	0.74	ML		From 28-32':	SILT; Varying CLAY content (from none to little), stiff, hard from 28.8-30', saturated from 30-32'
29							
30			2.50				
31			>4.0				
32		4.0	>4.0	ML/CL		From 32-36':	Alternating layers of SILT & SILTY CLAY; SILT - wet w/visible water to 33.8'; SILT layers <6"; CLAY layers 1-2" thick
33							
34			>4.0				
35			3.0				
36		3.4	0.90	SW		From 36-36.9':	SAND; Dark brown, bedded, moist
37				CL		From 36.9-37.3':	SILTY CLAY; Dark gray-olive, soft, very moist
38			0.67	ML		From 37.3-40':	SILT to SANDY SILT; Dark olive gray, mostly saturated; some layers slighty CLAYEY
39			0.28				
40							

BORING LOG

Project: GASTAL / 12010
Borehole No: SE SB-11
Date Drilled: 6/15/23
Total Depth: 28' BGS

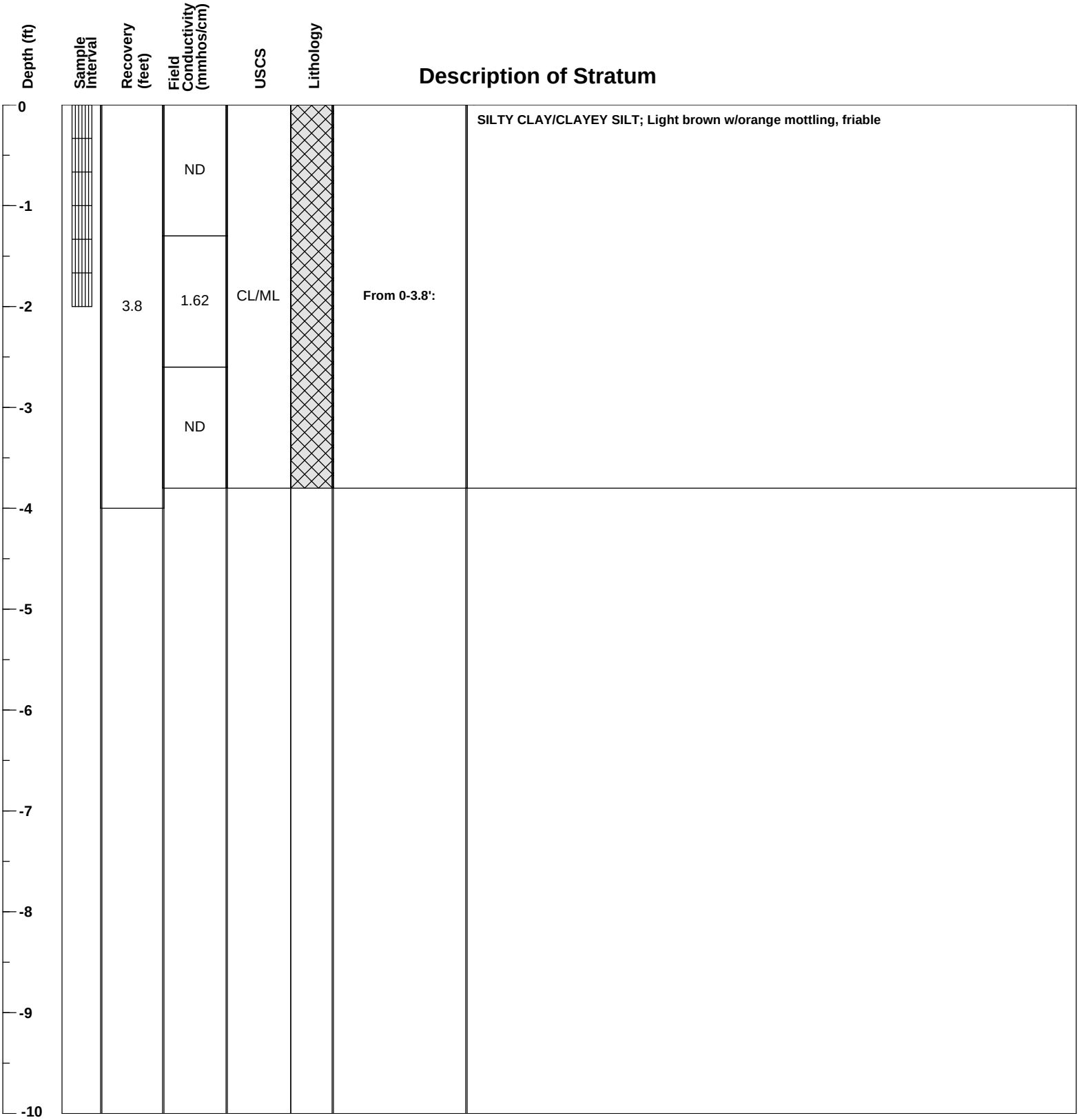
Drilling Method: GEOPROBE DUAL TUBE
Drilled By: WALKER HILL
Logged By: D. PIRANIO

Parish: ACADIA
UTM Easting: 548560.644
UTM Northing: 3333189.723

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
0 to -2		2.5	1.47 1.65 1.52	ML CL		From 0-0.3': SILT LOAM; Light yellow-brown, dry From 0.3-2.5': SILTY CLAY; Olive, yellow-brown & orange w/black mineral staining, medium stiff
-4 to -8		4.0	1.68 1.35 2.13	CL		From 4-8': CLAY to SILTY CLAY; Yellow-brown & orange w/black stains, stiff; increased SILT from 7.4-8'
-8 to -11		4.0	1.45 0.69 1.90	ML CL		From 8-11': CLAYEY SILT grading to SILT; Yellow-brown & orange-brown, visible water from 10.4-10.9' From 11-12': SILT Y CLAY; Light yellow-brown & orange w/mineral stains, soft to stiff
-12 to -16		3.9	1.78 1.25 1.03	CL CL/ML		From 12-12.6': CLAY; Light yellow-brown w/orange & black stains, stiff From 12.6-15.9': SILTY CLAY & SILT beds; Orange-brown, soft to medium stiff, very moist to saturated; increased SILT w/depth
-16 to -20		4.0	1.26 1.31 1.48	CL		From 16-20': CLAY; Orange & yellow-brown w/few black stains, stiff; few lateral SILT seams
-20 to -24		4.0	1.51 1.65 1.47	CH		From 20-24': CLAY; Light olive & yellow-brown w/some orange-brown, mineral stains, stiff, plastic; few SILT pockets & seams
-24 to -27		3.0	0.78 0.64 0.68	ML		From 24-27': Slightly CLAYEY SILT to SILT; Brown w/red stains; very CLAYEY from 25.5-25.9'; moist - not wet

BORING LOG

Project: GASTAL / 12010
Drilling Method: GEOPROBE DUAL TUBE
Parish: ACADIA
Borehole No: SE SB-11
Drilled By: WALKER HILL
UTM Easting: ~3333189
Date Drilled: 9/05/23
Logged By: C. CARY
UTM Northing: ~548560
Total Depth: 4' BGS



BORING LOG

Project: GASTAL / 12010 | **Drilling Method:** GEOPROBE DUAL TUBE | **Parish:** ACADIA

Borehole No: SE SB-12 | **Drilled By:** WALKER HILL | **UTM Easting:** 548619.630

Date Drilled: 6/15/23 | **Logged By:** D. PIRANIO | **UTM Northing:** 3333120.028

Total Depth: 20' BGS

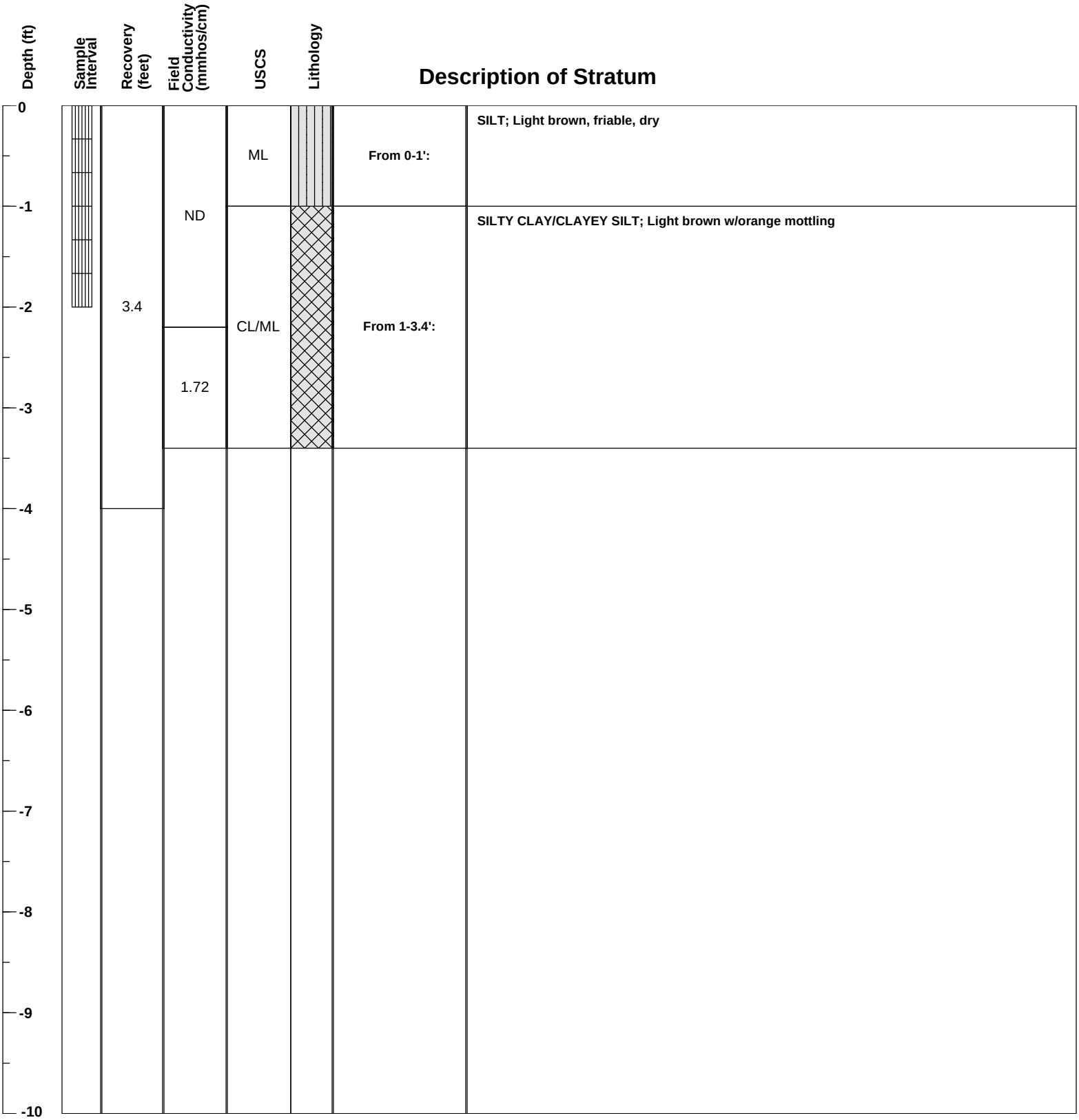
Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum	
0				ML		From 0-0.6':	SILTY LOAM; Brown, friable/dry
-1			0.96	CL		From 0.6-3.5':	SILTY CLAY to CLAY; Yellow-brown & light olive, medium stiff; some red 0.6-1.1'; some mineral nodules (~3mm dia)
-2		3.5	1.83				
-3			1.90				
-4							
-5			1.80	CL		From 4-6.6':	SILTY CLAY; Yellow-brown, light olive w/some orange & black stains, medium stiff; low SILT
-6		4.0	1.80				
-7			0.84	ML		From 6.6-8':	CLAYEY SILT grading to SILT; Light orange yellow-brown, very fine grained SILT, moist not wet/saturated; heavy black stains from 6.2-6.6'
-8			1.13	ML		From 8-9.6':	SILT; Brown, saturated
-9							
-10		3.4	2.50	CL		From 9.6-10.2':	SILTY CLAY; Light brown w/black stains, stiff
-11			0.58	ML		From 10.2-11.4':	SILT; Brown, stiff, moist, not wet
-12							
-13			1.72	ML		From 12-13.3':	SILT to CLAYEY SILT; Brown, soft, very moist to saturated; some black stains
-14		4.0	1.05	CL		From 13.3-16':	CLAY to SILTY CLAY; Brown & orange; black stains @ 14.9'; few SILT seams; soft from 13.9-14.5, stiff otherwise
-15			1.78				
-16			1.49	CL		From 16-17.5':	CLAY; Olive & orange, stiff
-17			0.92	ML		From 17.5-18':	SILT; Light yellow-brown, stiff, low moisture
-18		4.0	1.08	CL		From 18-20':	CLAY TO SILTY CLAY; Olive & yellow-brown grading to dark orange, stiff, iron concreation @ bottom (0.1' diameter)
-19			0.42				
-20							

BORING LOG

Project: GASTAL / 12010
Borehole No: SE SB-12
Date Drilled: 9/05/23
Total Depth: 4' BGS

Drilling Method: GEOPROBE DUAL TUBE
Drilled By: WALKER HILL
Logged By: C. CARY

Parish: ACADIA
UTM Easting: ~3333120
UTM Northing: ~548619



BORING LOG

Project: GASTAL / 12010 | **Drilling Method:** GEOPROBE DUAL TUBE | **Parish:** ACADIA

Borehole No: SE SB-13 | **Drilled By:** WALKER HILL | **UTM Easting:** 548631.952

Date Drilled: 6/15/23 | **Logged By:** D. PIRANIO | **UTM Northing:** 3333234.439

Total Depth: 20' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology		Description of Stratum
0				ML		From 0-0.4':	SILT LOAM/Roots; Light brown, dry
-1			0.23	CL		From 0.4-3.4':	SILTY CLAY; Gray-brown w/mineral stains, medium stiff, moist
-2		3.4	1.65				
-3			1.34				
-4							
-5			1.32	CL		From 4-7.6':	SILTY CLAY; Light olive & yellow-brown; some black mineral stains; burrow w/gray, soft, SILTY CLAY from 4.6-4.9'; stiffens w/depth
-6		3.6	1.35				
-7			1.70				
-8							
-9			1.79	CL		From 8-12':	CLAY; Light olive & yellow-brown, stiff; some black mineral stains; SILTY @ base
-10		4.0	1.63				
-11			1.87				
-12				CL		From 12-12.2':	SILTY CLAY; As above
-13			1.30	ML		From 12.2-15.1':	SILT; Reddish brown, moist, no visible water
-14		3.1	0.44				
-15			0.78				
-16							
-17			1.85	ML		From 16-17.6':	SILT; Brown, saturated, visible water
-18		3.7	1.53	CL		From 17.6-19.7':	SILTY CLAY to CLAY; Orange-brown & light olive, stiff; some mineral stains
-19			1.71				
-20							

BORING LOG

Project: GASTAL / 12010
Borehole No: SE SB-13
Date Drilled: 9/05/23
Total Depth: 4' BGS

Drilling Method: GEOPROBE DUAL TUBE
Drilled By: WALKER HILL
Logged By: C. CARY

Parish: ACADIA
UTM Easting: ~3333234
UTM Northing: ~548631

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
0						
-1						
-2		3.7	NM	ML		From 0-3.7': CLAYEY SILT; Light brown-brown, orange mottling
-3						
-4						
-5						
-6						
-7						
-8						
-9						
-10						

BORING LOG

SOUTHLAND ENVIRONMENTAL

Project: GASTAL / 12010 | **Drilling Method:** GEOPROBE DUAL TUBE | **Parish:** ACADIA

Borehole No: SE SB-14 | **Drilled By:** WALKER HILL | **UTM Easting:** 548610.139

Date Drilled: 6/16/23 | **Logged By:** D. PIRANIO | **UTM Northing:** 3333268.424

Total Depth: 20' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum	
0			0.39	ML		From 0-0.7':	SILT LOAM; Yellow-brown, low moisture
-1				CL		From 0.7-3.8':	SILTY CLAY; Brown w/some orange & dark stains, stiff, moist; black concretions@ bottom
-2		3.8	2.05				
-3			1.42				
-4			1.48	CL		From 4-8':	CLAY; Light olive-gray & orange w/black nodules (<1mm dia); stiffens w/depth
-5							
-6		4.0	1.44				
-7			1.80				
-8			1.80	CL		From 8-9.7':	CLAY; Orange w/black stains, medium stiff, moist
-9							
-10		4.0	1.74	CL		From 9.7-12':	SILTY CLAY; Tan w/black stains, medium stiff/moisture; increasing SILT w/depth
-11			1.78				
-12				CL		From 12-12.3':	CLAY; Tan, as above
-13			1.50	ML		From 12.3-14.2':	SILT; Orange, very moist to wet, no visible water
-14		3.5	0.92				
-15			0.77	CL		From 14.2-15.5':	CLAY to SILTY CLAY; Tan grading to orange; coarsens w/depth (SILT @ base); CLAY plug from 14.2-14.9, very stiff
-16							
-17			0.72	CL/ML		From 16-17.5':	Alternating layers of CLAY & SILT; Orange & light tan w/black stains in CLAY; max layer ~0.2' thick
-18		3.1	0.85				
-19			1.20	CH		From 17.5-19.1':	CLAY to SILTY CLAY; Orange-brown & light olive-tan w/dark orange, stiff & plastic
-20							

BORING LOG

Project: GASTAL / 12010
Drilling Method: GEOPROBE DUAL TUBE
Parish: ACADIA
Borehole No: SE SB-14
Drilled By: WALKER HILL
UTM Easting: ~3333268
Date Drilled: 9/05/23
Logged By: C. CARY
UTM Northing: ~548610
Total Depth: 4' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum	
0				CL		From 0-0.5':	SILTY CLAY; Brown-orange, damp
-1			1.78	ML		From 0.5-1.5':	CLAYEY SILT; Light brown, friable, dry
-2		3.6	1.57	ML/CL		From 1.5-3.6':	CLAYEY SILT grading to SILTY CLAY; Light brown to red-brown w/orange mottling
-3			2.14				
-4							
-5							
-6							
-7							
-8							
-9							
-10							

BORING LOG

Project: GASTAL / 12010 | **Drilling Method:** GEOPROBE DUAL TUBE | **Parish:** ACADIA

Borehole No: SE SB-15 | **Drilled By:** WALKER HILL | **UTM Easting:** 548657.720

Date Drilled: 6/16/23 | **Logged By:** D. PIRANIO | **UTM Northing:** 3333366.751

Total Depth: 20' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
0		3.1	0.26	CL		From 0-3.1': Very SILTY CLAY LOAM; Light brown w/orange & red, friable, fines w/depth; dry to 0.5' then medium moist
-1			0.22			
-2			0.73			
-3						
-4		3.4	1.18	CL		From 4-4.3': SILTY CLAY; Brown, soft, moist
-5			1.67	CH		From 4.3-7.4': CLAY; Light olive brown & orange w/black stains & nodules, medium stiff, plastic & waxy
-6						
-7			1.90			
-8		4.0	1.89	CL		From 8-11.2': CLAY; Orange-brown & light olive-brown w/black stains, stiff
-9						
-10			1.76			
-11			0.95			
-12				CL/ML		From 11.2-12': SILTY CLAY grading to CLAYEY SILT; Orange-brown w/some tan, moist
-13		4.0	0.73	ML		From 12-13': SILT; Orange-brown, viery moist to saturated; visible water from 12.5-12.9'
-14			0.33	CL		From 13-13.4': SILTY CLAY; Light olive-tan, moist
-15				ML		From 13.4-14.4': SILT; Orange-brown, very moist, no visible water
-16			0.93	CL		From 14.4-16': CLAY to SILTY CLAY; Light orange & tan to dark orange-brown; some bedding, varying SILT & stiffness; soft @ base
-17		4.0	1.11	CH		From 16-20': CLAY; Dark orange-brown w/light olive & black stains; white nodules below 17'; fractured (lateral) @ 16.7 & 17'; very stiff & plastic; few zones SILTY CLAY
-18			1.80			
-19			1.45			
-20						

BORING LOG

Project: GASTAL / 12010 | **Drilling Method:** GEOPROBE DUAL TUBE | **Parish:** ACADIA

Borehole No: SE SB-16 | **Drilled By:** WALKER HILL | **UTM Easting:** 548793.583

Date Drilled: 6/16/23 | **Logged By:** D. PIRANIO | **UTM Northing:** 3333278.612

Total Depth: 16' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology		Description of Stratum
0			0.18	ML		From 0-1.3':	SILTY LOAM; Tan-brown, dry & friable
-1			1.09	CL		From 1.3-3':	CLAY; Olive w/orange & some black stains, soft, very moist
-2		3.0	1.62				
-3							
-4			1.48	CL		From 4-7':	CLAY to SILTY CLAY; Light olive-tan & orange w/black stains, stiff; burrow 4-4.3' (softer & gray); SILT seam @ 6.2'
-5			1.61				
-6		3.4	1.30				
-7				CL		From 7-7.4':	Very SILTY CLAY; Orange-brown, medium moisture
-8			1.15	CL		From 8-9.4':	CLAY & SILTY CLAY; Orange-brown & tan w/black stains, stiff; low SILT from 8.5-9.4'
-9			1.56	ML		From 9.4-12':	SILT; Brown, very moist, no visible water; SILTY CLAY from 10.2-11'
-10		4.0					
-11			0.72				
-12			0.85	CL		From 12-14':	CLAY; Orange-brown w/black stains, stiff
-13			1.63				
-14		3.7		CL/ML		From 12-15.7':	CLAY; Orange-brown w/light olive-tan & some bb size white nodules; SILT mixed w/clay, orange-brown, soft & moist; some free water on liner
-15			1.75				
-16							

BORING LOG

Project: GASTAL / 12010
Drilling Method: GEOPROBE DUAL TUBE
Parish: ACADIA
Borehole No: SE SB-16
Drilled By: WALKER HILL
UTM Easting: ~3333275
Date Drilled: 9/06/23
Logged By: C. CARY
UTM Northing: ~548790
Total Depth: 4' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
0			ND	ML		From 0-1.9': CLAYEY SILT/SILT; Light brown, friable, dry
-1						
-2		4.0	1.77	CL		From 1.9-4': SILTY CLAY to CLAY; Friable, dry
-3			1.69			
-4						
-5						
-6						
-7						
-8						
-9						
-10						

BORING LOG

Project: GASTAL / 12010
Borehole No: SE SB-17
Date Drilled: 9/06/23
Total Depth: 4' BGS

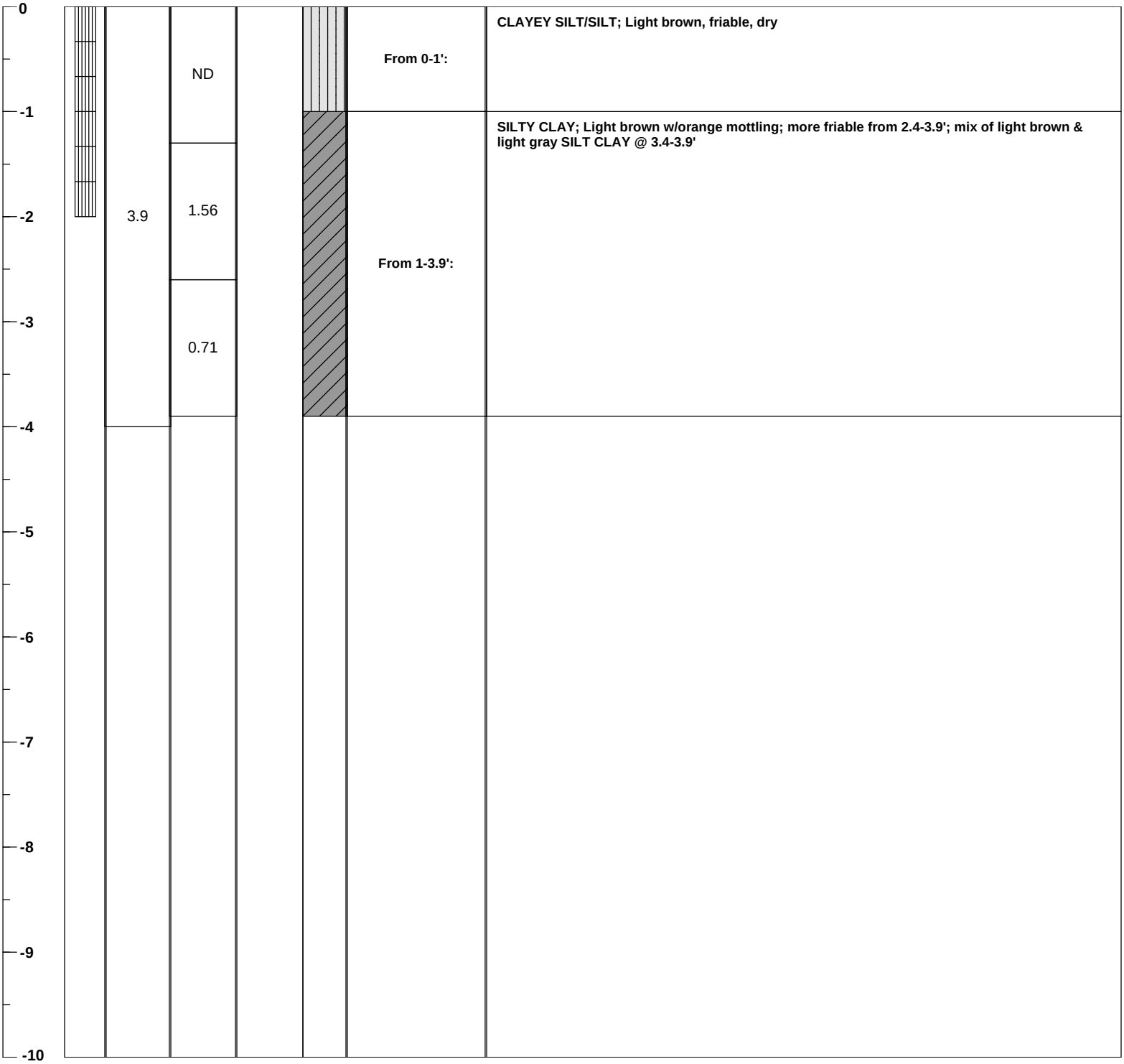
Drilling Method: GEOPROBE DUAL TUBE
Drilled By: WALKER HILL
Logged By: C. CARY

Parish: ACADIA
UTM Easting: 3333161.570
UTM Northing: 548822.131

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum	
0			ND	ML		From 0-0.8':	CLAYEY SILT/SILT; Light brown, friable, dry
-1			2.07	ML/CL		From 0.8-3.7':	CLAYEY SILT to SILTY CLAY; Light brown, orange mottling; Ca concretions (~0.25") from 1.2-2'
-2		3.7					
-3			1.38				
-4							
-5							
-6							
-7							
-8							
-9							
-10							

BORING LOG

Project: GASTAL / 12010
Drilling Method: GEOPROBE DUAL TUBE
Parish: ACADIA
Borehole No: SE SB-18
Drilled By: WALKER HILL
UTM Easting: 3333125.009
Date Drilled: 9/06/23
Logged By: C. CARY
UTM Northing: 548823.281
Total Depth: 4' BGS



BORING LOG

Project: GASTAL / 12010 | **Drilling Method:** GEOPROBE DUAL TUBE | **Parish:** ACADIA

Borehole No: SE SB-19 | **Drilled By:** WALKER HILL | **UTM Easting:** 3333145.076

Date Drilled: 9/06/23 | **Logged By:** C. CARY | **UTM Northing:** 548734.570

Total Depth: 20' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum	
0			ND	ML		From 0-1.5':	CLAYEY SILT; Light brown, friable, dry
-1							
-2		3.9	1.11	ML/CL		From 1.5-3.9':	CLAYEY SILT/SILTY CLAY; Light brown w/orange mottling, firm, friable, dry
-3			0.97				
-4			0.97	CL		From 4-7.7':	SILTY CLAY to CLAY; Light brown-light gray w/orange mottlin; firm; Mn staining from 5.2-7.2'
-5							
-6		3.7	1.75				
-7			2.01				
-8			1.62	CL		From 8-10':	SILTY CLAY; Light brown, orange mottling, firm, damp
-9							
-10		3.8	0.78	ML		From 10-11.8':	CLAYEY SILT; Light brown & red-brown; SILT & moisture increase w/depth
-11			0.50				
-12			1.04	ML		From 12-12.5':	CLAYEY SILT; Light brown & red-brown; SILT & moisture increase w/depth
-13				CL		From 12.5-16':	SILTY CLAY/CLAY; Red-brown to light brown, firm; CLAYEY SILT lens @ 14.1-14.3'; light brown Mn staining @ 15.6-15.8'
-14		4.0	1.62				
-15			2.45				
-16			2.36	CH		From 16-19.7':	CLAY; Light brown & red-brown, firm, plastic, slicken side, damp
-17							
-18		4.0	2.24				
-19			1.89				
-20				ML		From 19.7-20':	CLAYEY SANDY SILT; Fine grained, damp

BORING LOG

Project: GASTAL / 12010 | **Drilling Method:** GEOPROBE DUAL TUBE | **Parish:** ACADIA

Borehole No: SE SB-20 | **Drilled By:** WALKER HILL | **UTM Easting:** 3333210.723

Date Drilled: 9/06/23 | **Logged By:** C. CARY | **UTM Northing:** 548722.752

Total Depth: 20' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum	
0							
-1		3.5	2.08	CL/ML		From 0-1.7':	Mix of CLAY/SILTY CLAY/CLAYEY SILT/SILT; Brown-light brown, friable, dry
-2			1.77	CL		From 1.7-3.5':	SILTY CLAY; Light brown-yellow w/orange mottling, friable, dry
-3			1.07				
-4							
-5		3.5	1.58	CL		From 4-7.5':	SILTY CLAY; Yellow & light brown w/orange mottling; mor SILT from 4-4.4'; SILT decreasing w/depth; Mn staining @ 4.5-7'
-6			1.91				
-7			1.73				
-8							
-9		4.0	1.00	ML		From 8-8.7':	CLAYEY SILT; Red-brown, damp
-10				ML		From 8.7-9.8':	SILT; Light brown, very moist, free water
-11			1.01	CL/ML		From 9.8-12':	SILTY CLAY/CLAYEY SILT; Light brown, orange mottling, friable, damp
-12			1.75				
-13		3.8	1.31	CL/ML		From 12-12.6':	SILTY CLAY & damp CLAYEY SILT; Light brown
-14			2.14	CL		From 12.6-15.8':	CLAY; Light brown & red-brown, slicken side, firm
-15			1.98				
-16							
-17		3.3	2.04	CL		From 16-18.2':	CLAY; Light brown & orange, slicken side; Ca concretions @ 16.5-17'
-18			1.18				
-19			0.96	ML		From 18.2-19.3':	CLAYEY SILT; red-brown, soft, damp
-20							

BORING LOG

Project: GASTAL / 12010 | **Drilling Method:** GEOPROBE DUAL TUBE | **Parish:** ACADIA

Borehole No: SE SB-21 | **Drilled By:** WALKER HILL | **UTM Easting:** 3333243.885

Date Drilled: 9/06/23 | **Logged By:** C. CARY | **UTM Northing:** 548491.047

Total Depth: 22' BGS

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
0		3.5	0.99	ML/CL		From 0-2.3': CLAYEY SILT/SILTY CLAY; Red-brown, gray; friable, soft, damp
-1						
-2			0.63			
-3			1.39	CH		From 2.3-3.5': SILTY CLAY; Light brown-yellow, firm, plastic, damp
-4						
-5		4.0	1.46	CH		From 4-4.7': SILTY CLAY/CLAY; Light gray, orange-brown, firm, plastic, damp
-6			1.55	ML		From 4.7-6.2': SILT & CLAYEY SILT; Gray, tacky
-7			1.84	CL		From 6.2-8': SILTY CLAY; Light brown w/orange mottling, firm; SILT increasing w/depth
-8		4.0	1.90	ML		From 8-8.8': CLAYEY SILT; Light brown w/Mn staining, damp; CLAY increasing w/depth
-9				SW/ML		From 8.8-12': SAND & SILT; red-brown, fine grained, saturated; light brown CLAY lens @ 10.9-11.3'
-10			0.65			
-11			1.09			
-12		4.0	3.67	CL		From 12-13.6': CLAY; Light brown, red-brown, firm, damp
-13						
-14			1.25	ML		From 13.6-16': CLAYEY SILT; Soft, damp; SILTY CLAY lens @ 14.6-15'
-15			1.86			
-16		3.5	0.68	ML		From 16-17.4': CLAYEY SILT; Red-brown, damp to wet
-17						
-18			2.69	CL		From 17.4-19.5': CLAY/SILTY CLAY; Red-brown & light brown, firm, damp
-19			2.40			
-20		1.9	2.53	CL		From 20-21.7': CLAY/SILTY CLAY; Red-brown & light brown, firm, damp
-21			1.35			
-22				ML		From 21.7-21.9': CLAYEY SILT; Light gray, damp

BORING LOG/WELL DIAGRAM

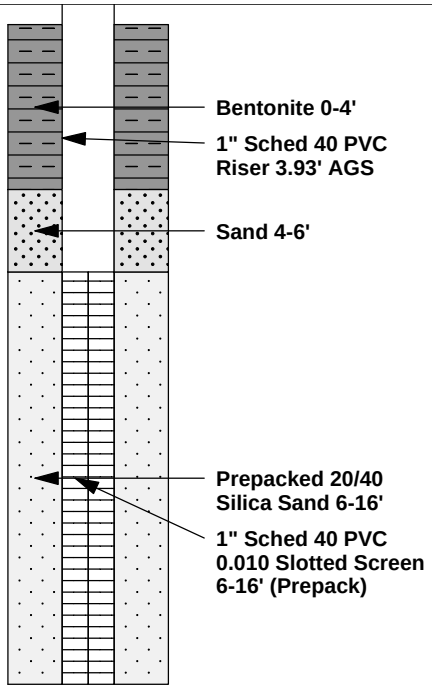
Project: GASTAL / 12010
Borehole No: MW-01
Date Drilled: 9/05/23
Total Depth: 32' BGS

Drilling Method: GEOPROBE DUAL TUBE
Drilled By: WALKER HILL
Logged By: C. CARY

Parish: ACADIA
UTM Easting: 548658.992
UTM Northing: 3333166.498

Well Construction Details
Monitor Well MW-01
Date Installed: 9/05/23
Borehole Diameter: 3.25"

Depth (ft)	Sample Interval	Visible Water	USCS	Lithology	Description of Stratum
0			CL		From 0-4': SILTY CLAY/CLAY; Dry
-4			CL		From 4-8': SILTY CLAY to CLAY; Moist
-8			CL/ML		From 8-12': SILTY CLAY to CLAYEY SILT; Moist to very moist
-12		▽	ML		From 12-16': CLAYEY SILT to SILT; Very moist to saturated; visible water @ 13.2-15.3'
-16			CL		From 16-20': CLAY to SILTY CLAY; Stiff
-20			CL		From 20-21.8': CLAY to SILTY CLAY; Stiff, moist
			ML/CL		From 21.8-24': CLAYEY SILT to SILTY CLAY; Very moist to moist
-24			ML		From 24-28': CLAYEY SILT; Moist; no visible water
-28			CL		From 28-28.7': Very SILTY CLAY; Moist
			ML		From 28.7-31.2': SILT; Moist, not wet
-32			CL		From 31.2-32': Very SILTY CLAY; Very moist; no visible water



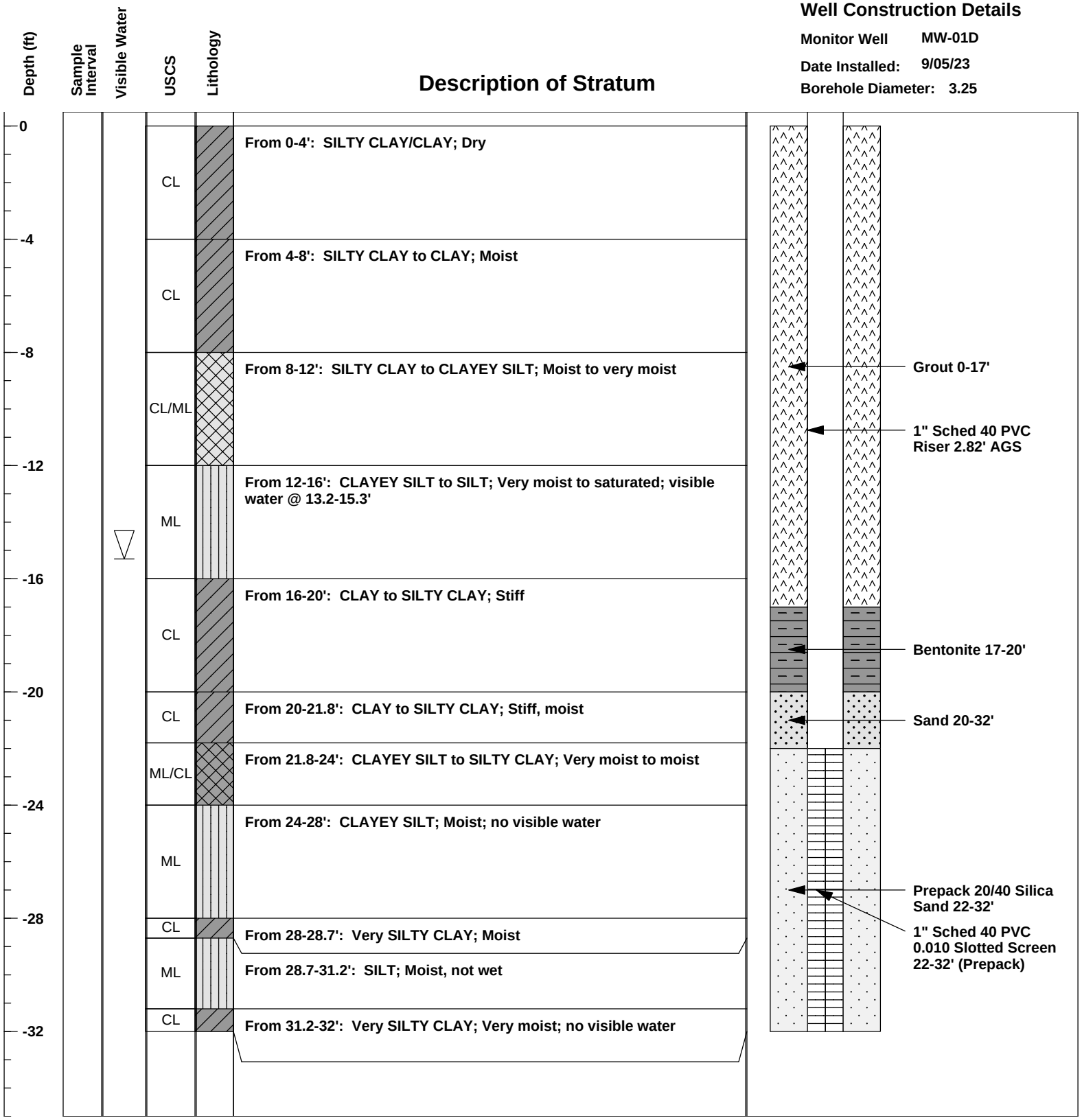
BORING LOG/WELL DIAGRAM

Project: GASTAL / 12010
Borehole No: MW-01
Date Drilled: 9/05/23
Total Depth: 32' BGS

Drilling Method: GEOPROBE DUAL TUBE
Drilled By: WALKER HILL
Logged By: C. CARY

Parish: ACADIA
UTM Easting: 548658.267
UTM Northing: 3333168.201

Well Construction Details
Monitor Well MW-01D
Date Installed: 9/05/23
Borehole Diameter: 3.25



SOUTHLAND ENVIRONMENTAL

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	MARSHMASTER/GEOPROBE	Parish:	ACADIA
Borehole No:	B-1		& 2.25" DUAL TUBE	S/T/R	32 / 10S / 01W
Date Drilled:	2/25/25 & 3/03/25 & 3/12-13/25	Drilled By:	HET	UTM Easting:	548,673.08
Total Depth:	64' BGS	Logged By:	C HEBERT / D PIRANIO / JKING	UTM Northing:	3,333,157.78

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
0		1.8	4.41	CL		From 0-0.9': SILTY CLAY; Dark brown
1			9.55	ML		From 0.9-1.8': CLAYEY SILT; Light brown HET COLLECTED SAMPLE @ 0-1' & 1-2'
2						
3						
4		2.1	8.69	ML/CL		From 4-5': SILT to CLAY; Tan w/mineral staining
5			8.75	CL		From 5-6.1': CLAY; Tan w/mineral staining
6						
7						
8		3.7	7.99	ML		From 8-9': CLAYEY SILT
9				SC		From 9-10': CLAYEY SAND; SAND increasing w/depth
10			4.93	ML		From 10-11.7': SILT w/fine grained SAND
11						
12		4.0	9.01	ML		From 12-14': SILT w/fine grained SAND; Gray-tan, wet
13						
14			11.4	ML		From 14.25-15.75': CLAYEY SILT; Moist to saturated
15						
16				ML		
17		4.0	9.0	CL		From 15.75-16' SILTY CLAY; Orange-tan HET COLLECTED SAMPLE @ 2' INTERVAL
18				CL		From 16-17.25': CLAY; Tan-brown, stiff; some SILT intervals; nodule @ 17.25' (0.5" diameter) From 17.25-20': SILTY CLAY; Tan-brown to gray @ 20' SILTY CLAY; Tan-brown to gray @ 20'
19			9.78			
20		4.0	10.05	CL		From 20-21.75': CLAY; Gray; some mineral staining, stiff; SILT lens @ 21.75'
21						
22				CL		From 21.75-22.25': CLAY; Tan
23			5.08	ML/CL		From 22.25-24': SILT/SILTY CLAY; Tan; SILT increasing w/depth
24		3.0	10.07	ML		From 24-25': SILT; Gray-brown
25				CL		From 25-26.75': SILTY CLAY; Tan HET COLLECTED SAMPLE @ 24-26'
26			8.78			
27				CL		From 26.75-27': SILTY CLAY; Brown; w/fine grained SAND @ 27'
28						

SOUTHLAND ENVIRONMENTAL

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	MARSHMASTER/GEOPROBE	Parish:	ACADIA
Borehole No:	B-1		& 2.25" DUAL TUBE	S/T/R	32 / 10S / 01W
Date Drilled:	2/25/25 & 3/03/25 & 3/12-13/25	Drilled By:	HET	UTM Easting:	548,673.08
Total Depth:	64' BGS	Logged By:	C HEBERT / D PIRANIO / JKING	UTM Northing:	3,333,157.78

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
29		4.0	1.31	ML		From 28-30.75': SILT; Tan; SILTY CLAY; Dark brown, damp @ 30.75'
30						
31			7.47	CL		From 30.75-31': CLAY; Brown
				ML		From 31-31.5': SILT; Tan, fine grained, tan; small, gray CLAY lens @ 31.5'
32				ML/CL		From 31.5-32': SILT; Light tan
33		4.0	0.41	ML		From 32-32.25': SILT w/CLAY lens
34						From 32.25-36': SILT; Tan to dark tan, dry
35			1.05			
36		2.5	4.97	ML		From 36-36.5': SILT; Tan
37				CL		From 36.5-37': CLAY; Brown-tan, firm
38			0.92	ML		From 37-38.5': SILT; Light tan to dark brown HET COLLECTED SAMPLE @ 38-40'
39						
40		3.9	0.65	ML/SW		3/03/25 - SWITCH TO GEOPROBE DUAL TUBE From 40-41.25': SILT/SAND; Brown, fine grained, wet
41				CL		From 41.25-42': SILTY CLAY to CLAY; Brown to gray; wood from 41.6-41.9' HET COLLECTED SAMPLE @ 40-42'
42			0.46	ML/SW		From 42-43.3': SILT/SAND; Brown, fine grained; CLAY clast @ 46.9'; gray CLAY @ 43.2-43.3'
43				SW		From 43.3-43.6': SAND; Brown, fine grained, wet
44				CL		From 43.6-43.9': CLAY to SANDY CLAY; Brown to gray, soft
45		4.0	0.20	SW/ML		From 44-48': SAND/SILT; Brown, fine grained, wet; some gray intervals HET COLLECTED SAMPLE @ 46-48'
46						
47			0.19			
48		2.3	0.48	ML/SW		From 48-49.6': SILT/SAND; Brown, fine grained, wet
49						
50						From 49.6-50.5': VOID
51			1.32	SW/ML		From 50.5-51.2': SAND/SILT; Brown, wet HET COLLECTED SAMPLE @ 48-50' & 50-52'
52						From 51.2-52': VOID
53		1.1	1.68	SM		3/12/25 From 52-53.1': SILTY SAND; Brown, wet HET COLLECTED SAMPLE @ 52-54'
54						
55						
56						
			3.01			

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	MARSHMASTER/GEOPROBE	Parish:	ACADIA
Borehole No:	B-1		& 2.25" DUAL TUBE	S/T/R	32 / 10S / 01W
Date Drilled:	2/25/25 & 3/03/25 & 3/12-13/25	Drilled By:	HET	UTM Easting:	548,673.08
Total Depth:	64' BGS	Logged By:	C HEBERT / D PIRANIO / JKING	UTM Northing:	3,333,157.78

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
57		3.5	3.01	SW		3/13/25 SWITCH TO MACROCORE TOOLING From 56-59': SILTY SAND; Brown, fine grained, saturated, visible water throughout; CLAY clast from 58.1-58.4', olive brown, irregular, soft
58			2.79			
59			5.78	CL		From 59-59.5': CLAY; Gray/olive-gray; medium soft, irregular contact; SAND around CLAY on liner
60		3.5		CL		From 60-60.25': CLAY; Dark gray to red-gray
61			0.60	SM		From 60.25-61.4': SILTY SAND; Brown, saturated w/visible water
62			1.89	CL		From 61.4-62.4': CLAY; Gray, soft, moist; ratty break w/brown SAND from 61.6-61.8'
63			0.24	SW		From 62.4-63.5': SAND; Brown, fine grained, saturated; less visible water; some visible bedding HET COLLECTED SAMPLE @ 58-60' & 62-64'
64						
65						
66						
67						
68						
69						
70						
71						
72						

SOUTHLAND ENVIRONMENTAL

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	MARSHMASTER/GEOPROBE	Parish:	ACADIA
Borehole No:	B-4	Drilled By:	HET	S/T/R	32 / 10S / 01W
Date Drilled:	2/27/25	Logged By:	C HEBERT	UTM Easting:	548,619.95
Total Depth:	38.5' BGS			UTM Northing:	3,333,125.51

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
0–2		2.4	1.91 2.00	CL		From 0-2.4': CLAY; Gray/tan/brown; soft to stiff @ 1.5-2.4'
2–4						
4–6		3.3	2.12 2.83	CL		From 4-7.3': CLAY; Gray w/orange mottling w/black nodules, stiff HET COLLECTED SAMPLE @ 6-8'
6–8						
8–9		3.6	1.69	CL		From 8-9.1': SILTY CLAY/CLAY; Gray w/orange mottling& nodules
9–11			1.26	ML		From 9.1-11.1': SILT; Tan
11–12				CL		From 11.1-11.6': CLAY; Brown w/orange mottling & dark streaks
12–13		2.9	1.07	ML		From 12-12.5': SILT; Tan-brown, damp
				ML		From 12.5-13.2': SILT; Brown, saturated
				CL		From 13.2-13.3': CLAY; Brown, soft
13–14				ML		From 13.3-14': SILT; Tan-orange, wet
14–15			1.87	CL		From 14-14.9': CLAY; Gray-brown, stiff HET COLLECTED SAMPLE @ 14-16'
15–16						
16–18		4.0	1.93	CL		From 16-20': CLAY; Tan & orange mottled to light gray, very stiff HET COLLECTED SAMPLE @ 16-18'
18–20			1.69			

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	MARSHMASTER/GEOPROBE	Parish:	ACADIA
Borehole No:	B-4	Drilled By:	HET	S/T/R	32 / 10S / 01W
Date Drilled:	2/27/25	Logged By:	C HEBERT	UTM Easting:	548,619.95
Total Depth:	38.5' BGS			UTM Northing:	3,333,125.51

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
21		3.2	1.60	ML		From 20-20.8': SILT; Tan,
				CL		From 20.8-21.6': CLAY; Tan/orange w/black streaking, stiff
22				CL		From 21.6-22.1': SILTY CLAY; Tan/orange
23			0.88	ML		From 22.1-23.2': SILT; Tan to dark brown
24						
25		3.85	0.25	ML		From 24-27.85': SILT; Light brown/tan to dark brown @ 27.85
26						
27			0.23			
28						
29		3.5	1.61	ML		From 28-29': SILT; Dark brown, wet; CLAY lens @ 8.75' TO 29'
				ML		From 29.29.75': SILT; Dark brown, wet
30			1.73	CL		From 29.75-30.65': CLAY; Dark gray, stiff
31				ML		From 30.65-31.5': SILT; Tan HET COLLECTED SAMPLE @ 30-32'
32						
33		3.05	1.72	ML		From 32-32.35': SILT; Brown
				CL		From 32.35-33.9': CLAY; Dark gray, firm
34			0.02	ML		From 33.9-35.05': SILT; Tan w/ 0.5" CLAY lense; dark gray @ 34.2' HET COLLECTED SAMPLE @ 34-36'
35						
36		1.4	0.10	ML		From 36-36.8': SILT; Brown, damp HET COLLECTED SAMPLE @ 36-38.5'
37				ML		36.8-37.4': SILT; Tan
38						
39						
40						

SOUTHLAND ENVIRONMENTAL

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	MARSHMASTER/GEOPROBE	Parish:	ACADIA
Borehole No:	B-5	Drilled By:	HET	S/T/R	32 / 10S / 01W
Date Drilled:	2/27/25 & 3/03/25 & 3/11/25	Logged By:	C HEBERT / D PRIANIO / C CARY	UTM Easting:	548,635.92
Total Depth:	60' BGS			UTM Northing:	3,333,174.01

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
0		1.5	2.68	CL		From 0-1.5': CLAY; Tan/gray, stiff, damp
1			3.15			
2						
3						
4		3.1	3.11	CL		From 4-7.1': CLAY; Gray/tan w/orange mottling, stiff; some dark nodules
5						
6			3.36			
7						
8		2.35	3.91	CL		From 8-9': CLAY; Gray/orange, stiff
9				CL		From 9-9.5': CLAY; Dark gray, soft
10			4.10	CL		From 9.5-10.35': SILTY CLAY; Light gray to orange; SILT increasing w/depth
11						
12		3.5	5.23	ML		From 12-13.1': SILT; Gray-brown, wet; saturated @ 12.3'-13.1'
13				ML		From 13.1-14.8': CLAYEY SILT; Damp; wet 14.6'-14.8'
14			8.81			HET COLLECTED SAMPLE @ 12-14'
15				CL		From 14.8-15.5': CLAY; Orange to tan, stiff
16						HET COLLECTED SAMPLE @ 14-16'
17		4.0	10.67	CL		From 16-20': CLAY; Brown/tan w/orange mottling to gray @ 19'-20', stiff
18						HET COLLECTED SAMPLE @ 18-20'
19			10.76			
20		3.5	8.24	CL		From 20-22.5': CLAY; Gray to brown, stiff
21						
22			8.63			
23				CL		From 22.5-23.3': SILTY CLAY; Brown to light gray
24				CL		From 23.3-23.5': CLAY
25		3.7	8.79	CL		From 24-25.1': CLAY to SILTY CLAY; Brown-orange
26				ML		From 25.1-27.7': SILT; Tan/brown to dark gray
27			8.73			
28		2.9	10.01	ML		From 28-28.5': SILT; Light gray
29				CL		From 28.5-29.1': CLAY; Gray/brown, soft, damp
30			7.50	ML		From 29.1-30.9': SILT; Tan/brown
31						HET COLLECTED SAMPLE @ 28-30'
32						

SOUTHLAND ENVIRONMENTAL

BORING LOG

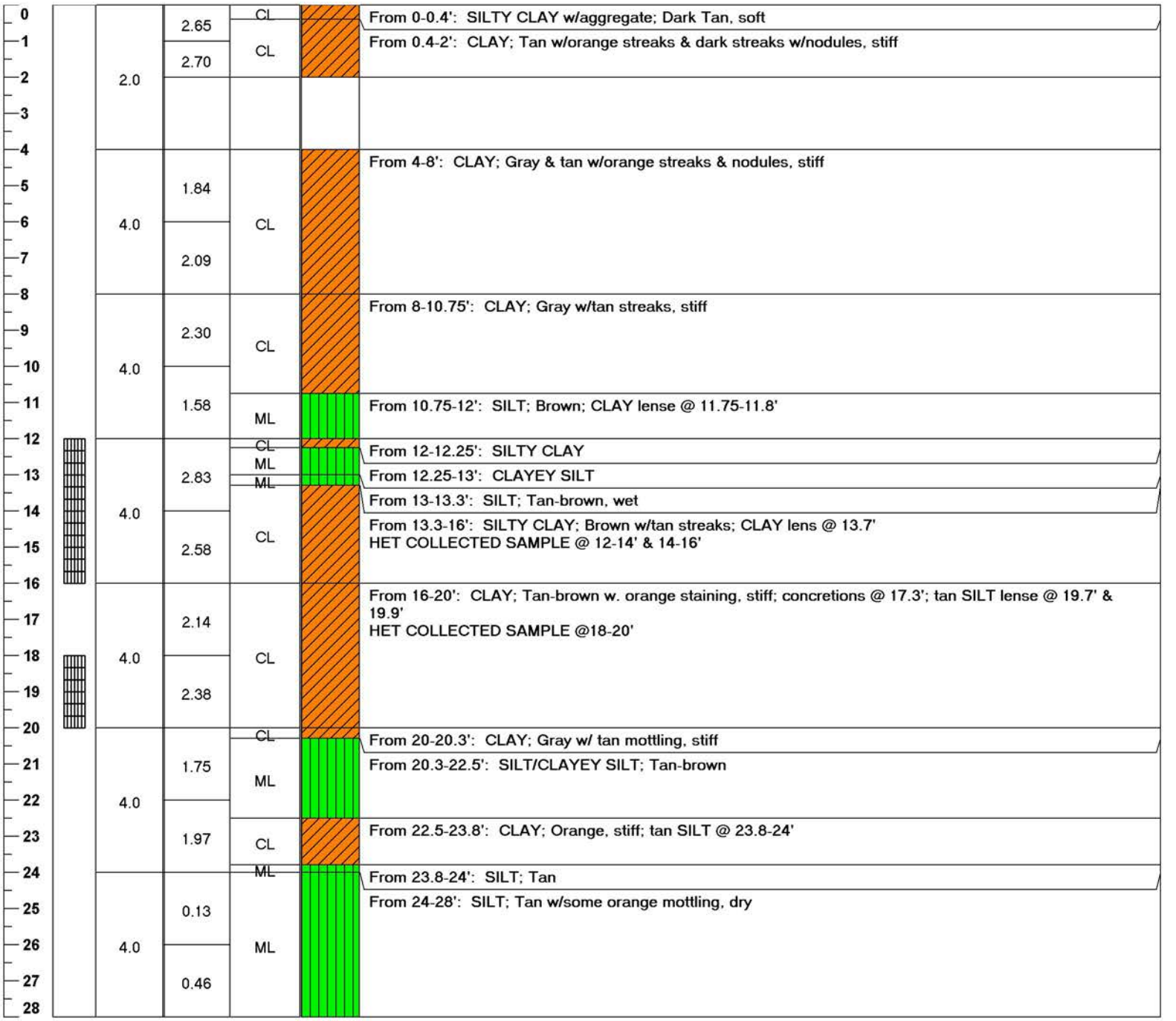
Project:	GASTAL / 12010	Drilling Method:	MARSHMASTER/GEOPROBE	Parish:	ACADIA
Borehole No:	B-5	Drilled By:	HET	S/T/R	32 / 10S / 01W
Date Drilled:	2/27/25 & 3/03/25 & 3/11/25	Logged By:	C HEBERT / D PRIANIO / C CARY	UTM Easting:	548,635.92
Total Depth:	60' BGS			UTM Northing:	3,333,174.01

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
33		4.0	9.53	ML		From 32-33.2': SILT; Tan/brown
34				ML		From 33.2-33.6': CLAYEY SILT
35			9.94	ML		From 33.6-35.1': SILT; Dark gray, saturated
36				ML		From 35.1-36': SILT; Dark gray, damp HET COLLECTED SAMPLE @ 34-36'
37		4.0	9.12	ML		From 36-40': SILT; Dark gray, saturated
38						
39			9.30			
40		4.0	3.61	ML		From 40-41.7': SILT; Dak gray, saturated
41						
42				CL		From 41.7-42.4': CLAY; Brown/gray
43			4.11	CL		From 42.4-44': CLAY; Dark gray, firm; orange from 43.6-43.8'
44		2.8	3.72	CL		From 44-44.9': CLAY; Dark gray, firm
45				ML		From 44.9-45.5': SILT; Brown, saturated
46			3.42	ML		From 45.5-46.25': SILT, Brown, damp
47				ML		From 46.25-46.8': SILT; Brown, saturated
48						
49		3.75	7.65	CL		From 0-1.4' of 3.75' recovery': CLAY; Brown to dark gray, firm
50			1.65	ML		From 1.4-2' of 3.75' recovery': SILT; Brown, wet
51			6.71	CL		HET COLLECTED SAMPLE @ 48-50'
52				ML		From 2-2.7' of 3.75' recovery: CLAY; Gray, firm
53		4.0	2.27	SW		From 2.7-3.75 of 3.75'': SILT; Brown, damp HET COLLECTED SAMPLE @ 50-51.5'
54						03/03/25 - SWITCH TO GEOPROBE DUAL TUBE From 52-56': SAND; Brown, fine grained, wet; visible water throughout COLLECT SPLIT SAMPLE W/HET @ 52-54' & 54-56'
55			0.91			
56		2.7		ML		3/11/25
57			1.53	CL/ML		From 56-58': 0-0.75' of 2.7' recovery: CLAYEY SILT; Gray, soft; mixed w/brown SILTY SAND 0.75-2.7' of 2.7' recovery: SILTY CLAY/CLAYEY SILT; Gray, soft; SAND mix @ 1.75-1.9'
58				CL		0.75-2.7' of 2.7' recovery: SILTY CLAY/CLAYEY SILT; Gray, soft; SAND mix @ 1.75-1.9'
59		2.4	1.60	SW		From 58-60': 0-0.9' of 2.4' recovery: SILTY CLAY; Gray, stiffens; saturated SILT lens @ 1.3-1.4; gray SILT lenses @ 0.5 & 1.1'
60						0.9-2.4' of 2.4' recovery: SAND; Brown, fine grained, dry HET COLLECTED SAMPLE @ 56-58' & 58-60'
61						
62						
63						
64						

SOUTHLAND ENVIRONMENTAL

BORING LOG

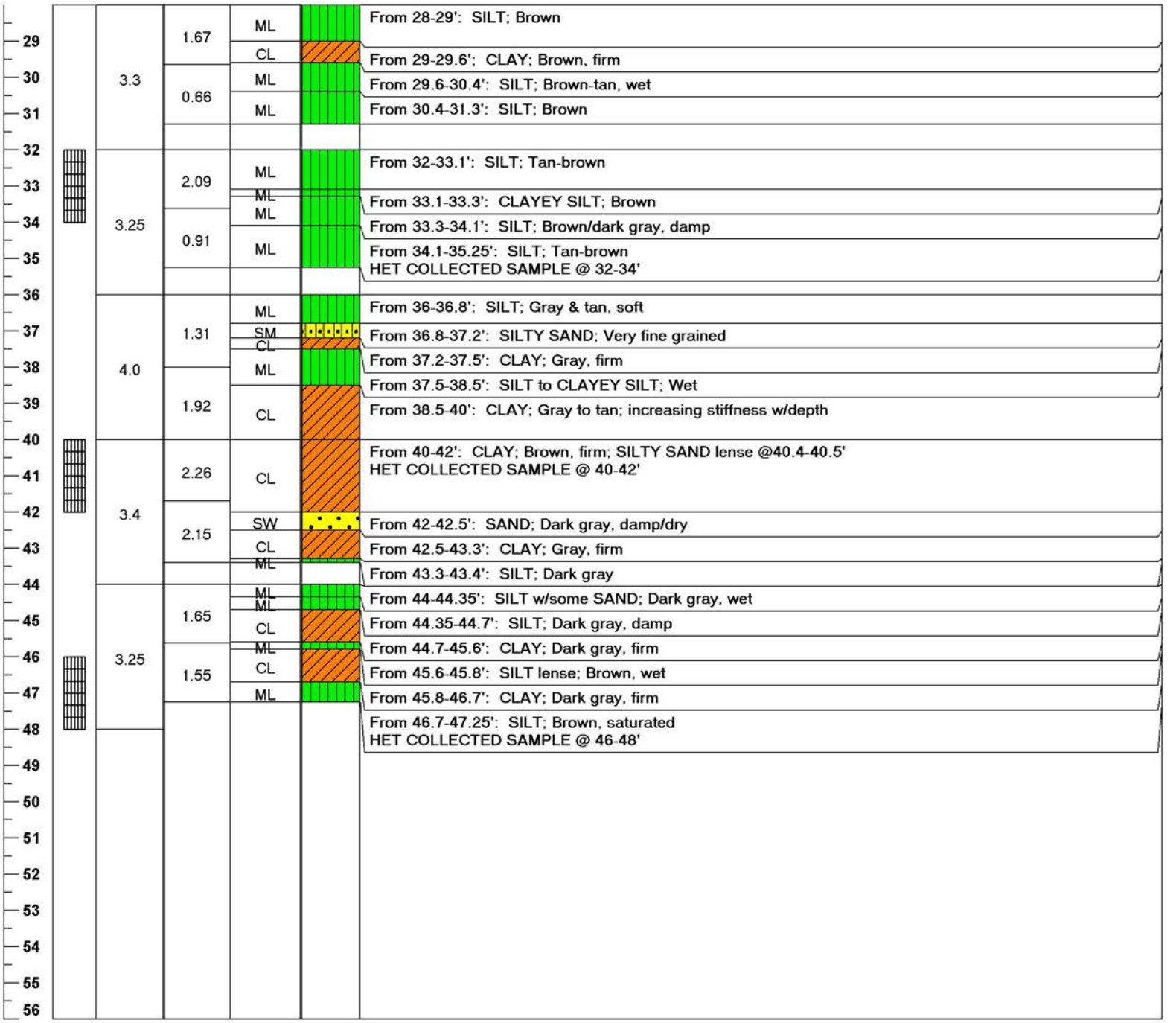
Project:	GASTAL / 12010	Drilling Method:	MARSHMASTER/GEOPROBE	Parish:	ACADIA
Borehole No:	B-6	Drilled By:	HET	S/T/R	32 / 10S / 01W
Date Drilled:	2/26/25	Logged By:	C HEBERT	UTM Easting:	548,704.51
Total Depth:	48' BGS			UTM Northing:	3,333,171.77



SOUTHLAND ENVIRONMENTAL

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	MARSHMASTER/GEOPROBE	Parish:	ACADIA
Borehole No:	B-6	Drilled By:	HET	S/T/R	32 / 10S / 01W
Date Drilled:	2/26/25	Logged By:	C HEBERT	UTM Easting:	548,704.51
Total Depth:	48' BGS			UTM Northing:	3,333,171.77



SOUTHLAND ENVIRONMENTAL

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	MARSHMASTER/GEOPROBE	Parish:	ACADIA
Borehole No:	B-7	Drilled By:	HET	S/T/R	32 / 10S / 01W
Date Drilled:	2/26/25	Logged By:	C HEBERT	UTM Easting:	548,700.0
Total Depth:	46' BGS			UTM Northing:	3,333,137.6

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
0		2.15	0.67	CL		From 0-2.15': CLAY; Brown to gray w/orange streaks, firm to stiff w/depth; nodule @ 1.7' HET COLLECTED SAMPLE @ 2-4'
1						
2			2.00			
3						
4		3.3	1.52	CL		From 4-5.1': CLAY; Gray w/orange streaks, stiff, firm
5				CL		From 5.1-5.3': CLAY; Light gray
6				CL		From 5.3-7.3': CLAY; Stiff
7			1.73			
8						
9		3.7	1.73	CL		From 8-10.7': CLAY; Gray w/black streaks & orange mottling, stiff
10						
11			1.04	ML		From 10.7-11.7': CLAYEY SILT; Tan; SILT increasing w/depth
12						
13		4.0	1.70	ML		From 12-12.9': SILT; Brown-tan
14				CL		From 12.9-14': CLAY w/SILT lenses; Brown-gray w/ black streaks HET COLLECTED SAMPLE @ 12-14'
15			1.60	ML		From 14-15.5': SILT; Tan/orange, wet
16				ML		From 15.5-16': CLAYEY SILT
17		3.5	2.07	CL		From 16-18.3': CLAY; Brown-gray, orange mottling, stiff; concretions @18.2-18.3'
18						
19			2.14	CL		From 18.3-19.5': CLAY; Tan w/orange, stiff HET COLLECTED SAMPLE @ 18-20'
20						
21		4.0	2.00	CL		From 20-24': CLAY; Gray w/orange mottling, stiff; SILT lense @ 23.4-23.5'
22						
23			1.51			
24						

SOUTHLAND ENVIRONMENTAL

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	MARSHMASTER/GEOPROBE	Parish:	ACADIA
Borehole No:	B-7	Drilled By:	HET	S/T/R	32 / 10S / 01W
Date Drilled:	2/26/25	Logged By:	C HEBERT	UTM Easting:	548,700.0
Total Depth:	46' BGS			UTM Northing:	3,333,137.6

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
25		4.0	0.38	ML		From 24-27.2': SILT; Tan
26						
27			0.75	ML		From 27.2-28': CLAYEY SILT; Tan/gray
28		3.4	0.62	ML		From 28-30.4': CLAYEY SILT; Gray-tan; CLAY lenses @29.7' & 30'
29						
30			1.48	CL		From 30.4-31.4': CLAY; Dark gray HET COLLECTED SAMPLE @ 30-32'
31						
32		4.0	0.06	ML		From 32-34.9': SILT; Light gray to gray w/depth
33						
34			1.08	CL		From 34.9-35.3': CLAY; Gray w/black streaks, soft; wet wood @ 35.3'-35.8'
35				ML		From 35.8-36': SILT; Dark gray
36		3.5	1.08	ML		From 36-36.7': SILT; Light gray
37				CL		From 36.7-37.2': CLAY; Gray; wood @ 37'-37.2'
38				ML		From 37.2-37.8': SILT; Gray; wood @ 37.6'-37.8'
39			0.31	ML		From 37.8-39.5': SILT; Gray-tan
40		4.0	0.64	ML		From 40-44': SILT; Dark gray, saturated to wet
41						
42			0.40			
43						
44		2.0	0.57	ML		From 44-44.7': SILT; Brown, saturated
45				ML		From 44.7-46': SILT; Brown, wet HET COLLECTED SAMPLE @ 44-46'
46						
47						
48						

SOUTHLAND ENVIRONMENTAL

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	MARSHMASTER/GEOPROBE	Parish:	ACADIA
Borehole No:	B-8	Drilled By:	HET	S/T/R	32 / 10S / 01W
Date Drilled:	2/28/25	Logged By:	D PIRANIO	UTM Easting:	548,533.84
Total Depth:	44' BGS			UTM Northing:	3,333,240.21

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
0		1.1	0.28			From 0-1.1': SILTY CLAY; Brown to orange-brown; decreasing SILT w/depth; stiffens
1			0.84			
2						
3						
4		4.0				From 4-8': SILTY CLAY; Mottled orange & olive-gray w/mineral stains, stiff; minor SILT content
5			1.53			
6						
7			1.76			
8		3.6				From 8-10.3': Very SILTY CLAY; Tan, moist
9			1.33			
10			2.37			From 10.3-11': SILTY CLAY; Tan & orange w/mineral stains; much less SILT
11						From 11-11.6': Very SILTY CLAY to CLAYEY SILT; Orange-brown/tan, soft, very moist
12						From 12-12.9': CLAYEY SILT; Orange-brown, soft
13		3.2	2.04			From 12.9-13.4': SILTY CLAY; Orange-brown, stiff
14			1.33			From 13.4-13.75': CLAYEY SILT; Orange-brown, soft From 13.75-14': SILTY CLAY; Orange-brown, stiff
15			1.94			From 14-14.5': CLAYEY SILT to SILT; Orange Brown, soft; wet from 14.15'-14.4'
16						From 14.5-15.2': SILTY CLAY; Stiff HET COLLECTED SAMPLE @ 10-12'
17		4.0	2.12			From 16-20': CLAY; Orange-brown to olive brown; minor SILT; stiff SILT lenses (<10mm) @ 16.6, 19.1,19.2, 19.8'; mostly olive brown from 18.4-20' HET COLLECTED SAMPLE @ 16-18'
18						
19			1.90			
20		4.0				From 20-24': SILTY CLAY (20-21') grading to CLAYEY SILT to very SILTY CLAY; Orange-brown, moist not saturated; friable 21-24';
21			0.97			
22						
23			1.49			
24						

SOUTHLAND ENVIRONMENTAL

BORING LOG

Project:	GASTAL / 12010	Drilling Method:	MARSHMASTER/GEOPROBE	Parish:	ACADIA
Borehole No:	B-8	Drilled By:	HET	S/T/R	32 / 10S / 01W
Date Drilled:	2/28/25	Logged By:	D PIRANIO	UTM Easting:	548,533.84
Total Depth:	44' BGS			UTM Northing:	3,333,240.21

Depth (ft)	Sample Interval	Recovery (feet)	Field Conductivity (mmhos/cm)	USCS	Lithology	Description of Stratum
25			1.85			From 24-5.1': CLAYEY SILT; Orange-olive brown, soft very SILTY from 24.9-25.1'
26		3.6	1.73			From 25.1-25.7': CLAY to SILTY CLAY; Orange-brown w/mineral staining, stiff From 25.7-26.4': Very SILTY CLAY; Orange-brown, soft HET COLLECTED SAMPLE @ 24-26'
27						From 26.4-26.95': CLAY to SILTY CLAY; Dark red w/white nodule (~5mm), stiff
28						From 26.95-27.6': Very SILT CLAY to CLAYEY SILT; Dark red-brown, no saturation
29		4.0	0.05			From 28-32': SAND; Orange-brown, fine grained, moist; no visible water
30						
31			0.19			
32						
33		3.8	0.30			From 32-35.8': SAND; Orange-brown, fine grained, moist; no visible water HET COLLECTED SAMPLE @ 34-36'
34						
35			0.31			
36						
37		3.5	0.48			From 36-39.5': SAND; Brown, fine grained; wet fro 36-37.8'; very moist to saturated from 37.8-39.5'
38						
39			0.46			
40						
41		3.8	0.93			From 40-41.1': SAND; Dark brown, wet From 41.1-41.5': CLAY; Olive green, wood/vegetation
42						From 41.5-41.7': SAND; Dark brown, fine grained, wet
43			1.31			From 41.7-42.2' CLAY; Olive green, medium stiff to soft From 42.2-42.5': SAND; Dark Brown, fine grained, wet
44						From 42.5-43.8': CLAY; Olive green & dark brown, medium stiff to soft HET COLLECTED SAMPLE @ 42-44'
45						
46						
47						
48						

ATTACHMENT G

LDNER Well Registrations

Expert Report

Danny Paul Gastal and Ignatius Hoffpauir vs.
Petrodome Operating, LLC, et al.
Case No. 202210495-A, 15th Judicial District Court
Acadia Parish, Louisiana

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
OFFICE OF PUBLIC WORKS
WATER-WELL REGISTRATION (State Act 535 (1972))

6/4/81

181

(Check Appropriate Boxes) If well is new does it replace an existing well? YES ☐ NO ☒ Is well gravel-packed? YES ☒ NO ☐

1. Well Owner. Howard Simon

Address 2440 Angelle Drive

Port Arthur, Texas 77640

Owner's Well Number or Name (If Any)

2 LOCATION OF WELL Parish Acadia, Section 30, Township 10S

Range 1W Well is Near, Approximately 3/4 miles from North

of Morse, Louisiana

(Crossroads, Town, City, Railroad, Any Landmark, etc.)

3 WELL INFORMATION Ground Elevation ____ ft M.S.L., Depth of Hole 262 ft

Diameter of Hole 12 x10 x8 in Depth of Completed Well 250.75 ft

Date Completed 4-9-81 by

(Give Name and Address of Water Well Contractor) Stamm-Scheele, Incorporated

P.O. Box 230, 202 W. La. Avenue, Rayne, La. 70578

4 CASING AND SCREEN INFORMATION

CASING TYPE			SCREEN TYPE Johnson SS		
12-3/4	from 0 ft	to 131.15 ft	8	from 189.25 ft	to 250.75 ft
10-3/4	131.15	150.35		from ____	to ____
Extension Pipe	8-5/8	150.35		from ____	to ____

5 WATER WELL STATIC LEVEL INFORMATION 4-9-81 (Date) the static water level was 55' ft ☒ below ☐ above ground How determined? electric tape The well yielded ____ gpm with a drawdown of ____ ft after ____ hours of continuous pumping on (date) ____ Describe how yield was measured ____ It is planned to pump the well at a rate 2000 gpm for 24 hours per day for 40 days per year. Proposed average daily pumping rate 315,616 gallons Motor HP 100 Pump setting 122' ft

6 USE OF WELL (Check Appropriate Box)

Irrigation/Agricultural ☒ Industrial ☐ Public Supply ☐ Domestic/Rural ☐ Power Generation ☐

(If industrial or public supply is checked please see bottom of this form)

OTHER (Please Specify)

7 AVAILABLE INFORMATION (Check Appropriate Boxes)

	YES	NO
Is an electrical log or other borehole geophysical log available?	☐	☑ (If yes, please attach a copy of log)
Is a driller's log available? (Complete bottom of form)	☒	☐
Is a mechanical analysis of the drill cuttings available?	☐	☑
Is a chemical analysis of water available?	☐	☑
Is a biological or bacteriological analysis available?	☐	☑
Are aquifer test results available?	☐	☑

8 ABANDONMENT INFORMATION

	YES	NO
If this is a replacement well has owner been informed by contractor of need to plug abandoned well?	☐	☐
Has the owner been informed of state regulations requiring the plugging and (or) sealing of all abandoned wells?	☐	☐

9 REMARKS (Such as engineer, pump information, acreage irrigated, etc.)

10 DRILLER'S LOG (Description and color of cuttings, such as, shale, sand, etc. in feet below ground level)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION
		See Attachment						

(If necessary, continue log on back of original form.)

PUBLIC SUPPLY (If well is for public-supply purpose please check one of the following to indicate principal category of public-supply use)

☐ Municipal ☐ Therapeutic

☐ Rural ☐ Institutional/Government

☐ Commercial ☐ Other ____ Specify

INDUSTRIAL (If well is for industrial purpose please check one of the following to indicate the standard industrial category representing the principal industrial use)

☐ Food and Kindred Products ☐ Paper and Allied Products

☐ Textile Mill Products ☐ Chemicals and Allied Products

☐ Lumber & Wood Products (Except Furniture) ☐ Petroleum Refining & Related Industries

☐ Other ____ ☐ Primary Metal Products

LDPW-GW-1 (R 1/78)

Form Completed By

Stamm-Scheele, Inc.
(Name) (Date)

P.O. Box 230, Rayne, La.
(Address)

Harold Scheele
(Signature)

PLEASE PRINT OR TYPE WHEN COMPLETING THIS FORM

MAIL ORIGINAL TO
Department of Transportation and Development
Office of Public Works
P O BOX 44155
BATON ROUGE, LA 70804
For Details Regarding Entries on This Form, SEE INSTRUCTIONS

DO NOT USE—OFFICE USE ONLY

STATE 22 (1 2) PARISH 001 (3 5) LOCAL WELL NO -519 (6 11)

IDENTIFICATION NUMBER 300825092295501 (12 26)

OWNER'S NAME SIMON HOWARD (27 41)

WELL DEPTH 251 (42 45) Ft. Use of Well I (46) (47 48)

Date Completed MO 04 81 (49 52) DAY (53 56)

Geologic Unit 112CHCTU (57 64)

Aquifer Code Registration Status R (65) Daily Pumping Rate 316000 (66 72)

AVAILABLE INFORMATION: (73) (74 L) (75) (76) (77) (78)

Additions Or Changes or Deletions A (79) Card No 1 (80)

REFER TO INSTRUCTION FOR CODES

Coded By RE on 5/22/81

Location Verified On 5/22/81

By REE

The Correct Location is

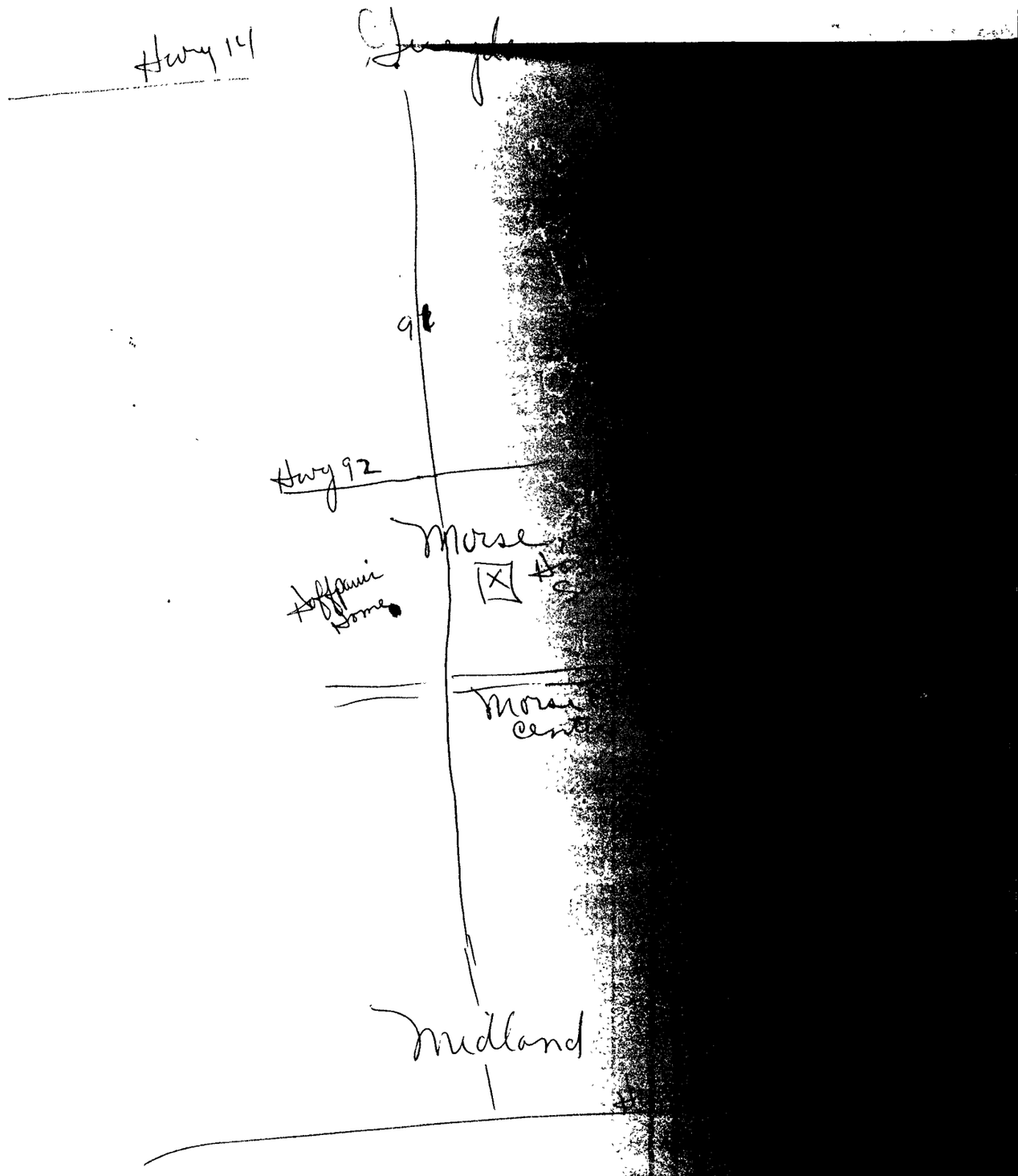
Remarks

Copy of Registration Form to USGS YES ☑ NO ☐

Copy of Form to Water Comm YES ☐ NO ☐

$$365 \overline{)115,200,000} \quad 315,616$$

$$2000 \times 60 = 120,000 \times 24 = 2,880,000 \times 40 = 115,200,000$$



STAMM-SCHEELE, INC.

ESTABLISHED 1902

PHONE -- RAYNE 318 - 334-3126

202 W. Louisiana — P. O. Box 230 — Rayne, La. 70578

Water Supply Contractors
Fresh Water Wells
Waste Disposal Wells
Controls
Pumps
Machine Shop & Fabrication

LOG OF FORMATIONS

Well Owner Howard Simon Date 4/9/81

Address 2440 Angelle Drive, Port Arthur, Texas Well No.

Well Location 3/4 mi. north of Morse, La. Contract No. 1882

EACH STRATUM FROM - TO	THICKNESS OF STRATA	FORMATIONS FOUND IN EACH STRATUM
0 - 2	2	Top Soil
2 - 54	52	Yellow Clay
54 - 124	70	Fine Sand
124 - 159	35	Medium & Coarse Sand w/ Small Gravels
159 - 262	103	Medium & Coarse Sand w/ Small Gravels

001-514

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
OFFICE OF PUBLIC WORKS
WATER-WELL REGISTRATION (State Act 535 (1972))

Form Completed By:
Guichard Drilling 11/9/84
(Name) (Date)
Rt. 3 Box 101 C Crowley, LA
(Address)
Joel A. Guichard
(Signature)

PLEASE PRINT OR TYPE WHEN COMPLETING THIS FORM
MAIL ORIGINAL TO
Department of Transportation and Development
Office of Public Works
P. O. BOX 44155
BATON ROUGE, LA. 70804
For Details Regarding Entries on This Form, SEE INSTRUCTIONS.

(Check Appropriate Boxes)
If well is new does it replace an existing well? YES ☐ NO ☒ Is well gravel-packed? YES ☐ NO ☐

1. Well Owner: Triton Turn-Key, Inc.
Address: 1201 Dairy Ashford
Suite 100 Houston, Texas 77079-3087
Owner's Well Number or Name (If Any) Gaston 32-12 #1

2. LOCATION OF WELL: Parish. Acadia, Section: 32, Township. 10 S
Range 1 W Well is Near, Morse, LA Approximately ____ miles from ____
East side of Hwy 91 on north boundary of Morse, Louisiana
(Crossroads, Town, City, Railroad, Any Landmark, etc.)

3 WELL INFORMATION Ground Elevation ____ ft M.S.L., Depth of Hole: ____ ft.
Diameter of Hole 7⅞ in. Depth of Completed Well 187 ft
Date Completed 10/8/84 by
(Give Name and Address of Water Well Contractor) Guichard Drilling Co.
Rt. 3 Box 101 C Crowley, LA

4. CASING AND SCREEN INFORMATION

CASING. TYPE PVC		SCREEN: TYPE PVC	
4½ in. from surface ft to 161 ft.		4½ in. from 161 ft to 181 ft.	
____ in. from ____ ft. to ____ ft.		____ in from ____ ft. to ____ ft.	
____ in. from ____ ft. to ____ ft.		____ in from ____ ft. to ____ ft.	

Extension Pipe 4½ in. from 3 ft to surface ft.
Give details on size and length of casing cemented and method used to cement.
Ran 1" tubing on side of 4½" casing and circulated cement in annulus from 60' to surface.

5 WATER LEVEL AND YIELD INFORMATION: On ____ (Date) the static water level in well was ____ ft. ☐ below ☐ above ____ How determined? ____
The well yielded ____ gpm with a draw down of ____ ft after ____ hours of continuous pumping on (date) ____ Describe how yield was measured ____ It is planned to pump the well at a rate ____ gpm for ____ hours per day for ____ days per year Proposed average daily pumping rate ____ gallons. Motor HP ____ Pump setting ____ ft.

6 USE OF WELL (Check Appropriate Box)
Irrigation/Agricultural ☐ Industrial ☐ Public Supply ☐ Domestic/Rural ☐ Power Generation ☐
(If Industrial or public supply is checked please see bottom of this form)
OTHER (Please Specify) Oilfield Supply

7 AVAILABLE INFORMATION (Check Appropriate Boxes)

	YES	NO	
Is an electrical log or other borehole geophysical log available?	☐	☒	(If yes, please attach a copy of log)
Is a driller's log available? (Complete bottom of form)	☐	☒	
Is a mechanical analysis of the drill cuttings available?	☐	☒	
Is a chemical analysis of water available?	☐	☒	
Is a biological or bacteriological analysis available?	☐	☒	
Are aquifer test results available?	☐	☒	

8 ABANDONMENT INFORMATION

	YES	NO
If this is a replacement well has owner been informed by contractor of need to plug abandoned well?	☐	☒
Has the owner been informed of state regulations requiring the plugging and (or) sealing of all abandoned wells?	☒	☐

9. REMARKS (Such as engineer, pump information, acreage irrigated, etc.) ____

10. DRILLER'S LOG (Description and color of cuttings, such as, shale, sand, etc. in feet below ground level)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION
0	87'	Clay						
87'	147'	Sand						
147'	187'	Coarse sand & small p. gravel						

(If necessary, continue log on back of original form.)

PUBLIC SUPPLY: (If well is for public-supply purpose please check one of the following to indicate principal category of public-supply use.)
☐ Municipal ☐ Therapeutic
☐ Rural ☐ Institutional/Government
☐ Commercial ☐ Other ____ Specify

INDUSTRIAL: (If well is for industrial purpose please check one of the following to indicate the standard industrial category representing the principal industrial use).
☐ Food and Kindred Products ☐ Paper and Allied Products
☐ Textile Mill Products ☐ Chemicals and Allied Products
☐ Lumber & Wood Products (Except Furniture). ☐ Petroleum Refining & Related Industries
☐ Other ____ ☐ Primary Metal Products

LDPW-GW-1 (R 9/83)

RECEIVED NOV 27 1984
LA. OFFICE OF PUBLIC WORKS

DO NOT USE—OFFICE USE ONLY
STATE 22 (1 2) PARISH 001 (3 5) LOCAL WELL NO. -5568Z (6 11)
IDENTIFICATION NUMBER 300 745 0 30 29460 1 92 (12 26)
OWNER'S NAME TRITON TURN-KEY (27 41)
WELL DEPTH 181 Ft. (42 45) Use of Well 2 RS (46 47 48)
Date Completed MO. 11 YR. 84 (49 52)
OWNER'S NO. 312 (53 56) Geologic Unit (57 64)
Proposed Daily Pumping Rate (66 72)
AVAILABLE INFORMATION (73 74 75 76 77 78) 4
CONTRACTOR'S NAME GUICHARD DRL
SECTION 32 TOWNSHIP 10S RANGE 1W
REVISED COORDINATES
Quad. No. 181
Inspected By ____
Date ____
Remarks ____

001-5568Z


MIDLAND
T10S-R1W
R2W
GASTAL
32-12
14,000'
520
1160
T11S-R
GUEYDAN
001-55687

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER-WELL REGISTRATION (State Act 535 (1972))

(Check Appropriate Boxes) If well is new does it replace an existing well? YES ☐ NO ☒ Is well gravel-packed? YES ☐ NO ☒

1. Well Owner: Champlin Petroleum Co.
   Address: 111 E. Capitol, Suite 600
   Jackson, MS 39201
   Owner's Well Number or Name (If Any): H. Foreman Estate #1

2. LOCATION OF WELL: Parish: Acadia, Section: 32, Township: 10 S
   Range: 1 W Well is Near, Morse Approximately 1/4 miles ~~from~~ XXXX NE
   Intersection of Hwy #91 and Hwy #92
   (Crossroads, Town, City, Railroad, Any Landmark, etc.)

3. WELL INFORMATION: Ground Elevation _____ ft. M.S.L., Depth of Hole: _____ ft.
   Diameter of Hole 7⅞ in. Depth of Completed Well: 188 ft.
   Date Completed: 7/1/85 by
   (Give Name and Address of Water Well Contractor) Guichard Drilling Co.
   Rt. 3 Box 101 C Crowley, LA

4. CASING AND SCREEN INFORMATION:
   CASING. TYPE steel & pvc
   steel 4½ in. from surface to 20 ft.
   pvc 4½ in. from 20 ft to 161 ft.
   _____ in from _____ ft. to _____ ft.
   SCREEN: TYPE pvc
   4½ in. from 161 ft. to 181 ft.
   _____ in. from _____ ft. to _____ ft.
   _____ in. from _____ ft to _____ ft.
   Extension Pipe 4½ in. from 3 ft. to surface ft.
   Give details on size and length of casing cemented and method used to cement.
   Ran 1" tubing on side of 4½" casing and circulated cement in annulus from 60' to surface.

5. WATER LEVEL AND YIELD INFORMATION: On 7/1/85 (Date) the static water level in well was 26 ft. ☒ below ☐ above ground level How determined? Est.
   The well yielded 100 gpm with a draw down of _____ ft. after _____ hours of continuous pumping on (date) _____. Describe how yield was measured Est. It is planned to pump the well at a rate _____ gpm for _____ hours per day for _____ days per year Proposed average daily pumping rate _____ gallons. Motor HP _____ Pump setting. Inst. 168 ft. for air line

6. USE OF WELL (Check Appropriate Box)
   Irrigation/Agricultural ☐ Industrial ☐ Public Supply ☐ Domestic/Rural ☐ Power Generation ☐
   (If Industrial or public supply is checked please see bottom of this form)
   OTHER (Please Specify) Oilfield Supply

7. AVAILABLE INFORMATION (Check Appropriate Boxes)

	YES	NO	
Is an electrical log or other borehole geophysical log available?	☐	☒	(If yes, please attach a copy of log)
Is a driller's log available? (Complete bottom of form)	☒	☐	
Is a mechanical analysis of the drill cuttings available?	☐	☒	
Is a chemical analysis of water available?	☒	☐	
Is a biological or bacteriological analysis available?	☐	☒	
Are aquifer test results available?	☒	☐	

Form Completed By:
Guichard Drilling 7/17/85
(Name) (Date)
Crowley, LA 70526
(Address)
Sheila Hodges
(Signature)

PLEASE PRINT OR TYPE WHEN COMPLETING THIS FORM
MAIL ORIGINAL TO
Department of Transportation and Development
Water Resources Section
P.O BOX 94245
BATON ROUGE, LA 70804-9245
For Details Regarding Entries on This Form, SEE INSTRUCTIONS.

DO NOT USE—OFFICE USE ONLY
STATE 22 (1 2) PARISH 001 (3 5) LOCAL WELL NO. -5624Z (6 11)
IDENTIFICATION NUMBER 300735092937 (12 26)
OWNER'S NAME CHAMPLIN PETRO (27 41)
WELL DEPTH 181 Ft. (42 45) Use of Well Z RS (46 47 48)
Date Completed MO. 07 YR. 85 (49 52)
OWNER'S NO. (53 56) Geologic Unit (57 64)
Proposed Daily Pumping Rate (66 72)
AVAILABLE INFORMATION L (73 74 75 76 77 78)
CONTRACTOR'S NAME GUICHARD DRL
SECTION 32 TOWNSHIP 10S RANGE 1W
REVISED COORDINATES
Quad. No. 181
Inspected By
Date
Remarks

8 ABANDONMENT INFORMATION.

	YES	NO
If this is a replacement well has owner been informed by contractor of need to plug abandoned well?	☐	☒
Has the owner been informed of state regulations requiring the plugging and (or) sealing of all abandoned wells?	☒	☐

9. REMARKS (Such as engineer, pump information, acreage irrigated, etc)

10. DRILLER'S LOG (Description and color of cuttings, such as, shale, sand, etc. in feet below ground level)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION
0	28	Clay			CHAMPLIN PETROLEUM COMPANY			
28	48	Sand			JUL 19 1985			
48	88	Clay			DATE RECEIVED AT JACKSON DISTRICT			
88	148	Sand						
148	188	Sand & gravel						

(If necessary, continue log on back of original form.)

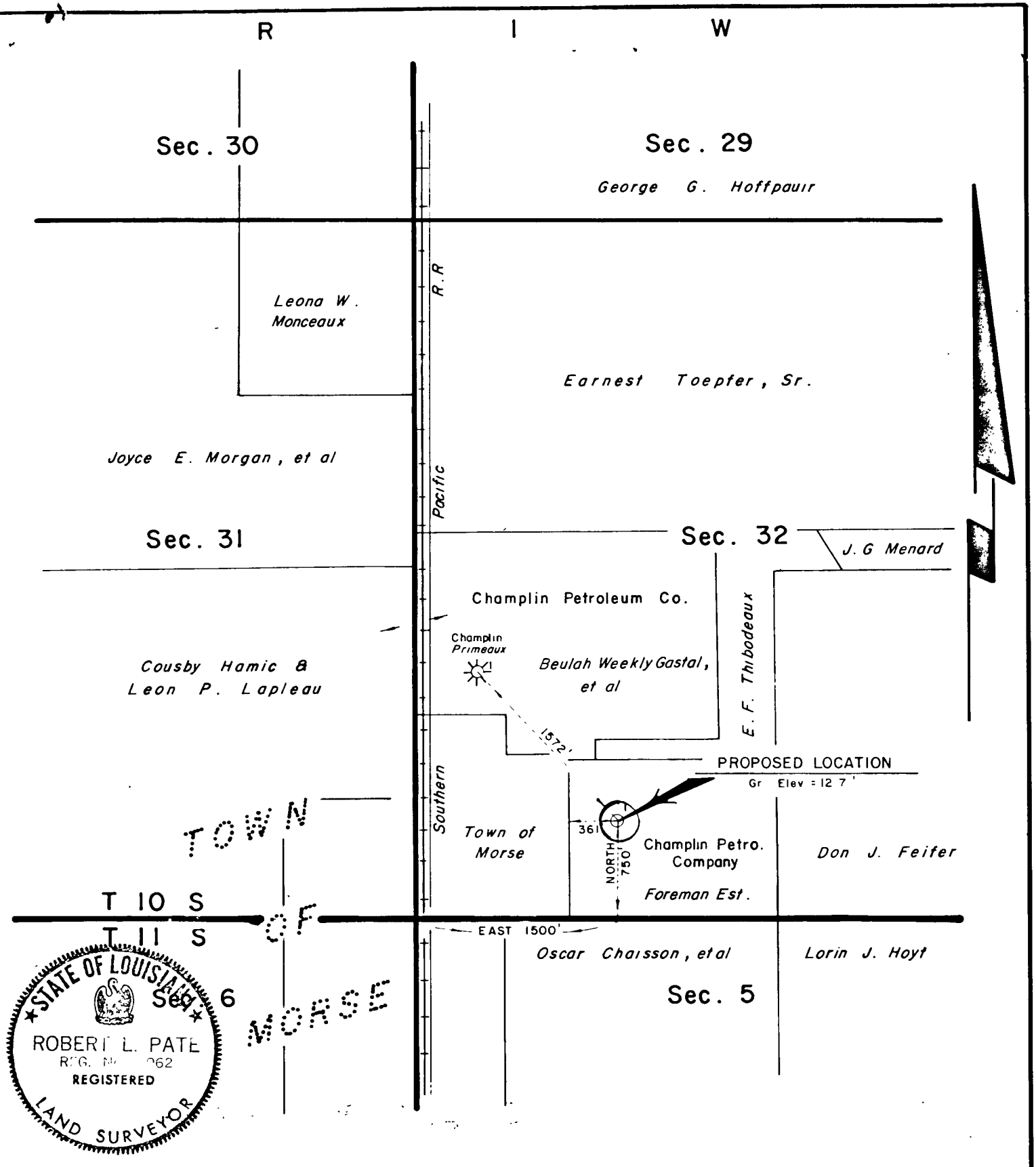
PUBLIC SUPPLY (If well is for public-supply purpose please check one of the following to indicate principal category of public-supply use.)
☐ Municipal ☐ Therapeutic
☐ Rural ☐ Institutional/Government
☐ Commercial ☐ Other _____ Specify

INDUSTRIAL: (If well is for industrial purpose please check one of the following to indicate the standard industrial category representing the principal industrial use).
☐ Food and Kindred Products ☐ Paper and Allied Products
☐ Textile Mill Products ☐ Chemicals and Allied Products
☐ Lumber & Wood Products (Except Furniture). ☐ Petroleum Refining & Related Industries
☐ Other _____ ☐ Primary Metal Products

LPDW-GW-1 (R 10/84)

LA. OFFICE OF PUBLIC WORKS

001-5624Z



STATE OF LOUISIANA
ROBERT L. PATE
REG. NO. 2962
REGISTERED
LAND SURVEYOR

I, Robert L. Pate, hereby certify that the loc'n. of Champlin Petro. Co.'s *Foreman Estate No. 1* is as follows: EAST 1500' and NORTH 750' from the Southwest corner of Sec 32, T 10 S – R 1 W, Acadia Parish, Louisiana.

Robert L. Pate

REGISTERED LAND SURVEYOR NO. 2962
STATE OF LOUISIANA
C L JACK STELLY & ASSOCIATES, INC.

LOUISIANA DEPT. OF CONSERVATION

CHAMPLIN PETROLEUM CO.

PERMIT PLAT

ACADIA PARISH, LOUISIANA

SCALE: 1" = 1,000'

JANUARY - 10, 1985

001-5287

E-MAIL UPON COMPLETION TO:
gwater@la.gov
OR MAIL ORIGINAL TO:
Louisiana Dept. of Natural Resources
Attn: Ground Water Resources
P.O. Box 94275
Baton Rouge, LA 70804-9275

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
OFFICE OF CONSERVATION, ENVIRONMENTAL DIVISION
WATER WELL REGISTRATION SHORT FORM (DNR-GW-1S)

DNR WELLS ONLINE ACCESS:
1) Go to http://sonris.com/
2) Click on **Data Access** in the left hand panel.
3) Under the section labeled **Conservation**, click on **Ground Water Information**.

1. USE OF WELL:

Well Use: Monitoring

Please specify other:

2. WELL OWNER: Danny Gastal c/o Southland Environmental, LLC

Well Owner Mailing Address: 510 Clarence St

City: Lake Charles State: LA Zip Code: 70601

Well Owner Phone Number: (337) 436-3248

Well Owner E-mail Address: dpiranio@southlandenv.com

Owner's Well Number or Name: MW-01D

Serial Number (Rig Supply Only):

3. WELL INFORMATION:

Date Completed: 09/05/2023 Depth of Hole: 32 ft. Depth of Well: 32 ft.

Static Water Level: 0.0 ft. below ground surface ☐ Free-Flowing Well

Date Measured: 10/03/2023 GWV Number (Variance Request):

Name of the Person Who Drilled the Well: Shaine Stockstill

4. CASING AND SCREEN INFORMATION:

Casing Type: Plastic Screen Type: Plastic

1.00	in. from -3	ft. to 22	ft.	1.00	in. from 22	ft. to 32	ft.
	in. from	ft. to	ft.		in. from	ft. to	ft.

Slot Size: 0.010 in. Screen Length: 10 ft.

Cemented From: 17 ft. to ground surface ☑ Inside ☐ Outside of Casing

Cementing Method Used: Gravity Method

5. LOCATION OF WELL (DD:MM:SS.SS):

Latitude: 30 ° 7 ' 44.17 " Longitude: 92 ° 29 ' 41.46 "

Parish: Acadia

Physical Address: 310 N Jackson Ave

Well is in a FEMA Flood Zone: Yes Base Flood Elevation: 14.0 ft.

Ground Elevation (GPS): 11.0 ft. Map Included: Yes

Well is Near, Morse Approximately 0.3 miles from,

NE of N Jackson Ave and Horace intersection

6. REMARKS:

* Well was installed w/10ft pre pack screen and completed with above grade surface completion.
* Well were gauged several times since installed with no static water reading.

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY

SECTION	TOWNSHIP	RANGE	ELEVATION	QUAD NO.
032	10S	01W	0011	

FOR OFFICE USE ONLY

PARISH	WELL NO.	GEOLOGIC UNIT	DATE RECEIVED
001	10035Z	112CHCTC	10/05/2023

REGISTERED BY: NAK DATE REGISTERED: 10/06/2023

REMARKS:

FOR OFFICE USE ONLY

001 | 10035Z

7. DRILLER'S LOG:

(Description and color of cuttings, such as shale, sand, etc. in feet below ground surface)

FROM	TO	DESCRIPTION
		see attached

8. FOR HEAT PUMP ONLY:

Average Depth: _____ ft.

Number of Holes: _____

9. ABANDONMENT INFORMATION:

Does this well replace an existing well? No

If **yes**, has owner been informed of state regulations requiring plugging of abandoned wells? _____

I certify that this work was done and completed in accordance with Rules and Regulations of the State of Louisiana, including Chapter XII of Title 51, Public Health – Sanitary Code, if applicable, on: 09/05/2023 ***(Date)***

by: Walker-Hill Environmental, Inc ***(Name of Water Well Contractor),***

License No. WWC- 574

I further acknowledge and agree that by typing my name or placing my mark in the signature space on this document it is my intention to electronically sign the document. Further, the electronic signature shall be considered as an original signature for all purposes and shall have the same force and effect as an original signature. Without limitation, "electronic signature" shall include faxed versions of an original signature or electronically scanned and transmitted versions (e.g., via pdf) of an original signature.

Authorized Signature: Caleb Hill

Date: 10/03/2023

SOUTHLAND ENVIRONMENTAL

BORING LOG/WELL DIAGRAM

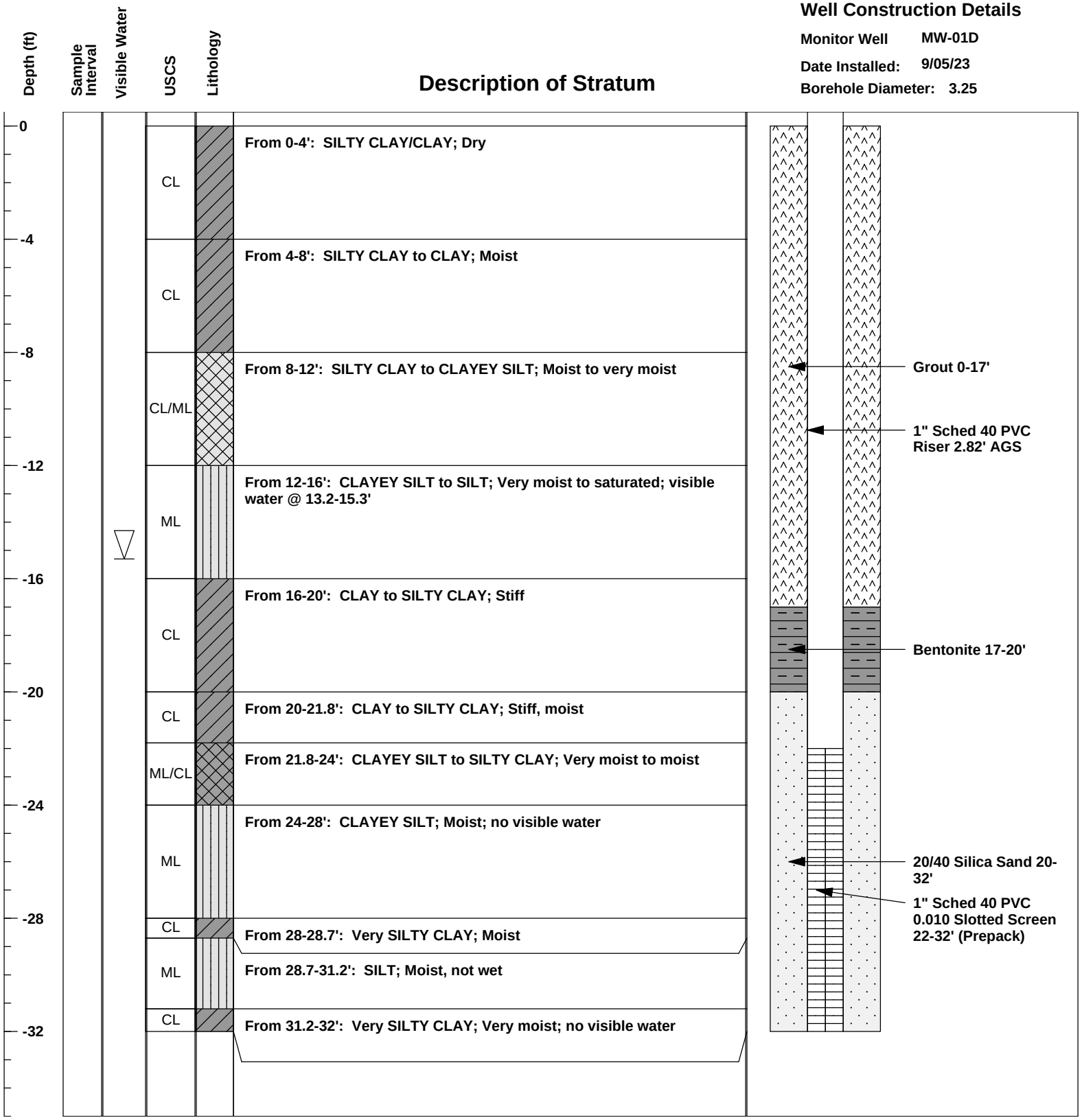
001-10035Z

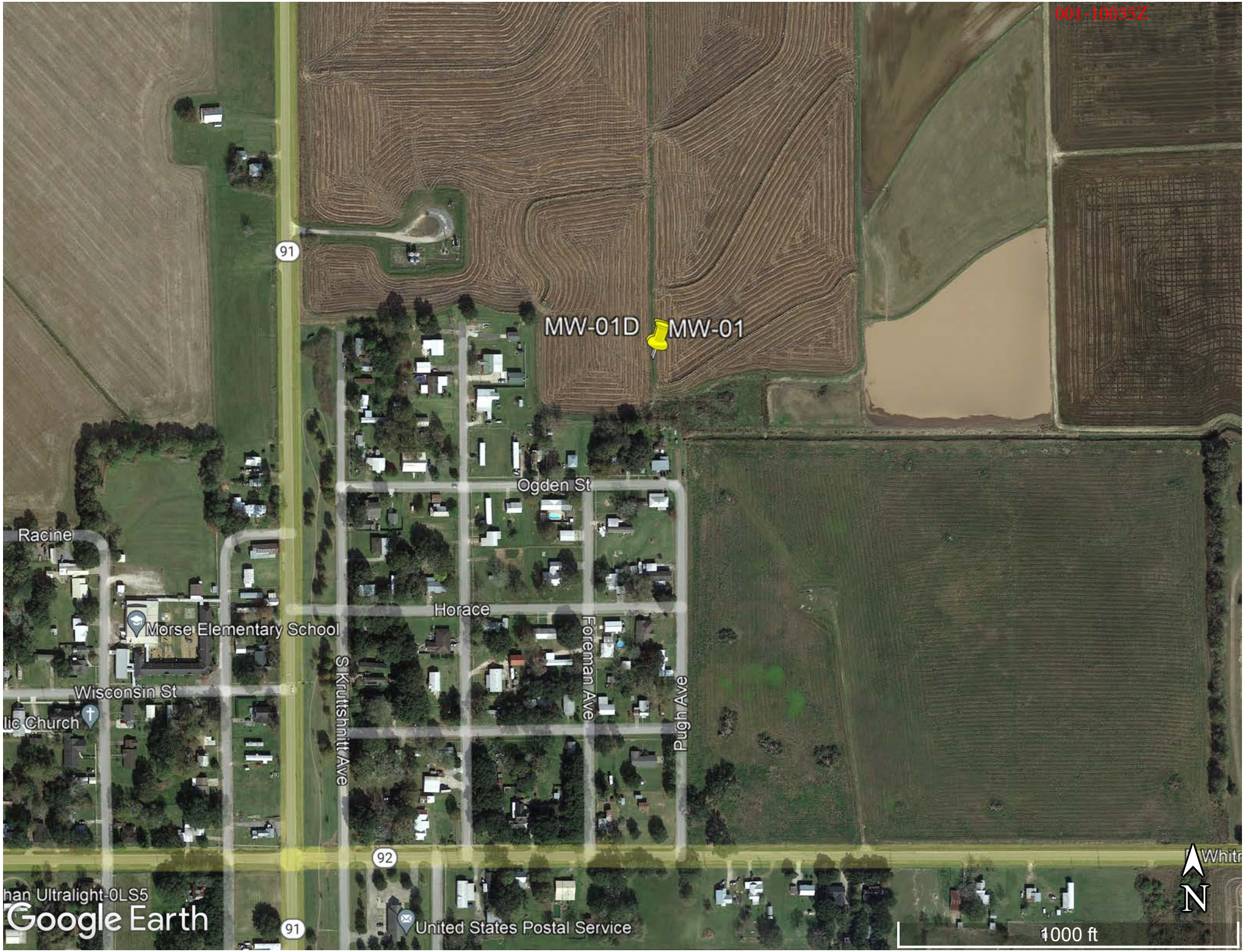
Project: GASTAL / 12010
Borehole No: MW-01
Date Drilled: 9/05/23
Total Depth: 32' BGS

Drilling Method: GEOPROBE DUAL TUBE
Drilled By: WALKER HILL
Logged By: C. CARY

Parish: ACADIA
UTM Easting: 548658.267
UTM Northing: 3333168.201

Well Construction Details
Monitor Well MW-01D
Date Installed: 9/05/23
Borehole Diameter: 3.25




001-10035Z
MW-01D
MW-01
Ogden St
Racine
Horace
Morse Elementary School
Wisconsin St
S Krutschnitt Ave
Foreman Ave
Pugh Ave
91
92
91
United States Postal Service
Google Earth
N
1000 ft

E-MAIL UPON COMPLETION TO:
gwater@la.gov
OR MAIL ORIGINAL TO:
Louisiana Dept. of Natural Resources
Attn: Ground Water Resources
P.O. Box 94275
Baton Rouge, LA 70804-9275

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OFFICE OF CONSERVATION, ENVIRONMENTAL DIVISION
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Please specify other:

2. WELL OWNER: Danny Gastal c/o Southland Environmental, LLC

Well Owner Mailing Address: 510 Clarence St

City: Lake Charles State: LA Zip Code: 70601

Well Owner Phone Number: (337) 436-3248

Well Owner E-mail Address: dpiranio@southlandenv.com

Owner's Well Number or Name: MW-01

Serial Number (Rig Supply Only):

3. WELL INFORMATION:

Date Completed: 09/05/2023 Depth of Hole: 16 ft. Depth of Well: 16 ft.

Static Water Level: 0.0 ft. below ground surface ☐ Free-Flowing Well

Date Measured: 10/03/2023 GWV Number (Variance Request):

Name of the Person Who Drilled the Well: Shaine Stockstill

4. CASING AND SCREEN INFORMATION:

Casing Type: Plastic Screen Type: Plastic

1.00	in. from	-3	ft. to	6	ft.	1.00	in. from	6	ft. to	16	ft.
	in. from		ft. to		ft.		in. from		ft. to		ft.

Slot Size: 0.010 in. Screen Length: 10 ft.

Cemented From: 2 ft. to ground surface ☑ Inside ☐ Outside of Casing

Cementing Method Used: Gravity Method

5. LOCATION OF WELL (DD:MM:SS.SS):

Latitude: 30 ° 7 ' 44.17 " Longitude: 92 ° 29 ' 41.46 "

Parish: Acadia

Physical Address: 310 N Jackson Ave

Well is in a FEMA Flood Zone: Yes Base Flood Elevation: 14.0 ft.

Ground Elevation (GPS): 11.0 ft. Map Included: Yes

Well is Near, Morse Approximately 0.3 miles from,

NE of N Jackson Ave and Horace intersection

6. REMARKS:

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* Well were gauged several times since installed with no static water reading.

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY

SECTION	TOWNSHIP	RANGE	ELEVATION	QUAD NO.
032	10S	01W	0011	

FOR OFFICE USE ONLY

PARISH	WELL NO.	GEOLOGIC UNIT	DATE RECEIVED
001	10036Z	112CHCTC	10/05/2023

REGISTERED BY: NAK DATE REGISTERED: 10/06/2023

REMARKS:

FOR OFFICE USE ONLY

001 | 10036Z

7. DRILLER'S LOG:

(Description and color of cuttings, such as shale, sand, etc. in feet below ground surface)

FROM	TO	DESCRIPTION
		see attached

8. FOR HEAT PUMP ONLY:

Average Depth: _____ ft.

Number of Holes: _____

9. ABANDONMENT INFORMATION:

Does this well replace an existing well? No

If **yes**, has owner been informed of state regulations requiring plugging of abandoned wells? _____

I certify that this work was done and completed in accordance with Rules and Regulations of the State of Louisiana, including Chapter XII of Title 51, Public Health – Sanitary Code, if applicable, on: 09/05/2023 ***(Date)***

by: Walker-Hill Environmental, Inc ***(Name of Water Well Contractor),***

License No. WWC- 574

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Authorized Signature: Caleb Hill

Date: 10/03/2023

SOUTHLAND ENVIRONMENTAL

BORING LOG/WELL DIAGRAM

001-10036Z

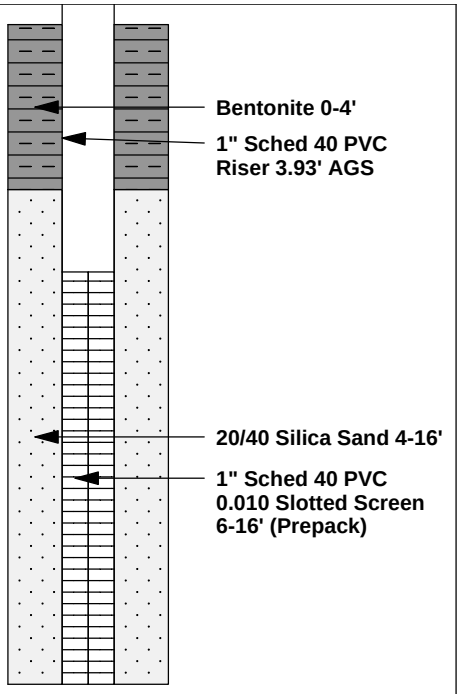
Project: GASTAL / 12010
Borehole No: MW-01
Date Drilled: 9/05/23
Total Depth: 32' BGS

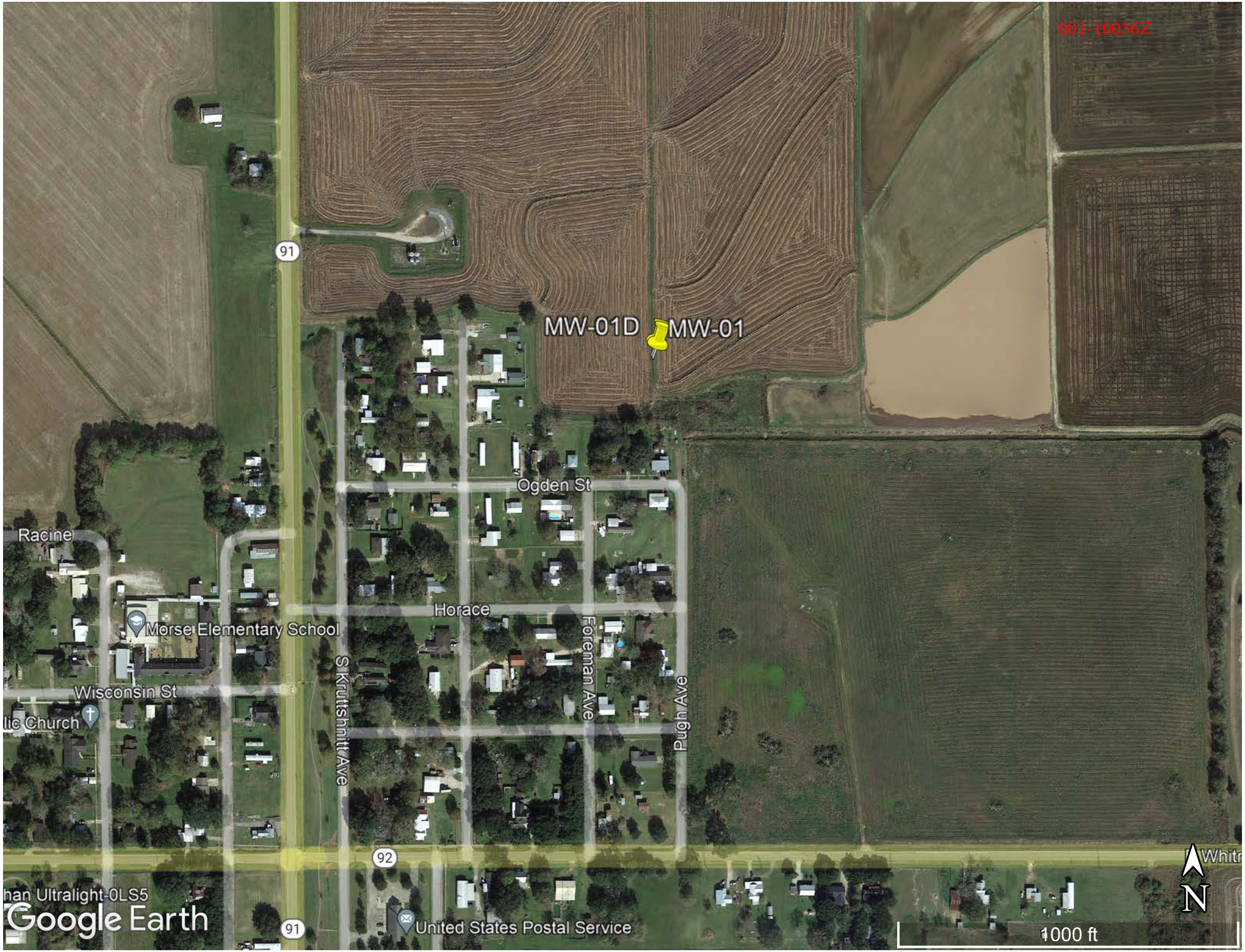
Drilling Method: GEOPROBE DUAL TUBE
Drilled By: WALKER HILL
Logged By: C. CARY

Parish: ACADIA
UTM Easting: 548658.992
UTM Northing: 3333166.498

Well Construction Details
Monitor Well MW-01
Date Installed: 9/05/23
Borehole Diameter: 3.25"

Depth (ft)	Sample Interval	Visible Water	USCS	Lithology	Description of Stratum
0			CL		From 0-4': SILTY CLAY/CLAY; Dry
-4			CL		From 4-8': SILTY CLAY to CLAY; Moist
-8			CL/ML		From 8-12': SILTY CLAY to CLAYEY SILT; Moist to very moist
-12		▽	ML		From 12-16': CLAYEY SILT to SILT; Very moist to saturated; visible water @ 13.2-15.3'
-16			CL		From 16-20': CLAY to SILTY CLAY; Stiff
-20			CL		From 20-21.8': CLAY to SILTY CLAY; Stiff, moist
			ML/CL		From 21.8-24': CLAYEY SILT to SILTY CLAY; Very moist to moist
-24			ML		From 24-28': CLAYEY SILT; Moist; no visible water
-28			CL		From 28-28.7': Very SILTY CLAY; Moist
			ML		From 28.7-31.2': SILT; Moist, not wet
-32			CL		From 31.2-32': Very SILTY CLAY; Very moist; no visible water




001-10036Z
MW-01D
MW-01
91
Ogden St
Racine
Horace
Morse Elementary School
Wisconsin St
S Krutshnitt Ave
Foreman Ave
Pugh Ave
92
91
United States Postal Service
Google Earth
N
1000 ft

ATTACHMENT H

Laboratory Analytical Reports USB Drive

Expert Report

Danny Paul Gastal and Ignatius Hoffpauir vs.
Petrodome Operating, LLC, et al.
Case No. 202210495-A, 15th Judicial District Court
Acadia Parish, Louisiana

ATTACHMENT I

Background Concentration Calculations

Expert Report

Danny Paul Gastal and Ignatius Hoffpauir vs.
Petrodome Operating, LLC, et al.
Case No. 202210495-A, 15th Judicial District Court
Acadia Parish, Louisiana

GASTAL - EC - SLE & HET DATA

Calculation of Background Soil Conditions Gastal
Electrical Conductivity (EC)
Calculate mean background EC **Includes SE SB-03 & SB-15**

Value		Sample ID		
0.46	mmhos/cm	SE SB-03 (0-2)	SLE	1
0.38	mmhos/cm	SE SB-03 (2-4)	SLE	2
0.87	mmhos/cm	SE SB-03 (4-6)	SLE	3
0.41	mmhos/cm	SE SB-03 (6-8)	SLE	4
0.77	mmhos/cm	SE SB-03 (8-10)	SLE	5
0.56	mmhos/cm	SE SB-03 (10-12)	SLE	6
1.22	mmhos/cm	SE SB-03 (12-14)	SLE	7
0.82	mmhos/cm	SE SB-03 (14-16)	SLE	8
1.08	mmhos/cm	SE SB-03 (16-18)	SLE	9
0.90	mmhos/cm	SE SB-03 (18-20)	SLE	10
2.34	mmhos/cm	SE SB-15 (2-4)	SLE	11
1.51	mmhos/cm	SE SB-15 (6-8)	SLE	12
1.1	mmhos/cm	SE SB-15 (10-12)	SLE	13
0.42	mmhos/cm	SE SB-15 (14-16)	SLE	14
0.25	mmhos/cm	SE SB-15 (18-20)	SLE	15
0.37	mmhos/cm	SE SB-11 (2-4)	SLE	16
0.62	mmhos/cm	SE SB-11 (6-8)	SLE	17
0.55	mmhos/cm	SE SB-11 (10-12)	SLE	18
0.99	mmhos/cm	SE SB-11 (14-16)	SLE	19
0.37	mmhos/cm	SE SB-11 (18-20)	SLE	20
0.13	mmhos/cm	SE SB-11 (22-24)	SLE	21
0.62	mmhos/cm	SE SB-11 (26-28)	SLE	22
1.01	mmhos/cm	SE SB-16 (0-2)	SLE	23
1.05	mmhos/cm	SE SB-16 (2-4)	SLE	24
1.03	mmhos/cm	SE SB-16 (6-8)	SLE	25
1.16	mmhos/cm	SE SB-16 (10-12)	SLE	26
0.39	mmhos/cm	SE SB-16 (14-16)	SLE	27
1.6	mmhos/cm	SE-SB-19 (0-2)	SLE	28
0.53	mmhos/cm	SE SB-19 (2-4)	SLE	29
0.57	mmhos/cm	SE SB-19 (6-8)	SLE	30
0.58	mmhos/cm	SE SB-19 (10-12)	SLE	31
0.32	mmhos/cm	SE SB-19 (14-16)	SLE	32
0.48	mmhos/cm	SE SB-19 (18-20)	SLE	33
1.03	mmhos/cm	SE-SB-20 (0-2)	SLE	34
1	mmhos/cm	SE SB-20 (2-4)	SLE	35
0.45	mmhos/cm	SE SB-20 (6-8)	SLE	36
0.41	mmhos/cm	SE SB-20 (10-12)	SLE	37
0.2	mmhos/cm	SE SB-20 (14-16)	SLE	38
0.24	mmhos/cm	SE SB-20 (18-20)	SLE	39
0.62	mmhos/cm	SE-SB-21 (0-2)	SLE	40
0.23	mmhos/cm	SE SB-21 (2-4)	SLE	41
0.11	mmhos/cm	SE SB-21 (6-8)	SLE	42
0.94	mmhos/cm	SE SB-21 (10-12)	SLE	43
0.34	mmhos/cm	SE SB-21 (12-14)	SLE	44
0.51	mmhos/cm	SE SB-21 (14-16)	SLE	45
0.2	mmhos/cm	SE SB-21 (18-20)	SLE	46
0.3	mmhos/cm	SE SB-21 (20-22)	SLE	47
0.668	mmhos/cm	SE SB-03 (0-2)	HET	48
0.666	mmhos/cm	SE SB-03 (2-4)	HET	49
0.798	mmhos/cm	SE SB-03 (4-6)	HET	50
1.03	mmhos/cm	SE SB-03 (6-8)	HET	51

	0.931	mmhos/cm	SE SB-03 (8-10)	HET	52
	0.917	mmhos/cm	SE SB-03 (10-12)	HET	53
	1.40	mmhos/cm	SE SB-03 (12-14)	HET	54
	1.17	mmhos/cm	SE SB-03 (14-16)	HET	55
	1.01	mmhos/cm	SE SB-03 (16-18)	HET	56
	0.834	mmhos/cm	SE SB-03 (18-20)	HET	57
	0.653	mmhos/cm	SE SB-15 (2-4)	HET	58
	1.14	mmhos/cm	SE SB-15 (6-8)	HET	59
	1.08	mmhos/cm	SE SB-15 (10-12)	HET	60
	0.555	mmhos/cm	SE SB-15 (14-16)	HET	61
	0.454	mmhos/cm	SE SB-15 (18-20)	HET	62
	1.51	mmhos/cm	SE SB-11 (6-8)	HET	63
	1.2	mmhos/cm	SE SB-11 (10-12)	HET	64
	0.686	mmhos/cm	SE SB-11 (14-16)	HET	65
	0.611	mmhos/cm	SE SB-11 (18-20)	HET	66
	0.471	mmhos/cm	SE SB-11 (22-24)	HET	67
	0.466	mmhos/cm	SE SB-11 (26-28)	HET	68
	1.45	mmhos/cm	SE SB-16 (0-2)	HET	69
	1.78	mmhos/cm	SE SB-16 (2-4)	HET	70
	0.952	mmhos/cm	SE SB-16 (6-8)	HET	71
	1.67	mmhos/cm	SE SB-16 (10-12)	HET	72
	0.399	mmhos/cm	SE SB-16 (14-16)	HET	73
	1.58	mmhos/cm	SE-SB-19 (0-2)	HET	74
	0.347	mmhos/cm	SE SB-19 (2-4)	HET	75
	0.849	mmhos/cm	SE SB-19 (6-8)	HET	76
	0.936	mmhos/cm	SE SB-19 (10-12)	HET	77
	0.685	mmhos/cm	SE SB-19 (14-16)	HET	78
	0.783	mmhos/cm	SE SB-19 (18-20)	HET	79
	1.2	mmhos/cm	SE-SB-20 (0-2)	HET	80
	0.952	mmhos/cm	SE SB-20 (2-4)	HET	81
	0.741	mmhos/cm	SE SB-20 (6-8)	HET	82
	0.567	mmhos/cm	SE SB-20 (10-12)	HET	83
	0.257	mmhos/cm	SE SB-20 (14-16)	HET	84
	0.446	mmhos/cm	SE SB-20 (18-20)	HET	85
	0.891	mmhos/cm	SE-SB-21 (0-2)	HET	86
	0.497	mmhos/cm	SE SB-21 (2-4)	HET	87
	0.548	mmhos/cm	SE SB-21 (6-8)	HET	88
	1.05	mmhos/cm	SE SB-21 (10-12)	HET	89
	0.501	mmhos/cm	SE SB-21 (12-14)	HET	90
	0.598	mmhos/cm	SE SB-21 (14-16)	HET	91
	0.494	mmhos/cm	SE SB-21 (18-20)	HET	92
+	0.706	mmhos/cm	SE SB-21 (20-22)	HET	93
	71.17 / n				
	0.77			n=	93

Calculate background variance

0.46	-	0.77	=	-0.305 ^2	0.09318	SLE	1
0.38	-	0.77	=	-0.385 ^2	0.14842	SLE	2
0.87	-	0.77	=	0.105 ^2	0.01097	SLE	3
0.41	-	0.77	=	-0.355 ^2	0.12621	SLE	4
0.77	-	0.77	=	0.005 ^2	0.00002	SLE	5
0.56	-	0.77	=	-0.205 ^2	0.04213	SLE	6
1.22	-	0.77	=	0.455 ^2	0.20679	SLE	7
0.82	-	0.77	=	0.055 ^2	0.00300	SLE	8
1.08	-	0.77	=	0.315 ^2	0.09906	SLE	9
0.90	-	0.77	=	0.135 ^2	0.01816	SLE	10
2.34	-	0.77	=	1.575 ^2	2.47981	SLE	11
1.51	-	0.77	=	0.745 ^2	0.55464	SLE	12
1.10	-	0.77	=	0.335 ^2	0.11205	SLE	13
0.42	-	0.77	=	-0.345 ^2	0.11920	SLE	14
0.25	-	0.77	=	-0.515 ^2	0.26549	SLE	15
0.37	-	0.77	=	-0.395 ^2	0.15623	SLE	16
0.62	-	0.77	=	-0.145 ^2	0.02110	SLE	17
0.55	-	0.77	=	-0.215 ^2	0.04634	SLE	18
0.99	-	0.77	=	0.225 ^2	0.05051	SLE	19
0.37	-	0.77	=	-0.395 ^2	0.15623	SLE	20
0.13	-	0.77	=	-0.635 ^2	0.40355	SLE	21
0.62	-	0.77	=	-0.145 ^2	0.02110	SLE	22
1.01	-	0.77	=	0.245 ^2	0.05990	SLE	23
1.05	-	0.77	=	0.285 ^2	0.08108	SLE	24
1.03	-	0.77	=	0.265 ^2	0.07009	SLE	25
1.16	-	0.77	=	0.395 ^2	0.15582	SLE	26
0.39	-	0.77	=	-0.375 ^2	0.14082	SLE	27
1.60	-	0.77	=	0.835 ^2	0.69679	SLE	28
0.53	-	0.77	=	-0.235 ^2	0.05535	SLE	29
0.57	-	0.77	=	-0.195 ^2	0.03813	SLE	30
0.58	-	0.77	=	-0.185 ^2	0.03432	SLE	31
0.32	-	0.77	=	-0.445 ^2	0.19825	SLE	32
0.48	-	0.77	=	-0.285 ^2	0.08137	SLE	33
1.03	-	0.77	=	0.265 ^2	0.07009	SLE	34
1.00	-	0.77	=	0.235 ^2	0.05510	SLE	35
0.45	-	0.77	=	-0.315 ^2	0.09939	SLE	36
0.41	-	0.77	=	-0.355 ^2	0.12621	SLE	37
0.20	-	0.77	=	-0.565 ^2	0.31952	SLE	38
0.24	-	0.77	=	-0.525 ^2	0.27590	SLE	39
0.62	-	0.77	=	-0.145 ^2	0.02110	SLE	40
0.23	-	0.77	=	-0.535 ^2	0.28650	SLE	41
0.11	-	0.77	=	-0.655 ^2	0.42936	SLE	42
0.94	-	0.77	=	0.175 ^2	0.03053	SLE	43
0.34	-	0.77	=	-0.425 ^2	0.18084	SLE	44
0.51	-	0.77	=	-0.255 ^2	0.06516	SLE	45
0.20	-	0.77	=	-0.565 ^2	0.31952	SLE	46
0.30	-	0.77	=	-0.465 ^2	0.21647	SLE	47
0.67	-	0.77	=	-0.097 ^2	0.00946	HET	48
0.67	-	0.77	=	-0.099 ^2	0.00985	HET	49
0.80	-	0.77	=	0.033 ^2	0.00107	HET	50
1.03	-	0.77	=	0.265 ^2	0.07009	HET	51
0.93	-	0.77	=	0.166 ^2	0.02747	HET	52
0.92	-	0.77	=	0.152 ^2	0.02303	HET	53
1.40	-	0.77	=	0.635 ^2	0.40290	HET	54
1.17	-	0.77	=	0.405 ^2	0.16382	HET	55
1.01	-	0.77	=	0.245 ^2	0.05990	HET	56

0.83	-	0.77	=	0.069 ^2	0.00473	HET	57
0.65	-	0.77	=	-0.112 ^2	0.01260	HET	58
1.14	-	0.77	=	0.375 ^2	0.14043	HET	59
1.08	-	0.77	=	0.315 ^2	0.09906	HET	60
0.56	-	0.77	=	-0.210 ^2	0.04421	HET	61
0.45	-	0.77	=	-0.311 ^2	0.09688	HET	62
1.51	-	0.77	=	0.745 ^2	0.55464	HET	63
1.20	-	0.77	=	0.435 ^2	0.18900	HET	64
0.69	-	0.77	=	-0.079 ^2	0.00628	HET	65
0.61	-	0.77	=	-0.154 ^2	0.02380	HET	66
0.47	-	0.77	=	-0.294 ^2	0.08659	HET	67
0.47	-	0.77	=	-0.299 ^2	0.08956	HET	68
1.45	-	0.77	=	0.685 ^2	0.46887	HET	69
1.78	-	0.77	=	1.015 ^2	1.02970	HET	70
0.95	-	0.77	=	0.187 ^2	0.03487	HET	71
1.67	-	0.77	=	0.905 ^2	0.81856	HET	72
0.40	-	0.77	=	-0.366 ^2	0.13414	HET	73
1.58	-	0.77	=	0.815 ^2	0.66380	HET	74
0.35	-	0.77	=	-0.418 ^2	0.17494	HET	75
0.85	-	0.77	=	0.084 ^2	0.00701	HET	76
0.94	-	0.77	=	0.171 ^2	0.02915	HET	77
0.69	-	0.77	=	-0.080 ^2	0.00644	HET	78
0.78	-	0.77	=	0.018 ^2	0.00031	HET	79
1.20	-	0.77	=	0.435 ^2	0.18900	HET	80
0.95	-	0.77	=	0.187 ^2	0.03487	HET	81
0.74	-	0.77	=	-0.024 ^2	0.00059	HET	82
0.57	-	0.77	=	-0.198 ^2	0.03931	HET	83
0.26	-	0.77	=	-0.508 ^2	0.25833	HET	84
0.45	-	0.77	=	-0.319 ^2	0.10193	HET	85
0.89	-	0.77	=	0.126 ^2	0.01581	HET	86
0.50	-	0.77	=	-0.268 ^2	0.07196	HET	87
0.55	-	0.77	=	-0.217 ^2	0.04720	HET	88
1.05	-	0.77	=	0.285 ^2	0.08108	HET	89
0.50	-	0.77	=	-0.264 ^2	0.06983	HET	90
0.60	-	0.77	=	-0.167 ^2	0.02798	HET	91
0.49	-	0.77	=	-0.271 ^2	0.07358	HET	92
0.71	-	0.77	=	-0.059 ^2	0.00351	HET	93

15.73994 /n-1

0.17109 variance n-1= 92

Calculate background standard deviation

0.414 square root of variance

Evaluate distribution of background data using CV test

0.414 / 0.77

0.54 (CV>1 unacceptable)

Calculate upper limit of background data

BG = 0.77 + 0.41

1.2 mmhos/cm Background EC

ATTACHMENT J

Remediation

Expert Report

Danny Paul Gastal and Ignatius Hoffpauir vs.
Petrodome Operating, LLC, et al.
Case No. 202210495-A, 15th Judicial District Court
Acadia Parish, Louisiana

SURFACE AREA	EXCAVATION PERIMETER
AREA 1A - 146,780 FT²	1,850 FT
AREA 1B - 11,826 FT²	574 FT
AREA 2 - 43,488 FT²	1,120 FT
AREA 3 - 29,482 FT²	925 FT
AREA 4 - 13,743 FT²	456 FT
AREA 5 - 1,936 FT²	157 FT

TOTAL AREA - 247,255 FT² - 5.68 ACRES

Legend:

- SE-SB01 — Soil Boring Location & ID
- SE-CPT03 — Cone Pentration Test Boring Location & ID
- MW-01 — Monitor Well Location & ID
- B-7 — HET Soil Boring Location & ID

Note:
Recent Aerial Imagery

0 100 200 300 400

MAP SCALE IN FEET
NAD83 UTM ZONE 15N COORDINATES

SOUTHLAND ENVIRONMENTAL
RBB Consulting, LLC

GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING, LLC, et al
ACADIA PARISH

29B REMEDIATION MAP

Drawn By: JRK	Date: 04/15/25	Project #12010
Checked By:RBB	Date: 04/16/25	Revised:

TABLE J-1
REMEDIATION CALCULATIONS: LDENR - 29B

GASTAL HOFFPAUIR VS. PETRODOME OPERATING LLC, ET AL
ACADIA PARISH

Area	Surface Area (ft^2)	Perimeter (ft.)	Overburden (in-place)		Impacted Soil (1) (in-place)		Confirmation Samples	
			Thickness (ft)	Volume (Yd^3)	Thickness (ft)	Volume (Yd^3)	Surface Area	Perimeter
Area 1A	146,780	1,850					92	47
SE-SB04			0.0		2.0			
SE-SB11			0.0		2.0			
SE-SB13			0.0		5.0			
SE-SB14			0.0		2.0			
B-2			0.0		3.0			
B-3			0.0		1.0			
	Average		**0.0**		**2.5**			
	Subtotal			**0**		**13,591**		
Area 1B	11,826	574					8	15
SE-SB03			4.0		2.0			
	Average		**4.0**		**2.0**			
	Subtotal			**1,752**		**876**		
Area 2	43,488	1,120					28	28
SE-SB05			8.0		8.0			
SE-SB07			4.0		14.0			
SE-SB08			8.0		8.0			
	Average		**6.7**		**10.0**			
	Subtotal			**10,738**		**16,107**		
Area 3	29,482	925					19	24
SE-SB01/B-5			0.0		30.0			
SE-SB02			10.0		17.0			
SE-SB06/B-1			0.0		28.0			
SE-SB09			10.0		17.0			
SE-SB10			7.0		23.0			
	Average		**5.4**		**23.0**			
	Subtotal			**5,897**		**25,115**		
Area 4	13,743	456					9	12
SE-SB17			0.0		3.0			
	Average		**0.0**		**3.0**			
	Subtotal			**0**		**1,527**		
Area 5	1,936	157					2	4
SE-SB15			5.0		8.0			
	Average		**5.0**		**8.0**			
	Subtotal			**359**		**574**		

TOTAL VOL OVERBURDEN (CY)	**18,746**	**TOTAL VOL SOIL DISPOSAL (CY)**	**57,790**	**TOTAL CONFIRMATION SAMPLES**	**288**
TOTAL EXCAVATION AREA (FT^2)	**247,255**	**TOTAL RAINFALL GALLONS**	**308,245**		

Notes: All calculations represent in-place volumes.
Confirmation samples collected on 40 ft. centers over excavation area and every 40 ft. along excavation perimeter.
In soil borings where deepest soil sample exceeds background standard, the remediation model assumes the impacted interval of soil is soil interval exceeding background standard plus 1 foot.
In soil borings where deepest soil sample exceeds 29-B standard, the remediation model assumes the impacted interval of soil is interval exceeding background standard plus 2 feet.

TABLE J-2
SOIL REMEDIATION: RESTORE TO LDENR 29B STANDARDS
EXCAVATION, TRANSPORTATION, DISPOSAL, AND BACKFILL

GASTAL HOFFPAUIR VS. PETRODOME OPERATING LLC, ET AL
ACADIA PARISH

Remediation Area		Excavation Volume (in-place Yd^3)	Excavation $/$Yd^3$ $10.18	Transportation (1.3 Fluff Factor) $/$Yd^3$ $24.40	Disposal (1.3 Fluff Factor) $/$Yd^3$ $93.94	Backfill (1.3 Fluff Factor) $/$Yd^3$ $18.48	Confirmation Sample $/Sample $100.00	Total Cost	Total Cost per cubic yard (in-place)
AREA 1A	OVERBURDEN	0	$0	$0	$0	$0	$0	$0	$0
	IMPACTED SOIL	13,591	$138,356	$431,107	$1,659,760	$326,510	$13,900	$2,569,633	$189
AREA 1B	OVERBURDEN	1,752	$17,835	$0	$0	$0	$0	$17,835	$10
	IMPACTED SOIL	876	$8,918	$27,787	$106,979	$21,045	$2,300	$167,029	$191
AREA 2	OVERBURDEN	10,738	$109,313	$0	$0	$0	$0	$109,313	$10
	IMPACTED SOIL	16,107	$163,969	$510,914	$1,967,019	$386,955	$5,600	$3,034,457	$188
AREA 3	OVERBURDEN	5,897	$60,031	$0	$0	$0	$0	$60,031	$10
	IMPACTED SOIL	25,115	$255,671	$796,648	$3,067,094	$603,363	$4,300	$4,727,076	$188
AREA 4	OVERBURDEN	0	$0	$0	$0	$0	$0	$0	$0
	IMPACTED SOIL	1,527	$15,545	$48,436	$186,480	$36,685	$2,100	$289,246	$189
AREA 5	OVERBURDEN	359	$3,655	$0	$0	$0	$0	$3,655	$10
	IMPACTED SOIL	574	$5,843	$18,207	$70,098	$13,790	$600	$108,538	$189

SUB-TOTAL	**$11,086,813**

Supplemental Excavation, Transportation, Disposal, Backfill

Confirmation Sample Failure Rate: 10%	**$1,108,682**

Stormwater Management

Transportation/Disposal	308,245	gallons x $0.32/gallon	**$98,639**

Access Road Improvement and Maintenance

Improvement/Maintenance	4,366	linear feet x $100/linear foot	**$436,600**

Groundwater Investigation

12 Monitor Wells	Install and Sample 12 Wells up to 75 ft-bgs	**$146,641**

Soil Flushing/Groundwater Recovery

Transportation/Disposal	1,323,152	gallons x $0.32/gallon	**$423,409**

Project Management

Project Management	$13,300,784	x 5%	**$665,040**

COST	**$13,965,824**
CONTINGENCY (10%)	**$1,396,583**
TOTAL COST	**$15,362,407**

SURFACE AREA	EXCAVATION PERIMETER
AREA 1A - 101,055 FT²	1,287 FT
AREA 1B - 13,744 FT²	330 FT
AREA 2 - 95,965 FT²	1,647 FT
AREA 3 - 51,435 FT²	1,236 FT
AREA 4 - 84,553 FT²	1,177 FT
AREA 5 - 2,827 FT²	188 FT

TOTAL AREA - 349,579 FT² - 8.03 ACRES

Legend:

- SE-SB01 — Soil Boring Location & ID
- SE-CPT03 — Cone Pentration Test Boring Location & ID
- MW-01 — Monitor Well Location & ID
- B-7 — HET Soil Boring Location & ID

Note:
Recent Aerial Imagery

0 100 200 300 400

MAP SCALE IN FEET
NAD83 UTM ZONE 15N COORDINATES

SOUTHLAND ENVIRONMENTAL
RBB Consulting, LLC

GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING, LLC, et al
ACADIA PARISH

BACKGROUND REMEDIATION MAP

Drawn By: JRK	Date: 04/15/25	Project #12010
Checked By:RBB	Date: 04/16/25	Revised:

TABLE J-3
REMEDIATION CALCULATIONS: BACKGROUND

GASTAL HOFFPAUIR VS. PETRODOME OPERATING LLC, ET AL
ACADIA PARISH

Area	Surface Area (ft^2)	Perimeter (ft.)	Overburden (in-place)		Impacted Soil (1) (in-place)		Confirmation Samples	
			Thickness (ft)	Volume (Yd^3)	Thickness (ft)	Volume (Yd^3)	Surface Area	Perimeter
Area 1A	101,055	1,287					64	33
SE-SB11			0.0		2.0			
SE-SB12			0.0		9.0			
SE-SB14			0.0		5.0			
B-3			0.0		3.0			
B-4			3.0		8.0			
	Average		**0.6**		**5.4**			
	Subtotal			**2,246**		**20,211**		
Area 1B	13,744	330					9	9
SE-SB03			10.0		4.0			
	Average		**10.0**		**4.0**			
	Subtotal			**5,091**		**2,037**		
Area 2	95,965	1,647					60	42
SE-SB04			6.0		10.0			
SE-SB07			2.0		16.0			
SE-SB08			2.0		14.0			
SE-SB13			4.0		13.0			
B-2			0.0		4.0			
B-7			0.0		11.0			
	Average		**2.3**		**11.3**			
	Subtotal			**8,294**		**40,282**		
Area 3	51,435	1,236					33	31
SE-SB01/B-5			0.0		30.0			
SE-SB02			6.0		22.0			
SE-SB05			4.0		21.0			
SE-SB06/B-1			0.0		30.0			
SE-SB09			6.0		22.0			
SE-SB10			0.0		30.0			
B-6			6.0		24.0			
	Average		**3.1**		**25.6**			
	Subtotal			**5,988**		**48,714**		
Area 4	84,553	1,777					53	45
SE-SB17			0.0		4.0			
SE-SB19			0.0		2.0			
	Average		**0.0**		**3.0**			
	Subtotal			**0**		**9,395**		
Area 5	2,827	188					2	5
SE-SB15			0.0		13.0			
	Average		**0.0**		**13.0**			
	Subtotal			**0**		**1,361**		

TOTAL VOL OVERBURDEN (CY)	**21,619**	**TOTAL VOL SOIL DISPOSAL (CY)**	**122,000**	**TOTAL CONFIRMATION SAMPLES**	**386**
TOTAL EXCAVATION AREA (FT^2)	**349,579**	**TOTAL RAINFALL GALLONS**	**435,809**		

Notes: All calculations represent in-place volumes.
Confirmation samples collected on 40 ft. centers over excavation area and every 40 ft. along excavation perimeter.
In soil borings where deepest soil sample exceeds background standard, the remediation model assumes the impacted interval of soil is soil interval exceeding background standard plus 1 foot.
In soil borings where deepest soil sample exceeds 29-B standard, the remediation model assumes the impacted interval of soil is interval exceeding background standard plus 2 feet.

TABLE J-4
SOIL REMEDIATION: RESTORE TO BACKGROUND/ORIGINAL CONDITIONS
EXCAVATION, TRANSPORTATION, DISPOSAL, AND BACKFILL

GASTAL HOFFPAUIR VS. PETRODOME OPERATING LLC, ET AL
ACADIA PARISH

Remediation Area		Excavation Volume (in-place Yd^3)	Excavation $/$Yd^3$ $10.18	Transportation (1.3 Fluff Factor) $/$Yd^3$ $24.40	Disposal (1.3 Fluff Factor) $/$Yd^3$ $93.94	Backfill (1.3 Fluff Factor) $/$Yd^3$ $18.48	Confirmation Sample $/Sample $100.00	Total Cost	Total Cost per cubic yard (in-place)
AREA 1A	OVERBURDEN	2,246	$22,864	$0	$0	$0	$0	$22,864	$10
	IMPACTED SOIL	20,211	$205,748	$641,093	$2,468,208	$485,549	$9,700	$3,810,298	$189
AREA 1B	OVERBURDEN	5,091	$51,826	$0	$0	$0	$0	$51,826	$10
	IMPACTED SOIL	2,037	$20,737	$64,614	$248,763	$48,937	$1,800	$384,851	$189
AREA 2	OVERBURDEN	8,294	$84,433	$0	$0	$0	$0	$84,433	$10
	IMPACTED SOIL	40,282	$410,071	$1,277,745	$4,919,318	$967,735	$10,200	$7,585,069	$188
AREA 3	OVERBURDEN	5,988	$60,958	$0	$0	$0	$0	$60,958	$10
	IMPACTED SOIL	48,714	$495,909	$1,545,208	$5,949,051	$1,170,305	$6,400	$9,166,873	$188
AREA 4	OVERBURDEN	0	$0	$0	$0	$0	$0	$0	$0
	IMPACTED SOIL	9,395	$95,641	$298,009	$1,147,336	$225,705	$9,800	$1,776,491	$189
AREA 5	OVERBURDEN	0	$0	$0	$0	$0	$0	$0	$0
	IMPACTED SOIL	1,361	$13,856	$43,176	$166,226	$32,700	$700	$256,658	$189

SUB-TOTAL **$23,200,321**

Supplemental Excavation, Transportation, Disposal, Backfill

Confirmation Sample Failure Rate: 10%			**$2,320,033**

Stormwater Management

Transportation/Disposal	435,809	gallons x $0.32/gallon	**$139,459**

Access Road Improvement and Maintenance

Improvement/Maintenance	4,366	linear feet x $100/linear foot	**$436,600**

Groundwater Investigation

Monitor Wells		Install and Sample 12 Wells up to 75 ft-bgs	**$146,641**

Soil Flushing/Groundwater Recovery

Transportation/Disposal	2,308,403	gallons x $0.32/gallon	**$738,689**

Project Management

Project Management	$26,981,743	x 5%	**$1,349,088**

COST	**$28,330,831**
CONTINGENCY (10%)	**$2,833,084**
TOTAL COST	**$31,163,915**

TABLE J-5
GROUNDWATER INVESTIGATION

GASTAL HOFFPAUIR VS. PETRODOME OPERATING LLC, ET AL
ACADIA PARISH

INITIAL ASSESSMENT

	Unit	Quantity	Rate	Sub-Total	Mark-up 10%	Total
Monitor Well Installation						
2 day Prep/Mob, 8 day field, 1 day DeMob						
10 hr work day						
Southland Environmental						
Geologist	hr	110	$172	$18,920	$0	$18,920
Vehicle Expense	day	8	$100	$800	$80	$880
Field Supplies		8	$50	$400	$40	$440
Walker Hill Environmental						
Cost Proposal	Estimate	1	$100,477	$100,477	$10,048	$110,525
					Sub-Total	**$130,765**
Monitor Well Sampling						
0.5 day Mob, 3 day field						
10 hr work day						
Southland Environmental						
Field Tech-Sr. Environmental Sci	hr	35	$142	$4,970	$0	$4,970
Field Tech-Environmental Sci	hr	35	$105	$3,675	$0	$3,675
Vehicle Expense	day	3	$100	$300	$30	$330
Field Supplies	day	3	$50	$150	$15	$165
55-Gallon Drums	each	2	$95	$190	$19	$209
Element Laboratories						
Specific Conductance	sample	13	$13	$169	$17	$186
TDS	sample	13	$32	$416	$42	$458
Chlorides	sample	13	$53	$689	$69	$758
TPH-G,D,O	sample	13	$166	$2,158	$216	$2,374
					Sub-Total	**$13,124**
Data Analysis						
Southland Environmental						
Geologist	hr	16	$172	$2,752	$0	$2,752
Vehicle Expense	day	0	$100	$0	$0	$0
Field Supplies	day	0	$50	$0	$0	$0
					Sub-Total	**$2,752**

GW INVEST: TOTAL $146,641

TABLE J-6
SOIL FLUSHING/GROUNDWATER RECOVERY

GASTAL HOFFPAUIR VS. PETRODOME OPERATING LLC, ET AL
ACADIA PARISH

29-B REMEDIATION	
AREA 3 Surface Area - ft^2	29,482
Impacted Zone Thickness - ft	30
Volume of Impacted Zone - ft^3	884,460
Effective Porsity - %	20
Volume of Pore Space - ft^3	176,892
Volume of Pore Space - gallons	1,323,152

BACKGROUND/ORIGINAL CONDITION REMEDIATION	
AREA 3 Surface Area - ft^2	51,435
Impacted Zone Thickness - ft	30
Volume of Impacted Zone - ft^3	1,543,050
Effective Porsity - %	20
Volume of Pore Space - ft^3	308,610
Volume of Pore Space - gallons	2,308,403

Feet
0 200 400 800

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SOUTHLAND ENVIRONMENTAL
RBB Consulting, LLC

GASTAL & HOFFPAUIR vs.
PETRODOME OPERATING, LLC, et al
ACADIA PARISH

PROPOSED SITE ACCESS ROADS

Drawn By: JRK	Date: 04/17/25	Project # 12010
Checked By: RBB	Date: 04/17/25	Revised: