

BROADWATER

RESOURCE REPORT NO. 7

SOILS

FOR A

PROJECT TO CONSTRUCT AND OPERATE A

LIQUEFIED NATURAL GAS RECEIVING TERMINAL

IN

LONG ISLAND SOUND

LONG ISLAND, NEW YORK

UNITED STATES OF AMERICA

JANUARY 2006

PUBLIC

BW001837

Resource Report 7 - Soils

Minimum Filing Requirement	Location in Environmental Report
<ul style="list-style-type: none"> • • Identify, describe, and group by milepost the soils affected by the proposed pipeline and aboveground facilities. (§ 380.12 (i) (1)) 	Section 7.2
<ul style="list-style-type: none"> • • For aboveground facilities that would occupy sites over 5 acres, determine the acreage of prime farmland soils that would be affected by construction and operation. (§ 380.12 (i) (2)) 	Not applicable
<ul style="list-style-type: none"> • • Describe, by milepost, potential impacts on soils. (§ 380.12 (i) (3, 4)) 	Section 7.3
<ul style="list-style-type: none"> • • Identify proposed mitigation to minimize impact on soils, and compare with the staff's Upland Erosion Control, Revegetation, and Maintenance Plan. (§ 380.12 (i) (5)) 	Not applicable

**Environmental Information Request
August 8, 2005**

Request	Location in Environmental Report
22. Any substrate conversion or stabilization methods associated with pipeline installation or the mooring structure.	Section 7.3
23. Pipeline trenching methods across the Stratford Shoal	Section 7.3

**Environmental Information Request
October 19, 2005**

Request	Location in Environmental Report
28. Describe the length and specific location of sediment conversion along the pipeline trench due to replacing existing sediment with backfill. Characterize the backfill material and backfilling methods including potential impacts.	Section 7.3 and Table 7-2
29. Provide site-specific drawings for each utility crossing, and discuss the specific methods, impacts, and appropriate mitigation measures associated with utility crossings and the use of concrete mats.	Resource Report 1, Sections 1.5.3.4, 1.5.3.5, and 1.5.3.6
30. Describe measures to minimize cable sweep and anchor drag using the planned anchoring methods. Provide a tabular summary of the acreage of surface sediment impacted during pipeline installation and the duration of anchoring impacts using the following offshore pipeline construction methods: <ul style="list-style-type: none"> a. Conventional laybarge; b. Conventional laybarge with midline buoys; and c. Dynamically positioned laybarge. 	Resource Report 10, Section 10.9 and Table 10-17

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List of Acronyms and Abbreviations

bcf	billion cubic feet
bcfd	billion cubic feet per day
cm	centimeter
CPT	cone penetrometer
EPA	Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
FSRU	Floating Storage and Regasification Unit
IGTS	Iroquois Gas Transmission System
km	kilometer
LNG	liquefied natural gas
m	meter
m ²	square meter
m ³	cubic meter
MP	milepost
SAP	Sampling and Analysis Plan
STV	shell and tube vaporization
USGS	United States Geological Survey
YMS	yoke mooring system

7. SOILS

7.1 INTRODUCTION

Broadwater Energy, a joint venture between TCPL USA LNG, Inc., and Shell Broadwater Holdings LLC, is filing an application with the Federal Energy Regulatory Commission (FERC) seeking all of the necessary authorizations pursuant to the Natural Gas Act to construct and operate a marine liquefied natural gas (LNG) terminal and subsea pipeline for the importation, storage, regasification, and transportation of natural gas. The Broadwater LNG Project (the Project) will increase the availability of natural gas to the New York and Connecticut markets through an interconnection with the Iroquois Gas Transmission System (IGTS). The FERC application for the Project requires the submittal of 13 Resource Reports, with each report evaluating Project effects on a particular aspect of the environment.

Resource Report 7 describes the soil and soil characteristics associated with the proposed Broadwater LNG Project. This Resource Report describes the conditions and sediment characteristics of Long Island Sound. Soil characteristics associated with land-based facilities are addressed in a separate report. A detailed discussion of water quality, existing contamination in the bottom sediments, and sediment transport in the Sound is presented in Resource Report 2, Water Resources.

The proposed Broadwater LNG terminal will be located in Long Island Sound (the Sound), approximately 9 miles (14.5 kilometers [km]) from the shore of Long Island in New York State waters, as shown on Figure 7-1. The LNG terminal facilitates the sea-to-land transfer of natural gas. It will be designed to receive, store, and regasify LNG at an average throughput of 1.0 billion cubic feet per day (bcfd) and will be capable of delivering a peak throughput of 1.25 bcfd. The Project will deliver the regasified LNG to the existing interstate natural gas pipeline system via an interconnection to the IGTS pipeline. Onshore facilities are discussed in the Onshore Facilities Resource Report.

The proposed LNG terminal will consist of a floating storage and regasification unit (FSRU) that is approximately 1,215 feet (370 meters [m]) in length, 200 feet (60 m) in width, and rising approximately 80 feet (25 m) above the water line to the trunk deck. The FSRU's draft is approximately 40 feet (12 m). The freeboard and mean draft of the FSRU will generally not vary throughout operating conditions. This is achieved by ballast control to maintain the FSRU's trim, stability, and draft. The FSRU will be designed with a net storage capacity of approximately 350,000 cubic meters [m³] of LNG (equivalent to 8 billion cubic feet [bcf] of natural gas) with base vaporization capabilities of 1.0 bcfd using a closed-loop shell and tube vaporization (STV) system. The LNG will be delivered to the FSRU in LNG carriers with cargo capacities ranging from approximately 125,000 m³ up to a potential future size of 250,000 m³ at the frequency of two to three carriers per week.



Source: ESRI StreetMap, 2002.

Figure 7-1
 Proposed Broadwater Project
 Location in Long Island Sound

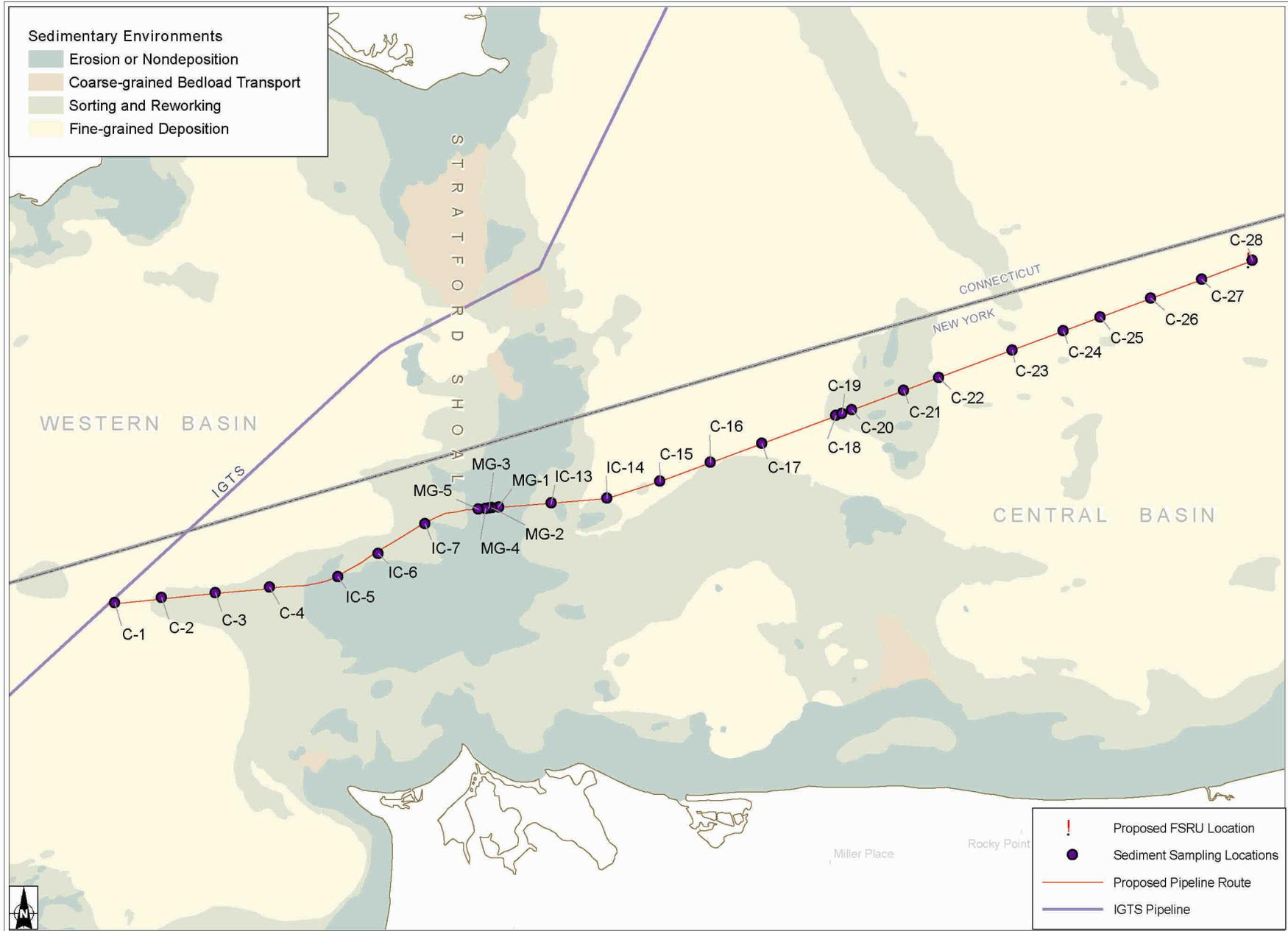
The FSRU will be connected to the send-out pipeline, which rises from the seabed and is supported by a stationary tower structure. In addition to supporting the pipeline, the stationary tower also serves the purpose of securing the FSRU in such a manner to allow it to orient in response to prevailing wind, wave, and current conditions (i.e., weathervane) around the tower. The tower, which is secured to the seabed by four legs, will house the yoke mooring system (YMS) allowing the FSRU to weathervane around the tower. The total area under the tower structure, which is of open design, will be approximately 13,180 square feet (1,225 square meters [m²]).

A 30-inch-diameter natural gas pipeline will deliver the vaporized natural gas to the existing IGTS pipeline. It will be installed beneath the seafloor from the stationary tower structure to an interconnection location at the existing 24-inch-diameter subsea section of the IGTS pipeline, approximately 22 miles (35 km) west of the proposed FSRU site. To stabilize and protect the operating components, sections of the pipeline will be covered with engineered back-fill material or spoil removed during the lowering operation. Figure 7-1 presents the proposed pipeline route.

7.2 SEDIMENT DESCRIPTION

Long Island Sound is a northeast-southwest trending basin that is approximately 112 miles (180 km) long and 21 miles (34 km) wide at its widest point, with a total area of 1,300 square miles (3,370 km²). The present distribution of surficial sediments in the Sound is the result of deposits left by the last glaciation stage and the cumulative effects of sediment erosion, transport, sorting, and deposition by tidal and other bottom currents (Pope 2001). The physical structure of the Sound began to take on its present shape approximately 26,000 years ago by the processes of glaciation, ice retreat, and marine submergence (i.e., rise in sea level). The southern shore of Long Island is dominated by at least two (Harbor Hill and Ronkonkoma) terminal (end) moraines (a ridge of glacial deposits marking the maximum advance of the glacier) deposited by the Late Wisconsin glacier. The moraines consist predominantly of sand- and gravel-rich material. As the glacier retreated northward, glacial Lake Connecticut was formed over most of the present Sound area, accumulating extensive fine-grained, glacial-lacustrine sediments. The north (Connecticut) shore of the Sound was reshaped by the retreating Wisconsin glacier, which deposited coarse-grained glacio-deltaic sediments in the form of lacustrine fans and moraines.

Knebel et al. (1999) studied the distribution of bottom sediments in the Sound and outlined the major processes that control the characteristics of sediments in these environments. The study utilized sidescan sonographs, data developed from analysis of grab samples, and video observations at 146 points along or near the proposed Broadwater study area. Based on this data, four categories of bottom sedimentary environments were identified in the 850-square-mile (2,200 km²) study area (see Figure 7-2). These four environments reflect the four major processes that operate in the area: deposition of fine-grained material; bedload transport of coarse-grained material; sorting and reworking of sediments; and erosion (or nondepositional). Areas of fine-grained deposition cover 50% of the area, primarily in the central and western portions of the Sound. Areas of sediment sorting cover approximately 22% of the area, primarily over



Source: U.S. Geological Survey Open-File Report OFR 00-304, 2000.



Figure 7-2 Sedimentary Environments

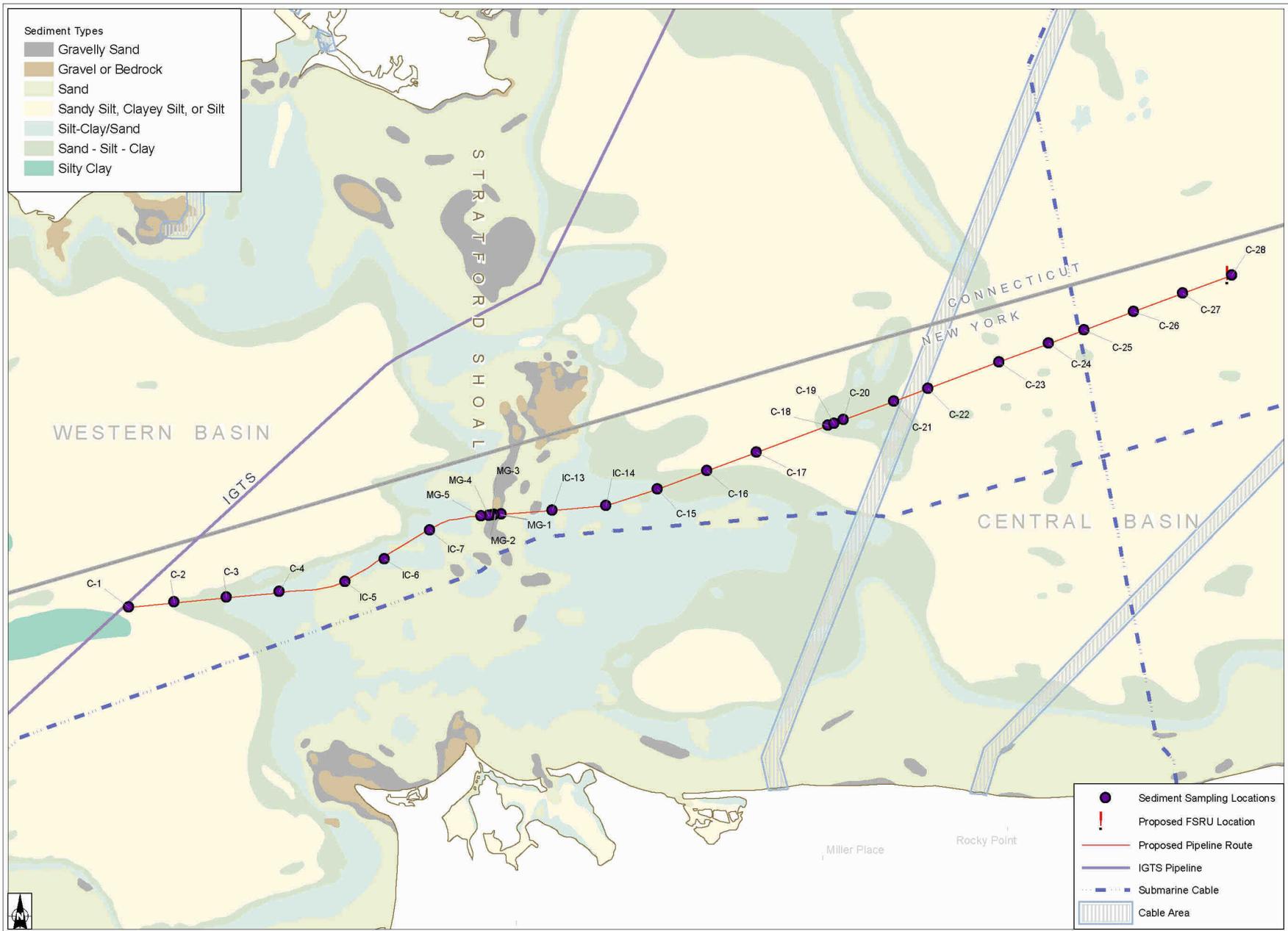
low knolls and ridges and on the flanks of the shoals in the western portion of the Sound. Coarse-grained bedload transport environments (characterized by the presence of sand ribbons or sand waves) cover 16% of the area and are mainly restricted to the east-central part of the Sound. Erosion or non-depositional areas cover 10% of the area, primarily across the irregular seafloor at the eastern entrance to the Sound and on top of the Stratford and Norwalk shoals in the central and western portions of the Sound.

Poppe et al. (2001) produced detailed geologic maps of surficial sediments (0 to 2 centimeter [cm] below the sediment-water interface) on the sea floor of the Sound. These maps combined the data from more than 1,500 sediment samples with over 12,900 published textural analyses and descriptions. Units on the sediment map represent the predominant textures of an area, but small-scale heterogeneity within the units is common. The gravel and gravelly sand sediments are typically found where tidal currents are strong (the easternmost Sound) and in shallow areas where subsurface bedrock crops out of the seafloor (over the Stratford and Norwalk shoals). Typically, this gravel is the lag left after the removal of fines from till deposits. Sand is the dominant sediment found across most of the eastern and central portions of the Sound, as well as on the flanks of the Stratford and Norwalk shoals and along most of the nearshore margins. Tidal currents commonly shape the sands in these areas into a series of channels and ridges that contain sand ribbons (in the channels) and sand waves (in the ridges). Silty sand and sand-silt-clay areas mark the transition zones between higher to lower energy environments. The silty clay and clayey silt sediments characterize depositional environments and are limited to protected nearshore areas, isolated depressions, and deep-water areas.

Figure 7-3 presents a detailed map showing the distribution of surficial sediments in the Project area using the data from the above-referenced study. In general, the bottom subsurface sediments in the Project area are generally broad areas of sand and silt environments except for gravel sands at Stratford Shoal. This shoal consists of irregular assemblage of gravel sands (and possibly bedrock) topographic highs and lows that are oriented north-south across the Sound and have a maximum relief of 40 m (130 feet) (Knebel et al. 1999).

Mapped sediment types from United States Geological Survey (USGS) Open File Report 00-304 (Poppe 2001) indicate that bottom sediments (from west to east) grade from sandy silt, clayey silt, or silt at the IGTS pipeline to sand/silt/clay mixtures between the pipeline and Stratford Shoal. East of the shoal, the sediments are characterized by sand/silt/clay mixtures followed by sandy silt, clayey silt, or silt at the proposed FSRU location. Stratford Shoal is characterized by gravel or bedrock along the centerline of the shoal to gravelly sand and then sand (further from the shoal) on the west and east flanks of the shoal.

To assess the actual conditions present in the Project area, geotechnical field investigations were conducted during the spring of 2005. Both vibracoring and cone penetrometer testing were conducted throughout the Project area. Prior to initiating field surveys, a Draft Sampling and Analysis Plan (SAP) was prepared and submitted to state



Source: U.S. Geological Survey Open-File Report OFR 00-304, 2000;
 Broadwater Surveys conducted in April/May 2005.

Figure 7-3 Distribution of Sediment Types in the Project Area

and federal agencies for review and approval. The Final SAP incorporated all comments received from the agencies. Figure 7-3 shows the sediment sampling locations in relation to the sediment types distributed through the Project area.

Sediment core samples were collected at a rate of approximately one every mile along the proposed pipeline route, or at closer intervals when the geophysical surveys indicated changes in the subsurface stratigraphy that might be representative of differing sediment types. A total of 28 samples were collected along the proposed pipeline alignment and at the proposed FSRU location.

At each sampling location, vibracore samples were collected to a depth of approximately 10 feet (3 meters) (or depth of refusal) to characterize the sediments to the proposed depth of installation. A vibracoring system consists of a vibratory head, a power source, and a weight stand to keep the core barrel in a vertical position. After the vibracore was lowered to the Sound floor, it was turned on. Samples were collected at 3-foot (1-m) intervals or at stratigraphic changes, with the first sample taken 1 foot (0.3 m) below the seafloor. Collected cores were logged on deck, capped, and stored for delivery to a geotechnical laboratory for detailed analysis of the sediments. Logs of the vibracore samples are provided in Appendix A.

In addition to the geotechnical samples collected with the vibracore, an *in situ* test method was also performed in the field using the cone penetrometer test. A cone penetrometer test (CPT) involves the deployment of a 3-foot by 4-foot (0.9 m by 1.2 m) CPT unit from the sampling vessel. The unit rested on the sound floor at each sample location and collected real-time data through the use of a 1.0 inch (2.5 cm) (head size) probe for approximately 30 minutes. A small probe penetrated the sound floor to the depth of pipeline installation or greater, depending on the density of the material encountered. Where the materials exhibited properties of muck rather than a silt or sand, the probe extended up to 30 feet (9 m) deep to collect data on sediment density. The CPT was completed concurrently with the collection of the vibracore samples for both the geotechnical and environmental chemistry analysis. Since the CPT is an *in situ* test, no sediments were collected or brought on board as part of the sampling effort. CPT graphs for each sample are provided in Appendix B.

The presence of the marked rise in the seafloor at Stratford Shoal was confirmed during the field study. The rise was determined to be composed of very coarse sand and gravel with large cobbles within the upper strata, which would be encountered during installation of the pipeline. Vibracore penetration depths were reduced to about 4 feet (1.2 m) in this area; however, a modified probe (1-inch (2.5-cm) diameter solid steel rod attached to the vibracore head) was driven to a depth of approximately 7.5 feet (2.3 m), whereas the standard vibracore was driven only 4 feet (1.2 m). Based on the field interpretation of the extracted cores, the major cause for the poor vibracore penetration was likely due to the presence of large cobbles. Geotechnical investigations also confirmed a second area of sand and gravel along the proposed pipeline route between sampling points C-18 and C-20, approximately 7 miles (11.3 km) east of the shoal.

In general, sediment descriptions noted from the sediment cores, along with the confirmatory grain size analyses, indicate that the USGS-mapped bottom sediments closely represent actual site conditions. Table 7-1 summarizes the conditions encountered at each sample location during the field studies compared to the mapped sediment types and sediment types based on geotechnical results.

DiGiacomo-Cohen and Lewis (2001) produced a detailed map of the marine transgressive surface and the thickness of post-glacial sediments in Long Island Sound. This hand-plotted and contoured map is based on over 2,175 miles (3,500 km) of high-resolution seismic-reflection profiles collected during multiple cruises of the Sound.

Figure 7-4 presents a detailed map showing the thickness of post-glacial sediments in the Project area using the data from the above-referenced study. In general, the sediment thickness are expected to range from 20 to 40 feet (6 to 12 m) in the eastern and western portions of the Project area (sampling locations C-1 and C-23 to C-28), and to 13 feet (4 m) or less in the central Project area where Stratford Shoal intersects the proposed pipeline route. Depth to bedrock along the proposed route is currently unknown, but is potentially near the bottom surface of the Sound near Stratford Shoal. Figures 7-5a through 7-5d provide a profile of the Long Island Sound sea floor confirming the widespread extent of recent Holocene sediments, with the exception of Stratford Shoal and the sand and gravel lens east of the Shoal.

7.3 CONSTRUCTION IMPACTS AND MITIGATION

Sediment-related impacts would result primarily from disturbances to bottom materials by pipeline installation, anchor placements, and cable sweeps. Once disturbed, sediments would become temporarily suspended in the water column and subsequently settle to the seafloor. Coarser sediments would fall out and resettle quickly, while finer sediments would remain suspended for longer periods. Trenching for pipeline lowering would impact sediment chemistry by exposing buried sediments that may be reduced or anoxic. The release of methane gas, de-oxygenated interstitial waters, or oxygen-demanding sediments could result in localized, short-term impact on water quality and benthic habitats. Changes in sediment texture following construction also could result in minimal short-term impacts on biological communities. Turbidity and the potential dispersal of contaminated sediments are discussed in more detail in Resource Report 2 (Water Quality) and Resource Report 3 (Fish, Vegetation, and Wildlife). Table 7-2 lists the areas and sediment volumes that could be impacted by construction of the proposed marine pipeline.

Table 7-1 Sediment Characteristics Summary

Station No.	MP	Water Depth (ft) ^a	Maximum Vibracore Penetration (ft)	Maximum Geotech Vibracore Recovery (ft)	Maximum CPT Penetration (ft)	Sediment Type at surface (based on Poppe et al. 2001)	Sediment Type, Top to Bottom (based on summary of core description)	Sediment Type, Top to Bottom (based on geotechnical testing)
C-1	21.6	119	10	8.1	32.8	Sandy Silt, clayey silt, or silt	Silty clay	Fat clay to elastic Silt
C-2	20.7	121	10	6.5	27	Sand-silt-clay	Clay with silt	Fat clay with sand to sandy fat clay
C-3	19.8	122	10	8	32.8	Sand-silt-clay	Clay with silt/sand/gravel, then clayey sand with silt	Clayey sand
C-4	18.8	122	10	6.5	32.8	Silt-Clay/Sand	Silty, sandy, clay	Silty sand to clayey sand
IC-5	17.5	121	10	5	32.8	Sand	Sand with silt and clay	Clayey sand
IC-6	16.7	114	10	7.1	32.8	Silt-Clay/Sand	Clay with silt and sand, then sand and gravel	Clayey sand to sandy fat clay then clayey sand
IC-7	15.7	112	10	9.4	32.8	Silt-Clay/Sand	Clay with silt, then sand and silt	Elastic silt with sand to sandy fat clay then silty sand
MG-1	14.3	72	4.7 (approx. 7.5 with modified probe)	NA	NA	Gravelly sand	Gravelly sand, silt, and clay (till)	Well graded sand with clay and gravel to sandy lean clay
MG-2	14.4	62	7.5	4.7	NA	Gravel or Bedrock	Sand and gravel	Poorly graded sand with gravel
MG-3	14.5	58	4	1	NA	Gravel or Bedrock	Sand, gravel, and cobbles	Poorly graded sand
MG-4	14.6	63	9.9	4.4	4	Sand	Sand and gravel	Poorly graded sand with gravel

7-9

Table 7-1 Sediment Characteristics Summary

Station No.	MP	Water Depth (ft) ^a	Maximum Vibracore Penetration (ft)	Maximum Geotech Vibracore Recovery (ft)	Maximum CPT Penetration (ft)	Sediment Type at surface (based on Poppe et al. 2001)	Sediment Type, Top to Bottom (based on summary of core description)	Sediment Type, Top to Bottom (based on geotechnical testing)
MG-5	14.7	75	10	4	32.8	Sand	Sand and gravel	Silty sand then poorly graded sand with gravel
IC-13	13.4	98	8	4.8	5.9	Silt-Clay/Sand	Sand/silt/clay	Clayey sand to well graded sand with silt
IC-14	12.4	111	10	8.1	33.2	Silt-Clay/Sand	Clay with silt and sand, then sand and silt	Sandy fat clay to clayey sand and silty sand
C-15	11.4	118	10	7.3	29.8	Silt-Clay/Sand	Clay, then clay/silt/sand	Sandy fat clay, then sandy elastic silt, silty sand, and poorly graded sand with silt
C-16	10.4	122	10	8.8	32.8	Sand-silt-clay	Clay	Fat clay with sand, then elastic silt with sand, clayey sand
C-17	9.4	118	10	6.5	32.8	Sandy Silt, clayey silt, or silt	Clay	Organic silt then fat clay to elastic silt
C-18	8.0	108	10	5.2	4.3	Sand-silt-clay	Clay, silt with sand grading to sand and gravel	Well graded sand with silt and gravel to poorly graded sand
C-19	7.9	100	10	6.8	6.5	Sand-silt-clay	Silty clay with sand, then gravel and sand	Poorly graded sand with gravel to clayey sand, silty sand with gravel
C-20	7.7	95	6.5	1.9	6.6	Sand-silt-clay	Clay with silt/sand/gravel, then sand and gravel	Clayey sand

7-10

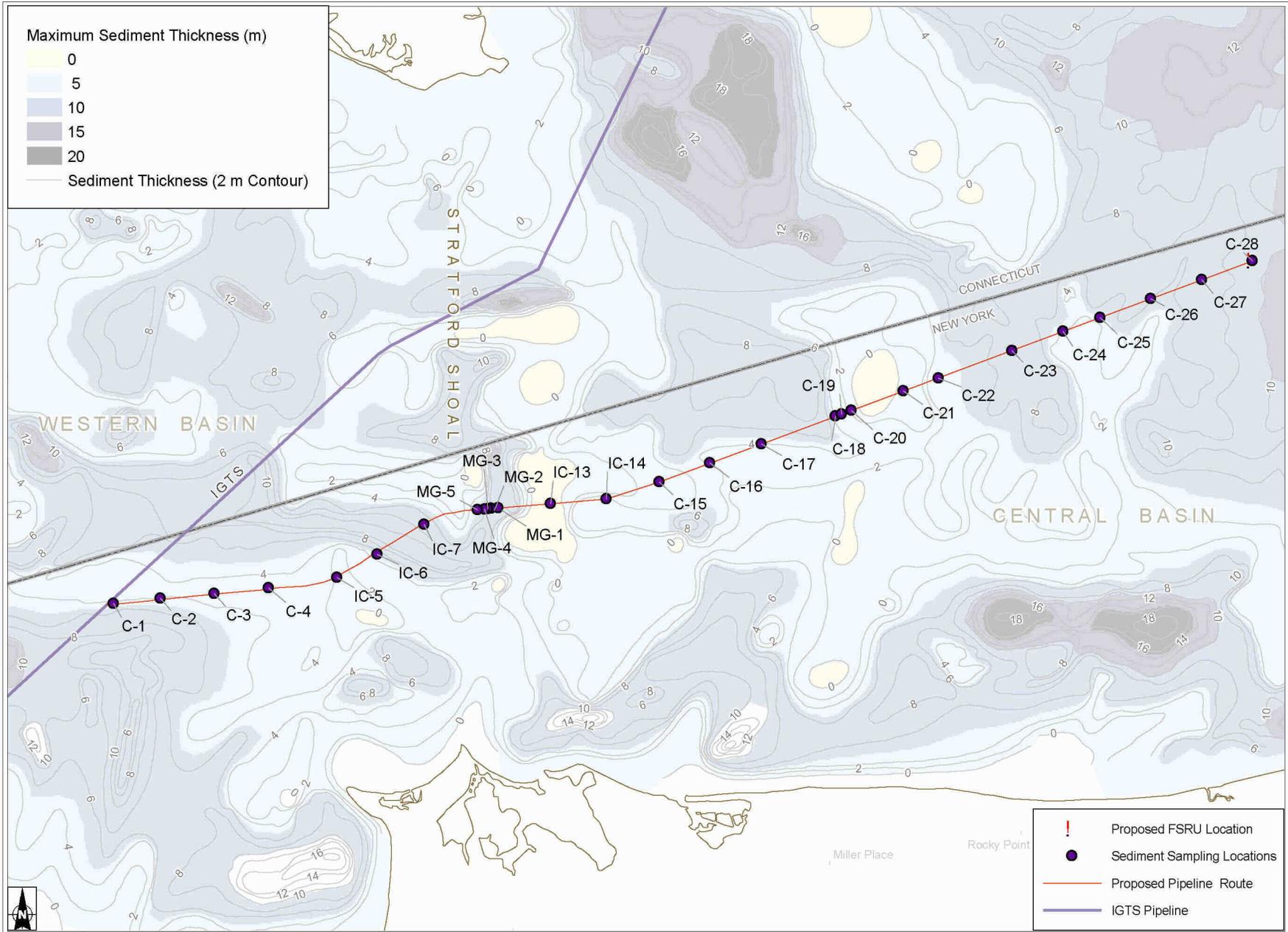
Table 7-1 Sediment Characteristics Summary

Station No.	MP	Water Depth (ft) ^a	Maximum Vibracore Penetration (ft)	Maximum Geotech Vibracore Recovery (ft)	Maximum CPT Penetration (ft)	Sediment Type at surface (based on Poppe et al. 2001)	Sediment Type, Top to Bottom (based on summary of core description)	Sediment Type, Top to Bottom (based on geotechnical testing)
C-21	6.7	93	6.5 (approx. 8 with modified probe)	2.9	4	Sandy Silt, clayey silt, or silt	Sand, then sand and gravel	Clayey Sand then well graded sand with gravel
C-22	6.0	99	9.5	5.8	8.6	Sandy Silt, clayey silt, or silt	Clay, then sand and gravel	Sandy fat clay to clayey sand
C-23	4.6	98	10	7.9	33	Sandy Silt, clayey silt, or silt	Silty clay	Elastic silt
C-24	3.6	97	10	7.3	33	Sandy Silt, clayey silt, or silt	Silty clay	Fat clay
C-25	2.9	96	10	8.2	24.2	Sandy Silt, clayey silt, or silt	Silty clay	Elastic silt
C-26	1.9	92	10	9	33	Sandy Silt, clayey silt, or silt	Silty clay	Organic silt then elastic silt
C-27	1.0	94	10	7.1	32.5	Sandy Silt, clayey silt, or silt	Silty clay	Fat clay then elastic silt
C-28	0.0	93	10	7.2	32.5	Sandy Silt, clayey silt, or silt	Silty clay	Elastic silt

^a Corrected depths based on geophysical survey results.

Key:

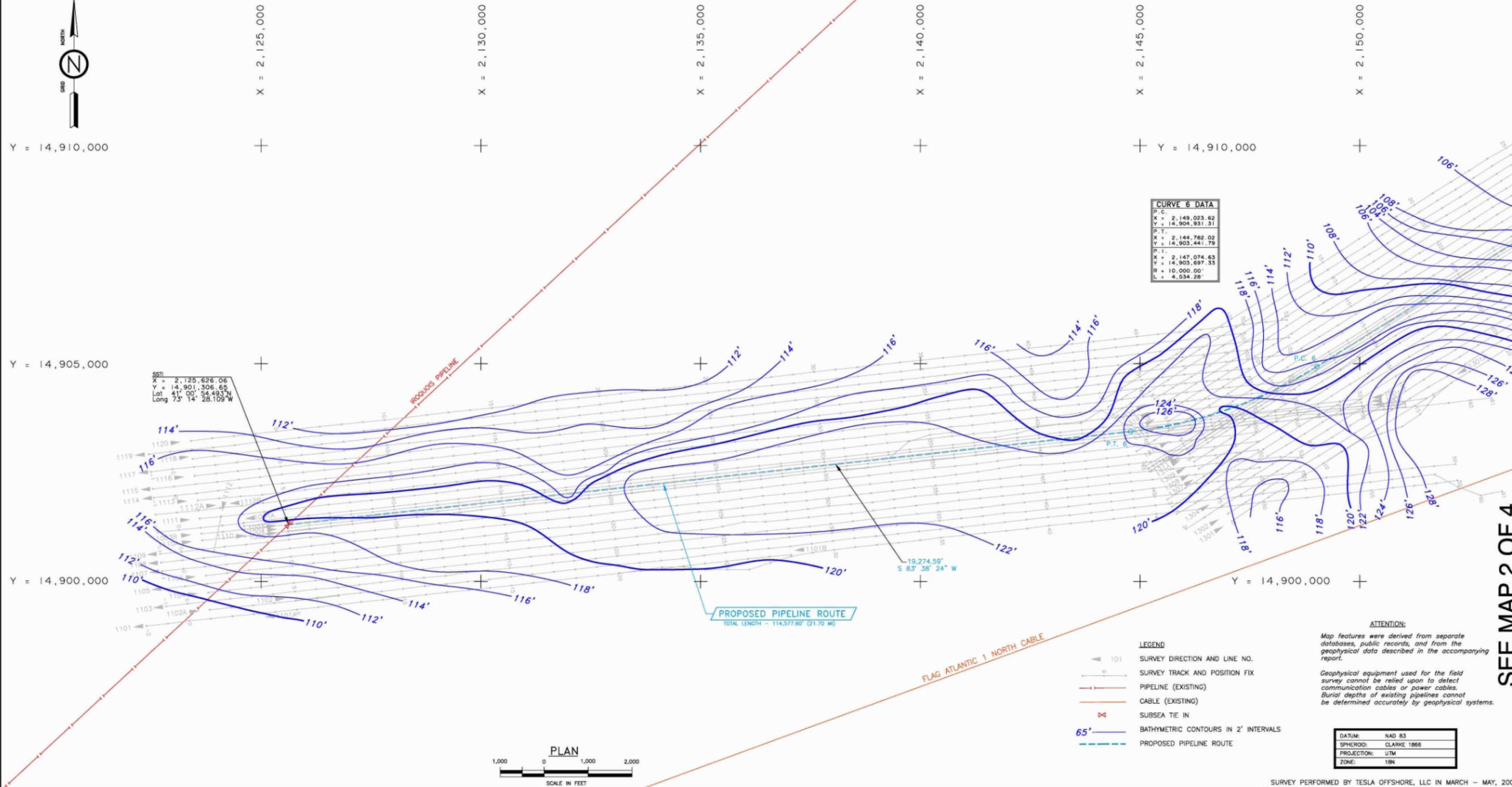
CPT = Cone penetrometer
 Ft = feet
 MP = milepost



Source: U.S. Geological Survey Open-File Report OFR 00-304, 2001.



Figure 7-4 Thickness of Post-Glacial Sediments in Long Island Sound



CURVE 6 DATA	
P.C.	X = 2,149,023.62 Y = 14,904,931.31
P.T.	X = 2,144,782.02 Y = 14,903,441.79
P.I.	X = 2,147,074.53 Y = 14,903,697.33
R	10,000.00'
L	4,534.28'

SST
 X = 2,125,626.06
 Y = 14,901,306.65
 Lat: 41° 00' 54.493"N
 Long: 73° 14' 28.109"W

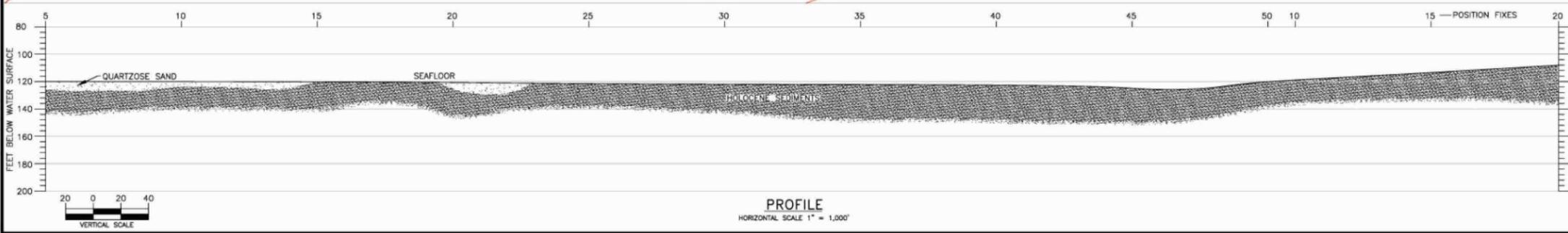
PROPOSED PIPELINE ROUTE
 TOTAL LENGTH = 114,577.60' (31.70 MI)

- LEGEND**
- 101 SURVEY DIRECTION AND LINE NO.
 - SURVEY TRACK AND POSITION FIX
 - PIPELINE (EXISTING)
 - CABLE (EXISTING)
 - ⊕ SUBSEA TIE IN
 - 65' BATHYMETRIC CONTOURS IN 2' INTERVALS
 - PROPOSED PIPELINE ROUTE

ATTENTION:
 Map features were derived from separate databases, public records, and from the geophysical data described in the accompanying report.
 Geophysical equipment used for the field survey cannot be relied upon to detect communication cables or power cables. Burial depths of existing pipelines cannot be determined accurately by geophysical systems.

DATUM:	NAD 83
SPHEROID:	CLARKE 1866
PROJECTION:	UTM
ZONE:	18N

SURVEY PERFORMED BY TESLA OFFSHORE, LLC IN MARCH - MAY, 2005



PROPOSED PIPELINE ROUTE SURVEY
PLAN AND PROFILE
ROUTE NO. 2
 LONG ISLAND SOUND (NEW YORK)

PROJECT CONSULTING SERVICES, INC. **BROADWATER**

TESLA OFFSHORE, LLC
 36499 Perkins Road
 Prairieville, Louisiana 70769
 Tel: 225-673-2163
 Fax: 225-744-3116

PREP. KBR	INT. MEK	CAD. KBR	APP. OTMG	FILE NO. 05-022-RT1-PP
CHK. MEX	CHK.	CHK. MEX	DATE 06-13-05	MAP 1 OF 4

SEE MAP 2 OF 4

SEE MAP 1 OF 4

SEE MAP 3 OF 4



X = 2,145,000

X = 2,150,000

X = 2,155,000

X = 2,160,000

X = 2,165,000

X = 2,170,000

X = 2,175,000

Y = 14,910,000

CURVE 6 DATA	
P.C.	2,149,023.62
X	14,904,931.31
Y	14,903,441.79
P.T.	2,144,782.02
X	14,903,441.79
Y	14,903,697.33
P.I.	2,147,074.63
X	14,903,697.33
Y	14,903,441.79
R	10,000.00'
L	4,534.28'

CURVE 5 DATA	
P.C.	2,159,864.34
X	14,910,505.90
Y	14,908,998.39
P.T.	2,155,447.30
X	14,908,998.39
Y	14,910,282.16
P.I.	2,157,474.93
X	14,910,282.16
Y	14,910,505.90
R	10,000.00'
L	4,710.65'

CURVE 4 DATA	
P.C.	2,175,037.25
X	14,912,294.48
Y	14,911,679.86
P.T.	2,172,401.61
X	14,911,679.86
Y	14,911,807.19
P.I.	2,173,761.40
X	14,911,807.19
Y	14,912,294.48
R	10,000.00'
L	2,714.67'

PROPOSED PIPELINE ROUTE
TOTAL LENGTH = 114,577.60' (21.70 MI)

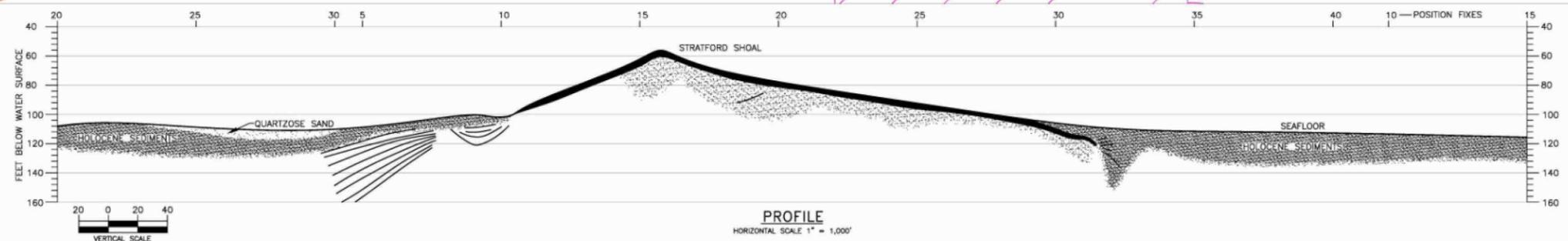


LEGEND	
	101 SURVEY DIRECTION AND LINE NO.
	SURVEY TRACK AND POSITION FIX
	CABLE (EXISTING)
	65' BATHYMETRIC CONTOURS IN 2' INTERVALS
	PROPOSED PIPELINE ROUTE

ATTENTION:
Map features were derived from separate databases, public records, and from the geophysical data described in the accompanying report.
Geophysical equipment used for the field survey cannot be relied upon to detect communication cables or power cables. Burial depths of existing pipelines cannot be determined accurately by geophysical systems.

DATUM:	NAD 83
SPHEROID:	CLARKE 1866
PROJECTION:	UTM
ZONE:	18N

SURVEY PERFORMED BY TESLA OFFSHORE, LLC IN MARCH - MAY, 2005

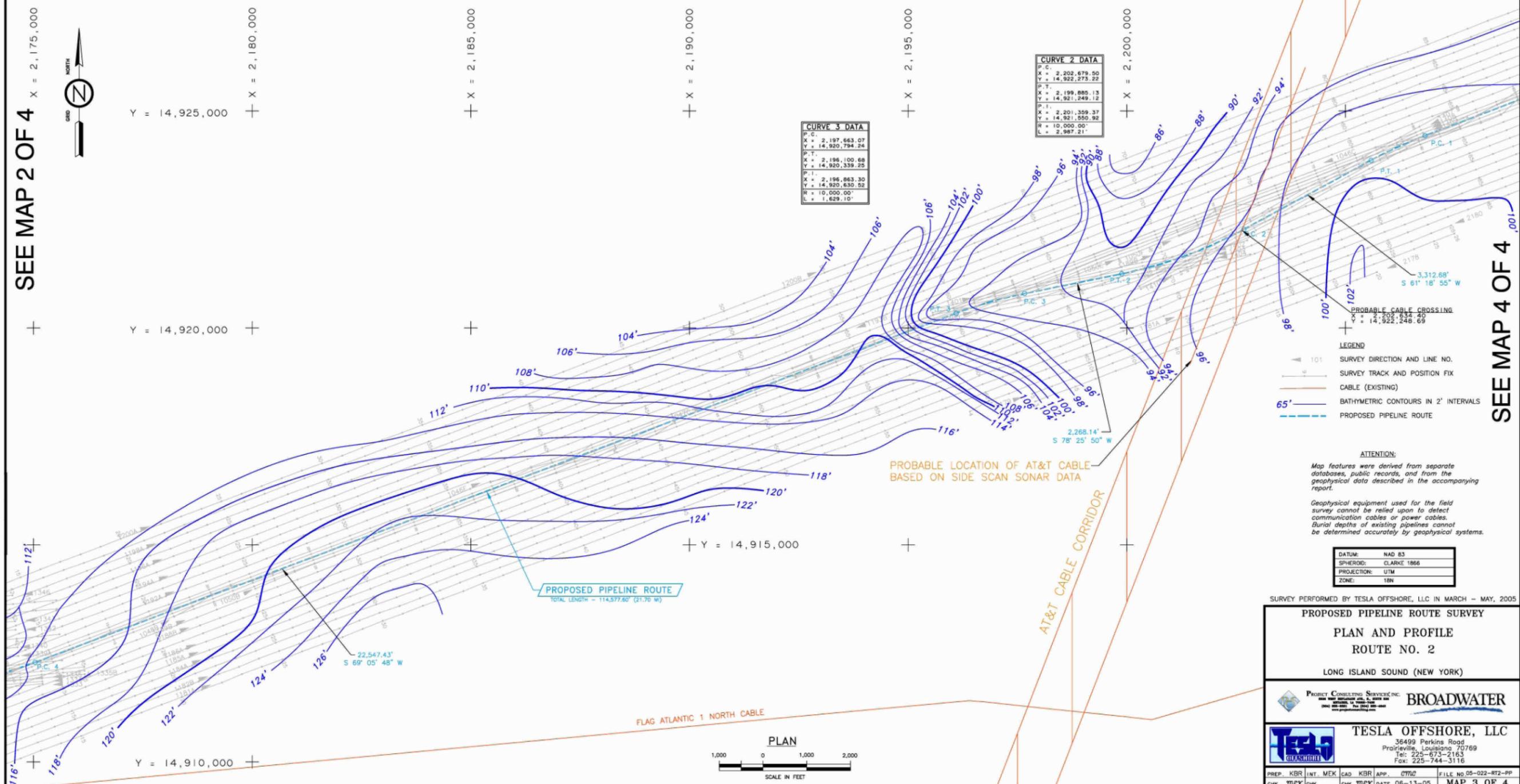
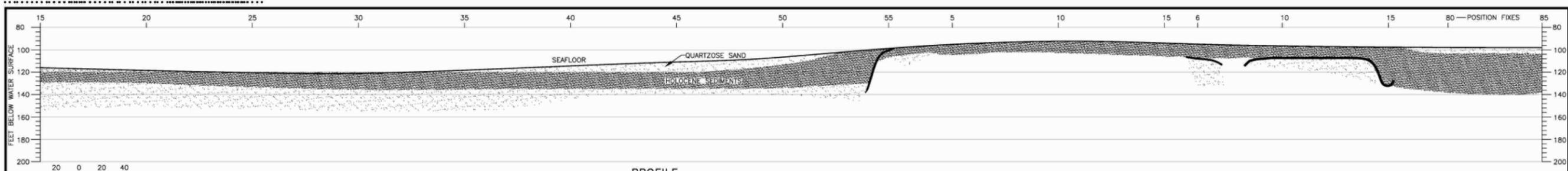


PROPOSED PIPELINE ROUTE SURVEY
PLAN AND PROFILE
ROUTE NO. 2
LONG ISLAND SOUND (NEW YORK)

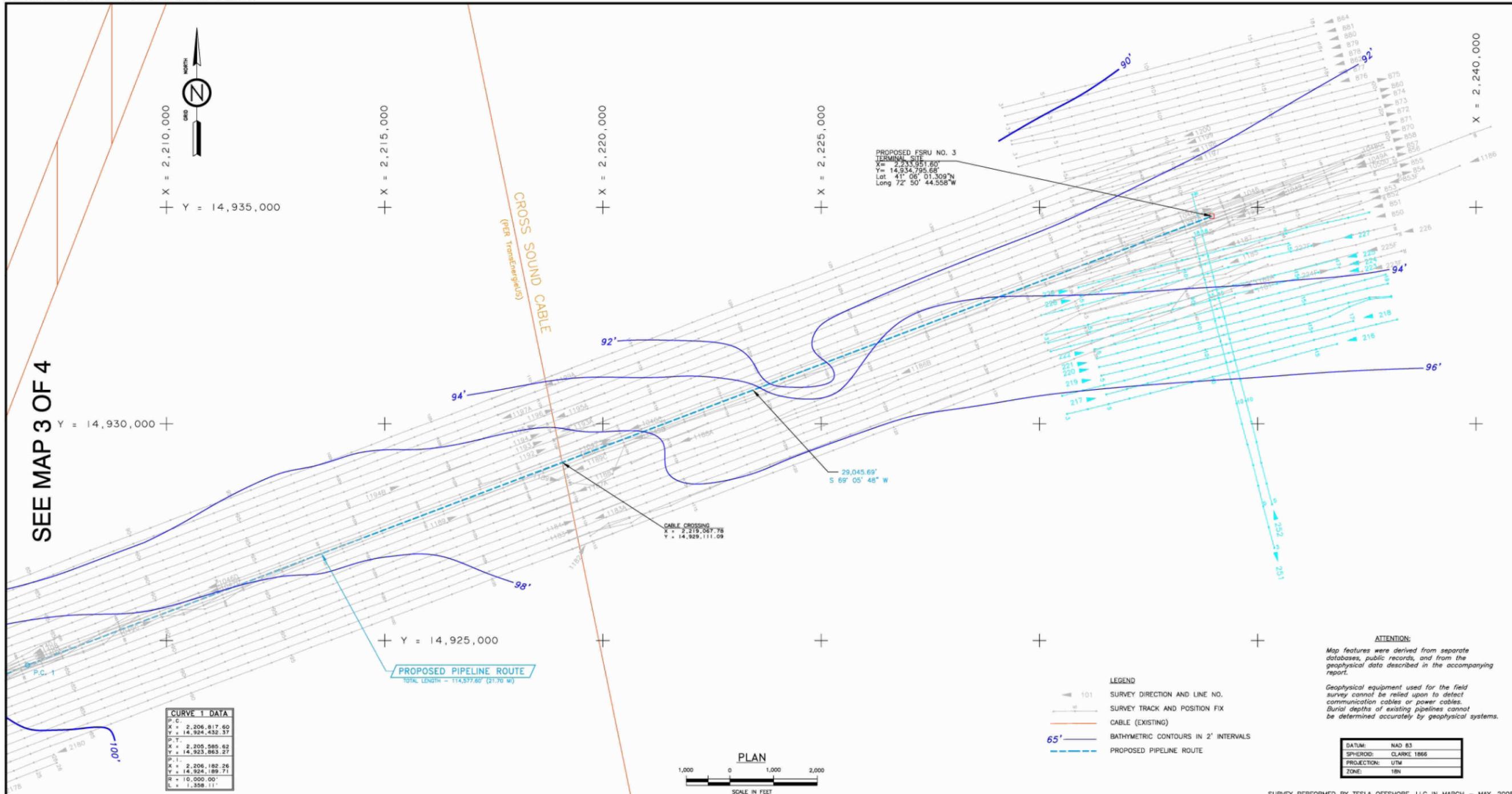
PROJECT CONSULTING SERVICES, INC. **BROADWATER**
36499 Perkins Road
Prairieville, Louisiana 70769
Tel: 225-673-2163
Fax: 225-744-3116

TESLA OFFSHORE, LLC
36499 Perkins Road
Prairieville, Louisiana 70769
Tel: 225-673-2163
Fax: 225-744-3116

PREP: KBR INT MEK CAD: KBR APP: BTM FILE NO: 05-022-R12-PP
CHK: MEX CHK: CHK: MEX DATE: 06-13-05 **MAP 2 OF 4**



SEE MAP 4 OF 4



SEE MAP 3 OF 4

CURVE 1 DATA

P.C.	X = 2,206,817.60
	Y = 14,924,432.37
P.T.	X = 2,205,585.62
	Y = 14,923,863.27
P.I.	X = 2,206,182.26
	Y = 14,924,189.71
R	10,000.00'
L	1,358.11'



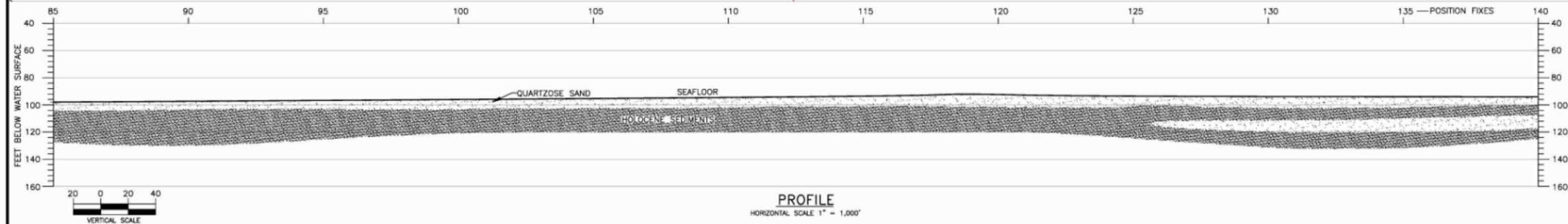
- LEGEND**
- 101 SURVEY DIRECTION AND LINE NO.
 - 102 SURVEY TRACK AND POSITION FIX
 - 103 CABLE (EXISTING)
 - 65' BATHYMETRIC CONTOURS IN 2' INTERVALS
 - 104 PROPOSED PIPELINE ROUTE

ATTENTION:
Map features were derived from separate databases, public records, and from the geophysical data described in the accompanying report.

Geophysical equipment used for the field survey cannot be relied upon to detect communication cables or power cables. Burial depths of existing pipelines cannot be determined accurately by geophysical systems.

DATUM:	NAD 83
SPHEROID:	CLARKE 1866
PROJECTION:	UTM
ZONE:	18N

SURVEY PERFORMED BY TESLA OFFSHORE, LLC IN MARCH - MAY, 2005



PROPOSED PIPELINE ROUTE SURVEY
PLAN AND PROFILE
ROUTE NO. 2
LONG ISLAND SOUND (NEW YORK)

BROADWATER
PROJECT CONSULTING SERVICES, INC.
36499 Perkins Road
Protrierville, Louisiana 70769
Tel: 225-673-2163
Fax: 225-744-3116

TESLA OFFSHORE, LLC
36499 Perkins Road
Protrierville, Louisiana 70769
Tel: 225-673-2163
Fax: 225-744-3116

PREP:	KBR	INT. MEX:	CAD	KBR	APP.	CYMO	FILE NO.	05-022-R12-PP
CHK:	MEX	CHK:	MEX	CHK:	MEX	DATE	06-13-05	MAP 4 OF 4

Table 7-2 Broadwater Pipeline Installation, Summary of Sediment-Related Impacts

Impact Type	Sediment Volume (cu yards)	Impact (acres)	Comment
Pipeline Lowering via Plow; 19.7 miles with 3 feet of cover (MP 2.0 – MP 21.7)	304,500	179.1	Impacts include both the trench and associated spoil mounds.
Pipeline Lowering via Plow; 2 miles with 5 feet of cover (MP 0.0 – M.P. 2.0)	39,500	18.2	In proximity to the FSRU, the pipeline will be lowered to a deeper depth to accommodate design considerations.
AT&T Cable Crossing (MP 6.4)	3,030	0.4	Impacts include excavations for crossing bridge and pipeline trench transition.
Cross Sound Cable Crossing (MP 3.0)	3,030	0.4	Impacts include excavations for crossing bridge and pipeline trench transition.
FSRU Tie-in (MP 0.0)	1,650	0.2	Includes expansion loop.
Check and Isolation Valve Spool (MP 0.4)	270	<0.1	Located approximately 2,000 feet from the FSRU.
IGTS Tie-in (MP 21.7)	2,340	0.3	Includes expansion offset.
Anchor Footprint	N/A	16	8-point mooring, 3 anchor sets per mile, and 3 passes (one lay, and two plow)
Anchor Cable Sweep	N/A	2,020	8-point mooring, midline buoys on quarter anchors, 3 anchor sets per mile, and 3 passes (one lay, and two plow)
Total	354,320	2,234.7	

Based on the current pipeline construction plan, subsea plowing will be the primary proposed method for lowering the pipeline. Following pipe-laying activities, a subsea plow is positioned over the pipeline and rides along the seafloor on pontoons. The plow is towed by a surface vessel. The subsea plow physically cuts the seafloor and casts the excavated spoil on either side of the trench without fluidizing the bottom sediments, minimizing the release of sediments to the water column. Due to the required depth (a minimum of 5 feet for the first 2 miles and a minimum of 3 feet for the remainder) to be obtained for pipeline installation, two passes of the subsea plow may be required to achieve the target depth. The trench created by the plow will be approximately 25 feet wide, and sediment berms will extend outward an additional 25 feet along both sides of the trench. Where necessary (i.e., the first 2 miles and at ties-in, valves, and cable crossings), the trench will be backfilled with either sidecast spoil or imported clean material. Backfill material will be imported if insufficient spoil is available from the adjacent spoil banks to complete the backfilling. Imported backfill material will be comprised of clean rock, which will be dumped from a suitable vessel, (i.e., using drop

tubes or similar) to ensure accurate placement of backfill into the trench. Any non-native materials used for backfill materials will be obtained from EPA- or state-approved sources. Since clean rock will be used as the primary backfill material, no impacts will be associated with installation of the material. A minor long-term impact will result from the importation of clean fill from the conversion of substrate type. As discussed in Resource Report 3, the diversification of substrate will result in a positive impact on the existing ecosystem.

At most locations, the pipeline within the trench will be allowed to backfill naturally through sediment deposition. Subsea plowing was selected as the preferred primary installation method because it causes only minimal amounts of sediment to be released into the water column as compared to jetting or dredging actions. Based on the geotechnical and geophysical surveys, no natural sediment or geologic features are present that should prevent installation to the prescribed depth.

While it is anticipated that plowing will be a viable installation method for the entire pipeline route, Stratford Shoal has been identified as a location where an alternative installation method may be required due to the presence of hard material (boulders or large cobbles) that could prevent plowing operations. Although the results of the vibracoring completed during the spring field surveys indicate that Stratford Shoal is suitable for plowing, it will be necessary to confirm that the material found in the vibracoring samples is present consistently across the entire shoal. It is proposed that a trial plow operation using a scaled-down plow be performed prior to construction to physically evaluate the sediments/materials between the vibracoring sites. The trial plow operation will provide the field data needed to determine the suitability of Stratford Shoal for installing the pipeline via subsea plowing.

Based on the results of the geotechnical surveys, and assuming that the trial plow operation is not successful, an approximately 4,000-foot trench across Stratford Shoal has been identified as potentially requiring dredging in place of subsea plowing. Dredging would produce a trench approximately 54 feet wide at the top and approximately 26 feet wide at the bottom, and would utilize either a long-arm excavator unit or a clamshell dredge. The volume of excavated trench material would be approximately 40,000 yd³. Dredged material would be removed to a hopper barge rather than cast to the side of the trench to ensure safer construction (i.e., by removing the possibility of the bucket hitting the pipeline during backfilling operations). Excavated material would be disposed of in an approved dredge disposal area. Minimal sedimentation would result as the bucket is brought from the trench up to the surface. Following lowering of the pipeline, the trench would be backfilled with imported clean material.

For safety reasons, subsea plowing will not be used to lower the FSRU and IGTS tie-ins, or where the pipeline route traverses the AT&T and Cross Sound cables. The subsea pipeline tie-ins and cable crossings are depicted on Figures 1-10, 1-12, and 1-19 in Resource Report 1 (General Project Description), and discussions of the proposed construction methodologies at the tie-ins and cable crossings are provided in Sections 1.5.3.4, 1.5.3.5, and 1.5.3.6 of Resource Report 1.

The excavations at these locations will be performed using a submersible pump or by divers using hand-jetting or air-lifting equipment. At each of these locations, impacts are anticipated to affect less than 0.5 acre. At these crossings, hand excavation will be required to construct bridging structures on either side of the existing cable. A minimum of 12 inches of separation will be maintained with the use of concrete mats between the proposed pipeline and the existing cables. Additional concrete mats will be placed over the pipeline from the centerline of the cable crossing to the point where adequate depth of cover has been reached. In these areas, the pipeline may create a slightly modified bottom topography and substrate, extending for up to 200 feet.

All areas requiring hand or submersible pump excavation will be protected using concrete mats, sandbags, and/or prefabricated protective structures. To complete backfilling in these areas, clean backfill material (i.e., rock) will be imported and placed into the trench.

Anchors used in moving the laybarges and bury barges also would disturb bottom materials. The vast majority of the seafloor area disturbed during construction would be caused by cable sweep, which occurs when the anchors are moved.

Sediment disturbances throughout the Sound are common events, although most occur in shallower coastal waters. A study by Signell et al. (1991) describing the physical conditions of the Sound that affect sediment suspension notes that fine sediments along coastal margins are regularly resuspended by tidal currents and that storm-related events that can redistribute fine sediments to depths of 20 meters occur 10 to 20 times per year. However, in the deeper portions of the Sound, the frequency of wind- or tidal-driven currents with velocities sufficient to resuspend fine sediment is infrequent. Detailed discussions of the sediment modeling conducted for the Project are presented in Appendix E of Resource Report 2 (Water Use and Quality). The modeling demonstrates that construction activities will result in only short-term increases in total suspended solids (TSS) that quickly dissipate following construction. With the exception of immediately above the trench line, where the sediment will be introduced into the water column, TSS levels resulting from subsea plow operations are not significantly different from background levels. The use of a submersible pump for areas that cannot be plowed does not introduce appreciable amounts of TSS into the water column. Appendix G (*Sediment Deposition Modeling Report*) in Resource Report 2 demonstrates that the maximum deposition depth of the suspended sediment resulting from pipeline installation will not exceed 5 mm.

7.4 REFERENCES

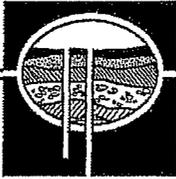
DiGiacomo-Cohen, M.L. and R.S. Lewis. 2001. *Map Showing the Shape of Marine Transgressive Surface and Thickness of Postglacial Sediments in Long Island Sound*, United States Geological Survey (USGS) Open-file Report OFR 00-304, Washington D.C., 4 pp.

Knebel, H.J. et al. 1999. Seafloor environments in the Long Island Sound estuarine system, *Marine Geology* 155: 277-388.

Poppe, L.J. et al. 2001. *Map Showing the Distribution of Surficial Sediments in Long Island Sound*, USGS Open-file Report OFR 00-304, Washington D.C., 7 pp.

Signell, R.P. et al. 1991. Physical processes affecting the sedimentary environments of Long Island Sound. *Proceedings of the 5th International Conference on Estuarine and Coastal Modeling*. M.L. Spaulding and A.F. Blumberg, eds. ASCE Press.

Appendix A
VGS Log of Vibracores



VIRGINIA GEOTECHNICAL SERVICES, P. C.

8211 Hermitage Road • Richmond, VA 23228-3031 • (804) 266-2199

VGS LOGS OF VIBRACORES

VIRGINIA GEOTECHNICAL SERVICES, P.C.
8211 Hermitage Road ♦ Richmond, Virginia 23228 ♦ (804) 266-2199

BW001863



VIRGINIA GEOTECHNICAL SERVICES, P. C.

8211 Hermitage Road ■ Richmond, VA 23228-3031 ■

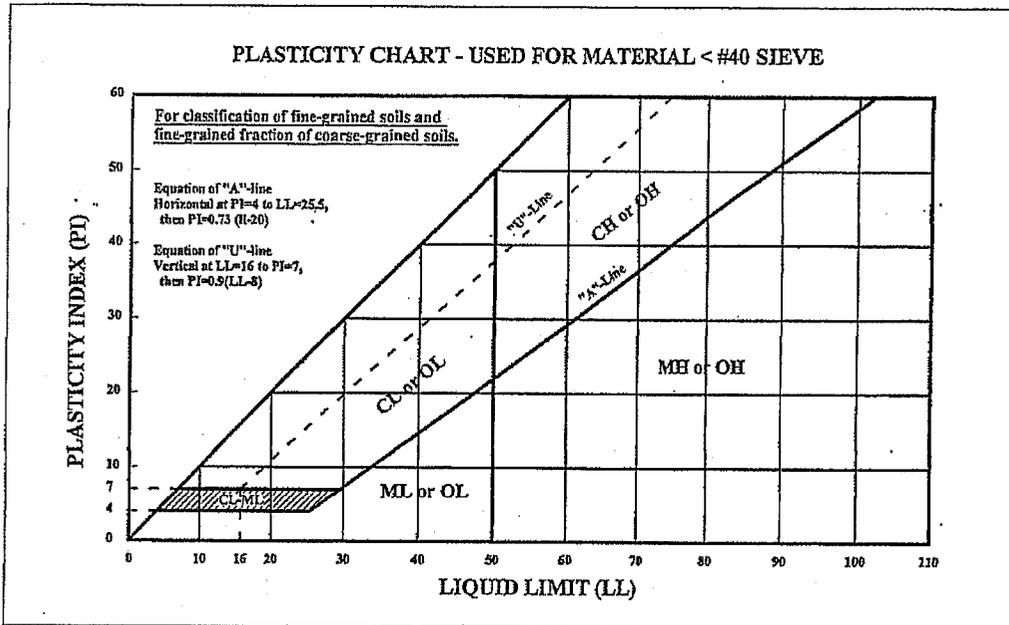
Key to Boring Log Terminology

Boring Log Soil Description Format:

Consistency (Density), Color, Major Modifier Primary Constituent, minor modifiers or further descriptors, moisture content. (USCS Group Symbol)

Relative Density - Used for soils with < 50% finer than the #200 sieve		Consistency - Used for soils with > 50% finer than the #200 sieve		Color - May use light and dark as modifiers	
Relative Density	N-Value	Consistency	N-Value	White	Yellow-Brown
Very Loose	0 to 4	Very Soft	0 to 1	Gray	Red-Brown
Loose	5 to 10	Soft	2 to 4	Black	Gray-Brown
Medium Dense	11 to 30	Medium Stiff	5 to 8	Brown	Green-Gray
Dense	31 to 50	Stiff	9 to 15	Blue-Gray	Blue-Gray
Very Dense	50 +	Very Stiff	16 to 30	Mottled - irregularly marked with spots or patches of different colors	
		Hard	30 +		

Grain Size Terminology (U.S. Standard Sieves)		Natural Moisture Content	
Term	Particle Size	Dry	No apparent moisture
Boulder	12-inches +	Moist	Damp but no visible water
Cobble	3-inches to 12 inches	Wet	Visible free water
Coarse Gravel	¾ inch to 3 inches		
Fine Gravel	#4 to ¾ inch		
Coarse Sand	#10 to #4	Trace	0 to 10%
Medium Sand	#40 to #10	Little	10 to 20%
Fine Sand	#200 to #40	Some	20 to 35%
Silt and Clay	< #200	And	35 to 50%



X:\GT\template\Report & Correspondance Templates\Key to Boring Log Terminology.doc

VIRGINIA GEOTECHNICAL SERVICES, P.C.
8211 Hermitage Road ♦ Richmond, Virginia 23228 ♦ (804) 266-2199

KEY TO USCS TERMINOLOGY AND GRAPHIC SYMBOLS

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS	
			GRAPH	USCS		
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS <small>(LESS THAN 5% PASSING THE #200 SIEVE)</small>		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES. LITTLE OR NO FINES	
		GRAVELS WITH FINES <small>(MORE THAN 12% PASSING THE #200 SIEVE)</small>		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES. LITTLE OR NO FINES	
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES <small>(MORE THAN 12% PASSING THE #200 SIEVE)</small>		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES	
		CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES <small>(MORE THAN 12% PASSING THE #200 SIEVE)</small>		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES	
MORE THAN 50% OF MATERIAL IS LARGER THAN NO 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS <small>(LESS THAN 5% PASSING THE #200 SIEVE)</small>		SW	WELL-GRADED SANDS, GRAVELLY SANDS. LITTLE OR NO FINES	
		SANDS WITH FINES <small>(MORE THAN 12% PASSING THE #200 SIEVE)</small>		SP	POORLY-GRADED SANDS, GRAVELLY SAND. LITTLE OR NO FINES	
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES <small>(MORE THAN 12% PASSING THE #200 SIEVE)</small>		SM	SILTY SANDS, SAND - SILT MIXTURES	
		CLAYEY SANDS, SAND - CLAY MIXTURES <small>(MORE THAN 12% PASSING THE #200 SIEVE)</small>		SC	CLAYEY SANDS, SAND - CLAY MIXTURES	
FINE GRAINED SOILS	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50	<15% Retained on #200 Sieve SILT OR CLAY		ML	INORGANIC SILTS WITH LOW PLASTICITY, SANDY OR GRAVELLY SILT, ROCK FLOUR, CLAYEY SILT	
		15% to 30% Retained on #200 Sieve SILT OR CLAY WITH SAND OR GRAVEL		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, LEAN CLAY, SANDY OR GRAVELLY LEAN CLAY, SILTY CLAYS	
		>30% Retained on #200 Sieve SANDY OR GRAVELLY SILT OR CLAY		OL	ORGANIC SILTS AND ORGANIC CLAYS OF LOW PLASTICITY	
	MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50	<15% Retained on #200 Sieve SILT OR CLAY		MH	INORGANIC SILTS OF HIGH PLASTICITY, ELASTIC SILT, SANDY OR GRAVELLY ELASTIC SILT, CLAYEY SILT
			15% to 30% Retained on #200 Sieve SILT OR CLAY WITH SAND OR GRAVEL		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAY, SANDY OR GRAVELLY FAT CLAY, SILTY CLAY
			>30% Retained on #200 Sieve SANDY OR GRAVELLY SILT OR CLAY		OH	ORGANIC SILTS AND CLAYS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS



VIRGINIA GEOTECHNICAL SERVICES, P.C.
 8211 Hermitage Road
 Richmond, Virginia 23228-3031
 804-266-2199
 804-261-5569 (fax)

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline	Driller: Aqua Survey, Inc.	Date: 4/29/2005	Horizontal Datum: UTM North Zone 18
Location: Long Island Sound, New York	Equipment: Rossfelder P3 Vibracore	Water Depth (ft): 121.7	Vertical Datum: MLLW
Project No.: GT2139	Drill Method: 4" ID Vibracore	Recovery (%): 80	
Consultant: Virginia Geotechnical Services, P.C.	Inspector: Boyd W. Clark		

Boring:

C-01

(1 of 1)

Latitude: 41.015250
 Longitude: -73.239720
 Northing: 14901356
 Easting: 2126017

Remarks: CPT data collected from a depth of 0 to 33 feet below surface of ocean floor.

The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA		LABORATORY DATA															
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	Li	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-119.0				Start Core Run at 12:09 Some shell fragments present	11369		0.0														
-120.8	2.0	Gray, fat CLAY, little fine to coarse sand, wet.	CH		11369		1.8	87	136.2	79	35	44	2.3	3.75	2.67	83	35				
					11369		2.9											47			
-122.7	4.0			Trace shell fragments present	11370		3.5														
					11370		4.5														
					11370		4.7											135	6.8	59.0	
-124.6	6.0	Gray, elastic SILT, little fine to medium sand, wet.	MH		11370		5.6	88	96.5	65	33	32	2.0	2.14	2.36	92	47				
-127.1	8.0	No recovery.																			
-129.0	10.0	Vibracore terminated at a depth of 10 feet.		End Core Run at 12:10																	

VGS VIBRACORE LOG - GT2139 EXTENDED INP/IT.SPJ 7/7/05

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline
 Location: Long Island Sound, New York
 Project No.: GT2139
 Consultant: Virginia Geotechnical Services, P.C.

Driller: Aqua Survey, Inc.
 Equipment: Rossfelder P3 Vibracore
 Drill Method: 4" ID Vibracore
 Inspector: Boyd W. Clark

Date: 4/22/2005
 Water Depth (ft): 126
 Recovery (%): 60

Horizontal Datum: UTM North Zone 18
 Vertical Datum: MLLW

Boring:

C-02

(1 of 1)

Latitude: 41.016530
 Longitude: -73.222620
 Northing: 14901916
 Easting: 2130722

Remarks: CPT data collected from a depth of 0 to 26.3 feet below surface of ocean floor.

The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA			LABORATORY DATA															
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	Y _t (pcf)	Y _d (pcf)	TV (psf)	pH	R (ohm-cm)		
-121.0				Start Core Run at 13:04	11340		0.0															
				Shell fragments present in upper 1 foot																		
	2.0	Gray, fat CLAY, some fine to coarse sand, trace fine gravel, wet.	CH	Occasional thin fine sand seams present	11340		1.5															
-123.1	11340					2.1	72	86.7	60	29	31	1.9		91	48				67			
	11341					2.8																
	4.0																					
-125.5		Gray, fat CLAY and fine to coarse SAND, wet.	CH		11341		4.5	54	83.6	60	29	31	1.8			93	51		6.2	58.0		
	6.0			Pocket of brown clay present at 5.2 feet	11341		5.3											167				
-127.5		No recovery.																				
	8.0																					
	10.0	Vibracore terminated at a depth of 10 feet.		End Core Run at 13:06																		

VGS VIBRACORE LOG - GT2139 - EXTENDED INPUT - GPJ 7/2005

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline Location: Long Island Sound, New York Project No.: GT2139 Consultant: Virginia Geotechnical Services, P.C.	Driller: Aqua Survey, Inc. Equipment: Rossfelder P3 Vibracore Drill Method: 4" ID Vibracore Inspector: Boyd W. Clark	Date: 4/28/2005 Water Depth (ft): 125.1 Recovery (%): 80	Horizontal Datum: UTM North Zone 18 Vertical Datum: MLLW	Boring: C-03 (1 of 1)
---	---	---	---	---

Latitude: 41.017710
Longitude: -73.203990
Northing: 14902453
Easting: 2135857

Remarks: CPT data collected from a depth of 0 to 32.8 feet below surface of ocean floor.
 The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA				LABORATORY DATA													
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	Y _t (pcf)	Y _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-122.0				Start Core Run at 13:45	11371		0.0														
				Trace shell fragments present																	
-124.2	2.0	Gray, fine to coarse SAND and CLAY, wet.	SC		11371		2.2	43	65.9	57	25	32	1.3			103	62				
					11372		2.8														
					11372		3.5												47		
					11372		3.8														
-126.7		Gray, fine to coarse SAND and CLAY, trace fine gravel, wet.			11372		4.6	48	54.0	55	28	27	1.0			114	74		6.9	69.0	
					11372		4.7														
					11372		5.3														
					11372		5.6														
				Abundant shell fragments present	11372		6.1											85			
-130.0	8.0	No recovery.																			
-132.0	10.0	Vibracore terminated at a depth of 10 feet.		End Core Run 13:47																	

VGS VIBRACORE LOG GT2139 EXTENDED INPUT.GPJ 7/7/05

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline
 Location: Long Island Sound, New York
 Project No.: GT2139
 Consultant: Virginia Geotechnical Services, P.C.

Driller: Aqua Survey, Inc.
 Equipment: Rossfelder VT-6 Vibracore
 Drill Method: 4" ID Vibracore
 Inspector: Boyd W. Clark

Date: 4/22/2005
 Water Depth (ft): 127.5
 Recovery (%): 60

Horizontal Datum: UTM North Zone 18
 Vertical Datum: MLLW

Boring:
C-04
 (1 of 1)

Latitude: 41.019000
 Longitude: -73.185330
 Northing: 14903031
 Easting: 2140982

Remarks: CPT data collected from a depth of 0 to 30.8 feet below surface of ocean floor.
 The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA				LABORATORY DATA												
Elevation (ft)	Depth (ft)	Description	USCS Group	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-122.0				11347		0.0														
		Start Core Run at 9:28																		
		Trace shell fragments present																		
	2.0																			
		Inner portion of sample consists of reddish-brown organic material																		
-124.6		Dark gray, fine to coarse SAND and silt, trace fine gravel, wet.	SM	11347		2.6	36	56.7	NP	NP	NP				111	71	270			
-125.4				11348		3.0														
-126.1	4.0																			
		Gray, fine to coarse SAND and clay, trace fine gravel, wet.	SC	11348		4.1	42	54.7	41	22	19	1.7			108	70		6.7	74.0	
				11348		4.5														
				11348		5.2											95			
-128.5		No recovery.																		
	6.0																			
	8.0																			
-132.0	10.0	Vibracore terminated at a depth of 10 feet.																		
		End Core Run at 9:29																		

VGS VIBRACORE LOG GT2139 EXTENDED INPUT GSI 27763

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline	Driller: Aqua Survey, Inc.	Date: 4/29/2005	Horizontal Datum: UTM North Zone 18 Vertical Datum: MLLW
Location: Long Island Sound, New York	Equipment: Rossfelder P3 Vibracore	Water Depth (ft): 127.2	
Project No.: GT2139	Drill Method: 4" ID Vibracore	Recovery (%): 50	
Consultant: Virginia Geotechnical Services, P.C.	Inspector: Boyd W. Clark		

Boring:
IC-5
(1 of 1)

Latitude: 41.021500
Longitude: -73.161810
Northing: 14904077
Easting: 2147463

Remarks: CPT data collected from a depth of 0 to 32.8 feet below surface of ocean floor.
The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA			LABORATORY DATA														
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-121.0				Start Core Run at 16:41	11400A		0.0														
-121.5		Gray, fine to coarse SAND, little clay, trace fine gravel, wet.	SC	Pockets of black organic material present throughout sample	11400A		0.5	14	30.8	57	19	38	0.3			122	93				
	2.0			Few shell fragments present																	
-123.5		Gray, fine to coarse SAND, little clay, wet.	SC		11400B		2.5	16	28.7	31	17	14	0.9								
	4.0				11400B		3.1													6.9	100.0
					11400B		3.6											80			
-126.0		No recovery.																			
	6.0																				
	8.0																				
-131.0	10.0	Vibracore terminated at a depth of 10 feet.		End Core Run at 16:42																	

VGS VIBRACORE LOG - GPS-19 EXTENDED INPUT GSI 2/2005

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline	Driller: Aqua Survey, Inc.	Date: 4/27/2005	Horizontal Datum: UTM North Zone 18. Vertical Datum: MLLW	Boring: IC-6 (1 of 1)
Location: Long Island Sound, New York	Equipment: Rossfelder P3 Vibracore	Water Depth (ft): 118.3		
Project No.: GT2139	Drill Method: 4" ID Vibracore	Recovery (%): 70		
Consultant: Virginia Geotechnical Services, P.C.	Inspector: Boyd W. Clark			

Latitude: 41.027450
 Longitude: -73.147930
 Northing: 14906322
 Easting: 2151248

Remarks: CPT data collected from a depth of 0 to 32.8 feet below surface of ocean floor.
 The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA			LABORATORY DATA																	
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)				
-114.0				Start Core Run at 16:29	11401A		0.0																	
-114.9		Gray and black, fine to coarse SAND, some clay, trace fine gravel, wet.	SC	Pockets of black organic material present throughout sample	11401A		0.9	24	59.2	59	27	32	1.0			104	66							
-115.5	2.0	Gray and black, fat CLAY and fine to coarse SAND, wet.	CH		11401B		2.0	52	56.0	51	26	25	1.2		2.68				93					
-116.0					11401B		2.4																	
					11401B		2.9																	
-117.5	4.0				11402		3.8												33					
-119.0	6.0	Gray, fine to coarse SAND, some clay, trace fine gravel, wet.	SC		11402		4.5													6.8	86.0			
					11402		5.0	30	41.8	43	21	22	1.0			117	82							
-121.1	8.0	No recovery.																						
-124.0	10.0	Vibracore terminated at a depth of 10 feet.		End Core Run at 16:30																				

VGS VIBRACORE LOG 672139 EXTENDED INFURGER 7/05

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline Location: Long Island Sound, New York Project No.: GT2139 Consultant: Virginia Geotechnical Services, P.C.	Driller: Aqua Survey, Inc. Equipment: Rossfelder P3 Vibracore Drill Method: 4" ID Vibracore Inspector: Boyd W. Clark	Date: 4/27/2005 Water Depth (ft): 118.4 Recovery (%): 90	Horizontal Datum: UTM North Zone 18 Vertical Datum: MLLW	Boring: IC-7 (1 of 1)
Latitude: 41.034930 Longitude: -73.131590 Northing: 14909143 Easting: 2155695	Remarks: CPT data collected from a depth of 0 to 32.8 feet below surface of ocean floor. The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.			

SOIL PROFILE				SAMPLE DATA				LABORATORY DATA													
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Typ	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-112.0				Start Core Run at 12:48	11403		0.0														
-112.6		Gray, elastic SILT, little sand, wet.	MH	Pockets of black organic material present to about 1.7 feet	11403		0.6	80	118.3	71	37	34	2.4			90	41				
-113.7	2.0				11403		1.9											53			
					11404		2.4														
-116.3	4.0	Gray, fat CLAY and fine to coarse SAND, moist.	CH		11404		3.9														
-117.1					11404		4.3	58	74.2	51	27	24	2.0	191	2.64	99	57		6.8	57.0	
-117.1					11404		4.5														
-117.1					11404		4.8											95			
-117.8	6.0	Gray, fine to coarse SAND and SILT, trace fine gravel, wet.	SM	Occasional pockets of black organic material present from 5.4 to 6.4 feet	11405A		5.4														
-117.8					11405A		5.8	40	57.4	NP	NP	NP				116	74				
-118.8		Gray, fine to coarse SAND, little silt, moist.			11405B		6.8	21	31.1	NP	NP	NP									
-118.8					11405B		7.0														
-118.8					11405B		7.6											240			
-121.4		No recovery.																			
-122.0	10.0	Vibracore terminated at a depth of 10 feet.																			

VGS-VIBRACORE LOG - GT2139-EXTENDED-INITIAL.GPJ 7/1/05

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline	Driller: Aqua Survey, Inc.	Date: 4/21/2005	Horizontal Datum: UTM North Zone 18 Vertical Datum: MLLW	Boring: MG-5 (1 of 1)
Location: Long Island Sound, New York	Equipment: Rossfelder VT-6 Vibracore	Water Depth (ft): 75.7		
Project No.: GT2139	Drill Method: 4" ID Vibracore	Recovery (%): 40		
Consultant: Virginia Geotechnical Services, P.C.	Inspector: Boyd W. Clark			

Latitude: 41.038620
 Longitude: -73.113290
 Northing: 14910596
 Easting: 2160714

Remarks: Recovery of 4 feet settled to 2.7 feet in tube during storage. CPT data collected from a depth of 0 to 32.8 feet below surface of ocean floor.
 The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA				LABORATORY DATA													
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-75.0		Gray, fine to medium SAND, trace silt, wet.	SP	Start Core Run at 16:09	11362A	X	0.0														
-75.2		Dark gray, fine to coarse SAND, little silt, trace fine gravel, wet.	SM		Some shell fragments present		11362A	0.5	13	20.6	NP	NP	NP					131	108		
-75.5		Light gray, fine to coarse SAND, trace fine gravel, moist.	SP																		
-75.6																					
-76.3		Brown, fine to coarse GRAVEL and fine to coarse sand, trace silt, wet.	GP																		
-76.9	2.0	Light brown, fine to coarse SAND, some fine to coarse gravel, trace silt, moist.	SP		11362B		2.0	2	13.7	NP	NP	NP		0.49							
-77.0																					
-77.7		No recovery.																			
	4.0																				
	6.0																				
	8.0																				
	10.0			End Core Run at 16:57																	
-85.0		Vibracore terminated at a depth of 10 feet.																			

VGS VIBRACORE LOG - GT2139 EXTENDED INPUT.GPJ 7/7/05

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline Location: Long Island Sound, New York Project No.: GT2139 Consultant: Virginia Geotechnical Services, P.C.	Driller: Aqua Survey, Inc. Equipment: Rossfelder P3 Vibracore Drill Method: 4" ID Vibracore Inspector: Boyd W. Clark	Date: 4/20/2005 Water Depth (ft): 64.5 Recovery (%): 33	Horizontal Datum: UTM North Zone 18 Vertical Datum: MLLW	Boring: MG-3 (1 of 1)
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Latitude: 41.038780
Longitude: -73.109710
Northing: 14910677
Easting: 2161700

Remarks: The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA			LABORATORY DATA														
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	Li	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-58.0				Start Core Run at 10:26	11360	X	0.0														
-58.6		Light brown, fine to coarse SAND, trace clay, trace fine gravel, wet.	SP		11360	X	0.6	2	17.0	NP	NP	NP		0.46		133	113				
-58.8		Gray, fine to coarse GRAVEL and fine to coarse SAND, trace silt, wet.	GP	Strong organic odor present																	
-59.1		No recovery.		Shell fragments present																	
	2.0																				
				End Core Run at 10:29																	
-61.0		Vibracore terminated at a depth of 3 feet.																			

VGS VIBRACORE LOG GT2139 EXTENDED INPUT.GPJ 7/7/05

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline	Driller: Aqua Survey, Inc.	Date: 4/30/2005	Horizontal Datum: UTM North Zone 18 Vertical Datum: MLLW	Boring: C-13 (1 of 1)
Location: Long Island Sound, New York	Equipment: Rossfelder VT-6 Vibracore	Water Depth (ft): 100.7		
Project No.: GT2139	Drill Method: 4" ID Vibracore	Recovery (%): 50		
Consultant: Virginia Geotechnical Services, P.C.	Inspector: Boyd W. Clark			

Latitude: 41.039950
Longitude: -73.088040
Northing: 14911233
Easting: 2167665

Remarks: CPT data collected from a depth of 0 to 6.1 feet below surface of ocean floor.
The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA				LABORATORY DATA													
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	Li	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-98.0				Start Core Run at 14:14	11406A	X	0.0														
-98.5		Gray, fine to coarse SAND, little clay, trace fine gravel, moist.	SC	Trace shell fragments present	11406A	X	0.5	15	26.5	40	22	18	0.3	0.83	2.68	116	91				
-98.9				Mineral staining observed	11406B	X	1.0														
-99.9	2.0	Light gray and white, fine to coarse SAND, trace silt, trace fine gravel, moist.	SW-SM		11406B	X	1.9	8	16.5	NP	NP	NP		0.54	2.77	131	112				
-101.8	4.0	No recovery.																			
	6.0																				
-106.0	8.0	Vibracore terminated at a depth of 8 feet.		End Core Run at 14:16																	

VGS VIBRACORE LOG STRAIGHT EXTENDED INPUT (REV. 7/2/05)

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline Location: Long Island Sound, New York Project No.: GT2139 Consultant: Virginia Geotechnical Services, P.C.	Driller: Aqua Survey, Inc. Equipment: Rossfelder P3 Vibracore Drill Method: 4" ID Vibracore Inspector: Boyd W. Clark	Date: 4/30/2005 Water Depth (ft): 113.6 Recovery (%): 80	Horizontal Datum: UTM North Zone 18 Vertical Datum: MLLW	Boring: C-14 (1 of 1)
Latitude: 41.041020 Longitude: -73.068930 Northing: 14911737 Easting: 2172926	Remarks: CPT data collected from a depth of 0 to 33.2 feet below surface of ocean floor. The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.			

SOIL PROFILE				SAMPLE DATA				LABORATORY DATA													
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-111.0				Start Core Run at 8:20	11407A		0.0														
-111.7		Gray, fat CLAY and fine to medium SAND, wet.	CH	Pockets of black organic material present throughout sample	11407A		0.7	55	84.8	58	28	30	1.9			102	55				
-112.7	2.0			Strong organic odor																	
-113.7		Gray, fine to coarse SAND and CLAY, trace fine gravel, wet.	SC		11407B		2.7	49	58.7	41	22	19	1.9								
					11407B		3.1											160			
	4.0			Trace shell fragments	11408		3.7														
-115.4				Mica present	11408		4.5												6.9	89.0	
	6.0				11408		6.1	26	38.3	26	23	3	5.0	0.98	2.66	116	84				
		Gray, fine to medium SAND, some silt, moist.	SM		11408		6.4											110			
					11408		7.0														
-119.1	8.0	No recovery.																			
-121.0	10.0	Vibracore terminated at a depth of 10 feet.		End Core Run at 8:20																	

VGS VIBRACORE LOG - SITE 219 EXTENDED INLET - 051 7/7/05

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline Location: Long Island Sound, New York Project No.: GT2139 Consultant: Virginia Geotechnical Services, P.C.	Driller: Aqua Survey, Inc. Equipment: Rossfelder P3 Vibracore Drill Method: 4" ID Vibracore Inspector: Boyd W. Clark	Date: 4/26/2005 Water Depth (ft): 123.8 Recovery (%): 70	Horizontal Datum: UTM North Zone 18 Vertical Datum: MLLW	Boring: C-15 (1 of 1)
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Latitude: 41.045280
Longitude: -73.050670
Northing: 14913404
Easting: 2177927

Remarks: CPT data collected from a depth of 0 to 29.9 feet below the surface of ocean floor.
 The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA				LABORATORY DATA													
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	Y _t (pcf)	Y _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-118.0				Start Core Run at 14:18	11377A		0.0														
-118.5		Gray and black, fat CLAY and fine to coarse SAND, trace gravel, wet.	CH	Black pockets of organic material present from about 0 to 1.9 feet	11377A		0.5	62	102.0	51	24	27	2.9			99	49				
-119.9	2.0	Gray, elastic SILT and fine to coarse SAND, wet.	MH		11377B		2.2	53	65.4	81	37	44	0.6	2.69				73			
-120.2					11377B		2.3														
-121.1					11377B		2.8														
-122.0	4.0	Gray, fine to coarse SAND, some silt, moist.	SM		11378A		3.6														
					11378A		4.0	33	40.4	NP	NP	NP	0.92	2.71	116	82				6.8	86.0
					11378A		4.5														
					11378A		5.0											155			
-124.2	6.0	Gray, fine to coarse SAND, trace silt, moist.	SP-SM		11378B		6.6	6	22.3	NP	NP	NP	0.62	2.65							
-124.6																					
-125.3	8.0	No recovery.																			
				End Core Run at 14:20																	
-128.0	10.0	Vibracore terminated at a depth of 10 feet.																			

VGS VIBRACORE LOG GT2139 EXTENDED INFLIT.GPJ 7/7/05

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline
 Location: Long Island Sound, New York
 Project No.: GT2139
 Consultant: Virginia Geotechnical Services, P.C.

Driller: Aqua Survey, Inc.
 Equipment: Rossfelder P3 Vibracore
 Drill Method: 4" ID Vibracore
 Inspector: Boyd W. Clark

Date: 4/26/2005
 Water Depth (ft): 126.5
 Recovery (%): 100

Horizontal Datum: UTM North Zone 18
 Vertical Datum: MLLW

Boring:
C-16
 (1 of 1)

Latitude: 41.050060
 Longitude: -73.033080
 Northing: 14915252
 Easting: 2182739

Remarks: CPT data collected from a depth of 0 to 32.8 feet below surface of ocean floor.
 The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA				LABORATORY DATA													
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	Y _t (pcf)	Y _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-122.0				Start Core Run at 11:44	11379A		0.0														
-122.8		Gray and black, fat CLAY, some sand, trace gravel, wet	CH	Upper 6 inches of material was removed from tube	11379A		0.8	75	108.4	91	32	59	1.3			91	44				
-123.4				Black organic material with strong odor present to a depth of 4.3 feet	11379B		1.9	80	98.4	89	40	49	1.2					110			
-123.9	2.0	Gray, elastic SILT, some sand, moist.	MEH		11379B		2.1														
-125.0					11380		2.7														
-126.0	4.0	Gray, fine to coarse SAND and CLAY, moist.	SC		11380		4.0	42	71.0	57	26	31	1.5	1.88	2.70	100	58		110	6.8	60.0
					11380		4.2														
					11380		4.4														
	6.0				11381		5.6														
-129.3	8.0	Gray, fine to coarse SAND and CLAY, moist.	SC	Trace fine gravel present	11381		7.3	38	49.6	29	19	10	3.1	1.28	2.70	111	74				
					11381		7.5														
-130.6		No recovery.			11381		8.2												190		
				Lower 6 inches of sample was removed after shoe removal																	
				End Core Run at 11:46																	
-132.0	10.0	Vibracore terminated at a depth of 10 feet.																			

VGS VIBRACORE LOG, GT2139, EXTENDED, INSET, 08.1.27.05

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline Location: Long Island Sound, New York Project No.: GT2139 Consultant: Virginia Geotechnical Services, P.C.	Driller: Aqua Survey, Inc. Equipment: Rossfelder VT-6 Vibracore Drill Method: 4" ID Vibracore Inspector: Boyd W. Clark	Date: 4/26/2005 Water Depth (ft): 117.8 Recovery (%): 60	Horizontal Datum: UTM North Zone 18 Vertical Datum: MLLW	Boring: C-17 (1 of 1)
Latitude: 41.054810 Longitude: -73.015400 Northing: 14917094 Easting: 2187574	Remarks: CPT data collected from a depth of 0 to 32.8 feet below surface of ocean floor. The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.			

SOIL PROFILE				SAMPLE DATA			LABORATORY DATA															
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	Li	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)		
-118.0				Start Core Run at 8:25	11382A		0.0															
-118.5		Gray-brown and black, organic SILT, trace fine to coarse sand, wet.	OH	Pockets of black organic matter present to a depth of 1.6 feet	11382A		0.5	93	117.6	103	46	57	1.3			87	40					
-119.6	2.0	Gray, fat CLAY, little fine to medium sand, wet.	GH		11382B		2.0	86	100.9	68	32	36	1.9						73			
-120.0					11382B		2.3															
-121.2					11383		2.8															
-122.3	4.0	Gray, elastic SILT, little fine to coarse sand, wet.	MH		11383		4.3	86	112.3	72	35	37	2.1	2.68	2.72	98	46			6.8	48.0	
-123.0					11383		4.5															
-124.5					11383		5.7															
-124.5		No recovery.			11383		6.1															
-128.0	10.0	Vibracore terminated at a depth of 10 feet.		End Core Run at 8:26																		

VGS VIBRACORE LOG GETLIP EXTENDED INPUT.GPJ 17/05

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline
 Location: Long Island Sound, New York
 Project No.: GT2139
 Consultant: Virginia Geotechnical Services, P.C.

Driller: Aqua Survey, Inc.
 Equipment: Rossfelder P3 Vibracore
 Drill Method: 4" ID Vibracore
 Inspector: Boyd W. Clark

Date: 4/19/2005
 Water Depth (ft): 101.9
 Recovery (%): 70

Horizontal Datum: UTM North Zone 18
 Vertical Datum: MLLW

Boring:

C-19

(1 of 1)

Latitude: 41.062220
 Longitude: -72.987720
 Northing: 14919966
 Easting: 2195143

Remarks: CPT data collected from a depth of 0 to 6.2 feet below the surface of ocean floor.

The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA				LABORATORY DATA													
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-100.0				Start Core Run at 15:01	11355A		0.0														
-100.8		Gray, fine to coarse SAND, some clay, trace gravel, wet.	SC	Upper 6 to 8 inches of sample was suspended sediment - discarded	11355A		0.8	3	9.1	NP	NP	NP		0.49		122	111				
-101.7	2.0			Trace shell fragments present	11355B		2.0														
-102.6		Gray-brown, fine to coarse SAND, some gravel, trace silt, wet.	SP		11355B		2.6	22	31.9	42	18	24	0.6			144	109				
-103.2					11356A		3.2														
-103.7	4.0	Brown, fine to coarse SAND, little clay, wet.	SC	Clay pocket present at a depth of 3.5 feet	11356A		3.7	15	12.7	28	15	13	-0.2			122	108				
-104.6				Material is very hard - resembles glacial till	11356A		4.7												2.6	37.5	
-105.5	6.0	Brown, fine to coarse SAND, little silt, little gravel, wet.	SM	Clay seam present from a depth of 4.3 to 4.6 feet	11356B		5.5	16	9.3	NP	NP	NP									
-106.8		No recovery.																			
-110.0	10.0	Vibracore terminated at a depth of 10 feet.		End Core Run at 15:07																	

VGS VIBRACORE LOG GT2139 EXTENDED INPUT.GPJ 1/7/05

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline Location: Long Island Sound, New York Project No.: GT2139 Consultant: Virginia Geotechnical Services, P.C.	Driller: Aqua Survey, Inc. Equipment: Rossfelder P3 Vibracore Drill Method: 4" ID Vibracore Inspector: Boyd W. Clark	Date: 4/21/2005 Water Depth (ft): 100.4 Recovery (%): 33	Horizontal Datum: UTM North Zone 18 Vertical Datum: MLLW	Boring: C-20 (1 of 1)
Latitude: 41.063140 Longitude: -72.984280 Northing: 14920325 Easting: 2196085	Remarks: CPT data collected from a depth of 0 to 7.1 feet below surface of ocean floor. The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.			

SOIL PROFILE				SAMPLE DATA				LABORATORY DATA													
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-95.0																					
-95.2		Gray, fine to coarse SAND, some clay, trace gravel, wet.	SC	Start Core Run at 13:06 Few shell fragments present	11357A	X	0.0														
					11357A		0.2	21	29.3	39	18	21	0.5					111	86		
-96.4		Gray, fine to coarse SAND, little clay, trace gravel, moist.	SC		11357A		1.0														
-96.9	2.0	No recovery.			11357B		1.2	13	13.8	24	15	9	-0.1				128	112	850		
					11357B		1.4														
	4.0																				
	6.0																				
-101.5		Vibracore terminated at a depth of 6.5 feet.		End Core Run at 13:08																	

VGS VIBRACORE LOG - GT2139 - EXTENDED INPUT - GPJ - 17703

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline
 Location: Long Island Sound, New York
 Project No.: GT2139
 Consultant: Virginia Geotechnical Services, P.C.

Driller: Aqua Survey, Inc.
 Equipment: Rossfelder VT-6 Vibracore
 Drill Method: 4" ID Vibracore
 Inspector: Boyd W. Clark

Date: 5/11/2005
 Water Depth (ft): 100.4
 Recovery (%): 67

Horizontal Datum: UTM North Zone 18
 Vertical Datum: MLLW

Boring:

C-22

(1 of 1)

Latitude: 41.071220
 Longitude: -72.954230
 Northing: 14923458
 Easting: 2204299

Remarks: CPT data collected from a depth of 0 to 8.6 feet below surface of ocean floor.

The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA				LABORATORY DATA													
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (pcf)	pH	R (ohm-cm)	
-99.0				Start Core Run at 14:06	11385		0.0														
-100.2	2.0	Gray and black, fat CLAY and fine to coarse SAND, trace gravel, wet.	CH	Pockets of black organic material present in upper 1 foot	11385		1.2	61	66.8	61	28	33	1.2	1.93	2.69	96	57				
					11385		1.3											65			
					11385		1.8														
					11386A		2.3														
-102.2	4.0	Gray, fat CLAY and fine to coarse SAND, trace gravel, wet.	CH	Pocket of brown clay present at about 3.1 feet	11386A		3.2	52	65.2	57	28	29	1.3	1.28	2.70	112	68	90			
-103.1					11386A		3.4														
					11386A		3.8														
-103.9		Gray, fine to coarse SAND, some clay, trace gravel, moist.	SC		11386A		4.6												6.8	92.0	
					11386B		4.9	30	36.6	42	22	20	0.8								
-104.8	6.0	No recovery.																			
	8.0																				
-108.0		Vibracore terminated at a depth of 9 feet.		End Core Run at 14:07																	

VGS VIBRACORE LOG GET/US EXTENDED INPUT GP1 17105

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline Location: Long Island Sound, New York Project No.: GT2139 Consultant: Virginia Geotechnical Services, P.C.	Driller: Aqua Survey, Inc. Equipment: Rossfelder P3 Vibracore Drill Method: 4" ID Vibracore Inspector: Boyd W. Clark	Date: 5/3/2005 Water Depth (ft): 98.4 Recovery (%): 80	Horizontal Datum: UTM North Zone 18 Vertical Datum: MLLW	Boring: C-23 (1 of 1)
Latitude: 41.078070 Longitude: -72.928760 Northing: 14926120 Easting: 2211264	Remarks: CPT data collected from a depth of 0 to 33.6 feet below surface of ocean floor. The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.			

SOIL PROFILE				SAMPLE DATA			LABORATORY DATA														
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-98.0				Start Core Run at 15:53	11387		0.0														
	2.0			Occasional pockets of black organic material present to about 4.5 feet																	
				Organic odor present																	
-101.1		Gray, elastic SILT, trace sand, wet.	MH		11387		3.1	94	89.9	66	36	30	1.8			91	48	115			
	4.0				11387		3.4														
					11388		4.0														
					11388		4.4												6.9	54.5	
-103.6		Gray, elastic SILT, trace sand, wet.	MH		11388		5.6	94	46.6	72	38	34	0.3	1.34	2.40	94	64				
	6.0				11388		6.0														
					11388		6.7														115
-105.9	8.0	No recovery.																			
-108.0	10.0	Vibracore terminated at a depth of 10 feet.		End Core Run at 15:55																	

VGS VIBRACORE LOG - CPT-23 - EXTENDED INPUT - 5/17/05

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline Location: Long Island Sound, New York Project No.: GT2139 Consultant: Virginia Geotechnical Services, P.C.	Driller: Aqua Survey, Inc. Equipment: Rossfelder VT-6 Vibracore Drill Method: 4" ID Vibracore Inspector: Boyd W. Clark	Date: 5/3/2005 Water Depth (ft): 99.2 Recovery (%): 70	Horizontal Datum: UTM North Zone 18 Vertical Datum: MLLW	Boring: C-24 (1 of 1)
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Latitude: 41.082830
Longitude: -72.911100
Northing: 14927970
Easting: 2216086

Remarks: CPT data collected from a depth of 0 to 32.8 feet below surface of ocean floor. Water depth is corrected based on NOAA predicted tides for Stratford Shoals MLLW.
 The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA			LABORATORY DATA														
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-97.0				Pockets of black organic material present to about 1.7 feet	11389		0.0														
-98.8	2.0	Gray, fat CLAY, trace sand, trace gravel, wet.	CH		11389		1.8	92	95.2	74	33	41	1.5	2.59	2.71	92	47	60			
					11389		1.9														
					11389		2.4														
	4.0			Trace shell fragments present	11390		3.8														
					11390		4.5													6.9	53.0
-102.7	6.0	Gray, fat CLAY, little sand, wet.	CH		11390		5.7	85	79.6	60	28	32	1.6	2.18	2.70	95	53	120			
					11390		6.0														
-104.1	8.0	No recovery.																			
-107.0	10.0	Vibracore terminated at a depth of 10 feet.																			

VGS VIBRACORE LOG GT2139 EXTENDED INLET CB1 1705

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline Location: Long Island Sound, New York Project No.: GT2139 Consultant: Virginia Geotechnical Services, P.C.	Driller: Aqua Survey, Inc. Equipment: Rossfelder P3 Vibracore Drill Method: 4" ID Vibracore Inspector: Boyd W. Clark	Date: 5/4/2005 Water Depth (ft): 101.4 Recovery (%): 80	Horizontal Datum: UTM North Zone 18 Vertical Datum: MLLW	Boring: C-25 (1 of 1)
Latitude: 41.086230 Longitude: -72.898380 Northing: 14929293 Easting: 2219566	Remarks: CPT data collected from a depth of 0 to 24.2 feet below surface of ocean floor. The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.			

SOIL PROFILE				SAMPLE DATA				LABORATORY DATA													
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-96.0				Pockets of black organic material present in upper 1.5 feet	11391		0.0														
-98.1	2.0	Gray, elastic SILT, trace sand, moist.	MH		11391		2.1	97	86.9	66	33	33	1.6	2.40	2.71	93	50	75			
					11391		2.6														
					11391		3.0														
					11391		3.0														
	4.0				11392		4.3														
					11392		4.5													6.8	56.0
-101.8	6.0	Gray, elastic SILT, trace sand, moist.	MH		11392		5.8	94	79.9	65	36	29	1.5	2.26	2.74	94	52				
					11392		5.9														
					11392		6.9														
-104.2	8.0	No recovery.																			
-106.0	10.0	Vibracore terminated at a depth of 10 feet.																			

VGS VIBRACORE LOG OFFSHORE EXTENDED INPUT GPJ 27005

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline Location: Long Island Sound, New York Project No.: GT2139 Consultant: Virginia Geotechnical Services, P.C.	Driller: Aqua Survey, Inc. Equipment: Rossfelder VT-6 Vibracore Drill Method: 4" ID Vibracore Inspector: Boyd W. Clark	Date: 5/3/2005 Water Depth (ft): 97.6 Recovery (%): 80	Horizontal Datum: UTM North Zone 18 Vertical Datum: MLLW	Boring: C-26 (1 of 1)
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Latitude: 41.091010
Longitude: -72.880820
Northing: 14931150
Easting: 2224360

Remarks: CPT data collected from a depth of 0 to 33.1 feet below surface of ocean floor.
 The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA				LABORATORY DATA													
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (obm-cm)	
-92.0				Strong organic odor present	11393		0.0														
				Pocket of organic material present at 0.1 foot and 1.1 feet																	
-93.6	2.0	Gray, organic SILT, trace sand, gravel, wet.	OH	Trace shell fragments	11393		1.6	94	93.4	71	37	34	1.6				91	47			
-94.0					11393		1.9												67		
					11394		2.4														
-96.0	4.0	Gray, elastic SILT, trace sand, trace gravel, wet.	MH		11394		4.0	93	86.3	68	35	33	1.5	3.00	2.72		79	42		6.3	56.0
					11394		4.3												105		
					11394		4.4														
					11395		5.4														
					11395		6.5												160		
-100.2	8.0	Gray, elastic SILT, trace sand, wet.	MH		11395		8.2	96	72.1	67	36	31	1.2	1.87	2.54		95	55			
-100.4		No recovery.																			
-102.0	10.0	Vibracore terminated at a depth of 10 feet.																			

VGS VIBRACORE LOG 017139 EXTENDED INPUT.GPJ 1/1/05

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline Location: Long Island Sound, New York Project No.: GT2139 Consultant: Virginia Geotechnical Services, P.C.	Driller: Aqua Survey, Inc. Equipment: Rossfelder P3 Vibracore Drill Method: 4" ID Vibracore Inspector: Boyd W. Clark	Date: 5/2/2005 Water Depth (ft): 95 Recovery (%): 70	Horizontal Datum: UTM North Zone 18 Vertical Datum: MLLW	Boring: C-27 (1 of 1)
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Latitude: 41.095710
Longitude: -72.863150
Northing: 14932982
Easting: 2229189

Remarks: CPT data collected from a depth of 0 to 32.9 feet below surface of ocean floor.
 The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA			LABORATORY DATA														
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Type	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	Li	e	G _s	Y _t (pcf)	Y _d (pcf)	IV (psf)	pH	R (ohm-cm)	
-94.0				Occasional pockets of black organic material throughout sample up to 3.5 feet	11396		0.0														
-96.0	2.0	Gray and black, fat CLAY, trace sand, wet.	CH		11396		2.0	95	80.0	62	31	31	1.6				94	52			
					11396		2.3											90			
					11397		3.0														
-97.5	4.0																				
-98.8		Gray, elastic SILT, trace sand, wet.	MH		11397		4.5	97	79.4	62	35	27	1.6	2.10	2.66		96	54	160	6.9	61.0
					11397		4.8														
					11397		5.0														
					11397		5.5														
-101.1	8.0	No recovery.																			
-104.0	10.0	Vibracore terminated at a depth of 10 feet.																			

VIBRACORE LOG GT2139 EXTENDED INPUT GPJ 3/7/05

Ecology & Environment, Inc.

Project: Geotechnical Evaluation for LNG Pipeline
 Location: Long Island Sound, New York
 Project No.: GT2139
 Consultant: Virginia Geotechnical Services, P.C.

Driller: Aqua Survey, Inc.
 Equipment: Rossfelder VT-6 Vibracore
 Drill Method: 4" ID Vibracore
 Inspector: Boyd W. Clark

Date: 5/2/2005
 Water Depth (ft): 98
 Recovery (%): 70

Horizontal Datum: UTM North Zone 18
 Vertical Datum: MLLW

Boring:

C-28

(1 of 1)

Latitude: 41.100350
 Longitude: -72.845660
 Northing: 14934791
 Easting: 2233966

Remarks: CPT data collected from a depth of 0 to 32.5 feet below surface of ocean floor.

The elevations on this log were developed by VGS using the drawing "Plan and Profile Route No. 2" provided by Tesla Offshore, L.L.C. on June 22, 2005.

SOIL PROFILE				SAMPLE DATA			LABORATORY DATA													
Elevation (ft)	Depth (ft)	Description	USCS Group	Comments	Sample No.	Depth (ft)	# 200 (%)	w (%)	LL	PL	PI	LI	e	G _s	γ _t (pcf)	γ _d (pcf)	TV (psf)	pH	R (ohm-cm)	
-93.0				Start Core Run at 9:41	11398	0.0														
	2.0			Silt content increases with depth																
-95.7		Gray, elastic SILT, trace sand, wet.	MH		11398	2.7	91	68.0	52	31	21	1.8			96	57	85			
	4.0				11398	2.9														
					11399	3.5														
					11399	4.5													6.7	57.0
					11399	4.9														
-98.6		Gray, elastic SILT, trace sand, wet.	MH		11399	5.6	97	92.3	61	34	27	2.1	2.42	2.74	96	50				
	6.0				11399	6.0											110			
-99.6		No recovery.																		
	8.0																			
	10.0	Vibracore terminated at a depth of 10 feet.		End Core Run at 9:42																

VGS VIBRACORE LOG - GT2139 EXTENDED INPUT.GPJ - 7/7/05

Appendix B
Cone Penetrometer (CPT) Graphs



VIRGINIA GEOTECHNICAL SERVICES, P. C.

8211 Hermitage Road • Richmond, VA 23228-3031 • (804) 266-2199

CONE PENETROMETER TEST (CPT) GRAPHS

VIRGINIA GEOTECHNICAL SERVICES, P.C.
8211 Hermitage Road ♦ Richmond, Virginia 23228 ♦ (804) 266-2199

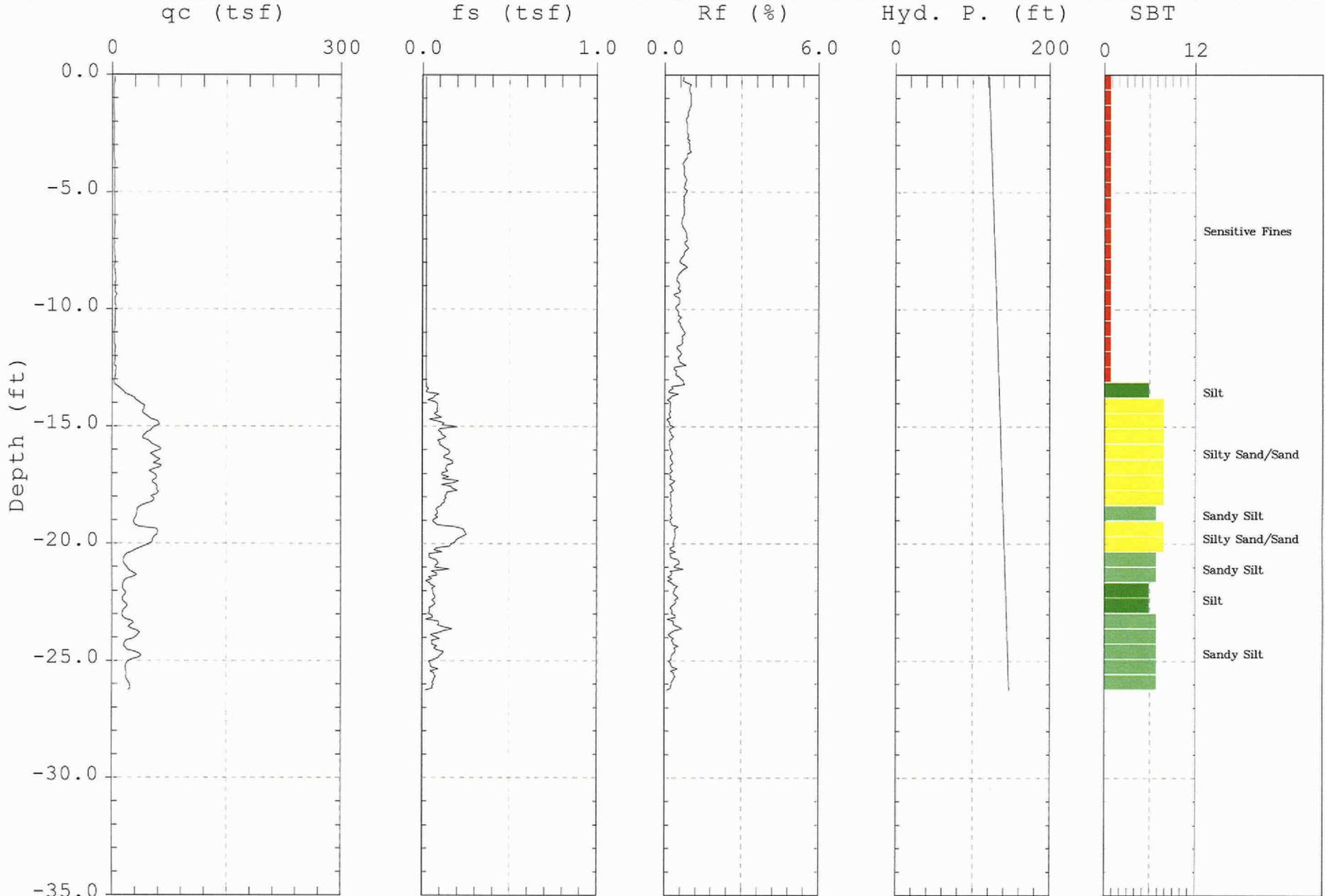
BW001892



V.G.S., P.C.

Sounding: MCPT C-02
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 4/22/05 13:02



Max. Depth: 26.25 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 121
Location - UTM Zone 18 (ft) 2, 130, 679E 14, 901, 898N

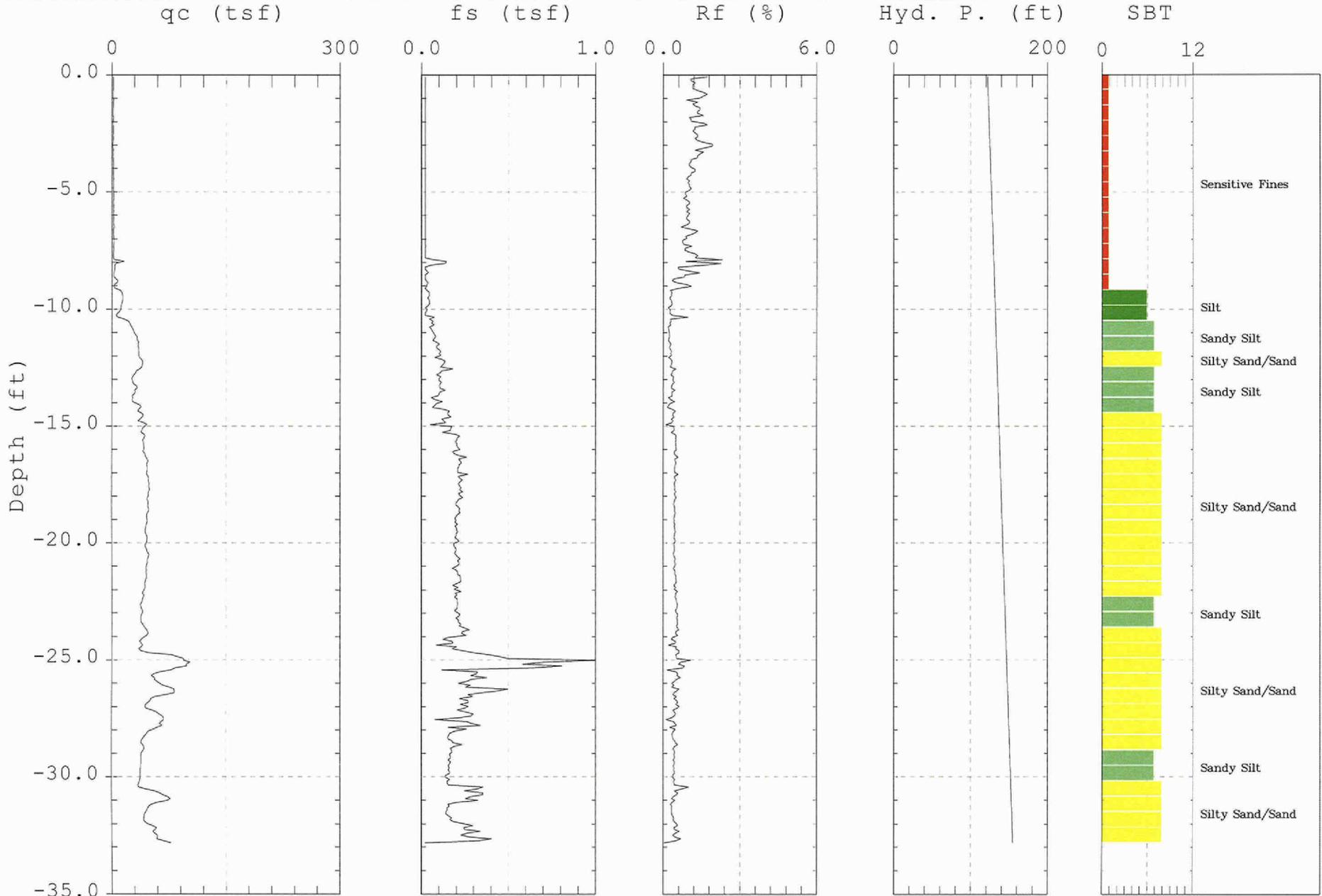
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-03
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 4/28/05 12:52



Max. Depth: 32.81 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 122
Location - UTM Zone 18 (ft) 2, 135, 857E 14, 902, 454N

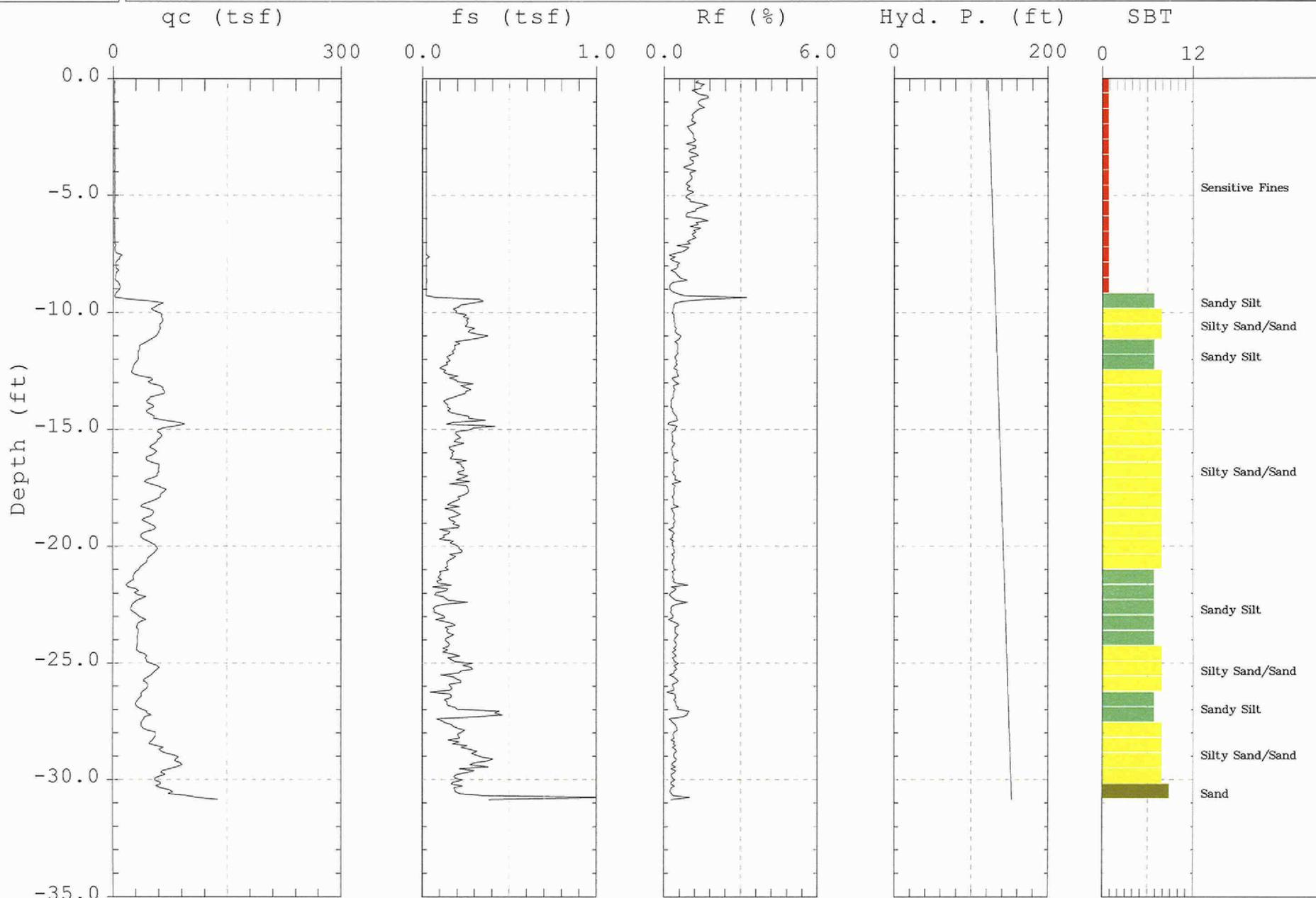
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-04
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 4/22/05 08:35



Max. Depth: 30.84 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 122
Location - UTM Zone 18 (ft) 2, 141, 003E 14, 903, 011N

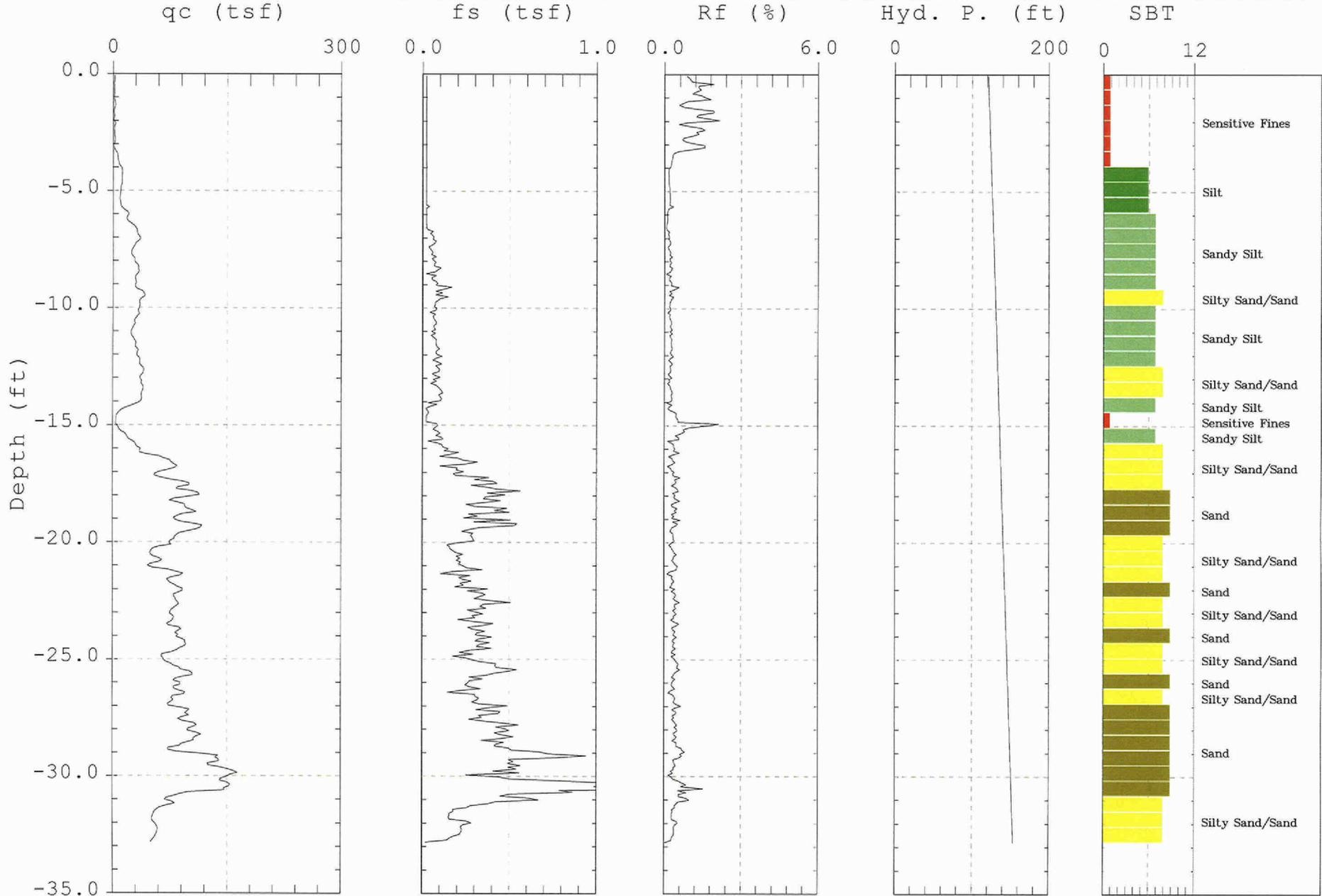
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT IC-05
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 4/29/05 16:43



Max. Depth: 32.81 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 121
Location - UTM Zone 18 (ft) 2, 147, 460E 14, 904, 081N

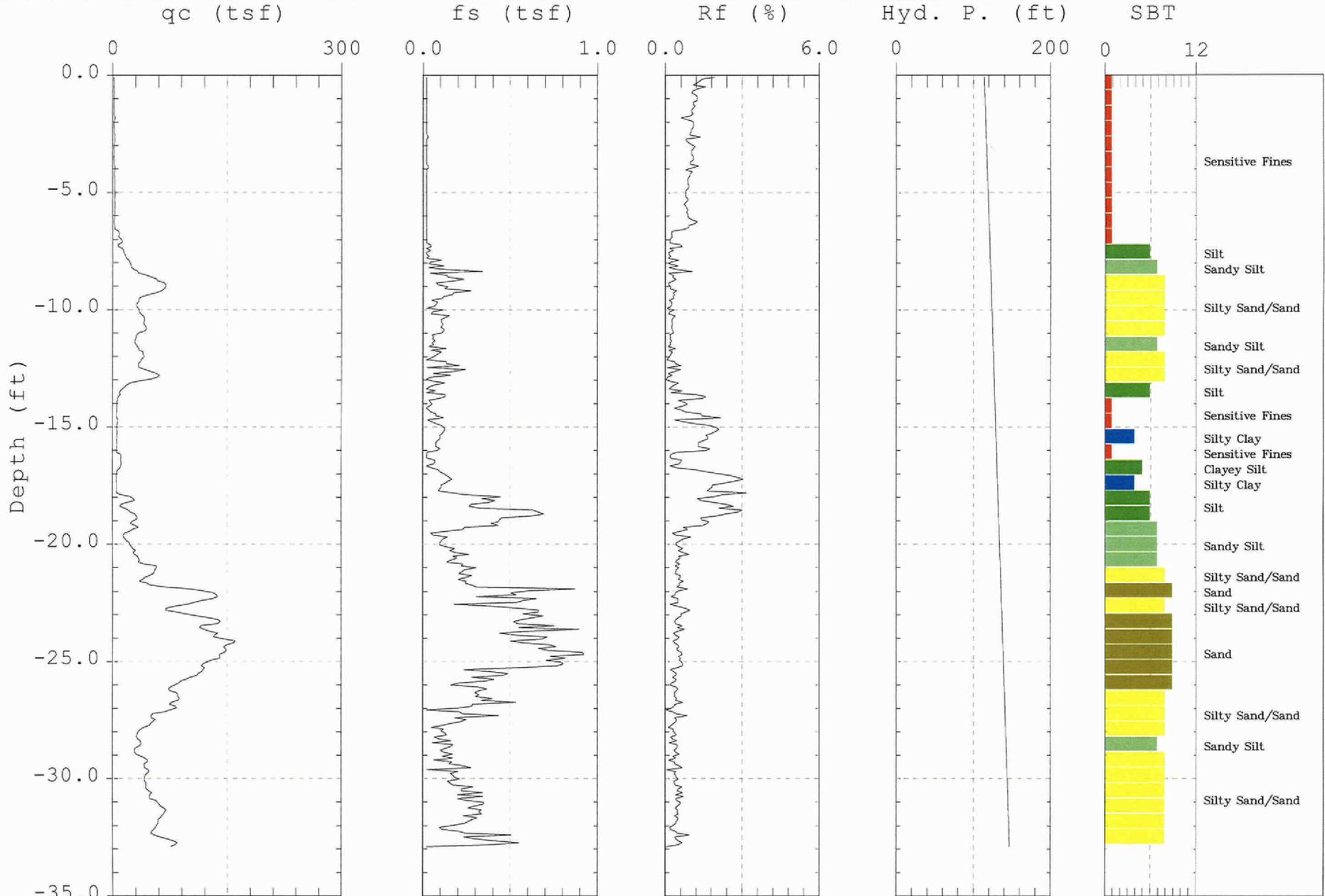
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT IC-6
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 4/27/05 15:39



Max. Depth: 32.89 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 114
Location - UTM Zone 18 (ft) 2, 151, 242E 14, 906, 304N

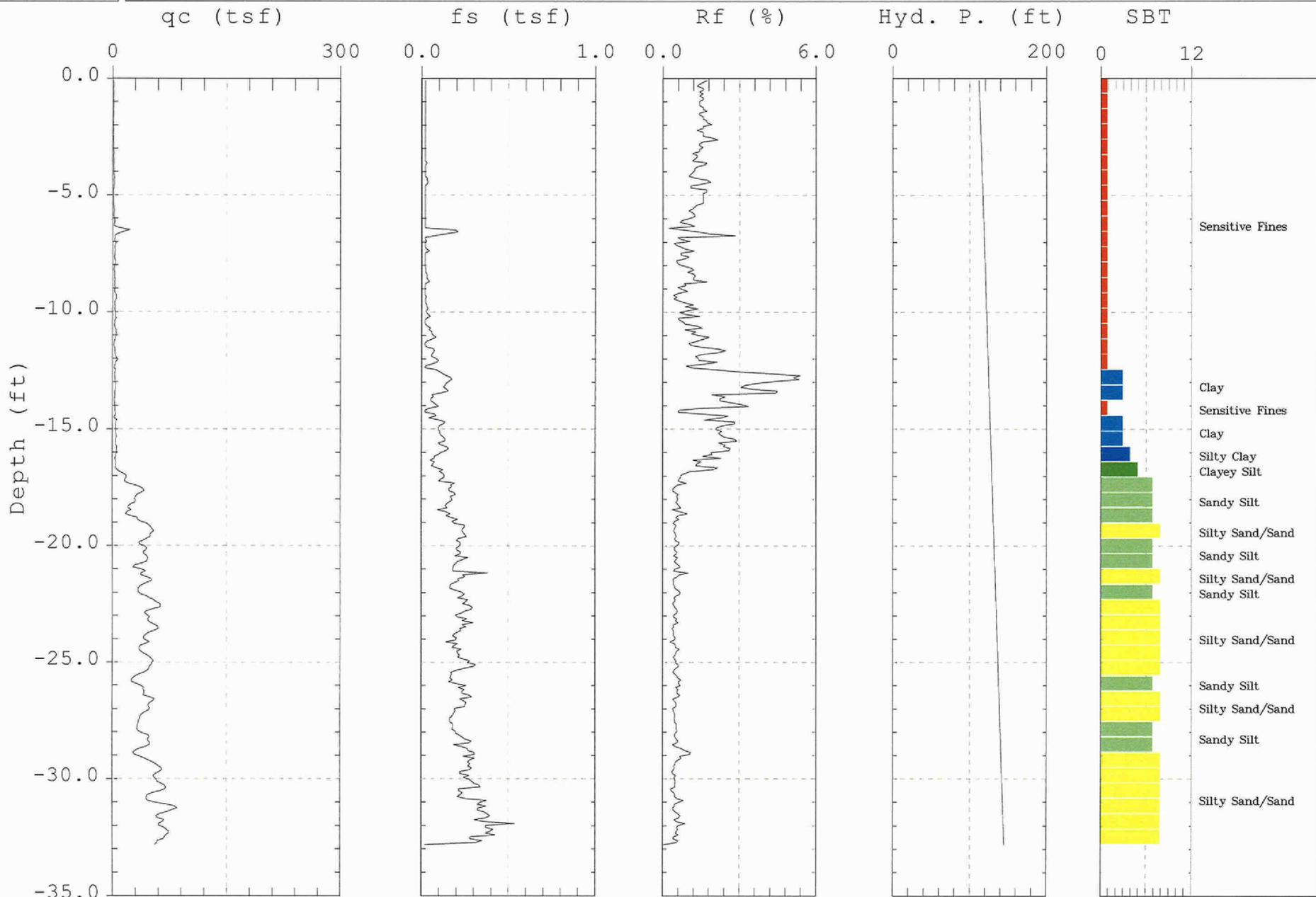
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT IC-7
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 4/27/05 11:54



Max. Depth: 32.81 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 112
Location - UTM Zone 18 (ft) 2, 155, 697E 14, 909, 178N

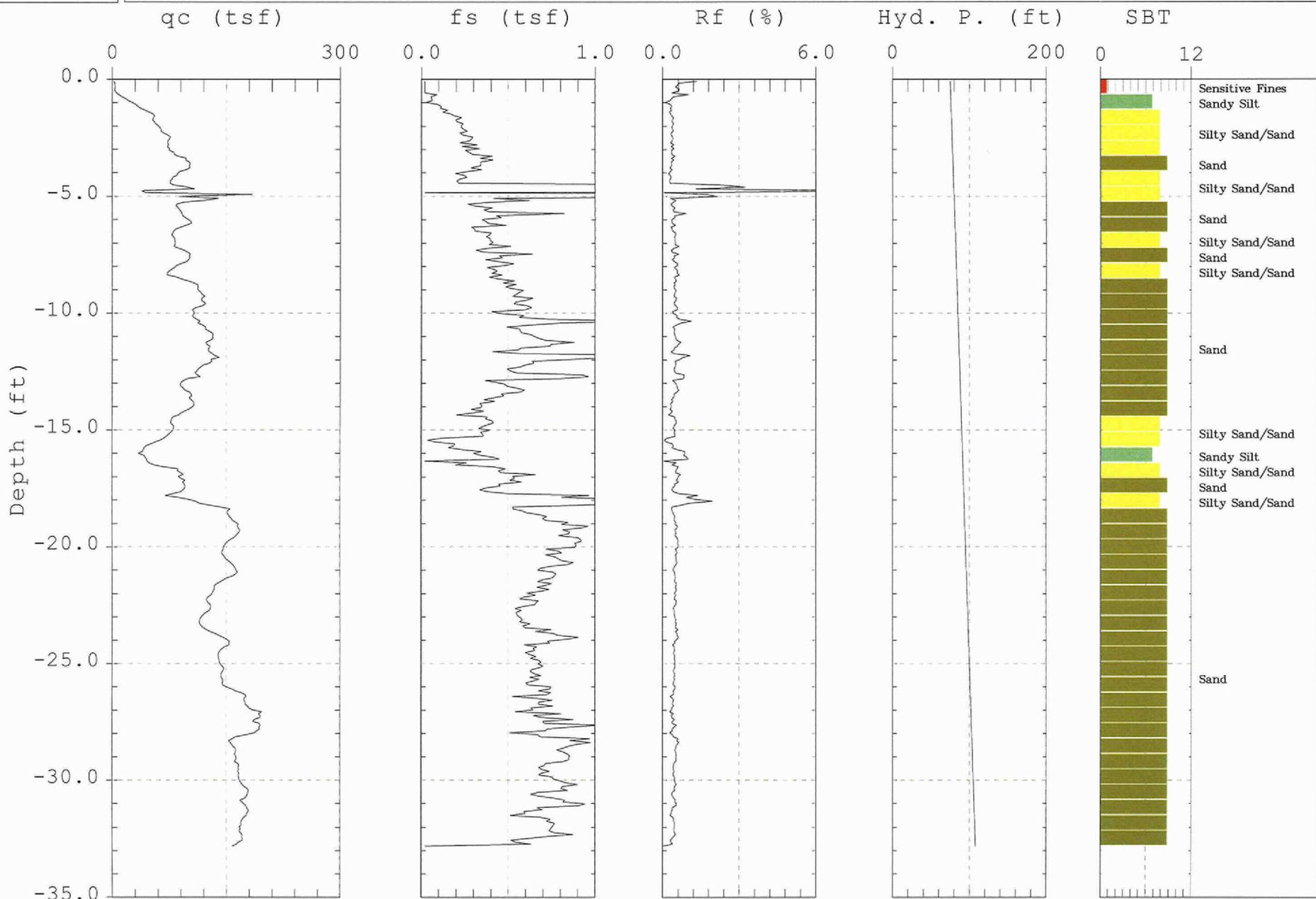
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT MG-05
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 4/21/05 15:18



Max. Depth: 32.81 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 75
Location - UTM Zone 18 (ft) 2, 160, 722E 14, 910, 586N

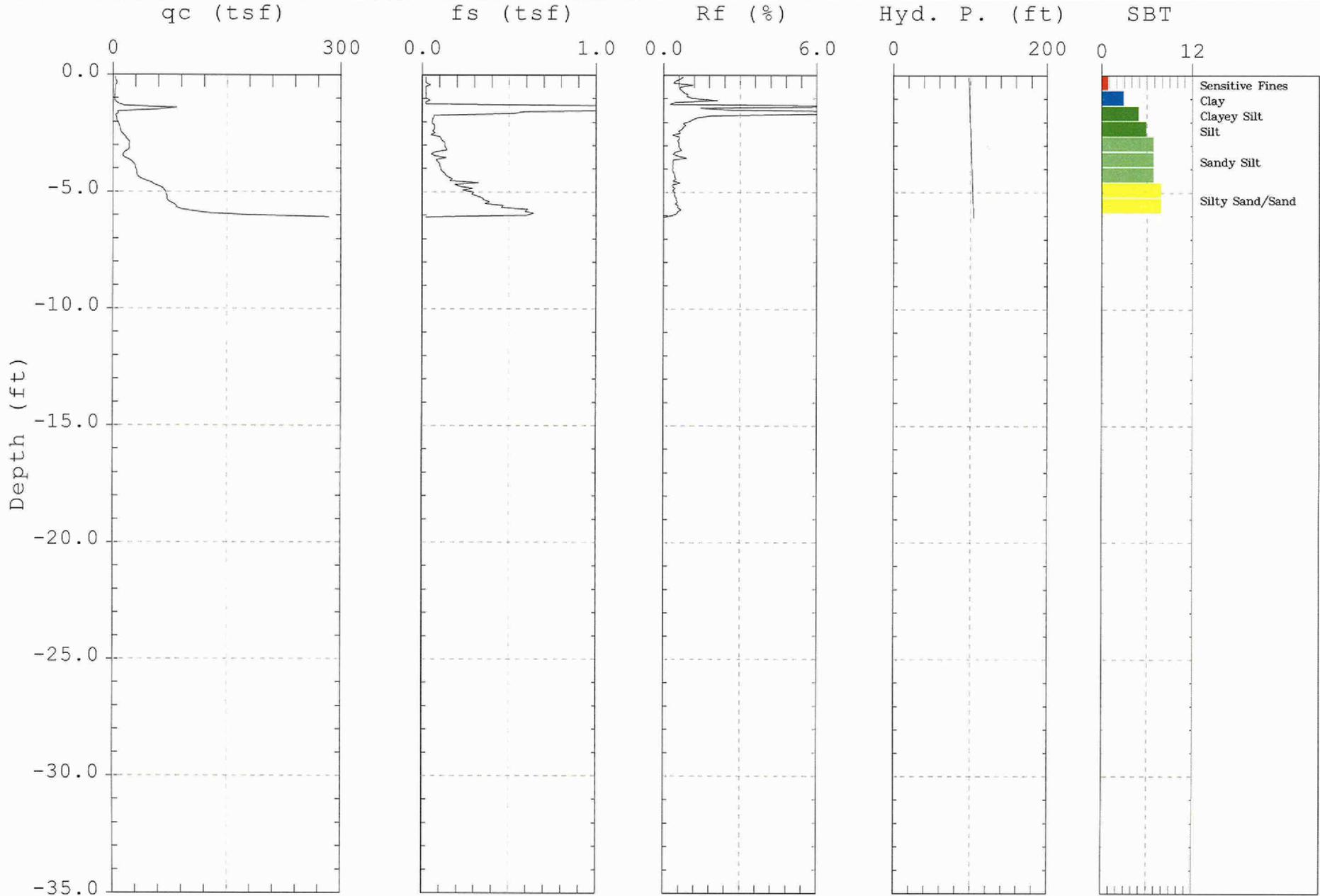
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-13
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 4/30/05 14:20



Max. Depth: 6.07 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 98
Location - UTM Zone 18 (ft) 2, 167, 663E 14, 911, 234N

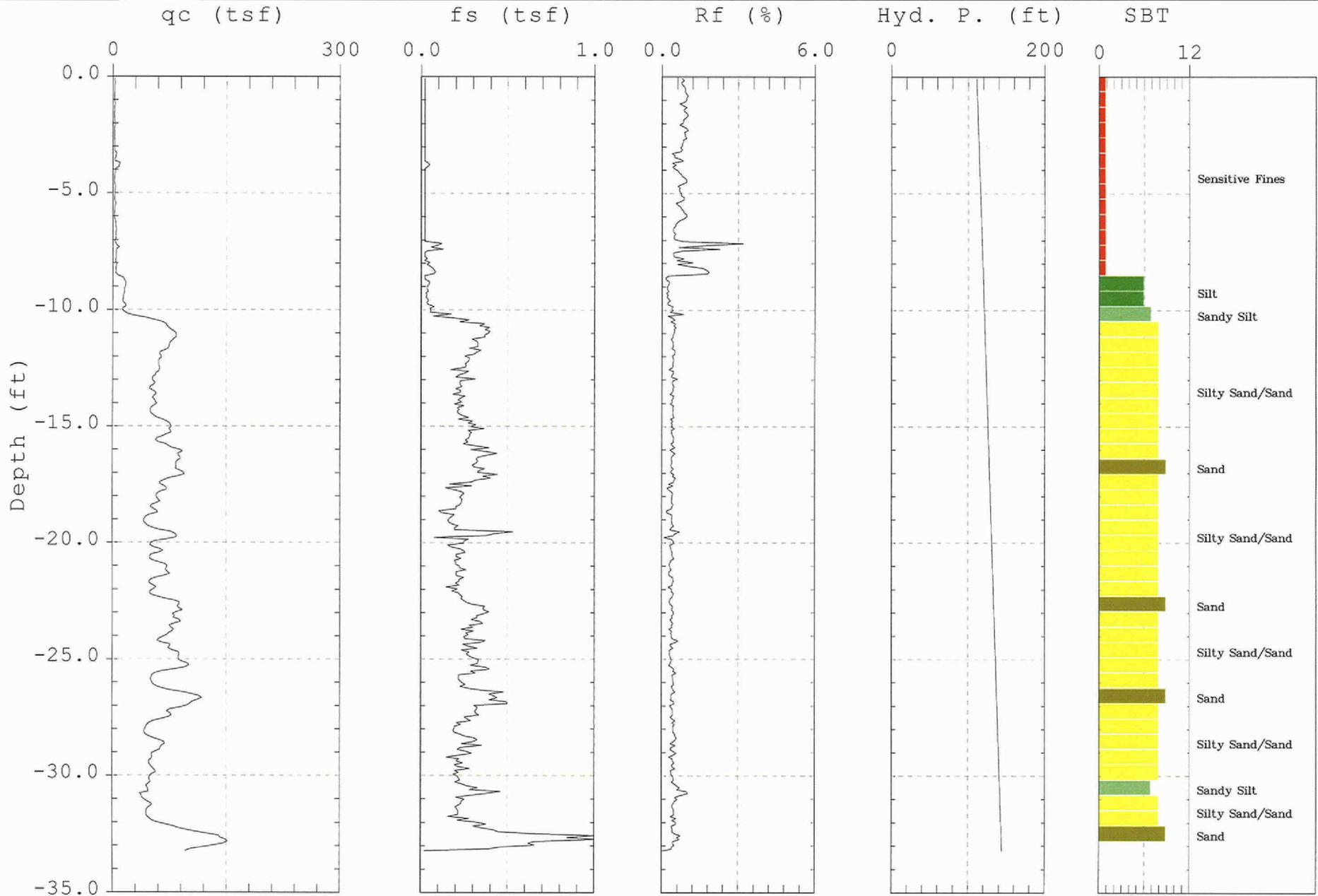
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-14
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 4/30/05 08:18



Max. Depth: 33.22 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 111
Location - UTM Zone 18 (ft) 2, 172, 932E 14, 911, 739N

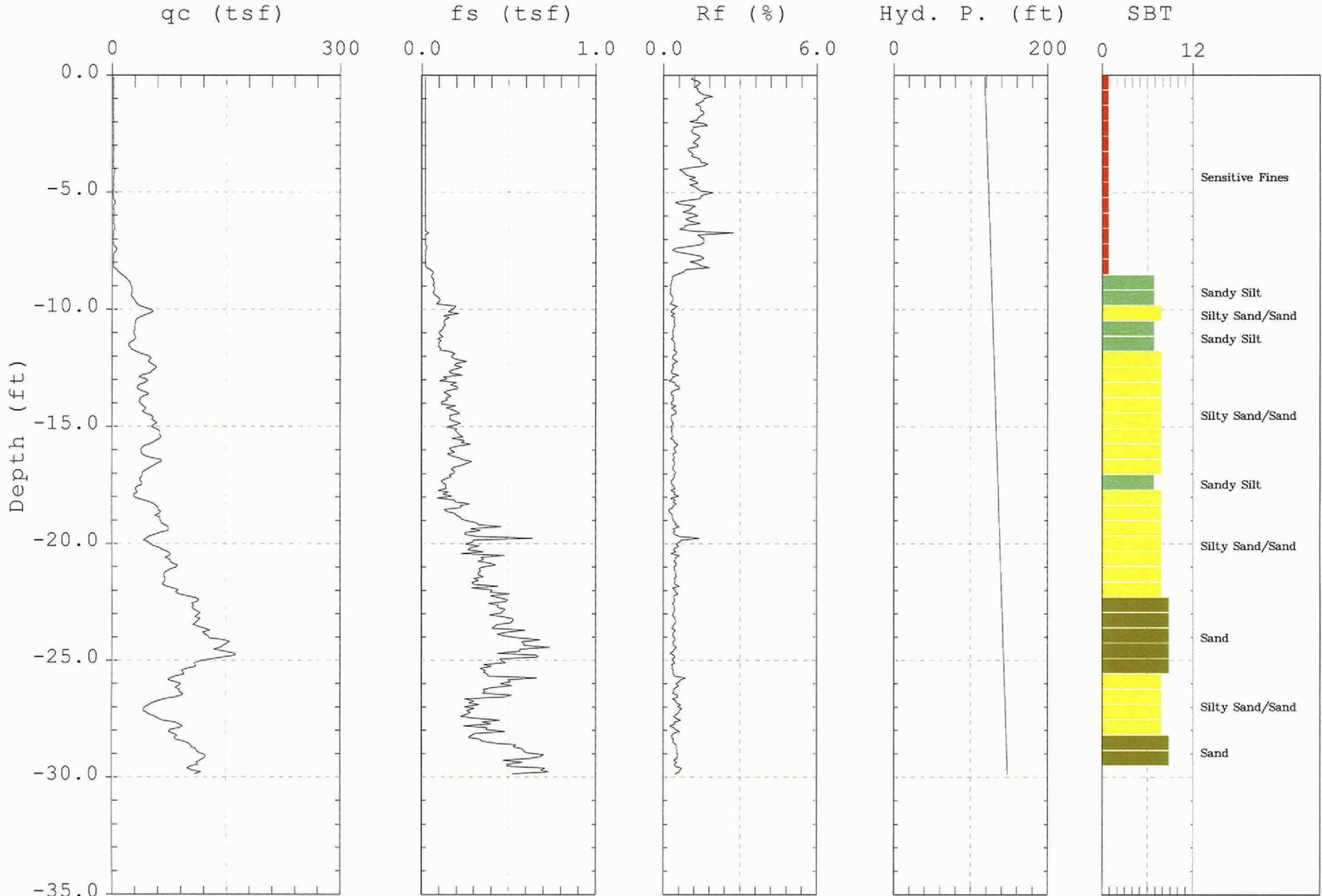
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-15
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 4/26/05 13:25



Max. Depth: 29.86 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 118
Location - UTM Zone 18 (ft) 2, 177, 948E 14, 913, 407N

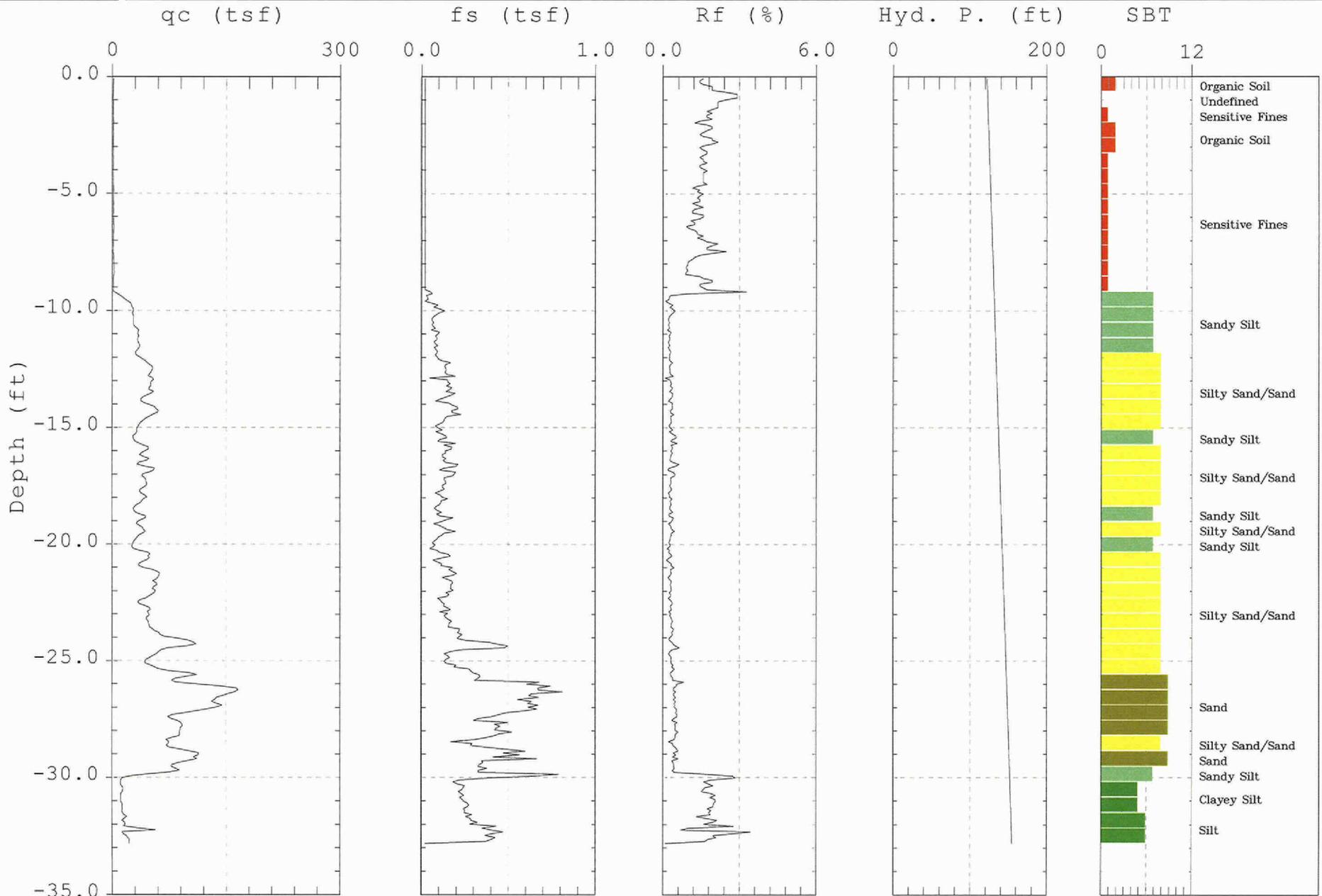
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-16
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 4/26/05 10:47



Max. Depth: 32.81 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 122
Location - UTM Zone 18 (ft) 2, 182, 754E 14, 915, 263N

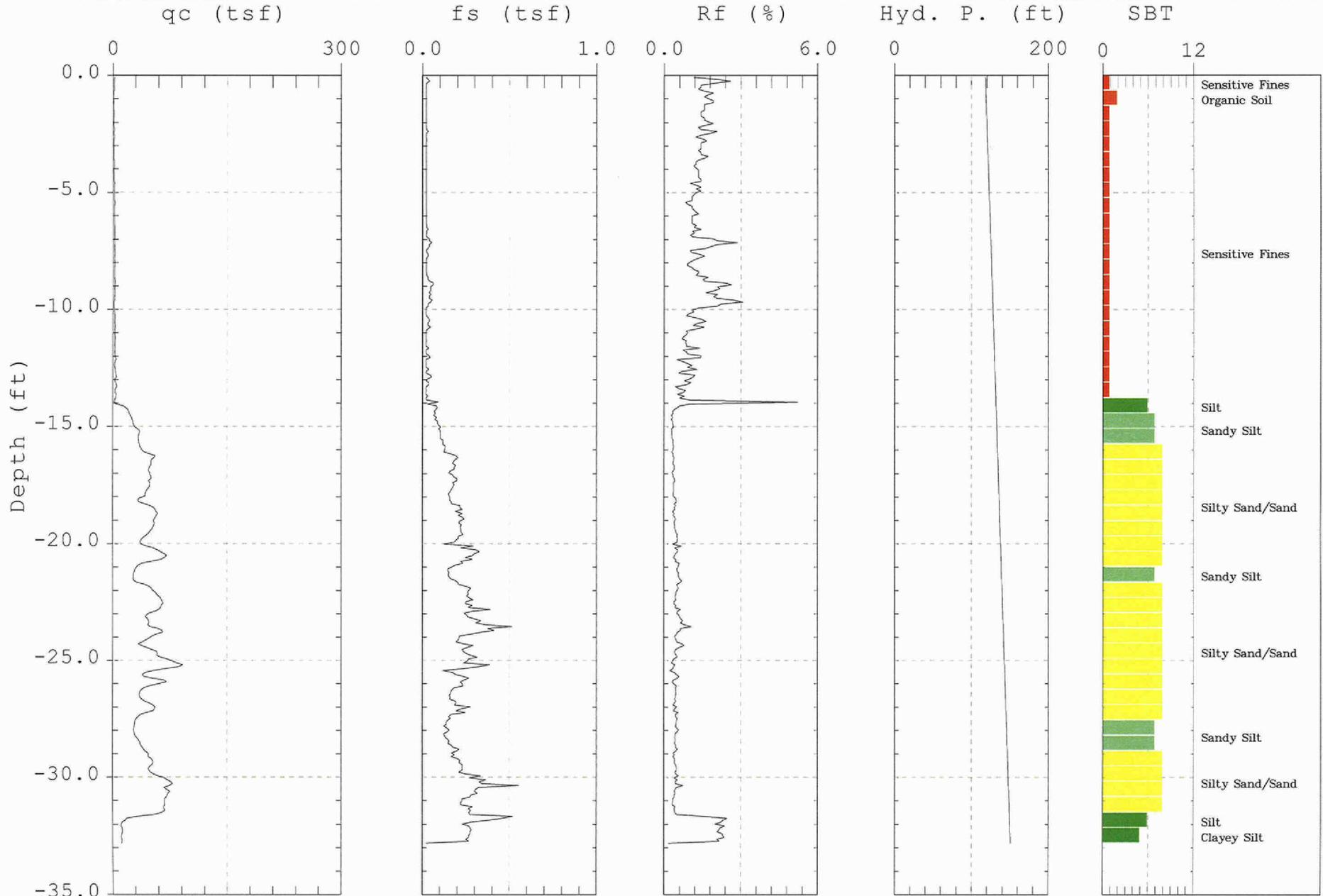
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-17
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 4/26/05 07:33



Max. Depth: 32.81 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 118
Location - UTM Zone 18 (ft) 2, 187, 583E 14, 917, 086N

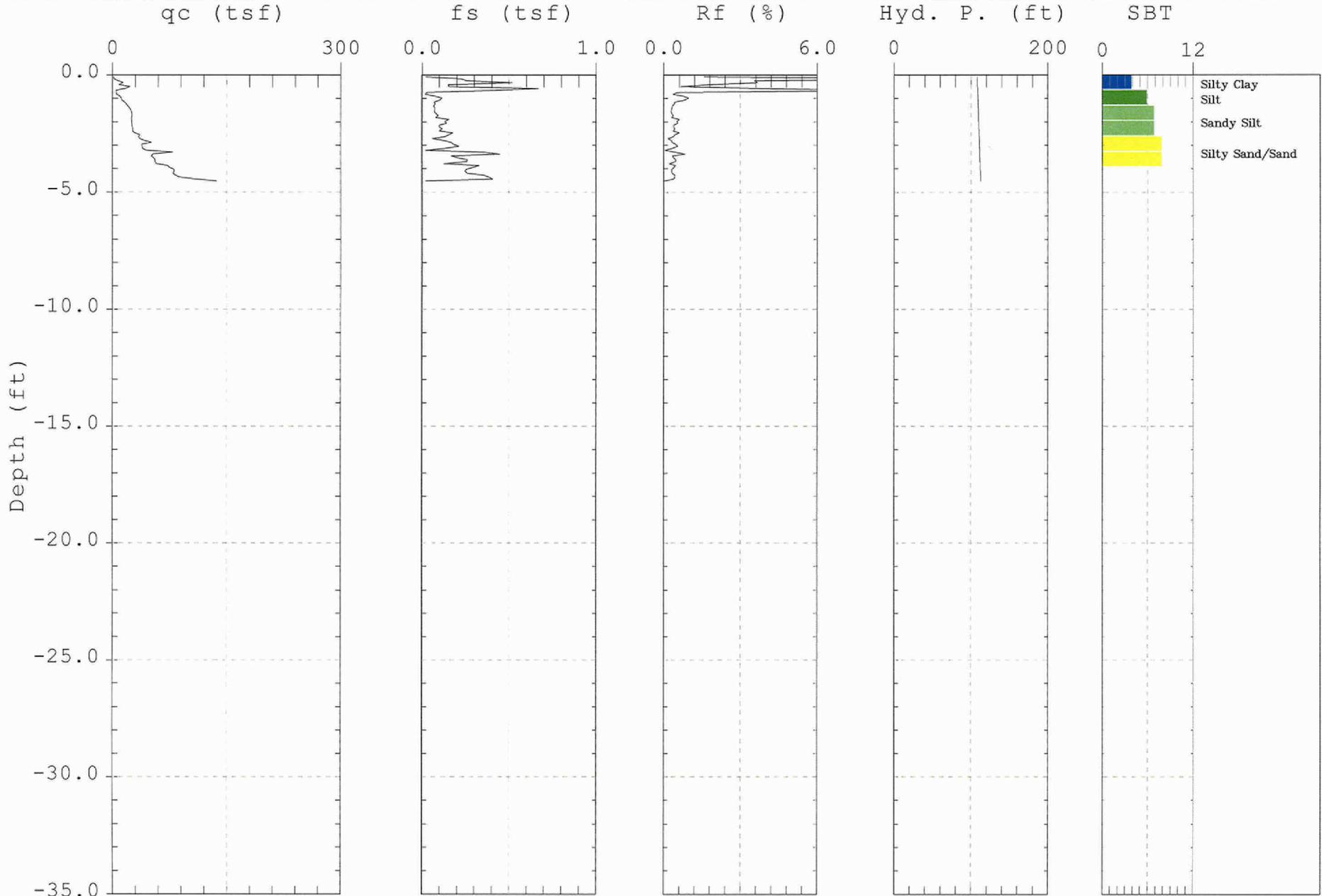
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-18
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 4/19/05 11:09



Max. Depth: 4.51 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 108
Location - UTM Zone 18 (ft) 2, 194, 593E 14, 919, 764N

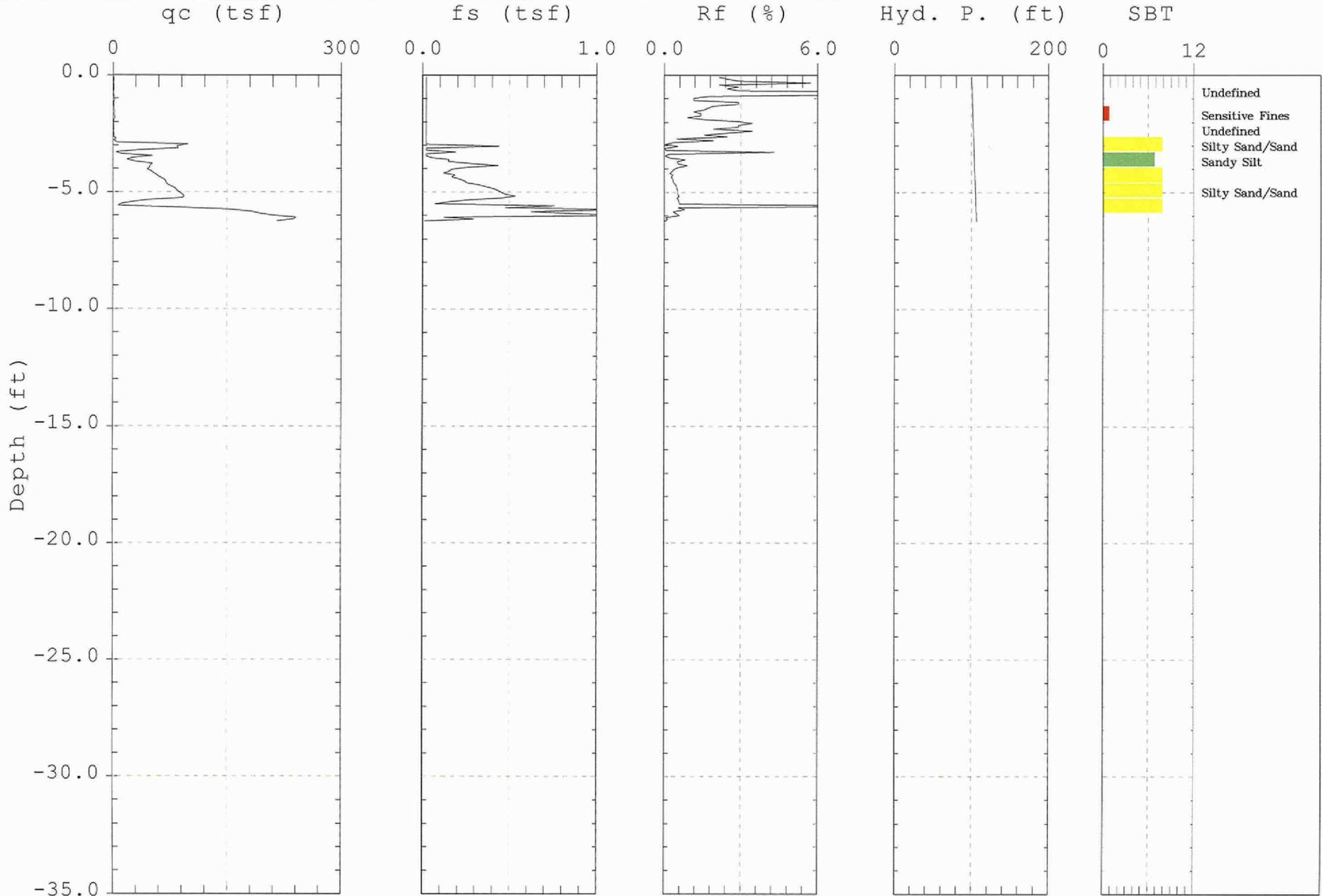
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-19
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 4/19/05 15:36



Max. Depth: 6.23 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 100
Location - UTM Zone 18 (ft) 2, 195, 142E 14, 919, 973N

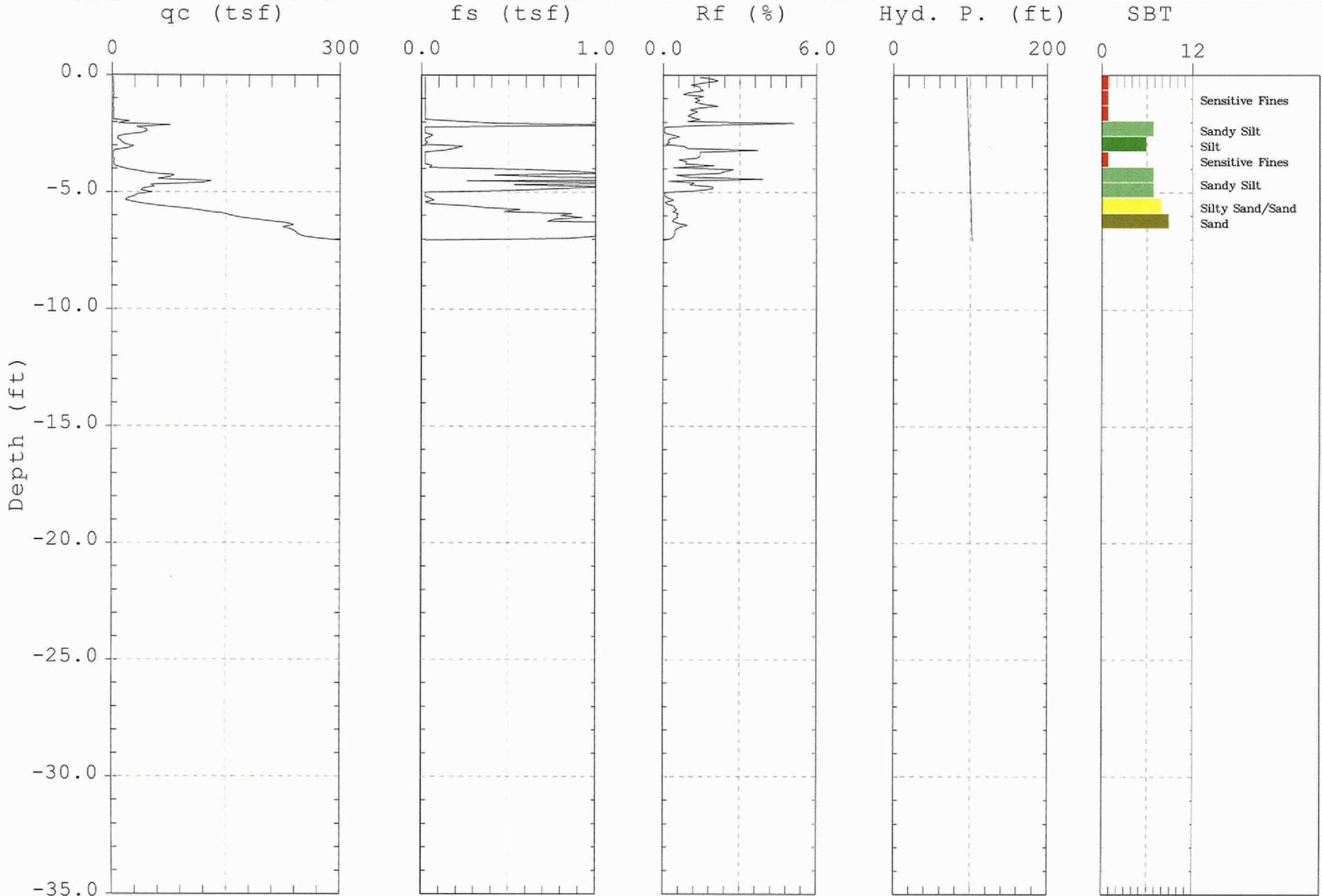
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-20
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 4/21/05 10:33



Max. Depth: 7.05 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 95
Location - UTM Zone 18 (ft) 2, 196, 092E 14, 920, 340

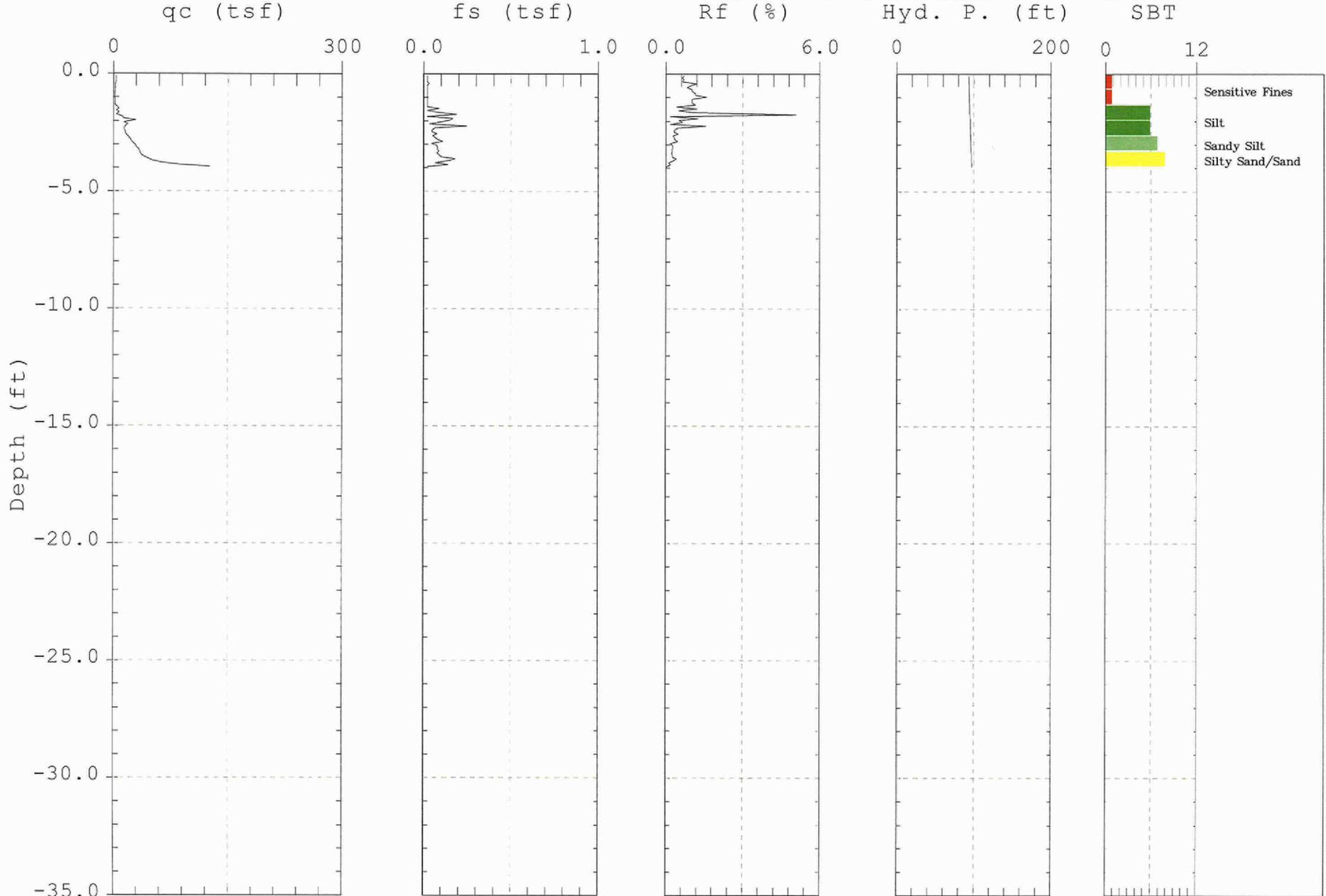
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-21
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 5/1/05 11:08



Max. Depth: 3.94 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 93
Location - UTM Zone 18 (ft) 2, 201, 007E 14, 922, 198N

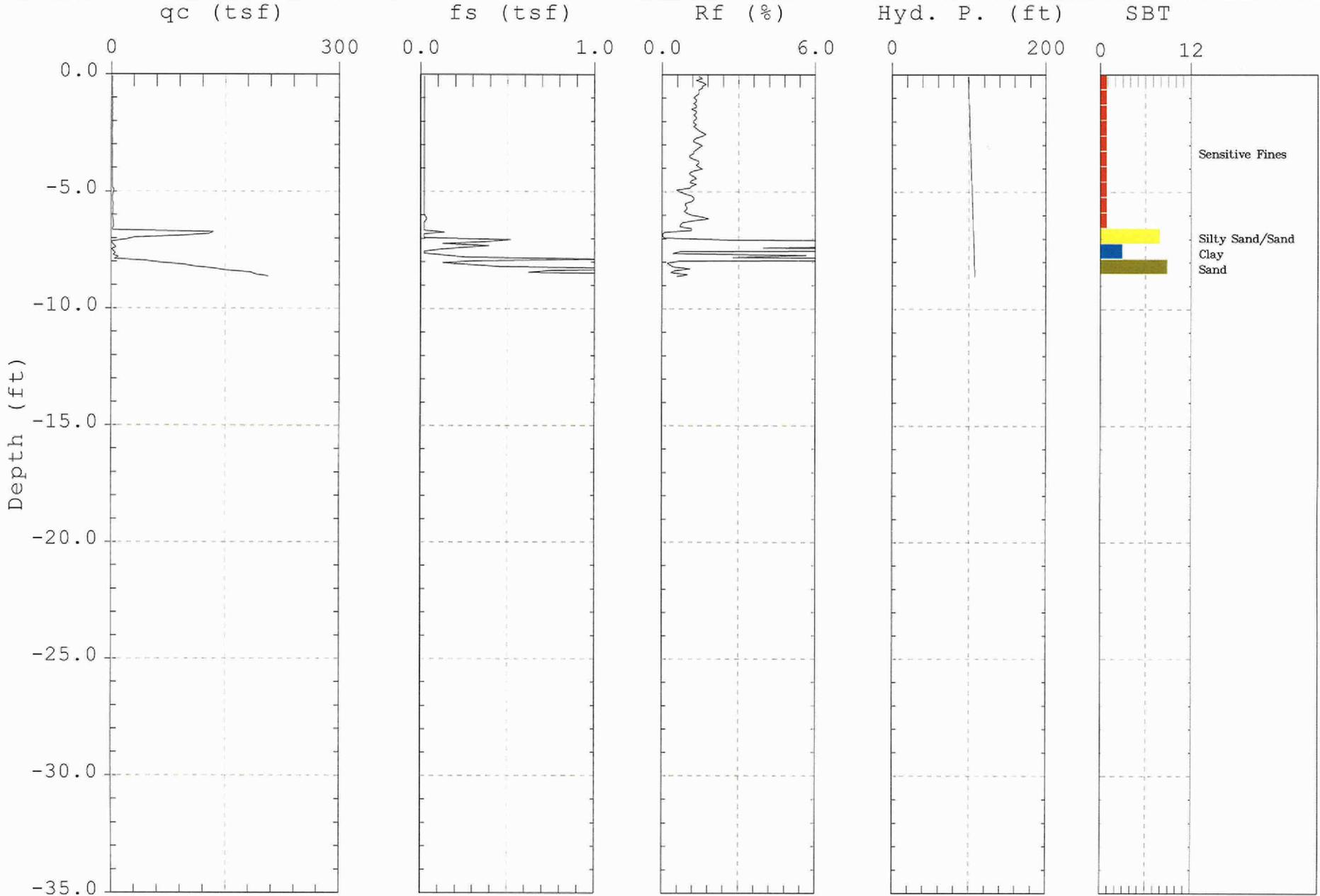
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-22
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 5/1/05 14:21



Max. Depth: 8.61 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 99

Location - UTM Zone 18 (ft) 2, 204, 299E 14, 923, 466N

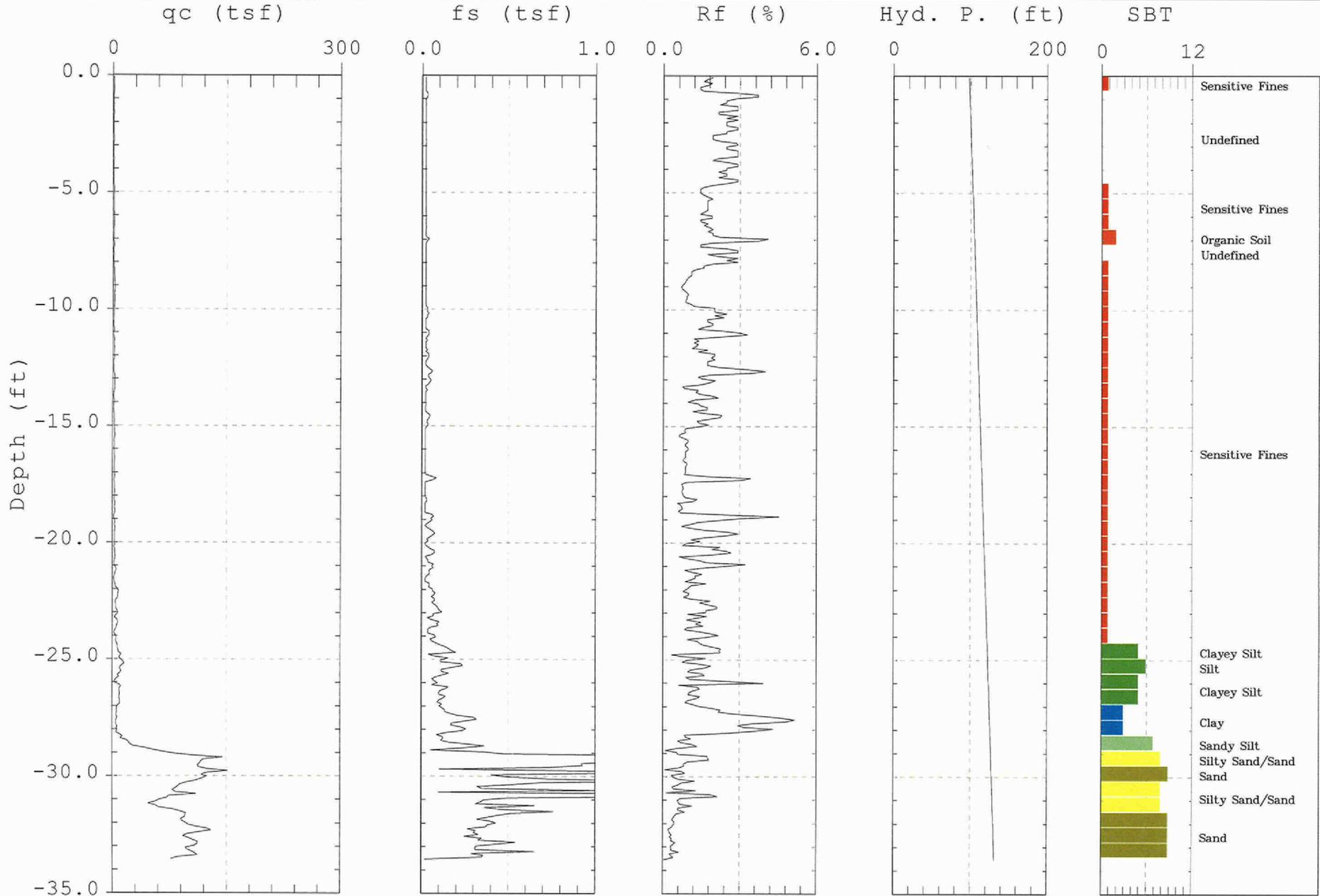
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-23
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 5/3/05 14:26



Max. Depth: 33.55 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 98
Location - UTM Zone 18 (ft) 2, 211, 261E 14, 926, 124N

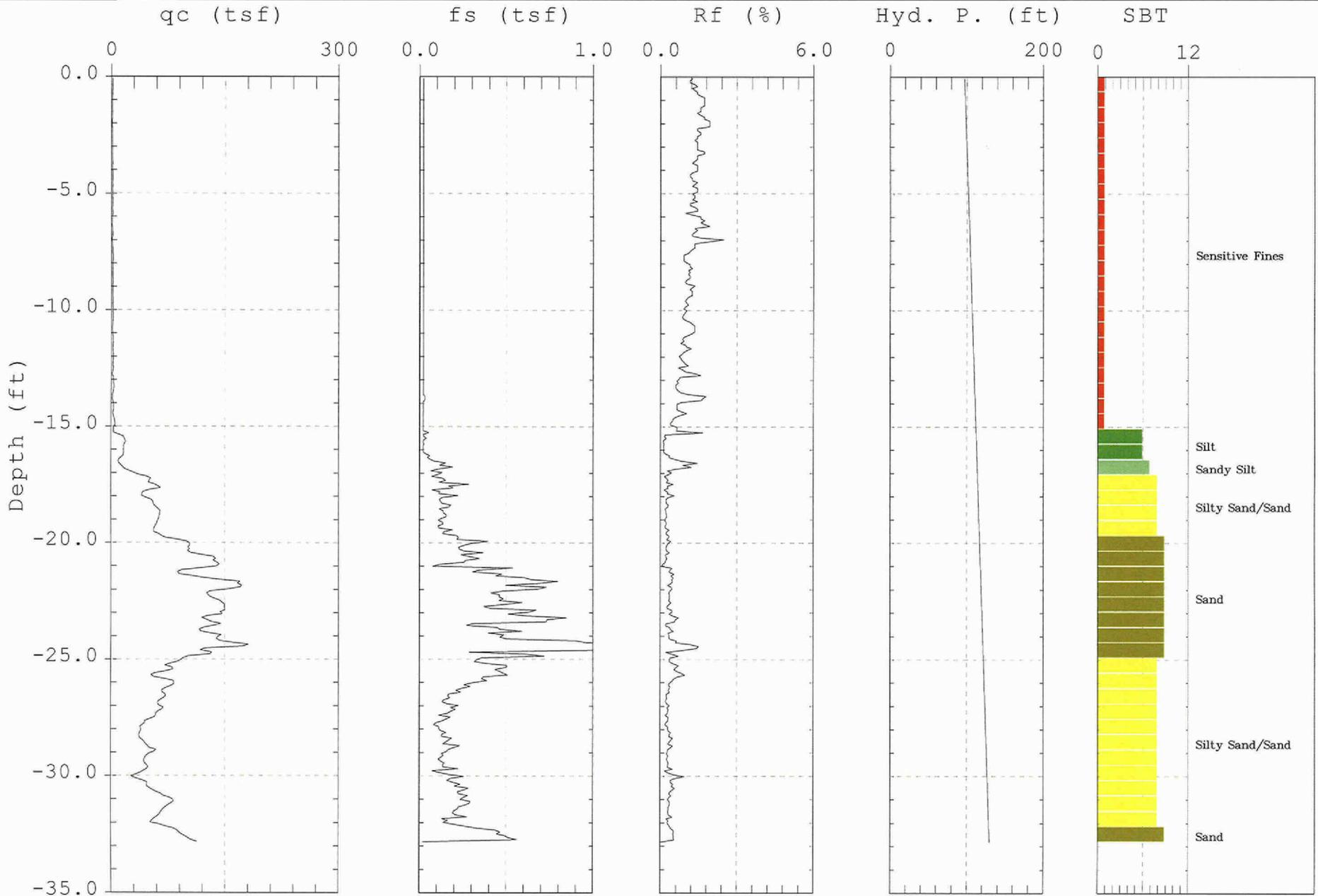
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-24
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 5/3/05 11:59



Max. Depth: 32.81 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 97
Location - UTM Zone 18 (ft) 2, 216, 086E 14, 927, 961N

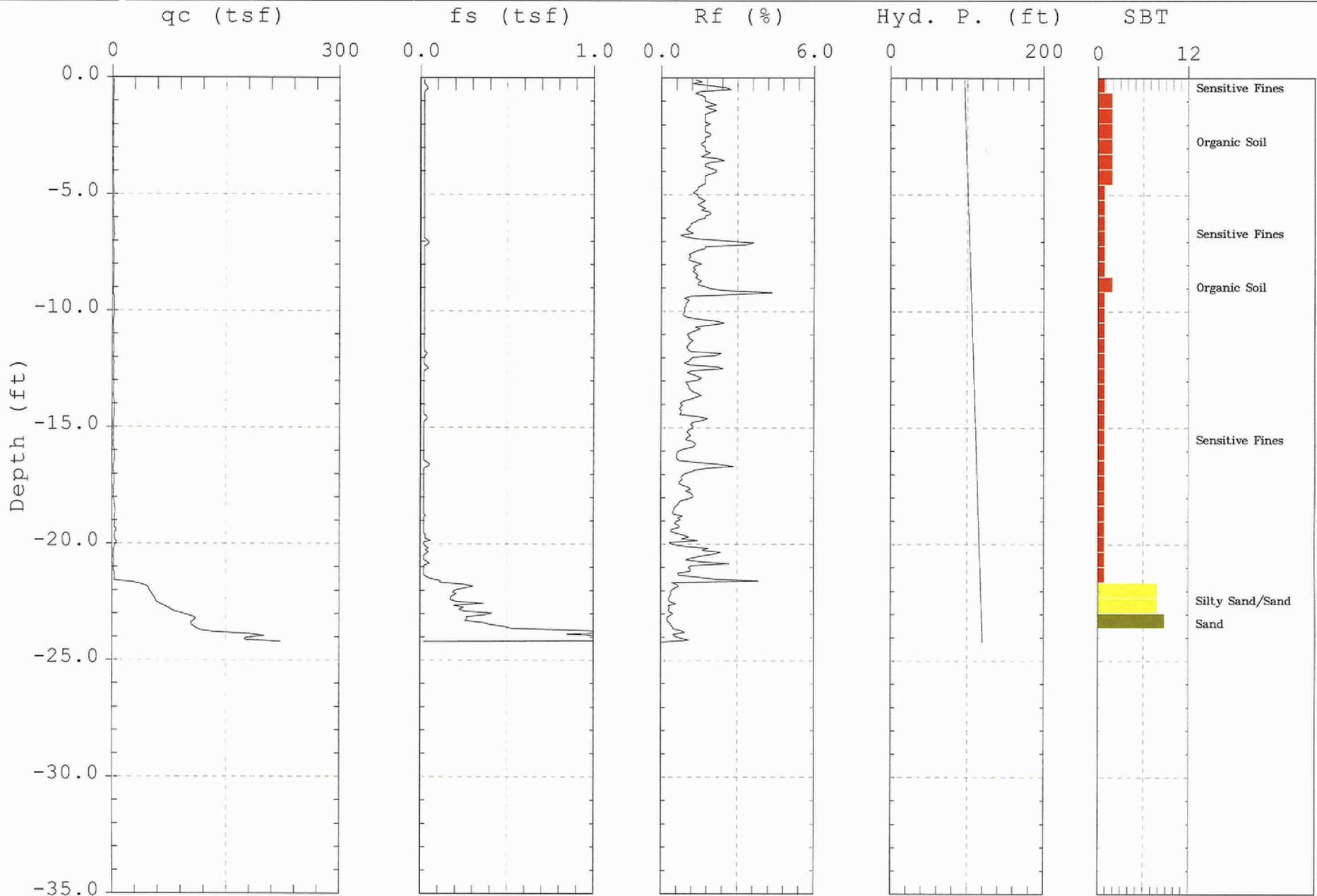
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-25
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 5/4/05 10:49



Max. Depth: 24.20 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 96
Location - UTM Zone 18 (ft) 2, 219, 585E 14, 929, 299N

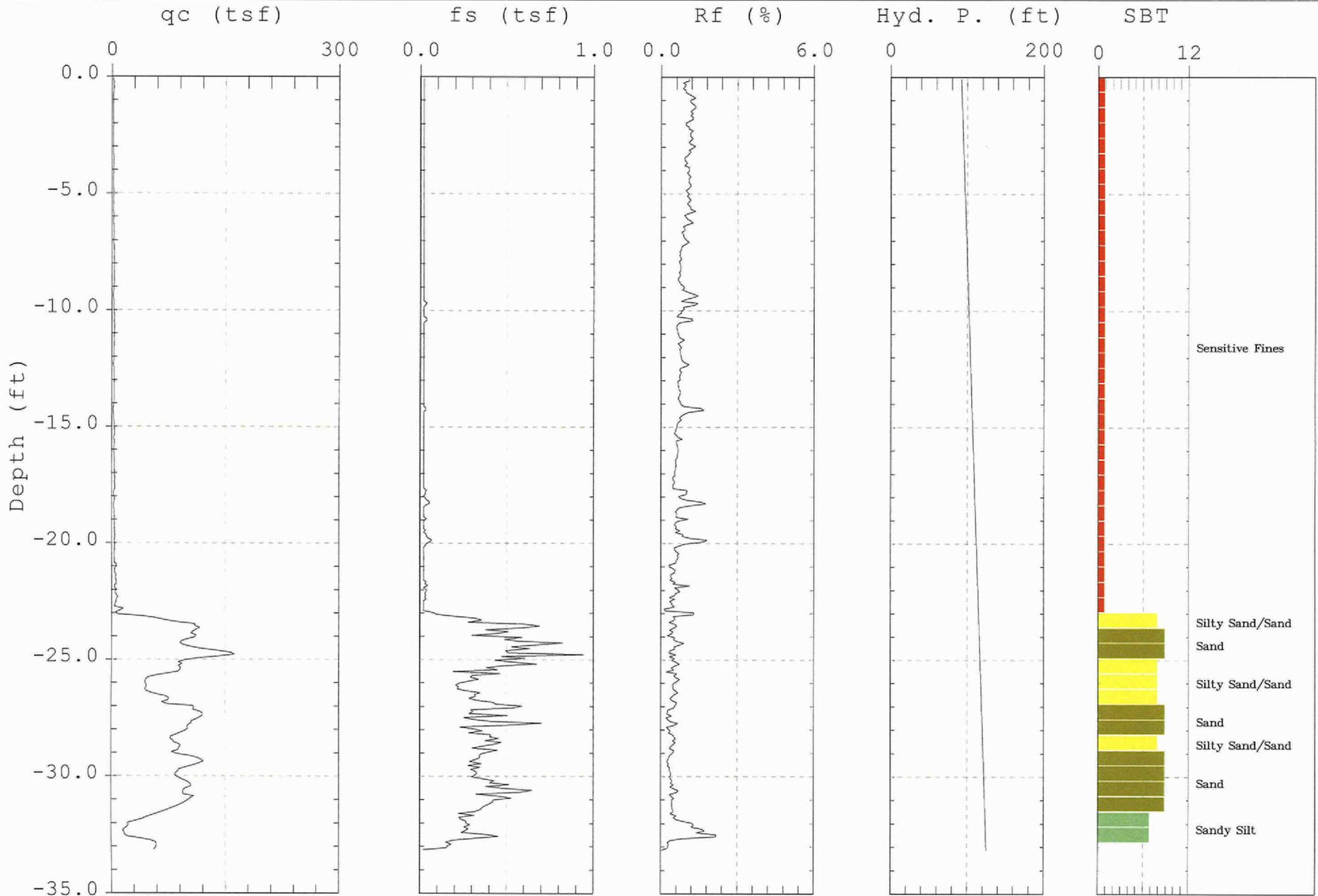
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-26
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 5/3/05 09:11



Max. Depth: 33.14 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 92
Location - UTM Zone 18 (ft) 2, 224, 360E 14, 931, 137N

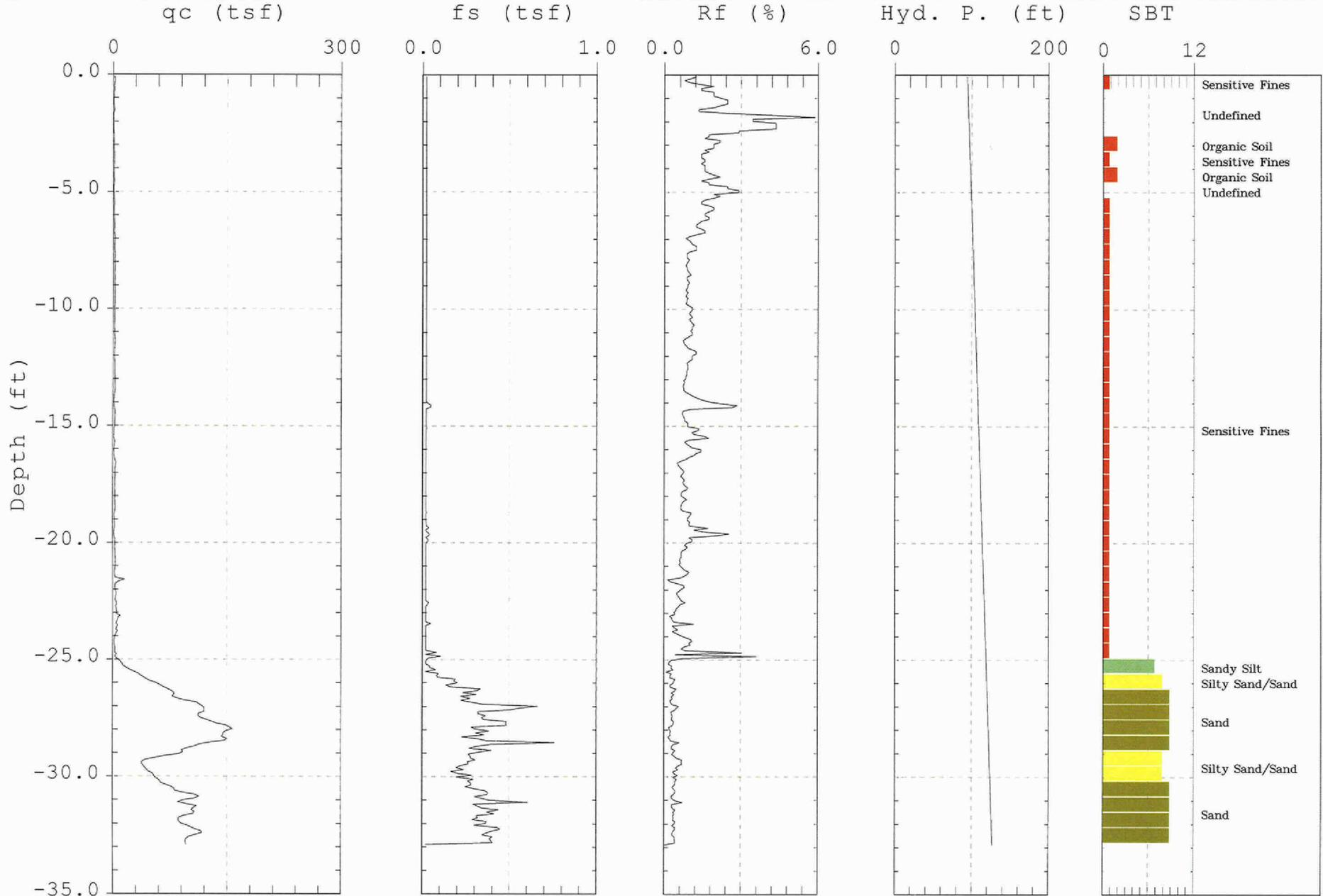
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-27
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 5/2/05 12:44



Max. Depth: 32.89 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 94
Location - UTM Zone 18 (ft) 2, 229, 192E 14, 932, 983N

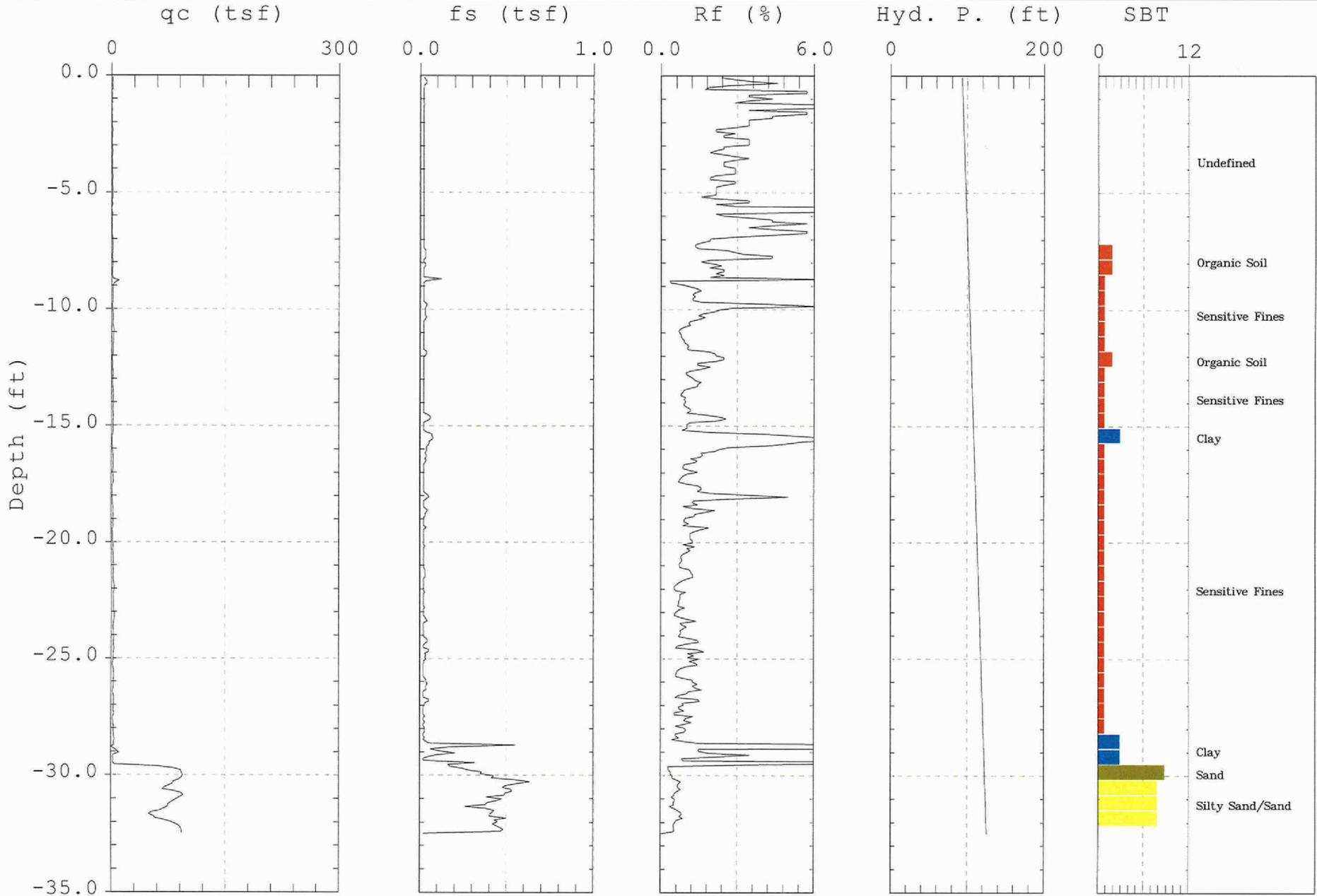
SBT: Soil Behavior Type (Robertson 1990)



V.G.S., P.C.

Sounding: MCPT C-28
Location: LONG ISLAND, NY

Cone: GNC-02
Date: 5/2/05 09:43



Max. Depth: 32.48 (ft)
Depth Inc.: 0.082 (ft)

Water Depth (ft): 93
Location - UTM Zone 18 (ft) 2, 233, 963E 14, 934, 789N

SBT: Soil Behavior Type (Robertson 1990)