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SITE ASSESSMENT,  
REMEDICATION &  
REVITALIZATION

April 21, 2009

Mr. Lucas Berresford  
Project Manager, State Remediation Section  
Division of Site Assessment and Remediation  
Bureau of Land and Waste Management  
South Carolina Dept. of Health and Environmental Control  
2600 Bull Street  
Columbia, SC 29201

**Re: Summary of Supplemental Delineation Activities  
South Carolina Electric & Gas Company  
Huger Street Former MGP Site  
Columbia, South Carolina**

Dear Mr. Berresford:

This letter report provides a summary of the supplemental delineation activities recently conducted at the Huger Street Former Manufactured Gas Plant (MGP) Site located in Columbia, South Carolina. The work was completed in accordance with the Supplemental Delineation Work Plan (SDWP) submitted to South Carolina Department of Health and Environmental Control (SCDHEC) on August 15, 2008 and subsequently approved on August 29, 2008.

**Background**

Remedial investigation activities have been ongoing at the site since 1995 and were culminated in the submittal of the Final Draft Remedial Investigation Report (RI Report) on June 4, 2007. Following submittal of the RI Report, SCE&G submitted the July 27, 2007 request for approval to complete an Interim Removal Action (IRA). SCE&G provided justification that an IRA was appropriate given the factors outlined in the request and the agency concurred. The request to conduct an IRA was approved via e-mail on January 14, 2008.

Completion of additional delineation activities was necessary prior to initiating development of an Interim Removal Action Work Plan (IRAWP) for submittal to SCDHEC. As a result, a total of 15 test pits were proposed for excavation in the SDWP. Each of the 15 locations were chosen in order to satisfy one or more of the objectives listed below:

- Provide additional information for areas identified in Comment #30 of SCDHEC's March 13, 2007 comments on the RI Report;
- Further delineate potential impacts in areas previously inaccessible due to the presence of the former structures;
- Define the planned extent of removal operations in order to produce more accurate plans and remediation contractor bid specifications;

- Gather information on the potential need for excavation water management during removal operations; and
- Collect representative samples for disposal facility characterization.

Figure 1 provides the locations of the 15 test pits. The heavy dashed lines also shown on Figure 1 represent the areas identified in SCDHEC's comments on the RI Report. Specifically, SCDHEC requested additional assessment in the following six areas of the site. The test pit(s) that were excavated to satisfy the request for each area are listed in parenthesis next to the description.

1. Former gas holder number 1 (SDTP-2 and SDTP3);
2. Data gaps should be filled in between M17, M39, M19 and the storm drain (SDTP-10, SDTP-11 and SDTP13);
3. Under the existing building near the tar wells and oil tanks (SDTP-5, SDTP-6 and SDTP-7);
4. Between M31 and the southwest property line (SDTP-15);
5. Between M37 and M29 (SDTP-12 and SDTP-14); and
6. Between M9, M7, M8, and M6 (SDTP-3 and SDTP-4).

### **Description of Activities**

Test pit excavation activities began on Monday, March 9, 2009 with the completion of two test pits (SDTP-2 and SDTP-3) in the northeastern corner of the site. Seven test pits (SDTP-1 and SDTP-4 through SDTP-9) located in the northern and central portions of the site were completed on Tuesday, March 10, 2009. The final six test pits (SDTP-10 through SDTP-15) located in the southern portion of the property were completed on Wednesday, March 11, 2009.

The test pits were excavated in the same general locations as previously specified in the SDWP. GEL Engineering, LLC. of Charleston, SC was brought onsite on Thursday, March 12, 2009 to survey the corners of the test pits and to establish ground surface elevations for each of the locations. The surveyed locations are provided on Figure 1.

In some of the locations a concrete breaking hoe-ram was utilized (during previously completed demolition activities) to remove the concrete foundations of existing structures in order to obtain access to the subsurface material. In the remaining locations the asphalt ground surface was scraped away by the excavator. The test pits were extended below ground surface (bgs) until either: the limits of the excavator were reached (approximately 18 to 20 feet bgs), water infiltration and/or sidewall cave-in precluded further excavation, or the top of the saprolite (clay) confining unit or the underlying bedrock was contacted. Some of the test pits were extended in length to gather more information on subsurface structures or to circumvent a particular obstruction. A geologist logged the lithology of each of the test pits and detailed test pit logs are included as Attachment A. Pictures were also taken of the test pits and are included in Attachment B. It should be noted that the angle of the sun produced shadows that were not conducive to capturing detailed pictures of the exposed sidewalls at some of the locations.

Most test pits were backfilled soon after completion. A few were left open for brief periods to gauge the level and rate of water infiltration. No test pits were left open overnight or during periods when personnel were not present at the site.

Representative soil samples were collected from five of the test pits (SDTP-1, SDTP-5, SDTP-6, SDTP-7 and SDTP-9) for disposal facility characterization purposes, as specified in the SDWP. The analytical results for these samples will be included in the IRAWP, along with the individual material characterization packages and disposal facility acceptance information.

### **Findings**

SDTP-1 was excavated to provide more information on potential impacts directly south of the former purifier box area. Observed conditions consisted of a zone of black stained soil with a moderate MGP/naphthalene odor from 7.5 to 10 feet bgs, immediately above the saprolite confining unit.

SDTP-2 and SDTP-3 were completed to satisfy the SCDHEC request for additional assessment in the former gas holder #1 area. From approximately ground surface to a depth of 4 to 4.5 feet bgs, above the former gas holder, impacts at both locations consisted of intermittent pockets of thick viscous to taffy like tar. At depths of approximately 11 to 13 feet bgs, at SDTP-2 and the eastern portion of SDTP-3, a black stained clay, with sheens and a slight MGP odor were observed. The western portion of SDTP-3 exhibited no visual or olfactory MGP impacts.

Along with SDTP-3, SDTP-4 was completed to satisfy the SCDHEC request for additional assessment in the area between soil borings M6, M7, M8 and M9. Conditions at SDTP-4 consisted of staining, with moderate diesel-like odors from 8.75 to 14.5 feet bgs, directly above the saprolite confining unit.

Test pits SDTP-5 through SDTP-7 were completed to satisfy the SCDHEC request for additional assessment in the former tar well and oil tanks area. At SDTP-5, several brick and concrete structures were encountered to depths of approximately 7 feet bgs. Impacts consisted of black staining from 10.5 to 15 feet bgs. Black stained clay was also observed from 15 to 16 feet bgs, but sidewall cave-in prevented further advancement of SDTP-5. SDTP-6 was without impacts to a depth of approximately 10 feet bgs. Below 10 feet bgs, the impacts observed graded from black staining to partially saturated with NAPL, to saturated with NAPL. The test pit excavation was terminated at 18.5 feet bgs, due to significant groundwater accumulation. At SDTP-7, three cylindrical concrete structures were observed at a depth of approximately 6 feet bgs. These may have been the foundations/footers of the former oil tanks. Impacts consisted of black stained sand and gravel partially saturated with NAPL from 10.5 to 17 feet bgs.

The rationale for SDTP-8 was to address a possible data gap between soil borings M-28 and M-16. Based on the test pit, a concrete and brick "floor" was encountered from 8.5 to 9.8 feet bgs, with the fill material above containing a black, silt and clay, with stiff weathered NAPL and blebs adhered to gravel from 6.3 to 8.5 feet bgs. Below the "floor", the excavated material consisted of slag, cinders, coal fines, and coal. Significant groundwater infiltration in this zone caused large amounts of sidewall cave-in, and the excavation was halted at 16.5 feet bgs.

A previously existing office structure prevented past investigative activities in the area of SDTP-9. SDTP-9 consisted entirely of fill material, from ground surface to approximately 23 feet bgs, where the competent granite bedrock was encountered. From approximately 14.5 feet bgs to bedrock, the fill material was stained black, with trace to some NAPL blebs.

Test pits SDTP-10, SDTP-11, and SDTP-13 were completed to satisfy the SDHEC request for additional assessment in the M17, M39, and M19 areas. Each of these test pits were composed entirely of fill material, with no visual or olfactory MGP related observations. Test pitting at all three locations was terminated when the excavator reached its maximum excavation depth, approximately 18 to 20 feet bgs.

Test pits SDTP-12 and SDTP-14 were completed to satisfy the SDHEC request for additional assessment in the M37 and M29 areas. Both SDTP-12 and SDTP-14 were composed of fill materials and terminated at the excavator's maximum excavation depth. At SDTP-12, black staining was observed with a slight petroleum odor from 18 to 19.5 feet bgs. At SDTP-14, the interval from 7 to 9 feet bgs was stained black and had a slight petroleum-type odor.

Test pit SDTP-15 was completed to satisfy the SDEHEC request for additional assessment between soil boring M31 and the southwest property boundary. Black staining, with a slight petroleum odor was observed from 17.5 to 19.5 feet bgs within fill material. The test pit was terminated at 19.5 feet bgs due to reaching the maximum depth capabilities of the excavator.

### **General Observations**

Completion of the supplemental delineation activities provided the following general observations, which will be incorporated in the IRAWP:

- With the exception of the gas holder #1 area (SDTP-2 and SDTP-3), a significant zone of visually unimpacted overburden material is present over much of the planned excavation area. This material must be removed and managed to access the underlying impacted material;
- Significant underground structures and oversized debris are present at the site that will require management during removal activities;
- Groundwater infiltration into the excavation areas within the saturated zone will occur and will require management and proper disposal;
- Material conditioning to render saturated material suitable for transport and disposal will most likely be required, to some extent;
- The bulk of the impacted source material is located within the saturated zone under the former bus maintenance facility structure (SDTP-6 and SDTP-7);
- Impacts were minimal in the northeastern corner of the site, when compared to the central portion (former tar well and oil tanks area);
- No impacts were observed in the southeastern site, south of the buried large diameter storm drain culvert (SDTP-10, SDTP-11 and SDTP-13); and
- Only minimal, non-MGP source material with potential olfactory impacts and slight staining was observed in the test pits excavated in the southwestern portion of the site (SDTP-12, SDTP-14 and SDTP-15).

### **Summary**

SCE&G currently anticipates that the information gathered from completing the supplemental delineation activities, as summarized herein, will satisfy SCDHEC's request for more information and the RI Report will be approved by the agency after review of this summary.

The above observations will be utilized to refine the planned excavation areas and to develop the IRAWP. SCE&G currently plans to submit the IRAWP for SCDHEC review and approval in May 2008. SCE&G also anticipates submitting a plan to address the underground storage tanks (USTs) at the site during the second or third quarter of 2009. Removal activities for the MGP-impacted material are currently planned for the fourth quarter of 2009.

Thank you for your review of this submittal and your continued involvement in this project. Should you have any questions, please contact me at (919) 819-2748.

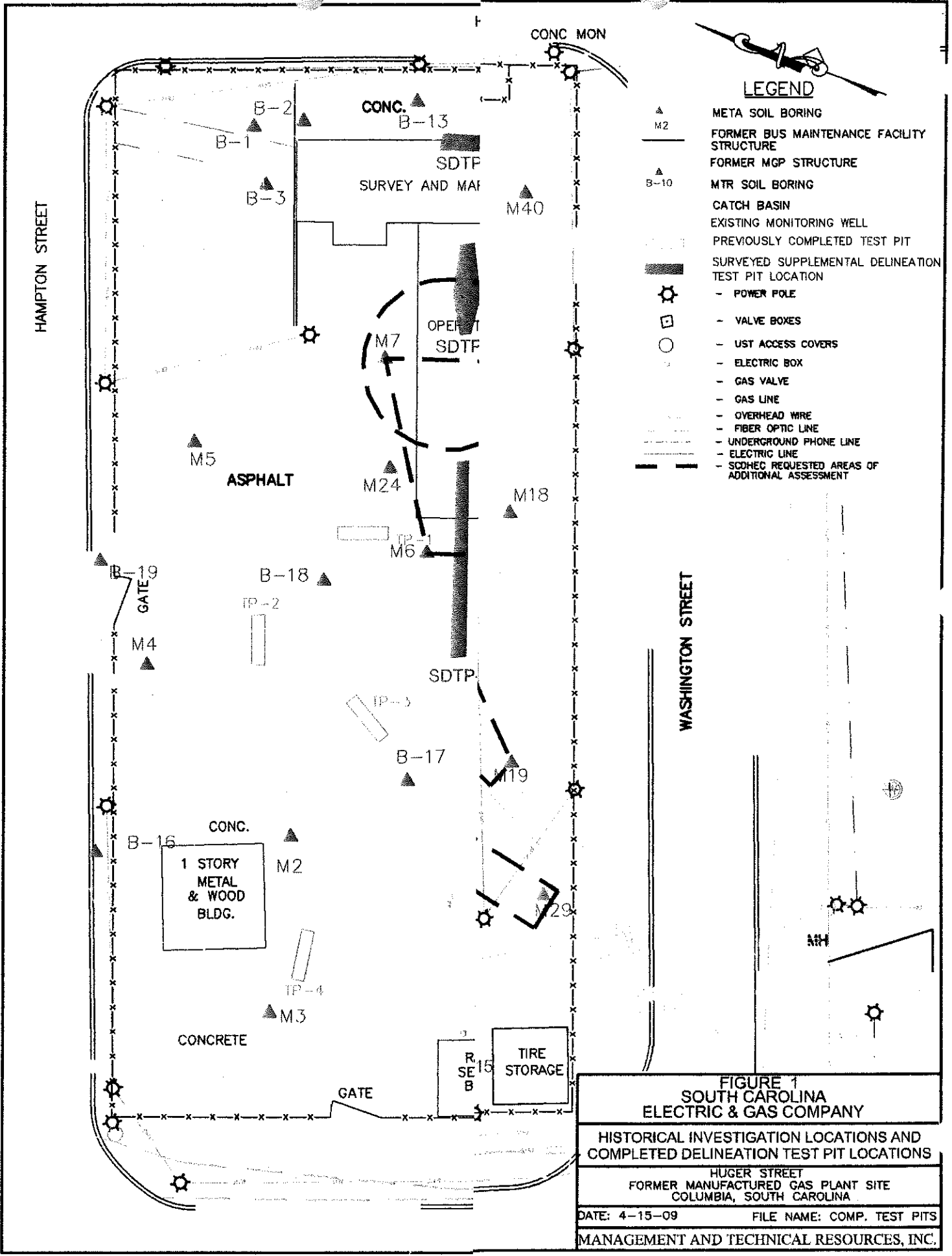
Sincerely,

Handwritten signature of Robert Apple in cursive, followed by the word "FOR" in capital letters.

Robert Apple  
SCANA Services, Inc.

Enclosures

cc: Konstantine Akhvediani (SCDHEC)  
Rusty Contrael (MTR)



**LEGEND**

- ▲ M2 META SOIL BORING
- M2 FORMER BUS MAINTENANCE FACILITY STRUCTURE
- ▲ B-10 FORMER MGP STRUCTURE
- ▲ B-10 MTR SOIL BORING
- CATCH BASIN
- EXISTING MONITORING WELL
- PREVIOUSLY COMPLETED TEST PIT
- ▬ SURVEYED SUPPLEMENTAL DELINEATION
- TEST PIT LOCATION
- ⊗ - POWER POLE
- - VALVE BOXES
- - UST ACCESS COVERS
- - ELECTRIC BOX
- - GAS VALVE
- - GAS LINE
- - OVERHEAD WIRE
- - FIBER OPTIC LINE
- - UNDERGROUND PHONE LINE
- - ELECTRIC LINE
- - SCDHEC REQUESTED AREAS OF ADDITIONAL ASSESSMENT

**FIGURE 1**  
**SOUTH CAROLINA**  
**ELECTRIC & GAS COMPANY**  
 HISTORICAL INVESTIGATION LOCATIONS AND  
 COMPLETED DELINEATION TEST PIT LOCATIONS  
 HUGER STREET  
 FORMER MANUFACTURED GAS PLANT SITE  
 COLUMBIA, SOUTH CAROLINA  
 DATE: 4-15-09 FILE NAME: COMP. TEST PITS  
 MANAGEMENT AND TECHNICAL RESOURCES, INC.

**ATTACHMENT A**  
**TEST PIT LOGS**



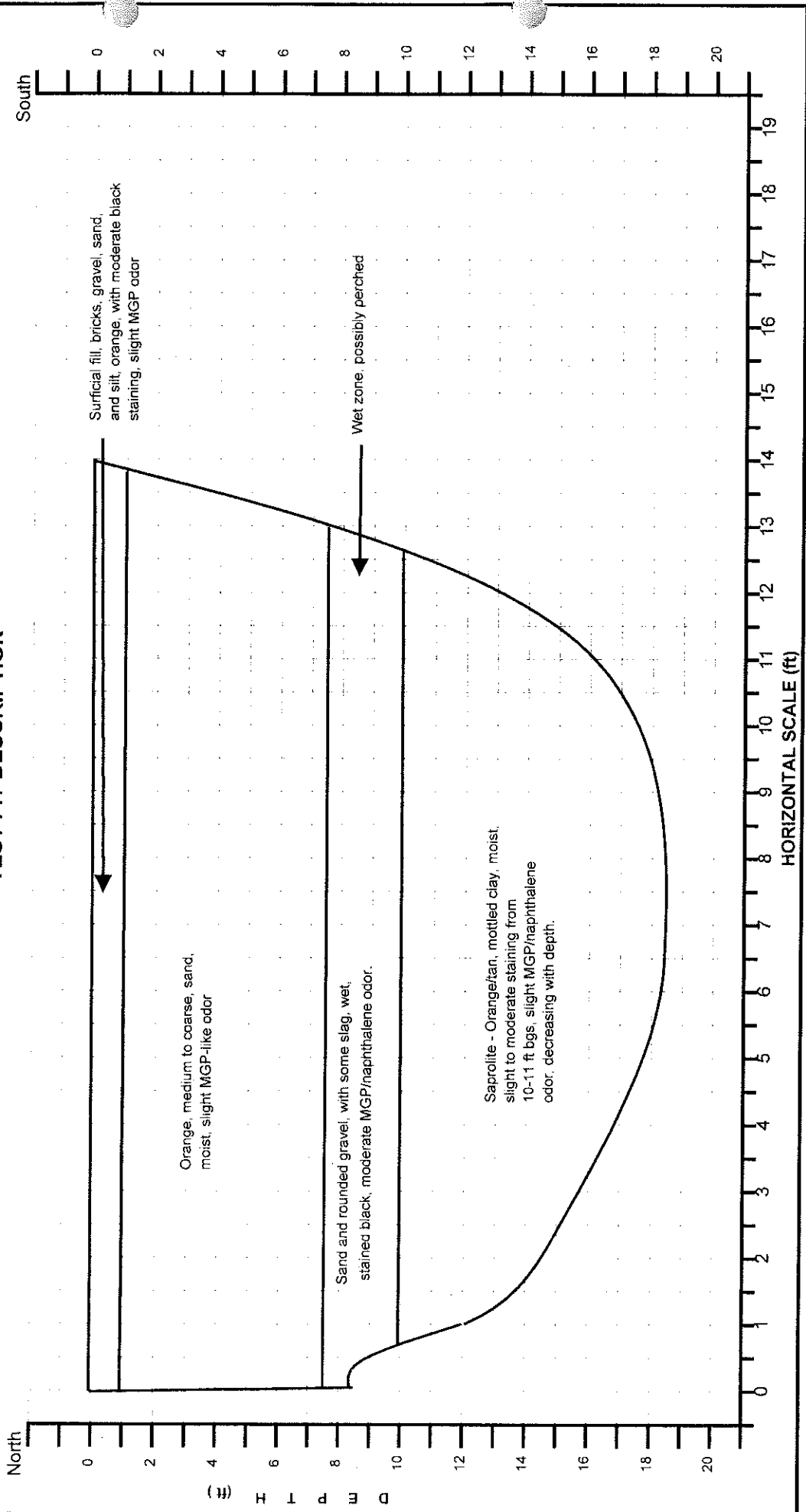
Project No.:  
 Location: Huger Street Former MGP  
 Client: South Carolina Electric and Gas Co.

Geologist: S. Pesch  
 Excavator: C. Lynch  
 Method: Trench Excavation  
 Date: 03/10/09  
 Depth: Variable  
 Surface Elevation: 191.80 ft-msl

TEST PIT: SDTP-1

NOTES

TEST PIT DESCRIPTION







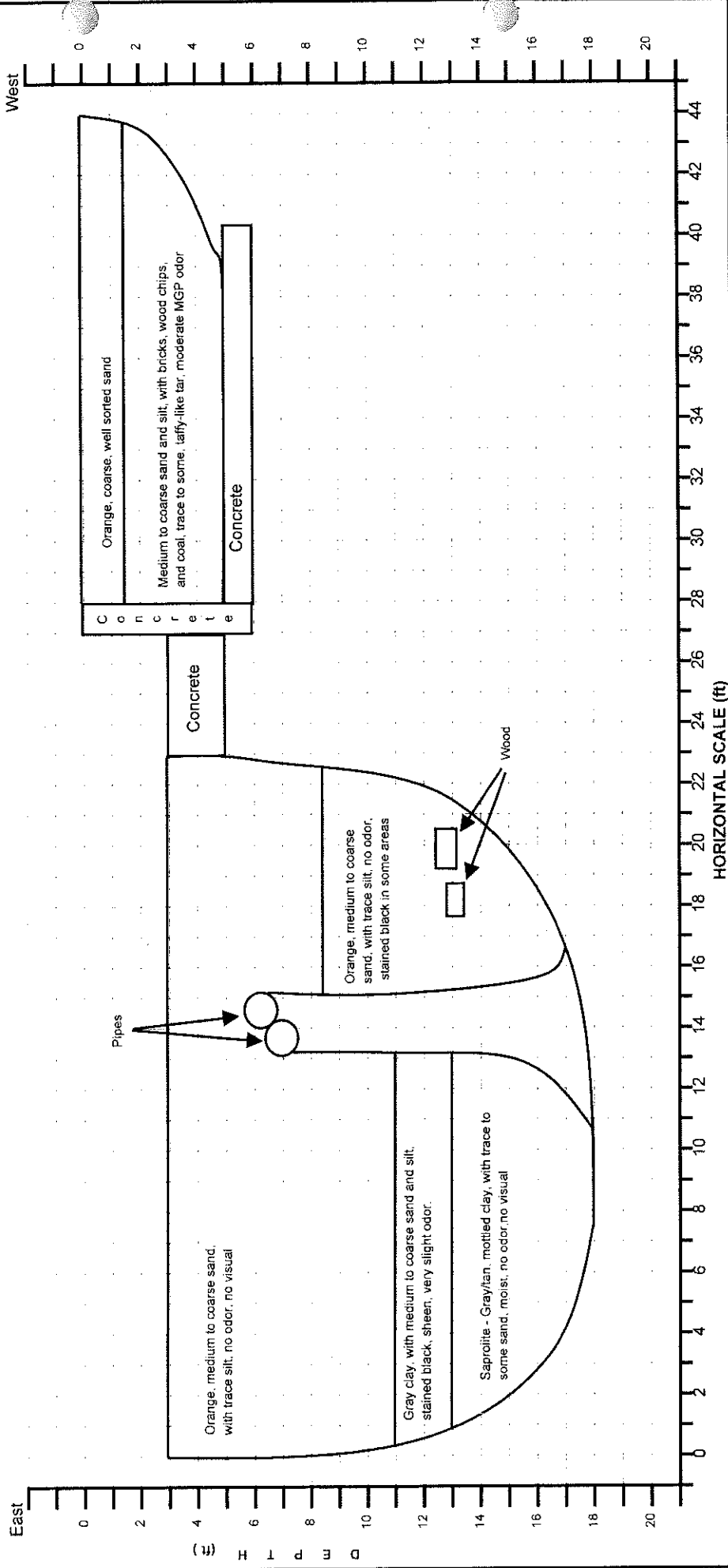
Geologist: S. Pesch  
 Excavator: C. Lynch  
 Method: Trench Excavation  
 Date: 03/09/09  
 Depth: Variable  
 Surface Elevation: 195.02 ft-msl

TEST PIT: SDTP-2

NOTES: No appreciable water encountered

Project No.:  
 Location: Huger Street Former MGP  
 Client: South Carolina Electric and Gas Co.

TEST PIT DESCRIPTION





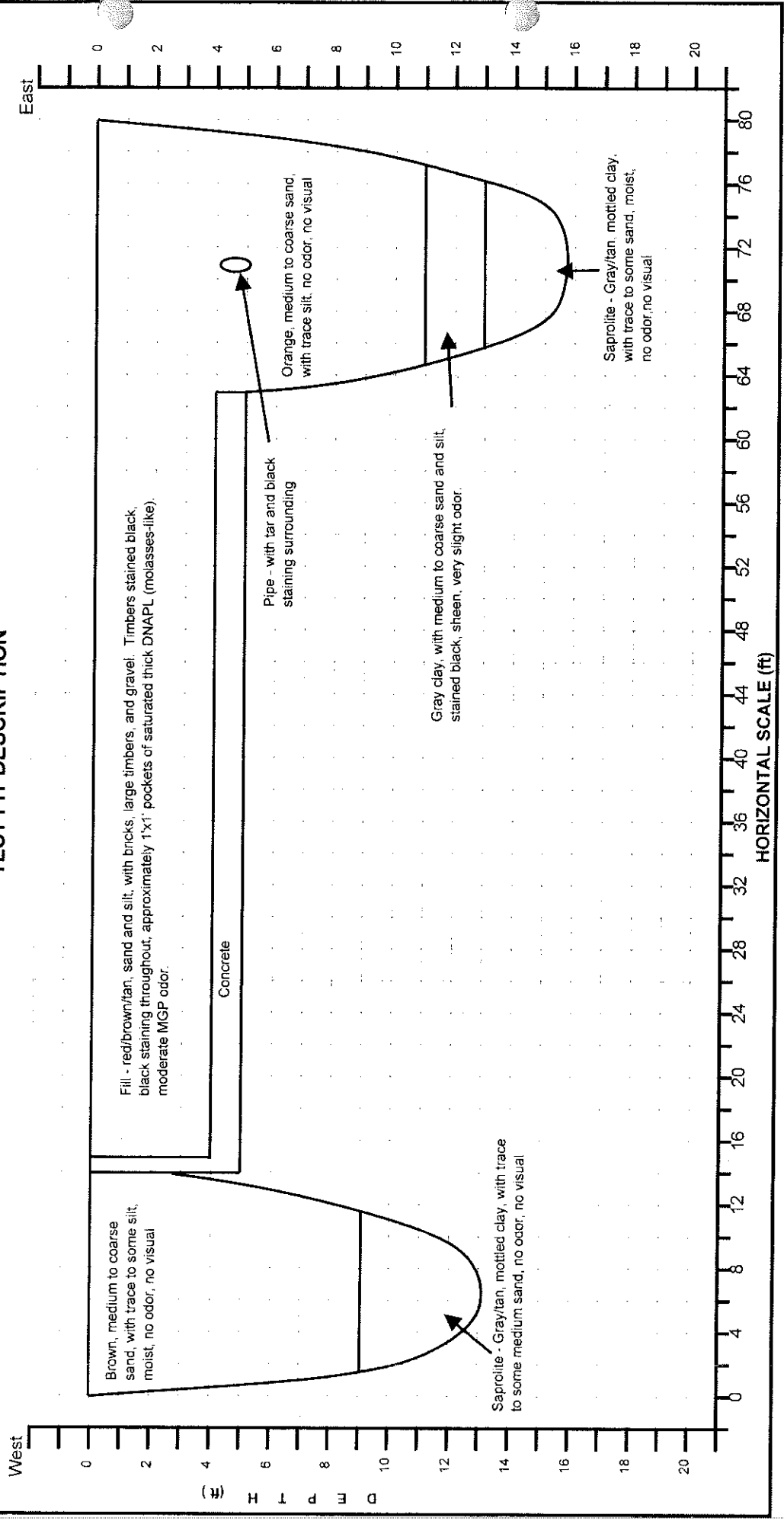
Geologist: S. Pesch  
 Excavator: C. Lynch  
 Method: Trench Excavation  
 Date: 03/09/09  
 Depth: Variable  
 Surface Elevation: 193.68 ft-msl

TEST PIT: SDTP-3

NOTES: No appreciable water encountered

Project No.:  
 Location: Huger Street Former MGP  
 Client: South Carolina Electric and Gas Co

TEST PIT DESCRIPTION





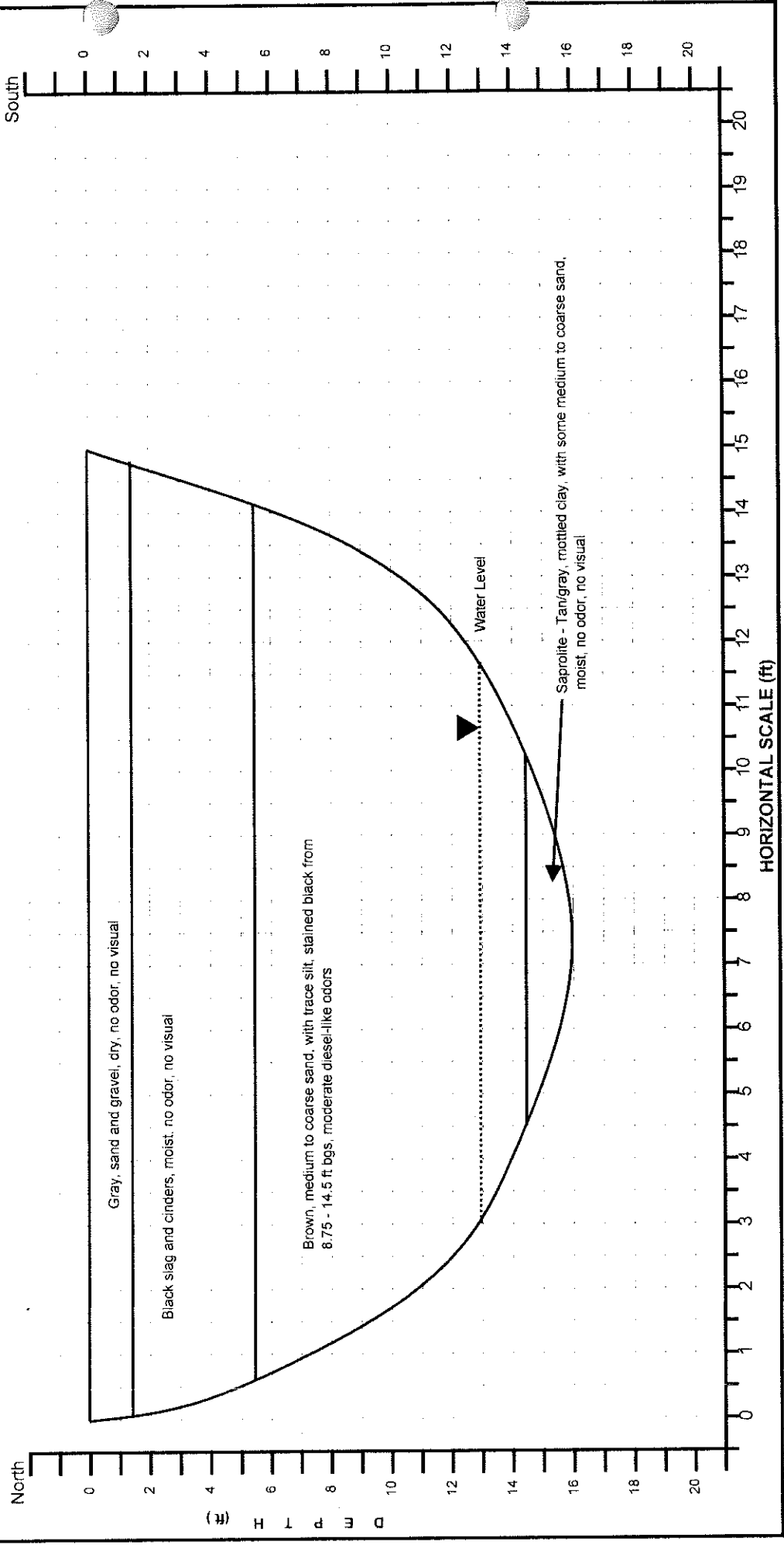
Geologist: S. Pesch  
Excavator: C. Lynch  
Method: Trench Excavation  
Date: 03/10/09  
Depth: Variable  
Surface Elevation: 189.86 ft-msl

TEST PIT: SDTP-4

NOTES:

Project No.:  
Location: Huger Street Former MGP  
Client: South Carolina Electric and Gas Co.

### TEST PIT DESCRIPTION





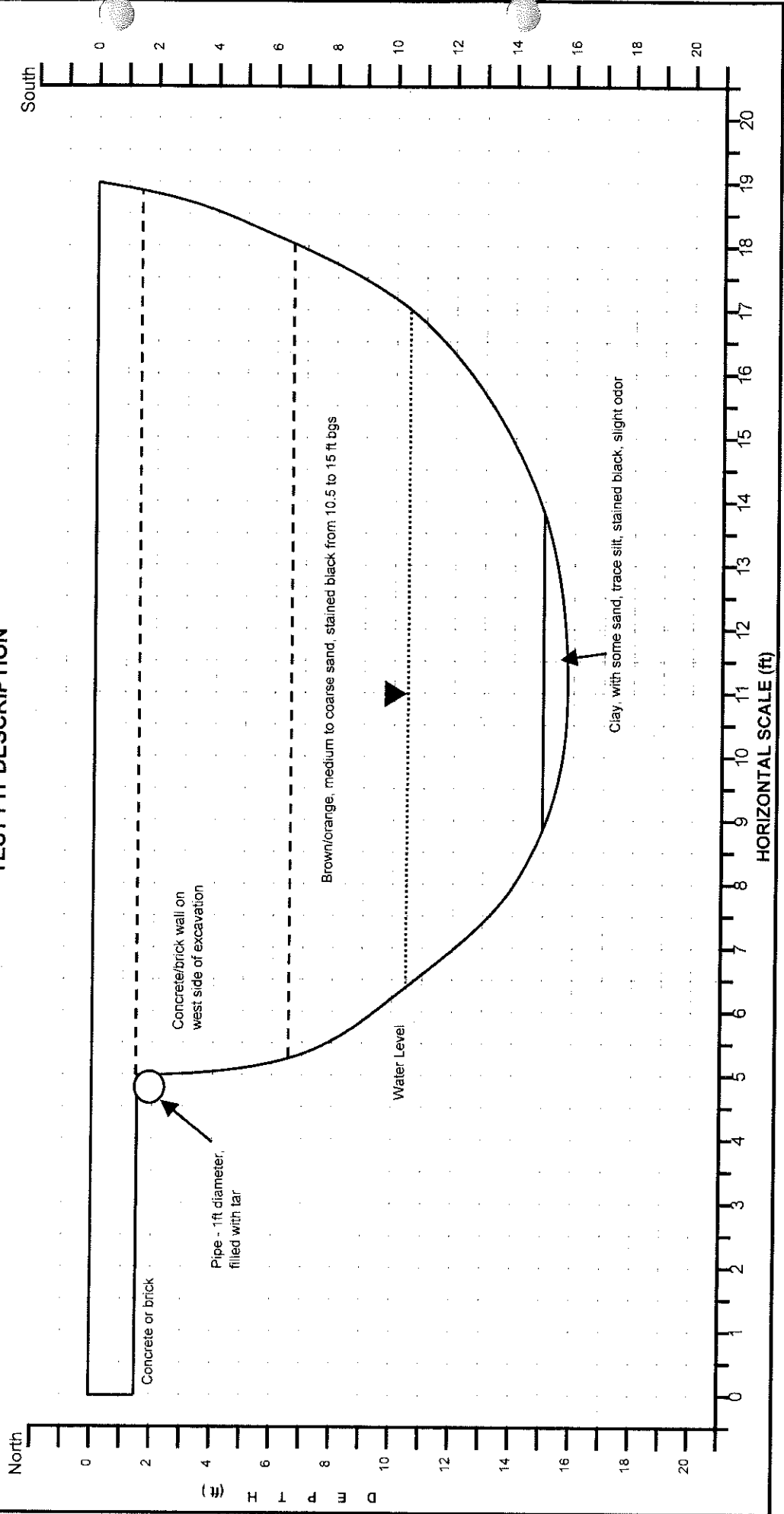
Project No.: \_\_\_\_\_  
 Location: Huger Street Former MGP  
 Client: South Carolina Electric and Gas Co.

Geologist: S. Pesch  
 Excavator: C. Lynch  
 Method: Trench Excavation  
 Date: 03/10/09  
 Depth: Variable  
 Surface Elevation: 189.50 ft-msl

TEST PIT: SDTP-5

NOTES:

**TEST PIT DESCRIPTION**





Geologist: S. Pesch  
Excavator: C. Lynch  
Method: Trench Excavation  
Date: 03/10/09  
Depth: Variable  
Surface Elevation: 198.55 ft-msl

TEST PIT: SDTP-6

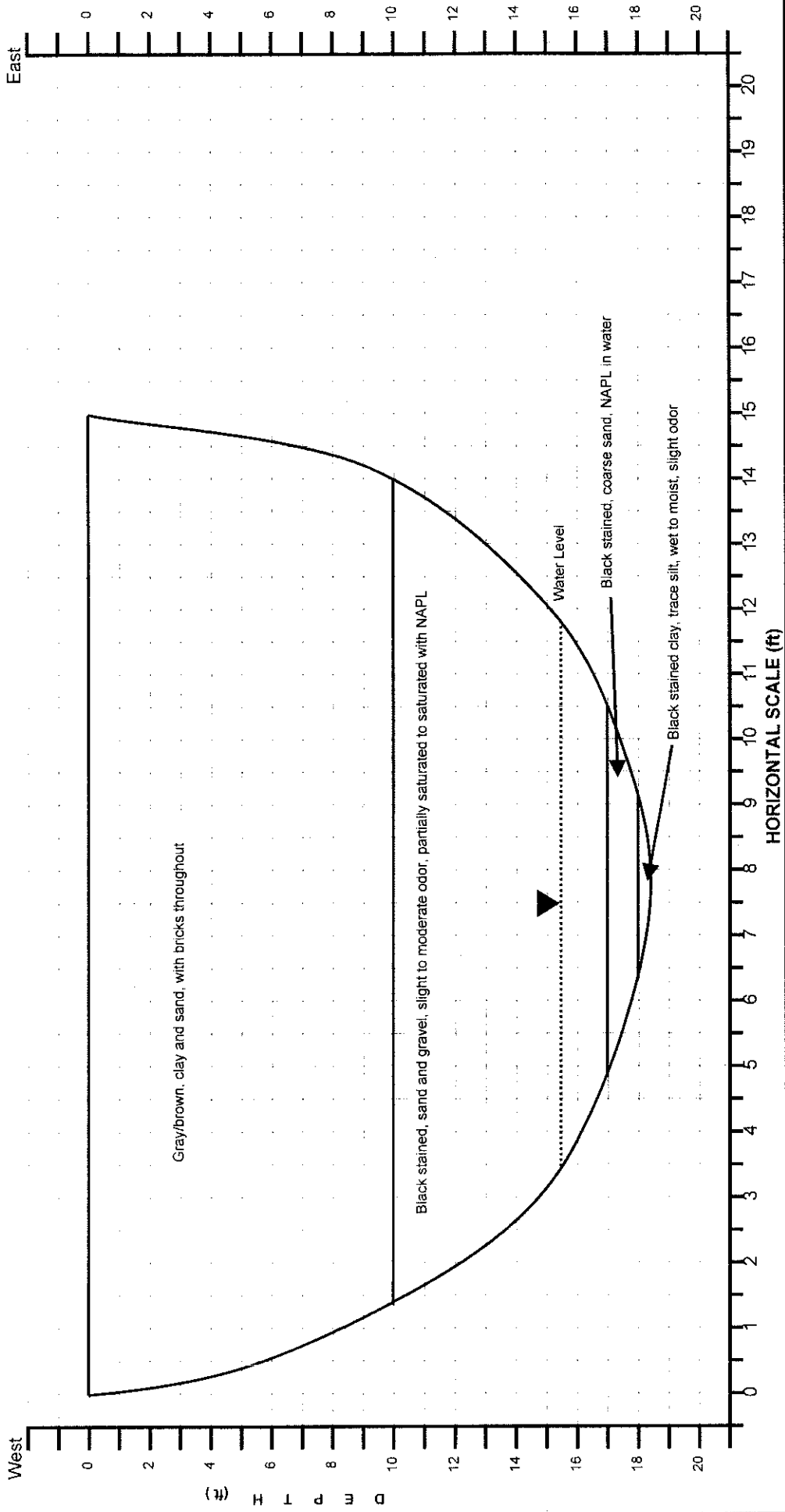
NOTES:

Project No.:

Location: Huger Street Former MGP

Client: South Carolina Electric and Gas Co

### TEST PIT DESCRIPTION





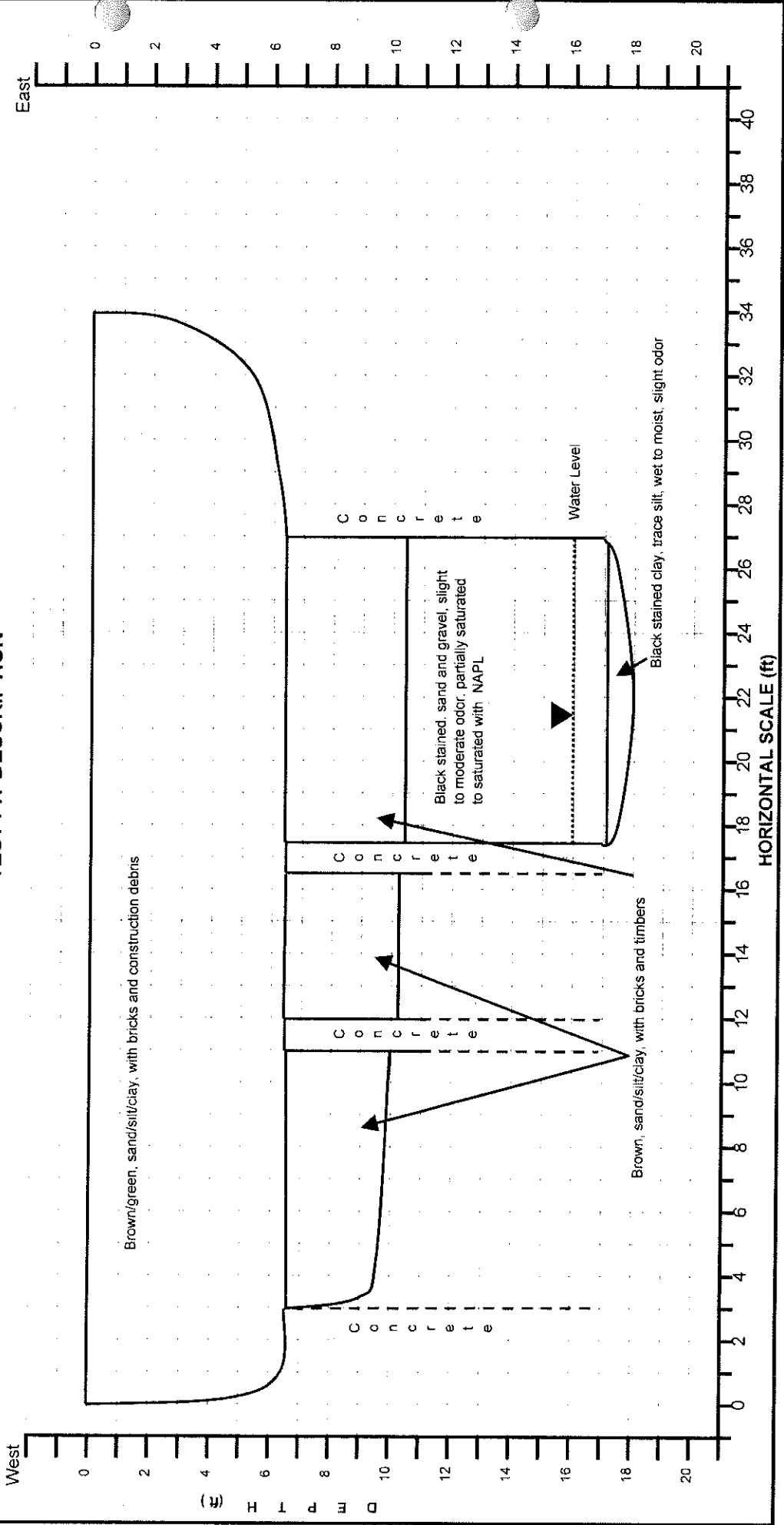
Geologist: S. Pesch  
 Excavator: C. Lynch  
 Method: Trench Excavation  
 Date: 03/10/09  
 Depth: Variable  
 Surface Elevation: 189.51 ft-msl

TEST PIT: SDTP-7

NOTES:

Project No.:  
 Location: Huger Street Former MGP  
 Client: South Carolina Electric and Gas Co.

TEST PIT DESCRIPTION





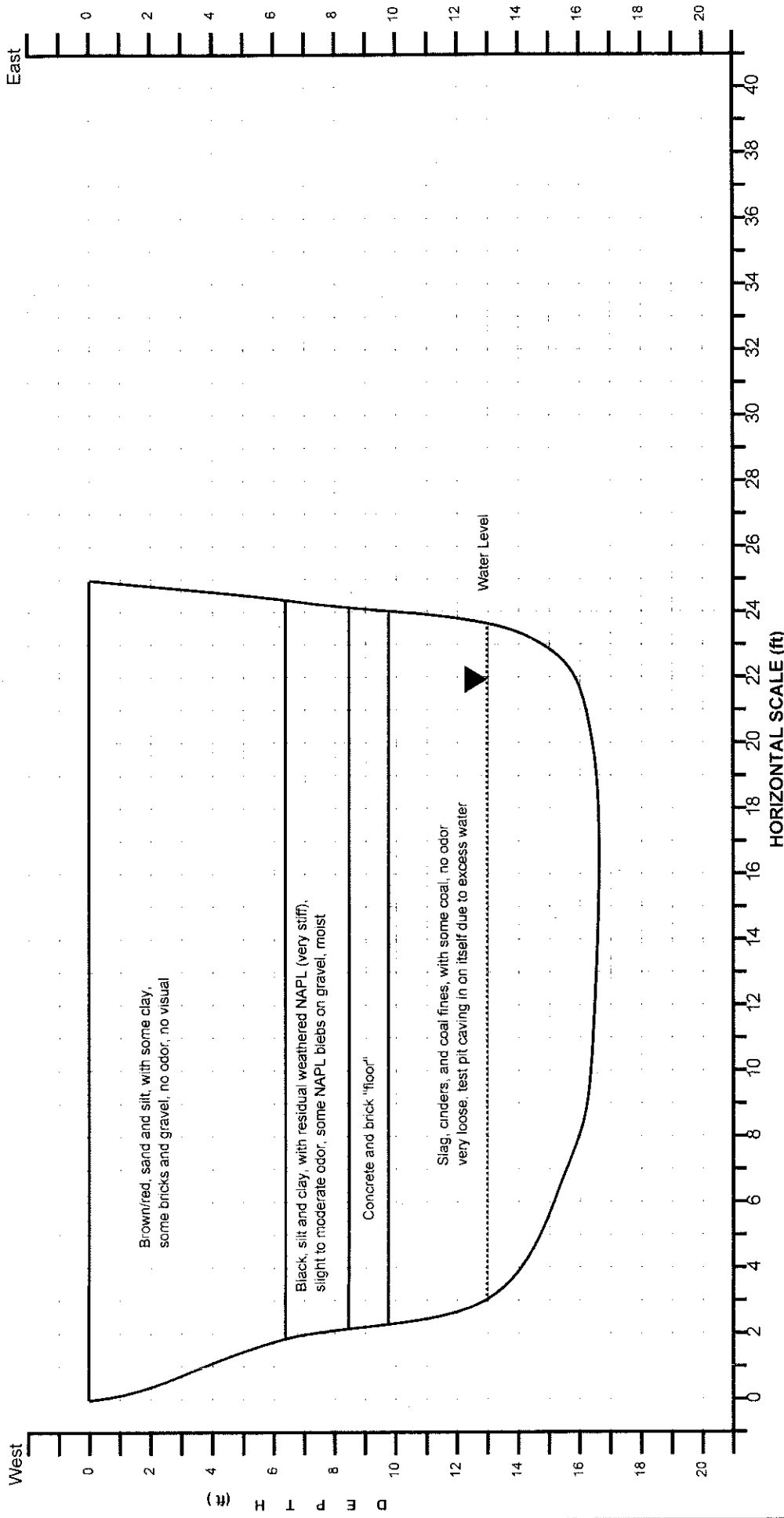
Geologist: S. Pesch  
Excavator: C. Lynch  
Method: Trench Excavation  
Date: 03/10/09  
Depth: Variable  
Surface Elevation: 189.65 ft-msl

TEST PIT: SDTP-8

NOTES:

Project No.:  
Location: Huger Street Former MGP  
Client: South Carolina Electric and Gas Co.

### TEST PIT DESCRIPTION





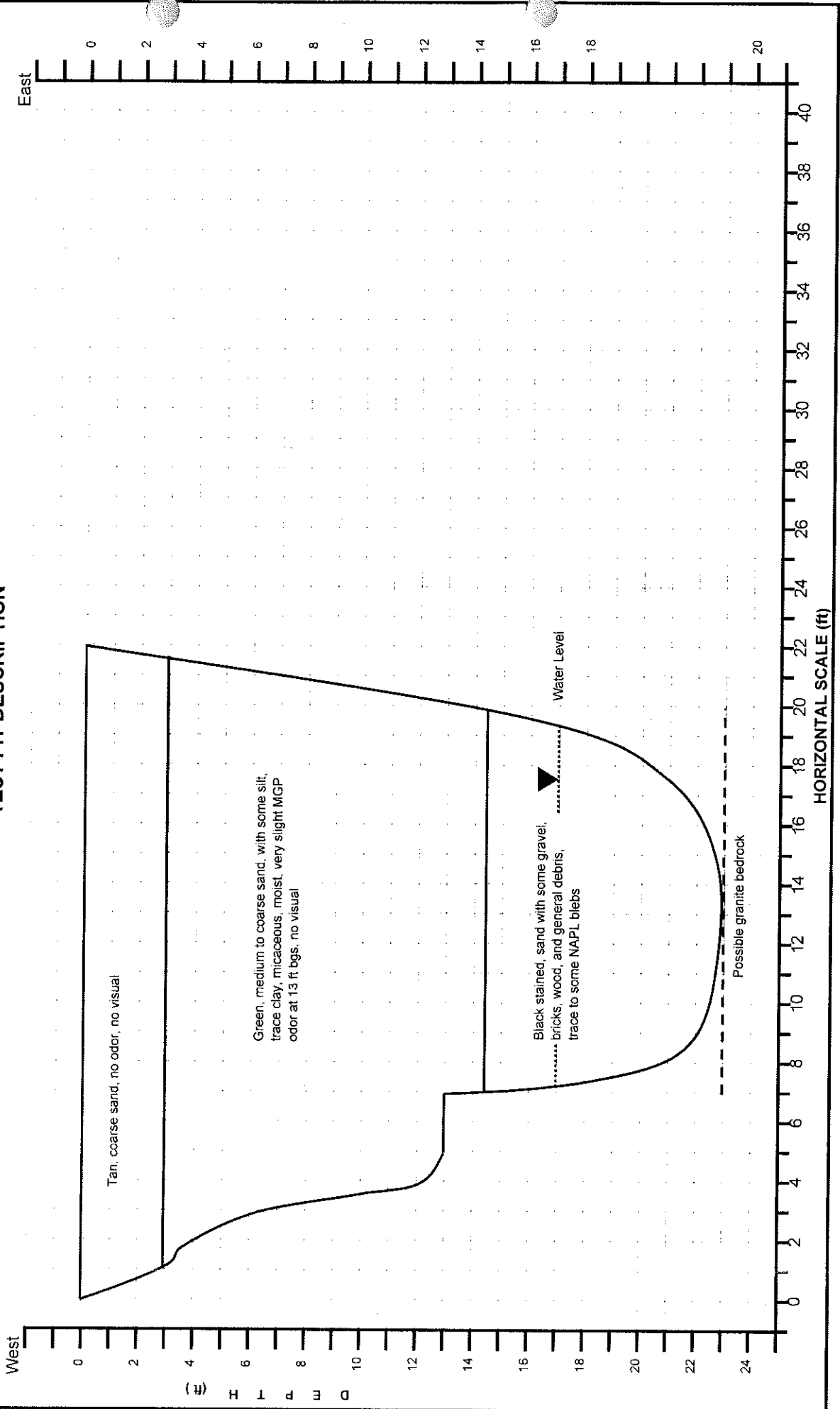
Project No.:  
Location: Huger Street Former MGP  
Client: South Carolina Electric and Gas Co

Geologist: S. Pesch  
Excavator: C. Lynch  
Method: Trench Excavation  
Date: 03/10/09  
Depth: Variable  
Surface Elevation: 189.55 ftmsl

TEST PIT: SDTP-9

NOTES:

### TEST PIT DESCRIPTION







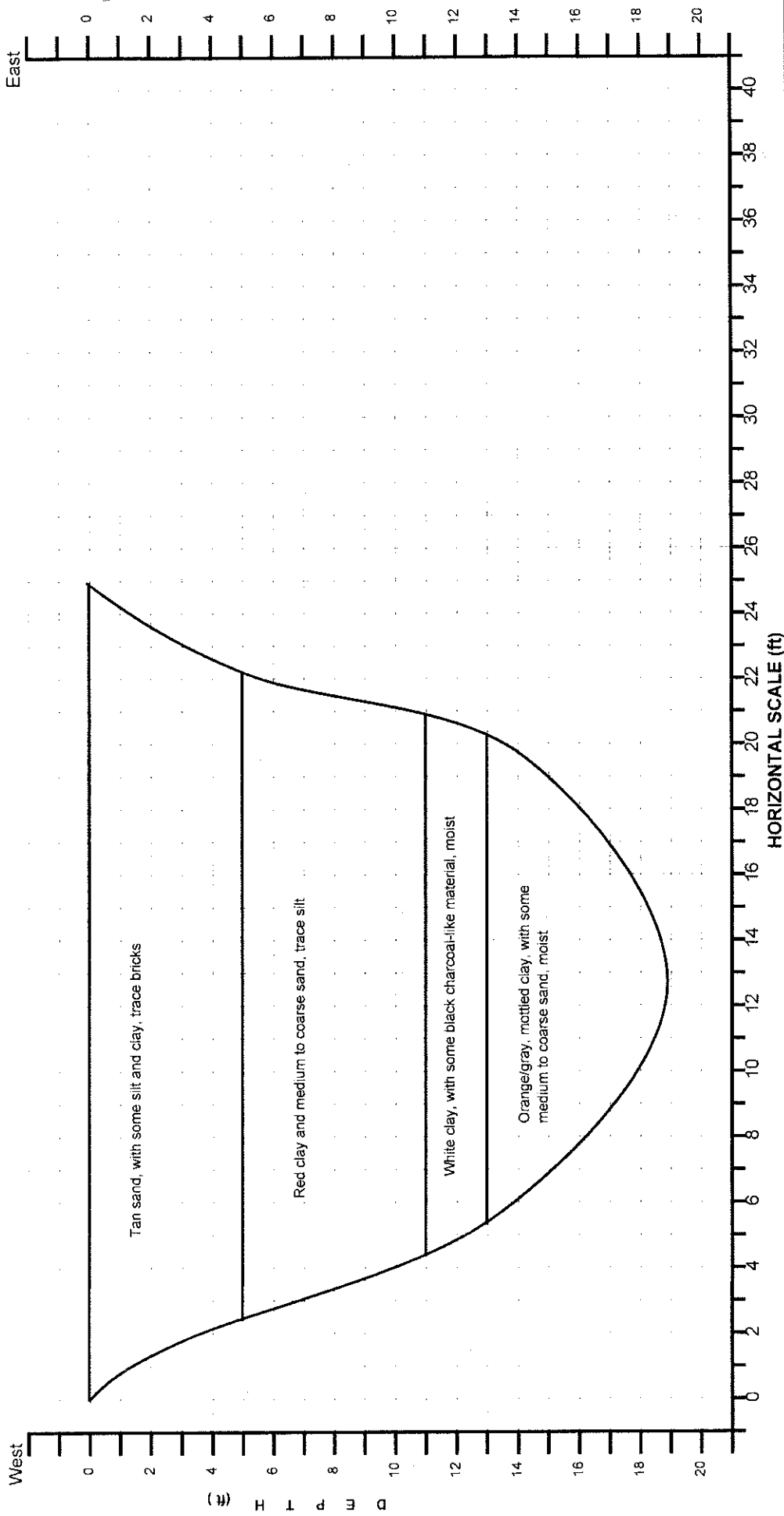
Geologist: S. Pesch  
Excavator: C. Lynch  
Method: Trench Excavation  
Date: 03/11/09  
Depth: Variable  
Surface Elevation: 188.71 ft-msl

TEST PIT: SDTP-10

NOTES: No appreciable water encountered

Project No.:  
Location: Huger Street Former MGP  
Client: South Carolina Electric and Gas Co.

### TEST PIT DESCRIPTION





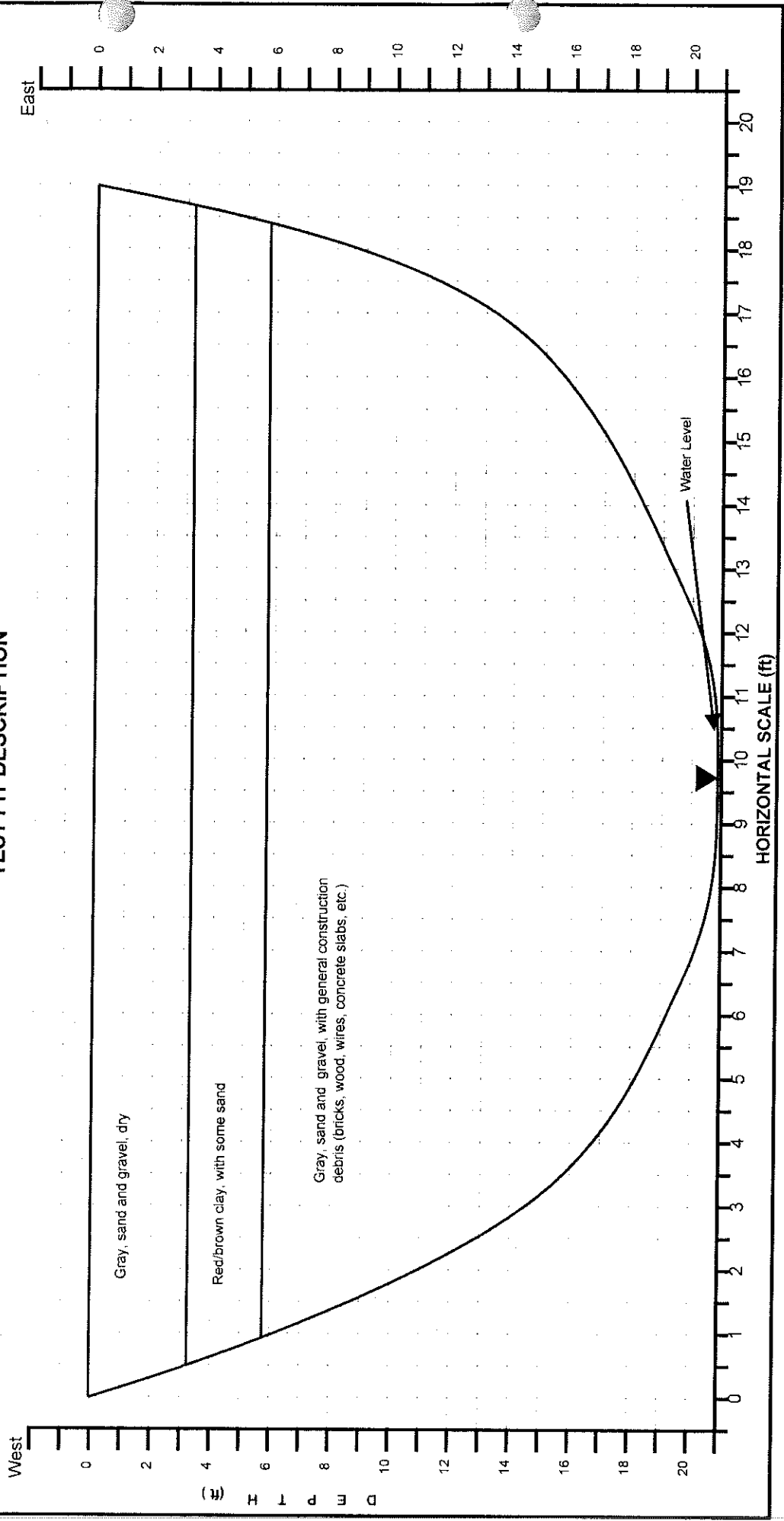
Geologist: S. Pesch  
Excavator: C. Lynch  
Method: Trench Excavation  
Date: 03/11/09  
Depth: Variable  
Surface Elevation: 188.15 ft.msl

TEST PIT: SDTP-11

NOTES:

Project No.:  
Location: Huger Street Former MGP  
Client: South Carolina Electric and Gas Co.

### TEST PIT DESCRIPTION





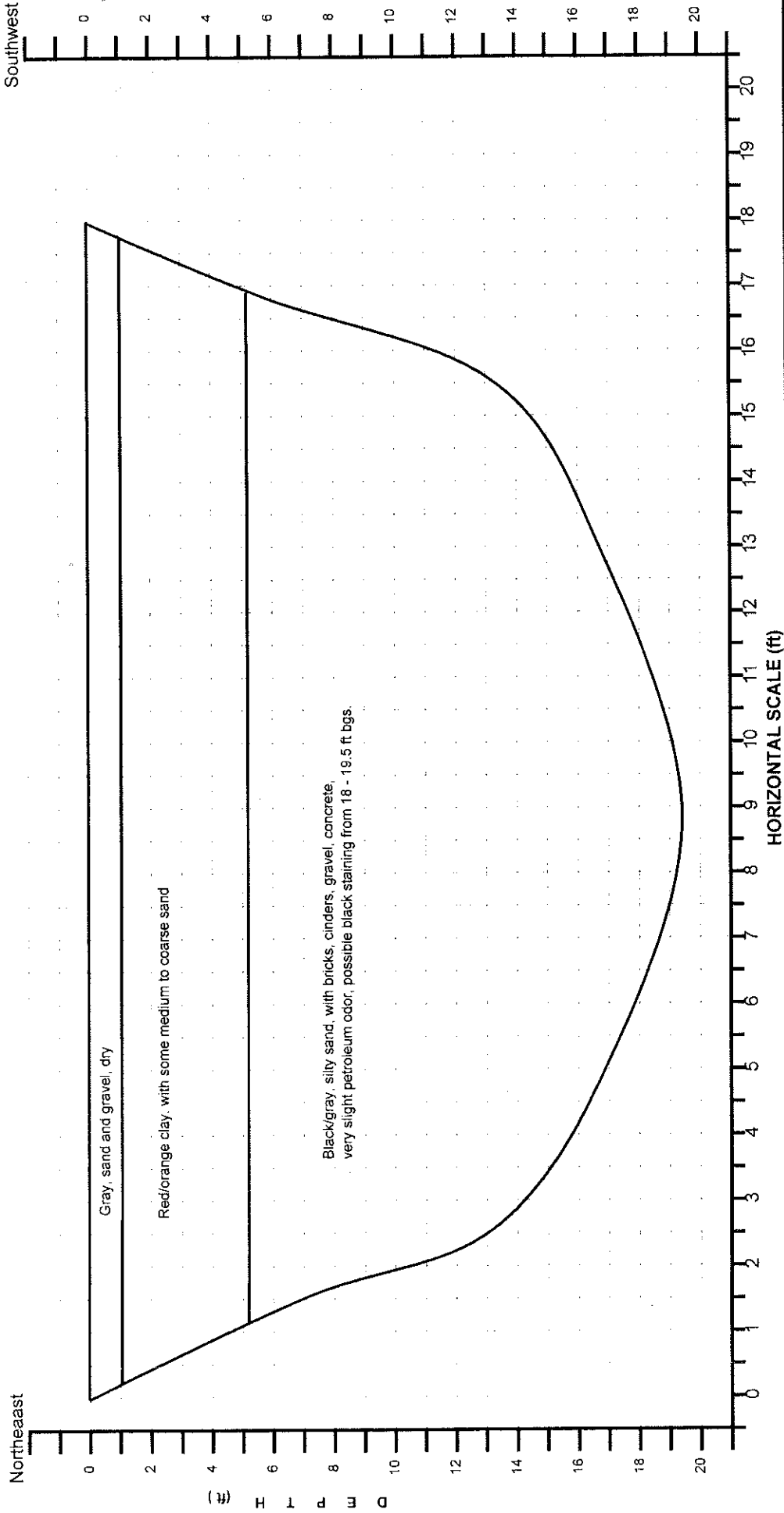
Geologist: S. Pesch  
 Excavator: C. Lynch  
 Method: Trench Excavation  
 Date: 03/11/09  
 Depth: Variable  
 Surface Elevation: 187.42 ft-msl

TEST PIT: SDTP-12

NOTES: No appreciable water encountered

Project No.:  
 Location: Huger Street Former MGP  
 Client: South Carolina Electric and Gas Co.

TEST PIT DESCRIPTION





Project No.:  
 Location:  
 Client:

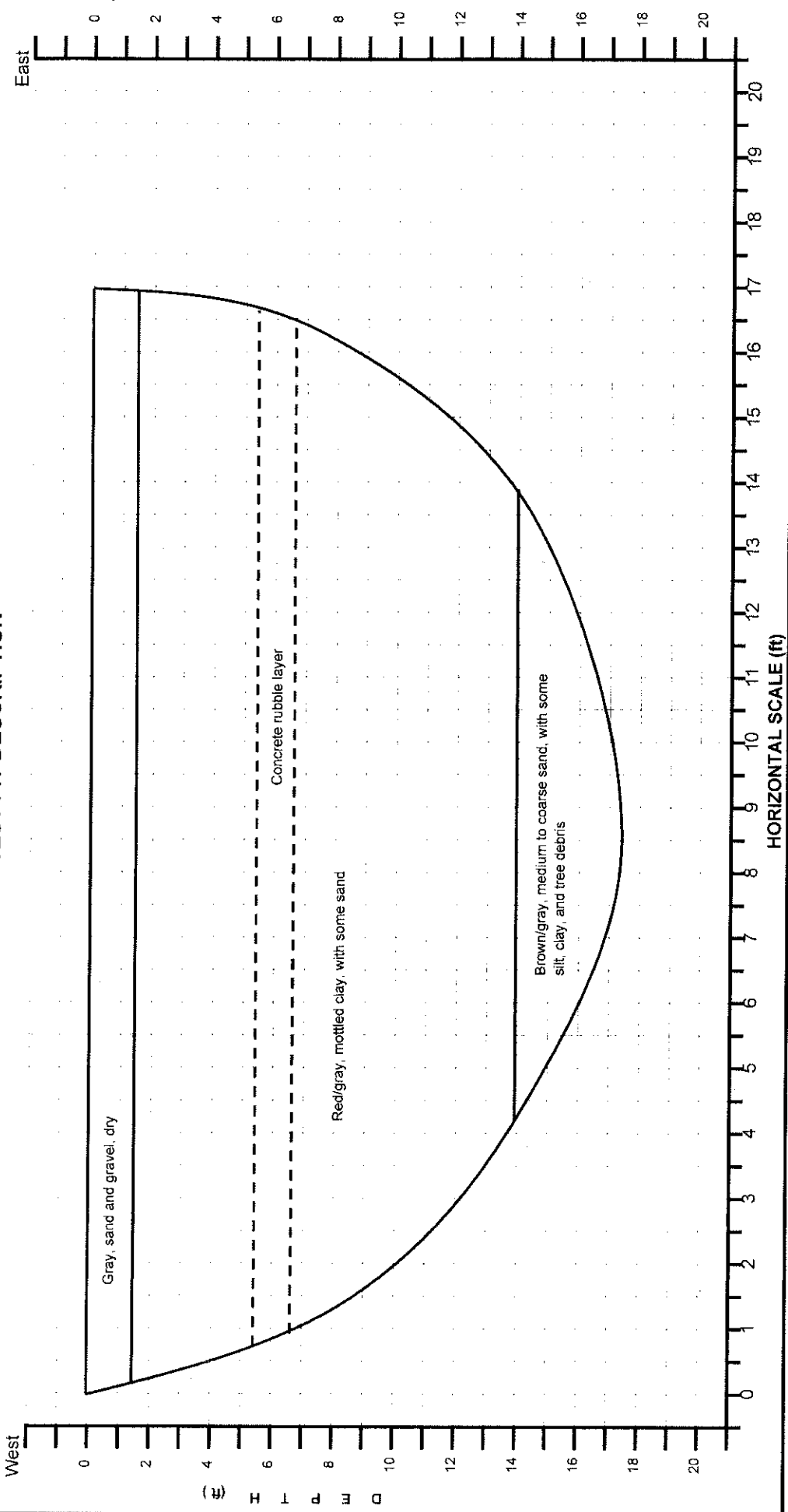
Huger Street Former MGP  
 South Carolina Electric and Gas Co.

Geologist: S. Pesch  
 Excavator: C. Lynch  
 Method: Trench Excavation  
 Date: 03/11/09  
 Depth: Variable  
 Surface Elevation: 185.40 ft.msl

TEST PIT: SDTP-13

NOTES: No appreciable water encountered

TEST PIT DESCRIPTION





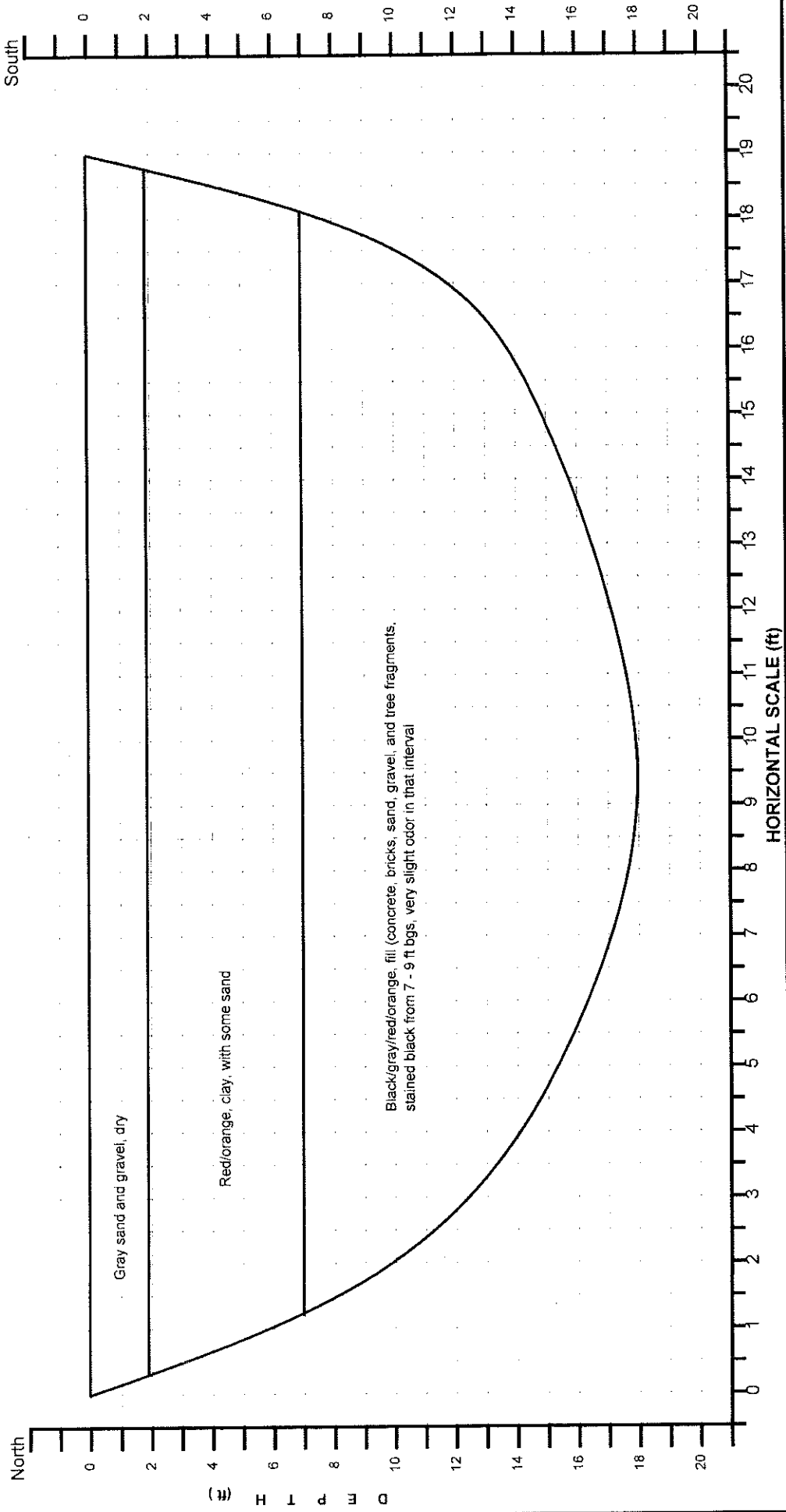
Geologist: S. Pesch  
Excavator: C. Lynch  
Method: Trench Excavation  
Date: 03/11/09  
Depth: Variable  
Surface Elevation: -185.07 ft-msl

TEST PIT: SDTP-14

NOTES: No appreciable water encountered

Project No.:  
Location: Huger Street Former MGP  
Client: South Carolina Electric and Gas Co.

### TEST PIT DESCRIPTION





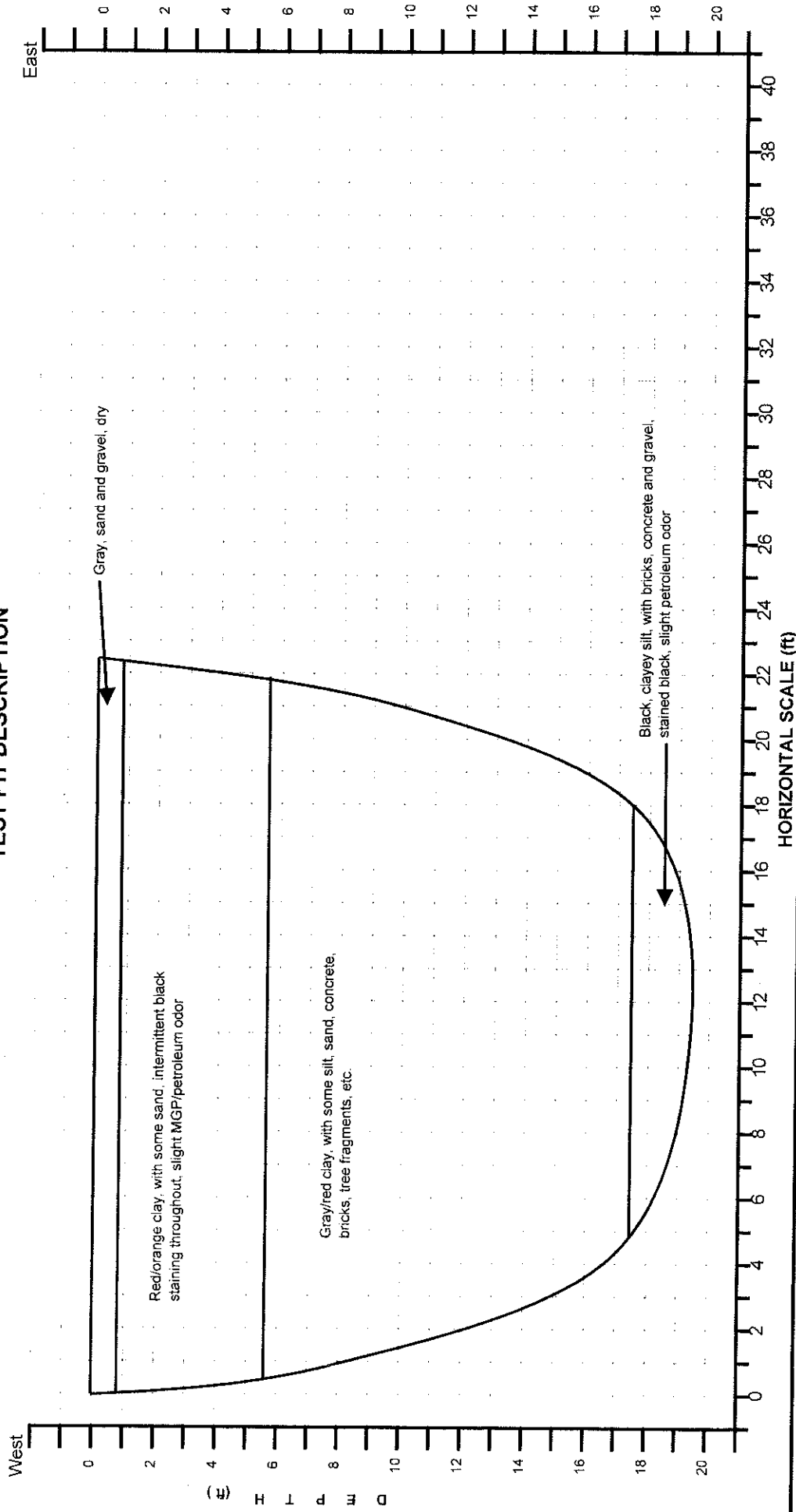
Geologist: S. Pesch  
Excavator: C. Lynch  
Method: Trench Excavation  
Date: 03/11/09  
Depth: Variable  
Surface Elevation: 184.16 ft.-msl

TEST PIT: SDTP-15

NOTES: No appreciable water encountered

Project No.:  
Location: Huger Street Former MGP  
Client: South Carolina Electric and Gas Co

### TEST PIT DESCRIPTION



**ATTACHMENT B**  
**PHOTOGRAPHIC DOCUMENTATION**

**MANAGEMENT AND TECHNICAL RESOURCES, INC.**  
**PHOTOGRAPHIC RECORD**

*Client:* SCANA Services, Inc.

*Site Location:* Huger St. - Columbia, South Carolina

**Note:** Due to oversight by field personnel, no photographs were taken of SDTP-1



Western portion of SDTP-2 showing buried gas holder base



Eastern portion of SDTP-2 showing black staining



**MANAGEMENT AND TECHNICAL RESOURCES, INC.**  
**PHOTOGRAPHIC RECORD**

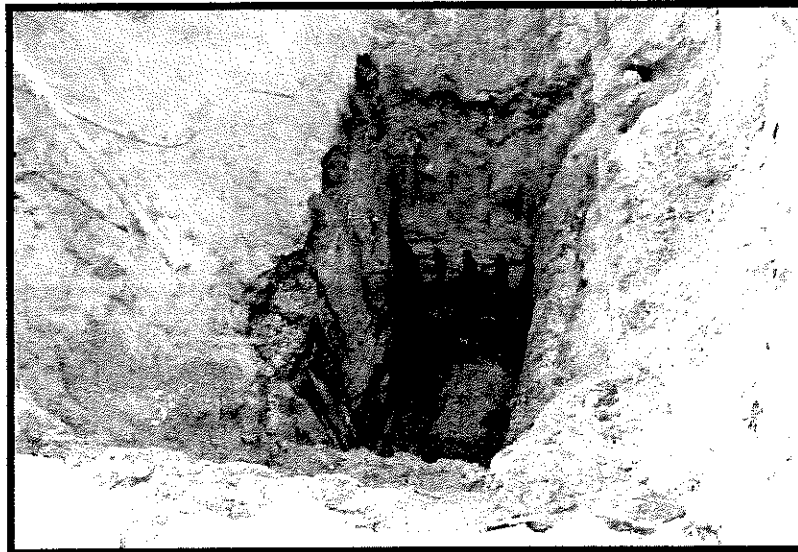
**Client:** SCANA Services, Inc.

**Site Location:** Huger St. - Columbia, South Carolina

SDTP-3 central portion  
showing buried  
structure



SDTP-3 eastern portion  
with black staining



SDTP-3 western portion



**MANAGEMENT AND TECHNICAL RESOURCES, INC.**  
**PHOTOGRAPHIC RECORD**

*Client:* SCANA Services, Inc.

*Site Location:* Huger St. - Columbia, South Carolina



**SDTP-4**

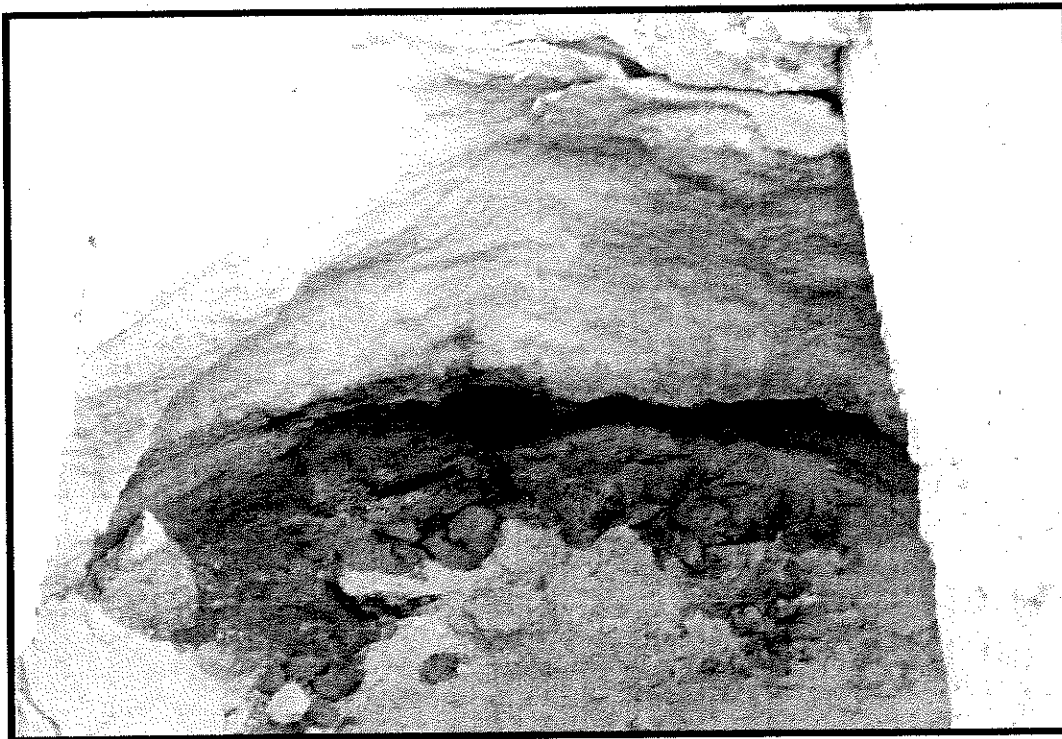


**SDTP-4**

**MANAGEMENT AND TECHNICAL RESOURCES, INC.**  
**PHOTOGRAPHIC RECORD**

**Client:** SCANA Services, Inc.

**Site Location:** Huger St. - Columbia, South Carolina



**SDTP-5 black staining**



**SDTP-5 brick structure and pipe containing tar**

**MANAGEMENT AND TECHNICAL RESOURCES, INC.**  
**PHOTOGRAPHIC RECORD**

**Client:** SCANA Services, Inc.

**Site Location:** Huger St. - Columbia, South Carolina



**SDTP-6**

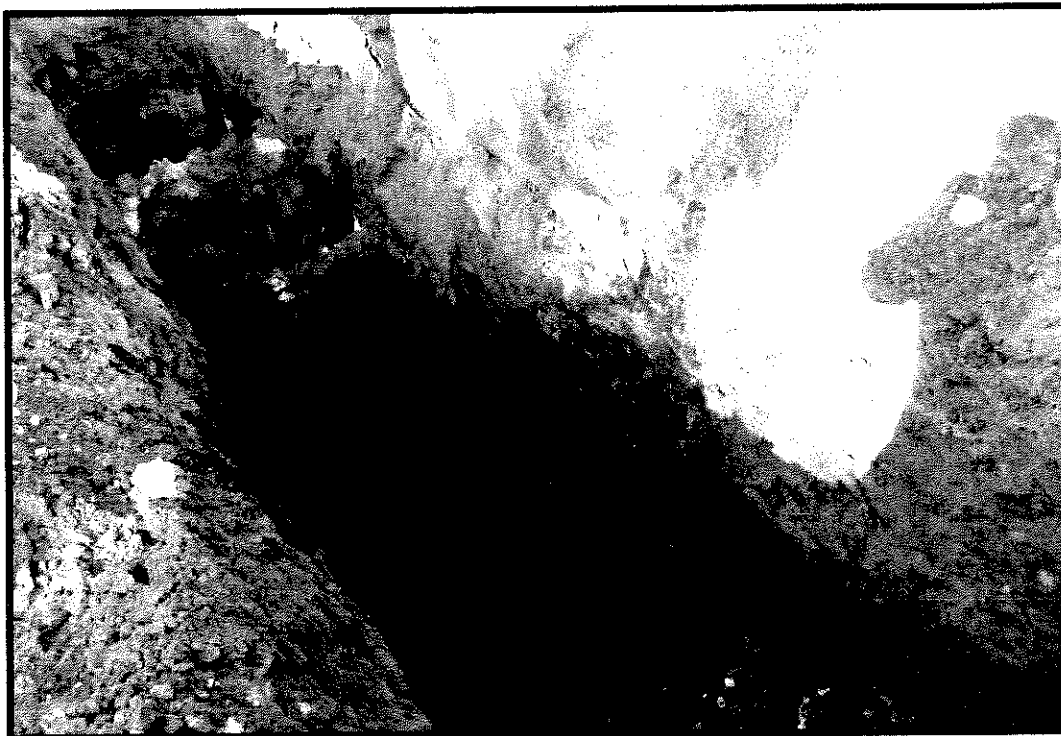


**SDTP-6 NAPL saturated material**

**MANAGEMENT AND TECHNICAL RESOURCES, INC.**  
**PHOTOGRAPHIC RECORD**

**Client:** SCANA Services, Inc.

**Site Location:** Huger St. - Columbia, South Carolina



**SDTP-7 concrete structure, NAPL, and black staining**



**SDTP-7 concrete structure, NAPL, and black staining**



**MANAGEMENT AND TECHNICAL RESOURCES, INC.**  
**PHOTOGRAPHIC RECORD**

*Client:* SCANA Services, Inc.

*Site Location:* Huger St. - Columbia, South Carolina



SDTP-8 with NAPL blebs on gravel above concrete "floor"

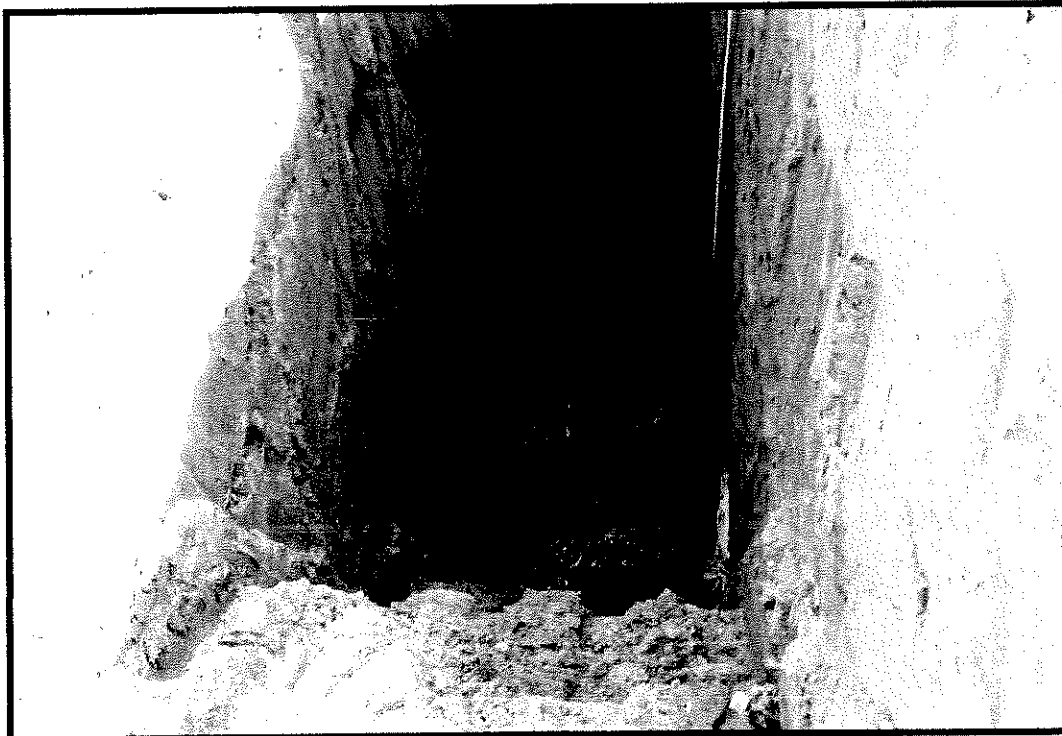
**MANAGEMENT AND TECHNICAL RESOURCES, INC.**  
**PHOTOGRAPHIC RECORD**

**Client:** SCANA Services, Inc.

**Site Location:** Huger St. - Columbia, South Carolina



SDTP-9 material



SDTP-9 excavation to bedrock

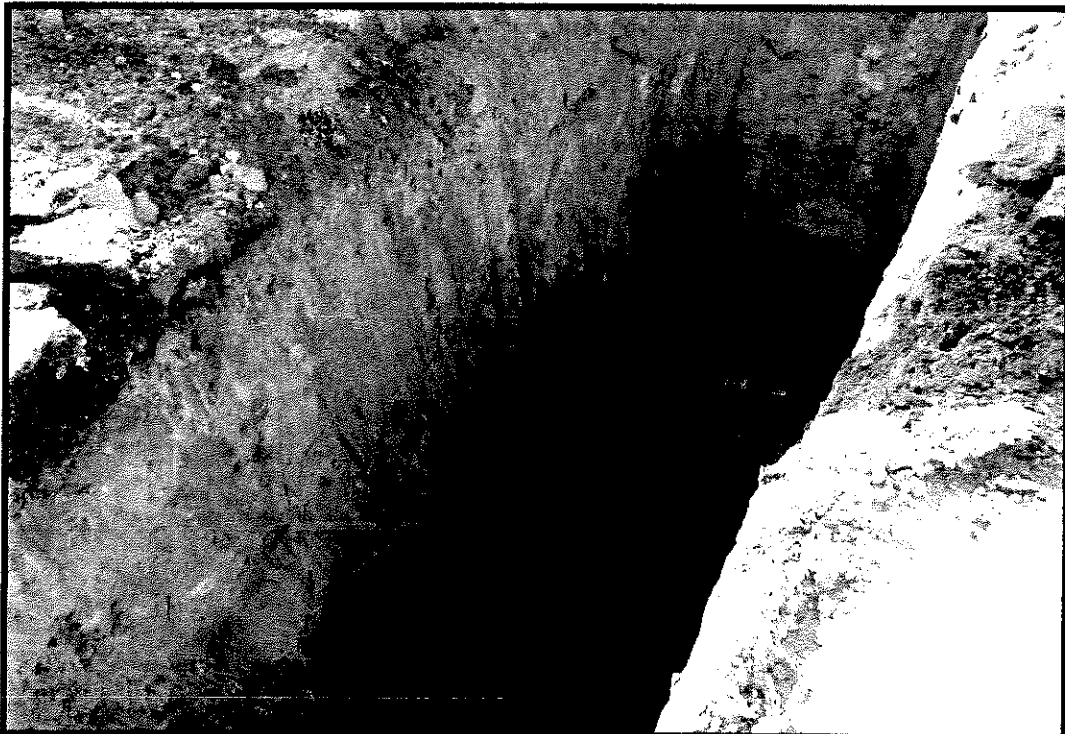
**MANAGEMENT AND TECHNICAL RESOURCES, INC.**  
**PHOTOGRAPHIC RECORD**

*Client:* SCANA Services, Inc.

*Site Location:* Huger St. - Columbia, South Carolina



**SDTP-10**



**SDTP-11**



**MANAGEMENT AND TECHNICAL RESOURCES, INC.**  
**PHOTOGRAPHIC RECORD**

*Client:* SCANA Services, Inc.

*Site Location:* Huger St. - Columbia, South Carolina



**SDTP-12**



**SDTP-13**

**MANAGEMENT AND TECHNICAL RESOURCES, INC.**  
**PHOTOGRAPHIC RECORD**

*Client:* SCANA Services, Inc.

*Site Location:* Huger St. - Columbia, South Carolina



**SDTP-14 material**



**SDTP-15 material**