

APPENDIX A SEDIMENT ANALYSIS

APPENDIX A SEDIMENT ANALYSIS REPORT

Carteret County, North Carolina Sand Search Investigation

DRAFT Final Geotechnical Report

Submitted to: Moffatt & Nichol, Inc.

Submitted by:

Coastal Tech Melbourne, FL

August 23, 2012 Revised January 4, 2013 Final: March 1, 2013



Executive Summary

This document presents the results of an advanced "*Plans & Specs*" level geotechnical investigation to identify the stratigraphy of potential borrow areas with beach-compatible sand to provide for future nourishment of Atlantic Ocean beaches in Carteret County, North Carolina. As part of the Moffatt & Nichol, Inc. (M&N) team, Coastal Tech herein presents the results of these investigations based upon offshore vibracores to delineate potential borrow areas with enough beach compatible sand to fulfill the long-term (up to 50 years) needs of Carteret County. M&N estimates this need at 15.7 to 26.9 million cubic yards (Mcy) over 30 years or 26 to 44.8 Mcy over 50 years.

Five main potential borrow areas were investigated – including (1) the main ebb channel of Bogue Inlet – a renewable source associated with maintenance of the inlet channel, (2) the Morehead City Outer Harbor – a renewable source associated with maintenance of the inlet channel, (3) the Current Ocean Dredge Material Disposal Site (ODMDS) in Federal waters offshore of Beaufort Inlet, (4) the Old ODMDS located directly north of the Current ODMDS across the Federal jurisdictional border in State waters, (5) Area Y, and (6) Area Z directly offshore of Emerald Isle in State waters. This investigation included the extraction of 164 twenty-foot vibracores in the Current and Old ODMDS, Areas Y and Z, and 5 ten-foot vibracores in Bogue Inlet by Alpine Ocean Seismic Survey, as well as bathymetric, seismic and backscatter surveys performed by Geodynamics offshore of Bogue Banks. Data from the Morehead City Outer Harbor were referenced from prior studies and reports by the USACE.

Based on analyses of these potential borrow areas, a total of approximately ~ 20 Mcy of sand from non-renewable offshore borrow areas is recommended for use as a sand source for nourishment of Carteret County beaches. These potential borrow areas are ranked "A", where sufficient data is available to define the stratigraphy, and the data show that the borrow area material is consistent with the applicable State Rules and solidly compatible with the native beach. Approximately 1.4 Mcy of material was identified in what is ranked as "B" potential borrow areas due to lack of data or lower compatibility of the sediment. Finally about 2.2 Mcy of material is located in borrow areas ranked as "C" due to insufficient data or poor compatibility of material.

In addition to the non-renewable offshore borrow areas, several renewable borrow areas offer significant additional volumes of beach quality material. These include a possible ~15.3 Mcy over 30 years or about 25.5 Mcy over 50 years coming from maintenance of Bogue and Beaufort Inlets.

The total estimated volume available from the non-renewable and renewable borrow areas totals about 35 Mcy available over 30 years, or 45 Mcy over 50 years. These volumes meet the estimated long-term needs of the County.

Table of Contents

1.0	Offshore Borrow Area Investigation	. 1
1.1	Scope of Investigation	. 1
1.2	Geologic Setting	. 1
1.3	Previous Investigations	. 2
1.4	Bathymetric Survey	. 3
1.5	Seismic and Backscatter Surveys	. 3
1.6	Geotechnical Investigation.	. 3
2.0	Laboratory Analyses	. 5
3.0	Native Beach	
4.0	Borrow Area Delineation and Compatibility Analysis	. 6
4.1	The Old ODMDS	. 8
4.1.1	Old ODMDS 1	. 8
4.1.2	Old ODMDS 2	12
4.2	The Current ODMDS	13
4.2.1	Current ODMDS 1	13
4.2.2	Higher Confidence Mounds	15
4.2.2.1	Mound O-15	15
4.2.2.2	Mound O-192	17
	Mound O-48	
4.2.2.4	Mound O-14/O-47	18
4.2.3	Lower Confidence Mounds	19
4.2.3.1	Mound O-35	19
4.2.3.2	Mound O-46	21
4.2.4	Contingency Mounds	22
4.4	Area Y	22
4.4.1	Vibracores Y-80 / Y-75	22
4.4.2	Vibracores Y-120 / Y-90	25
4.5	Area Z	26
4.6	Renewable Potential Borrow Areas	
4.6.1	Bogue Inlet Channel	26
4.6.2	Morehead City Outer Harbor	
4.6.3	Bogue Inlet – Atlantic Intracoastal Waterway Crossing	30
5.0	Conclusion	30
6.0	References	34

List of Figures

Figure 1.1 – Location of Potential Borrow Areas & 2012 Vibracores	4
Figure 4.1 – Old and Current Ocean Dredge Material Disposal Sites	9
Figure 4.2 – Old ODMDS Potential Borrow Areas	10
Figure 4.3 – Primary ODMDS Mound Cross-Section	11
Figure 4.4 – Current ODMDS 1 Potential Borrow Area	14
Figure 4.5 – Current ODMDS Higher Confidence Mounds	16
Figure 4.6 – Current ODMDS Lower Confidence Mounds	20
Figure 4.7 – Current ODMDS Contingency Mounds	23
Figure 4.8 – Area Y Vibracores and Potential Borrow Areas	24
Figure 4.9 – Area Z Vibracores	27
Figure 4.10 – Bogue Inlet Vibracores and Authorized Channel Location	28
Figure 4.11 – Morehead City Channel Vibracore and Section Locations	31
Figure 4.12 – Bogue Inlet AIWW Crossing	32
List of Tables	
Table 3.1 – Native Beach Characteristics and Rule Parameters	
Table 4.1 – Old ODMDS 1 Composite Characteristics and Rule Parameters	
Table 4.2 – Old ODMDS2 Composite Characteristics and Rule Parameters	
Table 4.3 – Current ODMDS 1 Composite Characteristics and Rule Parameters	
Table 4.4 – Mound O-15 Composite Characteristics and Rule Parameters	
Table 4.5 – Mound O-192 Composite Characteristics and Rule Parameters	
Table 4.6 – Mound O-48 Composite Characteristics and Rule Parameters	
Table 4.7 – O-14 / O-47 Mound Composite Characteristics and Rule Parameters	
Table 4.8 – Mound O-35 Composite Characteristics and Rule Parameters	
Table 4.9 – Mound O-46 Composite Characteristics and Rule Parameters	
Table 4.10 – Potential Volumes in Current ODMDS Contingency Mounds	
Table 4.11 – Mound Y-80 / Y-75 Composite Characteristics and Rule Parameters	
Table 4.12 – Mound Y-120 / Y-90 Composite Characteristics and Rule Parameters	
Table 4.14 – Bogue Inlet Channel Composite Characteristics and Rule Parameters	
Table 4.15 – Morehead City Outer Harbor Composite Characteristics and Rule Parameters	
Table 4.16 – Bogue Inlet AIWW Crossing Composite Characteristics and Rule Parameters	
Table 5.1 – Characteristics, Ranking and Volume of Non-Renewable Potential Borrow Areas	
Table 5.2 – Volume of Renewable Potential Borrow Areas	

List of Appendices

Appendix 1 – CD-ROM containing 2012 Alpine Ocean Seismic Survey report with Coastal Tech
sediment results
Appendix 2 – CD-ROM Containing gINT and Other Digital Files
Appendix 3 – Potential Borrow Area Composite Curves
Appendix 4 – Potential Borrow Area Overfill Factor Calculations

1.0 Offshore Borrow Area Investigation

1.1 Scope of Investigation

Coastal Tech was contracted by Moffat & Nichol, Inc. (M&N) to assimilate and review geotechnical investigation results associated with the Bogue Banks Master Beach Nourishment Plan and to identify beach-compatible sand resources for the long term beach-nourishment needs of Carteret County (County). M&N estimates the volume of sediment required to meet the 50-year needs of the County is between 26.0 and 44.8 million cubic yards (Mcy), while the required volume to meet the 30-year needs of the County is estimated to be between 15.7 and 26.9 Mcy. Coastal Tech herein examines the sand resources offshore of Carteret County located within the current and former Ocean Dredge Material Disposal Site (ODMDS), Bogue Inlet channel, the Morehead City Harbor outer channel, and Areas Y and Z, which are directly offshore of Emerald Isle in State waters. Figure 1.1 illustrates the location of these potential borrow areas and the general domain of this investigation. This document presents and summarizes results of the geotechnical investigation and delineates potential borrow areas for future nourishment of Carteret County beaches.

1.2 Geologic Setting

Bogue Banks is a southward facing barrier island located adjacent to Cape Lookout on a lower energy east-west trending shoreline in Onslow Bay. At 25.4 miles long, the island is the longest and widest in southeastern North Carolina (Cleary and Pilkey, 1996). Beaufort Inlet, which has a Federally maintained navigation channel, borders the island on the east, while the shallow draft Bogue Inlet borders the island on the west. The backbarrier of Bogue Banks features Bogue Sound, which is an open water lagoon with considerably less marsh vegetation than the backbarriers to the south (Cleary and Pilkey, 1996). Influx into Bogue Sound includes sources such as the White Oak River on the west and the Newport River on the east. The island is characterized by mature dunes with foredune elevations up to 33 feet NAVD88 (Kana et al., 2002). These higher oceanfront elevations impede washovers that would typically provide sedimentation to the backbarrier on which vegetation would take hold. Bogue Banks was at one time a regressive barrier from approximately 3000 years-before-present (ybp) to 1100 ybp, after which time the absence of overwash material to the backbarrier led to backbarrier erosion and island narrowing with periodic breaching along the central portion of the island (Elliot, 2010). Initiation of overwash is the precursor to an island becoming transgressive (Cleary and Pilkey, 1996; Elliot, 2010).

The shoreface of Onslow Bay seaward of Bogue Banks is characterized by the outcropping of middle Tertiary sediments where barrier island transgression and sea-level rise has resulted in the removal of the majority of the more modern sediments (Hine and Snyder, 1984). Relic channels of Pleistocene and Holocene age incise the upper shoreface, but terminate where the edge of the modern sediments meets these exposed Tertiary sediments in the nearshore (Hine and Snyder, 1984).

Bogue Inlet, which separates Bogue Banks from Bear Island, occupies one of these historic channels incised by the White Oak River during lower sea level (Hine and Snyder, 1984). Bogue

Inlet is periodically dredged with a sidecast dredge by the US Army Corps of Engineers to maintain safe navigation. The inlet channel generally migrates eastward with associated spit growth on the updrift side. In 2005, the inlet channel was realigned to a more shore normal direction in an effort to provide the most beneficial orientation for the adjacent shorelines and alleviate erosion on the Emerald Isle shoulder (CPE, 2004).

Beaufort Inlet hosts the Morehead City Harbor and is Federally maintained as a deep draft port. The outer harbor is dredged to a depth of –47 feet NAVD88 with more shallow draft portions in the inner harbor. Sedimentation into the Morehead City Inner Harbor is from numerous sources, including the Newport River and the North River (USACE, 2001). Many references suggest that Beaufort Inlet has been recognized on maps since the 1600's (for example, Fisher, 1962; Wells and McNinch, 2001). The inlet has been dredged for navigation purposes since 1911 (Olsen, 2006) and is stabilized by a terminal groin at Ft. Macon.

The beaches of Bogue Banks are subject to the erosive forces of tropical systems or hurricanes, the effects of the adjacent inlets, and to a lesser extent due to their south-facing orientation, winter frontal storms or "nor'easters".

1.3 Previous Investigations

There have been many prior investigations of potential sand resources both offshore of Carteret County and within the adjacent inlets. The different segments of Morehead City Harbor were examined within Beaufort Inlet to determine whether the dredged material would be suitable for beach placement (USACE, 2001; USACE, 2009; USACE, 2010; Olsen, 2006). It was determined that material within the Inner Harbor was likely to contain silt in excess of 10% by weight, and thus be non-compatible with the native beach, while the Outer Harbor and main inlet channel produced beach quality material (USACE, 2010).

Coastal Science and Engineering (CSE) investigated the Current Ocean Dredged Material Disposal Site (Current ODMDS) in association with emergency fill projects for Emerald Isle, Indian Beach, and Pine Knoll Shores following Hurricanes Isabel and Ophelia. CSE developed a borrow area in the northern portion of the Current ODMDS with 14 vibracores in 2006 (CSE, 2007). Olsen and Associates also completed a desk-top estimation of the volume of beach quality material that may be available in the Current and Old ODMDS (Olsen, 2006).

Prior to the channel realignment in Bogue Inlet in 2005, Coastal Planning and Engineering (CPE) took jet probes and vibracores within the proposed channel template, which demonstrated that the material was suitable for beach placement (CPE, 2004). Additionally, in 2008 the USACE took vibracores within the inlet backbarrier in the Atlantic Intracoastal Waterway channel; the results of which indicate that this material is suitable for beach placement when dredging is required (Ben Lackey, personal communication).

CSE performed a multi-phase offshore sand search in association with the Bogue Banks Beach Nourishment Project where CSE attempted to find beach quality material in close proximity to the project areas. CSE extracted and analyzed vibracores from borrow areas offshore of central Emerald Isle to Pine Knoll Shores, including areas it identified as borrow areas A and B (CSE,

2001). In 2002, offshore of Bogue Banks, an extensive grid of vibracores was taken by the USACE. These core logs and sediment analysis results were obtained by the M&N Team for the purpose of planning this Plans & Specs level field investigation.

1.4 Bathymetric Survey

Data from two separate bathymetric surveys were utilized throughout this report to calculate the total estimated volume of sediment within a proposed borrow area above the designated cut elevation. These multibeam bathymetric surveys were performed by Geodynamics in 2009 and 2011. The 2009 data set covers the Old Ocean Dredge Material Disposal Site and Bogue Inlet, while the 2011 survey covers the currently active Ocean Dredge Material Disposal Site and Area Y. The two data sets were successfully merged by Geodynamics and the data set that was utilized for each volume calculation is referenced throughout this report for clarity. The location and elevation of all data were collected and reported using the North Carolina State Plane (NAD83), U.S. Survey Feet horizontal datum and NAVD88 vertical datum. Survey lines through each potential borrow area were spaced at 200-foot intervals and soundings were collected continuously with a maximum point spacing of 10-foot along the profile line (Geodynamics, 2011).

1.5 Seismic and Backscatter Surveys

A seismic survey was conducted by Geodynamics, under contract with M&N, in July 2011 for the purpose of establishing the extent of the upper layer of sand throughout the Current ODMDS and Area Y. This survey was performed simultaneously with the multibeam backscatter and bathymetry surveys. Data from 2009 Geodynamics surveys were used for the Old ODMDS, Area Z and Bogue Inlet. Sub-bottom profile data were collected and analyzed for acoustic reflectors and anomalies that can indicate the presence and quantities of beach re-nourishment resources. Multibeam backscatter surveys were conducted to identify surficial anomalies as well as the presence of hardbottom. All surveys were conducted in accordance with State and Federal regulations (Geodynamics, 2011).

1.6 Geotechnical Investigation

In December 2012, a total of 164 20-foot vibracores were extracted by Alpine within the potential offshore borrow areas including the Old ODMDS, the Current ODMDS, Area Y, and Area Z. In April 2012, five 10-foot vibracores were taken in Bogue Inlet channel. The locations of these vibracores are shown in Figure 1.1. Vibracore locations were designed to define the stratigraphy of the potential borrow areas including the horizontal and vertical extent of the upper layer of sand in each area, and to meet current and future state rules for sediment investigations. Historical data were reviewed from a series of existing vibracores from across the nearshore of Onslow Bay previously obtained in association a USACE study performed in 2002. These data included general vibracore logs, as well as granularmetric data from representative sediment samples.

Representative samples from the 2012 vibracores were analyzed in Coastal Tech's *Coastal Geology and Sediments Lab* to characterize texture and composition. Potential borrow area boundaries were refined from that previously outlined in prior studies, using the bathymetric, seismic survey data, vibracore logs and sedimentologic sample data.

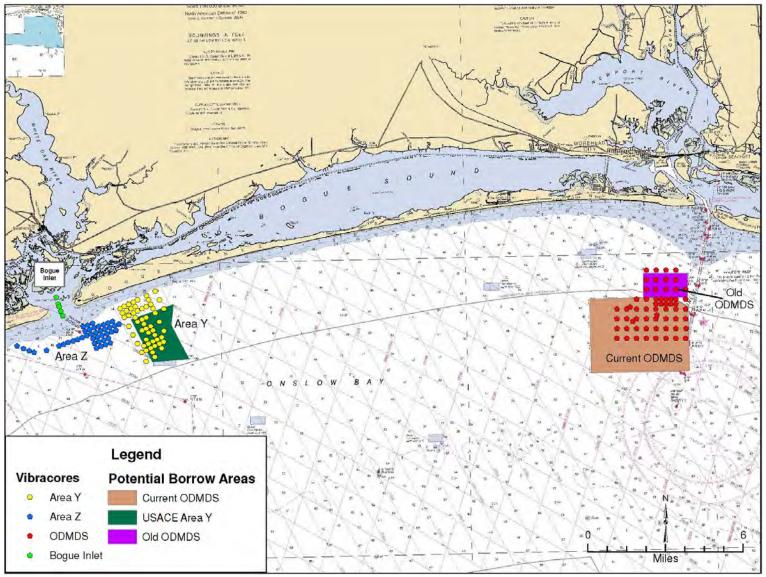


Figure 1.1 – Location of Potential Borrow Areas & 2012 Vibracores

boundaries were refined from that previously outlined in prior studies, using the bathymetric, seismic survey data, vibracore logs and sedimentologic sample data.

2.0 Laboratory Analyses

A total of 599 representative sediment samples were obtained by Alpine from the 2012 vibracores and transferred to Coastal Tech's *Coastal Geology and Sediments Lab* in Melbourne, Florida. These samples were analyzed using standard laboratory methods to characterize texture and composition. Sediment texture was quantified using nested sieves consistent with USACE procedures, and described in accordance with the Unified Soils Classification (USC) System. These methods are consistent with State Rules, including Rule 15A NCAC 07H.0312 Technical Standards for Beach fill Projects.

Gradation analysis was performed using 20 sieves ranging from -4.25 ϕ to +4 ϕ at ½ ϕ intervals, including the -2.25 ϕ and +3.75 ϕ sieves. Samples that appeared to contain flocculated fines were wet sieved prior to dry sieving. This entailed obtaining a dry sample weight, soaking the sample in a 5% (NaPO₃)₆ solution overnight, washing the sample over a #230 sieve, and obtaining a new dry weight to accurately quantify the amount of fines in the sample. The samples that contained fines in excess of 5% or more by weight passing through the #200 sieve were assigned a Unified Soils Classification Code on the basis of visual examination by a registered professional geologist.

Composition was determined through Loss on Ignition. This process entails burning a ~20g sample in a crucible at 550°C for two hours to burn off the organic material, and again at 1000°C for three hours to burn off the calcium carbonate material. The weight percent lost after the 550°C burn corresponds to the weight percent organic material in the sample. The weight percent lost after the 1000°C burn corresponds to the amount of CO₂ burned off of the CaCO₃ molecules in the sample. The molecular weight of the CO₂ molecule is 44% of the molecular weight of the CaCO₃ molecule, so the weight loss is then multiplied by 2.27 to ascertain the percent CaCO₃ that was in the sample.

Laboratory results of the sediment sample analyses conducted by Coastal Tech are summarized throughout the report and provided in digital format (see enclosed discs) within this report as follows:

- Appendix 1 CD-ROM containing 2012 Alpine Ocean Seismic Survey report with Coastal Tech sediment results
- Appendix 2 CD-ROM Containing gINT and Other Digital Files

3.0 Native Beach

Previous sampling and analysis of native beach sediments was utilized to determine compatibility of the potential borrow areas with Carteret County beaches. In 2001, CSE obtained 64 samples from the dune, berm beachface, and low tide terrace at 16 evenly spaced transects between stations 48 and 78. Four of these dune samples were excluded from this analysis because the samples were obtained from dunes that were formed with sand excavated from the

lower beach, and do not reflect sand naturally occurring in the dune. The 28 samples from adjacent transects were physically combined and analyzed together to define the composite characteristics of the native beach. These data represent the beach characteristics prior to the Bogue Banks Beach Restoration projects in 2002 (Phase I) and 2003 (Phase II). The resulting native beach composite is fine grained, moderately well sorted quartz sand with less than 1% fines and less than 2% gravel. The CSE report indicates that the material had an average of 15-20% shell content. The composite has a mean grain size of 0.30 mm (CSE, 2001).

The proposed borrow area material must meet the characteristics prescribed by North Carolina Administrative Code "Technical Standards for Beach Fill Projects" (15A NCAC 07H .0312) herein referred to as the "Rule". The Rule requires that the weight percent fines, gravel and granular size material not exceed the native beach weight percent by more than 5%. However, if the material is dredged from a federally maintained navigation channel the Rule only stipulates that it must contain less than 10% fines by weight. In addition, the weight percent calcium carbonate may not exceed the native by more than 15%. The native beach characteristics and the resulting parameters required of the borrow material are shown in Table 3.1.

Characteristic	2001 Native	Rule Requirements	Required Borrow Site Parameters
Fines <#230	Reported: 0%, Assumed: <1%	<1% + 5%	<u>≤</u> 6%
Sand (> #230 & <#10)	Reported at 98.68%	-	-
Granular (>#10 & < #4)	Reported combined at 1.32%,	0.7% + 5%	≤ 6%
Gravel (>#4)	Assumed 0.7% each	0.7% + 5%	<u><</u> 6%
Calcium Carbonate	Reported at 15-20%	20% + 15%	≤ 35%

Table 3.1 – Native Beach Characteristics and Rule Parameters

4.0 Borrow Area Delineation and Compatibility Analysis

Potential borrow areas were delineated, and compatibility for use as beach fill was assessed based upon the following:

- (1) vibracore sedimentology (i.e., texture and composition), and stratigraphy,
- (2) volume weighted composite vibracore and borrow area granularmetrics and organic / carbonate contents from 2012 vibracores,
- (3) the composite native beach granular metrics,
- (4) the Rule parameters (Table 3.1), and
- (5) the Overfill Factor (R_a) per the *Coastal Engineering Manual* (USACE, 2002).

Note that borrow area composites were formulated using only data from vibracores obtained by Alpine under contract with M&N in 2012. Data from vibracores obtained by USACE in 2002 and others were consulted for general consistency and compatibility, but were not included in the calculation of composites presented herein because these potential borrow areas were adequately covered with modern cores.

Surficial sediments within potential borrow areas are assessed based on overall sediment quality. Sediment in the upper layer of each vibracore is characterized as either:

- Good if the samples in this layer have low fines and gravel size content (<3%), appear to be light in color per the core photographs, and the layer thickness would be worth dredging (>3 feet);
- <u>Poor</u> if the samples in the upper layer contain appreciable fines or gravel (>5%), were very dark in color in the core photographs, or if the upper layer was very thin (<2 feet);
- Moderate: if any of the sample characteristics were between "Good" and "Poor".

Color-coding (Good = green; Poor = red; Moderate = orange) these vibracore characterizations in the plan-view maps assisted in visually determining where there were clusters of "Good" material from which borrow areas could be delineated after further study of the full granularmetrics. These color codes are shown in some of the plan-view figures in this report.

The potential borrow areas are delineated around clusters of "Good" vibracores, where a proposed cut-depth was identified at 2 feet above the underlying non-compatible material. Composite characteristics were then calculated for each area and compatibility with the native beach was assessed. Each sample was weighted within the vibracore to develop vibracore composite characteristics, and each vibracore composite was weighted within the potential borrow area to develop potential borrow area composite characteristics. Textural compatibility was assessed by comparison of composite sample mean grain sizes, grain size distribution, and sorting coefficients for the native beach and each potential borrow area.

Potential borrow areas are ranked based on (a) confidence in the stratigraphy per the available vibracore data, and (b) the quality and compatibility of the potential borrow area material with the native beach sediments and the Rule - per the following:

- \underline{A} If the stratigraphy of a potential borrow area is well defined, and the material is highly compatible with the native beach and the Rule, it is ranked as an "A" level borrow area
- <u>B</u> If a potential borrow area needs some more vibracores to confidently define the stratigraphy, has a moderately high overfill factor, and/or may have a characteristic that is slightly out of compliance with the Rule, it is given a "B" ranking.
- <u>C</u> Finally, if a potential borrow area has insufficient data to define the stratigraphy, has a high overfill factor, and/or poor or questionable compatibility of material with the native beach, it is given a "C" ranking.

A preliminary maximum cut elevation was selected for each vibracore where the sample analyses indicated sediment consistent with the Rule. This cut elevation was established to be two feet above the boundary with non-compatible material. This two foot buffer is often used in practice to provide for a margin of error in dredging, recognize uncertainties in extrapolation of conditions from core to core, and ultimately to avoid dredging of non-compatible material. Once all maximum cut elevations were delineated for each vibracore, the investigation areas were divided into separate potential borrow areas where the vibracores point to a similar cut elevation. A final cut elevation was selected for each potential borrow area based on the lowest common cut elevation that still allowed for a two foot buffer above non-compliant material.

The Overfill Factors shown in Appendix 4 and summarized in this report were calculated for reference, but the compliance of material with the Rule is the basis used herein for delineation or exclusion of potential borrow areas. The Overfill Factor is a common design element in coastal engineering practice used for simple comparison of potential borrow source material to native beach material. The Overfill Factor seeks to estimate, based on grain-size distributions, what volume of borrow source fill is necessary to functionally replace a "unit" of native beach sand. The Overfill Factor was estimated via methods prescribed by the USACE *Coastal Engineering Manual* and was calculated for each potential borrow area.

Conceptual geologic cross sections were drawn for the Ocean Dredge Material Disposal Site as determined through examination of the vibracore sediment samples and interpolation of likely stratigraphy between the cores. The stratigraphy within the Ocean Dredge Material Disposal Site is not naturally occurring, and is meant only to show the extent of the surficial (uppermost) layer of sediment. In these cross-sections the vibracore is presented with the actual Unified Soil Classification (USC) code represented in the stratigraphy within the core, while the stratigraphy between the cores is presented as a USC code that generalizes the nature of the adjacent strata for ease of interpretation. For example, adjacent samples may differ in USC code based on a slight percentage difference in fines or gravel, so the most common USC code (from all the surrounding cores) is chosen to represent the stratigraphy between cores.

Potential borrow area composite and compatibility data calculated by Coastal Tech are provided within this report as follows:

- Appendix 3 Potential Borrow Area Composite Curves
- Appendix 4 Potential Borrow Area Overfill Factor Calculations

4.1 The Old ODMDS

The previously utilized dredge disposal area referred to herein as the Old ODMDS is located directly north of the currently utilized disposal area. The two are separated by the approximate State/Federal water jurisdictional boundary located three miles offshore. The largest mound of disposal material straddles the boundary between the Old ODMDS in State waters and the currently active ODMDS in Federal waters (Figure 4.1). The majority of this mound is located within the boundaries of the Old ODMDS. This mound was separated into two potential borrow areas, designated Old ODMDS 1 and Old ODMDS 2 (Figure 4.2), with cut depths that differ by one foot; this separation maximizes the potential borrow area volume, while still maintaining a two foot buffer above non-compatible material.

4.1.1 Old ODMDS 1

The largest portion of the mound was designated Old ODMDS 1 (Figure 4.2). The majority of disposal material appears to be clean sand, while the material below roughly -54 feet NAVD88 contains >6% silt, which is not compliant with the Rule parameters and therefore not compatible with the native beach. Figure 4.3 exhibits the conceptual stratigraphy of the main ODMDS mound based on the vibracores extracted. Using a maximum cut to elevation -52 feet NAVD88,

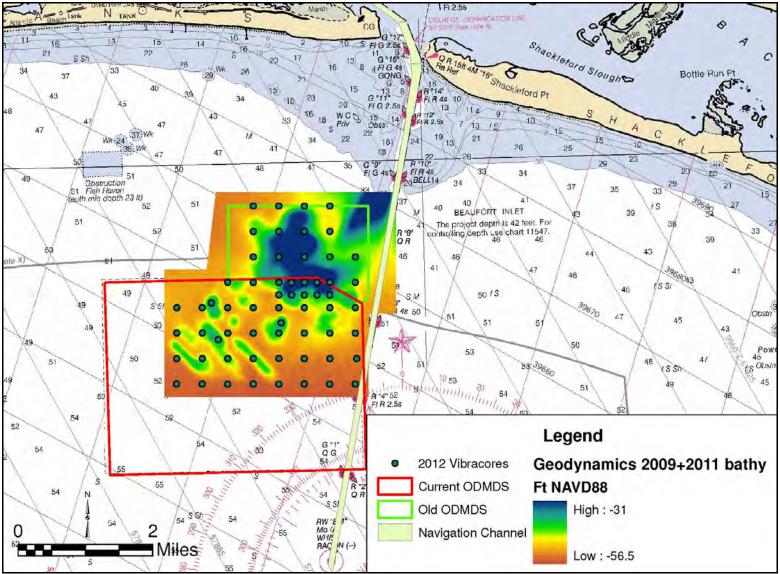


Figure 4.1 – Old and Current Ocean Dredge Material Disposal Sites

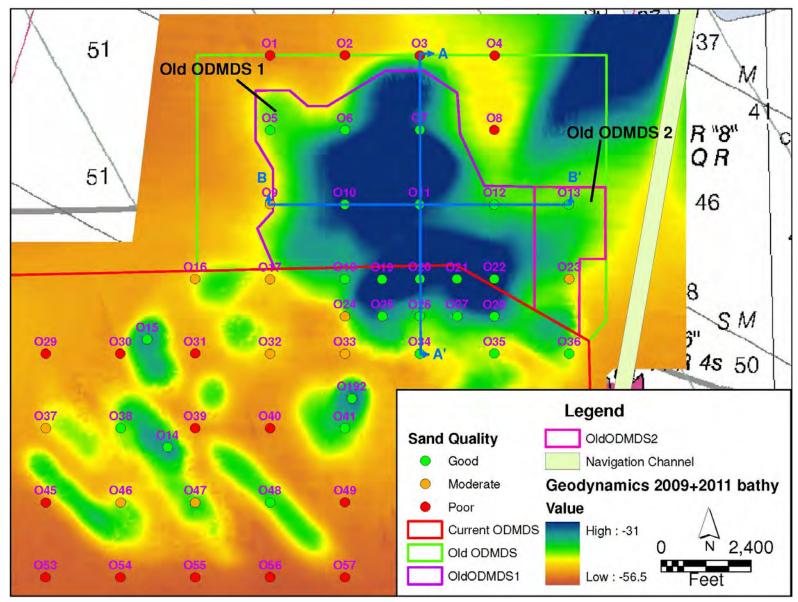


Figure 4.2 – Old ODMDS Potential Borrow Areas

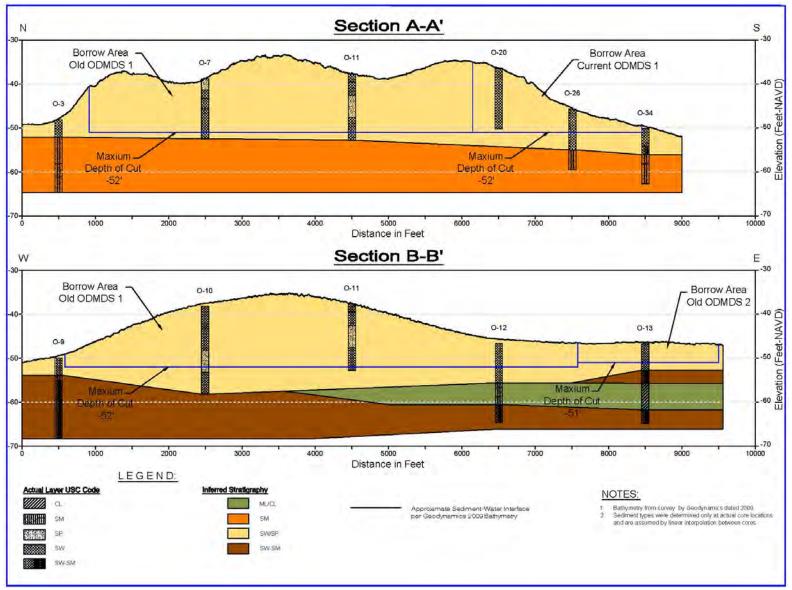


Figure 4.3 – Primary ODMDS Mound Cross-Section

and the 2009 bathymetry provided by Geodynamics, this area is estimated to contain about 13.14 Mcy of beach compatible material, as defined by twenty vibracores.

Fine grained (0.30 mm), poorly sorted quartz sand comprises the Old ODMDS 1 borrow area. This is the same mean grain size as the native beach composite, although the native beach material is better sorted (with a sorting coefficient of 0.61 for the native and 1.11 for the borrow area). The composition includes 13.6% carbonate material in the form of shell hash, which is similar to the reported native carbonate content of 15-20%. The characteristics of this material are compliant with the parameters set forth by the Rule shown in the center column of Table 4.1. A comparison of the grain size distribution curves of the Old ODMDS 1 borrow area and the 2001 native beach composite curve shows that the distributions are quite similar (see Figure A3.1 in Appendix 3). The overfill factor for the Old ODMDS 1 borrow area is calculated to be 1.30.

Characteristic	Required Borrow Site Parameters	Old ODMDS 1
Fines <#230	≤6%	0.53%
Sand (> #230 & <#10)	-	96.00%
Granular (>#10 & < #4)	≤ 6%	2.14%
Gravel (>#4)	≤ 6%	1.33%
Calcium Carbonate	<u>≤</u> 35%	13.55%

Table 4.1 – Old ODMDS 1 Composite Characteristics and Rule Parameters

4.1.2 Old ODMDS 2

Adjacent to the Old ODMDS 1 potential borrow area is the Old ODMDS 2 potential borrow area, where the cut elevation is raised one foot to maintain the two foot buffer above noncompatible material. This borrow area is on the northeast flank of the large mound in the Old ODMDS (Figures 4.2 and 4.3) and is defined by two vibracores. Based on the bathymetric survey performed by Geodynamics in 2009 and using a maximum cut to elevation -51 feet NAVD88, this area is estimated to contain about 1.1 Mcy of beach compatible material. This potential borrow area has a composite mean grain size of 0.32 mm, which is only slightly coarser than the native beach sand. It contains less than 1% gravel and fines, and 13.6% calcium carbonate. This composite is quite similar to the Old ODMDS 1 composite, as well as the native beach, as reflected in the grain size distribution curve shown in Figure A3.2 in Appendix 3. The material has an estimated Overfill Factor of 1.25, meets the parameters set forth by the Rule (see Table 4.2), and is thus deemed compatible with the native beach.

Characteristic	Required Borrow Site Parameters	Old ODMDS 2
Fines <#230	<u>≤</u> 6%	0.20%
Sand (> #230 & <#10)	-	96.30%
Granular (>#10 & < #4)	≤ 6%	2.49%
Gravel (>#4)	≤ 6%	1.01%
Calcium Carbonate	≤ 35%	13.57%

Table 4.2 - Old ODMDS2 Composite Characteristics and Rule Parameters

4.2 The Current ODMDS

The currently active ODMDS is located across the 3-mile jurisdictional line that separates State and Federally regulated waters (Figure 4.1). The Morehead City ODMDS was established by the EPA in 1972 by Section 102(c) of the Marine Protection, Research, and Sanctuaries Act of 1972, and the Final Rule (Vol. 52 No. 157) effective in 1987 per the Morehead City Ocean Dredged Material Disposal Site: Site Management and Monitoring Plan (USACE, 2009). The USACE Ocean Disposal Database lists disposal amounts for the current ODMDS beginning in 1989. Placement of material in the current ODMDS has declined since 1995 with the advent of use of the Nearshore disposal area, which (a) is located on the seaward flank of the Beaufort Inlet ebb tidal delta and (b) was established in an effort to dispose of beach quality material in a zone that would keep it within the littoral system. However, material is still disposed of in the ODMDS when (a) the wave climate does not allow dredges to approach the relatively shallow Nearshore area, which is estimated to be at -26 feet to -40 feet (datum unknown) (Olsen, 2006) or (b) when the disposal material contains fines in excess of 10% by weight.

The Current ODMDS was divided into several potential borrow areas. The large mound that includes Old ODMDS 1 and 2 also extends across the federal water boundary into the Current ODMDS, where it comprises the potential borrow area deemed Current ODMDS 1, as shown in Figure 4.4. Current ODMDS 1, is discussed below followed by the smaller disposal mounds present in the Current ODMDS. These smaller mounds have varying degrees of certainty with respect to their granularmetric characteristics based on the number of vibracores that penetrate the thickest portion of the mounds. These mounds will be presented based on the degree of confidence that the data provide in the granularmetrics.

4.2.1 Current ODMDS 1

Current ODMDS 1 is the Federal water extension of the large mound that also includes Old ODMDS 1 and 2 (Figure 4.2 and 4.4). Based on the bathymetric survey performed by Geodynamics in 2011 and a maximum cut to elevation -52 feet NAVD88, this area may contain about 4.23 Mcy of beach compatible material. This portion of the large mound is defined by fourteen (14) vibracores. The sediment composite for this borrow area reflects poorly sorted fine grained quartz sand with a mean grain size of 0.30mm, which is the same as the native beach composite. This material has less than 1% fines and less than 2% gravel, with approximately 13.3% carbonate material in the form of shell hash. The grain size distribution curve is quite similar to the native beach, with slightly more of the coarsest material present in the borrow area (Figure A3.3 in Appendix 3).

Based on the Rule parameters, this material is compatible with the native beach (Table 4.3). Volume-weighted average composite mean grain size and sorting coefficients for Current ODMDS 1 and the Carteret County native beach composite calculated from the CSE 2001 data were compared to calculate the Overfill Factor of 1.25. This is quite similar to the other portions of this large mound and it is illustrative to see the comparison of the three granularmetric

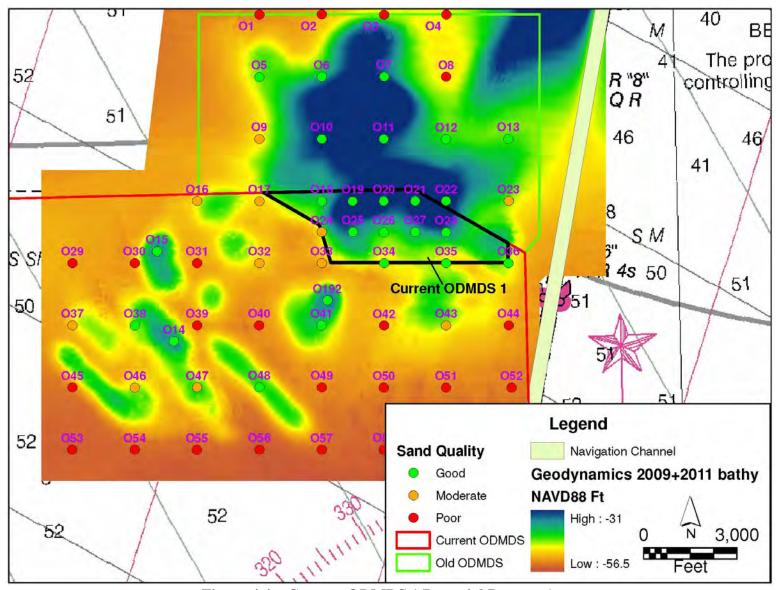


Figure 4.4 – Current ODMDS 1 Potential Borrow Area

frequency distribution curves together on one plot to see the similarity of the curves, and thus the consistency of the material throughout this large disposal mound as shown in Figure A3.4 in Appendix 3.

Characteristic	Required Borrow Site Parameters	Current ODMDS 1
Fines <#230	<u><</u> 6%	0.52%
Sand (> #230 & <#10)	-	96.06%
Granular (>#10 & < #4)	≤ 6%	2.06%
Gravel (>#4)	≤ 6%	1.36%
Calcium Carbonate	≤ 35%	13.29%

Table 4.3 – Current ODMDS 1 Composite Characteristics and Rule Parameters

4.2.2 Higher Confidence Mounds

The higher confidence mounds include those that have at least one vibracore that penetrates the thickest part of the mound within a potential borrow area, allowing the stratigraphy to be better defined. These mounds were named for the defining core(s) out of simplicity. These mounds include Mounds O-15, O-192, O-48 and the adjoining Mound O-14/O-47 (Figure 4.5). If multiple vibracore composites were used in preparing the composite for the mound, they were weighted equally within the borrow area. The sedimentology, volumes, and compatibility of these mounds are discussed below.

4.2.2.1 Mound O-15

Mound O-15 is located west of the main ODMDS mound and is penetrated only by Core O-15, so this vibracore composite was used to define the mound sedimentology (Figure 4.5). Using the bathymetric survey performed by Geodynamics in 2011 and a maximum cut to elevation -50 feet NAVD88, this mound may contain approximately 356,000 cubic yards (cy) of beach quality material. Fine grained, moderately sorted quartz sand comprises this mound; the composite of Core O-15 has a mean grain size of 0.24 mm, which is finer than the native beach composite (0.30mm). This finer mean grain size may be because Mound O-15 contains a slightly lower carbonate shell content of 10%.

A comparison of the Mound O-15 composite grain size distribution curve and that of the native composite reveals the generally finer nature of the mound composite (Figure A3.5 in Appendix 3). For example, when comparing only the percent finer than the 2ϕ sieve, the curve shows that 65% of the Mound material is finer than the 2ϕ sieve, while only 42% of the native composite is finer than the same sieve. As a result of this finer mean grain size, the Mound O-15 Overfill Factor is 1.60, which is higher than the previously discussed borrow areas. However, the material still falls within the parameters set forth by the Rule as shown in Table 4.4, and is thus still compatible with the native beach, although it is not expected to perform quite as well as the previously discussed borrow sites. Due to the higher overfill factor, Mound O-15 was assigned a "B" ranking.

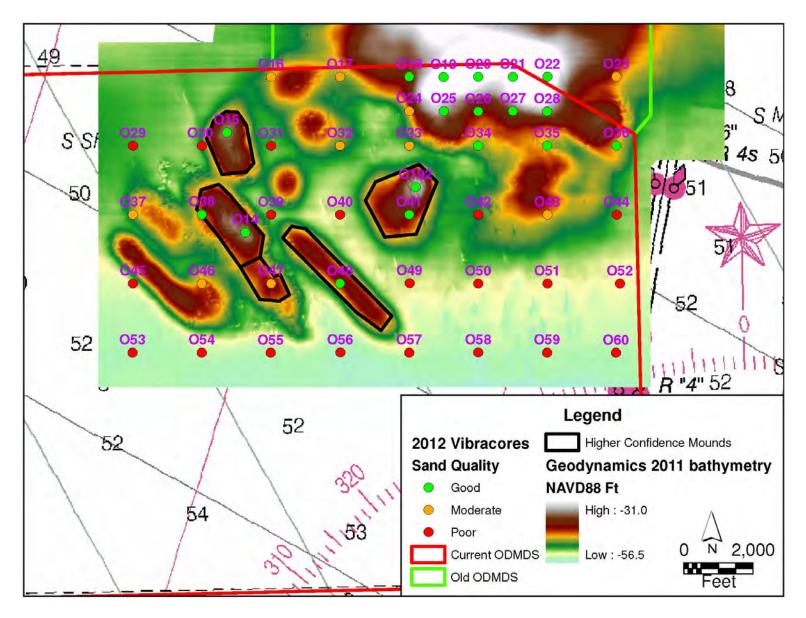


Figure 4.5 – Current ODMDS Higher Confidence Mounds

Characteristic	Required Borrow Site Parameters	Mound O-15
Fines <#230	<u>≤</u> 6%	0.07%
Sand (> #230 & <#10)	-	99.23%
Granular (>#10 & < #4)	≤ 6%	0.54%
Gravel (>#4)	≤ 6%	0.16%
Calcium Carbonate	≤ 35%	10.10%

Table 4.4 – Mound O-15 Composite Characteristics and Rule Parameters

4.2.2.2 Mound O-192

Mound O-192 is southwest of Current ODMDS 1 (Figure 4.5). Vibracores O-192 and O-41 penetrated this mound and these vibracore composites were given equal weight in preparing the mound composite. Using the bathymetric survey performed by Geodynamics in 2011 and a maximum cut to elevation -53 feet NAVD88, this mound may contain approximately 785,270 cy of beach quality material. Mound O-192 is characterized by fine grained, poorly sorted quartz sand with about 20% carbonate content in the form of shell hash. Generally the material shows a trend of fine gray sand interbedded with coarser tan shell hash.

The mean grain size is 0.36mm, which is coarser than the other borrow areas previously presented, as well as the native beach (0.30mm). This may be due to the higher shell content relative to the other borrow areas. A comparison of the grain size distribution curve for Mound O-192 and the native beach curve illustrates the divergence of the curves in the larger grain sizes where Mound O-192 has a higher percentage of coarser material, as well as the otherwise similar nature of the curve in the finer grain sizes (Figure A3.6 in Appendix 3). The O-192 mound material falls within the parameters set forth in the Rule as shown in Table 4.5, and is thus considered compatible with the native beach. The Overfill factor was calculated to be 1.25. This mound is given an "A" ranking.

Characteristic	Required Borrow Site Parameters	Mound O-192
Fines <#230	<u>≤</u> 6%	0.13%
Sand (> #230 & <#10)	-	93.07%
Granular (>#10 & < #4)	≤ 6%	3.43%
Gravel (>#4)	≤ 6%	3.37%
Calcium Carbonate	≤ 35%	19.59%

Table 4.5 – Mound O-192 Composite Characteristics and Rule Parameters

4.2.2.3 Mound O-48

Mound O-48 is a northwest/southeast trending mound located in the center part of the Current ODMDS and is penetrated only by Core O-48, so this vibracore composite was used to define the mound sedimentology (Figure 4.5). Using the bathymetric survey performed by Geodynamics in 2011 and a maximum cut to elevation -52 feet NAVD88, this mound may contain approximately 468,740 cy of beach quality material. Fine grained, moderately sorted quartz sand comprises this mound. Mound O-48 has a mean grain size of 0.20 mm which is significantly finer than the native beach composite (0.30mm). This finer mean grain size may be due to the slightly lower carbonate shell content of less than 8% that this mound contains.

A comparison of the Mound O-48 composite grain size distribution curve and that of the native composite illustrates the finer nature of the mound composite (Figure A3.7 in Appendix 3). For example, when comparing only the percent finer than the 2φ sieve, the curve shows that 82% of the Mound material is finer than the 2φ sieve, while only 42% of the native composite is finer than the same sieve. The finer nature of the Mound O-48 material results in a high Overfill Factor of 2.25. This mound composite also approaches the compatibility threshold with respect to fines content as the mound contains 5.91% fines, nearing the 6% threshold (Table 4.6). As a result of the high Overfill Factor, relatively higher fines content, and lack of additional vibracores, Mound O-48 should be a low priority sand source with a "C" ranking.

Characteristic	Required Borrow Site Parameters	Mound O-48
Fines <#230	<u>≤</u> 6%	5.91%
Sand (> #230 & <#10)	-	92.83%
Granular (>#10 & < #4)	<u>≤</u> 6%	1.11%
Gravel (>#4)	<u>≤</u> 6%	0.15%
Calcium Carbonate	≤ 35%	7.76%

Table 4.6 – Mound O-48 Composite Characteristics and Rule Parameters

4.2.2.4 Mound O-14/O-47

The mound that is penetrated by vibracores O-14, O-47, and O-38 is located directly west of Mound O-48 (Figure 4.5). This mound was assigned two different cut depths to maximize the volume of beach quality material that may be excavated from it. However, one composite was developed from the two areas because it is assumed the mound might be excavated as one borrow site. Using the 2011 Geodynamics bathymetry and the a maximum cut to elevation -49 feet NAVD88 for the portion of the mound including vibracores O-14 and O-38, and a maximum cut to elevation -53 feet NAVD88 for the area including vibracore O-47, this mound may contain approximately 566,028 cy of beach quality material. These vibracores show the same fine gray sand inter-bedded with coarser tan shell hash that is typical of this disposal area.

This mound is characterized by fine grained, poorly sorted quartz sand with less than 1% fines, less than 2% gravel and about 20% carbonate content in the form of shell hash. The mean grain size of 0.38 mm is coarser than the native (0.30mm) and may be attributable to the relatively

higher carbonate content of this mound compared to some of the other potential borrow areas. A comparison of the grain size distribution curve with that of the native beach composite shows that the curves diverge in the coarser grain sizes where the mound material contains more of the coarse material (Figure A3.8 in Appendix 3). The granularmetric characteristics of this mound fall within the parameters set forth by the Rule, indicating that this material is compatible with the native beach (Table 4.7). The Overfill Factor was calculated to be 1.20. This mound is assigned an "A" ranking.

Characteristic	Required Borrow Site Parameters	Mound O-14 / O-47
Fines <#230	<u>≤</u> 6%	0.23%
Sand (> #230 & <#10)	-	93.43%
Granular (>#10 & < #4)	≤ 6%	4.71%
Gravel (>#4)	≤ 6%	1.63%
Calcium Carbonate	≤ 35%	19.80%

Table 4.7 – O-14 / O-47 Mound Composite Characteristics and Rule Parameters

4.2.3 Lower Confidence Mounds

The lower confidence mounds (ranked as "B" or "C") include those that only have vibracores on the flanks, and none that penetrate the thickest portion of the mounds, such that the stratigraphy of the mound has not be adequately defined (Figure 4.6). As a result, the characteristics of the mound material can only be inferred from the adjacent vibracores. It is recommended that these mounds be sampled with additional vibracores in the thickest portion of the mounds to confirm the sediment characteristics inferred from the existing cores. There are two mounds that fall into this category of Lower Confidence Mounds; discussed below.

4.2.3.1 Mound O-35

Mound O-35 is located directly south of Current ODMDS 1, and in fact shares the composite data from core O-35 with Current ODMDS 1 (Figure 4.6). The other vibracore used in the composite of Mound O-35 was vibracore O-43 on the southern end of the mound. These core composites were weighted equally in the mound composite. Using the 2011 Geodynamics bathymetric data and a maximum cut to elevation -52 feet NAVD88, this mound may contain approximately 499,500 cy of beach quality material. Vibracore O-43 shows the same fine gray sand inter-bedded with coarser tan shell hash seen in previous mounds in the ODMDS.

Fine grained, poorly sorted quartz sand comprises Mound O-35. The cores suggest this mound may contain less than 1% fines or gravel and 15% carbonate in the form of shell hash. These characteristics are quite similar to the native beach, and all required parameters fall within the requirements set forth by the Rule (Table 4.8). The grain size distribution curve is similar to the native beach (Figure A3.9 in Appendix 3). Using these data the Overfill Factor was calculated to be 1.30. This mound is assigned a "B" ranking because it only has two vibracores on opposite flanks, with no sampling of the main part of the mound.

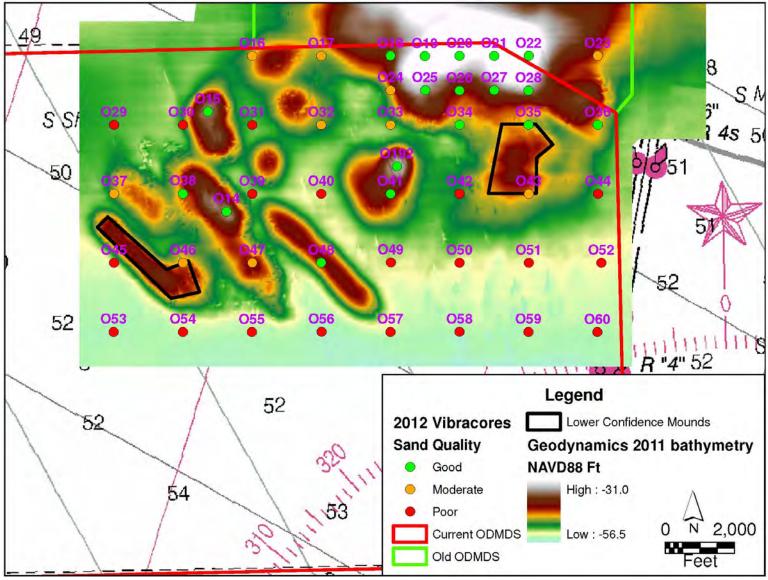


Figure 4.6 – Current ODMDS Lower Confidence Mounds

Characteristic	Required Borrow Site Parameters	Mound O-35
Fines <#230	<u>≤</u> 6%	0.31%
Sand (> #230 & <#10)	-	96.08%
Granular (>#10 & < #4)	≤ 6%	2.65%
Gravel (>#4)	≤ 6%	0.96%
Calcium Carbonate	≤ 35%	15.20%

Table 4.8 – Mound O-35 Composite Characteristics and Rule Parameters

4.2.3.2 Mound O-46

Mound O-46 is the southwestern-most mound in the Current ODMDS (Figure 4.6). Vibracore O-46 was the only core used in the composite calculation. Using the Geodynamics 2011 bathymetric data and a maximum cut to elevation -53 feet NAVD88, this mound may contain 493,564 cy of beach quality material. This vibracore shows the similar fine gray sand interbedded with coarser tan shell hash that is typical of the ODMDS. This material overlays dark gray silty material.

Vibracore O-46 indicates that this mound may contain fine grained, poorly sorted quartz sand with less than 1% fines and less than 3% gravel. The O-46 vibracore composite had about 18% carbonate. The composite has a mean grain size of 0.40 mm, which is coarser than the other mound composites. The slightly higher carbonate content may be partially responsible for the higher mean grain size. This composite does just slightly exceed the Rule requirement for granular size material (Table 4.9), however, the composite meets the other Rule provisions. It is likely that with additional sampling of this mound, the composite weight percent granular may fall within compliance. The higher mean grain size results in a low Overfill Factor of 1.25. The Overfill Factor is likely still above 1 due to the high sorting coefficient of 1.5. The comparison of the grain size distribution curves illustrates the divergence in the higher grain size levels where the mound contains more of the coarse material (Figure A3.10 in Appendix 3). This mound is given a "B" ranking because it is only penetrated on the flank by one vibracore, and ideally further coring would be performed to delineate the horizontal and vertical extents of the beach quality material within the mound.

Characteristic	Required Borrow Site Parameters	Mound O-46
Fines <#230	<u>≤</u> 6%	0.37%
Sand (> #230 & <#10)	-	90.60%
Granular (>#10 & < #4)	<u>≤</u> 6%	6.27%
Gravel (>#4)	≤ 6%	2.76%
Calcium Carbonate	≤35%	18.17%

Table 4.9 – Mound O-46 Composite Characteristics and Rule Parameters

4.2.4 Contingency Mounds

The Contingency Mounds are the remaining mounds in the Current ODMDS that do not have any vibracores in them, and do not have cores that penetrate enough of the flanks to speculate as to the granularmetrics of the mounds. Conceptual cut depths were inferred from surrounding vibracores for the purpose of calculating potential volumes. These mounds include those shown in Figure 4.7. The total volume of material above the proposed cut depths shown in Table 4.10 is about 320,000 cy.

Mound	Cut Elevation NAVD88	Volume (cy)
O-16	-50ft	95,326
O-39	-52ft	94,352
O-37/O-38	-51ft	71,233
O-32	-50ft	58,543
	Total	319,454

Table 4.10 – Potential Volumes in Current ODMDS Contingency Mounds

4.4 Area Y

Area Y is located offshore of Emerald Isle in State waters (Figure 4.8). The material in Area Y is spatially highly variable, but the upper layers mostly consist of material that contains fines far in excess of those permitted by the Rule. Originally, vibracores were to be collected on a 1000 foot by 1000 foot grid, but initial vibracores showed poor material, so a wider spacing of 2000 feet by 2000 feet was used with additional vibracores being collected where better material was encountered. There were two areas where the material does not contain excessive fines, as defined by two adjacent vibracores, and preliminary estimates are made about volumes and sediment characteristics. However, in both cases the cores surrounding the two shore-perpendicular cores do not contain comparable clean sand, so it is impossible to reliably define the spatial extent of the resource.

4.4.1 Vibracores Y-80 / Y-75

Vibracores Y-80 and Y-75 are about 2000 feet apart (Figure 4.8). No vibracores were taken to the east or south of these vibracores due to hardbottom buffer requirements. The vibracores taken to the west of these are also 2000 feet away, and have one to two feet of dark gravel (non-compliant with the Rule) overlying the sand. Therefore, the upper layer of sediment in these adjacent cores is not beach-compatible. Although the characteristics of the upper layer in cores Y-80/Y-75 are defined herein, this area should be considered a low priority borrow area with a "C" ranking because there are insufficient vibracores to designate a reliable borrow area and most of the material appears to be of relatively poor quality.

Drawing a rectangle around the ocean bottom represented by the two cores, and using the Geodynamics 2011 bathymetry and a maximum cut to elevation -56 feet NAVD88, a potential volume of 1.08 Mcy is estimated. However, the rectangle is conceptual as the extent of the sand layer is not defined by the cores. The composite of the samples within this rectangle shows that the material is fine grained (0.23 mm), moderately well sorted sand with less than 3% fines and no gravel material. This material is dark in color and contains almost no shell. These

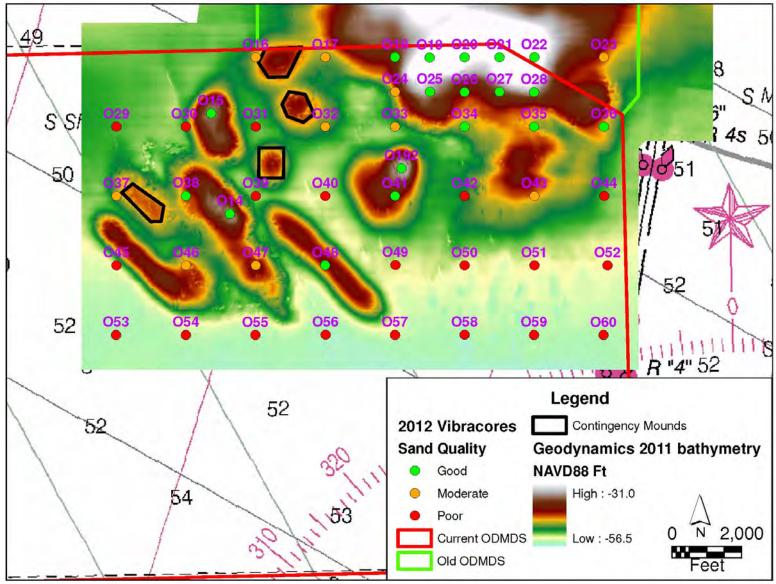


Figure 4.7 – Current ODMDS Contingency Mounds

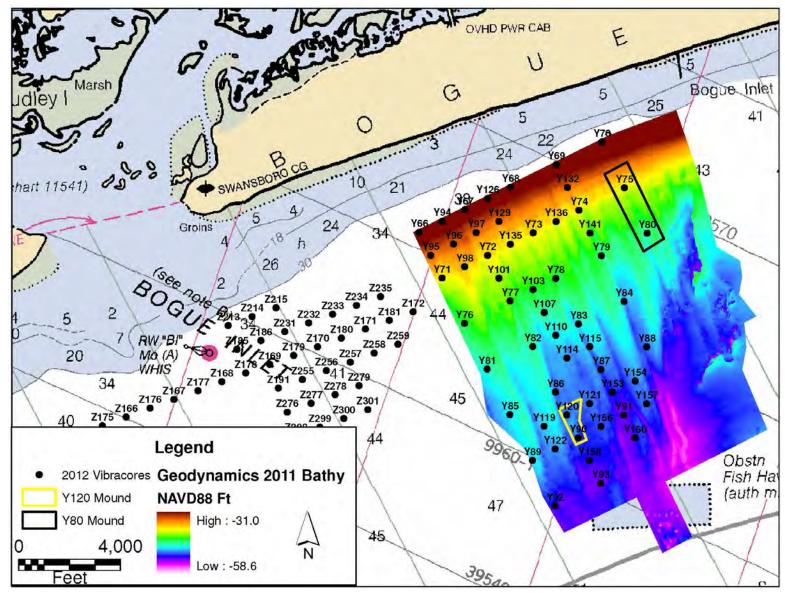


Figure 4.8 – Area Y Vibracores and Potential Borrow Areas

characteristics fall within the parameters set forth by the Rule, although it is significantly finer grained than the native composite (Table 4.11). The resulting Overfill Factor is 2.5 This indicates that this material would perform poorly as compared to native beach sand. The grain size distribution curve illustrates the finer nature of the borrow material throughout the grain sizes (Figure A3.11 in Appendix 3).

Characteristic	Required Borrow Site Parameters	Mound Y-80 / Y-75
Fines <#230	<u>≤</u> 6%	2.37%
Sand (> #230 & <#10)	-	97.55%
Granular (>#10 & < #4)	≤ 6%	0.08%
Gravel (>#4)	≤ 6%	0.00%
Calcium Carbonate	≤ 35%	1.85%

Table 4.11 – Mound Y-80 / Y-75 Composite Characteristics and Rule Parameters

4.4.2 Vibracores Y-120 / Y-90

The other potential borrow area in Area Y surrounds vibracores Y-120 and Y-90 (Figure 4.8). Core Y-90 penetrates a small ridge and Y-120 is just adjacent to the ridge. Using an assumed area of influence that incorporates this ridge to a cut elevation of -62 feet NAVD88, based on the Geodynamics 2011 survey data, a volume of 379,675 cy is calculated. As with the previous potential borrow area delineated in Area Y, the area of influence for this potential borrow area is uncertain because adjacent vibracores do not contain this upper layer of sand.

The material in this mound has a mean grain size of 0.40 mm with about 2% fines; the material is significantly coarser than the native beach. The composite exceeds the gravel parameter set forth by the Rule with nearly 8% gravel by weight (Table 4.12). However, the material contains only trace calcium carbonate, and an inspection of the samples shows that the gravel-sized material is smooth river rock, rather than shell, which is not desirable in placement on the beach. The grain size distribution curve differs from the native in both the coarse and fine ends of the curve, where the Y-120/Y-90 material contains significantly more coarse material and some more fine material (Figure A3.12 in Appendix 3). The sediment is also dark in color. The Overfill Factor was calculated to be 1.30. However, this area should be considered a low priority borrow area that would need to be further defined if it is ever proposed for use, which is not recommended as the material is not compatible with the native beach.

Characteristic	Required Borrow Site Parameters	Mound Y-120 / Y-90
Fines <#230	<u>≤</u> 6%	2.04%
Sand (> #230 & <#10)	-	86.60%
Granular (>#10 & < #4)	<u>≤</u> 6%	3.43%
Gravel (>#4)	<u>≤</u> 6%	7.93%
Calcium Carbonate	≤ 35%	1.50%

Table 4.12 – Mound Y-120 / Y-90 Composite Characteristics and Rule Parameters

4.5 Area Z

Forty-three vibracores were taken within Area Z, directly southeast of Bogue Inlet in an attempt to locate the relict White Oak River channel (Figure 4.9). The only sand that appeared to be beach quality in this area was underneath several feet of fine grained material with between 10-80% silt. The exception is vibracore Z-174, which contains about seven feet of clean light gray sand below 0.4 feet of silty sand. However, the two USACE vibracores from 2002 that were taken adjacent to this core showed poor material in the upper layer. As a result, the spatial extent of this resource is not defined and additional sampling in this area would be required if this resource is to be developed. The one composite sample from this upper layer is very poorly sorted and has a mean grain size of 0.35 mm, which is coarser than the native, likely due to the relatively high gravel content. This sample contains gravel-sized shell in excess of the 6% threshold (Table 4.13).

Characteristic	Required Borrow Site Parameters	Core Z - 174
Fines <#230	<u>≤</u> 6%	1.34%
Sand (> #230 & <#10)	-	84.57%
Granular (>#10 & < #4)	≤ 6%	2.28%
Gravel (>#4)	≤ 6%	11.81%
Calcium Carbonate	≤35%	11.10%

Table 4.13 – Core Z-174 Composite Characteristics and Rule Parameters

4.6 Renewable Potential Borrow Areas

Renewable potential borrow areas are regularly dredged, naturally replenish, and offer repeated use as a sand source for beach nourishment. These areas have been previously identified and evaluated for compatibility with the native beach. These areas are described below.

4.6.1 Bogue Inlet Channel

Five vibracores were taken within the previously authorized channel relocation template from the 2005 Bogue Inlet relocation project (Figure 4.10). Based upon the vibracores and 2009 Geodynamics bathymetry, the previously excavated channel has infilled with fine grained, poorly sorted quartz sand with less than 1% fines or gravel and about 15% calcium carbonate in the form of shell hash. The samples taken from these cores have a composite mean grain size of 0.33 mm, which is slightly coarser than the native beach (0.30mm), indicating that the channel has in-filled with beach-compatible sand, which likely came from the surrounding beaches. This is supported by the low Overfill Factor of 1.15. This material falls within the parameters set forth by the Rule (Table 4.14) and has a similar grain size distribution to the native beach (Figure A3.13 in Appendix 3).

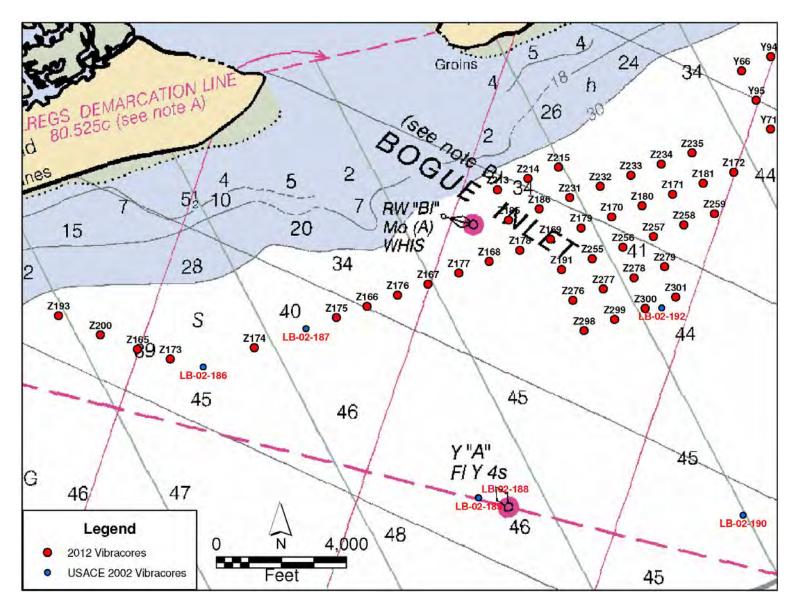


Figure 4.9 – Area Z Vibracores

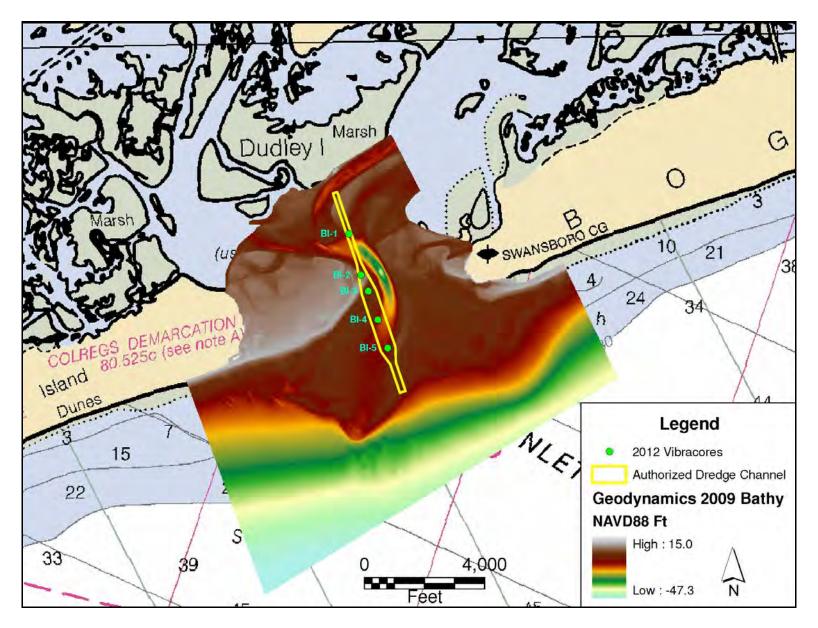


Figure 4.10 – Bogue Inlet Vibracores and Authorized Channel Location

Characteristic	Required Borrow Site Parameters	Bogue Inlet Channel
Fines <#230	<u>≤</u> 6%	0.15%
Sand (> #230 & <#10)	-	96.61%
Granular (>#10 & < #4)	≤ 6%	2.40%
Gravel (>#4)	≤ 6%	0.84%
Calcium Carbonate	≤ 35%	14.96%

Table 4.14 - Bogue Inlet Channel Composite Characteristics and Rule Parameters

If the channel is dredged to the template associated with the previously authorized dredge depth of -18 feet NAVD88, it may produce between 850,000 cy to 1 Mcy of beach quality material as it did in 2005. This indicates that the channel may shoal up to about 100,000 cy per year. The 2012 vibracores only extended to a maximum of about 6 feet below the channel bottom or to around -12 feet NAVD88. However, it may be assumed that the previously excavated channel in-filled with only modern beach-compatible sand as the spit on the Bear Island shoulder migrates eastward into the inlet channel. The vibracores previously obtained within the inlet channel prior to the 2005 channel relocation also did not penetrate the full proposed dredge depth, while the excavated material proved to be beach-compatible sand.

4.6.2 Morehead City Outer Harbor

Outer portions of the Morehead City Harbor that are dredged regularly have proven to provide beach quality sand, while the inner portions of the Harbor generally produce sand with higher silt contents (USACE, 2009). The Outer Harbor consists of the Cutoff and Range A out to Station 110+00 (Figure 4.11). The Rule states that material dredged in association with a federal navigation project need only contain less than 10% silt in order to be deemed compatible with the native beach. The USACE tested 23 post-placement samples following the 2004 nourishment, which used this material, and found that it contained <1% fines, 6.4% gravel and 15.7% carbonate material (Olsen, 2006; USACE, 2010) (Table 4.15). Olsen and Associates estimated that the maintenance dredging of this portion of the channel will produce about 950,000 cy of sand per event (2006). The USACE Morehead City Harbor draft Dredged Material Management Plan (DMMP) estimates that the Outer Harbor is shoaling at a rate of 1.2 Mcy per year (2012). Depending on the final DMMP, there may be between 228,000-635,000 cy of sand available for beach placement annually. For the purposes of calculating available quantities of beach quality sand, a mid-range amount of 400,000 cy/yr is assumed to be available from this source.

Characteristic	Required Borrow Site Parameters	Morehead City Outer Harbor
Fines <#230	<u>≤</u> 6%	<1%
Sand (> #230 & <#10)	-	Not Reported
Granular (>#10 & < #4)	≤ 6%	Not Reported
Gravel (>#4)	≤ 6%	6.40%
Calcium Carbonate	≤ 35%	15.70%

Table 4.15 – Morehead City Outer Harbor Composite Characteristics and Rule Parameters

4.6.3 Bogue Inlet – Atlantic Intracoastal Waterway Crossing

In addition to the sediment available from relocation of the main Bogue Inlet channel discussed in section 4.6.1 above, there is additional periodic dredging in the Atlantic Intracoastal Waterway (AIWW) Crossing (Figure 4.12). This channel is dredged every two to three years via pipeline dredge. Each dredging event can produce about 65,000 cy of sand that has traditionally been placed on "The Point" on western Emerald Isle (www.protectthebeach.com). These channel sediments were sampled by the USACE in 2002; results revealed that the sediment generally contained less than 2% fines or gravel, which is compatible with the Rule stipulation that material from a federally maintained navigation channel contain less than 10% fines by weight to be considered compatible with the native beach. A review of the sediment data from the analyses performed by Caitlin for the USACE shows the general character of the sediment that shoals in the AIWW Crossing, given in Table 4.16, below.

Characteristic	Required Borrow Site Parameters	Bogue Inlet AIWW Crossing
Fines <#230	<u>≤</u> 6%	<2%
Sand (> #230 & <#10)	-	>94%
Granular (>#10 & < #4)	≤ 6%	<2%
Gravel (>#4)	≤ 6%	<2%
Calcium Carbonate	≤35%	<15%

Table 4.16 – Bogue Inlet AIWW Crossing Composite Characteristics and Rule Parameters

5.0 Conclusion

In summary, the potential borrow areas examined in this investigation were ranked based on the amount of data available and the compatibility of the material with the native beach composite as outlined by the Rule, as well as the Overfill Factor (Table 5.1). Potential borrow areas are given an A, B or C designation to reflect their desirability and reliability as a borrow area. Potential borrow areas designated by "A" are recommended for use as a sand source for nourishment of Carteret County beaches. Potential Borrow areas designated by "B" require additional vibracores to reliably define the stratigraphy or demonstrate compatibility of the sediment with the native beach consistent with the Rule. Potential Borrow areas designated by "C" are not recommended for use as a sand source for nourishment of Carteret County beaches due to insufficient data or poor compatibility of the sediment.

An estimated 19,821,325 cy of beach compatible material is given an "A" ranking because there is a significant amount of data available to define the stratigraphy, and the data show that the borrow area material is consistent with the Rule and solidly compatible with the native beach. About 1,348,975 cy of material was given the "B" ranking based on a lack of data and/or a higher Overfill Factor. If additional sampling verifies that the thickest portion of the mound is consistent with the sediment on the flanks, much of this volume can be moved into the "A" ranking. Finally, approximately 2,248,000 cy of material was given a "C" ranking because of a lack of data on these mounds, or because of poor compatibility; this material is not recommended for use as a sand source for beach nourishment.

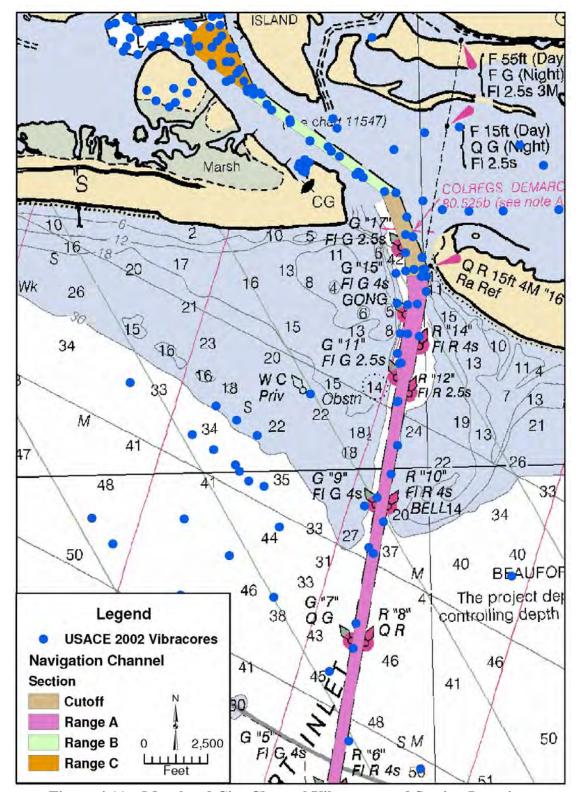


Figure 4.11 – Morehead City Channel Vibracore and Section Locations

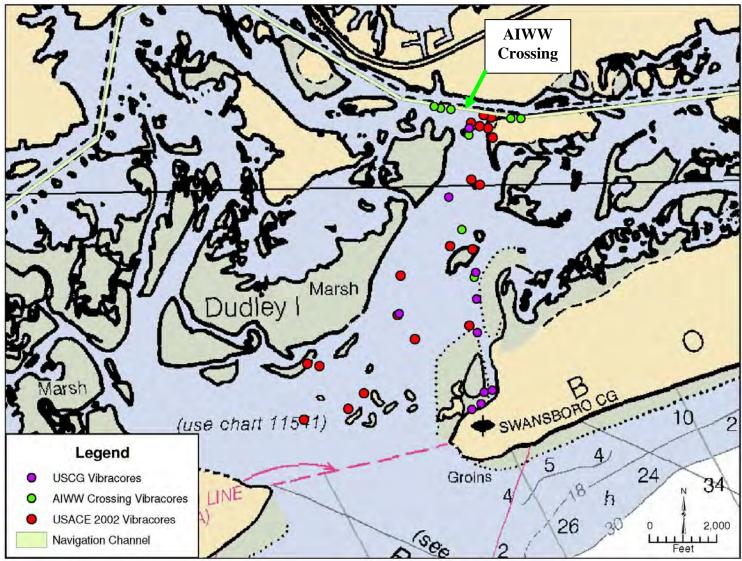


Figure 4.12 – Bogue Inlet AIWW Crossing

Area	Section	Navigation	Volume	Mean Grain Size (mm)	Fines (%)	CaCO3	Overfill Factor	Rank
Native Beach	CSE 2001 Composite	-	-	0.3	<1%	<u><</u> 20%	-	-
Old ODMDS	Old ODMDS 1	no	13,138,307	0.3	0.53	13.6	1.25	A
	Old ODMDS 2	no	1,098,108	0.32	0.2	13.6%	1.25	A
	Current ODMDS 1	no	4,233,612	0.3	0.52	13.3%	1.25	A
	O-192 Mound	no	785,270	0.36	0.13	19.6%	1.25	A
	O-14/O-47 Mound	no	566,028	0.38	0.23	19.8%	1.2	A
Current	O-15 Mound	no	355,920	0.24	0.07	10.1%	1.6	В
ODMDS	O-35 Mound	no	499,491	0.3	0.31	15.2%	1.3	В
	O-46 Mound	no	493,564	0.4	0.37	18.2%	1.25	В
	O-48 Mound	no	468,740	0.2	5.91	7.8%	2.25	C
	Remaining Mounds	no	~320,000	ı	1	-	ı	С
Area Y	Y-80 Mound	no	1,079,853	0.23	2.37	1.5%	2.50	C
Alea I	Y-120 Mound	no	379,675	0.4	2.04	1.5%	1.30	C

Table 5.1 – Characteristics, Ranking and Volume of Non-Renewable Potential Borrow Areas

In addition to the non-renewable borrow areas ranked above, renewable borrow areas may provide approximately 15,322,992 cy over 30 years or 25,538,320 over 50 years (see Table 5.2). When added to the "A" ranked non-renewable material outlined above, there may be a total of 35,144,317 cy available over 30 years, which meets the 30 year estimated need of 15.7-26.9 Mcy. The combined non-renewable and renewable borrow areas may provide 45,359,645 cy available over 50 years, which meets the estimated 50 year need of 26-44.8 Mcy.

	G 4	¥7 ¥	Dredging	30 yr Total	50 yr Total	
Area	Section	Volume	Frequency	volume	volume	
MHC Outer	Cutoff+Range A	400,000 cy	1 years	12,000,000	20,000,000	
Harbor	to STA 110	(assumed)	1 years	12,000,000	20,000,000	
Bogue Inlet	Inlet Relocation	847,664 cy	10 years	2,542,992	4,238,320	
Dogue Illiet	AIWW Crossing	65,000 cy	2.5 years	780,000	1,300,000	
		_	Totals:	15,322,992	25,538,320	

Table 5.2 – Volume of Renewable Potential Borrow Areas

6.0 References

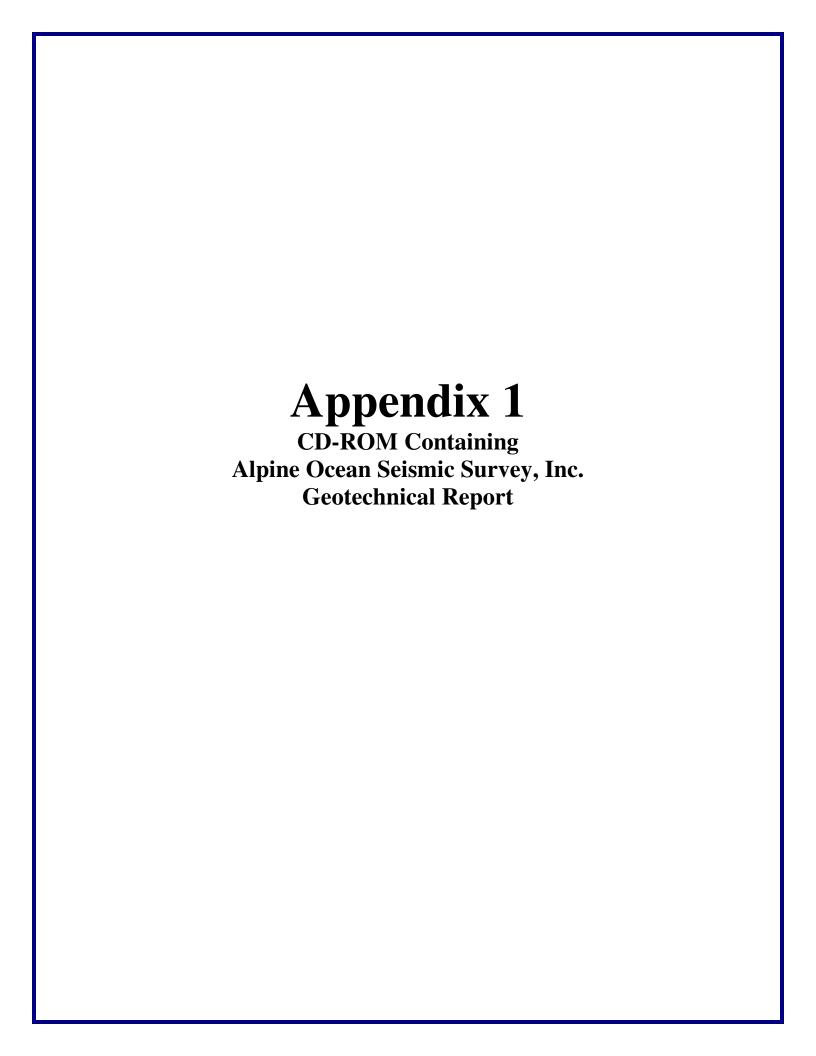
Carteret County Shore Protection Office, http://www.protectthebeach.com/.

- Cleary, W.J. and O.H. Pilkey, 1996. Environmental coastal geology: Cape Lookout to Cape Fear, North Carolina regional overview, in Carolina Geological Society Field Trip Guidebook for 1996 Annual Meeting, W.J. Cleary (ed.) p.73-107.
- CPE, March, 2004. Bogue Inlet Channel Erosion Response Project Final Environmental Impact Statement, Prepared for Town of Emerald Isle, North Carolina, by Coastal Planning & Engineering, Inc., Wilmington, North Carolina, March 2004.
- CSE, 2001. Final Environmental Assessment, Bogue Banks Beach Nourishment Project, Carteret County, North Carolina, Submitted in Conjunction with National Environmental Policy Act and Federal Review of Permit Application ID 200000362, Prepared for USACE, Carteret County, and Towns of Pine Knoll Shores, Indian Beach and Emerald Isle, by Coastal Science & Engineering, PLLC, Morehead City, North Carolina, October 2001.
- CSE, 2007. Final Report: Post-Ophelia FEMA Sand Replacement Project Bogue Banks, North Carolina, Prepared for Town of Emerald Isle, by Coastal Science & Engineering, May 2007.
- Elliot, E.A., 2010. Transitioning from a regressive to transgressive barrier: Discussing threshold response and the mechanisms of change, Geological Society of America Abstracts with Programs, Vol. 42, No. 5, p. 523.
- Fisher, J.J., 1962. Geomorphic Expression of Former Inlets along the Outer Banks of North Carolina. Unpub. M.S. Thesis, University of North Carolina, Chapel Hill, North Carolina, 120p.
- Geodynamics, 2011. Draft final descriptive report: Sub-bottom and seafloor surface surveys, Bogue Banks master nourishment plan, Carteret County, North Carolina, prepared for Moffat & Nichol, Inc.
- Hine, A.C. and S.W. Snyder, 1984. Coastal lithosome preservation: Evidence from the shoreface and inner continental shelf off Bogue Banks, North Carolina, Marine Geology, Vol. 63, Is. 1-4, p. 307-330.
- Kana, T.W., White, T.E., Forman, Jr., J.W., and P.A. McKee, 2002. Shoreline erosion along Bogue Banks, North Carolina, in Solutions to Coastal Disasters '02, L. Ewing and L. Wallendorf (eds.), American Society of Civil Engineers, p.561-575.
- NCDCM, 2009. North Carolina Division of Coastal Management: http://dcm2.enr.state.nc.us/Rules/current.htm

- Olsen, 2006. Regional Sand Transport Study: Morehead City Harbor Federal Navigation Project: Summary Report, Prepared for Carteret County Board of Commissioners, by Olsen Associates, Inc., Jacksonville, Florida, March 2006.
- USACE, 2001. Section 111 Report, Morehead City Harbor / Pine Knoll Shores, North Carolina, Prepared by United States Army Corps of Engineers, Wilmington District, Wilmington, North Carolina, June 2001.
- USACE, 2002. Coastal Engineering Manual. Engineer Manual 1110-2-1100, U.S. Army Corps of Engineers, Washington, D.C. (in 6 volumes).
- USACE, 2009. Morehead City Ocean Dredged Material Disposal Site, Site Management and Monitoring Plan, Prepared by United States Army Corps of Engineers Wilmington District and the Environmental Protection Agency, July 2009.
- USACE, 2010. Morehead City Harbor, Morehead City, North Carolina Dredged Material Management Plan, Alternative Formulation Briefing Preconference Material, Prepared by United States Army Corps of Engineers Wilmington District, Wilmington, North Carolina, May 2010.

USACE, 2012.

Wells, J.T. and J.E. McNinch, 2001. Reconstructing shoal and channel configuration in Beaufort Inlet: 300 years of change at the site of *Queen Anne's Revenge*, Southeastern Geology, Vol. 40, No.1, p. 11-18.



Final Report

Bogue Banks Master Beach Renourishment Plan

Prepared for:



Moffatt & Nichol 1616 East Millbrook Road, Suite 160 Raleigh, NC 27609



Carteret County Shore Protection Office P.O. Box 4297 Emerald Isle, NC 28594

Submitted by:



Alpine Ocean Seismic Survey, Inc. 155 Hudson Avenue Norwood, NJ 07648







Table of Contents

1.0 INTRODUCTION	
1.1 Areas of Interest	
2.0 EQUIPMENT AND PERSONNEL	3
2.1 KEY PERSONNEL 2.2 SURVEY VESSELS 2.2.1 R/V Shearwater 2.2.2 Tug and Spud Barge for Bogue Inlet Sampling 2.3 NAVIGATION DATA ACQUISITION AND LOGGING SYSTEM. 2.4 BATHYMETRY. 2.5 VIBRACORE 2.6 FIELD METHODS	
3.0 VIBRACORE DATA PRESENTATION Table of Figures	6
FIGURE 1. AREAS OF INTEREST	

Appendices

Appendix 1: Table of Core Sites

Appendix 2: Core Penetration Graphs

Appendix 3: Geological Logs
Appendix 4: Core Photographs

Appendix 5: Grain Size and Carbonate Analysis Results







1.0 Introduction

Alpine Ocean Seismic Survey, Inc (Alpine), under contract to Moffatt & Nichol and Carteret County, conducted vibracore sampling offshore of Bogue Banks, North Carolina. The majority of the work was conducted using an Alpine model 270 pneumatic vibracore configured to collect 20 foot long cores. The R/V Shearwater was used for deployment of the vibracore system. Five cores inside Bogue Inlet were subsequently collected using an Alpine Mini-Vibracore system configured to collect 10 foot long cores, as deployed off a local spud barge.

The purpose of the project was to collect sediment samples for use in characterization of four areas as potential borrow sites for periodic renourishment of Bogue Banks beaches.

1.1 Areas of Interest

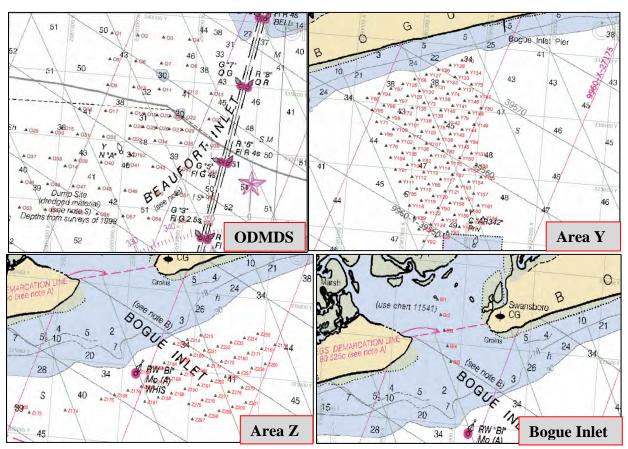


Figure 1. Areas of Interest.







1.2 Summary of Operations

12/9/2011 0615: R/V Shearwater underway to ODMDS site 0650: Conduct safety meeting 0742: Begin coring at ODMDS site 1724: Anchored offshore for night 12/10/2011 0712: Pull anchor and head to next ODMDS site 0720: Arrive on site, continue coring 1731: Anchored offshore for night 0650: Pull anchor and head to next ODMDS site 12/11/2011 0715: Arrive on site, continue coring 1700: Anchored offshore for night 12/12/2011 0730: Pull anchor and head to next ODMDS site 1400: Collect final ODMDS core, underway to dock 1546: Arrive at Portside Marina 12/13/2011 0700: Change vibracore heads, wait on delivery of new core pipes 12/14/2011 0600: Underway to Area Y 1030: Begin coring at Area Y 1100: Clients board R/V Shearwater to observe operations 1230: Clients leave R/V Shearwater 1620: Anchored offshore for night 0630: Pull Anchor and head to next Area Y site 12/15/2011 0715: Arrive on site, continue coring 1650: Anchored offshore for night 12/16/2011 0630: Pull Anchor and head to next Area Y site 0700: Arrive on site, continue coring 0945: Transiting to Area Z site 1000: Arrive on site, begin coring at Area Z site 1700: Anchored offshore for night 0645: Pull anchor and head to next Area Z site 12/17/2011 0725: Arrive on site, continue coring 1700: Anchored offshore for night 12/18/2011 0620: Pull anchor and head to next Area Z site 0645: Arrive on site, continue coring 0900: Return to Area Y for "optional" cores 0920: Begin coring at Area Y 1728: Anchored offshore for night

12/19/2011 0615: Pull Anchor and head to next Area Y "option" site







0725: Arrive on site, continue coring

1350: Client confirms enough cores collected, underway to dock

1700: Arrive at Portside Marina

12/20/2011 0900: Unloading cores, demobilization

1130: Shipping truck arrives, loading cores into truck

1600: Finished demobilization

Additional sampling in Shallow water inside Bogue Inlet

4/10/2012 0700: Meet boat and mobilize Mini-Vibracore & navigation gear

0950: Underway to first core site

1145: Commence coring at northern most site (BI-1) 1615: Finish collecting five cores- underway to dock

1800: At dock; demob equipment from boat

2.0 Equipment and Personnel

2.1 Key Personnel

Project Manager/Geologist Navigator/Geologist Vibracore Technician Chuck Dill
Stephanie Miller
Ovidio Hernandez, Steve Gentry,
Michael Telesco

2.2 Survey Vessels

2.2.1 R/V Shearwater

The primary vessel for the survey was the R/V Shearwater (Figure 2), which is 110 feet long by 39 feet wide. It has ample deck space with a strong winch and hydraulic crane for vibracoring. The R/V Shearwater is powered by two individually controlled hydraulic drives which rotate 360 degrees and have separate thrust control which allows the vessel to maneuver accurately and hold position within 20 to 30 feet of proposed core sites without anchoring.









Figure 2. R/V Shearwater

2.2.2 Tug and Spud Barge for Bogue Inlet Sampling

Alpine contracted with a local barge operator to supply a platform for use in collecting the five cores located in shallow water inside Bogue Inlet. The equipment used consisted of a 20x48 foot barge equipped with two spuds to hold it on site. The barge was propelled by a tug boat with two diesel engines, and that tug was attached to the stern of the barge. The Vibracore was deployed from the barge by using a crane. The DGPS system was set up in the tugboat and the offset to the front of the barge was included in the navigation software.

This barge and tug worked well in the shallow waters of the inlet, as the tug boat draft was less than 30 inches.

2.3 Navigation Data Acquisition and Logging System

The POS-MV GPS system was utilized with a separate antenna for reception of US Coast Guard differential corrections (New Bern, NC). The POS-MV was interfaced to a computer equipped with Hypack navigation software providing WGS-84 geographic position. The positioning information was converted into North Carolina (NAD 83) state plane coordinate positions in real time by Hypack. An offset was then applied to provide the position of the deployment of the Vibracore off the support vessel being used. The proposed core locations were entered into the navigation software for initial positioning of the Vibracore on the core location. The final position of each core was also provided to CoreLog by Hypack and that data was stored in the computer. This same system was used during both the primary offshore survey and the inshore sampling at Bogue Inlet.







2.4 Bathymetry

During the primary survey digital depths from the Odom echosounder were fed into Hypack and draft corrected in real time providing spot soundings at each core location. The data were later tide corrected to MLLW using the Beaufort, NC tide gauge (station ID 8656483) and were then offset to NAVD88 using the tidal datums at Atlantic Beach Triple S Pier (removed in 2000).

During the inshore shallow water survey, depths were obtained by use of a weighted measuring tape deployed near the bow of the barge adjacent to each core site. These depths were then corrected using the Beaufort tide gage data and including the time offset for Bogue Inlet, with the resultant depth offset to NAVD-88 as described above.

2.5 Vibracore

A self-contained freestanding Alpine model 270 pneumatic vibracore configured to take cores up to 20 feet in length was utilized for the offshore portions of the project. The vibracore consists of: an air-driven vibratory hammer assembly with an 8 inch diameter piston; an aluminum H-beam which acts as the vertical guide for the vibrator; a set of four steel support pads and legs which hold the beam upright on the sea bottom; a steel coring pipe; a cutting edge; a core retainer; a clear lexan core liner; and a penetrometer which records time and depth of penetration of the core pipe in to the sea floor. An air hose array provides passage of compressed air from the compressor on deck to drive the Vibracore.

For the inshore sampling in Bogue Inlet, the Alpine Mini-Vibracore was used. This system consists of an air driven vibratory hammer with a five inch diameter piston which is used to drive an aluminum core pipe into the sediments. The core pipe, which is 3.5 inches OD, uses a stainless steel cutting edge to hold the core liner and retainer in place during the coring operation. The core pipe was 10 feet in length.

2.6 Field Methods

The vessel was maneuvered to within 10 feet of a given core location based upon the position of the vibracore deployment location to the proposed core position in Hypack. Once the vessel was in a stable position, the vibracore was placed on the seafloor, water depth and position were recorded, and the core was conducted. If refusal was hit prior to achieving the desired core depth, the jetting method was used for a second run.

Once the vibracore reached the desired core depth or refusal as shown in CoreLog, the air power was turned off and the vibracore was returned to and secured on the side of the vessel. The sample was then removed, measured, marked, cut into 5 foot sections and sealed. A description of the core was taken at every 5 feet and a seafloor sample was collected and bagged for analysis by the client.

Once back at Alpine, the samples were split in half, photographed and described. A composite sample was collected from each significant sediment unit and sent to Coastal







Technology, Inc. in Melbourne, Florida for grain size analysis and carbonate content analysis.

3.0 Vibracore Data Presentation

Appendix 1 presents a summary of final core locations for all samples along with corrected water depth, penetration and recovered core length. Penetration graphs for each core are presented in Appendix 2 with the header of the graphs indicating the core number (runs only shown if required recovery was reached), date and time, location (NCSPCS 83), length of penetration and recovery and the raw and corrected (NAVD88) water depth. The USACE format geological logs for each core are provided in Appendix 3 with core photographs provided in Appendix 4. Grain size analysis and carbonate analysis data are provided in Appendix 5.







APPENDIX 1 TABLE OF CORE SITES







Core							W.D.
Name	Date	Easting	Northing	Unit	Penetration	Recovery	Corr.
01	12/11/2011	2688366	338253.5	Feet	18.66 ft	18.3 ft	53.59 ft
02	12/11/2011	2690366	338257	Feet	18.80 ft	19.6 ft	52.40 ft
03	12/11/2011	2692365	338252.1	Feet	18.61 ft	16.60 ft	48.13 ft
04	12/11/2011	2694365	338253	Feet	18.92 ft	16.75 ft	50.21 ft
05	12/11/2011	2688364	336249.4	Feet	17.78 ft	18.60 ft	47.63 ft
06	12/11/2011	2690365	336252.7	Feet	19.11 ft	19.00 ft	42.60 ft
07	12/11/2011	2692366	336256.4	Feet	15.73 ft	13.60 ft	38.84 ft
08	12/11/2011	2694364	336253	Feet	19.16 ft	19.00 ft	52.12 ft
09	12/12/2011	2688363	334253.5	Feet	19.82 ft	18.50 ft	49.87 ft
010	12/12/2011	2690364	334251.1	Feet	20.02 ft	15.00 ft	38.03 ft
010	12/12/2011	2690367	334250	Feet	8.85 ft	6.20 ft	38.24 ft
011	12/12/2011	2692363	334252.6	Feet	15.25 ft	17.00 ft	37.59 ft
012	12/12/2011	2694365	334250.7	Feet	19.06 ft	18.00 ft	46.61 ft
013	12/12/2011	2696360	334251	Feet	18.75 ft	14.10 ft	47.29 ft
013	12/12/2011	2696362	334251.3	Feet	18.93 ft	0.00 ft	46.72 ft
014	12/12/2011	2685622	327738.9	Feet	17.50 ft	11.92 ft	42.65 ft
015	12/12/2011	2685079	330634.9	Feet	20.01 ft	12.25 ft	41.32 ft
016	12/12/2011	2686364	332253.3	Feet	19.13 ft	18.20 ft	48.52 ft
017	12/12/2011	2688366	332247.9	Feet	18.50 ft	17.8 ft	49.65 ft
018	12/12/2011	2690367	332252.7	Feet	20.02 ft	17.80 ft	44.07 ft
019	12/11/2011	2691363	332243.7	Feet	19.25 ft	15.00 ft	36.09 ft
019	12/11/2011	2691366	332250.3	Feet	10.25 ft	8.50 ft	36.08 ft
020	12/11/2011	2692365	332250.4	Feet	15.74 ft	13.83 ft	36.43 ft
021	12/11/2011	2693364	332249.3	Feet	17.61 ft	15.92 ft	37.05 ft
022	12/10/2011	2694364	332253.7	Feet	19.14 ft	14.00 ft	32.74 ft
022	12/10/2011	2694364	332252.8	Feet	8.63 ft	6.83 ft	36.80 ft
023	12/10/2011	2696365	332253	Feet	19.73 ft	17.17 ft	47.80 ft
024	12/12/2011	2690362	331252.2	Feet	18.48 ft	13.75 ft	49.27 ft
025	12/11/2011	2691367	331253.5	Feet	19.99 ft	11.50 ft	41.97 ft
025	12/11/2011	2691364	331253.1	Feet	10.14 ft	8.00 ft	41.97 ft
026	12/11/2011	2692365	331247.3	Feet	20.04 ft	13.80 ft	45.70 ft
027	12/11/2011	2693366	331253.5	Feet	19.42 ft	16.75 ft	43.63 ft
028	12/10/2011	2694359	331246.1	Feet	19.17 ft	12.6 ft	42.72 ft
029	12/10/2011	2682364	330251.9	Feet	18.94 ft	15.70 ft	51.90 ft
030	12/10/2011	2684366	330251.1	Feet	18.51 ft	18.80 ft	51.03 ft
031	12/10/2011	2686364	330253.4	Feet	19.27 ft	17.90 ft	53.64 ft
032	12/10/2011	2688366	330251.3	Feet	18.67 ft	17.50 ft	51.12 ft
033	12/10/2011	2690363	330252.2	Feet	16.33 ft	18.20 ft	63.18 ft
034	12/10/2011	2692365	330251.8	Feet	18.65 ft	12.50 ft	50.17 ft
035	12/10/2011	2694363	330254	Feet	19.18 ft	11.90 ft	49.35 ft







Core Name	Date	Easting	Northing	Unit	Penetration	Recovery	W.D. Corr.
036	12/10/2011	2696365	330251.5	Feet	19.46 ft	15.63 ft	49.13 ft
037	12/10/2011	2682364	328255.2	Feet	19.06 ft	14.90 ft	50.78 ft
038	12/10/2011	2684368	328255.7	Feet	20.03 ft	13.80 ft	46.62 ft
039	12/10/2011	2686365	328252.6	Feet	18.15 ft	17.75 ft	53.79 ft
040	12/10/2011	2688362	328251.4	Feet	18.36 ft	18.80 ft	53.73 ft
041	12/10/2011	2690364	328249.4	Feet	19.42 ft	16.25 ft	45.91 ft
042	12/10/2011	2692366	328247	Feet	18.70 ft	13.80 ft	52.44 ft
043	12/10/2011	2694364	328249.5	Feet	18.67 ft	14.40 ft	48.40 ft
044	12/10/2011	2696367	328252.3	Feet	18.57 ft	14.30 ft	53.27 ft
045	12/9/2011	2682365	326254.2	Feet	19.00 ft	19.00 ft	54.25 ft
046	12/9/2011	2684367	326253	Feet	19.38 ft	15.25 ft	47.29 ft
047	12/9/2011	2686366	326253.6	Feet	20.02 ft	18.00 ft	47.39 ft
048	12/9/2011	2688363	326257.2	Feet	20.03 ft	0.00 ft	47.15 ft
048	12/9/2011	2688363	326256.6	Feet	20.03 ft	8.83 ft	46.58 ft
049	12/9/2011	2690351	326260.7	Feet	16.35 ft	16.50 ft	54.12 ft
O50	12/9/2011	2692364	326252.1	Feet	19.28 ft	19.80 ft	55.90 ft
051	12/9/2011	2694364	326252.9	Feet	19.32 ft	17.33 ft	52.67 ft
052	12/9/2011	2696365	326251.6	Feet	19.17 ft	18.33 ft	54.69 ft
053	12/9/2011	2682357	324251	Feet	19.10 ft	17.50 ft	55.07 ft
054	12/9/2011	2684362	324250.9	Feet	18.61 ft	19.00 ft	55.11 ft
055	12/9/2011	2686362	324249	Feet	18.29 ft	19.20 ft	55.19 ft
056	12/9/2011	2688369	324253	Feet	18.48 ft	16.75 ft	57.69 ft
057	12/9/2011	2690363	324250.4	Feet	17.97 ft	18.00 ft	54.70 ft
O58	12/9/2011	2692364	324253.9	Feet	11.04 ft	9.70 ft	55.66 ft
O59	12/9/2011	2694361	324250.4	Feet	18.45 ft	18.20 ft	54.91 ft
O60	12/9/2011	2696356	324248.3	Feet	16.07 ft	13.10 ft	56.16 ft
0192	12/11/2011	2690549	329052.1	Feet	16.20 ft	17.30 ft	41.66 ft







Core Name	Date	Easting	Northing	Unit	Penetration	Recovery	W.D. Corr.
Y66	12/15/2011	2581068	330291	Feet	11.64 ft	10.20 ft	40.26 ft
Y67	12/15/2011	2582861	331179.8	Feet	16.37 ft	15.00 ft	39.90 ft
Y68	12/16/2011	2584653	332068.2	Feet	17.22 ft	17.50 ft	40.55 ft
Y69	12/16/2011	2586446	332954.7	Feet	17.39 ft	17.90 ft	40.36 ft
Y70	12/14/2011	2588236	333843.2	Feet	19.51 ft	19.20 ft	35.91 ft
Y71	12/15/2011	2581959	328498.1	Feet	12.53 ft	15.5 ft	45.70 ft
Y72	12/15/2011	2583749	329384.7	Feet	11.83 ft	13.50 ft	46.30 ft
Y73	12/16/2011	2585541	330274.7	Feet	16.21 ft	16.25 ft	46.20 ft
Y74	12/16/2011	2587334	331159.7	Feet	17.20 ft	19.10 ft	48.83 ft
Y75	12/14/2011	2589123	332046.5	Feet	16.91 ft	19.20 ft	47.79 ft
Y76	12/15/2011	2582843	326707.4	Feet	16.33 ft	15.10 ft	49.58 ft
Y77	12/15/2011	2584636	327594.7	Feet	15.08 ft	20.10 ft	47.78 ft
Y78	12/16/2011	2586423	328481	Feet	14.16 ft	16.90 ft	48.52 ft
Y79	12/14/2011	2588220	329370	Feet	13.89 ft	19.50 ft	48.67 ft
Y80	12/14/2011	2590015	330255.7	Feet	15.94 ft	19.40 ft	48.47 ft
Y81	12/15/2011	2583730	324915.7	Feet	16.06 ft	19.40 ft	50.65 ft
Y82	12/15/2011	2585524	325799.9	Feet	11.64 ft	14.60 ft	48.88 ft
Y83	12/16/2011	2587317	326689.7	Feet	13.05 ft	19.80 ft	51.46 ft
Y84	12/14/2011	2589108	327575.4	Feet	14.42 ft	19.70 ft	51.30 ft
Y85	12/15/2011	2584622	323122.1	Feet	15.01 ft	18.20 ft	51.37 ft
Y86	12/15/2011	2586413	324010.1	Feet	13.18 ft	18.10 ft	51.04 ft
Y87	12/16/2011	2588205	324899.2	Feet	13.06 ft	18.10 ft	52.49 ft
Y88	12/14/2011	2589997	325785.6	Feet	8.35 ft	12.50 ft	51.40 ft
Y89	12/15/2011	2585512	321327.7	Feet	11.96 ft	16.10 ft	51.85 ft
Y90	12/15/2011	2587301	322214.3	Feet	14.06 ft	19.30 ft	53.17 ft
Y91	12/15/2011	2589099	323108.1	Feet	14.03 ft	20.00 ft	52.48 ft
Y92	12/15/2011	2586399	319538.9	Feet	16.02 ft	20.00 ft	54.21 ft
Y93	12/15/2011	2588189	320426.9	Feet	11.76 ft	15.70 ft	53.52 ft
Y94	12/18/2011	2581965	330730.1	Feet	16.26 ft	16.90 ft	40.71 ft
Y95	12/18/2011	2581514	329387.4	Feet	17.07 ft	17.17 ft	43.75 ft
Y96	12/18/2011	2582408	329835.8	Feet	12.16 ft	13.00 ft	43.73 ft
Y97	12/18/2011	2583303	330281.6	Feet	15.97 ft	17.90 ft	49.07 ft
Y98	12/18/2011	2582849	328940.6	Feet	16.09 ft	19.10 ft	45.34 ft
Y101	12/18/2011	2584195	328487.1	Feet	16.04 ft	18.20 ft	49.89 ft
Y103	12/19/2011	2585533	328038.1	Feet	16.28 ft	20.00 ft	48.63 ft
Y107	12/19/2011	2585977	327138.4	Feet	10.10 ft	15.00 ft	51.06 ft
Y110	12/19/2011	2586423	326244.5	Feet	14.25 ft	18.50 ft	51.24 ft
Y114	12/19/2011	2586864	325349.2	Feet	10.26 ft	14.00 ft	52.10 ft
Y115	12/19/2011	2587761	325794.7	Feet	14.22 ft	18.30 ft	52.25 ft
Y119	12/19/2011	2585965	322670.2	Feet	14.20 ft	18.30 ft	51.85 ft







Core							
Name	Date	Easting	Northing	Unit	Penetration	Recovery	W.D. Corr.
Y120	12/18/2011	2586858	323115.1	Feet	16.19 ft	18.00 ft	51.76 ft
Y121	12/19/2011	2587756	323559.5	Feet	10.78 ft	13.10 ft	51.44 ft
Y122	12/18/2011	2586406	321774.2	Feet	15.76 ft	18.50 ft	51.55 ft
Y126	12/18/2011	2583757	331622.8	Feet	16.20 ft	18.2 ft	41.12 ft
Y129	12/18/2011	2584199	330723.8	Feet	16.18 ft	10.50 ft	44.67 ft
Y132	12/19/2011	2586888	332058.4	Feet	16.16 ft	17.50 ft	44.69 ft
Y135	12/18/2011	2584643	329827	Feet	16.02 ft	17.00 ft	47.22 ft
Y136	12/19/2011	2586438	330719.8	Feet	15.97 ft	18.00 ft	47.59 ft
Y141	12/19/2011	2587775	330265.1	Feet	11.92 ft	12.70 ft	48.36 ft
Y153	12/19/2011	2588650	324001.2	Feet	14.18 ft	17.00 ft	51.85 ft
Y154	12/19/2011	2589546	324444.9	Feet	14.17 ft	16.50 ft	51.33 ft
Y156	12/18/2011	2588204	322660.9	Feet	14.78 ft	17.50 ft	52.05 ft
Y157	12/18/2011	2589989	323550.8	Feet	10.96 ft	13.20 ft	52.80 ft
Y158	12/18/2011	2587745	321321.6	Feet	15.02 ft	18.50 ft	52.85 ft
Y160	12/18/2011	2589536	322210.1	Feet	15.15 ft	17.00 ft	52.31 ft







Core							W.D.
Name	Date	Easting	Northing	Unit	Penetration	Recovery	Corr.
Z165	12/16/2011	2562509	321709.8	Feet	15.07 ft	14.17 ft	42.57 ft
Z166	12/16/2011	2569560	323032.7	Feet	15.08 ft	17.80 ft	44.01 ft
Z167	12/16/2011	2571435	323719.2	Feet	16.42 ft	15.58 ft	42.66 ft
Z168	12/16/2011	2573317	324420.6	Feet	14.65 ft	16.00 ft	44.92 ft
Z169	12/16/2011	2575196	325102.7	Feet	15.13 ft	17.20 ft	45.59 ft
Z170	12/16/2011	2577076	325791.6	Feet	16.01 ft	17.50 ft	44.38 ft
Z171	12/16/2011	2578952	326487.8	Feet	16.00 ft	17.70 ft	45.42 ft
Z172	12/16/2011	2580828	327167.9	Feet	16.56 ft	19.00 ft	49.32 ft
Z173	12/16/2011	2563518	321406.6	Feet	16.58 ft	17.50 ft	45.85 ft
Z174	12/16/2011	2566101	321757.3	Feet	16.24 ft	18.30 ft	45.09 ft
Z175	12/16/2011	2568624	322687.4	Feet	15.37 ft	13.83 ft	44.07 ft
Z176	12/16/2011	2570500	323378.8	Feet	13.74 ft	18.00 ft	42.21 ft
Z177	12/16/2011	2572380	324063.6	Feet	16.16 ft	20.00 ft	42.97 ft
Z178	12/16/2011	2574257	324762.4	Feet	16.07 ft	20.00 ft	43.53 ft
Z179	12/16/2011	2576137	325450.3	Feet	10.57 ft	10.08 ft	43.69 ft
Z180	12/17/2011	25780137	326133.3	Feet	9.90 ft	9.50 ft	45.50 ft
Z181	12/17/2011	2579891	326828.3	Feet	16.63 ft	16.80 ft	45.91 ft
Z185	12/17/2011	2573912	325692	Feet	16.24 ft	19.33 ft	41.12 ft
Z186	12/17/2011	2574849	326037.8	Feet	14.62 ft	15.42 ft	41.44 ft
Z191	12/17/2011	2575538	324167.1	Feet	12.73 ft	15.33 ft	47.56 ft
Z193	12/16/2011	2560083	322745.3	Feet	17.38 ft	17.00 ft	35.73 ft
Z200	12/16/2011	2561367	322152.4	Feet	17.94 ft	17.25 ft	39.34 ft
Z213	12/17/2011	2573569	326629	Feet	14.98 ft	13.50 ft	34.13 ft
Z214	12/17/2011	2574505	326974.5	Feet	16.89 ft	16.80 ft	36.53 ft
Z215	12/17/2011	2575444	327325.2	Feet	17.64 ft	17.17 ft	32.13 ft
Z231	12/17/2011	2575789	326387.5	Feet	12.49 ft	10.33 ft	42.46 ft
Z232	12/17/2011	2576728	326732.5		14.12 ft	15.17 ft	43.64 ft
Z233	12/17/2011	2577666	327071.9	Feet	17.04 ft	17.92 ft	41.37 ft
Z234	12/17/2011	2578603	327418.9	Feet	16.16 ft	14.58 ft	42. 71 ft
Z235	12/17/2011	2579546	327766.4	Feet	16.06 ft	18.17 ft	44.80 ft
Z255	12/17/2011	2576481	324501.4	Feet	13.40 ft	15.83 ft	49.19 ft
Z256	12/17/2011	2577422	324854.6	Feet	16.01 ft	17.30 ft	46.26 ft
Z257	12/17/2011	2578360	325187.1	Feet	17.03 ft	19.10 ft	46.82 ft
Z258	12/17/2011	2579295	325544.5	Feet	15.01 ft	18.42 ft	46.84 ft
Z259	12/17/2011	2580234	325889.1	Feet	16.04 ft	18.33 ft	47.50 ft
Z276	12/18/2011	2575886	323220.7	Feet	13.97 ft	18.33 ft	47.01 ft
Z277	12/17/2011	2576823	323571	Feet	18.14 ft	13.60 ft	48.78 ft
Z277	12/17/2011	2576824	323569	Feet	7.04 ft	7.00 ft	48.00 ft
Z278	12/17/2011	2577765	323912.6	Feet	15.52 ft	20.00 ft	48.03 ft
Z279	12/17/2011	2578703	324259.8	Feet	16.04 ft	14.92 ft	46.97 ft







Core							W.D.
Name	Date	Easting	Northing	Unit	Penetration	Recovery	Corr
Z180	12/17/2011	2578013	326133.3	Feet	9.90 ft	9.50 ft	45.50 ft
Z181	12/17/2011	2579891	326828.3	Feet	16.63 ft	16.80 ft	45.91 ft
Z185	12/17/2011	2573912	325692	Feet	16.24 ft	19.33 ft	41.12 ft
Z186	12/17/2011	2574849	326037.8	Feet	14.62 ft	15.42 ft	41.44 ft
Z191	12/17/2011	2575538	324167.1	Feet	12.73 ft	15.33 ft	47.56 ft
Z193	12/16/2011	2560083	322745.3	Feet	17.38 ft	17.00 ft	35.73 ft
Z200	12/16/2011	2561367	322152.4	Feet	17.94 ft	17.25 ft	39.34 ft
Z213	12/17/2011	2573569	326629	Feet	14.98 ft	13.50 ft	34.13 ft
Z214	12/17/2011	2574505	326974.5	Feet	16.89 ft	16.80 ft	36.53 ft
Z215	12/17/2011	2575444	327325.2	Feet	17.64 ft	17.17 ft	32.13 ft
Z231	12/17/2011	2575789	326387.5	Feet	12.49 ft	10.33 ft	42.46 ft
Z232	12/17/2011	2576728	326732.5	Feet	14.12 ft	15.17 ft	43.64 ft
Z233	12/17/2011	2577666	327071.9	Feet	17.04 ft	17.92 ft	41.37 ft
Z234	12/17/2011	2578603	327418.9	Feet	16.16 ft	14.58 ft	42. 71 ft
Z235	12/17/2011	2579546	327766.4	Feet	16.06 ft	18.17 ft	44.80 ft
Z255	12/17/2011	2576481	324501.4	Feet	13.40 ft	15.83 ft	49.19 ft
Z256	12/17/2011	2577422	324854.6	Feet	16.01 ft	17.30 ft	46.26 ft
Z257	12/17/2011	2578360	325187.1	Feet	17.03 ft	19.10 ft	46.82 ft
Z258	12/17/2011	2579295	325544.5	Feet	15.01 ft	18.42 ft	46.84 ft
Z259	12/17/2011	2580234	325889.1	Feet	16.04 ft	18.33 ft	47.50 ft
Z276	12/18/2011	2575886	323220.7	Feet	13.97 ft	18.33 ft	47.01 ft
Z277	12/17/2011	2576823	323571	Feet	18.14 ft	13.60 ft	48.78 ft
Z277	12/17/2011	2576824	323569	Feet	7.04 ft	7.00 ft	48.00 ft
Z278	12/17/2011	2577765	323912.6	Feet	15.52 ft	20.00 ft	48.03 ft
Z279	12/17/2011	2578703	324259.8	Feet	16.04 ft	14.92 ft	46.97 ft
Z298	12/18/2011	2576231	322284.7	Feet	14.02 ft	16.50 ft	46.91 ft
Z299	12/18/2011	2577167	322630.3	Feet	14.27 ft	18.50 ft	49.41 ft
Z300	12/18/2011	2578107	322970.3	Feet	16.24 ft	16.92 ft	49.74 ft
Z301	12/18/2011	2579045	323320.2	Feet	16.60 ft	18.00 ft	47.84 ft







Core							W.D.
Name	Date	Easting	Northing	Unit	Penetration	Recovery	Corr.
BI-1	4/10/2012	2568064	332679	Feet	5.21 ft	5.20 ft	4.5 ft
BI-2	4/10/2012	2568478	331313	Feet	5.92 ft	5.20 ft	5.2 ft
BI-3	4/10/2012	2568710	330774	Feet	6.20 ft	5.67 ft	4.9 ft
BI-4	4/10/2012	2569033	329825	Feet	4.91 ft	5.20 ft	6.6 ft
BI-5	4/10/2012	2569357	328880	Feet	5.55 ft	5.00 ft	6.6 ft







APPENDIX 2 CORE PENETRATION GRAPHS

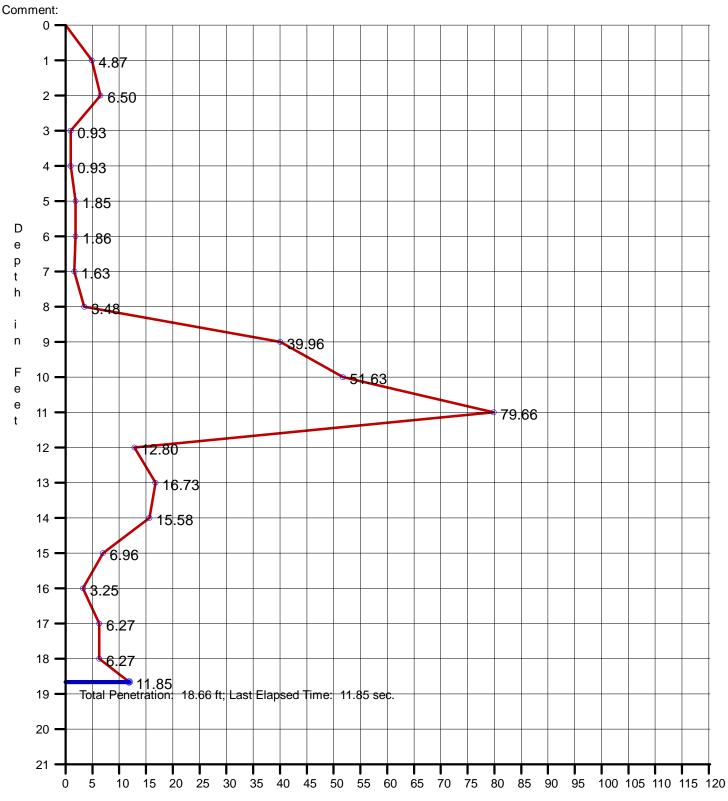
Penetration Graph for Core No. O1, Run 1

Date: 12/11/2011 Start Time: 2:37:06 PM End Time: 2:41:39 PM

Penetration: 18.66 ft Recovery: 18.3 ft W. D. Corrected: 53.59 ft Easting: 2688365.88 Northing: 338253.45 Coord. System: NCSPCS 83 Long: 76°42'38.6940"W Lat: 034°39'27.3300"N Datum: NAVD 88

W. D. Raw: 51.55 ft





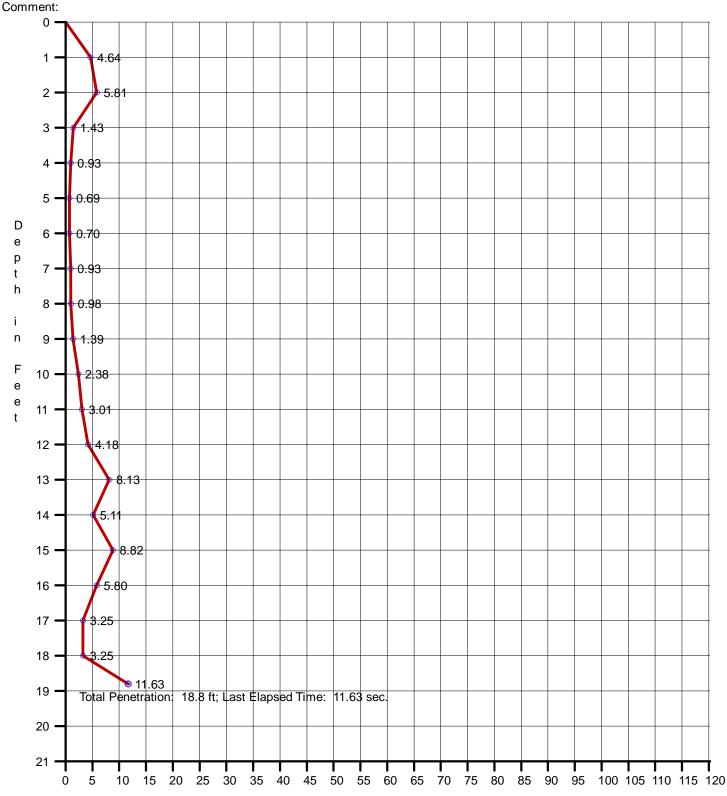
Penetration Graph for Core No. O2, Run 1

Date: 12/11/2011 Start Time: 2:01:15 PM End Time: 2:02:28 PM

Penetration: 18.80 ft Recovery: 19.6 ft W. D. Corrected: 52.40 ft Easting: 2690365.61 Northing: 338257.02 Coord. System: NCSPCS 83 Long: 76°42'14.7600"W Lat: 034°39'26.9100"N Datum: NAVD 88

W. D. Raw: 50.46 ft





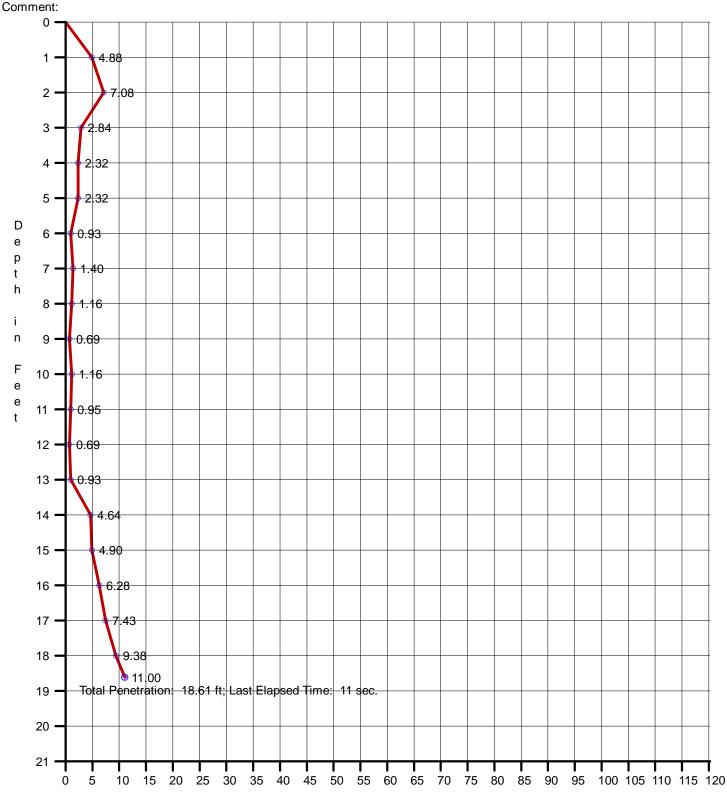
Penetration Graph for Core No. O3, Run 1

Date: 12/11/2011 Start Time: 1:34:41 PM End Time: 1:35:52 PM

Penetration: 18.61 ft Recovery: 16.60 ft W. D. Corrected: 48.13 ft Easting: 2692365.35 Northing: 338252.14 Coord. System: NCSPCS 83 Long: 76°41'50.8260"W Lat: 034°39'26.4000"N Datum: NAVD 88

W. D. Raw: 46.30 ft





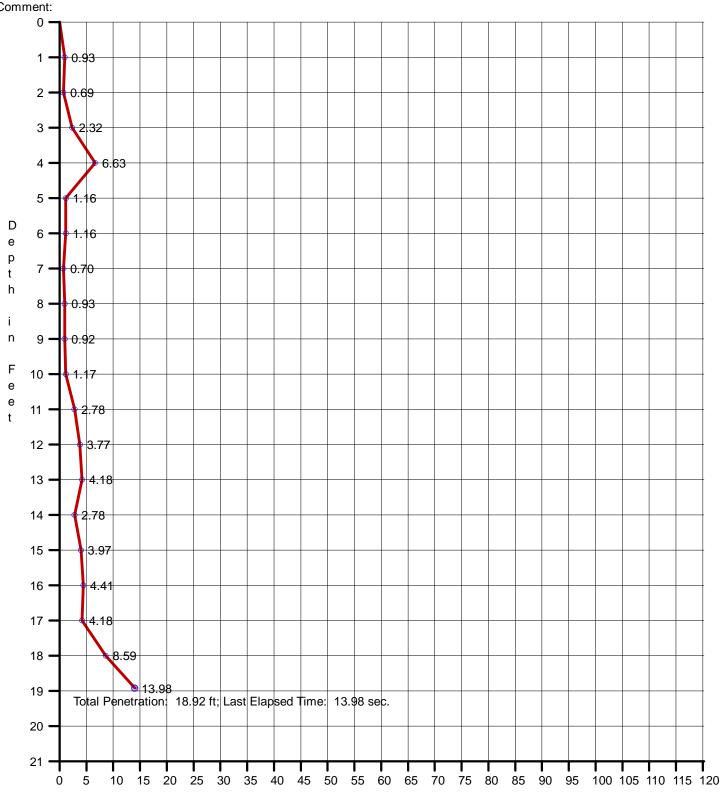
Penetration Graph for Core No. O4, Run 1

Date: 12/11/2011 Start Time: 1:12:17 PM End Time: 1:13:22 PM

Penetration: 18.92 ft Recovery: 16.75 ft W. D. Corrected: 50.21 ft Easting: 2694365.27 Northing: 338252.98 Coord. System: NCSPCS 83 Long: 76°41'26.8920"W Lat: 034°39'25.9500"N Datum: NAVD 88

W. D. Raw: 48.54 ft





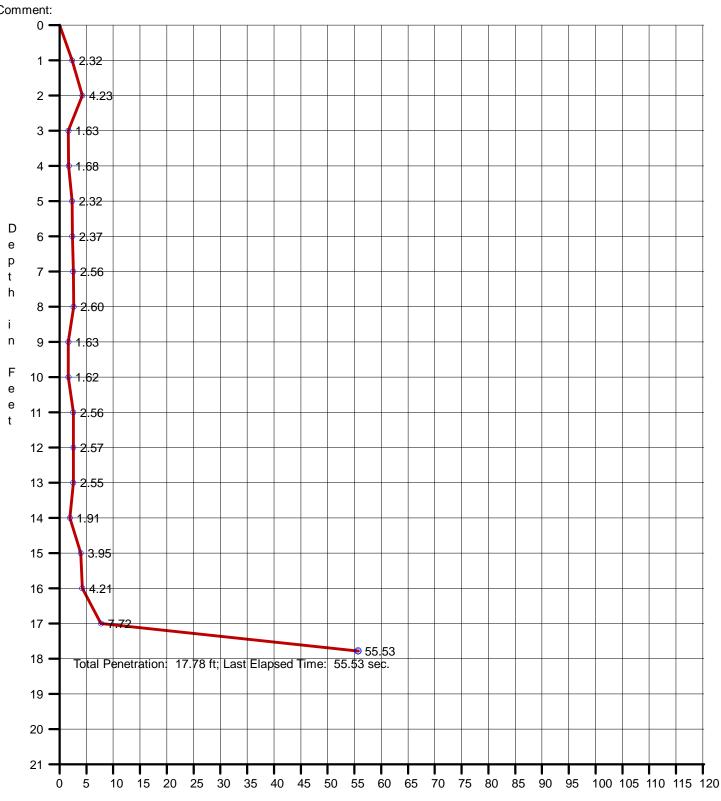
Penetration Graph for Core No. O5, Run 1

Date: 12/11/2011 Start Time: 3:10:13 PM End Time: 3:12:01 PM

Penetration: 17.78 ft Recovery: 18.60 ft W. D. Corrected: 47.63 ft Easting: 2688363.92 Northing: 336249.42 Coord. System: NCSPCS 83 Long: 76°42'39.2700"W Lat: 034°39'07.5120"N Datum: NAVD 88

W. D. Raw: 45.60 ft





Penetration Graph for Core No. O6, Run 1

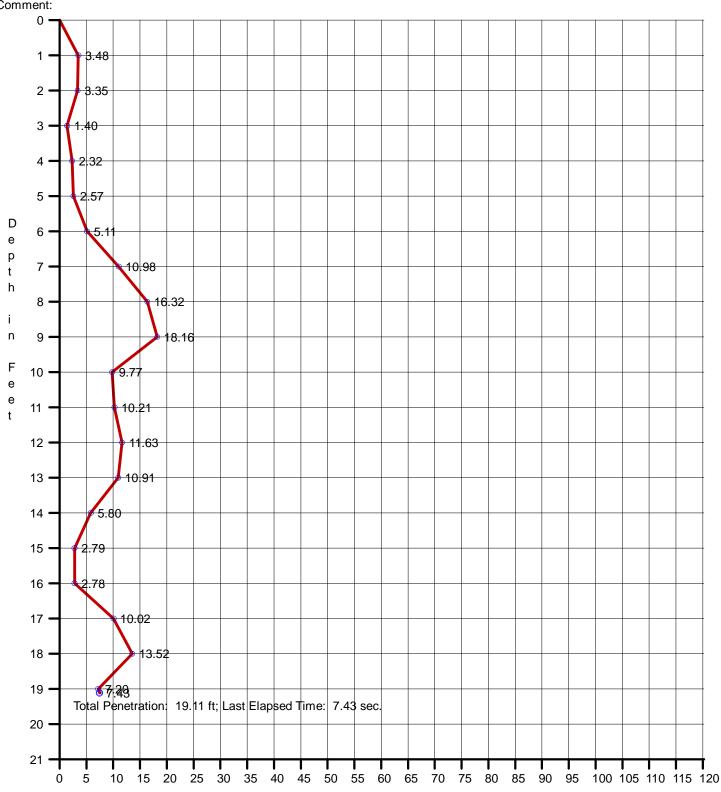
Date: 12/11/2011 Start Time: 3:37:23 PM End Time: 3:40:02 PM

Penetration: 19.11 ft Recovery: 19.00 ft W. D. Corrected: 42.60 ft

W. D. Raw: 40.75 ft

Easting: 2690364.77 Northing: 336252.68 Coord. System: NCSPCS 83 Long: 76°42'15.3240"W Lat: 034°39'07.0860"N Datum: NAVD 88

Comment:

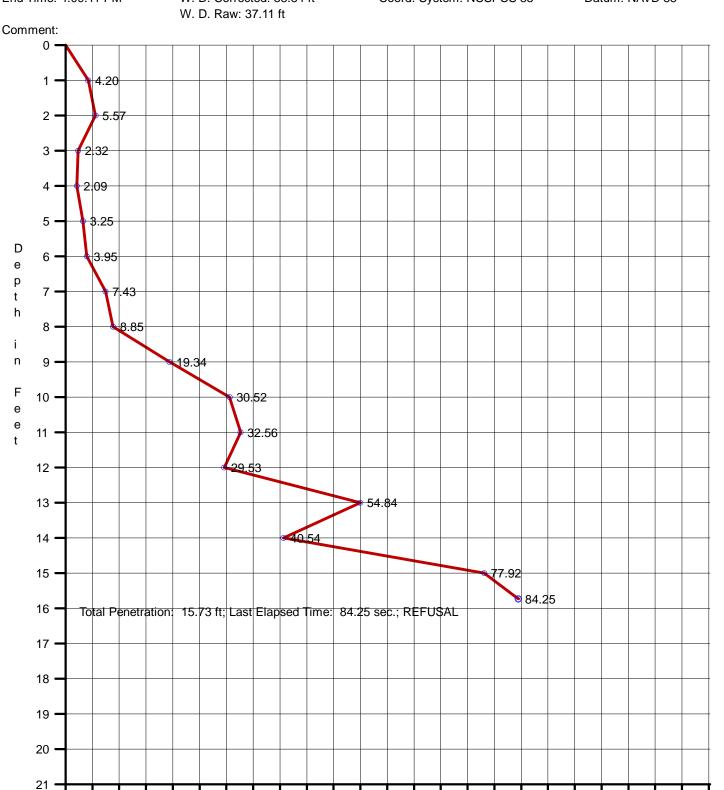


Penetration Graph for Core No. 07, Run 1

Date: 12/11/2011 Start Time: 4:02:23 PM End Time: 4:09:11 PM

Penetration: 15.73 ft Recovery: 13.60 ft W. D. Corrected: 38.84 ft Easting: 2692366.01 Northing: 336256.38 Coord. System: NCSPCS 83 Long: 76°41'51.3720"W Lat: 034°39'06.6660"N

Datum: NAVD 88



Time in Seconds

55 60 65 70 75 80 85 90 95 100 105 110 115 120

45 50

30

20 25

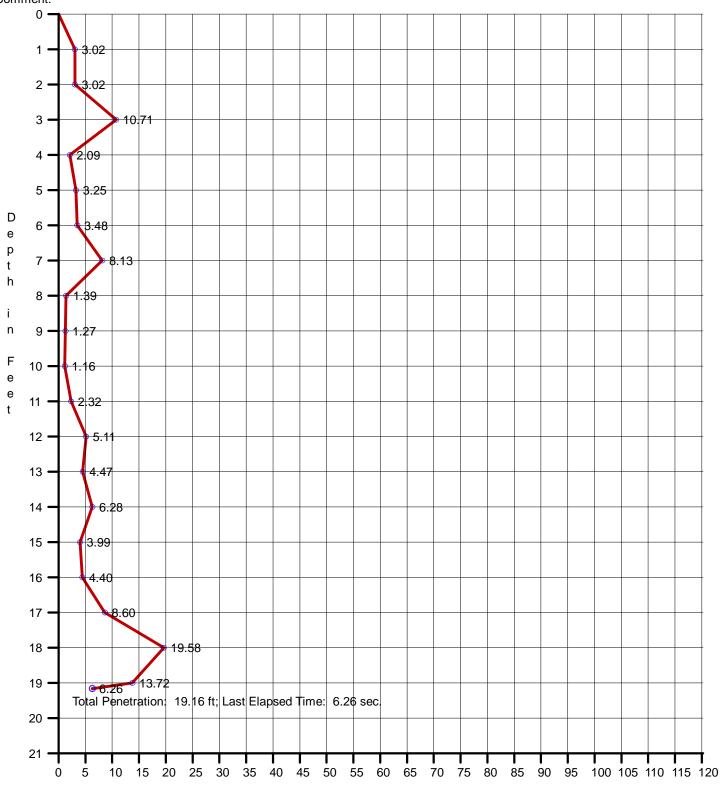
10 15 40

35

Penetration Graph for Core No. 08, Run 1

Date: 12/11/2011 Start Time: 4:32:24 PM End Time: 4:35:22 PM Penetration: 19.16 ft Recovery: 19.00 ft W. D. Corrected: 52.12 ft W. D. Raw: 50.76 ft Easting: 2694363.61 Northing: 336253.01 Coord. System: NCSPCS 83 Long: 76°41'27.4680"W Lat: 034°39'06.1740"N Datum: NAVD 88

Comment:



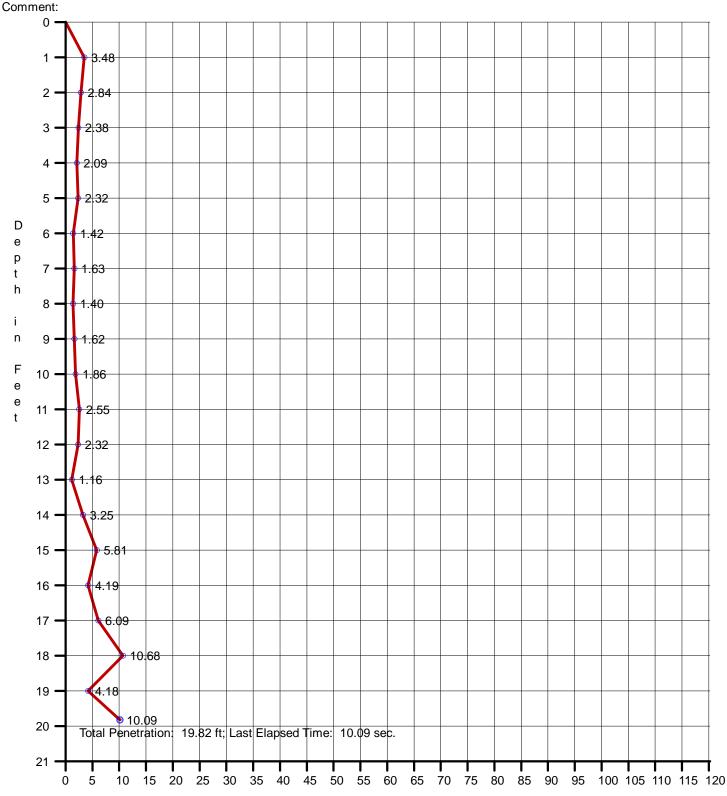
Penetration Graph for Core No. 09, Run 1

Date: 12/12/2011 Start Time: 10:29:38 AM End Time: 10:30:50 AM

Penetration: 19.82 ft Recovery: 18.50 ft W. D. Corrected: 49.87 ft W. D. Raw: 50.47 ft

Easting: 2688362.57 Northing: 334253.48 Coord. System: NCSPCS 83 Long: 76°42'39.8340"W Lat: 034°38'47.7720"N

Datum: NAVD 88



Penetration Graph for Core No. O10, Run 1

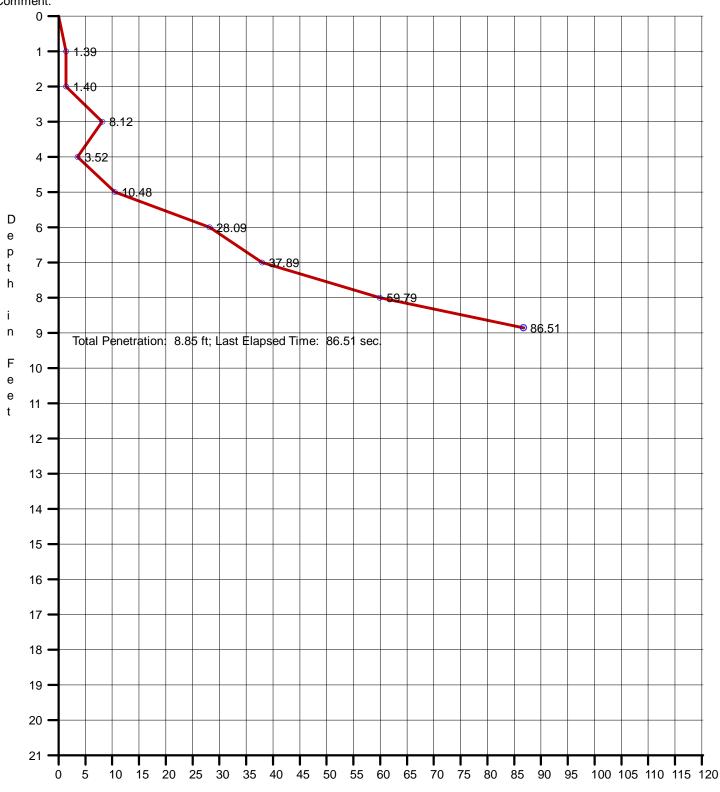
Date: 12/12/2011 Start Time: 9:23:14 AM End Time: 9:27:11 AM

Penetration: 8.85 ft Recovery: 6.20 ft W. D. Corrected: 38.24 ft

W. D. Raw: 39.54 ft

Easting: 2690366.91 Northing: 334249.95 Coord. System: NCSPCS 83 Long: 76°42'15.8520"W Lat: 034°38'47.2800"N Datum: NAVD 88

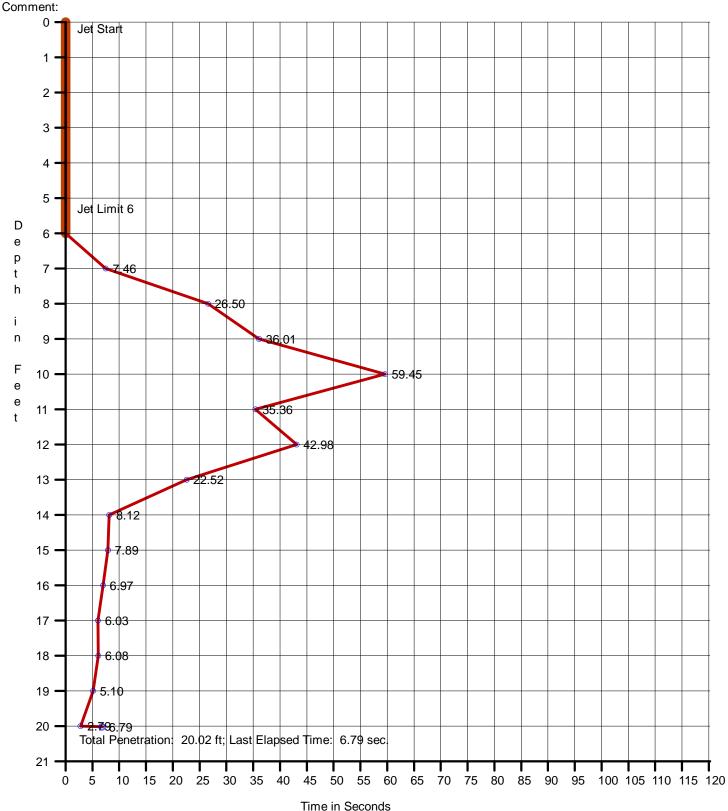
Comment:



Penetration Graph for Core No. O10, Run 2

Date: 12/12/2011 Start Time: 10:00:52 AM End Time: 10:06:36 AM Penetration: 20.02 ft Recovery: 15.00 ft W. D. Corrected: 38.03 ft Easting: 2690363.71 Northing: 334251.14 Coord. System: NCSPCS 83 Long: 76°42'15.8880"W Lat: 034°38'47.2920"N Datum: NAVD 88

W. D. Raw: 38.94 ft



Penetration Graph for Core No. O11, Run 1

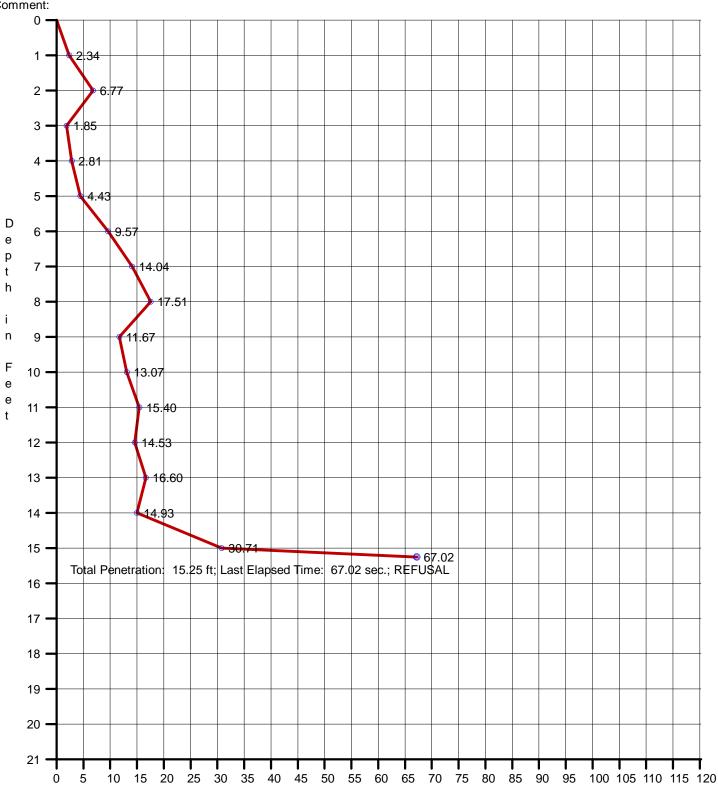
Date: 12/12/2011 Start Time: 9:01:35 AM End Time: 9:05:39 AM

Penetration: 15.25 ft Recovery: 17.00 ft W. D. Corrected: 37.59 ft

W. D. Raw: 39.12 ft

Easting: 2692362.90 Northing: 334252.57 Coord. System: NCSPCS 83 Long: 76°41'51.9660"W Lat: 034°38'46.8480"N Datum: NAVD 88

Comment:



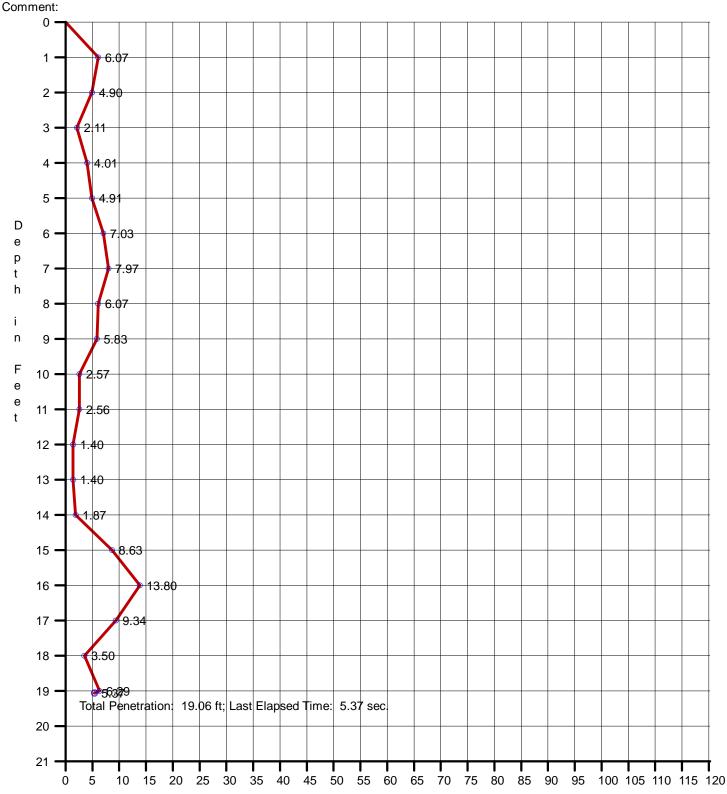
Penetration Graph for Core No. O12, Run 1

Date: 12/12/2011 Start Time: 8:39:18 AM End Time: 8:41:04 AM

Penetration: 19.06 ft Recovery: 18.00 ft W. D. Corrected: 46.61 ft W. D. Raw: 48.10 ft

Easting: 2694365.04 Northing: 334250.71 Coord. System: NCSPCS 83 Long; 76°41'28.0080"W Lat: 034°38'46.3740"N

Datum: NAVD 88



Penetration Graph for Core No. O13, Run 2

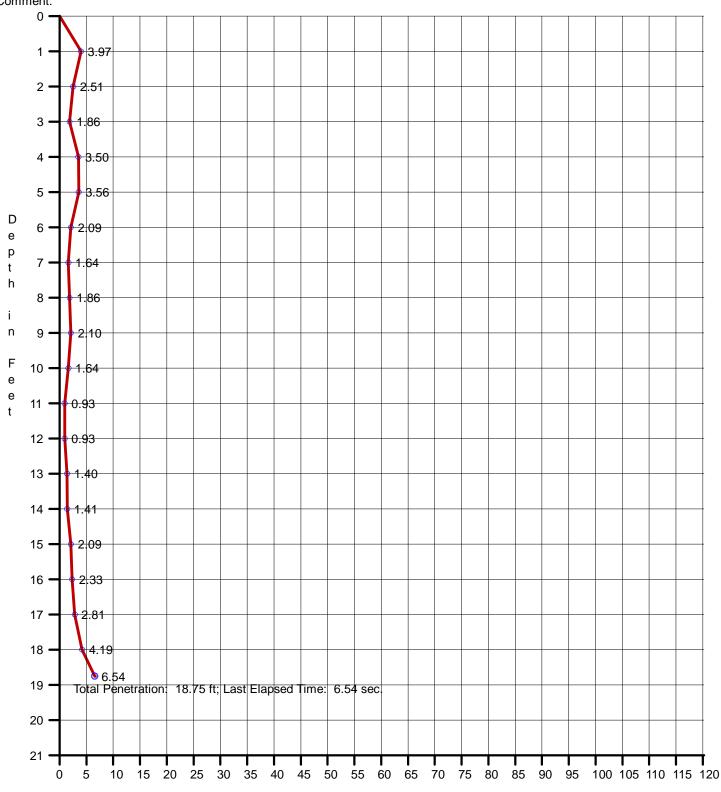
Date: 12/12/2011 Start Time: 8:18:01 AM End Time: 8:18:58 AM

Penetration: 18.75 ft Recovery: 14.10 ft W. D. Corrected: 47.29 ft

W. D. Raw: 48.70 ft

Easting: 2696360.16 Northing: 334250.97 Coord. System: NCSPCS 83 Long: 76°41'04.1340"W Lat: 034°38'45.9120"N Datum: NAVD 88

Comment:



Penetration Graph for Core No. 014, Run 1

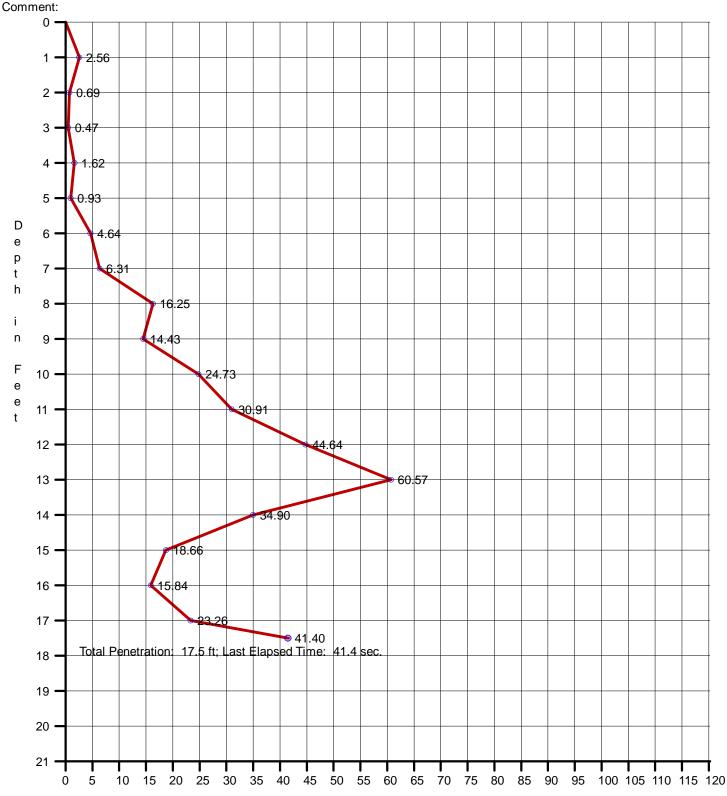
Date: 12/12/2011 Start Time: 1:32:18 PM End Time: 1:38:01 PM

Penetration: 17.50 ft Recovery: 11.92 ft W. D. Corrected: 42.65 ft

W. D. Raw: 41.05 ft

Easting: 2685621.80 Northing: 327738.93 Coord. System: NCSPCS 83 Long: 76°43'14.4240"W Lat: 034°37'43.9740"N

Datum: NAVD 88



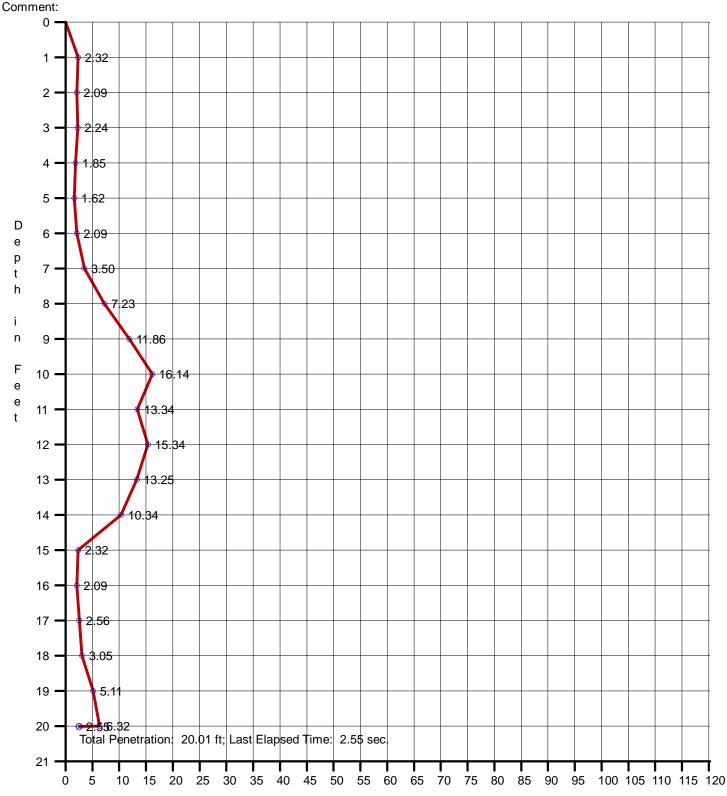
Penetration Graph for Core No. O15, Run 1

Date: 12/12/2011 Start Time: 1:10:29 PM End Time: 1:12:36 PM

Penetration: 20.01 ft Recovery: 12.25 ft W. D. Corrected: 41.32 ft W. D. Raw: 39.98 ft

Easting: 2685079.19 Northing: 330634.85 Coord. System: NCSPCS 83 Long: 76°43'20.1180"W Lat: 034°38'12.7380"N

Datum: NAVD 88



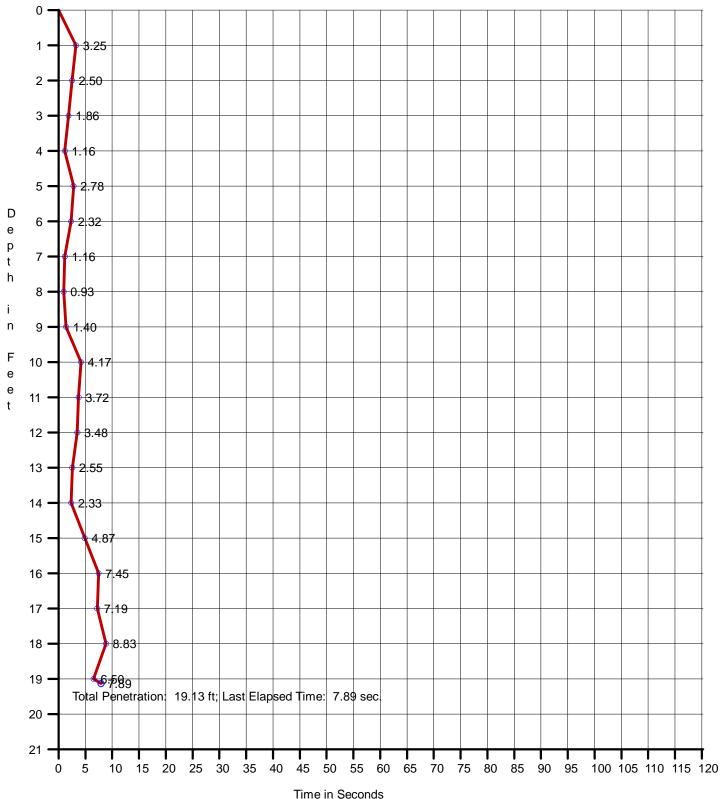
Time in Seconds

Penetration Graph for Core No. O16, Run 1

Date: 12/12/2011 Start Time: 10:52:35 AM End Time: 10:56:26 AM Penetration: 19.13 ft Recovery: 18.20 ft W. D. Corrected: 48.52 ft

W. D. Raw: 48.95 ft

Easting: 2686364.14 Northing: 332253.27 Coord. System: NCSPCS 83 Long: 76°43'04.3020"W Lat: 034°38'28.4460"N Datum: NAVD 88



Penetration Graph for Core No. O17, Run 1

Date: 12/12/2011 Start Time: 11:16:03 AM End Time: 11:17:40 AM

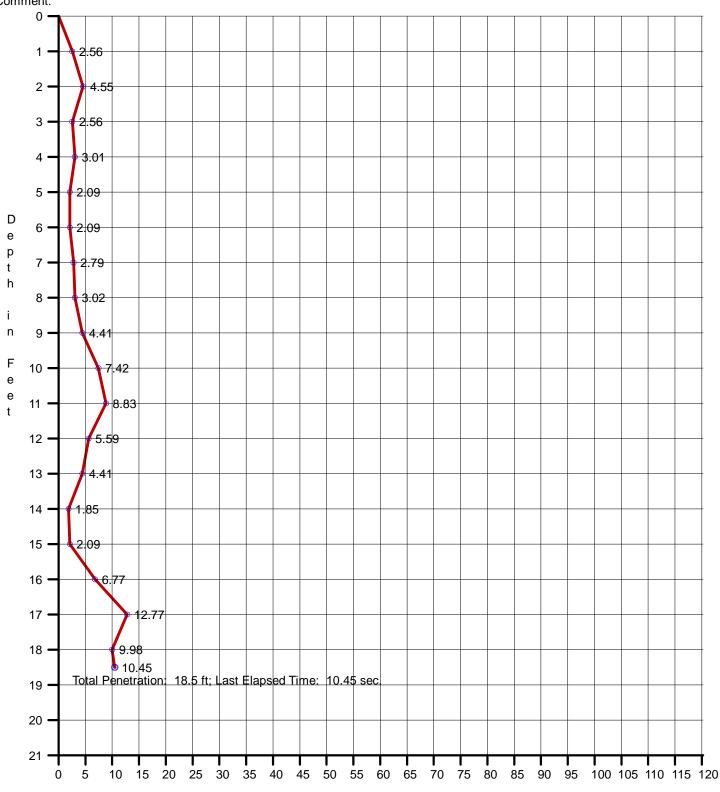
Penetration: 18.50 ft Recovery: 17.8 ft W. D. Corrected: 49.65 ft

Northing: 332247.90 Coord. System: NCSPCS 83 W. D. Raw: 49.73 ft

Easting: 2688366.21

Long: 76°42'40.3440"W Lat: 034°38'27.9420"N Datum: NAVD 88

Comment:



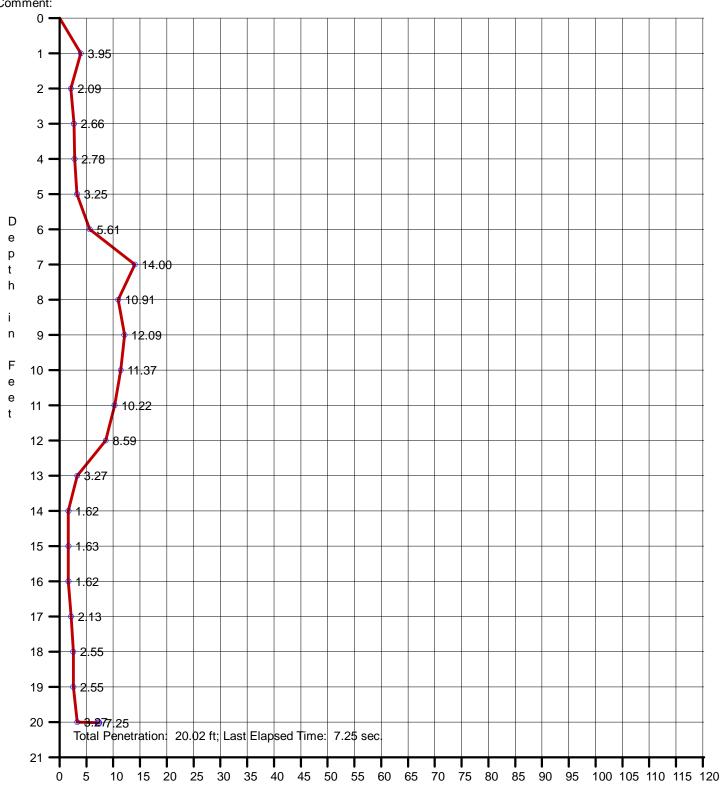
Penetration Graph for Core No. O18, Run 1

Date: 12/12/2011 Start Time: 11:49:17 AM End Time: 11:51:10 AM

Penetration: 20.02 ft Recovery: 17.80 ft W. D. Corrected: 44.07 ft W. D. Raw: 43.69 ft

Easting: 2690367.29 Northing: 332252.65 Coord. System: NCSPCS 83 Long: 76°42'16.3980"W Lat: 034°38'27.5280"N

Datum: NAVD 88



Time in Seconds

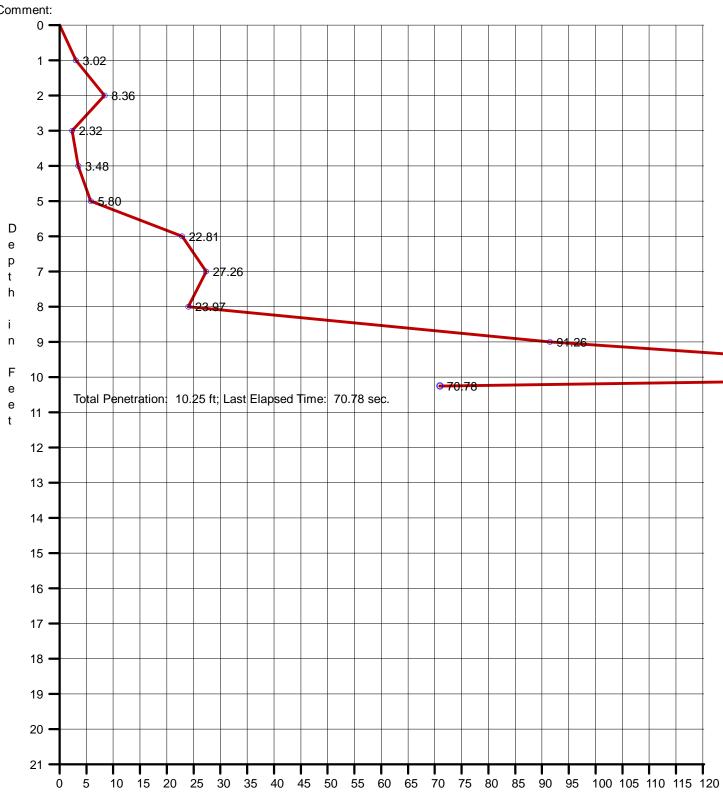
Penetration Graph for Core No. O19, Run 1

Date: 12/11/2011 Start Time: 9:31:30 AM End Time: 9:38:56 AM

Penetration: 10.25 ft Recovery: 8.50 ft W. D. Corrected: 36.08 ft Easting: 2691366.45 Northing: 332250.27 Coord. System: NCSPCS 83 Long: 76°42'04.4460"W Lat: 034°38'27.2760"N Datum: NAVD 88

W. D. Raw: 37.09 ft





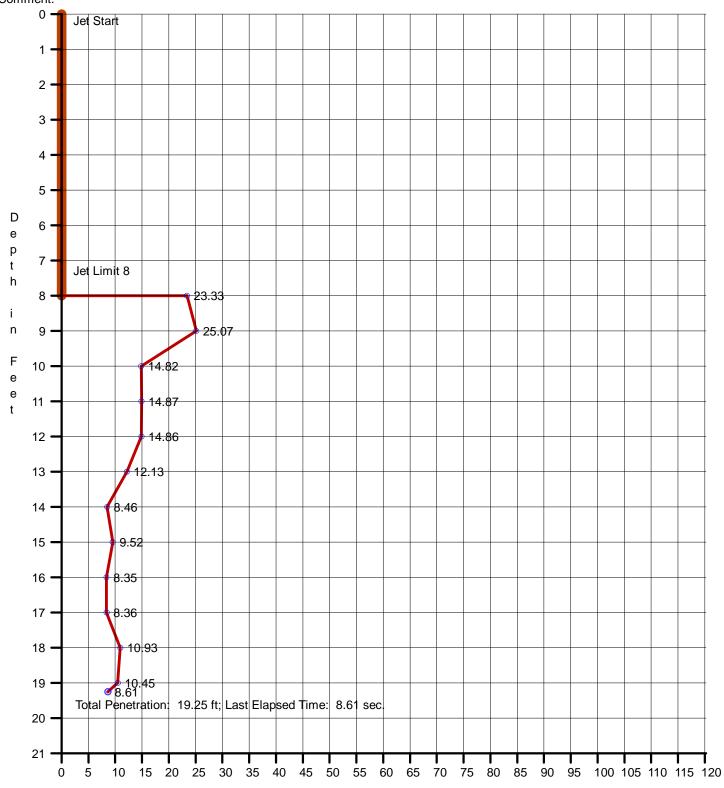
Penetration Graph for Core No. O19, Run 2

Date: 12/11/2011 Start Time: 10:01:35 AM End Time: 10:05:52 AM Penetration: 19.25 ft Recovery: 15.00 ft W. D. Corrected: 36.09 ft

W. D. Raw: 36.68 ft

Easting: 2691363.16 Northing: 332243.67 Coord. System: NCSPCS 83 Long: 76°42'04.4880"W Lat: 034°38'27.2100"N Datum: NAVD 88

Comment:



Penetration Graph for Core No. O20, Run 1

Date: 12/11/2011 Start Time: 8:58:15 AM End Time: 9:08:11 AM

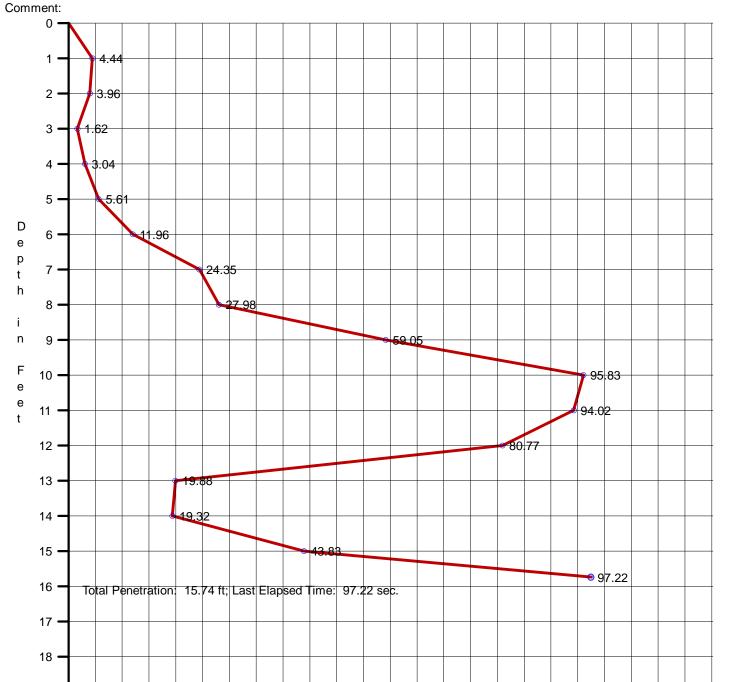
19 -

20 •

21 •

Penetration: 15.74 ft Recovery: 13.83 ft W. D. Corrected: 36.43 ft Easting: 2692364.69 Northing: 332250.35 Coord. System: NCSPCS 83 Long: 76°41'52.5000"W Lat: 034°38'27.0480"N Datum: NAVD 88

W. D. Raw: 37.7 ft



Time in Seconds

55 60 65 70 75 80 85 90 95 100 105 110 115 120

45 50

40

35

25 30

20

10 15

Penetration Graph for Core No. O21, Run 1

Date: 12/11/2011 Start Time: 7:19:11 AM End Time: 7:26:47 AM

Penetration: 17.61 ft Recovery: 15.92 ft W. D. Corrected: 37.05 ft

W. D. Raw: 38.19 ft

Easting: 2693363.50 Northing: 332249.29 Coord. System: NCSPCS 83 Long: 76°41'40.5480"W Lat: 034°38'26.8080"N

Datum: NAVD 88



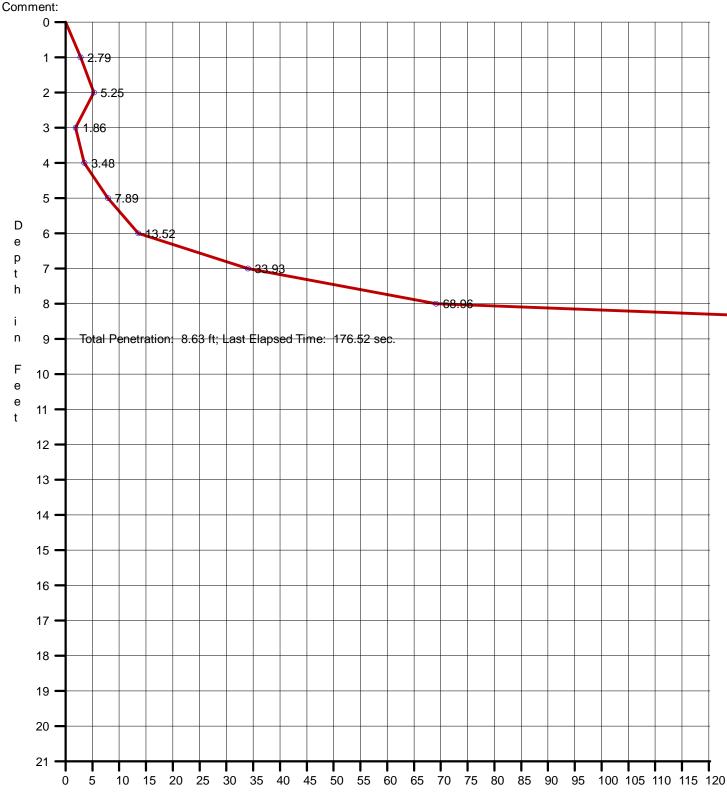
Penetration Graph for Core No. O22, Run 1

Date: 12/10/2011 Start Time: 4:29:30 PM End Time: 4:34:47 PM

Penetration: 8.63 ft Recovery: 6.83 ft W. D. Corrected: 36.80 ft Easting: 2694363.93 Northing: 332252.81 Coord. System: NCSPCS 83 Long: 76°41'28.5780"W Lat: 034°38'26.6160"N Datum: NAVD 88

W. D. Raw: 36.03 ft

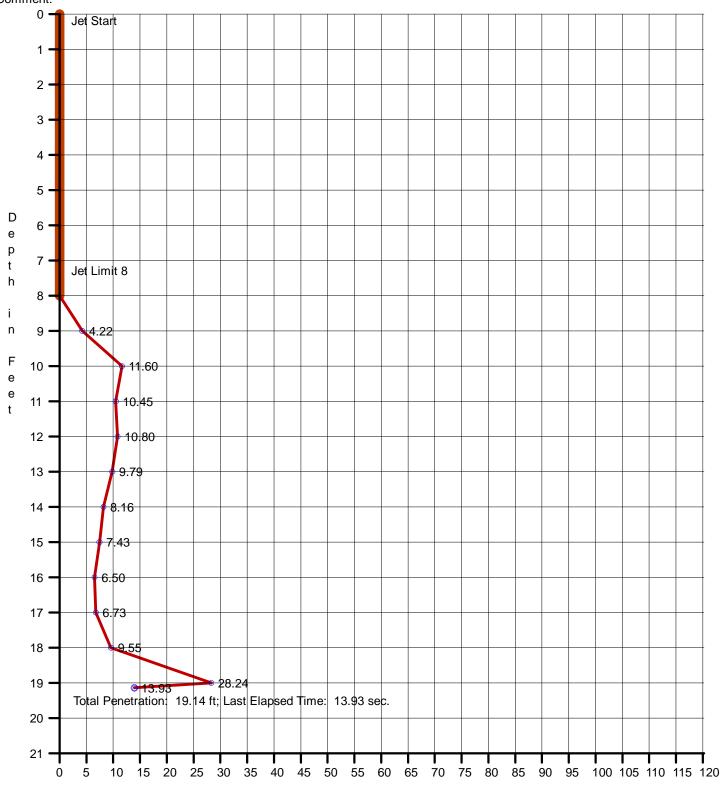




Penetration Graph for Core No. O22, Run 2

Date: 12/10/2011 Start Time: 4:51:54 PM End Time: 4:56:06 PM Penetration: 19.14 ft Recovery: 14.00 ft W. D. Corrected: 32.74 ft W. D. Raw: 32.14 ft Easting: 2694363.56 Northing: 332253.70 Coord. System: NCSPCS 83 Long: 76°41'28.5840"W Lat: 034°38'26.6220"N Datum: NAVD 88

Comment:



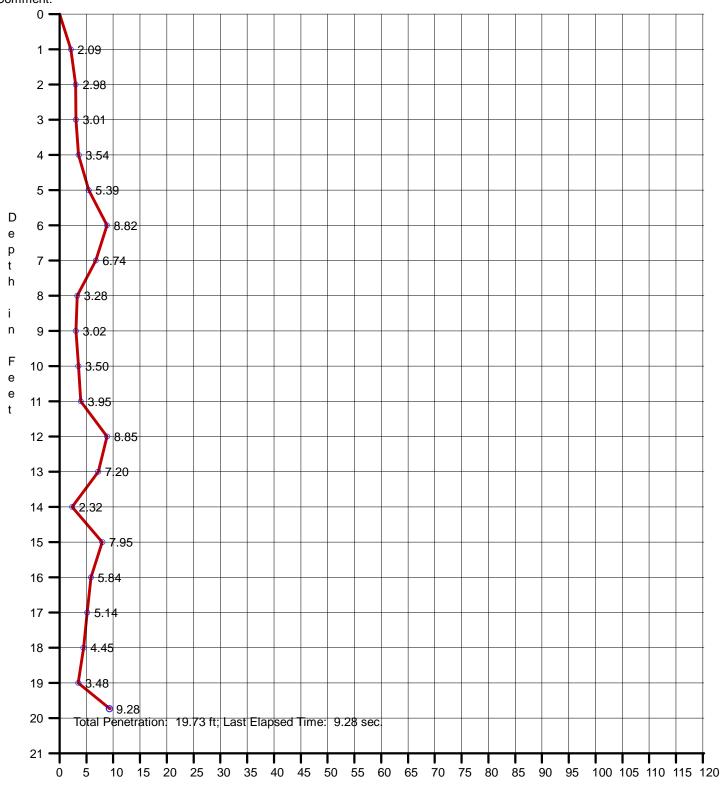
Penetration Graph for Core No. O23, Run 1

Date: 12/10/2011 Start Time: 3:36:38 PM End Time: 3:38:23 PM Penetration: 19.73 ft Recovery: 17.17 ft W. D. Corrected: 47.80 ft

W. D. Raw: 46.34 ft

Easting: 2696365.13 Northing: 332253.00 Coord. System: NCSPCS 83 Long: 76°41'04.6320"W Lat: 034°38'26.1540"N Datum: NAVD 88

Comment:



Penetration Graph for Core No. O24, Run 1

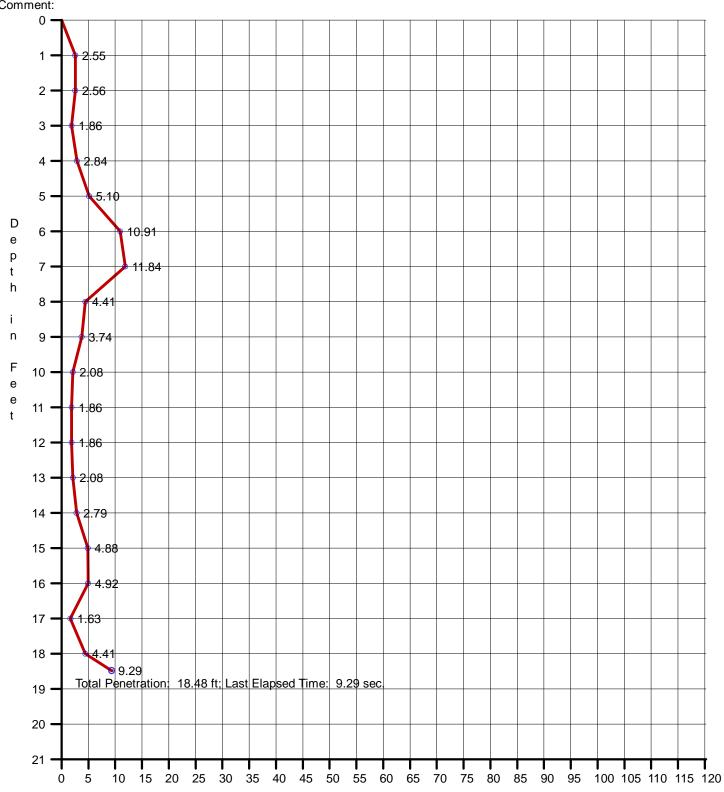
Date: 12/12/2011 Start Time: 12:11:23 PM End Time: 12:12:45 PM

Penetration: 18.48 ft Recovery: 13.75 ft W. D. Corrected: 49.27 ft W. D. Raw: 48.71 ft

Easting: 2690361.98 Northing: 331252.24 Coord. System: NCSPCS 83 Long: 76°42'16.7400"W Lat: 034°38'17.6400"N

Datum: NAVD 88

Comment:



Penetration Graph for Core No. O25, Run 1

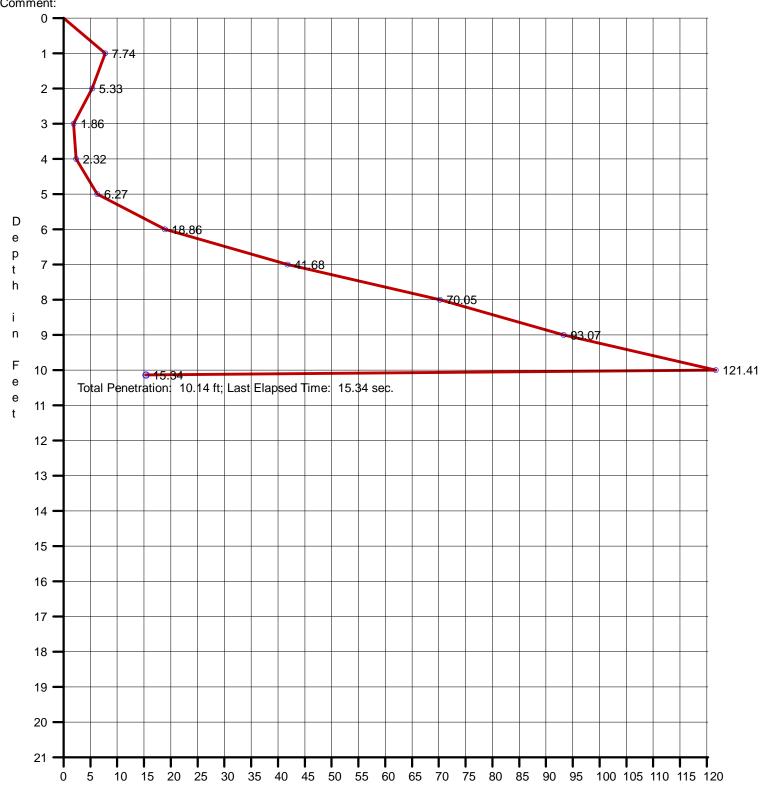
Date: 12/11/2011 Start Time: 10:31:03 AM End Time: 10:37:27 AM

Penetration: 10.14 ft Recovery: 8.00 ft W. D. Corrected: 41.97 ft

W. D. Raw: 42.10 ft

Easting: 2691364.49 Northing: 331253.07 Coord. System: NCSPCS 83 Long: 76°42'04.7460"W Lat: 034°38'17.4180"N Datum: NAVD 88

Comment:



Penetration Graph for Core No. O25, Run 2

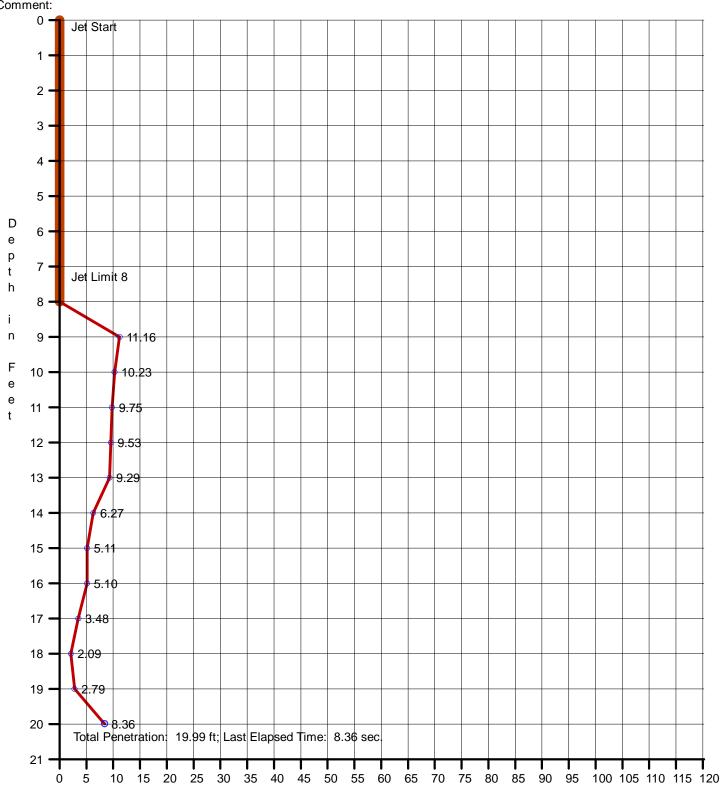
Date: 12/11/2011 Start Time: 10:55:21 AM End Time: 10:59:00 AM

Penetration: 19.99 ft Recovery: 11.50 ft W. D. Corrected: 41.97 ft W. D. Raw: 39.39 ft

Easting: 2691367.19 Northing: 331253.49 Coord. System: NCSPCS 83 Long: 76°42'04.7100"W Lat: 034°38'17.4180"N

Datum: NAVD 88



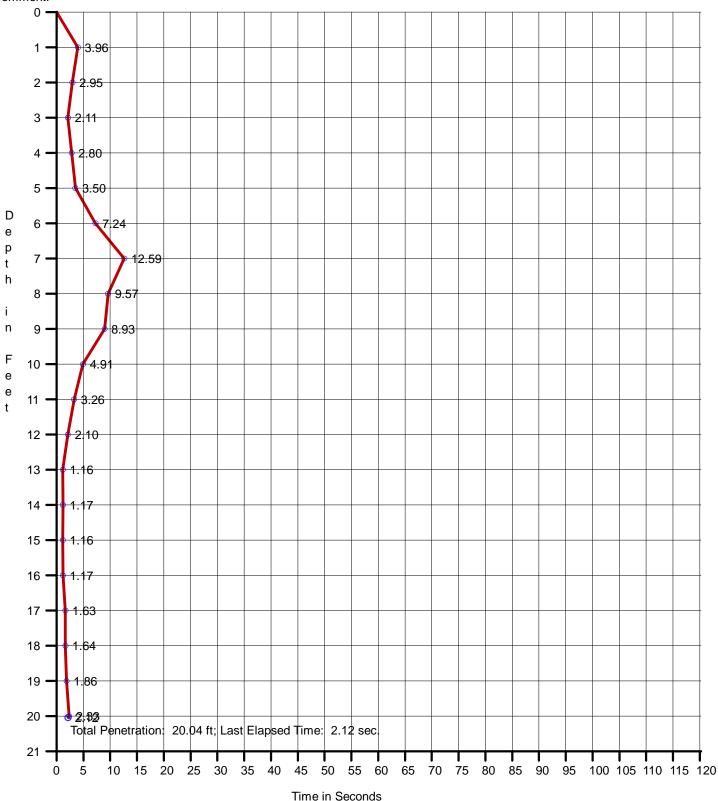


Penetration Graph for Core No. O26, Run 1

Date: 12/11/2011 Start Time: 8:31:53 AM End Time: 8:33:17 AM Penetration: 20.04 ft Recovery: 13.80 ft W. D. Corrected: 45.70 ft

W. D. Raw: 47.10 ft

Easting: 2692365.13 Northing: 331247.31 Coord. System: NCSPCS 83 Long: 76°41'52.7760"W Lat: 034°38'17.1300"N Datum: NAVD 88



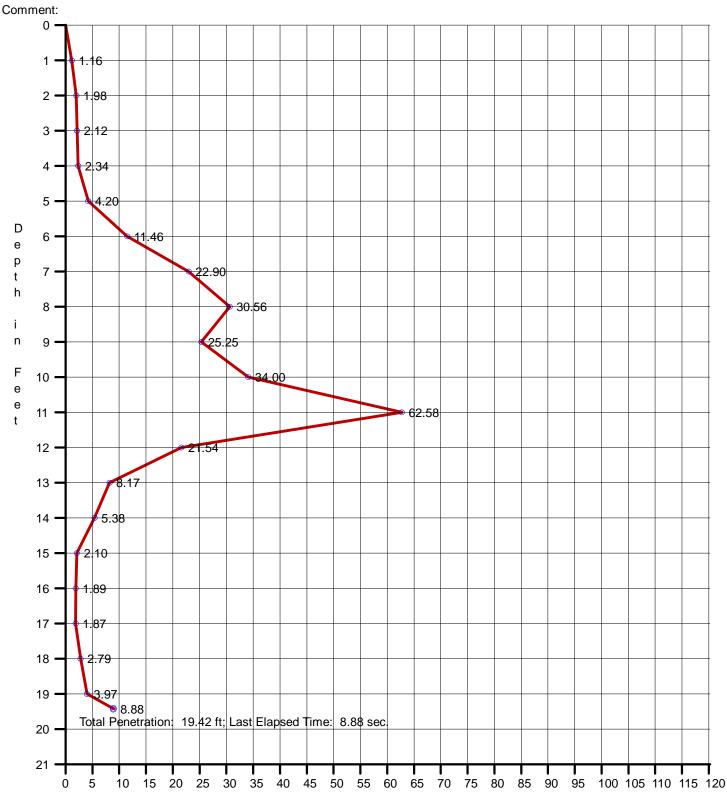
Penetration Graph for Core No. O27, Run 1

Date: 12/11/2011 Start Time: 8:04:51 AM End Time: 8:09:14 AM

Penetration: 19.42 ft Recovery: 16.75 ft W. D. Corrected: 43.63 ft

W. D. Raw: 45.06 ft

Easting: 2693366.30 Northing: 331253.48 Coord. System: NCSPCS 83 Long: 76°41'40.7940"W Lat: 034°38'16.9620"N Datum: NAVD 88



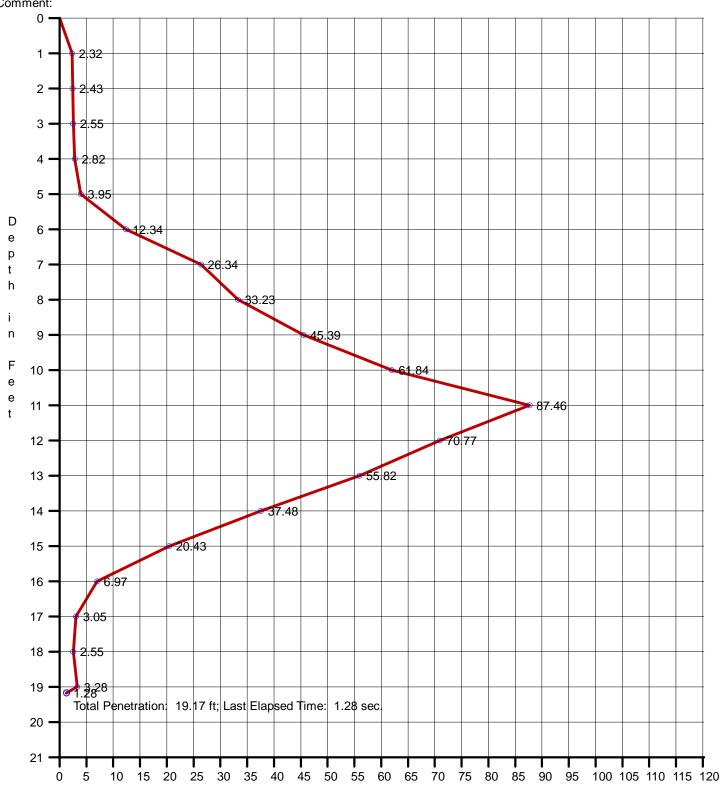
Penetration Graph for Core No. O28, Run 1

Date: 12/10/2011 Start Time: 3:58:57 PM End Time: 4:08:00 PM

Penetration: 19.17 ft Recovery: 12.6 ft W. D. Corrected: 42.72 ft

W. D. Raw: 41.51 ft

Easting: 2694358.58 Northing: 331246.13 Coord. System: NCSPCS 83 Long: 76°41'28.9200" W Lat: 034°38'16.6620"N Datum: NAVD 88



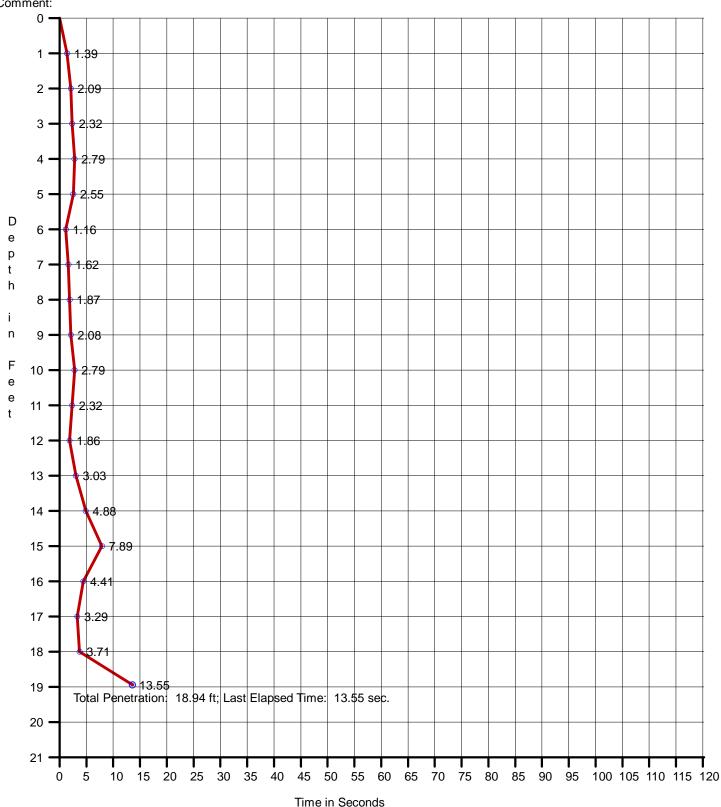
Time in Seconds

Penetration Graph for Core No. O29, Run 1

Date: 12/10/2011 Start Time: 11:21:12 AM End Time: 11:22:29 AM

Penetration: 18.94 ft Recovery: 15.70 ft W. D. Corrected: 51.90 ft W. D. Raw: 50.75 ft

Easting: 2682363.58 Northing: 330251.89 Coord. System: NCSPCS 83 Long: 76°43'52.7160"W Lat: 034°38'09.5640"N Datum: NAVD 88



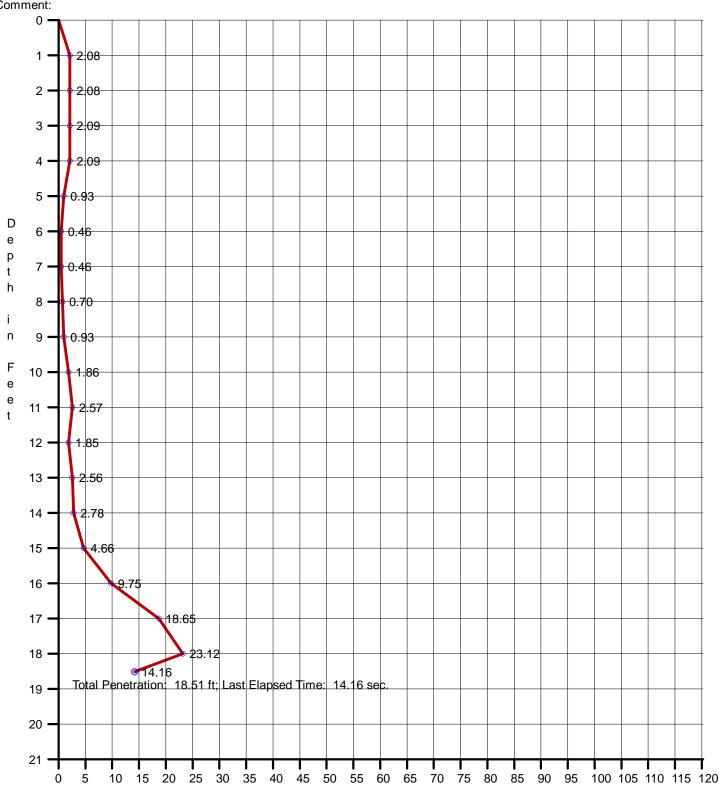
Penetration Graph for Core No. O30, Run 1

Date: 12/10/2011 Start Time: 11:42:51 AM End Time: 11:44:32 AM

Penetration: 18.51 ft Recovery: 18.80 ft W. D. Corrected: 51.03 ft W. D. Raw: 49.69 ft

Easting: 2684365.71 Northing: 330251.10 Coord. System: NCSPCS 83 Long: 76°43'28.7640"W Lat: 034°38'09.1020"N Datum: NAVD 88

Comment:



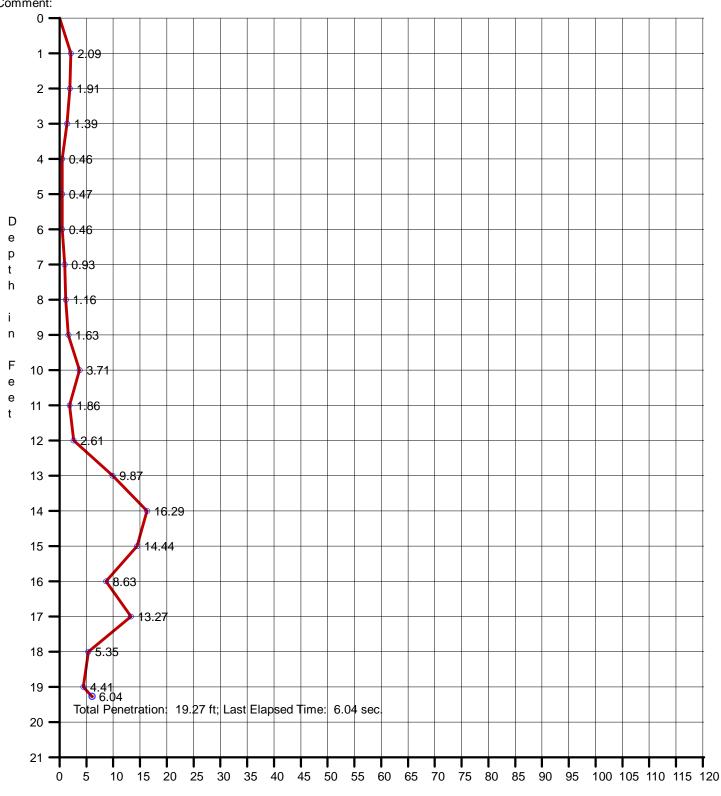
Penetration Graph for Core No. O31, Run 1

Date: 12/10/2011 Start Time: 12:10:34 PM End Time: 12:12:25 PM

Penetration: 19.27 ft Recovery: 17.90 ft W. D. Corrected: 53.64 ft W. D. Raw: 51.94 ft

Easting: 2686363.95 Northing: 330253.40 Coord. System: NCSPCS 83 Long: 76°43'04.8540"W Lat: 034°38'08.6700"N

Datum: NAVD 88



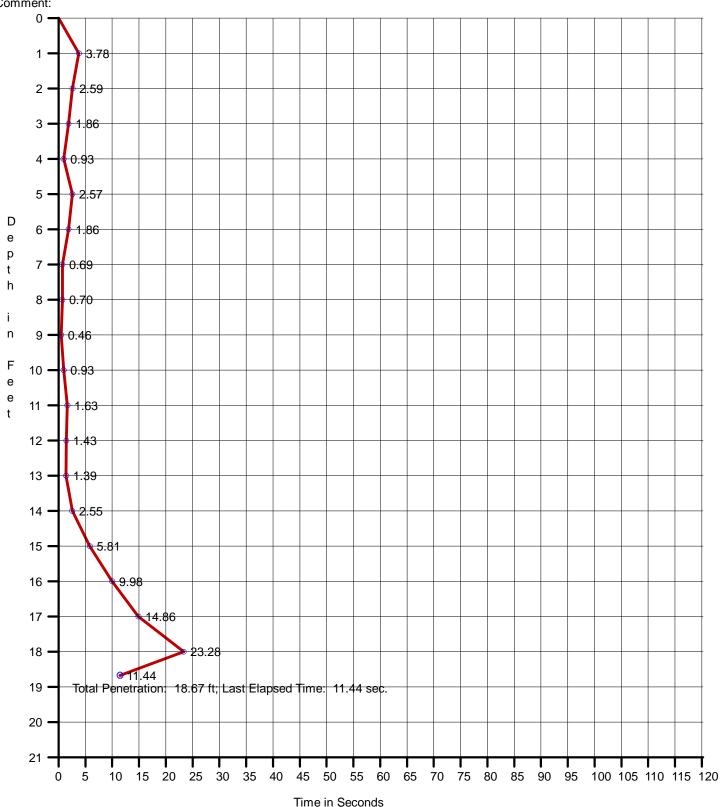
Time in Seconds

Penetration Graph for Core No. O32, Run 1

Date: 12/10/2011 Start Time: 1:19:55 PM End Time: 1:21:31 PM

Penetration: 18.67 ft Recovery: 17.50 ft W. D. Corrected: 51.12 ft W. D. Raw: 49.05 ft

Easting: 2688366.17 Northing: 330251.28 Coord. System: NCSPCS 83 Long: 76°42'40.8960"W Lat: 034°38'08.1960"N Datum: NAVD 88



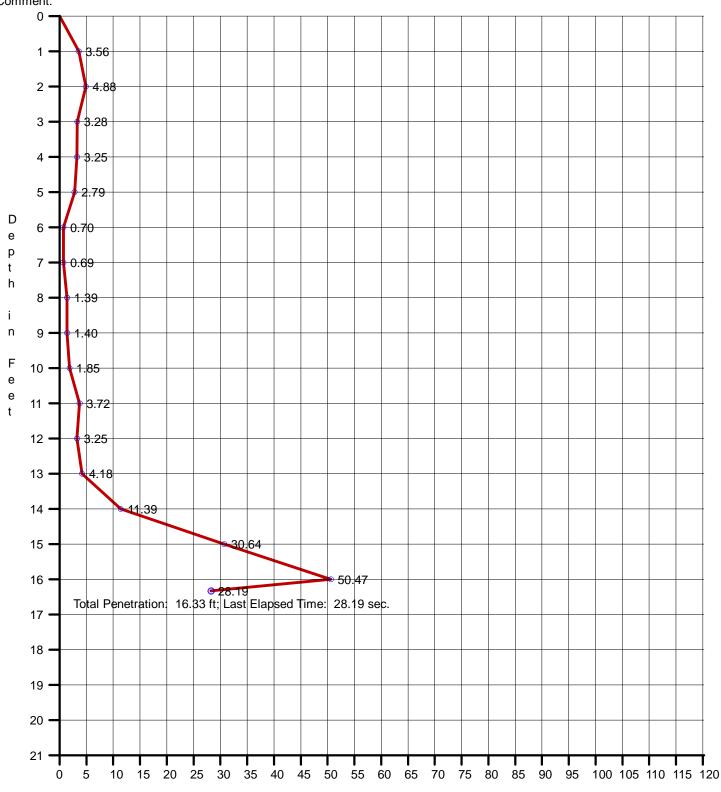
Penetration Graph for Core No. O33, Run 1

Date: 12/10/2011 Start Time: 1:42:02 PM End Time: 1:44:42 PM

Penetration: 16.33 ft Recovery: 18.20 ft W. D. Corrected: 63.18 ft W. D. Raw: 60.95 ft

Easting: 2690362.50 Northing: 330252.17 Coord. System: NCSPCS 83 Long: 76°42'17.0100"W Lat: 034°38'07.7460"N Datum: NAVD 88

Comment:



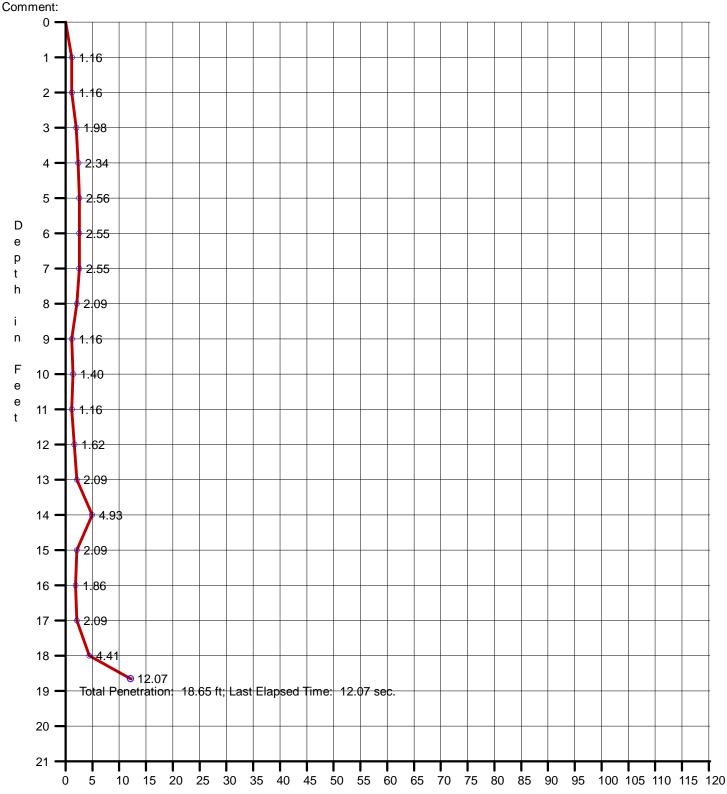
Penetration Graph for Core No. O34, Run 1

Date: 12/10/2011 Start Time: 2:06:23 PM End Time: 2:07:27 PM

Penetration: 18.65 ft Recovery: 12.50 ft W. D. Corrected: 50.17 ft

W. D. Raw: 47.96 ft

Easting: 2692365.40 Northing: 330251.78 Coord. System: NCSPCS 83 Long: 76°41'53.0460"W Lat: 034°38'07.2840"N Datum: NAVD 88



Penetration Graph for Core No. O35, Run 2

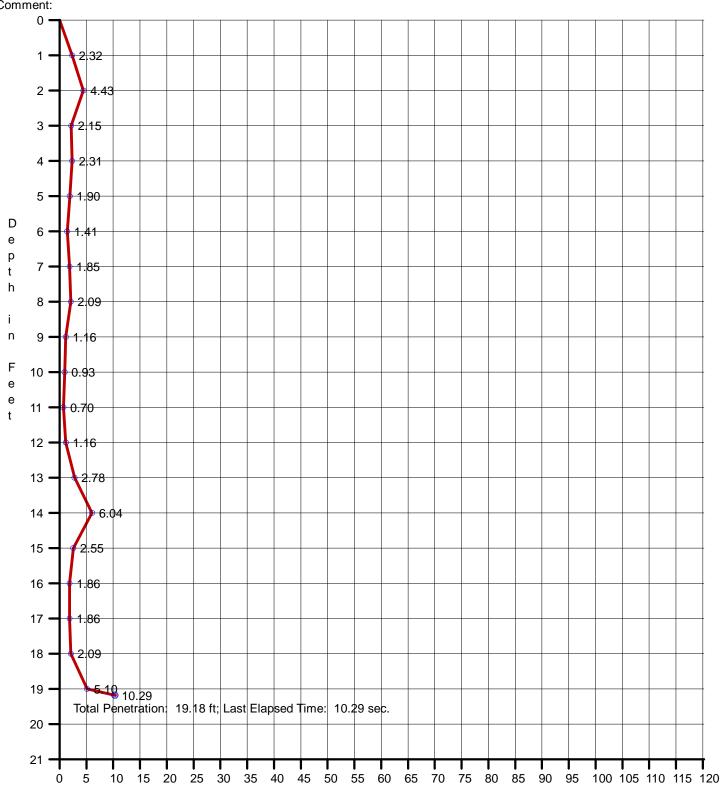
Date: 12/10/2011 Start Time: 2:41:15 PM End Time: 2:42:10 PM

Penetration: 19.18 ft Recovery: 11.90 ft W. D. Corrected: 49.35 ft

W. D. Raw: 47.35 ft

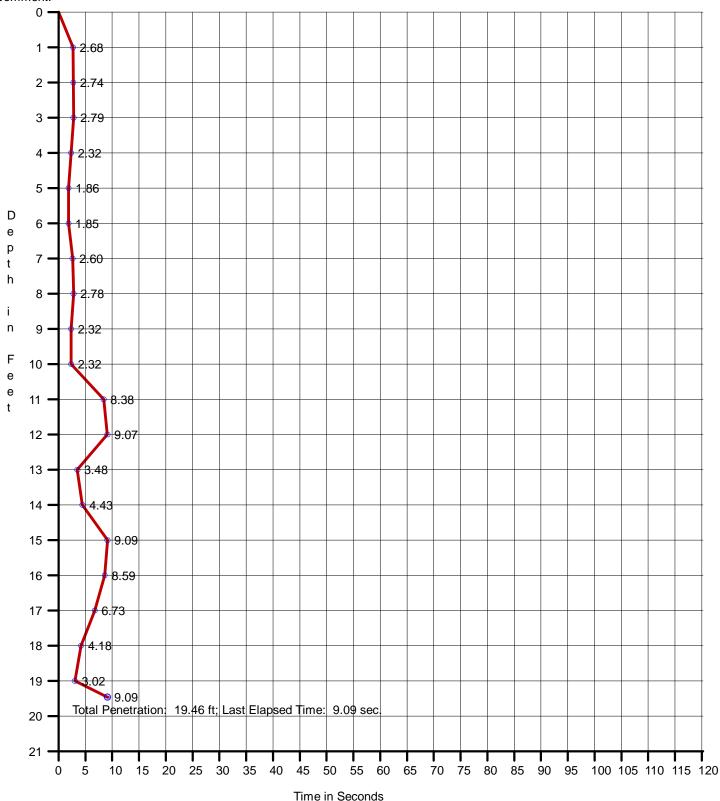
Easting: 2694362.53 Northing: 330254.04 Coord. System: NCSPCS 83 Long: 76°41'29.1480"W Lat: 034°38'06.8460"N Datum: NAVD 88

Comment:



Penetration Graph for Core No. O36, Run 1

Date: 12/10/2011 Start Time: 3:08:54 PM End Time: 3:10:43 PM Penetration: 19.46 ft Recovery: 15.63 ft W. D. Corrected: 49.13 ft W. D. Raw: 47.30 ft Easting: 2696364.66 Northing: 330251.48 Coord. System: NCSPCS 83 Long: 76°41'05.1960"W Lat: 034°38'06.3600"N Datum: NAVD 88



Penetration Graph for Core No. O37, Run 1

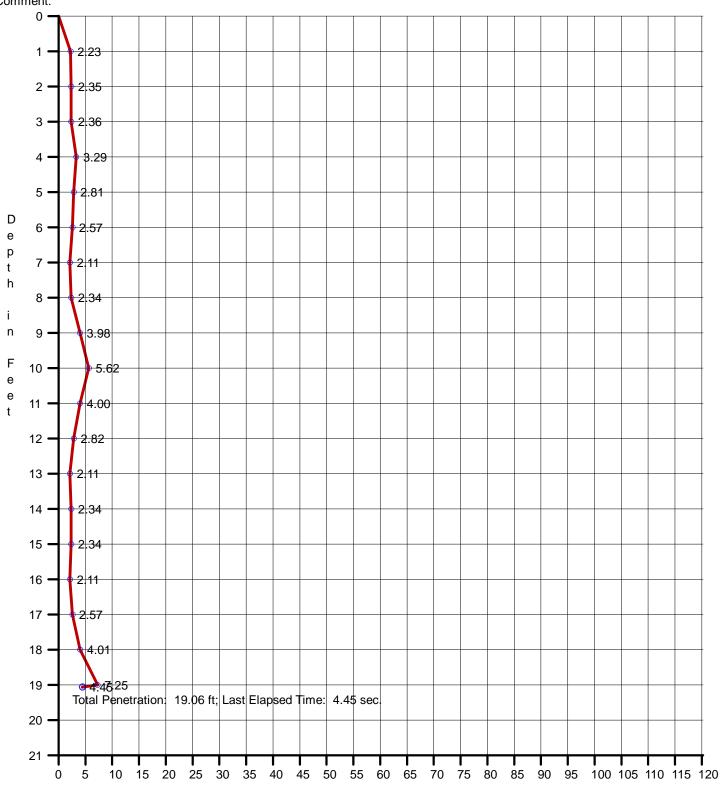
Date: 12/10/2011 Start Time: 10:34:58 AM End Time: 10:36:09 AM

Penetration: 19.06 ft Recovery: 14.90 ft W. D. Corrected: 50.78 ft

W. D. Raw: 50.26 ft

Easting: 2682364.06 Northing: 328255.19 Coord. System: NCSPCS 83 Long: 76°43'53.2560"W Lat: 034°37'49.8180"N Datum: NAVD 88

Comment:



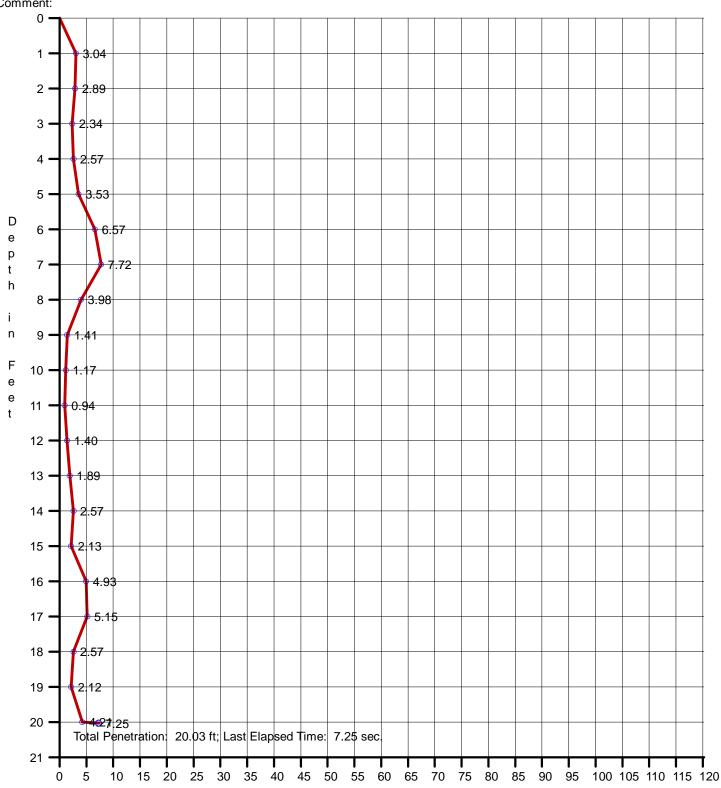
Penetration Graph for Core No. O38, Run 1

Date: 12/10/2011 Start Time: 10:07:41 AM End Time: 10:08:55 AM

Penetration: 20.03 ft Recovery: 13.80 ft W. D. Corrected: 46.62 ft W. D. Raw: 46.48 ft

Easting: 2684367.69 Northing: 328255.66 Coord. System: NCSPCS 83 Long: 76°43'29.2860"W Lat: 034°37'49.3680"N Datum: NAVD 88

Comment:



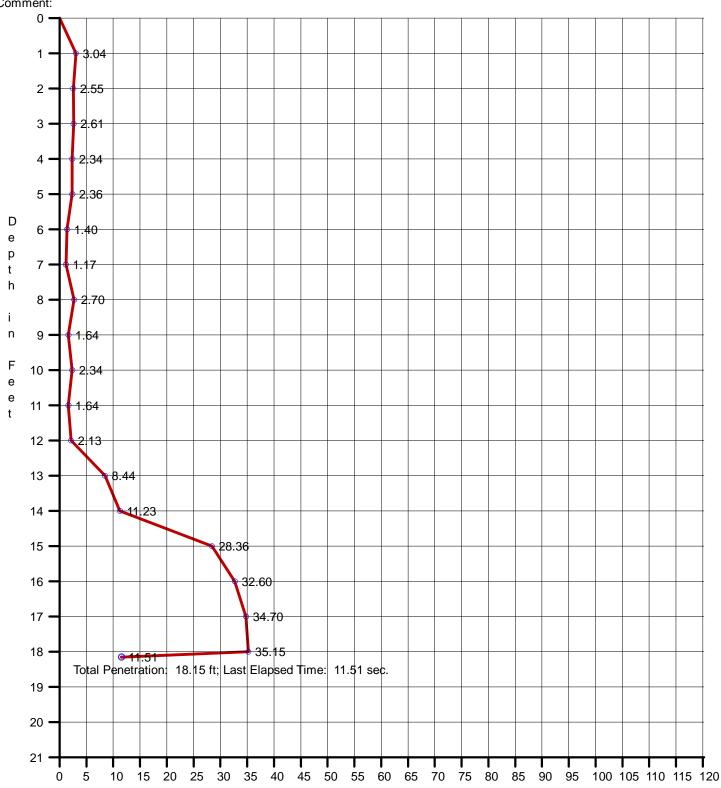
Penetration Graph for Core No. O39, Run 1

Date: 12/10/2011 Start Time: 9:44:48 AM End Time: 9:48:02 AM

Penetration: 18.15 ft Recovery: 17.75 ft W. D. Corrected: 53.79 ft Easting: 2686364.53 Northing: 328252.60 Coord. System: NCSPCS 83 Long: 76°43'05.3940"W Lat: 034°37'48.8820"N Datum: NAVD 88

W. D. Raw: 53.79 ft





Time in Seconds

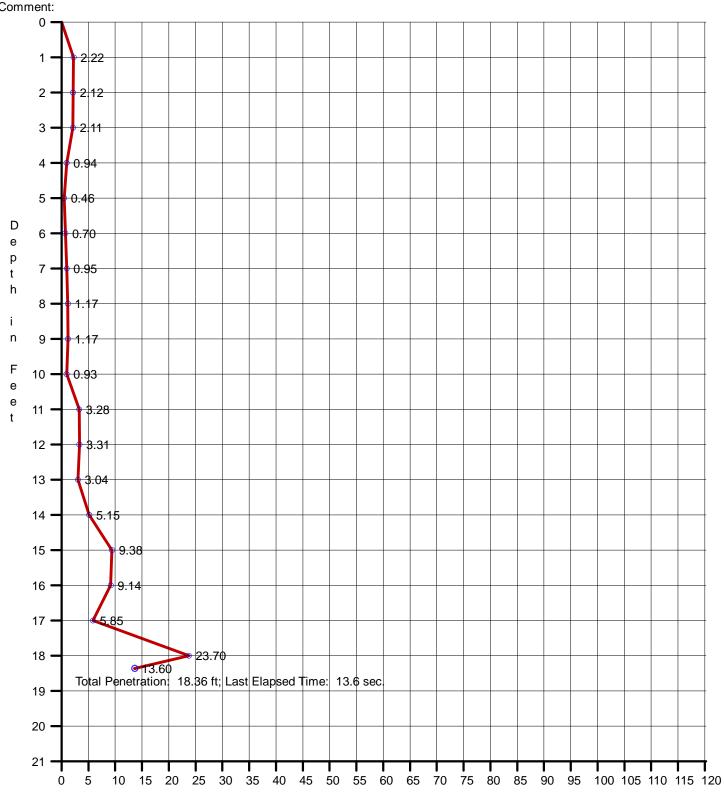
Penetration Graph for Core No. O40, Run 1

Date: 12/10/2011 Start Time: 9:22:05 AM End Time: 9:23:41 AM

Penetration: 18.36 ft Recovery: 18.80 ft W. D. Corrected: 53.73 ft Easting: 2688361.74 Northing: 328251.41 Coord. System: NCSPCS 83 Long: 76°42'41.5020"W Lat: 034°37'48.4200"N Datum: NAVD 88

W. D. Raw: 54.15 ft



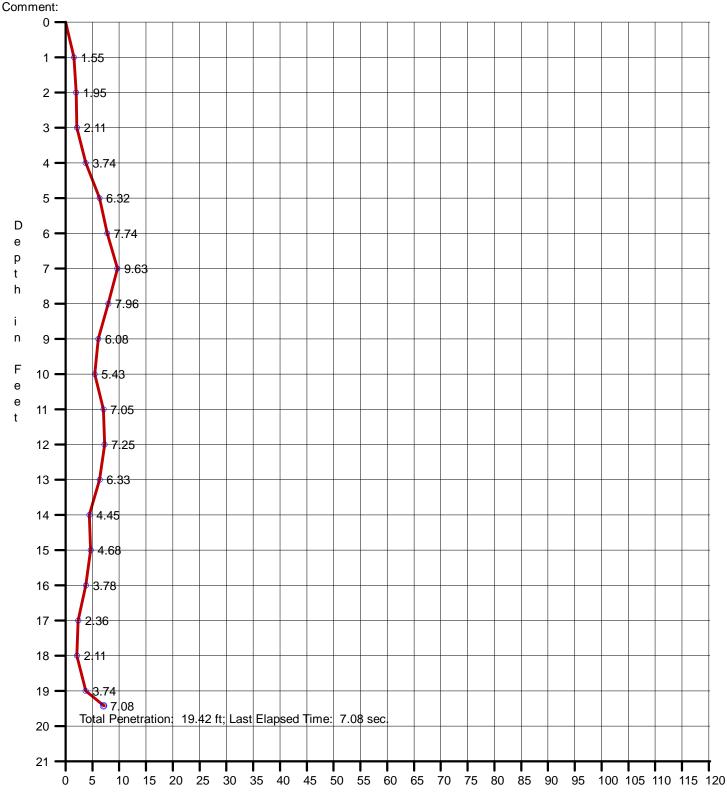


Penetration Graph for Core No. 041, Run 1

Date: 12/10/2011 Start Time: 9:00:10 AM End Time: 9:02:21 AM

Penetration: 19.42 ft Recovery: 16.25 ft W. D. Corrected: 45.91 ft W. D. Raw: 46.49 ft

Easting: 2690364.08 Northing: 328249.39 Coord. System: NCSPCS 83 Long: 76°42'17.5440"W Lat: 034°37'47.9400"N Datum: NCSPCS 83



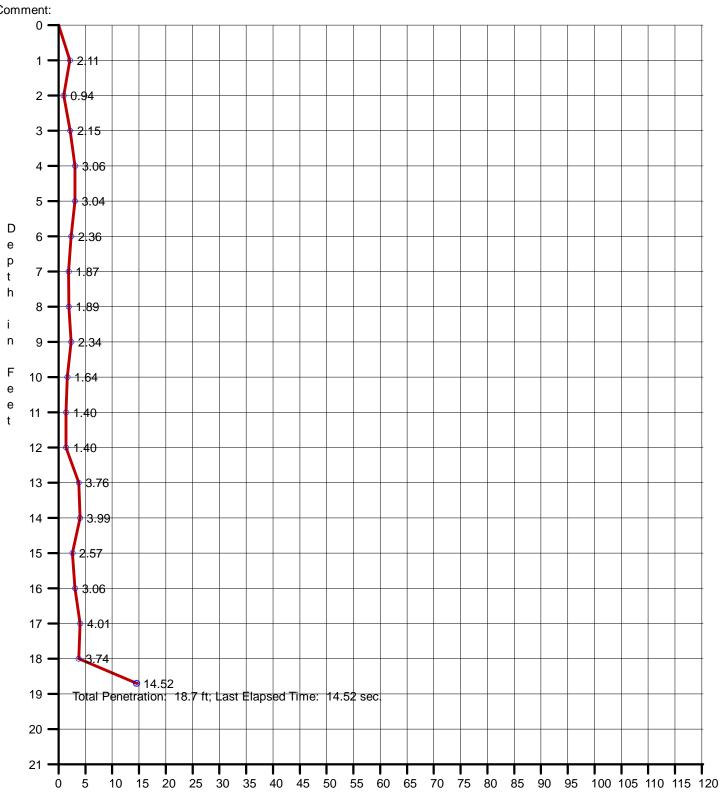
Penetration Graph for Core No. 042, Run 1

Date: 12/10/2011 Start Time: 8:38:14 AM End Time: 8:39:23 AM

Penetration: 18.70 ft Recovery: 13.80 ft W. D. Corrected: 52.44 ft Easting: 2692365.73 Northing: 328246.95 Coord. System: NCSPCS 83 Long: 76°41'53.5980"W Lat: 034°37'47.4600"N Datum: NAVD 88

W. D. Raw: 53.22 ft





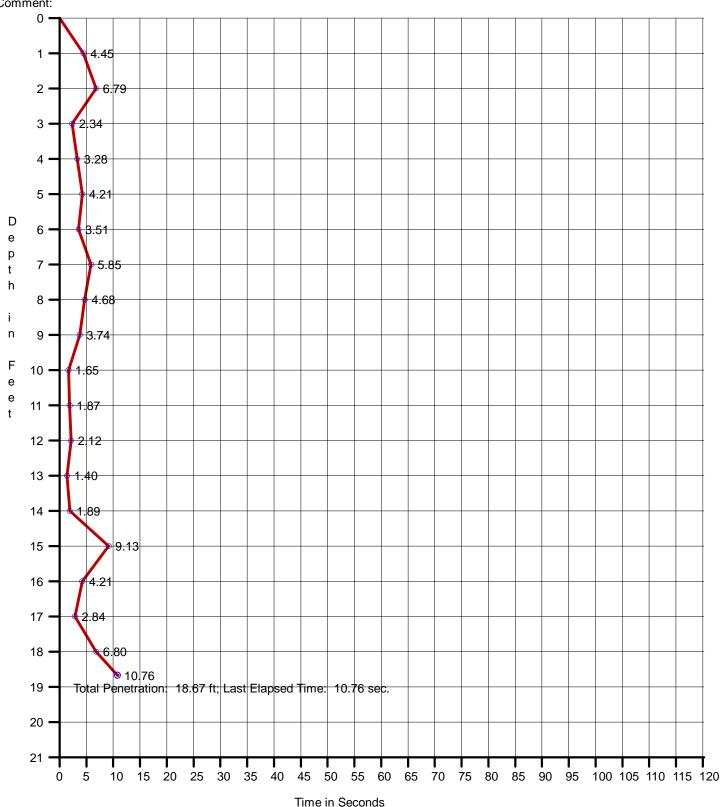
Penetration Graph for Core No. 043, Run 1

Date: 12/10/2011 Start Time: 8:12:39 AM End Time: 8:14:00 AM

Penetration: 18.67 ft Recovery: 14.40 ft W. D. Corrected: 48.40 ft Easting: 2694364.18 Northing: 328249.45 Coord. System: NCSPCS 83 Long: 76°41'29.6880"W Lat: 034°37'47.0220"N Datum: NAVD 88

W. D. Raw: 49.41 ft





Penetration Graph for Core No. 044, Run 1

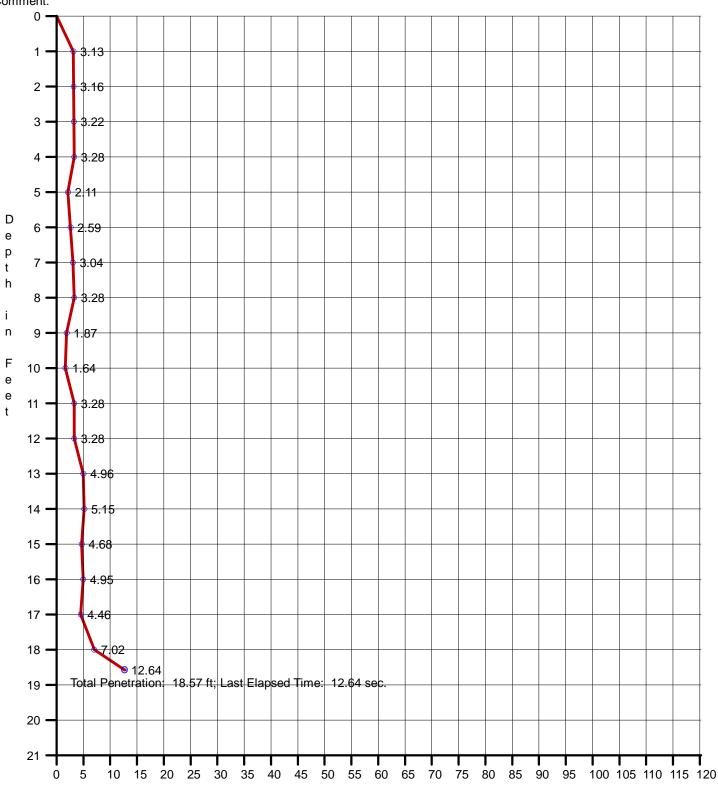
Date: 12/10/2011 Start Time: 7:44:03 AM End Time: 7:45:38 AM

Penetration: 18.57 ft Recovery: 14.30 ft W. D. Corrected: 53.27 ft

W. D. Raw: 54.29 ft

Easting: 2696367.35 Northing: 328252.26 Coord. System: NCSPCS 83 Long: 76°41'05.7240"W Lat: 034°37'46.5900"N Datum: NAVD 88

Comment:



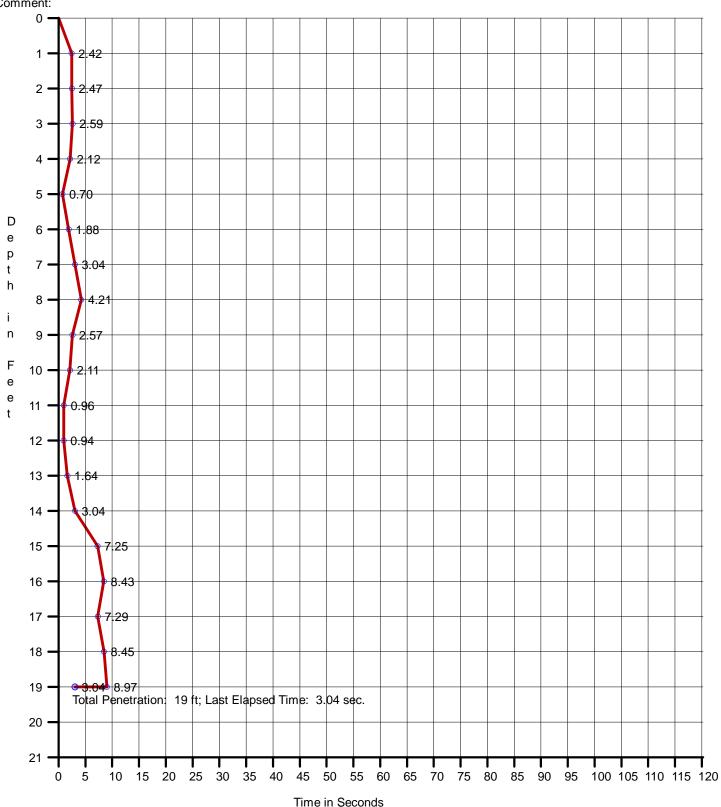
Penetration Graph for Core No. 045, Run 1

Date: 12/9/2011 Start Time: 1:32:36 PM End Time: 1:33:57 PM

Penetration: 19.00 ft Recovery: 19.00 ft W. D. Corrected: 54.25 ft

W. D. Raw: 52.58 ft

Easting: 2682364.81 Northing: 326254.16 Coord. System: NCSPCS 83 Long: 76°43'53.7960"W Lat: 034°37'30.0300"N Datum: NAVD 88



Penetration Graph for Core No. O46, Run 1

Date: 12/9/2011 Start Time: 2:02:49 PM End Time: 2:04:06 PM

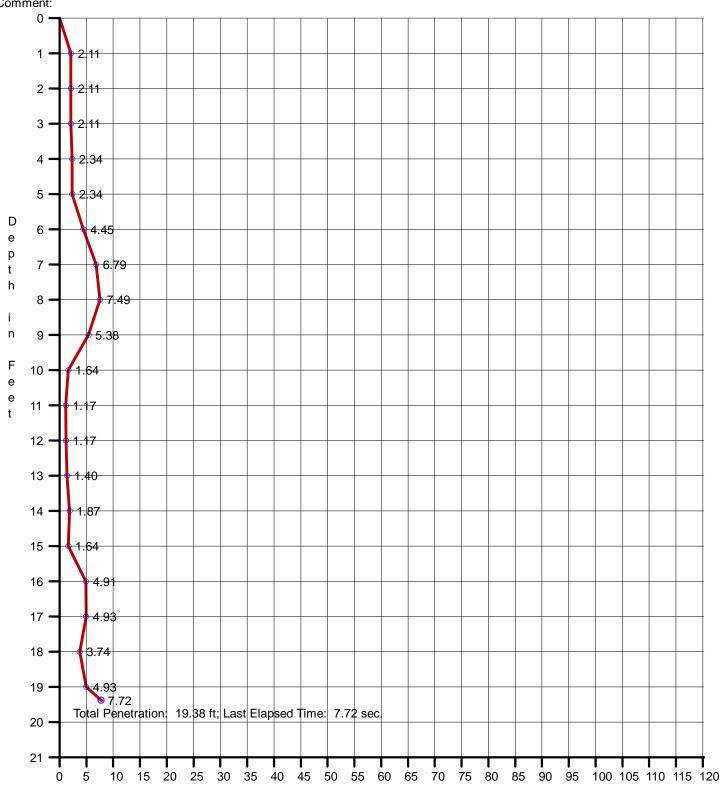
Penetration: 19.38 ft Recovery: 15.25 ft W. D. Corrected: 47.29 ft

W. D. Raw: 45.72 ft

Easting: 2684367.36 Northing: 326253.03 Coord. System: NCSPCS 83 Long: 76°43'29.8380"W Lat: 034°37'29.5620"N

Datum: NAVD 88

Comment:



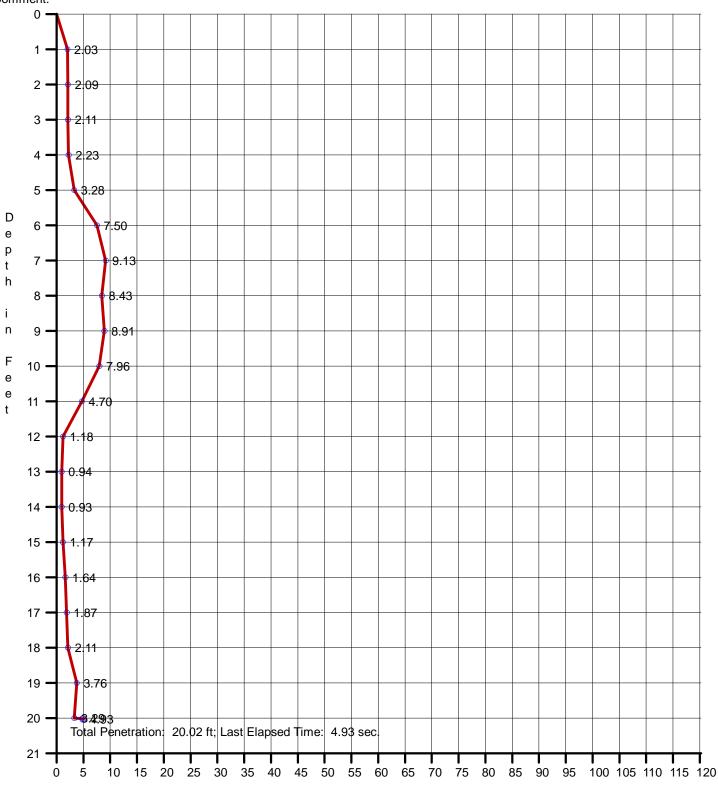
Penetration Graph for Core No. 047, Run 1

Date: 12/9/2011 Start Time: 2:29:31 PM End Time: 2:30:59 PM Penetration: 20.02 ft Recovery: 18.00 ft W. D. Corrected: 47.39 ft

W. D. Raw: 45.95 ft

Easting: 2686365.88 Northing: 326253.57 Coord. System: NCSPCS 83 Long: 76°43'05.9280"W Lat: 034°37'29.1120"N Datum: NAVD 88

Comment:



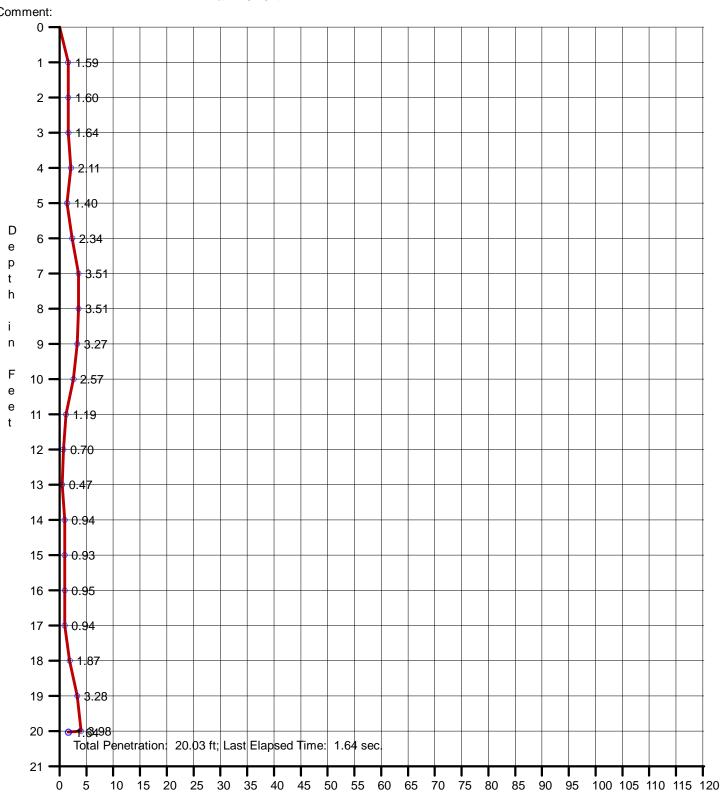
Penetration Graph for Core No. 048, Run 1

Date: 12/9/2011 Start Time: 2:54:41 PM End Time: 2:55:29 PM

Penetration: 20.03 ft Recovery: 8.83 ft W. D. Corrected: 46.58 ft Easting: 2688363.39 Northing: 326256.56 Coord. System: NCSPCS 83 Long: 76°42'42.0300"W Lat: 034°37'28.6920"N Datum: NAVD 88

W. D. Raw: 45.20 ft





Penetration Graph for Core No. 049, Run 1

Date: 12/9/2011 Start Time: 3:38:45 PM End Time: 3:41:27 PM

Penetration: 16.35 ft Recovery: 16.50 ft W. D. Corrected: 54.12 ft

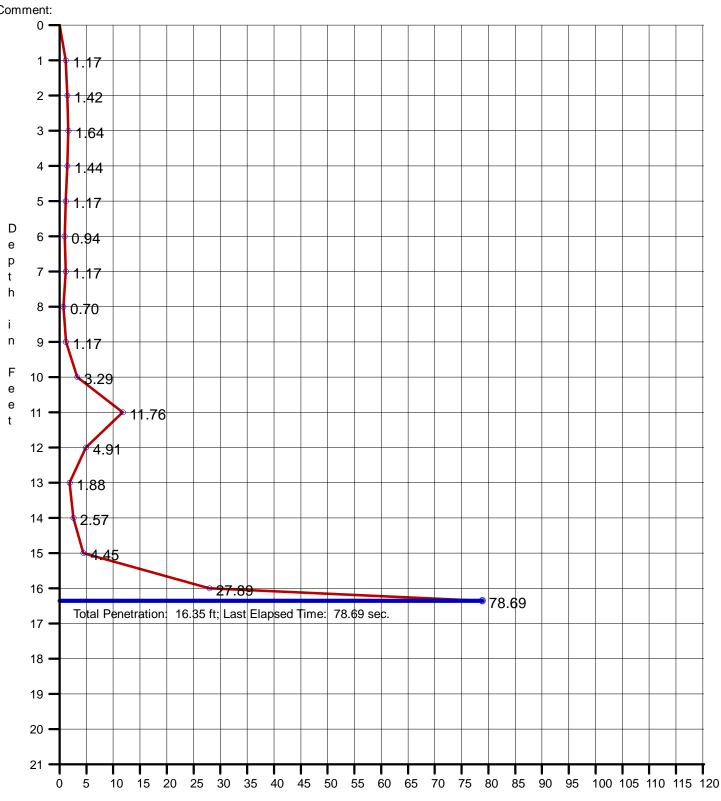
Northing: 326260.71 Coord. System: NCSPCS 83

Easting: 2690351.16

Long: 76°42'18.2520"W Lat: 034°37'28.2780"N Datum: NAVD 88

W. D. Raw: 53.07 ft





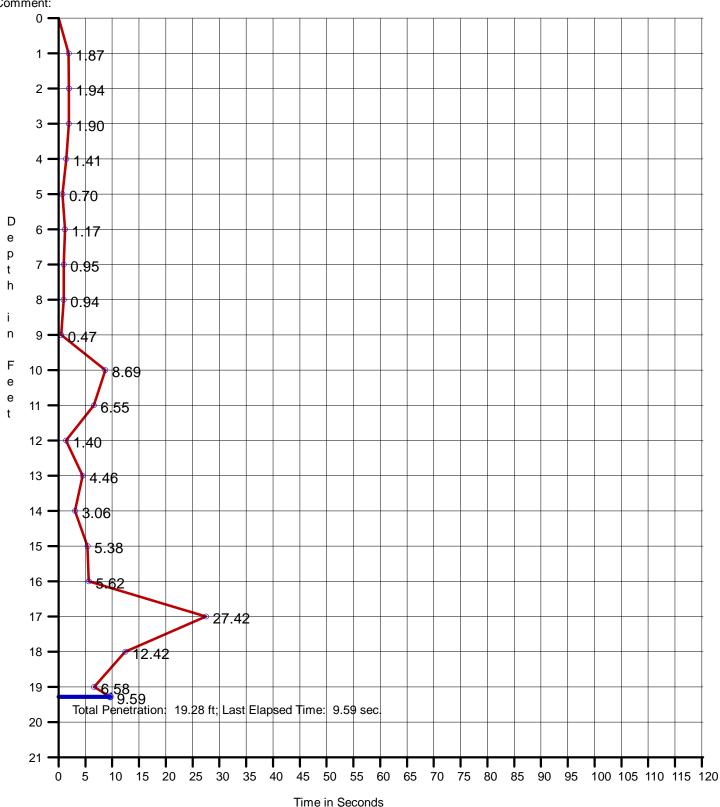
Penetration Graph for Core No. O50, Run 1

Date: 12/9/2011 Start Time: 4:05:04 PM End Time: 4:06:56 PM

Penetration: 19.28 ft Recovery: 19.80 ft W. D. Corrected: 55.90 ft

W. D. Raw: 55.23 ft

Easting: 2692363.84 Northing: 326252.08 Coord. System: NCSPCS 83 Long: 76°41'54.1740"W Lat: 034°37'27.7320"N Datum: NAVD 88

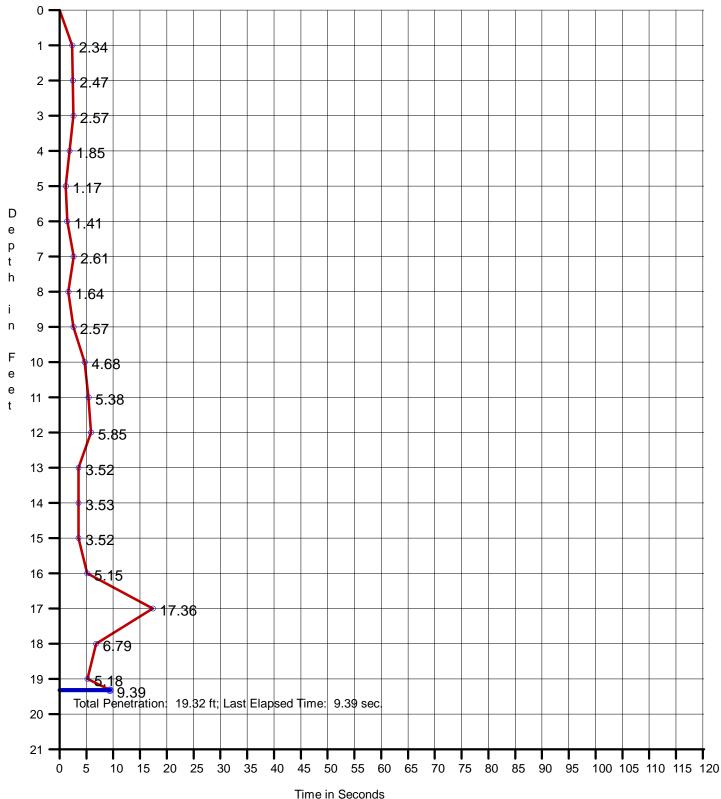


Penetration Graph for Core No. O51, Run 1

Date: 12/9/2011 Start Time: 4:30:48 PM End Time: 4:32:34 PM Penetration: 19.32 ft Recovery: 17.33 ft W. D. Corrected: 52.67 ft

W. D. Raw: 52.29 ft

Easting: 2694364.35 Northing: 326252.93 Coord. System: NCSPCS 83 Long: 76°41'30.2400"W Lat: 034°37'27.2820"N Datum: NAVD 88



Penetration Graph for Core No. O52, Run 1

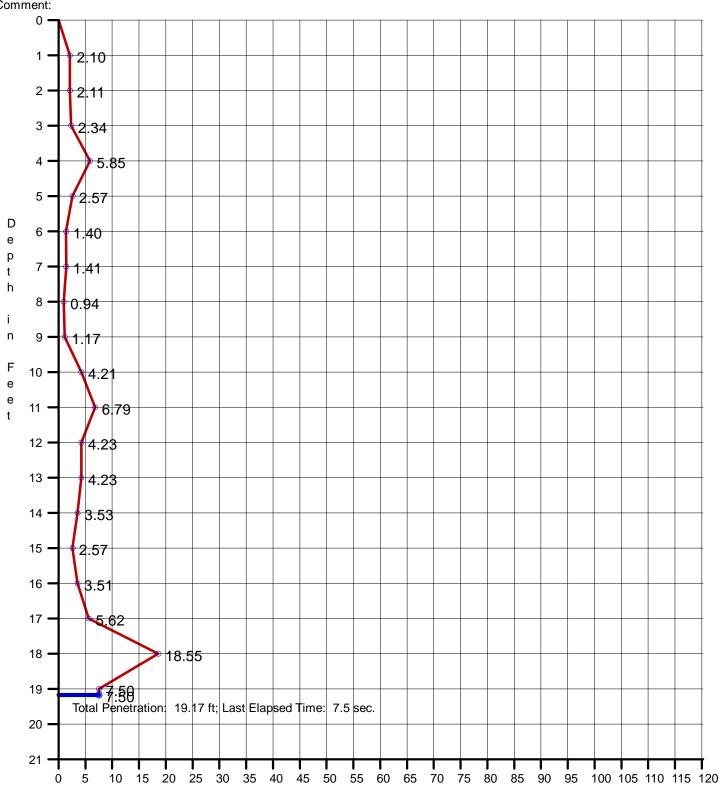
Date: 12/9/2011 Start Time: 4:59:04 PM End Time: 5:00:53 PM

Penetration: 19.17 ft Recovery: 18.33 ft W. D. Corrected: 54.69 ft

W. D. Raw: 54.60 ft

Easting: 2696364.53 Northing: 326251.56 Coord. System: NCSPCS 83 Long: 76°41'06.3120"W Lat: 034°37'26.8080"N Datum: NAVD 88

Comment:



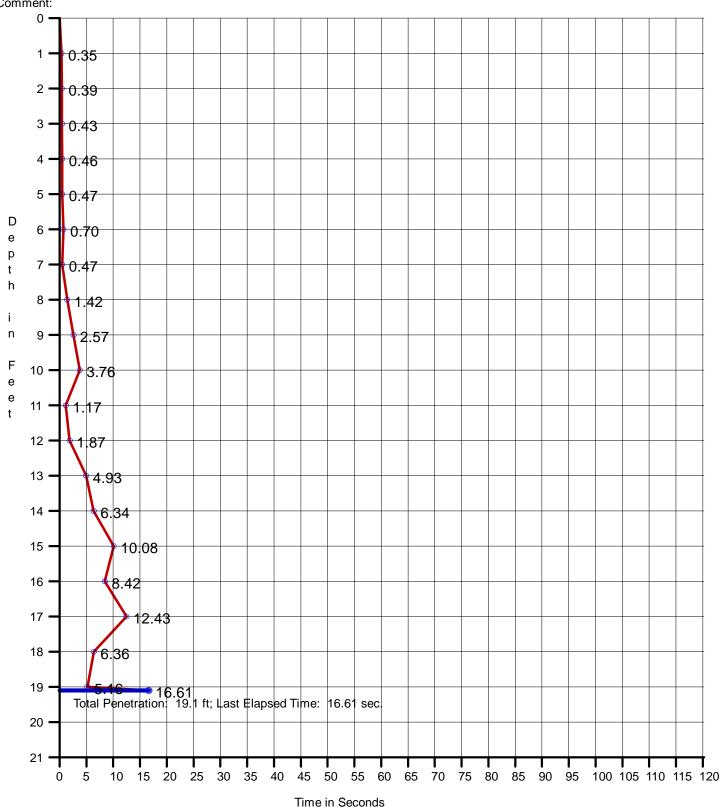
Penetration Graph for Core No. O53, Run 1

Date: 12/9/2011 Start Time: 1:08:09 PM End Time: 1:09:45 PM

Penetration: 19.10 ft Recovery: 17.50 ft W. D. Corrected: 55.07 ft

W. D. Raw: 53.40 ft

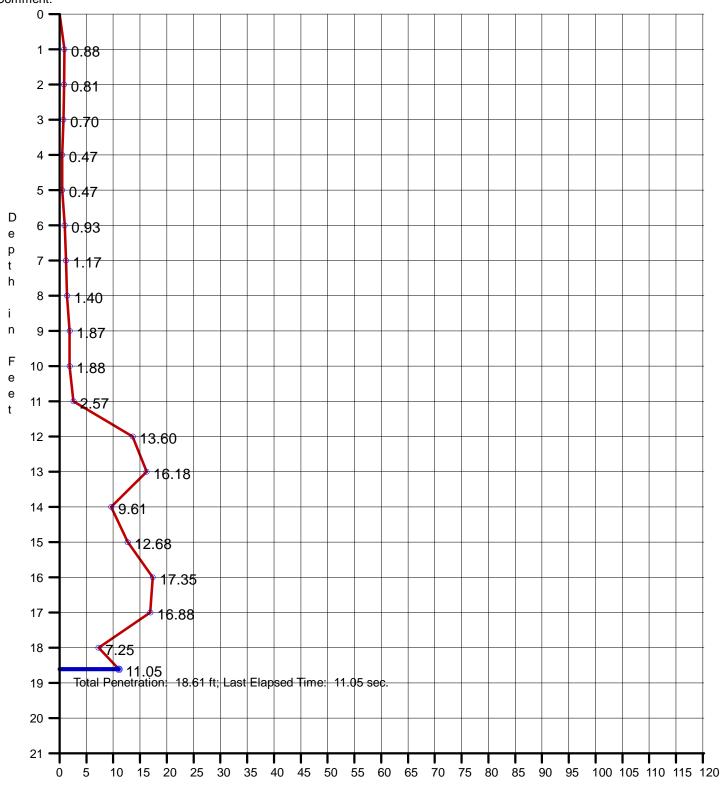
Easting: 2682357.26 Northing: 324250.96 Coord. System: NCSPCS 83 Long: 76°43'54.4320"W Lat: 034°37'10.2180"N Datum: NAVD 88



Penetration Graph for Core No. O54, Run 1

Date: 12/9/2011 Start Time: 12:04:55 PM End Time: 12:07:01 PM Penetration: 18.61 ft Recovery: 19.00 ft W. D. Corrected: 55.11 ft W. D. Raw: 53.67 ft Easting: 2684362.14 Northing: 324250.92 Coord. System: NCSPCS 83 Long: 76°43'30.4500"W Lat: 034°37'09.7620"N Datum: NAVD 88

Comment:



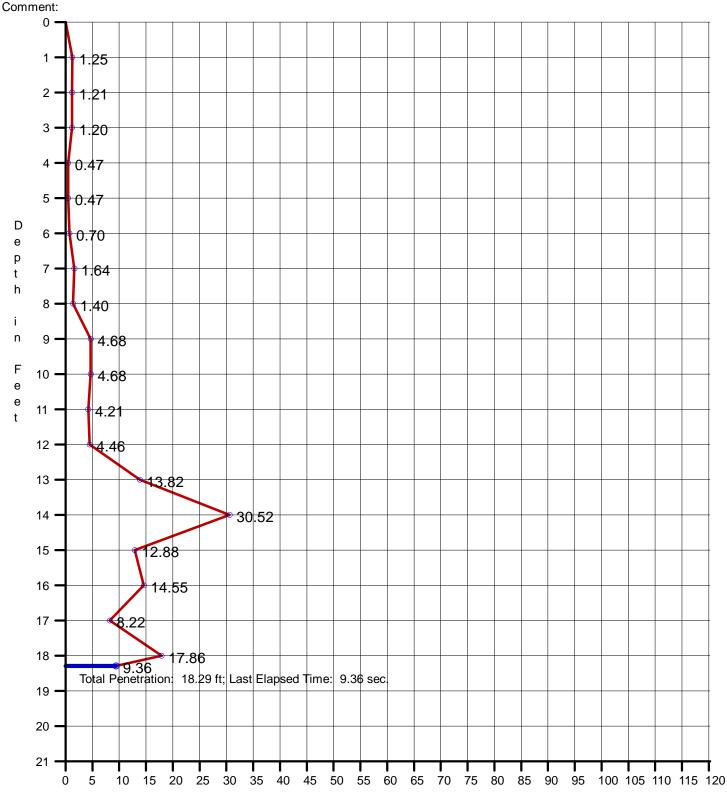
Penetration Graph for Core No. O55, Run 1

Date: 12/9/2011 Start Time: 11:35:03 AM End Time: 11:37:25 AM

Penetration: 18.29 ft Recovery: 19.20 ft W. D. Corrected: 55.19 ft W. D. Raw: 53.93 ft

Easting: 2686361.62 Northing: 324249.01 Coord. System: NCSPCS 83 Long: 76°43'06.5340"W Lat: 034°37'09.2940"N

Datum: NAVD 88

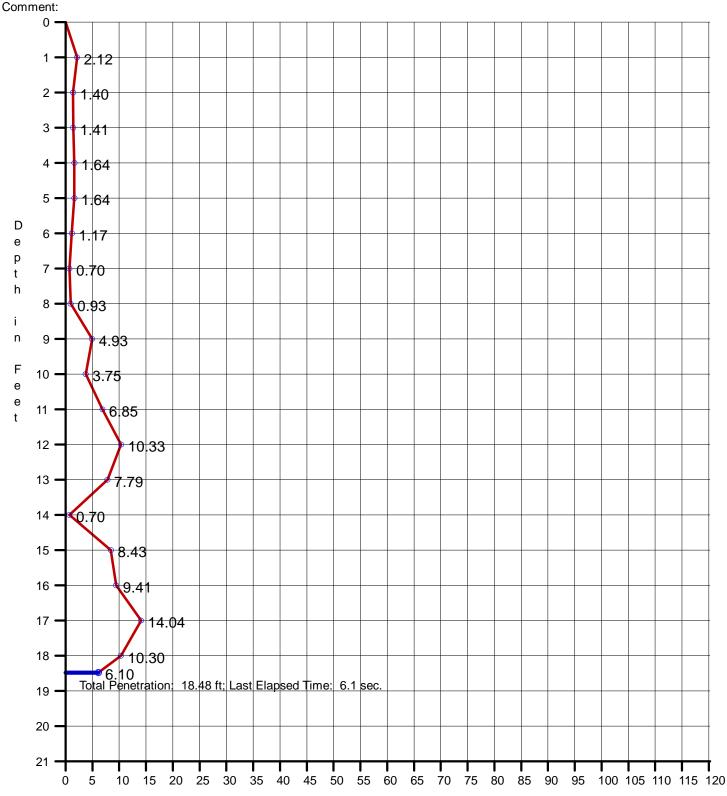


Penetration Graph for Core No. O56, Run 2

Date: 12/9/2011 Start Time: 10:26:31 AM End Time: 10:28:05 AM

Penetration: 18.48 ft Recovery: 16.75 ft W. D. Corrected: 57.69 ft W. D. Raw: 57.04 ft

Easting: 2688369.39 Northing: 324252.95 Coord. System: NCSPCS 83 Long: 76°42'42.5100"W Lat: 034°37'08.8740"N Datum: NAVD 88



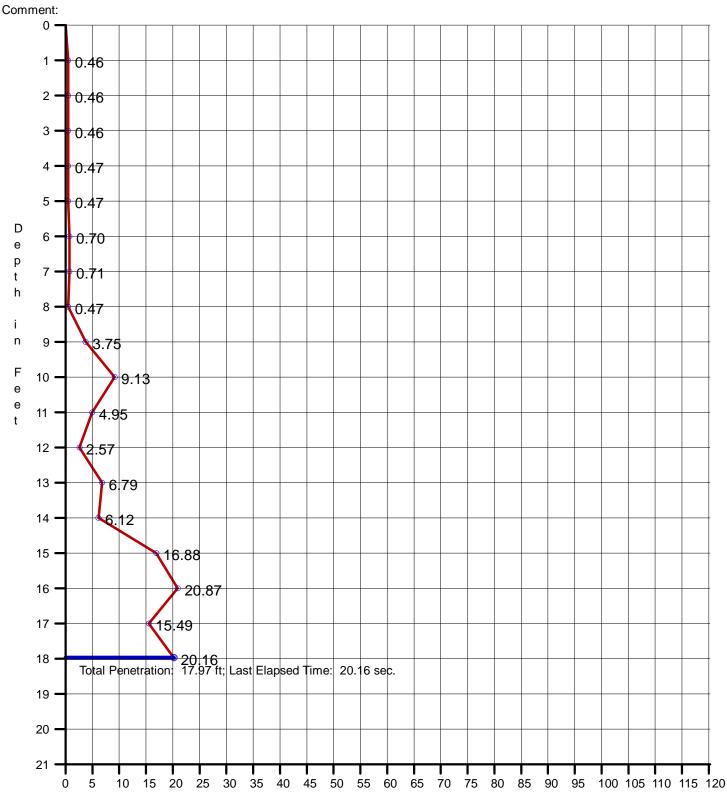
Penetration Graph for Core No. O57, Run 1

Date: 12/9/2011 Start Time: 9:47:12 AM End Time: 9:49:17 AM

Penetration: 17.97 ft Recovery: 18.00 ft W. D. Corrected: 54.70 ft

W. D. Raw: 54.47 ft

Easting: 2690363.38 Northing: 324250.44 Coord. System: NCSPCS 83 Long: 76°42'18.6600"W Lat: 034°37'08.3940"N Datum: NAVD 88



Penetration Graph for Core No. O58, Run 1

Date: 12/9/2011 Start Time: 9:20:22 AM End Time: 9:22:21 AM Penetration: 11.04 ft Recovery: 9.70 ft W. D. Corrected: 55.66 ft

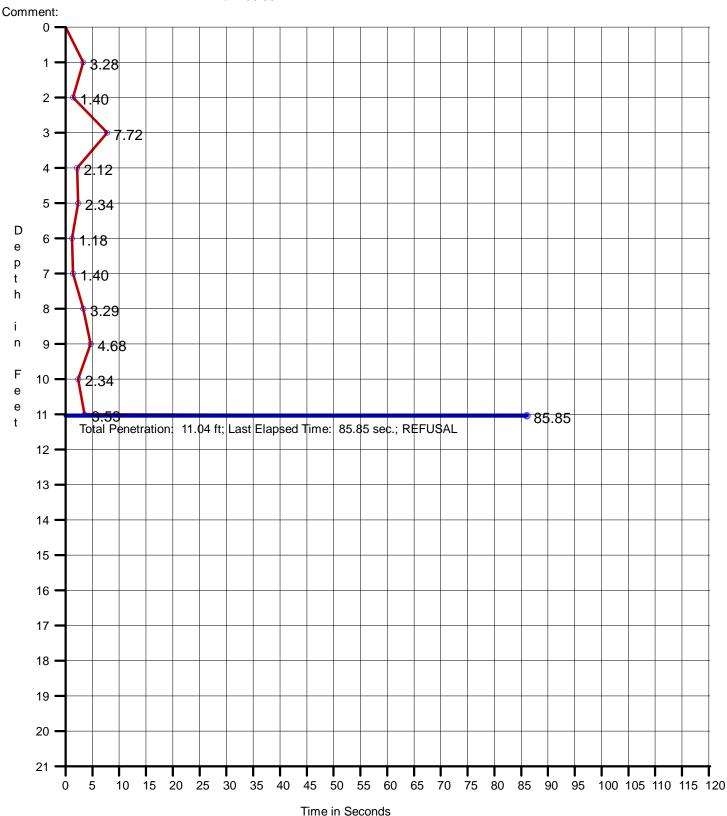
Northing: 324253.91 Coord. System: NCSPCS 83

Easting: 2692363.73

Long: 76°41'54.7320"W Lat: 034°37'07.9680"N

Datum: NAVD 88

W. D. Raw: 55.80 ft

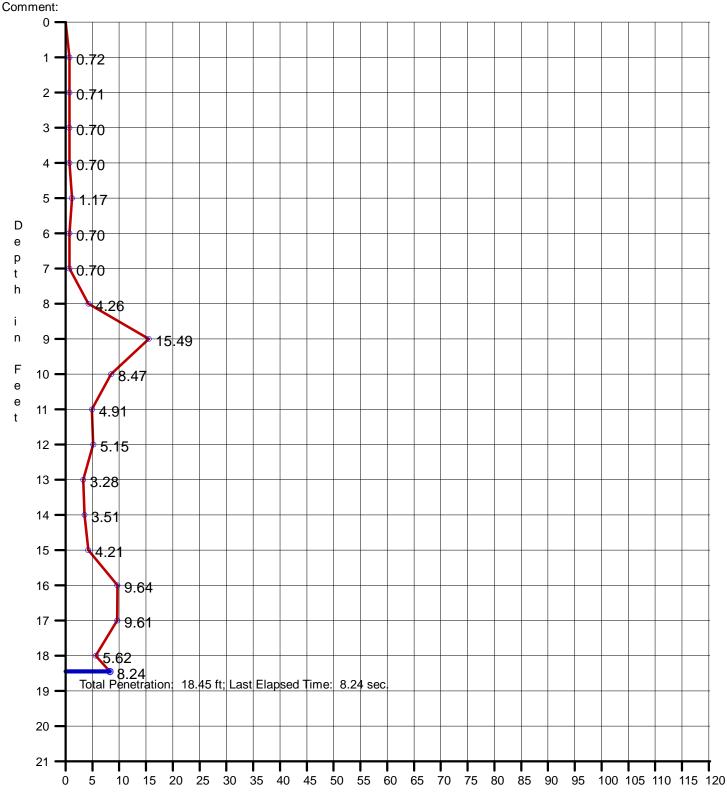


Penetration Graph for Core No. O59, Run 2

Date: 12/9/2011 Start Time: 8:49:26 AM End Time: 8:51:03 AM

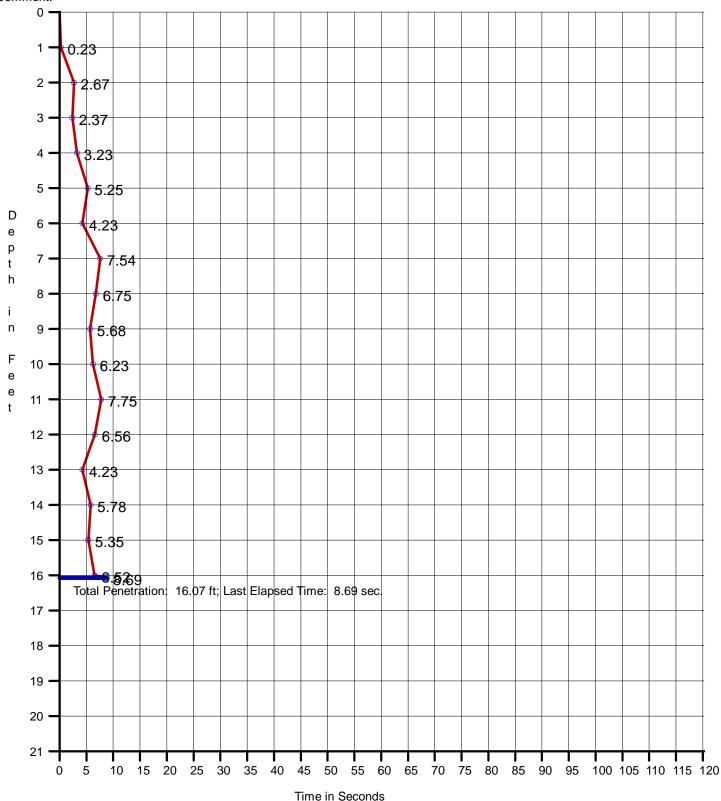
Penetration: 18.45 ft Recovery: 18.20 ft W. D. Corrected: 54.91 ft W. D. Raw: 55.40 ft

Easting: 2694360.70 Northing: 324250.38 Coord. System: NCSPCS 83 Long: 76°41'30.8400"W Lat: 034°37'07.4760"N Datum: NAVD 88



Penetration Graph for Core No. 060, Run 2

Date: 12/9/2011 Start Time: 8:07:10 AM End Time: 8:07:29 AM Penetration: 16.07 ft Recovery: 13.10 ft W. D. Corrected: 56.16 ft W. D. Raw: 56.00 ft Easting: 2696356.23 Northing: 324248.29 Coord. System: NCSPCS 83 Long: 76°41'06.9720"W Lat: 034°37'06.9960"N Datum: NAVD 88



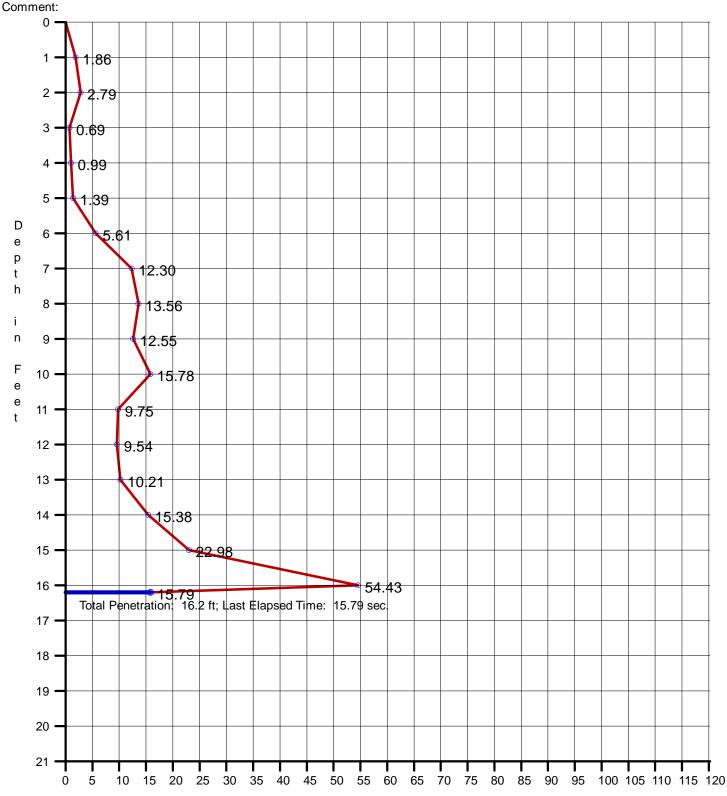
Penetration Graph for Core No. O192, Run 1

Date: 12/11/2011 Start Time: 11:28:46 AM End Time: 11:32:20 AM

Penetration: 16.20 ft Recovery: 17.30 ft W. D. Corrected: 41.66 ft W. D. Raw: 41.00 ft

Easting: 2690549.40 Northing: 329052.07 Coord. System: NCSPCS 83 Long: 76°42'15.1080"W Lat: 034°37'55.8360"N Datum: NAVD 88





Penetration Graph for Core No. Y66, Run 1

Date: 12/15/2011 Start Time: 12:28:55 PM End Time: 12:31:50 PM Penetration: 11.64 ft Recovery: 10.20 ft W. D. Corrected: 40.26 ft W. D. Raw: 40.60 ft Easting: 2581068.17 Northing: 330290.99 Coord. System: NCSPCS 83 Long: 77°04'04.7880"W Lat: 034°38'31.1460"N Datum: NAVD 88



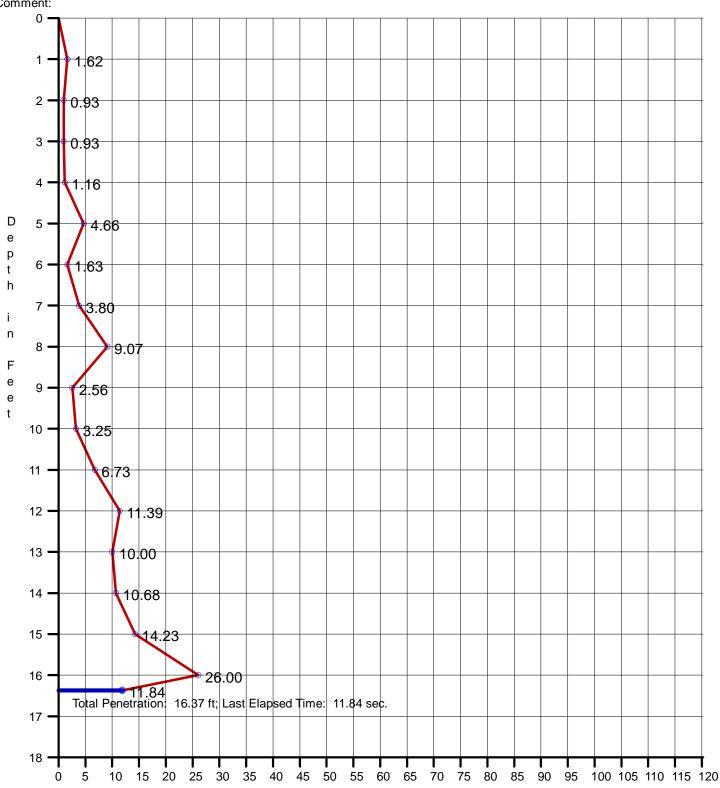
Penetration Graph for Core No. Y67, Run 1

Date: 12/15/2011 Start Time: 12:53:42 PM End Time: 12:55:42 PM

Penetration: 16.37 ft Recovery: 15.00 ft W. D. Corrected: 39.90 ft W. D. Raw: 39.92 ft

Easting: 2582861.40 Northing: 331179.80 Coord. System: NCSPCS 83 Long: 77°03'43.1220"W Lat: 034°38'39.5940"N Datum: NAVD 88

Comment:



Penetration Graph for Core No. Y68, Run 1

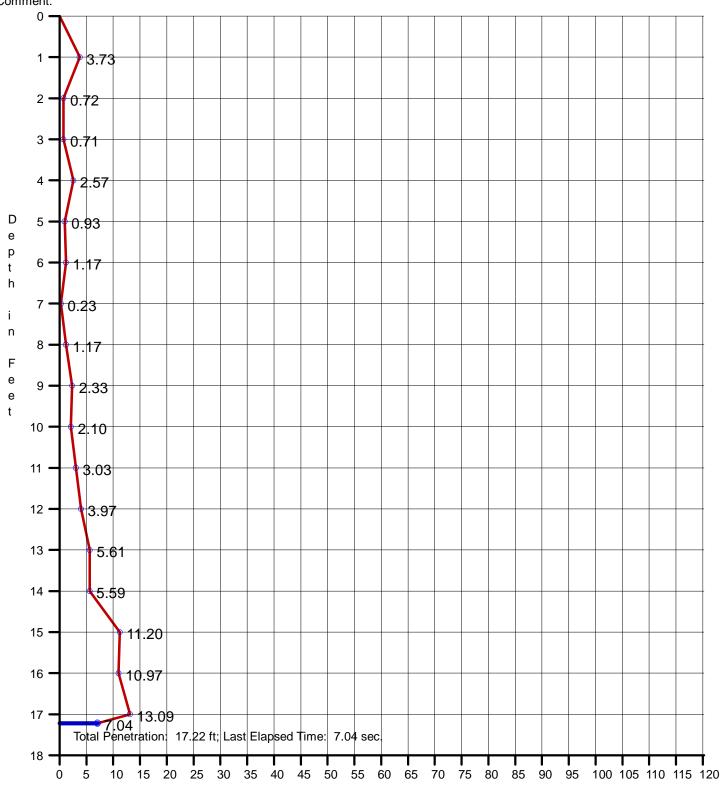
Date: 12/16/2011 Start Time: 8:48:29 AM End Time: 8:49:45 AM

Penetration: 17.22 ft Recovery: 17.50 ft W. D. Corrected: 40.55 ft

W. D. Raw: 39.98 ft

Easting: 2584652.54 Northing: 332068.24 Coord. System: NCSPCS 83 Long: 77°03'21.4800"W Lat: 034°38'48.0360"N Datum: NAVD 88

Comment:



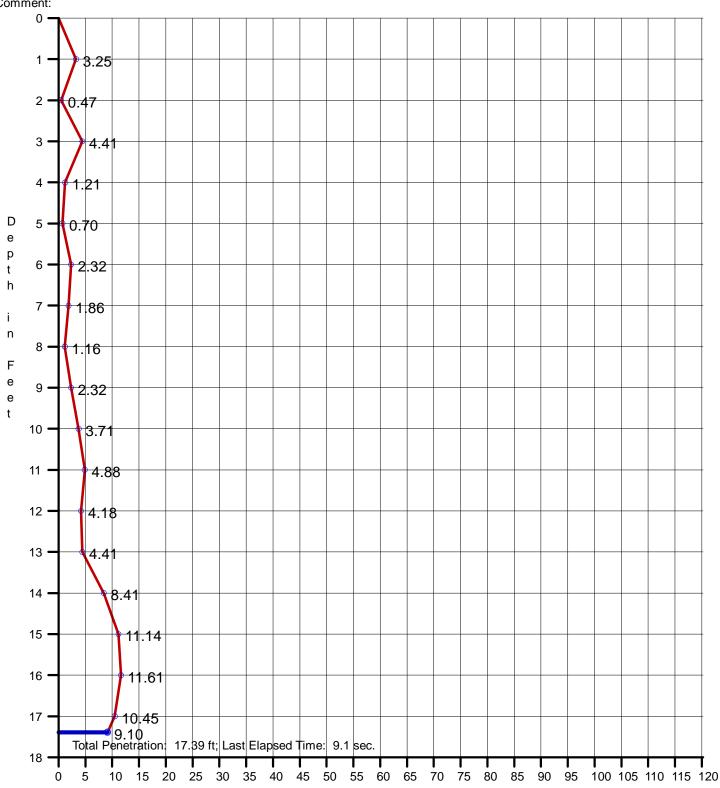
Penetration Graph for Core No. Y69, Run 1

Date: 12/16/2011 Start Time: 9:07:28 AM End Time: 9:08:53 AM

Penetration: 17.39 ft Recovery: 17.90 ft W. D. Corrected: 40.36 ft W. D. Raw: 40.00 ft

Easting: 2586445.77 Northing: 332954.66 Coord. System: NCSPCS 83 Long: 77°02'59.8140"W Lat: 034°38'56.4540"N Datum: NAVD 88

Comment:

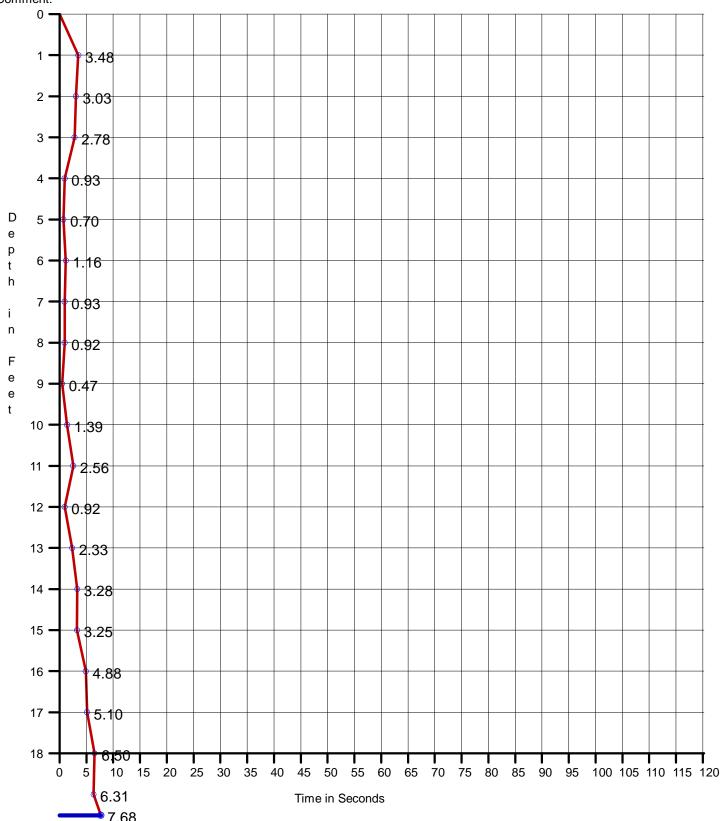


Penetration Graph for Core No. Y70, Run 1

Date: 12/14/2011 Start Time: 10:29:25 AM End Time: 10:30:28 AM Penetration: 19.51 ft Recovery: 19.20 ft W. D. Corrected: 35.91 ft W. D. Raw: 37.16 ft

Total Penetration: 19.51 ft; Last Elapsed Time: 7.68 sec.

Easting: 2588236.45 Northing: 333843.16 Coord. System: NCSPCS 83 Long: 77°02'38.1720"W Lat: 034°39'04.8900"N Datum: NAVD 88



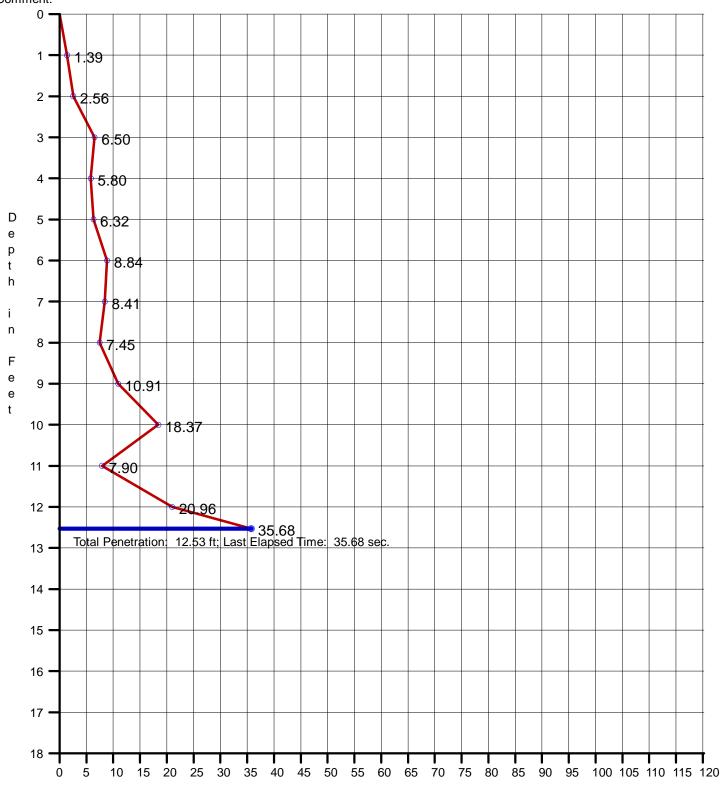
Penetration Graph for Core No. Y71, Run 2

Date: 12/15/2011 Start Time: 12:04:57 PM End Time: 12:07:18 PM Penetration: 12.53 ft Recovery: 15.5 ft W. D. Corrected: 45.70 ft

W. D. Raw: 46.41 ft

Easting: 2581958.90 Northing: 328498.09 Coord. System: NCSPCS 83 Long: 77°03'54.5520"W Lat: 034°38'13.2420"N Datum: NAVD 88

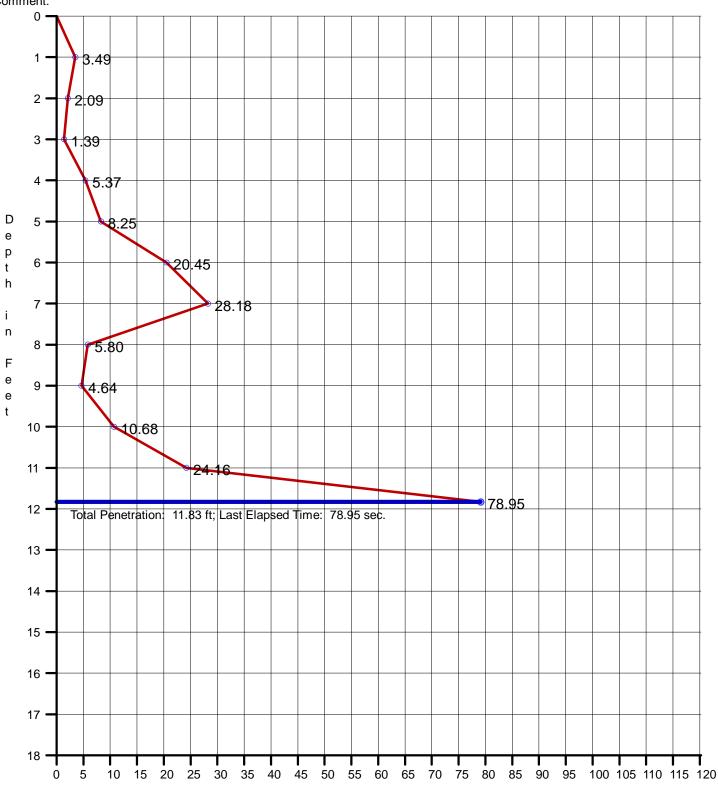
Comment:



Penetration Graph for Core No. Y72, Run 1

Date: 12/15/2011 Start Time: 1:35:32 PM End Time: 1:38:45 PM Penetration: 11.83 ft Recovery: 13.50 ft W. D. Corrected: 46.30 ft W. D. Raw: 45.76 ft Easting: 2583748.74 Northing: 329384.70 Coord. System: NCSPCS 83 Long: 77°03'32.9220"W Lat: 034°38'21.6660"N Datum: NAVD 88

Comment:



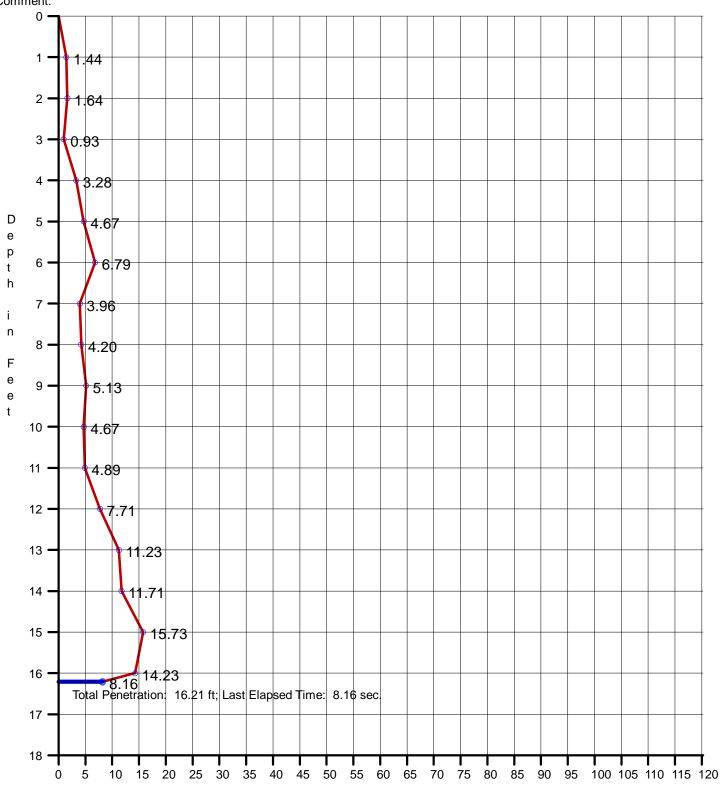
Penetration Graph for Core No. Y73, Run 1

Date: 12/16/2011 Start Time: 8:30:13 AM End Time: 8:32:03 AM

Penetration: 16.21 ft Recovery: 16.25 ft W. D. Corrected: 46.20 ft W. D. Raw: 45.40 ft

Easting: 2585541.18 Northing: 330274.65 Coord. System: NCSPCS 83 Long: 77°03'11.2680"W Lat: 034°38'30.1200"N Datum: NAVD 88

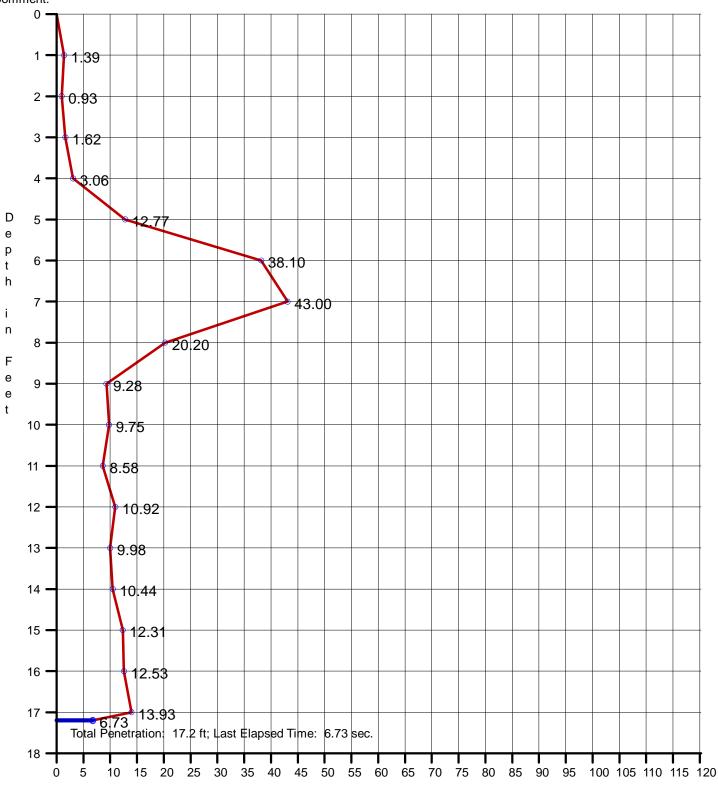
Comment:



Penetration Graph for Core No. Y74, Run 1

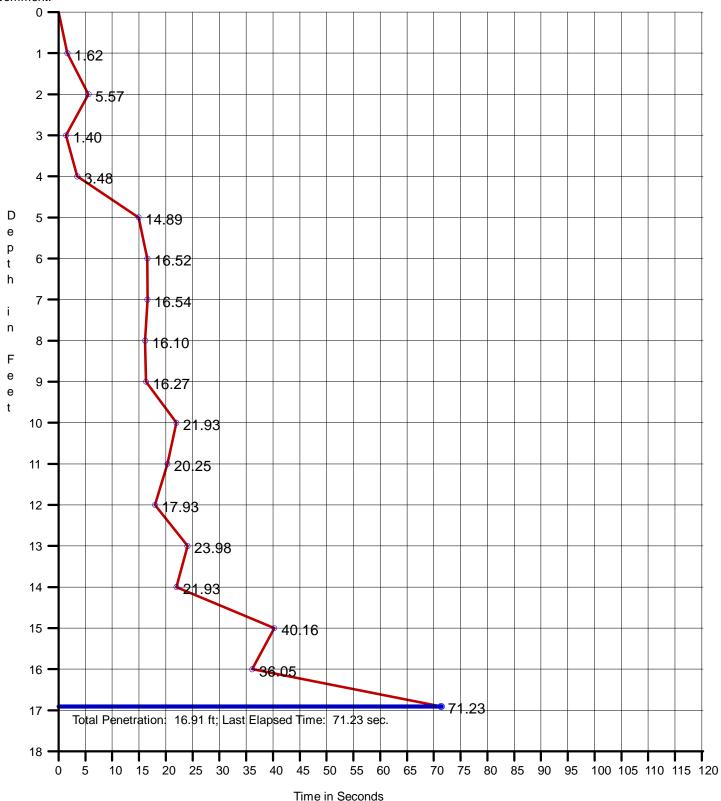
Date: 12/16/2011 Start Time: 9:27:02 AM End Time: 9:30:47 AM Penetration: 17.20 ft Recovery: 19.10 ft W. D. Corrected: 48.83 ft W. D. Raw: 48.74 ft Easting: 2587333.66 Northing: 331159.67 Coord. System: NCSPCS 83 Long: 77°02'49.6080"W Lat: 034°38'38.5260"N Datum: NAVD 88

Comment:



Penetration Graph for Core No. Y75, Run 1

Date: 12/14/2011 Start Time: 12:01:49 PM End Time: 12:07:35 PM Penetration: 16.91 ft Recovery: 19.20 ft W. D. Corrected: 47.79 ft W. D. Raw: 48.19 ft Easting: 2589122.90 Northing: 332046.48 Coord. System: NCSPCS 83 Long: 77°02'27.9900"W Lat: 034°38'46.9500"N Datum: NAVD 88



Penetration Graph for Core No. Y76, Run 1

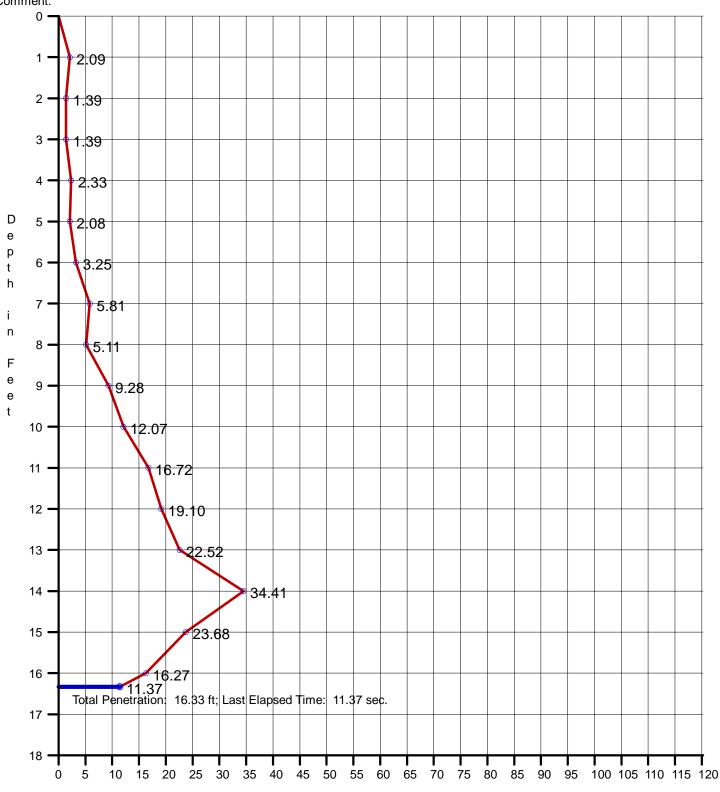
Date: 12/15/2011 Start Time: 9:29:07 AM End Time: 9:32:16 AM

Penetration: 16.33 ft Recovery: 15.10 ft W. D. Corrected: 49.58 ft

W. D. Raw: 50.42 ft

Easting: 2582843.22 Northing: 326707.43 Coord. System: NCSPCS 83 Long: 77°03'44.3880"W Lat: 034°37'55.3620"N Datum: NAVD 88

Comment:



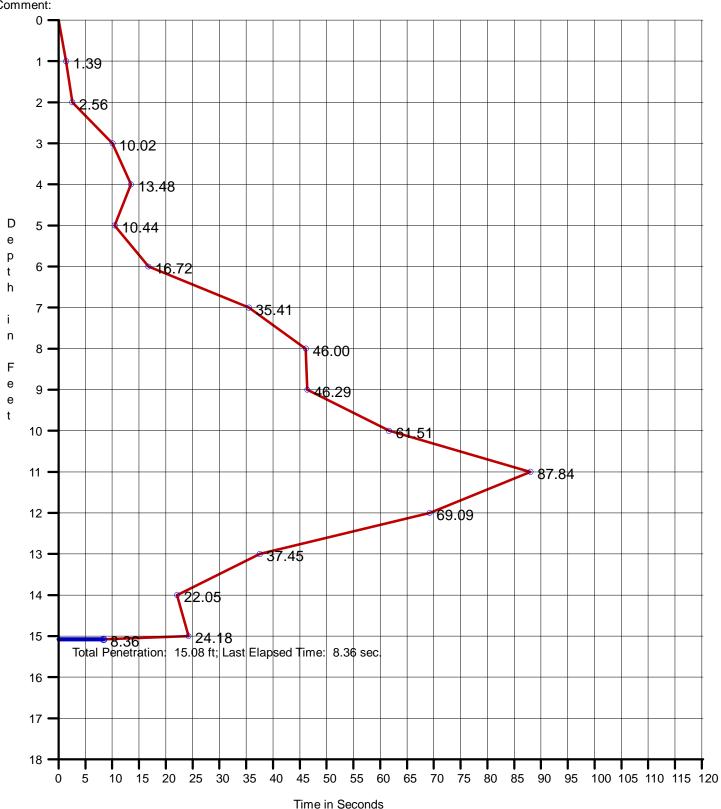
Penetration Graph for Core No. Y77, Run 1

Date: 12/15/2011 Start Time: 1:56:00 PM End Time: 2:04:13 PM

Penetration: 15.08 ft Recovery: 20.10 ft W. D. Corrected: 47.78 ft Easting: 2584636.12 Northing: 327594.67 Coord. System: NCSPCS 83 Long: 77°03'22.7280"W Lat: 034°38'03.7920"N Datum: NAVD 88

W. D. Raw: 47.05 ft

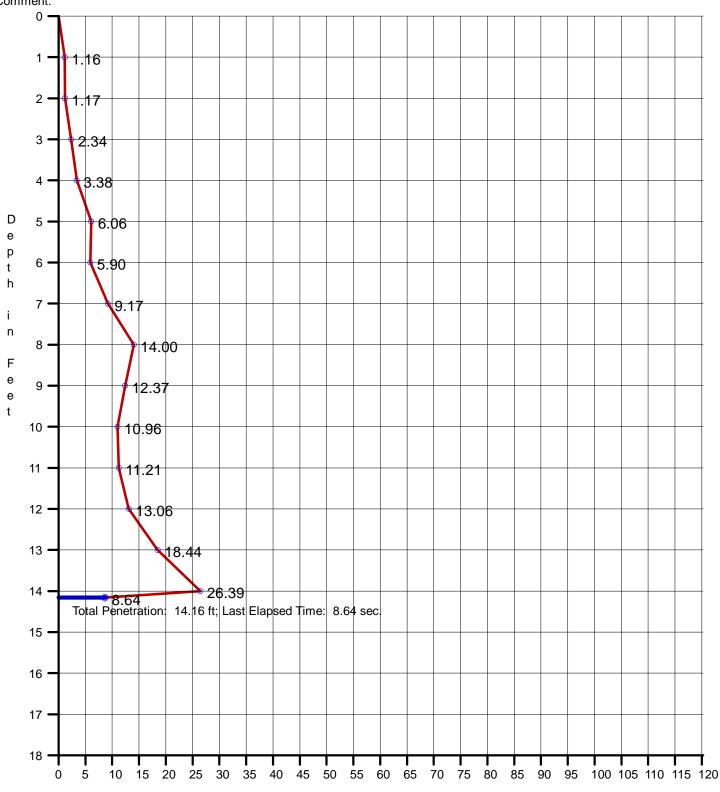




Penetration Graph for Core No. Y78, Run 1

Date: 12/16/2011 Start Time: 8:11:49 AM End Time: 8:14:13 AM Penetration: 14.16 ft Recovery: 16.90 ft W. D. Corrected: 48.52 ft W. D. Raw: 47.49 ft Easting: 2586422.94 Northing: 328481.03 Coord. System: NCSPCS 83 Long: 77°03'01.1400"W Lat: 034°38'12.2100"N Datum: NAVD 88

Comment:



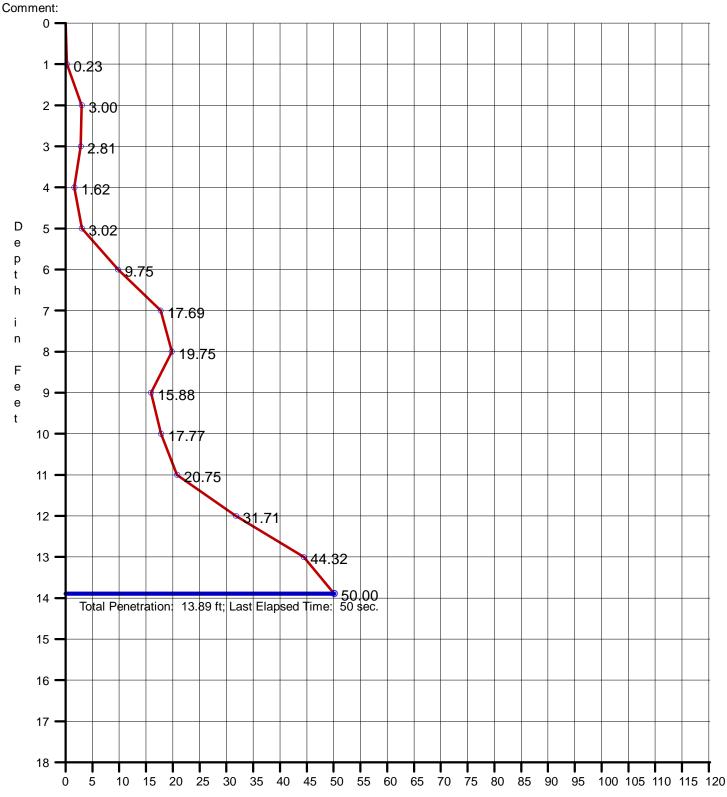
Penetration Graph for Core No. Y79, Run 1

Date: 12/14/2011 Start Time: 1:49:12 PM End Time: 1:57:03 PM

Penetration: 13.89 ft Recovery: 19.50 ft W. D. Corrected: 48.67 ft W. D. Raw: 47.67 ft

Easting: 2588219.74 Northing: 329370.00 Coord. System: NCSPCS 83 Long: 77°02'39.4260"W Lat: 034°38'20.6520"N

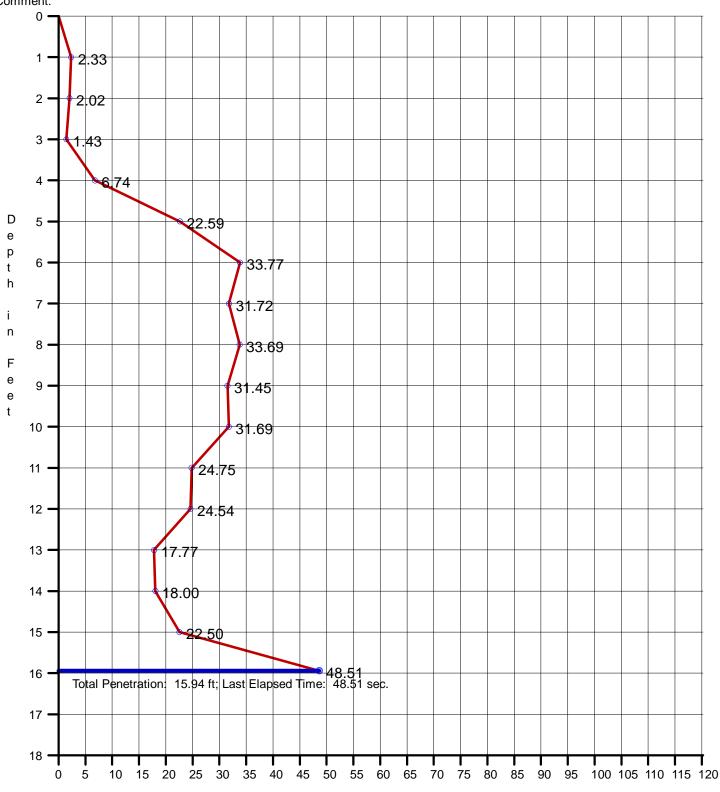
Datum: NAVD 88



Penetration Graph for Core No. Y80, Run 1

Date: 12/14/2011 Start Time: 12:38:28 PM End Time: 12:44:27 PM Penetration: 15.94 ft Recovery: 19.40 ft W. D. Corrected: 48.47 ft W. D. Raw: 48.42 ft Easting: 2590014.88 Northing: 330255.73 Coord. System: NCSPCS 83 Long: 77°02'17.7360"W Lat: 034°38'29.0640"N Datum: NAVD 88

Comment:



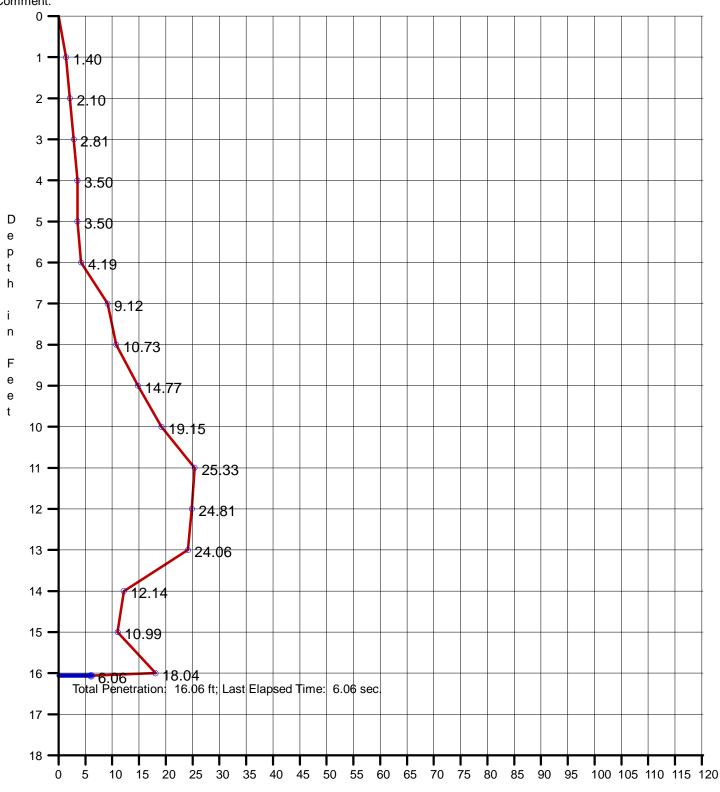
Penetration Graph for Core No. Y81, Run 1

Date: 12/15/2011 Start Time: 9:01:43 AM End Time: 9:04:56 AM Penetration: 16.06 ft Recovery: 19.40 ft W. D. Corrected: 50.65 ft

W. D. Raw: 51.23 ft

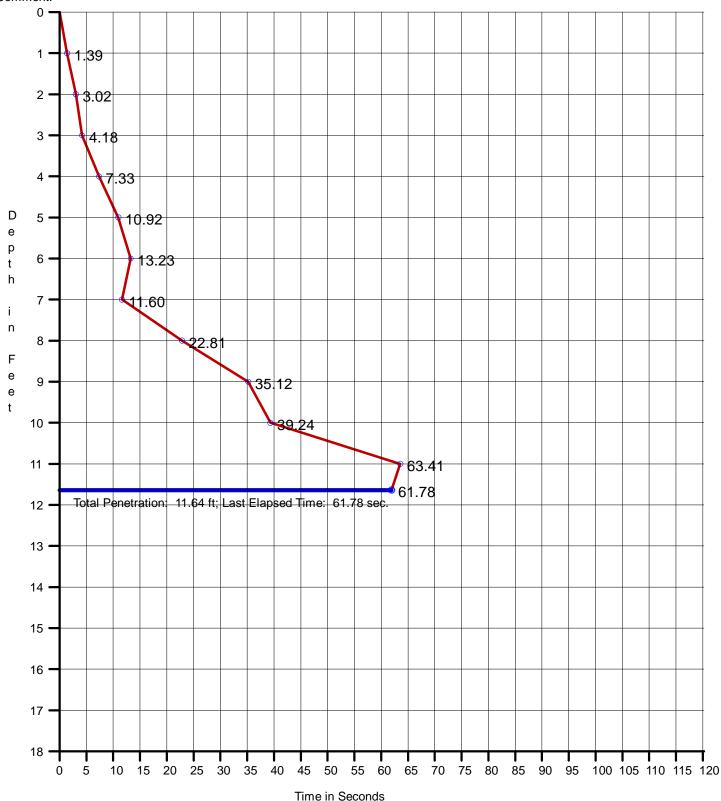
Easting: 2583729.96 Northing: 324915.65 Coord. System: NCSPCS 83 Long: 77°03'34.1940"W Lat: 034°37'37.4700"N Datum: NAVD 88

Comment:



Penetration Graph for Core No. Y82, Run 1

Date: 12/15/2011 Start Time: 2:44:06 PM End Time: 2:48:40 PM Penetration: 11.64 ft Recovery: 14.60 ft W. D. Corrected: 48.88 ft W. D. Raw: 47.60 ft Easting: 2585524.25 Northing: 325799.94 Coord. System: NCSPCS 83 Long: 77°03'12.5220"W Lat: 034°37'45.8700"N Datum: NAVD 88



Penetration Graph for Core No. Y83, Run 1

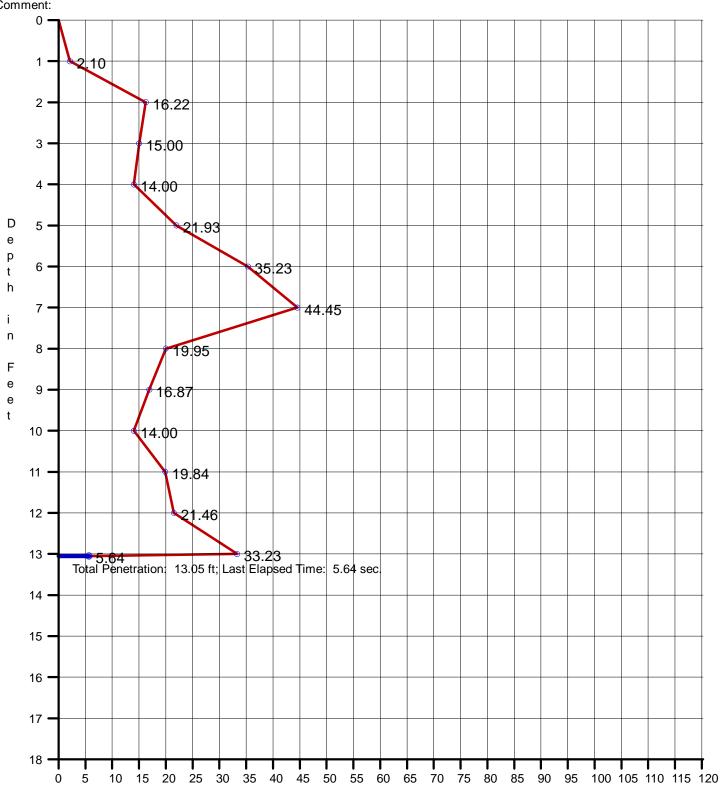
Date: 12/16/2011 Start Time: 7:39:04 AM End Time: 7:43:44 AM

Penetration: 13.05 ft Recovery: 19.80 ft W. D. Corrected: 51.46 ft W. D. Raw: 50.02 ft

Easting: 2587316.76 Northing: 326689.74 Coord. System: NCSPCS 83 Long: 77°02'50.8620"W Lat: 034°37'54.3240"N

Datum: NAVD 88

Comment:



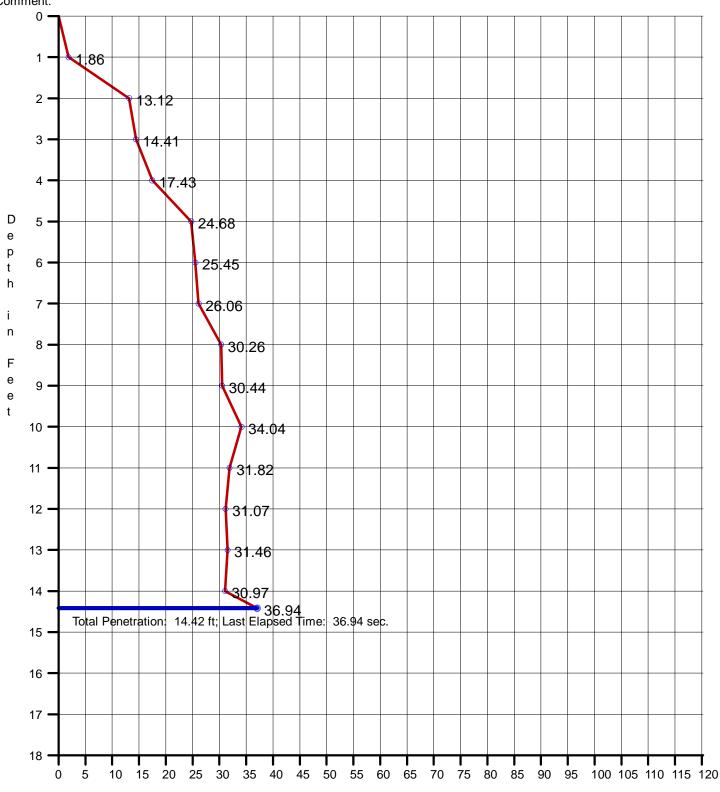
Penetration Graph for Core No. Y84, Run 1

Date: 12/14/2011 Start Time: 2:29:53 PM End Time: 2:36:13 PM Penetration: 14.42 ft Recovery: 19.70 ft W. D. Corrected: 51.30 ft W. D. Raw: 49.92 ft Easting: 2589107.52 Northing: 327575.40 Coord. System: NCSPCS 83 Long: 77°02'29.2260"W Lat: 034°38'02.7300"N Datum: NAVD 88

Occia. Oyo

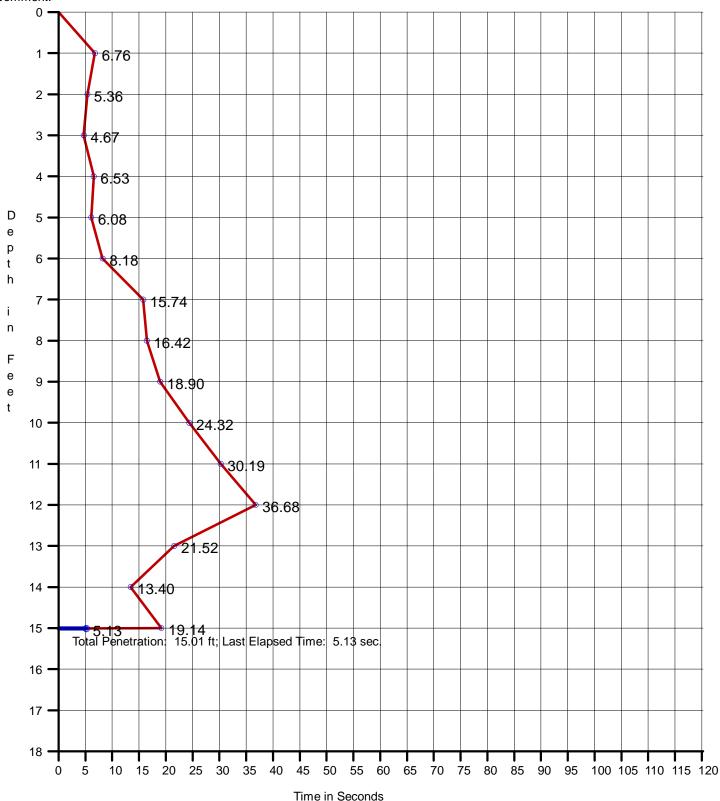
rd. System: NCSPCS 83 Datum: NAVD 88





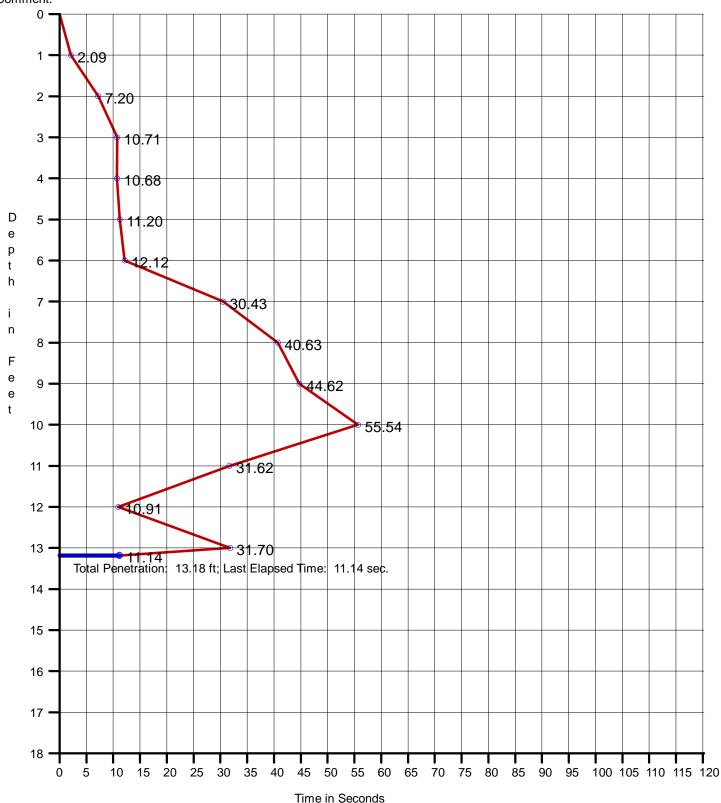
Penetration Graph for Core No. Y85, Run 1

Date: 12/15/2011 Start Time: 8:38:07 AM End Time: 8:43:11 AM Penetration: 15.01 ft Recovery: 18.20 ft W. D. Corrected: 51.37 ft W. D. Raw: 51.71 ft Easting: 2584622.31 Northing: 323122.10 Coord. System: NCSPCS 83 Long: 77°03'23.9400"W Lat: 034°37'19.5600"N Datum: NAVD 88



Penetration Graph for Core No. Y86, Run 1

Date: 12/15/2011 Start Time: 3:08:10 PM End Time: 3:13:20 PM Penetration: 13.18 ft Recovery: 18.10 ft W. D. Corrected: 51.04 ft W. D. Raw: 49.52 ft Easting: 2586412.93 Northing: 324010.13 Coord. System: NCSPCS 83 Long: 77°03'02.3100"W Lat: 034°37'27.9960"N Datum: NAVD 88

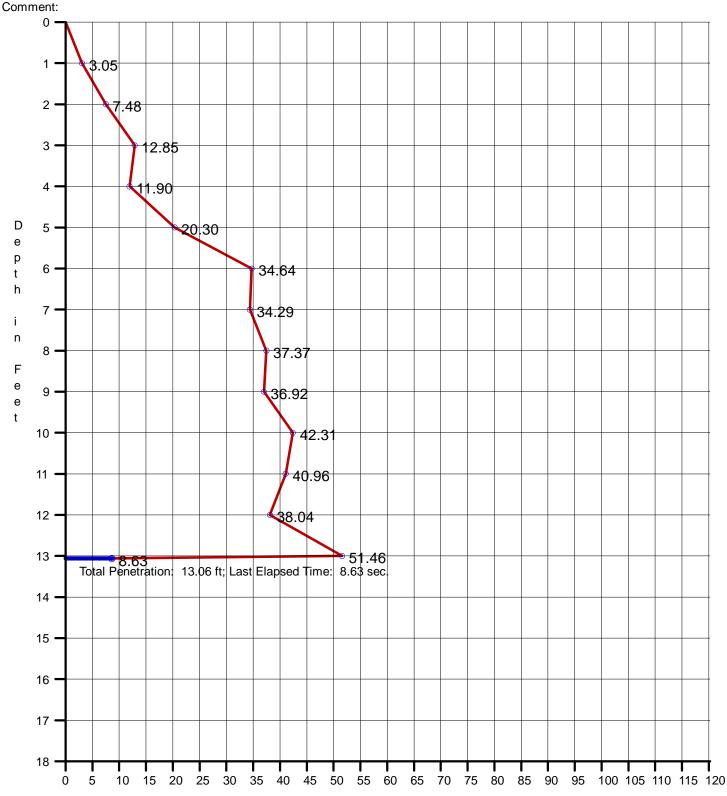


Penetration Graph for Core No. Y87, Run 1

Date: 12/16/2011 Start Time: 7:11:47 AM End Time: 7:18:07 AM

Penetration: 13.06 ft Recovery: 18.10 ft W. D. Corrected: 52.49 ft W. D. Raw: 50.88 ft

Easting: 2588204.78 Northing: 324899.19 Coord. System: NCSPCS 83 Long: 77°02'40.6620"W Lat: 034°37'36.4380"N Datum: NAVD 88



Penetration Graph for Core No. Y88, Run 1

Date: 12/14/2011 Start Time: 3:22:22 PM End Time: 3:26:56 PM

Penetration: 8.35 ft Recovery: 12.50 ft W. D. Corrected: 51.40 ft

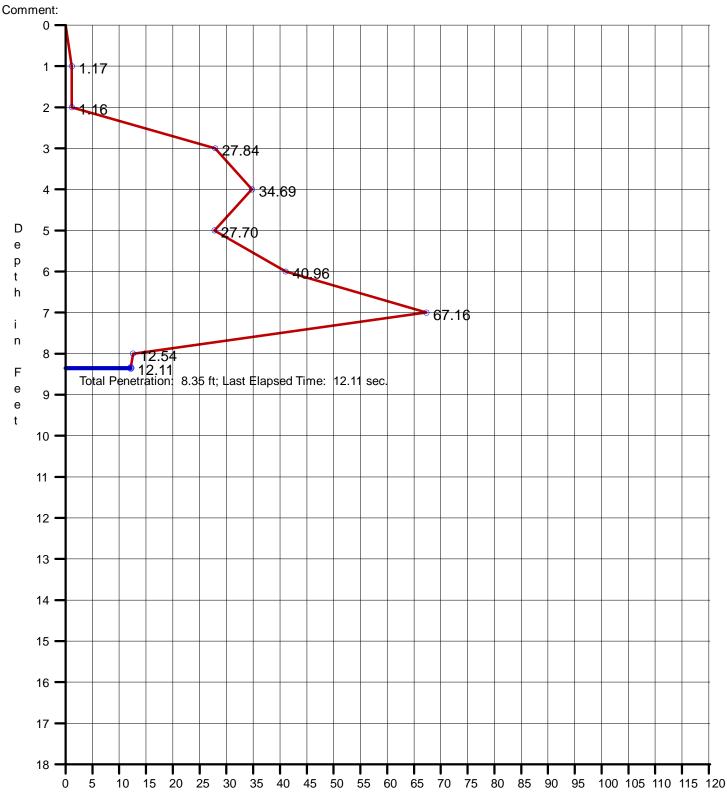
Northing: 325785.60 Coord. System: NCSPCS 83

Easting: 2589996.84

Long: 77°02'19.0080"W Lat: 034°37'44.8560"N Datum: NAVD 88

W. D. Raw: 49.47 ft





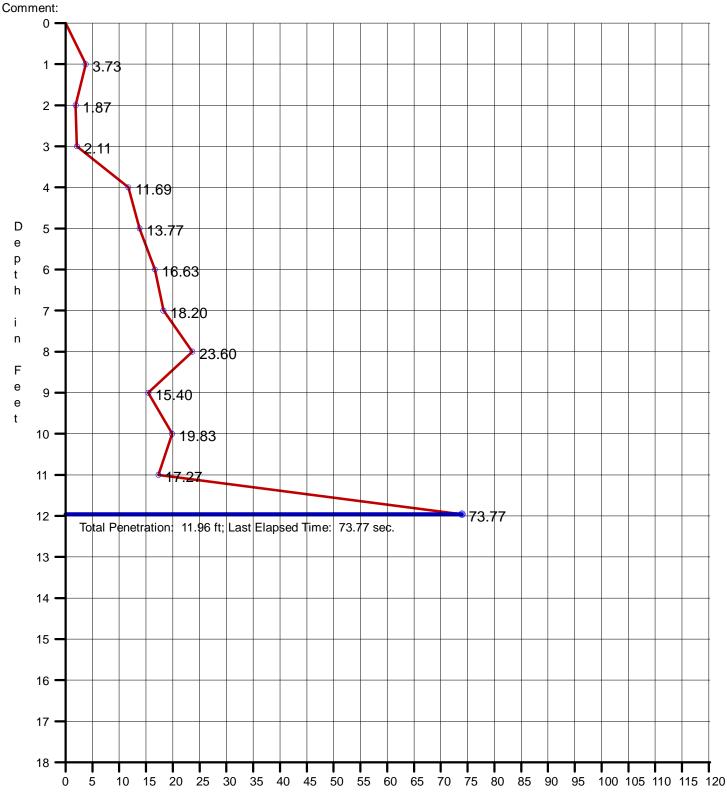
Penetration Graph for Core No. Y89, Run 1

Date: 12/15/2011 Start Time: 7:58:33 AM End Time: 8:02:11 AM

Penetration: 11.96 ft Recovery: 16.10 ft W. D. Corrected: 51.85 ft W. D. Raw: 51.65 ft

Easting: 2585512.28 Northing: 321327.69 Coord. System: NCSPCS 83 Long: 77°03'13.7100"W Lat: 034°37'01.6440"N

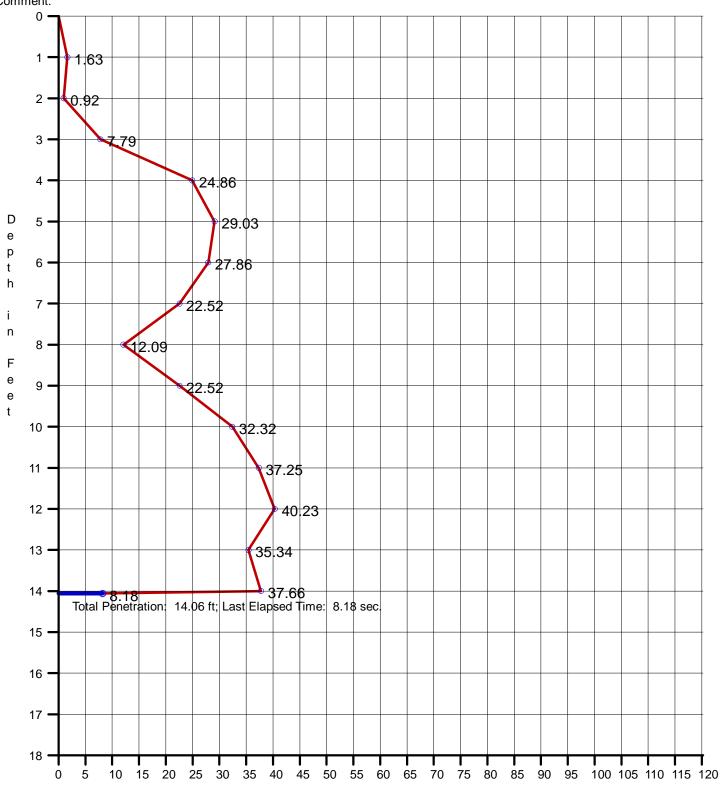
Datum: NAVD 88



Penetration Graph for Core No. Y90, Run 1

Date: 12/15/2011 Start Time: 3:31:12 PM End Time: 3:36:52 PM Penetration: 14.06 ft Recovery: 19.30 ft W. D. Corrected: 53.17 ft W. D. Raw: 51.48 ft Easting: 2587301.30 Northing: 322214.30 Coord. System: NCSPCS 83 Long: 77°02'52.1040"W Lat: 034°37'10.0620"N Datum: NAVD 88

Comment:

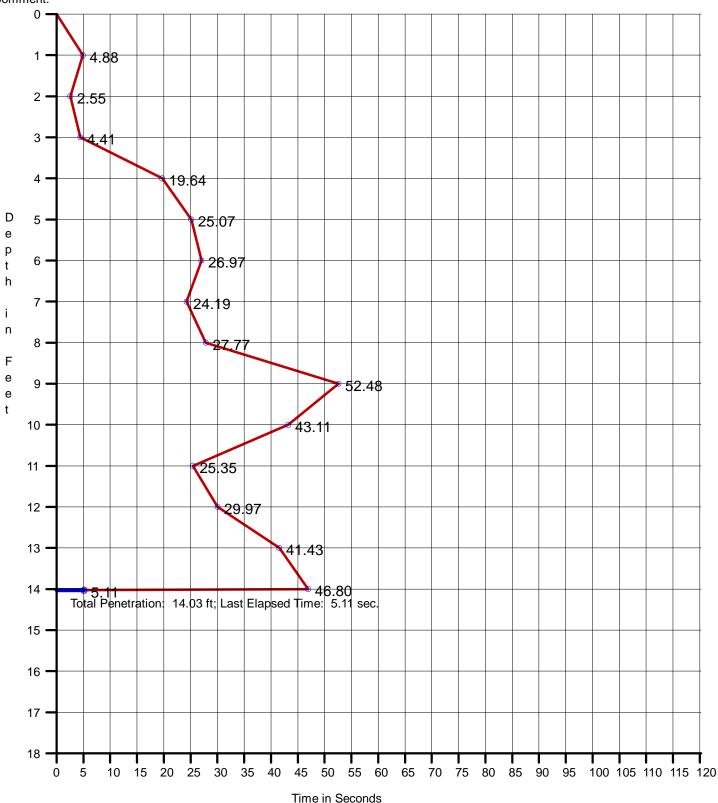


Penetration Graph for Core No. Y91, Run 1

Date: 12/15/2011 Start Time: 4:27:36 PM End Time: 4:33:56 PM Penetration: 14.03 ft Recovery: 20.00 ft W. D. Corrected: 52.48 ft

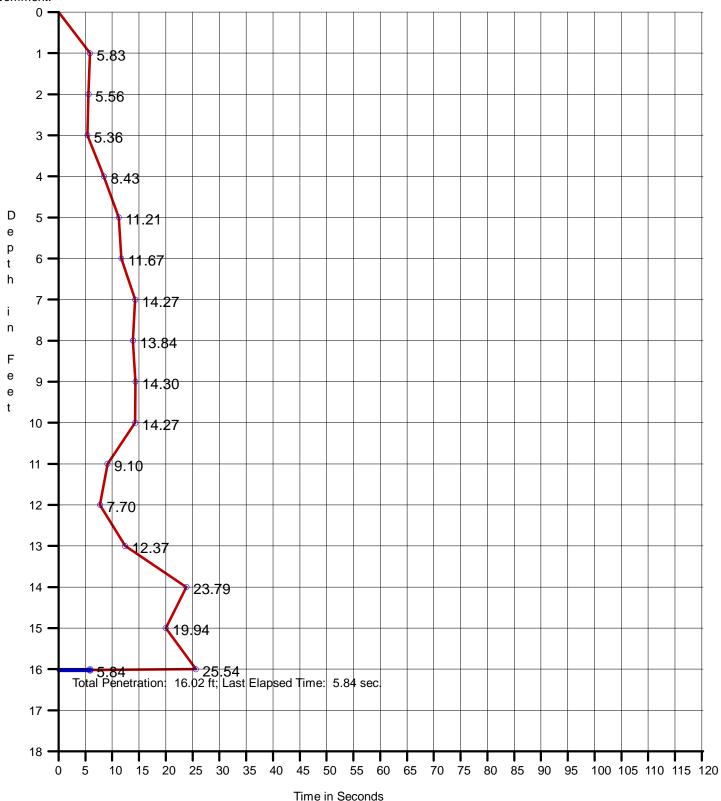
W. D. Raw: 50.46 ft

Easting: 2589099.32 Northing: 323108.12 Coord. System: NCSPCS 83 Long: 77°02'30.3780"W Lat: 034°37'18.5520"N Datum: NAVD 88



Penetration Graph for Core No. Y92, Run 1

Date: 12/15/2011 Start Time: 7:20:57 AM End Time: 7:25:26 AM Penetration: 16.02 ft Recovery: 20.00 ft W. D. Corrected: 54.21 ft W. D. Raw: 53.59 ft Easting: 2586399.19 Northing: 319538.88 Coord. System: NCSPCS 83 Long: 77°03'03.5220"W Lat: 034°36'43.7760"N Datum: NAVD 88

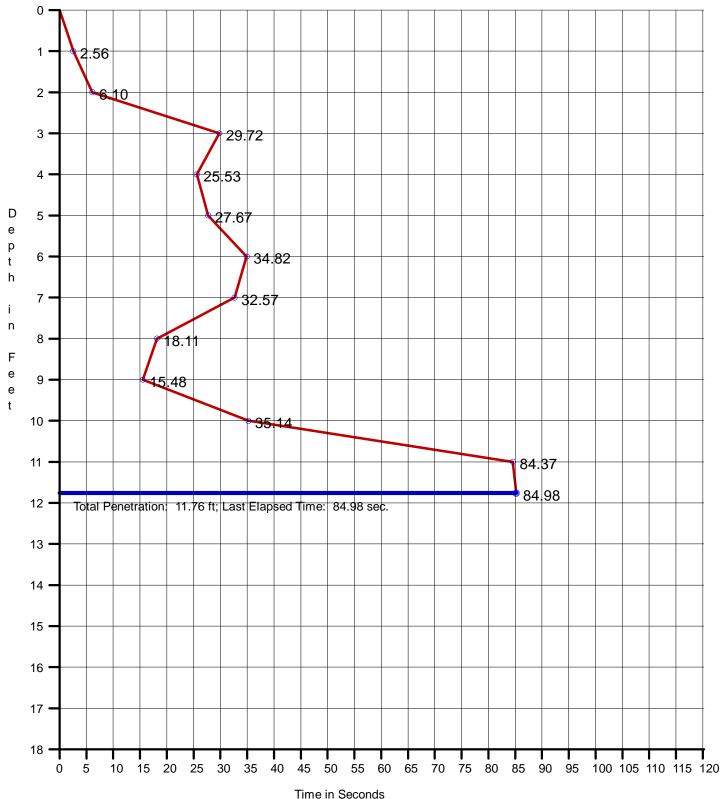


Penetration Graph for Core No. Y93, Run 1

Date: 12/15/2011 Start Time: 4:02:17 PM End Time: 4:08:55 PM Penetration: 11.76 ft Recovery: 15.70 ft W. D. Corrected: 53.52 ft

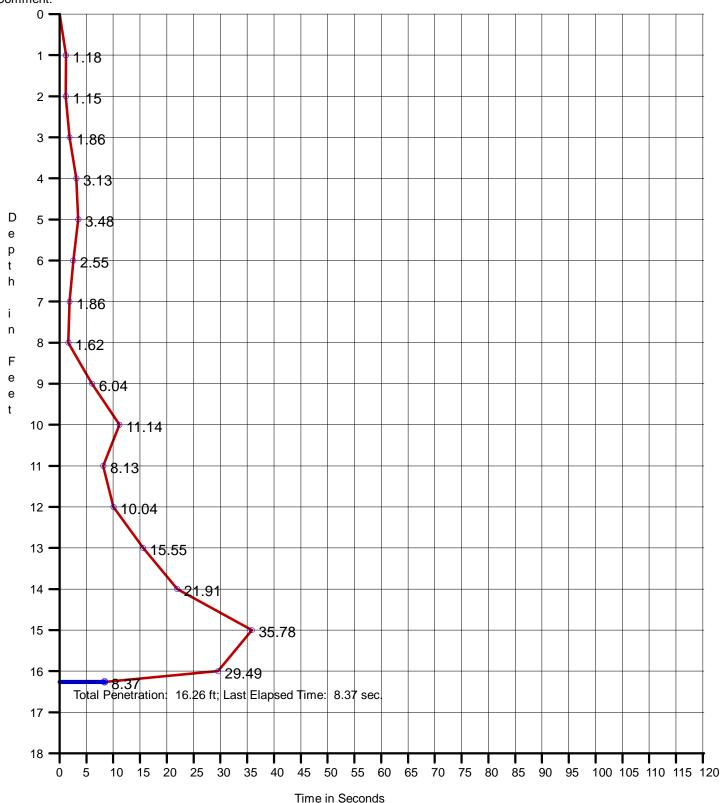
W. D. Raw: 51.59 ft

Easting: 2588189.33 Northing: 320426.88 Coord. System: NCSPCS 83 Long: 77°02'41.8980"W Lat: 034°36'52.2120"N Datum: NAVD 88



Penetration Graph for Core No. Y94, Run 1

Date: 12/18/2011 Start Time: 9:43:40 AM End Time: 9:46:23 AM Penetration: 16.26 ft Recovery: 16.90 ft W. D. Corrected: 40.71 ft W. D. Raw: 39.58 ft Easting: 2581965.03 Northing: 330730.11 Coord. System: NCSPCS 83 Long: 77°03'53.9580"W Lat: 034°38'35.3160"N Datum: NAVD 88



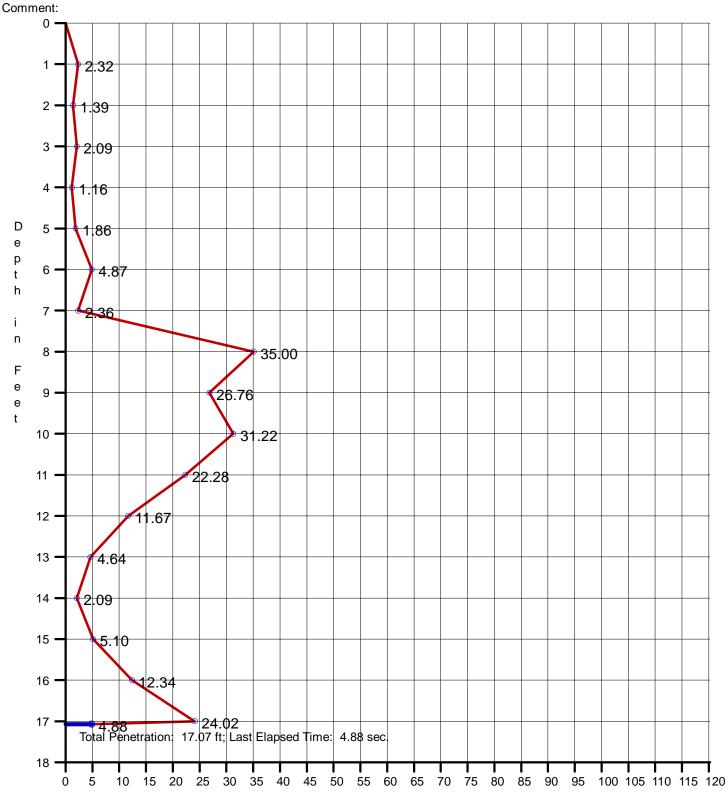
Penetration Graph for Core No. Y95, Run 1

Date: 12/18/2011 Start Time: 9:21:32 AM End Time: 9:25:15 AM

Penetration: 17.07 ft Recovery: 17.17 ft W. D. Corrected: 43.75 ft

W. D. Raw: 42.47 ft

Easting: 2581514.28 Northing: 329387.44 Coord. System: NCSPCS 83 Long: 77°03'59.6640"W Lat: 034°38'22.1280"N Datum: NAVD 88



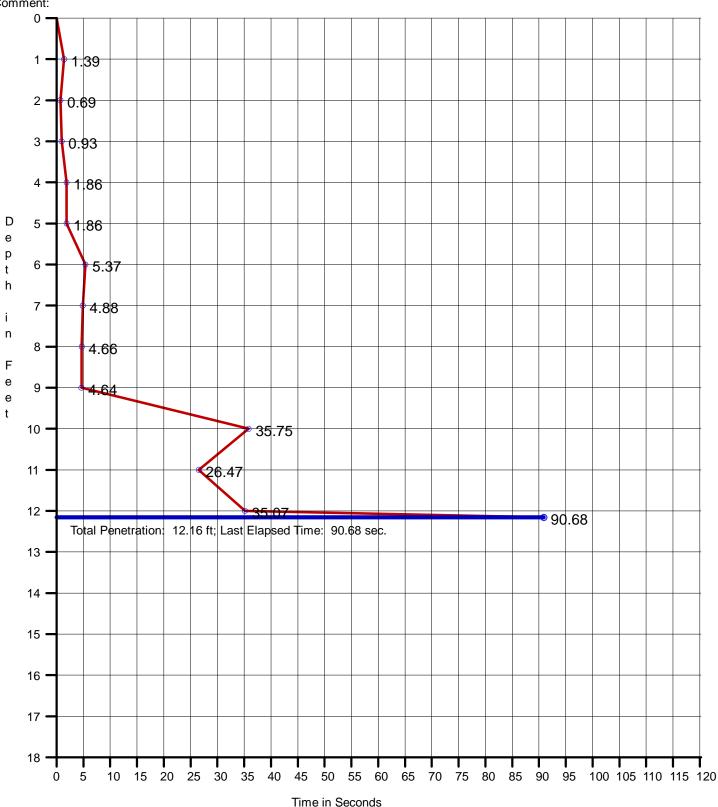
Time in Seconds

Penetration Graph for Core No. Y96, Run 1

Date: 12/18/2011 Start Time: 10:00:40 AM End Time: 10:04:14 AM

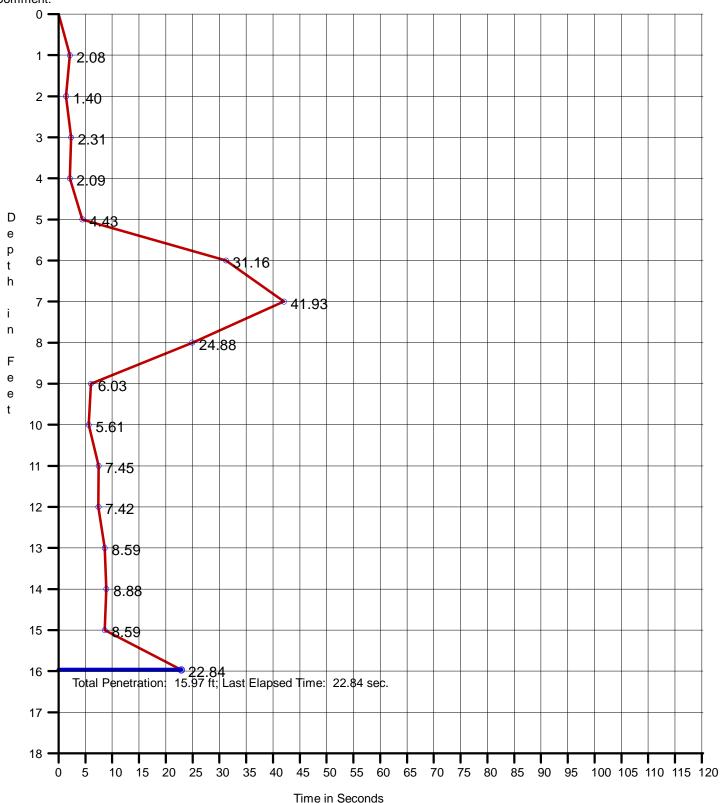
Penetration: 12.16 ft Recovery: 13.00 ft W. D. Corrected: 43.73 ft W. D. Raw: 42.81 ft

Easting: 2582408.38 Northing: 329835.79 Coord. System: NCSPCS 83 Long: 77°03'48.8580"W Lat: 034°38'26.3880"N Datum: NAVD 88



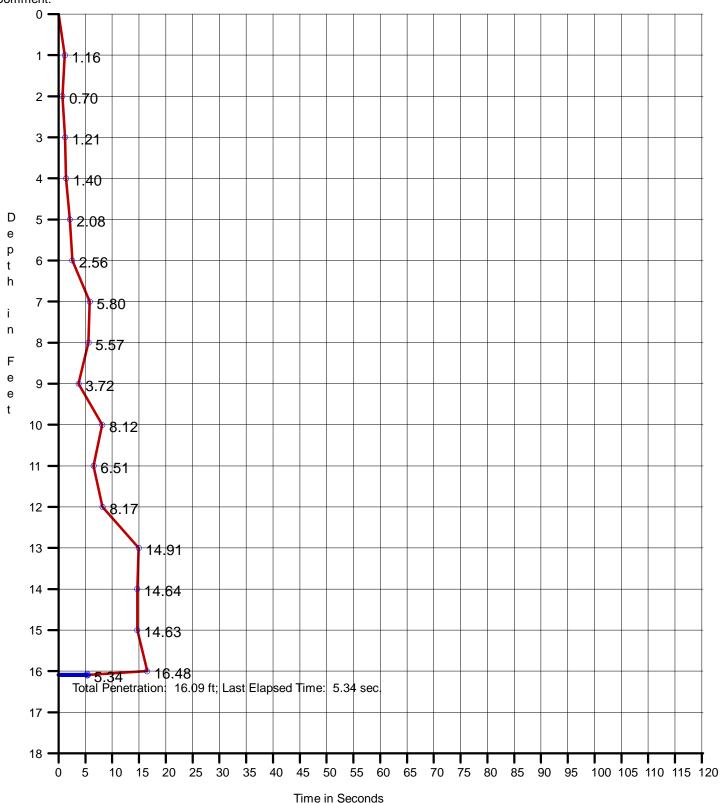
Penetration Graph for Core No. Y97, Run 1

Date: 12/18/2011 Start Time: 10:17:53 AM End Time: 10:20:58 AM Penetration: 15.97 ft Recovery: 17.90 ft W. D. Corrected: 49.07 ft W. D. Raw: 48.30 ft Easting: 2583302.62 Northing: 330281.57 Coord. System: NCSPCS 83 Long: 77°03'38.0520"W Lat: 034°38'30.6240"N Datum: NAVD 88



Penetration Graph for Core No. Y98, Run 1

Date: 12/18/2011 Start Time: 12:23:17 PM End Time: 12:25:10 PM Penetration: 16.09 ft Recovery: 19.10 ft W. D. Corrected: 45.34 ft W. D. Raw: 45.80 ft Easting: 2582849.48 Northing: 328940.55 Coord. System: NCSPCS 83 Long: 77°03'43.7880"W Lat: 034°38'17.4480"N Datum: NAVD 88



Penetration Graph for Core No. Y101, Run 1

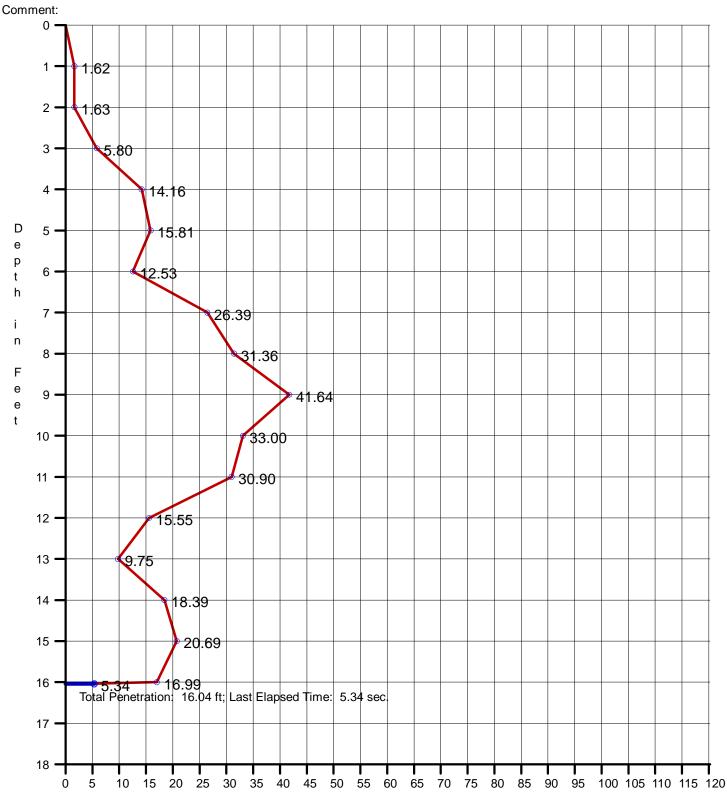
Date: 12/18/2011 Start Time: 11:59:25 AM End Time: 12:04:26 PM

Penetration: 16.04 ft Recovery: 18.20 ft W. D. Corrected: 49.89 ft

W. D. Raw: 50.16 ft

Easting: 2584195.49 Northing: 328487.11 Coord. System: NCSPCS 83 Long: 77°03'27.7920"W Lat: 034°38'12.7020"N

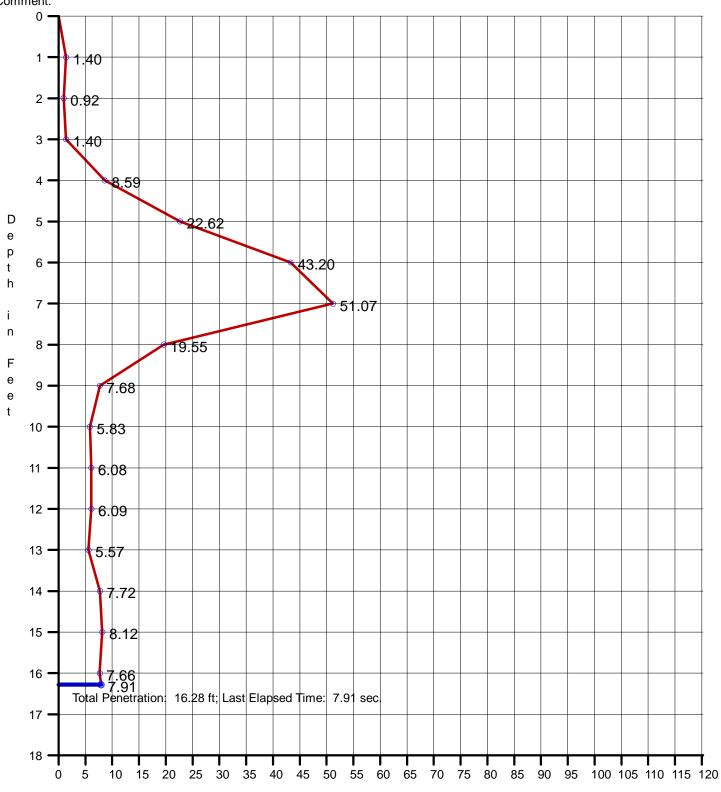
Datum: NAVD 88



Penetration Graph for Core No. Y103, Run 1

Date: 12/19/2011 Start Time: 11:56:42 AM End Time: 12:00:13 PM Penetration: 16.28 ft Recovery: 20.00 ft W. D. Corrected: 48.63 ft W. D. Raw: 48.45 ft Easting: 2585532.68 Northing: 328038.13 Coord. System: NCSPCS 83 Long: 77°03'11.8920"W Lat: 034°38'08.0040"N Datum: NAVD 88

Comment:

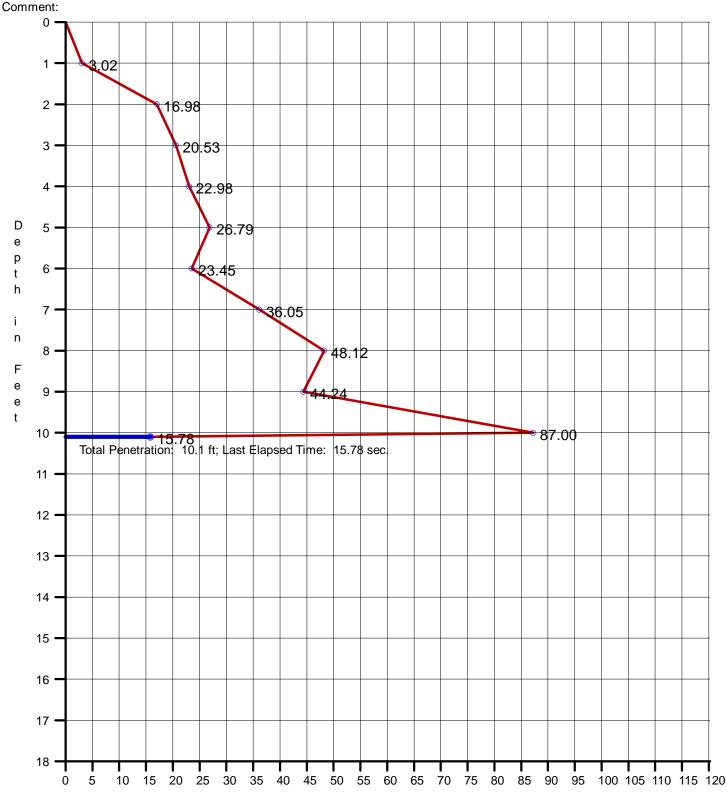


Penetration Graph for Core No. Y107, Run 1

Date: 12/19/2011 Start Time: 12:19:47 PM End Time: 12:25:31 PM

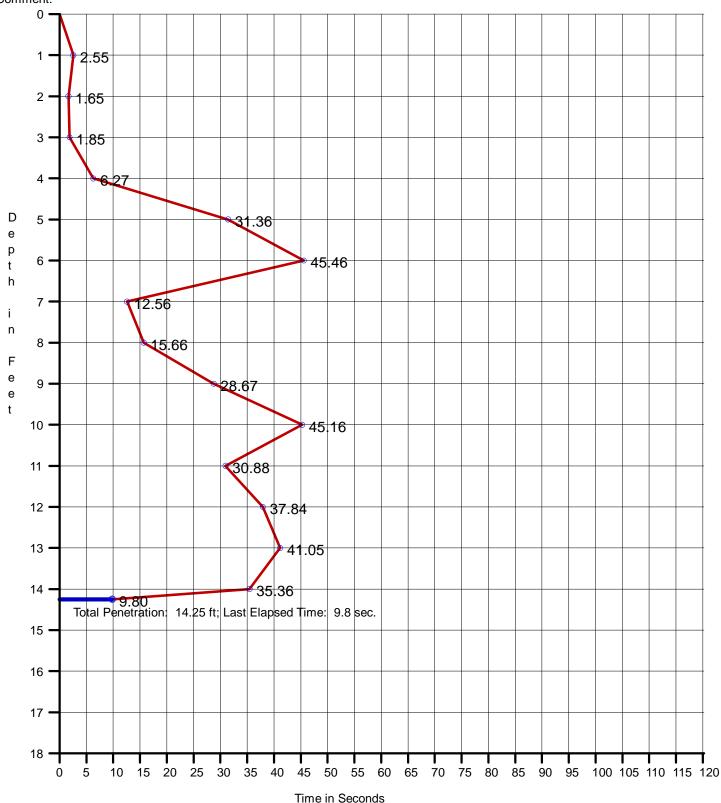
Penetration: 10.10 ft Recovery: 15.00 ft W. D. Corrected: 51.06 ft W. D. Raw: 51.16 ft

Easting: 2585977.33 Northing: 327138.35 Coord. System: NCSPCS 83 Long: 77°03'06.7860"W Lat: 034°37'59.0220"N Datum: NAVD 88



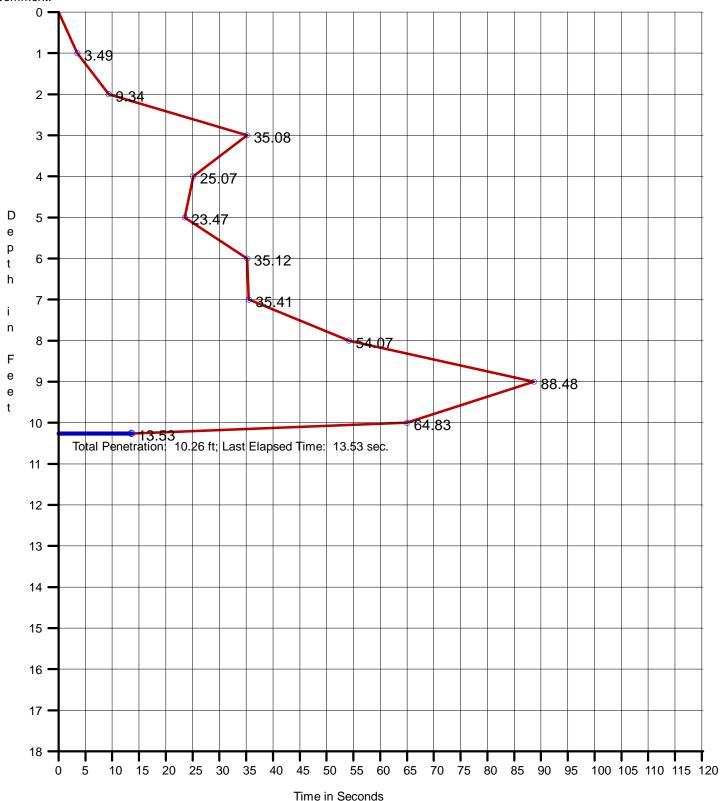
Penetration Graph for Core No. Y110, Run 1

Date: 12/19/2011 Start Time: 12:41:16 PM End Time: 12:47:02 PM Penetration: 14.25 ft Recovery: 18.50 ft W. D. Corrected: 51.24 ft W. D. Raw: 51.58 ft Easting: 2586423.00 Northing: 326244.54 Coord. System: NCSPCS 83 Long: 77°03'01.6620"W Lat: 034°37'50.0940"N Datum: NAVD 88



Penetration Graph for Core No. Y114, Run 1

Date: 12/19/2011 Start Time: 1:07:42 PM End Time: 1:14:10 PM Penetration: 10.26 ft Recovery: 14.00 ft W. D. Corrected: 52.10 ft W. D. Raw: 52.6 ft Easting: 2586864.04 Northing: 325349.21 Coord. System: NCSPCS 83 Long: 77°02'56.5980"W Lat: 034°37'41.1540"N Datum: NAVD 88



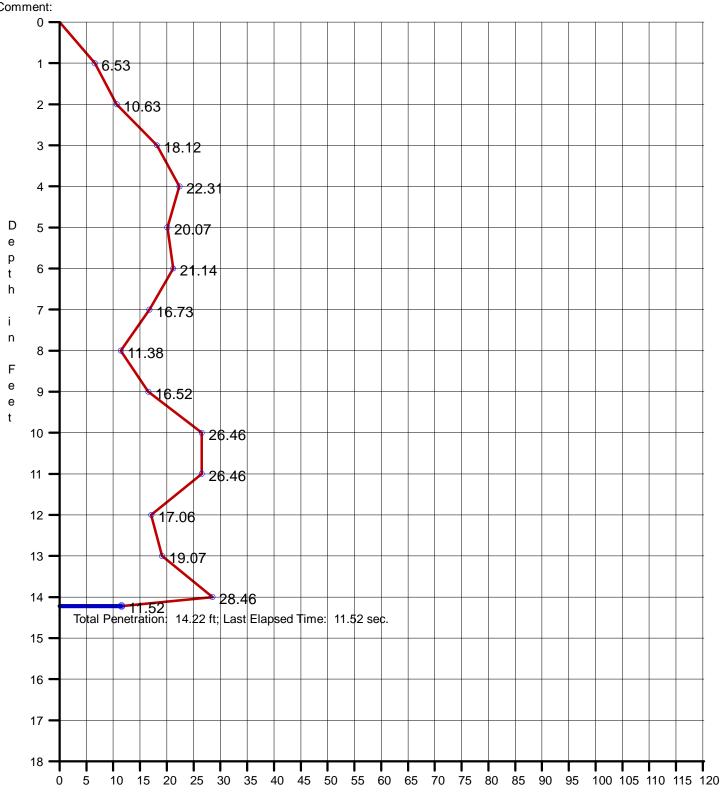
Penetration Graph for Core No. Y115, Run 1

Date: 12/19/2011 Start Time: 1:30:58 PM End Time: 1:35:31 PM

Penetration: 14.22 ft Recovery: 18.30 ft W. D. Corrected: 52.25 ft Easting: 2587760.81 Northing: 325794.71 Coord. System: NCSPCS 83 Long: 77°02'45.7620"W Lat: 034°37'45.3840"N Datum: NAVD 88

W. D. Raw: 52.87 ft



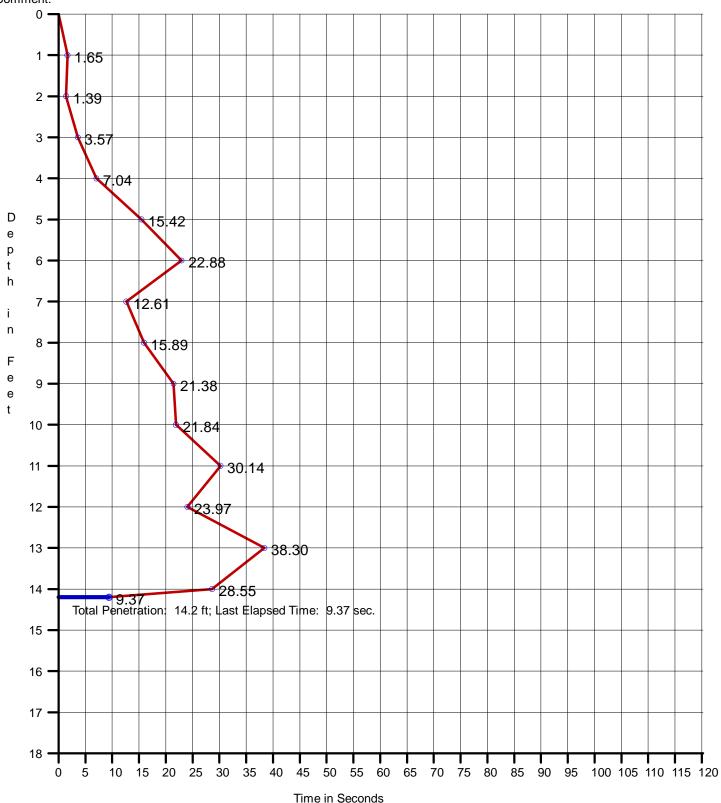


Penetration Graph for Core No. Y119, Run 1

Date: 12/19/2011 Start Time: 8:30:11 AM End Time: 8:34:25 AM Penetration: 14.20 ft Recovery: 18.30 ft W. D. Corrected: 51.85 ft

W. D. Raw: 49.96 ft

Easting: 2585964.90 Northing: 322670.23 Coord. System: NCSPCS 83 Long: 77°03'07.9800"W Lat: 034°37'14.8320"N Datum: NAVD 88

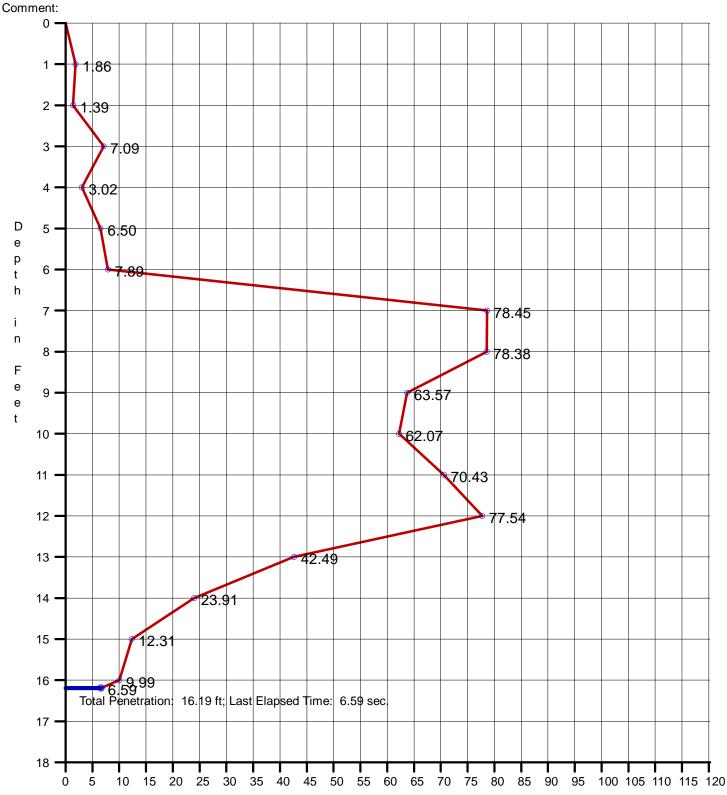


Penetration Graph for Core No. Y120, Run 1

Date: 12/18/2011 Start Time: 1:10:00 PM End Time: 1:19:13 PM

Penetration: 16.19 ft Recovery: 18.00 ft W. D. Corrected: 51.76 ft W. D. Raw: 52.26 ft

Easting: 2586858.40 Northing: 323115.08 Coord. System: NCSPCS 83 Long: 77°02'57.1860"W Lat: 034°37'19.0560"N Datum: NAVD 88



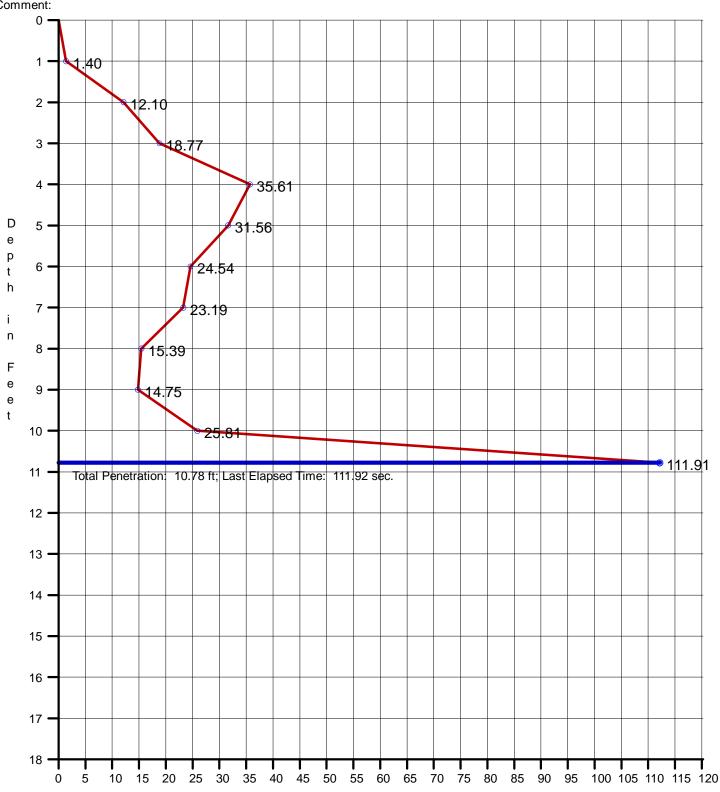
Penetration Graph for Core No. Y121, Run 1

Date: 12/19/2011 Start Time: 8:08:24 AM End Time: 8:13:39 AM

Penetration: 10.78 ft Recovery: 13.10 ft W. D. Corrected: 51.44 ft W. D. Raw: 49.58 ft

Easting: 2587755.54 Northing: 323559.53 Coord. System: NCSPCS 83 Long: 77°02'46.3500"W Lat: 034°37'23.2800"N Datum: NAVD 88

Comment:

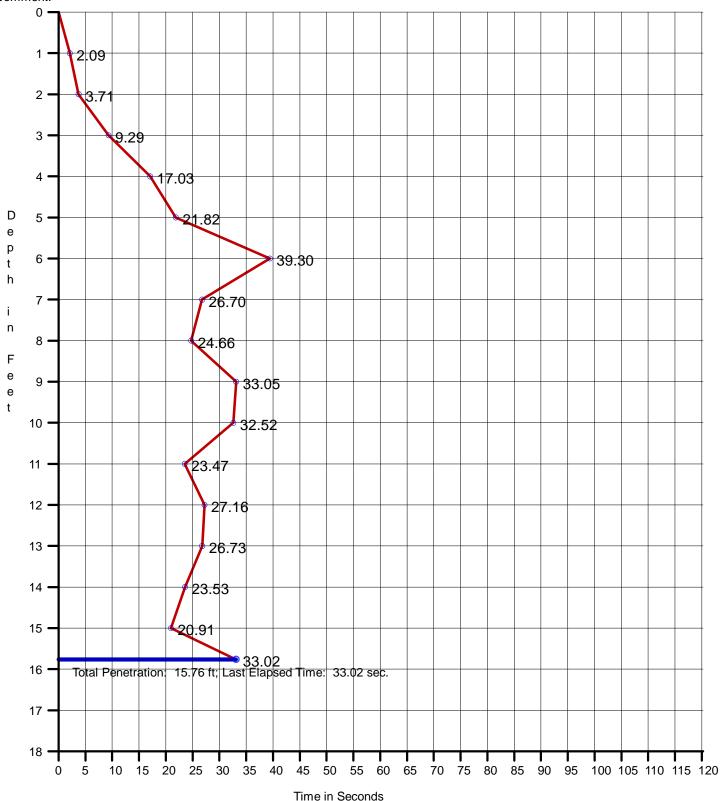


Penetration Graph for Core No. Y122, Run 1

Date: 12/18/2011 Start Time: 1:41:57 PM End Time: 1:48:02 PM Penetration: 15.76 ft Recovery: 18.50 ft W. D. Corrected: 51.55 ft

W. D. Raw: 52.00 ft

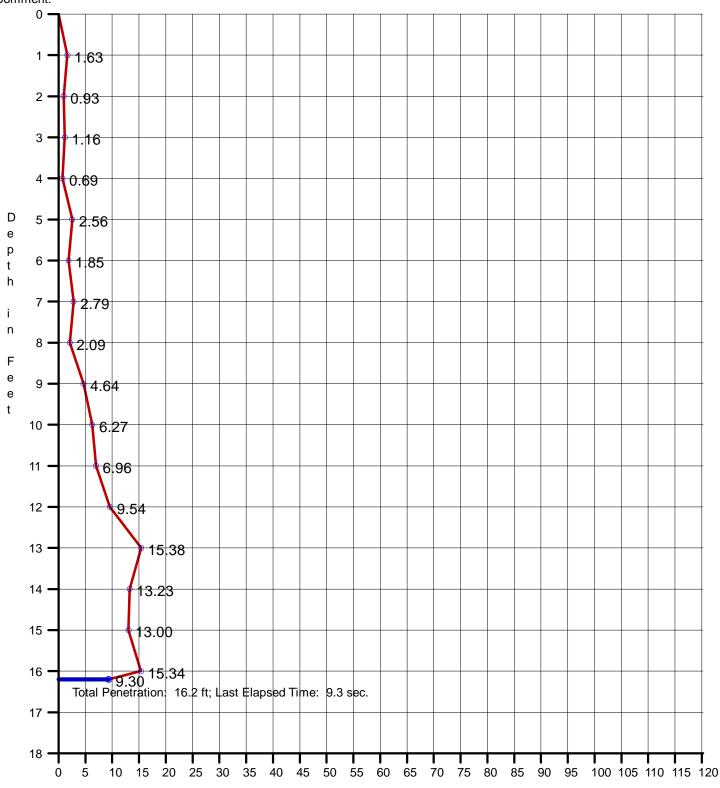
Easting: 2586406.35 Northing: 321774.22 Coord. System: NCSPCS 83 Long: 77°03'02.9100"W Lat: 034°37'05.8860"N Datum: NAVD 88



Penetration Graph for Core No. Y126, Run 1

Date: 12/18/2011 Start Time: 10:46:01 AM End Time: 10:47:49 AM Penetration: 16.20 ft Recovery: 18.2 ft W. D. Corrected: 41.12 ft W. D. Raw: 40.73 ft Easting: 2583757.23 Northing: 331622.84 Coord. System: NCSPCS 83 Long: 77°03'32.2980"W Lat: 034°38'43.8000"N Datum: NAVD 88

Comment:



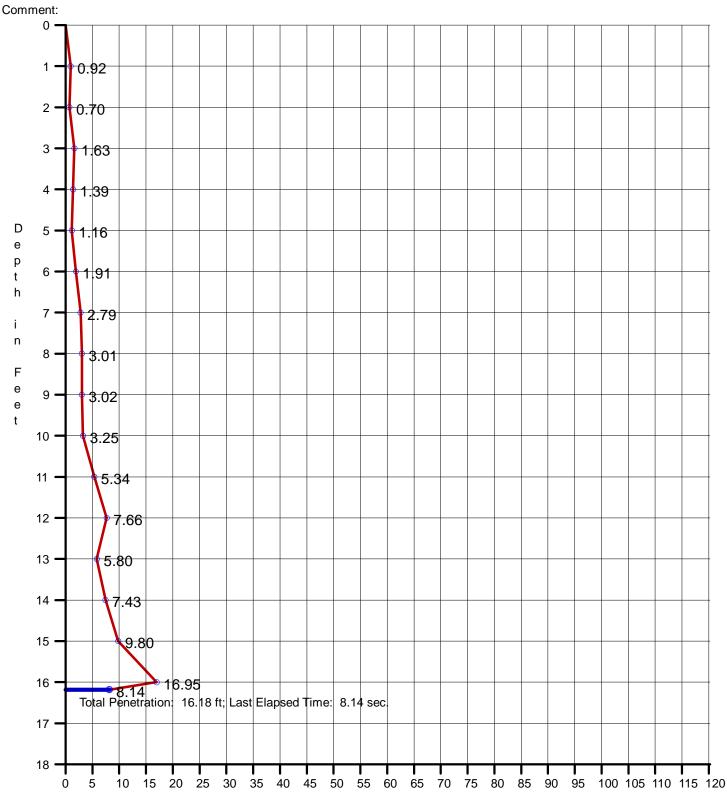
Penetration Graph for Core No. Y129, Run 1

Date: 12/18/2011 Start Time: 11:06:01 AM End Time: 11:07:22 AM

Penetration: 16.18 ft Recovery: 10.50 ft W. D. Corrected: 44.67 ft W. D. Raw: 44.50 ft

Easting: 2584198.90 Northing: 330723.77 Coord. System: NCSPCS 83 Long: 77°03'27.2220"W Lat: 034°38'34.8240"N Datum: NAVD 88





Penetration Graph for Core No. Y132, Run 2

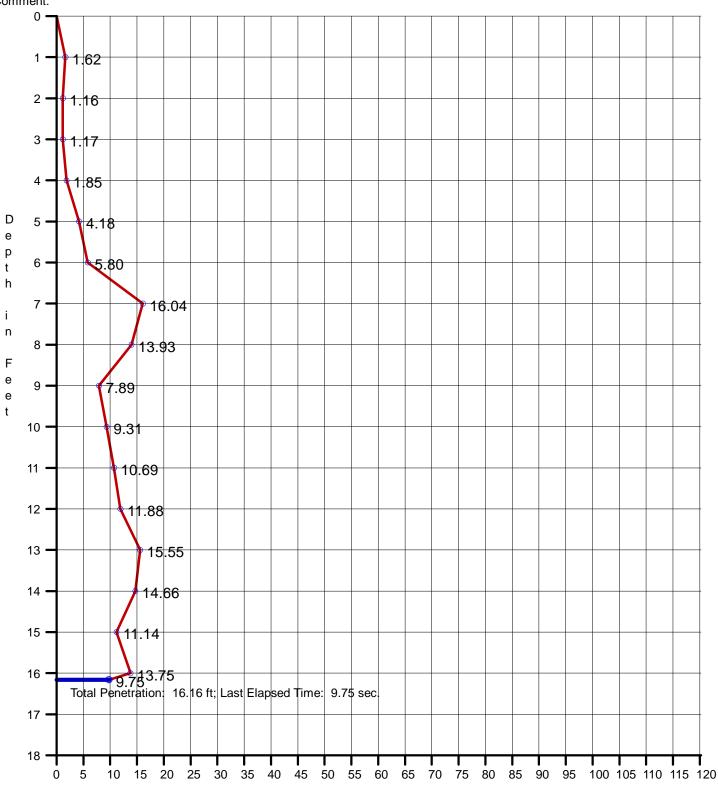
Date: 12/19/2011 Start Time: 11:35:47 AM End Time: 11:38:17 AM

Penetration: 16.16 ft Recovery: 17.50 ft W. D. Corrected: 44.69 ft

W. D. Raw: 44.30 ft

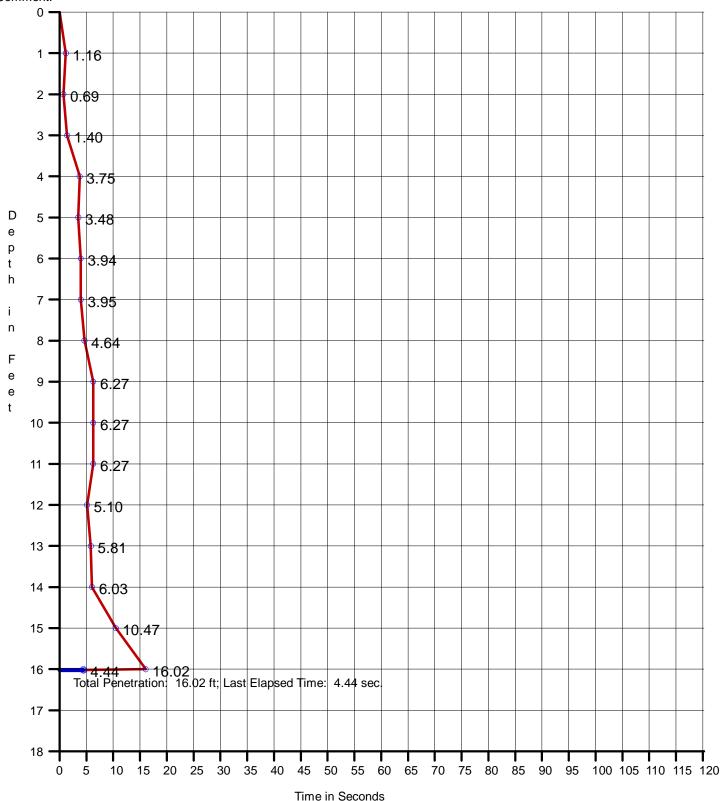
Easting: 2586887.78 Northing: 332058.37 Coord. System: NCSPCS 83 Long: 77°02'54.7320"W Lat: 034°38'47.5020"N Datum: NAVD 88

Comment:



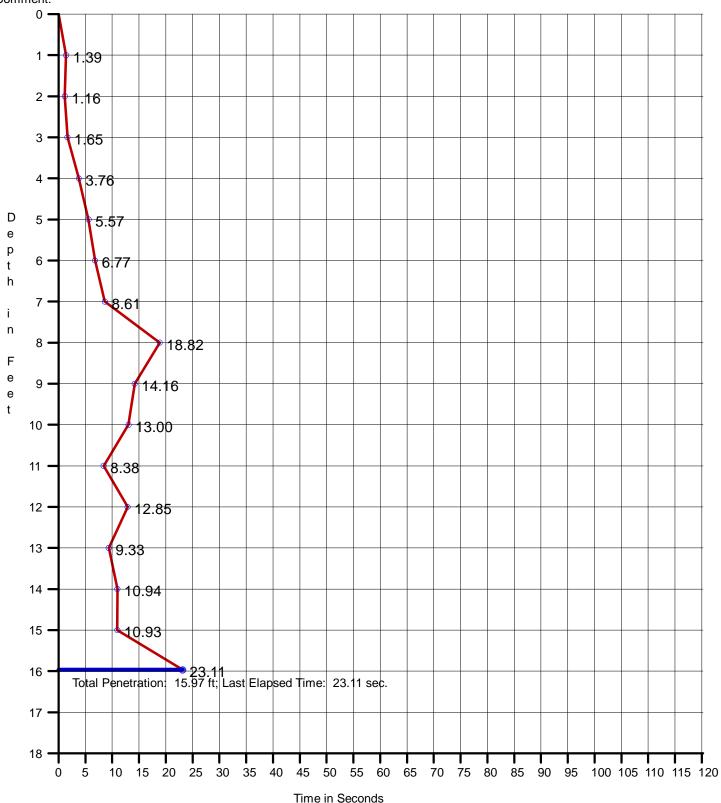
Penetration Graph for Core No. Y135, Run 1

Date: 12/18/2011 Start Time: 11:39:39 AM End Time: 11:41:08 AM Penetration: 16.02 ft Recovery: 17.00 ft W. D. Corrected: 47.22 ft W. D. Raw: 47.30 ft Easting: 2584643.45 Northing: 329827.03 Coord. System: NCSPCS 83 Long: 77°03'22.1160"W Lat: 034°38'25.8720"N Datum: NAVD 88



Penetration Graph for Core No. Y136, Run 1

Date: 12/19/2011 Start Time: 11:00:44 AM End Time: 11:03:14 AM Penetration: 15.97 ft Recovery: 18.00 ft W. D. Corrected: 47.59 ft W. D. Raw: 46.82 ft Easting: 2586437.92 Northing: 330719.80 Coord. System: NCSPCS 83 Long: 77°03'00.4320"W Lat: 034°38'34.3500"N Datum: NAVD 88

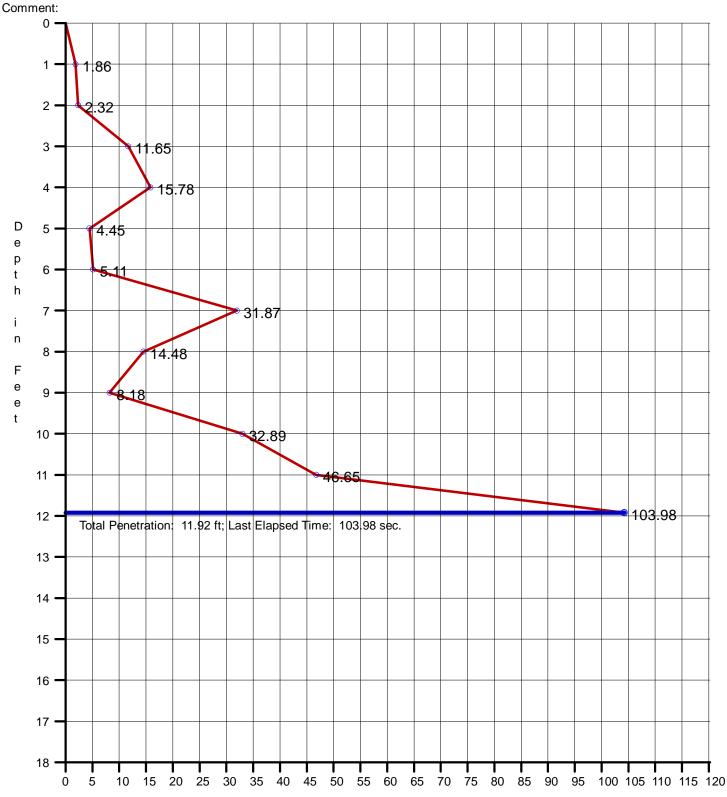


Penetration Graph for Core No. Y141, Run 1

Date: 12/19/2011 Start Time: 9:55:38 AM End Time: 10:00:18 AM Penetration: 11.92 ft Recovery: 12.70 ft W. D. Corrected: 48.36 ft W. D. Raw: 46.84 ft

Easting: 2587775.24 Northing: 330265.08 Coord. System: NCSPCS 83 Long: 77°02'44.5380"W Lat: 034°38'29.5920"N

Datum: NAVD 88



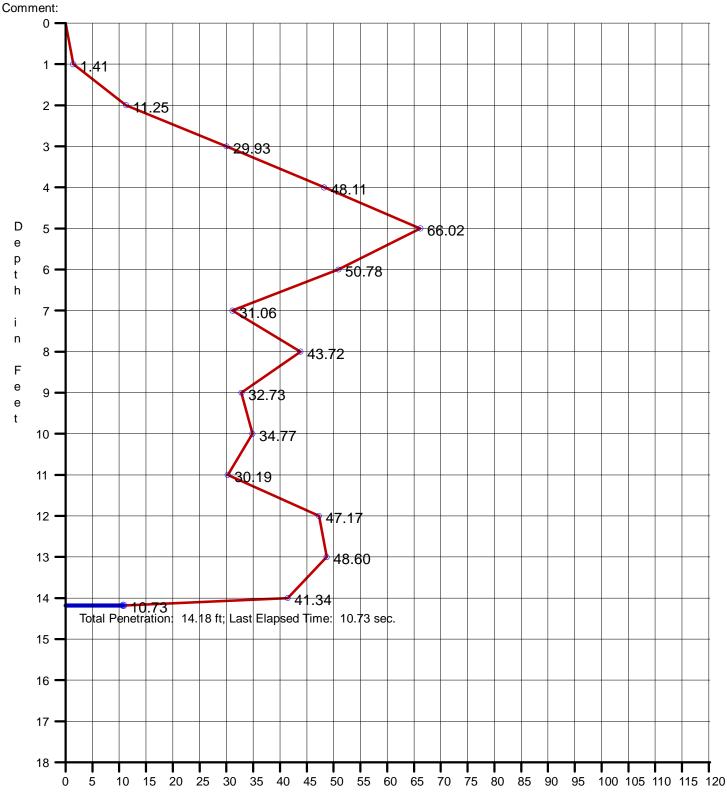
Penetration Graph for Core No. Y153, Run 1

Date: 12/19/2011 Start Time: 7:26:20 AM End Time: 7:35:08 AM

Penetration: 14.18 ft Recovery: 17.00 ft W. D. Corrected: 51.85 ft W. D. Raw: 50.17 ft

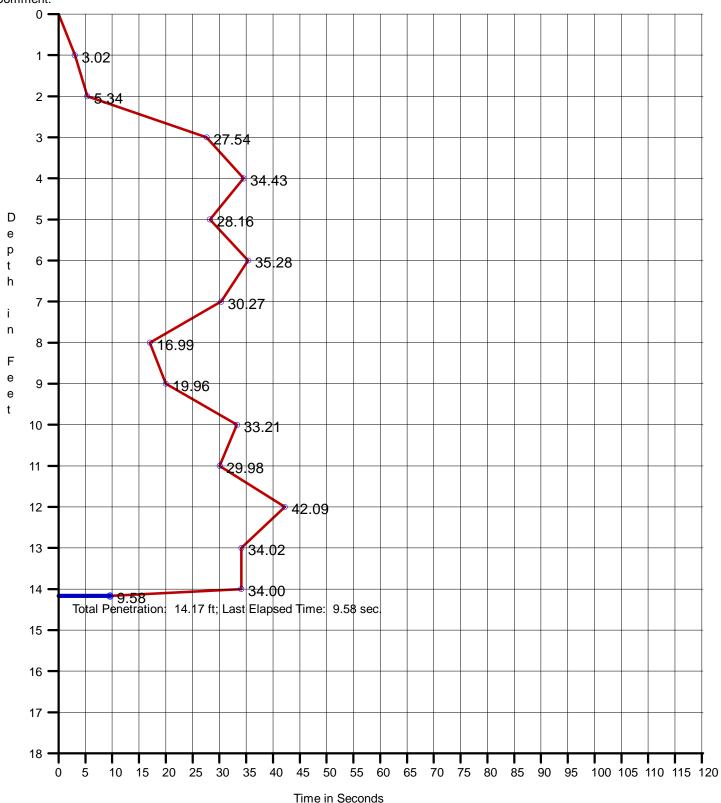
Easting: 2588649.74 Northing: 324001.20 Coord. System: NCSPCS 83 Long: 77°02'35.5500"W Lat: 034°37'27.4740"N

Datum: NAVD 88



Penetration Graph for Core No. Y154, Run 1

Date: 12/19/2011 Start Time: 9:21:23 AM End Time: 9:27:47 AM Penetration: 14.17 ft Recovery: 16.50 ft W. D. Corrected: 51.33 ft W. D. Raw: 49.65 ft Easting: 2589546.48 Northing: 324444.93 Coord. System: NCSPCS 83 Long: 77°02'24.7140"W Lat: 034°37'31.6860"N Datum: NAVD 88



Penetration Graph for Core No. Y156, Run 2

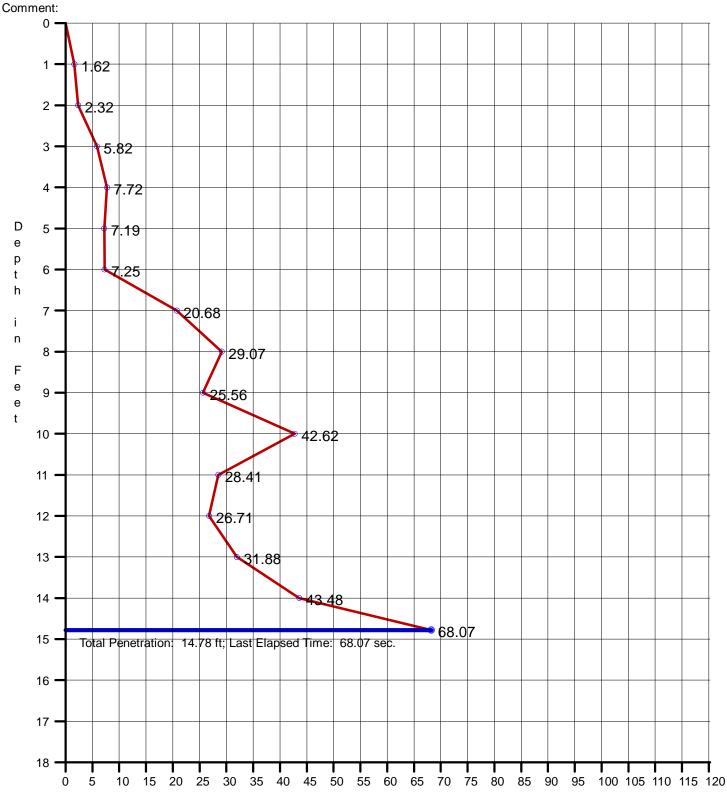
Date: 12/18/2011 Start Time: 3:41:05 PM End Time: 3:46:53 PM

Penetration: 14.78 ft Recovery: 17.50 ft W. D. Corrected: 52.05 ft

W. D. Raw: 51.65 ft

Easting: 2588204.18 Northing: 322660.91 Coord. System: NCSPCS 83 Long: 77°02'41.1960"W Lat: 034°37'14.3040"N

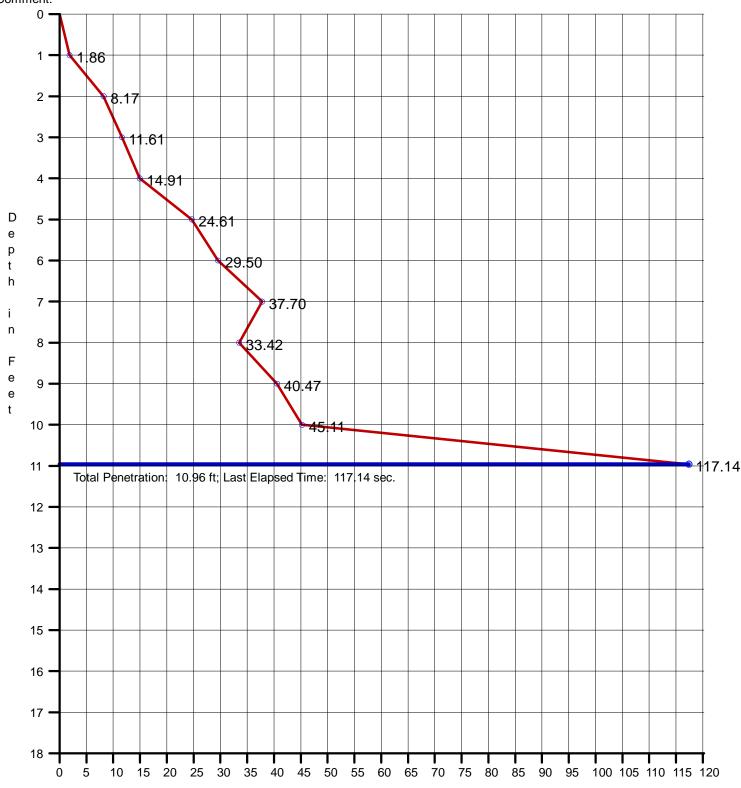
Datum: NAVD 88



Penetration Graph for Core No. Y157, Run 1

Date: 12/18/2011 Start Time: 5:00:25 PM End Time: 5:06:30 PM Penetration: 10.96 ft Recovery: 13.20 ft W. D. Corrected: 52.80 ft W. D. Raw: 51.59 ft Easting: 2589989.21 Northing: 323550.81 Coord. System: NCSPCS 83 Long: 77°02'19.6320"W Lat: 034°37'22.7580"N Datum: NAVD 88

Comment:



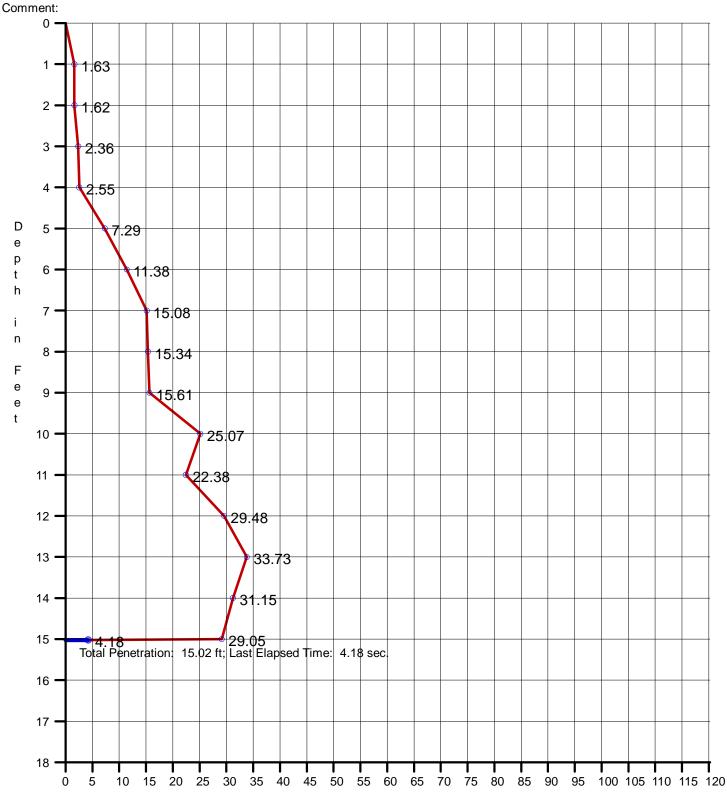
Penetration Graph for Core No. Y158, Run 1

Date: 12/18/2011 Start Time: 2:22:41 PM End Time: 2:26:48 PM

Penetration: 15.02 ft Recovery: 18.50 ft W. D. Corrected: 52.85 ft

W. D. Raw: 53.12 ft

Easting: 2587744.80 Northing: 321321.56 Coord. System: NCSPCS 83 Long: 77°02'47.0040"W Lat: 034°37'01.1460"N Datum: NAVD 88



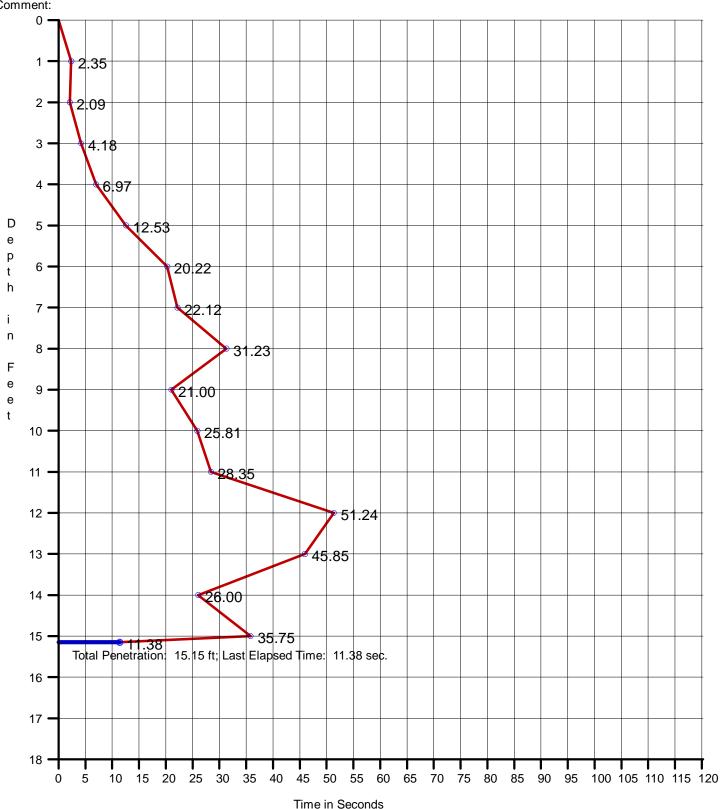
Penetration Graph for Core No. Y160, Run 1

Date: 12/18/2011 Start Time: 4:12:53 PM End Time: 4:18:40 PM

Penetration: 15.15 ft Recovery: 17.00 ft W. D. Corrected: 52.31 ft Easting: 2589535.99 Northing: 322210.10 Coord. System: NCSPCS 83 Long: 77°02'25.3680"W Lat: 034°37'09.5880"N Datum: NAVD 88

W. D. Raw: 51.58 ft





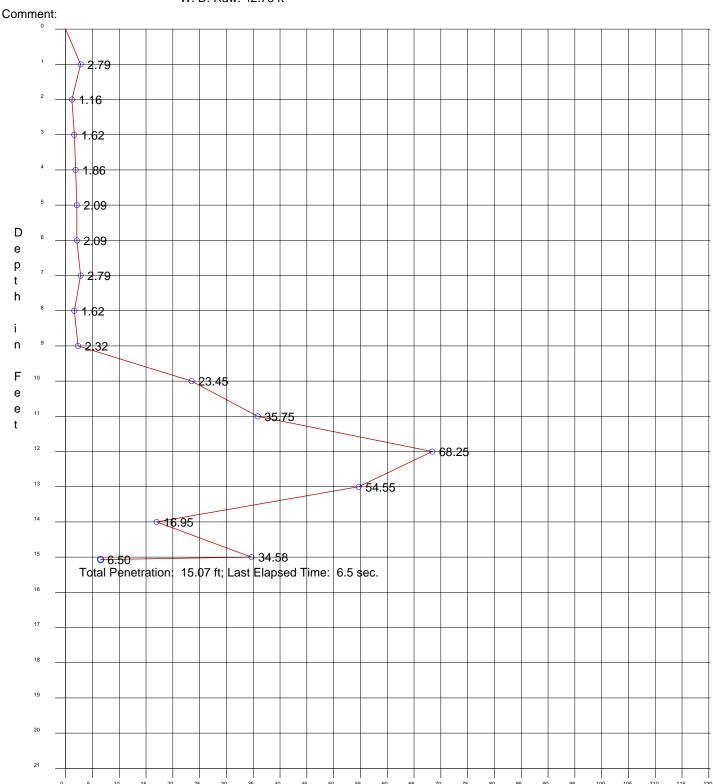
Penetration Graph for Core No. Z165, Run 1

Date: 12/16/2011 Start Time: 12:48:19 PM End Time: 12:52:37 PM Penetration: 15.07 ft Recovery: 14.17 ft W. D. Corrected: 42.57 ft Easting: 2562508.97 Northing: 321709.82 Coord. System: NCSPCS 83

Lat: 034°37'09.7920" N Datum: NAVD 88

Long: 77°07'48.8220" W

W. D. Raw: 42.78 ft



Penetration Graph for Core No. Z166, Run 1

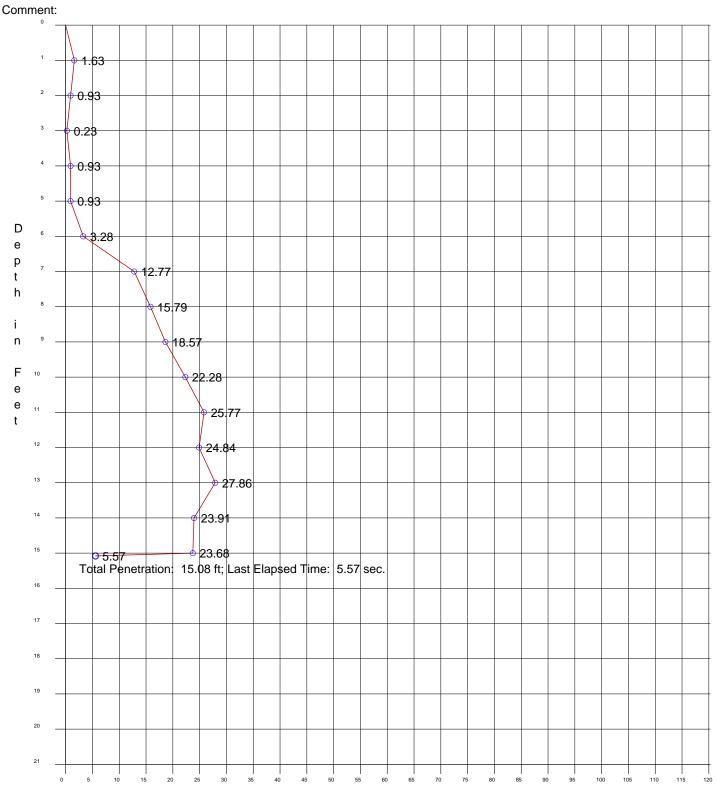
Date: 12/16/2011 Start Time: 12:19:35 PM End Time: 12:23:04 PM

Penetration: 15.08 ft Recovery: 17.80 ft W. D. Corrected: 44.01 ft Easting: 2569560.08 Northing: 323032.70

Lat: 034°37'21.5580" N Coord. System: NCSPCS 83 Datum: NAVD 88

Long: 77°06'24.1620" W

W. D. Raw: 44.51 ft



Time in Seconds

Penetration Graph for Core No. Z166, Run 1

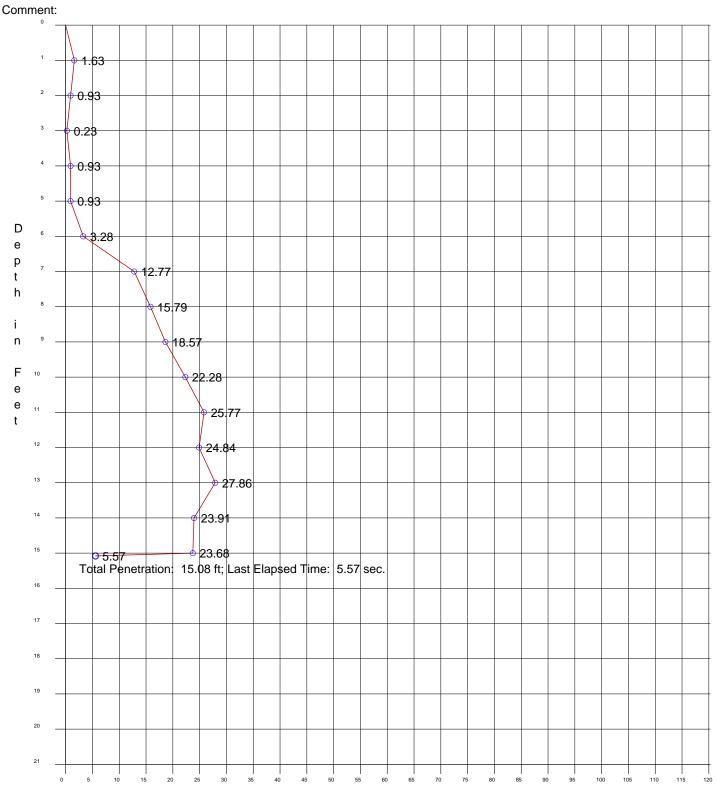
Date: 12/16/2011 Start Time: 12:19:35 PM End Time: 12:23:04 PM

Penetration: 15.08 ft Recovery: 17.80 ft W. D. Corrected: 44.01 ft Easting: 2569560.08 Northing: 323032.70

Lat: 034°37'21.5580" N Coord. System: NCSPCS 83 Datum: NAVD 88

Long: 77°06'24.1620" W

W. D. Raw: 44.51 ft



Time in Seconds

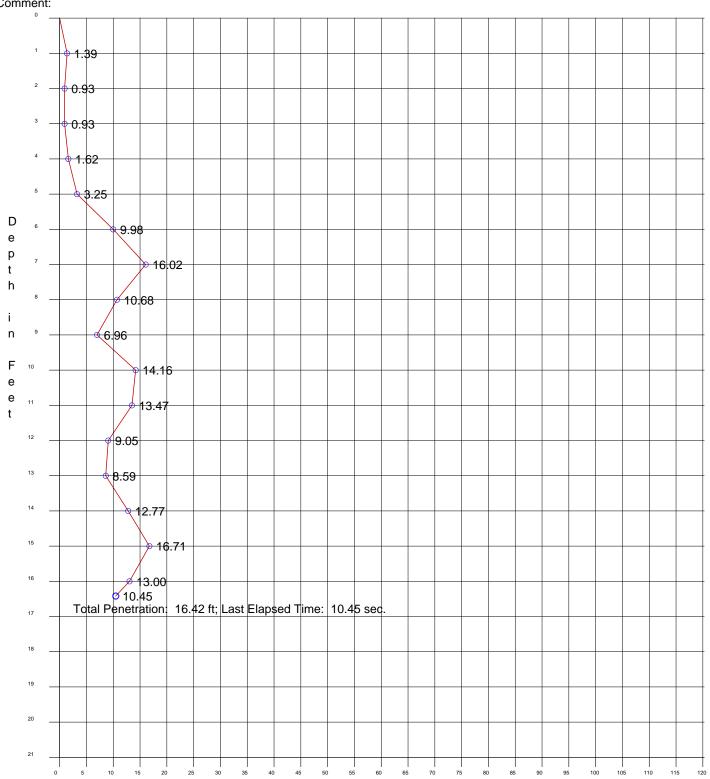
Penetration Graph for Core No. Z167, Run 1

Date: 12/16/2011 Start Time: 11:52:51 AM End Time: 11:55:21 AM

Penetration: 16.42 ft Recovery: 15.58 ft W. D. Corrected: 42.66 ft W. D. Raw: 43.27 ft

Easting: 2571435.12 Northing: 323719.17 Coord. System: NCSPCS 83 Long: 77°06'01.5720"W Lat: 034°37'27.9900"N Datum: NAVD 88

Comment:



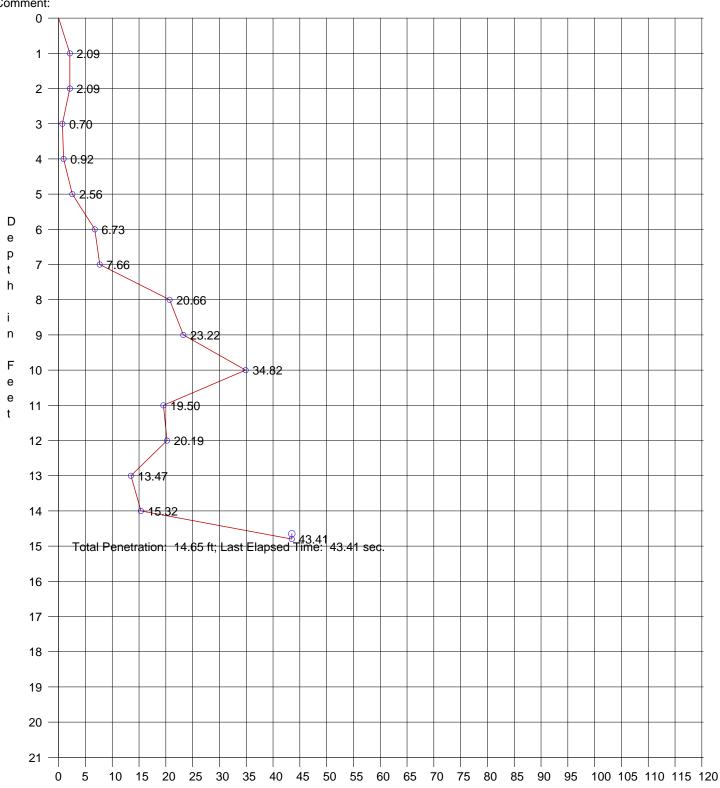
Penetration Graph for Core No. Z168, Run 1

Date: 12/16/2011 Start Time: 11:29:00 AM End Time: 11:32:33 AM

Penetration: 14.65 ft Recovery: 16.00 ft W. D. Corrected: 44.92 ft W. D. Raw: 45.55 ft

Easting: 2573316.83 Northing: 324420.63 Coord. System: NCSPCS 83 Long: 77°05'38.8980" W Lat: 034°37'34.5720" N Datum: NAVD 88

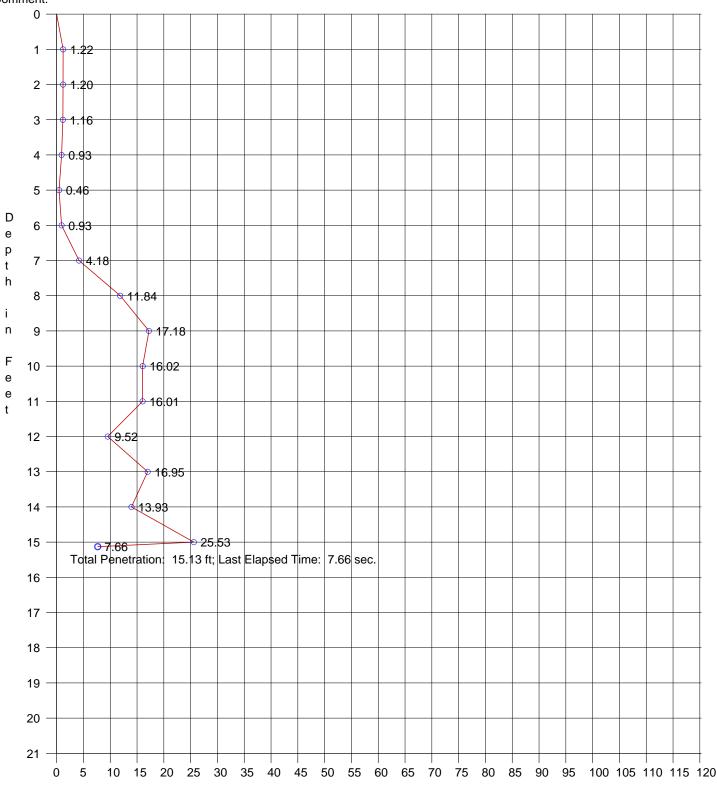




Penetration Graph for Core No. Z169, Run 1

Date: 12/16/2011 Start Time: 11:03:41 AM End Time: 11:06:08 AM Penetration: 15.13 ft Recovery: 17.20 ft W. D. Corrected: 45.59 ft W. D. Raw: 46.19 ft Easting: 2575195.80 Northing: 325102.72 Coord. System: NCSPCS 83 Long: 77°05'16.2600" W Lat: 034°37'40.9620" N Datum: NAVD 88

Comment:



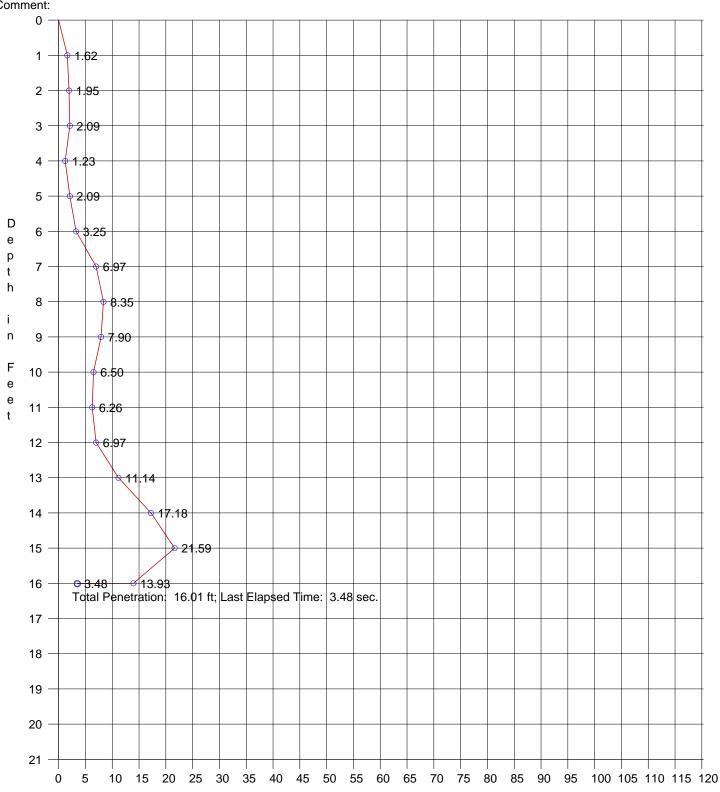
Penetration Graph for Core No. Z170, Run 1

Date: 12/16/2011 Start Time: 10:42:03 AM End Time: 10:44:07 AM

Penetration: 16.01 ft Recovery: 17.50 ft W. D. Corrected: 44.38 ft W. D. Raw: 44.89 ft

Easting: 2577075.50 Northing: 325791.59 Coord. System: NCSPCS 83 Long: 77°04'53.6100"W Lat: 034°37'47.4120"N Datum: NAVD 88

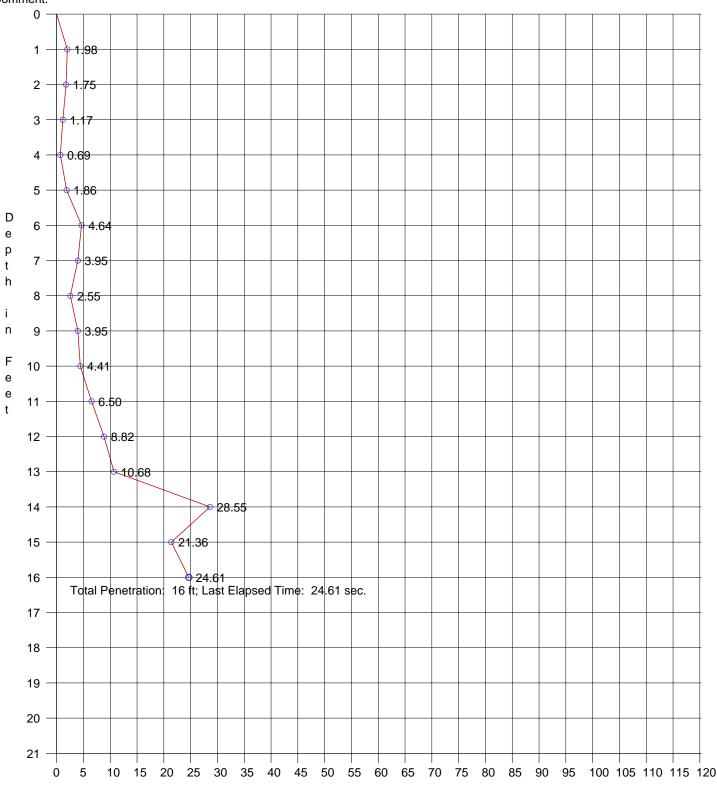
Comment:



Penetration Graph for Core No. Z171, Run 1

Date: 12/16/2011 Start Time: 10:23:34 AM End Time: 10:25:48 AM Penetration: 16.00 ft Recovery: 17.70 ft W. D. Corrected: 45.42 ft W. D. Raw: 45.84 ft Easting: 2578951.87 Northing: 326487.83 Coord. System: NCSPCS 83 Long: 77°04'30.9960" W Lat: 034°37'53.9400" N Datum: NAVD 88

Comment:



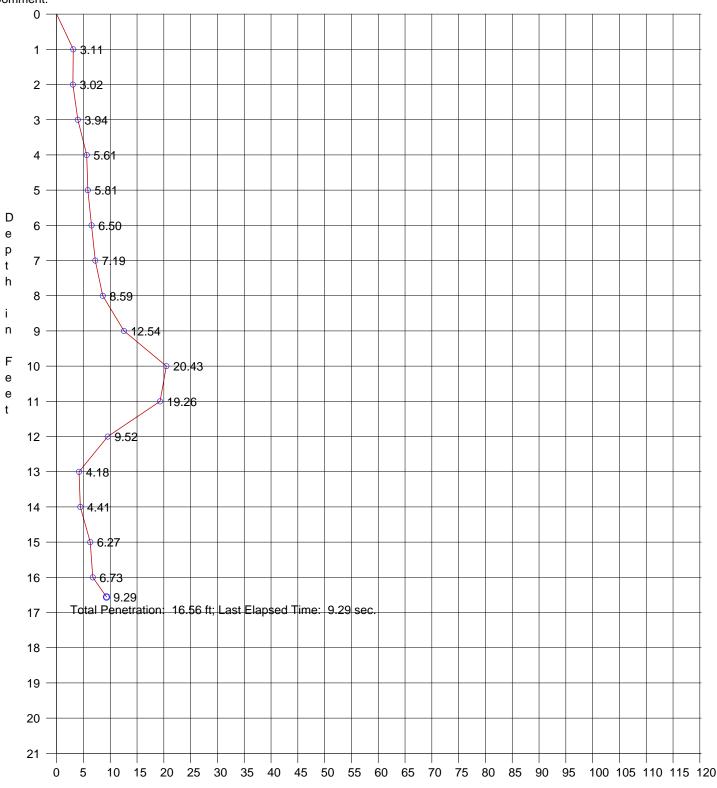
Penetration Graph for Core No. Z172, Run 1

Date: 12/16/2011 Start Time: 10:00:38 AM End Time: 10:03:03 AM Penetration: 16.56 ft Recovery: 19.00 ft W. D. Corrected: 49.32 ft

W. D. Raw: 49.52 ft

Easting: 2580828.45 Northing: 327167.92 Coord. System: NCSPCS 83 Long: 77°04'08.3880"W Lat: 034°38'00.3060"N Datum: NAVD 88

Comment:



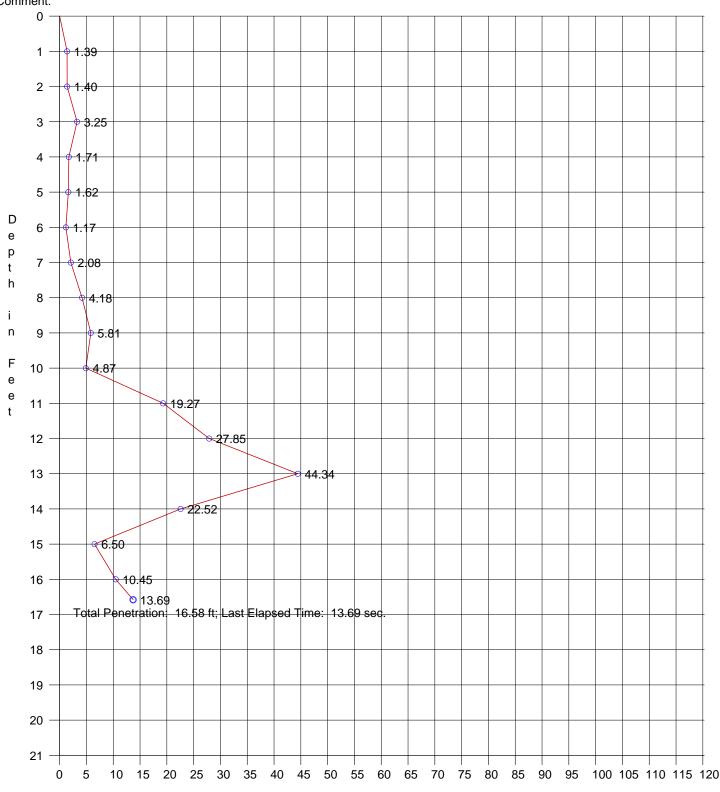
Penetration Graph for Core No. Z173, Run 1

Date: 12/16/2011 Start Time: 1:39:41 PM End Time: 1:42:33 PM

Penetration: 16.58 ft Recovery: 17.50 ft W. D. Corrected: 45.85 ft W. D. Raw: 45.41 ft

Easting: 2563517.85 Northing: 321406.63 Coord. System: NCSPCS 83 Long: 77°07'36.8160"W Lat: 034°37'06.6060"N Datum: NAVD 88

Comment:



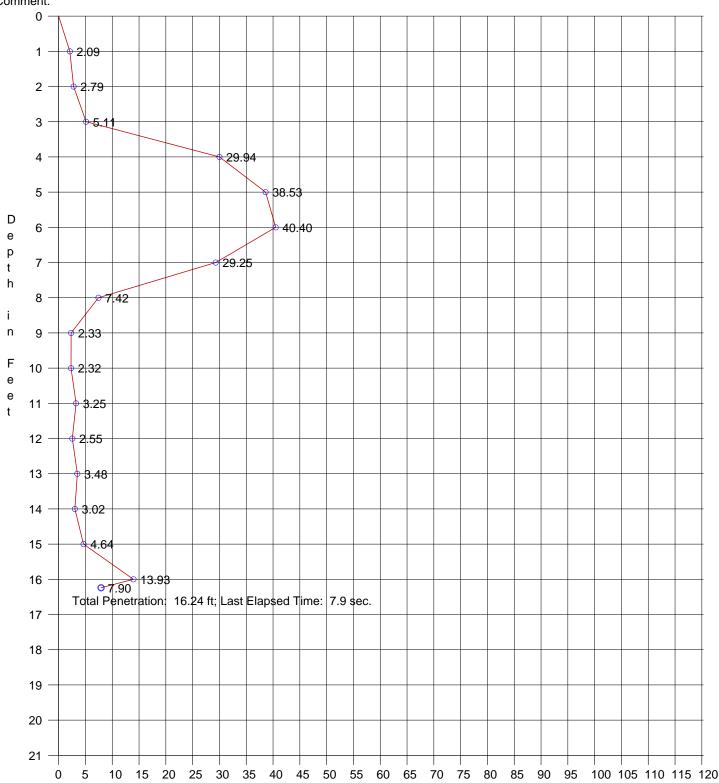
Penetration Graph for Core No. Z174, Run 1

Date: 12/16/2011 Start Time: 2:03:27 PM End Time: 2:06:46 PM Penetration: 16.24 ft Recovery: 18.30 ft W. D. Corrected: 45.09 ft

W. D. Raw: 44.36 ft

Easting: 2566100.86 Northing: 321757.27 Coord. System: NCSPCS 83 Long: 77°07'05.8380" W Lat: 034°37'09.5940" N Datum: NAVD 88

Comment:



Penetration Graph for Core No. Z175, Run 1

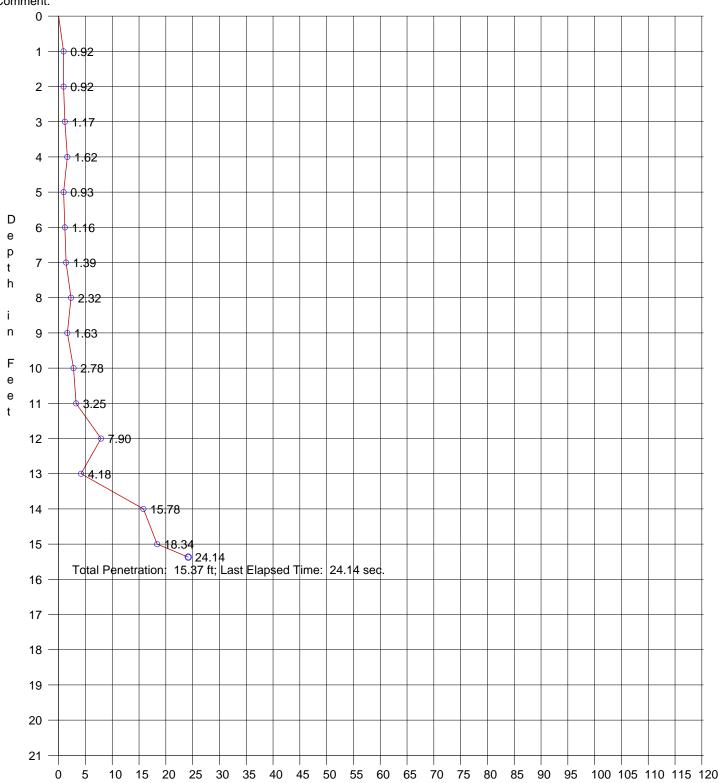
Date: 12/16/2011 Start Time: 3:12:51 PM End Time: 3:14:21 PM

Penetration: 15.37 ft Recovery: 13.83 ft W. D. Corrected: 44.07 ft

W. D. Raw: 42.61 ft

Easting: 2568624.35 Northing: 322687.40 Coord. System: NCSPCS 83 Long: 77°06'35.4360" W Lat: 034°37'18.3180" N Datum: NAVD 88

Comment:



Penetration Graph for Core No. Z176, Run 1

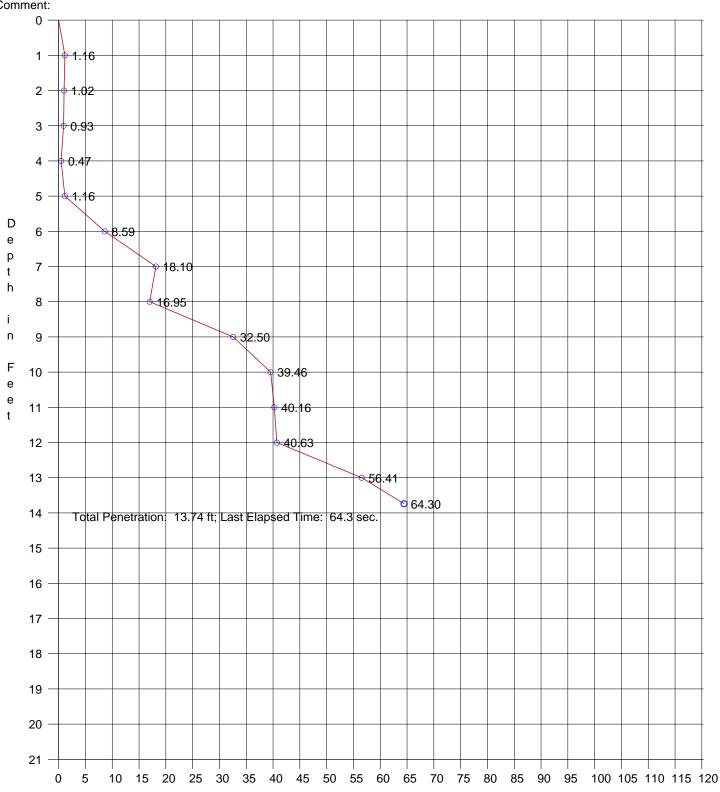
Date: 12/16/2011 Start Time: 3:31:49 PM End Time: 3:37:12 PM

Penetration: 13.74 ft Recovery: 18.00 ft W. D. Corrected: 42.21 ft W. D. Raw: 40.55 ft

Easting: 2570499.82 Northing: 323378.84 Coord. System: NCSPCS 83 Long: 77°06'12.8400" W Lat: 034°37'24.8040" N

Datum: NAVD 88

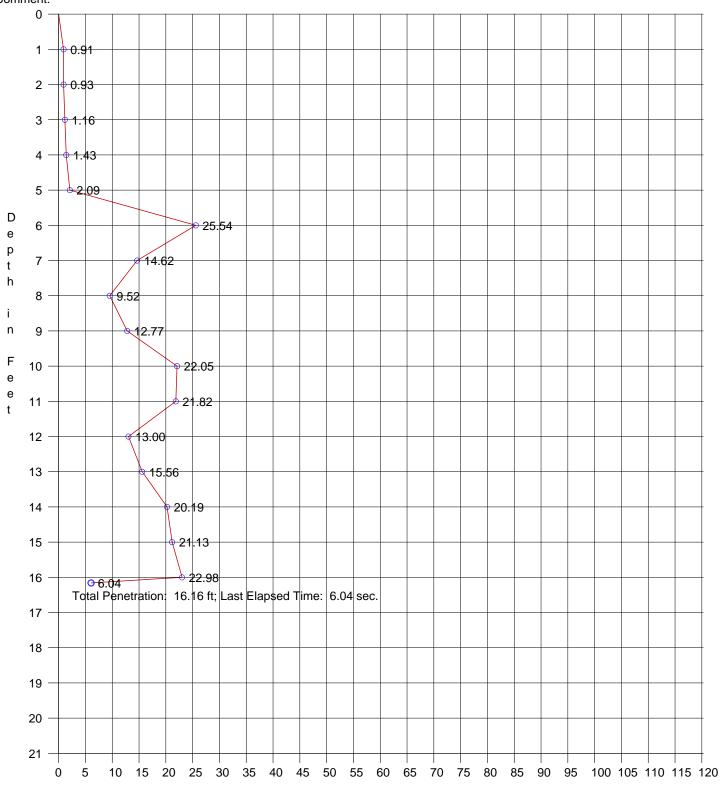
Comment:



Penetration Graph for Core No. Z177, Run 1

Date: 12/16/2011 Start Time: 3:57:11 PM End Time: 4:00:44 PM Penetration: 16.16 ft Recovery: 20.00 ft W. D. Corrected: 42.97 ft W. D. Raw: 41.08 ft Easting: 2572380.24 Northing: 324063.63 Coord. System: NCSPCS 83 Long: 77°05'50.1840" W Lat: 034°37'31.2180" N Datum: NAVD 88

Comment:



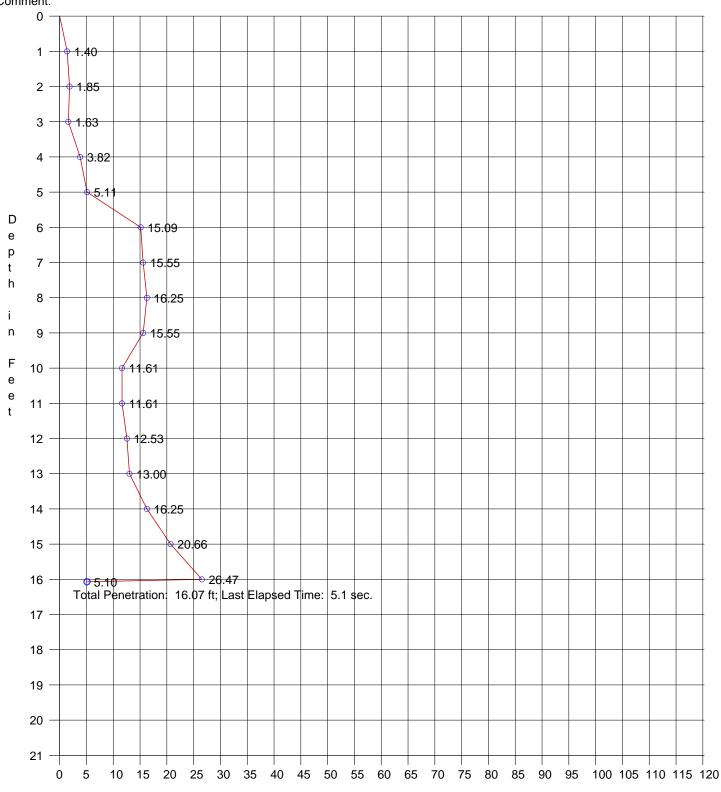
Penetration Graph for Core No. Z178, Run 1

Date: 12/16/2011 Start Time: 4:21:44 PM End Time: 4:24:57 PM

Penetration: 16.07 ft Recovery: 20.00 ft W. D. Corrected: 43.53 ft W. D. Raw: 41.44 ft

Easting: 2574256.62 Northing: 324762.36 Coord. System: NCSPCS 83 Long: 77°05'27.5760" W Lat: 034°37'37.7760" N Datum: NAVD 88

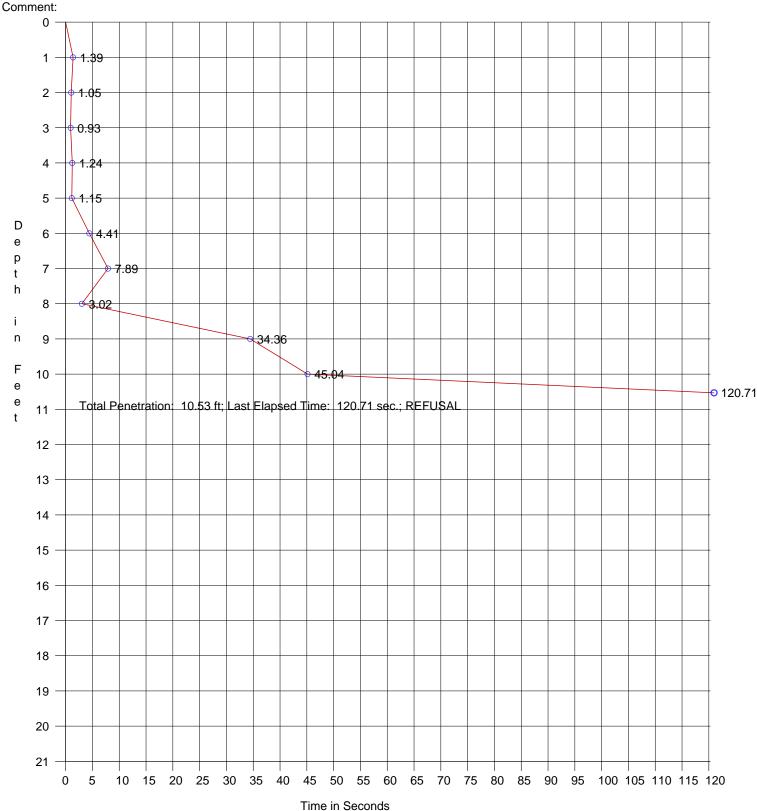
Comment:



Penetration Graph for Core No. Z179, Run 1

Date: 12/16/2011 Start Time: 4:38:51 PM End Time: 4:42:33 PM Penetration: 10.53 ft Recovery: 10.08 ft W. D. Corrected: 43.69 ft Easting: 2576137.43 Northing: 325450.27 Coord. System: NCSPCS 83 Long: 77°05'04.9140" W Lat: 034°37'44.2200" N Datum: NAVD 88

W. D. Raw: 0.00 ft



Penetration Graph for Core No. Z180, Run 1

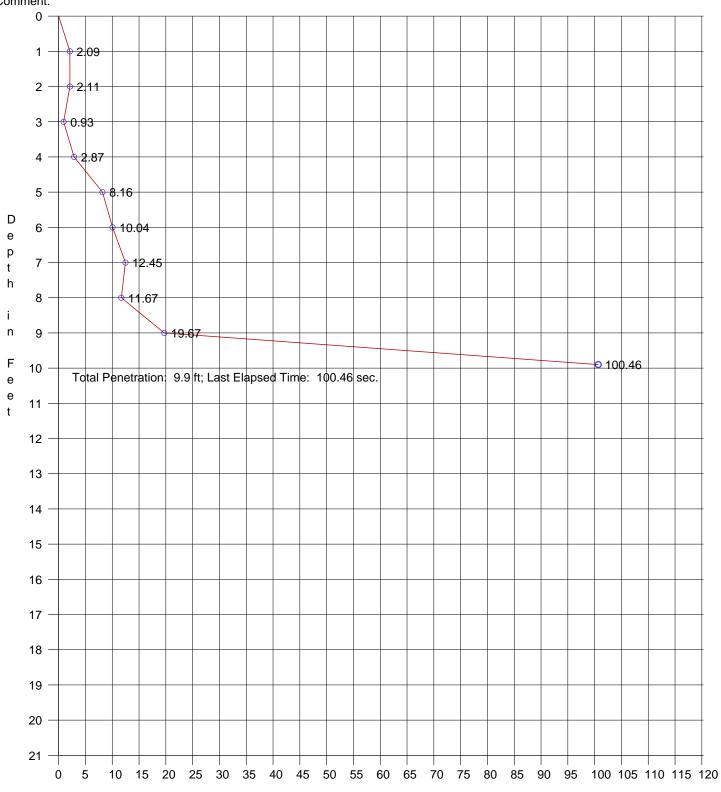
Date: 12/17/2011 Start Time: 7:30:20 AM End Time: 7:33:10 AM

Penetration: 9.90 ft Recovery: 9.50 ft W. D. Corrected: 45.50 ft

W. D. Raw: 43.67 ft

Easting: 2578013.44 Northing: 326133.26 Coord. System: NCSPCS 83 Long: 77°04'42.3060" W Lat: 034°37'50.6160" N Datum: NAVD 88

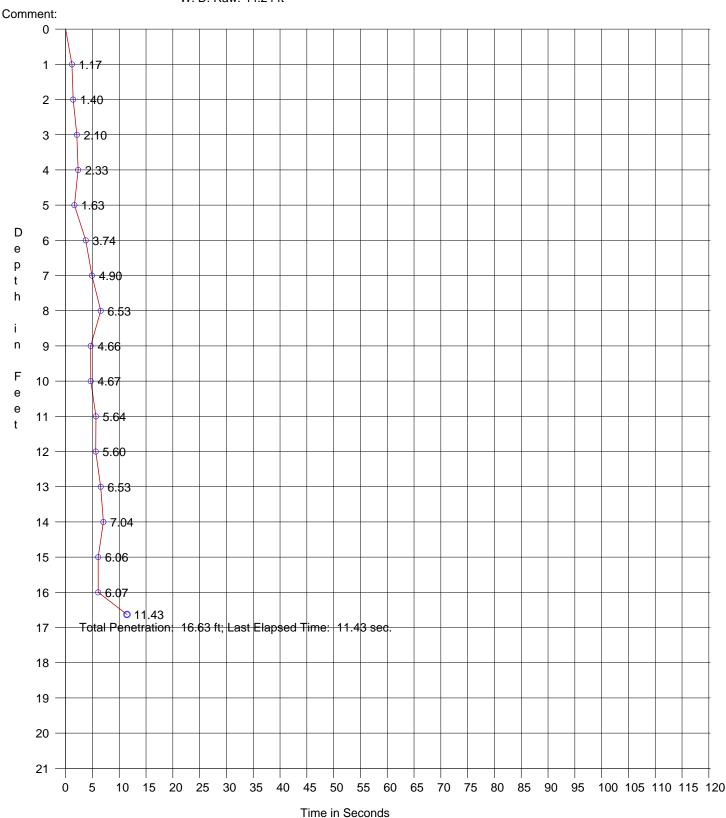
Comment:



Penetration Graph for Core No. Z181, Run 1

Date: 12/17/2011 Start Time: 7:50:59 AM End Time: 7:52:20 AM Penetration: 16.63 ft Recovery: 16.80 ft W. D. Corrected: 45.91 ft Easting: 2579891.11 Northing: 326828.31 Coord. System: NCSPCS 83 Long: 77°04'19.6800" W Lat: 034°37'57.1260" N Datum: NAVD 88

W. D. Raw: 44.24 ft



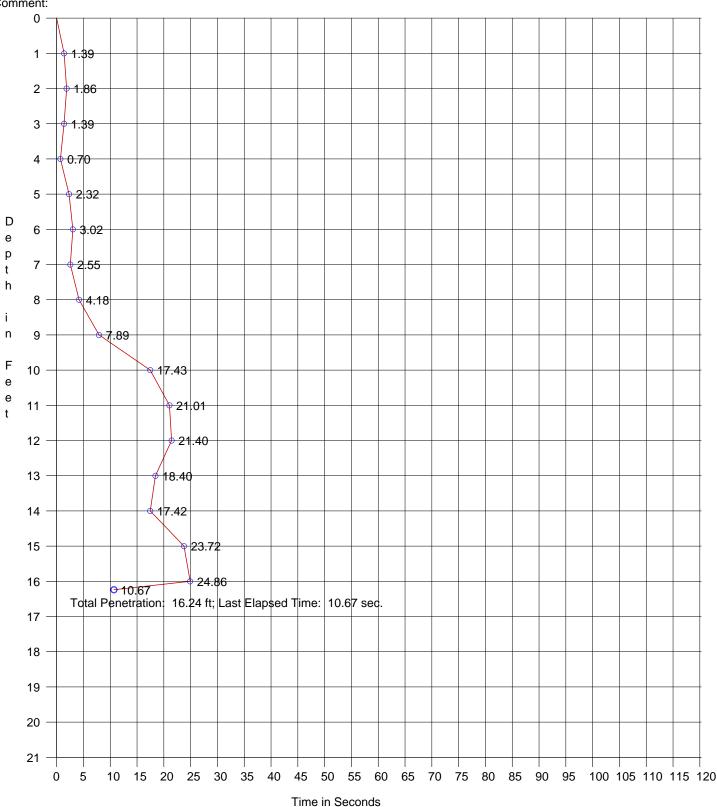
Penetration Graph for Core No. Z185, Run 1

Date: 12/17/2011 Start Time: 2:43:09 PM End Time: 2:46:09 PM

Penetration: 16.24 ft Recovery: 19.33 ft W. D. Corrected: 41.12 ft W. D. Raw: 40.97 ft

Easting: 2573912.01 Northing: 325692.04 Coord. System: NCSPCS 83 Long: 77°05'31.4820"W Lat: 034°37'47.0340"N Datum: NAVD 88

Comment:



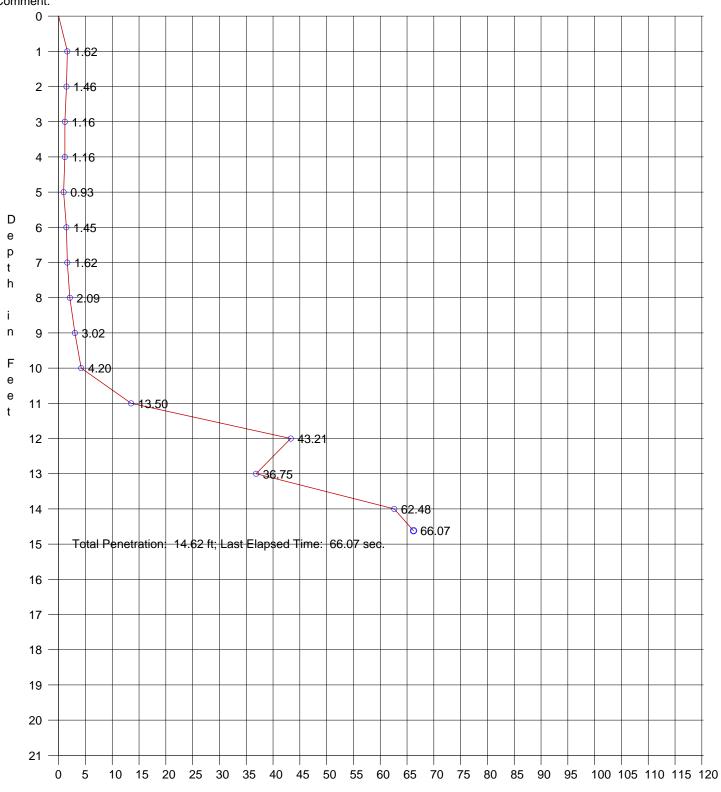
Penetration Graph for Core No. Z186, Run 1

Date: 12/17/2011 Start Time: 10:31:01 AM End Time: 10:35:02 AM

Penetration: 14.62 ft Recovery: 15.42 ft W. D. Corrected: 41.44 ft W. D. Raw: 41.59 ft

Easting: 2574849.37 Northing: 326037.82 Coord. System: NCSPCS 83 Long: 77°05'20.1900" W Lat: 034°37'50.2740" N Datum: NAVD 88

Comment:



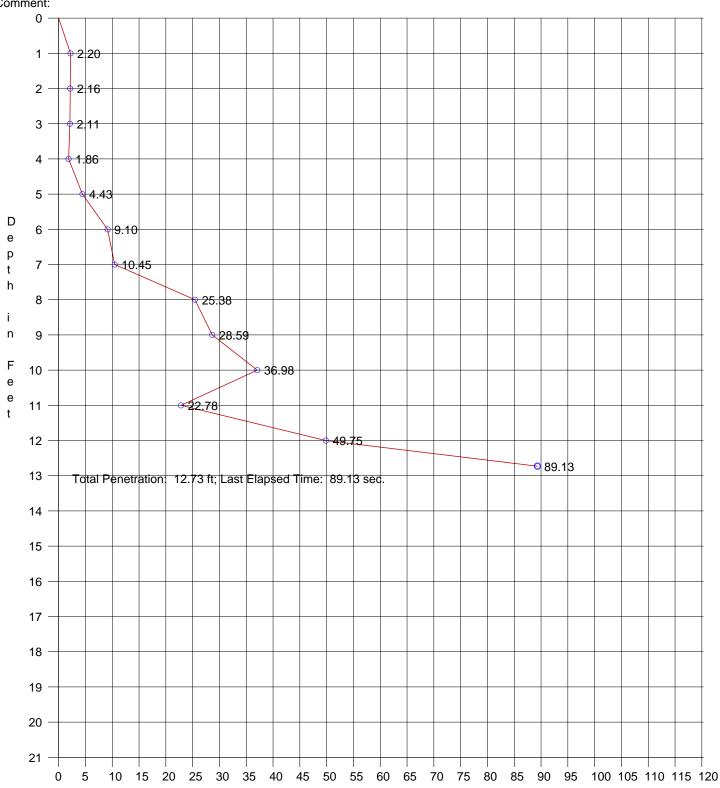
Penetration Graph for Core No. Z191, Run 1

Date: 12/17/2011 Start Time: 10:51:49 AM End Time: 10:56:38 AM

Penetration: 12.73 ft Recovery: 15.33 ft W. D. Corrected: 47.56 W. D. Raw: 47.90 ft

Easting: 2575538.09 Northing: 324167.06 Coord. System: NCSPCS 83 Long: 77°05'12.3780" W Lat: 034°37'31.6440" N Datum: NAVD 88





Penetration Graph for Core No. Z193, Run 1

Date: 12/16/2011 Start Time: 2:48:17 PM End Time: 2:50:40 PM

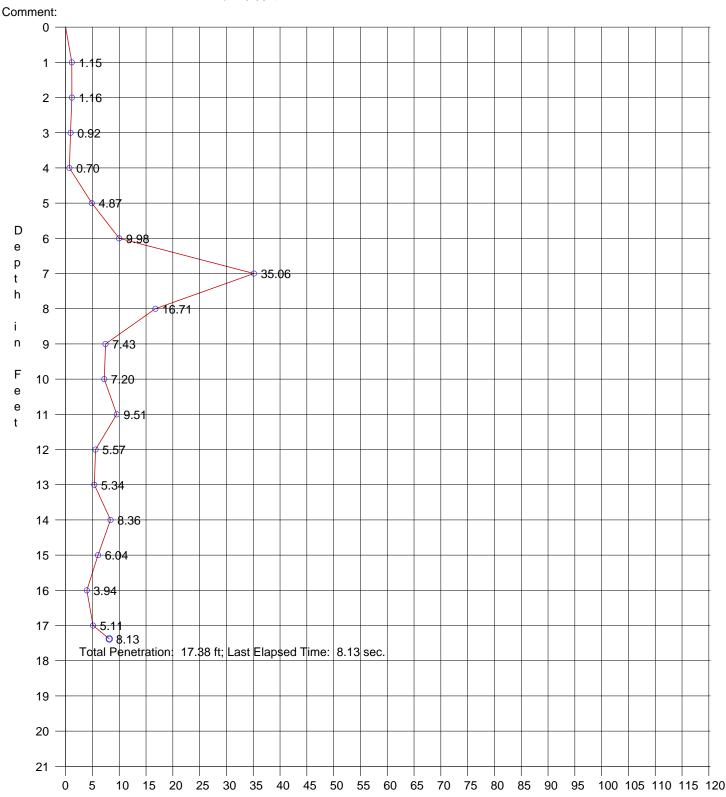
Penetration: 17.38 ft Recovery: 17.00 ft W. D. Corrected: 35.73 ft

Northing: 322745.32 Coord. System: NCSPCS 83

Easting: 2560082.62

Long: 77°08'17.6160"W Lat: 034°37'20.4840"N Datum: NAVD 88

W. D. Raw: 0.00 ft



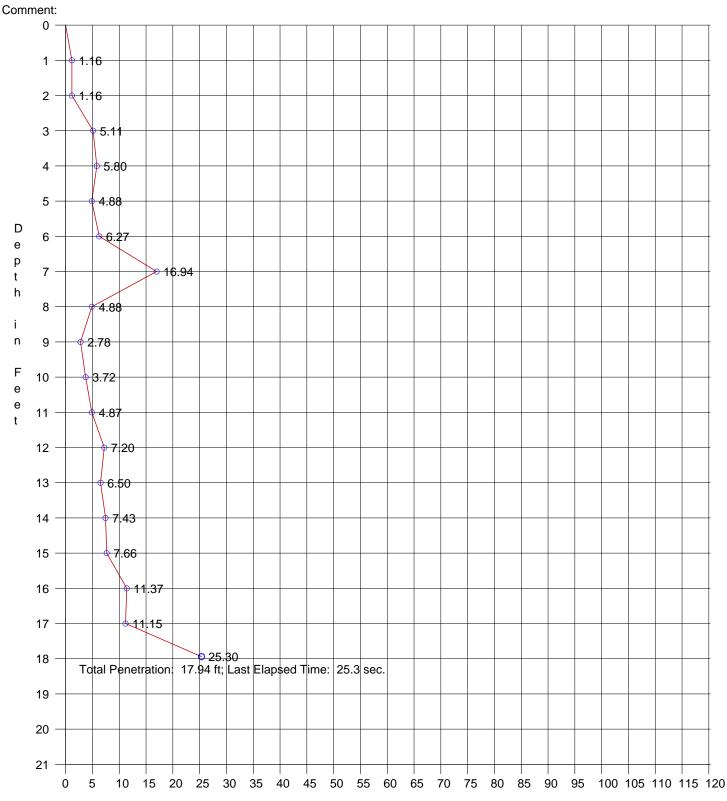
Penetration Graph for Core No. Z200, Run 1

Date: 12/16/2011 Start Time: 2:25:57 PM End Time: 2:28:11 PM

Penetration: 17.94 ft Recovery: 17.25 ft W. D. Corrected: 39.34 ft W. D. Raw: 38.38 ft

Easting: 2561367.43 Northing: 322152.44 Coord. System: NCSPCS 83 Long: 77°08'02.3760" W Lat: 034°37'14.3820" N

Datum: NAVD 88



Penetration Graph for Core No. Z213, Run 1

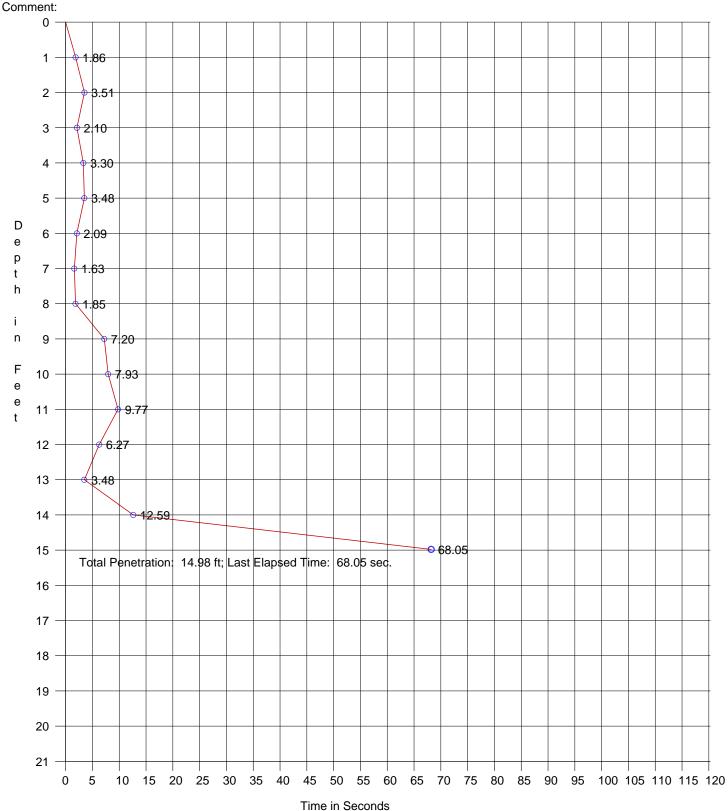
Date: 12/17/2011 Start Time: 2:20:48 PM End Time: 2:23:03 PM

Penetration: 14.98 ft Recovery: 13.50 ft W. D. Corrected: 34.13 ft Easting: 2573568.58 Northing: 326628.98

Lat: 034°37'56.3640" N Coord. System: NCSPCS 83 Datum: NAVD 88

Long: 77°05'35.3760" W

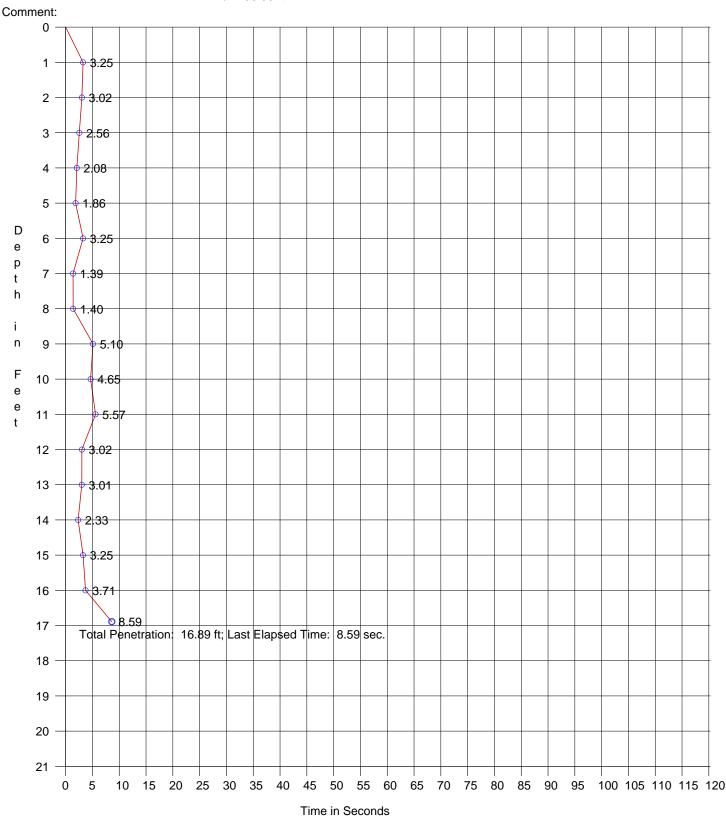
W. D. Raw: 34.27 ft



Penetration Graph for Core No. Z214, Run 1

Date: 12/17/2011 Start Time: 2:02:07 PM End Time: 2:03:05 PM Penetration: 16.89 ft Recovery: 16.80 ft W. D. Corrected: 36.53 ft Easting: 2574504.89 Northing: 326974.46 Coord. System: NCSPCS 83 Long: 77°05'24.0960" W Lat: 034°37'59.6040" N Datum: NAVD 88

W. D. Raw: 36.90 ft



Penetration Graph for Core No. Z215, Run 1

Date: 12/17/2011 Start Time: 1:38:36 PM End Time: 1:39:41 PM

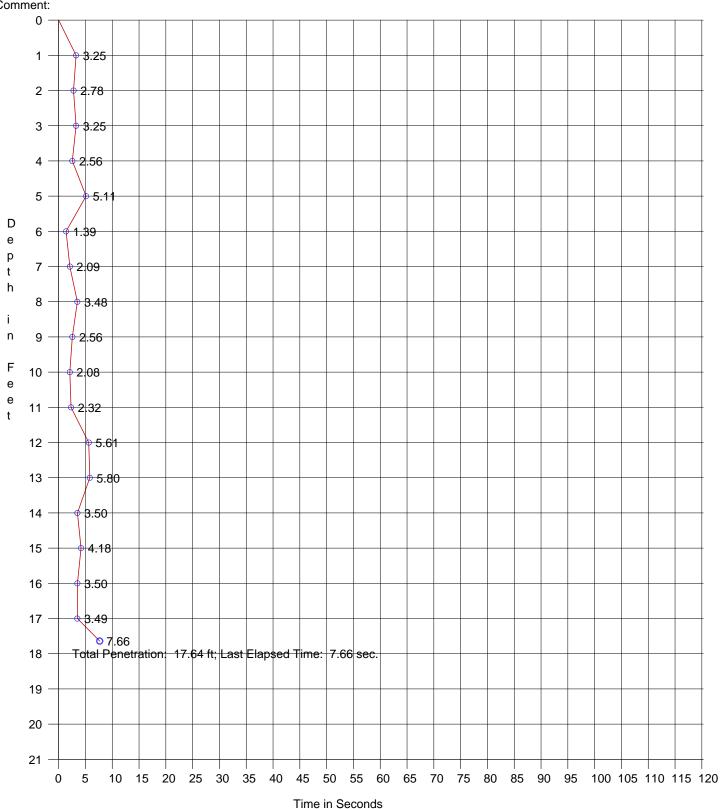
Penetration: 17.64 ft Recovery: 17.17 ft W. D. Corrected: 32.13 ft

W. D. Raw: 32.65 ft

Easting: 2575443.70 Northing: 327325.17 Coord. System: NCSPCS 83 Long: 77°05'12.7800" W Lat: 034°38'02.8920" N

Datum: NAVD 88

Comment:



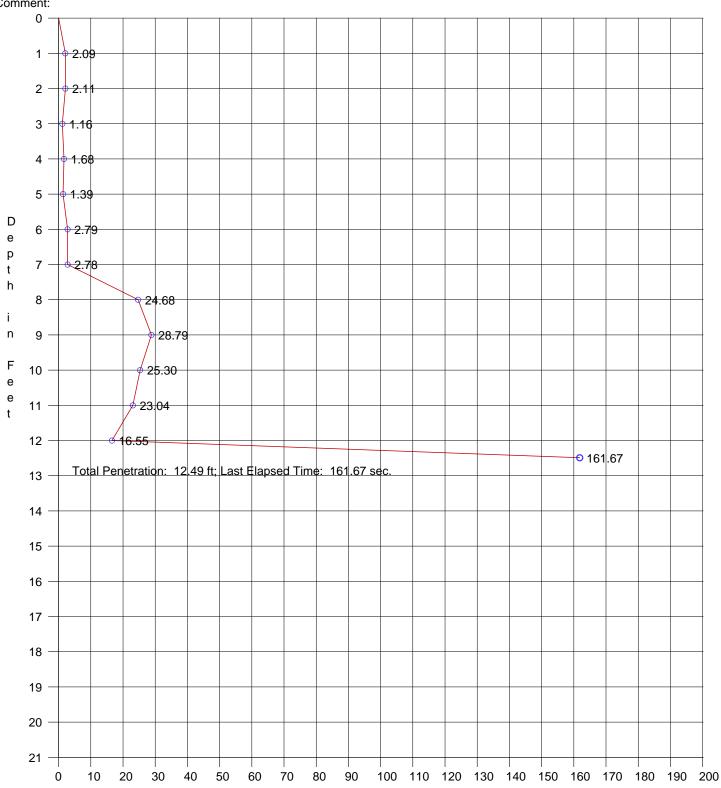
Penetration Graph for Core No. Z231, Run 1

Date: 12/17/2011 Start Time: 9:42:57 AM End Time: 9:47:51 AM

Penetration: 12.49 ft Recovery: 10.33 ft W. D. Corrected: 42.46 ft W. D. Raw: 42.01 ft

Easting: 2575788.75 Northing: 326387.52 Coord. System: NCSPCS 83 Long 77°05'08.8680" W Lat: 034°37'53.5560" N Datum: NAVD 88

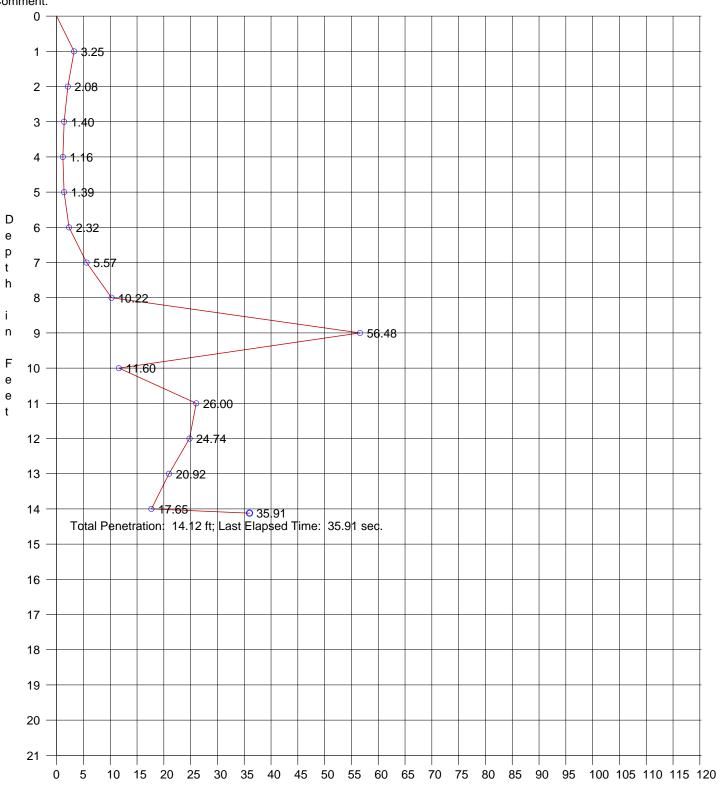
Comment:



Penetration Graph for Core No. Z232, Run 1

Date: 12/17/2011 Start Time: 9:21:32 AM End Time: 9:25:13 AM Penetration: 14.12 ft Recovery: 15.17 ft W. D. Corrected: 43.64 ft W. D. Raw: 42.98 ft Easting: 2576727.61 Northing: 326732.45 Coord. System: NCSPCS 83 Long: 77°04'57.5580" W Lat: 034°37'56.7840" N Datum: NAVD 88

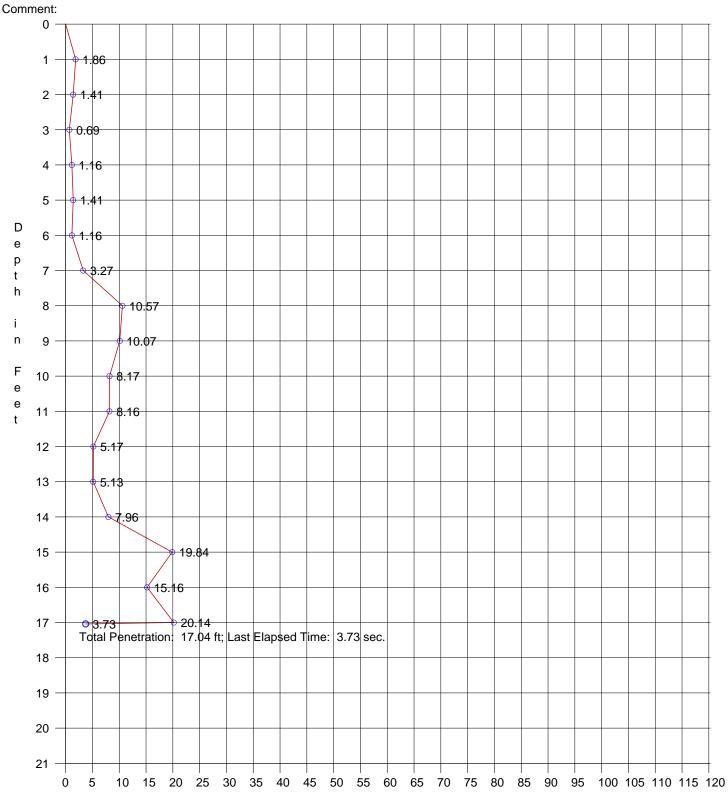
Comment:



Penetration Graph for Core No. Z233, Run 1

Date: 12/17/2011 Start Time: 9:03:27 AM End Time: 9:05:32 AM Penetration: 17.04 ft Recovery: 17.92 ft W. D. Corrected: 41.37 ft Easting: 2577666.13 Northing: 327071.92 Coord. System: NCSPCS 83 Long: 77°04'46.2480" W Lat: 034°37'59.9640" N Datum: NAVD 88

W. D. Raw: 40.49 ft



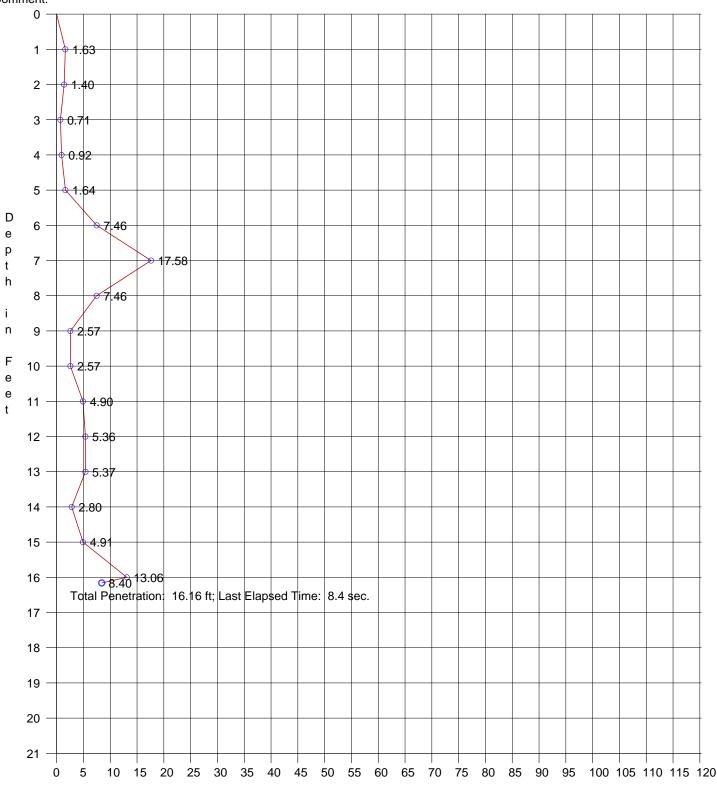
Penetration Graph for Core No. Z234, Run 1

Date: 12/17/2011 Start Time: 8:45:45 AM End Time: 8:47:14 AM Penetration: 16.16 ft Recovery: 14.58 ft W. D. Corrected: 42. 71 ft

W. D. Raw: 41.70 ft

Easting: 2578603.35 Northing: 327418.86 Coord. System: NCSPCS 83 Long: 77°04'34.9500" W Lat: 034°38'03.2160" N Datum: NAVD 88

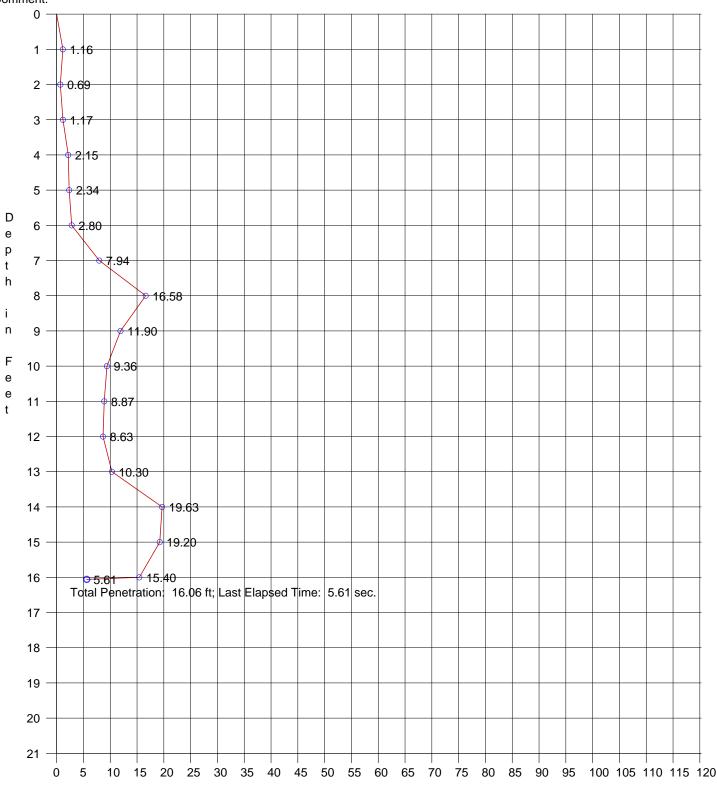
Comment:



Penetration Graph for Core No. Z235, Run 1

Date: 12/17/2011 Start Time: 8:28:48 AM End Time: 8:31:12 AM Penetration: 16.06 ft Recovery: 18.17 ft W. D. Corrected: 44.80 ft W. D. Raw: 43.63 ft Easting: 2579546.31 Northing: 327766.40 Coord. System: NCSPCS 83 Long: 77°04'23.5860" W Lat: 034°38'06.4740" N Datum: NAVD 88

Comment:



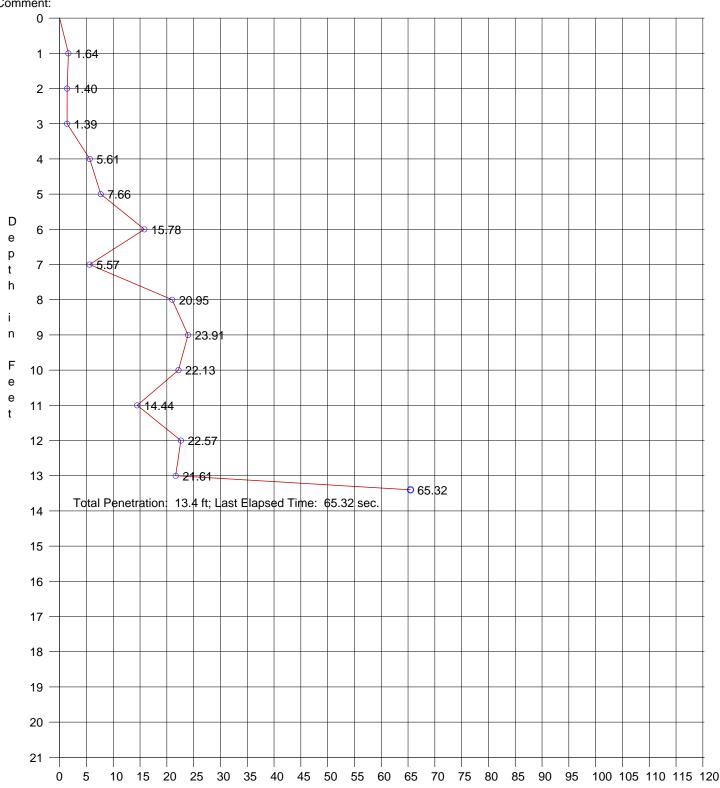
Penetration Graph for Core No. Z255, Run 1

Date: 12/17/2011 Start Time: 11:15:09 AM End Time: 11:18:59 AM

Penetration: 13.40 ft Recovery: 15.83 ft W. D. Corrected: 49.19 ft Easting: 2576480.52 Northing: 324501.43 Coord. System: NCSPCS 83 Long: 77°05'01.0260" W Lat: 034°37'34.7700" N Datum: NAVD 88

W. D. Raw: 49.71 ft

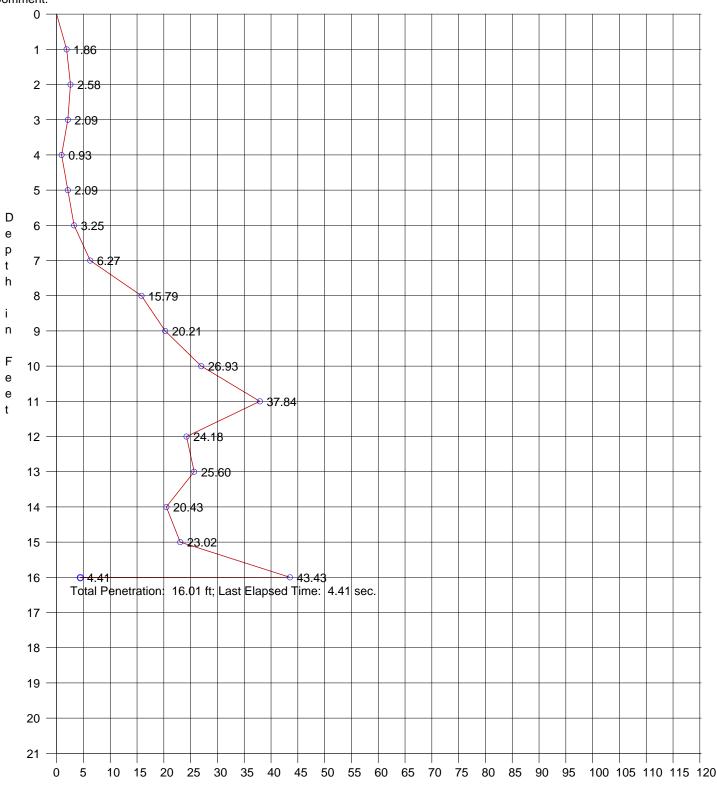




Penetration Graph for Core No. Z256, Run 1

Date: 12/17/2011 Start Time: 11:36:20 AM End Time: 11:40:41 AM Penetration: 16.01 ft Recovery: 17.30 ft W. D. Corrected: 46.26 ft W. D. Raw: 46.88 ft Easting: 2577422.19 Northing: 324854.57 Coord. System: NCSPCS 83 Long: 77°04'49.6800" W Lat: 034°37'38.0820" N Datum: NAVD 88

Comment:



Penetration Graph for Core No. Z257, Run 1

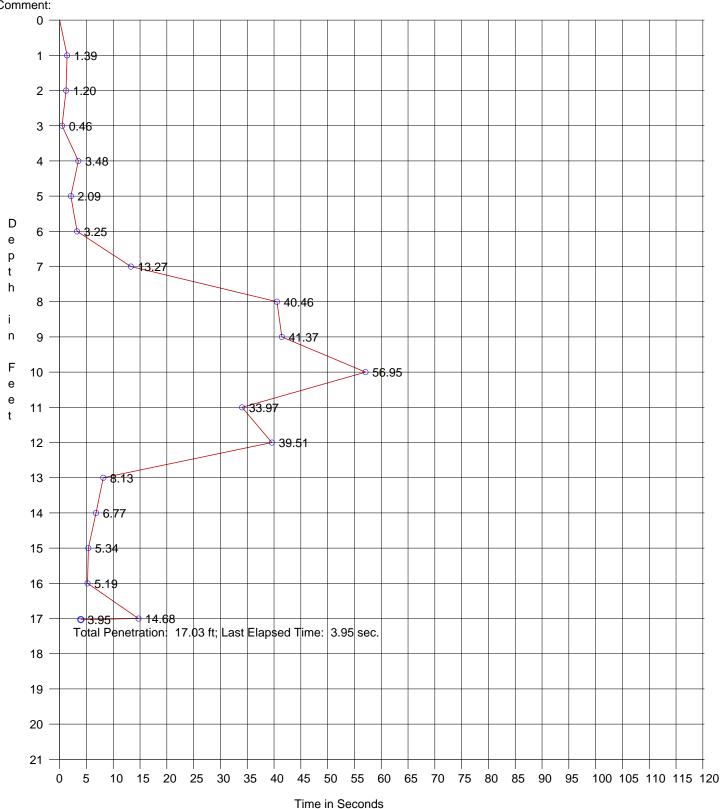
Date: 12/17/2011 Start Time: 11:57:32 AM End Time: 12:02:13 PM

Penetration: 17.03 ft Recovery: 19.10 ft W. D. Corrected: 46.82 ft W. D. Raw: 47.54 ft

Easting: 2578360.06 Northing: 325187.06 Coord. System: NCSPCS 83 Long: 77°04'38.3820" W Lat: 034°37'41.1900" N

Datum: NAVD 88

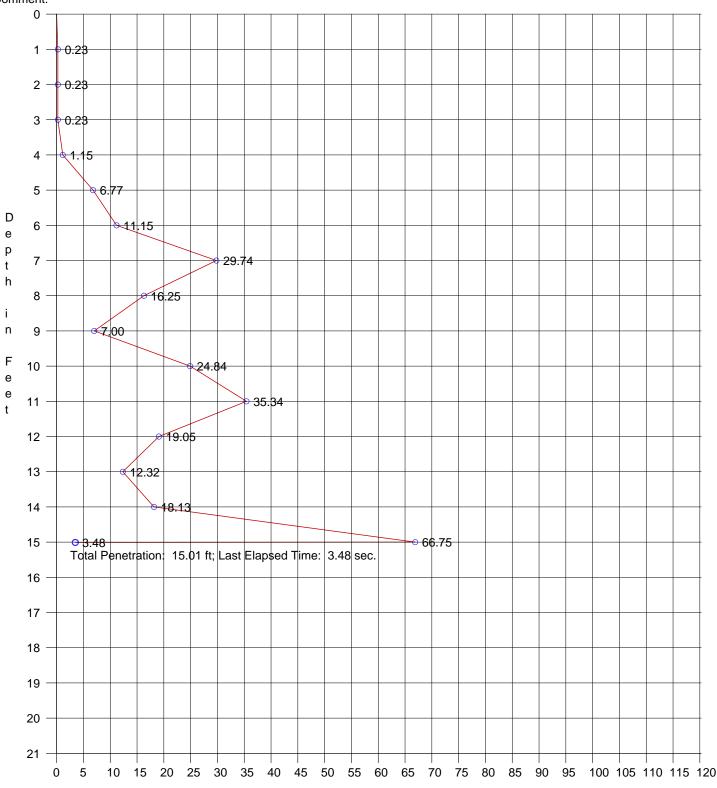
Comment:



Penetration Graph for Core No. Z258, Run 1

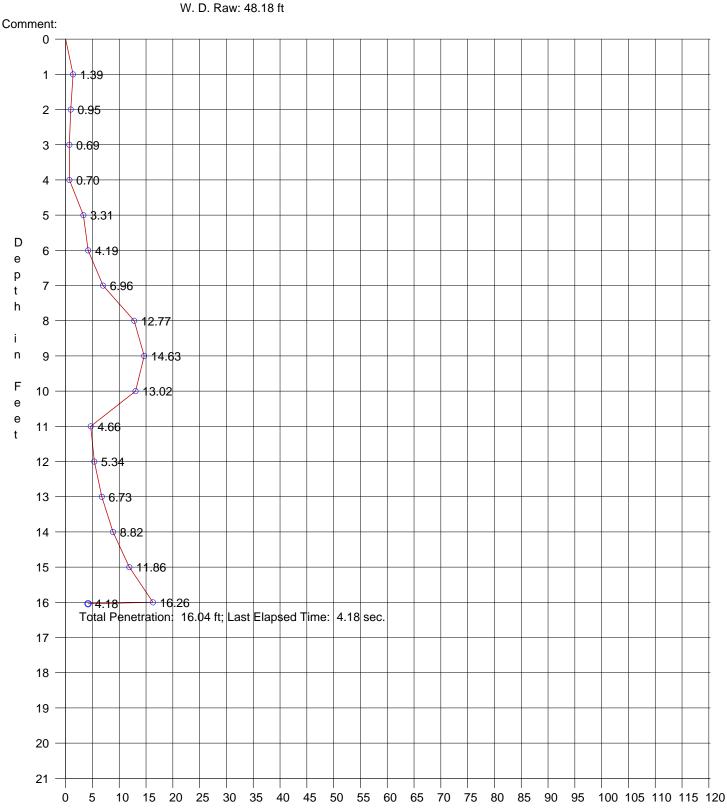
Date: 12/17/2011 Start Time: 12:22:47 PM End Time: 12:27:00 PM Penetration: 15.01 ft Recovery: 18.42 ft W. D. Corrected: 46.84 ft W. D. Raw: 47.64 ft Easting: 2579294.60 Northing: 325544.54 Coord. System: NCSPCS 83 Long: 77°04'27.1140" W Lat: 034°37'44.5440" N Datum: NAVD 88

Comment:



Penetration Graph for Core No. Z259, Run 1

Date: 12/17/2011 Start Time: 1:15:28 PM End Time: 1:17:24 PM Penetration: 16.04 ft Recovery: 18.33 ft W. D. Corrected: 47.50 ft Easting: 2580233.91 Northing: 325889.06 Coord. System: NCSPCS 83 Long: 77°04'15.7980" W Lat: 034°37'47.7720" N Datum: NAVD 88



Penetration Graph for Core No. Z276, Run 1

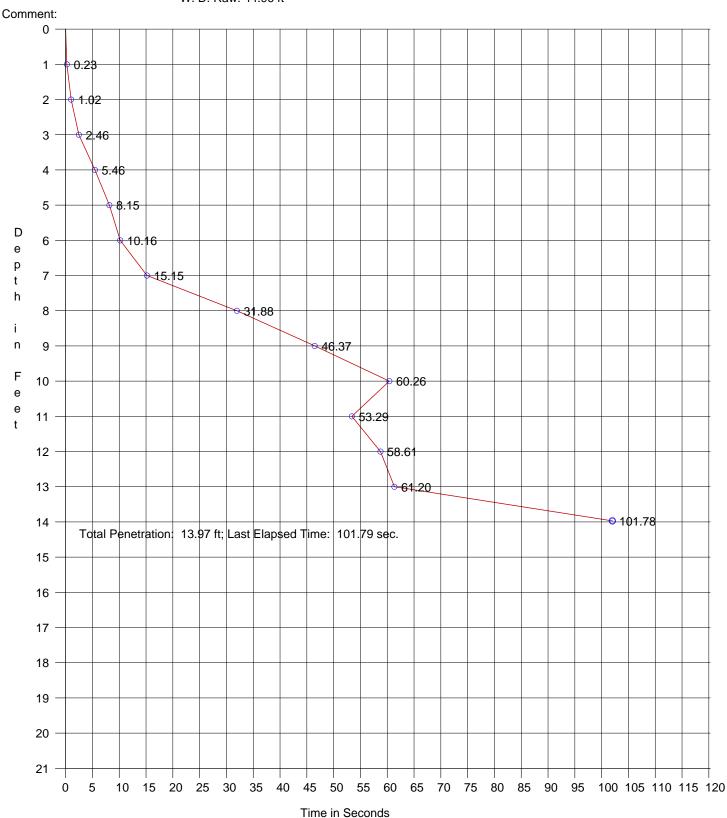
Date: 12/18/2011 Start Time: 7:17:25 AM End Time: 7:25:26 AM Penetration: 13.97 ft Recovery: 18.33 ft W. D. Corrected: 47.01 ft

Northing: 323220.72 Coord. System: NCSPCS 83

Easting: 2575885.91

Long: 77°05'08.4360" W Lat: 034°37'22.2180" N Datum: NAVD 88

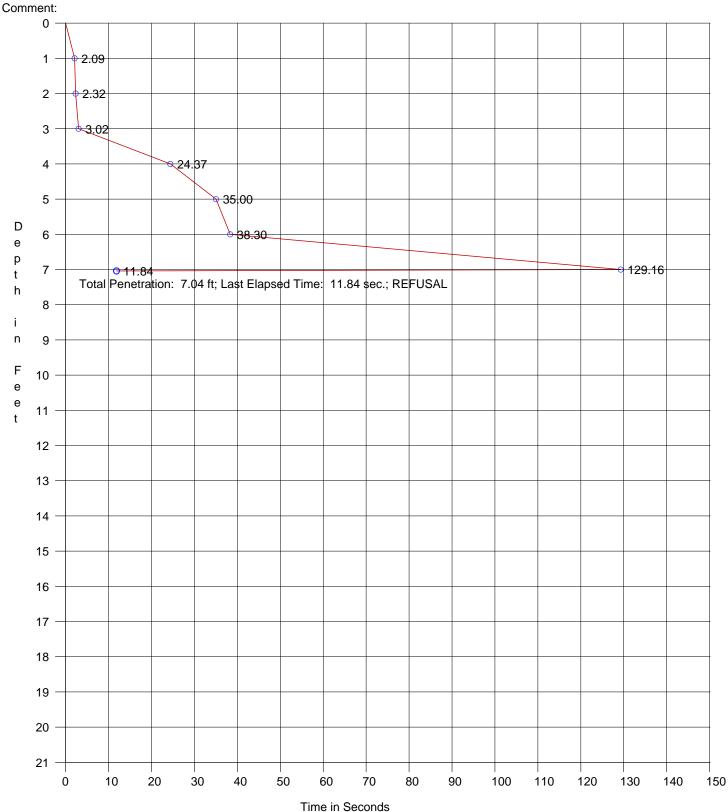
W. D. Raw: 44.96 ft



Penetration Graph for Core No. Z277, Run 1

Date: 12/17/2011 Start Time: 3:29:49 PM End Time: 3:35:07 PM Penetration: 7.04 ft Recovery: 7.00 ft W. D. Corrected: 48.00 ft Easting: 2576823.78 Northing: 323568.96 Coord. System: NCSPCS 83 Long. 77°04'57.1380" W Lat: 034°37'25.4820" N Datum: NAVD 88

W. D. Raw: 48.17 ft



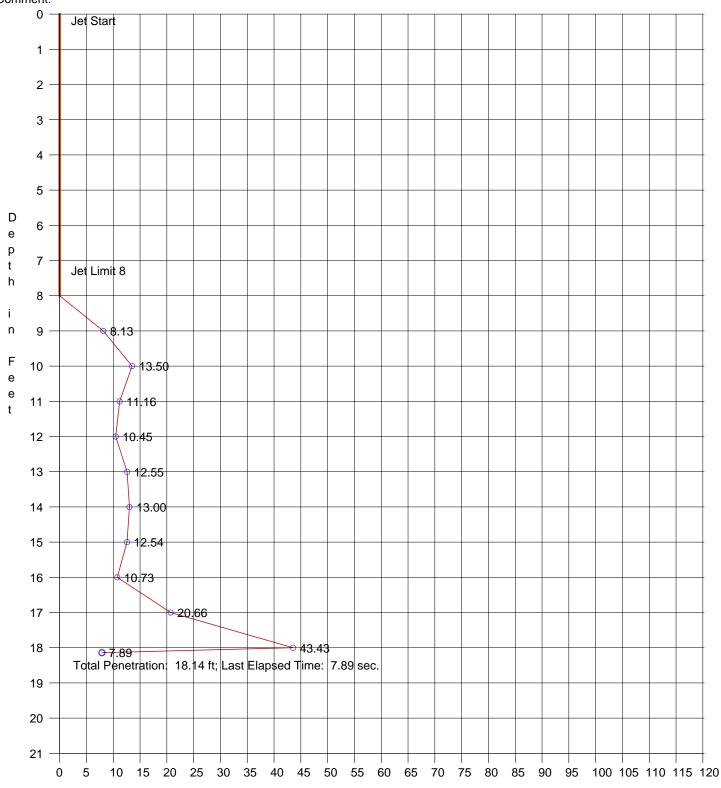
Penetration Graph for Core No. Z277, Run 2

Date: 12/17/2011 Start Time: 3:52:29 PM End Time: 3:57:42 PM Penetration: 18.14 ft Recovery: 13.60 ft W. D. Corrected: 48.78 ft

W. D. Raw: 47.89 ft

Easting: 2576822.91 Northing: 323571.04 Coord. System: NCSPCS 83 Long: 77°04'57.1440" W Lat: 034°37'25.5000" N Datum: NAVD 88

Comment:



Penetration Graph for Core No. Z278, Run 1

Date: 12/17/2011 Start Time: 4:15:23 PM End Time: 4:20:07 PM

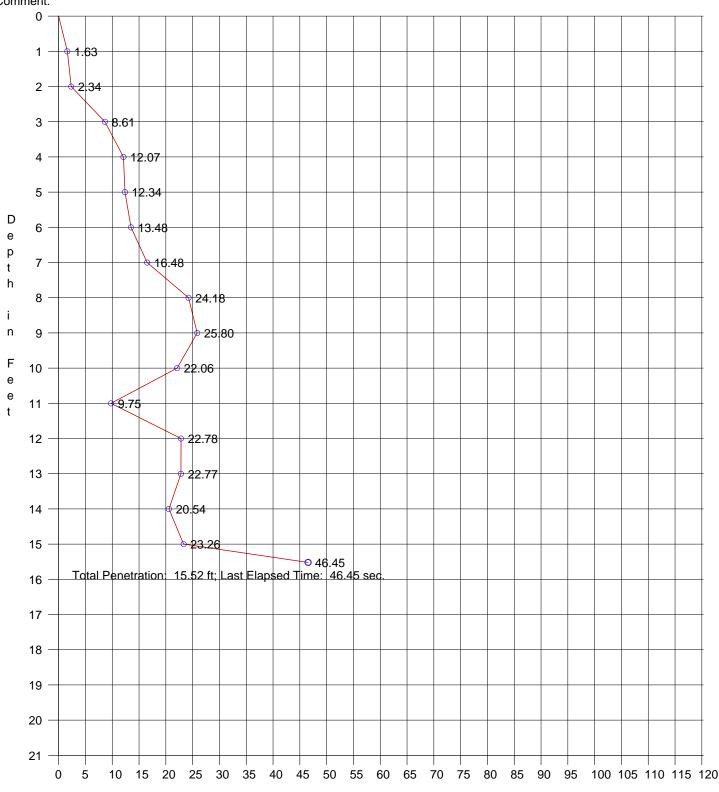
Penetration: 15.52 ft Recovery: 20.00 ft W. D. Corrected: 48.03 ft W. D. Raw: 46.89 ft

Northing: 323912.61 Coord. System: NCSPCS 83

Easting: 2577764.56

Long: 77°04'45.7980"W Lat: 034°37'28.6980"N Datum: NAVD 88

Comment:

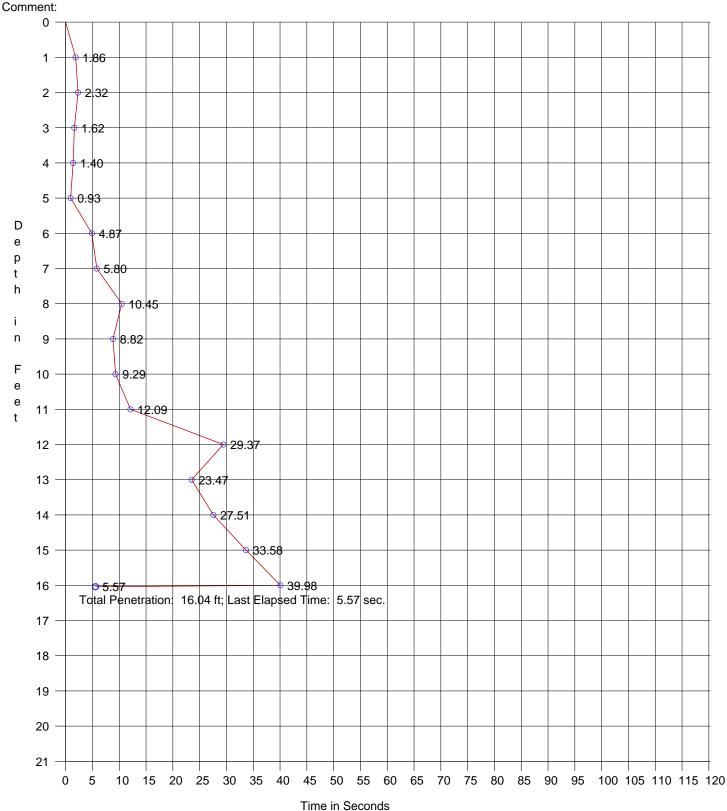


Penetration Graph for Core No. Z279, Run 1

Date: 12/17/2011 Start Time: 4:42:40 PM End Time: 4:46:19 PM Penetration: 16.04 ft Recovery: 14.92 ft W. D. Corrected: 46.97 ft Easting: 2578702.94 Northing: 324259.84 Coord. System: NCSPCS 83 Long: 77°04'34.4940" W Lat: 034°37'31.9560" N

Datum: NAVD 88

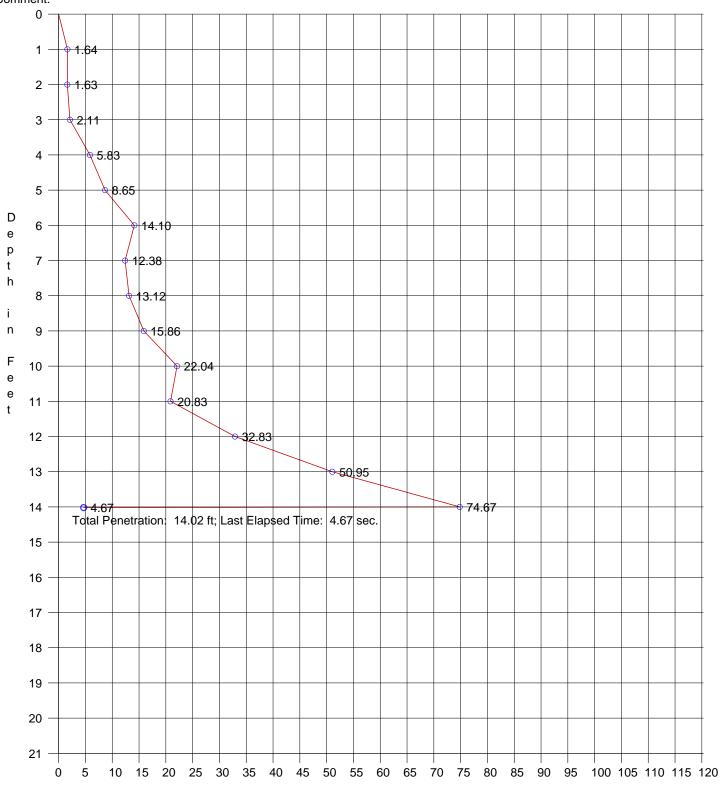
W. D. Raw: 45.55 ft



Penetration Graph for Core No. Z298, Run 1

Date: 12/18/2011 Start Time: 8:08:57 End Time: 8:13:38 Penetration: 14.02 ft Recovery: 16.50 ft W. D. Corrected: 46.91 ft W. D. Raw: 45.00 ft Easting: 2576230.77 Northing: 322284.66 Coord. System: NCSPCS 83 Long: 77°05'04.5300" W Lat: 034°37'12.8940" N Datum: NAVD 88

Comment:



Penetration Graph for Core No. Z299, Run 1

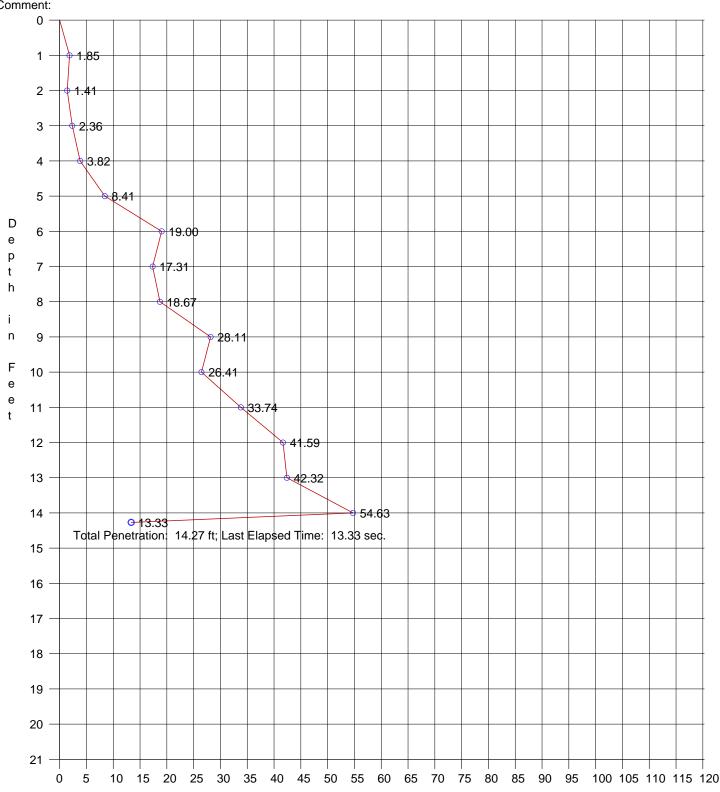
Date: 12/18/2011 Start Time: 7:48:05 AM End Time: 7:53:18 AM

Penetration: 14.27 ft Recovery: 18.50 ft W. D. Corrected: 49.41 ft W. D. Raw: 47.46 ft

Easting: 2577166.65 Northing: 322630.30 Coord. System: NCSPCS 83 Long: 77°04'53.2500" W Lat: 034°37'16.1340" N

Datum: NAVD 88





Penetration Graph for Core No. Z300, Run 1

Date: 12/18/2011 Start Time: 8:29:32 AM End Time: 8:36:13 AM

Penetration: 16.24 ft Recovery: 16.92 ft W. D. Corrected: 49.74 ft

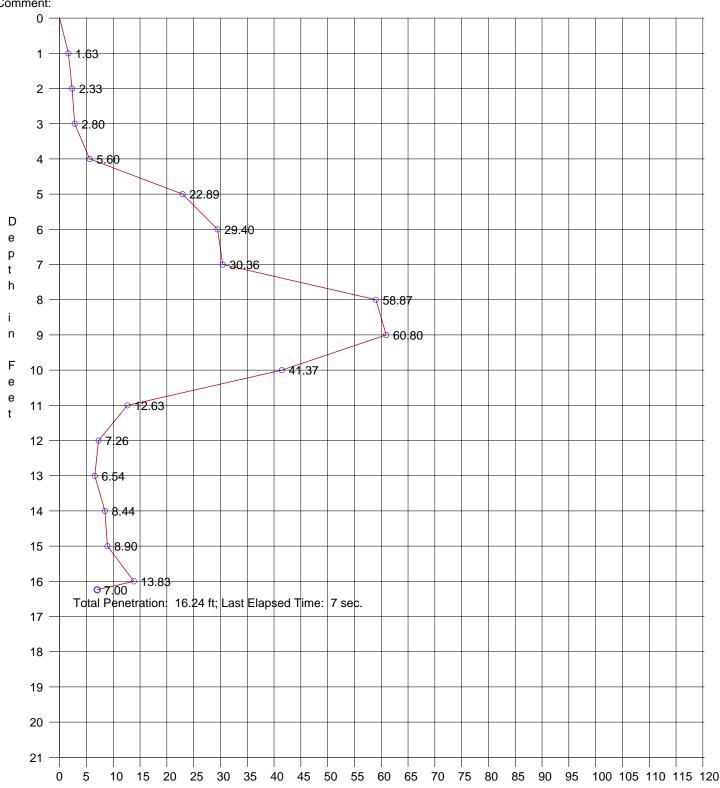
Northing: 322970.27 Coord. System: NCSPCS 83 W. D. Raw: 47.88 ft

Easting: 2578106.66

Long: 77°04'41.9280"W Lat: 034°37'19.3140" N

Datum: NAVD 88





Penetration Graph for Core No. Z301, Run 1

Date: 12/18/2011 Start Time: 8:51:54 AM End Time: 8:58:06 AM

Penetration: 16.60 ft Recovery: 18.00 ft W. D. Corrected: 47.84 ft

W. D. Raw: 46.06 ft

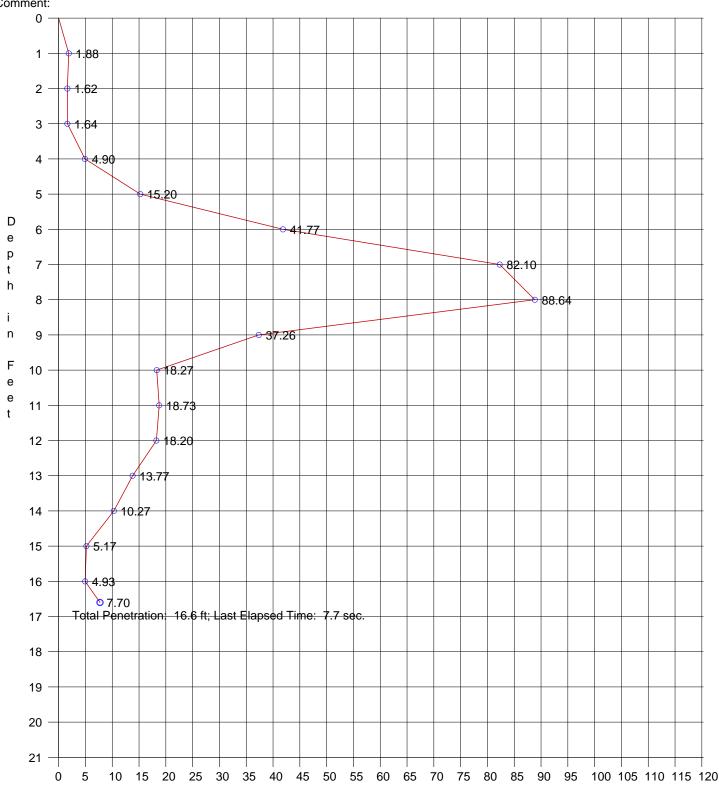
Easting: 2579045.16 Northing: 323320.21

Coord. System: NCSPCS 83

Long: 77°04'30.6180" W Lat: 034°37'22.5960" N

Datum: NAVD 88





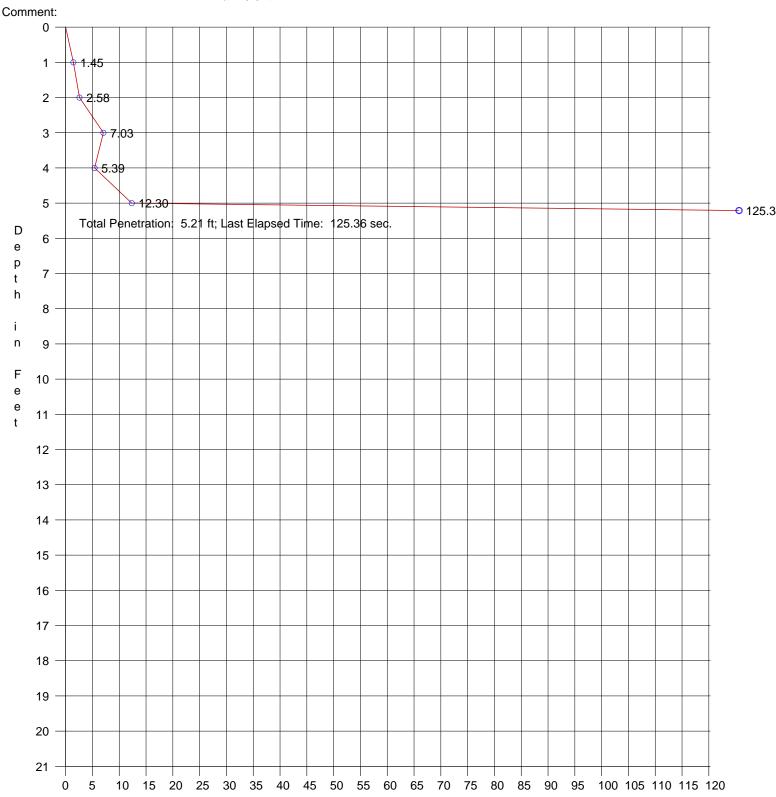
Penetration Graph for Core No. BI-1, Run 2

Date: 4/10/2012 Start Time: 12:52:29 PM End Time: 12:54:30 PM

Penetration: 5.21 ft Recovery: 5.2 ft W. D. Corrected: 4.5 ft W. D. Raw: 5.0 ft

Easting: 2568064.41 Northing: 332679.15 Coord. System: NCSPCS 83 Lat: 34.64923500° Long: 77.11107167° Datum: NAVD-88





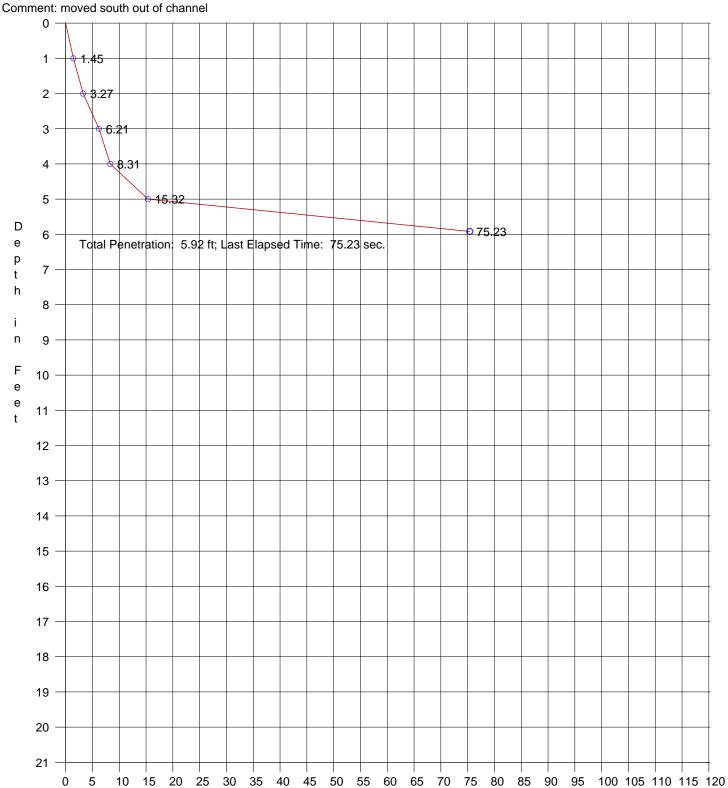
Penetration Graph for Core No. BI-2, Run 1

Date: 4/10/2012 Start Time: 14:15:29 PM End Time: 14:17:03 PM

Penetration: 5.92 ft Recovery: 5.2 ft W. D. Corrected: 5.2 ft Easting: 2568477.5 Northing: 331312.5 Coord. System: NCSPCS 83 Lat: 34 38' 43.65"N Long: 77 06' 35.23"W Datum: NAVD-88

W. D. Raw: 4.7 ft

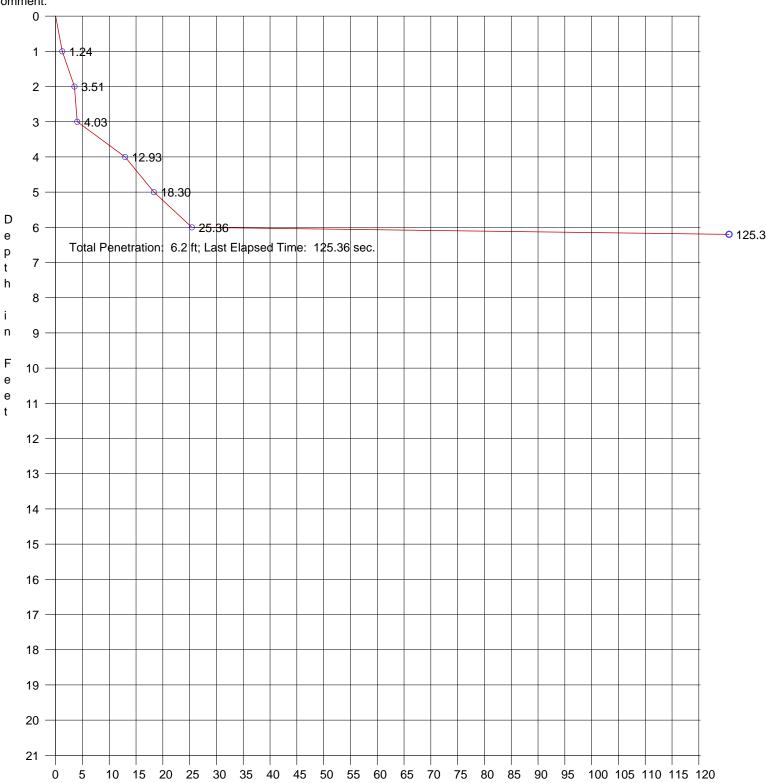




Penetration Graph for Core No. BI-3, Run 1

Date: 4/10/2012 Start Time: 14:52:07 PM End Time: 14:54:27 PM Penetration: 6.2 ft Recovery: 5.67 ft W. D. Corrected: 4.9 ft W. D. Raw: 3.9 ft Easting: 2568710.2 Northing: 330774.3 Coord. System: NCSPCS 83 Lat: 34° 38' 38.28"N Long: 77° 06' 32.56"W Datum: NAVD-88

Comment:



Penetration Graph for Core No. BI-4, Run 1

Date: 4/10/2012 Start Time: 15:25:29 PM End Time: 15:28:30 PM

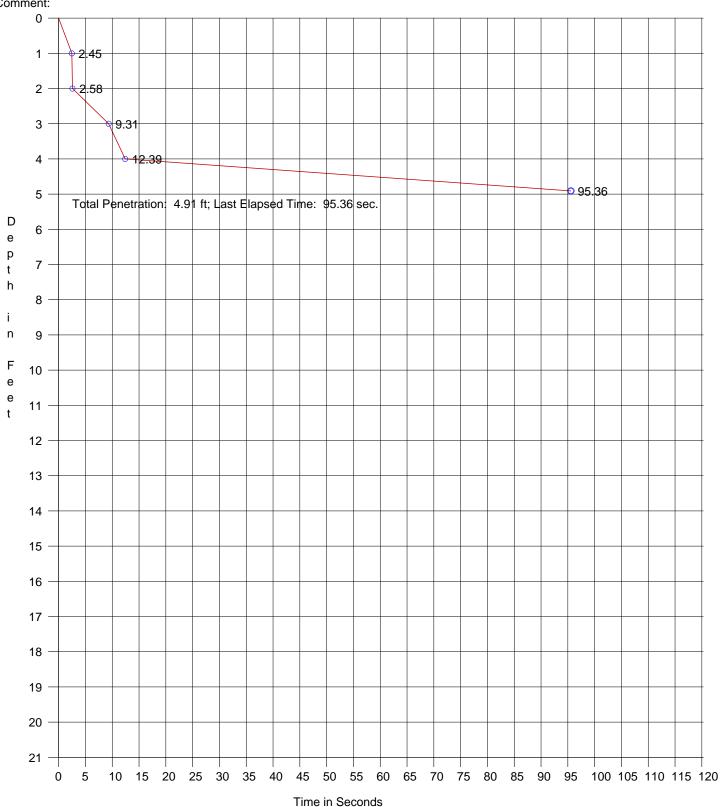
Penetration: 4.91 ft Recovery: 5.2 ft W. D. Corrected: 6.6 ft W. D. Raw: 5.2 ft

Easting: 2569032.6 Northing: 329825.2

Long: 77° 06'28.923"W Coord. System: NCSPCS 83 Datum: NAVD-88

Lat: 34°38'28.834"N

Comment:



Penetration Graph for Core No. 5, Run 1

Date: 4/10/2012 Start Time: 16:05:02 PM End Time: 16:08:15 PM

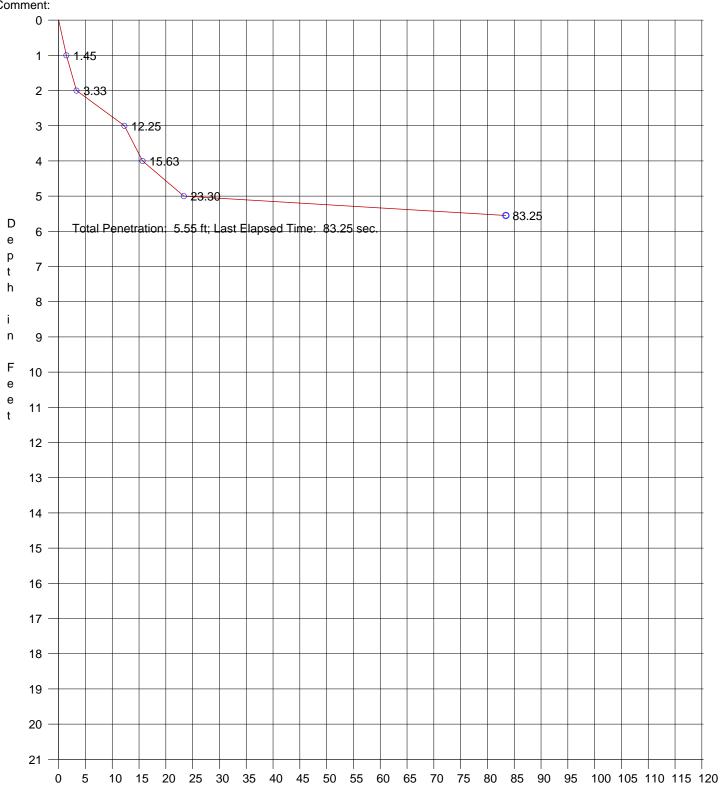
Penetration: 5.55 ft Recovery: 5.0 ft W. D. Corrected: 6.6 ft W. D. Raw: 4.8 ft

Easting: 2569357.2 Northing: 328880.3

Coord. System: NC State Plane

Lat: 34° 49'32.122"N Long: 77° 07' 32.141"W Datum: NAVD-88

Comment:





Bogue Banks Master Beach Renourishment Plan





APPENDIX 3 GEOLOGICAL LOGS

SOIL CLASSIFICATION CHART

			SYME	BOLS	TYPICAL
M	AJOR DIVISI	ONS	GRAPH	LETTER	DESCRIPTIONS
	GRAVEL AND	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	GRAVELLY SOILS	(LITTLE OR NO FINES)		BRECCIA	BROKEN SHELLS AND SHELL HASH; LITTLE SILT
COARSE GRAINED SOILS	MORE THAN 50% OF COARSE FRACTION	GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
	RETAINED ON NO. 4 SIEVE	(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS	SAND AND	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
LARGER THAN NO. 200 SIEVE SIZE	SANDY SOILS	(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE	SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
	FRACTION PASSING ON NO. 4 SIEVE	(APPRECIABLE AMOUNT OF FINES)		sc	CLAYEY SANDS, SAND - CLAY MIXTURES
				ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
GOILO				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE				OLSH	INORGANIC SILTS, LOW PLASTICITY WITH SHELLS
SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		СН	INORGANIC CLAYS OF HIGH PLASTICITY
				ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
н	GHLY ORGANIC S	SOILS	71 71 71 71 11 11 11 11 11 11 11 11 11 1	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

									10. U-	<u> </u>
DRILLING LOG DIVISION				INSTALLA				SHEET	1	
1. PROJECT				ODM			<u> </u>	of 1	SHEETS	4
	inks Master B	ear	h Nourishment Plan		ND TYPE OF		3.5 in			4
	Coordinates or Stat		ii Nourisiiiieiit Fiari	NAVE		ATION SHO	WN (TBM or MSL)			
	3.5 E 2,688,		.9			S DESIGNAT	TION OF DRILL			┨
3. DRILLING AG				Vibra		o beolor (TOTO OF BILLE			
	ean Seismic				NO. OF OV	ERBURDEN	DISTURBED	UNDISTU	RBED	1
4. HOLE NO. (A file number)	s shown on drawir	ng title		SAMP	LES TAKEN		5			
5. NAME OF DR	DILLED		0-1	14. TOTAI	NUMBER C	ORE BOXES	3			
C. Dill	MILLER			15. WATE	R DEPTH					
6. DIRECTION (OF HOLE			16. DATE	HOLE	STA		MPLETED		
∨ERTICA	AL INCLI	NED	DEG. FROM VERT.			:	12/11/2011	12/11/	2011	-
7. Penetration, f	ì		18.7		ATION TOP C		-53.6		00.0	-
8. Recovery, ft			18.3		CORE REC	OVERY FOR	R BORING		98 %	
9. Total Recover	rv %		98.0	19. GEOL	OGIST		C. Dill			
			CLASSIFICATION OF MATERIALS	3	% CORE	BOX OR	REMAR			┨
ELEVATION	DEPTH LEGE	END	(Description)	,	RECOV- ERY	SAMPLE NO.	(Drilling time, wate weathering, etc., i			
а	b c		d		е	f f	g	ii sigriiilea	, inty	
-53.6	0.0		Dark gray fine to medium silty sand, w	vith	101	1 1				F
			shells (10-20%) to 1/2"			0.0 2.9				F
										E
										E
										F
-56.5	2.9									E
00.0			Dark gray fine to medium Sand, 23%	shell	98	2				E
			fragments			2.9				F
-57.6	4.0		Dark gray silty fine Sand and shells to		100	4.0				F
			(44%)	1 2	100	3 4.0				E
			(1176)			8.0				L
										F
										E
										E
										F
-61.6	8.0 ➡₩₩									E
01.0	- : : : :		Light gray broken pieces of cemented		100	NA				
	∃∷∷		calcareous sandstone to 7 inches long	g; with		8.0				E
			silt in between rock pieces			11.0				
	=:::::									F
	│ <u> </u>									
	==:::::									F
-64.6	11.0 - :::::		Gray Silty fine sand and shells (30-40	0/ \	100	4				F
			Gray Silty line sand and shells (30-40	%)	100	11.0				E
						16.0				E
										F
										E
	▎									E
										F
										E
	 									F
										F
-69.6	16.0									E
-03.0			Dark gray silty fine Sand, few shells (6	3%)	101	5				F
				· · · · ·		16.0				F
						18.3				E
	∄∷ໍ∷ໍ !									E
-71.9	18.3									F
-11.9	10.3 - ****	0 0 0								E
										Ē
	🗏									F
						1				

								HOIE INC	<u>). U-Z</u>
DRILLI	NG LOG	DIV	VISION	INSTALLATION SHEET 1 ODMDS OF 1 SHEE					
1. PROJECT						- 5.7	0.5:	of 1	SHEETS
	nke Maetor	r Read	ch Nourishment Plan		ND TYPE OF		3.5 in		
2. LOCATION (11. DATUN NAVE		ATION SHO	WN (TBM or MSL)		
	7.0 E 2,69					S DESIGNAT	TION OF DRILL		
3. DRILLING AG	SENCY			Vibra					
	ean Seism				NO. OF OV	ERBURDEN	•	JNDISTURB	ED
4. HOLE NO. (A file number)	s shown on dra	awing tit	tle and : : O-2		LES TAKEN		4 :		
5. NAME OF DR	RILLER		; 32		NUMBER C	ORE BOXES	5		
C. Dill				15. WATE	R DEPTH	. OTA	DTED : OOM	4DI ETED	
6. DIRECTION (16. DATE	HOLE	: 514	RTED : COM 12/11/2011 :	MPLETED 12/11/20)11
	AL LING	CLINED		17. ELEVA	TION TOP C	F HOLE	-52.4	12/11/20	,,,,
7. Penetration, ft 18.8					CORE REC				104 %
8. Recovery, ft 19.6				19. GEOL					101 //
9. Total Recovery, % 104.0							C. Dill		
ELEVATION DEPTH LEGEND CLASSIFICATION OF MATERIA				3	% CORE RECOV-	BOX OR SAMPLE	REMARI (Drilling time, wate		,
ELEVATION DEPTH LEGEND (Description)				ERY	NO. f	weathering, etc., i			
-52 4	a b c d -52.4 0.0 - ♣•••••••••••••••••••••••••••••••••••				e 100	1 1	g		-
	large shell pieces (20%)				100	0.0			F
-53.4	1.0	· * • • • • • • • • • •	Dark gray fine sand and silt, few shell			4.0			F
			fragments (20%)						E
			• • • • • • • • • • • • • • • • • • • •						F
	∃:::		•] •]						E
			•] •]						E
	$\exists : :$		•						E
-56.4	4.0		•			_			
	48		Dark gray silty fine Sand with 30-60%	shells	100	2 4.0			F
	3					12.0			E
	4								F
	_=								E
									E
	48		1						F
	\exists								E
	=		:]						F
	\exists :								E
	⇒								F
			<u> </u>						F
	$\exists :$								E
			:						F
	\exists								E
									E
	400 =								F
-64.4	12.0		Dark gray shell fragments and pieces	of	100	3			E
	∃::		broken limestone to 1" in loose silt		100	12.0			F
	— ∃ ∴					15.0			E
	3.0		1						E
	_=								F
	3.3								E
-67.4	15.0				404				E
	30		Dark gray fine Sand, some silt, 20% silt, shell fragments	mall	101	4 15.0			E
	<u>_</u>		: one in agriculto			18.8			E
	400								F
	_=		:						E
									F
70.0	10.2		1						F
-70.6	18.2		Green silty fine Sand rare shells frage	ments					E
-71.2 18.8 Green silty fine Sand, rare shells fra								F	
									E
	\exists								E

							noie no.	<u>U-3</u>	
DRILLING LOG DIVISION				INSTALLA					1
1. PROJECT				ODMI		- DIT	0. F. i.e.	OF 1 SH	HEETS
	nks Maste	r Beac	ch Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)		
2. LOCATION (Coordinates or S	Station)		NAVE	VI FOR ELEV	ATION SHO	VVIN (I DIVI UI MOL)		
	2.1 E 2,69	2,365	.4	12. MANU	FACTURER'S	S DESIGNAT	TION OF DRILL		
3. DRILLING AG	BENCY Bean Seism	ic Sur	vev	Vibra		EDDI IDDEVI	: DISTURDED :	INDISTI IDDEC	
4. HOLE NO. (A file number)			le and	SAMP	NO. OF OV LES TAKEN		4	UNDISTURBED	
5. NAME OF DE	RILLER		O-3		NUMBER C	ORE BOXES	S		
C. Dill				15. WATE	R DEPTH	:		4DI ====	
6. DIRECTION (16. DATE	HOLE	: STA	RTED : COM 12/11/2011 :	MPLETED 12/11/201	₁
	AL IN	CLINED	DEG. FROM VERT.	17. ELEVA	ATION TOP C	F HOLE	-48.1	12/11/201	•
7. Penetration, ft 18.6					CORE REC				89 %
8. Recovery, ft 16.6				19. GEOL				<u> </u>	
9. Total Recovery, % 89.0				<u>l</u>	N 0005	L BOY OF '	C. Dill	140	
ELEVATION DEPTH LEGEND CLASSIFICATION OF MATERIA				6	% CORE RECOV-	BOX OR SAMPLE	REMAR (Drilling time, wate	er loss, depth	
а	a b c (Description)				ERY e	NO. f	weathering, etc., i	if significant)	
-48.1	0.0	••••••	Dark gray fine Sand, trace silt, few sm	nall shell	100	1	9		E
	⊒:::		fragments (5-10%)			0.0 4.0			E
		••••••				4.0			E
	⊒:::								F
									E
	=:::								F
									E
-52.1	4.0								F
52		ŮŮ	Dark gray sandy Silt and fine shell fra	gments	100	2			E
	4.7		(15%)			4.0 10.0			F
						10.0			E
	40								F
									E
	= = = = = = = = = = = = = = = = = = =								F
									E
	3.0								E
	3								E
	<u> </u>								E
									E
-58.1	10.0								F
00.1			Dark gray shells and silty fine Sand (3	80%	100	3			E
	33		shells)			10.0			E
						13.0			F
	3								E
-61.1	13.0								E
V			Dark gray silty fine Sand with small sh	nell	100	4			E
	3		fragments (30-40%)			13.0 16.6			E
						10.0			E
	30								E
	\exists								E
	$\exists :$								E
64.7	16.6								
-64.7	16.6								E
									
	\exists								E
	=								F
	\exists								E
									F
	\exists								E

							LICIE 14	<u> </u>	<u>T</u>
DRILLING LO	G D	DIVISION	INSTALLA				SHEET	1	1
1. PROJECT			ODM			0.5:	of 1	SHEETS	4
	ster Bea	ach Nourishment Plan		AND TYPE OF		3.5 in DWN (TBM or MSL)			4
2. LOCATION (Coordinates N 338,253.0 E 2	s or Station	1)	NAVI	28 C		TION OF DRILL			-
3. DRILLING AGENCY			Vibra		3 DEGIGINA	HON OF BINEE			
Alpine Ocean Sei		title and		L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 3	UNDISTURE	BED	
file number)		O-4	14. TOTA	L NUMBER C	ORE BOXE	S			1
5. NAME OF DRILLER C. Dill			15. WATE	R DEPTH			MDI ETED]
6. DIRECTION OF HOLE	_		16. DATE	HOLE	: 517	ARTED COI 12/11/2011	MPLETED 12/11/20	011	
	INCLINE		T. 17. ELEV	ATION TOP C	F HOLE	-50.2			1
7. Penetration, ft		18.9	18. TOTA	L CORE REC	OVERY FO			89 %	,
8. Recovery, ft		16.8	19. GEOL	.OGIST		O D:II			1
9. Total Recovery, %		89.0	1.0	% CORE	BOX OR	C. Dill	rks		4
ELEVATION DEPTH a b	LEGENE	CLASSIFICATION OF MATERIA (Description) d	LS	RECOV- ERY e	SAMPLE NO. f	(Drilling time, water weathering, etc., g	er loss, dept		
-50.2 0.0 _		Dark gray silty fine Sand to sandy S	ilt, slightly	100	1	9			E
=		cohesive, 10-20% shell fragments			0.0 7.5				F
	3								F
]								E
=======================================									F
	-1 1 . 1								E
- - -									E
									F
=]								E
									F
=	3								E
	# # #								F
	3 11	Maria de la companya							E
<u>-</u>									E
-57.7 7.5 =		Dark gray silty Shell hash, some fin	e sand	100	2				F
]	(>50% shell fragments)	o ouria,	100	7.5				F
					12.0				E
									F
									E
	# 4 4 4	졝							F
	3								E
-	111								F
]								E
				101	3				E
		બ			12.0 16.7				F
	3	쳶			10.7				E
									E
	3 1 1								
		<u> </u>							E
		황							F
	3	쳶							E
-66.9 16.7 <u>-</u>									E
-	1					1			E
									E
									E
									E
									E
=									E
	1			1	1	i .			

								ilole		<u>U-J</u>	
DRILLI	NG LOG	DIV	ISION	INSTALLA ODM				SHEET		•	
1. PROJECT				_		- DIT	0 F in	OF 1	I SH	EETS	ł
	nks Master F	Reac	h Nourishment Plan		AND TYPE OF		3.5 in				1
2. LOCATION (C	Coordinates or Sta 9.4 E 2,688,	tion)		NAVE	88 C		WN (TBM or MSL) FION OF DRILL				
3. DRILLING AG				Vibra		S DESIGNAI	HON OF DRILL				
	ean Seismic			13. TOTA	L NO. OF OV	ERBURDEN	DISTURBED	UNDIST	JRBED		ĺ
4. HOLE NO. (A file number)	s shown on draw	ng title	e and O-5		LES TAKEN L NUMBER C	ODE BOVE	3				
5. NAME OF DR	RILLER				R DEPTH	ONL BOXE	<u> </u>				
C. Dill						: STA	ARTED : COI	MPLETE	<u> </u>		ł
6. DIRECTION (VERTICA		INED	DEG. FROM VERT.	16. DATE			12/11/2011	12/11		1	
7. Penetration, f			17.8	17. ELEV	ATION TOP C	F HOLE	-47.6				
8. Recovery, ft	<u> </u>		18.6		L CORE REC	OVERY FOR	R BORING		10)4 %	
9. Total Recover	2/ 9/		104.0	19. GEOL	OGIST		C. Dill				
			CLASSIFICATION OF MATERIALS		% CORE	BOX OR	C. DIII REMAR	KS			ł
ELEVATION	DEPTH LEG		(Description)	5	RECOV- ERY e	SAMPLE NO. f	(Drilling time, wate weathering, etc.,	er loss, d			
-47.6	0.0		Gray to dark gray fine to medium San	d. few	100	1	g				E
			shell fragments	-,		0.0					E
	<u>-</u> ⊒:::::					6.5					
	=:::: :										F
	= :::::										E
	- ⊒*::::										E
	≓ ;;;;										E
											E
											E
											Ė.
	∄ઃંઃઃ										E
											Ė-
-54.1	6.5	°.°.°.	5 1 1 1 11 11 00 0	200/ 1 11	400						E
	_=:::::		Dark gray fine sand and silt, with 20-3 hash	su% snell	100	2 6.5					Ė.
	$\exists \cdots$					10.0					E
											Ė.
											E
											Ė.
	∄∷∷										E
-57.6	10.0		Dod was about a said about for was a sta	/F00/ \ 1 -	400						Ė.
	7-6		Dark gray shells and shell fragments 2" in sandy silt matrix	(50%) to	100	3 10.0					E
		/ 				17.8					E
	7-7	-									E
											Ė.
											E
		7-1									
	3-2										E
											<u> </u>
	7	/									E
											Ė.
	<u> </u>										E
	——————————————————————————————————————										⊨
											E
	15	\Box									<u> </u>
65.4	17.0										E
-65.4	17.8	. <u>~</u>									Ē
	\exists										E
	_=										Ė.
	\exists										E
	_				1	1					⊢ .

								IIOIE		<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA ODM				SHEET OF 1		
1. PROJECT						- DIT	2 E in	OF I	SHE	EIS
	nks Master	Beac	ch Nourishment Plan		AND TYPE O		3.5 in WN (TBM or MSL)			
2. LOCATION (0		ation)		NAVE	88 C		TION OF DRILL			
3. DRILLING AG	SENCY			Vibra		3 DEGIGINAT	TION OF BRILL			
	ean Seismid			13. TOTA	L NO. OF OV	ERBURDEN	•	UNDIST	JRBED	
4. HOLE NO. (A file number)	s shown on drav	ving titl	e and : O-6	-	LES TAKEN L NUMBER C	ODE BOVE	5 ;			_
5. NAME OF DR	RILLER				R DEPTH	ONL BOXE	3			-
C. Dill 6. DIRECTION (25 1101 5					STA	RTED : CO	MPLETE)	
6. DIRECTION C		LINED	DEG. FROM VERT.	16. DATE	HOLE		12/11/2011	12/11		
7. Penetration, f			 19.1	17. ELEV	ATION TOP C	F HOLE	-42.6			
8. Recovery, ft	•		19.0		L CORE REC	OVERY FOR	R BORING		99	9 %
9. Total Recover	rv. %		99.0	19. GEOL	OGIST		C. Dill			
			CLASSIFICATION OF MATERIALS	3	% CORE	BOX OR	REMAR			\dashv
ELEVATION a	DEPTH LEG	GEND c	(Description)		RECOV- ERY e	SAMPLE NO. f	(Drilling time, wat weathering, etc., g			
-42.6	0.0	Ĭ.	Light gray to gray fine to medium San	d, rare	100	1	<u> </u>			\top
	3.3		shell fragments (5%)			0.0 3.4				E
						3.4				E
	3									E
										E
	=									F
-46.0	3.4									E
			Dark gray fine to medium Sand and 1 clay lenses at 3.9' and 4.5"	/2" thick	100	2 3.4				F
			clay letises at 3.9 and 4.3			5.2				E
47.0										F
-47.8	5.2		Gray fine to medium Sand, few shell		100	3				E
			fragments (11%)			5.2				E
	=;:::					9.0				F
										E
										F
		*****								E
										E
-51.6	9.0 -	*****	Dark growto growfing to modium Con	d some	100					F
	$\exists : : :$		Dark gray to gray fine to medium San shells (15-20%)	u, some	100	9.0				E
			, , , ,			14.0				E
										F
										E
		******								F
										F
										E
										F
-56.6	14.0									E
00.0			Dark gray Silt, little fine sand, some s	mall	100	5				E
	3.3		shell fragments (22%)			14.0 17.2				F
						''				E
										E
										F
-59.6	17.0									E
	#33		Dark gray fine to medium Sand, rare shell fragments (5%)	small						F
	_ =		Sileii II ayilleliis (5%)							E
	\exists									E
-61.6	19.0				_					E
	\exists									E
I	_		1		1	1				—

									10. U-1	_
DRILLI	DRILLING LOG DIVISION				TION			SHEET	1	
1. PROJECT				ODM		- DIT	O. F. :	of 1	SHEETS	┨
	nks Master F	Reac	h Nourishment Plan		AND TYPE OF		3.5 in WN (TBM or MSL)			1
	Coordinates or Star		Treation Tentral	NAVE) 88	ATION SHO	VVIN (IBIVI OI IVISL)			
	6.4 E 2,692,	366.	.0			S DESIGNAT	TION OF DRILL			1
3. DRILLING AG		0		Vibra						1
4. HOLE NO. (A	ean Seismic s shown on drawi		e and		L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTUF	RBED	
file number)			O-7	14. TOTA	L NUMBER C	ORE BOXES	S			1
5. NAME OF DR C. Dill	RILLER			15. WATE	R DEPTH					1
6. DIRECTION (16. DATE	HOLE	STA	ARTED COI 12/11/2011	MPLETED 12/11/2	2011	
	AL INCLI	INED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-38.8	12/11/2	2011	1
7. Penetration, f	t		15.7	18. TOTA	L CORE REC	OVERY FOR			87 %	1
8. Recovery, ft			13.7	19. GEOL						1
9. Total Recover	у, %		87.0				C. Dill			_
ELEVATION	DEPTH LEGI	FND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMAR (Drilling time, wate		oth	
			(Description)		ERY	NO. f	weathering, etc.,			
-38.8	0.0 —) 49.394	d Light brown gray fine to medium Sand	l rate	100	1	g			╆
00.0			small shell fragments (5%)	i, rate	100	0.0				F
	<u>-</u> ₹::::					2.5				F
	三 三 三									Е
										E_
-41.3	2.5									F
	=:::::		Gray fine to medium Sand with some	large	100	2				F
	$\exists : : : :$		shells (20%)			2.5 4.5				E
	ા ઃઃઃઃ	::::::				7.5				E
40.0										
-43.3	4.5		Cray fine to modium Sand fow shalls	in	101	3				E
			Gray fine to medium Sand, few shells lenses between 6 and 6.9'	111	101	4.5				
			ionede between e and e.e			6.9				F
	=:::::									F
										E
-45.7	6.9				0.5					
1911			Densely packed gray to dark gray fine	Sand,	95	4 6.7				
	=::::::		shell fragments in lens 9.9-10'			13.7				E
	::::::									
										E
										E
										E
	=::::::									E
	₹;;;;									F
	$\exists : : : :$									Е
	=::::: :::::::::::::::::::::::::::::::									F
										F
-52.5	13.7	•••••								E
	=									F
	-7									
	\exists									Е
	\exists									F
	\exists									F
	\exists									F
										F
										E
	\exists									E
										F
	\exists									F
	ゴ									

		_							<u> 10. U-</u>	<u>o</u>
DRILLING LOG DIVISION				INSTALLA				SHEET	1	
1. PROJECT				ODM			0.5.	of 1	SHEETS	4
	nke Maeter B	eac	h Nourishment Plan		AND TYPE OF		3.5 in			4
	Coordinates or Stat		ii Nourisiirierit i lari	NAVE	M FOR ELEV 7 88	ATION SHO	WN (TBM or MSL)			
	3.0 E 2,694,		6			S DESIGNAT	TION OF DRILL			1
3. DRILLING AG				Vibra						
	ean Seismic					ERBURDEN	DISTURBED	UNDISTU	RBED	
4. HOLE NO. (As file number)	s shown on drawii	ng title		SAMP	LES TAKEN		4			
5. NAME OF DR	III ED		O-8	14. TOTAI	L NUMBER C	ORE BOXES	S			
C. Dill	ILLER			15. WATE	R DEPTH					
6. DIRECTION C	OF HOLE			16. DATE	HOLE	STA		MPLETED)	
	L INCLI	NED	DEG. FROM VERT.				12/11/2011	12/11/	2011	
7. Penetration, ft			19.2	17. ELEV	ATION TOP C	F HOLE	-52.1			
			19.2	18. TOTAI	L CORE REC	OVERY FOR	R BORING		99 %	6
8. Recovery, ft	0/			19. GEOL	OGIST		O D:II			
9. Total Recover	y, %		99.0		% CORE	BOX OR	C. Dill	VC.		4
ELEVATION	DEPTH LEGE	END	CLASSIFICATION OF MATERIALS	3	RECOV-	SAMPLE	(Drilling time, wate	er loss, de	pth	
а	b c		(Description)		ERY e	NO. f	weathering, etc., g	if significa	int)	
-52.1	0.0	333	Black to dark gray soft organic silt to s	silty fine	96	1	9			┢
	434		to medium Sand, few shell fragments	,		0.0				F
						1.9				E
540										E
-54.0	1.9		Dark gray fine to medium Sand, some	1/2"	101	2				
	∄∷∷		shell fragments (10-20%)	, 1/2	101	1.9				Е
	_==:::::		,			4.7				E
	≓ ःःः									F
	≓ ∷∷\$									F
										E
-56.8	4.7	• • • •	Charachers at 4.5 fact to doubt supply		101	2				
			Sharp change at 4.5 feet to dark gray Organic Silt, few shells	SOIL	101	3 4.7				
	3.42					7.5				E
	⇒									E
	_=									
-59.6	7.5		D	1244	400	4				Е
	<u></u>		Dark gray shell hash to 1.5" (45-50%) fine silty Sand	, little	100	4 7.5				E
	ૻ૽ ૽૽૽		inic sitty caria			19.0				F
										E
	⇉░░									E
	#									F
										F
										E
	─ ‡::::\$									\vdash
	ૻ૽ ઃઃઃ									F
	∄::::\$									
	≓ ःःः									E
	_=									F
	$\exists ::::$									E
	_=}::::\$									
	≓∷ ∷									E
	_=:::::::::::::::::::::::::::::::::::::									
										E
	#									E
	∄ ઃःः									E
										F
-71.1	19.0	<u>•[•]•]•</u>								E
	\exists									F
										-

									<u> 10. U-3</u>	2
DRILLING LOG DIVISION				INSTALLA				SHEET	1	
1. PROJECT				ODM			0.5:	of 1	SHEETS	4
	ınks Master R	eac	h Nourishment Plan		AND TYPE OF		3.5 in WN (TBM or MSL)			-
	Coordinates or Stat		Trivourishinient Flair	NAVE	N FOR ELEV	ATION SHO	WIN (IBM OF MSL)			1
	3.5 E 2,688,		6			S DESIGNAT	TION OF DRILL			1
3. DRILLING AG		_		Vibra						
	ean Seismic			13. TOTAL	L NO. OF OV LES TAKEN	ERBURDEN		UNDISTUF	RBED	
4. HOLE NO. (A file number)	s shown on drawir	ng title	∍ and : : O-9			005 00/5/	3 :			-
5. NAME OF DF	RILLER		:		L NUMBER C	ORE BOXES	5			-
C. Dill				15. WATE	R DEPTH	. OTA	DTED : 001	MDI ETED		4
6. DIRECTION (16. DATE	HOLE	: 517	RTED : COI 12/12/2011 :	MPLETED 12/12/2		
	AL INCLII	NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-49.9			1
7. Penetration, f	t		19.8	18. TOTA	L CORE REC	OVERY FOR			93 %	1
8. Recovery, ft	· · · · · · · · · · · · · · · · · · ·				OGIST					1
9. Total Recover	ry, %		93.0				C. Dill			
ELEVATION	DEPTH LEGE	ND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMAR (Drilling time, wate		nth	1
			(Description)		ERY	NO. f	weathering, etc.,			
-49.9	b c 0.0 →		d Gray fine to medium Sand, some sma	all choll	100	1	g			┺
-43.5		****	fragments (15%)	ali Sileli	100	0.0				E
		:::::	,			4.0				<u> </u>
										E
	_=::::::									
										F
		:::::]								E
-53.9	4.0 ⊒∷∷									F
		ŤŤ	Dark gray fine sandy Silt, few shell fra	gments	97	2				E
						4.0				E
-55.1	5.2		5 1 0 111 1 (000)		404	5.2				
			Dark gray Shell Hash (32%), some fin medium silty sand	ie to	101	3 5.2				E
			mediam sitty sand			9.5				E
										E
										E
										Е
										E _
-59.4	9.5									F
			Light gray to gray silty Shell Hash (46	%)	100	4 9.5 18.4				E
						9.5				
										F
										E
										E
										F
										Е
										F
										F
										E
										F
										E
	<u> </u>									F
										E
										E
										F
-68.3	18.4									E
										E
										F
										E

		1	#01C::			IN 10= · · ·	T1011			I IOIE IV		5-10
DRILLII	NG LOG) DI	VISION			INSTALLA				SHEET OF 1		TETS
1. PROJECT								E DIT	2 5 in	UF	SH	EETS
	nks Mast	er Rea	ch Nou	rishment Plan			AND TYPE O		3.5 in			
2. LOCATION (0 N 334,251	Coordinates o	or Station)				NAVI	88 C		WN (TBM or MSL) TION OF DRILL			
3. DRILLING AG	BENCY	-				Vibra		DESIGNA	HON OF DRILL			
Alpine Oc 4. HOLE NO. (A				:		13. TOTA		ERBURDEN	DISTURBED 4	UNDIST	JRBED	
file number)				0-1	0	14. TOTA	L NUMBER C	ORE BOXES	_			
5. NAME OF DR C. Dill	RILLER					15. WATE	R DEPTH					
6. DIRECTION (16. DATE	HOLE	STA	RTED CC 12/12/2011	MPLETEI 12/12		1 I
		INCLINED	<u> </u>		G. FROM VERT	17. ELEV	ATION TOP C	F HOLE	-38.2			
7. Penetration, f	t			20		18. TOTA	L CORE REC	OVERY FOR	R BORING		10	00 %
8. Recovery, ft	a. 0/			20 100		19. GEOL	OGIST		C Dill			
9. Total Recover				CLASSIFICATION		<u> </u>	% CORE	BOX OR	C. Dill			
ELEVATION a	DEPTH b	LEGEND c		(Descr	iption)	-0	RECOV- ERY e	SAMPLE NO. f	(Drilling time, wa weathering, etc., g			
-38.2	0.0	*******	Gray 1	ine to medium Sa	nd; shell frac	ments in	100	1	9			E
			.† 4-6" l∈ •¦	enses at 1-1.5' (10	-15%)			0.0 5.0				E
			•									F
	_≓:											E
	\exists :		•]									E
		° . ° . ° . ° . ° . ° . ° . ° . ° . ° .	•									F
	₹.											E
	——;		•]									E
40.0	<u> </u>		•									F
-43.2	5.0		Grav t	ine to medium Sa	nd: 10-15% :	shell	100	2				F
	₫.		fragm					5.0				E
	=		:					10.0				F
	₹.		:]									E
			•									E
	_=											E
	= = = = = = = = = = = = = = = = = = =		•]									F
	_ <u>=</u> :	* . * . * . * . * . * . * . * . * . * .	•									E
	=		•]									E
-48.2	10.0	**************************************	Crove	ina ta madium Ca	nd: 10 1E0/	ah all	100	2				F
	∃;		Gray ifragm	ine to medium Sa ents	ııu, 10-15% S	SHEII	100	3 10.0				F
								15.0				E
	=:											E
	-==1:											F
	=======================================											E
												E
												F
	===											E
-53.2	15.0											E
	= ₹		Gray 1	ine to medium Sa enses at 17-17.5' (nd; shell frag	ments in	100	4 15.0				F
	_=:	******* ********	• 10	113C3 at 11-11.5 ((10-1370)			20.0				E
	₫:		:]									E
			•									þ
	⊒:		:									F
	<u></u>		:]									E
	= 1.											E
	- ⊒:		•									F
-58.2	20.0		:]									E

								<u> 1018 110.</u>	<u> </u>	_
DRILLING LOG DIVISION				INSTALLA				SHEET	1	
1. PROJECT		-		ODM		- DIT	0.5:-	OF 1 8	SHEETS	
	nks Mas	ster Re	ach Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)			
2. LOCATION (Co	oordinates	or Station	1)	NAVE		ATION SHO	IVVIN (IDIVI UI IVIOL)			l
N 334,252	.6 E 2			12. MANU	FACTURER'S	S DESIGNAT	TION OF DRILL			
3. DRILLING AGE Alpine Oce		smic Si	irvev	Vibra		EDDU IDDE:	I DICTURDED	INDIOT: IDC		
4. HOLE NO. (As file number)			title and	SAMP	NO. OF OVI LES TAKEN		4	UNDISTURBE	בט	
5. NAME OF DRI	IIFR		0-11	14. TOTAI	NUMBER C	ORE BOXES	S			
C. Dill	LLLI			15. WATE	R DEPTH					
6. DIRECTION O				16. DATE HOLE STARTED COMPLETED 12/12/2011 12/12/201					11	
	_	INCLINE		17. ELEV	ATION TOP C	F HOLE	-37.6	12/12/20		
7. Penetration, ft			15.2		CORE REC				111 %	
8. Recovery, ft			17.5	19. GEOL						
9. Total Recovery	ı, %		111.0		0/ 00==	DOV 65	C. Dill	140		
ELEVATION	DEPTH	LEGEN	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMAR (Drilling time, wate	er loss, depth		
a	b	С	(Description)		ERY e	NO. f	weathering, etc.,			
-37.6	0.0	*******	Gray fine to medium Sand, few shell		100	1	9			E
	Ξ		fragments (15%)			0.0 2.0				E
	_					2.0				F
-39.5	1.9									E
-39.6	2.0 _	••••••	Lens of dark gray soft Organic Silt		100	2				F
	Ξ		Gray fine to medium Sand, 10-20% sl	hell		2.0				E
			fragment			5.0				F
	=									E
										E
	= =									F
-42.6	5.0 —] `.°.°.°.	Gray fine to medium Sand, 10-20% sl	hell	100	3				
	=		fragment concentrated in 4"-6" thick la	ayerat	100	5.0				F
			्र 8-9 ं	•		10.0				E
	=		쳶							E
			전 							E-
										E
	_=		쳶							E
	=		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							E
			젊							E
	=		싦							E
-47.6	10.0									Ē
	=		Gray fine to medium Sand, 10-20% sl	hell aver at	100	4 10.0				F
	_=		12'-12.5'	ay c ı at		15.2				E
	Ξ									Ė
	_=									E
										Ē
	=									E
	=									E
	Ξ									E
	=		•							E
	=									E
-52.8	15.2									F
	Ξ									E
	_									F
	=	1								E
	_=									E
										F
]								E
	Ξ	-								E
		1								E
	Ξ									Ē
		4	T. Control of the Con				i			_

		1						IOIE IN		/- 1/
DRILLI	NG LOG	DIV	ISION	INSTALLA ODM				SHEET OF 1		
1. PROJECT		1				- DIT	3.5 in	OF I	SHI	EETS
	nks Master E	Beac	h Nourishment Plan	10. SIZE AND TYPE OF BIT 3.5 in 11. DATUM FOR ELEVATION SHOWN (TBM or MSL)						
2. LOCATION (0	Coordinates or Sta	tion)		NAVE	88 C		, ,			
3. DRILLING AG			•	12. MANUFACTURER'S DESIGNATION OF DRILL Vibracore						
	ean Seismic			13. TOTAL NO. OF OVERBURDEN DISTURBED UNDISTURBED						
4. HOLE NO. (A file number)	s shown on draw	ng titl	e and : : O-12	-	LES TAKEN	ODE DOVE	4			
5. NAME OF DR	RILLER		· · · · · · · · · · · · · · · · · · ·		L NUMBER C	ORE BOXES	5			_
C. Dill				15. WATE	R DEPTH	· et 4	ARTED : CO	MPLETE	`	
6. DIRECTION (NIED.	DE0 ED0M/EDT	16. DATE	HOLE	: 514	12/12/2011	12/12		
		INED	DEG. FROM VERT.	17. ELEV	ATION TOP C	OF HOLE	-46.6			
7. Penetration, f	t		19.1	18. TOTA	L CORE REC	OVERY FOR	R BORING		9	4 %
8. Recovery, ft			18.0	19. GEOL	OGIST					
9. Total Recover	ry, %		94.0		% CORE	BOX OR	C. Dill	OK6		
ELEVATION	DEPTH LEG		CLASSIFICATION OF MATERIALS (Description) d	S	RECOV- ERY	SAMPLE NO.	(Drilling time, wat weathering, etc.,	ter loss, de		
-46.6	0.0 -::::	; ^^^^	Gray fine to medium Sand, 15% shell	s and	e 100	f 1	g			
			shell fragments in layers 12-18" thick	- uu		0.0				E
						5.0				F
										F
										F
	=:::::									F
	- ⊒:;;;									E
	≓∷ ∷:									F
										E
										þ
					100	2				E
	=:::::				100	5.0				F
						9.0				E
	≓ ∷∷:									F
										E
	⇒ ;;;;									E
										E
										F
-55.6	9.0		Dark gray silty fine Sand, some shell		100	3				E
50.0			fragments (15-20%)		100	9.0				F
-56.6	10.0		Dark gray soft Organic Silt, some fine	shell	_	14.0				F
	当业		fragments							E
										E
E0 6	12.0									E
-58.6	12.0		Dark gray silty fine sand, some shell		-					F
			fragments							E
										F
60.6	440 ∃									E
-60.6	14.0	[•[•]•	Dark gray fine to medium Sand, some	Silt	100	4				F
	∃ ;;;;					14.0				E
						18.0				F
62.6	16.0									E
-62.6	16.0		Dark gray silty fine to medium Sand a	nd shell	-					F
			fragments (30%)							E
										E
64.0	18.0									F
-64.6	10.0 7.0.0									F
	\exists									E
	=									F
	\exists									E

								iole No.	<u>U-13</u>	
DRILLI	NG LOG) DI	VISION	INSTALLA ODM				SHEET OF 1 S	1 SHEETS	
1. PROJECT				1		- DIT	3.5 in	JOF I S	TEE 13	
	nks Mast	er Bea	ich Nourishment Plan	10. SIZE AND TYPE OF BIT 3.5 in 11. DATUM FOR ELEVATION SHOWN (TBM or MSL)						
2. LOCATION (0 N 334,25	Coordinates o	or Station		NAVI	28 C					
3. DRILLING AG	SENCY			Vibra		S DESIGNA	TION OF DRILL			
Alpine Oc 4. HOLE NO. (A				13. TOTA SAMP	L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTURBE	D	
file number)			O-13	14. TOTA	L NUMBER C	ORE BOXES	:			
5. NAME OF DE C. Dill				15. WATE	R DEPTH			MDI ETED		
6. DIRECTION (16. DATE	HOLE	SIA	ARTED COI 12/12/2011	MPLETED 12/12/201	11 I	
		INCLINE		17. ELEV	ATION TOP (F HOLE	-47.3			
7. Penetration, f	t		18.8	18. TOTA	L CORE REC	OVERY FOR	R BORING		72 %	
8. Recovery, ft			14.1	19. GEOL	OGIST					
9. Total Recover	ry, %		72.0		% CORE	BOX OR	C. Dill	NC .		
ELEVATION		LEGEND	CLASSIFICATION OF MATERIALS (Description) d	5	RECOV- ERY	SAMPLE NO. f	(Drilling time, wat weathering, etc.,	er loss, depth		
-47.3	0.0 —	C	Gray fine to medium Sand, some she	·II	100	1	g			
			fragments (10-15%)			0.0			E	
						6.0				
	\exists :	******							E	
	\exists :								E	
	=:								E	
	=:		Ì						F	
	_ =:								F	
-53.3	6.0	*******	Dark gray silty fine Sand and shells (10.20%)	100	2			E	
	\exists :		Dark gray silty line Sand and Shells (10-20%)	100	6.0			E	
	_=;					9.0				
	\exists :								E	
	<u> </u>								E	
-56.3	9.0								E.	
	=		Dark gray soft cohesive Organic Silty	Clay	100	3 9.0			F	
						11.0			E	
	=								F	
	-								F	
									E	
	\Rightarrow								F	
	\exists								E	
									-	
	=								F	
	\Rightarrow								F	
-62.3	15.0		Double many points Cilt to pills fine to man	- ali	1				 	
	\exists :		Dark gray sandy Silt to silty fine to me	ealum					E	
									<u> </u>	
	===								F	
	_=:								E	
	=;								F	
65.5	10 2								E	
-65.5	18.2	<u>。"。"。</u> "。			†				E	
									E	
	日								E	
	\exists								F	

								HOIE NO	<u>). U-14</u>	
DRILLI	NG LOG	DIVISIO	ON	INSTALLA ODMI				SHEET OF 1	1	
1. PROJECT		ļ			AND TYPE OF	F RIT	3.5 in	OF I	SHEETS	
Bogue Ba			Nourishment Plan				WN (TBM or MSL)			
	Coordinates or Star			NAVD 88 12. MANUFACTURER'S DESIGNATION OF DRILL						
3. DRILLING AG	3.9 E 2,685, SENCY	021.0		12. MANU Vibra		S DESIGNAT	TION OF DRILL			
	ean Seismic	Surve	у			ERBURDEN	I DISTURBED	UNDISTUR	BED	
4. HOLE NO. (A file number)	s shown on drawi	ng title ar		SAMP	LES TAKEN		3			
5. NAME OF DR	PILLER		O-14	14. TOTAI	NUMBER C	ORE BOXES	S			l
C. Dill	VILLEIX			15. WATE	R DEPTH					
6. DIRECTION (OF HOLE			16. DATE	HOLE	STA	ARTED CO 12/12/2011	OMPLETED 12/12/2	2011	
	AL INCLI	NED	DEG. FROM VERT.	17 FLFV/	ATION TOP C	E HOLE	-42.6	12/12/2	2011	
7. Penetration, f	t		17.5		CORE REC				64 %	
8. Recovery, ft			12.0	19. GEOL		OVERTION	(BOI WING		<u> </u>	
9. Total Recover	ry, %		64.0				C. Dill			
ELEVATION	DEPTH LEGE	END	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMA (Drilling time, wa		oth	
	b c		(Description) d		ERY	NO. f	weathering, etc.	, if significar	nt)	
-42.6	0.0		ray fine Sand, with 6" thick lenses of	fshells	e 100	1	9			F
		to	1.5" in size (15-20%)			0.0				E
						5.0				
										F
										E
										F
										E
	$\exists : : : :$									E
										=
	#:::: :									F
									l	E
					100	2				
						5.0 8.5				E
						0.5				F
									l	E
										┢
										E
										F
-51.1	8.5		and the second first to the second first to	ll	400	0				E
			ght gray-brown fine to medium Sand nells (30-50%); 12-17' washed out, n		100	3 8.5				=
		re	ecovery	·		12.0				F
	_=::::::									E
	=::::::									E
										F
										F
-54.6	12.0								l	Ē
~J4.U	- 12.0	••••					1			F
	\exists									E
									l	E
	\exists									F
										F
	\exists								l	Ε
										<u> </u>
	⇉									F
	_=									E
	\exists									Ė
	\exists									F
	\exists									E
									ŀ	Ē
									ŀ	F
										F
										E
	\exists									F
	_	1			l .	1	l .			_

									I IOIE IN	<u> </u>	<u>~</u>
DRILLII	NG LOG	} [DIVISION		INSTALLA				SHEET	1	
1. PROJECT					ODM			0.5:	OF 1	SHEETS	S
	nke Maei	ter Re:	ach Nourishme	ant Plan		AND TYPE OF		3.5 in			_
2. LOCATION (C				anti ian	NAVI		ATION SHO	OWN (TBM or MSL)			
N 330,634		385,07	9.2		12. MANU	JFACTURER'S	S DESIGNA	TION OF DRILL			
3. DRILLING AG Alpine Oc		mic Sı	Invov		Vibra						
4. HOLE NO. (A. file number)				0.45		L NO. OF OV PLES TAKEN	EKBUKDEN	DISTURBED 3	UNDISTU	KRED	
5. NAME OF DR	WII ED		<u>:</u>	O-15	14. TOTA	L NUMBER C	ORE BOXE	S			
C. Dill	ILLER .				15. WATE	15. WATER DEPTH					
6. DIRECTION C	RECTION OF HOLE					HOLE	STA	ARTED : 0 12/12/2011 :	COMPLETED 12/12/		
	L _	INCLINE	D	DEG. FROM VEF	RT. 17 FLEV	ATION TOP C	E HOLF	-41.3	12/12/	2011	-
7. Penetration, ft	t			20.1		L CORE REC				63 %	/ ₀
8. Recovery, ft				12.3	19. GEOL						Ť
9. Total Recover	у, %			63.0				C. Dill			
ELEVATION	DEPTH	LEGEN	CLAS	SIFICATION OF MATERIA (Description)	ALS	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REM. (Drilling time, w weathering, et			
а	b	C		d		е	f		g		\perp
-41.3	0.0			to medium Sand, 10)-15% shell	100	1				F
	∃:		hash				0.0 5.0				F
			쳶								E
	===		쳶								E
	7:		샓								F
	<u> </u>		쳶								E
			섞								E
			섳								E
			씱								
						100	2				E
	크:						5.0 10.5				F
	\exists						10.0				E
	=======================================		셝								F
	===										
			쳶								E
	===		쳶								F
	∃:		쳶								E
			쳤								\vdash
-51.8	10.5										F
	_==		Dark gray ver	y shelly (35%) silty Sa	and to	100	3				
	\exists		sandy Silt				10.5 12.2				
	=						12.2				F
-53.5	12.2		*•]								
	\exists										E
											F
	\exists										E
	=										F
	_=										F
	\exists										E
	_=										
	コ										F
											E
	\exists										E
	\exists										F
											E
	\exists										E
											F
	\equiv										E

								noie ivo.	<u> </u>	
DRILLI	NG LOG	DIV	ISION	INSTALLA ODM				SHEET OF 1	1 SHEETS	
1. PROJECT				10. SIZE AND TYPE OF BIT 3.5 in						
	nks Master	Beac	h Nourishment Plan	10. SIZE AND TYPE OF BIT 3.5 IN 11. DATUM FOR ELEVATION SHOWN (TBM or MSL)						
2. LOCATION (C		tation)		NAVE	88 (
3. DRILLING AG	SENCY			12. MANUFACTURER'S DESIGNATION OF DRILL Vibracore						
4. HOLE NO. (A	ean Seismi		e and	13. TOTAL NO. OF OVERBURDEN DISTURBED UNDISTURBED SAMPLES TAKEN 3						
file number) O-16				14. TOTAL	NUMBER C	ORE BOXES				
5. NAME OF DRILLER C. DIII					R DEPTH					
6. DIRECTION (16. DATE	HOLE	STA	RTED CO 12/12/2011	MPLETED 12/12/20)11	
	AL LINC	LINED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-48.5	12/12/20		
7. Penetration, f	t		19.1	18. TOTAL	CORE REC	OVERY FOR			83 %	
8. Recovery, ft			18.2	19. GEOL	OGIST		0.5			
9. Total Recover	ry, %		83.0		% CORE	BOX OR	C. Dill	okc .		
ELEVATION	DEPTH LEG	GEND c	CLASSIFICATION OF MATERIALS (Description) d	S	RECOV- ERY	SAMPLE NO. f	(Drilling time, wat weathering, etc.,	ter loss, depth	1	
-48.5	0.0	•••••	Gray fine to medium Sand, few shells	and	100	1	9			
	⊒::::		shell hash (15-20%)			0.0 2.5			E	
						2.5			E	
	=:::::								E	
-51.0	2.5								E	
-51.1	2.6		One inch thick layer of dark gray soft	Organic [99	2			E	
-52.0	3.5		Silt Dark gray fine to medium Sand, few s	holls		2.5 4.6			E	
			(10-15%)	ilelis [E	
-53.0	4.5	G_{\downarrow}	Dark gray shells (50-60%) and soft or	ganic						
			Silt Dark gray soft Organic Silt		104	3			E	
	===		Dark gray soft Organic Sift			4.6 5.0			E	
	_===					3.0			E	
	===								F	
-55.7	7.2								E	
-55.7	- 1.2		Dark gray silty fine Sand and shell ha	sh (40%)					F	
				` ,					E	
	∃								E	
	3								E	
-58.0	9.5								F	
			Dark gray coarse Shells and shell has little silt	sh (90%),					E	
	⊒ ,%;;		iittie siit						F	
									E.	
	$\exists : : \zeta$								F	
	_=::::								E	
									F	
	\exists :: ϵ								E	
	7								F	
									E	
-63.0	_14.5 📑 🔅								F	
			Light gray coarse silty Shell hash (90% shells to 2" in size	%);					E	
	$\exists $		Shells to 2 III size						E	
									E	
									E	
									E	
	⇒::::								F_	
-66.7	18.2	ان. ان.نثان							E	
-00.1	10.2	~ 0.6.0)							F	
	\exists								E	
	<u> </u>								F	
	=								F	

		LDIV	ISION	INSTALLA	TION			LOUE IN		'''
DRILLI	NG LOG	DIV	ISION	ODM				SHEET OF 1	•	те
1. PROJECT					AND TYPE OI	F RIT	3.5 in	J ∪F I	SHEE	-13
	nks Maste	er Beac	ch Nourishment Plan				WN (TBM or MSL)			\dashv
2. LOCATION (0		Station)		NAVE	88 (TION OF DRILL			4
3. DRILLING AG	SENCY	-		Vibra		0 0 0 0 0 0 0 0 0				
Alpine Oc 4. HOLE NO. (A			le and		NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTU	IRBED	
file number)			O-17	14. TOTAI	NUMBER C	ORE BOXES	S	•		
5. NAME OF DR C. Dill				15. WATE	R DEPTH	:		014D) ETER		
6. DIRECTION (16. DATE	HOLE	SIA	RTED : CO 12/12/2011 :	OMPLETED 12/12/		
	AL IN	ICLINED	DEG. FROM VERT.	17 FI FV	ATION TOP C	E HOLF	-49.6	12/12/	2011	
7. Penetration, f	t		18.5		CORE REC				95	%
8. Recovery, ft			17.8	19. GEOL						
9. Total Recover	ry, %		95.0				C. Dill			
ELEVATION		EGEND	CLASSIFICATION OF MATERIALS (Description)	5	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMA (Drilling time, wa weathering, etc.	ater loss, de ., if significa		
-49.6	0.0 —	C	Gray fine to medium Sand, few shell		e 100	f 1	g			╁
40.0			fragments (10-15%)		100	0.0				F
						4.0				
	4.3									F
	-3									E
										E
	_=									F
	3									E
-53.6	4.0	• • • •			100					F
	3::		Dark gray very fine Sand, some silt, for and shell hash (10-15%)	ew snells	100	2 4.0				E
			tana shon nash (18 1878)			5.5				E
-55.1	5.5	·:•[•]•]•				_				E
	=		Dark gray fine sand, rare small shell fragments (5%)		101	3 5.5				E
	7.		inaginents (070)			11.3				F
	_=:									E
	∃::									E
	3									E
	_=;:									E
	7									F
	_=:									E
	4									F
	⊒∷									E
-60.9	11.3	જુન્નુન્	Gray to light gray shells to 1.5" (35%)	and	107	4				F
			shell hash, little silt or fine sand;	J		11.3				E
			with pieces of cemented calcareous sandstone in bottom			12.0				F
			dandono in bottom							E
	<i></i>									F
										E
	7.2									F
										E
	;ેં.									F
										E
										F
										E
										E
-67.4	17.8 — »;									F
	\exists									E
	\exists									F
	\exists									E
	\exists									E

								iole inc). U-10	2
DRILLI	NG LOG	i DIV	ISION	INSTALLATION SHEET 1 ODMDS OF 1 SHEETS						
1. PROJECT							0.5.	OF I	SHEETS	4
	nke Maete	er Reac	ch Nourishment Plan		AND TYPE OF		3.5 in			4
2. LOCATION (C			on reduisiment rian	NAVI	M FOR ELEV	ATION SHO	WN (TBM or MSL)			1
N 332,252			.3			S DESIGNAT	ΓΙΟΝ OF DRILL			1
3. DRILLING AG	SENCY			Vibra		0 0 0 0 0 0 0				
Alpine Oc				13. TOTA	L NO. OF OV	ERBURDEN	DISTURBED	UNDISTUR	BED	1
4. HOLE NO. (A file number)	s shown on d	lrawing titl		SAMP	LES TAKEN		3			1
,	NI LED		O-18	14. TOTA	L NUMBER C	ORE BOXES	S			1
5. NAME OF DR C. Dill	KILLER			15. WATE	R DEPTH					1
6. DIRECTION (OF HOLF			40 DATE	ПОГЕ	STA		MPLETED		1
✓ VERTICA		NCLINED	DEG. FROM VERT.	16. DATE	HOLE	<u> </u>	12/12/2011	12/12/2	2011	
			20.2	17. ELEV	ATION TOP C	F HOLE	-44.1			1
7. Penetration, f	ι			18. TOTA	L CORE REC	OVERY FOR	R BORING		90 %	
8. Recovery, ft			17.8	19. GEOL	OGIST					1
9. Total Recover	ry, %		90.0				C. Dill			1
ELEVATION	DEPTH L	LEGEND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMAR (Drilling time, wate		oth	1
			(Description)		ERY	NO. f	weathering, etc.,	if significan	nt)	1
a -44.1	0.0 —;•	C	d Gray fine to medium Well-graded Sar	d fow	100	1	9			┢
	^{0.0}		shells and shell hash (12%)	iu, iew	100	0.0				E
	<u></u>		1			6.0				F-
	ઃ									F
	⊒::									E
	⇉:									E
	⇉:									F
	∃::									E
	:									
	♯ :									F
	<u></u>									F
];:									E
	:									
	::				100	2 6.0				F
	⊐ૂ:					12.0				F
	::									E
	::									E
	:									
	⊒::									E
	:									
	::									F
	<u></u> :									F-
	∃::									E
	:									
	: :									E
-56.1	12.0									F
			Sharp break at 12 ft to Dark gray fine	Silty	100	3				E
	===		Sand and shell hash (25%)			12.0 17.8				E
						17.0				
	∃::									F
	#:									E
	∃:									E
	4.									F
	⋾	기기는	1							F
			1							E
-61.9	17.8									F
	\exists									F
	=									E
	\exists									E
	\exists									F

								ie No. U-19
DRILLI	NG LO) DI	VISION	INSTALLA ODM			St	HEET 1 F 1 SHEETS
1. PROJECT						- D.T		F I SHEETS
	nke Maei	ter Res	ch Nourishment Plan		AND TYPE O		3.5 in	
2. LOCATION (NAVE		ATION SHO	WN (TBM or MSL)	
N 332,250	0.3 E 2,6			12. MANU	FACTURER'S	S DESIGNAT	ΓΙΟΝ OF DRILL	
3. DRILLING AG		mio Cu	T/OV	Vibra				
Alpine Oc 4. HOLE NO. (A file number)			tle and		L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED UND	DISTURBED
5. NAME OF DE	שוובס		O-19	14. TOTAI	L NUMBER C	ORE BOXES	S	
C. Dill				15. WATE	R DEPTH		DTED COMPL	ETED
6. DIRECTION (16. DATE	HOLE	SIA	RTED COMPL 12/12/2011 12	2/12/2011
	AL L	INCLINE		17. ELEV	ATION TOP C	F HOLE	-36.1	
7. Penetration, f	t		19.3	18. TOTAI	L CORE REC	OVERY FOR		115 %
8. Recovery, ft			21.5	19. GEOL	OGIST			
9. Total Recover	ry, %		115.0				C. Dill	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	5	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water lo weathering, etc., if sig	ss, depth gnificant)
a	b	С	d		е	NO. f	g	
-36.1	0.0		Gray to dark gray fine to medium Wels Sand; lenses of shell fragments at 4'-	ll-graded 5-5' and	100	0.0		E
			6.9-7.5'	o o ana		6.0		E_
								E
								E.
								F
			:]					E_
								E
	:							E_
								E
								F
								E
								E
					100	2		E
	=					6.0		E
						12.0		=
	📑							F
								E-
	=							E
								=
								E
			•					F
			:]					E_
			;]					E
			:]					F
					100	3		E
-49.1	13.0					12.0 17.0		E
-49.2	13.1	*******	↑ Dark gray Clay lens			17.0		
			Dark gray fine to medium Well-graded	d Sand,				E
			rare shell fragments (5%)					=
								F
								E
								E
								<u> </u>
								E
-53.1	17.0	******		11 112.	100			E
	📑		Gray fine Poorly-graded Sand, few shark gray silt-clay in thin laminae	ielis, little	100	4 17.0		F
	│ <u></u>		Hank gray siir-ciay iii tiilli lalliillae			17.0		E.
	∄							F
	│ 📑		4					F
-55.4	19.3		:					E
	=							F

								<u>HOIE NO</u>	<u>. U-20</u>
DRILLI	NG LOG	DIVISION		INSTALLA ODMI				SHEET OF 1	1
1. PROJECT					ND TYPE OF	- RIT	3.5 in	OF I	SHEETS
Bogue Ba	nks Master B	each Nou	rishment Plan				WN (TBM or MSL)		
	Coordinates or Stat			NAVE					
3. DRILLING AG	0.4 E 2,692,3 SENCY	304.7		12. MANU Vibra		S DESIGNAT	TION OF DRILL		
Alpine Oc	ean Seismic			13. TOTAL	NO. OF OV	DISTURBED	UNDISTUR	BED	
4. HOLE NO. (A file number)	s shown on drawir	ng title and	O-20	SAMP	LES TAKEN		3		
5. NAME OF DR	RILLER		0-20		NUMBER C	ORE BOXES	S		
C. Dill				15. WATE	R DEPTH	·	DTED : 00	MADI ETED	
6. DIRECTION (16. DATE	HOLE	SIA	RTED CC 12/11/2011	MPLETED 12/11/2	011
		NED	DEG. FROM VERT.	17. ELEVA	ATION TOP C	F HOLE	-36.4		
7. Penetration, fi	t		15.7	18. TOTAL	CORE REC	OVERY FOR	R BORING		86 %
8. Recovery, ft			13.8	19. GEOL	OGIST		0. 0.11		
9. Total Recover	y, % 		86.0		% CORE	BOX OR	C. Dill	RKS	
ELEVATION	DEPTH LEGE	END	CLASSIFICATION OF MATERIALS (Description)	5	RECOV-	SAMPLE	(Drilling time, wa	ter loss, dep	th
а	b c		d		ERY e	NO. f	weathering, etc.,	ır sıgnırıcan	t)
-36.4	0.0	Gray fi	ne to medium Well-graded San %) shells and shell hash; sand	d with	100	1 0.0			E
		· brown-	gray for two inches at 5 ft.; coa	rse shell		5.0			E
	#:::::	layer (90%) at 13-13.4 ft.						E
	***** :	::::							F
		::::↓							
	$\exists : : : :$	* * * * • •							E
		• • • • •							=
									=
		• . • . • .							=
	≓ ઃःः	* * * * 1							F
	⊒::::: :	• • • • • • • • • • • • • • • • • • • •							F
					100	2			E
	≓ ∷::::					5.0 10.0			=
						10.0			
	7::::::	* * * * *							F
		:::::							
	$\exists : : : :$								Е
		••••							<u> </u>
		• • • • • •							=
	≓ ∷∷:	• • • • • •							
	 ::::::	****							
	∃∷∷	* * * * 1							E
		• • • • • • • • • • • • • • • • • • • •			99	3			
	≓ ::::::				00	10.0			=
						13.8			F
									F
	_=::::::								E
		****							E
	#***	****							F
		****							F
-50.2	13.8	* * * * *							E
									E
	\exists								E
									F
									F
	_=								E
	\exists								E
	\exists								F
	\dashv								
	1								F
	\exists								E
	\exists								E
	#								F
	=								F

								IOIE IN		/- Z-i,
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET		
1. PROJECT				ODM			0.5:	OF 1	SHE	ETS
	nks Master F	3ear	h Nourishment Plan	1	AND TYPE OF		3.5 in WN (TBM or MSL)			\dashv
2. LOCATION (C	Coordinates or Sta 9.3 E 2,693,	tion)		NAVE	S8 C		FION OF DRILL			
3. DRILLING AG	SENCY			Vibra		DESIGNA	HON OF BRILL			
	ean Seismic			13. TOTA	L NO. OF OV	ERBURDEN		UNDISTU	RBED	
file number)	s shown on drawi	ng titl	e and : O-21		LES TAKEN L NUMBER C	ORF BOXES	3			
5. NAME OF DR C. DIII	RILLER				R DEPTH	0.12.207.2	<u>-</u>			
6. DIRECTION (OF HOLE					STA	ARTED CO	MPLETED)	
VERTICA		INED	DEG. FROM VERT.	16. DATE	HOLE		12/12/2011	12/12/	2011	
7. Penetration, f			17.6	17. ELEV	ATION TOP C	F HOLE	-37.0			
8. Recovery, ft	•		15.9		L CORE REC	OVERY FOR	R BORING		8	5 %
9. Total Recover	rv. %		85.0	19. GEOL	.OGIST		C. Dill			
			CLASSIFICATION OF MATERIALS	3	% CORE	BOX OR	REMAR			
ELEVATION a	DEPTH LEG		(Description)		RECOV- ERY e	SAMPLE NO. f	(Drilling time, wat weathering, etc., g			
-37.0	0.0 -::::	****	Gray-brown fine to medium Well-grad	ed	100	1	9			
	$\exists : : : :$		Sand, with some scattered shells			0.0 5.0				E
						3.0				F
										E
										E
										F
										E
										E
										E
-42.0	5.0									E
			Gray fine to medium Well-graded Sar	id, some	100	2				
			rare shell pieces; lens of dark gray cla thick at 9.9'	ıy 1"		5.0 10.0				E
										E
	_=:::::									E
										F
										E
										E
										E
					400					
					100	3 10.0				E
						15.0				F
										F
										E
										F
										F
										E
										E
-52.9	15.9									E
		^ ^ ^			1					F
	\exists									E
										E
	\exists									F
	\exists									E
	\exists									F
	彐									E
	\exists									E

								I IOIE I	<u>0. 0-</u>	<u> </u>
DRILLI	NG LOG	DIVI	ISION	INSTALLA				SHEET	•	
1. PROJECT				ODM		- DIT	2 F in	OF 1	SHEE	IS
	inks Maste	r Beac	h Nourishment Plan	I	AND TYPE OF		3.5 in WN (TBM or MSL)			\dashv
2. LOCATION (Station)		NAVE	88 C					_
3. DRILLING AG		, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		12. MANU Vibra		5 DESIGNA	TION OF DRILL			
Alpine Oc	ean Seism			13. TOTA	L NO. OF OV	ERBURDEN	DISTURBED	UNDISTU	IRBED	\dashv
4. HOLE NO. (A file number)	s shown on dr	awing title	e and O-22		LES TAKEN	ODE DOVE	4	<u>:</u>		_
5. NAME OF DR	RILLER		÷ 		L NUMBER C	OKE BOXE	o			\dashv
C. Dill	OF HOLF				R DEPTH	: ST/	ARTED :	COMPLETE)	\dashv
6. DIRECTION (CLINED	DEG. FROM VERT.	16. DATE			12/10/2011	12/10		
7. Penetration, f			 19.1		ATION TOP C		-32.7			_
8. Recovery, ft	•		20.0		L CORE REC	OVERY FOR	R BORING		105	%
9. Total Recover	ry, %		105.0	19. GEOL	OGIST		C. Dill			
ELEVATION		EGEND	CLASSIFICATION OF MATERIALS	3	% CORE	BOX OR SAMPLE		MARKS	- m # h	\dashv
a	b b	C	(Description) d		RECOV- ERY e	NO. f	weathering, e			
-32.7	0.0	******	Gray to brown fine to medium Well-gr	aded	100	1		g		+
			Sand, intermittent shells and shell has	sh		0.0				E
			(20%); some shells to 2 inches in size and 1'3" below sea floor and between			5.0				
			and 10'							E
	:	******								
										F
										F
										E
	□∷	******								F
					100	2				E
	∃∷÷				100	5.0				E
						10.0				E
	∄∷	:::::::::::::								E
										E
										E
	_ ::	******								E
										E
										F
		******								E
					100	3 10.0				F
						15.0				E
	□ ::									F
	_=;:									E
										F
										E
		*********								F
										E
										F
	::									E
					100	4				E
						15.0 19.0				E
										E
	_=;:									F
										E
	_=;:	*******								F
		```````\ ```````\								E
-51.8	19.1									F
-51.0	10.1									E
										F

		T = ::	101011	I IN ICE : :	T101:			10le No	
DRILLI	NG LOG	DIV	ISION	INSTALLA ODM				SHEET OF 1	1 SHEETS
1. PROJECT					AND TYPE OF	FRIT	3.5 in	IOF I	SHEETS
	nks Master E	Beac	h Nourishment Plan				3.5 III WN (TBM or MSL)		
2. LOCATION (	Coordinates or Sta 3.0 E 2,696,	tion)		NAVE	28 C		FION OF DRILL		
3. DRILLING AG	SENCY			Vibra		0 0 0 0 0 0 0 0 0			
4. HOLE NO. (A	ean Seismic s shown on drawi		e and		L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 3	UNDISTUR	BED
file number)			O-23	14. TOTA	L NUMBER C	ORE BOXES	S		
5. NAME OF DE C. DIII				15. WATE	R DEPTH	. CTV	ARTED : COI	MPLETED	
6. DIRECTION (				16. DATE	HOLE	514	12/10/2011	12/10/2	011
		NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-47.8		
7. Penetration, f	t		19.7	18. TOTA	L CORE REC	OVERY FOR	R BORING		86 %
8. Recovery, ft			17.2	19. GEOL	OGIST		0. D.III		
9. Total Recover	ry, %		86.0		% CORE	BOX OR	C. Dill	NC	
ELEVATION	DEPTH LEGI		CLASSIFICATION OF MATERIALS (Description)	8	RECOV- ERY	SAMPLE NO. f	(Drilling time, wate weathering, etc.,	er loss, depi	
-47.8	0.0 — 0.0	; `^^^	d Gray fine to medium Well-graded Sar	nd with	100	1	g		
			intermittent shells (20%)	id Willi	100	0.0			E
	*****					6.0			
									E
									E
									E
									F
									E
									F
-53.8	6.0								F
			Dark gray fine to medium Poorly-grad	ed Sand	100	2			E
	<b>=</b> 33		with Silt some shells (20-30%)			6.0 10.0			F
									E
									E
	<b>=</b>								F
	_=333								E
	<b>=</b>								F
	_388								E
					100	3 10.0			E
						15.0			<b>–</b>
									E
	— <b>=</b> ::::::::::::::::::::::::::::::::::::								F
	- 日本語								E
									E
	<b>=</b>								F
	<u>-∃</u> #\$								E
00.0	450 = 30								F
-62.8	15.0		Gray shells and fine Well-graded San	d with	100	4			F
			Silt (50-70% shells)			15.0			E
						17.2			F
									E
-65.0	17.2—_:•:•:•	[•[•]• <u>]</u>			-				
	$\exists$								E
	$\exists$								E
	$\exists$								E
	$\exists$								E
	$\exists$								F

								HOIE NO	<u>). U-24</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA ODM				SHEET OF 1	1 SHEETS
1. PROJECT		ļ			AND TYPE OF	BIT	3.5 in	101 1	SHEETS
			h Nourishment Plan	11. DATU	M FOR ELEV		WN (TBM or MSL)		
	Coordinates or State 2.2 E 2,690,		0	NAVE		S DESIGNAT	TION OF DRILL		
3. DRILLING AG	SENCY			Vibra		3 DESIGNA	TION OF DRILL		
4. HOLE NO. (A	ean Seismic s shown on drawii		e and		L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTUR	BED
file number) 5. NAME OF DR	DILLED		O-24	14. TOTA	L NUMBER C	ORE BOXES	s		
C. Dill	KILLER			15. WATE	R DEPTH		·		
6. DIRECTION (				16. DATE	HOLE	STA	ARTED CC 12/12/2011	MPLETED 12/12/2	2011
	AL INCLI	NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-49.3	12/12/2	.011
7. Penetration, fl	t		18.5	18. TOTA	L CORE REC	OVERY FOR			73 %
8. Recovery, ft			13.8	19. GEOL	OGIST		O D:II		
9. Total Recover	ry, % 		73.0 CLASSIFICATION OF MATERIALS		% CORE	BOX OR	C. Dill	RKS	
ELEVATION	DEPTH LEGE	END	CLASSIFICATION OF MATERIALS (Description) d	5	RECOV- ERY e	SAMPLE NO. f	(Drilling time, wa weathering, etc.,	ter loss, dep	oth nt)
-49.3	0.0		Gray fine to medium Well-graded San	d with	100	1	g		
	3::::		Silt, few shells (15-20%); dark gray cla at 4'4"	ay lens		0.0 4.9			
			44			4.9			
									F
	<b></b>								F
									<b>F</b>
-54.2	4.9 ∄∷∷								
			Sharp change to 4.9 feet to dark gray	fine	101	2			
	488		Poorly-graded Sand, some shell fragn	nents		4.9 6.8			F
	<u>-∃</u>		(20-30%)			0.0			
-56.1	6.8								
			Soft dark gray organic Silty Sand, son	ne shells	100	3			
	3.3		(30-40%)			6.8 13.8			<b>–</b>
	-3/4					13.0			
	3								
	_=								<b>F</b>
	7.4								F
	_3.46								
	<b>- 1888</b>								
	4.0								F
									E
	# # # # # # # # # # # # # # # # # # # #								<b>–</b>
-63.1	13.8								
	3								
									<u>_</u>
									F
									E
									F
	_=								F
	$\exists$								E
									F
	$\exists$								F
									þ
						1			

								<u>ioie ivo.</u>	<u>U-25</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA ODM				SHEET	1
	PROJECT Bogue Banks Master Beach Nourishment Plan					- DIT	2 E in	OF 1	SHEETS
	inks Maste	r Beac	ch Nourishment Plan		AND TYPE OF		3.5 in WN (TBM or MSL)		
2. LOCATION (			Tround In Inc.	NAVE	) 88	ATION SHO	VVIN (IBIVI OI IVISL)		
N 331,25	3.1 E 2,69		.5	12. MANU	FACTURER'S	S DESIGNAT	ΓΙΟΝ OF DRILL		
3. DRILLING AC	BENCY Bean Seism	nic Sur	VAV	Vibra		EDDUDDEN	: DIOTUDDED	I INDIOTI IDD	
4. HOLE NO. (A file number)			e and	13. TOTAL SAMP	L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTURB	ED
5. NAME OF DE	DILLED		O-25	14. TOTA	L NUMBER C	ORE BOXES	3		
C. Dill	VILLEIX			15. WATE	R DEPTH	· · · · · · · · · · · · · · · · · · ·			
6. DIRECTION (				16. DATE	HOLE	STA	RTED : COI 12/11/2011 :	MPLETED 12/11/20	)11
	AL IN	ICLINED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-42.0	12/11/20	<del>'''</del>
7. Penetration, f	t		20.0	-	L CORE REC				95 %
8. Recovery, ft			19.5	19. GEOL					
9. Total Recove	ry, %		95.0				C. Dill		
ELEVATION	DEPTH L	EGEND	CLASSIFICATION OF MATERIALS (Description)	8	% CORE RECOV-	BOX OR SAMPLE	REMAR (Drilling time, wate	er loss, depth	
а	b	С	(Description)		ERY e	NO. f	weathering, etc.,	if significant)	
-42.0	0.0		Light gray fine to medium Well-graded	d Sand,	100	1	3		
	<b>⊒</b> ::		trace shells and shell fragments (10-	15%)		0.0 6.0			E
						0.0			E
									F
									E
									E
									E
									F
									E
	<b> </b>								F
									E
	<b>⊒</b> ∷		•						
					100	2			F
	]::					6.0 12.0			E
						12.0			
		******							E
	<b>∃</b> ::								E
	<u></u>								<b>–</b>
									F
									F
									F
									F
					100	3			
	<b>□:</b> :				100	12.0			F
						17.9			E
									E
									E
									E
									<b>–</b>
									E
	::								<u> </u>
									E
									E
									F
-59.9	17.9		Dark grow fine Deerly graded Seed with	th Cilt	100				E
	=		Dark gray fine Poorly-graded Sand wind some shells and shell fragments (15-2	uı Siit, 25%)	100	4 17.9			F
	_=_:		1	,		19.5			E
-61.5	19.5								F
									F

		T =						IOIE IN		<del>-</del>
DRILLII	NG LOG	DIVI	SION	INSTALLA ODM				SHEET OF 1		
1. PROJECT				_		DIT	2 E in	OF I	SHE	=15
	nks Master F	eacl	h Nourishment Plan	1	AND TYPE OF		3.5 in WN (TBM or MSL)			$\dashv$
2. LOCATION (C	Coordinates or Star 7.3 E 2,692,	tion)		NAVE	88 C		FION OF DRILL			
3. DRILLING AG	SENCY			Vibra		DEGIGIAN	HON OF BINEE			
	ean Seismic			13. TOTA	L NO. OF OV	ERBURDEN		UNDISTL	IRBED	
4. HOLE NO. (A file number)	s shown on drawi	ng title	e and O-26	-	LES TAKEN L NUMBER C	ORE BOXES	3			
5. NAME OF DR	RILLER		,		R DEPTH	0.12.207.21				
C. Dill	OF HOLF					STA	ARTED : CO	MPLETE	)	
6. DIRECTION (		NED	DEG. FROM VERT.	16. DATE			12/11/2011	12/11		_
7. Penetration, fl	t		20.4	-	ATION TOP C		-45.7			
8. Recovery, ft			13.8		L CORE REC	OVERY FOR	R BORING		68	3 %
9. Total Recover	v %		68.0	19. GEOL	OGIST		C. Dill			
			CLASSIFICATION OF MATERIALS	2	% CORE	BOX OR	REMAF			$\dashv$
ELEVATION a	DEPTH LEGI		(Description)	,	RECOV- ERY e	SAMPLE NO. f	(Drilling time, wat weathering, etc., g			
-45.7	0.0	•:•:•	Gray fine to medium Well-graded Sar	d. some	100	1	9			+
			small shell fragments (10-20%); Very	rare 1"		0.0				F
	<u> </u>	****	clay balls			5.0				E
	<b>=:::::</b> ::	****								F
		****								F
	$\exists : : : :$									E
		****								E
	<b>=:::::</b> :	****								F
		****								E
		****								E
	<b>=:::::</b> :	****								F
		****			100	2				F
	$\exists : : : :$					5.0				E
		****				9.3				
	<b>=:::::</b> ::	****								F
										E
										F
										F
										E
55.0										E
-55.0	9.3		Dark gray fine Silty Sand with some c	lav	100	3				F
	_3%		lenses and shells (30-50%)	iay	100	9.3				E
	<b>= #</b>	4:4				13.8				E
	4.4									F
										E
	3 4									E
										F
										E
										F
-59.5	13.8									F
										E
	$\exists$									F
										F
	$\exists$									E
	_=									E
	$\exists$									F
	_=									E
	$\exists$									F
	$\exists$									F
										E
	$\exists$									F
	$\exists$									F
	∃									E

							Г	<u> 1018 NO. U</u>	<u>-21</u>
DRILLI	NG LO	G DI	VISION	INSTALLA ODM				SHEET 1 OF 1 SHE	
1. PROJECT		Ļ				- DIT	0.5:-	OF 1 SHE	EIS
	nks Mas	ter Bea	ch Nourishment Plan		AND TYPE OF		3.5 in DWN (TBM or MSL)		$\dashv$
2. LOCATION (	Coordinates	or Station)		NAVE		ALION SHU	TANK (IDIVI OI IVISL)		
N 331,253		693,366	3.3	12. MANU	JFACTURER'S	S DESIGNA	TION OF DRILL		
Alpine Oc		smic Su	rvey	Vibra 13. TOTA		ERBURDEN	I : DISTURBED :	UNDISTURBED	-
4. HOLE NO. (A file number)			tle and		LES TAKEN	5	4		
5. NAME OF DF	RILLER		O-27		L NUMBER C	ORE BOXE	S		
C. Dill				15. WATE	R DEPTH	: 07/	APTED : 00	MDI ETED	_
6. DIRECTION (		INIO! INICE	DE0 FD044/557	16. DATE	HOLE	517	ARTED COI 12/11/2011	MPLETED 12/11/2011	
VERTICA		INCLINED		17. ELEV	ATION TOP C	F HOLE	-43.6		
<ul><li>7. Penetration, f</li><li>8. Recovery, ft</li></ul>	ι		19.4 16.8		L CORE REC	OVERY FOR	R BORING	86	3 %
Recovery, it     Total Recover	rv. %		86.0	19. GEOL	.OGIST		C. Dill		
		1.5051/5	CLASSIFICATION OF MATERIALS	S	% CORE	BOX OR	REMAR		$\dashv$
ELEVATION	DEPTH	LEGEND	(Description)		RECOV- ERY	SAMPLE NO.	(Drilling time, wat weathering, etc.,		
-43.6	0.0 —	C	d  Gray fine to medium Well-graded Sar	nd. rare	100	f 1	g		+
			shells (5%) in lenses	,		0.0			E
			<b>○</b>   			4.0			F
	$\equiv$		•						E
	=		•						E
	_=		•						E
			•]						F
			•   •						E
	$\equiv$				100	2 4.0			E
	=					8.0			E
			•						E
			•						F
			•						F
			•						
		, , , , , , , , , , , , , , , , , , ,	•						F
	=				100	3			F
			•			8.0			E
			▼ • •			12.9			
									E
			•						E
	$\equiv$		•   •						Ē
			•						E
	_=		•						E
			•						F
-56.5	12.9 =		Dork grow fine Oille Conducting to U.S.	2 cups = 12 t =	400	4			E
			Dark gray fine Silty Sand with shell fra (20%) and rare clay lenses to 1/2" thic	agments k	100	4 12.9			E
	_=					16.8			E
									E
									E
	$\equiv$		4						F
	=								
-60.4	16.8		4						F
									F
									E
									F
	$\equiv$								F
									E
	$\exists$								F

				T				iole No		•
DRILLI	NG LOG	DIV	ISION	INSTALLA ODM				SHEET	1	
1. PROJECT						- DIT	0 F in	of 1	SHEETS	ł
	nks Masta	er Reac	h Nourishment Plan		AND TYPE OF		3.5 in			1
2. LOCATION (C			in Nourisimient i lan	11. DATU NAVE	M FOR ELEV 7 88	ATION SHO	WN (TBM or MSL)			1
N 331,246			.6			S DESIGNAT	TION OF DRILL			1
3. DRILLING AG	ENCY			Vibra		2201014/71	SINEE			1
Alpine Oc				13. TOTA	L NO. OF OV	ERBURDEN		UNDISTURI	BED	
4. HOLE NO. (A file number)	s shown on d	rawing title	e and	SAMP	LES TAKEN		3			1
5. NAME OF DR	DILLED		O-28	14. TOTA	L NUMBER C	ORE BOXES	S			1
C. Dill	AILLEK			15. WATE	R DEPTH					1
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA		MPLETED		1
∨ERTICA		NCLINED	DEG. FROM VERT.			:	12/10/2011	12/10/2	011	1
7. Penetration, f			19.2	17. ELEV	ATION TOP C	F HOLE	-42.7			1
-	•		12.9		L CORE REC	OVERY FOR	R BORING		63 %	1
8. Recovery, ft	0/			19. GEOL	OGIST		O D:!!			
9. Total Recover	у, % ————————————————————————————————————	1	63.0	<u> </u>	% CODE	BOX OR	C. Dill	ike.		ł
ELEVATION	DEPTH L	EGEND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	SAMPLE	(Drilling time, wate	er loss, dep		
а	b	С	(Description) d		ERY e	NO. f	weathering, etc.,	if significan	<i>t</i> )	1
-42.7	0.0	*******	Gray fine to medium Well-graded San	id, few	100	1	9_			F
	⊒::		shell fragments (15-20%)	., .= ••		0.0				E
						6.0				E
	⊒::									E
										Ė.
	ું:`									E
	<u></u>									
	⊒::									E
	⊒::									F
	<b>∃</b> ::									Е
	∃::									E
	— <u>;</u> ;									F
	⊒::									F
					100	2				$\vdash$
	⊒::				100	6.0				E
						11.6				
	∃::									Е
										F
	_=::									E
	=::									
	⊒::									E
	$\exists$ :									Ē
										F
-54.3	11.6		Charp change of 11 C ft to double service	off Cilk.	100	2				E
			Sharp change at 11.6 ft to dark gray s Sand and clay, few shells (20%)	on Silty	100	3 11.6				E
-55.6	12.9	실생성	(2070)			12.9				F
-55.6	12.9	341-343-343-343-343-343-343-343-343-343-								E
	$\exists$									E
										E.
	$\exists$									F
										E
	$\exists$									E
										F
										E
	$\exists$									E
	$\dashv$									F
	コ									F
										E
	$\exists$									E
										Ė.
	$\exists$									F
I					1	1				

								iole is		<u> </u>
DRILLI	NG LOG	DIVI	SION	INSTALLA ODM				SHEET		1
1. PROJECT						- DIT	0 F in	OF 1	SH	EETS
	nks Master F	Beacl	h Nourishment Plan		AND TYPE OF		3.5 in WN (TBM or MSL)			-
2. LOCATION (C	Coordinates or Sta 1.9 E 2,682,	tion)		NAVI	88 C		FION OF DRILL			
3. DRILLING AG	SENCY			Vibra		o beolor with	TION OF BINEE			
4. HOLE NO. (A	ean Seismic s shown on drawi		and	13. TOTA		ERBURDEN	DISTURBED 3	UNDISTU	IRBED	
file number)			O-29	14. TOTA	L NUMBER C	ORE BOXES	· · · · · · · · · · · · · · · · · · ·			
5. NAME OF DR C. Dill	RILLER			15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	RTED : CO 12/12/2011 :	MPLETED 12/12		, I
	L INCLI	INED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-51.9	12/12/	201	<u>'</u>
7. Penetration, fl	t		18.9		L CORE REC					31 %
8. Recovery, ft			15.7	19. GEOL						
9. Total Recover	у, %		81.0				C. Dill			
ELEVATION	DEPTH LEGI		CLASSIFICATION OF MATERIALS (Description) d	3	% CORE RECOV- ERY	BOX OR SAMPLE NO. f	REMAF (Drilling time, wat weathering, etc.,	er loss, de		
-51.9	0.0 —		Dark gray silty fine Sand, some shells	and	e 100	1	g			
			shell hash (20-30%)	ana	100	0.0				E
						3.0				F
	3:3:1									E
-54.9	3.0									E
-54.5	3.0		Dark gray soft Organic Silt		100	2				F
	===					3.0 4.3				
-56.2	4.3									E
			Dark gray silty fine to medium Sand a shells (50%)	nd	100	3 4.3				E
			Shelle (66 70)			10.0				E
	<b>=</b>									F
										E
	433									F
										E
	# # # # # # # # # # # # # # # # # # # #									F
										E
	<b>⇒</b>									E
-61.9	10.0									E
	<b>₩</b>		Light gray to dark gray shells and silt, fine sand; 3" shell fragments 15.4-15.	some	100	4 10.0				F
			inic sand, o shell hayments 15.4-15.	,		15.7				E
	<b>∄</b> ;;;;	0								F
										E
		\$								E
		:D::3								F
										E
										E
	<u>ئننئز</u>									F
										E
-67.6	15.7									F
										E
	$\exists$									F
	$\overline{\exists}$									E
	$\exists$									E
	$\overline{}$									E
	∄									E
	=									F
	$\exists$									E

								IOIE I		<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET		
1. PROJECT						- DIT	0 F in	OF 1	SHI	EETS
	nks Master	Beac	h Nourishment Plan	1	ND TYPE O		3.5 in WN (TBM or MSL)			
2. LOCATION (C		tation)		NAVE	88 (		TION OF DRILL			
3. DRILLING AG		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Vibra		3 DEGIGINAT	TON OF BRILL			
	ean Seismi			13. TOTAL	NO. OF OV	ERBURDEN	DISTURBED	UNDISTU	IRBED	
4. HOLE NO. (A file number)	s shown on drav	ving title	e and O-30		LES TAKEN _ NUMBER C	ODE BOYE	4			
5. NAME OF DR	RILLER					ORE BUXES	•			
C. Dill				15. WATE	RUEPIH	. STV	RTED : CO	MPLETED	`	
6. DIRECTION (  VERTICA		LINED	DEG. FROM VERT.	16. DATE	HOLE		12/10/2011	12/10/		1
		LIIVLD		17. ELEV	ATION TOP C	F HOLE	-51.0			
7. Penetration, f	l .		18.5 18.8	18. TOTAI	CORE REC	OVERY FOR	R BORING		10	)1 %
8. Recovery, ft	n, 0/		101.0	19. GEOL	OGIST		C. Dill			
9. Total Recover	y, %		CLASSIFICATION OF MATERIALS		% CORE	BOX OR	C. DIII REMAF	RKS		
ELEVATION a	DEPTH LEG	GEND c	(Description)	•	RECOV- ERY e	SAMPLE NO. f	(Drilling time, wat weathering, etc., g	er loss, de		
-51.0	0.0		Dark gray fine to medium Sand; shells	s (50%)	100	1	9			
	$\exists$		in layer 2.2-2.6 ft	,		0.0				E
						3.3				F
	∃:::::									E
										F
	$\exists x$									E
-54.3	3.3									E
			Soft dark gray Organic Silt		100	2				F
						3.3 5.6				E
						0.0				F
	-===									F
-56.6	5.6									E
			Dark gray silty fine to medium Sand a shell fragments (30%)	nd some	100	3 5.6				E
	3		Sileii iragirients (30 %)			9.0				E
	_=									F
	∃									E
	_=									
	<b>∃</b> (\$)									E
-60.0	9.0		0 1 11 0 11 1 1 (70 000)		100					E
	田湖		Gray sandy silty Shell hash (70-90%)		100	9.0				E
	_#:4					16.0				E
	三部									E
	三三									E
	_33									E
	3.4									F
	_3%									E
	<b>=</b>									F
										E
	<b>-</b>									F
	_=_3									E
	크웨									F
-67.0	16.0									E
		1,,60	Gray silty shells and cemented calcar	eous						E
		Ž.;;;	sandstone fragments to 3" in size							F
										E
	≓ઃંં¢	وم الم								F
										E
-69.8	18.8	<u> ۲</u> ۳۰۰۰۶								E
										E
	$\exists$									E

										<u>C 14</u>	<u>v.                                    </u>	<u> </u>	_
DRILLI	NG LO	G	DIVI	ISION	INSTALLA ODMI					HEET		1	
1. PROJECT						ND TYPE OF	DIT	2.5 in	OI	F 1	SH	IEETS	1
	ınks Mas	ster B	eac	ch Nourishment Plan				3.5 in WN (TBM or MSL)					-
2. LOCATION (0 N 330,253	Coordinates	or Stati	on)		NAVE	88 (		TION OF DRILL					-
3. DRILLING AG	SENCY				Vibra	core							
Alpine Oc 4. HOLE NO. (A						NO. OF OVI	ERBURDEN	DISTURBED 3	UNE	ISTU	RBED	)	1
file number)			J	O-31	14. TOTAL	NUMBER C	ORE BOXES	•	:				1
5. NAME OF DF C. Dill	RILLER				15. WATE	R DEPTH							]
6. DIRECTION (					16. DATE	HOLE	STA	ARTED 12/12/2011	: COMPL		) '201	1	
	AL	] INCLIN	NED	DEG. FROM VERT.	17. ELEV <i>A</i>	ATION TOP C	F HOLE	-53.6		., 12,	201		1
7. Penetration, f	t			19.3	18. TOTAL	CORE REC	OVERY FOR		·			93 %	1
8. Recovery, ft				17.9	19. GEOL	OGIST		0. D.:					1
Total Recover	ry, %	_		93.0		% CORE	BOX OR	C. Dill	MARKS				4
ELEVATION a	DEPTH b	LEGE c	ND	CLASSIFICATION OF MATERIALS (Description) d	•	RECOV- ERY e	SAMPLE NO. f	(Drilling time weathering,	, water lo				
-53.6	0.0			Dark gray fine to medium Sand, some	shells	100	1		9				E
	=			and shell fragments (30-40%)			0.0 1.5						E
-55.1	1.5			Dark gray soft Organic Silt		100	2						E
	_		=	Daik gray Suit Organic Siit		100	2 1.5						E
		<u> </u>	彐				4.5						E
		==	$\equiv$										
	=		_										E
-58.2	4.6	==	=										E
-30.2	4.6 —			Dark gray sandy Silt and shells (40%)		100	3						F
		7-	7	,			4.5 6.0						E
-59.6	6.0		$\subseteq$										E
	=		0	Dark gray shell hash and fine to medion	um								F
	=	/- G	- <del>-</del>	Suridy Silt									E
		7											E
		<del>-</del> 6											
CO C		6											E
-62.6	9.0 —	<del>                                     </del>		Dark gray Organic Silt and shells (30-	50%)								
-63.6	10.0	7-7	7	,	,								E
00.0	=			Gray fine to medium sandy Silt, some	shells								E
	_ <u>=</u>			to 2" (20-40%)									E
	=												F
	_=												E
													E
													E
07.0	14.0												E
-67.6	14.0 —			Light gray broken cemented calcareou	JS								F
				sandstone, 4 " long sections									E
			: : :										E
	_ <u>=</u>		: : :										E
		<u> </u>											F
	_=	]::::::											E
	47.0 =	<b>]</b> ::::::											E
-71.5	17.9	1											E
		1											F
	_												F
		1											E

								IOIE IA		<u>-52</u>
DRILLI	NG LOG	DIVI	ISION	INSTALLA				SHEET	•	
1. PROJECT		_		ODM			0 F :	of 1	SHE	EIS
	nks Master F	Reac	h Nourishment Plan		AND TYPE OF		3.5 in WN (TBM or MSL)			
2. LOCATION (C	Coordinates or Star 1.3 E 2,688,	tion)		NAVE	88 (		FION OF DRILL			
3. DRILLING AG			<del>-</del>	Vibra		DESIGNA	HON OF BRILL			
	ean Seismic			13. TOTA		ERBURDEN	DISTURBED 3	UNDISTU	RBED	
file number)			O-32	14 TOTAL	_ NUMBER C	ORF BOXES	• •			
5. NAME OF DR C. Dill	RILLER			15. WATE						
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	RTED : CO 12/10/2011 :	MPLETED 12/10/		
	AL INCLI	NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-51.1	12/10/	2011	
7. Penetration, f	t		18.7		CORE REC				93	3 %
8. Recovery, ft			17.5	19. GEOL						
9. Total Recover	ry, %		93.0				C. Dill			
ELEVATION	DEPTH LEGE		CLASSIFICATION OF MATERIALS (Description)	8	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMAF (Drilling time, wat weathering, etc.,	er loss, de		
-51.1	0.0 — 0.0		d  Dark gray to gray silty fine Sand gradi	na with	e 100	f 1	g			
0			fine to medium sand lenses, trace she	ell	100	0.0				F
			fragments (5-15%)			4.2				
										F
										F
	<b>⊒</b> ::::::									E
-55.4	4.3									
-55.4			Dark gray Organic Silt, few shell fragn	nents	100	2				E
	==		(5-10%)			4.2 7.5				
	7					7.5				F
	==									E
	=									E
	_=									E
-58.6	7.5									F
	_3//		Gray shell hash (50%) and silty fine S	and	100	3				
	<b>#</b> ###					7.5 11.2				F
	二 二 二 二 二 二 二 二 二 二 二 二 二 二 二 二 二 二 二									F
	<b>= 4</b>									F
	3.46									E
-62.3	11.2	11	Doub was Ossania Oilt and aball 1 O	U (FOC()						
-63.1	12.0	<u>-</u> [ <u>-</u> ]	Dark gray Organic Silt and shells to 3	(၁૫%)						E
-00.1	<u>'</u>	11	Gray silty Shell hash (70-90%)							F
	3.00		, ,							E
										F
	4.90									F
	-344									
	# 48									<b> </b>
										E
	-4%									F
										E
										E
-68.6	17.5									F
	_=									E
	$\exists$									F
	_=									E
	$\exists$									E
	$\exists$									F

		1 = 0 /		I				IOIE IN		<del></del>
DRILLII	NG LOG	DIV	ISION	INSTALLA				SHEET OF 1	•	
1. PROJECT						DIT	2 E in	OF I	SHE	ETS
	nks Master I	3ean	ch Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)			$\dashv$
2. LOCATION (C		ation)		NAVE	88 (		FION OF DRILL			_
3. DRILLING AG	SENCY	,		Vibra		S DEGICITY (1	HON OF BINEE			
4. HOLE NO. (A	ean Seismic s shown on draw		e and	13. TOTAL SAMP	NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 3	UNDISTU	RBED	
file number)			O-33	14. TOTAI	NUMBER C	ORE BOXES				
5. NAME OF DR C. Dill	RILLER			15. WATE	R DEPTH					
6. DIRECTION O	OF HOLE			16. DATE	HOLE	STA	RTED : CC 12/10/2011 :	MPLETED 12/10		
	L INCL	INED	DEG. FROM VERT.	17. ELEV	TION TOP C	F HOLE	-63.2	12/10/	2011	$\dashv$
7. Penetration, f	t		16.3		CORE REC				110	0 %
8. Recovery, ft			18.2	19. GEOL						
9. Total Recover	у, %		110.0		0/ 00DE	DOV OD 1	C. Dill	2140		_
ELEVATION		END	CLASSIFICATION OF MATERIALS (Description) d	8	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMAF (Drilling time, wat weathering, etc.,	ter loss, de		
-63.2	0.0 —	C	Dark gray to gray fine to medium San	d some	e 100	f 1	g			+
	∃		shell fragments (10-15%)	,		0.0				E
						3.5				
	$\exists$									E
										F
	3.8									E
-66.7	3.5									F
-00.7			Dark gray silty fine Sand, some shell		100	2				E
			fragments (10-20%)			3.5 5.0				E
-68.2	5.0					3.0				E
00.2			Dark gray silty fine sand and shell has	sh, small	100	3				E
	3.1		pieces (30-50%)			5.0 9.0				E
						9.0				E
	3 //									F
										E
	<b>=</b>									F
										E
-72.2	9.0									F
			Light gray loose very coarse shells an	id shell						E
			hash (60-90%)							E
	$\exists \triangle$	Δ Δ								F
		$\triangle \triangle$								E
		Δ Δ Δ								F
		Δ								E
		ΔΔ								E
-76.2	13.0	<u> </u>								E
	∃::::	: : : :	Light gray layers of cemented calcare sand and fine to medium sand	ous						E
	_= ::::									上
	3::::									E
	-==::::									F
	3::::	: : : :								E
-79.4	16.2	::::								F
										E
										E
	$\exists$									E
										E
	$\exists$									E
										E
										E

									<u>). U-32</u>	<u>t</u>
DRILLIN	IG LOG	DIVIS	SION	INSTALLA				SHEET	1	
1. PROJECT				ODM			0.5:	OF 1	SHEETS	4
	ıks Master R	leach	n Nourishment Plan		ND TYPE OF		3.5 in			1
2. LOCATION (Co			Trounsiment ran	NAVE		ATION SHO	WN (TBM or MSL)			
	8 E 2,692,		4			S DESIGNAT	TION OF DRILL			┨
3. DRILLING AGE	NCY			Vibra		o beolor with	TION OF BINEE			
	an Seismic				NO. OF OV	ERBURDEN	DISTURBED	UNDISTUR	RBED	1
4. HOLE NO. (As file number)	shown on drawii	ng title		SAMP	LES TAKEN		4			1
5. NAME OF DRIL	LED		O-34	14. TOTAI	NUMBER C	ORE BOXES	S			
C. Dill	LLER			15. WATE	R DEPTH					
6. DIRECTION OF	F HOLE			16. DATE	HOLE	STA		MPLETED		1
	. INCLI	NED	DEG. FROM VERT.				12/10/2011	12/10/2	2011	4
7. Penetration, ft			18.6	17. ELEV	ATION TOP C	OF HOLE	-50.2			1
8. Recovery, ft			12.5		CORE REC	OVERY FOR	R BORING		67 %	1
	. 0/			19. GEOL	OGIST		C Dill			
9. Total Recovery,	7, %		67.0		% CORE	BOX OR	C. Dill	NS.		┨
ELEVATION	DEPTH LEGE	END	CLASSIFICATION OF MATERIALS (Description)	Ó	RECOV-	SAMPLE	(Drilling time, wat	ter loss, dep	pth	
а	b c		(Description)		ERY e	NO. f	weathering, etc.,	if significar	nt)	
-50.2	0.0 -:::::		Light gray fine to medium Sand and s	ome	100	1	<u> </u>			┢
	$\exists : : : :$		shell fragments (10-15%)			0.0				E
	<b>-∃:</b> :::::	****				4.0				
	⇒:::::	****								F
	_ <b>_</b> _:::::	****								
	$\exists : : : :$	****								Е
		****								L
	=::::::	****								E
-54.2	4.0 □:::::	****								F
	<b>⊒</b> :::::\$		Dark gray silty fine sand, few small sh	ell	100	2				
	⇉ःःःः		fragments (5-10%)			4.0 5.9				E
	<b></b>					3.9				
-56.1	5.9 ∄∷∷									E
			Gray silty fine Sand and large shells (	20-30%)	100	3				
	크위					5.9				F
						8.0				
	3.3									E
-58.2	8.0		5		400					
	15	$\overline{}$	Dark gray silty fine Sand and shell has (35-50%); with two inch thick lenses of	f	100	8.0				Е
	<del></del>	<del>-</del> 4	Organic Silt; shells to 3 inches at bottom	om		12.5				<u> </u>
										F
	16									F
		7_4								E
		7								
	<b>∃</b> -€	<u></u>								Е
60.7	125									F
-62.7	12.5 👉 🛨	_ 4								F
	$\overline{}$									E
	$\exists$									E
	_=									
	$\exists$									Е
										F
	$\exists$									E
	$\exists$									F
										E
										E
	$\exists$									F
1										F
										E
	$\exists$									F
		1					i			_

								TOTE INC	<del>J. U-3</del>	<u> </u>
DRILLI	NG LOG	DIVI	ISION	INSTALLA				SHEET	1	
1. PROJECT		<u> </u>		ODM			0.5:	of 1	SHEETS	4
	nke Master B	موما	h Nourishment Plan		ND TYPE OF		3.5 in			-
	Coordinates or Stat		II Nourishment Flan	11. DATUI NAVE	M FOR ELEV. N 88	ATION SHO	WN (TBM or MSL)			
	4.0 E 2,694,		.5			S DESIGNAT	TION OF DRILL			┨
3. DRILLING AG	SENCY			Vibra		o beolor with	TION OF BRIDE			
	ean Seismic				NO. OF OV	ERBURDEN	DISTURBED	UNDISTUF	RBED	1
4. HOLE NO. (A file number)	s shown on drawii	ng title		SAMP	LES TAKEN		3			_
5. NAME OF DR	NII ED		O-35	14. TOTAI	NUMBER C	ORE BOXES	S			
C. Dill	RILLER			15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA		MPLETED		1
	AL INCLI	NED	DEG. FROM VERT.				12/10/2011	12/10/2	2011	-
7. Penetration, f	t		19.2	17. ELEV	ATION TOP C	OF HOLE	-49.3			4
8. Recovery, ft	•		11.9		CORE REC	OVERY FOR	R BORING		65 %	5
	0/			19. GEOL	OGIST		C Dill			
9. Total Recover	ry, %		65.0		% CORE	BOX OR	C. Dill	oks.		-
ELEVATION	DEPTH LEGE	END	CLASSIFICATION OF MATERIALS (Description)	3	RECOV-	SAMPLE	(Drilling time, wat	er loss, de		
а	b c		(Description)		ERY e	NO. f	weathering, etc., g	if significal	nt)	
-49.3	0.0 -:::::	•:•:•	Gray fine to medium Sand, few shell		100	1	<u> </u>			╆
			fragments (5-10%)			0.0				E
						4.9				
	<b>=:::::</b> :									F
	:::::									<b>F</b>
	$\exists : : : :$									Е
	::::::									E
	<b>=:::::</b> :									F
	_=::::::									E
										F
-54.2	4.9									F
			Dark gray silty fine sand with shells ar fragments (20-30%)	nd shell	97	2 4.9				E
			magments (20-30%)			8.0				E
										F
	$\exists : : : : :$									Е
										<b>F</b>
57.0										F
-57.3	8.0		Gray to brown sticky silty fine Sand, w	/ith	100	3				E
			lenses of shell hash (10-15%)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	100	8.0				F
						10.0				E
										E
-59.3	10.0		Deale supplied by Cilt (20, 500/ ab all)							
			Dark gray shelly Silt (30-50% shell)							E
	_=									<u> </u>
	크게									F
-61.2	11.9	1								E
	$\exists$									F
	╡									F
	$\equiv$									E
	=									F
	=									F
	$\exists$									E
										⊨
	$\exists$									E
	$\dashv$									F
	$\exists$									F
										E
	$\exists$									E
	_=									<b>F</b>
										E
	_=									E
	$\exists$									F
	$\exists$					1				

								I IOIE IN	<u>,                                    </u>	<u>u</u>
DRILLI	NG LOG	DIV	VISION	INSTALLA				SHEET	1	
1. PROJECT				ODM		- DIT	2 E in	OF 1	SHEETS	4
	nks Master	Bear	ch Nourishment Plan		AND TYPE OF		3.5 in DWN (TBM or MSL)			-
2. LOCATION (		Station)		NAVE	88 C		TION OF DRILL			-
3. DRILLING AG				Vibra	core					
4. HOLE NO. (A	ean Seismi s shown on dra		tle and		L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTUR	BED	
file number) 5. NAME OF DF	NILLED		O-36	14. TOTA	L NUMBER C	ORE BOXE	S			
C. Dill	KILLER			15. WATE	R DEPTH					
6. DIRECTION (				16. DATE	HOLE	STA	ARTED : CC 12/10/2011 :	MPLETED 12/10/2	0011	
	AL INC	CLINED	DEG. FROM VERT.	17 FI FV/	ATION TOP C	E HOLE	-49.1	12/10/2	.011	┨
7. Penetration, f	t		19.5	-	L CORE REC				81 %	6
8. Recovery, ft			15.9	19. GEOL						1
9. Total Recover	CLASSIFICATION OF MATERIA					DOV OD	C. Dill	DIKO		4
ELEVATION	a b c (Description)			S	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMAI (Drilling time, wa weathering, etc., g	ter loss, dep		
		*****	Gray fine to medium Sand, rare (5%)	shells	100	1	9			╆
	⊒:::					0.0 3.5				E
		*****	• 1			3.5				E
	=;:::		• ]							F
			•							E
	_=:::		•							E
-52.6	3.5		• 1							E
	_=;::		Dark gray silty fine sand and shells what hash (30-50%)	ith shell	100	2 3.5				E
	≓∷ઃ		Hash (50-50%)			6.2				F
			•   •							
	≓ઃઃં		·   							F
-55.3	6.2		•							E
-33.3			Gray to light brown fine Sand with 10	% brown	100	3				F
	_=		clay laminae			6.2 11.0				E
	∃::					11.0				E
	_=									
	日為									E
										F
	3									E
20.4	<b>.</b> ⇒									F
-60.1	11.0		Dark gray shells (30-40%) and silty fi	ne Sand	100	4	1			F
	当然		few clay lenses to 1" thickness	Jana,		11.0				E
						15.9				F
	$\exists$ ::									E
										F
	38									E
	$\exists$									E
	⇒ = = = = = = = = = = = = = = = = = = =		1							F
			1							E
-65.0	15.9									F
	$\exists$									E
	_=									E
	$\exists$									F
										E
	$\exists$									F
	$\exists$									E
	$\exists$									F
	$\exists$				1					F

		1		T			П	oie No.	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA ODM				SHEET OF 1	1
1. PROJECT					AND TYPE OF	E DIT	3.5 in	OF I	SHEETS
	nks Master B	eac	ch Nourishment Plan				WN (TBM or MSL)		
2. LOCATION (	Coordinates or Stat 5.2 E 2,682,3	tion)		NAVE	88 C		FION OF DRILL		
3. DRILLING AG	SENCY			Vibra		O DEGIGIA/ (	HON OF BRILL		
4. HOLE NO. (A	ean Seismic s shown on drawir		e and		L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED U	INDISTURB	ΞD
file number)			O-37	14. TOTA	L NUMBER C	ORE BOXES	S		
5. NAME OF DE C. DIII				15. WATE	R DEPTH	. ct./	ARTED : COM	IPLETED	
6. DIRECTION (		NED	DEC EDOM/EDT	16. DATE	HOLE	: 517		12/12/20	11
		NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-50.8		
7. Penetration, f	t		19.1	18. TOTA	L CORE REC	OVERY FOR	R BORING		79 %
Recovery, ft     Total Recover	0/ 0/		15.0 79.0	19. GEOL	OGIST		C. Dill		
			CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	REMARK		
ELEVATION a	DEPTH LEGE		(Description)	,	RECOV- ERY e	SAMPLE NO. f	(Drilling time, water weathering, etc., it g		
-50.8	0.0		Gray fine to medium Sand, some she	lls (30%)	100	1	9		
	433					0.0 2.0			F
						2.0			
-52.8	2.0								E
			Dark gray silty fine to medium Sand, values and shell hash (30-50%)	with	100	2 2.0			<b> </b>
			Silelis and shell hash (30-3076)			5.0			E
									E
	_=_3								E.
	크용화		-						F
-55.8	5.0								E_
	二 二 二 三 三 三 三 三 三 三 三 三 三 三 三 三 三 三 三 三		Gray to brown silty very fine Sand, wit clay lenses, no shells	h rare	100	3 5.0			F
			ciay letises, no sitelis			11.0			E
									F
									E
									E
	<b>- 188</b>								F
									E
	二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二								F
									E
	그것								F
									E
-61.8	11.0								F
J			Sharp break at 11 ft to Gray loose she	ell hash	100	4			E
	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3		(70-90%) and silty fine Sand			11.0 15.0			E
						13.0			E
	<b>- 100</b>								
									E
-65.8	15.0								E
00.0	-								
	$\exists$								E
	$\dashv$								<del> </del>
	$\exists$								E
	$\overline{}$								
									E
									<b> </b>
	$\exists$								E
									-
	$\exists$								E

									). U-30
DRILLI	NG LOG	DIV	ISION	INSTALLATION SHEET 1 ODMDS OF 1 SHEET					1
1. PROJECT							0.5:	JOF T	SHEETS
	nks Masta	or Read	ch Nourishment Plan		AND TYPE OF		3.5 in		
2. LOCATION (C	Coordinates or	Station)	n Hounsmineller lan	11. DATU NAVE	VI FOR ELEV ) 88	ATION SHO	WN (TBM or MSL)		
N 328,255			.7			S DESIGNAT	TION OF DRILL		
3. DRILLING AG	ENCY	-		Vibra			SINEE		
Alpine Oc				13. TOTA	NO. OF OV	ERBURDEN	DISTURBED	UNDISTUR	RBED
4. HOLE NO. (A file number)	s shown on di	rawing title		SAMP	LES TAKEN		3		
,	W. L. E.D.		O-38	14. TOTAI	NUMBER C	ORE BOXES	S		
5. NAME OF DR C. Dill	KILLER			15. WATE	R DEPTH				
6. DIRECTION C	OF HOLE			16. DATE	HOLE	STA		MPLETED	
	L IN	CLINED	DEG. FROM VERT.	IO. DATE	HOLL	<u></u>	12/10/2011	12/10/2	2011
7. Penetration, ff			20.0	17. ELEV	ATION TOP C	F HOLE	-46.6		
			13.8	18. TOTA	CORE REC	OVERY FOR	R BORING		70 %
8. Recovery, ft				19. GEOL	OGIST		O D:II		
9. Total Recover	<u>у, %</u>		70.0		% CORE	BOX OR	C. Dill	IVC	
ELEVATION	DEPTH L	.EGEND	CLASSIFICATION OF MATERIALS	3	RECOV-	SAMPLE	(Drilling time, wate	er loss, dep	
а	b	С	(Description)		ERY e	NO. f	weathering, etc.,	if significan	nt)
-46.6	0.0		Light gray to light brown fine to mediu	m Sand	100	1	9		
			some shells and shell fragments (30%	6)		0.0			F
						4.0			F
	3								E
									F
	7		-						F
	_3								E
	⇒::								F
-50.6	4.0								F
	-::		Dark gray silty fine Sand, few shells (	10-20%)	100	2			E
	∃;;					4.0			E
						7.0			F
	7.3								F
									E
	=::3								E
-53.6	7.0	· <u>·····</u>	,		400				F
	<u> </u>		Brown-gray cohesive Silt		100	3 7.0			E
						12.0			F
	#_								F
		===							E
	<u> </u>								F
	<u></u>								F
	<u> </u>								E
	===								E
									F
E9.0	12 n ==								F
-58.6	12.0		Gray shell hash (40-60%) and silty fin	e Sand					E
	∃∷		2.3) and hadri (40 00 /0) and anty in	Cana					F
	_=								F
-60.4	13.8								E
-00.4	13.0								E
	$\exists$								F
	_=								E
	$\exists$								E
	$\exists$								F
									F
	=								E
	$\exists$								⊨
	$\exists$								F
									E
	$\exists$								E
									F
	$\exists$								F
	$\exists$								

		1		T				iole No.	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET OF 1 S	1 SHEETS
1. PROJECT		1				DIT	3.5 in	TOF I S	SHEETS
	nks Master E	Beac	ch Nourishment Plan		ND TYPE OF		WN (TBM or MSL)		
2. LOCATION (	Coordinates or Sta 2.6 E 2,686,	ition)		NAVE	88 (				
3. DRILLING AC	GENCY			12. MANU Vibra		S DESIGNAT	TION OF DRILL		
	cean Seismic				NO. OF OV	ERBURDEN	DISTURBED 3	UNDISTURBE	D
file number)			O-39	14. TOTAL	NUMBER C	ORE BOXES	<u> </u>		
5. NAME OF DF C. Dill	RILLER			15. WATE	R DEPTH				
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	RTED COI	MPLETED 12/10/20	₁₁
	AL INCL	INED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-53.9	12/10/20	
7. Penetration, f	Ť		18.2	18. TOTAL	CORE REC	OVERY FOR			97 %
8. Recovery, ft			17.8	19. GEOL	OGIST		0.5	-	
9. Total Recove	ry, %		97.0		% CORE	BOX OR	C. Dill	NC .	
ELEVATION	DEPTH LEG		CLASSIFICATION OF MATERIALS (Description)	3	RECOV- ERY	SAMPLE NO.	(Drilling time, wate weathering, etc.,	er loss, depth	
a -54.2	b (	) January	Cray fine to madium Sand, few shells	(200/ )	e 100	f 1	g		<u>_</u> _
-54. <u>2</u>	0.3		Gray fine to medium Sand, few shells Dark gray silty fine Sand, rare clay ler		100	0.0			E
			Burk gray only line band, rare day ler	1000		4.0			E
									E
									<b>F</b>
									E
									E
-57.9	4.0								E
			Dark gray fine sand and Silt with shell fragments (20-40%)		100	2 4.0			F
			nagments (20-40 %)			6.0			E
									E
-59.9	6.0								F
			Light gray 1003C very coarse offens at	nd shell	100	3			E
		$\Delta$ $\Delta$	fragments (80%) and a few pieces of cemented sandstone			6.0 11.0			E
			cernented sandstone			11.0			
		ΔΔ							E
	_	Δ							F
		$\triangle \triangle$							E
		ΔΔ							
									F
-64.9	│ 11.0 ☐ △ △	ΔΔ							E
-65.1 -65.4	11.2 \( \triangle \triangl	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Dark brown to dark green very had brown to the state of t	own Silt					F
-00.4	'' <b>`_</b>		Gray shell hash (100%)	orod					E
		# ::	Dark green very hard Clay with weath white shell remnants (5%)	ereu					
			(5,0)						F
									E
									F
									E
									E
									E
									F
-71.7	17.8								E
, ,,,									F
									E
									<b> </b>
									E
	-					1			

							Г	TOIR INC	<u>0. U-4</u>	<u>u</u>
DRILLI	NG LOG	DIV	SION	INSTALLA				SHEET	1	
1. PROJECT		ļ		ODM			0.5:	OF 1	SHEETS	4
Bogue Ba 2. LOCATION (0	inks Master E Coordinates or Stat 1.4 E 2,688,	tion)	h Nourishment Plan	11. DATU	88 (	ATION SHO	3.5 in WN (TBM or MSL)			
3. DRILLING AG		301.	1	12. MANU Vibra		S DESIGNAT	TION OF DRILL			
Alpine Oc	ean Seismic			13. TOTA	NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 3	UNDISTUF	RBED	1
file number)			O-40	14. TOTAL	NUMBER C	ORE BOXES				1
5. NAME OF DE C. DIII	RILLER			15. WATE						
6. DIRECTION (				16. DATE	HOLE	STA	RTED : CO 12/10/2011 :	MPLETED 12/10/2		
	AL INCLI	NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-53.7			1
7. Penetration, f	t		18.4	18. TOTA	CORE REC	OVERY FOR	R BORING		104 %	5
8. Recovery, ft			18.8	19. GEOL	OGIST		0 D:II			1
9. Total Recover	ry, %		104.0		% CORE	BOX OR	C. Dill	NS .		4
ELEVATION	DEPTH LEGE		CLASSIFICATION OF MATERIALS (Description) d	S	RECOV- ERY	SAMPLE NO. f	(Drilling time, wat weathering, etc.,	ter loss, de		
-53.7	0.0		Dark gray silty fine Sand and shells (4	10-70%)	100	1	9			╆
-55.0	1.3		3.,,	,		0.0 1.3				E
-33.0	1.3		Dark gray sticky Organic Silt-Clay and	d fine	100	2				E
			Sand; some shell fragments (20-30%)	)		1.3 4.0				E
	===	$\subseteq$				4.0				E
										F
-57.7	4.0	4	Dark gray shells and shell hash (80%)	) in silt	100	3				
			matrix.	) III 3IIC	100	4.0				F
						11.0				
										F
										F
										F
										E
										F
										E
										F
										F
-64.7	11.0		Light gray fine to medium Sand, few s	hells						
	=		(15-20%)							F
-66.2	12.5		Light gray coarse shell hash and shell	ls						F
			(70-90%) with little fine sand and silt							E
										F
										E
										F
										F
										F
										E
										F
-72.0	18.3									E
, 2.0		1								E
										E

Hole No. O-41 DIVISION INSTALLATION **DRILLING LOG ODMDS** OF 1 SHEETS 1. PROJECT 10. SIZE AND TYPE OF BIT 3.5 in Bogue Banks Master Beach Nourishment Plan 11. DATUM FOR ELEVATION SHOWN (TBM or MSL) 2. LOCATION (Coordinates or Station) NAVD 88 N 328,249.4 E 2,690,364.1 12. MANUFACTURER'S DESIGNATION OF DRILL 3. DRILLING AGENCY Vibracore Alpine Ocean Seismic Survey 13. TOTAL NO. OF OVERBURDEN DISTURBED UNDISTURBED SAMPLES TAKEN 4. HOLE NO. (As shown on drawing title and file number) 0-41 14. TOTAL NUMBER CORE BOXES 5. NAME OF DRILLER 15. WATER DEPTH C. Dill STARTED COMPLETED 6. DIRECTION OF HOLE 16. DATE HOLE 12/10/2011 12/10/2011 **▼** VERTICAL INCLINED DEG. FROM VERT. -45.9 17. ELEVATION TOP OF HOLE 19.4 7. Penetration, ft 84 % 18. TOTAL CORE RECOVERY FOR BORING 16.3 8. Recovery, ft 19. GEOLOGIST 84.0 9. Total Recovery, % C. Dill % CORE **BOX OR** REMARKS CLASSIFICATION OF MATERIALS **ELEVATION** DEPTH **LEGEND** RECOV-SAMPLE (Drilling time, water loss, depth (Description) **ERY** NO. weathering, etc., if significant) Gray to light brown fine to medium Sand with -45.9 0.0 100 1 shells and shell hash in layers to 1" thick 0.0 -51.9 6.0 Gray fine sand, few small shells (10-20%) 100 2 6.0 9.0 9.0 -54.9 Dark gray silty fine Sand with shells to 2 " and shell hash (40-70%) 100 3 9.0 16.2 -62.1 16.2

							<u>_</u>		J. U-42	<b>_</b>
DRILLI	NG LOG	DIVI	SION	INSTALLATION SHEET 1 ODMDS OF 1 SHEETS						
1. PROJECT		<u> </u>					0. F. :	OF T	SHEETS	4
	nke Maeter E	Sear	h Nourishment Plan		ND TYPE OF		3.5 in			-
	Coordinates or Sta		II I I I I I I I I I I I I I I I I I I	11. DATU <b>NAV</b> [		ATION SHO	WN (TBM or MSL)			
	7.0 E 2,692,		7			S DESIGNAT	TION OF DRILL			1
3. DRILLING AG	SENCY			Vibra			STALL			
	ean Seismic				NO. OF OV	ERBURDEN	DISTURBED	UNDISTUR	RBED	1
4. HOLE NO. (A file number)	s shown on drawi	ng title		SAMP	LES TAKEN		3			1
5. NAME OF DR	שוור		O-42	14. TOTAI	NUMBER C	ORE BOXES	3			
C. Dill	RILLER			15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA		MPLETED		
	AL INCLI	NED	DEG. FROM VERT.	IO. DATE	HOLL		12/10/2011	12/10/2	2011	1
7. Penetration, f			18.7	17. ELEV	ATION TOP C	OF HOLE	-52.4			1
-			13.8	18. TOTA	CORE REC	OVERY FOR	R BORING		74 %	
8. Recovery, ft				19. GEOL	OGIST		O D:II			
9. Total Recover	ry, %		74.0		% CORE	BOX OR	C. Dill	NC.		4
ELEVATION	DEPTH LEGI	END	CLASSIFICATION OF MATERIALS	3	RECOV-	SAMPLE	(Drilling time, wat	er loss, dep		
а	b	,	(Description)		ERY e	NO. f	weathering, etc.,	if significar	nt)	
-52.4	0.0		Gray medium to coarse Sand and sm	all shell	100	1	9			F
	三 三 三		fragments (40-50%)	-		0.0				E
						2.0				F
										F
-54.4	2.0	77	Dark gray silty fine Cand and shalls (2	00 400/ \;	100	2				
			Dark gray silty fine Sand and shells (2 little clay	20-40%);	100	2 2.0				Е
	_=		inde day			7.5				L
	<b></b>									F
	7.43									F
	<b>=</b>									E
										Е
	<b>=</b>									F
-59.9	7.5		D 1 (11 0 1 0)		400					Е
			Dark gray sticky Organic Silt, some fir some small shells (15-25%)	ne sand,	100	3 7.5				
	7		(10 <u>20</u> 70)			11.5				F
	_===									E
	====									E
	===									F
										E
	===	$\exists$								E
-63.9	11.5									F
-63.9 -64.4	12.0		Dark gray Organic Silt and large shell							E
-04.4	12.0	+	fragments (60-75%)	/						Ē
	<b>= 3</b> 8		Shells and shell fragments (60-80%) i	n a silty						F
	<u>-∃</u> kd8		fine sand matrix							E
-66.2	13.8									E
-00.2	13.0									
	7									F
	=									F
	_=									E
	$\exists$									E
	$\exists$									F
										F
	$\equiv$									E
	=									F
										F
										F
	$\exists$									E
1	1	- 1			l	1				

								iole No.	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA ODM				SHEET OF 1 S	1
1. PROJECT					ND TYPE OF	DIT	3.5 in	TOP I S	SHEETS
	nks Master	Beac	h Nourishment Plan				WN (TBM or MSL)		
2. LOCATION (		tation)		NAVE	88 (		FION OF DRILL		
3. DRILLING AC	GENCY			Vibra		S DESIGNAT	HON OF DRILL		
4. HOLE NO. (A	cean Seismid			13. TOTAL	NO. OF OV	ERBURDEN	DISTURBED 3	UNDISTURBE	.D
file number)			O-43	14. TOTAL	_ NUMBER C	ORE BOXES	<del> </del>		
5. NAME OF DF C. Dill	RILLER			15. WATE	R DEPTH		·		
6. DIRECTION (				16. DATE	HOLE	STA	RTED : CO 12/10/2011 :	MPLETED 12/10/201	11
	AL INC	LINED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-48.4	12/10/20	
7. Penetration, f	t		18.7		CORE REC				104 %
8. Recovery, ft			19.4	19. GEOL					
9. Total Recove	ry, %		104.0				C. Dill		
ELEVATION	DEPTH LEG	GEND	CLASSIFICATION OF MATERIALS (Description)	3	% CORE RECOV- ERY	BOX OR SAMPLE NO. f	REMAF (Drilling time, wat weathering, etc.,	er loss, depth	
a -48.4	0.0 —	C	d	المطم	е		g		
-40.4			Light gray fine to medium Sand, coars hash layers at 1.9 to 2.5 feet and at 3	se snell .1-3.5 ft.	100	0.0			E
			•			4.9			E
									F
									E
									F
									F
-53.3	4.9								F
00.0			Sharp change to dark gray silty fine sa	and, with	100	2			F
			occasional thin clay laminae			4.9 10.0			E
						10.0			E
									E
									E
									E
									<b>F</b>
									E
					100	3			E
						10.0 15.0			E
						15.0			E
									F
									E
									F
									E
									E_
									F
	<u> </u>								E
									F
	3								E
									F
									E
66.0	₁٫。 ∃								E
-66.2	17.8		Grades with large 2-3" shells (30-50%	,)					E
-67.1	18.7		5 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	•					E
		- 11 - 11 -							E
									E
1						1			⊢

								HOIE IN		
DRILLI	NG LOG	DIV	/ISION	INSTALLA				SHEET		
1. PROJECT		<u> </u>		ODMI	ND TYPE OF	DIT	2.5 in	OF 1	SHEET	8
	ınks Master E	Beac	ch Nourishment Plan				3.5 in OWN (TBM or MSL)			-
2. LOCATION (	Coordinates or Sta 2.3 E 2,696,	tion)		NAVE	88 (		TION OF DRILL			4
3. DRILLING AC		_		Vibra	core			_		
4. HOLE NO. (A	ean Seismic s shown on drawi		le and		_ NO. OF OVI LES TAKEN	ERBURDEN	DISTURBED 3	UNDISTU	RBED	
file number)	NILLED		O-44	14. TOTAL	NUMBER C	ORE BOXE	S	•		
5. NAME OF DF C. Dill	RILLER			15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	ARTED : CO 12/10/2011 :	OMPLETED 12/10/		
	AL INCLI	NED	DEG. FROM VERT.	17 FLEVA	ATION TOP C	E HOLE	-53.3	12/10/	2011	-
7. Penetration, f	t		18.6		CORE REC				77	%
8. Recovery, ft			14.3	19. GEOL						
9. Total Recove	Total Recovery, % 77.0  CLASSIFICATION OF MATERIAL				0/ 00DE	DOV OD	C. Dill	DICO		_
ELEVATION	a b c (Description) d -53.3 0.0 — Dark gray silty fine Sand; rare brown				% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMA (Drilling time, wa weathering, etc.	ater loss, de ., if significa		
-53.3				lav	100	1	<u>g</u>			╆
			lenses, less than 1/2" thick; some shel	ls		0.0				E
			(30%) in layers at 0-1.9 ft and 7-9.5 ft.			5.0				F
										F
										E
	_=:									E
										F
	_=									E
										E
					100	2				
					100	5.0				E
						9.5				
										E
										E
										E
										E
-62.8	9.5									F
	<u>-</u> ∃‰		Dark gray to gray shells and shell hash in silt matrix	า (80%)	100	3 9.5				E
						14.3				E
										E
										F
										F
										E
										<b>F</b>
										F
-67.6	14.3									E
										E
										F
										E
	$\exists$									E
	_=									F
										F
									E	
										F
										E

									HOIC		<u> </u>	<u> </u>	<u> </u>
DRILLI	NG LOG	[	OIVI	ISION	INSTALLA					EET		1	
1. PROJECT					ODM		DIT	2 E in	OF	1	SH	EETS	ł
	nks Maste	er Re	ac	h Nourishment Plan		AND TYPE OF		3.5 in WN (TBM or MSL)					-
2. LOCATION (0 N 326,254	Coordinates or	Statio	n)		NAVE	88 0		TION OF DRILL					
3. DRILLING AG	ENCY				Vibra		PEOIGINAI	HON OF DIVILL					
Alpine Oc 4. HOLE NO. (A					13. TOTA		ERBURDEN	DISTURBED 3	UNDI	STU	RBED	,	
file number)				O-45	14. TOTA	L NUMBER C	ORE BOXES		•				1
5. NAME OF DR C. Dill	RILLER				15. WATE	R DEPTH	•						
6. DIRECTION (					16. DATE	HOLE	STA	RTED : C 12/9/2011 :	OMPLE	TED	2011		
	L [] IN	NCLINE	ED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-54.2	- '-	., 0, 2			l
7. Penetration, f	t			19.0		L CORE REC					1(	00 %	1
8. Recovery, ft				19.0	19. GEOL								1
9. Total Recover	. Total Recovery, % 100.0							C. Dill					1
ELEVATION	DEPTH L	LEGEN	ID	CLASSIFICATION OF MATERIALS (Description) d	3	% CORE RECOV- ERY	BOX OR SAMPLE NO. f	REMA (Drilling time, wa weathering, etc	ater los ., if sigi				
-54.2	0.0	c		Dark gray silty fine Sand, some shells	and	e 100	0.0	g					┢╴
	3			shell hash (30-40%)			3.0						
													F
-56.2	2.0												E
00.2	2.0		샜	Dark gray sticky Organic Silt									E
-57.2	3.0		$\mathcal{M}$										E
0			$\cap$	Dark gray to brown silty fine Sand with	n Dark	1000	3.0						E
	===			gray Člay lenses; pieces of wood (old 3.6 feet and 6.5 ft	roots) at		6.7						E
				3.0 leet and 0.5 it									E
	⇒.												E
	3												
	∃.												E
													E
-60.9	6.7		11	Gray dense shells and shell hash, little	e sandy	100	6.7						F
	<u> </u>			silt in matrix; 4 inch thick layer of Clay	at	100	10.0						E
	₹:			10.5-11 ft									F
	==:												E
	_=												
	⇒.												
	⇒:												E
	_=_:												
	_=;												E
													E
	⇒.:												E
	⇒::												F
	_=												E
	⇒.												E
													E
	= = :												E
	_=												E
	3												E
	_==::												E
												E	
-73.2 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.0 = 19.												E	
	$\equiv$		T										E
	$\exists$												E

								<u> 1018 110.</u>	<u>U-40</u>
DRILLING LOG DIVISION				INSTALLA ODMI				SHEET	1
1. PROJECT							0.5.	OF 1	SHEETS
	nks Maci	ter Rese	ch Nourishment Plan		ND TYPE OF		3.5 in		
2. LOCATION (C			on roundiment han	11. DATUI NAVE	VI FOR ELEV. ) 88	ATION SHO	OWN (TBM or MSL)		
N 326,253	3.0 E 2,6		.4			S DESIGNA	TION OF DRILL		
3. DRILLING AG		mic S		Vibra	core				
Alpine Oc			le and		. NO. OF OVI LES TAKEN	ERBURDEN	DISTURBED 3	UNDISTURB	BED
file number)			O-46	14. TOTAL	NUMBER C	ORE BOXE	S		
5. NAME OF DR C. DIII				15. WATE	R DEPTH	:	ADTED	MDI ETE-	
6. DIRECTION C				16. DATE	HOLE	STA	ARTED COI 12/9/2011	MPLETED 12/9/20	₁₁
		INCLINED	DEG. FROM VERT.	17. ELEVA	TION TOP C	F HOLE	-47.3	12/3/20	
7. Penetration, ft	:		19.4	18. TOTAL	CORE REC	OVERY FOR			78 %
8. Recovery, ft			15.2	19. GEOL					
9. Total Recover	y, %		78.0			DOV CT	C. Dill	2140	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMAR (Drilling time, wat		h
	b	C	(Description)		ERY	NO. f	weathering, etc.,		
-47.3	0.0		Light brown medium to coarse Sand a	and shell	100	1	g		
	=======================================		fragments (30-50%)	011011		0.0			F
			1			4.5			E
	$\exists$								E
	_=		1						E
	= = = = = = = = = = = = = = = = = = =								F
	_ =								F
	===		1						E
	$\exists$		1						E
[ [	, <u>-</u>								⊨
-51.8	4.5		Dark gray fine Sand and some shells		100	2	1		F
			(30-40%)		100	4.5			E
	⇉		, in the second			7.8			E
	_=:								E
	⇉		1						F
	⇒:								E
	─;								F
-55.1	7.8	· · · · · · · · · · · · · · · · · · ·							F
	$\exists$		Dark gray soft Organic Silt, rare small	shell	100	3			E
	#		fragments			7.8 11.0			F
			+			11.0			F
	7		]						E
			-						
	#		+						F
-58.3	11.0		]						F
			Dark gray silty fine Sand and fine she	ll hash			1		E
	3:		(40-60%); some shell fragments to 3/4	4"					E
									F
	===								F
									E
	∃:								E
	_=								E
	===								F
00.5	15 A =								F
-62.5	15.2								E
	Ⅎ								F
									F
	コ								F
	$\exists$								E
	크								E
	$\exists$								F
									F
	$\exists$								E
	$\exists$								E

DIVISION				I IN IOTAL LA	TION			LOUE IN		<del>"</del>
DRILLING LOG				INSTALLA ODM				SHEET OF 1	•	те
1. PROJECT				_	AND TYPE OI	- DIT	3.5 in	OF I	SHEE	15
	ınks Mast	er Bea	ach Nourishment Plan				WN (TBM or MSL)			-
2. LOCATION (0 N 326,253	Coordinates o	or Station	)	NAVE	88 0		FION OF DRILL			
3. DRILLING AG		, , , , ,		Vibra		O DEGICITY (	HON OF BINEE			
Alpine Oc				13. TOTA	L NO. OF OV	ERBURDEN		UNDISTU	IRBED	
4. HOLE NO. (A file number)	is shown on o	drawing t	title and O-47		LES TAKEN  L NUMBER C	ORE BOXES	3			_
5. NAME OF DE	RILLER		•		R DEPTH	ONE BOXE	<u> </u>			-
C. Dill	25 1101 5					STA	ARTED : CO	MPLETED	)	-
6. DIRECTION (		INCLINE	D DEG. FROM VERT.	16. DATE			12/9/2011	12/9/		
7. Penetration, f	t		20.0		ATION TOP C		-47.4			_
8. Recovery, ft			18.0		L CORE REC	OVERY FOR	R BORING		90	%
9. Total Recover	rv. %		90.0	19. GEOL	OGIST		C. Dill			
			CLASSIFICATION OF MATERIAL	S	% CORE	BOX OR	REMAR			$\dashv$
ELEVATION a	DEPTH b	LEGENE c	(Description)		RECOV- ERY e	SAMPLE NO. f	(Drilling time, wat weathering, etc., g			
-47.4	0.0		Light brown-gray fine to medium San	d with	100	1	9			ᆍ
	∃:		shell fragments (30-50%) in layers at and 3.5-4.2 ft	0-1.8 ft		0.0				E
			and 3.5-4.2 π			4.3				F
	∃;									E
	<b>─</b> ─ <b></b>		葛							<b> </b>
	] = 3		시 원							E
	<u> </u>									
			심							F
-51.7	4.3									E
9.11	=:		Gray fine to medium Sand with shelly	layers	100	2				F
	_=:		(50%) between 7 and 7.7 ft			4.3 10.5				<b> </b>
	∃:					10.5				E
										F
	∃:									E
			회 : : : : : : : : : : : : : : : : : : :							E
	∃:									E
			)							E
	_ <u>≕</u>		빏							
	≒:									F
	_∃:		퉑							E
-57.9	10.5									F
			Dark gray stickly Organic Silt, rare (5	%) small	100	3				E
	===		shells			10.5 13.6				
	1 7:									F
	<u> </u>		<u>-</u>							E
	=									F
-61.0	13.6	==	-[]							E
-01.0	13.0	ΔΔΔ	$\stackrel{-}{ riangle}$ Dark gray silty shell hash, mostly less	s than						F
	<u> </u>	ΔΔΔ	4 1/4" size (60-80%)							E
	$\exists$									E
										E
		$\triangle$ $\triangle$ $\triangle$	Δ							
										F
										F
-65.4	18.0		+							
										E
	-=									F
	=									E
					1	1				<b>—</b>

								HOIE NO	<u>). U-48</u>
DRILLI	VISION	INSTALLA ODM				SHEET OF 1	1 SHEETS		
1. PROJECT		ļ			AND TYPE OF	F BIT	3.5 in	01 1	SHLLIS
			ch Nourishment Plan				WN (TBM or MSL)		
2. LOCATION (C				NAVE					
N 326,256		088,36	3.4	12. MANU Vibra		S DESIGNAT	TION OF DRILL		
Alpine Oc		mic Su	rvey			ERBURDEN	: DISTURBED	UNDISTUR	BED
4. HOLE NO. (A			tle and		LES TAKEN		3	:	
file number) 5. NAME OF DR	WI LED		O-48	14. TOTA	L NUMBER C	ORE BOXES	S	•	
C. Dill	KILLER			15. WATE	R DEPTH				
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	ARTED C 12/9/2011	OMPLETED 12/9/2	011
	AL	INCLINED	DEG. FROM VERT.	17 FLF\//	ATION TOP C	:	-46.6	12/9/2	011
7. Penetration, fl	t		20.0						44 %
8. Recovery, ft			8.9	19. GEOL	L CORE REC	OVERT FOR	REDRING		44 %
9. Total Recover	ry, %		44.0	10. 0202	00101		C. Dill		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMA (Drilling time, w		oth
			(Description)		ERY	NO.	weathering, etc	., if significan	nt)
-46.6	0.0 —	<u>C</u>	d : Gray fine to medium Sand		e 100	f 1	9	)	
	=		oray into to modium cana		100	0.0			F
	-=					5.0			E
									F
	=								E
									E
	=								E
									E
									E
	$\exists$								E
					109	_			F
	$\exists$				109	2 5.0			E
			:			7.9			E
	$\exists$								E
	_=								E
	_ = =								E
-54.5	7.9		Dark gray silty fine Sand and shells to	. 3"	100	3			E
	∃		diameter (40-60%)	, 5	100	7.9			E
-55.5	8.9		:			8.9			E
									E
	$\equiv$								E
	=								E
	=								F
	$\equiv$								E
	$\exists$								E
	$\exists$								F
	=								E
	$\equiv$								F
									E
	$\exists$								E
									E
	$\exists$								F
	_ =								F
									E
	=								F
	$\equiv$								E
	$\exists$								F
	$\equiv$								E
	$\exists$								E

								HOIE N	<u> </u>	<u>9</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA ODM				SHEET OF 1	1 SHEETS	s
1. PROJECT					AND TYPE OF	BIT	3.5 in	1		Ť
			h Nourishment Plan				WN (TBM or MSL)			1
	Coordinates or Star		2	NAV						_
3. DRILLING AG	0.7 E 2,690,	JO 1.	.2	12. MANU Vibra		S DESIGNAT	TION OF DRILL			
	ean Seismic	Sur	vey			ERBURDEN	DISTURBED	UNDISTU	RBED	-
4. HOLE NO. (A	s shown on drawi		e and		LES TAKEN		5	:		
file number)			O-49	14. TOTA	L NUMBER C	ORE BOXES	3			
5. NAME OF DR C. Dill	RILLER			15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA		OMPLETED		
	AL INCLI	NED	DEG. FROM VERT.				12/9/2011	12/9/2	:011	4
7. Penetration, f	t		16.3		ATION TOP C		-54.1		101 -	_
8. Recovery, ft			16.5		L CORE REC	OVERY FOR	R BORING		101 %	%
9. Total Recover	rv. %		101.0	19. GEOL	OGIST		C. Dill			
	-		CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	REMA			1
ELEVATION	DEPTH LEGE	=ND	(Description)		RECOV- ERY	SAMPLE NO.	(Drilling time, wa weathering, etc	ater Ioss, de ., if significa	pth nt)	
a -54.1	0.0 —	: :31:31:3	d	-111	e	f	g			+
-54.1			Dark gray fine Sand, some shells and fragments (25-40%)	snell	100	1 0.0				E
	_#\					2.5				<b>F</b>
	334									E
	-#:4									
-56.6	2.5		Dayle avantable Companie Cilé agus fir		100	2				E
		$\subseteq$	Dark gray sticky Organic Silt, some fir and shells (20-30%)	ie sand	100	2 2.5				
		<del>/</del>	( )			4.0				E
-58.1	4.0	<del>-</del>	Doub supply fine to modify the County of the	atialo.	100	2				
			Dark gray fine to medium Sand, some clay layers and shells (20-30%)	Sticky	100	3 4.0				E
	_###					9.0				
	334									E
	_#:4									<b>F</b>
	3.3									E
	_==									$\vdash$
										Е
										E
-63.1	9.0		Dark gray fine to medium Sand, few s	halla	100	4				
	<u> </u>		(10-20%)	rieiis	100	9.0				E
	<u>-∃</u> 88		,			11.0				E
	크송원									E
-65.1	11.0		Light gray shell hash (60-80%), some	shalls to	100	5				
	<b>= 4</b> %		3 inches, some silt	SHEIIS IO	100	11.0				F
						16.5				
	<b>= 1</b> 10.									F
	-344									
	###									F
	<u>-∃%</u> (%)									
	<b>- 48</b>									F
	<b>#</b>									F
70.0	<b>16 F</b> →									F
-70.6	16.5	.er.(1)								E
	$\overline{}$									F
	$\exists$									F
	$\exists$									E
	$\exists$									E
	$\dashv$									F
	$\exists$									E

						iole ivo	). U-3t	4		
DRILLING LOG DIVISION				INSTALLA ODMI				SHEET OF 1	1 SHEETS	
1. PROJECT						DIT '	3.5 in	UF I	SHEETS	1
	ınks Master B	eac	h Nourishment Plan		ND TYPE OF		3.5 IN WN <i>(TBM or MSL)</i>			1
2. LOCATION (0	Coordinates or Stat	ion)		NAVE	88 (					1
N 326,252 3. DRILLING AG	2.1 E 2,692,3 SENCY	363.	8	12. MANU Vibra		S DESIGNAT	TION OF DRILL			1
Alpine Oc	ean Seismic			13. TOTAL	NO. OF OV	ERBURDEN	DISTURBED	UNDISTUR	BED	1
4. HOLE NO. (A file number)	s shown on drawir	ng title	e and O-50	SAMP	LES TAKEN		4			1
5. NAME OF DE	RILLER		U-JU		NUMBER C	ORE BOXES	8			-
C. Dill				15. WATE	R DEPTH	. STA	RTED : CO	MPLETED		4
6. DIRECTION (		NED	DEG. FROM VERT.	16. DATE	HOLE	317	12/9/2011	12/9/2	011	
7. Penetration, f	<u> </u>	NLD	19.3	17. ELEVA	TION TOP C	F HOLE	-55.9			
8. Recovery, ft	· ·		19.8		CORE REC	OVERY FOR	R BORING		102 %	1
9. Total Recover	rv. %		102.0	19. GEOL	OGIST		C. Dill			
		- NID	CLASSIFICATION OF MATERIALS	3	% CORE	BOX OR	REMAR		-41-	1
ELEVATION	DEPTH LEGE		(Description)		RECOV- ERY	SAMPLE NO.	(Drilling time, wat weathering, etc.,	er loss, dep if significan	oth nt)	
-55.9	b c		Dark gray fine Sand, some shell fragn	nents	e 100	f 1	g			┢
			(20-30%), some sticky clay lenses			0.0 2.0				E
						2.0				E
-57.9	2.0									E
			Dark gray silty fine to medium Sand, s sticky silt layers, some shells (20-30%	some	100	2 2.0				
			Sticky Siit layers, Some Shells (20-30 /	9)		7.1				E
										E
										F-
										F
										E
										F
00.0										E
-63.0	7.1		Dark gray fine sand, few shell fragmer	nts	100	3				E
			(10-20%)			7.1 9.7				F
						9.7				E
										E
-65.6	9.7									E
55.5		<del>- i</del>	Dark gray sticky clay, some shell frag	ments	100	4				E-
-66.5	10.6	<u> </u>	(20-30%)	-		9.7 10.6				E
			Gray coarse shell hash, some silt and sand	fine						E
										E
	- <del></del>									F
										E
										E
		7								E
	<del>-</del>	7-1								F
		<u></u>								E
	<u> </u>	<u>6</u>								E
										<u> </u>
	7.	٦								E
		7								F
	<u> </u>	<u>,</u>								E
										F
	1-G	7-1								E
-75.2	19.3	7								E
										F

Div #01011								I IOIE II	<u> </u>	<u>-J I</u>
DRILLI	RILLING LOG DIVISION			INSTALLA				SHEET	1	
1. PROJECT				ODMI		E DIT	3 5 in	OF 1	SHEE	-18
	ınks Master E	eac	ch Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)			$\dashv$
2. LOCATION (	Coordinates or State 2.9 E 2,694,	ion)		NAVE	88 (		TION OF DRILL			_
3. DRILLING AC		C		Vibra	core					
	ean Seismic s shown on drawii		le and		NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTU	RBED	
5. NAME OF DF	DILLED		O-51	14. TOTAL	NUMBER C	ORE BOXE	S			
C. Dill	KILLER			15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	ARTED 12/9/2011	COMPLETED 12/9/2		
∨ERTICA	AL INCLI	NED	DEG. FROM VERT.	17 FLEV/	ATION TOP C	E HOLE	-52.7		2011	_
7. Penetration, f	t		19.3		CORE REC				90	) %
8. Recovery, ft			17.3	19. GEOL		OVERTION	( BOI (III C		- 30	70
9. Total Recover	ry, %		90.0				C. Dill			
ELEVATION a	DEPTH LEGE		CLASSIFICATION OF MATERIALS (Description) d		% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	(Drilling time,	MARKS water loss, de etc., if significa g		
-52.7	0.0		Dark gray silty fine Sand, some fine sh fragments (20-30%)	iells	100	1 0.0 1.5		3		Ē
-54.2	1.5		Dark gray Organic Silt, little fine sand,	few	100	2				E
		=	shell fragments (10-20%)	ICW	100	1.5				F
	<u> </u>					3.5				E
-56.2	3.5									F
-30.2	3.5		Dark gray fine Sand, trace silt, trace sl	nell	100	3				E
			fragments (5-10%)			3.5 9.6				E
						9.0				E
										E
										F
										E
										E
										F
										E
										E
										E
-62.3	9.6				400	4				F
			Dark gray to light gray coarse Shells a hash to 2" in size, little silt in matrix	na sneli	100	9.6				F
						17.3				F
										F
										E
										F
										F
										E
										E
										E
										E
										F
										E
										E
-70.0	17.3									F
7 0.0		.1								E
										E
										F
										F
										E

DIVISION				TION			IOIE IN		<del>-34</del>	
DRILLI	DRILLING LOG			INSTALLA				SHEET OF 1	1	гто
1. PROJECT					AND TYPE OF	E DIT	3.5 in	OF 1	SHE	_13
	nks Master B	eac	h Nourishment Plan				3.5 IN WN (TBM or MSL)			$\dashv$
2. LOCATION (0	Coordinates or Stat 1.6 E 2,696,	tion)		NAVE	88 0		FION OF DRILL			_
3. DRILLING AG	SENCY			Vibra		S BLOIGIW (	HOW OF BINEE			
	ean Seismic			13. TOTAI SAMP	L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTU	RBED	
file number)			O-52	14. TOTAI	L NUMBER C	ORE BOXES	_i			$\neg$
5. NAME OF DR C. Dill	RILLER			15. WATE						
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA		MPLETED		
	AL INCLI	NED	DEG. FROM VERT.	17 FLEV	ATION TOP C	E HOLF	12/9/2011 -54.7	12/9/2	2011	$\dashv$
7. Penetration, f	t		19.2		L CORE REC				9:	3 %
8. Recovery, ft			18.3	19. GEOL						
9. Total Recover	ry, %		93.0				C. Dill			
ELEVATION	DEPTH LEGE		CLASSIFICATION OF MATERIALS (Description) d	3	% CORE RECOV- ERY	BOX OR SAMPLE NO. f	REMAI (Drilling time, wa weathering, etc.,	ter loss, de		
-54.7	0.0 — c		Gray fine Sand with brown-gray clay le	enses	e 100	1	g			
			1/4"-3/8" thick			0.0				E
						3.0				
	3.4									E
										F
-57.7	3.0									F
			Dark gray sandy sticky Silt to silty fine	Sand,	100	2				E
	= :::::::::::::::::::::::::::::::::::::		few small shell fragments (10-15%)			3.0 7.0				F
						7.0				E
	4.4									F
										E
	<b>- 183</b>									F
										E
-61.7	7.0									F
			Dark gray fine to medium Sand and S	ilt, some	100	3				E
	_300		shells and shell fragments (20-30%)			7.0 13.0				E
	484									F
										E
	크용화									F
	_=\$									E
										F
	_3%									E
										E
	_=									⊨
	田鉄道									E
-67.7	13.0		O	114 · C · · ·	400	4				
			Gray shell hash (70-90%) and some sand	siity fine	100	4 13.0				E
						17.9				<b>F</b>
										E
										E
	$\exists \triangle \angle$	Δ								F
										F
										F
		Δ								E
-72.6	17.9									F
-72.0	18.3	 	Sections of light gray cemented calca	reous						F
	3		∖sand							E
	$\overline{}$									F
	$\exists$									E

	LDIVICIONI						П	ole No. U-53	
DRILLING LOG DIVISION				INSTALLA ODM				SHEET 1 OF 1 SHEETS	
1. PROJECT						E DIT	3.5 in	OI I SHEETS	
	nks Master	Beac	h Nourishment Plan		ND TYPE OF		3.5 IN WN (TBM or MSL)		
2. LOCATION (C		Station)		NAVE	88 (		FION OF DRILL		
3. DRILLING AG	SENCY			Vibra		O DEGIGIA/ (	TION OF BRIDE		
4. HOLE NO. (A	ean Seismi s shown on dra		e and		NO. OF OV LES TAKEN	ERBURDEN	DISTURBED L	JNDISTURBED	
file number)	W. L. E.D.		O-53	14. TOTAL	NUMBER C	ORE BOXES	S		
5. NAME OF DR C. Dill				15. WATE	R DEPTH	. QT/	ARTED : CON	MPLETED	
6. DIRECTION (  VERTICA		CLINED	DEC EDOMVEDT	16. DATE	HOLE	317	12/9/2011	12/9/2011	
		LINED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-55.1		
7. Penetration, f	t		19.1 17.3		CORE REC	OVERY FOR	R BORING	95 %	
9. Total Recover	n/ %		95.0	19. GEOL	OGIST		C. Dill		
			CLASSIFICATION OF MATERIALS	<u>                                       </u>	% CORE	BOX OR	REMARI		
ELEVATION a	DEPTH LE	GEND c	(Description)	,	RECOV- ERY e	SAMPLE NO. f	(Drilling time, wate weathering, etc., i g		
-55.4	0.3	<u> </u>	Dark brown silty fine Sand, few shell	Г	100	1	9		=
	===		fragments (10-15%)		100	0.0 0.3		F	=
			Dark brown Organic Silt, trace fine sa shell fragments (5%)	nd, trace		2		E	=
	===		(2,12)			0.3		<b> </b>	_
	<u> </u>					3.7		E	=
	丰							F	=
50.0	, <del>-</del>							F	Ξ
-58.8	3.7		Dark gray silty shell hash (60-80%), s	ome fine	100	3		E	=
			to medium Sand		100	3.7		E	=
	_=					12.0		E	=
									=
								E	=
	# #							<b> </b>	_
	_3							E	=_
	<b>=</b> :::							<b> </b>	=
	_33							E	=_
	# # # # # # # # # # # # # # # # # # # #							<b> </b>	=
	_3.0							E	=_
	= 3 %								_
	_=:							E	=
									=
	7.3							F	=
	33							F	Ξ
-67.1	12.0							F	=
		યું. <b>.</b>	Light gray silty coarse shells (60-80%	and	100	4		F	=
	<b>≓</b>		some fine to medium Sand			12.0 16.3		F	_
						10.0		E	Ξ
								F	_
								E	Ξ
								F	=
		، ، ، في نخب ب						E	=
	_ું.;							<b>F</b>	_
-71.4	16.3	()	Crev hasken coments deslare					E	=
	∃∷:		Gray broken cemented calcareous sa pieces and shell fragments, little fine t	nastone :o				E	_
-72.4	17.3	: : : : : :	medium sand					E	=
	$\exists$							F	_
	$\exists$							E	=
	$\exists$							F	_
								E	=
	$\exists$								_

L DIV #GOOM								110	DIE 14	<u> </u>	<u> </u>		
DRILLI	RILLING LOG DIVISION				INSTALLA					SHEET		-	
1. PROJECT					ODM		- DIT	0. F. i.e.		OF 1	SHI	EETS	ł
	nks Mast	ter Bea	ach Nourishment Pla	n		AND TYPE OF		3.5 in WN (TBM or MSL)	1				ł
2. LOCATION (0 N 324,250	Coordinates of	or Station	1)		NAVE	88 C		TION OF DRILL					
3. DRILLING AG	ENCY	-			Vibra		5 DE010147 (	TION OF BINEE					
Alpine Oc 4. HOLE NO. (A						L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 2	UI	NDISTU	RBED		
file number)				-54	14. TOTA	L NUMBER C	ORE BOXE		<del>-</del>				1
5. NAME OF DR C. Dill	RILLER				15. WATE	R DEPTH							
6. DIRECTION (					16. DATE	HOLE	STA	ARTED 12/9/2011		PLETED 12/9/2			
		INCLINE		EG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-55		12/0/2			
7. Penetration, f	t			18.6	18. TOTA	L CORE REC	OVERY FOR	R BORING			10	)4 %	1
8. Recovery, ft				19.0	19. GEOL	OGIST		0. 0.11			-		1
9. Total Recover	у, %			04.0		% CORE	BOX OR	C. Dill	REMARK	<u> </u>			ł
ELEVATION	DEPTH	LEGENI	)	ON OF MATERIALS scription)	S	RECOV- ERY	SAMPLE NO.		ime, water ng, etc., if	loss, de			
a -55.1	0.0	c	Dark brown-gray Org		Ity fine	e 100	f 1		g				⊨
	=		sand laminae; no she	lls			0.0						E
	一寸		<u>-</u>   -				8.5						
	=												E
			<u>-</u>										F
	7												F
	극	==	-]										E
	=		 										F
	-		-]										E
	#												E
			_]										E
	=		<u>-</u>										E
			_										E-
	<u></u>		-]										Е
	=		 										Ė.
	<b>-</b>	===	-]										E
			 										Ė.
-63.6	8.5			700()	r. ,	400							E
	_=		Loose gray shells (50 medium Sand; few pi	-70%) and silty teces of rock to 2	rine to 2x3"	100	2 8.5						<b>–</b>
	$\exists$	$\triangle$ $\triangle$	$\triangle$		-/.0		12.7						E
													E.
	$\equiv$												E
	=												E
	=	$\triangle \triangle \triangle$	7										F
	=	$\triangle \triangle$											E
-67.8	12.7												F
07.0	-1 <u>2.</u> ;		Stiff dark gray silt with	weatherd shell	s								E
													F
	=		¥										E_
	=₹												E
-70.0	14.9		<u> </u>										E
	======================================		Dark green silty medi fine gravel; no shells	um to coarse Sa	and, rare								E
	_=:		in a grave, ne eneme										E
	======================================												E
	⇉												E
	===		問										E
	_ =												E
-73.7	18.6												E
10.1	- 10.0	er a terffelte	h										E
	日												E
	Ⅎ												E

Luivieloni							<u>_</u>		). U-55	<u>'</u>
DRILLING LOG DIVISION				INSTALLA				SHEET	1	
1. PROJECT				_		- DIT	2 E in	OF 1	SHEETS	1
	inks Mast	ter Re	ach Nourishment Plan		AND TYPE O		3.5 in WN (TBM or MSL)			1
2. LOCATION (				NAVE		ATION SHO	WN (IBM or MSL)			
N 324,249						S DESIGNAT	TION OF DRILL			1
3. DRILLING AG	SENCY			Vibra			STALL			1
Alpine Oc					L NO. OF OV	ERBURDEN	DISTURBED	UNDISTUR	RBED	1
4. HOLE NO. (A file number)	s shown on	drawing		SAMP	LES TAKEN		4			
5. NAME OF DR	DILLED		O-55	14. TOTA	L NUMBER C	ORE BOXES	3			
C. Dill	KILLER			15. WATE	R DEPTH					1
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA		MPLETED		1
	AL	INCLINE	DEG. FROM VERT				12/9/2011	12/9/2	011	1
7. Penetration, f	<del>'</del>		18.3	17. ELEV	ATION TOP (	OF HOLE	-55.2			1
			19.2		L CORE REC	OVERY FOR	R BORING		104 %	
8. Recovery, ft	0/			19. GEOL	OGIST		O D:II			
9. Total Recover	ry, %		104.0		% CORE	BOX OR	C. Dill	NC .		-
ELEVATION	DEPTH	LEGENI	CLASSIFICATION OF MATERIAL	-S	RECOV-	SAMPLE	(Drilling time, wat	er loss, dep		
а	b	С	(Description)		ERY e	NO. f	weathering, etc.,	if significar	nt)	ı
-55.2	0.0		Gray fine to medium Sand, few small	l shells	100	1	9			F
-56.2	1.0		and shell fragments (10-15%)			0.0				E
-50.2	1.0		☐ Dark gray Organic Silt, few small she	ااد	100	1.0				
	=		Tragments (10-15%)	<b>2</b> 11	100	2 1.0				F
	│ <del>-</del>					4.0				F
	]									Е
										E_
	쿠		_]							F
-59.2	4.0									E
	$\exists$		Dark gray silty fine Sand and shells (	(30-50%)	100	3				
	│		<u></u>			4.0 10.3				E
			똷			10.5				F
	∃:		[2]							Е
			쑀							F
	‡		湯							F
	∃		쇄							E
	_==		<del>以</del>							<u> </u>
	=		숽							E
	<u> </u>		紨							E
	│									E
			씱							F
-65.5	10.3	• • • • •	· · · · · · · · · · · · · · · · · · ·		100					E
			Gray coarse Shells and shell hash w	ith white	100	4 10.3				E
			idycis of sitty fine sand			14.5				F
										E
	=									E
			ैंदै							F
		٩								Е
										<u> </u>
-69.7	14.5 📑	8.00.8								F
	_=	::::::	Gray broken pieces of cemented cal sandstone	careous						
			Sandstone							E
										F
										E
-72.2	17.0		::							E
-12.2	17.0		Dark green dense fine to coarse san	d, some	†					F
	=====================================		silt, trace fine gravel; no shells	.,						F
-73.5	18.3		<u>                                     </u>							E
, 5.5		23.34.515			1					E
	_=									E
	=									E
I					1					L

							<u>). U-56</u>			
DRILLI	NG LOG	DIV	ISION	INSTALLA ODM				SHEET OF 1	1 SHEETS	
1. PROJECT					AND TYPE OF	- DIT	3.5 in	OF I	SHEETS	
	nks Master B	eac	h Nourishment Plan				WN (TBM or MSL)			
2. LOCATION (	Coordinates or Stat 3.0 E 2,688,	ion)		NAVE	88 C		FION OF DRILL			
3. DRILLING AG	SENCY			Vibra		S DESIGNA	HON OF DRILL			
	ean Seismic s shown on drawii			13. TOTA SAMP	L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTUR	BED	
file number)			O-56	14. TOTA	L NUMBER C	ORE BOXES	-ii			
5. NAME OF DE C. Dill	RILLER			15. WATE	R DEPTH					
6. DIRECTION (				16. DATE	HOLE	STA	ARTED COI 12/9/2011	MPLETED 12/9/20	011	
	AL INCLI	NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-57.7	12/0/2		
7. Penetration, f	t		18.5	18. TOTA	L CORE REC	OVERY FOR			91 %	
8. Recovery, ft			16.9	19. GEOL	OGIST		O D:II			
9. Total Recover	'y, % 		91.0		% CORE	BOX OR	C. Dill	RKS		
ELEVATION	DEPTH LEGE		CLASSIFICATION OF MATERIALS (Description)		RECOV- ERY	SAMPLE NO. f	(Drilling time, wate weathering, etc.,	er loss, dep	oth ot)	
a -57.7 -58.3	0.0 0.6	X.33	d Gray to brown fine to medium Sand, s	some	100	1	g			_
-58.3	0.6		small shell fragments (10-25%)	onia Cilt	100	0.0 0.6			F	_
	===	=	Grades to dark brown-gray sandy Org	anic Siit		2				_
						0.6 3.9				-
	<u> </u>	-=-				0.0			E	_
										_
04.0	3.9	-=								_
-61.6	3.9		Dark gray silty fine to medium Sand, s	some	100	3				_
			shells and shell hash (15-25%)			3.9 12.0			F	=
						12.0			F	_
	3.4									_
										_
	434								E	_
										_
	_=\B									_
	$\exists : \exists$								E	_
										_
	크용화									_
										_
									E	-
									F	_
-69.7	12.0									=
55.7			Gray shells and shell hash, loose (60-	-80%);	102	4			E	
			some silt and fine to medium Sand			12.0 16.8			F	_
		0							F	_
										_
										_
		<b>D</b> 5								_
									F	_
									E	
-74.5	16.8								E	_
									F	_
	$\exists$								F	_
	$\exists$								E	=
									E	_
	$\exists$								F	_
	7									_

								HOLE		<u>. O</u>	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA ODMI				SHE		1	
1. PROJECT						DIT	2 E in	OF	1	SHEE	:18
	nks Master	Beac	h Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)				$\dashv$
2. LOCATION (0	Coordinates or S 0.4 E 2,69	Station)		NAVE	88 (		TION OF DRILL				_
3. DRILLING AG	SENCY	-		Vibra		DEGIGINA	HON OF DIVILL				
	ean Seismi			13. TOTAL	NO. OF OV	ERBURDEN	DISTURBED	UNDIS	TURE	BED	
4. HOLE NO. (A file number)	s shown on dra	wing title	e and : : O-57		LES TAKEN _ NUMBER C	ORE BOXES	<u> </u>				
5. NAME OF DE	RILLER			15. WATE		ONE BOXE					-
C. Dill 6. DIRECTION (	DE HOLE					STA	ARTED	COMPLET	ED		-
VERTICA		CLINED	DEG. FROM VERT.	16. DATE			12/12/2011	12/1	2/2	011	
7. Penetration, f	t		18.0		ATION TOP C		-54.7			100	0/
8. Recovery, ft			18.0	19. GEOL	CORE REC	OVERY FOR	RBURING			100	%
9. Total Recover	ry, %		100.0	19. GLOL	OGIST		C. Dill				
ELEVATION	DEPTH LE	GEND	CLASSIFICATION OF MATERIALS (Description)	8	% CORE RECOV- ERY	BOX OR SAMPLE NO.	RE (Drilling time, weathering,				
а	b	С	d		е	f	weathering,	g g	ICarit		
-54.7 -55.6	0.0		Dark gray fine to medium Sand, some and shell fragments (20-30%)	shells	100	1 0.0					F
-55.0	0.9		Dark gray Organic Silt, rare shell fragi	ments	100	0.9					E
	#=		(5%) and little fine sand			2 0.9					F
		==				3.0					F
-57.7	3.0	===									E
-51.1	3.0		Dark gray fine to medium Sand, some	shells	100	3					F
			and shell fragments (20-30%)			3.0 9.0					E
						9.0					E
	333										E
	一一										E
	<b>∃</b>										E
	$\exists$										E
	33										E
											E
	48										F
											F
-63.7	9.0										E
	#		Dark gray fine to medium sand and la shells and shell fragments, with lense	yers of	100	4 9.0					F
	_3.0		sticky clay; grades to light gray 13-14	feet		14.0					E
											E
											E
	3.3										E
											F
	3.3										E
	_=										F
	3.3										E
-68.7	14.0		At 14 feet - sharp change to dark gree	n dense							E
	48		Silt, rare white laminae - appear to be	highly							F
			weathered shell fragments								E
											E
											⊨
	3.3										E
											F
-72.7	18.0										E
-14.1	10.0	r t. Feete									E
	∃										E
	$\exists$										E
	$\exists$										E

								HOIE N	0. U-50	<u> </u>
DRILLI	NG LOG	DIVISI	ON	INSTALLA ODMI				SHEET OF 1	1 SHEETS	
1. PROJECT					ND TYPE OF	- BIT	3.5 in	101 1	OI ILL I C	1
Bogue Ba			Nourishment Plan				WN (TBM or MSL)			┨
	Coordinates or Stat			NAVE	88 (					
3. DRILLING AG	8.9  E  2,692,3	303.7		12. MANU Vibra		S DESIGNAT	TION OF DRILL			
	ean Seismic	Surve	ey			ERBURDEN	DISTURBED	UNDISTU	RBED	1
	s shown on drawir		and	SAMP	LES TAKEN		2			
5. NAME OF DR	DILLED		O-58	14. TOTAI	NUMBER C	ORE BOXES	3			
C. Dill	KILLER			15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	RTED : C 12/9/2011 :	OMPLETED 12/9/2	0011	
	AL INCLI	NED	DEG. FROM VERT.	17 ELEV//	ATION TOP C	: E HOLE	-55.7	12/9/2	2011	┨
7. Penetration, f	t		10.9		CORE REC				89 %	1
8. Recovery, ft			9.7	19. GEOL		OVERTION	COCING		09 /	<u>'</u>
9. Total Recover	ry, %		89.0	.0. 0202			C. Dill			
ELEVATION	DEPTH LEGE	-ND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REM. (Drilling time, w	ARKS vater loss, de	nth	1
			(Description) d		ERY	NO. f	weathering, etc	c., if significa	nt)	
-55.7	0.0 - C		Dark gray sticky Organic Silt, little fine	sand.	e 100	1		g		╆
		fe	ew shells (10-20%)			0.0				E
	1	$\overline{C}$				2.0				F
-57.7	2.0	7								E
-51.1	- 3	Ĭ	Dark gray silty fine Sand and shells, fe	ew to 2"	100	2				
	3.4	(4	40-60%); refusal at bottom of core			2.0				E
						9.7				
										E
										F
	383									E
	344									E
										E
										E
	크송화									E
-65.4	9.7									E
	=									
	$\exists$									E
										E
	$\exists$									E
	$\exists$									E
	$\exists$									F
	$\exists$									E
	$\exists$									E
	$\dashv$									F
	$\exists$									E
										F
	$\exists$									E
	=									F
	$\exists$									E
	$\dashv$									F
	$\exists$									E

								iole ivo	). U-5t	<u>'</u>
DRILLI	NG LOG	DIVI	SION	INSTALLA ODM				SHEET OF 1	1 SHEETS	
1. PROJECT						- DIT	3.5 in	01 1	SHLLIS	1
	nks Master B	eacl	n Nourishment Plan		ND TYPE OF		3.5 IN WN (TBM or MSL)			1
2. LOCATION (	Coordinates or Stat	ion)		NAVE		ATION SHO	VVIN (TEIVI OF WISE)			
N 324,250	0.4 E 2,694,	360.	7			S DESIGNAT	TION OF DRILL			1
	ean Seismic	Surv	rey	Vibra	NO. OF OV	FRBURDEN	: DISTURBED :	UNDISTUR	BED	ł
	s shown on drawir				LES TAKEN		4			1
5. NAME OF DF	RILLER		. U-59		NUMBER C	ORE BOXES	S			1
C. Dill				15. WATE	R DEPTH	: OT A	DTED : OOI	MDLETED		4
6. DIRECTION (		IED	PEO EDOMVEDI	16. DATE	HOLE	: 517	RTED : COI 12/9/2011 :	MPLETED 12/9/20	011	
		NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-54.9			1
7. Penetration, f	t		18.5 18.2	18. TOTA	CORE REC	OVERY FOR	R BORING		99 %	
Recovery, ft     Total Recover	0, 9/		99.0	19. GEOL	OGIST		C. Dill			
			CLASSIFICATION OF MATERIALS	<u>                                     </u>	% CORE	BOX OR	REMAR			┨
ELEVATION	DEPTH LEGE	ND	(Description)	,	RECOV- ERY	SAMPLE NO.	(Drilling time, wate weathering, etc.,			
a -54.9 -55.5	0.0 0.6	939	Dark gray fine to medium Sand, some	shell	e 100	f 1	g			┢
-55.5	0.6		fragments (20-35%)		100	0.0				E
			Dark gray silty fine Sand with layers of Silt (sticky) up to one foot thick; some	f sandy	100	0.6				F
			fragments in the sand layers (20-30%	)		0.6				E
						6.5				E
										E
	<b>-</b>									E
	_=:::::::::::::::::::::::::::::::::::::									E-
	383									E
										E
	<b> </b>									F
04.4	_ <u>,</u> _∃∴									
-61.4	6.5	111	Dark gray-green dense fine to medium	n sand.	100	3				E
			rare small shell fragments (5%)	,		6.5				F
						8.7				E
00.0	<u>,∃</u>									E
-63.6	8.7		Dark gray to gray coarse shells and s	hell hash	100	4				E
			Dark gray to gray coarse shells and s (70-90%). Little sticky silt to fine sand matrix.	d in		4 8.7 18.2				F
		5	matrix.			10.2				E_
										E
										E
										E
		ان ب								E
		8.								E
										E
										E
										E
	<b>ૻ૽૾૽ૣ</b> ૽૽									F
										E_
										E
		٥ <u>ا</u>								E
										E
-73.1	18.2									F
	$\exists$									E
										E
	$\exists$									E

								HOIE NO	). U-60	<u>,                                     </u>
DRILLI	NG LOG	DIVIS	SION	INSTALLA ODMI				SHEET OF 1	1 SHEETS	
1. PROJECT		-			ND TYPE OF	- BIT	3.5 in	01 1	GILLIO	1
			n Nourishment Plan	11. DATUI	M FOR ELEV		WN (TBM or MSL)			1
	Coordinates or Sta 3.3 E 2,696,			NAVE		2 25010114	FIGURE BRILL			1
3. DRILLING AG		330.2	<u>-</u>	Vibra		SDESIGNA	TION OF DRILL			
	ean Seismic			13. TOTAL	NO. OF OV	ERBURDEN	•	UNDISTUR	BED	1
4. HOLE NO. (A file number)	s shown on drawi	ng title	and : O-60		LES TAKEN		3	<u>:</u>		4
5. NAME OF DR	RILLER		<u> </u>		NUMBER C	ORE BOXES	S			┨
C. Dill				15. WATE	RDEPTH	: 614	ARTED : CO	OMPLETED		-
6. DIRECTION (		NED	PEO EDOM/EDT	16. DATE	HOLE	317	12/9/2011	12/9/2	011	
▼ VERTICA		NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-56.1			1
7. Penetration, f	t		16.1 13.1	18. TOTAI	CORE REC	OVERY FOR	R BORING		81 %	]
8. Recovery, ft	n. 0/		81.0	19. GEOL	OGIST		C. Dill			1
9. Total Recover	1y, %		CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	C. DIII REMA	RKS		┨
ELEVATION	DEPTH LEGI	END	(Description)	•	RECOV- ERY	SAMPLE NO.	(Drilling time, wa weathering, etc.	ater loss, dep , if significan	oth nt)	
a -56.1	0.0 —		d	II	е	f	9			╄
-30.1			Dark gray silty fine Sand, some fine sl fragments (25-40%)	ieii	100	1 0.0				F
	<u>-∃</u>					3.5				E
										F
	— <u>—</u> 3833									E
	<b>⇒</b>									E
	<u>-</u> =\$33									F
-59.6	3.5		Doub such Cilk some fine conditions the	-11	100	2				E
			Dark gray Silt, some fine sand, few sh fragments (10-15%)	ieii	100	2 3.5				
	===		age. (16 16/6)			8.0				E
	===									F
	_===	<u></u> 1								E
	<b></b>									E
										F
-64.1	8.0									Е
-04.1			Dark gray shell sand shell hash (60-80	0%).	100	3				$\vdash$
		؛   🛆 ،	shells to 1.5"; some shells to 1.5"	,		8.0				F
						13.1				
										F
										Е
	$\exists \triangle A$									F
	_==^_	\ _\								E
										F
-69.2	13.1									F
-U3.Z	10.1									E
	$\exists$									F
	$\exists$									Е
	$\exists$									F
										E
	$\exists$									F
	_=									F-
	$\exists$									E
										Ė
	$\exists$									F
	_=									E
										E
	$\exists$									E

								<u>Hole No.</u>	<u>O-192</u>
DRILLI	NG LOG	DIVI	SION	INSTALLA				SHEET	1
1. PROJECT				ODM			0.5.	of 1	SHEETS
	nks Master F	Reac	h Nourishment Plan		ND TYPE OF		3.5 in		
	Coordinates or Sta		THOUSE THE THE	NAVE		ATION SHO	OWN (TBM or MSL)		
N 329,052	2.1 E 2,690,		4			S DESIGNA	TION OF DRILL		
3. DRILLING AG		_		Vibra					
	ean Seismic				NO. OF OVILES TAKEN	ERBURDEN		UNDISTUR	BED
4. HOLE NO. (A file number)	s shown on draw	ing title	o and : : O-192			005 0015	5	:	
5. NAME OF DR	RILLER				NUMBER C	ORE BOXE	8		
C. Dill				15. WATE	RDEPTH		ARTED : C	COMPLETED	
6. DIRECTION (				16. DATE	HOLE	: 517	12/11/2011	12/11/2	2011
	AL INCL	INED	DEG. FROM VERT.	17. ELEVA	ATION TOP C	F HOLE	-41.7		
7. Penetration, f	t		16.2	18. TOTA	CORE REC	OVERY FOR			107 %
8. Recovery, ft			17.3	19. GEOL					101 /
9. Total Recover	у, %		107.0				C. Dill		
ELEVATION	DEPTH LEG	END	CLASSIFICATION OF MATERIALS	;	% CORE RECOV-	BOX OR SAMPLE	REM. (Drilling time, w	ARKS vater loss den	oth
			(Description)		ERY	NO.	weathering, et	c., if significan	nt)
-41.7		C . • . • . • . • .	Light brown fine to medium Sand, son	ne fine	e 100	f 1	!	g	
			shell fragments (10-20%)		100	0.0			F
-42.9	1.2		-			1.2			E
	<b>- 1888</b>		Light brown shell hash layer (80%), little	tle fine	100	2			F
-43.7	2.0	* * * * * *	to medium Sand Gray fine to medium Sand, some 2-3"	lavora	100	1.2			E
	$\exists : : :$		of light brown shell hash	layers	100	3			E
	_=:::::	****	3			2.0			F
	<b>∄</b> :::::	****				7.0			E
	_==:::::	****							E
	⇉ઃःः	****							F
									<b>=</b>
									F
	$\exists : : :$								E
									<b></b>
	= = = = = = = = = = = = = = = = = =								<b>=</b>
-48.7	7.0		Limbt busy on madicine County come and	المطما	100	4			F
	$\exists$ :::: $\vdots$		Light brown medium Sand, some sma fragments (20-30%)	iii sneii	100	4 7.0			E
			maginisms (20 0070)			9.5			
	<b>#::::</b>								F
	_=:::::								E
-51.2	9.5								E
	<b>=::::</b> :	****	Gray fine to medium Sand; layers of	shell	100	5_			F
	<b>==::::</b> :	****	hash at 12 ft, 13 ft and 14 ft.			9.5 16.2			
	⊒∷∷:	*****				10.2			E
									<b></b>
									<b> </b>
	_=:::::								F
	$\exists : : : :$								E
	_=::::::								
	⇉ःःः								<b></b>
	⊒:::::								F
									E
	<b></b>								
									<b>=</b>
	<b>=::::</b> :								F
-57.9	16.2	<u> </u>							E
		Ī							E
	_=								E
	$\exists$								F
									E
	$\exists$								F
	$\exists$								F
									F
	$\exists$								E

								TOIR IN	<u>0. 1-0</u>	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET	1	
1. PROJECT		1					0.5:	OF 1	SHEET	<u> </u>
	nke Maetor 5	2000	h Nourishment Plan		ND TYPE OF		3.5 in			_
	Coordinates or Star		II INOUIISIIIIGIIL FIAII	11. Datui Nave		ATION SHO	WN (TBM or MSL)			1
	1.0 E 2,581,		.1			S DESIGNAT	TION OF DRILL			$\dashv$
3. DRILLING AG	SENCY			Vibra			SINEE			
	ean Seismic					ERBURDEN	•	UNDISTU	RBED	7
4. HOLE NO. (A file number)	s shown on drawi	ng title		SAMP	LES TAKEN		6 :			
5. NAME OF DR	DILLED		Y-66	14. TOTAI	NUMBER C	ORE BOXES	S			
C. Dill	MILLER			15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLF	STA		MPLETED		
∨ERTICA	AL INCLI	NED	DEG. FROM VERT.			<u> </u>	12/15/2011	12/15/	2011	4
7. Penetration, f	t		11.6		ATION TOP C		-40.3			4
8. Recovery, ft	-		10.2		CORE REC	OVERY FOR	R BORING		88	%
9. Total Recover	n/ %		88.0	19. GEOL	OGIST		S. Miller			
9. Total Necovel	y, 76		CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	S. WIIIIEI REMAR	KS		┨
ELEVATION	DEPTH LEGE	END	(Description)	•	RECOV-	SAMPLE	(Drilling time, wate	er loss, de		
а	b c	;	d		ERY e	NO. f	weathering, etc., g	ıı sıgnıtıca. ——	111)	╛
-40.3	0.0		Dark gray soft Organic Silt		100	1				F
44.4	_					0.0 1.1				F
-41.4	1.1		Dark gray silty fine to medium Sand, I	ittle	100	2				F
			coarse Sand, little shell fragments (10	15%)	100	1.1				E
-42.6	2.3					2.3				
			Dark gray medium to coarse Sand, tra	ace fine	100	3				F
		8.00	gravel, some shell fragments (45%)			2.3 3.5				
-43.8	3.5		0 1 11 1 (000)		400					E
			Gray shell hash (20%) in medium to fi matrix	ne sand	100	4 3.5				E_
	<b>=::::</b>		matix			4.9				F
-45.2	4.9									E
	<b>_:::::</b> :::::::::::::::::::::::::::::::		Light brown fine to medium Sand, rare diameter soft gray clay balls, little coa	e 1 inch	100	5 4.9				
	<b>=:::::</b> :::::::::::::::::::::::::::::::		to fine gravel; no shells	isc sand		7.3				F
										F
	$\exists : : : : :$									Е
-47.6	7.3									F
	<b>⊒</b> \$;;;;;		Gray medium to coarse Sand and fine	gravel	100	6				F
	<u>-</u>		to 1/2" diameter			7.3 9.0				
						3.0				F
-49.3	9.0		Link busine van band aand madialli							<b>F</b>
	∃∷∷		Light brown very hard sand, partially cemented							Е
-50.5	10.2	: : : :	33333							
00.0										F
	_=									E
	$\exists$									F
	╡									F
	$\exists$									E
										F
										F
										E
										F
										E
										E
	_=									<b> </b>
	$\exists$									E
	_=									E
	$\exists$									F
										F
										E
	$\exists$									E
	===									<b>F</b>
	$\exists$									E

								Hole N	0.	<u>Y-6/</u>	
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1		1 EETS	
1. PROJECT					ND TYPE OF	- BIT	3.5 in	OF I	5H	EEIS	
			h Nourishment Plan				WN (TBM or MSL)				
	Coordinates or Stat 9.8 E 2,582,6		Л	NAVE		2 25010114	51011 OF BB#1				
3. DRILLING AG	SENCY			Vibra		SDESIGNA	TION OF DRILL				
	ean Seismic			13. TOTA	L NO. OF OV	ERBURDEN	DISTURBED	UNDISTU	RBED		
4. HOLE NO. (A file number)	s shown on drawii	ng title	e and Y-67		LES TAKEN		4	:			
5. NAME OF DR	RILLER		1-07		L NUMBER C	ORE BOXES	<u> </u>				
C. Dill				15. WATE	R DEPTH	· CT/	ARTED : CO	OMPLETED			
6. DIRECTION (				16. DATE	HOLE	: 517	12/15/2011	12/15/		1	
	<u> </u>	NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-39.9				
7. Penetration, f	t		16.4	18. TOTA	L CORE REC	OVERY FOR	R BORING		(	92 %	
8. Recovery, ft			15.0	19. GEOL	OGIST		O Miller				
9. Total Recover	ry, %		92.0	<u> </u>	% CORE	BOX OR	S. Miller	RKS			
ELEVATION	DEPTH LEGE	ND	CLASSIFICATION OF MATERIALS (Description)	•	RECOV- ERY	SAMPLE NO.	(Drilling time, wa weathering, etc	ater loss, de			
а	b c		d		е	f	weathering, etc		1111)		
-39.9	0.0		Dark gray coarse to fine Sand, little fir	ne gravel	100	1 0.0				Ė	=
-40.8	0.9		Dark gray silty fine Sand, no shells		100	0.9				F	
			Dark gray sitty line darid, no shells		100	2 0.9				F	=
	_=:::::					2.8				F	
-42.7	2.8									F	=
12.7			Dark gray to gray-green shell hash (25	5%) with	100	3				E	_
			silty fine to medium sand matrix			2.8 6.0				F	=
						0.0				F	
										E	=
-44.9	5.0									F	
			Light brown fine to coarse Sand, no sl	nells						E	=
-45.9	6.0									F	=_
			Dark gray-green very fine Sand; no sh	iells	100	4 6.0				F	_
						15.0				E	=
										ŀ	_
										F	_
										E	=
										ŀ	_
										F	_
										E	=
										E	
										F	_
										F	
										E	=
										þ	
										ļ	_
										E	_
										E	=
		44								þ	_
										E	=
-54.9	15.0									þ	=
01.0	-	.1.4.1								F	
										E	=
										E	_
	= =									þ	=
										F	
										F	_
	_=									þ	
										F	=
										E	_
										þ	=
						1				[	=

									noie ind	<u> </u>
DRILLI	NG LOG		IVISION		INSTALLA				SHEET	1
1. PROJECT					Area			0.5.	OF 1	SHEETS
	nke Mast	or Boo	ich Na	urishment Plan		AND TYPE O		3.5 in		
2. LOCATION ( N 332,068	Coordinates	or Static	n)	unsiment Flan	NAVE	88 (		OWN (TBM or MSL) ATION OF DRILL		
3. DRILLING AC		,00	2.0		Vibra		S DESIGNA	ATION OF DRILL		
Alpine Oc	ean Seisr			:	13. TOTA			N DISTURBED 1	JNDISTURE	BED
file number)				Y68	14. TOTA	L NUMBER (	CORE BOXE	<u>-</u>		
5. NAME OF DE C. Dill	RILLER				15. WATE	R DEPTH		•		
6. DIRECTION					16. DATE	HOLE	STA	ARTED COM 12/15/2011	MPLETED 12/15/20	111
⊠ VERTIC/	AL I	NCLINE	D	DEG. FROM VERT.	17. ELEV	ATION TOP (	:: OF HOLE	-40.6	12/13/20	
7. Penetration,	ft			17.2		L CORE REC				92 %
8. Recovery, ft				17.5	19. GEOL					
9. Total Recove	ery, %			92.0				S. Miller		
ELEVATION	DEPTH	LEGENI	0	CLASSIFICATION OF MATERIAL	S	% CORE RECOV-	BOX OR SAMPLE	REMAR (Drilling time, wate	r loss, depth	,
а	b	С		(Description) d		ERY e	NO. f	weathering, etc., i	if significant)	' I
-40.6	0.0			gray coarse to fine Sand, little fine		100	1	9		F
-41.5	0.9		medi	um gravel; rare small shell fragmer	nts (5%)	<u> </u>	0.0 0.9			E
				gray fine Sand, rare pebbles to 1"	diameter	100	2			F
	∃;		at 2.6	5-3 π			0.9			E
			[•]				3.0			F
-43.6	3.0		[:]							E
-43.0	3.0 r		Grav	shells and shell hash to 2" size (60	)-80%).	100	3			F
-44.5	3.9		in silt	ty fine sand matrix	, 50,70,,		3.0			F
77.0	0.5			n sticky, dense Organic Silt- Clay;	layer of	100	3.9			E
			shells	s in bottom 3 inches	,		4 3.9			F
							9.5			F
										E
										E
										F
										F
										E
										E
										F
										E
	│ <u> </u>									E
-50.1	9.5	//////	Dorle	gray-green silty fine Sand; no shel	lo.	100				F
			Dark	gray-green silty line Sand, no she	iS .	100	5 9.5			F
							17.2			E
	_=:									E
										F
	📑									F
										E
										E
										F
	📑									F
										E
										F
										F
	∹:									F
	<u></u> ∃:									E
	≕									F
[ 57.0	₄₇ ,		:-							F
-57.8	17.2		t:							E
										E
										F
										E
										E
										E

								HOIE IN	U. 1-0	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET	1	
1. PROJECT						- DIT	0 F im	of 1	SHEETS	<u> </u>
	nks Master R	eac	h Nourishment Plan		AND TYPE OF		3.5 in WN (TBM or MSL)			-
2. LOCATION (0	Coordinates or Stat 4.7 E 2,586,4	ion)		NAVE	88 0		FION OF DRILL			-
3. DRILLING AG	SENCY			Vibra		3 2 2 3 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4				
4. HOLE NO. (A	ean Seismic s		e and		L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTUF	RBED	
file number)			Y-69	14. TOTA	L NUMBER C	ORE BOXES	S			
5. NAME OF DR C. Dill				15. WATE	R DEPTH	÷ 0T A	ARTED : CO	MPLETED		1
6. DIRECTION (				16. DATE	HOLE	: 517	12/15/2011	12/15/2		
		NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-40.4			
7. Penetration, f	t		17.4	18. TOTA	L CORE REC	OVERY FOR	R BORING		104 %	6
8. Recovery, ft			17.9	19. GEOL	OGIST					1
9. Total Recover	ry, %		104.0		% CORE	BOX OR	S. Miller	OKC .		4
ELEVATION	DEPTH LEGE	ND	CLASSIFICATION OF MATERIALS (Description) d	3	RECOV- ERY	SAMPLE NO. f	(Drilling time, wat weathering, etc.,	er loss, de		
-40.4	0.0	•[•[•]	Dark gray silty fine to medium Sand, f	ew shell	100	1	<u>g</u>			┢
			fragments (20-30%)			0.0				E
	<b></b>					1.8				
-42.2	1.8									E
			Dark gray silty Sand to Sandy Silt, sor fragments (15-25%)	me shell	100	2 1.8				
	3,343		1149116113 (13-2370)			4.5				E
										E
										E
-44.9	4.5									E
		• • • •	Dark gray Shells and Shell hash (30-4	10%),	100	3				E
			sandy silt matrix	,,		4.5 6.9				
	<b>#!!!!</b>					0.9				
										E
-47.3	6.9									E
			Sharp contact to dense dark green-brifine Sand, no shells	own silty	100	4 6.9				E
	<b>=</b>		ine dana, no sneils			17.4				E
										E
	3 3									
	_=\$									
	<b>- 1888</b>									F
										E
	4 4									F
	<b>= 3</b>									F
										E
	<b>=</b>									F
	田舎									E
	<b>=</b>									F
										E
	<b>= 3</b>									F
-57.8	17.4									E
	=									F
										E
	_=									E
										E
	$\exists$									E

								I IOIE I		1-/V	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET		1	
1. PROJECT				Area		- DIT	0. F. in	OF 1	SH	IEETS	┨
	ınks Master E	Beac	ch Nourishment Plan	I	ND TYPE OF		3.5 in DWN (TBM or MSL)				┨
2. LOCATION (	Coordinates or Sta 3.2 E 2,588,	tion)		NAVE	88 (		TION OF DRILL				
3. DRILLING AG	SENCY			Vibra		5 2 2 5 7 5 7 7 7					
4. HOLE NO. (A	ean Seismic s shown on drawi		e and		NO. OF OVI LES TAKEN	ERBURDEN	DISTURBED 3	UNDISTL	JRBED	)	
file number)	NI I ED		Y-70	14. TOTAI	NUMBER C	ORE BOXE	S				1
5. NAME OF DE C. Dill	RILLER			15. WATE	R DEPTH						
6. DIRECTION (		NED	DEG. FROM VERT.	16. DATE	HOLE	SIA	ARTED : CO 12/15/2011 :	MPLETEI 12/15		1	
7. Penetration, f		INED	19.5	17. ELEV	ATION TOP C	F HOLE	-35.9				
8. Recovery, ft	ι		19.5		CORE REC	OVERY FO	R BORING		(	98 %	
Total Recover	rv %		98.0	19. GEOL	OGIST		S. Miller				
			CLASSIFICATION OF MATERIALS	<u>                                     </u>	% CORE	BOX OR	REMAR				1
ELEVATION a	DEPTH LEGI		(Description)		RECOV- ERY e	SAMPLE NO. f	(Drilling time, wat weathering, etc., g				
-35.9	0.0		Dark gray silty fine Sand, few small sh	nell	100	1	-				E
			fragments (5-10%)			0.0 7.0					E
											E
											E
											F
											E
											E
											E
-42.9	7.0		Dark gray Shells and shell fragments		100	2					
		80,0	(20-30%), rare gravel to 3/4"		100	7.0					
						9.8					
		,									F
-45.7	9.8										E
			Dense dark gray-green silty fine Sand visible shells or shell fragments	; no	100	3 9.8					
			Violete strend of strent fragments			19.2					E
											E
											F
	_=%3										E
											E
											E
											Ē
											E
											F
											E
											E
-55.1	19.2										F
											E

Service of the control of the contro	DRILLI	NG L O	3 DI	VISION	INSTALL				SHEET	1	
Dogue Banks Master Beach Nourishment Plan   To AnTUR POR REVATION SHOWN (78M or MSL)   N 328,498.1 E 2,581,958.9   To ANTUR POR REVATION SHOWN (78M or MSL)   N AVD 8   To ANTUR POR REVATION SHOWN (78M or MSL)   N AVD 8   To ANTUR POR REVATION SHOWN (78M or MSL)   N AVD 8   To ANTUR POR REVATION SHOWN (78M or MSL)   N AVD 8   To ANTUR POR REVATION SHOWN (78M or MSL)   N AVD 8   To ANTUR POR REVATION SHOWN (78M or MSL)   N AVD 8   To ANTUR POR REVATION SHOWN (78M or MSL)   To ANTUR POR REVATION OF PORT POR REVATION OF PORT PORT PORT PORT PORT PORT PORT PORT								0.5:	OF 1	SHEETS	
NAVD 88		nks Mas	ter Bea	ich Nourishment Plan							
3. ORILLING AGENCY Alpine Ocean Seismic Survey 4. HOLE NO. (As shown on drawing site and inches number) 5. NAME OF DRILLER C. DIII 5. SHAME OF DRILLER C. DIII 6. DIRECTION OF HOLE 7. Penetration. it 7. Penetration. it 8. Recovery, it 9. Total Recovery, it 10.9 9. Total Recovery, it 10.9 9. Total Recovery, it 10.9 9. Conselled Recovery it 10.9 10. Total Recovery, it 10.9 10. Total Recovery, it 10.9 10. Total Recovery, it 10. Description of section; lew sent maintained by a section of section; lew sent maintained by a sent maintained by a section of section; lew sent maintained by a sen	2. LOCATION (C	Coordinates	or Station	)			ATION SHO	OVVIN (TEINI OF INISE)			
A Dine Ocean Seismic Survey   14, INCLEN O, Sabown or drawing filter and internumber)   15, INCLED OF SABORES TARSEN   2			581,95	8.9			S DESIGNA	TION OF DRILL			
4-HOLE NO. (As shown on drawing ofte and   Y-71			smic Su	rvev			EDDI IDDEN	I : DISTLIBBED :	LINDICTUDD	)ED	
S. NAME OF DRILLER   15. MATER DEPTH   15. MATER DEPTH   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011   12/15/2011	4. HOLE NO. (A			itle and			EKBUKDEN		UNDISTURB	DED.	
C. DII	,	RILLER		Y-71	14. TOTA	AL NUMBER C	ORE BOXE	S			
Solid From   Sol	C. Dill				15. WATI	ER DEPTH	÷ e =	ARTED : CO	MDI ETED		
7. Peretration, ft			INCLINE	DEG FROM VE		HOLE	317		12/15/20	011	
8. Recovery, ft  16.9  9. Total Recovery, w  124.09  105 DEPTH LEGEND  2 Dark gray life to medium Sand, trace fine 3 Dark gray life and life and sand shall fragments (10-20%)  45.7  46.8  1.1  Dense dark brown Clay; no shells  100  2 1.1  Dense dark brown Clay; no shells  100  2 1.1  12.0  Brown silly fine Sand, trace wood fragments (small roots) at top of section; no shells  100  2 1.1  12.0  Brown silly fine Sand, trace wood fragments (small roots) at top of section; no shells  100  2 1.1  12.0  Brown silly fine Sand, trace wood fragments (small roots) at top of section; no shells  100  2 1.1  12.0			IIVOLIIVLE		17. ELEV	ATION TOP C	OF HOLE	-45.7			
9. Total Recovery, %  124.0  CLASSIFICATION OF MATERIALS (Description) or dispersion of the control of the cont	-	•					OVERY FO	R BORING		124 %	
ELEVATION DEPTH LEGEND CLASSIFICATION OF MATERIALS (Description)  a	-	ry, %			19. GEOI	LOGIST		S. Miller			
a b c Dark gray fine to medium Sand, trace fine gravel to 1/4* toward bottom of section; few small shell fragments (10-20%)  Dense dark brown Clay; no shells  100 2 1.1  Dense dark brown Clay; no shells  100 2 1.1  12.0  Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet	ELEVATION	DEPTH	LEGEND	) [	RIALS			REMAR		h	
-57.7 12.0  Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells  -57.7 12.0  Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells  -57.7 12.0  Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet				(Description)		ERY	NO.	weathering, etc.,			
-57.7 12.0  Brown silty fine Sand, trace wood fragments (small roles) at top of section; no shells  Brown silty fine Sand, trace wood fragments (small roles) at top of section; no shells. NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet				Dark gray fine to medium Sand, t	race fine		1	9			=
Brown silty fine Sand, trace wood fragments (small roots) at top of section, no shells    Brown silty fine Sand, trace wood fragments (small roots) at top of section, no shells   NOTE: Core logged and photographed including all of recovered length, NOT adjusted to represent only penetrated depth of 12.5 feet	-46.8	11 =		gravel to 1/4" toward bottom of se small shell fragments (10-20%)	ection; few					-	_
-57.7 12.0  Brown silty fine Sand, trace wood fragments (small roots) at top of section, no shells.  NOTE: Core logged and photographed including all of recovered length, NOT adjusted to represent only penetrated depth of 12.5 feet	-40.0			74	3	100	2	-			Ξ
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet											=
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet		=					12.0			F	=
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet										E	=
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet										F	=
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet		_=								E	=
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet										E	Ξ
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet		=								F	=
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet										F	=
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet		$\equiv$								E	Ξ
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet										E	_
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet		_								Ŀ	_
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet										Ŀ	_
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet										F	_
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet										F	_
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet										F	_
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet		=								F	=
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet										E	=
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet		$\equiv$								Е	Ξ
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet										F	_
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet										<u> </u>	_
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet		_								F	=
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet										F	_
Brown silty fine Sand, trace wood fragments (small roots) at top of section; no shells.  NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet	57.7	12.0									_
-61.2 15.5 (small roots) at top of section; no shells. NOTE: Core logged and photographed including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet	-51.1	12.0		Brown silty fine Sand trace wood	l fragments					<b>-</b>	
-61.2 15.5 — including all of recovered length; NOT adjusted to represent only penetrated depth of 12.5 feet		=		(small roots) at top of section; no	shells.					<b>-</b>	_
-61.2 15.5 adjusted to represent only penetrated depth of 12.5 feet				NOTE: Core logged and photogra	aphed					F	_
-61.2 15.5 =		$\equiv$		including all of recovered length;	NOI ated denth of					E	=
				12.5 feet	ated deptil of					Ŀ	_
		=								F	=
		_								F	=
	-61.2	15.5		점						F	_
	01.2	10.0	· . · . · . · · · · · · · · · · · · · ·	·						E	=
										E	
										þ	=
										þ	
		=								F	=
										E	Ξ
										E	=
										þ	_
										F	=
		=					<u>L</u>				=

									O. 1-72	<b>4</b>
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET	1	
1. PROJECT				Area		- DIT	2 E in	OF 1	SHEETS	4
	nks Master P	Beac	h Nourishment Plan		AND TYPE OF		3.5 in WN (TBM or MSL)			+
2. LOCATION (C	Coordinates or State	tion)		NAVE	88 0		FION OF DRILL			4
3. DRILLING AG	SENCY			Vibra		3 DESIGNA	TION OF DIVILL			
4. HOLE NO. (A	ean Seismic				L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED U	JNDISTUR	RBED	
file number)			Y-72	14. TOTAL	L NUMBER C	ORE BOXES				1
5. NAME OF DR C. Dill				15. WATE	R DEPTH	; OT 4	ADTED : COM	ADI ETED		
6. DIRECTION (				16. DATE	HOLE	SIF		MPLETED 12/15/2	2011	
	AL INCLI	NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-46.3			
7. Penetration, f	t		11.8	18. TOTAL	L CORE REC	OVERY FOR	R BORING		113 %	, 0
8. Recovery, ft			13.5	19. GEOL	OGIST					
9. Total Recover	ry, %		113.0		% CORE	BOX OR	S. Miller	<u>/</u> S		4
ELEVATION a	DEPTH LEGE		CLASSIFICATION OF MATERIALS (Description) d	8	RECOV- ERY e	SAMPLE NO. f	(Drilling time, wate weathering, etc., i.	er loss, dep	oth nt)	
-46.8	0.5		Very soft dark gray Organic Silt; no sh	nells	100	1	9			F
-40.0			Dark gray fine Sand, Shells to 2" size		100	0.0				E
			(60-80%)			0.5				F
-48.3	2.0					0.5				E
.0.0			Brown fine Sand with dark gray/brown	laminae	100	2.0				E
	= 3		of Silt/Clay.			2.0				F
						6.0				E
										E
	3.3									
-52.3	6.0									E
			Dark brown peaty Clay							
-53.3	7.0	717								E
	<b>=</b>		Dark brown silty fine Sand, small root fragments near 10 ft below sea floor		100	4 7.0				F
	_3.46		magnicitis fical to it below sea floor			11.9				E
	3.4									E
	_=									
	3									E
	3.40									E
	_==									<b>F</b>
50.0	<b>→</b>									E
-58.2	11.9	(1) c								E
	$\exists$									E
										E
	$\exists$									F
	$\exists$									F
	$\exists$									
	$\equiv$									E
	$\exists$									F
	$\exists$									E
	$\exists$									F
	$\exists$									E
	$\dashv$									F
										E
										F
										E

								П	ole N	<u>0. 1-7</u>	<u>၁</u>
DRILLI	NG LO	3	DIVI	ISION	INSTALLA Area `				SHEET	1	
1. PROJECT	PRILLING LOG  ROJECT  ogue Banks Master Beach Nourishment Plan							0 F :	of 1	SHEETS	S
	nks Mas	ter Be	eac	ch Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)			$\dashv$
2. LOCATION (0 N 330,274	Coordinates	or Stati	on)		NAVE	88 (		TION OF DRILL			4
3. DRILLING AG	ENCY				Vibra		5 BE010147 (	TION OF BRIDE			
Alpine Oc 4. HOLE NO. (A				e and		NO. OF OVI LES TAKEN	ERBURDEN	I DISTURBED L	JNDISTUF	RBED	
file number)				Y-73	14. TOTAL	NUMBER C	ORE BOXE	S			
5. NAME OF DR C. Dill					15. WATE	R DEPTH	· et/	ARTED : COM	1PLETED		
6. DIRECTION (		INIOL IN		DEC EDOM/EDT	16. DATE	HOLE	317		12/16/2		
		INCLIN	IED	DEG. FROM VERT.	17. ELEVA	TION TOP C	F HOLE	-46.2			1
7. Penetration, f	t			16.2	18. TOTAL	CORE REC	OVERY FOR	R BORING		99 %	6
8. Recovery, ft				16.1	19. GEOL	OGIST		O M:U			
9. Total Recover	у, %			99.0		% CORE	BOX OR	S. Miller	(S		4
ELEVATION a	DEPTH b	LEGEI c	ND	CLASSIFICATION OF MATERIALS (Description) d		RECOV- ERY e	SAMPLE NO. f	(Drilling time, wate weathering, etc., ii	r loss, dej		
-46.2			٠.	Loose gray shells and shell hash (40-5	50%) in	100	1	9			+
	$\exists$		8.00	coarse sand matrix; few pieces of grav	el to		0.0 2.0				F
			\$\$	3/4			2.0				E
-48.2	2.0										F
			$\prod$	Very sharp contact to dark gray- greer	dense	100	2				E
	=			sandy Silt to silty Sand; no visible shell	IS		2.0 5.0				F
							0.0				
											E
											F
						100	3				E
	_=						5.0 10.0				E
											F
	_=										E
											F
	_=										E
	=										F
	=										E
											F
	=										E
	=					100	4 10.0				F
	_=						16.0				
	$\exists$										F
	_=										E
	$\equiv$										E
	_=										F
	$\exists$										E
	$\equiv$										E
	_=										E
	=										E
-62.2	16.0	<u> </u>									E
	$\exists$										F
	$\exists$										F
	=										F
											E
											F
	目										E

										noie i	<u>10. 1-7</u>	<u>4</u>
DRILLI	NG I O	G [	OIVISION			INSTALLA				SHEET	1	
1. PROJECT	ECT 10. SIZE AND TYPE OF BIT 3.5 in											
	nke Mee	ter Ro	ach Nourie	hment Plan								4
2. LOCATION (				ionti lan		11. DATU NAVE		ATION SHO	OWN (TBM or MSL)			
N 331,159	9.7 E 2,					12. MANU	FACTURER'S	S DESIGNA	TION OF DRILL			1
3. DRILLING AG		omic C	In (O) (	<u> </u>		Vibra				•		_
Alpine Oc				\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			L NO. OF OV LES TAKEN	ERBURDEN	I DISTURBED 4	UNDISTU	RBED	
file number)	NII ED			Y-74		14. TOTA	L NUMBER C	ORE BOXE	S			
5. NAME OF DR C. DIII						15. WATE	R DEPTH	: CT/	ADTED : CC	MDI ETER	`	
6. DIRECTION (						16. DATE	HOLE	: 517	ARTED : CC 12/16/2011 :	0MPLETED 12/16/		
	AL L	INCLINE	D		FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-48.8			1
7. Penetration, f	t			17.2		18. TOTA	L CORE REC	OVERY FOR			111 %	6
8. Recovery, ft				19.1	1	19. GEOL						1
9. Total Recover	ry, %			111.0	)				S. Miller			┛
ELEVATION	DEPTH	LEGEN		CLASSIFICATION C		3	% CORE RECOV-	BOX OR SAMPLE	REMAI (Drilling time, wa		epth	
	b	С		(Descript d	tion)		ERY	NO. f	weathering, etc.,	, if significa	ant)	
-48.8		\$.:3::;		fine to coarse S			100	1	<u>g</u>			+
	=	8.00.8	gravel; so	me shells and s				0.0				E
-49.9	-49.9 1.1 (20-30%) Gray fine to medium Sand, trace and clay lenses between 4.5 and				d trace elev	halle	100	1.1				F
			and clay	enses between	4.5 and 5'; ra	are	100	1.1				E
			shells (5%		-,			8.5				F
	=		H									F
	Ξ											Е
	_=											
			11									F
	_											F
												E
												Е
												$\vdash$
												F
												E
-57.3	8.5											F
				rbedded layers o		ells and	100	3				E
-58.3	9.5		tine to me	edium sand (30-	50% snells)			8.5 11.5				E
0010	=	*****	Gray fine	to medium San	d, some sma	all shell	•	11.5				F
	_		fragment	s (10-15%)								F
	=	!										E
												E
-60.3	11.5	******	Crov fina	to modium Con	d and same	ah alla	100	4				F
			and shell	to medium San fragments (15%	u and some 5): 1/2' thick l	snells laver of	100	4 11.5				<b>F</b>
	=		gray clay		.,,	, 0. 01		17.2				E
												E
	Ξ											F
	=											F
												E
	Ξ	<b></b>										E
			::∤									E
	=		::↓									F
	_=		::∤									E
	Ξ		<b>:</b> :↓									E
-66.0	17.2		:::									Ē
-00.0	11.4		•						1			F
	=											F
												E
	Ξ											F
		1										F
		]										E

										noie inc	
DRILLI	NG LO	3	DIVISION			STALLA <b>Area</b> `				SHEET OF 1	1 SHEETS
1. PROJECT								- D.T	0.5:	OF I	SHEETS
	nks Mac	ter Ra	ach Nourishr	ment Plan			ND TYPE O		3.5 in WN (TBM or MSL)		
2. LOCATION (	Coordinates	or Static	n)	nent i lan	11	NAVE	0 88 ) 88	ATION SHO	WN (IBM or MSL)		
N 332,046		589,1	22.9		12	. MANU	FACTURER'S	S DESIGNAT	TION OF DRILL		
3. DRILLING AG Alpine Oc		smic S	urvev			Vibra	ore No. of ov	EDRI IDDEN	: DISTURBED :	UNDISTUR	PRED
4. HOLE NO. (A file number)				V 75			LES TAKEN	LINDONDLIN	3	ON DIOTOR	
5. NAME OF DE	RILLER		<u> </u>	Y-75	_		NUMBER C	ORE BOXES	S		
C. Dill					15	. WATE	R DEPTH		DTED : 00	MDI ETED	
6. DIRECTION (						. DATE	HOLE	SIA	RTED : CO 12/14/2011 :	MPLETED 12/14/2	2011
		INCLIN	ED	_ DEG. FROM	VERT. 17	. ELEVA	TION TOP C	OF HOLE	-47.8		
7. Penetration, f	t			16.9	18	. TOTAL	CORE REC	OVERY FOR	R BORING		114 %
8. Recovery, ft	. 0/			19.2	19	. GEOL	OGIST		C Miller		
9. Total Recover	ry, %		CL	114.0 ASSIFICATION OF MATE	EDIVI 6		% CORE	BOX OR	S. Miller	RKS	
ELEVATION	DEPTH	LEGEN	ID CL	(Description)	ERIALS		RECOV- ERY	SAMPLE NO. f	(Drilling time, wat weathering, etc.,	ter loss, dep	oth nt)
a -47.8	0.0 —	C	Dork grov fi	d ne to medium Sand,	troop ror	o thin	e 100	f 1	g		
-47.0	0.0			ne to medium Sand, ay lenses; few small		e min	100	0.0			E
	- =		fragments (	10-15%)				5.0			E
											E
	-										F
	$\equiv$										E
	_=										
	$\exists$										F
											E
	$\exists$										
	=										
							100	2			<b>—</b>
	=							5.0			E
	=							11.0			E
			상								E
	_=										
											F
	7										F
											E
	$\exists$										E
											<b></b>
	=										F
	=										E
	$\exists$										E
-58.8	11.0										E
	=		Dark gray-g	reen dense silty fine	e Sand, no	)	100	3 11.0			<b>=</b>
	=		visible shell	S				16.9			F
								10.0			E
	$\exists$										E
											<b></b>
	=										<b>=</b>
	-										
	$\exists$										E
											<b>=</b>
	=										<b>=</b>
	=										F
	$\exists$		쇎								E
-64.7	16.9										E
											F
	$\exists$										F
											E
	$\exists$										E
											E
	=										F
	=										

							<b>F</b>	iole No	<u>. 1-/0</u>	_
DRILLIN	IG LOG	) DI	IVISION	INSTALLA Area				SHEET	1	
1. PROJECT						- DIT	0.5:	OF 1	SHEETS	ł
	nks Mast	er Rea	ach Nourishment Plan		AND TYPE OF		3.5 in WN (TBM or MSL)			1
2. LOCATION (Co	oordinates o	or Station)	)	NAVE		ATION SHO	IVVIN (I DIVI UI IVISL)			
N 326,707	.4 E 2,5			12. MANU	JFACTURER'S	S DESIGNA	TION OF DRILL			
Alpine Oce		mic Su	ırvev	Vibra	<b>core</b> L NO. OF OV	EDRI IDDEN	I : DISTURBED : I	UNDISTURB	RED	ł
4. HOLE NO. (As file number)			itle and		LES TAKEN	LNDONDLN	4	JINDISTORB	,LD	
5. NAME OF DRI	IIFR		Y-76	14. TOTA	L NUMBER C	ORE BOXE	S			
C. Dill				15. WATE	R DEPTH					
6. DIRECTION O				16. DATE	HOLE	SIA	ARTED : COM 12/15/2011 :	MPLETED 12/15/20	011	
		INCLINED		17. ELEV	ATION TOP C	F HOLE	-49.6			
7. Penetration, ft			16.3		L CORE REC				93 %	
8. Recovery, ft			15.1	19. GEOL						
9. Total Recovery	/, %		93.0			DOY OD	S. Miller	1/0		1
ELEVATION		LEGEND	(Description)	_S	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMAR (Drilling time, wate weathering, etc., i	er loss, depti		
-49.6	0.0 —	C	d Dark gray coarse to fine Sand, trace	fine	e 104	f 1	g			$\vdash$
-49.6 -50.4	0.0		ু Dark gray coarse to fine Sand, trace ু gravel	III IC	104	0.0				E
00.7			Gray-green silty fine Sand		100	0.8				E
	==:					2 0.8				E
	<b>-</b> ∃:		H			4.2				E
	7		H							F
			M .							E
	3									E
-53.8	4.2			1 0"	400					F
	∃:		Dark green-brown silty fine Sand to	sandy Silt	100	3 4.2				E
			A			9.0				F
	$\exists$ :									E
										F
	∃:									E
			H							F
	- ∃:									E
			A							E
-58.6	9.0									E
30.0			Dark green silty fine Sand		100	4				E
	==:					9.0 15.0				E
			H			10.0				
	=									F
			a de la companya de							E
	_=									E
	$\Rightarrow$									F
	_ <b>∃</b> :									E
	= 3.		A							E
	_=_:									Ē
	∃:									E
-64.7	15.1—									Ė.
	∃									E
	_=									E
	$\exists$									E
	=									E
	$\exists$									F
	$\exists$									E
										Ė
	$\exists$									F
	$\equiv$									E

DRILLI	NG LO	G	DIVI	SION				INSTALLA				SHEET	1	
1. PROJECT								Area			0.5:	of 1	SHEE	TS
Bogue Ba	inks Mas	ster Be	eacl	h Nou	rishment l	Plan			AND TYPE OI		3.5 in OWN (TBM or MSL)			_
2. LOCATION (	Coordinates	or Statio	on)					NAVE		ATION OFFIC	OVVIV (TEINI OF INISE)			
N 327,594		,584,6	36.	1						S DESIGNA	TION OF DRILL			
Alpine Oc		smic S	Surv	ev ev				Vibra		ERRI IRDEN	N DISTURBED	UNDISTU	RRED	_
4. HOLE NO. (A file number)						V 77			LES TAKEN	LINDONDLIN	4	OI VIDIO I O	NOLD	
5. NAME OF DF	RILLER			-		Y-77			L NUMBER C	ORE BOXE	S			_
C. Dill								15. WATE	R DEPTH	: eT	ARTED : COI	MPLETED		
6. DIRECTION (		INCLIN	IED	_		DEG. FROM	// VEDT	16. DATE	HOLE	317	12/15/2011	12/15/		
7. Penetration, f		INOLIN				15.1	VI VLICI.	17. ELEV	ATION TOP C	OF HOLE	-47.8			
8. Recovery, ft	•					20.1			L CORE REC	OVERY FO	R BORING		133	%
9. Total Recover	ry, %					133.0		. 19. GEOL	OGIST		S. Miller			
ELEVATION	DEPTH	LEGE	ND			ATION OF MA (Description)	TERIALS	3	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMAR (Drilling time, wate weathering, etc.,	er loss, de		
a -47.8	0.0 —	c		Dark h	rown dense	d Clay with p	eat lens	es and	e 100	f 1	g			╆
-50.0	2.2			tree ro materia Vibrace This m	ots (NOTE: al was reco ore pipe aft eans that tl	Additional 1 vered from the removal one actual thical ay be almost	.5 feet on the top of the concept.	of this of the ore liner. of dense	100	0.0 2.2				
-30.0		<i>//////</i>		site.)					100	2				F
	_=			Light b	rown to ligh ble shells	t gray fine to	o mediu	m Sand;		2.2 12.9				E
				110 1101						12.9				E
														E
														E
														E
														E
	_=													F
														E
														E
														E
														E
	=													F
														E
	=													E
														E
														F
	=													F
														E
														F
														E
-60.7	12.9 =													F
				Dark g	reen dense ble shells	silty fine Sa	nd to sa	andy Silt;	100	3 12.9				E
	_=			.10 1131	0.0 0.10110					15.0				E
-62.8	15.0													F
														E
														F
		1												E
														E
		1												F
														E
		1												F
		]												E
	_	1												F
														E

									<u>HOIE N</u>	<u>o. Y-</u>	<u>·/8</u>
DRILLI	NG LO	G	DIVIS	SION	INSTALLA Area				SHEET OF 1	1	то
1. PROJECT						ND TYPE OF	F RIT	3.5 in	OF I	SHEE	:15
Bogue Ba				Nourishment Plan				OWN (TBM or MSL)			$\dashv$
2. LOCATION (0					NAVE						
N 328,48 ² 3. DRILLING AG	ENCY	,560,4	22.9	9	12. MANU Vibra		S DESIGNA	TION OF DRILL			
Alpine Oc	ean Sei				13. TOTAL	NO. OF OV	ERBURDEN	I DISTURBED	UNDISTU	RBED	
4. HOLE NO. (A file number)	s shown or	n drawing	g title a	and Y-78	SAMP	LES TAKEN		3			_
5. NAME OF DF	RILLER			1-70		_ NUMBER C	ORE BOXE	S			_
C. Dill					15. WATE	R DEPTH	·	ADTED : 00	MADI ETED		
6. DIRECTION (		,			16. DATE	HOLE	SIA	ARTED CO 12/16/2011	MPLETED 12/16/		
	· · · · · · · · · · · · · · · · · · ·	] INCLIN	ED	DEG. FROM VERT.	17. ELEVA	ATION TOP C	F HOLE	-48.5			
7. Penetration, f	t			14.2	18. TOTAL	CORE REC	OVERY FOR	R BORING		116	%
8. Recovery, ft				16.9	19. GEOL	OGIST		0.1477			
9. Total Recover	ry, %			116.0		% CORE	BOX OR	S. Miller	SKS		_
ELEVATION	DEPTH	LEGEN	ND	CLASSIFICATION OF MATERIALS (Description)	•	RECOV-	SAMPLE	(Drilling time, wat	ter loss, de	pth	
а	b	С		d		ERY e	NO. f	weathering, etc.,	ıı sıgnıtıca	111)	
-48.5	0.0			Gray gravel and pebbles, some mediu coarse Sand, few shells (10-20%)	ım to	100	1 0.0				F
-49.6	1.1			coarse Sand, lew shells (10-20%)			1.1				E
	=		(	Contact to light green-brown fine Sand	d; no	100	2				F
	_=		١,	visible shells			1.1 7.8				E
	=						7.0				F
	_=										E
	=										F
	=										F
											E
	=										
	_										
	=										F
	_=										
	Ξ										E
	_=										
	=										E
-56.3	7.8					2.1					
			[	Dark green silty fine Sand to sandy Si visible shells	lt; no	84	3 7.8				
	=	1	`	visible stiells			14.1				F
		]									E
	Ξ										E
	=										E
	=										
	_										
	Ξ	]									E
	_										
	Ξ										E
	_=	100									
	=										F
-62.6	14.1										E
02.0		11						1			E
	=	1									E
		1									F
	=	1									F
		3									F
	=	}									E
		1									E
	Ξ	1									⊢ E
		1									F
		1									F
	=	}									E
	-=	1									E
	=	1									F
	_	7	- 1			i	1	Í.			

									noie i	<u>10. 1-</u>	<u>/ 3</u>
DRILLII	NG LO	G	DIV	ISION	INSTALLA				SHEET		
1. PROJECT					Area `		DIT	2.5 in	of 1	SHEE	18
	nks Mas	ster Be	eac	ch Nourishment Plan		ND TYPE OF		3.5 in DWN (TBM or MSL)			$\dashv$
2. LOCATION (0 N 329,370	Coordinates	or Static	on)		NAVE	88 (		TION OF DRILL			_
3. DRILLING AG	SENCY				Vibra	core					
Alpine Oc 4. HOLE NO. (A file number)				e and	13. TOTAL SAMP	NO. OF OVI LES TAKEN	ERBURDEN	I DISTURBED 3	UNDISTU	IRBED	
5. NAME OF DR	III FR			Y-79	14. TOTAL	NUMBER C	ORE BOXE	S			_
C. Dill	MELLIX				15. WATE	R DEPTH					_
6. DIRECTION (		,			16. DATE	HOLE	STA	ARTED CO 12/14/2011	MPLETED 12/14		
		] INCLIN	ED	DEG. FROM VERT.	17. ELEVA	ATION TOP C	F HOLE	-48.7			
7. Penetration, f	t			13.9	18. TOTAL	CORE REC	OVERY FOR	R BORING		140	%
8. Recovery, ft	n. 0/			19.5 140.0	19. GEOL	OGIST		S. Miller			
9. Total Recover				CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	REMAR			$\dashv$
ELEVATION a	DEPTH b	LEGEN c	ND	(Description)	,	RECOV- ERY e	SAMPLE NO. f	(Drilling time, wat weathering, etc., g			
-48.9	0.2			Lag deposit of Dark gray shells (30-50	)%) and _[	100	1	9			E
	_=			coarse sand and gravel Interbedded lenses of fine to medium	Sand		0.0 3.0				E
	Interbedded lenses of fine to med with rare (5%) shells, rare gravel a gray/brown clay				lenses of						F
	with rare (5%) shells, rare gravel gray/brown clay										E
	Ξ										E
-51.7	3.0 —	//////		Dark gray soft Clay		100	2				
	Ξ			Dank gray 30tt Olay		100	3.0				E
							5.0				
-53.7	5.0										E
-55.1	<u> </u>	//////		Sharp contact to dense green sandy S	Silt to	100	3				E
	Ξ			silty fine Sand, 20% shell fragments in inches of section	n top few		5.0 13.9				F
				mones of section			10.0				E
	_=										E
	=										F
	_=										
											E
	_=										
	Ξ										F
	-=										
	Ξ										E
	=										
	Ξ										E
	=										E
	=										E
											E
-62.6	13.9										E
	Ξ										E
	_=										
	=										E
		1									
	=	1									F
		1									
	=	1									E
		1									F
											E
		1									E
	Ξ	†									F

											O. 1-0	<u>U</u>
DRILLI	NG LO	3	DIVIS	SION		INSTALLA				SHEET	1	
1. PROJECT						Area		- DIT	0 F in	of 1	SHEETS	2
	nks Mas	ter Re	ach	Nourishment P	lan		ND TYPE OF		3.5 in DWN (TBM or MSL)			+
2. LOCATION (	Coordinates	or Statio	n)			NAVE		ATION SHO	VVVIN (TEINI OF INISE)			
N 330,25	5.7 E 2,	590,0	14.9	9		12. MANU	FACTURER'S	S DESIGNAT	TION OF DRILL			1
3. DRILLING AG Alpine Oc		mic S	urv	ev		Vibra		EDDI IDDELL	I : DISTLIBBED :	LINDICTI	DDEN	-
4. HOLE NO. (A file number)				and	Y-80	SAMP	L NO. OF OVI LES TAKEN		3	UNDISTU	KREN	
5. NAME OF DE	RILLER			<u> </u>	1-00	_	L NUMBER C	ORE BOXES	S			4
C. Dill						15. WATE	R DEPTH	:	ADTED :	MDI ====		4
6. DIRECTION (						16. DATE	HOLE	STA	ARTED COI 12/14/2011	MPLETED ./ <b>12/14</b>		
		INCLIN	ED		DEG. FROM VERT	17. ELEV	ATION TOP C	F HOLE	-48.5			1
7. Penetration, f	t				15.9	18. TOTAL	L CORE REC	OVERY FOR			122 %	6
8. Recovery, ft					19.4	19. GEOL						1
9. Total Recover	y, %				122.0		% CORE	BOX OR	S. Miller	PKS		4
ELEVATION	DEPTH	LEGEN	1D		TION OF MATERIAL Description)	S	RECOV- ERY	SAMPLE NO.	(Drilling time, wat weathering, etc.,	er loss, de	pth nt)	
a -48.5	0.0 —	c		Dark green dense s	d silty fine Sand to s	andv Silt	e 100	f 1	g			+
.5.5				grades with rare we	eathered shell frag	ments	100	0.0				E
	-			below 9 ft.				5.0				E
	$\exists$											E
	-=											F
	$\exists$											E
	$\exists$											F
												E
												F
												E
							100	2				F
								5.0				E
								10.0				F
												E
	-											F
	$\exists$											E
												F
	$\exists$											E
	-											F
	$\exists$											E
							100	3				F
	$\exists$							10.0				E
								15.9				F
	$\exists$											E
												E
	$\exists$											F
												E
	$\exists$											Ē
												E
	$\exists$											F
												E
-64.4	15.9											F
	$\equiv$											E
	$\exists$											F
												E
	$\equiv$											F
												E
	_=											E
	$\equiv$											E
	=											F

		T = =			T				HOIE NO	
DRILLI	NG LOG	DIVISION			INSTALLA				SHEET	1
1. PROJECT		L			Area		- DIT	0 F in	of 1	SHEETS
	ınks Master B	Beach Noi	urishment	Plan		AND TYPE OF		3.5 in WN (TBM or MSL)		
2. LOCATION (	Coordinates or Stat	tion)			NAVE		ATION SITO	VVIV (TDINI OF INISE)		
	5.6 E 2,583,	723.0			12. MANU	FACTURER'S	S DESIGNAT	TION OF DRILL		
3. DRILLING AC	SENCY Sean Seismic	Survey			Vibra		EDDUDDEN	. DIOTUDDED	LINDIOTUDE	
	s shown on drawir		:	Y-81	SAMP	L NO. OF OV LES TAKEN	EKBUKDEN	DISTURBED 3	UNDISTURE	SED .
5. NAME OF DF	RILLER		:	1-01	14. TOTA	L NUMBER C	ORE BOXES	S		
C. Dill	WELET C				15. WATE	R DEPTH				
6. DIRECTION (					16. DATE	HOLE	STA	ARTED CC 12/15/2011	MPLETED 12/15/20	011
	AL INCLI	NED		DEG. FROM VERT.	17 FLEVA	ATION TOP C	F HOLF	-50.7	12/10/20	
7. Penetration, f	t			16.1		L CORE REC				122 %
8. Recovery, ft				19.4	19. GEOL					122 /
9. Total Recover	ry, %			122.0				S. Miller		
ELEVATION	DEPTH LEGE	END	CLASSIFIC	CATION OF MATERIALS (Description)	8	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMAI (Drilling time, wa weathering, etc.,	ter loss, dept	
a 50.7	b c			d	***	е	NO. f	g		
-50.7	0.0	Dark Sand	green-browr arades with	n dense sandy Silt to n few 1/2" thick clay	silty lenses	100	0.0			E
		below	/ 13.5 feet		.0000		5.0			E
										E
										F
										E
										E
										E
										E
						100	2			E
						100	5.0			F
							10.0			
										F
										F
										F
										E
										E
						100	3			
							10.0			E
							13.5			
										E
										E
										E
						100	4			F
							13.5 16.1			
							10.1			
										E
-66.8	16.1									F
-00.0		1.1.11.1								E
										E
										E
										E
										F
										E
										F
	$\Box$									F

								<u>HOIE N</u>	<u>о. Ү-</u>	<u>52</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1	
1. PROJECT					ND TYPE OF	F RIT	3.5 in	OF I	SHEET	쒸
Bogue Ba	nks Master E	Beac	h Nourishment Plan				WN (TBM or MSL)			$\dashv$
	Coordinates or Sta		2	NAVE						_
3. DRILLING AG	9.9 E 2,585, SENCY	<b>524</b> .	.2	12. MANU Vibra		S DESIGNA ⁻	TION OF DRILL			
	ean Seismic	Sur	vey			ERBURDEN	I DISTURBED	UNDISTUR	RBED	$\dashv$
4. HOLE NO. (A file number)	s shown on drawi	ng title		SAMP	LES TAKEN		2			_
5. NAME OF DR	PILLER		Y-82	14. TOTA	NUMBER C	ORE BOXE	S			_
C. Dill				15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	ARTED : CO 12/15/2011 :	MPLETED 12/15/2	2011	
	AL INCLI	NED	DEG. FROM VERT.	17 FLEV	ATION TOP C	E HOLE	-48.9	12/13/	2011	$\dashv$
7. Penetration, f	t		11.6		CORE REC				125 (	%
8. Recovery, ft			14.6	19. GEOL		OVERTION	( BOI (III C		120	~
9. Total Recover	ry, %		125.0				S. Miller			╝
ELEVATION	DEPTH LEGI	ΞΝD	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMAF (Drilling time, wat		pth	7
a	b c		(Description) d		ERY	NO. f	weathering, etc.,	if significa	nt)	
-49.4	0.5		Lag deposit, Brown coarse to fine Sar	nd. some	е	1	g			
-49.4	0.5		shells and shell fragments	ſ	100	1				E
			Interbedded 1/2 inch to 3 inch thick la dark bronw clay and silty fine to media	yers of		0.5				
			Sand; dense	airi		6.0				E
										Е
										F
	<u>-∃</u> ;;;;;									E
	4.4									F
	-34									
	<b>= 30</b>									F
	-3%				100	2				
	# # #				100	6.0				F
						11.6				E
										E
										F
										E
										E
										E
										<u> </u>
-60.5	11.6									E
	_=									<u> </u>
	$\exists$									E
	_=									E
	$\exists$									E
										E
	$\exists$									E
	_=									
	$\exists$									E
	$\exists$									E
	$\exists$									F
	三									E
	$\exists$									F
										E
	$\exists$									F
										E
										E
	$\exists$									F

								noie No.	<u>1-03</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET	1
1. PROJECT				Area `		DIT	2 E in	of 1 s	SHEETS
	nks Maste	er Beac	ch Nourishment Plan		ND TYPE OF		3.5 in OWN (TBM or MSL)		
2. LOCATION (C N 326,689	Coordinates or	Station)		NAVE	88 (		TION OF DRILL		
3. DRILLING AG	SENCY	-		Vibra		220.0			
Alpine Oc			le and		. NO. OF OVI LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTURBE	ĒD
file number) 5. NAME OF DR	DILLED		Y-83	14. TOTAL	NUMBER C	ORE BOXE	S		
C. Dill	VILLEIX			15. WATE	R DEPTH	·			
6. DIRECTION (				16. DATE	HOLE	STA	ARTED CO 12/16/2011	MPLETED 12/16/20	11
		ICLINED	DEG. FROM VERT.	17. ELEVA	TION TOP O	F HOLE	-51.5		
7. Penetration, f	t		13.1	18. TOTAL	CORE REC	OVERY FOR	R BORING		125 %
8. Recovery, ft	. 0/		19.8	19. GEOL	OGIST		C. Miller		
9. Total Recover	ry, %		152.0  CLASSIFICATION OF MATERIALS		% CORE	BOX OR	S. Miller	KS	
ELEVATION a	DEPTH L	EGEND c	(Description)	•	RECOV- ERY e	SAMPLE NO. f	(Drilling time, wat weathering, etc., g	er loss, depth	
-51.5	0.0		Dark brown dense hard Clay; Note- di expansion of the core, more of this se type was lost out of the top of the core Actual thickness more than 2.7 feet.	diment	100	1 0.0 2.7	g g		
-54.2 -54.5	2.7		Dark brown silty fine Sand, one 1" thic	ck round	100	2			E
	=		piece of wood (tree root)			2.7			F
	_=_		Light gray-brown silty fine Sand; no sl	nells		7.5			E
	3								E
	<u>∃</u> ;								E
	= :								E
-59.0	7.5								F
-59.0	7.5		Gray medium to coarse Sand, trace fi	ne	100	3	-		E
			Gravel			7.5 11.5			E
	=:::					11.5			E
	_=::								E
									E
									E
-63.0	11.5								F
	_=		Dense dark green-gray sandy Silt to S Sand	Silty fine	100	4 11.5			E
	3.		Sand			13.1			E
-64.6	13.1								E
	$\exists$								E
									E
	$\exists$								E
	-								E
	$\exists$								F
	$\exists$								E
	$\exists$								E
	$\exists$								F
	$\exists$								E
	$\exists$								<b>F</b>
									E
	$\exists$								E
	∃								E

							I	iole No	
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1
1. PROJECT					ND TYPE OI	- DIT	3.5 in	OF I	SHEETS
	nks Master	Beac	h Nourishment Plan				WN (TBM or MSL)		
2. LOCATION (C		ation)		NAVE	88 0		TION OF DRILL		
3. DRILLING AG	SENCY			Vibra		S DESIGNA	HON OF DRILL		
Alpine Oc 4. HOLE NO. (A	ean Seismic			13. TOTAI SAMP	L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTURE	3ED
file number)			Y-84	14. TOTA	L NUMBER C	ORE BOXES	<del> </del>		
5. NAME OF DR C. Dill	RILLER			15. WATE	R DEPTH				
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	ARTED COM 12/14/2011	MPLETED 12/14/2	011
	AL INCL	INED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-51.3	12/14/2	011
7. Penetration, f	t		14.4		L CORE REC				139 %
8. Recovery, ft			19.7	19. GEOL					
9. Total Recover	ry, %		139.0		0/ CODE	DOV OD	S. Miller	1/0	
ELEVATION		SEND	CLASSIFICATION OF MATERIALS (Description)	3	% CORE RECOV- ERY	BOX OR SAMPLE NO. f	REMAR (Drilling time, wate weathering, etc., i	er loss, dept	th t)
-51.3	0.0 —	c	d Gray silty fine Sand and shells (40-60	%)	100	1	g		
00			Gray Sinty line Saina and Shells (45 55	70)	100	0.0			E
						2.0			
-53.3	2.0								E
-55.5	2.0		Gray-green silty fine to medium Sand		100	2			
	3					2.0			E
						5.0			
	<u>∃</u>								E
									<b>—</b>
	<u> </u>								E
					100	3			F
	<b>-</b>				100	5.0			F
	-33					10.0			<u> </u>
									E
	· · · · .								<b>–</b>
									E
	<b>- 188</b>								F
									E
	<u> </u>								F
									F
					100	4			E
	<b>#</b>					10.0 14.4			
						14.4			F
									E
	<b>- 188</b>								F
									E
	二字級								F
-65.7	14.4								
-05.7	14.4	346.33							F
	4								<b>-</b>
	$\exists$								E
	_=								F
	$\exists$								E
									E
									F
									E
									E
	$\exists$								F
	$\exists$								E
	$\exists$								F

								HOIE INC	). T-05	
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET	1	
1. PROJECT				Area `		- DIT	0 F im	of 1	SHEETS	1
	nke Maetar	Reac	h Nourishment Plan		AND TYPE OF		3.5 in			1
2. LOCATION (			Trivourisimism I I I I I I I	11. DATUI NAVE	VI FOR ELEV ) 88	ATION SHO	WN (TBM or MSL)			1
N 323,122	2.1 E 2,584		3	12. MANU	FACTURER'S	S DESIGNAT	TION OF DRILL			
3. DRILLING AG	SENCY Sean Seismic	s Cun	(0)	Vibra						
4. HOLE NO. (A file number)			e and	13. TOTAL SAMPI	NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTUR	BED	
5. NAME OF DR	RILLER		Y-85	14. TOTAL	NUMBER C	ORE BOXES	S			
C. Dill	VILLEIV			15. WATE	R DEPTH					
6. DIRECTION (				16. DATE	HOLE	STA	ARTED COI 12/15/2011	MPLETED 12/15/2	2011	
		LINED	DEG. FROM VERT.	17. ELEVA	ATION TOP C	F HOLE	-51.4			
7. Penetration, f	t		15.0	18. TOTAL	CORE REC	OVERY FOR	R BORING		139 %	
8. Recovery, ft			18.2	19. GEOL	OGIST		0.1477			
9. Total Recover	ry, %		121.0		% CORE	BOX OR	S. Miller	NS .		
ELEVATION	DEPTH LEG	GEND	CLASSIFICATION OF MATERIALS (Description)	5	RECOV- ERY	SAMPLE	(Drilling time, wate weathering, etc.,	er loss, dep		
a		С	d		е	NO. f	g g			
-51.4 -52.0	0.6		Gray fine Sand		100	0.0				F
-52.6	1.2		Gray fine to medium Sand and fine to	medium		1.2				E.
02.0			Gravel to1/2"; some shells to 2" (40-6 Sharp contact to brown-gray-green sil		100	2				E
			Sand	ty iiio		1.2 6.0				Ė.
	田家					0.0				E
										Ė.
	$\exists$									E
	_= <u>=</u> =									E.
	4									F
										E.
	433									E
	<b>=</b>									F
	$\exists$				100	3				E
						6.0				E
						12.0				F
	二 二 二									F
										E
	<b>⇒</b>									E
	_ <b>_</b>									F
	$\exists x$									E
	_=_									E
	4 3									F
	7.3									F
										E
-63.4	12.0									E
00.4			Grades to dark gray-green silty fine S	and to	100	4				F
	∃.\$%		sandy Silt			12.0				Ε
						15.0				F
	二 学									F
	<u>-</u> ∃(%)									F
										E
-66.4	15.0	333								Ė.
	$\exists$									F
	=									Ē.
	$\exists$									F
	_=									E
	$\exists$									E
	=									F
										E
	$\exists$									E
	$\exists$									Ė
	$\exists$									F
I	-					1	1			_

								iole No.	1-00
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1 S	1
1. PROJECT							0.5:	OF I S	SHEETS
	nks Master	Reac	h Nourishment Plan		AND TYPE OF		3.5 in DWN (TBM or MSL)		
2. LOCATION (0	Coordinates or St	tation)		NAVE		ATION SHO	OVVIN (TBM OF MSL)		
	0.1 E 2,586	5,412.	.9	12. MANU	FACTURER'S	S DESIGNA	TION OF DRILL		
3. DRILLING AG Alpine Oc	ean Seismic	: Sur	vev	Vibra	core _ NO. OF OV	EDRI IDDEN	I : DISTURBED : U	JNDISTURBE	.n
4. HOLE NO. (A file number)			e and		LES TAKEN	LNBONDLN	3	INDISTORBL	
5. NAME OF DR	PILLER		Y-86	14. TOTAI	NUMBER C	ORE BOXE	S		
C. Dill				15. WATE	R DEPTH				
6. DIRECTION (				16. DATE	HOLE	SIA		12/15/201	11 I
		LINED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-51.0		
7. Penetration, f	t		13.2	18. TOTAL	CORE REC	OVERY FOR	R BORING	1	137 %
8. Recovery, ft	n. 0/		18.1 137.0	19. GEOL	OGIST		C Millor		
9. Total Recover			CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	S. Miller	(S	
ELEVATION		GEND	(Description)	•	RECOV- ERY	SAMPLE NO. f	(Drilling time, water weathering, etc., it	r loss, depth f significant)	
a 51.4	b	C	d Light brown-gray fine to medium Sand	1 raro	е	f	g		<u> </u>
-51.4	0.4		Tright brown-gray line to medium Sand ∖fine gravel	ı, rare ∫	100	1			E
			Interbedded dark brown Clay and gray	v to light	100	0.4			
	<b>- 1</b>		Interbedded dark brown Clay and gray brown fine to medium Sand lenses	,		3.5			F
	7								F
	7.8								F
	<del></del>								<u> </u>
-54.5	3.5				400				E
			Dark brown dense Clay; grades to per between 9 and 10 feet	aty clay	100	2 3.5			<u> </u>
	=		between 9 and 10 leet			10.0			F
	=								F
									F
	= 1///								F
									<u> </u>
	=								F
	3///								F
									E
	3///								Е
	<del></del>								
	<b>=</b> ////								E
									E
	<b>=</b> ////								E
-61.0	10.0								F
01.0			Gray to light brown fine Sand with bro	wn clav	100	3	1		
	7.4		lenses; one piece of wood at 12.5 ft	,		10.0			F
						13.2			
	74								F
	<b>-</b>								F
									E
	3.4								E
-64.2	13.2								
									F
									F-
	7								F
	$\exists$								F
									E
	$\exists$								E
	$\dashv$								<u> </u>
									F
	_=								<u> </u>
	<b>コ</b>								F
									F
	===								F
									E
	$\exists$								E
I	_					1			<b>⊢</b>

								I IOIE I	10.	1-01	<u>_</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET		1	
1. PROJECT				Area		- DIT	0.F.in	OF 1	SH	IEETS	4
	nks Master	Beac	ch Nourishment Plan		ND TYPE OF		3.5 in DWN (TBM or MSL)				┨
2. LOCATION (		tation)		NAVE	88 0		TION OF DRILL				4
3. DRILLING AG		_		Vibra	core						
4. HOLE NO. (A	ean Seismi		le and		L NO. OF OVI LES TAKEN	ERBURDEN	I DISTURBED 3	UNDISTU	JRBED	)	
file number) 5. NAME OF DF	NILLED		Y-87	14. TOTAI	L NUMBER C	ORE BOXE	S				1
C. Dill	RILLER			15. WATE	R DEPTH						
6. DIRECTION (				16. DATE	HOLE	STA	ARTED CO 12/16/2011	MPLETEI 12/16		1	
		LINED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-52.5			-	1
7. Penetration, f	t		13.0	18. TOTAI	L CORE REC	OVERY FOR	R BORING		1:	37 %	1
8. Recovery, ft	•		18.1	19. GEOL	OGIST		O Miller				
9. Total Recover	ry, %		137.0  CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	S. Miller	RKS			┨
ELEVATION a	DEPTH LEG	GEND c	(Description)	•	RECOV- ERY e	SAMPLE NO. f	(Drilling time, wat weathering, etc., g	ter loss, d			
-52.5	0.0	ؠؠۜڔؠڹ	White to light gray-green densely pac	ked	100	1	3				E
			Shells and shell hash (30-50%); some medium sand in matrix	e fine to		0.0 5.4					F
			mediam sana in matrix			0.4					E
											E
		<u> </u>									E
											Ė.
											E
											E
	<b>⇒</b> ::3										F
-57.9	5.4										F
07.10			Dark gray-green fine Sand		100	2					E
						5.4 10.0					E
	3										F
											E
	<u> </u>										E
											E
	<b>-</b>										E
	3.8										F
					100	3					E
	3				100	10.0					E
						13.0					F
	300										E
											E
-65.5	13.0										E
	$\exists$										E
	4										E
	3										E
	=										E
	=										E
	$\exists$										Ē
	$\exists$										E
	$\exists$										E
	∄										Ē
											E
											E
	=										E
	$\exists$										F

		,						HOIE INC	<u>). 1-00</u>	
DRILLII	NG LOG	DIVISI	ION	INSTALLA Area				SHEET OF 1	1	
1. PROJECT						DIT	3.5 in	OF I	SHEETS	ĺ
	nks Master B	Beach	Nourishment Plan		AND TYPE OF		3.5 IN WN (TBM or MSL)			
2. LOCATION (C	Coordinates or Stat 5.6 E 2,589,	tion)		NAVE	88 C		FION OF DRILL			
3. DRILLING AG	SENCY			Vibra		3 DESIGNA	TION OF DIVILL			l
	ean Seismic s shown on drawii			13. TOTAI SAMP	L NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 3	UNDISTUR	BED	
file number)			Y-88	14. TOTAL	L NUMBER C	ORE BOXES	<del> </del>			l
5. NAME OF DR C. Dill	RILLER			15. WATE	R DEPTH					
6. DIRECTION (				16. DATE	HOLE	STA	RTED CO 12/14/2011	MPLETED 12/14/2	011	l
	L INCLI	NED	DEG. FROM VERT.	17 FI FV	ATION TOP C	F HOLF	-51.4	12/14/2		l
7. Penetration, fl	t		8.4		L CORE REC				134 %	ĺ
8. Recovery, ft			12.5	19. GEOL			( BOT ( III )		10+ 70	ĺ
9. Total Recover	у, %		134.0				S. Miller			l
ELEVATION	DEPTH LEGE	END	CLASSIFICATION OF MATERIALS (Description)	3	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMAF (Drilling time, wat weathering, etc.,	ter loss, dep	oth ot)	
a	b c		d		е	f	g g		,	
-51.4	0.0		ight gray Shells and shell hash (40% ayers of gray dense fine Sand	) with	100	0.0				E
	_=:::::		ayers or gray derise fine cand			5.0				E_
									ŀ	E
										E_
	<b>###</b>									F
									- 1	
	<b>⊒∷</b> ∷:								ļ	E
									ŀ	E
-56.4	5.0									E
		i i c	Gray green dense fine Sand and some	e small	100	2			ŀ	E
	크색	s	shell fragments (10-15%)			5.0			-	E
						7.0				
50.4										F
-58.4	7.0		Gray green coarse Shell hash (20-25%	/- ) with	100	3			ŀ	E
		i.s. li	ittle fine Sand	o) willi	100	7.0				E
-59.8						8.3				Ė-
-59.8	8.4	.v							ŀ	E
	$\exists$									E
	7									F
	$\exists$								-	
	$\exists$									E
	$\exists$								- [	Е
	$\dashv$								ŀ	
										F
									ŀ	E
	$\exists$								ŀ	Ē
									ļ	E-
	7								- 1	F
	_=								ŀ	Ē.
	$\exists$									F
	_=								ļ	E
	$\exists$								ŀ	E
	$\exists$								ŀ	F
	$\dashv$									F
	$\exists$								ŀ	E
	$\dashv$								-	
	$\dashv$								- 1	E
	$\exists$								ŀ	Ē
	-				1	1			ŀ	⊢ .

								TOIR INC	). T-09	
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET	1	
1. PROJECT				Area			0.5:	OF 1	SHEETS	
	nks Master	Reac	h Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)			
2. LOCATION (	Coordinates or St	tation)		NAVE		ATION SHO	VVIN (TBINI OF INISL)			
N 321,327	7.7 E 2,585	5,512.	3	12. MANU Vibra		S DESIGNAT	TION OF DRILL			
Alpine Oc	ean Seismic			13. TOTAL	NO. OF OV	ERBURDEN	DISTURBED	UNDISTURI	BED	
4. HOLE NO. (A file number)	s shown on drav	ving title	e and Y-89		LES TAKEN		3			
5. NAME OF DF	RILLER		1 00		NUMBER C	ORE BOXES	5			
C. Dill 6. DIRECTION (	DE LIOLE			15. WATE		STA	ARTED : CO	MPLETED		
6. DIRECTION (		LINED	DEG. FROM VERT.	16. DATE	HOLE		12/15/2011	12/15/2	011	
7. Penetration, f			12.0		ATION TOP C		-51.9			
8. Recovery, ft	-		16.1		CORE REC	OVERY FOR	R BORING		134 %	
9. Total Recover	ry, %		134.0	. 19. GEOL	OGIST		S. Miller			
ELEVATION		GEND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMAR (Drilling time, wat		th	
	b pearly rec		(Description) d		ERY	NO. f	weathering, etc.,			
-51.9	0.0 -:•:•	C	Gray fine to medium Sand, few shell		e 100	1	g			_
	$\exists : : :$		fragments (10-15%)			0.0 2.0				=
						2.0				=
-53.9	2.0									=
	_	71 71	Dark brown dense hard Clay, few pied	es of	100	2 2.0			F	Ξ
		<u>'/ \\                                  </u>	wood (roots); no shells			8.0				=_
	-	71/7								=
		<u> </u>							<b> </b>	
	_	1, 11,								Ξ
		77 7								
		1, 11,							<b> </b>	_
		<u> </u>								_
	-	1, 11,								=
	<u></u>	<u> </u>							E	_
-59.9	8.0 = 1/2 \(\frac{1}{2}\)	1/ 1/							<b> </b>	=
			Sharp contact to dense green-gray fin	e sandy	100	3				=
	_=_3		Silt to silty fine Sand; no visible shells			8.0 12.0				=_
	$\exists : \exists$								E	=
	_= :								-	=_
	33								<b>F</b>	Ξ
									E	_
20.0	<b>400</b> → 1								F	=
-63.9	12.0								E	
	$\exists$									=
	$\equiv$								E	_
	$\exists$								<b> </b>	=
	$\exists$									Ξ
										=
	=								<b> </b>	=
	=									Ξ_
	$\equiv$									=
									þ	
	$\exists$								F	_
									E	_
									þ	=
									F	_
									E	=

								HOIE N	<u> 10. Y</u>	<u>-90</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1 SHE	ETC
1. PROJECT		ļ			ND TYPE OF	BIT	3.5 in	101 1	SIIL	L13
			h Nourishment Plan	11. DATUI	M FOR ELEV		WN (TBM or MSL)			
	Coordinates or Star 4.3 E 2,587,		3	NAVE		2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5				
3. DRILLING AG		JU 1.	.5	Vibra		S DESIGNA	TION OF DRILL			
	ean Seismic			13. TOTAI	NO. OF OV	ERBURDEN	DISTURBED	UNDISTU	RBED	
4. HOLE NO. (A file number)	s shown on drawi	ng title	e and Y-90		LES TAKEN		5	<u>:</u>		
5. NAME OF DR	RILLER		1-50		NUMBER C	ORE BOXES	S			_
C. Dill				15. WATE	RDEPTH	: ST/	ARTED : C	OMPLETED	١	
6. DIRECTION (		NED	DEC EDOMNEDI	16. DATE	HOLE	317	12/15/2011	12/15		
▼ VERTICA	<u> </u>	NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-53.2			
7. Penetration, ff	t		14.0 19.3	18. TOTAI	CORE REC	OVERY FOR	R BORING		13	2 %
8. Recovery, ft	n, 0/		132.0	19. GEOL	OGIST		S. Miller			
9. Total Recover	19, %		CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	REMA			$\dashv$
ELEVATION	DEPTH LEGI	END	(Description)	•	RECOV- ERY	SAMPLE NO.	(Drilling time, w weathering, etc	ater loss, de	epth ant)	
a 52.2	b c	: গ্ৰাহ্ম	d		е	f	Wodinering, etc			_
-53.2 -53.9	0.0		Brown to gray very fine Sand and gray Clay balls (30%); no visible shells	/ SOTT	100	1 0.0				E
		****	Gray medium Sand, some fine gravel	in	100	0.7				E
			lenses at 2.9 ft and 3.1 ft			2 0.7				F
						4.0				
										F-
										E
-57.2	4.0	*								<b> </b>
	<b></b>		Gray sandy gravel to gravelly Sand; no shells	o visible	100	3 4.0				F
			Silelis			8.0				E
		0								E
		69								F
										E
		D.::								
										F
-61.2 -61.3	8.0		Croop gray shall layer in fine sand ma	strise [						
-01.3	6.1 ∃		Green-gray shell layer in fine sand ma Sharp contact to top of Gray-green sil		100	4 8.1				E
	_=		fine Sand	ty very		11.0				
	<b>- 1888</b>									F
	<b>=</b>									F
										E
-64.2	11.0									F
01.2			Grades to dark gray silty fine Sand		100	5				
	$\exists$					11.0				E
						14.0				⊨
	400									F
	<u>-</u> ≠%%									F
	∃::::::::::::::::::::::::::::::::::::									E
-67.2	14.0									
	=									F
	_=									
										E
	$\exists$									F
	$\equiv$									F
										E
	$\dashv$									
										F
										<u> </u>
	$\exists$									E
	_=									<u> </u>
	$\exists$									F
	$\exists$									

								HOIE N	<u>ю. Y-</u>	<u>91</u>
DRILLI	NG LOG	DIVIS	SION	INSTALLA Area				SHEET OF 1	1 SHEE	те
1. PROJECT					ND TYPE OF	- BIT	3.5 in	I OF I	SHEE	113
Bogue Ba			n Nourishment Plan				WN (TBM or MSL)			-
	Coordinates or Stat 3.1 E 2,589,0		2	NAVE						_
3. DRILLING AG		099.	3	12. MANU Vibra		S DESIGNAT	TION OF DRILL			
Alpine Oc	ean Seismic			13. TOTA	L NO. OF OV	ERBURDEN	I DISTURBED	UNDISTU	RBED	
4. HOLE NO. (A file number)	s shown on drawir	ng title	Y-91	SAMP	LES TAKEN		5	:		
5. NAME OF DR	RILLER		1-91		L NUMBER C	ORE BOXES	S			_
C. Dill				15. WATE	R DEPTH	·	NOTED : O	ON ADULETEE		_
6. DIRECTION (				16. DATE	HOLE	SIA	ARTED : CO 12/15/2011 :	OMPLETED 12/15/		
	<u> </u>	NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-52.5			
7. Penetration, f	t		14.0	18. TOTA	L CORE REC	OVERY FOR	R BORING		142	%
8. Recovery, ft			20.0	19. GEOL	OGIST		0.14111			
9. Total Recover	ry, %		142.0		% CORE	BOX OR	S. Miller	RKS		_
ELEVATION	DEPTH LEGE	END	CLASSIFICATION OF MATERIALS (Description)	5	RECOV-	SAMPLE	(Drilling time, wa	iter loss, de	epth	
а	b c	, ,	d		ERY e	NO. f	weathering, etc.	, ii sigriilica	arit)	
-52.5	0.0		Gray to dark brown silty fine Sand		100	1 0.0				F
F2 0	, <u> </u>					2.7				E
-53.8	1.3		Gray Shells and Shell hash(40%) in se	oft silt						E
		0000	matrix							E
-55.2	2.7									E
00.2			Light green coarse Shell hash and she	ells	100	2				
		8.00	(40%) and fine sand matrix			2.7 8.0				E
						0.0				
										E
										F
		Þ								E
	<b>₽</b> ;;;;									F
		8.00								E
		6								F
-60.5	8.0									E
			Dark gray silty fine Sand, some shells (20-30%)		100	3 8.0				F
	_=:::::		(20-30 %)			9.5				E_
-62.0	9.5									F
			Light green coarse Shells and Shell had (60-70%)	ash	100	9.5				E_
	$\exists ``````$		(60-70%)			11.0				F
-63.5	11.0 📑 🔅 👯	<u>0</u> ∫								E
	# # # # # # # # # # # # # # # # # # # #		Dark gray-green silty fine Sand; rare s shells (5%)	mall	100	5 11.0				F
	_300		311cli3 (J /0)			14.0				E
	488									F
	_388									E
	4									F
-66.5	14.0									E
	$\exists$									E
	_=									E
	$\exists$									E
	_=									E
										F
										E
	$\equiv$									E
										F
	$\equiv$									E
	$\exists$									F
	$\exists$									E
	$\exists$									E

							п	<u> </u>	
DRILLI	NG LOG	3	DIVISION	INSTALLA				SHEET 1	
1. PROJECT				Area		- DIT		OF 1 SHEETS	
	nks Mast	ter Bea	ach Nourishment Plan		AND TYPE OF		3.5 in  WWN (TBM or MSL)		
2. LOCATION (0	Coordinates o	or Station	1)	NAVE	88 0				
N 319,538		000,39	J <del>S</del> .∠	12. MANU Vibra		S DESIGNAT	TION OF DRILL		
Alpine Oc	ean Seis			13. TOTAL	L NO. OF OVI	ERBURDEN	•	IDISTURBED	
4. HOLE NO. (A file number)	s shown on	drawing	title and Y-92		LES TAKEN L NUMBER C	ODE BOVE	4 :		
5. NAME OF DR	RILLER		· · · · · · · · · · · · · · · · · · ·	14. TOTAL		ORE BUXES	<b>.</b>		
C. Dill  6. DIRECTION (	OF HOLE			16. DATE		STA		PLETED	
		INCLINE	D DEG. FROM VERT.			:		2/15/2011	
7. Penetration, f	t		16.0		ATION TOP C L CORE REC		-54.2	112 %	
8. Recovery, ft			18.0	18. TOTAL		OVERT FUI	טוואטט א	112 %	
9. Total Recover	у, %		112.0	0202			S. Miller		
ELEVATION	DEPTH	LEGENI	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMARKS (Drilling time, water l	loss, depth	
а	b	С	(Description)		ERY e	NO. f	weathering, etc., if s	significant)	_
-54.2	0.0		Dark brown clay, some thin fine sand	laminae	100	1 0.0			=
						8.0		E	=_
								ļ.	=
								F	
	$\exists$							F	=
								E	_
	=							<b> </b>	_
									=
	-								=
								<b>-</b>	_
	$\exists$								=
									=
									=
									Ξ
-62.2	8.0								=
	$\exists$		Gray Gravel to 1.2 inches diameter and fine Sand as a matrix	nd silty	100	2 8.0			=
		本	into Sana as a matrix			9.5		E	=-
-63.7	9.5		●】 ∴ Light gray silty fine Sand with shell ha	ısh	100	3			Ξ
	===:		layers at 11-12 ft and 13-14 ft (60-80%)	%)	100	9.5		E	
	$\exists$		•			12.0			Ξ
	<b>-</b> ⊒:								
	⇉		•					E	=
	===				100	4		E	=
	_ =		• •			12.0 16.0		ļ.	=
	<b>=</b>								=
			•					E	=_
	<u></u>		• 1					ļ.	=
	<b>=</b>							E	=
-70.2	16.0							F	
	目								_
	-=							E	_
	$\exists$							<u> </u>	=
	=							F	
	目							F	_
								E	=
	$\exists$								=

										<u>0. 1-93</u>	4
DRILLI	NG LO	G	DIV	ISION	INSTALLA Area				SHEET OF 1	1	1
1. PROJECT							- 5	0.F.:	UF I	SHEETS	1
	nke Mac	ster D	220	h Nourishment Plan		AND TYPE OF		3.5 in			1
2. LOCATION (C	Coordinates	or Stati	on)	III NOUIISIIIIICIIL FIAII	11. DATUI NAVE		ATION SHO	WN (TBM or MSL)			
N 320,426	6.9 E 2			.3	12. MANU	FACTURER'S	S DESIGNA	TION OF DRILL			1
3. DRILLING AG Alpine Oc		smic '	Sur	vev	Vibra		EDDLIDDE	I : DISTURDED ::	INDICTI	DDED	1
4. HOLE NO. (A file number)				e and		L NO. OF OV LES TAKEN	EKBUKDEN	DISTURBED 1	UNDISTUR	מפט	
5. NAME OF DR	DILLED			Y-93	14. TOTA	L NUMBER C	ORE BOXE	s			1
C. Dill					15. WATE	R DEPTH	:07	ADTED : 00:	אחו בדבה		-
6. DIRECTION (					16. DATE	HOLE	STA	ARTED : COM 12/15/2011 :	MPLETED 12/15/2	2011	1
	AL L	] INCLIN	NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-53.5	12/ 10/2		1
7. Penetration, fi	t			11.8		L CORE REC				133 %	1
8. Recovery, ft				15.7	19. GEOL					.00 /0	1
9. Total Recover	ry, %			133.0		L 0/ 22==	DOV.	S. Miller	10		1
ELEVATION	DEPTH	LEGE	ND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMARI (Drilling time, wate	er loss, dep		1
а	b	С		(Description) d		ERY e	NO. f	weathering, etc., i			
-53.8	0.3 =	,,,,,,		Gray fine to medium Sand	,			9			F
-55.6	J.U			Dense brown Clay with rare roots and	organic	100	1				E
				matter (peat like lenses)	<b>J</b>		0.3 7.0				E
	Ξ						'.0				E
	_=										E_
	=	<b>\</b> ////									F
	_ =	<b>\////</b>									E
											E
	=										Е
	=										E
	_										E
	=										F
											F
00.5	7.0										E
-60.5	7.0	/////	444	Dark brown-gray silty fine Sand		100	2				
	_			Dark brown-gray siity line Sand		100	7.0				E
							9.0				<u> </u>
	=										F
-62.5	9.0										E
	=			Gray-green silty fine Sand		100	3				
	=						9.0 11.8				E
							11.0				F
04.5											F
-64.5	11.0			Gray sandy Gravel		-					E
-65.3	11.8	• 6	•	Gray Sariuy Graver							E
-05.3	11.0	, <del>, , ,</del>									E_
	=	1									F
	=	1									F
		1									F
	=	}									E
		1									E
	=	1									E
	_=	1									E_
	=	1									F
	=	1									F
		1									F
		}									Е
		1									E
	=	1									E
	_=	1									E_
		1									F
	_ =	1									E
		}									E
		1									E

		1						IOIE I		1-3-	ξ.
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1		1 HEETS	
1. PROJECT					ND TYPE OF	E DIT	3.5 in	OF	3	HEETS	H
	nks Master E	3eac	h Nourishment Plan				WN (TBM or MSL)				1
2. LOCATION (C	Coordinates or Sta 0.1 E 2,581,	tion)		NAVE	88 (		FION OF DRILL				-
3. DRILLING AG	SENCY			Vibra		0 0 0 0 0 0 0	TION OF BINEE				
4. HOLE NO. (A	ean Seismic s shown on drawi		e and		NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 4	UNDIST	JRBEI	D	
file number)			Y-94	14. TOTAL	NUMBER C	ORE BOXE	;; S				1
5. NAME OF DR C. Dill	RILLER			15. WATE							1
6. DIRECTION O	OF HOLE			16. DATE	HOLE	STA	ARTED COI 12/18/2011	MPLETEI 12/18		1	
	L INCL	INED	DEG. FROM VERT.	17. ELEV <i>A</i>	ATION TOP C	F HOLE	-40.7	12/10	/201	1	1
7. Penetration, fl	t		16.3		CORE REC				1	04 %	1
8. Recovery, ft			16.9	19. GEOL						01 /	1
9. Total Recover	у, %		104.0				S. Miller				
ELEVATION		END	CLASSIFICATION OF MATERIALS (Description)	3	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMAR (Drilling time, wat weathering, etc.,	er loss, d			
-40.7	0.0 —	: [4] [4] [5]	Dark gray silty fine Sand		e 100	f 1	g				┢
			Bank gray siity iine sand		100	0.0 1.5					E
-42.2	1.5										E
	2000		Dark gray shelly Sand and Gravel to 3	3/4"	100	2					F
		\$.	diameter			1.5 4.0					
						4.0					F
											E
-44.7	4.0										E
-44.7	- · · · ·		Dark gray silty fine Sand, rare (5%) sr	nall shell	100	3					
	日約		fragments; 1" diameter pebbles at bot	tom of		4.0					E
-46.2	5.5		section			5.5					
-40.2	3.5	/////	Sharp contact to top of dark brown de	nse Clav	100	4					E
	-3///		onarp contact to top or dam srom ac			5.5					
	= ////					15.5					F
	=										F
	= 4///										E
	3///										Е
	_=										
	<i>=====================================</i>										E
	_=										
	₹////										E
	_=\////										E
	₹////										E
	_ <del>_</del>										Ė
	<b>=</b> \////										E
	_======================================										E
	=////										F
	_======================================										E
-56.2	15.5										F
-56.9	16.2		Dark brown Clay grades with Peat								E
-50.8	10.2	/////									E
	_=										E
											E
											E
											E
	$\exists$										F
	$\exists$										E
	$\exists$										E

		1		T					1-95
DRILLI	NG LOG	DIVI	ISION	INSTALLA Area				1 .	1
1. PROJECT						- DIT	0 F in	OF I SH	IEETS
	inks Master	Reac	h Nourishment Plan		AND TYPE OF		3.5 in WN (TBM or MSL)		
2. LOCATION (	Coordinates or S	Station)		NAVE	88 (		,		
N 329,387	7.4 E 2,58 GENCY	1,514.	3	12. MANU Vibra		S DESIGNAT	TION OF DRILL		
	ean Seismi			13. TOTAL	NO. OF OV LES TAKEN	ERBURDEN	•	JNDISTURBED	
4. HOLE NO. (A file number)	is snown on ara	iwing title	e and : : Y-95		NUMBER C	ORE BOXES	<u> </u>		-
5. NAME OF DF C. Dill	RILLER		•	15. WATE		ONE BOXE	5		$\dashv$
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA		MPLETED	
∨ERTICA	AL INC	CLINED	DEG. FROM VERT.		ATION TOP C	:	12/18/2011 -43.8	12/18/2011	1
7. Penetration, f	t		17.1						00 %
8. Recovery, ft			17.1	19. GEOL	CORE REC	OVERY FOR	RBURING		JU %
9. Total Recover	ry, %		100.0	19. GLOL	00131		S. Miller		
ELEVATION	DEPTH LE	GEND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMARI (Drilling time, wate		
	b b		(Description) d		ERY	NO. f	weathering, etc., i		
a -44.1	0.3	C	Gray coarse shells and shell hash (40	)-60%)	e 100	1	g		+
-44.5	0.7		and coarse to fine Sand, some fine gr		100	0.0			F
			Gray soft Organic Silt with shells (15-2			2.6			
-45.3	1.5	عَبْرِي	Gray medium to coarse Gravel and sr shells (15-25%)	mall _/					E
40.4			Gray shell hash and shells to 1", some	e fine to					F
-46.4	2.6		medium Sand as matrix Dark brown dense Clay		100	2			F
47.5			Dark brown dense Clay			2.6			E
-47.5	3.7		Brown to gray fine to medium Sand; n	o visible		7.9			F
			shells	IO VISIDIC					E
									E
									F
	<del>-</del> 48								
									F
									E
-51.7	7.9								F
			Sharp Contact at top of gray-green sil	ty fine	100	3			
			Sand; no visible shells			7.9			
						14.0			<b>—</b>
									E
									E
-57.8	14.0								F
	-83		Contact at top of green-gray coarse S	hells	100	4			F
			and shell hash (60-80%) with sandy s	ilt matrix		14.0			E
						17.1			
									F
-60.9	17.1_=								F
55.5		11 11 11							E
									E
									⊨
									F
									F
									E
						1			⊢

								noie ivo.	<u>1-90</u>
DRILLI	NG LOG	DIV	/ISION	INSTALLA Area				SHEET OF 1	1
1. PROJECT		ļ				- DIT	0.5:-	TOF I	SHEETS
	nks Maste	er Bead	ch Nourishment Plan		AND TYPE O		3.5 in WN (TBM or MSL)		
2. LOCATION (	Coordinates or	Station)		NAVE		ATION SHO	IVVIN (TBINI OF MISL)		
N 329,835		82,408	3.4			S DESIGNAT	TION OF DRILL		
Alpine Oc		nic Sur	vey	Vibra	NO. OF OV	ERBURDEN	I : DISTURBED :	UNDISTURBE	ED
4. HOLE NO. (A file number)					LES TAKEN		3		
5. NAME OF DF	RILLER		1-90		NUMBER C	ORE BOXES	S		
C. Dill				15. WATE	R DEPTH	: OT 4		MDIETED	
6. DIRECTION (				16. DATE	HOLE	SIF	ARTED COI 12/18/2011	MPLETED 12/18/20	)11
		NCLINED		17. ELEV	ATION TOP C	F HOLE	-43.7		
7. Penetration, f	t		12.2	18. TOTAL	CORE REC	OVERY FOR	R BORING		105 %
8. Recovery, ft	n. 0/		13.0	19. GEOL	OGIST		C Millor		
9. Total Recover	ry, %		105.0 CLASSIFICATION OF MATERIALS		% CORE	BOX OR	S. Miller	KS	
ELEVATION a	DEPTH L	LEGEND c	(Description)	0	RECOV- ERY e	SAMPLE NO. f	(Drilling time, wate weathering, etc., g	er loss, depth	
-43.7	0.0		Gray fine to medium Sand, few shells	at	100	1	9		
-44.6	0.9		bottom of section			0.0 2.4			E
-44.9	1.2	<i>!!!!</i> !	Gray soft sticky Clay			2.7			E
		60	Dark gray coarse to fine Gravel, some fragments (15-25%)	e snei					E
-46.1	2.4		Dark brown dones Clay with fow fine	and	112	1			<b> </b>
			Dark brown dense Clay with few fine staminae	sanu	112	2 2.4			E
	$\equiv$					9.1			E
									E
	= 1/2								E
	===								F
	<u>//</u>								<b>–</b>
	<b>=</b> //								E
	_ <del>/</del> /								
	<b>=</b> //								E
	=======================================								F
-52.8	9.1								E
	= = = = = = = = = = = = = = = = = = = =		Brown fine Sand, some lenses of brown	vn Clay	100	3			F
						9.1 12.1			E
	<b>⇒</b>					12.1			F
	;								F
	3								E
<i>EE</i> 0	12.1								F
-55.8	12.1—								
	$\exists$								E
	$\exists$								E
									F
	$\exists$								F
									F
	$\exists$								E
									<b> </b>
									E
	三								E
									F
	耳								E
	$\exists$								F
	$\exists$								F

								<u>HOIE N</u>	<u>О. Ү-</u>	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1	
1. PROJECT					ND TYPE OF	- RIT	3.5 in	TOF I	SHEET	15
Bogue Ba			h Nourishment Plan				OWN (TBM or MSL)			$\dashv$
	Coordinates or State 1.6 E 2,583,		6	NAVE						
3. DRILLING AG		302.	.0	12. MANU Vibra		S DESIGNA	TION OF DRILL			
Alpine Oc	ean Seismic			13. TOTA	L NO. OF OV	ERBURDEN	I DISTURBED	UNDISTU	RBED	
4. HOLE NO. (A file number)	s shown on drawii	ng title	e and Y-97	SAMP	LES TAKEN		3			
5. NAME OF DR	RILLER		: 1-97	14. TOTA	L NUMBER C	ORE BOXE	S			
C. Dill				15. WATE	R DEPTH					
6. DIRECTION (				16. DATE	HOLE	STA	ARTED : CO 12/18/2011 :	MPLETED 12/18/	2011	
	AL INCLI	NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-49.1	12/10/		
7. Penetration, f	t		16.0		L CORE REC				112	%
8. Recovery, ft			17.9	19. GEOL						
9. Total Recover	ry, %		112.0				S. Miller	2160		_
ELEVATION	DEPTH LEGE	ND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMAF (Drilling time, wat	er loss, de	pth	
а	b c		(Description) d		ERY e	NO. f	weathering, etc.,	if significa	nt)	
-49.1	0.0		Dark gray to dark gray-green Shell ha	sh	100	1				E
			(30-40%) and gravel; some coarse to sand	fine		0.0 2.7				E
			Sand			2.1				E
										F
54.0	2.7									E
-51.8	2.7		Sharp contact to top of Gray- green si	Ity fine	100	2				E
			Sand to sandy Silt	,		2.7				E
	_3					10.0				
	3.33									
	_=%									
	<b>- 188</b>									F
	_3%									
	:									
										E
	_3:::::									
	크용하									F
										E
	_=									
	3:33				100	3				
						10.0 16.1				E
	_=									E
	$\exists$									F
	_=:4									E
	# # #									F
										E
	<b> </b>									E
	_3.3									
	<b>=</b>									F
-65.1	16.0									E
	= =						1			F
										E
	$\exists$									F
										E
	$\exists$									F
										E
	$\exists$									F
	=					1				

								<u>iole No.</u>	
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1
1. PROJECT		1				DIT	3.5 in	OF I	SHEETS
	nks Master E	Beac	h Nourishment Plan		ND TYPE OF		WN (TBM or MSL)		
2. LOCATION (	Coordinates or Sta 0.6 E 2,582,	tion)		NAVE	88 (		TION OF DRILL		
3. DRILLING AG	SENCY			Vibra		o beolor with	TION OF BRIDE		
4. HOLE NO. (A	ean Seismic		e and	13. TOTAL SAMP	NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 1	JNDISTURBE	ΞD
file number)			Y-98	14. TOTAL	NUMBER C	ORE BOXES	S		
5. NAME OF DE C. DIII				15. WATE	R DEPTH	. ct/	ARTED : COM	MPLETED	
6. DIRECTION (			DE0 FD041/FDT	16. DATE	HOLE	517	12/18/2011	12/18/20	11
		INED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-45.3		
7. Penetration, f	t		16.1	18. TOTAL	CORE REC	OVERY FOR	R BORING		116 %
8. Recovery, ft			19.1	19. GEOL	OGIST		O 14:11		
9. Total Recover	ry, %		116.0		% CORE	BOX OR	S. Miller	KS	
ELEVATION		END	CLASSIFICATION OF MATERIALS (Description) d	S .	RECOV- ERY	SAMPLE NO. f	(Drilling time, wate weathering, etc., i	er loss, depth	
a -45.3 -45.9	0.0		Dark gray coarse to fine Sand and 2 in	nch	e 100	1	<u>g</u>		
-45.9 -46.2	0.6		shells (20%)			0.0			E
70.2	•••••	•••••	Dark gray sandy soft Organic Silt			1.9			<u> </u>
-47.2	1.9 ⊒∷∷		Dark gray coarse to fine Sand and she inches (20%)	ells to 2					E
			Sharp contact to Dark brown Silt, few	fine	100	2			<b>F</b>
	크세		sand laminae			1.9 8.0			F
									E
	= 4.48								E
									E
	<b>= 300</b>								E
									E
									F
									E
	= : : : : : : : : : : : : : : : : : : :								F
									E
-53.3	8.0								E
			Dark brown silty fine to medium Sand	and	100	3			F
			brown Clay laminae			8.0 16.0			E
	<b>=</b>								F
	_=								E
	499								F
									E
	<b>⇒</b>								F
	_3%								E
	<b>=</b>								F
	_3%								E
									F
									E_
									F
	_38								E
									E
-61.4	16.1								E
									E
	$\exists$								E
	$\exists$								E
									E
	$\exists$								E
									<b> </b>
	∃								E
	_								<u> </u>

								<u>iole No.</u>	
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1
1. PROJECT		1				DIT	3.5 in	OF I	SHEETS
	nks Master E	Beac	h Nourishment Plan		ND TYPE OF		WN (TBM or MSL)		
2. LOCATION (	Coordinates or Sta 0.6 E 2,582,	tion)		NAVE	88 (		TION OF DRILL		
3. DRILLING AG	SENCY			Vibra		o bedicity (	TION OF BRIDE		
4. HOLE NO. (A	ean Seismic		e and	13. TOTAL SAMP	NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 1	JNDISTURBE	ΞD
file number)			Y-98	14. TOTAL	NUMBER C	ORE BOXES	S		
5. NAME OF DE C. DIII				15. WATE	R DEPTH	. ct/	ARTED : COM	MPLETED	
6. DIRECTION (			DE0 FD041/FDT	16. DATE	HOLE	517	12/18/2011	12/18/20	11
		INED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-45.3		
7. Penetration, f	t		16.1	18. TOTAL	CORE REC	OVERY FOR	R BORING		116 %
8. Recovery, ft			19.1	19. GEOL	OGIST		O 14:11		
9. Total Recover	ry, %		116.0		% CORE	BOX OR	S. Miller	KS	
ELEVATION		END	CLASSIFICATION OF MATERIALS (Description) d	S .	RECOV- ERY	SAMPLE NO. f	(Drilling time, wate weathering, etc., i	er loss, depth	
a -45.3 -45.9	0.0		Dark gray coarse to fine Sand and 2 in	nch	e 100	1	<u>g</u>		
-45.9 -46.2	0.6		shells (20%)			0.0			E
70.2	•••••	•••••	Dark gray sandy soft Organic Silt			1.9			<u> </u>
-47.2	1.9 ⊒∷∷		Dark gray coarse to fine Sand and she inches (20%)	ells to 2					E
			Sharp contact to Dark brown Silt, few	fine	100	2			<b>F</b>
	크세		sand laminae			1.9 8.0			F
									E
	= 4.48								E
									E
	<b>= 4818</b>								E
									E
									F
									E
	= : : : : : : : : : : : : : : : : : : :								F
									E
-53.3	8.0								E
			Dark brown silty fine to medium Sand	and	100	3			F
			brown Clay laminae			8.0 16.0			E
	<b>=</b>								F
									E
	499								F
									E
	<b>⇒</b>								F
	_3%								E
	<b>=</b>								F
	_3%								E
									F
									E_
									F
	<u>-3</u> 44								E
									E
-61.4	16.1								E
									E
	$\exists$								E
	$\exists$								E
									E
	$\exists$								E
									<b> </b>
	∃								E
	_								<u> </u>

						H	<u>ole no.</u>	Y-10	<u>1</u>
DRILLING LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1	
1. PROJECT				ND TYPE OF	BIT	3.5 in	loi. I	SHEETS	1
		ch Nourishment Plan				WN (TBM or MSL)			1
2. LOCATION (Coordinates of N 328,487.1 E 2,5		5	NAVE			FIGURE DRIVE			
3. DRILLING AGENCY	04, 190	.5	Vibrac		BUESIGNA	TION OF DRILL			
Alpine Ocean Seisr			13. TOTAL	NO. OF OVE	ERBURDEN	DISTURBED :	JNDISTUR	BED	
4. HOLE NO. (As shown on a file number)	lrawing title	e and Y-101		LES TAKEN		3 :			
5. NAME OF DRILLER		1-101		NUMBER C	ORE BOXES	S			4
C. Dill			15. WATE	R DEPTH	: OT 4	ADTED : COM	4DI ETED		4
6. DIRECTION OF HOLE			16. DATE	HOLE	: 517	ARTED : COM 12/18/2011 :	MPLETED 12/18/2	011	
	NCLINED	DEG. FROM VERT.	17. ELEVA	ATION TOP O	F HOLE	-49.9			
7. Penetration, ft		16.0	18. TOTAL	CORE REC	OVERY FOR	R BORING		113 %	5
8. Recovery, ft		18.2 113.0	19. GEOL	OGIST		S. Miller			
9. Total Recovery, %		CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	REMAR			┨
ELEVATION DEPTH I	LEGEND	(Description)	,	RECOV- ERY	SAMPLE	(Drilling time, wate weathering, etc., i			
a b -49.9 0.0 —¦r	C	d		е	NO. f	g g	r oigimioaii	·/	╄-
-49.9 0.0 i		Dark gray fine to coarse Sand and fine medium gravel; some shell fragments	e to	100	1 0.0				E
		(5-10%); some lenses of dark gray so	ft clay		2.5				E
									F
, i									
-52.4 2.5		Sharp break to top of brown dense Cl	av:	100	2				E
		grades with peat in lower one foot of s	ection		2.5				
					9.0				E
									E
									E
									E
									F
									E
									E
									F
									E
									E
-58.9 9.0		Charry contact to top of light group silts.	fin a	400	2				F
		Sharp contact to top of light gray silty Sand; no visible shells	Tine	100	3 9.0				E
					16.0				E
									F
									E
									E
									E
									E
									E
									E
									E
									E
-65.9 16.0									E
									E
									E
									E
									E
									E
									E
									E

		_						<u>Hole No.</u>	Y-103
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET	1
1. PROJECT				Area `		DIT	2 E in	OF 1	SHEETS
	ınks Master F	Beac	h Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)		
2. LOCATION (0	Coordinates or Sta	ation)		NAVE			THE ( I DIVI OF IVIOL)		
	3.1 E 2,585	,532.	.7			S DESIGNAT	TION OF DRILL		
3. DRILLING AG	ean Seismic	Sur	vev	Vibra	Ore NO. OF OVI	EBBI IBDEVI	: DISTURBED	UNDISTURE	RED.
4. HOLE NO. (A	s shown on draw		e and		LES TAKEN	LADONDEN	: 4	: ONDIOTORI	
file number) 5. NAME OF DF			Y-103	14. TOTAL	NUMBER C	ORE BOXES	S	•	
C. Dill	MLLER			15. WATE	R DEPTH				
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	ARTED (	COMPLETED 12/19/2	011
∨ERTICA	AL INCL	INED	DEG. FROM VERT.	17 515\//	ATION TOP C	: NE HOLE	-48.6	12/19/2	011
7. Penetration, f	t		16.3		CORE REC				130 %
8. Recovery, ft			20.0	19. GEOL		OVERTION	( BOIGINO		130 %
9. Total Recover	ry, %		130.0				S. Miller		
ELEVATION	DEPTH LEG	END	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	(Drilling time, v	IARKS vater loss, depi	th
a		С	(Description) d		ERY e	NO. f	weathering, et	tc., if significant	t)
-48.6	0.0		Gray silty fine Sand		100	1		<u>.</u>	ŧ
	3.33					0.0 4.0			F
						7.0			E
									F
-51.1	2.5								E
			Light gray fine to medium Sand, rare	small					E
			clay balls						F
-52.6	4.0								E
			Gray- green sandy Gravel to 1.5" dian	neter	100	2			E
		ڒ؞؞؞؞ٳ				4.0 7.0			E
		.0							F
									E
		<b>%</b> .							F
-55.6	7.0	૽ૼૺ૽૽૽૽ઙૺ							E
			Sharp contact to light tan-green silty fi to sandy Silt; no shells	ine Sand	100	3 7.0			F
			to sarity Silt, no shells			10.0			E
									E
									E
									E
-58.6	10.0		Overdee to deal over		400				E
			Grades to dark green-gray silty fine Sasandy Silt; at 12.5 feet- two clay layer	and to rs up to	100	4 10.0			E
			3 inches thick; no shells	P - 0		16.3			E
									E
									F
									E
									F
									E
									F
									E
									F
									E
-64.9	16.3								E
		الله العمل							F
									E
									F
									E
									F
									E
									E

							F	<u>1018 NO</u>	<u>. Y-107</u>	
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1 SHEETS	
1. PROJECT		_			ND TYPE OF	F RIT	3.5 in	I OI I	SHEETS	
	nks Master	Beac	h Nourishment Plan				WN (TBM or MSL)			
2. LOCATION (C	Coordinates or S	tation)		NAVE	88 (					
3. DRILLING AG	3.4 E 2,585 SENCY	0,977.	.3	12. MANU Vibra		S DESIGNA ⁻	TION OF DRILL			
	ean Seismi	Sur	vey			ERBURDEN	I DISTURBED	: UNDISTUF	RBED	
4. HOLE NO. (A file number)	s shown on drav	ving title	e and Y-107	SAMP	LES TAKEN		2	<u>:</u>		
5. NAME OF DR	RILLER		; 1107		NUMBER C	ORE BOXE	S			
C. Dill				15. WATE	RDEPTH	: ST/	ARTED : CC	OMPLETED		
6. DIRECTION (  VERTICA		LINED	DEG. FROM VERT.	16. DATE	HOLE		12/19/2011	12/19/2		
		LINED		17. ELEVA	ATION TOP C	F HOLE	-51.1			
7. Penetration, f	t		10.1	18. TOTAI	CORE REC	OVERY FOR	R BORING		149 %	
8. Recovery, ft	0/		15.0	19. GEOL	OGIST		C Millor			
9. Total Recover	ry, %		149.0	<u> </u>	% CORE	BOX OR	S. Miller	RKS		
ELEVATION		GEND	CLASSIFICATION OF MATERIALS (Description)	•	RECOV- ERY	SAMPLE NO. f	(Drilling time, wa weathering, etc.	ater loss, de	pth nt)	
a -51.1	0.0 —///	c /////	d  Dense brown Clay, trace peat like org	anice	e 100	1 1	g			
01.1	J. J.		Delise brown clay, trace peat like org	ariics	100	0.0			<u> </u>	=
	— <u></u>					8.5			E	
	= 4///								ļ.	=
	<u>-</u> ₹///								E	
	= 1///								-	_
	<u> </u>								ŀ	
	∃///								-	Ξ
	_=								<u> </u>	
	₹///								Ē	=
									<u> </u>	
	=								ŀ	=
	<u>=====================================</u>									=_
	=\ //								ļ.	_
	_=								-	=_
	₹///								<u> </u>	=
	<u>=</u>									=
-59.6	8.5								ļ	=
	_ <del>_</del>		Gray-brown fine Sand; no visible shell	S	100	2 8 5			-	=_
	4					8.5 10.1			<u> </u>	_
-61.2	10.1									=_
0	= = = = = = = = = = = = = = = = = = = =	.1. 1. 1							ŀ	=
									E	=
	$\exists$								Į.	=
									ļ	Ξ
									F	=
									ļ	Ξ
	$\equiv$								F	Ξ
									ļ	=
	$\equiv$								-	=
									į.	_
									Ė	=
									<u> </u>	_
	$\equiv$								ļ	=
									<u> </u>	_
									ļ	_
	$\exists$								E	Ξ
	==								ļ	
	$\exists$								ŀ	=
									F	
	$\exists$								ļ	_

							<u> </u>	<u>ioie no</u>	. Y-11	<u>U</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1 SHEETS	
1. PROJECT					ND TYPE OF	RIT	3.5 in	OF I	SHEETS	4
	ınks Master B	eac	h Nourishment Plan				WN (TBM or MSL)			
	Coordinates or Stat		_	NAVE	88 (					
N 326,244 3. DRILLING AG	4.5 E 2,586,4	423.	.0			S DESIGNAT	TION OF DRILL			
	ean Seismic	Sur	vev	Vibra		ERRI IRDEN	: DISTURBED	UNDISTU	RRED	-
	s shown on drawir		e and		LES TAKEN	LINDONDLIN	4	CIADIOTO		
5. NAME OF DR	RILLER		Y-110	14. TOTAL	NUMBER C	ORE BOXES	S			
C. Dill	VILLER			15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	RTED : CO 12/19/2011 :	OMPLETED 12/19/		
	AL INCLI	NED	DEG. FROM VERT.	17 ELEV/	ATION TOP C	E HOLE	-51.2	12/13/	2011	
7. Penetration, fl	t		14.3		CORE REC				130 %	<u>,</u>
8. Recovery, ft			18.5	19. GEOL		OVERTION	\ DOMING		130 /	å
9. Total Recover	ry, %		130.0	10. 0202	00101		S. Miller			
ELEVATION	DEPTH LEGE	ND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMA (Drilling time, wa		nth	1
			(Description)		ERY	NO.	weathering, etc.	., if significa	nt)	
-51.2	0.0 — c		d Gray fine to medium Sand		e 100	f 1	9			+
-51.9	0.7	61.6 \	•		100	0.0				E
-52.3	1.1		Dark gray shell hash (50-70%); some medium Sand, with few pebbles to 1"	fine to	100	1.1				
			Sharp contact to gray fine to medium	Sand	100	1.1				E
			with clay balls to 1" diameter; some fire	ne to		5.5				
			medium Gravel (20-30%); no visible s	nells						F
										E
	<b></b>	••••								E
	::::::	****								
-56.0	4.8 ⊒∷∷									E
			Dark gray silty sandy Gravel; no visibl	e shells						
-56.7	5.5				100					E
	<u>-</u> =\$33		Sharp contact to top of light green-grafine Sand	y silty	100	3 5.5				
			inio Garia			8.0				E
										E
-59.2	8.0									E
			Dark gray silty fine Sand to sandy Silt		100	8.0				E
						14.2				
	<u>- 3</u> 334									E
										E
										F
										E
										F
										E
-65.4	14.2									
										F
										E
										E
										E
										E
										F
										E
										F
										E
										F
										F

								<u>Hole No.</u>	<u>Y-114</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET	1
				Area			0.5:-	of 1	SHEETS
1. PROJECT  Bodue Ba	inks Mast	er Reac	ch Nourishment Plan		AND TYPE OF		3.5 in		
2. LOCATION (			ar recurrent num	NAVE		ATION SHO	WN (TBM or MSL)		
N 325,349	9.2 E 2,5		.0			S DESIGNA	TION OF DRILL		
3. DRILLING AG		:- 0		Vibra	core				
Alpine Oc				13. TOTAL	L NO. OF OV LES TAKEN	ERBURDEN		UNDISTUR	BED
4. HOLE NO. (A file number)	is shown on (	drawing title	e and Y-114				2	•	
5. NAME OF DF	RILLER		:		L NUMBER C	ORE BOXE	S		
C. Dill				15. WATE	R DEPTH	: OT	ADTED :	OOMBI ETED	
6. DIRECTION (				16. DATE	HOLE	SIA	ARTED (	COMPLETED 12/19/2	011
	AL []	INCLINED	DEG. FROM VERT.	17 FI FV/	ATION TOP C	E HOLF	-52.1	12/10/2	
7. Penetration, f	t		10.3		L CORE REC				136 %
8. Recovery, ft			14.0	19. GEOL		OVERTIO	K BOKING		130 %
9. Total Recover	ry, %		136.0	10. 0202	00.01		S. Miller		
ELEVATION.	DEDTU	LECEND	CLASSIFICATION OF MATERIALS	3	% CORE	BOX OR	REM	IARKS	4h
ELEVATION		LEGEND	(Description)		RECOV- ERY	SAMPLE NO. f	(Drilling time, weathering, et	vater ioss, depi c., if significant	
a -52.1	0.0 —	٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠٠	Drown to dork grow fine condy Silt to a	sil4s /	е			g	
-52.1 -52.9		**************************************	Brown to dark gray fine sandy Silt to s Sand; trace medium shell fragments (	10-20%)	100	1 0.0			E
02.0	J		Stiff dark brown Clay with light brown		101	0.8			E
			Sand laminae in top foot of unit	- ,		2			E
						0.8 10.3			E
	=					.3.5			F
									E
									F
									F
									F
									E
									F
									F
									F
									F
									E
									E
									F
									F
									F
									E
									E
00.4	100								E
-62.4	10.3	<u> </u>					1		F
									E
									E
									F
									F
									E
									E
									F
									F
									F
									E
									F
									F
									F
									E
									E
									E
									E
									F
									E
									E
	⊢∃				1				E

								<u>Hole No.</u>	<u>Y-115</u>
DRILLI	NG LOG	DIVI	SION	INSTALLA				SHEET	1
1. PROJECT				Area			0.5:	OF 1	SHEETS
	inks Master F	3eacl	h Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)		
2. LOCATION (0	Coordinates or Sta	tion)		NAVE		ATION SHU	VVIN (IDIVI UI IVISL)		
N 325,794	4.7 E 2,587,		8	12. MANU	FACTURER'S	S DESIGNAT	TION OF DRILL		
3. DRILLING AG	SENCY Lean Seismic	Sun	/eV	Vibra		EDD/ 1222	DIOTURNER	LINDICTUE	
	s shown on drawi		e and		_ NO. OF OVI LES TAKEN	FKROKDEN	: DISTURBED : 4	UNDISTURE	SED
file number)			Y-115	14. TOTAI	NUMBER C	ORE BOXES		•	
5. NAME OF DF C. Dill	RILLER			15. WATE		5,			
6. DIRECTION (	OF HOLE					STA		COMPLETED	
0. DIRLETION (		INED	DEG. FROM VERT.	16. DATE			12/19/2011	12/19/2	011
7. Penetration, f			14.2	17. ELEVA	ATION TOP C	F HOLE	-52.3		
8. Recovery, ft			18.3		CORE REC	OVERY FOR	R BORING		128 %
9. Total Recover	rv %		128.0	19. GEOL	OGIST		S. Miller		
			CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	REM	IARKS	
ELEVATION	DEPTH LEG	END	(Description)	,	RECOV- ERY	SAMPLE NO.	(Drilling time, weathering, et	vater loss, dept c., if significant	th
a <b>50.0</b>		0	d		е	f		g signincan	
-52.3	0.0		Light brown to gray fine sandy Silt to s Sand	silty fine	100	1 0.0			F
			Cana			5.2			E
									F
									E
									F
									E
									<b> </b>
F7.4									<b> </b>
-57.4	5.2		Gray to brown medium Sand with coa	rse	100	2			
			gravel	130	100	5.2			<b> </b>
						8.0			
		.0							
									F
-60.3	8.0	\$J							E
-00.3	— * * * * * * * * * * * * * * * * * * *		Dark gray fine to medium Sand		100	3			F
			<b>3</b> - <b>7</b> - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -			8.0			E
						10.3			F
									F
-62.5	10.3								E
			Gray-green fine sandy Silt to silty fine	Sand	100	4			
						10.3 14.3			E
									F
									F
									þ
									E
-66.5	14.3								F
-00.0	17.0	1.1.1.1							
									F
									F
	=====================================								E
	=								<u> </u>
									F
									E
	#								F
	=								E
	🗏								<u> </u>
									F
	$\exists$								

								<u>Hole</u>	<u>NO.</u>	Y-11	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHE	ET 1	1 SHEETS	
1. PROJECT					ND TYPE OF	BIT	3.5 in	TOF	<u>'</u>	SHEETS	Ⅎ
			h Nourishment Plan				WN (TBM or MSL)				1
	Coordinates or Stat 0.2 E 2,585,9		۵	NAVE							4
3. DRILLING AG		904.	9	Vibra		S DESIGNA	TION OF DRILL				
	ean Seismic			13. TOTAI	NO. OF OVI	ERBURDEN	DISTURBED	UNDIS	STUR	BED	1
4. HOLE NO. (A file number)	s shown on drawii	ng title	e and Y-119		LES TAKEN		3				4
5. NAME OF DR	RILLER		; 1-119		_ NUMBER C	ORE BOXES	S				4
C. Dill				15. WATE	R DEPTH		NDTED :/	COMPLE	TED		4
6. DIRECTION (				16. DATE	HOLE	: 517	RTED : ( 12/19/2011 :		19/2	011	
		NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-51.9				1
7. Penetration, f	t		14.2	18. TOTAI	CORE REC	OVERY FOR	R BORING			129 %	,
8. Recovery, ft			18.3	19. GEOL	OGIST		O Miller				1
9. Total Recover	ry, %		129.0	<u> </u>	% CORE	BOX OR	S. Miller	IARKS			┨
ELEVATION	DEPTH LEGE	END	CLASSIFICATION OF MATERIALS (Description)	•	RECOV- ERY	SAMPLE NO.	(Drilling time, v weathering, et	vater loss	s, dep	th +)	
а	b c	, ,	d		е	f		g., ii sigr	ilicari		
-51.9	0.0		Dark gray sandy Silt with trace shell fr (10-15%)	agments	100	1 0.0					F
-52.7 -52.9	0.8	11	\Soft dark gray Organic Silt; no visible	shells r		1.5					E
-53.4	1.5		Dark gray Gravel with trace silt; no vis		400						E
			shells		100	2 1.5					
			Dark gray fine Sand with dark gray silf lenses; no visible shells	t-clay		12.0					E
			Terrore, the violete errore								
	$\exists : : : : $										E
	<b>=!:::::</b> [										F
											F
											Е
50.0											Е
-58.9	7.0		Brown fine sandy Silt with trave dark b	rown							E
	≓ઃઃઃ		clay lenses; no visible shells	, own							
	_=:::::		•								
	$\exists : : : : $										Е
-60.9	9.0 -										
			Dark brown to gray fine Sand with lens dark brown stiff clay; no shells	ses of							F
	_=:::::::::::::::::::::::::::::::::::::		dark brown still clay, no shells								
	<b>⊒∷∷</b> }										
-63.9	12.0										E
-03.8	12.0	900	Dark brown fine Sand with trace dark	brown	100	3					F
	크레스		stiff clay lenses			12.0					F
		13				14.3					E
											E
-65.8 -66.1	13.9 14.3		Dark brown soft silty Clay with traces	of							
-00.1	14.5	2222	organics (tree roots)	oi ſ							F
	_=		, ,								E
	$\exists$										F
	$\exists$										F
	$\exists$										E
	$\exists$										E
	$\dashv$										
											E
	$\exists$										E
	$\exists$										E
	_=										F
	$\exists$										E
											$\vdash$

							ŀ	<u> 1016 NO.</u>	<u>. Y-120</u>
DRILLII	NG LOC	) DIV	/ISION	INSTALLA Area				SHEET OF 1	1
1. PROJECT		ĺ			ND TYPE OF	- RIT	3.5 in	OF I	SHEETS
	nks Mas	ter Bead	ch Nourishment Plan				OWN (TBM or MSL)		
2. LOCATION (C	Coordinates	or Station)		NAVE			(.2 002)		
N 323,115		586,858	5.4			S DESIGNA	TION OF DRILL		
3. DRILLING AG Alpine Oc		mic Sur	NAV.	Vibra			. :		
4. HOLE NO. (A				13. TOTAL SAMP	L NO. OF OVI LES TAKEN	EKBUKDEN	I DISTURBED	UNDISTUR	KBED
file number)			Y-120	14. TOTAL	NUMBER C	ORE BOXE	<del></del>	<del>:</del>	
5. NAME OF DR C. Dill	RILLER			15. WATE	R DEPTH				
6. DIRECTION C	OF HOLE			16. DATE	HOLE	STA		OMPLETED	
	L 🗆	INCLINED	DEG. FROM VERT.				12/18/2011	12/18/2	2011
7. Penetration, ft	t		16.2		ATION TOP C		-51.8		445.00
8. Recovery, ft			18.0	18. TOTAL	CORE REC	OVERY FOR	R BORING		115 %
9. Total Recover	у, %		115.0	19. GEOL	JGIS I		S. Miller		
ELEVATION.	DEDTU	LECEND	CLASSIFICATION OF MATERIALS	3	% CORE	BOX OR	REMA		-41-
ELEVATION	DEPTH	LEGEND	(Description)		RECOV- ERY	SAMPLE NO.	(Drilling time, wa weathering, etc	ater ioss, dep :., if significar	otn nt)
a -51.8	b	C	Dark gray silty fine Sand		e 100	f 1	<u>g</u>	J	
-51.8 -52.4	0.0	>			100	0.0			F
-52.8	1.0		Dark gray coarse shell hash and sma	ll gravel, ∫	100	1.0			E
	∄		Light to dark gray, fine to medium Sar	nd	100	2 1.0			F
						12.0			E
	_ ∃								E
-54.8	3.0		Light gray very fine Sand, trace Silt						E
	∄		Light gray very line Sand, trace Sit						F
	<u> </u>								F
	3.								E
	_=								E
	∃:								E
-57.8	6.0								E
	= =		Light gray fine Sand						F
	_ <u>=</u> :								E
	╡								F
	_=								E
	-								F
	_=								E
									F
	_=								E
									E
	ゴ								F
									E
-63.8	12.0								F
			Light gray to brown fine sandy Silt		100	3			E
	= = = = = = = = = = = = = = = = = = =					12.0 16.2			F
	$\exists$					10.2			E
	⇉								F
	$\exists$								E
	⇉								F
	$\exists$								E
	₫		1						F
-67.9	16.2	<u> 120014146</u>							F
	∃								E
	$\dashv$								F
	∃								E
	=								F
	$\exists$								E
	$\exists$								F
	╡								F

							п	ne no.	1-121	_
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET	1	
1. PROJECT				Area			0.5:	of 1	SHEETS	l
	nke Maat	or Booo	ch Nourishment Plan		ND TYPE OF		3.5 in			1
2. LOCATION (C			on Nourisilliciil Flati	11. DATUI <b>NAV</b> E		ATION SHO	OWN (TBM or MSL)			I
N 323,559			.5			S DESIGNAT	TION OF DRILL			l
3. DRILLING AG	ENCY	-		Vibra						
Alpine Oc 4. HOLE NO. (A					NO. OF OVI	ERBURDEN	I DISTURBED L	JNDISTURI	BED	
file number)			Y-121	14. TOTAI	NUMBER C	ORE BOXE	<del>- i</del>			i
5. NAME OF DR C. Dill	RILLER			15. WATE			-			
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	ARTED : COM 12/19/2011 :	MPLETED 12/19/2	011	
	L	NCLINED	DEG. FROM VERT.	17. ELEV	ATION TOP O	F HOLE	-51.4	12/19/2	.011	
7. Penetration, f	t		10.8	18. TOTAI	CORE REC	OVERY FOR			130 %	1
8. Recovery, ft			13.1	19. GEOL						i
9. Total Recover	у, %		130.0				S. Miller			1
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMARI (Drilling time, wate		th	I
a	b	С	(Description)		ERY e	NO. f	weathering, etc., i			
-51.9					99	1	<u>g</u>			F
01.0	<u> </u>		\fragments (5%)		100	0.0				E
			Dark brown stiff Clay; few wood fragm	ents		0.4				
			near bottom of section			2 0.4				F
						6.0				E
	$\exists$									E
										<b>–</b>
	$\exists$									Е
										E_
										E
										F
										Е
-57.4	6.0									E
-51.4			Dark brown to light brown fine sandy	Silt	100	3				F
	∃.:					6.0				E
	— <del>]</del> ∷					8.4				E
										E
										E-
-59.8	8.4		Light gray fine to medium Sand with to	200	100	3				Е
-60.4	8.9	• • • • •	coarse gravel and trace dark brown C	ace lav r	100	8.4				E.
	;		lenses	1		10.7				F
	;		Dark gray medium Sand, trace fine gr	avel						E
-61.7	10.3		Light to dark brown sandy Silt to silty	ino						E
-62.2	10.8		Sand	ii l <del>e</del>						E
	$\exists$									F
	$\exists$									Е
	=									Ē
	$\exists$									E
										E-
										Е
										Ē
	$\exists$									E
	$\exists$									F
										E
	$\exists$									Ē
	$\exists$									F
	$\exists$									F
										E
	$\exists$									Ē
										E-
	$\exists$									F
										E
	$\exists$									Е

							F	<u>iole no</u>	. Y-122	<u> </u>
DRILLII	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1	
1. PROJECT					ND TYPE OF	- RIT	3.5 in	OF I	SHEETS	┨
			h Nourishment Plan				OWN (TBM or MSL)			┨
	Coordinates or Stat		4	NAVE						1
3. DRILLING AG	1.2 E 2,586,4 SENCY	+00.	4	12. MANU Vibra		S DESIGNA	TION OF DRILL			
Alpine Oc	ean Seismic			13. TOTA	NO. OF OV	ERBURDEN	I DISTURBED	UNDISTUF	RBED	1
4. HOLE NO. (A. file number)	s shown on drawir	ng title	e and Y-122	SAMP	LES TAKEN		3	<u>:</u>		1
5. NAME OF DR	RILLER		1-122		_ NUMBER C	ORE BOXE	S			1
C. Dill				15. WATE	R DEPTH	·	ADTED : O	OMBI ETED		4
6. DIRECTION C				16. DATE	HOLE	SIA	ARTED : CO 12/18/2011 :	OMPLETED 12/18/2	2011	
		NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-51.6			1
7. Penetration, ft	t		15.8	18. TOTA	CORE REC	OVERY FOR			117 %	1
8. Recovery, ft			18.5	19. GEOL	OGIST		0.14:11			1
9. Total Recover	y, %		117.0		% CORE	BOX OR	S. Miller	RKS		┨
ELEVATION	DEPTH LEGE	END	CLASSIFICATION OF MATERIALS (Description)	5	RECOV-	SAMPLE	(Drilling time, wa	ater loss, de	oth	
а	b c		d		ERY e	NO. f	weathering, etc.		nt)	
-52.1	0.5		Dark brown stiff Clay with traces of dansand in lenses	rk brown	100	1				F
			Dark to light brown fine sandy Silt to s			0.0 5.0				E
	# # # # # # # # # # # # # # # # # # # #		Sand with dark brown clay lenses	only in C						F
										E
	<b>→</b>									F
										E
										E
	書類									F
										E
										E
					100	2				
						5.0 10.0				F
						10.0				E
										F
										F
	- 日後第									E
	日本は									E
										F
										E
					100	3				F
	三 三 三					10.0				E
						15.8				F
	300									E
										F
	3.4									E
										Ē
	3.4									E
										F
	二 二 二 三 三 三 三 三 三 三 三 三 三 三 三 三 三 三 三 三									F
										E
-67.3	15.8									F
	=									F
	$\exists$									F
										E
	$\exists$									F
										E
	$\exists$									F
										E
	$\pm$									E
		- 1			i	1	i .			

							F	<u>iole no</u>	<u>. Y-12</u>	<u>6</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET	1	
1. PROJECT		<u> </u>		Area 10 SIZE 4	ND TYPE OF	RIT	3.5 in	OF 1	SHEETS	4
	nks Master B	eac	h Nourishment Plan				WN (TBM or MSL)			-
2. LOCATION (C	Coordinates or Stat	ion)		NAVE			(			
N 331,622 3. DRILLING AG	2.8 E 2,583,	757.	.2			S DESIGNAT	TION OF DRILL			1
	ean Seismic	Sur	vev	Vibra		EDDI IDDEN	I DISTURBED	UNDISTUE	DDED	4
4. HOLE NO. (A	s shown on drawir		e and	SAMP	LES TAKEN	EKBUKDEN	: 3	ONDISTOR	KBED	
file number)			Y-126	14. TOTAI	NUMBER C	ORE BOXES	•	<del>-</del>		1
5. NAME OF DR C. Dill	RILLER			15. WATE	R DEPTH					1
6. DIRECTION (	OF HOLF			16. DATE	UOL F	STA		OMPLETED		1
		NED	DEG. FROM VERT.	IO. DATE	HOLE		12/18/2011	12/18/2	2011	_
7. Penetration, ff			16.2	17. ELEV	ATION TOP O	F HOLE	-41.1			4
8. Recovery, ft	•		18.2		CORE REC	OVERY FOR	R BORING		113 %	6
9. Total Recover	v %		113.0	19. GEOL	OGIST		S. Miller			
			CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	REMA			┨
ELEVATION	DEPTH LEGE	ND	(Description)	,	RECOV- ERY	SAMPLE NO.	(Drilling time, wa weathering, etc.	ater loss, de _l if significa	oth nt)	
а	b c	٠	d		е	f	g g			┸
<del>-41.4</del>	0.3		Dark gray to dark brown Silt		84	1 0.0				F
-41.6	0.5		Dark gray soft Clay			6.3				E
	⊒ંઃઃેઃ		Dark gray silty fine Sand with trace sh fragments (15-25%)	eli						F
			ge (10 <b>2</b> 070)							F
										E
										E
										F
	∄₩₩									E
	⊒ંઃઃેઃ{									F
	$\exists : : : : [$									E
										E
-47.5	6.3	•[•[•]	Dark gray to light brown stiff sandy Sil	t to oiltu	100	2				F
	<b>***</b> ***		fine Sand: light gray clay filling burrow	s in	100	6.3				F
			Sand; no visible shells			11.5				E
	<b>≓</b> ∷:::									F
	∄ઃઃઃ									E
	<b>─</b> ‡ःःः									
	<b>≓</b> ∷∷:									F
	≓ઃઃઃ									E
	_===*::::\$									E
-52.6	11.5	• • • •								F
	_383		Light gray-green stiff sandy Silt to silty Sand; no visible shells	fine	121	3 11.5				E
	<b>= 30</b>		Janu, no visible silelis			16.2				F
	<b>- 183</b>									F
										E
	크용화									F
										F
	그렇게									F
	크용화									F
-57.3	16.2									<b>F</b>
-	= = ::1									E
	_=									Ė
	$\exists$									F
	_=									E
	$\equiv$									E
	$\exists$									F
	$\exists$									F
	$\exists$									E

							Н	<u>oie no.</u>	<u>Y-129</u>	
DRILLII	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1	
1. PROJECT		<u> </u>			ND TYPE OF	F BIT	3.5 in	IOF I	SHEETS	
Bogue Ba			h Nourishment Plan				WN (TBM or MSL)			
	Coordinates or Stat		0	NAVE						
3. DRILLING AG	3.8 E 2,584,° SENCY	198.	9	12. MANU Vibra		S DESIGNA ⁻	TION OF DRILL			
	ean Seismic	Sur	vey			ERBURDEN	I DISTURBED	UNDISTUR	BED	
4. HOLE NO. (A. file number)	s shown on drawir	ng title	e and Y-129		LES TAKEN		2			
5. NAME OF DR	RILLER		: 1-129	14. TOTAI	NUMBER C	ORE BOXE	S			
C. Dill				15. WATE	R DEPTH					
6. DIRECTION C				16. DATE	HOLE	STA	ARTED : CO 12/18/2011 :	MPLETED 12/18/2	2011	
	L INCLI	NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-44.7	12/10/2		
7. Penetration, ft	t		16.2		CORE REC				65 %	
8. Recovery, ft			10.5	19. GEOL						
9. Total Recover	у, %		65.0				S. Miller			
ELEVATION	DEPTH LEGE	END	CLASSIFICATION OF MATERIALS	8	% CORE RECOV-	BOX OR SAMPLE	REMAF (Drilling time, wat	er loss, dep	oth	
а	b c		(Description) d		ERY e	NO. f	weathering, etc.,	if significan	nt)	
-45.1	0.4 = /////		Dark gray soft Clay		101	1				=
			Dark green-gray sandy Silt to silty fine	Sand		0.0 2.8			F	=
			with trace shell fragments (10-20%); s content and size increases with depth	in		2.0				=
	<b>#!!!!</b>		section (60-80% below 2 ft)							=
									E	=
-47.5	2.8									=
			Dark brown stiff fine sandy Silt to silty Sand; trave gray to dark gray clay layer	fine	100	2 2.8			<u> </u>	=
			visible shells	C13, 110		10.5			F	=
									F	
										Ξ
									ļ.	_
	334									Ξ
									<u> </u>	=
									-	Ξ
									ļ.	_
									E	Ξ
									ļ.	_
	日本								E	Ξ
									<b>.</b>	_
	3 3								E	Ξ
-55.2	10.5								ļ.	
-55.2	10.5	31-11-								=
									ļ	
	$\exists$								E	Ξ
									ļ	
	$\exists$								E	Ξ
	=								ļ	
	$\exists$								E	Ī
									ļ	_
	$\exists$									Ξ
	$\exists$								<u> </u>	Ξ
									ļ	_
	$\exists$								<u> </u>	Ξ
									ļ	
	$\exists$								ŀ	Ξ
									<u> </u>	
									ŀ	Ξ
									F	
	$\exists$									=

								<u>ioie no</u>	<u>. Y-13</u>	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1	
1. PROJECT					ND TYPE OF	- RIT	3.5 in	JOF I	SHEETS	긤
Bogue Ba	nks Master E	eac	h Nourishment Plan				OWN (TBM or MSL)			┨
	Coordinates or Star		0	NAVE						
3. DRILLING AG	3.4 E 2,586, GENCY	007	.0	12. MANU Vibra		S DESIGNA	TION OF DRILL			
Alpine Oc	ean Seismic			13. TOTAL	NO. OF OV	ERBURDEN	I DISTURBED	UNDISTUF	RBED	1
4. HOLE NO. (A file number)	s shown on drawi	ng title	e and Y-132	SAMP	LES TAKEN		4	•		_
5. NAME OF DF	RILLER		1-132		NUMBER C	ORE BOXE	S			4
C. Dill				15. WATE	R DEPTH		ADTED : O	NADI ETED		4
6. DIRECTION (				16. DATE	HOLE	SIA	ARTED : CC 12/18/2011 :	OMPLETED 12/18/2	2011	
	<u> </u>	NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-44.7			1
7. Penetration, f	t		16.2	18. TOTAI	CORE REC	OVERY FO	R BORING		105 %	6
8. Recovery, ft			17.5	19. GEOL	OGIST					1
9. Total Recover	ry, %		105.0		% CORE	BOX OR	S. Miller	DKS		4
ELEVATION	DEPTH LEGE	END	CLASSIFICATION OF MATERIALS (Description)	5	RECOV-	SAMPLE	(Drilling time, wa	iter loss, de	oth	
а	b c		d		ERY e	NO. f	weathering, etc.		nt)	
-44.9	0.3		Dark brown to dark gray-black very so clay-silt	ft /	133	1 0.0				F
		. 8	Dense gray shells and shell hash (40-	50%).	100	0.0				E
			some gravel; trace dark brown fine sa	nd and		2				E
47.0	2.3		silt in matrix			0.3 2.3				E
-47.0	2.3		Dark brown fine sandy silt to silty fine	Sand	89	3				E
	_==		trace light gray to light brown sandy le			2.3				
	3		filling old burrows			10.0				E
	_333									
	<b>#</b>									F
	_3:31									E
										E
										F
	1									
										Е
	4.4									F
	_=									
										Е
	_==									
	<b>=</b>									F
	7 1									F
					100	4				E
	<b>=</b> = 1					10.0 16.2				F
						10.2				$\vdash$
	3.33									E
	<b>=</b>									F
	- 3.3									E
	4.4									F
	_3%4									E
	# # # # # # # # # # # # # # # # # # # #									F
-60.9	16.2									E
-00.9	10.2									E
	$\exists$									F
	$\dashv$									F
	$\exists$									E
	$\dashv$									
	⇉									F
										E
	$\exists$									F
					i	1	Í.			

							ŀ	<u> 1018 NO</u>	<u>. Y-135</u>	
DRILLI	NG LOG	DIVI	SION	INSTALLA Area				SHEET OF 1	1 SHEETS	
1. PROJECT					ND TYPE OF	F BIT	3.5 in	101 1	OI ILL I S	
Bogue Ba	nks Master B	eac	h Nourishment Plan				WN (TBM or MSL)			
	Coordinates or Stat			NAVE	88 (					
3. DRILLING AG	7.0  E  2,584,6	043.	4	12. MANU Vibra		S DESIGNA	TION OF DRILL			
	ean Seismic	Sur	/ey			FRBURDEN	I : DISTURBED	UNDISTUE	RBED	
	s shown on drawir		e and		LES TAKEN		4			
5. NAME OF DR	PILLER		Y-135	14. TOTAI	NUMBER C	ORE BOXE	S			
C. Dill	MELLIX			15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	ARTED : CO 12/18/2011 :	OMPLETED 12/18/2		
	AL INCLI	NED	DEG. FROM VERT.	17 ELEV/	ATION TOP C	E HOLE	-47.2	12/10/2	2011	
7. Penetration, f	t		16.0		CORE REC				108 %	
8. Recovery, ft			17.0	19. GEOL		OVERTIO	N BORING		100 %	
9. Total Recover	ry, %		108.0	.0. 0202			S. Miller			
ELEVATION	DEPTH LEGE	-ND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMA (Drilling time, wa		nth	
			(Description)		ERY	NO. f	weathering, etc	., if significal	nt)	
-47.2	0.0		Dark brown to dark gray-black stiff fine	e sandv	e 100	1	<u>g</u>	1	-	
-47.9	0.7	9 0 1	Silt			0.0			E	=
40.0			Dark gray to brown shells (50-70%) are with fine sandy silt matrix	nd gravel	100	0.7			-	
-48.8	1.6		Dark brown to green silty fine Sand to	sandy	100	0.7				Ξ
			Silt, trace (5-10%) shell fragments; oc	casional	100	1.6			F	
			gray fine sand and silt in burrows; dark stiff clay laminae in lower two feet	k brown		1.6			E	=
			Still Clay lattillae iii lowel two leet			8.0			F	
	二 二 三 三 三 三 三 三 三 三 三 三 三 三 三 三 三 三 三 三								F	_
										=
	<b>- 1838</b>									_
										=
										=
	_3::::	111								=_
	그용화									_
										=
					100	4				=
	二 二 二 三 三 三 三 三 三 三 三 三 三 三 三 三 三 三 三 三					8.0 16.0			F	_
						10.0			E	=
	<b>- 1833</b>								F	=
										=
	크용제									_
	- 日本は								E	Ξ
									F	
									F	Ξ
										_
	<b>- 100</b>									=
	<u>-∃</u> &#</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>E</td><td>_</td></tr><tr><td></td><td><b>- 1888</b></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td><b> </b></td><td>_</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>F</td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>=</td></tr><tr><td>-63.2</td><td>16.0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>þ</td><td></td></tr><tr><td></td><td>$\exists$</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>E</td><td>=</td></tr><tr><td></td><td>$\exists$</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>F</td><td></td></tr><tr><td></td><td>$\exists$</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>F</td><td>=</td></tr><tr><td></td><td>二</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>_</td></tr><tr><td></td><td>$\exists$</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>F</td><td>_</td></tr><tr><td></td><td>_=</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>E</td><td>=</td></tr><tr><td></td><td>$\exists$</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>F</td><td>_</td></tr><tr><td> </td><td>$\dashv$</td><td></td><td></td><td></td><td></td><td>1</td><td>I</td><td></td><td><b>-</b></td><td>-</td></tr></tbody></table>									

							H	<u>oie no.</u>	Y-136	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA '				SHEET	1	]
1. PROJECT					ND TYPE OF	DIT	3.5 in	OF 1	SHEETS	4
	nks Master E	eac	ch Nourishment Plan				WN (TBM or MSL)			1
	Coordinates or Stat			NAVD	88 (					1
3. DRILLING AG	9.8 E 2,586, SENCY	437.	.9	12. MANUI		S DESIGNAT	TION OF DRILL			
	ean Seismic	Sur	vey			ERBURDEN	DISTURBED	UNDISTUR	BED	1
4. HOLE NO. (A file number)	s shown on drawii	ng title		SAMPI	ES TAKEN		3			
5. NAME OF DR	PILLER		Y-136	14. TOTAL	NUMBER C	ORE BOXES	S			
C. Dill	WELEI (			15. WATE	R DEPTH					_
6. DIRECTION (				16. DATE	HOLE	STA	ARTED COI 12/19/2011	MPLETED 12/19/2	2011	
	AL INCLI	NED	DEG. FROM VERT.	17 FLEVA	TION TOP O	E HOLF	-47.6	12/13/2	-011	1
7. Penetration, f	t		16.0		CORE REC				112 %	†
8. Recovery, ft			18.0	19. GEOL		012111101			112 /	1
9. Total Recover	ry, %		112.0				S. Miller			1
ELEVATION	DEPTH LEGE	END	CLASSIFICATION OF MATERIALS		% CORE RECOV-	BOX OR SAMPLE	REMAR (Drilling time, wat	er loss, dep	oth	
а	b c		(Description)		ERY e	NO. f	weathering, etc.,	if significan	nt)	
-47.6	0.0		Light brown fine sandy Silt lens over c	oarse	100	1	9			Ħ
			shells (40-60%) and pebbles in dark great sandy silt matrix	ray		0.0 1.2				E
-48.8	1.2		Dark brown silty fine Sand to sandy Si	It with	100	2				
	크용		numerous soft gray clay lenses; trace fragments (5-10%)	shell	100	1.2				E
			inaginents (3-1070)			7.0				E
	<b>=</b>									F
										E
	_3:3									
										E
										E
										F
	——→ . `. · . 1.									E
			1							E
					400					E
					100	3 7.0				E
	_=					15.9				
	384									E
										E
	3.33									E
	<del>-3</del> 88									E
	<b>-</b>									F
										E
										E
										Ē
										E
										E
	3/4		•							E
										E
	<b>- 100</b>									F
	田湖									E
-63.5	15.9									E
	$\exists$									E
										E
										E
										E
										F
										E
										E

								<u>Hole No.</u>	<u>Y-141</u>
DRILLI	NG LOG	DIVI	SION	INSTALLA				SHEET	1
1. PROJECT				Area		DIT	2 E in	OF 1	SHEETS
	nks Master E	3eacl	h Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)		
2. LOCATION (C	Coordinates or Sta	tion)		NAVE		, thoir shu	TVIN (I DIVI OI IVIOL)		
	5.1 E 2,587,	,775.	2	12. MANU	FACTURER'S	S DESIGNA	TION OF DRILL		
3. DRILLING AG	SENCY Sean Seismic	Sun	(A)	Vibra			, DIOTUBBED		
4. HOLE NO. (A	s shown on drawi		and	13. TOTAL SAMP	NO. OF OV LES TAKEN	EKBURDEN	DISTURBED 3	UNDISTURE	3ED
file number)			Y-141	14. TOTAL	NUMBER C	ORE BOXE	-	<u> </u>	
5. NAME OF DR C. Dill	RILLER			15. WATE	R DEPTH				
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA		COMPLETED	
		INED	DEG. FROM VERT.				12/19/2011	12/19/2	011
7. Penetration, f	t		11.9		ATION TOP C		-48.4		405 ::
8. Recovery, ft			12.7		CORE REC	OVERY FOR	R BORING		105 %
9. Total Recover	ry, %		105.0	19. GEOL	UGIS I		S. Miller		
	1		CLASSIFICATION OF MATERIALS	3	% CORE	BOX OR	REM	IARKS	<u></u>
ELEVATION		END	(Description)		RECOV- ERY	SAMPLE NO.	(Drilling time, w weathering, et	vater loss, depi tc., if significant	th t)
-48.4	b0.0 —	<u>०,५,०%</u>	d Light gray dense Shells and shell has	h	e 100	f 1		g	
-40.4		(.8)	(50-70%) with small pebbles; silt and	fine	100	0.0			F
-49.5	1.2	74	sand matrix			1.8			E
-50.2	1.8		transition zone from shell- gravel unit underlying gray sandy Silt	to					F
00.2	*****		Light gray fine sandy Silt to silty fine S	Sand with	100	2			E
			trace shell hash and large shells (15-2	25%)		1.8 7.4			E
						/.4			E
									F
									E
									F
									E
	<b>=:::::</b> :::::								E
									E
-55.1	6.8								E
-55.8	7.4		Dark gray shell hash and shells (50-70 fine sandy silt matrix	0%) in					F
00.0			Dark gray green fine sandy Silt to silty	fine	100	3			E
			Sand with some light gray-brown lens	es of		7.4 11.9			⊨
	田鉄道		same grain size distribution			11.9			E
									F
									E
									F
	333								E
									F
-60.3	11.9								E
33.0	=								F
	∃								E
									F
									E
									F
	$\exists$								E
									F
	$\exists$								E
	$\exists$								F
	$\exists$								E
									F
	$\exists$								E
	$\dashv$								F
									E
									F
	$\exists$								E

							Н	<u>oie no.</u>	Y-15	<u>3</u>
DRILLII	NG LOG	DIV	ISION	INSTALLA  Area				SHEET OF 1	1 SHEETS	
1. PROJECT					ND TYPE OF	BIT	3.5 in	101 1	SILEIS	H
			ch Nourishment Plan				OWN (TBM or MSL)			┨
	Coordinates or Sta		7	NAVE						
3. DRILLING AG	1.2 E 2,588, SENCY	049.	. /	12. MANU Vibra		S DESIGNAT	TION OF DRILL			
	ean Seismic	Sur	vey			ERBURDEN	I DISTURBED	UNDISTUR	RBED	┨
	s shown on drawi		e and		LES TAKEN		3			
5. NAME OF DR	DILLED		Y-153	14. TOTAL	NUMBER C	ORE BOXES	S			
C. Dill	MILLER			15. WATE	R DEPTH					
6. DIRECTION C	OF HOLE			16. DATE	HOLE	STA	ARTED CO 12/19/2011	MPLETED 12/19/2	0011	
	AL INCLI	NED	DEG. FROM VERT.	17 FLEV/A	ATION TOP C	E HOLE	-51.9	12/19/2	2011	-
7. Penetration, ft	t		14.2		CORE REC				120 %	-
8. Recovery, ft			17.0	19. GEOL		OVERTION	T BOT WING		120 %	1
9. Total Recover	у, %		120.0				S. Miller			
ELEVATION	DEPTH LEGI	ΞΝD	CLASSIFICATION OF MATERIALS		% CORE RECOV-	BOX OR SAMPLE	REMAF (Drilling time, wat		oth	1
	b c		(Description)		ERY	NO. f	weathering, etc.,	if significan	nt)	
-51.9	0.0		Light gray fine sandy Silt with white sh	ell hash	e 102	1	9			╆
	3		and medium to large shell fragments (	50-80%)		0.0				E
						5.2				F
										E
										F
	3.8									E
										F
										E
										E
										E
-57.0	5.2—		Light gray shell hash (40-50%) with sa	ındv silt	100	2				E
			matrix	iliay one	100	5.2				F
						9.0				E
			•							F
										E
-59.9	8.0									E
	<b>=</b>		Transitional layer from shell hash on to sandy silt and silty fine sand below	op to						F
-60.9	9.0									E
	<b>=</b>		Dark gray-green silty fine sand to sand with some shell hash (20-40%) in laye	dy Silt,	102	3 9.0				F
	_3(4)		with some shell hash (20-40 /0) in layer	13		14.2				E
										E
	_ <u></u> =₹₩									E
	三: ※									E
										F
	- 母級									E
	-384									E
	<b>→</b>									E
-66.0	14.2									E
	$\exists$									F
	$\exists$									F
	$\exists$									F
	$\exists$									E
	$\overline{}$									F
	$\exists$									E
	=									F
										E
										F
	$\exists$									E

									HOIE NO	). Y-1	<u> 54</u>
DRILLI	NG LO	}	DIV	ISION	INSTALLA  Area				SHEET OF 1	1 SHEE	ETQ
1. PROJECT			ļ			ND TYPE OF	BIT	3.5 in	101 1	SHILL	.13
				h Nourishment Plan	11. DATU	I FOR ELEV		WN (TBM or MSL)			$\neg$
2. LOCATION (0 N 324,444				5	NAVE		PERIONA	TION OF DRILL			_
3. DRILLING AG	SENCY				Vibra		DESIGNAT	HON OF DRILL			
Alpine Oc 4. HOLE NO. (A				e and		. NO. OF OVI LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTU	RBED	
file number)	WILED.			Y-154	14. TOTAL	NUMBER C	ORE BOXES	S	•		
5. NAME OF DF C. Dill	RILLER				15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE				16. DATE	HOLE	STA	ARTED C 12/19/2011	OMPLETED 12/19		
	AL	INCLI	NED	DEG. FROM VERT.	17 FLEVA	TION TOP C	E HOLF	-51.3	12/19/	2011	$\dashv$
7. Penetration, f	t			14.2		CORE REC				116	%
8. Recovery, ft				16.5	19. GEOL	OGIST					
9. Total Recover	ry, %			116.0		% CORE	BOX OR	S. Miller	V D K C		4
ELEVATION	DEPTH	LEGE		CLASSIFICATION OF MATERIALS (Description)	<b>3</b>	RECOV- ERY	SAMPLE NO.	(Drilling time, w weathering, etc	ater loss, de c., if significa	epth ant)	
-51.3	0.0 —	C Joseph C		d Light brown sandy silt with shell hash	and few	e 100	f 1	9	3		+
-52.2				medium shells (40-60%)	and low	100	0.0				E
				Dark brown Silt with medium to large	shell		3.0				F
	$\exists$			fragments (50-80%)							E
	$\equiv$										E
-54.3	3.0										E
	∄			Dark brown Silt with medium to large stragments (50-80%)	shell	100	2 3.0				F
	=			magnients (50-60 %)			9.8				E
											E
-56.3	5.0			Light gray Shall bash and shalls/60.90	00/ \ in						E
	$\exists$			Light gray Shell hash and shells(60-80 sandy silt matrix	J70) III						F
	===										E
-58.2	6.9										E
00.2	- 0.0			Dark gray to light gray shell hash (60-	80%)						F
	∃:			trace silt in matrix							E
	$\equiv$										E
	=										F
04.4											E
-61.1	9.8			Dark gray sandy Silt with trace (10-20	%)shell	100	3				E
	$\exists$			hash; few larger shells 11-11.6 feet	,		9.8				E
	_=						13.6				E
-62.9	11.6										E
	===			Dark gray to brown sandy Silt with she and small to medium shells (20-30%)	eii hash						
	$\exists$			(== 30/0)							E
04.0	10.0										F
-64.9	13.6			Gray-green sandy Silt with trace (5%)	small	100	4				E
-65.5	14.2			shell fragments			13.6				E
	$\equiv$						14.2				E
	$\equiv$										F
	三										E
	=										E
	=										Ē
	$\exists$										E
											E
	$\exists$										E
	$\exists$										F
	日										E

							П	<u>oie ivo</u>	). T-15	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET	1	
				Area `				of 1	SHEETS	긱
1. PROJECT			h Nassiahaa ast Dlas		ND TYPE OF		3.5 in			
			h Nourishment Plan			ATION SHO	WN (TBM or MSL)			
	Coordinates or Sta 0.9 E 2,588,		2	NAVE						4
3. DRILLING AG		204.	.2			S DESIGNAT	TION OF DRILL			
	ean Seismic	Sur	vev	Vibra			: DISTURBED : I	INDICTUI		-
	s shown on draw		e and		LES TAKEN	EKBUKDEN	DISTURBED 4	UNDISTUF	KRED	
, , , , , , , , , , , , , , , , , , ,	W. I. ED		Y-156	14. TOTAL	NUMBER C	ORE BOXES	S			
5. NAME OF DR C. Dill				15. WATE	R DEPTH			IDI ETED		
6. DIRECTION O	OF HOLE			16. DATE	HOLE	: 517	RTED : CON 12/18/2011 :	MPLETED 12/18/2		
		INED	DEG. FROM VERT.	17. ELEVA	TION TOP C	F HOLE	-52.1	12/10/2	2011	1
7. Penetration, fl	t		14.8	18. TOTAL	CORE REC	OVERY FOR	R BORING		118 %	6
8. Recovery, ft			17.5	19. GEOL	OGIST			-		1
9. Total Recover	ry, %		118.0				S. Miller			
E. E. 41-TION	DEDTIL LEG	- L I D	CLASSIFICATION OF MATERIALS	3	% CORE	BOX OR	REMAR		.,	1
ELEVATION	DEPTH LEG		(Description)		RECOV- ERY	SAMPLE NO.	(Drilling time, wate weathering, etc.,			
-52.3	0.3		d Dark brown sandy silt with shells and	chall	e 100	f 1	9			+
-52.3 -52.7	0.3		hash (60-80%)	SHEII	100	0.0				Е
-JZ./			Dark gray to brown soft sandy Clay ar	nd sandy	100	0.7				
		ૣ૾૾ઌ૾ૺ૾૽૽	silt with some shell fragments (20%)			2				
	⇉⋯⋮		Light to dark brown silty Shell hash ar	nd shells		0.7				F
		.,,,,,	(60-80%)			4.8				
		$\ddot{\mathbb{Q}}$								F
-55.2	3.2									E
	<b>∃</b> (\$\$		Dark brown sandy Silt with shell hash	and						E
	_=		trace medium shell fragments (40%)							<b>E</b>
										E
-56.8	4.8		Cray candy Chall back and Challe (CO	000/\:	100					E
			Gray sandy Shell hash and Shells (60 sandy silt matrix	-80%) III	100	3 4.8				
	⊒;%;€		Salidy Silt Matrix			8.3				F
-58.3	6.3	0.0								E
			Dark gray sandy Silt with shell hash a	nd some						E
-59.2	7.1		shells (10-20%)							
			Shell hash and shells(60-80%) in dark	gray						F
-60.1	8.0		silty fine sand matrix `							F
-60.4	8.3		Dark gray sandy Silt to silty fine Sand	with						E
			medium to large shells (40-60%)		100	4				Е
			Dark brown to gray-green sandy Silt to fine Sand with 5% shell fragments	o silty		8.3 14.8				
	<b>- 1888</b>		tine Sand with 5% shell fragments			17.0				F
	<u>-</u> ⊒:::::::									
	구성									F
										E
	$\exists$									
	<b>= 100</b>									E
	7,00									F
	<u>-∃</u> %%									Е
										<u> </u>
00.0	4.0 = 1									E
-66.8	14.8									E
	=									
	$\exists$									E
	$\exists$									F
	_=									<b>F</b>
										F
										E
										E
	$\exists$									E
	#									F

				_				<u>Hole No.</u>	<u>Y-157</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET	1
1. PROJECT				Area		- DIT	3.5 in	OF 1	SHEETS
	ınks Master E	Beac	h Nourishment Plan		ND TYPE OF		3.5 IN WN (TBM or MSL)		
2. LOCATION (0	Coordinates or Sta	ation)		NAVE	88 (				]
N 323,550	0.8 E 2,589	,989.	2			B DESIGNAT	TION OF DRILL		
	ean Seismic	Sur	vey	Vibra	C <b>ore</b> _ NO. OF OV	ERBURDEN	I : DISTURBED	UNDISTURE	BED
	s shown on draw				LES TAKEN		4		
5. NAME OF DR	RILLER		Y-157	14. TOTAI	NUMBER C	ORE BOXES	S		
C. Dill	WLLLI (			15. WATE	R DEPTH				
6. DIRECTION (				16. DATE	HOLE	STA	RTED : ( 12/18/2011 :	COMPLETED 12/18/2	011
	AL INCL	INED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-52.8		
7. Penetration, f	t		11.0	18. TOTAI	CORE REC	OVERY FOR			120 %
8. Recovery, ft			13.2	19. GEOL	OGIST				
9. Total Recover	ry, %		120.0		% CORE	BOX OR	S. Miller	IARKS	
ELEVATION a		END c	CLASSIFICATION OF MATERIALS (Description) d	8	RECOV- ERY e	SAMPLE NO. f	(Drilling time, www.eathering, et		th t)
-53.3	0.5		Gray shells and shell hash with silty fi	ne sand	100	1		9	
-55.5			matrix	Γ		0.0 2.2			E
			Dark gray to brown sandy silt with she shell hash (40-60%)	elis and		۷.۷			E
55.0			( : :::,						
-55.0	2.2		Dark brown dense sandy Silt with trace	e shell	100	2			F
			hash (10-15%)	0		2.2			
						5.0			
	<u>-</u> 글:해								
-57.8	5.0								
			Dark brown shell hash and shells in samatrix (30-40%)	andy silt	100	3 5.0			F
	_=:::::		matrix (30-40 %)			8.7			
	<b></b>								F
-61.5	8.7 ⊒∷∷								
			Light brown to gray dense shells and	shell	100	4			
			hash in sandy silt matrix (40-50%)			8.7 10.9			
						10.0			
20 -									E
-63.7	10.9	<u> </u>							
									E
									F
									F
									F
									E
									F
									E
									F
									F
									E
									F
									E

								H	<u>ioie no</u>	. Y-15	<u>5</u>
DRILLI	NG LO	3	DIVI	ISION	INSTALLA				SHEET OF 1	1 SHEETS	
1. PROJECT			!			ND TYPE OF	RIT	3.5 in	OF I	SHEETS	Ή
Bogue Ba				h Nourishment Plan				WN (TBM or MSL)			┨
2. LOCATION (0 N 321,321				0	NAVE						
3. DRILLING AG		367,	144.	.0	Vibrac		S DESIGNAT	TION OF DRILL			
Alpine Oc					13. TOTAL	NO. OF OVI	ERBURDEN	DISTURBED	UNDISTUF	RBED	1
4. HOLE NO. (A file number)	s shown on	drawir	ng title	e and Y-158		LES TAKEN		4	<u>:</u>		4
5. NAME OF DR	RILLER			; 1-130		NUMBER C	ORE BOXES	<u> </u>			4
C. Dill					15. WATE	R DEPTH	: 614	ARTED : CC	OMPLETED		-
6. DIRECTION (		INICLI	NICD	DEC EDOMVEDT	16. DATE	HOLE	: 317	12/18/2011	12/18/2		
▼ VERTICA		INCLI	NED	DEG. FROM VERT.	17. ELEVA	TION TOP O	F HOLE	-52.9			
<ul><li>7. Penetration, ft</li><li>8. Recovery, ft</li></ul>	<u> </u>			15.0 18.5	18. TOTAL	CORE REC	OVERY FOR	R BORING		123 %	D
9. Total Recover	7/ %			123.0	19. GEOLO	OGIST		S. Miller			
				CLASSIFICATION OF MATERIALS	.	% CORE	BOX OR	REMAI			┨
ELEVATION	DEPTH	LEGE	END	(Description)		RECOV- ERY	SAMPLE NO.	(Drilling time, wa weathering, etc.,	ter loss, de _l , if significal	pth nt)	
-52.9	b	C	77/77	d \Dark gray to black sandy Silt	п	e 100	f 1	g		•	╆
-52.9 -53.4	0.1 =	411				100	0.0				Ē
-33.4	0.0	11		Black to dark gray soft silty Clay Dark to light gray fine Sandy Silt with	sholl		2.3				
	∃			hash in burrows (0.75-1.25')	SHEII						E
-55.1	2.3										
00.1				Light gray Shell hash and shells (60-8	0%) in	100	2				E
				sandy silt matrix.			2.3				
	$\exists$						8.7				E
	_=:										
	⇉										E
	<u>_</u>										E
-58.5	5.7										E
				Large shells and shell hash (70-90%)	in silt						
-59.1	6.3			matrix							
	∄			Dark gray to brown sandy Silt with she	ell hash						F
	$\exists$			(20-30%)							E
	=										E
	<u>,                                    </u>										
-61.5	8.7			Gray Shells and shell hash in sandy s	ilt matriy	100	3				F
	$\exists$			Cray Griene and orien mash in sarray s	iii iiidaix	100	8.7				E
	⇉						10.9				E
	===										
-63.8	10.9										E
	$\exists$			Light brown to dark gray sandy Silt wit	h trace	100	4				F
	∃:			(5-15%) shell fragments at top, with in shell content below 12 feet (50-60%).	creasing		10.9 15.0				E
	$\dashv$			311611 CONTENT DOIOW 12 1661 (30-00 ///).			15.0				F
	∄										E
-66.0	13.1			Dark brown to dark green-gray sandy	Silt with						Ė
	∄			trace (5-10%) shell hash	OIIL WILLI						E
				,							E
	그										F
-67.9	15.0	<u> </u>									
	$\exists$										E
											E
	∃										E
											<u> </u>
	#										F
											E
											F
	_ =										E
	日										E
	Ⅎ										$\vdash$

							<u> </u>	<u> 1018 NO.</u>	<u>Y-160</u>	
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1 SHEETS	
1. PROJECT					ND TYPE OF	- BIT	3.5 in	OF I	SHEETS	
			h Nourishment Plan				WN (TBM or MSL)			
2. LOCATION (0 N 322 210	Coordinates or St 0.1 E 2,589		0	NAVE		DECIONA	FION OF DDILL			
3. DRILLING AC	SENCY			Vibra		SDESIGNA	FION OF DRILL			
	ean Seismi			13. TOTAL	NO. OF OV	ERBURDEN	•	UNDISTUR	RBED	
4. HOLE NO. (A file number)	s shown on drav	wing title	e and Y-160		LES TAKEN	ODE BOYE	. 4	:		
5. NAME OF DR	RILLER			15. WATE	NUMBER C	ORE BUXES	5			
C. Dill 6. DIRECTION (	DE HOLE					STA	ARTED : CO	OMPLETED		
VERTICA		LINED	DEG. FROM VERT.	16. DATE	HOLE		12/18/2011	12/18/2	2011	
7. Penetration, f			15.2		ATION TOP C		-52.3			
8. Recovery, ft	<u> </u>		17.0		CORE REC	OVERY FOR	R BORING		112 %	
9. Total Recover	ry, %		112.0	. 19. GEOL0	JGIST		S. Miller			
ELEVATION	DEPTH LEG	GEND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMA (Drilling time, wa		oth	
			(Description) d		ERY	NO. f	weathering, etc.	., if significar	nt)	
-52.7	0.4 -:::	c	Dark gray sandy Silt with trace shells		e 100	1	<u>g</u>		+	_
			∖fragments (5-10%)			0.0 1.7			F	=
F4.0	1.7		Dark gray sandy Silt and soft Clay madense shell fragments (40-60%); 1 roo	ck to		1.7			E	Ξ
-54.0			$_{ m h}$ 2.5" in diameter and some small grave	el _/	100	2				=
	4.1		Light gray to dark gray medium sandy trace shell hash (5-10%); some clay fi	lled		1.7 4.5				_
	<u>-∃</u> ∭		burrows in sandy silt unit			4.5				
	34									Ξ
									Ė	
-56.8	4.5	J (. )	Light brown to gray medium Shell has	h and	100	3				=
		\	medium to large Shells (20-30%) in si		100	4.5				=
			sandy matrix			11.0				Ξ
										Ξ
									E	Ξ
		ان وان								=
										_
										Ξ_
		0							E	Ξ
									E	_
00.0										_
-63.3	11.0 - 11.0 -::::		Dark brown Shell hash and medium to	large	100	4			F	_
			shells (30-40%) in sandy silty matrix	<b>3</b> -		11.0 15.0			Ė	=
						15.0			Ė	
	₹:::								F	_
									F	=
										=
									Ė	Ξ
-67.3	15.0									=_
	$\exists$									=
	=									_
	$\exists$								F	=
									F	_
	$\exists$								Ė	=
	$\exists$								Ė	=
	$\exists$								F	_
	$\equiv$								F	=
	$\dashv$									-

								п	oie no	. Z-10	2
DRILLI	NG LO	G	DIV	ISION	INSTALLA Area				SHEET OF 1	1	
1. PROJECT						ND TYPE OF	DIT	3.5 in	JOF I	SHEETS	4
	nks Mas	ter B	eac	ch Nourishment Plan				WN (TBM or MSL)			1
2. LOCATION (0	Coordinates	or Stat	ion)		NAVE	)-88		, ,			
N 321,709		562,	509.	.0	12. MANU Vibra		DESIGNAT	TION OF DRILL	_		
Alpine Oc		smic	Sur	vey		NO. OF OVI	ERBURDEN	I : DISTURBED :	UNDISTUF	RBED	1
4. HOLE NO. (A file number)				e and		LES TAKEN		4			
5. NAME OF DR	RILLER			Z-165	14. TOTAL	NUMBER C	ORE BOXES	S			4
C. Dill					15. WATE	R DEPTH	·	100	MDI ETED		4
6. DIRECTION (					16. DATE	HOLE	SIA	RTED CO 12/16/2011	MPLETED 12/16/2		
		INCLI	NED	DEG. FROM VERT.	17. ELEVA	ATION TOP C	F HOLE	-42.6			1
7. Penetration, f	t			15.1	18. TOTAL	CORE REC	OVERY FOR	R BORING		94 %	5
8. Recovery, ft				14.2	19. GEOL	OGIST		O Miller			
9. Total Recover	у, %			94.0	<u> </u>	% CORE	BOX OR	S. Miller	KS.		-
ELEVATION	DEPTH b	LEGE		CLASSIFICATION OF MATERIALS (Description) d	5	RECOV- ERY	SAMPLE NO. f	(Drilling time, wat weathering, etc.,	er loss, de		
-42.8	0.3	c /////		Dark gray to black sandy stiff Silt with	trace r	e 100	1	<u>g</u>			╆
-43.6	1.0			(5-10%) shell fragments			0.0 1.6				E
-44.2	1.6		1	Dark gray to brown soft sticky Silt with (5-10%) shell hash	trace		0.1				E
<del>-44</del> .∠	1.0			Dark gray sandy Silt to silty fine Sand	, with	100	2				F
				some shell hash (20-30%)  Dark gray to light brown fine sandy Sil	It to silty		1.6 7.4				E
				fine Sand, trace (10%) shell hash dec	reasing		7.4				E
	=			down section; grades with fine to med Sand, trace silt, between 2.33 and 2.7							F
	_=			Garia, trace siit, between 2.35 and 2.7	J II.						E
	_										E
											E
											F
	_=										E
	=										F
-50.0	7.4										E
		. 🖳		Light brown gravel (1-2' diameter) in fi	ne to						F
-50.7	8.1		•	medium sand matrix		100	3				F
				Light brown to light gray fine to mediu with trace Silt; light green-gray clay le		100	8.1				E
				5" intervals			11.4				E
	=										E
	=										E
	Ξ										E
-54.0 -54.2	11.4										E
-54.2	11.7			Dak gray to dark brown sandy Silt - C		100	4 11.4				F
	=			Dark gray to light brown fine to medium dark brown stiff clay lens @12.17 ft	m Sand;		14.2				E
	_ =			3.5 5 5 5 5 5 5 5.							E
											E
-56.7	14.2										E
-50.7	14.2		: - : - :								
	_=										E
											E
	_=										E
											E
	=										E
											E
	_ =										E
											E
	=										E
											F
	=										F

							<u> </u>		). Z-100	2
DRILLI	NG LOG	DIVI	SION	INSTALLA Area				SHEET OF 1	1	
1. PROJECT					ND TYPE OF	RIT	3.5 in	10- 1	SHEETS	H
	nks Master B	eacl	h Nourishment Plan				OWN (TBM or MSL)			1
2. LOCATION (0	Coordinates or State 2.7 E 2,569,	tion)		NAVE	)-88					1
3. DRILLING AG		300.	1	12. MANU Vibra		S DESIGNA	TION OF DRILL			
	ean Seismic			13. TOTAL	NO. OF OVI	ERBURDEN	• • • • • • • • • • • • • • • • • • • •	UNDISTU	RBED	1
file number)	s snown on drawn	ig iilie	Z-166		NUMBER C	ORE BOXE	<u>: 4 :</u> s			1
5. NAME OF DR C. Dill	RILLER			15. WATE		0112 20712				1
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA		MPLETED		1
	AL INCLI	NED	DEG. FROM VERT.	17 FLEVA	ATION TOP C	E HOLE	12/16/2011 -44.0	12/16/	2011	1
7. Penetration, f	t		15.1		CORE REC				119 %	1
8. Recovery, ft			17.8	19. GEOL						1
Total Recover	ry, %		119.0		% CORE	BOX OR	S. Miller	NS		4
ELEVATION a	DEPTH LEGE		CLASSIFICATION OF MATERIALS (Description) d	•	RECOV- ERY e	SAMPLE NO. f	(Drilling time, wat weathering, etc., g	ter loss, de		
-44.0 -44.6	8.8		Dark gray fine sandy Silt to silty fine S	and;	101	1 0.0				F
-45.0	1.0		trace shell fragments (5-10%) Dark gray shell hash (70%) and trace	pebbles r	99	0.6				E
45.0			in sandy silt matrix		100	2 0.6				E
-45.9 -46.0	1.9       2.0		Dark gray clayey Silt with trace fine sa trace shell fragments (10-15%)	ırıa; f		1.0				E
			Gray shell hash (80%) in silt matrix			3 1.0				E
-47.4	3.4		Dark gray stiff clayey Silt with trace fin and pebbles; trace shell hash (20%)	e sand		3.4				
			Dark brown very stiff Clay with light br	own to	100	4 3.4				F
			dark gray fine to medium sandy Silt le light gray soft silt and shell hash filled	nses; burrows		15.0				E
			@ 3.58-3.83 feet							E
										E
										F
										E
										F
										E
										E
										F
										E
										F
										E
										F
										E
										F
										E
										F
										F
										E
										F
50.0	45.0									E
-59.0	15.0									F
	$\exists$									F
	$\exists$									E
										E
	$\exists$									E
	∄									E
	$\exists$									F
	$\exists$									E
	=									E
	$\exists$									E

							п		. Z-10	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET	1	
1. PROJECT				Area			o = :	OF 1	SHEETS	4
	nks Master F	Reac	h Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)			4
	Coordinates or Sta		Trivourishment Flair	NAVE		ATION SHO	WIN (IBM OF MSL)			
N 323,719	9.2 E 2,571		1			S DESIGNAT	TION OF DRILL			1
3. DRILLING AG		0		Vibra						
4. HOLE NO. (A	ean Seismic		e and		NO. OF OV LES TAKEN	ERBURDEN	DISTURBED : U	JNDISTUF	RBED	
file number)			Z-167	14. TOTAL	NUMBER C	ORE BOXES				1
5. NAME OF DR C. Dill	RILLER			15. WATE	R DEPTH	i				
6. DIRECTION O	OF HOLE			16. DATE	HOLE	STA	RTED : COM 12/16/2011 :	MPLETED 12/16/2	2011	
		INED	DEG. FROM VERT.	17. ELEVA	ATION TOP C	F HOLE	-42.7	12/10/2	2011	1
7. Penetration, fl	t		16.4	18. TOTAL	CORE REC	OVERY FOR	R BORING		94 %	, D
8. Recovery, ft			15.6	19. GEOL	OGIST			-		1
9. Total Recover	ry, %		94.0		N 0005	DOV 00	S. Miller	-		4
ELEVATION	DEPTH LEG	END	CLASSIFICATION OF MATERIALS (Description)	3	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARI (Drilling time, wate weathering, etc., i	er loss, de		
а			d		е	f	g	Sigrillical		
-42.7	0.0		Dark gray to light brown shell hash (70 fine gravel, trace small pebbles, trace	silt and	100	1 0.0				F
-44.1	1.4		medium to coarse sand; soft dark gray layer at 0.75 ft.	y Clay		2.4				
-44.4	1.8		Light gray shell hash (30%) in dark gra	av fine						F
4F 1			sandy Silt matrix							
-45.1	2.4		DArk gray shell hash (80%) with some	<del></del>	100	2				E
-45.9	3.3		pebbles in silty fine sand matrix	No.	100	2.4				
-46.2	3.6		Dark brown stiff Clay with softer silty ( trace shell hash (5%) in lenses	Jay,		11.7				Е
			Dark to light gray clayey Silt with shell	hash						<b>L</b>
			(15-20%)							F
			Dark brown stiff Clay with dark brown							F
			gray fine sand lenses throughout; graddark gray clayey Silt with trace shell h	des to						E
			(5%) from 3.75-3.92 ft; coarse light to	dark						E
			brown sand lens at 6-7.25 feet; piece	of wood						
			at 11.1-11.3 feet							F
										E
										F
										Е
										E
										F
										F
										E
-54.3	11.7				400					E
	<b>-</b> ⊒:::::		Dark gray to light brown silty fine Sand shell hash (5-10%) and small pebbles		100	3 11.7				E
	<b>:::::</b>		pebble to 2" diameter at 13.25 ft.	, 0110		14.2				F
										E
	⊒ःःः	****								Е
-56.8	14.2	****								<b>L</b>
33.3		أثأ	Dark gray to green Silt, little fine to me	edium	113	4				F
	_3:4:		Sand; no shells			14.2				E
-58.2	15.6					15.6				E
55.2		11 + 2 * 1								F
										E
	$\exists$									E
	$\dashv$									F
										F
	$\exists$									E
	_=									F
	$\exists$									F
1										

									<u>Hole No.</u>	<u>Z-168</u>
DRILLI	NG LO	G	DIVIS	SION	INSTALLA				SHEET	1
1. PROJECT		·			Area		DIT	2 E in	OF 1	SHEETS
	nks Ma	ster Be	ach	Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)		
2. LOCATION (	Coordinates	or Statio	n)		NAVE		A TON SHO	TTT ( I DIVI OI IVIOL)		
N 324,420		,573,3	16.8	3	12. MANU	FACTURER'S	S DESIGNAT	TION OF DRILL		
3. DRILLING AC Alpine Oc		smic S	urve	ev	Vibra		EDDI IDDEN	DISTURBED	UNDISTURE	DED
4. HOLE NO. (A file number)					SAMP	LES TAKEN		4	ONDISTORE	J_U
5. NAME OF DF	RILLER			Σ-100		_ NUMBER C	ORE BOXES	S		
C. Dill					15. WATE	R DEPTH	: 0.7	DTED :	OMPLETED	
6. DIRECTION (					16. DATE	HOLE	STA	RTED : ( 12/16/2011 :	COMPLETED 12/16/2	₀₁₁
		INCLIN	-D	DEG. FROM VERT.	17. ELEVA	ATION TOP C	F HOLE	-44.9		
7. Penetration, f	t			14.8	18. TOTAL	CORE REC	OVERY FOR	R BORING		108 %
8. Recovery, ft	. 0′			16.0	19. GEOL	OGIST		C Mill		
9. Total Recove	ry, %	1		108.0		% CORE	BOX OR	S. Miller	IARKS	
ELEVATION	DEPTH	LEGEN	ID	CLASSIFICATION OF MATERIALS (Description)	•	RECOV- ERY	SAMPLE NO.	(Drilling time, v weathering, et	vater loss, dept c., if significant	
a -44.9	0.0 –	c	•[•] (	d Gray fine sandy Silt with trace (5%) sh	nell	e 100	f 1		9	
			╬╣	hash, few large shell fragments; incre	ase in	100	0.0			
	=	<b>****</b> ***	: :  ⁽	clay and shell content (10%) with dept	ın		3.8			F
-46.9	2.0									ŀ
70.0				Gray pebble and shell hash mixture, to	race silt,					Ė
	=		t t	trace gravel to 0.5" diameter						F
										ŀ
-48.7	3.8 -	<b>*****</b>	-	Transition zone from fine to medium li	aht	125	2			Ė
-49.4	4.5		<u> </u>	brown/gray silty sand to dark brown ve	ery stiff	120	3.8			F
	_=			clay Dark brown very stiff Clay, some orga	nice		7.8			ŀ
		<i>\\\\\\</i>	<b>/// (</b>	(tree roots)	11103					Ė
	_=	<i>\\\\\\</i>								F
	=	<i>\\\\\\</i>								ŀ
	_=									ļ
-52.8	7.8	<i>\\\\\\</i>								F
52.0			[ ]	Dark to light brown fine silty Sand to s	andy Silt	99	3			ŀ
							7.8 10.4			Ė
	=									F
										ŀ
-55.3	10.4									Ė
			I	Light brown to gray medium Sand with pieces (roots) at 11.5-11.9 and 12.4 to	wood	100	4 10.4			F
	=			pieces (1001s) at 11.5-11.9 and 12.4 to	) 14.∠ II)		10.4			ŀ
	_=									Ė
										F
	_=									ŀ
	=	1								Ė
	=									F
-59.7	14.8 -									ŀ
		1								Ė
	=	1								F
	-	}								E
	=	1								Ė
	=	1								F
	=	1								ŀ
	=	1								Ė
	=	1								F
		]								ŀ
	=	1								Ŀ

							П		). Z-10	<u>'3</u>
DRILLI	NG LOG	DIVI	ISION	INSTALLA				SHEET	1	
1. PROJECT				Area			0.5:	OF 1	SHEET	$\stackrel{\mathrm{s}}{\vdash}$
	inke Master F	Reac	h Nourishment Plan		ND TYPE OF		3.5 in			4
	Coordinates or Sta		Trivourishment Flair	NAVE		ATION SHO	WN (TBM or MSL)			
	2.7 E 2,575,		8			S DESIGNAT	TION OF DRILL			┨
3. DRILLING AG		_		Vibra	core					
4. HOLE NO. (A	ean Seismic				NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTU	RBED	
file number)			Z-169	14. TOTAI	NUMBER C	ORE BOXES		-		1
5. NAME OF DF C. Dill	RILLER			15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	RTED : CON 12/16/2011 :	MPLETED / <b>12/16</b>		
		INED	DEG. FROM VERT.	17. ELEV <i>A</i>	ATION TOP C	F HOLE	-45.6	12/10/	2011	┨
7. Penetration, f	t		15.1	18. TOTAI	CORE REC	OVERY FOR	R BORING		113 %	<del>-</del>
8. Recovery, ft			17.2	19. GEOL	OGIST					1
9. Total Recover	ry, %		113.0				S. Miller			
ELEVATION	DEPTH LEGI	END	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMAR (Drilling time, wate		epth	
а	b c	,	(Description) d		ERY e	NO. f	weathering, etc., i			
-46.0	0.4		Light brown coarse Sand with shell ha	sh	100	1	9			E
-46.2	0.6	/////	(20-30%)			0.0				E
-46.4 -46.8	0.8—		Dark gray to black very soft Clay			4.3				F
-47.3	17		Dark gray to light brown medium Sand trace shell hash (5%)	d and						E
-48.0	2.4		Gray-green silty fine Sand; rare shell l	nash						F
			(5-10%)							F
-48.6	3.0		Dark gray to light gray medium Sand,	with soft						E
			dark gray clay lens at 1.33 ft							Е
-49.9	4.3		Gray-green sandy Silt with rare small fragments (5%)	snell						F
-40.0	7.0	7	Dark gray coarse shells (70-80%) and		100	2				E
-50.7	5.1		pebbles, some shell fragments in fine silt matrix	sandy		4.3				F
			Dark to light gray silty Clay with trace	chall	100	5.1				E
	_=:::::		hash (5%); lens of light brown coarse	sand at		3 5.1				
			4.33 ft			9.6				F
			Dark brown fine sandy Silt with dark b	rown						F
			stiff Clay lenses, trace shell hash (5% gray soft clay-filled burrow at 5 ft.	); light						
			Dark gray very coarse Shell hash (40°	%) with						F
			coarse sand and pebbles	, , , , , , , , , , , , , , , , , , , ,						E
										E
										F
-55.2	9.6		Dark gray to light brown coarse Sand	with	100	4				E
			small lenses of stiff dark brown clay; t	race	100	9.6				
			pebbles (5%)			15.2				F
		. O:								
										E
										E
		ان، دا اختار								E
										F
										F
										E
										E
-60.8	15.2									
	$\equiv$									E
										F
										F
										E
	_=									<b> </b>
										E
										E
										F

							H	<u>ioie no</u>	<u>. Z-17</u>	<u>U</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area 2				SHEET OF 1	1	
1. PROJECT					ND TYPE OF	BIT	3.5 in	TOF I	SHEETS	4
			ch Nourishment Plan	11. DATU	M FOR ELEV		WN (TBM or MSL)			1
	Coordinates or Sta		5	NAVE		DECIONA-	TION OF DRILL			4
3. DRILLING AG	SENCY			Vibra		DESIGNA	HON OF DRILL			
4. HOLE NO. (A	ean Seismic s shown on drawi		e and		. NO. OF OVI LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTUF	RBED	
file number)			Z-170	14. TOTAL	NUMBER C	ORE BOXE	S .			1
5. NAME OF DR C. Dill	RILLER			15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	NRTED : CC 12/16/2011 :	MPLETED 12/16/2		
	AL INCL	INED	DEG. FROM VERT.	17. ELEVA	TION TOP C	F HOLE	-44.4	12/10/2	2011	1
7. Penetration, f	t		16.0	18. TOTAL	CORE REC	OVERY FOR			109 %	%
8. Recovery, ft			17.5	19. GEOL	OGIST		0.14"			
9. Total Recover	y, % 		109.0 CLASSIFICATION OF MATERIALS		% CORE	BOX OR	S. Miller	RKS		4
ELEVATION	DEPTH LEG		(Description)	•	RECOV- ERY	SAMPLE NO. f	(Drilling time, wai weathering, etc.,	ter loss, de		
-44.4	0.0		Dark gray sandy Silt-Clay; rare shell		e 100	1	g			+
-45.1	0.8	• • • •	fragments (1-5%)		400	0.0 0.8				E
-45.8	1.4		Dark gray shell hash (10-20%) with pe trace silt in matrix	ebbles;	100	2				E
			Dark brown stiff Clay with light brown t	to gray	100	0.8 1.4				E
			very fine silt-clay; grades with lenses of medium sand below 10.5 ft.	of gray		3				E
						1.4				E
						13.8				F
										E
										F
										E
										F
										E
										E
										E
										E
										<b>F</b>
										E
										<b>F</b>
										E
										E
										$\vdash$
										E
-58.1	13.8									E
33.1	10.0		Light gray medium to coarse Sand wit	h	100	4				
			pebbles in lenses			13.8 16.0				E
						10.0				<b>F</b>
										E
-60.4	16.0									<b>F</b>
	$\exists$									E
	$\exists$									E
	$\exists$									E
	$\exists$									E
	$\exists$									E
										E
	$\exists$									E
I	$\dashv$						I			⊢

								NO. Z-1/1	_
DRILLI	NG LOG	DIV	SION	INSTALLA			SHE	•	
1. PROJECT				Area			OF.	1 SHEETS	┨
	nks Master	Reac	h Nourishment Plan		ND TYPE OF		3.5 in		-
2. LOCATION (C			THOURSTINE TELL	NAVE		ATION SHO	WN (TBM or MSL)		
N 326,487	7.8 E 2,578		9			B DESIGNAT	TION OF DRILL		1
3. DRILLING AG		~ C	40.4	Vibra					
4. HOLE NO. (A	ean Seismi s shown on drav		e and		NO. OF OV LES TAKEN	ERBURDEN	DISTURBED UNDIS	STURBED	
file number)	NILLED		Z-171	14. TOTAL	NUMBER C	ORE BOXES	S		
5. NAME OF DR C. Dill				15. WATE	R DEPTH	· et/	ARTED : COMPLE	TED	
6. DIRECTION (				16. DATE	HOLE	: 517	ARTED COMPLET 12/16/2011 12/	16/2011	
		LINED	DEG. FROM VERT.	17. ELEV <i>A</i>	ATION TOP C	F HOLE	-45.4		1
7. Penetration, f	t		16.0	18. TOTAL	CORE REC	OVERY FOR	R BORING	110 %	1
8. Recovery, ft			17.7	19. GEOL					1
9. Total Recover	ry, %		110.0				S. Miller		1
ELEVATION	DEPTH LEG	GEND	CLASSIFICATION OF MATERIALS	8	% CORE RECOV-	BOX OR SAMPLE	REMARKS (Drilling time, water loss	s, depth	
а	b	С	(Description) d		ERY e	NO. f	weathering, etc., if sign	nificant)	
-45.8				shell	100	1	9		F
	<u> </u>		∖hash			0.0			E
			Dark gray sandy Silt with shell fragme (20%); layer of medium to coarse san	ents d at 1 ft		2.2			F
	∃::::		(2070), layer of medium to coarse sam	u at i it.					E
-47.6	2.2		Deals were Obelle and about for wearth	d	400	0			⊨
	∄∷∷		Dark gray Shells and shell fragments pebbles; trace silt in matrix	and	100	2 2.2			E
-48.7	3.3		possios, ados one in madin			4.4			E
			Dark gray to light brown medium to co	oarse					F
40.8			Sand with 20% pebbles and few shell fragments (10-15%)						E
-49.8 -50.1	4.4		Layers of light brown sandy Silt and d	ark -	100	3			F
			brown stiff Clay; trace pebbles and sh	ell hash		4.4			E
	글:회		Light gray-green silty fine Sand to san	ndy Silt,		11.0			E
	_==		trace dark gray clay filled burrows						Ė.
	# # #								F
									E
									E
	크왕								E
	三三十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十								Е
									⊨
	4.4								F
									F-
									Е
-56.4	11.0				400				Ė.
			Light brown to gray medium Sand; no	shells	100	4 11.0			F
	_3.					16.0			E_
	<b>→</b>								E
	<b>-</b>								F
									E
	<b>⇒</b>								E
									F
									Е
									⊨
									F
-61.4	16.0								E
	$\exists$								E
	_=								E
	$\exists$								F
									E
	$\exists$								Ė
	$\exists$								F
									E
	$\exists$								Ē

								<u>ioie no</u>	. Z-1 <i>1</i> 2	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1	
1. PROJECT					AND TYPE OF	- RIT	3.5 in	JOF I	SHEETS	4
Bogue Ba	nks Master E	Beac	h Nourishment Plan				WN (TBM or MSL)			┨
	Coordinates or Sta		4	NAVE						
3. DRILLING AG	7.9 E 2,580,	828.	.4	12. MANU Vibra		S DESIGNAT	TION OF DRILL			
	ean Seismic	Sur	vey			ERBURDEN	I DISTURBED	UNDISTUR	RBED	1
4. HOLE NO. (A file number)	s shown on drawi	ng titl		SAMP	LES TAKEN		4			
5. NAME OF DE	DILLED		Z-172	14. TOTA	L NUMBER C	ORE BOXES	S			
C. Dill	MLLLIX			15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	ARTED : CC 12/16/2011 :	OMPLETED 12/16/2		
	AL INCLI	NED	DEG. FROM VERT.	17 ELEV/	ATION TOP C	E HOLE	-49.3	12/10/	2011	-
7. Penetration, f	t		16.6		L CORE REC				114 %	_
8. Recovery, ft			19.0	19. GEOL		OVERTION	( BOI WING		117	1
9. Total Recover	ry, %		114.0				S. Miller			╛
ELEVATION	DEPTH LEGI	END	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMA (Drilling time, wa		pth	1
a	b c		(Description)		ERY	NO. f	weathering, etc.			
-49.4	0.1 - /////		Dark brown soft silty Clay with shell ha	ash [	-	'	9			╆
-49.9	0.6		(40-60%)		99	1				E
-50.7	1.4	.8.	Dark brown stiff Clay; no shells	<u> </u>	33	0.6				
			Dark gray pebbles (40%) in a sandy s matrix: rare shell hash	lit /	100	1.4 2				E
			Dark gray-green sandy Silt to silty fine	Sand;		1.4				
			few clay filled burrows			5.0				E
										E
	<b>=</b>									E
										E
	483									F
					100	3				E
						5.0 10.0				F
						10.0				E
	# * * * * * * * * * * * * * * * * * * *									F
										E
	_=333									E
										E
	<b>-</b>									F
	_333									E
	<b>=</b>				100	4 10.0				F
	_3(4)					16.5				E
	# # # # # # # # # # # # # # # # # # # #									F
	_=									E
	3.33									E
	_ <del></del>									E
										E
	_==1883									
										E
										E
										E
-65.8	16.5	1.1.								Ē
										E
	$\exists$									F
	$\exists$									E
	$\exists$									E
	$\exists$									F
	∃									E

								F	<u>iole no</u>	). Z-1 <i>1</i>	<u>3</u>
DRILLI	NG LO	G	DIVIS	SION	INSTALLA Area				SHEET OF 1	1 SHEET	
1. PROJECT		Ļ				ND TYPE OF	RIT	3.5 in	OF I	SHEET	4
				n Nourishment Plan				WN (TBM or MSL)			1
2. LOCATION (0 N 321,406				3	NAVE		2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	FIGURE BRILL			
3. DRILLING AG		,505,5	17.0	,	12. MANU Vibra		S DESIGNAT	TION OF DRILL			
Alpine Oc					13. TOTAL	NO. OF OVI	ERBURDEN	DISTURBED	UNDISTU	RBED	
4. HOLE NO. (A file number)	s shown on	n drawing	title	and : : Z-173		LES TAKEN		4	<u>:</u>		4
5. NAME OF DR	RILLER			2-173		NUMBER C	ORE BOXES	S			_
C. Dill					15. WATE	RDEPTH	: STA	ARTED : CO	OMPLETED		-
6. DIRECTION (		] INCLINE	-D	DEC EDOMVEDT	16. DATE	HOLE	317	12/16/2011	12/16/	2011	
		INCLINE	ט	DEG. FROM VERT.	17. ELEVA	TION TOP C	F HOLE	-45.9			
7. Penetration, f	t			16.6 17.5	18. TOTAL	CORE REC	OVERY FOR	R BORING		105	%
9. Total Recover	n/ %			105.0	19. GEOL	OGIST		S. Miller			
		<u> </u>		CLASSIFICATION OF MATERIALS		% CORE	BOX OR	REMA	RKS		$\dashv$
ELEVATION	DEPTH	LEGEN	D	(Description)		RECOV- ERY	SAMPLE NO.	(Drilling time, wa weathering, etc.	ater loss, de . if significa	epth ent)	
a -45.9	0.0 —	с		d Dark gray sandy Silt with shell hash ar	ad amall	е	f 1	g			-
-45.9 -46.7	0.0	ΔΔ.		shell fragments (40-60%)	na smaii	100	0.0				E
				Dark gray sandy Silt with trace shell ha	ash		7.0				
-47.4 -47.6	1.6 -	111/11		(5%)							F
-47.0	1.0	6		Dark gray very stiff Clay Dark gray sandy Silt with trace shell ha	ash						F
-48.9	3.0	<del>-</del>		(5%)							E
-49.2	3.3 —	11111		Dark gray stiff to soft Clay, with lens o	f fine						E
	=			sandy silt							F
			'	Dark green-gray sandy Silt							E
	=										F
											E
	=										E
											E
-52.9	7.0										F
02.0		17/19/		Dark gray to brown sandy Silt with sm	all	100	2				F
	=		ا	pebbles and rare shell hash (1-5%)			7.0 8.3				F
-54.2	8.3	[B]B]	<b>/</b>			400					E
	=			Light to dark brown medium sand with silt; trace dark brown clay lenses	trace	100	3 8.3				F
				one, made dank brown day honded			12.4				E
											F
-56.1	10.3			Light to dark brown coarse sand with	20%						E
		。 () ·		pebbles	20 /0						F
-57.1 -57.3	11.3 <u> </u>			Dark brown very stiff silty Clay, rare pe	abblee s						E
07.0	···- =			Light brown medium to coarse Sand	bbles						F
-58.3	12.4	,,,,,									E
	=	<b>\////</b>	/// I	Dark gray-green very stiff Clay		100	4 12.4				F
							16.3				E
	=										E
	=										
	_										F
	_										E
-61.7	15.8										E
-62.1	16.3		///	Dark gray-green silty Clay							F
	Ξ	1									E
		†									<b>F</b>
	Ξ	]									E
		1									<b> </b>
	=	]									E
		†									<b> </b>
	Ξ										E

		I.e.		Luce			- 11	ole No.	
DRILLI	NG LOG	DIVI	SION	INSTALLA Area				SHEET	1
1. PROJECT				_	ND TYPE OF	- RIT	3.5 in	OF 1	SHEETS
	nks Master B	Beac	h Nourishment Plan				OWN (TBM or MSL)		
2. LOCATION (	Coordinates or Stat	tion)		NAVE	)-88		,		
N 321,757	7.3 E 2,566,	100.	9			S DESIGNA	TION OF DRILL		
	ean Seismic	Surv	/ev	Vibra	NO. OF OV	EDRI IDDEN	I : DISTURBED : I	JNDISTURI	RED
	s shown on drawii				LES TAKEN	LNDONDLN	4	JINDISTON	BLD
5. NAME OF DE	RILLER		<u>Z-174</u>	14. TOTAI	NUMBER C	ORE BOXE	S		
C. Dill	WELLI (			15. WATE	R DEPTH				
6. DIRECTION (		NED	DEG. FROM VERT.	16. DATE	HOLE	STA	ARTED COM 12/16/2011 :	MPLETED 12/16/2	011
	<u> </u>	INED	Beg. PROM VERT.	17. ELEV	TION TOP C	F HOLE	-45.1		
7. Penetration, f 8. Recovery, ft	l .		18.3	18. TOTAI	CORE REC	OVERY FOR	R BORING		112 %
9. Total Recover	0, 9/		112.0	19. GEOL	OGIST		S. Miller		
9. Total Recover			CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	S. WIIIIEI REMAR	KS	
ELEVATION	DEPTH LEGE		(Description)	5	RECOV- ERY	SAMPLE NO. f	(Drilling time, wate weathering, etc.,	er loss, dep	
-45.5	0.4 C	, 	Dark gray sandy Silt with shell hash a	nd shell	e 100	1	g g		
10.0	<u> </u>		fragments (40%); dark brown peat lay	er at		0.0			ŀ
			bottom of section  Light gray fine to medium Sand with s	hells		7.8			ļ
-47.1	2.0		and shell hash in layers (40-60%)	,,,,,,,,,					ŀ
-47.1			Dark to light gray fine to medium Sand	d with					ļ
	333		large shells (50%)						<b>.</b>
									ŀ
-49.2	4.1_								
-49.2	4.1		Light gray fine to medium Sand, trace	silt;					Į.
	3.4		occasional layers of large shells (30-4						ŀ
									ļ.
	<b>=</b>								ļ.
									ŀ
-52.9	7.8		Deale was for a to an adjust October 1	- <b>f</b> t -11 -	400	0			ŀ
			Dark gray fine to medium Sand with s gray clay layers	on dark	100	2 7.8			ŀ
	_=_					10.0			Ē
	484								ŀ
-55.1	10.0								-
	##		Dark gray-green Silt with little fine to r Sand, trace soft clay lenses; wood fra	medium	100	3 10.0			ļ
	<b>3</b>		11.92 ft	igini <del>c</del> iil al		13.4			Ŀ
	1								ļ
	_3/8								ŀ
	3.1								į
									<b>[</b>
-58.5	13.4		Light brown to day gray medium Sand	d trace	100	4			ŀ
	_= :		silt, with dark gray soft clay layers; rar	re	100	13.4			<b>[</b>
	3.43		pebbles			16.3			ŀ
									ļ
	日制								ŀ
-61.3	16.3								ļ
51.0		-11							ŀ
	_=								ļ
	$\exists$								ŀ
									ļ
	$\exists$								F
									Ė
	$\exists$								<b>[</b>
I	$\dashv$					1	1		

							<b>i</b>	<u>iole no</u>	<u>. Z-1/:</u>	2
DRILLI	NG LOG	DIVI	ISION	INSTALLA Area				SHEET OF 1	1	
1. PROJECT					ND TYPE OF	RIT	3.5 in	OF I	SHEETS	+
Bogue Ba			h Nourishment Plan				WN (TBM or MSL)			┨
2. LOCATION (C			1	NAVE						
3. DRILLING AG	7.4 E 2,568	8,624.	4	12. MANU Vibra		S DESIGNAT	TION OF DRILL			
	ean Seismi	c Sur	vey			ERBURDEN	: DISTURBED	: UNDISTUF	RBED	-
4. HOLE NO. (A			e and		LES TAKEN		4	:		
file number) 5. NAME OF DR	שוורס		Z-175	14. TOTAL	NUMBER C	ORE BOXES	S			
C. Dill	RILLER			15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	ARTED CO 12/16/2011	OMPLETED 12/16/2	2011	
∨ERTICA	AL INC	LINED	DEG. FROM VERT.	17 ELEV/	ATION TOP O	: :	-44.1	12/10/2	2011	-
7. Penetration, f	t		15.4		CORE REC				90 %	-
8. Recovery, ft			13.9	19. GEOL		OVERTION	\ DOMING		90 %	1
9. Total Recover	ry, %		90.0	.0. 0202			S. Miller			
ELEVATION	DEPTH LE	GEND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMA (Drilling time, wa		nth	1
		C	(Description)		ERY	NO. f	weathering, etc.			
-44 4	b 0.3 − △	$\Delta \Delta$	Light gray to dark brown shells and sh	ell hash	e 100	1	9			╆
-44.5	0.4		(40-60%) in silty fine sand matrix			0.0				E
-45.1	1.0		Dark gray very stiff Clay		100	1.0				
			Dark gray to black pebbly Gravel in s sandy matrix; trace shell hash	lty		1.0				E
	<del></del>		Dark gray to dark brown still Clay; rare	shell		9.0				F
			fragments in burrows							E
										F
										E
										F
										E
										E
	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\									E
										E
	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\									F
										E
										F
-52.3	8.3		Black stiff Clay							E
-53.1	9.0		-							E
-53.4	9.3 - 11/2	<u> </u>	Section of wood - possible large tree r		100	3				F
-54.1	10.0		Dark red-brown stiff Clay, significant p organic layers	eat-like	100	9.3				E
	<i>\\\ </i>		Dark brown silty stiff Clay			11.0				F
-55.1	11.0									E
-55.7	11.6		Dark brown and light gray banded fine	Sand	100	4 11.0				F
			Dark red-brown silty stiff Clay			13.9				E
-56.7	12.7									E
			Light gray medium Sand							E
										E
-58.0	13.9									F
	3									E
										F
										E
										E
										F
										E
										E
										E
										F
										E
										E

							П	ole No. 4	<u> </u>
DRILLI	NG LOG	DIV	/ISION	INSTALLA Area				SHEET OF 1 S	1
1. PROJECT						DIT	2 E in	IOF I S	SHEETS
	nks Maste	er Bead	ch Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)		
2. LOCATION (0 N 323,378	Coordinates or	Station)		NAVE	)-88				
3. DRILLING AG	BENCY	<u> </u>		12. MANU Vibra		S DESIGNA	TION OF DRILL		
Alpine Oc 4. HOLE NO. (A					NO. OF OV LES TAKEN	ERBURDEN	I DISTURBED U	JNDISTURBE	.D
file number)			Z-176	14. TOTAL	NUMBER C	ORE BOXE	<u> </u>		
5. NAME OF DF C. Dill	RILLER			15. WATE	R DEPTH				
6. DIRECTION (				16. DATE	HOLE	STA	ARTED : COM 12/16/2011 :	MPLETED 12/16/201	11 I
	AL	ICLINED		17. ELEVA	ATION TOP C	F HOLE	-42.2	12/10/20	
7. Penetration, f	t		13.7	18. TOTAL	CORE REC	OVERY FOR	R BORING		131 %
8. Recovery, ft			18.0	19. GEOL	OGIST		0.14		
Total Recover	ry, %		131.0		% CORE	BOX OR	S. Miller	KS	
ELEVATION a	DEPTH L	.EGEND	CLASSIFICATION OF MATERIALS (Description) d	5	RECOV- ERY e	SAMPLE NO. f	(Drilling time, wate weathering, etc., i	er loss, depth	
-42.2 -42.8	8.6		Light brown fine to medium Sand and	shells	100	1	3		
-43.5	1.3		and shell fragments (60-80%)  Dark gray Silt with fine Sand, trace sh	 ell hash		0.0 1.6			E
-43.8	1.6	·Q·:·(·) hååååå	(1-5%)	<u> </u>	100				E
44.0			Dark gray shell hash and pebbles (80° sandy silt as matrix	,	100	2 1.6			
-44.8	2.6		Dark gray stiff Clay with shelly silt in b		100	2.6			E
45.0	. 7		Dark gray-green Silt with fine sand, 30 hash and some pebbles (10%)	)% snell	.00	2.6			
-45.9	3.7		Layers of sandy Silt and stiff brown Cl	ay		9.0			E
-46.6	4.4			-					E
			Dark brown stiff Clay with layers of light fine to medium Sand; few shell hash light	ayers					E
			(10-30%)						E
									F
									E
									E
									E
-51.2	9.0								E
-31.2	9.0		Dark brown stiff Clay; wood fragments	at	100	4			<u> </u>
			bottom of section			9.0 13.8			E
						13.0			E
									F
									E
									F
									E.
-56.0	13.8								E
-30.0	10.0	<u> YYYYYYYY</u>							<u> </u>
	$\exists$								E
	_=								F
	$\equiv$								E
									E
									F
									E
	$\overline{}$								F
	$\exists$								E
									E
	$\exists$								F

								r	<u> 1018 NC</u>	). Z-1 <i>1</i>	
DRILLI	NG LO	G	DIV	ISION	INSTALLA Area				SHEET OF 1	1 SHEET	
1. PROJECT						AND TYPE OF	DIT	3.5 in	OF I	SHEET	쒸
	ınks Mas	ter B	eac	h Nourishment Plan				WN (TBM or MSL)			$\dashv$
2. LOCATION (	Coordinates	or Stati	on)		NAVE	D-88					
N 324,063		5/2,3	380.	.2			S DESIGNAT	TION OF DRILL			
Alpine Oc		smic S	Sur	vev	Vibra		EDDLIDDEN	: DISTURBED	UNDISTU	DDED	4
4. HOLE NO. (A				e and		LES TAKEN	EKBUKDEN	5 5	ONDISTO	KBED	
file number)				Z-177	14. TOTA	L NUMBER C	ORE BOXES	S	•		
5. NAME OF DF C. Dill	RILLER				15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE				16. DATE	HOLE	STA		OMPLETED		
∨ERTICA	AL	INCLIN	NED	DEG. FROM VERT.			<u> </u>	12/16/2011	12/16/	2011	_
7. Penetration, f	t			16.2		ATION TOP C		-43.0			4
8. Recovery, ft				20.0		L CORE REC	OVERY FOR	R BORING		124 (	%
9. Total Recove	ry, %			124.0	. 19. GEOL	UGIST		S. Miller			
		. 505		CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	REMA			┨
ELEVATION	DEPTH	LEGE	ND	(Description)		RECOV- ERY	SAMPLE NO.	(Drilling time, wa weathering, etc	iter loss, de ., if significe	epth ant)	
-43.0	0.0 —	C	٠	Dark grov shall beek and shalls and n	abblaa	e 100	f	g			+
-40.0	0.0	• 6	•	Dark gray shell hash and shells and p (50%); large rocks from 1.08-1.5 ft	ennies	100	1 0.0				E
			•	, ,			1.8				E
-44.5 -44.8	1.5 <u> </u>		<b>)</b> • `	Doub and an an an an all Cité with trace	المطما						Е
-44.6 -45.0	2.0			Dark gray-green sandy Silt with trace	sneii [	100	2				F
-45.1	2.2			Dark brown stiff Clay			1.8				E
-45.2 -45.9	2.3 =			Dark gray green sandy Silt with shell h	nash		3.1				E
-46.1	3.1			(20%)		99	3 3.1				E
-47.1	4.2	\. \. \. \. \. \. \. \. \. \. \. \. \. \		Light brown to dark gray fine Sand Dark brown stiff Clay			4.2				E.
				Dark gray-green Silt with fine sand; tra	ace	101	4				E
-48.1	5.1			coarse gravel			4.2 5.1				E
	=			Dark gray-green fine to medium Sand	with	100	5				F
	_=			40% pebbles Dark red-brown stiff Clay; wood fragm	anta at		5.1				E
	=			bottom of section	enis ai		16.2				F
				Light brown to gray silty Sand, coarse							E
	=			downward to a fine to medium Sand, to pebbles below 15 ft.	ew						F
				pebbles below 15 ft.							E
	=										F
											E
											F
											E
	=										F
											E
	=										E
	=										E
											F
											F
											E
											F
											E
50 E	15.5										$\vdash$
-58.5	15.5		T	Dark gray green Silt with some fine Sa	and						E
-59.1	16.2		1	5 : , 5 : : : : : : : : : : : : : : : :	-						
	=										F
	_										
	=										F
											E
	$\equiv$										F
											E
											F
	_	1		1		1		i e			_

									NO. Z-1/0	
DRILLI	NG LO	G	DIVI	ISION	INSTALLA Area			SHEI		
4 DDO IECT								1	1 SHEETS	
1. PROJECT  Roque Ba	inks Mas	ter Be	eac	h Nourishment Plan		AND TYPE OF		3.5 in WN (TBM or MSL)		
2. LOCATION (				THOURSTHICK FIGH	NAVE		ATION SHO	WIN (IBM OF MSL)		
N 324,762	2.4 E 2,			6	12. MANU	FACTURER'S	S DESIGNAT	ΓΙΟΝ OF DRILL		
3. DRILLING AG Alpine Oc		smic S	Surv	/ev	Vibra		EDDUDDEN	: DICTUDDED : LINDIC	TUDDED	
4. HOLE NO. (A file number)				e and		L NO. OF OV LES TAKEN	EKBUKDEN	DISTURBED UNDIS	TURBED	
5. NAME OF DR	RILLER			Z-178	14. TOTA	L NUMBER C	ORE BOXES	S		
C. Dill					15. WATE	R DEPTH	: 0.7.4	DTED : OOMBLET	·ED	
6. DIRECTION (					16. DATE	HOLE	SIA	ARTED COMPLET 12/16/2011 12/1	6/2011	
	AL [_]	INCLIN	IED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-43.5		
7. Penetration, f	t			16.1	18. TOTA	L CORE REC	OVERY FOR	R BORING	125 %	
8. Recovery, ft				20.0	19. GEOL	OGIST				
9. Total Recover	ry, %			125.0		% CORE	BOX OR	S. Miller		
ELEVATION	DEPTH	LEGE	ND	CLASSIFICATION OF MATERIALS (Description)	3	RECOV- ERY	SAMPLE NO.	(Drilling time, water loss, weathering, etc., if signii		
a	b	_ c		Dark grov andy Silt with rare shall from	amonto	e 102	f	g		
-43.9 -44.0	0.3 = 0.5 =			Dark gray sandy Silt with rare shell fra	igrnents [	102	0.0		F	Ξ
-44.6	1.1			Dark gray shell hash (60%) with sand	v silt		2.1			Ξ_
-44.8	1.3	•••••		matrix	,					=
-45.5 -45.6	1.9 =			Dark gray-green sandy Silt						=_
-45.7	2.2			Dark gray sandy Silt with shell hash (South Bray silty soft Clay with shell has		100	2 2.1		<b>-</b>	=
-45.8	2.3			shells (20-30%) and rock pieces	in and		12.9			=
				Gray shells (50%) and pebbles in silt	matrix				=	=
	_=			Dark brown stiff Clay					E	=
				Dark gray shell hash (50%) with pebb	es in silt					_
				matrix  Dark brown stiff Clay with lenses of sil	ty gray					=
				fine sand	ity gray					_
										=
										=
										_
										_
									<b>-</b>	_
										=
										=
									=	_
										Ξ
									=	
	$\exists$									=
									<b>-</b>	
										=
									F	
-56.5	12.9								F	Ξ
-30.5	12.5	/////		Light gray Silt with some fine to media	ım sand	97	3			_
	=			and lenses of yellow-brown stiff Clay			12.9			_
	=						15.4			=
									<b>=</b>	_
50.0	15 4									_
-59.0	15.4 <u> </u>			Dark gray-green sandy Silt, trace shel	l I	101	4			_
-59.6	16.1			hash(1-5%)			15.4		F	_
	=						16.1		F	=
	=								þ	_
									E	Ξ
	_=								þ	
									E	=
									F	_
	=								F	=
	=									_

								<u>1018 NO</u>	. Z-1/S	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1 SHEETS	
1. PROJECT					ND TYPE OF	- BIT	3.5 in	101 1	OFFICETO	1
			h Nourishment Plan				WN (TBM or MSL)			1
2. LOCATION (0			4	NAVE	)-88					1
3. DRILLING AG	0.3 E 2,57 SENCY	0,137.	4	12. MANU Vibra		S DESIGNAT	TION OF DRILL			
	ean Seism			13. TOTAL	NO. OF OV	ERBURDEN	DISTURBED	UNDISTUF	RBED	1
4. HOLE NO. (A file number)	s shown on dra	awing title	e and Z-179	SAMPI	LES TAKEN		4			1
5. NAME OF DF	RILLER		<u> </u>		NUMBER C	ORE BOXES	S			-
C. Dill				15. WATE	R DEPTH	·	DTED : O	MDI ETED		4
6. DIRECTION (				16. DATE	HOLE	SIF	RTED : CC 12/16/2011 :	OMPLETED 12/16/2		
		CLINED	DEG. FROM VERT.	17. ELEVA	TION TOP C	F HOLE	-43.7			1
7. Penetration, f	t		10.5	18. TOTAL	CORE REC	OVERY FOR	R BORING		96 %	,
8. Recovery, ft			10.0	19. GEOL	OGIST		<b></b>			1
9. Total Recover	ry, %		96.0		% CORE	BOX OR	S. Miller	RKS		-
ELEVATION	DEPTH LE	EGEND	CLASSIFICATION OF MATERIALS (Description)	5	RECOV- ERY	SAMPLE	(Drilling time, wa	iter loss, de	oth	
а	b	С	d		е	NO. f	weathering, etc.	, ii sigriilicai	rit)	
-44.0	0.3	//////	Dark gray fine to medium Sand, trace trace shell hash (1-5%)	silt,	100	1 0.0				F
-44.5	0.8		\Dark gray soft Clay			3.1				E
	44		Dark gray-green sandy Silt with little s	hell						F
-45.7	2.0		hash (5%)							E
-46.2	2.5		Dark gray shell hash (90%) and pebbl	es; large						F
-46.8	3.1	7 0	Dark gray silty Clay with shell hash (8)	0%) and						E
	= = = = = = = = = = = = = = = = = = = =		small pebbles		100	2				F
			Light gray to brown fine to medium Sa			3.1 5.5				E
	<b>→</b>		shell hash (10%); some stiff clay lense	es		0.0				F
	4.0									F
-49.2	5.5									
10.2			Dark brown stiff Clay with lenses of da	ark	100	3				E
	<del></del>		brown very fine sandy silt			5.5				F
-50.4	6.8					6.8				F
-50.9	7.3		Dark brown silty medium Sand with pe	ebbles	100	4				
	<b>⊒</b> ¢;		and rock fragments (30%)  Gray to brown medium to coarse Sand			6.8 10.1				E
			fine to medium gravel (40%)	J WILLI		10.1				<b>F</b>
			and to meaning grants (1275)							Е
		ا ا								
	$\exists \varphi : \emptyset$									F
-53.8	10.1	ٳڹ؞؞۫ڹڮٳ								
		••••								
	=									F
	$\exists$									Е
										$\vdash$
	=									F
										E
										E
										<b></b>
	$\exists$									E
	=									E
										F
										E
										E
										F
										F
										E
										Ē
	=									F
	$\exists$									F
, I	$\rightarrow$	l				1				$\vdash$

								П	ole No.	<u>. Z-100</u>	<u>'</u>
DRILLII	NG LO	<b>G</b>	DIVIS	SION	INSTALLA				SHEET	1	
1. PROJECT					Area 2		DIT	2 E in	OF 1	SHEETS	1
	nks Mas	ter Ra	act	n Nourishment Plan		ND TYPE OF		3.5 in DWN (TBM or MSL)			-
2. LOCATION (C N 326,133	Coordinates	or Statio	on)		NAVE	)-88					
3. DRILLING AG	SENCY				12. MANU Vibra		S DESIGNA	TION OF DRILL			
Alpine Oc 4. HOLE NO. (A						. NO. OF OVI LES TAKEN	ERBURDEN	DISTURBED 3	UNDISTUR	RBED	1
file number)				Z-180	14. TOTAL	. NUMBER C	ORE BOXE	<del>- i i</del>			1
5. NAME OF DR C. DIII					15. WATE	R DEPTH	: 07	ADTED : 00	MOLETED		]
6. DIRECTION C		INCLIN	ED	DEG. FROM VERT.	16. DATE	HOLE	. 817	ARTED COI 12/17/2011	MPLETED 12/17/2	2011	
7. Penetration, fl		INCLIN		9.9	17. ELEVA	TION TOP O	F HOLE	-45.5			
8. Recovery, ft	<u> </u>			9.5		CORE REC	OVERY FOI	R BORING		96 %	4
9. Total Recover	у, %			96.0	19. GEOL0	JGIST		S. Miller			
ELEVATION	DEPTH	LEGE	ND	CLASSIFICATION OF MATERIALS (Description)	3	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMAR (Drilling time, wat weathering, etc.,	er loss, dep		1
а	b	С		d	(====()	е	f	weathering, etc.,	sigriiricar		
<del>-45.8</del>	0.3		· 1:-1	Dark gray shell hash and large shells sandy silt matrix	(50%) in _/		1 0.0				E
	_=			Dark gray green fine Sandy Silt with tr	ace	100	0.3				
				(5%) shell hash; some fine to medium	gravel		2 0.3				E
-47.9	2.4						2.4				F
	=			Dark brown stiff Clay, trace shells and	silt in	100	3				E
				burrows; some wood fragments			2.4 9.5				E
	_=										E
											F
	=										E
											E-
	Ξ										E
	_=										
											E
											E
	=										E
55.0	0.5										
-55.0	9.5	//////	2/4								E
											E
	_										F
											E
											F
											E
											E
											F
	$\equiv$										Е
	Ξ										Е
											F
											E
											F
											E
											E
											E
											E
	Ξ										F

								H	<u>iole no</u>	<u>. Z-18</u>	<u> 51</u>
DRILLI	NG LC	OG	DIV	ISION	INSTALLA Area				SHEET OF 1	1	
1. PROJECT			1			ND TYPE OF	- BIT	3.5 in	TOL I	SHEET	<b>当</b>
	nks Ma	aster E	3eac	h Nourishment Plan				WN (TBM or MSL)			$\dashv$
2. LOCATION (0 N 326,828				1	NAVE	)-88		,			4
3. DRILLING AG		2,010,	001	. 1	Vibra		SDESIGNA	TION OF DRILL			
Alpine Oc	ean Se				13. TOTAL	NO. OF OVI	ERBURDEN	•	UNDISTUR	RBED	1
4. HOLE NO. (A file number)	s shown (	on drawi	ing title	e and : Z-181		LES TAKEN	ODE DOVE	4			4
5. NAME OF DR	RILLER				15. WATE	NUMBER C	ORE BUXES	5			$\dashv$
C. Dill 6. DIRECTION (	DE HOLE						STA		MPLETED		$\dashv$
VERTICA		] INCLI	INED	DEG. FROM VERT.	16. DATE			12/17/2011	12/17/2	2011	_
7. Penetration, f	t			16.6		ATION TOP O		-45.9		404	_
8. Recovery, ft				16.8	18. TOTAL	CORE REC	OVERY FOR	R BORING		101 9	<u>%</u>
9. Total Recover	у, %			101.0	19. GEOL	JGIS I		S. Miller			
ELEVATION	DEPTH	LEGI	FND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMAF (Drilling time, wat		nth	1
a	<i>b</i> _ т			(Description)		ERY e	NO. f	weathering, etc.,	if significar	nt)	
-46.4	0.5		<u>;,,,,,</u>	Red-brown shell hash and shells (90%	6), some	100	1	<u>g</u>			ŧ
.5.1				∖fine gravel in sandy silt matrix  Dark gray to black shell hash and she			0.0 2.0				F
				(80%), few pebbles in silty fine to med			2.0				E
-47.9	2.0			Sand matrix							E
				Dark gray-green sandy Silt and soft C trace shell hash (5%); layer of coarse		100	2 2.0				E
	_	=::::::		at 2.58 ft	graver		3.5				
-49.4	3.5	*****		Light gray sandy Silt, trace dark gray o	olav in	100	3				E
				burrow fills; dark gray silty fine to med	ium	100	3.5				
		$\exists$		Sand layer at 4 ft; trace wood fragmer	nts		14.8				F
	_										
	•										E
	_	∄									E
											E
											E
	_	$\exists$									E
											E
	_	$\exists$									E
		$\exists$									E
											E
											F
	_	3									
		$\exists$									E
		$\exists$									F
		∃ :::									F
		3									E
											E
-60.7	14.8	****		Light brown to gray silty medium Sand	d with	92	4				E
				brown color banding 15.5-16.33 ft		02	14.8				E
	_	<b>=:::::</b> :					16.6				F
-62.5	16.6	<b></b>	****								F
	:										E
	_										F
											E
											E
		$\exists$									E

		_					П	oie No.	<u>Z-103</u>	
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1	
1. PROJECT					<u>.</u> .ND TYPE OF	DIT	3.5 in	JOF I	SHEETS	l
	nks Master E	Beac	ch Nourishment Plan				WN (TBM or MSL)			l
2. LOCATION (0	Coordinates or Star 2.0 E 2,573,	tion)		NAVE	)-88		FION OF DRILL			
3. DRILLING AG		^		Vibra	core					
4. HOLE NO. (A	ean Seismic s shown on drawi		le and		. NO. OF OVI LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTURI	BED	
file number)	NILLED		Z-185	14. TOTAL	NUMBER C	ORE BOXES	S			l
5. NAME OF DR C. Dill	RILLER			15. WATE	R DEPTH	·				
6. DIRECTION (				16. DATE	HOLE	STA	RTED CO 12/17/2011	MPLETED 12/17/2	011	
	AL INCLI	NED		17. ELEVA	TION TOP C	F HOLE	-41.1	12/11/2		
7. Penetration, f	t		16.2		CORE REC				97 %	
8. Recovery, ft			19.3	19. GEOL						
9. Total Recover	ry, %		119.0				S. Miller			
ELEVATION	DEPTH LEGE		CLASSIFICATION OF MATERIALS (Description)	3	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMAF (Drilling time, wat weathering, etc.,	er loss, dep		
-41.1	0.0 —	; 31413	d Dark gray sandy Silt with trace (1-5%)	shell	e 100	f 1	g			
			hash	0.10.1		0.0 3.1				Ē.
-42.5 -42.8	1.4		Dark gray coarse Gravel in sandy silt	matriy					ŀ	E
			Dark gray-green fine sandy Silt with tra							F-
44.0			hash (5%)							Ē
-44.0 -44.2	2.9 <b>****</b> **		Dark gray stiff Clay		400				ŀ	E
	<b>= 333</b>		Dark gray-green fine sandy Silt, with g	ravel	100	2 3.1				F
			and shell hash (10-40%); increasing content with depth in section	lay		4.9			- 1	Ē
-46.0	4.9		content with depth in section							F
-40.0	<del></del>		Dark brown stiff Clay, some light brow	n silty	100	3				Ē
			layers throughout	·		4.9			ŀ	E
						10.0				Ē
									ŀ	Е
										Ē
										E
										F
									ŀ	Ē
										F
										Ē
					100	4			ŀ	E
						10.0 16.3				E
						10.5				E
										F
									- 1	Ē
										F
										Ē
									ŀ	E
										F
									- 1	Ē.
										F
-57.4	16.3								- 1	Ē
-51.4		<u> XXXXX</u>								Ē
									[	<u> </u>
	$\exists$								ŀ	Ē
	_=									E
	$\exists$								ŀ	Ē
	=								ŀ	
	$\exists$									E
			Í.							

								п	ole inc	). <u>Z-10</u>	<u>0</u>
DRILLI	NG LO	G	DIV	ISION	INSTALLA				SHEET	1	
1. PROJECT					Area			0.5:	of 1	SHEET	S
	nke Mac	ter Ra	220	ch Nourishment Plan		AND TYPE OF		3.5 in			4
2. LOCATION (C				in Nounsilinelle Flair	11. DATU NAVE		ATION SHO	OWN (TBM or MSL)			1
N 326,037	7.8 E 2,			.4			S DESIGNA	TION OF DRILL			1
3. DRILLING AG			٠.		Vibra	core					╛
Alpine Oc 4. HOLE NO. (A				e and		L NO. OF OVI LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTU	RBED	1
file number)				Z-186	14. TOTA	L NUMBER C	ORE BOXE	S			1
5. NAME OF DR C. Dill					15. WATE	R DEPTH	. 07.	ARTED : 00	MDI ETES	<b>1</b>	1
6. DIRECTION (		1	_		16. DATE	HOLE	: 517	ARTED CO 12/17/2011	MPLETED 12/17/	, 2011	
	\L	INCLIN	ED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-41.4			1
7. Penetration, fl	t			14.6		L CORE REC				106 9	%
8. Recovery, ft				15.5	19. GEOL						1
9. Total Recover	у, %			106.0				S. Miller			_
ELEVATION	DEPTH	LEGE	ND	CLASSIFICATION OF MATERIALS		% CORE RECOV-	BOX OR SAMPLE	REMAR (Drilling time, wat		epth	
	b		_	(Description)		ERY	NO. f	weathering, etc.,			
-41.4	0.0 —	C	٠٠٠,	Dark gray sandy Silt, dark gray soft cl	av lens	e 100	1	g			╆
-42.4	0.9			at 0.25 ft; trace shell hash (1-5%), exc	cept for		0.0				E
-74.4	0.8			one large shell at 0.92 ft	/	100	0.9				
	=			Dark gray-green sandy Silt with trace hash (5%); medium Sand and shell hash	snell ash		2 0.9				F
				(50%) layer 2-2.25 ft; shell hash (90%	)		5.6				
	=			4.25-4.58 ft; bottom of unit grades with coarser sand	h						F
				Coalsel saliu							F
	Ξ										E
											E
	=										F
-47.0	5.6										
-47.0	5.0			Dark brown to gray fine sandy Silt to s	silty fine	100	3				
	_			Sand; dark gray clay filling burrows wi	th trace		5.6				
				shell hash			10.2				F
	=										
	_										F
	=										F
	_=										E
											E
E4.0	10.0										F
-51.6	10.2			Light brown fine to medium Sand, trac	re silt:	99	4	1			E
	Ξ			large pebble at 10.58 ft; color transition	n near	33	10.2				E
				11.75 feet to dark-light gray, less silt t			14.6				$\vdash$
	=			of section							F
	_										
											E
	_=										E
	=										F
	_=										E
-56.1	14.6										F
³ JU.1	17.0							1			F
		]									E
	$\equiv$	1									E
	_	1									
	=	1									F
		1									E
		1									E
		1									$\vdash$
		1									F
	_ =	1									E
											E
		1									Е

							П	<u>oie no</u>	. <u>Z-19</u>	<u> </u>
DRILLII	NG LO	g l	DIVISION	INSTALLA				SHEET	1	
1. PROJECT				Area			0.5:	OF 1	SHEETS	4
	nke Mac	ter Re	ach Nourishment Plan		AND TYPE OF		3.5 in			4
2. LOCATION (C				11. DATU NAVI		ATION SHO	WN (TBM or MSL)			
N 324,167	'.1 E 2,					S DESIGNA	TION OF DRILL			1
3. DRILLING AG		0		Vibra						
Alpine Oct 4. HOLE NO. (As			title and		L NO. OF OV LES TAKEN	ERBURDEN	I DISTURBED :	UNDISTUF	RBED	
file number)			Z-191	14. TOTA	L NUMBER C	ORE BOXE	S			1
5. NAME OF DR C. Dill				15. WATE	R DEPTH	: CT/	ARTED : COI	MPLETED		
6. DIRECTION C				16. DATE	HOLE	: 317	12/17/2011	12/17/2	2011	
		INCLINE			ATION TOP C	F HOLE	-47.6			1
7. Penetration, ft			12.7	18. TOTA	L CORE REC	OVERY FOR	R BORING		119 %	1
8. Recovery, ft			15.3	19. GEOL	OGIST					1
9. Total Recover	y, %	ı	119.0			DOY OD	S. Miller	1/0		4
ELEVATION	DEPTH	LEGEN	(Description)	.S	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMAR (Drilling time, wate weathering, etc.,	er loss, de		
a	b	C	d	with little	e 100	f 1	g			┢
-47.9 -48.4	0.3 =	<u>`````</u>	Light brown medium to coarse Sand shell hash (20%)	with little	100	1 0.0				E
-48.4	۷.ŏ		Dark gray medium to coarse Sand w	ith trace	100	0.8				<b>F</b>
-49.4	1.8		silt and shell hash (10%)	II hash		2 0.8				F
-49.7	2.2—		Dark gray-green sandy Silt; little she	lenses	1	2.2				E
-50.1	2.6	\$.:Q:.	Dark gray-green Silt with fine to med	ium	100	3				E
-50.7	3.2	(* * * * * * * * * * * * * * * * * * *	Sand; trace shell fragments (1-5%0;	rare		2.2 3.2				E
-51.0	3.4 _		Dark gray shell hash (80%); trace fin	e gravel	100	4				F
-52.0	4.4		in sandy silt matrix	.		3.2 10.6				E
	_	<i>//////</i>	Dark gray fine to medium Gravel; tra	ce sandy		10.0				F
-52.6	5.1	,,,,,,,	Transition from sandy gravel to stiff	sandv silt						
	_		and clay	·						F
			Dark brown stiff Clay with lenses of t							E
	=		Gray to light brown fine to medium S trace dark brown stiff clay lenses	and with						F
	-=		Dark brown stiff Clay							F
	_		,							F
	=									E
	=									F
	=									F
										E
-58.1	10.6		Williams become to account the second of the		400	_				F
			Light brown to green Silt with very fir coarsening downward to dark gray to		100	5 10.6				E
	Ξ		brown fine to medium Sand, trace si			12.8				F
			쩱							E
-60.3	12.8		<u> </u>							F
										E
	Ξ									F
										E
	Ξ									F
										E
	Ξ									F
										E
	Ξ									Ē
										E
	Ξ									E
										F
										E
										E
	Ξ									E
		4	1		1	1	I .			_

										. Z-20	ע
DRILLI	NG LO	G	DIVI	SION	INSTALLA Area				SHEET OF 1	1	
1. PROJECT							- DIT		OF I	SHEETS	4
	nks Mas	ter Re	acl	h Nourishment Plan		AND TYPE OF		3.5 in WN (TBM or MSL)			4
2. LOCATION (				Treatment an	NAVE		ATION SHO	IVVIN (I BIVI OF IVISL)			
N 322,152	2.4 E 2,			4			S DESIGNAT	TION OF DRILL			1
3. DRILLING AG Alpine Oc		mic S	Surv	(A)	Vibra						
4. HOLE NO. (A file number)				e and		L NO. OF OV LES TAKEN	ERBURDEN	I DISTURBED UI	NDISTUR	RBED	
5. NAME OF DE	DILLED			Z-200	14. TOTA	L NUMBER C	ORE BOXES	S			
C. Dill	VILLEIX				15. WATE	R DEPTH		·			4
6. DIRECTION (					16. DATE	HOLE	STA		PLETED 12/16/2	2011	
	AL	INCLIN	ED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-39.3	27 1072		1
7. Penetration, f	t			17.9		L CORE REC				97 %	5
8. Recovery, ft				17.3	19. GEOL					<u> </u>	
9. Total Recover	ry, %			97.0			B01/ 0B	S. Miller			1
ELEVATION	DEPTH	LEGE	ND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMARKS (Drilling time, water		oth	
а	b	С		(Description) d		ERY e	NO. f	weathering, etc., if	significar	nt)	
-39.8	0.5			Dark gray to black Clay with fine sand	y silt;	100	1	3			E
-40.1	0.8			trace (5%) shell hash			0.0 2.8				E
				Large shell fragments (100%)			2.0				
	_			Gray Silt with fine to medium sand an fragments increasing with depth (50-9							F
			\$	magnification increasing with depth (50-5	070)						E
-42.1	2.8										F
				Dark to light gray fine sandy Silt with t	race	100	2				E
				(5%) shell hash; shell layer at 4.25 ft			2.8 5.2				E
							5.2				F
											E
-44.5	5.2 <del></del>										
11.0				Dark gray stiff Clay; medium to coarse	e sand in	100	3				F
				burrows at 13.58 ft			5.2				F
							14.5				E
											E
	_										
											F
											E
											E
											E
											F
											E
	=										F
											E
											Ē
											E
											F
-53.8	14.5		74	David to limbt many on aliver to a conseq.		0.7	4				Е
				Dark to light gray medium to coarse S trace silt	and,	97	4 14.5				
				trace ont			16.8				F
	=										E
	=										F
-56.2	16.8	(0)		Dada mari fina t			_				F
-56.6	17.3		, م	Dark gray fine to medium Gravel; trac	e sandy ′	99	5 16.8				E
				Jone 1			17.3				E
											F
											E
	=										E
	=										F
i	_					1	1				$\vdash$

							H	<u>ioie no.</u>	Z-21.	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1 SHEETS	
1. PROJECT					ND TYPE OF	BIT	3.5 in	OI   I	OI ILE I S	1
Bogue Ba			ch Nourishment Plan				WN (TBM or MSL)			┨
2. LOCATION (C N 326 629	Coordinates or 9.0 E 2,57		6	NAVE		DESIGNAT	TION OF DRILL			1
3. DRILLING AG		0,000		Vibra		DESIGNA	TION OF DIVILL			
Alpine Oc 4. HOLE NO. (A	ean Seism				NO. OF OVI	ERBURDEN	DISTURBED 4	UNDISTUR	BED	1
file number)			Z-213	14 TOTAL	NUMBER C	ORF BOXES	<del>_</del>			1
5. NAME OF DR C. Dill	RILLER			15. WATE						1
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA		MPLETED	044	1
	L IN	CLINED	DEG. FROM VERT.	17. ELEVA	TION TOP O	F HOLE	12/17/2011 -34.1	12/17/2	2011	┨
7. Penetration, fi	t		15.0		CORE REC				90 %	-
8. Recovery, ft			13.5	19. GEOL					00 //	1
9. Total Recover	у, %		90.0		W 0005	2011.00	S. Miller	21/0		1
ELEVATION	DEPTH LE	EGEND	CLASSIFICATION OF MATERIALS (Description)	3	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMAF (Drilling time, wai weathering, etc.,	ter loss, dep	oth	
а	b	С	d		е	f	weathering, etc., g	ıı sığıııncan		
-34.5	0.3	• • • • • • • • • • • • • • • • • • • •	Light brown fine to medium Sand, son	ne silt	100	1 0.0				F
			Dark gray sandy Silt			7.0				E
										E
-36.0 -36.3	1.9 🗔		Dark gray soft Clay with 10-20% shell							
			fragments							E
		<u></u>	Dark gray to brown fine sandy Silt, wit	h shell						
		<u>,                                    </u>	hash (40%) from 3.33 to 3.7 ft.							E
	<u>_</u>									
										E
										E
	7									E
										E
-40.9	6.8	<u></u>								F
-41.1	7.0		Dark gray semi-stiff Clay		100	2				
-42.1	7.9		Dark gray shell and shell fragments (4 in silty sand matrix	0-80%)	100	7.0 9.2				E
			Gray-green sandy silt and shell hash v	with fine		J. <u>Z</u>				F
-43.3	9.2									E
			Dark gray to light gray fine sandy Silt shell hash and shell fragments increase	with	100	3				E
			snell hash and shell fragments increas down section (15-40%)	sing		9.2 11.8				F
										E
										E
-45.9	11.8									E
			Light gray shells and shell fragments i	n sandy	100	4				E
			silt matrix			11.8 13.5				F
47.0	<b>40.5</b> →									E
-47.6	13.5	<u> </u>								F
	-=									E
	$\exists$									E
										$\vdash$
										E
	$\exists$									E
										F
	$\exists$									E
										E
	$\exists$									Ē
										E
	$\exists$									E

		Low	101011	INIOTALLA	TION			LOUE INC	<u>,                                    </u>	₹ .
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1	ا
1. PROJECT						E DIT	2.5 in	I OF I	SHEETS	$\dashv$
	ınks Master F	Beac	h Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)			$\dashv$
2. LOCATION (	Coordinates or Sta 4.5 E 2,574,	tion)		NAVE	)-88		TION OF DRILL			4
3. DRILLING AG			-	Vibra		DEGIGINA	HON OF DRILL			
	ean Seismic			13. TOTAL		ERBURDEN	I DISTURBED 5	UNDISTU	RBED	
file number)		<i>.</i>	Z-214	14 TOTAL	NUMBER C	ORE BOXE		<del>:</del>		1
5. NAME OF DE C. Dill	RILLER		•	15. WATE		ONE BOXE	<u> </u>			1
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA		OMPLETED		
∨ERTICA		NED	DEG. FROM VERT.		ATION TOP C	: 	12/17/2011 -36.5	12/17/	2011	-
7. Penetration, f	t		16.9		CORE REC				97 %	_
8. Recovery, ft			16.8	19. GEOL		OVERT FOR	REDRING		91 7	^{/0}
9. Total Recover	ry, %		97.0	10. 0202	00101		S. Miller			╛
ELEVATION	DEPTH LEGI		CLASSIFICATION OF MATERIALS (Description)	3	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMA (Drilling time, w weathering, etc	ater loss, de		
a -36.5	0.0 — c	: 'al'al'al	d  Dark gray sandy Silt with trace (1-5%)	sholl	e 100	f 1	g	9		╆
-50.5			fragments; layer of large shells at 1.5	ft; shell	100	0.0				F
			hash (70%) and gravel from 2.75-3.08 at bottom of section	ft and		3.8				E
	<b>□</b>		at bottom of section							E
										F
										E
										E
-40.1	3.6									E
-40.3	3.8		Dark gray stiff Clay		100	2				
-41.1	4.6		Dark gray to brown fine Gravel; trace hash (1-5%); trace medium to coarse	shell		3.8				F
	_=_		Gray-green sandy Silt with trace shell		100	4.6				E
			(1-5%) and dark gray-green stiff clay I	ayers;		4.6				F
			shell hash layer 6.58-6.67 ft; stiff clay 6.67-7.08 ft	layer		7.3				F
			0.07-7.08 10							E
										F
-43.9	7.3	9 6 1								E
-44.3 -44.5	7.8		Dark gray to black medium to coarse trace silt; trace shell hash (5%); little f		100	7.3				F
-44.0	3.0	****	gravel (20%)			9.8				E
			Gray-green sandy Silt							F
-45.8	9.3		Dark gray sandy Silt with shell fragme	nts						F
-46.4	9.8		increasing down section (40-95%) Dark gray fine to medium Sand and s	holl bach						E
			(50); trace silt	nen Hasii	100	5				F
			Dark gray green sandy Silt with varying	g		9.8 16.8				E
			amounts of shell hash (5-40%); trace	peat at		.5.5				F
			12.42-13.08 ft							F
										F
	<b></b>									F
										E
										E
										F
										E
										E
										E
F0.0										F
-53.3	16.8	•[•]•								E
										F
	_=									E
										E
										F
										E
										E

							П		). <b>Z-</b> Z13	ב
DRILLI	NG LOG	DIVI	ISION	INSTALLA				SHEET	1	
				Area			0.5:	of 1	SHEETS	4
1. PROJECT	nke Maetor E	Seco	h Nourishment Plan		ND TYPE OF		3.5 in			4
	Coordinates or Sta		II INOUIISIIIICIIL FIAII	11. DATUN NAVE		ATION SHO	WN (TBM or MSL)			
	5.2 E 2,575,		7			S DESIGNAT	TION OF DRILL			┨
3. DRILLING AG	SENCY			Vibra			Si Sine			
	ean Seismic				NO. OF OV	ERBURDEN	•	UNDISTU	RBED	1
4. HOLE NO. (A file number)	s shown on drawi	ing title	e and Z-215		LES TAKEN		5 :			4
5. NAME OF DR	RILLER		Z-215	14. TOTAL	NUMBER C	ORE BOXES	S			4
C. Dill	WELET (			15. WATE	R DEPTH					1
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA		MPLETED		
	AL INCLI	INED	DEG. FROM VERT.	47 515\4	TION TOD O	:	12/17/2011	12/17/	2011	-
7. Penetration, f	t		17.6		TION TOP C		-32.1		00.0	-
8. Recovery, ft			17.2		CORE REC	OVERY FOR	R BORING		98 %	
9. Total Recover	rv. %		98.0	19. GEOL	JGIST		S. Miller			
			CLASSIFICATION OF MATERIALS		% CORE	BOX OR	REMAR	KS		┨
ELEVATION	DEPTH LEGI	END	(Description)	, l	RECOV- ERY	SAMPLE NO.	(Drilling time, wate weathering, etc., i			
а	b c		d		е	f	weathering, etc., g	o.g.mica	,	$\perp$
-32.1	0.0		Brown to dark gray sandy Silt with trac	ce shell	100	1 0.0				F
-32.9 -33.1	0.8		fragments (<5%)  Dark gray to black very soft Clay			0.0 4.0				E
-33.7	1.6	****	Dark gray fine to medium Sand with tr	ace silt		"				E
-55.1			and 5% shell hash							F
			Dark gray to light gray fine sandy Silt,	trace						E
-35.1	2.9		shell hash							E
			Light gray silty fine Sand							
										F
-36.1 -36.3	4.0		Dark gray silty fine to medium sand w	ith chall r	100	2				E
-50.5	<b>7.2</b> =		hash (80%) and small gravel	iui siicii	100	4.0				E
			Dark gray-green sandy Silt with shell h	nash		9.2				<b>F</b>
	3.1.1		(5-30%)							E
-38.1	6.0									E
			Shell hash and shell fragments (90%)	with						F
-39.2	7.1		trace dark gray green silt							F
-39.6	7.4		Soft dark gray-green Clay							E
			Dark gray fine sandy Silt with soft Clay	y layers						F
		-	containing shell hash and some larger fragments	shell						E
	34		nagments							E
-41.3	9.2	1111	Deale service		404					F
	<i>=              </i>		Dark gray semi-stiff Clay		101	3 9.2				E
-42.5	10.3					10.3				E
	<b>⊒</b> v.;;;	ٳڹڮڔۛڹ	Dark gray silt and fine gravel with 30%	shell	100	4				F
-43.4	11.3	\$.00.00	hash matrix			10.3 11.6				E
-43.5	11.3 - /////		Dark gray to black stiff Clay with band	s of	465					E
-43.6 -43.7	11.5		brown to gray coloring		100	5 11.6				E
-44.0	11.8 🖠		Dark gray-green semi-stiff Clay	brover to		17.2				E
-44.1	12.0		Dark gray to black stiff Clay with light gray bands of silty Clay	orown to						Ē
-44.2	12.1		Dark gray-green sandy Silt							F
			Light gray silty very fine Sand							E
			Dark gray to black stiff silty Clay							E
	<b>#</b>		Dark gray-green Silt with fine to mediu	ım sand;						F
			rare shell hash lenses							E
	<b>⇒</b>									E
										F
										Е
-49.3	17.2									
	$\exists$									F
										E
	$\exists$									E
	_=									F
	$\exists$									E
1							1			

							1 1		). Z-23 ¹	_
DRILLII	NG LOG	DIV	ISION	INSTALLA				SHEET	1	
1. PROJECT		<u> </u>		Area		- DIT	2 E in	of 1	SHEETS	1
	nks Master B	lear	h Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)			1
	Coordinates or Stat		arrivourisminent rium	NAVE		ATION SHO	WIN (IBM OF MSL)			
	7.5 E 2,575,		.8			S DESIGNAT	TION OF DRILL			1
3. DRILLING AG				Vibra						
	ean Seismic				NO. OF OV	ERBURDEN	•	UNDISTUF	RBED	
4. HOLE NO. (A. file number)	s shown on drawii	ng title	e and Z-231		LES TAKEN		3			-
5. NAME OF DR	IIIFR		÷ Z-201	14. TOTAI	NUMBER C	ORE BOXES	S			
C. Dill				15. WATE	R DEPTH					
6. DIRECTION C	OF HOLE			16. DATE	HOLE	STA		MPLETED		
	L INCLI	NED	DEG. FROM VERT.			<del></del>	12/17/2011	12/17/2	2011	ł
7. Penetration, ft			12.5		ATION TOP C		-42.5			1
8. Recovery, ft	·		10.3		CORE REC	OVERY FOR	R BORING		80 %	
9. Total Recover	n, 0/		80.0	19. GEOL	OGIST		S. Miller			
9. Total Necover	y, 70		CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	S. WIIIIEI REMAR	KS		┨
ELEVATION	DEPTH LEGE	END	(Description)	•	RECOV-	SAMPLE	(Drilling time, wate	er loss, de		
а	b c		d		ERY e	NO. f	weathering, etc.,	ır sıgnırıca	int)	
-42.5	0.0		Dark gray green silty fine to medium S	Sand,	100	1	, and the second			F
	크		trace shell hash (1-10%)			0.0				E
						4.2				
	7.1									F
	— <u>-∃</u> ::::;;;;									E
	3:31									Е
										E.
-46.0	3.6									F
-46.2	3.8		Dark gray-green stiff Clay layer							E
-46.6	4.2		Dark gray-green silty fine Sand, trace	shell	359	2				
		.8.	hash (10%)			4.2				F
-47.8	5.3		Shell hash and small to medium grave trace gray-green silt	ei with		5.3				
			Light brown very fine Sand, trace burn	ows with	100	3 5.3				Е
	<u> </u>		layers of dark gray sandy Silt			10.3				F
	二二二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十									F
	그용화									E
										_
	384									E
	_3/4									E_
	4 4									Ė.
-52.3 -52.5	9.8		Dark and become off Oleve							F
-52.5 -52.5	10.1		Dark red-brown stiff Clay Dark gray stiff Clay							E
-52.8	10.3		Light to dark brown fine sandy Silt							E
	=		Light to dark brown line sandy Sitt							F
	$\exists$									Е
	$\dashv$									F
	#									F
										E
	$\exists$									E
										Ė.
	7									F
	_=									
	$\exists$									
	=									
										E
	$\exists$									E
	$\dashv$									F
	$\exists$									F
										E
	$\exists$									E
	_=									Ė-
	$\exists$									E
1						1				

									<u>Hole No.</u>	Z-232
DRILLI	NG LO	G ☐	DIV	ISION	INSTALLA				SHEET	1
1. PROJECT		-			Area			0.5:	OF 1	SHEETS
	inks Mas	ster Re	าละ	h Nourishment Plan		AND TYPE OF		3.5 in WN (TBM or MSL)		
2. LOCATION (	Coordinates	or Statio	on)		NAVE		ATION SHO	VVVIN (IDIVI UI IVIOL)		J
N 326,732		576,7	27.	.6	12. MANU	FACTURER'S	S DESIGNA	TION OF DRILL		
3. DRILLING AC Alpine Oc		emio C	lim	VAV	Vibra			, DIOTISTO		
4. HOLE NO. (A						L NO. OF OV LES TAKEN	ERBURDEN	I DISTURBED 5	UNDISTURI	BED
file number)			,	Z-232		L NUMBER C	ORF BOXE	-	:	
5. NAME OF DE	RILLER			·		R DEPTH	ONE BOXE	<u> </u>		
C. Dill 6. DIRECTION (	25 1101 5						: STA	ARTED : (	COMPLETED	
6. DIRECTION (		INCLIN	ED	DEG. FROM VERT.	16. DATE	HOLE		12/17/2011	12/17/2	011
		INCLIN			17. ELEV	ATION TOP C	F HOLE	-43.6		
7. Penetration, f	ι			14.1 15.0	18. TOTA	L CORE REC	OVERY FOR	R BORING		106 %
· -	0/				19. GEOL	OGIST		C Millor		
9. Total Recove	ıy, %			106.0 CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	S. Miller	IARKS	
ELEVATION	DEPTH	LEGEN	ND	(Description)	•	RECOV-	SAMPLE	(Drilling time, w	vater loss, dep	th
а	b	С		d		ERY e	NO. f	weathering, et	c., if significant g	<i>'</i>
-43.6	0.0			Dark gray-green sandy Silt, trace shel	l hash	98	1		<u></u>	
				(5%); shell pieces at 2.58 ft			0.0 3.8			
										F
	=									F
										E
	=									<b> </b>
										F
-47.5	3.8									E
				Dark gray shell hash and pebbles with interbedded silt and clay lenses	trace	99	2 3.8			<b> </b>
-48.3	4.7	: 6. P.	////	<u>-</u>	lov in	100	4.7			E
	_	<b>\</b> /////		Dark brown stiff Clay, trace soft silty of burrows; trace shell hash; trace wood	iay III	100	3			
	=	<b>\</b> /////		fragments increasing with depth			4.7 8.4			F
		<i>\/////</i>					0.4			E
	=	<i>\\\\\\</i>								
										F
		<i>\/////</i>								F
50.4										F
-52.1 -52.3	8.4 <u> </u>			Wood fragments in stiff dark red-brow	n Clav					E
-52.8	9.2—			Dark brown to black organic rich stiff		33	4			þ
				Dark red-brown stiff very fine Silt	,,		8.7 10.2			E
-53.8	10.2						10.2			F
	=			Light brown to gray very fine sandy Si		99	5			F
				coarsening with depth to fine to medius	ım silty		10.2 14.1			E
				Sanu 			14.1			
										E
										F
	_=									F
										E
<b>57</b> 0	14.1—									
-57.8	14.1		l							E
		1								F
		1								F
		1								E
	_	1								
	=	]								F
	_	1								E
		1								
		1								E
		1								E
	_=	1								F
		1								E
		4	- 1			i .	I	i .		

							П		). <u>L-2</u> 3	<u>၁</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA				SHEET	1	ا
1. PROJECT	<del>-</del>	<u> </u>		Area Z  10. SIZE AND TYPE OF BIT 3.5 in  11. DATUM FOR ELEVATION SHOWN (TBM or MSL)				SHEETS	5	
	inke Maeter E	(P20	h Nourishment Plan	1						4
	Coordinates or Sta		Trivourisimism III I I I III	11. DATUI NAVE		ATION SHO	IVVIN (IBM OF MSL)			
	1.9 E 2,577,		.1			S DESIGNAT	ΓΙΟΝ OF DRILL			$\dashv$
3. DRILLING AC	SENCY			Vibra			DINEE			
	ean Seismic				NO. OF OV	ERBURDEN	DISTURBED	JNDISTUF	RBED	1
4. HOLE NO. (A file number)	s shown on drawi	ng title		SAMP	LES TAKEN		5			
5. NAME OF DR	NII ED		Z-233	14. TOTAI	NUMBER C	ORE BOXES	S			
C. Dill	RILLER			15. WATE	R DEPTH					
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA		/PLETED		1
	AL INCLI	NED	DEG. FROM VERT.					12/17/2	2011	_
7. Penetration, f	†		17.0	17. ELEV	ATION TOP C	OF HOLE	-41.4			4
8. Recovery, ft			17.9		CORE REC	OVERY FOR	R BORING		105 %	6
· · · · · · · · · · · · · · · · · · ·	0/			19. GEOL	OGIST		C Millon			
9. Total Recover	ry, %		105.0		% CORE	BOX OR	S. Miller	<u> </u>		4
ELEVATION	DEPTH LEGE	END	CLASSIFICATION OF MATERIALS (Description)	5	RECOV-	SAMPLE	(Drilling time, wate	r loss, de		
а	b c		(Description)		ERY e	NO. f	weathering, etc., i	f significa	nt)	
-41.4	وربي ــــــــــــــــــــــــــــــــــــ	.,	Dark brown to gray medium to coarse	sand,	100	1	9			丰
-42.1	0.8 = 8.0	.8	trace silt, shell hash and shells (40-50			0.0				E
			pebble to 1.5-2" at 0.67 ft		100	0.8				
			Dark gray-green Silt with fine sand; tra	ace shell		2 0.8				F
			114311 (1-570)			3.5				F
										Е
-44.9	3.5									F
	그네네		Dark gray green Silt with sand and fin	e gravel;	100	3				F
-46.0	4.6		some shell hash (50-70%)			3.5 5.8				Е
-46.5	5.1		Dark gray sandy Silt; trace soft clay			0.0				E
-40.5	3.1		Dark gray to brown fine to medium Sa	nd with						F
-47.2	5.8 ∄∷ાં		gravel (40%)	and with						Е
			Gray-green Silt with very fine sand		100	4				
						5.8 11.2				F
						11.2				F
										Е
										E
										F
										E
										E
										F
										E
-52.5	11.2		Dork grow to create have 20th will 5	20.00-1	100					<b> </b>
			Dark gray to orange-brown Silt with fir trace medium to coarse sand	ie sana;	100	5 11.2				E
			and modalities source surface			17.0				F
-54.0	12.6		Dark harrier at 1 C'''							F
			Dark brown sandy Silt, grading to orange-brown color at 14.75 ft and gra	av at						F
			15.75 ft; grain size increases with dep	oth in						E
			section							
										F
	_=:::::									E
										E
										F
										E
-58.4	17.0									E
-30.4	17.0	<u> ۱۰۱۰</u>								$\vdash$
										F
										E
	=====================================									<b> </b>
										E
I						1	1			

								<u>1018 NO</u>	<u>. Z-234</u>	<u>+</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1 SHEETS	
1. PROJECT		ļ			ND TYPE OF	BIT	3.5 in	101 1	SHEETS	1
			h Nourishment Plan	11. DATU	M FOR ELEV		WN (TBM or MSL)			1
	Coordinates or Star 3.9 E 2,578,		4	NAVE		2 DECICNIA	TION OF DRILL			1
3. DRILLING AG	SENCY			Vibra		5 DESIGNA	TION OF DRILL			
	ean Seismic				NO. OF OV LES TAKEN	ERBURDEN	DISTURBED 4	UNDISTUF	RBED	1
file number)			Z-234	14. TOTAL	NUMBER C	ORE BOXES		:		1
5. NAME OF DR C. Dill	RILLER			15. WATE	R DEPTH					1
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	ARTED CO 12/17/2011	OMPLETED 12/17/2	2011	
	AL INCLI	NED	DEG. FROM VERT.	17. ELEVA	TION TOP C	F HOLE	-42.7	12/11/2	2011	1
7. Penetration, f	t		16.2		CORE REC				91 %	,
8. Recovery, ft			14.6	19. GEOL						1
9. Total Recover	ry, %		91.0		% CORE	BOX OR	S. Miller	DIC		4
ELEVATION	DEPTH LEGE		CLASSIFICATION OF MATERIALS (Description)	•	RECOV- ERY	SAMPLE NO.	(Drilling time, wa weathering, etc.	iter loss, dej	oth nt)	
-42.7	0.0 -: · · · ·	· · · · · ·	d  Dark gray-green sandy Silt with shell		e 100	f 1	g			╆
72.7			hash(5%); pebbles and large shell at (	).5 ft	100	0.0				F
						1.7				
-44.4	1.7		Dark gray-green Gravel and large she	llo with	100	2				E
-44.8	2.1		∖trace sandy silt	iis, with	100	1.7				E
			Dark gray soft to semi-stiff Clay and s	andy Silt		3.5				F
-46.2	3.5		with shell hash (40%) and trace grave							E
	_*.*.*.		Dark gray to brown medium to coarse	Sand,	100	3				F
			trace silt, trace fine gravel			3.5 5.6				
						0.0				F
-48.3	5.6									E
10.0			Dark gray-green Silt with fine to mediu	ım sand;	100	4				F
			trace gray soft clay in burrows with so hash	me shell		5.6 14.6				E
			ilasii			14.0				E
										E
										E
										F
										E
										F
										E
										F
										E
										E
										E
										F
										E
	<b> </b>									F
	_=::::::									E
-57.3	14.6									E
0.10										E
										F
										E
										F
	_=									E
										E
	_=									E
										E
	_=									E
										E
										E

							HOIE NO. Z-Z-	<u> </u>
DRILLI	NG LOG	DIVI	ISION	INSTALLA			SHEET 1	
1. PROJECT				Area			OF 1 SHEE	IS
	nks Master B	leac	h Nourishment Plan		ND TYPE OF		3.5 in WN (TBM or MSL)	_
2. LOCATION (C	Coordinates or State 5.4 E 2,579,	tion)		NAVE	D-88			
3. DRILLING AG	BENCY			12. MANU Vibra		S DESIGNAT	TION OF DRILL	
	ean Seismic				NO. OF OV	ERBURDEN	DISTURBED UNDISTURBED 4	
file number)		<i>19 1.1.</i>	Z-235		NUMBER C	ORE BOXES	<del>-                                    </del>	1
5. NAME OF DR C. Dill	RILLER			15. WATE	R DEPTH	·		
6. DIRECTION (				16. DATE	HOLE	STA	ARTED COMPLETED 12/17/2011	
	AL INCLI	NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-44.8	1
7. Penetration, f	t		16.1	18. TOTA	CORE REC	OVERY FOR		%
8. Recovery, ft			18.0	19. GEOL	OGIST		0.14	
9. Total Recover	ry, % 		112.0		% CORE	BOX OR	S. Miller  REMARKS	4
ELEVATION	DEPTH LEGE	END	CLASSIFICATION OF MATERIALS (Description)	5	RECOV- ERY	SAMPLE NO.	(Drilling time, water loss, depth weathering, etc., if significant)	
a	b c	////	Dark grov von voet Clay		e 100	f 1	g	-
-45.1 -45.5	0.3 = ////		Dark gray very soft Clay Dark gray to black Gravel and shell ha		100	0.0		E
			(80%) with trace silt and fine to mediu			2.8		
	<b>=</b> :::::		Dark gray-green sandy Silt with trace					E
-47.1	2.3		hash (5%)					
-47.3	2.5		Gray-green medium Gravel; trace she	ell hash ,				E
-47.6	2.8		(5%) and trace sandy silt		100	2		E
			Dark gray stiff Clay		100	2.8		E
	_3.3		Dark gray to brown sandy Silt			5.5		E
	크용의							F
	7.3							F
-50.3	5.5							E
00.0		• • • •	Dark brown fine sandy Silt with shell h	nash	100	3		E
			(40-60%); shell content decreasing do	own		5.5		
			section; grain size of sandy silt increa down section	ses		10.0		F
			down section					
	$\exists : : : :$							Е
								F
	≓ઃઃઃ							F
	<b></b>							
	∃ઃઃઃઃ							Е
	<b>─</b> ‡ःःः				100	4		
	<b>≓</b> ∷∷				100	10.0		F
						16.1		<b>F</b>
	7::::}							F
	_=:::::							E
	⇉ઃःःः							F
								F
	$\exists : : : :$							Е
								F
								<b>—</b>
								F
-60.9	16.1_=							E
	<b></b>							E
	$\exists$							E
	$\dashv$							<b> </b>
	$\exists$							E
	$\exists$							E
	$\exists$							E
	_=							<b> </b>
	$\exists$							E
1	$\dashv$					1		<b>—</b>

									<u>HOIE N</u>	<u>10.</u>	Z-25	<u>5</u>
DRILLI	NG LOG	;	DIV	ISION	Area 2				SHEE	T 1	1	
1. PROJECT		!				AND TYPE OF	RIT	3.5 in	UF	<u>'</u>	SHEETS	Ή
Bogue Ba				h Nourishment Plan				WN (TBM or MSL)				1
2. LOCATION (0 N 324,501				E	NAVE							
3. DRILLING AG		570,4	ου.	.5	12. MANU Vibra		S DESIGNAT	TION OF DRILL				
Alpine Oc					13. TOTAL	NO. OF OVI	ERBURDEN	DISTURBED	UNDIST	URE	BED	1
4. HOLE NO. (A file number)	s shown on c	drawing	g title	e and Z-255	SAMP	LES TAKEN		5				_
5. NAME OF DR	RILLER			Z-255		NUMBER C	ORE BOXES	S				4
C. Dill					15. WATE	R DEPTH	·	ADTED : C	OMBI ETT			4
6. DIRECTION (					16. DATE	HOLE	SIA	RTED : C 12/17/2011 :	OMPLETE 12/1		011	
		INCLIN	ED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-49.2				1
7. Penetration, fi	t			13.4	18. TOTAL	CORE REC	OVERY FOR	R BORING			112 %	6
8. Recovery, ft				15.8	19. GEOL	OGIST		0.14				1
Total Recover	y, %			112.0		% CORE	BOX OR	S. Miller	ARKS			4
ELEVATION	DEPTH	LEGEN	ND	CLASSIFICATION OF MATERIALS (Description)	i	RECOV-	SAMPLE	(Drilling time, w	ater loss,	dept	th	
а	b	С		d		ERY e	NO. f	weathering, etc	g., ii sigriiii	cani	)	
-49.6 -49.9	0.4 = 0 0.8 = 0	,:Q::		Dark to light brown coarse Sand with hash and gravel (30-40%); trace silt	shell	100	1 0.0					E
-50.0	0.8				d fine		1.0					E
-50.2	1.0			gravel (60-70%); grades with shell has 0.58-0.75 ft	sh from	100	2 1.0					E
				Dark gray soft Clay, trace shell fragme	ents		4.8					
	$\exists$			(1-5%)								E
				Dark gray medium to coarse Sand wit	h gravel							
	$\exists$			(30%) Dark brown stiff Clay; dark gray sandy	silt and							E
				small shell fragments filling burrows	one arra							E
-54.0	4.8											E
04.0			1444	Light gray Silt with fine Sand		100	3					<b>E</b>
-54.7	5.6		w	V II			4.8					E
				Yellow gray stiff silty Clay			7.0					
	$\exists$											E
-56.2	7.0			Light has a madicus and trace sit		100	4					
	∃:			Light brown medium sand, trace silt		100	4 7.0					E
	_=						11.1					
	3											E
	_=											<b>F</b>
	∃:											E
	_===											
	3											E
-60.2	11.1											
	$\exists$			Dark brown stiff silty Clay		100	5 11.1					E
							13.4					<b> </b>
-61.7	12.6											E
				Dark brown to light gray medium to co sand; grain size increases with depth								
-62.6	13.4	*****	* . *	\section	III 							E
	$\exists$											E
	$\exists$											E
	=											E
												E
												E
												F
												E
	$\exists$											F
												E
	$\exists$											F
	$\exists$											

							F		<u> </u>	<u>,                                     </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1 SHEETS	
1. PROJECT					AND TYPE OF	BIT	3.5 in	101 1	SHEETS	ı
			ch Nourishment Plan	11. DATUI	M FOR ELEV		WN (TBM or MSL)			1
2. LOCATION (0 N 324.854	Coordinates or 9 1.6 E 2,57		2	NAVE		S DESIGNAT	TION OF DRILL			ł
3. DRILLING AG	SENCY			Vibra		3 DESIGNA	TION OF BRILL			
4. HOLE NO. (A	ean Seism s shown on dra		e and		NO. OF OVI	ERBURDEN	DISTURBED 4	UNDISTUR	RBED	
file number)			Z-256	14. TOTAI	NUMBER C	ORE BOXES	s ·			1
5. NAME OF DR C. Dill	RILLER			15. WATE	R DEPTH					]
6. DIRECTION (	OF HOLE			16. DATE	HOLE	STA	ARTED CC 12/17/2011	MPLETED 12/17/2	2011	
	L INC	CLINED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-46.3	12/11/2	2011	ł
7. Penetration, ff	t		16.0		CORE REC				109 %	1
8. Recovery, ft			17.3	19. GEOL	OGIST					1
9. Total Recover	у, %		109.0		% CORE	BOX OR	S. Miller	RKS		ł
ELEVATION		EGEND	CLASSIFICATION OF MATERIALS (Description)	<b>i</b>	RECOV- ERY	SAMPLE NO.	(Drilling time, wai weathering, etc.,	ter loss, de	oth nt)	
-46.3	0.0 —	С	d  Dark gray-green sandy Silt; trace shel	l hash	e 100	f 1	g			┢
			(5-10%); trace coarse gravel; coarse s	shell		0.0				E
			fragment and gravel layer - 2.33 to 3.0 clay layer 3.25-3.4 ft	) II; Still		4.8				E
	= = = = = = = = = = = = = = = = = = = =									F
	_3									E_
	43									F
	_=_									
-51.0	4.8									E
01.0	9.3	٠ <u>٠</u> ٠٠٠٠٠	Light to dark gray medium to coarse S	Sand;	100	2				E-
			trace silt; grades with 20-30% gravel 5.5-5.92 ft	from		4.8 7.6				E
			0.0 0.02 11			7.0				
	<b>≒</b> ;:3	$\Diamond \bigcirc$								F
-53.8	7.6		Light brown to dark gray shell hash (6	0-80%).	100	3				E
			silty fine sand matrix	0 00 70),	100	7.6				E
	<b>=::</b> :					10.7				F
-56.9	10.7									
-50.9	10.7		Light brown to dark gray Silt with fine	sand;	100	4				
			grain size increases down section; she present below 14.33 ft (5-10%)			10.7 16.0				
			present below 14.55 ft (5-10%)			16.0				E
	₹:;									F
	<b>=:::</b>									F
	_=_::3									E
	7::3									F
										E_
	<b>=::</b> ::									F
-62.3	16.0									E_
	=									F
										E
	$\exists$									F
	ヨ									E
	#									E
	=									Ē.
	$\exists$									E
1	$\dashv$		1		l	1	İ			⊢

								<u>iole no</u>	<u>. Z-25/</u>	_
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1 SHEETS	
1. PROJECT					ND TYPE OF	BIT	3.5 in	101 1	SHEETS	1
			h Nourishment Plan	11. DATU	M FOR ELEV		WN (TBM or MSL)			1
2. LOCATION (0 N 325,178			1	NAVE		DECIONA	FION OF PRILL			1
3. DRILLING AG		070,000	. 1	Vibra		S DESIGNAT	TION OF DRILL			
Alpine Oc				13. TOTAL	NO. OF OV	ERBURDEN	•	UNDISTUR	RBED	1
4. HOLE NO. (A file number)	s shown on c	drawing title	e and : Z-257		LES TAKEN	005 00/5/	4	-		4
5. NAME OF DF	RILLER		; = 20.		NUMBER C	ORE BOXES	S			-
C. Dill				15. WATE	RDEPTH	STA	ARTED : CC	OMPLETED		┨
6. DIRECTION (		NCLINED	DEG. FROM VERT.	16. DATE	HOLE		12/17/2011	12/17/2	2011	
7. Penetration, f		IVOLIIVED	17.0	17. ELEVA	ATION TOP C	F HOLE	-46.8			
8. Recovery, ft	ι		17.0		CORE REC	OVERY FOR	R BORING		114 %	1
9. Total Recover	rv. %		114.0	19. GEOL	OGIST		S. Miller			
		. ======	CLASSIFICATION OF MATERIALS	<u> </u>	% CORE	BOX OR	REMA			1
ELEVATION		LEGEND	(Description)		RECOV- ERY	SAMPLE NO.	(Drilling time, wa weathering, etc.	ter loss, de _l , if significaı	oth nt)	
a -47.2	0.4	C	d Light brown fine to medium Sand; son	ne silt:	e 100	f 1	g			▙
-47.2 -47.7	0.4		trace shell fragments (5-10%)		100	0.0				F
			Dark gray to black large shells (80%)			2.8				E
			fragments in medium sand, trace silt in Dark gray green Silt with some sand a							E
-49.2	2.4		shell hash (1-5%)							E
-49.4 40.7	2.5		Dark gray soft Clay							E
-49.7	2.8		Dark gray-green fine to medium Grave and shell hash (10%) with trace fine to	el (80%)	100	2 2.8				E
	₹		medium sand as matrix.	,		4.5				F
-51.3	4.5		Dark gray to brown medium to coarse	Sand,						E
01.0		• • • • • • • • • • • • • • • • • • • •	trace silt and gravel; trace soft dark gr		100	3				E
	<b>□</b> ;		Light to dark gray-brown medium to version to describe to dark gray-brown medium to version (1-5%)	ery		4.5				F
	⊒;		graver (1 670)			11.3				E
	— <b>—</b> ;									
	— <b>;</b>									<b>—</b>
	∃;									Е
	□;									F
-56.0	9.2									E
-30.0	3.2		Light brown to dark gray medium to co	parse						E
	⊒;		Sand, some silt; one rock fragment a	t 10.92						F
			feet							
	∃;									E
-58.1	11.3									F
-58.7	11.9		Light brown Silt and fine sand		100	4 11.3				E
-30.1	11.9	•••••••••••••••••••••••••••••••••••••••	Dark gray-green-brown Silt and fine S	and;		17.0				
	⊒;		trace medium sand from 14.58 to 15.5	feet						F
	<b>-</b> ₹									E
	];									Е
	;									
	⊒;3									F
	;									
	;									E
	□;									F
										E
-63.8	17.0									E
-00.0		<u>~, ~, °l °l °l °.</u>								F
	$\exists$									Е
	-									F
	$\exists$									F
										E
	$\exists$									F
	_		I.							_

									П	_	. Z-250	2
DRILLI	NG LO	G l'	IVISION			INSTALLA Area				SHEET OF 1	1	1
1. PROJECT								- DIT	0.5 :	OF I	SHEETS	4
	nks Mas	ster Re	ach Nouris	hment Plan			ND TYPE OF		3.5 in WN (TBM or MSL)			-
2. LOCATION (C				oner ian		NAVE		ATION SHO	IVVIN (IDIVI OF MISL)			
N 325,544	1.5 E 2					12. MANU	FACTURER'S	S DESIGNAT	TION OF DRILL			1
3. DRILLING AG Alpine Oc		smic S	ırvev			Vibra	Core NO. OF OV	EBBI IBDEVI	I : DISTURBED :	UNDISTUR	RED	-
4. HOLE NO. (A file number)				7.050			LES TAKEN	LUDUKUEN	5 5	ו פוחאוס ו	עטרט	
5. NAME OF DR	RILLER		:	Z-258		14. TOTAI	NUMBER C	ORE BOXES	s			1
C. Dill						15. WATE	R DEPTH	: 0 - 1	ADTED : 00	MDI ETES		-
6. DIRECTION (		1 11 12 11 11	_			16. DATE	HOLE	: STA	RTED CO 12/17/2011	MPLETED 12/17/2		
▼ VERTICA		] INCLINE	υ <u></u>	DEG. FRO	VIVI VERT.	17. ELEV	ATION TOP C	F HOLE	-46.8			1
7. Penetration, f	Ţ.			15.0		18. TOTAI	CORE REC	OVERY FOR	R BORING		123 %	
Recovery, ft     Total Recover	n/ %			18.5 123.0		19. GEOL	OGIST		S. Miller			
	<u> </u>			LASSIFICATION OF MA	ATFRIAI (	<u> </u> S	% CORE	BOX OR	REMAF			1
ELEVATION	DEPTH b	LEGEN	)	(Description)	AT LIXIALS	J	RECOV- ERY	SAMPLE NO. f	(Drilling time, wat weathering, etc.,			
-47.3	0.5	С		wn to dark gray fine t		ım Sand,	100	1	9			F
	_		some she	ell hash (30%), trace				0.0 3.5				E
-47.9 -48.1	1.1 1.3 =			silty fine Sand	oball 5 -	ob in		ა.5				F
				to black shells and sand matrix	snen na	1911 1[]						F
-49.5	2.7		Dark gray	/-green sandy silt int h layers and stiff dar	erbedde	ed with						F
70.0		//	Interbedo	led dark gray-green	silty san	d	1					E
-50.3	3.5		🥍 interbedo	led with dark gray cla small to medium gra	ay, dark	brown	400					E
			71	wn stiff Clay	. 701		100	2 3.5				E
				<b>,</b>				6.1				E
	_=											F
	Ξ	<i>\\\\\\</i>										E
-52.9	6.1		4	h	1		400					
		<u> </u>		brown stiff Clay with (peat); trace silt lens		DΤ	100	6.1				F
54.0		==		M				9.4				E
-54.3	7.5		Light to c	ark brown silty Clay	with sm	all						F
	_=			very fine silt								
	=											E
-56.3	9.4											Ē
	=	******	Dark brov	wn to dark gray Silt v	with med	lium	100	4				E
-57.0	10.2			little fine gravel (10- y medium to coarse		th some		9.4 11.5				E
	=			y medium to coarse a edium gravel (10-20%		ui some		'				E
-58.3	11.5			<u> </u>	•							E
-58.7	11.8			wn fine sandy Silt			100	5				E
			Dark gra	/-green fine sandy S	ilt, trace	black		11.5 15.1				E
	Ξ		organic le	enses @ 12.25 ft				10.1				F
-60.3	13.5		<u>H_</u>									E
				wn Silt with fine to m	edium s	and,						E
			trace fine	gravel								E
-61.9	15.1											E
01.0												
	_=	1										E
		1										F
		1										E
		‡										F
	_=	1										E
		‡										E
	_=	1										E
	=	†										F
	=	7										F

								п		<u>. Z-259</u>	<u> </u>
DRILLI	NG LOG	;	DIV	ISION	INSTALLA Area 2				SHEET OF 1	1	
1. PROJECT						ND TYPE OF	BIT	3.5 in	OF I	SHEETS	1
				h Nourishment Plan				WN (TBM or MSL)			1
2. LOCATION (C N 325,889				۵	NAVE		2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	FIGURE BRILL			4
3. DRILLING AG		JOU,2		.9	Vibrac		S DESIGNA	TION OF DRILL			
Alpine Oc					13. TOTAL	NO. OF OVI	ERBURDEN	DISTURBED	UNDISTUF	RBED	1
4. HOLE NO. (A file number)	s shown on	drawin	g title	e and		LES TAKEN		4			4
5. NAME OF DR	RILLER			<u>. 2-259</u>		NUMBER C	ORE BOXES	S			4
C. Dill					15. WATE	R DEPTH		ADTED : CO	MPLETED		-
6. DIRECTION (					16. DATE	HOLE	: SI <i>F</i>	RTED CO 12/17/2011	12/17/2	2011	
		INCLIN	NED	DEG. FROM VERT.	17. ELEVA	TION TOP C	F HOLE	-47.5			1
7. Penetration, f	t			16.0	18. TOTAL	CORE REC	OVERY FOR	R BORING		114 %	,
8. Recovery, ft	0/			18.3	19. GEOL	OGIST		O Millan			1
9. Total Recover	ry, %			114.0		% CORE	BOX OR	S. Miller	RKS		┨
ELEVATION	DEPTH	LEGE	ND	CLASSIFICATION OF MATERIALS (Description)	•	RECOV- ERY	SAMPLE NO.	(Drilling time, wat weathering, etc.,	er loss, de	oth	
а	b	С		d		е	f	weathering, etc.,	ıı sığıııncar		
-47.8	0.3			Light brown to gray Silt with fine to me sand and shell hash (5%); trace grave	edium el [	100	1 0.0				E
	<b>—</b> ₹		0.00	Dark gray green sandy Silt, trace med	lium		2.0				
	∄			sand; with shell hash (6-80%) and fine	gravel						E
-49.5	2.0	<i>`@`•</i> `•}		Dark grov ooft Clov and light brown vo	n, fino	100	2				E
-50.3	2.8			Dark gray soft Clay and light brown ve sandy silt; trace (5%) shell fragments	ery fine	100	2 2.0				E
00.0				Light brown very fine sandy Silt; trace	soft to		11.5				F
	∃:			stiff dark brown clay lenses							E
	_≓:										<b>F</b>
	$\exists$										E
	_∃:										E
	===										F
	₹:										F
	$\exists$ :										E
	;										F
											F
	∃:										E
	==										F
	‡։										F
											E
	∃:										E
	_≓:										E
	∃:										F
	<u> </u>										E
-59.0	11.5										F
	4:			Dark gray to light brown Silt, trace me	dium	100	3_				F
	$\exists$ :			sand			11.5 15.4				E
	∄						15.4				F
	===										
	∃:										E
	<b>→</b>										⊨
	======================================										F
60.0	<b>45 4</b> <del>−</del> <del>-</del>										
-62.9	15.4	****		Dark brown to light brown fine to medi	um	101	4				E
-63.6	16.1	૾૽૾ઽ૾ૺૺૺૺૺૺૺ		Sand, trace silt			15.4				F
	$\equiv$						16.1				E
											Ė
											F
											E
											E
	$\exists$										F
											E
	$\exists$										E

							F	<u>iole no</u>	<u>. Z-2/6</u>	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1	
1. PROJECT		ļ			AND TYPE OF	- BIT	3.5 in	TOF I	SHEETS	1
			ch Nourishment Plan				WN (TBM or MSL)			1
2. LOCATION (C N 323,220			٥	NAVE		2 25010111	TION OF BBILL			1
3. DRILLING AG		07 3,003	.9	12. MANU Vibra		S DESIGNA	TION OF DRILL			
Alpine Oc				13. TOTAI	NO. OF OV	ERBURDEN	I DISTURBED	UNDISTUR	RBED	1
4. HOLE NO. (A file number)	s shown on o	drawing titl	le and : Z-276	SAMP	LES TAKEN		: 4	<u>:</u>		1
5. NAME OF DR	RILLER		. 2-210		_ NUMBER C	ORE BOXE	S			4
C. Dill				15. WATE	R DEPTH	: CT	ARTED : CO	OMPLETED		-
6. DIRECTION (			DE0	16. DATE	HOLE	517	12/18/2011	12/18/2		
		NCLINED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-47.0			1
7. Penetration, f	t		14.0	18. TOTAL	CORE REC	OVERY FO	R BORING		131 %	1
8. Recovery, ft	0/		18.3	19. GEOL	OGIST		C Millor			1
9. Total Recover	'y, % 		131.0  CLASSIFICATION OF MATERIALS		% CORE	BOX OR	S. Miller	RKS		-
ELEVATION	DEPTH	LEGEND	(Description)	•	RECOV- ERY	SAMPLE NO.	(Drilling time, wa weathering, etc.	ater loss, de	oth nt)	
а	b	С	d		е	f	g g			<u> </u>
-47.3 47.0	—r.	*******	Red-brown to dark gray fine to mediur trace silt, and shell hash (80%); trace	n Sand, fine ∫	97	1 0.0				E
-47.9	0.9		gravel	lr	104	0.9				<u> </u>
-48.5	1.5		Dark gray Silt with fine to medium Sar Dark gray- green Silt with fine sand; s		100	2 0.9				E
			hash and gravel (80%)	neii	100	1.5				F
-49.6	2.6		Dark brown stiff Clay with lenses of da	ark to		3 1.5				F
			light gray silt Dark brown stiff Clay; light brown silt l	onege in		13.5				F
	$\Rightarrow$		bottom few inches of section	enses m						F
	$\exists$									
	-   -   -   -   -   -   -   -									F
	7									
	$\exists$									Е
										E
	7									F
	7									F
	$\pm$									E
	$\Rightarrow$									F
	— <del></del>									
										Е
	- ≠									F
	-									F
-60.5	13.5									E
-60.9	13.9		Light gray to light brown very fine Silt		99	4	1			Ē
		[]	, , , , ,			13.5				
	=					13.9				F
	$\equiv$									Е
										F
	$\exists$									F
	$\exists$									F
										E
	$-\frac{1}{2}$									
										F
	_=									F
	3									E
	$\exists$					1				$\vdash$

							F	<u>iole no</u>	<u>. Z-27 </u>	<u> </u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1 SHEETS	
1. PROJECT					AND TYPE OF	- BIT	3.5 in	OF I	SHEETS	4
			h Nourishment Plan				WN (TBM or MSL)			┨
2. LOCATION (C	Coordinates or 9		0	NAVE						
3. DRILLING AG		0,022.	.9	12. MANU Vibra		S DESIGNA	TION OF DRILL			
Alpine Oc	ean Seism			13. TOTAL	NO. OF OV	ERBURDEN	I DISTURBED	UNDISTUF	RBED	1
4. HOLE NO. (A file number)	s shown on dra	awing title	e and Z-277	SAMP	LES TAKEN		4	•		
5. NAME OF DR	RILLER		Z-211		_ NUMBER C	ORE BOXE	S			1
C. Dill				15. WATE	R DEPTH	·	NDTED : OC	MDI ETED		4
6. DIRECTION (				16. DATE	HOLE	SIA	RTED CC 12/17/2011	OMPLETED 12/17/2		
		CLINED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-48.8			1
7. Penetration, ff	t		18.1	18. TOTAL	CORE REC	OVERY FOR	R BORING		103 %	5
8. Recovery, ft			18.6	19. GEOL	OGIST		0.14"			1
9. Total Recover	ry, %		103.0		% CORE	BOX OR	S. Miller	DKG		4
ELEVATION	DEPTH LE	EGEND	CLASSIFICATION OF MATERIALS (Description)	5	RECOV-	SAMPLE	(Drilling time, wa	ter loss, de	pth	
а	b	С	d		ERY e	NO. f	weathering, etc.,	, if significal	nt) 	
<del>-49.1</del>	0.3		Dark gray green sandy Silt		99	1				F
		N.6.	Dark gray shells and shell hash (80%) 5-10% gravel in silty fine sand matrix	) with		0.0 1.4				E
-50.2	1.4		, ,			_				F
-50.6 -50.7	1.8 —	*****	Dark gray-green sandy Silt with 5-20% Interlayered with stiff dark brown Clay	6 shells F	97	2 1.4				E
-51.2	2.4		Dark brown stiff Clay		100	1.9				
			Dark brown to gray fine sandy Silt			3				F
			Gray fine to very coarse Sand, trace s	silt		1.9 12.0				E
						12.0				E
										$\vdash$
	<b>≓</b> ∷									F
										E
	<b>≒</b> ∷									F
	<b>≓</b> :::3									F
	<b>─</b> ;;;									⊨
	=:::3									F
	::									
										F
	<b>≓</b> ∷:									F
										F
	<b>=:::</b>									F
	<u></u>									F
	<b>≓</b> ∷									F
	<b>≓</b> :::									F
										F
	7:::3									F
	<b>-</b> ₹:;									<b>F</b>
-60.3	11.5									F
-60.8	12.0		Light gray green silty Clay							F
-61.1	12.3		Gray medium Sand layers and light		100	4				E
	3		gray-green fine clayey sandy Silt			12.0				E
	<u> </u>		Dark gray to light green Silt with fine to	0		18.5				$\vdash$
	#		medium Sand; clay lenses from 15.25	-16.5 π						F
	_=									E_
	二二二									F
	7.3									F
										E
	3									E
	<b>-∃</b> ∰									$\vdash$
	∃:									F
										<u> </u>
	크									F
	ゴジ									F
-67.3	18.5									F
-57.5		1.515.45.7					1			E
	$\dashv$									F
	$\exists$									E

							п		<u> </u>	2
DRILLI	NG LOG	DIVI	SION	INSTALLA				SHEET 1	1	
1. PROJECT				Area			0.5:	OF 1	SHEETS	4
	nks Master	Reac	h Nourishment Plan		AND TYPE OF		3.5 in			1
2. LOCATION (			II Nourisiment i lan	11. DATUI NAVE		ATION SHO	WN (TBM or MSL)			
	2.6 E 2,57		6			S DESIGNAT	FION OF DRILL			1
3. DRILLING AC				Vibra						
4. HOLE NO. (A	ean Seismi s shown on dra		e and		NO. OF OV LES TAKEN	ERBURDEN	DISTURBED U	JNDISTUR	BED	
file number)			Z-278	14. TOTAI	NUMBER C	ORE BOXES				1
5. NAME OF DR C. Dill				15. WATE			-	4DI 5777		1
6. DIRECTION (				16. DATE	HOLE	STA	RTED CON 12/17/2011	MPLETED 12/17/2	2011	
		CLINED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-48.0	. 4 11/2	-011	1
7. Penetration, f	t		15.5	18. TOTAI	CORE REC	OVERY FOR	R BORING		103 %	,
8. Recovery, ft			20.0	19. GEOL	OGIST					1
9. Total Recover	ry, %		130.0		0/ 0055	DOV CD	S. Miller	1/0		1
ELEVATION	DEPTH LE	GEND	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMARI (Drilling time, wate	er loss, den	oth	
	b	С	(Description) d		ERY	NO. f	weathering, etc., i	f significar	nt)	
-48.0	0.0 -///	<i>"/////</i>	Dark brown stiff Clay with trace wood	pieces	100	1	g			⇇
	= = = = = = = = = = = = = = = = = = = =		Mill duoc wood	r.0000	.55	0.0				F
	<i>-</i> <b>∃</b> ///					7.0				E
	∃///									Ē
	_=\[///									E
	=======================================									F
	_=_///									E
										E
	= ///									E
	= ///									F
	= ///									F
-54.0	6.0									E
		71/7	Dark brown to black Clay with organic							E
-55.0	7.0	11, 11,	fragments (peat)							Е
-33.0	7.0		Dark gray fine to medium silty Sand,		100	2				$\vdash$
			coarsening down section to very coars	se sand		7.0				F
	_≓:::	*****	and trace fine gravel			10.3				<b>F</b>
	<b>≓</b> ∷:									E
	_=:::	*****								E
										E
	<b>≓∷</b> :									E
-58.4	10.3	::::::::::::::::::::::::::::::::::::::								F
-58.7	10.7		Very coarse gravel with rock fragment	s in very	100	3				E
			coarse sand matrix			10.3 11.8				
-59.8	11.8		Dark gray green fine sandy Silt			11.0				F
20.0			Dark to light brown fine sandy Silt with	shell	100	4				E
	7:::		hash decreasing down section (10-15)	%)		11.8				F
	:::					15.5				E
	<b>⊒:::</b> ¹									E
										F
										<b>F</b>
	<b>≓</b> ∷:									F
										E
-63.5	15.5	<u> •[•[•]•]•</u>								E
										<u></u>
	$\exists$									F
	$\exists$									F
	$\exists$									E
	∄									E
	$\exists$									
	$\exists$									F
										F-
	$\exists$									F
I	$\exists$					1				

								<u>ioie no</u>	. Z-2/:	<u>9</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1 SHEETS	
1. PROJECT					ND TYPE OF	- BIT	3.5 in	101 1	OFFICE	4
			h Nourishment Plan				WN (TBM or MSL)			┨
	Coordinates or Star 9.8 E 2,578,		٥	NAVE						4
3. DRILLING AG		102	.9	12. MANU Vibra		S DESIGNAT	TION OF DRILL			
Alpine Oc	ean Seismic			13. TOTAL	NO. OF OV	ERBURDEN	I DISTURBED	UNDISTUF	RBED	1
4. HOLE NO. (A file number)	s shown on drawi	ng titl	e and	SAMP	LES TAKEN		4	:		4
5. NAME OF DR	RILLER		<u> </u>		NUMBER C	ORE BOXES	S			4
C. Dill				15. WATE	R DEPTH		ADTED : CC	OMPLETED		4
6. DIRECTION (				16. DATE	HOLE	: 517	ARTED CO 12/17/2011	12/17/2		
	<u> </u>	NED	DEG. FROM VERT.	17. ELEVA	ATION TOP C	F HOLE	-47.0			1
7. Penetration, f	t		16.0	18. TOTAL	CORE REC	OVERY FOR	R BORING		113 %	6
8. Recovery, ft	0/		15.0	19. GEOL	OGIST		C Millor			1
9. Total Recover	ry, %		93.0 CLASSIFICATION OF MATERIALS		% CORE	BOX OR	S. Miller	RKS		┨
ELEVATION	DEPTH LEGE	END	(Description)	)	RECOV- ERY	SAMPLE NO.	(Drilling time, wa weathering, etc.	ater loss, de	pth nt)	
a -47.0	0.0 — · · · · ·		d Dark gray-green Silt with fine to mediu	ım Sand	e 101	f 1	g			╆
-47.6	0.7		and shell hash (20-30%)	iii Sanu	101	0.0				F
			Dark gray-green Silt with fine sand, tra	ace (5%)		1.6				
-48.5	1.6		Dark gray-green shell hash and mediu	ım	98	2				E
-49.5	2.5		gravel (80-90%); trace dark gray greei	n Silt		1.6				E
10.0			with fine sand  Dark gray-green to brown sandy Silt, t	race	100	2.5				E
	<b>=</b>		dark brown semi-stiff to stiff clay	idoc		2.5				E
						5.8				
										E
	431									E
										E
-52.8	5.9									E
			Light brown fine sandy Silt with shells	and	100	4 5.8				F
			shell fragments (30-40%)			14.9				E
										F
										F
										F
	<b>=:::::</b> :::									F
										E
-56.5	9.5		Doub harring Ciltimith was fine Count to							E
			Dark brown Silt with very fine Sand, transh (5%)	ace snell						
			1.0011 (0 70)							E
-58.5	11.5									F
	_=::::::		Dark brown to light brown Silt with fine	sand						E
			and shell hash (30-50%)							E
										F
										E
										E
										F
-61.9	14.9									E
01.0		0 0 0								
	=									F
										E
	$\exists$									E
										<b>F</b>
										E
	_=									E
	$\exists$									F
	_=									E
	$\exists$									E
	$\exists$									E

									HOIE NO	. Z-298	<u> </u>
DRILLI	NG LO	G	DIVISION		INSTALLA Area				SHEET OF 1	1 SHEETS	
1. PROJECT						AND TYPE OF	F BIT	3.5 in	101 1	OFFICE	1
			ach Nourishr	nent Plan	11. DATU	M FOR ELEV		OWN (TBM or MSL)			1
2. LOCATION (0 N 322,284					NAVI		C DECIONA	TION OF DOLL			4
3. DRILLING AG	SENCY	,			Vibra		S DESIGNA	TION OF DRILL			
Alpine Oc 4. HOLE NO. (A					13. TOTA		ERBURDEN	I DISTURBED 4	UNDISTUR	RBED	1
file number)				Z-298	14. TOTA	L NUMBER C	ORE BOXE		<del>-</del>		1
5. NAME OF DR C. Dill	RILLER					R DEPTH					1
6. DIRECTION (	OF HOLE				16. DATE	HOLE	STA	ARTED (	COMPLETED 12/18/2		
	AL	INCLINE	:D	_ DEG. FROM VERT	. 17 FLFV	ATION TOP C	E HOLE	-46.9	12/10//	2011	-
7. Penetration, f	t			14.0		L CORE REC				118 %	,
8. Recovery, ft				16.5	19. GEOL		OVERTION			110 %	-
9. Total Recover	ry, %			118.0				S. Miller	14 DI (0		1
ELEVATION	DEPTH	LEGEN	D CLA	ASSIFICATION OF MATERIAL	.S	% CORE RECOV-	BOX OR SAMPLE	(Drilling time, v	IARKS vater loss, de	pth	
а	b	С		(Description) d		ERY e	NO. f	weathering, et	c., if significa g	nt)	
-46.9	0.0			wn medium to coarse Sai	nd, some	100	1				E
-47.9	1.0		· • • • • • • • • • • • • • • • • • • •	20%); trace gravel (5%)			0.0				E
-48.5	1.6		Dark gray fi	ne to medium silty Sand, ents (5%); gravel lens at t	trace	101	2				F
			section	ents (570), graver lens at t		89	1.0 1.6				E
				stiff Clay, trace light brov	vn silt in		3				E
			lenses				1.6				E
							10.4				F
											E
											E
											E
											F
											F
											F
											Е
	_=										Ł
	=										F
											F
											F
											E
											E
	=										E
											E-
-57.3	10.4		<del></del>	and the stiff deal bearing	-1	404	4				F
			grading to	one with stiff dark brown ght brown fine to medium	ciay Sand	101	4 10.4				E
			trace silt	g Stomi into to intodium	. Jana,		14.0				E
	=										F
											F
-59.7	12.8		<b>%</b>								E
	42.0		Dark brown	medium Sand with 10-20	% gravel						F
-60.5 -60.9	13.6 <u>—</u> 14.0 —		Brown silty	fine Sand		1					E
-60.9	14.0	5-45-34-31-	:j: Diowir siity	iiie Janu							⊨
											F
											F
											F
	_=										E
											E
											F
	_										F
											E
											E
											F
											F-
	=										F
I							1				

									HOIE NO	<u>. Z-29</u>	<u>9</u>
DRILLII	NG LO	G	DIV	ISION	INSTALLA Area				SHEET OF 1	1 SHEETS	
1. PROJECT						ND TYPE OF	- BIT	3.5 in		J. ILL I	1
				ch Nourishment Plan				OWN (TBM or MSL)			┨
2. LOCATION (C N 322,630				6	NAVE		2 2 2 2 2 2 2 2 2	TION OF BBILL			4
3. DRILLING AG		.,511,	, 100.	.0	Vibra		S DESIGNA	TION OF DRILL			
Alpine Oc	ean Sei				13. TOTAL	NO. OF OVI	ERBURDEN	I DISTURBED	UNDISTUR	RBED	1
4. HOLE NO. (A. file number)	s shown o	n drawı	ing title	le and Z-299	SAMP	LES TAKEN		: 4	<u>:                                    </u>		4
5. NAME OF DR	III I FR			Z-299	14. TOTAL	NUMBER C	ORE BOXES	S			4
C. Dill					15. WATE	R DEPTH					4
6. DIRECTION C					16. DATE	HOLE	STA	ARTED : C 12/18/2011 :	OMPLETED 12/18/2		
	L _	] INCL	INED	DEG. FROM VERT.	17. ELEVA	ATION TOP C	F HOLE	-49.4	12/10/2	2011	1
7. Penetration, ft	t			14.3		CORE REC				130 %	<u>,                                    </u>
8. Recovery, ft				18.5	19. GEOL					100 /	1
9. Total Recover	у, %			130.0				S. Miller			_
ELEVATION	DEPTH	LEG	END	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMA (Drilling time, wa	ater loss, de	pth	
а	b		c	(Description)		ERY e	NO. f	weathering, etc	., if significar	nt)	
-49.9	0.5		•••••	Light gray to brown Silt with fine to me	edium	100	1	9			ŧ
-50.3	0.9 -			sand; trace shell hash (1-5%)		100	0.0 0.5				E
-50.6	1.2			Dark brown stiff Clay with shell hash ( some fine sandy silt in lenses	50%); [		2				E
-50.7	1.3	]		Dark brown stiff Clay			0.5				E
-51.6	2.2			Dark gray-green shell hash and grave	I (90%)		4.3				E
50.0	_ =			in silt matrix Dark brown stiff silty Clay							F
-52.6	3.2			Transition from stiff Clay to dark gray-	brown						E
	=			Silt with fine sand							F
-53.7	4.3	/////		Dark brown Silt with fine to medium sa	and;	100	3				
	=			trace dark brown clay in laminae  Dark brown stiff Clay with wood fragm	ents at	100	4.3				F
				11.17 ft	crito at		12.1				
	=	1///									F
											E
	_=										E
	=										
	_=										
	=										F
											E
	=										F
	_=										E
	=	<b>\</b> ///									E
	_										E
	Ξ										E
-61.5	12.1										E
	Ξ			Layers of dark brown stiff Clay and da silt to silty fine sand	irk brown	99	4 12.1				E
		# 1		Silt to silty line sailu			14.3				
	Ξ	]									E
-63.7	14.3	‡ : :									<b>F</b>
56.7											E
		=									E
	Ξ										E
	_	1									E
		1									F
											E
	Ξ										F
		1									F
	=										F
	=	}									F
	=										E

								<u>ioie no</u>	. Z-30	<u>U</u>
DRILLI	NG LOG	DIV	ISION	INSTALLA Area				SHEET OF 1	1 SHEETS	
1. PROJECT		ļ			AND TYPE OF	BIT	3.5 in	OF I	SHEETS	4
			h Nourishment Plan				WN (TBM or MSL)			┨
	Coordinates or Sta 0.3 E 2,578,		7	NAVE						_
3. DRILLING AG		100.	. 1	12. MANU Vibra		S DESIGNA	TION OF DRILL			
	ean Seismic			13. TOTAL	NO. OF OVI	ERBURDEN	I DISTURBED	UNDISTU	RBED	1
4. HOLE NO. (A file number)	s shown on drawi	ng title	e and E	SAMP	LES TAKEN		4	:		4
5. NAME OF DR	RILLER		<u>. 2-300</u>		_ NUMBER C	ORE BOXES	S			4
C. Dill				15. WATE	R DEPTH		ADTED : CC	OMPLETED		4
6. DIRECTION (				16. DATE	HOLE	: 517	ARTED : CC 12/18/2011 :	12/18/		
		NED	DEG. FROM VERT.	17. ELEV	ATION TOP C	F HOLE	-49.7			7
7. Penetration, f	t		16.2	18. TOTAL	CORE REC	OVERY FOR	R BORING		105 %	6
8. Recovery, ft			16.9	19. GEOL	OGIST		O M:U			7
9. Total Recover	ry, %		105.0		% CORE	BOX OR	S. Miller	RKS		┨
ELEVATION	DEPTH LEGI	END	CLASSIFICATION OF MATERIALS (Description)	i	RECOV- ERY	SAMPLE NO.	(Drilling time, wa weathering, etc.	ter loss, de	pth nt)	
а	b c	;	d		е	f	weathering, etc.,	, ii sigriilica	· · · · · · · · · · · · · · · · · · ·	
-50.2	0.5		Light brown silty fine Sand; trace shell fragments (<5%)	r	97	1 0.0				E
-50.7 -50.9	0.9		Dark brown silty fine to medium Sand	trace [		1.2				Ē
-51.5	1.8		medium to large shell fragments (<5%		106	2				E
			Dark brown to light gray Sand, trace s Dark brown stiff Clay with dark gray sa		100	1.2 1.8				E
-52.5	2.8		lenses	,		3				E
			Transition from dark brown- black silty	Clay to		1.8 9.5				
			dark gray fine sandy Silt  Light brown to gray Silt with fine sand;			0.0				F
			becoming slightly coarser with depth							
										F
										E
-56.4	6.7	**** • 4 • 1								E
			Light to dark gray medium to coarse S trace silt, trace fine gravel	and,						
			3							E
		0								
										E
-59.2	9.5									
00.2			Dark gray-green sandy Silt		100	4				E
						9.5 16.3				
						10.3				E
										E
										F
										E
										E
										F
66.0	16 2—									E
-66.0	16.3									E
										E
										E
										E
										E
										<b>F</b>
										E
					l		I			-

									<u>iole no</u>	<u>. Z-30</u>	<u>1</u>
DRILLI	NG LOG	}	DIVI	SION	INSTALLA Area				SHEET OF 1	1 SHEETS	
1. PROJECT						ND TYPE OF	RIT	3.5 in	101 1	OFFICE	1
Bogue Ba	nks Mast	ter Be	ac	h Nourishment Plan				WN (TBM or MSL)			┨
2. LOCATION (0 N 323,320				2	NAVE	)-88		,			_
3. DRILLING AG		37 9,0	+3.	2	Vibra		S DESIGNA	TION OF DRILL			
Alpine Oc		mic S	urv	/ey			ERBURDEN	I : DISTURBED	: UNDISTUF	RBED	┨
4. HOLE NO. (A file number)	s shown on	drawing	title			LES TAKEN		3			
5. NAME OF DR	DILLED			Z-301	14. TOTAL	NUMBER C	ORE BOXE	S			_
C. Dill	VILLEIX				15. WATE	R DEPTH	·				4
6. DIRECTION (					16. DATE	HOLE	STA	ARTED CO 12/18/2011	OMPLETED 12/18/2	2011	
	AL	INCLIN	ED	DEG. FROM VERT.	17. ELEVA	ATION TOP C	F HOLE	-47.8	12/10/2	2011	┨
7. Penetration, f	t			16.6		CORE REC				108 %	6
8. Recovery, ft				18.0	19. GEOL					100 /	1
9. Total Recover	ry, %			108.0		A	B01/ 0B	S. Miller	DIG		┛
ELEVATION	DEPTH	LEGEN	1D	CLASSIFICATION OF MATERIALS	;	% CORE RECOV-	BOX OR SAMPLE	REMA (Drilling time, wa	ater loss, de	pth	
а	b	С		(Description)		ERY e	NO. f	weathering, etc.	, if significa	nt)	
-48.1	0.3		( ) 1	Light gray Silt with fine sand; trace she	ell hash ,	100	1	9			E
-48.8	1.0			\(<5%) Dark gray shell hash (80%) and grave	l in fin :		0.0 1.6				E
-49.2	1.3		( • )	∖Dark gray snell nash (80%) and grave √sandy silt matrix	i in tine		1.0				E
-49.4	1.6	أأأ		Dark brown to gray sandy Silt		100	2				F
-50.3	2.4			Dark gray medium to coarse Sand and	d fine to		1.6 12.7				E
	_=:			medium Gravel Dark gray to light brown Silt with fine t	0		12.7				E
	=			medium Sand							F
	_=_*			Light brown Silt with fine to medium sa							
-52.3	4.5			increasing fine gravel content with dep							
	===			Dark brown to black medium to coarse	e Sand,						
-53.5	5.7			trace silt; little fine gravel							F
-55.5		أأأ		Dark gray Silt with fine sand							E
	==:										F
-54.8	6.9		()	Dark grouts block fine to seems Cons	l. trans						E
	= 5			Dark gray to black fine to coarse Sand silt; trace fine gravel	ı, ırace						E
											$\vdash$
-56.3	8.5		}*.*\ •C• 1\	Limbt busy to supply up adicine to come of							E
	<u></u>			Light brown to gray medium to very co Sand, trace silt and fine gravel	arse						
	$\exists$ :			-							E
	<u> </u>										
-58.6	10.8		۲								F
				Light to dark gray fine to very coarse strang gilt; rare fine grayel	Sand;						E
				trace silt; rare fine gravel							E
	— <u>⊒</u> :										F
-60.5	12.7			Light brown Citywith fine seed		100	2				E
				Light brown Silt with fine sand		100	3 12.7				F
	3						16.6				E
	===										
	∃:										E
	===										E
	=======================================										F
-64.4	16.6										E
U-1.T		1.1	-1-1								E
	$\equiv$										F
											E
	$\exists$										F
	三										E
	=										E
	$\Box$										$\vdash$

Hole No. BL1

			אועם	SION	INSTALLA	TION		SHEET 1	┧
DRILLI	NG LO	G	DIVI	SION		er Plan		OF 1 SHEETS	
1. PROJECT						AND TYPE OF	- BIT	3in	1
Bogue Inle	et							WN (TBM or MSL)	1
	et, North	or Station	_{on)} Iina	N 332,679.1 E 2,568,064.4	12. MANU	FACTURER'S		TION OF DRILL	+
3. DRILLING AG Alpine	SENCY					/ibracore		, DIOTURDED	4
4. HOLE NO. (A file number)	s shown on	drawing	g title	and BI-1	SAMP	NO. OF OV LES TAKEN		2 0	
5. NAME OF DR	RILLER			; DI-1		NUMBER C	ORE BOXES	S	4
C. Dill					15. WATE	R DEPTH	: OT A	ADTED COMPLETED	
6. DIRECTION (		INCLIN	ED	DEG. FROM VERT.	16. DATE			ARTED   COMPLETED   4/10/2012   4/10/2012	4
7. Penetration, f	t			5.2		ATION TOP C		-4.5	_
8. Recovery, ft				5.2	18. TOTAL	CORE REC	OVERY FOR	R BORING 100 %	0
9. Total Recover	ry, %			100.0	19. OLOL	00101		C. Dill	
ELEVATION	DEPTH	LEGEN	ın.	CLASSIFICATION OF MATERIALS	3	% CORE RECOV-	BOX OR SAMPLE	REMARKS (Drilling time, water loss, depth	1
а	b	C	עוע	(Description) d		ERY e	NO. f	weathering, etc., if significant) g	
-4.5	0.0			Gray medium Sand with 25% shell ha	sh	100	1		
	_						0.0 3.0		$\vdash$
	_								$\vdash$
	_								$\vdash$
	_								$\vdash$
	_								
	_								$\vdash$
	_								$\vdash$
	_								
-7.5	3.0	*****		Cray madisum to soone Count 150/ ob	طمعط المد	100	2		<u> </u>
	_			Gray medium to coarse Sand, 15% sh	ieii nasn	100	2 3.0		$\vdash$
	_						5.2		
	_								$\vdash$
	_								
	_								
	_								$\vdash$
-9.7	5.2								
	_	ļ							E
									$\vdash$
	_								$\vdash$
	_	1							
	_								$\vdash$
	_								$\vdash$
		]							
	_								
		-							$\vdash$
	_	1							$\vdash$
	_								$\vdash$
									$\vdash$
	_	]							L
									L
	_	-							$\vdash$
	_								$\vdash$
	_								F
ENC FORM						DDO IECT		HOLENO	

Hole No. BI-2

DRILLII	NG I O	G	DIVISION		INSTALLA				SHEET	1	1
1. PROJECT						er Plan	- DIT	2in	OF 1	SHEETS	3
Bogue Inle	et					AND TYPE OF		3in WN (TBM or MSL)			-
2. LOCATION (C Bogue Inle 3. DRILLING AG	Coordinates et, North			2.5 E 2,568,477.5	12. MANU			TION OF DRILL			
Alpine 4. HOLE NO. (A.	s shown on	drawing	title and		13. TOTAL		ERBURDEN	DISTURBED 2	UNDISTU	RBED 0	
file number)		uravirig	inde und	BI-2		L NUMBER C	ORE BOXES	<del>.</del>		0	1
5. NAME OF DR C. Dill	RILLER				15. WATE	R DEPTH					
6. DIRECTION C		INCLIN	=D	DEG. FROM VERT.	16. DATE	HOLE	STA	ARTED COI 4/10/2012	MPLETED 4/10/2		
7. Penetration, ft		INCLIN		5.9		ATION TOP C		-5.2			
8. Recovery, ft	•			5.6		L CORE REC	OVERY FOR	R BORING		100 %	6
9. Total Recover	у, %			95.0	19. GEOL	OGIST		C. Dill			
ELEVATION	DEPTH	LEGEN	ID CLAS	SIFICATION OF MATERIALS (Description)	3	% CORE RECOV- ERY	BOX OR SAMPLE NO. f	REMAR (Drilling time, wate weathering, etc.,	er loss, de		
-5.2	0.0	C	Brown-gray f	d ine sand with 12-16%sha	ااد	e 100		g			┢
-5.2	0.0		Brown-gray fi fragments	ine sand with 12-16%she	ell	100	1 0.0 2.8 2 2 2.8 5.6				
-10.8	5.6										
											-  -  -  -  -  -  -  -

Hole No. Bl-3

		1-	OIV/ICION		INOTALL	YOU.			TOUE NO.	_
DRILLI	NG LO	G اٰ	DIVISION		INSTALLA					1
						er Plan		2:	OF 1 SH	HEETS
1. PROJECT	ot					AND TYPE O		3in		
Bogue Inl		or Station	n)		11. DATU	M FOR ELEV	ATION SHO	OWN (TBM or MSL)		
				4.3 E 2,568,710.	2 12 MANII	IFACTI IPED'	S DESIGNA	TION OF DRILL		+
3. DRILLING AG			,	,===,: . •		Vibracore		HOR OF DIVILL		
Alpine						L NO. OF OV		I DISTURBED	UNDISTURBED	)
4. HOLE NO. (A	s shown or	n drawing	title and			LES TAKEN		2	0	
file number)				BI-3	14. TOTA	L NUMBER C	ORE BOXE	S		
5. NAME OF DE C. Dill	RILLER				15. WATE	R DEPTH				
6. DIRECTION (	OE HOLE						STA	ARTED : CO	MPLETED	
0. DIRLETION (		] INCLINE	ED	DEG. FROM VE	16. DATE	HOLE		4/10/2012	4/10/2012	2
		JINCLINE			17. ELEV	ATION TOP (	OF HOLE	-4.9		
7. Penetration, f	t			6.2	18. TOTA	L CORE REC	OVERY FO	R BORING	1	00 %
8. Recovery, ft				5.6	19. GEOL	.OGIST				
9. Total Recover	ry, %			90.0				C. Dill		
ELEVATION	DEPTH	LEGEN	CLA	SSIFICATION OF MATER	RIALS	% CORE RECOV-	BOX OR SAMPLE	REMAR (Drilling time, wat		
ELEVATION				(Description)		ERY	NO. f	weathering, etc.,	if significant)	
a	b	C	• • •	d		e		g		
-4.9	0.0		∷:∤ Brown- gray	medium Sand, 29%	shell hash	100	0.0			$\vdash$
	_		:::				2.8			$\vdash$
	_	<b></b>	::•				,			$\vdash$
	_		•••							$\vdash$
			••••							
	_		• • • • •							
			••••							
	_	******								
	_		• • •							
	_		:: <u>}</u>							⊢
-7.7	2.8		:: <u> </u>							$\vdash$
-1.1	2.0		·.· Brown- gray	medium Sand, 25%	shell hash	100	2	-		
			···	mediam dana, 2070	onen naon	100	2.8			
	_		:••}				5.6			
		]······	••••							
	_		•••							
		<u> </u>	·•••							⊢
	_	-	••••							⊢
	_	******								$\vdash$
	_	******	•							
	_	*******								
			**•							
			::1							
-10.5	5.6	*****	•:•!					_		
	_	4								
		-								<u> </u>
	_	1								$\vdash$
	_	1								
	_	1								
		1								
	_	4								$\vdash$
	_	-								$\vdash$
	_	1								$\vdash$
		1								$\vdash$
	_	†								
	<del>-</del>	1								
	_									
		]								
	_									
	_	-								L
	_	4								$\vdash$
	_	-								$\vdash$
ENC FORM						DDO IECT			HOLENO	

									HOIE NO	<u>). BI-4</u>	<u> </u>
DRILLI	NG LOG	DIVI	SION		INSTALLA				SHEET	1	1
1. PROJECT						er Plan AND TYPE OI	E DIT	3in	OF 1	SHEETS	1
Bogue Inle	et							OWN (TBM or MSL)			┨
2. LOCATION (C	Coordinates or S	Station)	NI O	00.005.0							
3. DRILLING AG		arolina	I IN 34	29,825.2 E 2,569,032.6		FACTURER': <b>Vibracore</b>		TION OF DRILL			
Alpine								I DISTURBED	UNDISTURI	BED	1
4. HOLE NO. (A file number)	s shown on dra	awing title	and	DI 4		LES TAKEN		2	0		1
5. NAME OF DR	RILLER			BI-4		L NUMBER C	ORE BOXE	S			1
C. Dill					15. WATE	R DEPTH		ADTED : OO	MDI ETED		4
6. DIRECTION (					16. DATE	HOLE	517	ARTED : CC 4/10/2012 :	MPLETED 4/10/20	)12	
		CLINED		DEG. FROM VERT	17. ELEV	ATION TOP C	OF HOLE	-6.6			1
7. Penetration, f	t			4.9	18. TOTA	L CORE REC	OVERY FOI	R BORING		100 %	1
8. Recovery, ft	0/			4.9	19. GEOL	OGIST		0. Dill			1
9. Total Recover	ry, %			100.0		% CORE	BOX OR	C. Dill	RKS		┨
ELEVATION a	DEPTH LE	EGEND c		CLASSIFICATION OF MATERIAL (Description) d	LS	RECOV- ERY e	SAMPLE NO. f	(Drilling time, wai weathering, etc.,	ter loss, dep	th t)	
-6.6	0.0		Gray f	fine Sand; < 5% shell fragment	is	100	1	3			t
							0.0 2.3				$\vdash$
							,				$\vdash$
											$\vdash$
											$\vdash$
											$\vdash$
-8.9	2.3		Crovit	fine Sand; < 10% shell fragmer	oto	100	2				
			Glay	ilile Saliu, < 10% Sileli Ilagillei	its	100	2.3				F
							4.9				$\vdash$
											F
											F
											$\vdash$
											L
-11.5	4.9										$\vdash$
	$\mid \cdot \mid$										$\vdash$
											L
											$\vdash$
	$\mid \cdot \mid$										$\vdash$
											$\vdash$
	$\vdash$										$\vdash$
											F
	$\vdash$										$\vdash$
	_										$\vdash$
	$\mid \cdot \mid$										$\vdash$
											$\vdash$
	$\vdash$										$\vdash$
											F
ENG FORM	4000 =	DE: #6:::		ONO ADE ODOS: 575		PROJECT	<u> </u>		HOLE	NO.	
MAR 71	<b>1836</b> ₽	REVIOUS	s EDITIO	ONS ARE OBSOLETE.		Bogue	Inlet		BI-4	4	

								<u> 1016 NO. BI-</u>	<u>-၁</u>
DRILLII	NG LOG	DIVISION		INSTALL				SHEET 1	
1. PROJECT					er Plan AND TYPE O	C DIT	3in	OF 1 SHEET	5
Bogue Inle	et						OWN (TBM or MSL)		-
2. LOCATION (C	Coordinates or Sta	ation)	000 000 0						
3. DRILLING AG		rollna iv .	328,880.3 E 2,569,357		JFACTURER'S Vibracore		TION OF DRILL		
Alpine	DEI (O)						I DISTURBED L	JNDISTURBED	-
4. HOLE NO. (A file number)	s shown on draw	ing title and			PLES TAKEN		2	0	
5. NAME OF DR	PILLER		BI-5	14. TOTA	AL NUMBER C	ORE BOXE	S		
C. Dill	MELLIX			15. WAT	ER DEPTH				
6. DIRECTION (				16. DATE	HOLE	STA	ARTED : COM 4/10/2012 :	1PLETED 4/10/2012	
	AL INCL	INED	DEG. FROM V	/ERT.   17. ELEV	ATION TOP (	F HOLE	-6.6		1
7. Penetration, f	t		5.6	18. TOTA	AL CORE REC	OVERY FO		100	%
8. Recovery, ft			5.6	19. GEO	OGIST				1
9. Total Recover	у, %	<u> </u>	100.0		% CORE	BOX OR	C. Dill	(9	4
ELEVATION a		END c	CLASSIFICATION OF MATE (Description) d	ERIALS	RECOV- ERY e	SAMPLE NO. f	(Drilling time, wate weathering, etc., i.	r loss, depth	
-6.6	0.0		to brown fine Sand; 7% she	ell hash	100	1	9		+
	3.3					0.0 2.5			
	$\dashv$					2.5			$\vdash$
	4								$\vdash$
									$\vdash$
	<b>二</b>	홍취							
									$\vdash$
-9.1	2.5	Grav	y to brown fine Sand; 9% she	ell hash	100	2			
	$\dashv$		, 10 5.01 5 544, 5 70 5			2.5			$\vdash$
						5.6			
	-								$\vdash$
	+								F
									$\vdash$
	7								
	<u></u> [∴								-
-12.2	5.6								
	-								$\vdash$
	_								$\vdash$
	$\dashv$								$\vdash$
	_								$\vdash$
	_								
	$\exists$								F
									$\vdash$
									E
									$\vdash$
	$\dashv$								$\vdash$
	$\dashv$								$\vdash$
	$\dashv$								
ENG EGG					DDC ISCT			HOLENO	┸
ENG FORM MAR 71	<b>1836</b> PRE	EVIOUS EDIT	TIONS ARE OBSOLETE.		PROJECT Bogue	Inlet		HOLE NO. BI-5	







# APPENDIX 4 CORE PHOTOGRAPHS

ODMDS Cores
Area Y Cores
Area Z Cores
Bogue Inlet Cores







# ODMDS Core 1 0 – 5 feet













# ODMDS Core 1 5 – 10 feet













# **ODMDS Core 1** 10 – 15 feet













# ODMDS Core 1 15 - 18.25 feet











# ODMDS Core 2 0 – 5 feet













# ODMDS Core 2 5 – 10 feet













# ODMDS Core 2 10 – 15 feet













ODMDS Core 2 15 – 18.83 feet













# ODMDS Core 3 0 – 5 feet













# ODMDS Core 3 5 – 10 feet













# ODMDS Core 3 10 – 15 feet













# **ODMDS Core 3** 15 – 16.75 feet









# ODMDS Core 4 0 – 5 feet













# ODMDS Core 4 5 – 10 feet













# ODMDS Core 4 10 – 15 feet













# ODMDS Core 4 15 – 16.75 feet









# ODMDS Core 5 0 - 5 feet













ODMDS Core 5 5 – 10 feet













ODMDS Core 5 10 – 15 feet













# ODMDS Core 5 15 - 17.75 feet











# ODMDS Core 6 0 – 5 feet













# ODMDS Core 6 5 – 10 feet













# ODMDS Core 6 10 – 15 feet













# ODMDS Core 6 15 – 19 feet





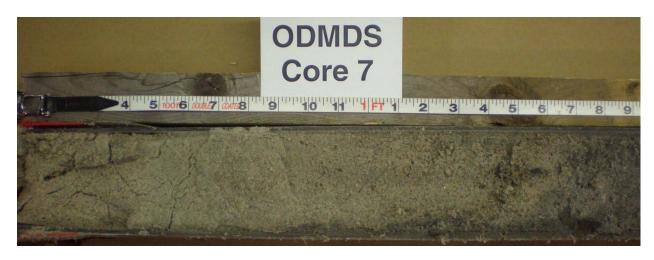








# ODMDS Core 7 0 – 5 feet













# **ODMDS Core 7 5 – 10 feet**













ODMDS Core 7 10 – 13.75 feet













# ODMDS Core 8 0 – 5 feet













# ODMDS Core 8 5 – 10 feet













# ODMDS Core 8 10 – 15 feet













# ODMDS Core 8 15 – 19 feet













# ODMDS Core 9 0 – 5 feet













# ODMDS Core 9 5 – 10 feet













**ODMDS Core 9** 10 – 15 feet













ODMDS Core 9 15 – 18.42 feet













# ODMDS Core 10 0 - 5 feet













# ODMDS Core 10 5 – 10 feet









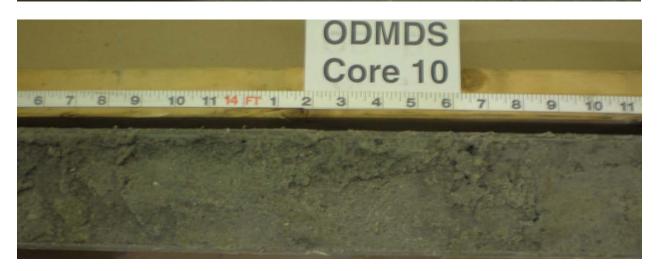




# ODMDS Core 10 10 – 15 feet





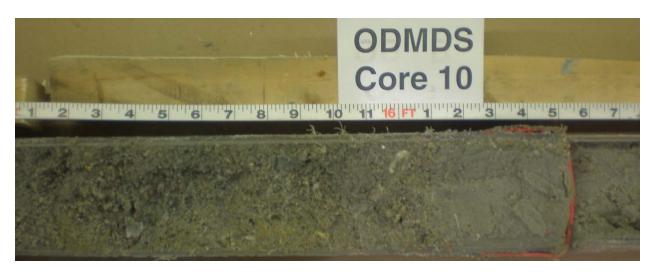








# ODMDS Core 10 15 – 19.83 feet













# ODMDS Core 11 0 – 5 feet













# ODMDS Core 11 5 – 10 feet













# ODMDS Core 11 10 – 15 feet













# ODMDS Core 12 0 – 5 feet













# ODMDS Core 12 5 – 10 feet













# ODMDS Core 12 10 – 15 feet













# ODMDS Core 12 15 – 18 feet











# ODMDS Core 13 0 – 5 feet













# ODMDS Core 13 5 – 10 feet













# ODMDS Core 13 10 – 15 feet











# ODMDS Core 13 15 – 18.17 feet











# ODMDS Core 14 0 – 5 feet













# ODMDS Core 14 5 – 10 feet













# ODMDS Core 14 10 - 11.92 feet









# ODMDS Core 15 0 – 5 feet













# ODMDS Core 15 5 – 10 feet













# ODMDS Core 15 10 – 12.25 feet











# ODMDS Core 16 0 – 5 feet













# ODMDS Core 16 5 – 10 feet













# ODMDS Core 16 10 – 15 feet













# ODMDS Core 16 15 – 18.17 feet











# ODMDS Core 17 0 – 5 feet













# **ODMDS Core 17 5 – 10 feet**













# ODMDS Core 17 10 – 15 feet













ODMDS Core 17 15 – 17.58 feet











# ODMDS Core 18 0 – 5 feet













# ODMDS Core 18 5 – 10 feet













# ODMDS Core 18 10 – 15 feet













# ODMDS Core 18 15 – 17.83 feet



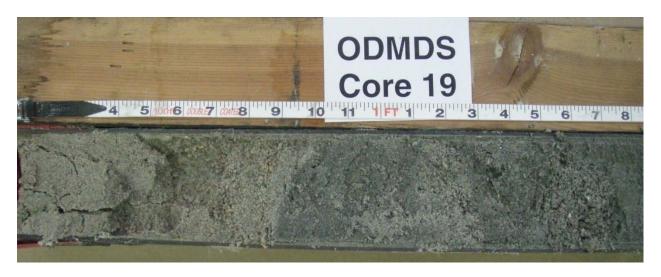








# ODMDS Core 19 0 – 5 feet













# ODMDS Core 19 5 – 10 feet













# ODMDS Core 19 10 – 15 feet









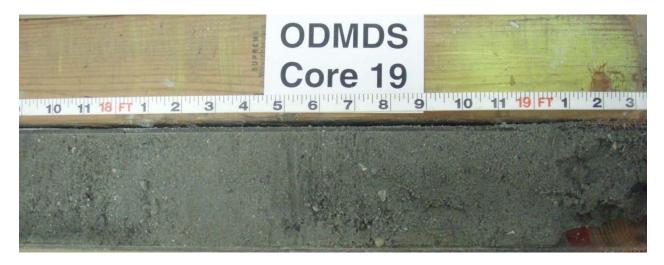




## ODMDS Core 19 15 – 19.25 feet













## ODMDS Core 20 0 - 5 feet













## ODMDS Core 20 5 – 10 feet













## ODMDS Core 20 10 - 13.83 feet











## ODMDS Core 21 0 – 5 feet













## **ODMDS Core 21 5 – 10 feet**













ODMDS Core 21 10 - 15.92 feet













## ODMDS Core 22 0 - 5 feet













# **ODMDS Core 22 5 – 10 feet**













## ODMDS Core 22 10 – 15 feet













## ODMDS Core 22 15 – 19 feet













## ODMDS Core 23 0 - 5 feet













# **ODMDS Core 23 5 – 10 feet**













## ODMDS Core 23 10 – 15 feet







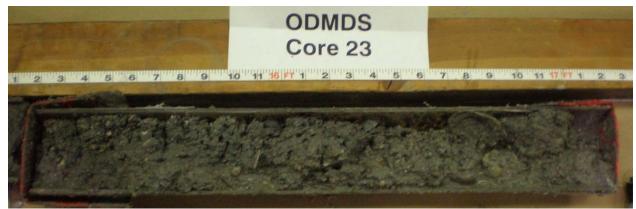






## ODMDS Core 23 15 – 17.17 feet



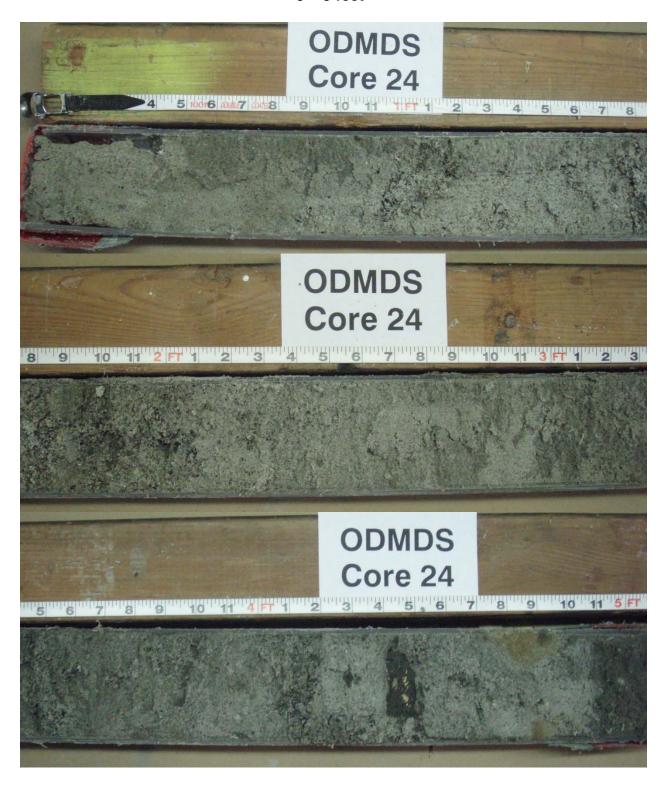








## ODMDS Core 24 0 – 5 feet

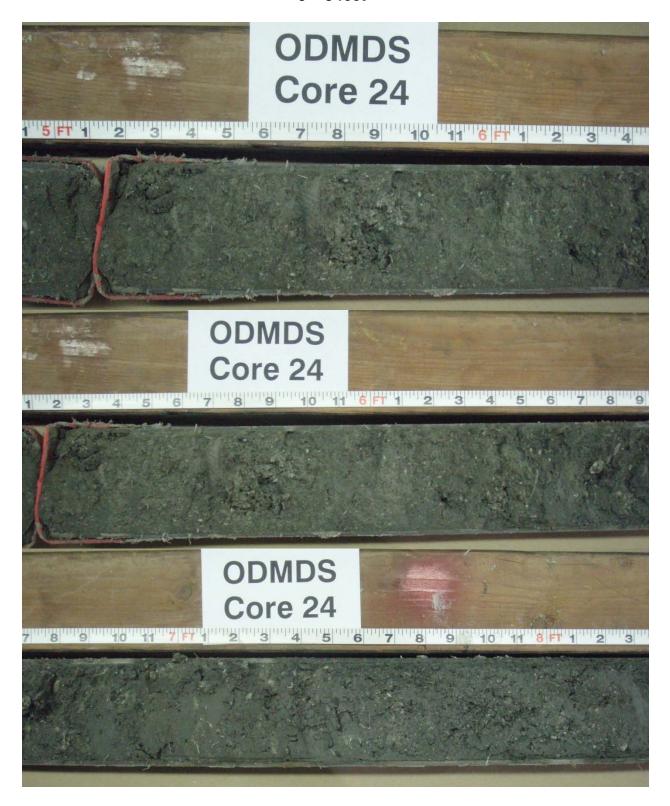








## ODMDS Core 24 5 – 8 feet

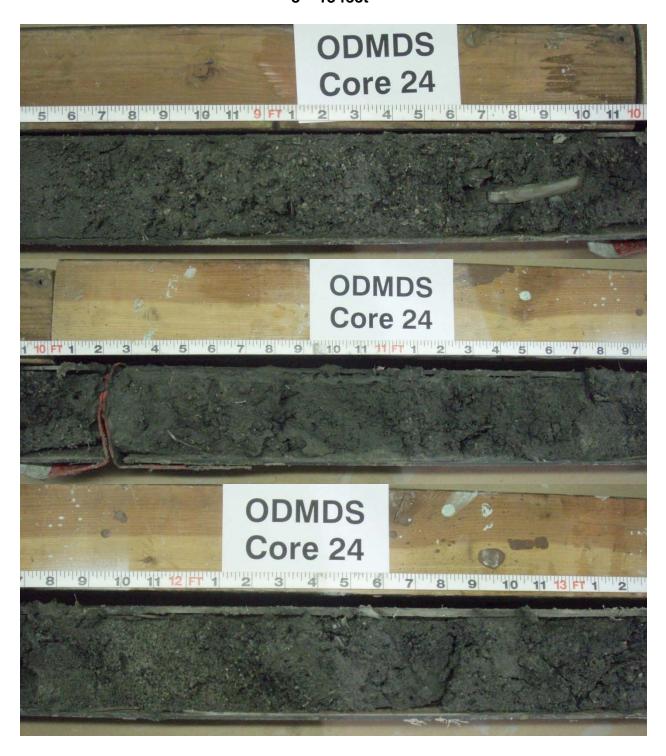








## ODMDS Core 24 8 – 13 feet









## ODMDS Core 24 12.42 – 13.75 feet









## ODMDS Core 25 0 - 5 feet













## ODMDS Core 25 5 – 10 feet













## ODMDS Core 25 10 – 15 feet













ODMDS Core 25 15 – 19.42 feet













## ODMDS Core 26 0 - 5 feet













# ODMDS Core 26 5 – 10 feet













## ODMDS Core 26 10 - 13.75 feet





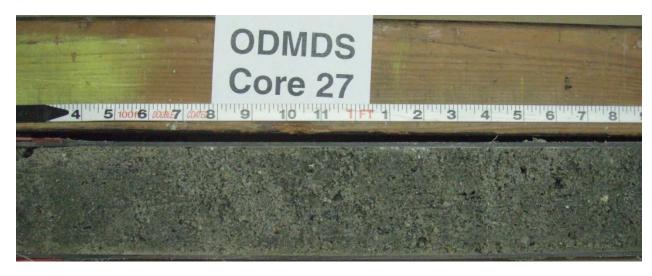








## ODMDS Core 27 0 – 5 feet













## ODMDS Core 27 5 – 10 feet













## ODMDS Core 27 10 – 15 feet













## ODMDS Core 27 15 – 16.75 feet









## ODMDS Core 28 0 - 5 feet













# **ODMDS Core 28 5 – 10 feet**













## ODMDS Core 28 10 - 12.58 feet











## ODMDS Core 29 0 – 5 feet













# ODMDS Core 29 5 – 10 feet













## ODMDS Core 29 10 – 15 feet













# ODMDS Core 29 15 – 15.83 feet









## ODMDS Core 30 0 - 5 feet













# **ODMDS Core 30 5 – 10 feet**













# ODMDS Core 30 10 – 15 feet













ODMDS Core 30 15 – 18.83 feet













## ODMDS Core 31 0 – 5 feet













# **ODMDS Core 31 5 – 10 feet**













# ODMDS Core 31 10 – 15 feet













ODMDS Core 31 15 – 17.83 feet











## ODMDS Core 32 0 - 5 feet













# **ODMDS Core 32** 5 – 10 feet













# ODMDS Core 32 10 – 15 feet













# ODMDS Core 32 15 – 17.42 feet











# ODMDS Core 33 0 – 5 feet





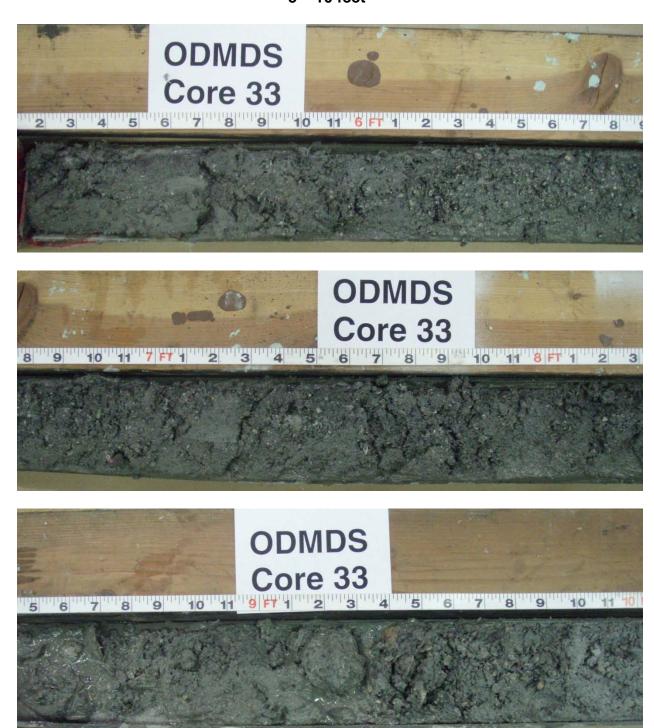








# **ODMDS Core 33 5 – 10 feet**









# ODMDS Core 33 10 – 15 feet













# ODMDS Core 33 15 – 16.33 feet









# ODMDS Core 34 0 – 5 feet





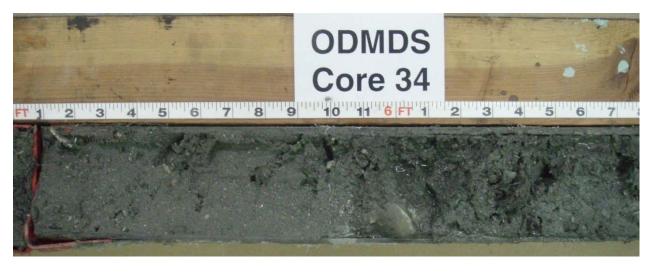








# **ODMDS Core 34 5 – 10 feet**













# ODMDS Core 34 10 - 12.50 feet











## ODMDS Core 35 0 - 5 feet







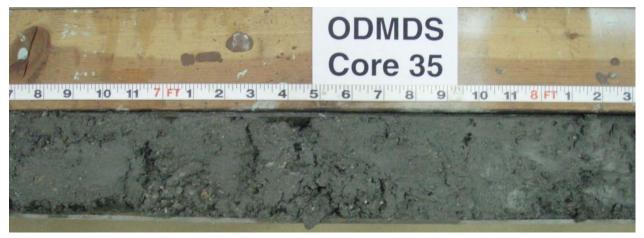






# **ODMDS Core 35 5 – 10 feet**













# ODMDS Core 35 10 - 11.83 feet









# ODMDS Core 36 0 - 5 feet













# **ODMDS Core 36 5 – 10 feet**













## ODMDS Core 36 10 – 15 feet













# ODMDS Core 36 14.42 – 15.58 feet









# ODMDS Core 37 0 – 5 feet













# **ODMDS Core 37 5 – 10 feet**













ODMDS Core 37 10 – 14.83 feet









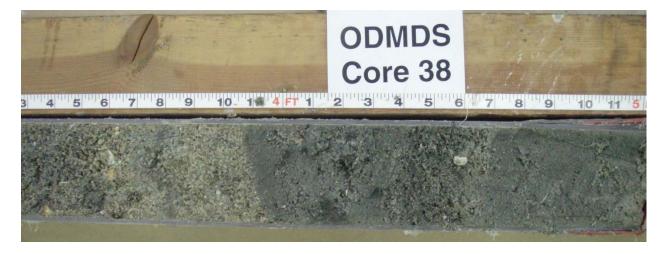




# ODMDS Core 38 0 - 5 feet













# **ODMDS Core 38 5 – 10 feet**













## ODMDS Core 38 10 – 13.75 feet









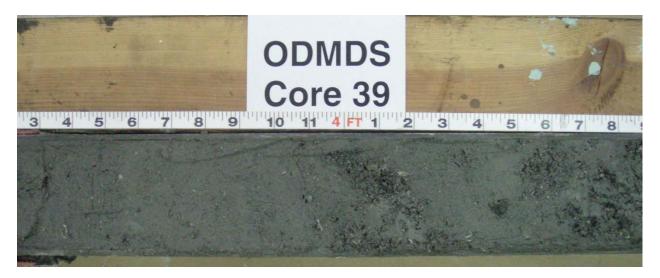




# ODMDS Core 39 0 – 5 feet













# **ODMDS Core 39 5 – 10 feet**













# ODMDS Core 39 10 – 15 feet













## ODMDS Core 39 15 – 17.75 feet











## ODMDS Core 40 0 - 5 feet













## **ODMDS Core 40 5 – 10 feet**













## ODMDS Core 40 10 – 15 feet













## ODMDS Core 40 15 – 18.25 feet



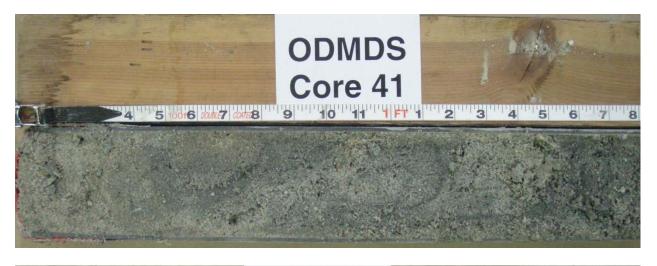








## ODMDS Core 41 0 – 5 feet





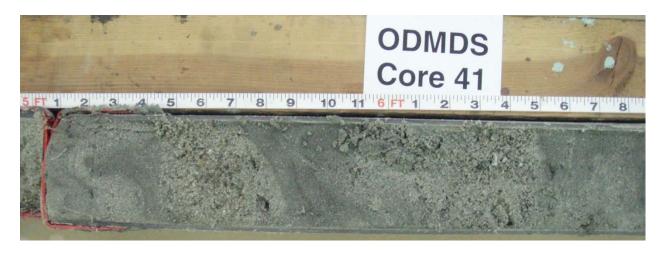








# **ODMDS Core 41 5 – 10 feet**













## ODMDS Core 41 10 – 15 feet













## ODMDS Core 41 15 – 16.25 feet









## ODMDS Core 42 0 – 5 feet













# **ODMDS Core 42 5 – 10 feet**













## ODMDS Core 42 10 - 13.75 feet













## ODMDS Core 43 0 – 5 feet













# **ODMDS Core 43 5 – 10 feet**













## ODMDS Core 43 10 – 15 feet











ODMDS Core 43 15 – 18.58 feet













## ODMDS Core 44 0 – 5 feet





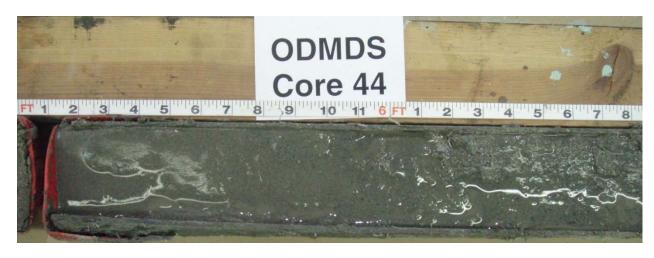








## **ODMDS Core 44** 5 – 10 feet





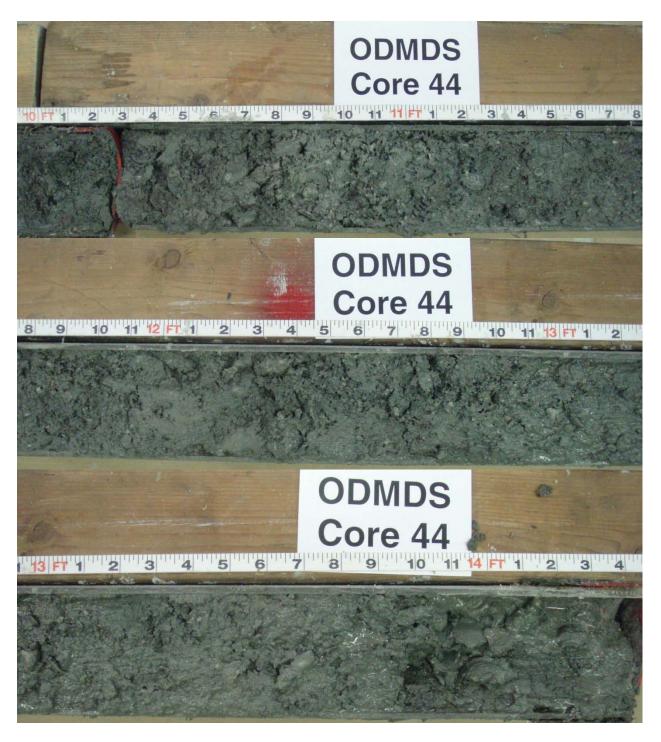








## ODMDS Core 44 10 - 14.33 feet









## ODMDS Core 45 0 - 5 feet







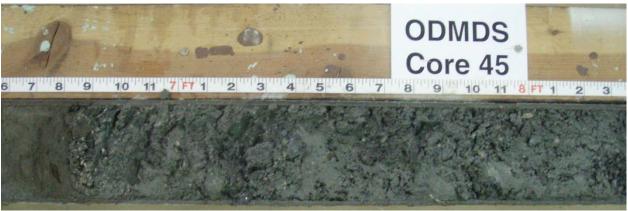






# **ODMDS Core 45 5 – 10 feet**













## ODMDS Core 45 10 – 15 feet













## ODMDS Core 45 15 – 18.75 feet











## ODMDS Core 46 0 - 5 feet













# **ODMDS Core 46 5 – 10 feet**













## ODMDS Core 46 10 – 14.67 feet













ODMDS Core 46 14.17 – 15.25 feet









## ODMDS Core 47 0 – 5 feet







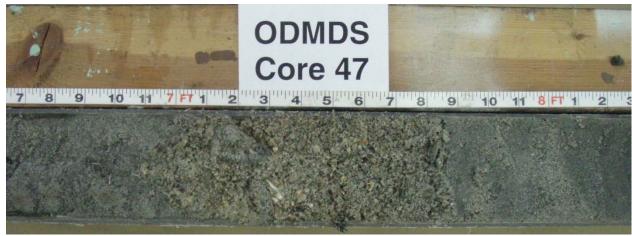






# **ODMDS Core 47 5 – 10 feet**













## ODMDS Core 47 10 – 15 feet













## ODMDS Core 47 15 – 18 feet



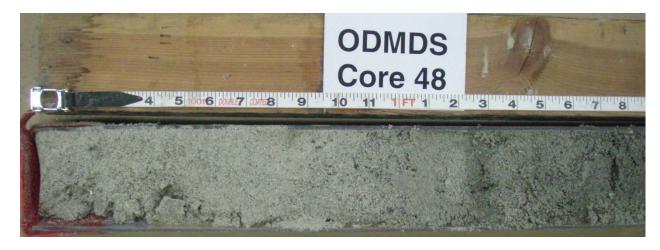








## ODMDS Core 48 0 - 5 feet













# **ODMDS Core 48** 5 – 8.83 feet













## ODMDS Core 49 0 – 5 feet













# **ODMDS Core 49 5 – 10 feet**





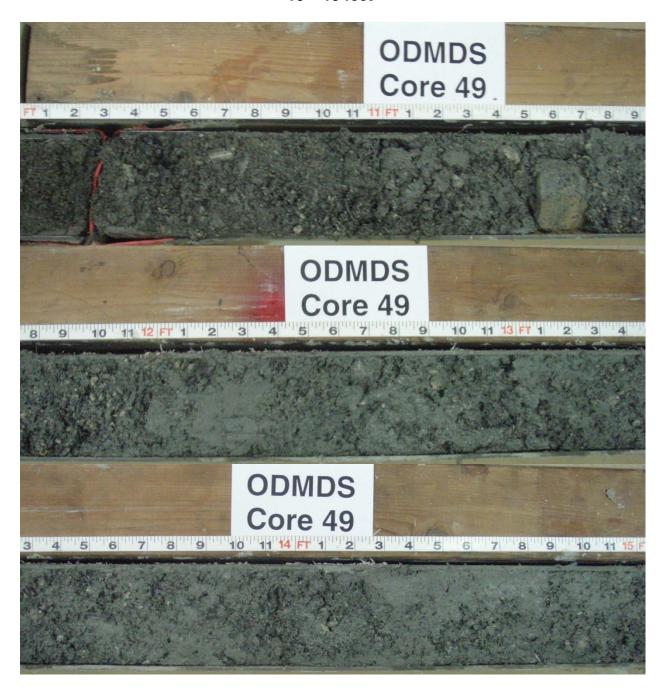








## ODMDS Core 49 10 – 15 feet









## ODMDS Core 49 15 – 16.42 feet









## ODMDS Core 50 0 - 5 feet













## **ODMDS Core 50 5 – 10 feet**













## ODMDS Core 50 10 – 15 feet













## ODMDS Core 50 15 – 19.25 feet













## ODMDS Core 51 0 – 5 feet









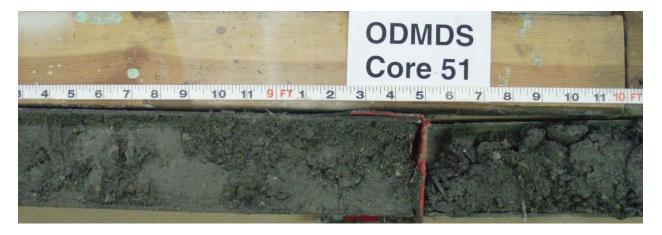




## ODMDS Core 51 5 – 10 feet













## ODMDS Core 51 10 – 15 feet













## ODMDS Core 51 15 – 17.33 feet











## ODMDS Core 52 0 - 5 feet













# **ODMDS Core 52 5 – 10 feet**













## ODMDS Core 52 10 – 15 feet





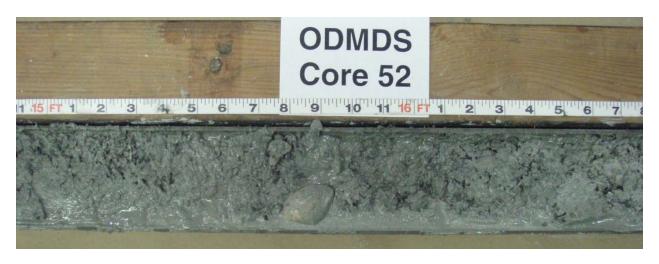








## ODMDS Core 52 15 – 18.33 feet











## ODMDS Core 53 0 - 5 feet













# **ODMDS Core 53 5 – 10 feet**













## ODMDS Core 53 10 – 15 feet













## ODMDS Core 53 15 – 17.50 feet











## ODMDS Core 54 0 – 5 feet





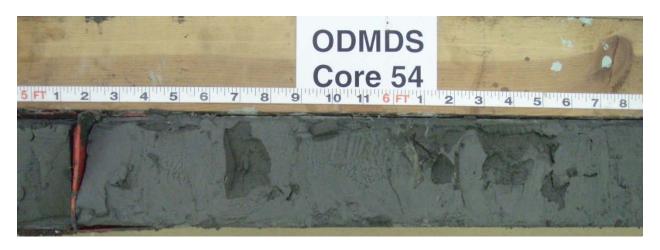








# **ODMDS Core 54 5 – 10 feet**













## ODMDS Core 54 10 – 15 feet













## ODMDS Core 54 15 – 18 feet













## ODMDS Core 54 17.33 – 18.58 feet









## ODMDS Core 55 0 - 5 feet













# **ODMDS Core 55 5 – 10 feet**





