July 30, 2014-Revised
December 11, 2013

South Florida Water Management District
3301 Gun Club Road
West Palm Beach, Florida 33406

Attn: Mr. Jesse VanEyk, P.E., Project Manager
RE: **Geotechnical Engineering & Testing Services**
C-139 Annex Restoration Project
Hendry County, Florida
Tierra South Florida Project No.: 7111-13-142

Dear Jesse:

Tierra South Florida, Inc. (TSF) has completed the geotechnical services for the subject project. The project was performed in two phases.

Phase 1 was performed in general accordance with Exhibit C-1 Statement of Work. Work completed in this phase included all works reported in this report with exception to monitoring wells W-22A and W-23A. The geotech engineering and testing services report for this phase was submitted initially (dated September 9, 2013) for the District's review and the final report (dated December 11, 2013) was submitted after addressing all review comments and approval.

Installation of monitoring wells W-22A and W-23A was not being performed earlier (during Phase 1) due to non-accessible site conditions. Work related to these two monitoring wells was performed in Phase 2 of this project in general accordance with Exhibit C-6, Statement of Work. The previously approved project report (dated 12/11/13 for Phase 1) has been revised now to include the field exploration program and laboratory testing for wells W-22A and W-23A.

TSF appreciates the opportunity to be of service to South Florida Water Management District (SFWMD) on this project and looks forward to working with you on future projects. If you have any questions or comments regarding this report, please contact our office at your earliest convenience.

Sincerely

TIERRA SOUTH FLORIDA, INC.

Raj Krishnasamy, P.E.
Principal Geotechnical Engineer
FL Registration No. 53567
Attachments

Jose Oliva
Project Manager

2765 Vista Parkway, Suite 10 · West Palm Beach, Florida 33411
(561) 687-8539 · FAX (561) 687-8570
State of Florida Professional Engineers License #28073

1.0 Project Information 2
1.1 Introduction 2
1.2 Review of USDA Soil Survey, Hendry County, Florida 2
2.0 Scope of services 3
2.1 Purpose and Scope of Services 3
2.2 SPT and Auger Boring Process 3
2.3 Monitoring Well Construction 4
3.0 Results of Subsurface Exploration 4
3.1 General Soil Condition 4
3.2 Soil Borings 4
4.0 Laboratory testing 5
4.1 General 5
4.2 Organic Content 5
4.3 Grain Size Analysis 5
4.4 Moisture Content 6
5.0 Groundwater And PERMEABILITY TEST 7
5.1 Groundwater 7
5.2 Borehole Permeability Test (BHP) 7
6.0 Report Limitations 8

Appendix A - Soil Survey Report
Soil Profiles
Summary of Laboratory Test Results
Grain Size Data Sheet
Boring and Monitoring Well Location Plan
Monitoring Well Diagram
Boring Logs
Summary of Borehole Permeability Test (BHP) Results
Borehole Permeability Test (BHP) Schematic
Borehole Permeability Test (BHP) Graphs and Calculations

1.0 PROJECT INFORMATION

1.1 Introduction

The project, as we understand it is a site acquired from the United States Sugar Corporations. The site is about 14,300 acres and is currently an active citrus grove with canal, ditches and pump stations.

The purpose of this study was to provide Geotechnical engineering services to determine the subsurface conditions and provide installation of monitoring wells for future data collection. The C-139 Annex Restoration Project will restore the acquired citrus land to its historical wetland prairie state prior to agricultural use.

1.2 Review of USDA Soil Survey, Hendry County, Florida

Based on a review of the Hendry County Soil Survey (1986), it appears that there are thirty-four (34) soil-mapping units noted within the project alignment. The map units description and survey is presented in the appendix.

During this study the soils encountered, typically, are composed by topsoil underlain by sand, sand with silt, sand with shell and limestone fragments and clay, these soils were encountered within the full depth of the borings performed. These results, generally, are consistent with the USDA Soil Survey soil descriptions.

2.0 SCOPE OF SERVICES

2.1 Purpose and Scope of Services

The study was performed to obtain information on the existing subsurface conditions at the proposed project site to assist in the design of the construction plans for the proposed improvements. The following services were provided:

1. Reviewed readily available published topographic and soils information. This information was obtained from the "Soil Survey of Big Cypress and Hendry County, Florida" published by the United States Department of Agriculture (USDA) Soil Conservation Services (SCS).

2. Performed a Geotechnical field study to determine the subsurface conditions which included a total of 21 Standard Penetration Test (SPT) borings, twenty-four (24) field permeability tests, and laboratory testing on selected soil samples.

3. Install 22 monitoring wells at SPT, Auger and permeability test locations.

4. Prepared this Data Summary Report.

These Geotechnical Services were performed in general accordance with Exhibit C-1 (Contract # 4600002706-WO01) and Exhibit C-6 (Contract # 4600002706-WO06)

2.2 SPT and Auger Boring Process

To evaluate the subsurface conditions, 21 SPT borings were drilled to depths ranging from 15 to 100 feet below existing grade

The soil test borings were performed using a CME Power Drill Rig using Bentonite "Mud" drilling procedures. The soil samples were obtained with a Split Spoon Sampler in general accordance with the SPT procedure (ASTM test designation D-1586). These samples were taken continuously to boring termination depth. Representative portions of these soil samples were sealed in glass jars, labeled and transferred to our laboratory for classification and analysis.

A total of nine (9) auger borings were performed at locations where sampling was not required. The borings were performed by advancing a hollow stem auger into the ground, in 6 inch increments. As each soil type was revealed, representative samples were placed in airtight jars and returned to our office for review by a Geotechnical engineer for confirmation of the field classification.

2.3 Monitoring Well Construction

Twenty-two (22) monitoring wells were installed at the site with depths ranging from 30 to 100 feet deep. The monitoring well was constructed with Schedule 40 PVC Tri-Loc riser and screen. All well casings and screen joints were connected by thread connections with manufactured supplied "O" rings. The annular space around the well screen was filled 6/20 silica sand filter pack to about 3 feet above the top screen section. Two (2) feet of bentonite pellets were placed above the filter pack and hydrated to provide a seal between the filter pack and the cement grout. The deep wells were fitted with stainless steel centralizers. The wells were recessed below grade and was enclosed in a meter type protective box with bolting lids (See attached Diagram).

3.0 RESULTS OF SUBSURFACE EXPLORATION

3.1 General Soil Condition

Typically, topsoil underlain by sand, sand with silt, sand with shell, and limestone fragments, clay and limestone were encountered within the full depth of the borings performed. Organic materials were encountered at several borings, predominately in the upper 15 feet. These results, generally, are consistent with the USDA Soil Survey soil descriptions. Soils profiles are attached in the appendix.

3.2 Soil Borings

A Geotechnical engineer bases soil stratification on a visual review of the recovered samples, laboratory testing and interpretation of the field boring logs. The boring stratification lines represent the approximate boundaries between soil types of significantly different engineering properties; however, the actual transition may be gradual. In some cases, small variations in properties not considered pertinent to our engineering evaluation may have been abbreviated or omitted for clarity. The boring profiles represent the conditions at the particular boring location and variations do occur among the borings.

4.0 LABORATORY TESTING

4.1 General

Representative soil samples collected from the borings were classified and stratified in general accordance with the USCS Soil Classification System. Our classification was based on visual inspection, using the results from the laboratory testing as confirmation. Laboratory index property testing comprised of grain size analysis, moisture content, and organic content tests was performed on representative materials encountered.

- Natural Moisture Content 14
- Grain Size Analysis 14
- Organic Content 9

4.2 Organic Content

Moisture free samples are used for this test. Drying is accomplished by heating the samples in a drying (230^{o} F) oven. The dried soil samples are then heated in a muffle furnace with a temperature from 445 degrees Centigrade for six hours, thereby burning off all organic-type material, leaving only the soil minerals. The difference in weight prior to and after the burning is the weight of the organics. The weight of the organics divided by the weight of the dried soil before the burning process is the percentage of organics within the sample. Organic contents that exceed five (5) percent are considered detrimental by FDOT criteria. Tests were performed in general accordance with ASTM D-2974 (AASHTO T-267).

4.3 Grain Size Analysis

The grain size analysis test measures the percentage by weight of a dry soil sample passing a series of U.S. Standard sieves, including the percent passing the No. 200 sieve (Minus 200). In this manner, the grain size distribution of the soil is measured. The percentage passing the No. 200 sieve constitutes the silt and clay content of the sample. The percentage by weight of the silt and clay in a soil affects its engineering properties, including permeability, suitability as roadway subgrade, and suitability as general fill material. Tests were performed in general accordance with ASTM D-442 (AASHTO T-88).

4.4 Moisture Content

Laboratory moisture content tests consist of the determination of the percentage of moisture in selected samples. The test is performed in general accordance with ASTM D-2974-87. Natural moisture content is determined by weighing a sample of the selected material and then drying in a warm oven. Care is taken to use gentle heat so as not to burn off any of the organic material. The sample is removed from the oven and then reweighed. The difference of the two weights is the amount of moisture in the sample. The weight of the moisture divided by the weight of the dry soil is the percentage by weight of the moisture in the sample (AASHTO T-265).

5.0 GROUNDWATER AND PERMEABILITY TEST

5.1 Groundwater

The groundwater table was measured at each of the boring locations immediately following termination of drilling or auguring. The depths to the static water table along the project alignment were measured after a short stabilization period on the order of five (5) to ten (10) minutes and were found to range from 2 to 10 feet below the existing grades except B-5, no groundwater was encountered at this location. The groundwater table measured at each of the boring locations is presented on the boring profiles in Appendix A.

Groundwater conditions will vary with environmental variations and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as man-made influences (i.e. existing swells, drainage ponds, under drains).

5.2 Borehole Permeability Test (BHP)

On eight (8) well locations, BHP tests were performed to determine the hydraulic conductivity (k) using the usual open-hole, constant head methodology and the case-hole for different depths as advocated by the SFWMD (see schematics in appendix). The samples retrieved during drilling were visually classified by a geotechnical engineer. Each borehole was completed as an open well with gravel pack (6-20 silica sand). The well screen slot width was 0.1 inch. Water from the drill rig tank was then pumped into the open well, and the amount of water required maintaining a constant head in the pipe was recorded. The permeability tests locations are also indicated in the Boring Location Plan

At each location, the test was conducted at depths of 10, 15 and 25 feet, for a total of twenty-four (24) tests completed. A summary table with the permeability test results, test details and calculation formulas are included in the Appendix.

6.0 REPORT LIMITATIONS

The subsurface conditions presented in this report are based upon the field exploratory test data obtained during the geotechnical study.

APPENDIX A

Soil Survey Report
Soil Profiles
Summary of Laboratory Test Results
Grain Size Data Sheet
Boring and Monitoring Well Location Plan
Monitoring Well Diagram
Boring Logs
Summary of Borehole Permeability Test Results
Borehole Permeability Test (BHP) Schematic
Borehole Permeability Test (BHP) Graphs and Calculations

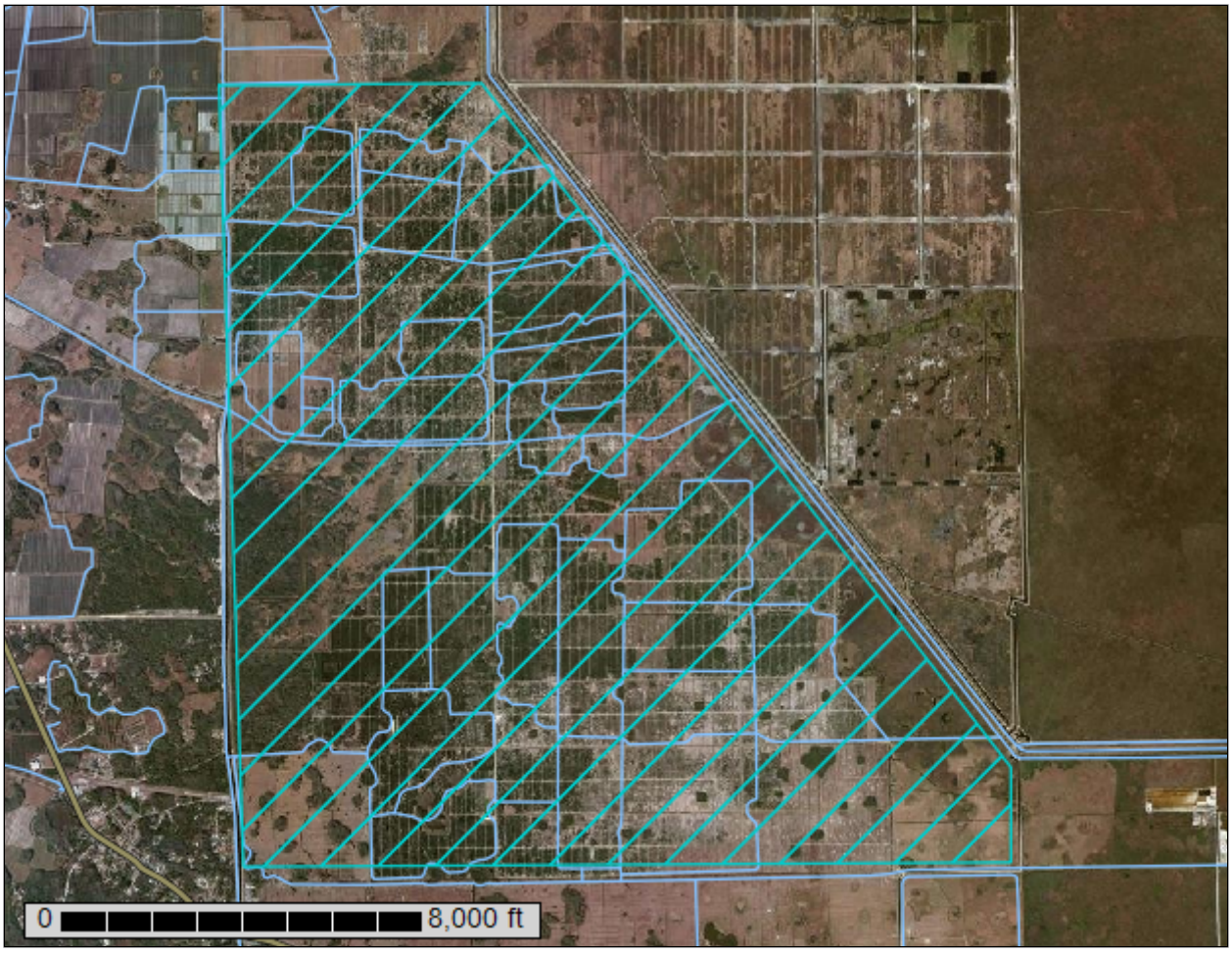
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Hendry County, Florida



September 21, 2013

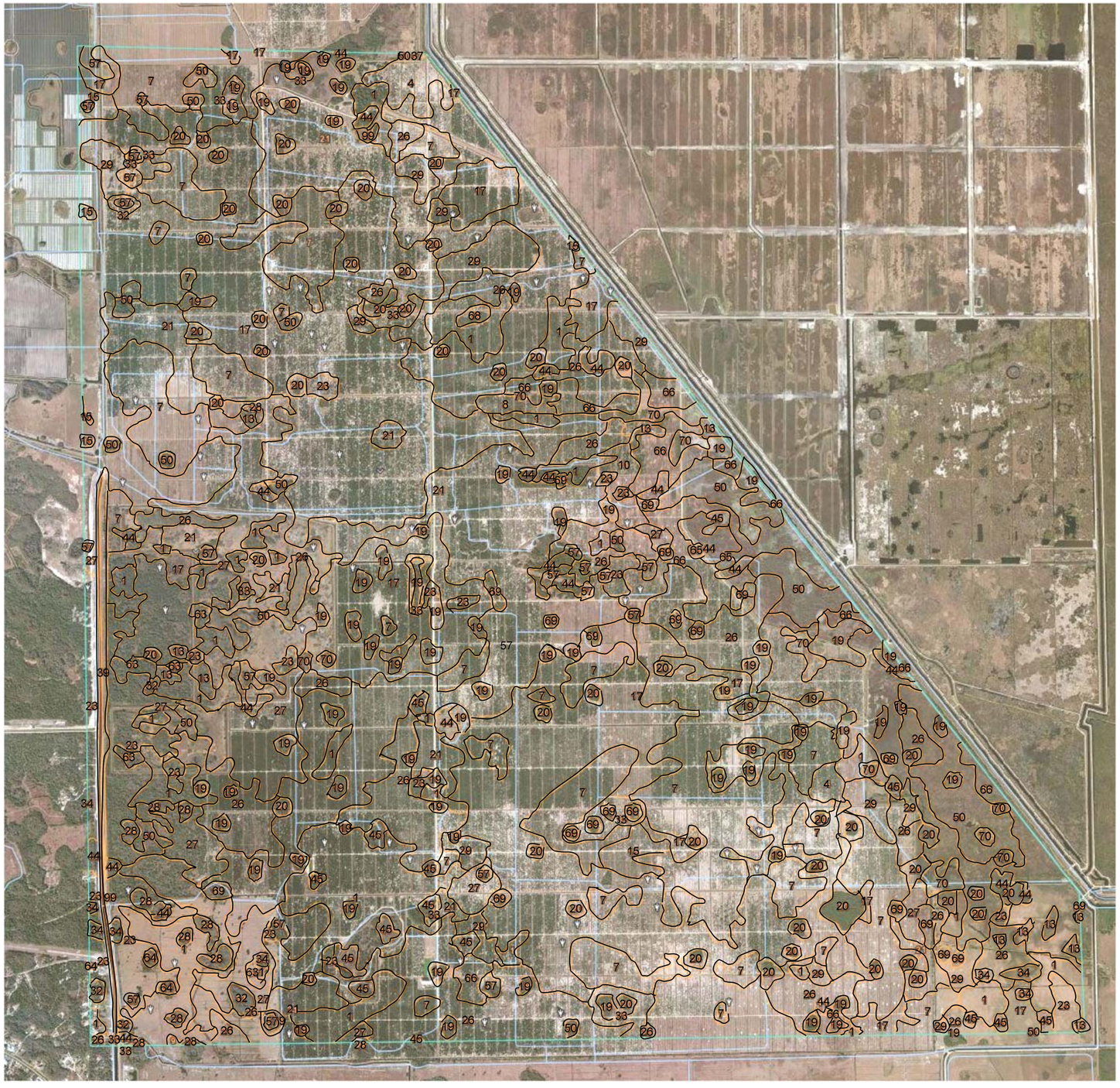
Map Unit Symbol	Map Unit	Description
1	Boca sand	This is a poorly drained soils on broad flatwoods that has a sand layer about 7 inches thick. The subsurface layer to a depth of about 27 inches is light gray sand. The subsoil is grayish brown fine sand to a depth of about 28 inches and brown sandy loam to a depth of about 33 inches. It is underlain by limestone that is discontinuous and that has many fractures and solution basins.
4	Oldsmar sand	This nearly level, poorly drained soil is on broad flatwoods, typically, this soil has a very dark gray sand surface layer about 6 inches thick. The subsurface layer to a depth of about 38 inches is sand.
7	Immokalee sand	This is a poorly drained soil on broad flatwoods that has a very dark gray sand layer about 5 inches thick. The subsurface layer to a depth of about 40 inches is sand. The subsoil to a depth of about 70 inches is sand that is stained with organic matter. The substratum is light brownish gray sand to a depth of 80 inches.
8	Malabar sand	This poorly drained soil is in sloughs on flatwoods. Typically, this soil has a dark grayish brown sand surface layer about 5 inches thick. The subsurface layer to a depth of about 15 inches is light brownish gray sand. The subsoil to a depth of 65 inches is sand, gray sandy clay loam and gray sandy loam. The substratum to a depth of 80 inches is gray sand and loamy sand.
9	Riviera fine sand	This poorly drained soil is in sloughs on broad flatwoods. Typically, this soil has a very dark gray fine sand surface layer about 4 inches thick. The subsurface layer to a depth of about 26 inches is fine sand. The subsoil to a depth of 32 inches is gray sandy loam, gray sandy clay loam to a depth of 50 inches and gray sandy loam to 70 inches deep. The substratum to a depth of 80 inches or more is gray sandy clay loam.
10	Pineda fine sand	This is a poorly drained soil in sloughs and low flats in flatwoods areas. Typically this soil has a black fine sand surface layer about 2 inches thick. The subsurface layer is gray and light gray fine sand to a depth of 14 inches. The subsoil to a depth of 30 inches is fine sand. To a depth of 50 inches, it is gray sandy clay loam. The substratum is gray sandy loam to a depth of 60 inches and gray sandy clay loam to a depth of 75 inches and sand to a depth of 80 inches.
13	Gentry fine sand, depressional	This is poorly drained soil in broad, low sloughs on flatwoods. This soil have a dark gray fine sand surface layer of 4 inches thick. The subsurface layer is sand to a depth of 14 inches. The subsoil extends to 47 inches deep composed by sandy loam. The substratum to a depth of 80 inches is sandy loam and sandy clay loam.
15	Myakka sand	This is a poorly drained soil on broad flatwoods that has a very dark gray sand layer about 6 inches thick. The subsurface layer to a depth of about 26 inches is gray sand. The subsoil to a depth of about 60 inches is sand that is

		stained with organic matter. The substratum is grayish brown sand to a depth of 80 inches.
17	Basinger sand	This is a poorly drained soil is in sloughs and poorly defined drainage. Typically, this soil has a very dark gray sand surface layer about 6 inches thick. The subsurface layer to a depth of about 25 inches is light brownish gray sand. The subsoil to a depth of about 50 inches is dark yellowish brown sand. The substratum is light brownish gray sand to a depth of 80 inches.
19	Gator muck	This is a poorly drained organic soil is in swamps and marshes that has a black muck layer about 32 inches thick. The underlying material is black sandy loam to a depth of 35 inches and to a depth of 51 inches it is gray sandy clay loam that contains carbonate nodules.
20	Okeelanta muck	This very poorly drained soil is in depressions and broad freshwater marshes. Typically, this soil has a black muck surface layer about 35 inches thick. The underlying material to a depth of 60 inches is sand.
21	Holopaw sand	This is a poorly drained soil is in sloughs and low areas on flatwoods that has a very dark gray sand layer about 5 inches thick. The subsurface layer to a depth of about 48 inches is sand. The subsoil to a depth of about 65 inches is grayish brown sandy clay loam. The substratum to a depth of 80 inches is grayish brown sandy loam that has many carbonate nodules.
23	Hallandale sand	This is a poorly drained soil on broad flatwoods that has a very dark gray sand layer about 4 inches thick. The underlying material to a depth of about 16 inches is brown sand. The subsoil to a depth of about 70 inches is sand that is stained with organic matter. It is underlain by limestone that is discontinuous and that has many fractures and solution basins.
26	Holopaw sand, limestone substratum	This is a poorly drained soil on broad , low flats and in poorly defined drainage ways that has a very dark grayish brown sand layer about 6 inches thick. The subsurface layer to a depth of about 40 inches is sand. The subsoil to a depth of about 45 inches is brown sand and to a depth of 60 inches is gray sandy loam underlain by fractured limestone.
27	Riviera sand, limestone substratum	This is a poorly drained soil is in sloughs on broad flatwoods that has a black sand layer about 5 inches thick. The subsurface layer to a depth of about 35 inches is light brownish gray sand. The subsoil to a depth of about 50 inches is olive gray sandy loam underlain by fractured limestone.
28	Boca sand, depressional	This poorly drained soil is in depressions on flatwoods. Typically, this soil has a dark gray sand surface layer about 5 inches thick. The substratum layer to a depth of 25 inches is sand. The subsoil sandy clay loam to a depth of 32 inches. The substratum to a depth of 38 inches is calcium carbonate and rock fragments.
29	Oldsmar sand, limestone substratum	This nearly level, poorly drained soil is in broad areas on flatwoods. This soil has a black sand surface layer of 5 inchs thick. The subsurface layer to a depth of 38 inches is sand.

		The subsoil to a depth of about 63 inches is sand nad sandy clay loam to a depth of 73 inches. The subsoil is underlain by fractured limestone.
32	Riviera sand, depressional	This poorly drained soil is in depressions on flatwoods. Typically, this soil has a very dark gray sand surface layer about 5 inches thick. The subsurface layer is light gray fine sand to a depth of about 26 inches. The subsoil extends to a depth of 70 inches. The substratum to a depth of 80 inches is gray sand with many shell fragments
33	Holopaw sand, depressional	This is a poorly drained soil is in depressions on flatwoods that has a dark grayish brown sand layer about 6 inches thick. The subsurface layer to a depth of about 65 inches is sand. The subsoil to a depth of about 65 inches is grayish brown sandy clay loam. The substratum to a depth of 80 inches is light grayish brown sandy clay loam.
34	Chobee fine sandy loam, limestone substratum, depressional	This very poorly drained soil is in swamps, marshes, and depressions. Typically, this soil has a black fine sandy loam surface layer about 15 inches thick. The subsoil to a depth of about 32 inches is light gray sandy clay loam. The substratum to a depth of 50 inches is sandy clay loam. It is underlain by limestone.
37	Tuscawilla fine sand	This nearly level, poorly drained soil is on low-lying ridges and hammocks, which generally are between sloughs and depressions on flatwoods. Typically, this soil has a dark gray fine sand surface layer about 4 inches thick. The subsurface layer to a depth of about 8 inches is gray fine sand. The subsoil extends to a depth of about 56 inches. The substratum is white, calcareous loamy fine sand to a depth of 80 inches or more.
39	Udifluvents	This unit consists of spoil material that was piled along the Caloosahatchee River when waterways was dredged and widened. These soils have a very dark gray fine sand surface layer about 25 inches thick. The underlying material is mixed or stratified light gray, light brownish gray, or gray sand, sandy clay, and clay or silty clay, loamy sand, sandy loam, sandy clay loam, or sandy clay that contains fragments of shells, limestone or both.
42	Riviera sand, limestone substratum, depressional	This poorly drained soil is near ponds and in depressions. Typically, this soil has a very dark gray sand surface layer about 3 inches thick. The subsurface layer to a depth of about 32 inches is gray sand. The subsoil is sandy clay loam to a depth of 50 inches and gray sandy loam to a depth of 58 inches.
44	Jupiter fine sand	This is a poorly drained soil is in hammocks and on low flats that border slough and marshes has a fine sand surface layer about 6 inches thick. It is black in the upper part and very dark grayish brown in the lower part. This layer is underlain by fractured limestone that contains numerous crevices and solution basins.
45	Pahokee muck	This is a very poorly drained organic soil in marshes and swamps. Typically, this soil has a black muck surface layer about 40 inches thick that is underlain by fractured limestone
50	Delray sand, depressional	This is a poorly drained soil is in swamps, marshes, and

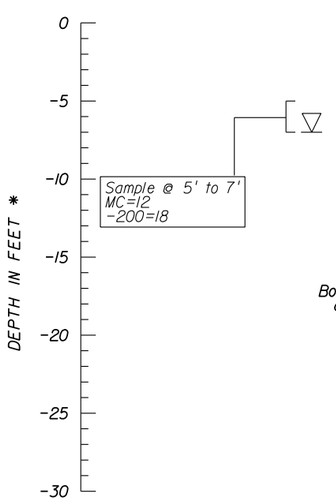
		depressions that has a sand surface layer about 22 inches thick. The subsurface layer to a depth of about 50 inches is gray sand. The subsoil to a depth of about 62 inches is dark grayish brown sandy clay loam. The substratum to a depth of 80 inches is gray loamy fine sand that contains fragments of calcareous material.
57	Chobee fine sandy loam, depressional	This is a poorly drained soil is in marshes, swamps and depressions that has a black fine sandy loam layer about 9 inches thick. The subsoil extends to a depth of 68 inches; gray fine sandy loam in the upper part and light gray sandy loam in the lower part. The substratum to a depth of 80 inches is light gray fine sandy loam.
63	Jupiter-Ochopee-Rock outcrop complex (Jupiter)	This map unit consists of areas of nearly level, poorly drained Jupiter and Ochopee soils and bedrock outcrops on broad, low-lying, grassy prairies. Typically the Jupiter soil has a black fine sand surface layer about 6 inches thick. The subsoil to a depth of about 14 inches is dark grayish brown fine sand. It is underlain by fractured limestone. Typically, the Ochopee soil is fine sandy loam to a depth of 10 inches. Limestone bedrock is at depth of 10 inches. The rock outcrop of this unit is hard, fractured limestone.
64	Hallandale sand, depressional	This is very poorly drained soil is in depressions on flatwoods. Typically, this soil has a very dark gray sand surface layer about 3 inched thick. The subsoil to a depth of about 15 inches is sand.
65	Plantation muck	This nearly level, very poorly drained soil is on broad, low-lying flats generally adjacent to the Everglades. Typically, this soil has a black muck surface layer about 12 inches thick. The next layer is black sand to a depth of 20 inches. The substratum is sand to a depth of 39 inches, It is underlain by hard limestone.
66	Margate sand	This is nearly level, poorly drained soil is on low-lying flats and sloughs adjacent to the Everglades that has a black sand surface layer about 10 inches thick. The subsurface layer to a depth of about 18 inches is brown sand. The subsoil to a depth of about 24 inches is pale brown sand. The substratum to a depth of 30 inches is light yellowish brown gravelly sand underlain by hard limestone.
68	Dania muck	This nearly level, very poorly drained soil is in marshes along the edge of the Everglades. Typically, this soil is muck to a depth of 14 inches. The underlying material to a depth of 18 inches is fine sand. It is underlain by hard limestone.
69	Denaud-Gator mucks (Denaud)	This is very poorly drained soils in depressions along the edge of the Everglade. The Denaud soil has a black muck surface layer about 11 inches thick. The subsurface layer to a depth of about 20 inches is fine sand and dark gray fine sand to a depth of 23 inches. The underlying material to a depth of 42 inches is gray fine sandy loam and to a depth of 80 inches is light gray gravelly fine sand that has shell and calcareous concretions.
69	Denaud-Gator mucks (Gator)	This is very poorly drained soils in depressions along the edge of the Everglade. The Gator soil has a black muck surface layer about 32 inches thick. The subsurface layer to

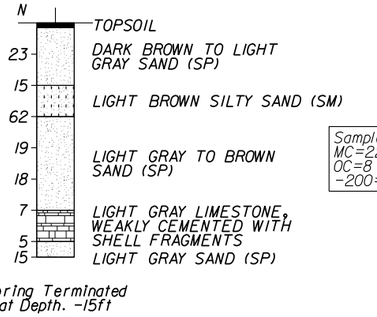
		a depth of about 35 inches is black sandy loam. The underlying material to a depth of 51 inches is gray sandy clay loam. Calcium carbonates nodules are in the lower part of the underlying material.
70	Denaud muck	This is very poorly drained soils is primarily in depressions along the edge of the Everglade that has a black muck surface layer about 11 inches thick. The subsurface layer to a depth of about 20 inches is black fine sand and dark gray fine sand to a depth of about 23 inches. The underlying material to a depth of 42 inches is gray fine sandy loam. To a depth of 80 inches, it is light gray gravelly fine sand that has shell and calcareous concretions.
99	Water	Existing water bodies



DRAWN BY:	APPROVED BY:	ENGINEER OF RECORD:		SCALE:	PROJECT NUMBER:	GEOTECHNICAL ENGINEERING SERVICES	Sheet:
NG	RK	RAJ KRISHNASAMY, P.E.	RAJ KRISHNASAMY, P.E. P.E. LICENSE NUMBER 53567 TIERRA SOUTH FLORIDA 2765 VISTA PARKWAY, S-10 WEST PALM BEACH, FL 33411 CERTIFICATE OF AUTHORIZATION 28073	NTS	7111-13-142	C-139 ANNEX RESTORATION S.F.W.M.D HENDRY COUNTY,FLORIDA	xx
CHECKED BY:	DATE:	FLORIDA LICENSE NO.:					
JO	07-29-2013	53567					

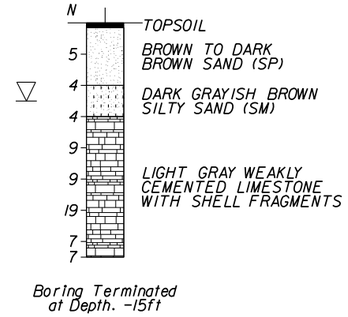
BOR # B-1
ELEV. N/A
DATE 6/3/2013
HAMMER Safety
RIG CME-55
NORTHING 737939.65
EASTING 681721.70





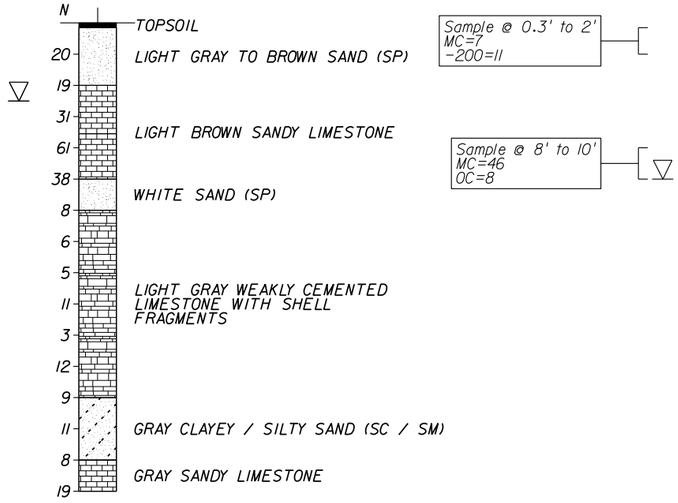
Boring Terminated at Depth. -15ft

BOR # B-2
ELEV. N/A
DATE 6/3/2013
HAMMER Safety
RIG CME-55
NORTHING 733965.59
EASTING 684383.63



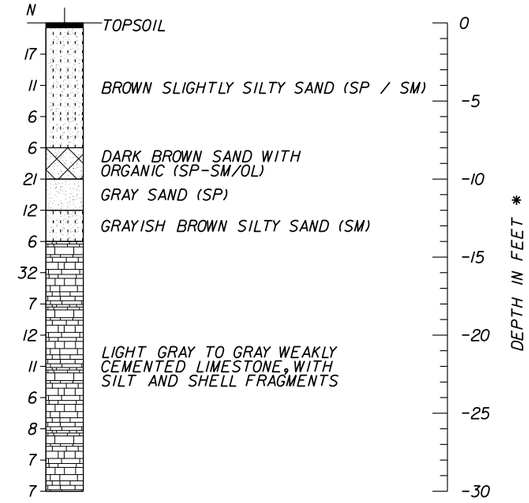
Boring Terminated at Depth. -15ft

BOR # B-3
ELEV. N/A
DATE 6/3/2013
HAMMER Safety
RIG CME-55
NORTHING 732019.97
EASTING 687573.80



Boring Terminated at Depth. -30ft

BOR # B-4
ELEV. N/A
DATE 6/14/2013
HAMMER Safety
RIG CME-550
NORTHING 730374.75
EASTING 691317.54



Boring Terminated at Depth. -30ft

Legend

- Topsoil
- Sand
- Silty Sand
- Limestone
- Clayey Sand
- Sand Organic
- Shelly Sand
- Limestone (weakly cemented)

NOTES

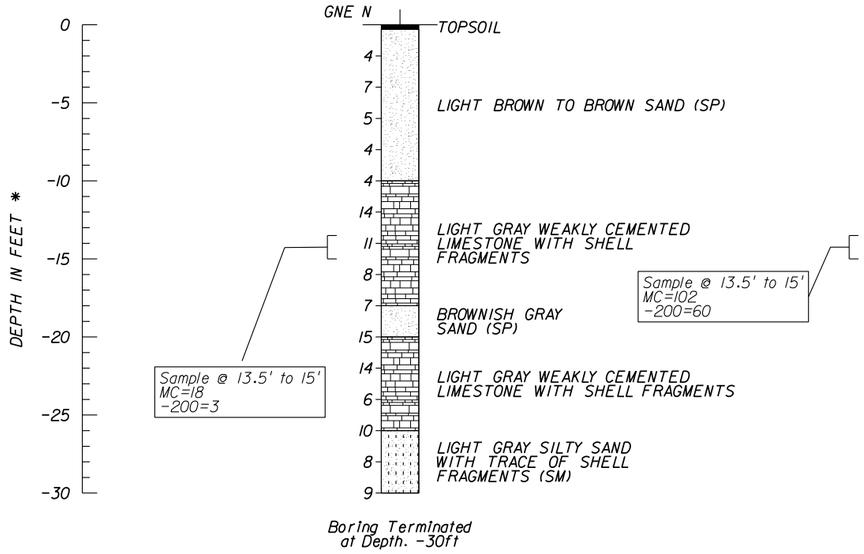
▽ ENCOUNTERED GROUNDWATER TABLE

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12" PENETRATION AND THEY WERE OBTAINED USING AN AUTOMATIC HAMMER. (UNLESS OTHERWISE NOTED.)

* DENOTES DEPTH IN FEET FROM EXISTING GROUND SURFACE

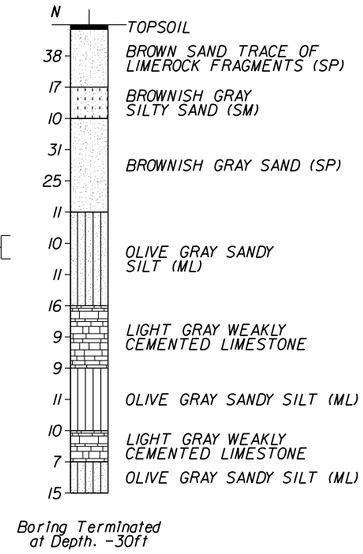
DRAWN BY: NG CHECKED BY: JO	APPROVED BY: RK DATE: 07-29-2013	ENGINEER OF RECORD: RAJ KRISHNASAMY, P.E. FLORIDA LICENSE NO.: 53567	RAJ KRISHNASAMY, P.E. P.E. LICENSE NUMBER 53567 TIERRA SOUTH FLORIDA 2765 VISTA PARKWAY, S-10 WEST PALM BEACH, FL 33411 CERTIFICATE OF AUTHORIZATION 28073	SCALE: NTS	PROJECT NUMBER: 7111-13-142	GEOTECHNICAL ENGINEERING SERVICES C-139 ANNEX RESTORATION S.F.W.M.D HENDRY COUNTY,FLORIDA	Sheet: xx

BOR # B-5
ELEV. N/A
DATE 6/4/2013
HAMMER Safety
RIG CME-55
NORTHING 728815.75
EASTING 688450.36



Boring Terminated at Depth. -30ft

BOR # B-6
ELEV. N/A
DATE 6/7/2013
HAMMER Safety
RIG CME-55
NORTHING 726193.27
EASTING 689787.81



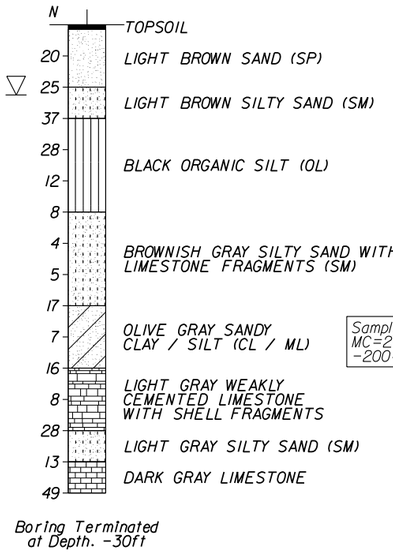
Boring Terminated at Depth. -30ft

Sample @ 4' to 6'
MC=14
-200=27

Sample @ 6' to 8'
MC=14
OC=19

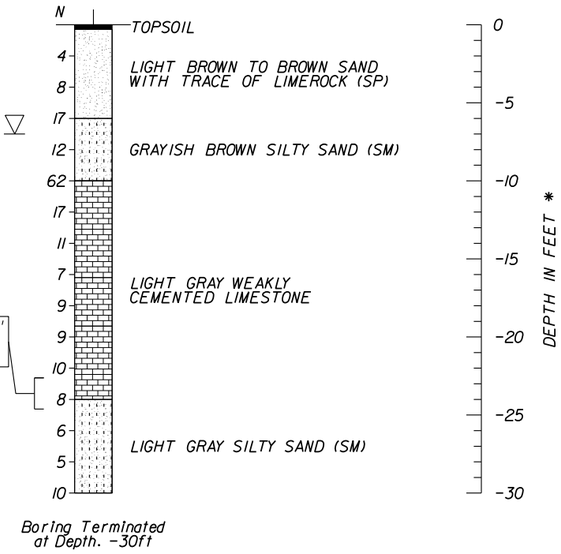
Sample @ 8' to 10'
MC=47
OC=12

BOR # B-7
ELEV. N/A
DATE 6/12/2013
HAMMER Safety
RIG CME-550
NORTHING 726331.93
EASTING 694225.04



Boring Terminated at Depth. -30ft

BOR # B-8
ELEV. N/A
DATE 6/12/2013
HAMMER Safety
RIG CME-550
NORTHING 720754.90
EASTING 689557.90



Boring Terminated at Depth. -30ft

Legend

- Topsoil
- Sand
- Silty Sand
- Limestone
- Silt
- Shelly Sand
- Sandy Silt
- Sandy Clay
- Limestone (weakly cemented)

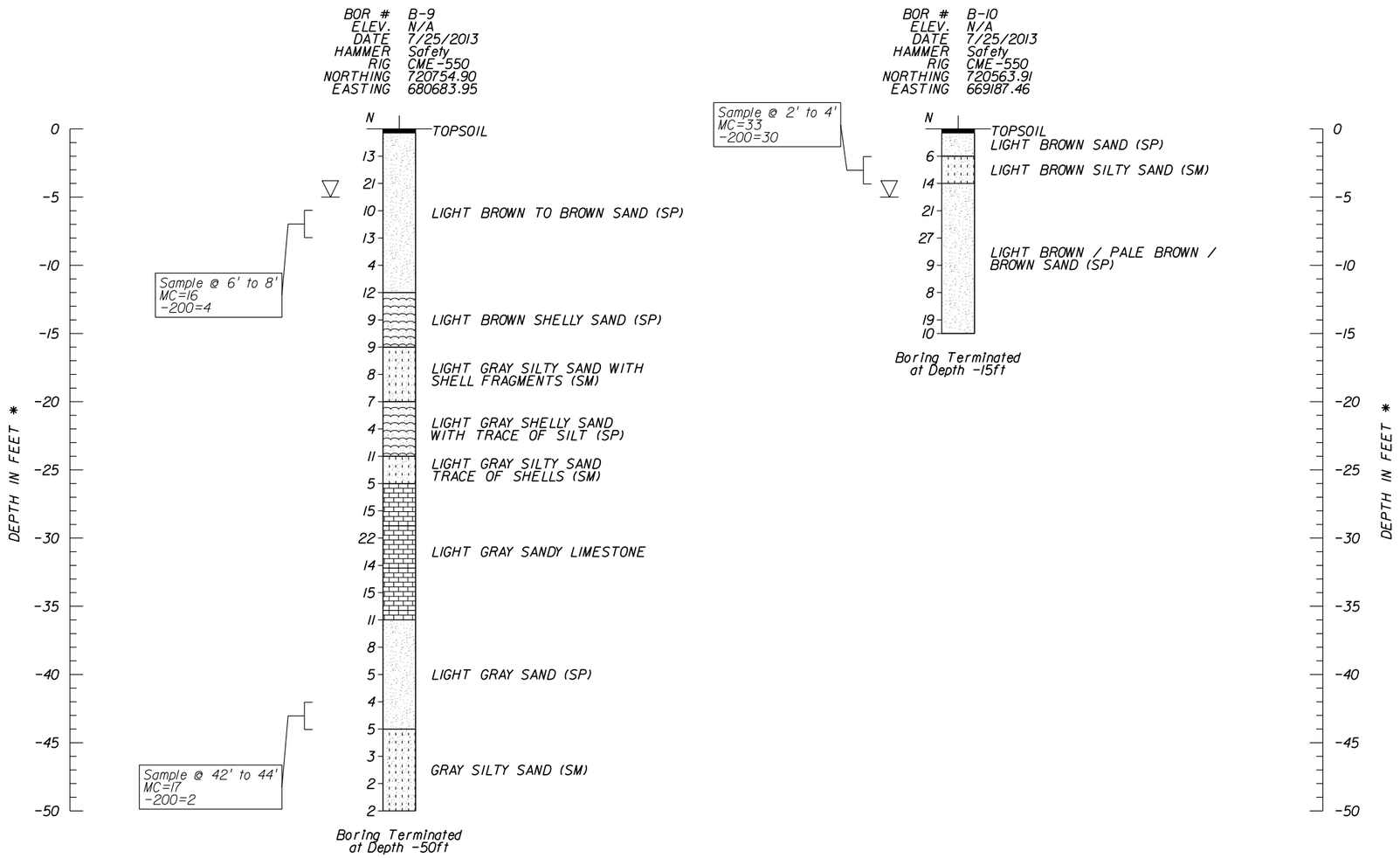
NOTES

▽ ENCOUNTERED GROUNDWATER TABLE

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12" PENETRATION AND THEY WERE OBTAINED USING AN AUTOMATIC HAMMER. (UNLESS OTHERWISE NOTED.)

* DENOTES DEPTH IN FEET FROM EXISTING GROUND SURFACE

DRAWN BY: NG CHECKED BY: JO	APPROVED BY: RK DATE: 07-29-2013	ENGINEER OF RECORD: RAJ KRISHNASAMY, P.E. FLORIDA LICENSE NO.: 53567	RAJ KRISHNASAMY, P.E. P.E. LICENSE NUMBER 53567 TIERRA SOUTH FLORIDA 2765 VISTA PARKWAY, S-10 WEST PALM BEACH, FL 33411 CERTIFICATE OF AUTHORIZATION 28073	SCALE: NTS	PROJECT NUMBER: 7111-13-142	GEOTECHNICAL ENGINEERING SERVICES C-139 ANNEX RESTORATION S.F.W.M.D HENDRY COUNTY,FLORIDA	Sheet: xx



Legend

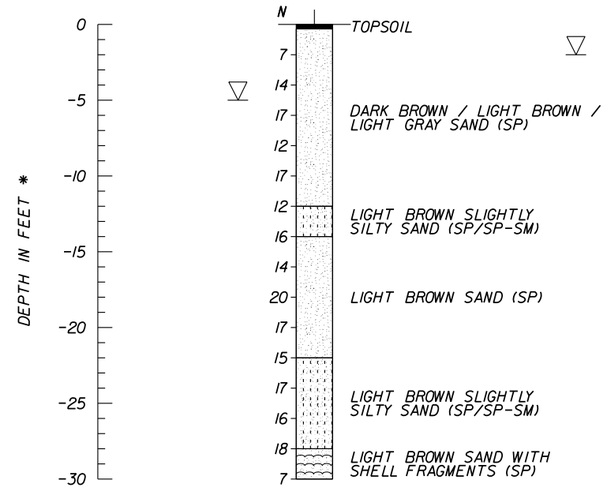
- Topsoil
- Sand
- Silty Sand
- Limestone
- Shelly Sand

NOTES

- ▽ ENCOUNTERED GROUNDWATER TABLE
- N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12" PENETRATION AND THEY WERE OBTAINED USING AN AUTOMATIC HAMMER. (UNLESS OTHERWISE NOTED.)
- * DENOTES DEPTH IN FEET FROM EXISTING GROUND SURFACE

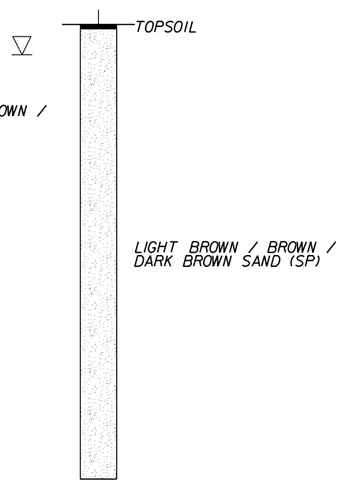
DRAWN BY: NG CHECKED BY: JO	APPROVED BY: RK DATE: 07-29-2013	ENGINEER OF RECORD: RAJ KRISHNASAMY, P.E. FLORIDA LICENSE NO.: 53567	RAJ KRISHNASAMY, P.E. P.E. LICENSE NUMBER 53567 TIERRA SOUTH FLORIDA 2765 VISTA PARKWAY, S-10 WEST PALM BEACH, FL 33411 CERTIFICATE OF AUTHORIZATION 28073	SCALE: NTS	PROJECT NUMBER: 7111-13-142	GEOTECHNICAL ENGINEERING SERVICES C-139 ANNEX RESTORATION S.F.W.M.D HENDRY COUNTY,FLORIDA	Sheet: xx

BOR # W-2
ELEV. N/A
DATE 7/5/2013
HAMMER Safety
RIG CME-55
NORTHING 751143.17
EASTING 663146.31



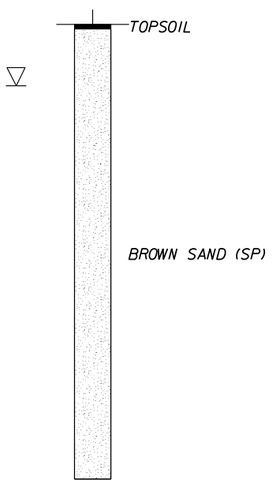
Boring Terminated at Depth. -30ft

BOR # W-3
ELEV. N/A
DATE 7/5/2013
HAMMER -
RIG CME-55
NORTHING 751203.67
EASTING 664067.4



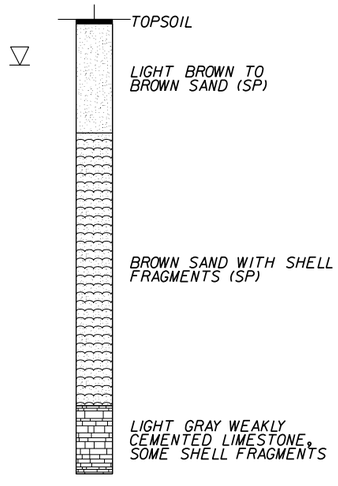
Boring Terminated at Depth. -30ft

BOR # W-4
ELEV. N/A
DATE 7/7/2013
HAMMER -
RIG CME-55
NORTHING 745932.85
EASTING 670674.72



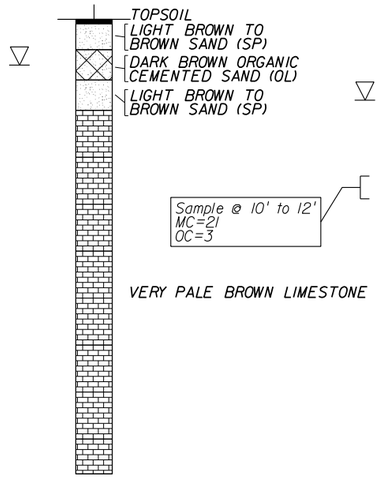
Boring Terminated at Depth. -30ft

BOR # W-5
ELEV. N/A
DATE 06/27/2013
HAMMER -
RIG CME-55
NORTHING 746036.84
EASTING 677601.16



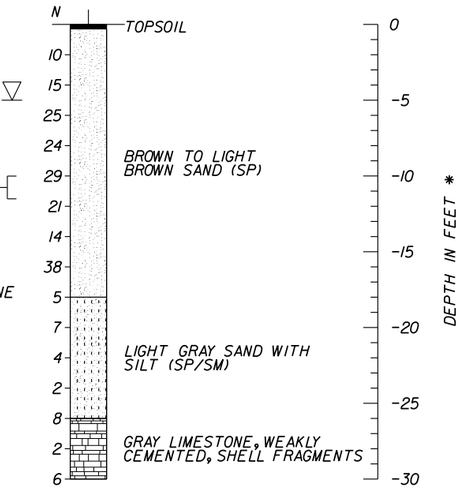
Boring Terminated at Depth. -30ft

BOR # W-6
ELEV. N/A
DATE 06/27/2013
HAMMER -
RIG CME-55
NORTHING 746041.78
EASTING 678711.59



Boring Terminated at Depth. -30ft

BOR # W-9
ELEV. N/A
DATE 7/9/2013
HAMMER Safety
RIG CME-55
NORTHING 740499.18
EASTING 663262.34



Boring Terminated at Depth. -30ft

Legend

- Topsoil
- Sand
- Silty Sand
- Limestone
- Shelly Sand
- Limestone (weakly cemented)

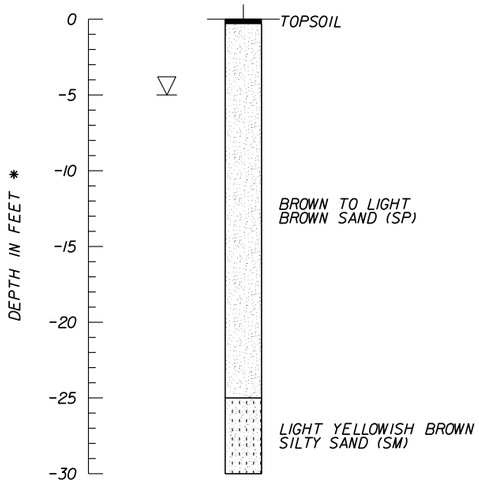
NOTES

- ▽ ENCOUNTERED GROUNDWATER TABLE
- N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12" PENETRATION AND THEY WERE OBTAINED USING AN AUTOMATIC HAMMER. (UNLESS OTHERWISE NOTED.)
- * DENOTES DEPTH IN FEET FROM EXISTING GROUND SURFACE

DRAWN BY: NG CHECKED BY: JO	APPROVED BY: RK DATE: 07-29-2013	ENGINEER OF RECORD: RAJ KRISHNASAMY, P.E. FLORIDA LICENSE NO.: 53567	RAJ KRISHNASAMY, P.E. P.E. LICENSE NUMBER 53567 TIERRA SOUTH FLORIDA 2765 VISTA PARKWAY, S-10 WEST PALM BEACH, FL 33411 CERTIFICATE OF AUTHORIZATION 28073	SCALE: NTS	PROJECT NUMBER: 7111-13-142	GEOTECHNICAL ENGINEERING SERVICES C-139 ANNEX RESTORATION S.F.W.M.D HENDRY COUNTY, FLORIDA	Sheet: xx

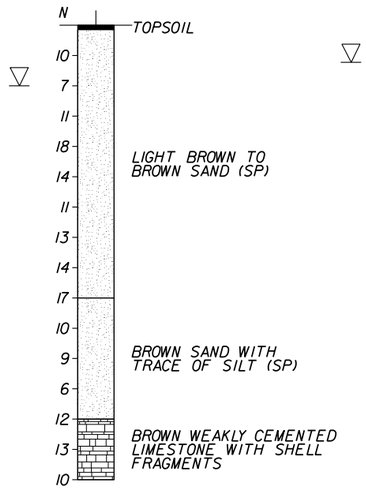
jolva 1/28/2014 9:55:38 AM J:\Tierra Documents\Projects\TSF 2013\7111-13-142.C-139 Annex Restoration (SFWMD)\geotech\BIBORING.dgn

BOR # W-10
ELEV. N/A
DATE 7/9/2013
HAMMER -
RIG CME-55
NORTHING 740357.23
EASTING 664196.47



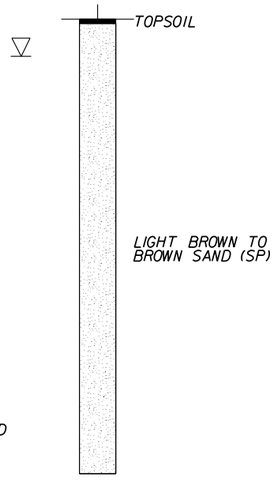
Boring Terminated at Depth. -30ft

BOR # W-11
ELEV. N/A
DATE 7/23/2013
HAMMER Safety
RIG CME-55
NORTHING 737591.62
EASTING 671445.13



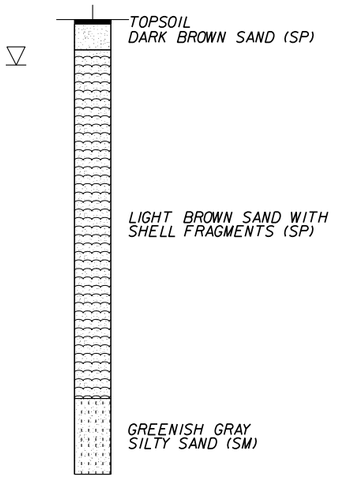
Boring Terminated at Depth. -30ft

BOR # W-14
ELEV. N/A
DATE 6/22/2013
HAMMER -
RIG CME-55
NORTHING 729938.48
EASTING 668171.28



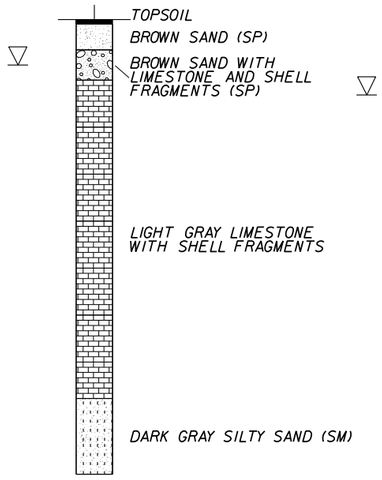
Boring Terminated at Depth. -30ft

BOR # W-16
ELEV. N/A
DATE 06/26/2013
HAMMER -
RIG CME-55
NORTHING 729086.16
EASTING 681272.2



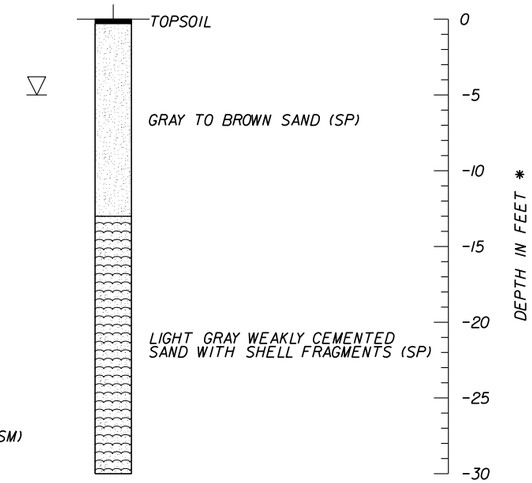
Boring Terminated at Depth. -30ft

BOR # W-17
ELEV. N/A
DATE 06/26/2013
HAMMER -
RIG CME-55
NORTHING 728381.3
EASTING 681279.17



Boring Terminated at Depth. -30ft

BOR # W-19
ELEV. N/A
DATE 7/21/2013
HAMMER -
RIG CME-55
NORTHING 720646.9
EASTING 668955.49



Boring Terminated at Depth. -30ft

Legend

- Topsoil
- Sand
- Silty Sand
- Limestone
- Shelly Sand
- Gravelly Sand
- Limestone (weakly cemented)

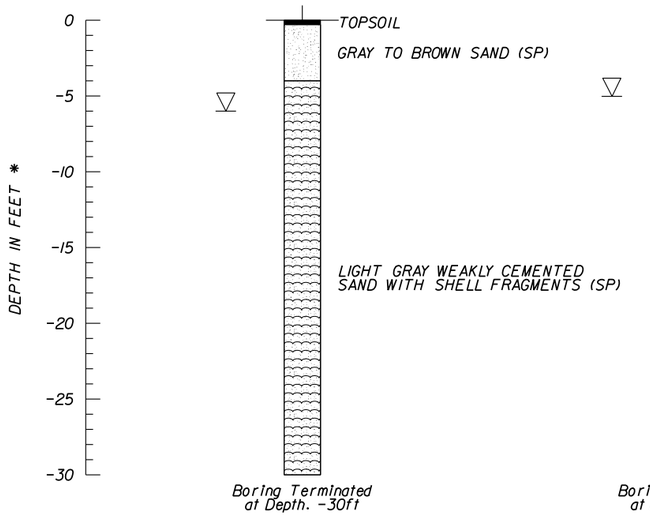
NOTES

- ▽ ENCOUNTERED GROUNDWATER TABLE
- N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12" PENETRATION AND THEY WERE OBTAINED USING AN AUTOMATIC HAMMER. (UNLESS OTHERWISE NOTED.)
- * DENOTES DEPTH IN FEET FROM EXISTING GROUND SURFACE

DRAWN BY: NG CHECKED BY: JO	APPROVED BY: RK DATE: 07-29-2013	ENGINEER OF RECORD: RAJ KRISHNASAMY, P.E. FLORIDA LICENSE NO.: 53567	RAJ KRISHNASAMY, P.E. P.E. LICENSE NUMBER 53567 TIERRA SOUTH FLORIDA 2765 VISTA PARKWAY, S-10 WEST PALM BEACH, FL 33411 CERTIFICATE OF AUTHORIZATION 28073	SCALE: NTS	PROJECT NUMBER: 7111-13-142	GEOTECHNICAL ENGINEERING SERVICES C-139 ANNEX RESTORATION S.F.W.M.D HENDRY COUNTY,FLORIDA	Sheet: xx

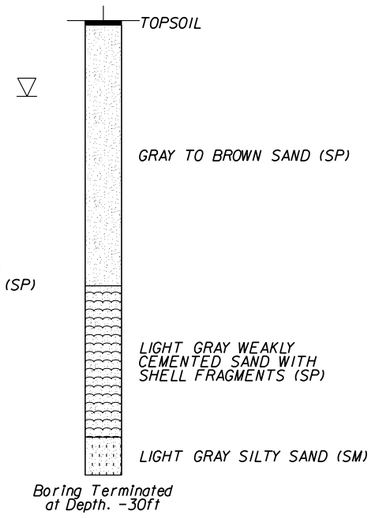
jolivo 1/28/2014 9:58:53 AM J:\Tierra Documents\Projects\TSF 2013\7111-13-142.C-139 Annex Restoration (SFWMD)\geotech\BIBORING.dgn

BOR # W-20
ELEV. N/A
DATE 6/26/2013
HAMMER Safety
RIG CME-55
NORTHING 721279.26
EASTING 681034.76



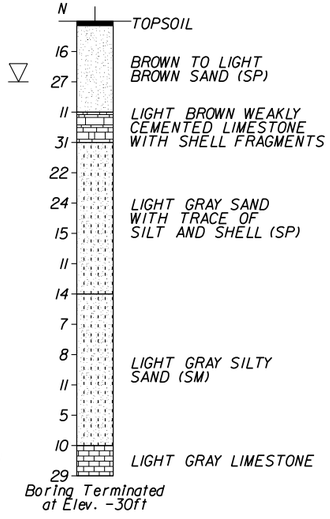
Boring Terminated at Depth. -30ft

BOR # W-21
ELEV. N/A
DATE 6/14/2013
HAMMER Safety
RIG CME-55
NORTHING 721074.1
EASTING 689745.44



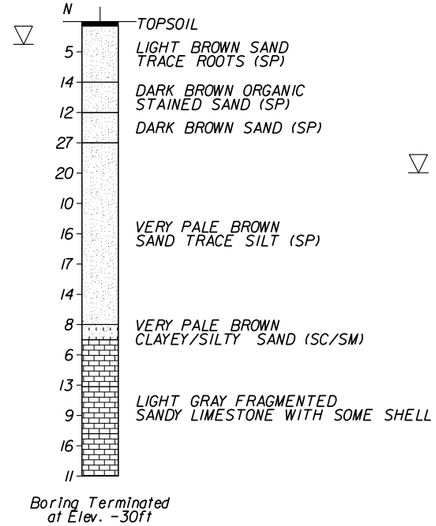
Boring Terminated at Depth. -30ft

BOR # W-22
ELEV. N/A
DATE 08/28/2013
HAMMER Safety
RIG CME-55
NORTHING 720843.094
EASTING 681028.797



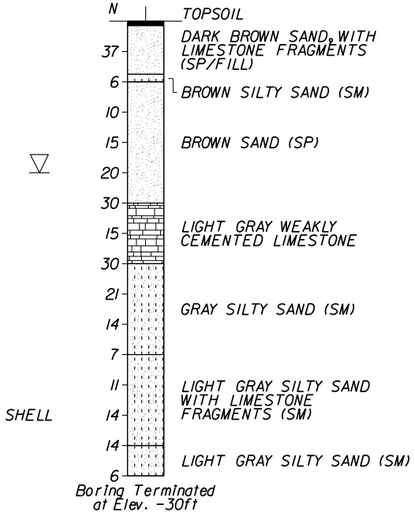
Boring Terminated at Elev. -30ft

BOR # W-22A
ELEV. N/A
DATE 6/17/2014
HAMMER Auto
RIG CME-55
NORTHING 720562.42
EASTING 681034.42



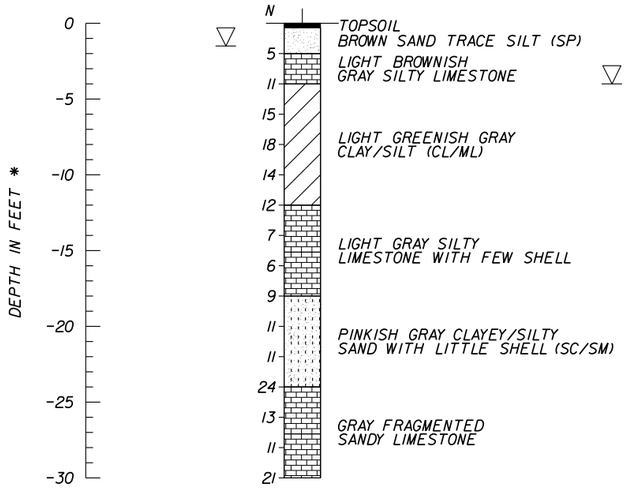
Boring Terminated at Elev. -30ft

BOR # W-23
ELEV. N/A
DATE 08/29/2013
HAMMER Safety
RIG CME-55
NORTHING 726267.429
EASTING 692849.182



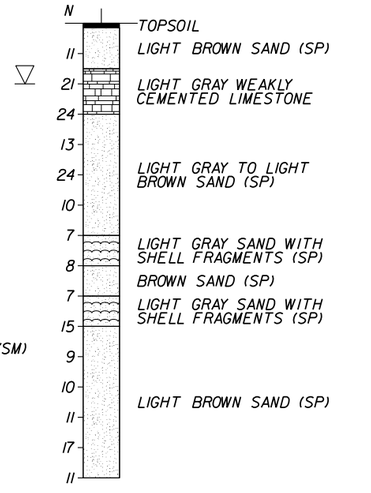
Boring Terminated at Elev. -30ft

BOR # W-23A
ELEV. N/A
DATE 6/17/2014
HAMMER Auto
RIG CME-55
NORTHING 725949.48
EASTING 692953.28



Boring Terminated at Elev. -30ft

BOR # W-24
ELEV. N/A
DATE 7/10/2013
HAMMER Safety
RIG CME-55
NORTHING 735263.54
EASTING 680441.82



Boring Terminated at Depth. -30ft

Legend

- Topsoil
- Sand
- Silty Sand
- Limestone
- Shelly Sand
- Gravelly Sand
- Limestone (weakly cemented)

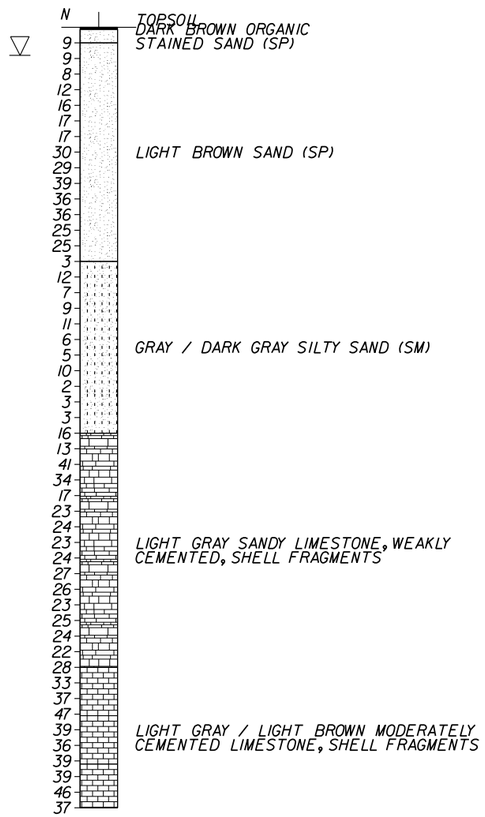
NOTES

- ▽ ENCOUNTERED GROUNDWATER TABLE
- N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12" PENETRATION AND THEY WERE OBTAINED USING AN AUTOMATIC HAMMER. (UNLESS OTHERWISE NOTED.)
- * DENOTES DEPTH IN FEET FROM EXISTING GROUND SURFACE

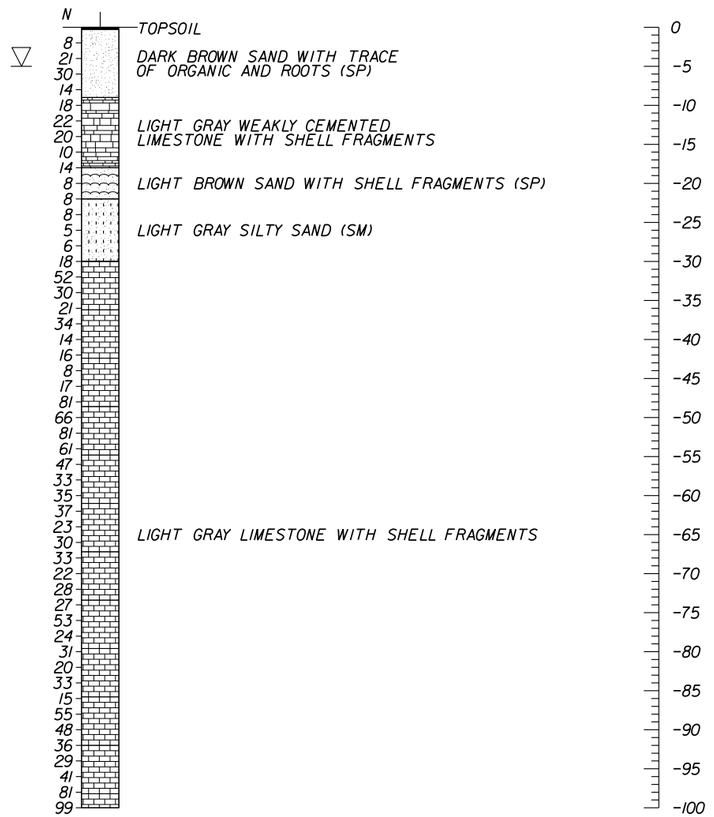
DRAWN BY: NG CHECKED BY: JO	APPROVED BY: RK DATE: 08-29-2013	ENGINEER OF RECORD: RAJ KRISHNASAMY, P.E. FLORIDA LICENSE NO.: 53567	RAJ KRISHNASAMY, P.E. P.E. LICENSE NUMBER 53567 TIERRA SOUTH FLORIDA 2765 VISTA PARKWAY, S-10 WEST PALM BEACH, FL 33411 CERTIFICATE OF AUTHORIZATION 28073	SCALE: NTS	PROJECT NUMBER: 7111-13-142	GEOTECHNICAL ENGINEERING SERVICES C-139 ANNEX RESTORATION S.F.W.M.D HENDRY COUNTY,FLORIDA	Sheet: xx

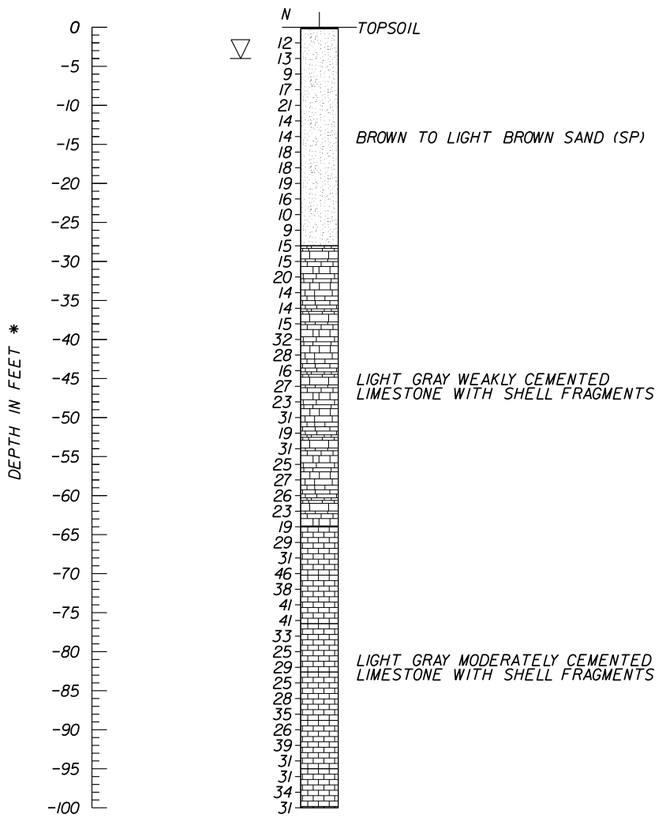
jaliva 7/8/2014 11:53:09 AM J:\Tierra Documents\Projects\TSF 2013\7111-13-142.C-139 Annex Restoration (SFWMD)\geotech\BIBORING.dgn

BOR # W-14D
ELEV. N/A
DATE 7/31/2013
HAMMER Safety
RIG CME-55
NORTHING 729938.48
EASTING 668171.28



BOR # W-16D
ELEV. N/A
DATE 8/5/2013
HAMMER Safety
RIG CME-55
NORTHING 729087.16
EASTING 681272.2





Legend

- Topsoil
- Sand
- Limestone Soft
- Limestone Hard
- Silty Sand
- Shelly Sand

NOTES

- ▽ ENCOUNTERED GROUNDWATER TABLE
- N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12" PENETRATION AND THEY WERE OBTAINED USING AN AUTOMATIC HAMMER. (UNLESS OTHERWISE NOTED.)
- * DENOTES DEPTH IN FEET FROM EXISTING GROUND SURFACE

DRAWN BY: NG CHECKED BY: JO	APPROVED BY: RK DATE: 07-29-2013	ENGINEER OF RECORD: RAJ KRISHNASAMY, P.E. FLORIDA LICENSE NO.: 53567	RAJ KRISHNASAMY, P.E. P.E. LICENSE NUMBER 53567 TIERRA SOUTH FLORIDA 2765 VISTA PARKWAY, S-10 WEST PALM BEACH, FL 33411 CERTIFICATE OF AUTHORIZATION 28073	SCALE: NTS	PROJECT NUMBER: 7111-13-142	GEOTECHNICAL ENGINEERING SERVICES C-139 ANNEX RESTORATION S.F.W.M.D HENDRY COUNTY, FLORIDA	Sheet: xx

Summary of Laboratory Test Results
C-139 Annex

TSF Project No: 7111-13-142

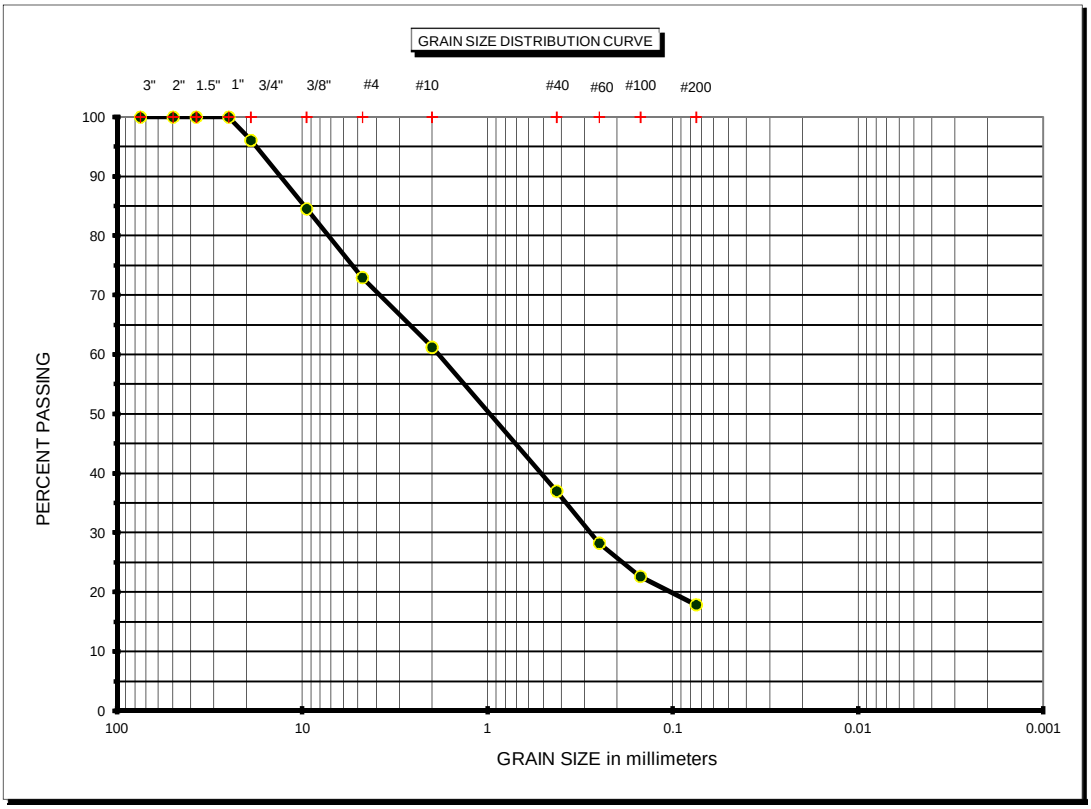
Boring Number	Sample Depth (ft)	USCS Symbol	Sieve Analysis, Percentage Passing								Atterberg Limits			Organic Content (%)	Natural Moisture Content (%)
			3/4"	3/8"	#4	#10	#40	#60	#100	#200	Liquid Limit	Plastic Limit	Plasticity Index		
B-1	5.0 - 7.0	SM	96	85	73	61	37	28	23	18					12
B-2	2.0 - 4.0	SP			100	99	57	25	12	4				1.83	22
B-4	0.3 - 2.0	SP-SM	100	84	74	69	35	22	15	11					7
B-4	8.0 - 10.0	SP-SM												8.24	46
B-5	13.5 - 15.0	SP	100	98	98	97	47	15	5	3					18
B-6	14.0 - 16.0	ML		100	99	98	90	83	70	60					102
B-7	4.0 - 6.0	SM	100	95	90	85	53	44	38	27					14
B-7	6.0 - 8.0	OL												19.03	14
B-7	8.0 - 10.0	OL												12.08	47
B-8	23.5 - 25.0	SM			100	98	96	95	69	26					27
B-9	6.0 - 8.0	SP			100	99	40	15	7	4					16
B-9	42.0 - 44.0	SP				100	61	18	4	2					17
B-10	2.0 - 4.0	SM	100	98	98	96	94	93	77	30					33
W-4	10.0 - 12.0	SP												5.6	40
W-9	10.0 - 12.0	SP												2.9	21
W-22A	4.0-6.0	SP												3.7	16
W-22A	8.0-10.0	SP	100	100	100	100	38	12	4	3					15
W-22A	20.0-21.0	SM	100	100	99	97	93	88	51	13					26
W-23A	0.3-2.0	SP	100	100	100	100	47	22	10	5					17
W-23A	6.0-8.0	CL	100	99	95	92	89	88	87	79					24
W-23A	20.0-22.0	SM	100	100	100	99	94	92	79	26					31

NP = Non Plastic

GRAIN SIZE DATA SHEET

PROJECT NAME: C-139 Annex **DATE:** 7/5/2013

PROJECT #: 7111-13-142



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10 = 78.1
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60) = 1.77
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # B-1 **OFFSET (ft)** **DEPTH (ft):** 5.0 - 7.0

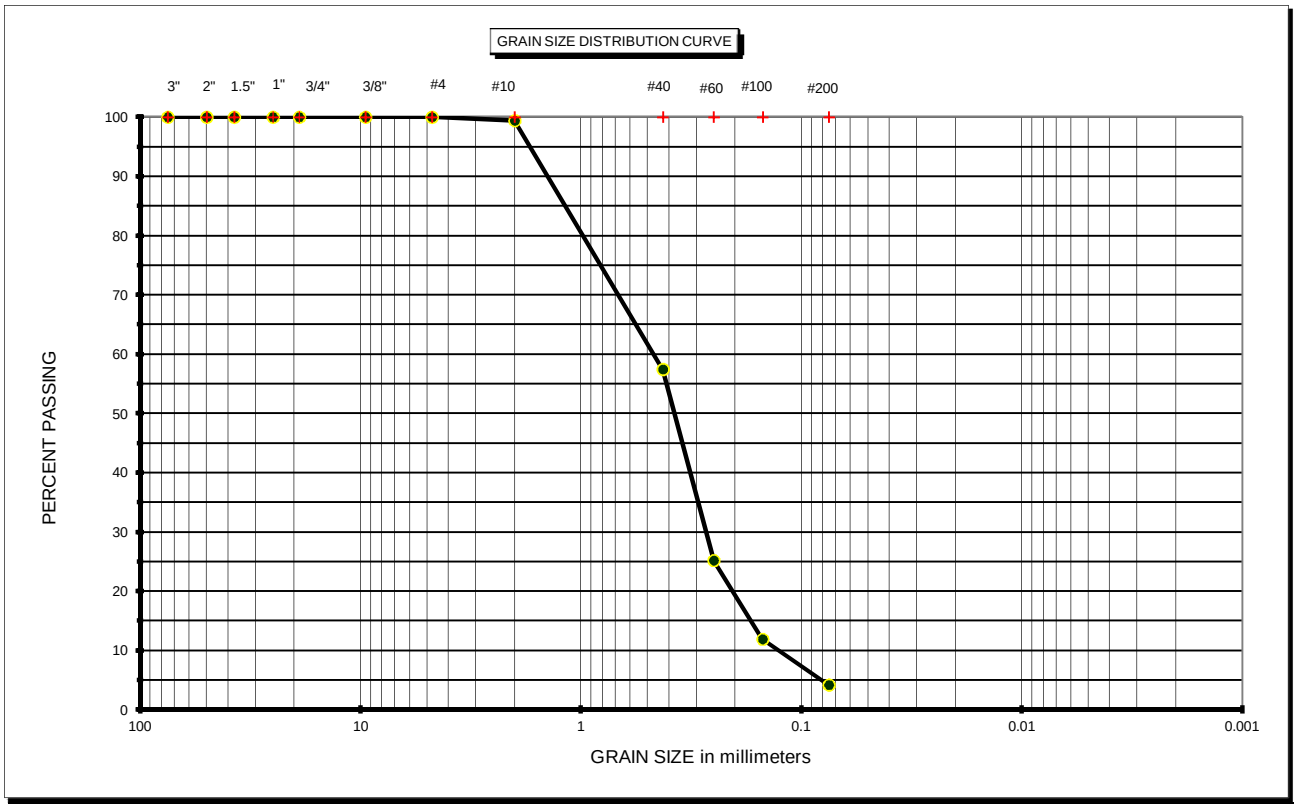
SOIL CLASSIFICATION: SM

ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTIC INDEX	

GRAIN SIZE DATA SHEET

PROJECT NAME: C-139 Annex **DATE:** 7/5/2013

PROJECT #: 7111-13-142



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10 = 3.69
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60) = 1.24
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # B-2 **OFFSET (ft)** **DEPTH (ft):** 2.0 - 4.0

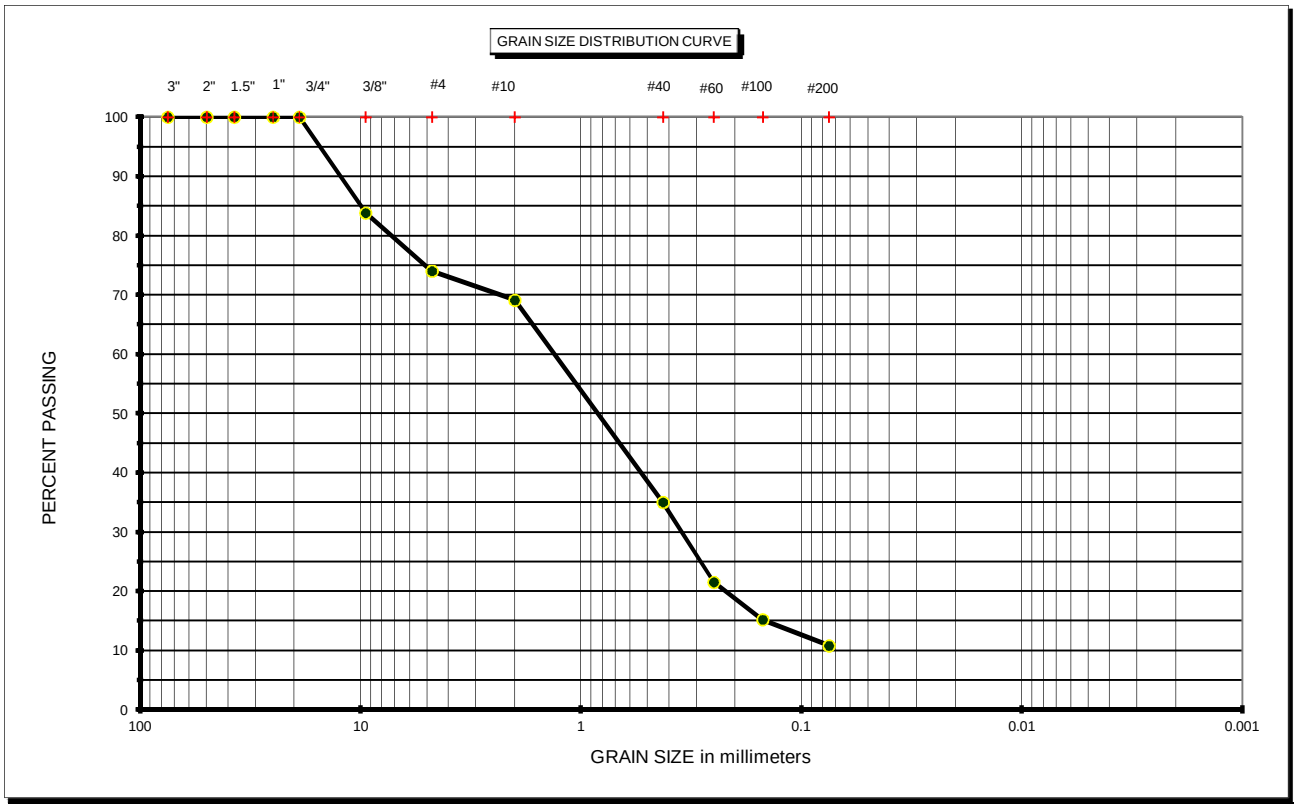
SOIL CLASSIFICATION: SP

ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTIC INDEX	

GRAIN SIZE DATA SHEET

PROJECT NAME: C-139 Annex **DATE:** 7/5/2013

PROJECT #: 7111-13-142



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10 = 19.98
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60) = 1.39
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # B-4 **OFFSET (ft)** **DEPTH (ft):** 0.3 - 2.0

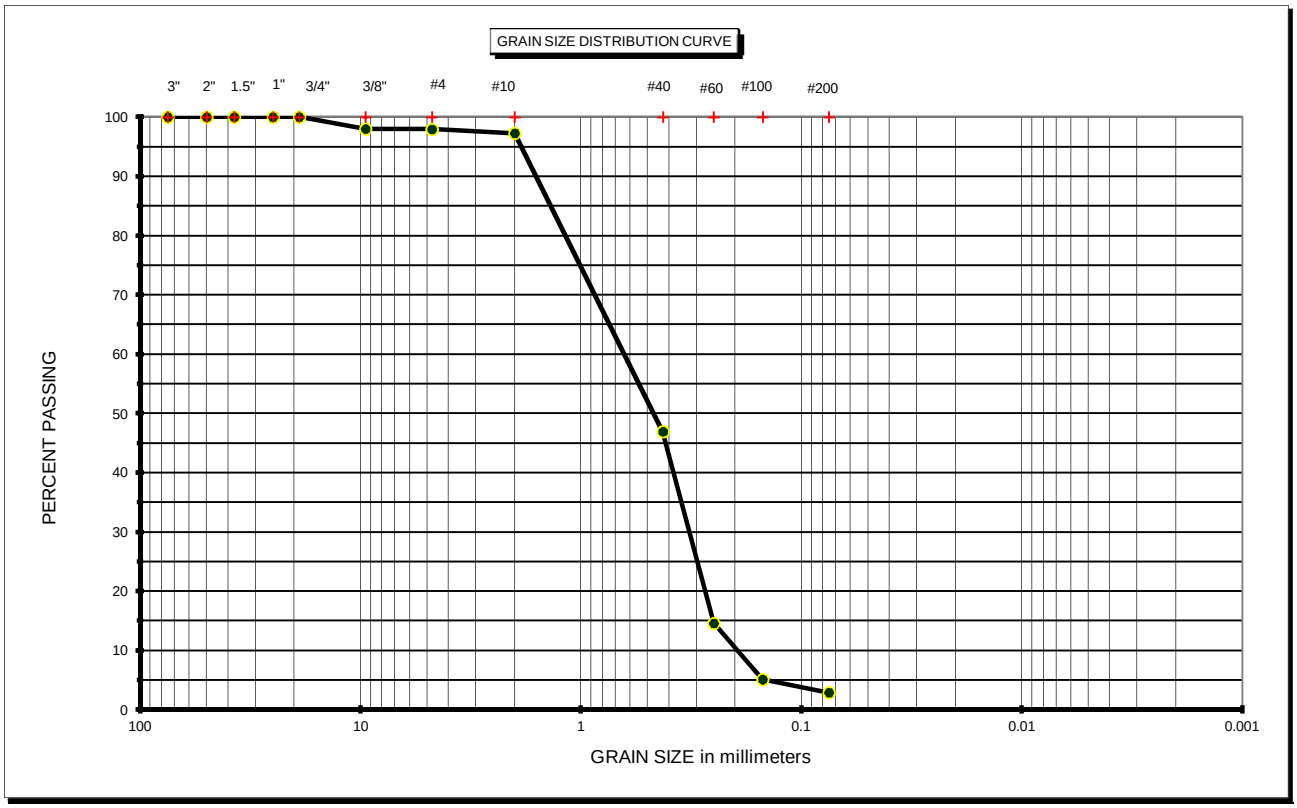
SOIL CLASSIFICATION: SP-SM

ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTIC INDEX	

GRAIN SIZE DATA SHEET

PROJECT NAME: C-139 Annex **DATE:** 7/5/2013

PROJECT #: 7111-13-142



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10 = 3.25
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60) = 0.84
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # B-5 **OFFSET (ft)** **DEPTH (ft):** 13.5 - 15.0

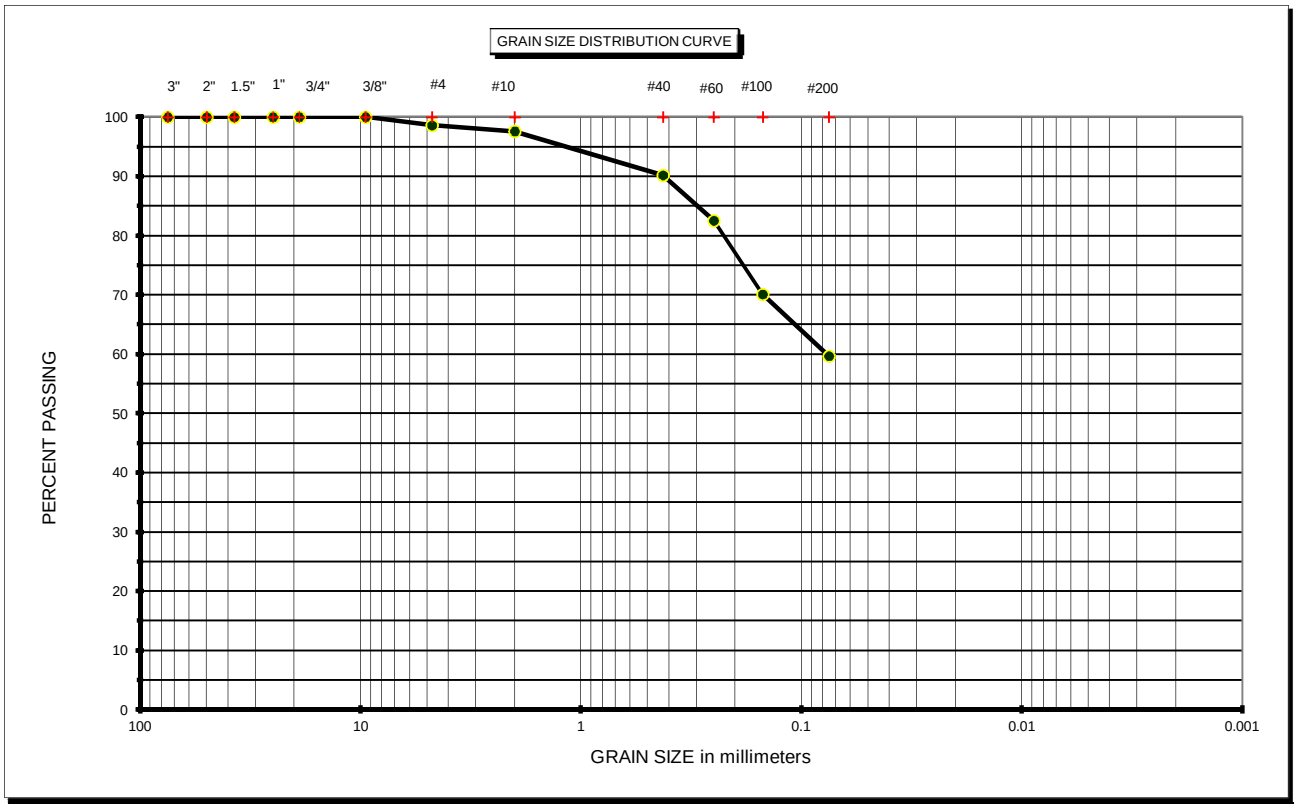
SOIL CLASSIFICATION: SP

ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTIC INDEX	

GRAIN SIZE DATA SHEET

PROJECT NAME: C-139 Annex **DATE:** 7/5/2013

PROJECT #: 7111-13-142



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10 = 27.76	
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40		
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200		

BORING # B-6 **OFFSET (ft)** **DEPTH (ft):** 14.0-16.0

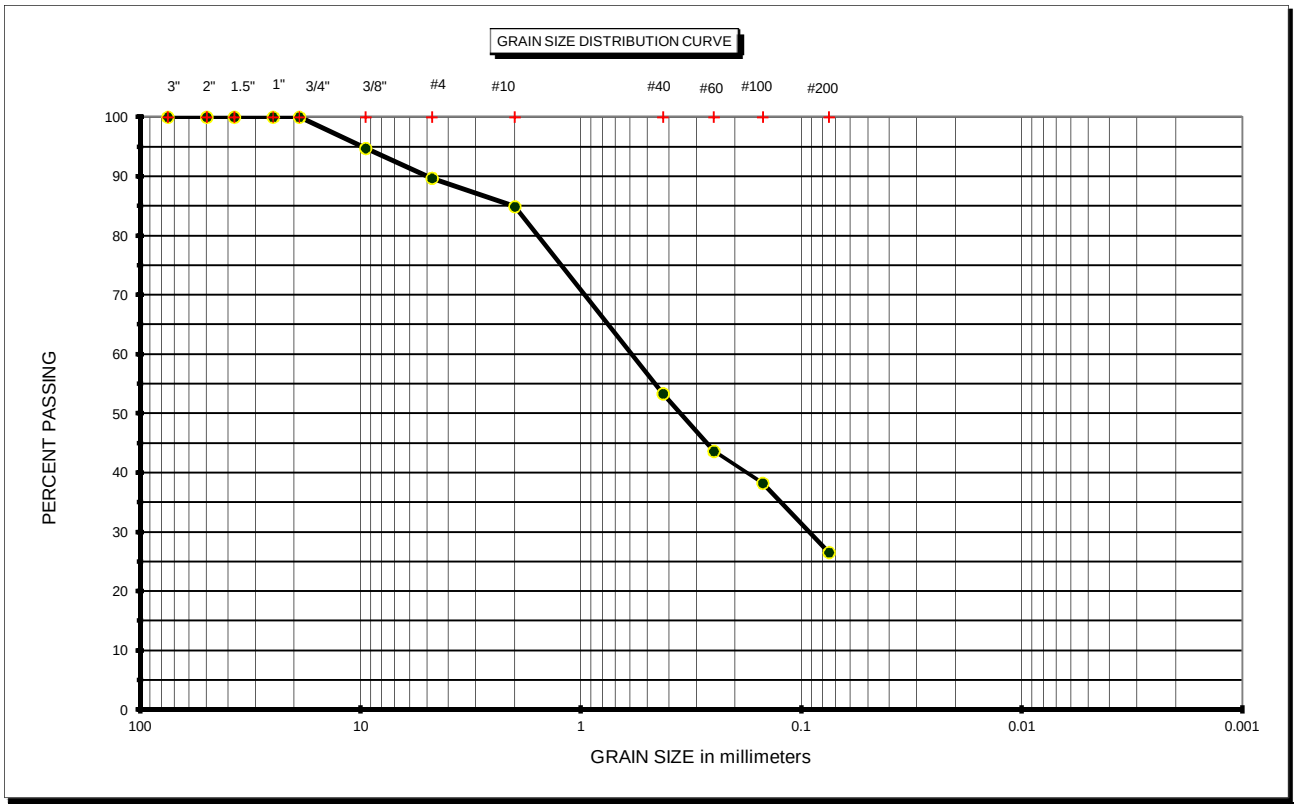
SOIL CLASSIFICATION: ML

ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTIC INDEX	

GRAIN SIZE DATA SHEET

PROJECT NAME: C-139 Annex **DATE:** 7/5/2013

PROJECT #: 7111-13-142



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10 = 20.88
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60) = 0.51
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # B-7 **OFFSET (ft)** **DEPTH (ft):** 4.0 - 6.0

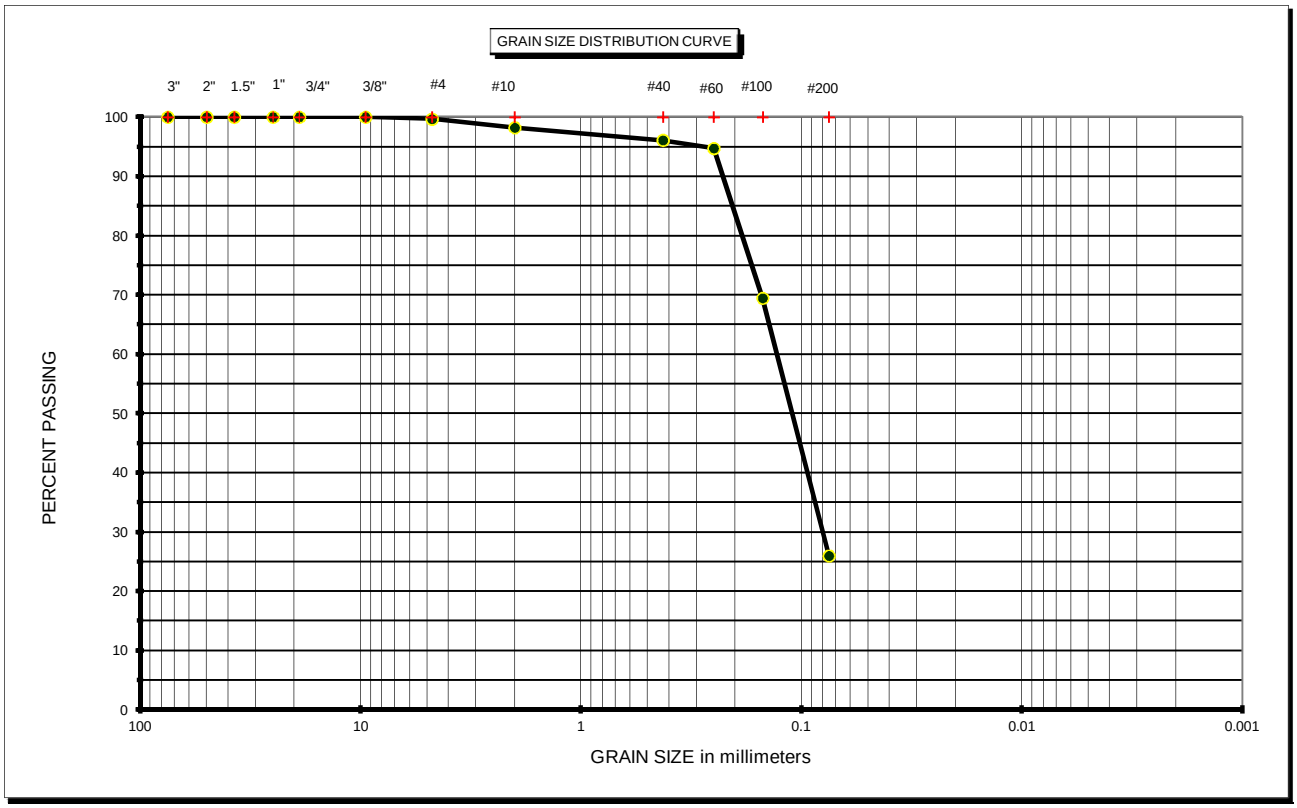
SOIL CLASSIFICATION: SM

ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTIC INDEX	

GRAIN SIZE DATA SHEET

PROJECT NAME: C-139 Annex **DATE:** 7/5/2013

PROJECT #: 7111-13-142



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10 = 2.22
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60) = 0.85
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # B-8 **OFFSET (ft)** **DEPTH (ft):** 23.5 - 25.0

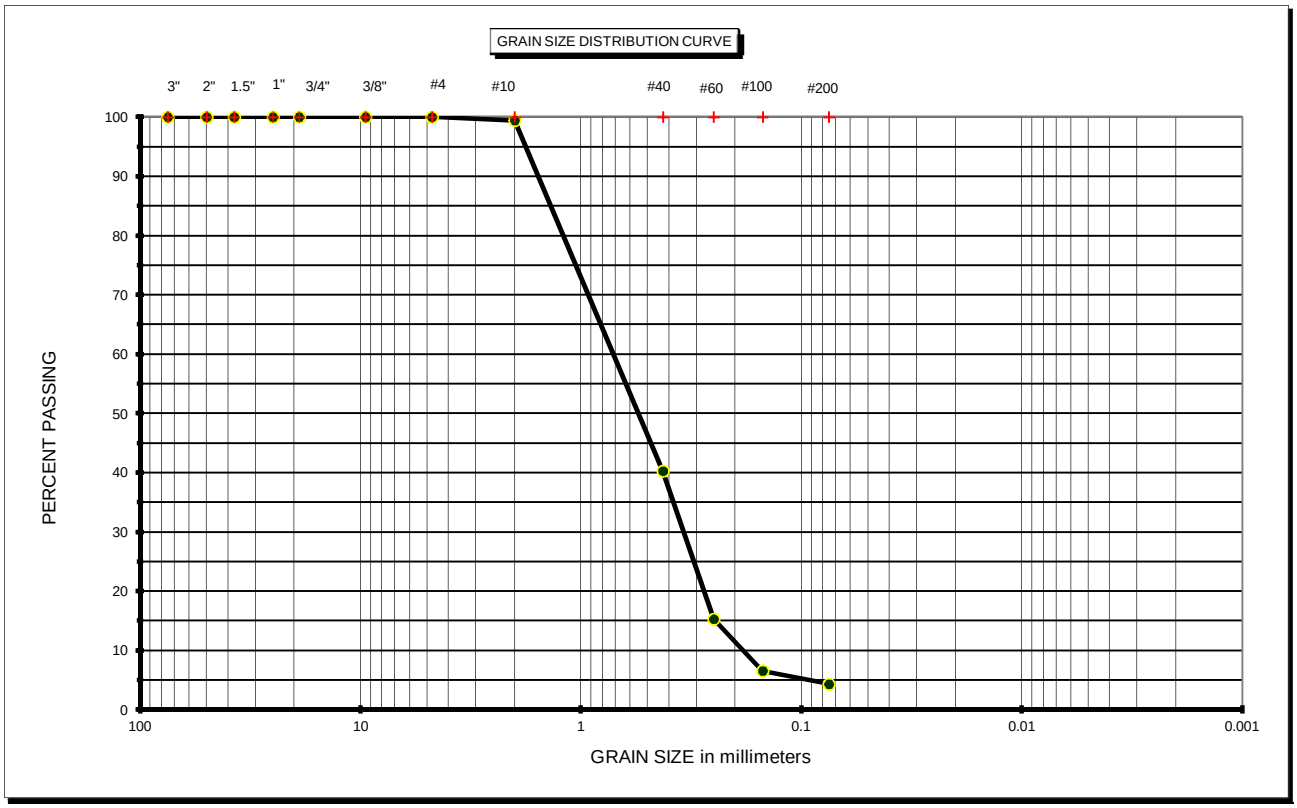
SOIL CLASSIFICATION: SM

ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTIC INDEX	

GRAIN SIZE DATA SHEET

PROJECT NAME: C-139 Annex **DATE:** 8/6/2013

PROJECT #: 7111-13-142



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	#N/A
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	#N/A
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # B-9 **OFFSET (ft)** **DEPTH (ft):** 6.0 - 8.0

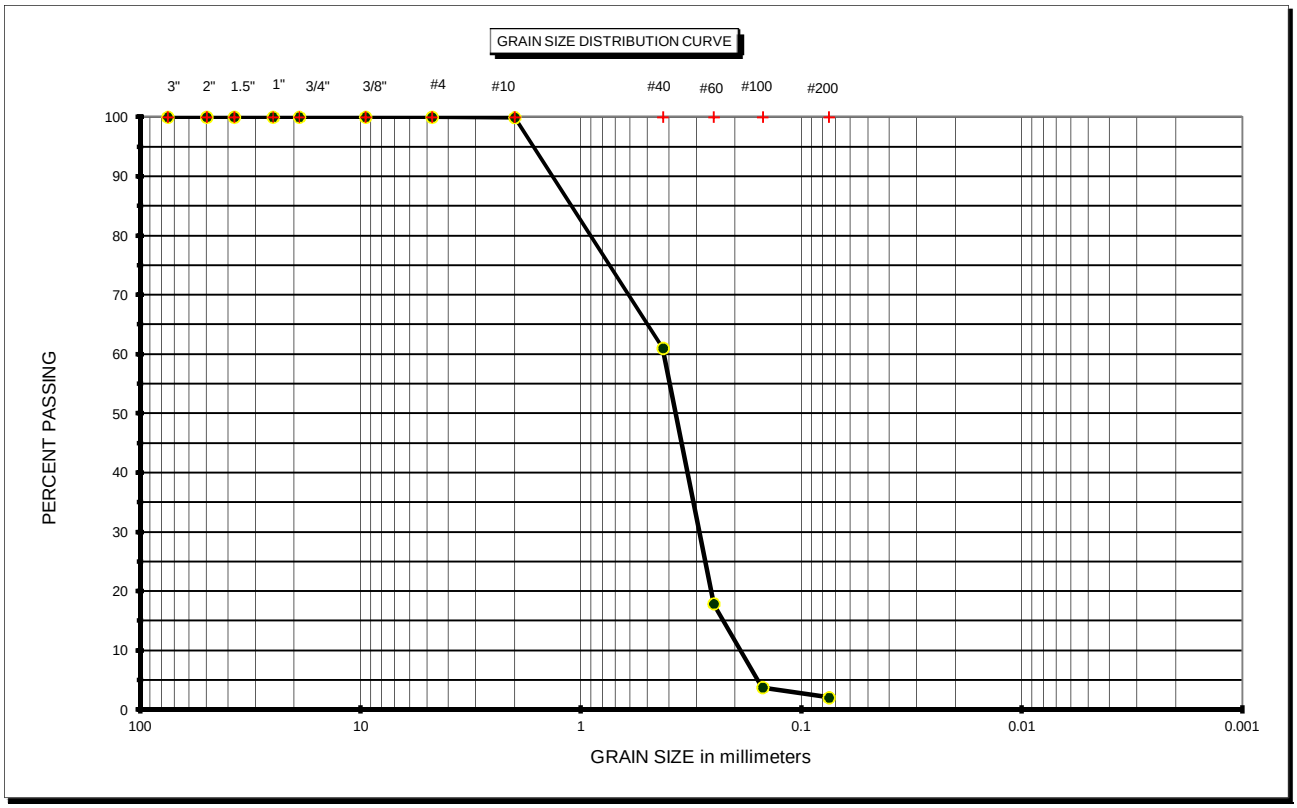
SOIL CLASSIFICATION: SP

ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTIC INDEX	

GRAIN SIZE DATA SHEET

PROJECT NAME: C-139 Annex **DATE:** 8/6/2013

PROJECT #: 7111-13-142



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	#N/A
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	#N/A
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # B-9 **OFFSET (ft)** **DEPTH (ft):** 42.0 - 44.0

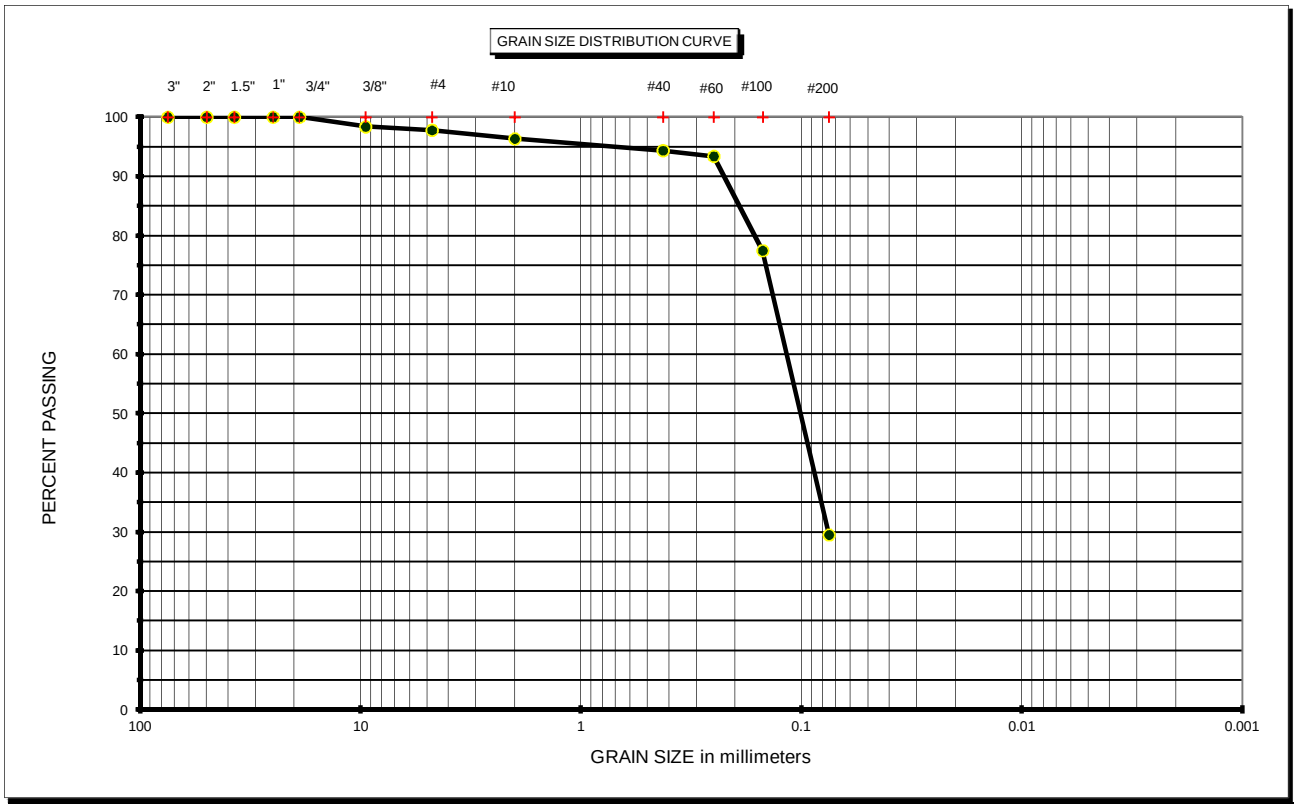
SOIL CLASSIFICATION: SP

ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTIC INDEX	

GRAIN SIZE DATA SHEET

PROJECT NAME: C-139 Annex **DATE:** 8/6/2013

PROJECT #: 7111-13-142



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	#N/A
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	#N/A
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # B-10 **OFFSET (ft)** **DEPTH (ft):** 2.0 - 4.0

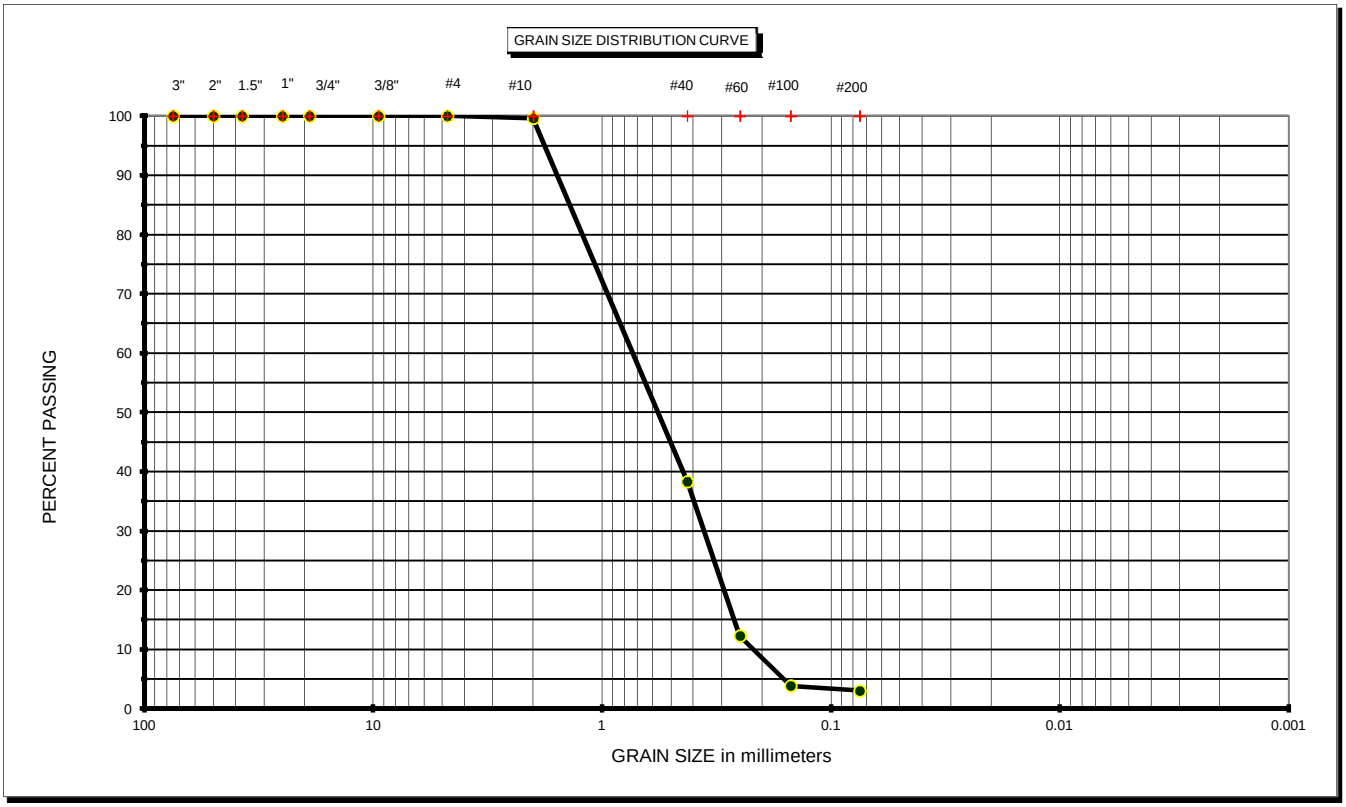
SOIL CLASSIFICATION: SM

ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTIC INDEX	

GRAIN SIZE DATA SHEET

PROJECT NAME: C-139 Annex Restauration **DATE:** 6/20/2014

PROJECT #: 7111-13-142



ASTM D 2487 Classification of Soil for Engineering Purposes			**Coarse Sand**	**< #4 and > #10**	**Cu = D_{60} / D_{10}**
Coarse Gravel	**< 3" and > 3/4"**		**Medium Sand**	**< #10 and > #40**	**Cc = $(D_{30})^2$ / (D_{10} x D_{60})**
Fine Gravel	**< 3/4" and > #4**		**Fine Sand**	**< #40 and > #200**	

BORING # W-22A **OFFSET (ft)** **DEPTH (ft):** 8.0-10.0

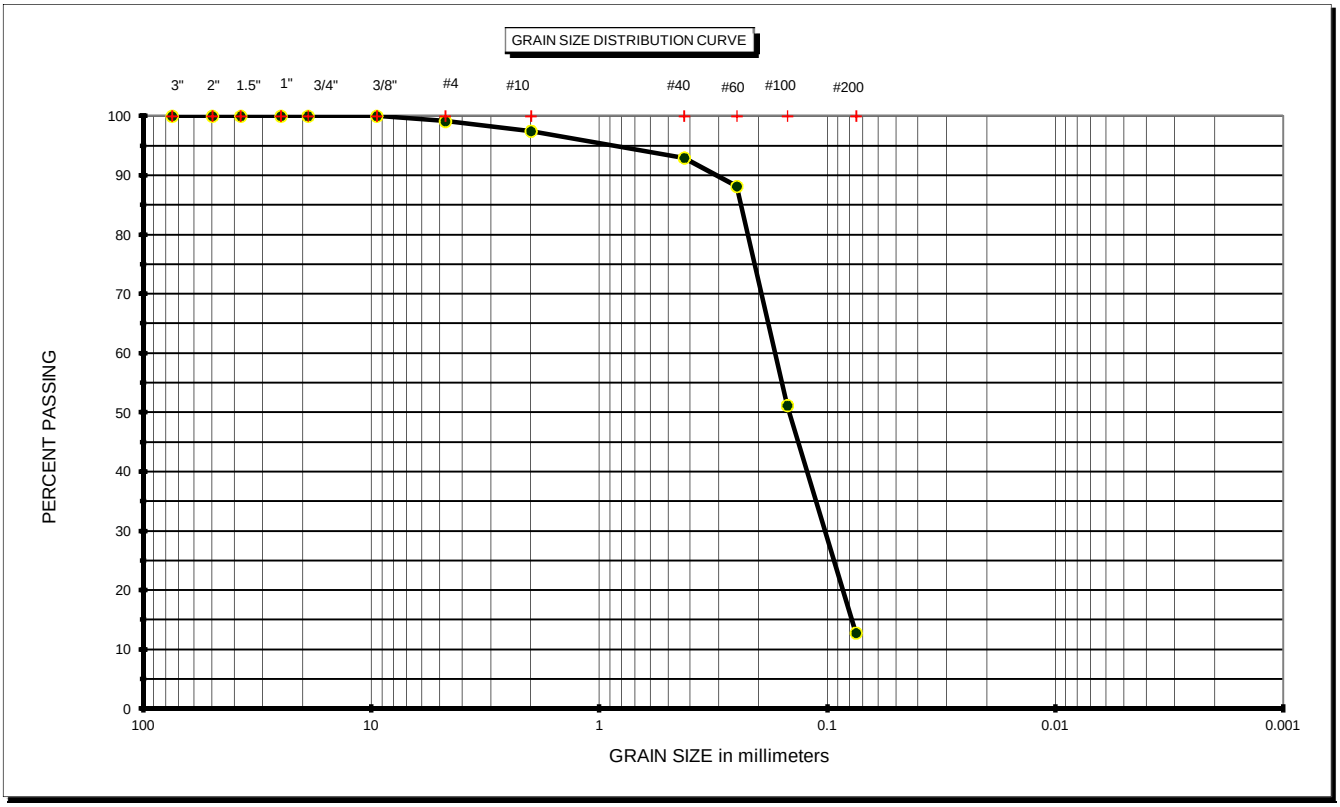
SOIL CLASSIFICATION: SP

ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTIC INDEX	

GRAIN SIZE DATA SHEET

PROJECT NAME: C-139 Annex Restauration **DATE:** 6/20/2014

PROJECT #: 7111-13-142



ASTM D 2487 Classification of Soil for Engineering Purposes			**Coarse Sand**	**< #4 and > #10**	**Cu = D_{60} / D_{10}**
Coarse Gravel	**< 3" and > 3/4"**		**Medium Sand**	**< #10 and > #40**	**Cc = $(D_{30})^2$ / (D_{10} x D_{60})**
Fine Gravel	**< 3/4" and > #4**		**Fine Sand**	**< #40 and > #200**	

BORING # W-22A **OFFSET (ft)** **DEPTH (ft):** 20-21

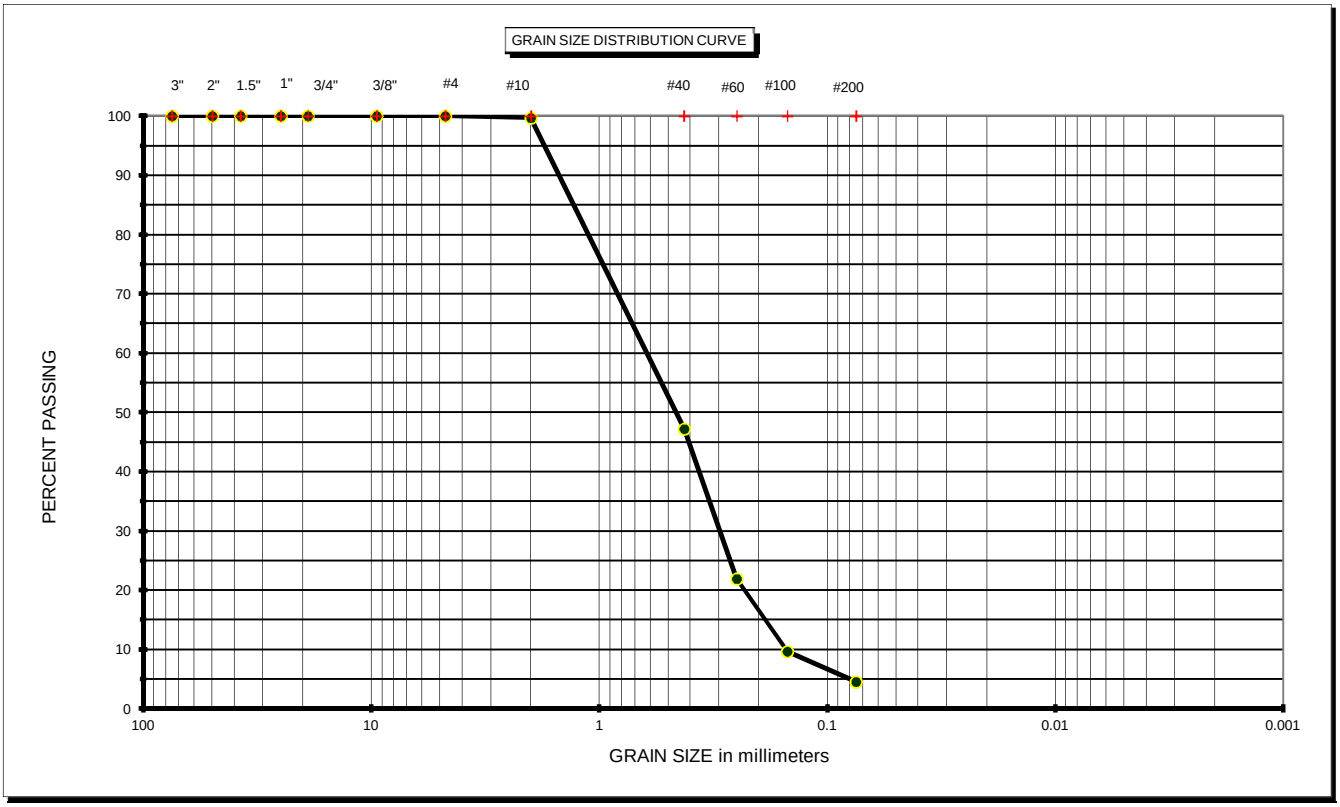
SOIL CLASSIFICATION: SM

ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTIC INDEX	

GRAIN SIZE DATA SHEET

PROJECT NAME: C-139 Annex Restauration **DATE:** 6/20/2014

PROJECT #: 7111-13-142



ASTM D 2487 Classification of Soil for Engineering Purposes			**Coarse Sand**	**< #4 and > #10**	**Cu = D_{60} / D_{10}**
Coarse Gravel	**< 3" and > 3/4"**		**Medium Sand**	**< #10 and > #40**	**Cc = $(D_{30})^2$ / (D_{10} x D_{60})**
Fine Gravel	**< 3/4" and > #4**		**Fine Sand**	**< #40 and > #200**	

BORING # W-23A **OFFSET (ft)** **DEPTH (ft):** 0.3-2.0

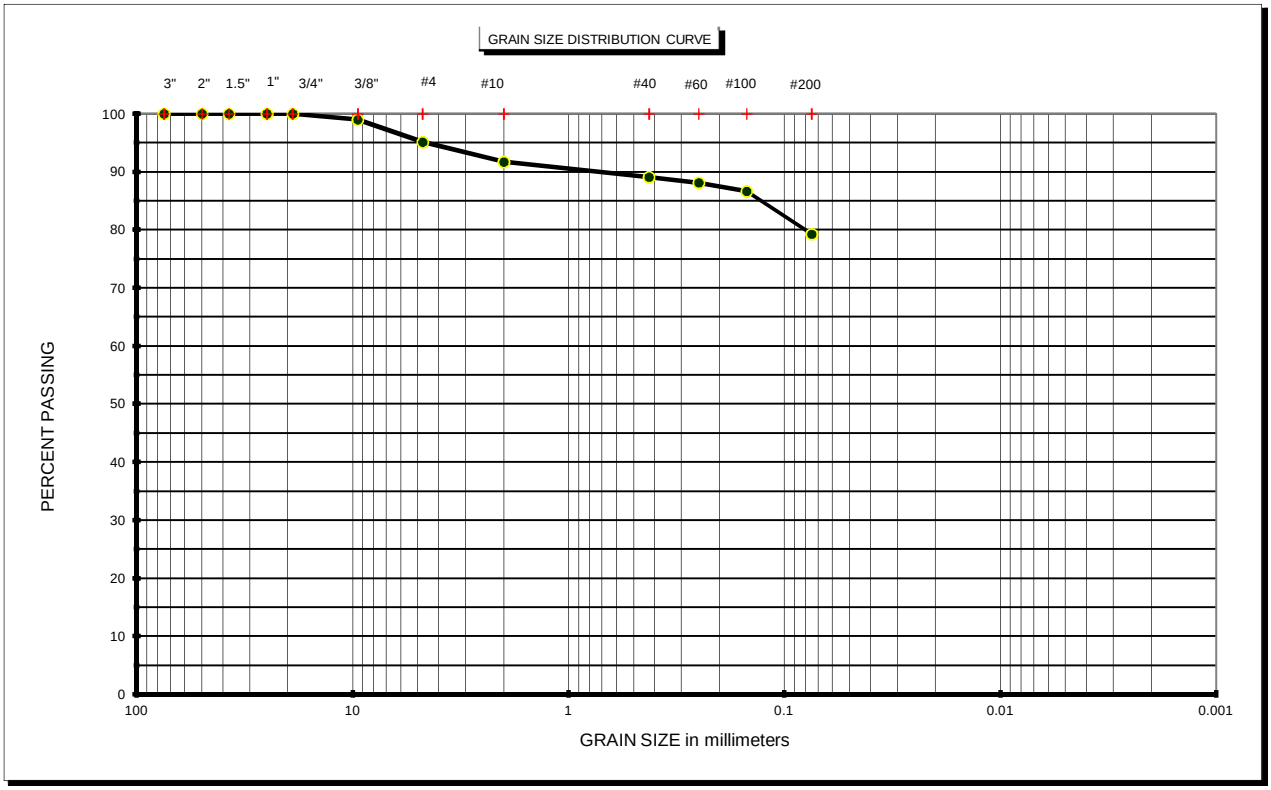
SOIL CLASSIFICATION: SP

ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTIC INDEX	

GRAIN SIZE DATA SHEET

PROJECT NAME: C-139 Annex Restauration **DATE:** 6/20/2014

PROJECT #: 7111-13-142



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	$Cu = D_{60} / D_{10}$
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	$Cc = (D_{30})^2 / (D_{10} \times D_{60})$
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # W-23A **OFFSET (ft)** **DEPTH (ft):** 6.0-8.0

SOIL CLASSIFICATION: CL

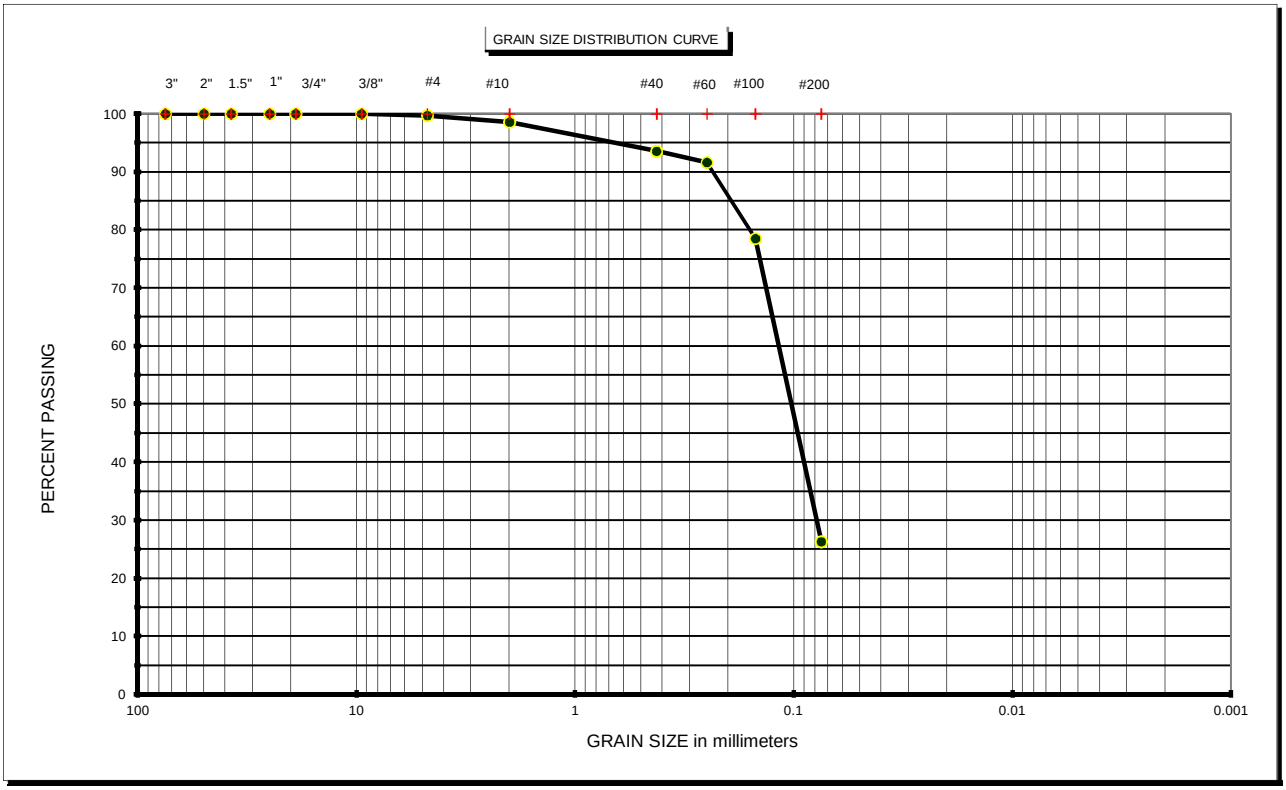
ATTERBERG LIMIT (- #40 Material)

LIQUID LIMIT	
PLASTIC LIMIT	
PLASTIC INDEX	

GRAIN SIZE DATA SHEET

PROJECT NAME: C-139 Annex Restauration **DATE:** 6/20/2014

PROJECT #: 7111-13-142

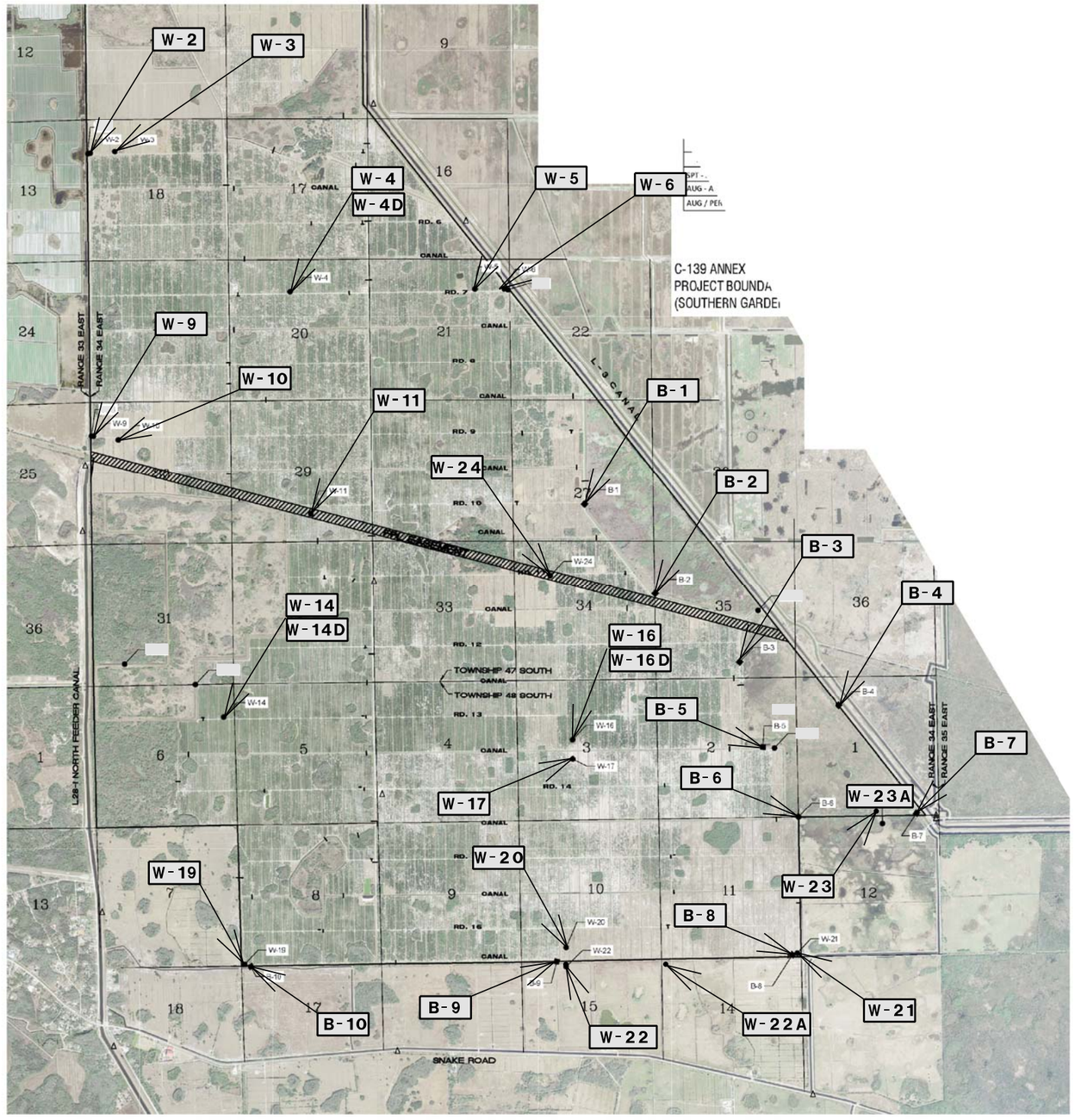


ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D_{60} / D_{10}
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = $(D_{30})^2$ / (D_{10} x D_{60})
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # W-23A **OFFSET (ft)** **DEPTH (ft):** 20-22

SOIL CLASSIFICATION: SM

ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	
PLASTIC LIMIT	
PLASTIC INDEX	



NTS

N

BORING AND MONITORING WELL LOCATION PLAN

DRAWN BY: NG CHECKED BY: JO	APPROVED BY: RK DATE: 07-29-2013	ENGINEER OF RECORD: RAJ KRISHNASAMY, P.E. FLORIDA LICENSE NO.: 53567	RAJ KRISHNASAMY, P.E. P.E. LICENSE NUMBER 53567 TIERRA SOUTH FLORIDA 2765 VISTA PARKWAY, S-10 WEST PALM BEACH, FL 33411 CERTIFICATE OF AUTHORIZATION 28073	SCALE: NTS	PROJECT NUMBER: 7111-13-142	GEOTECHNICAL ENGINEERING SERVICES C-139 ANNEX RESTORATION S.F.W.M.D HENDRY COUNTY,FLORIDA	Sheet: xx

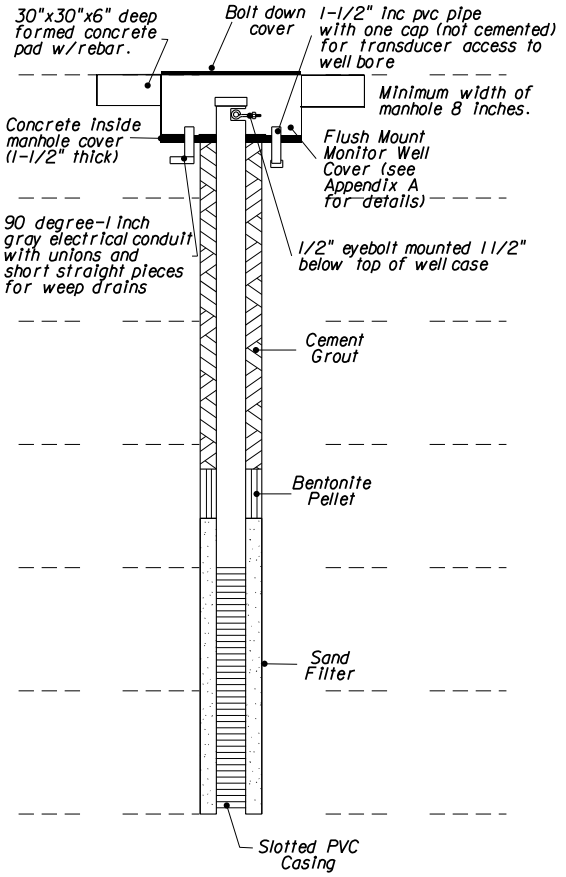
jolva 7/8/2014 11:49:10 AM J:\Tierra Documents\Projects\TSF 2013\7111-13-142.C-139 Annex Restoration (SFWMD)\geotech\BIBORING.dgn

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-2
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/5/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 751143.17
Easting: 663146.31
County: Hendry



Depth Feet	Static Water Level	Water Level During Pumping	Blow Counts (N)	Soils Description
0			7	TOPSOIL
	▽		14	
-5			17	DARK BROWN / LIGHT BROWN / LIGHT GRAY SAND (SP)
			12	
-10			17	
			12	LIGHT BROWN SLIGHTLY SILTY SAND (SP/SP-SM)
-15			16	
			14	
			20	LIGHT BROWN SAND (SP)
-20			17	
			15	
-25			17	LIGHT BROWN SLIGHTLY SILTY SAND (SP/SP-SM)
			16	
		▽	18	LIGHT BROWN SAND WITH SHELL FRAGMENTS (SP)
-30			7	
-35				
-40				

Well Contruction Details / Notes:

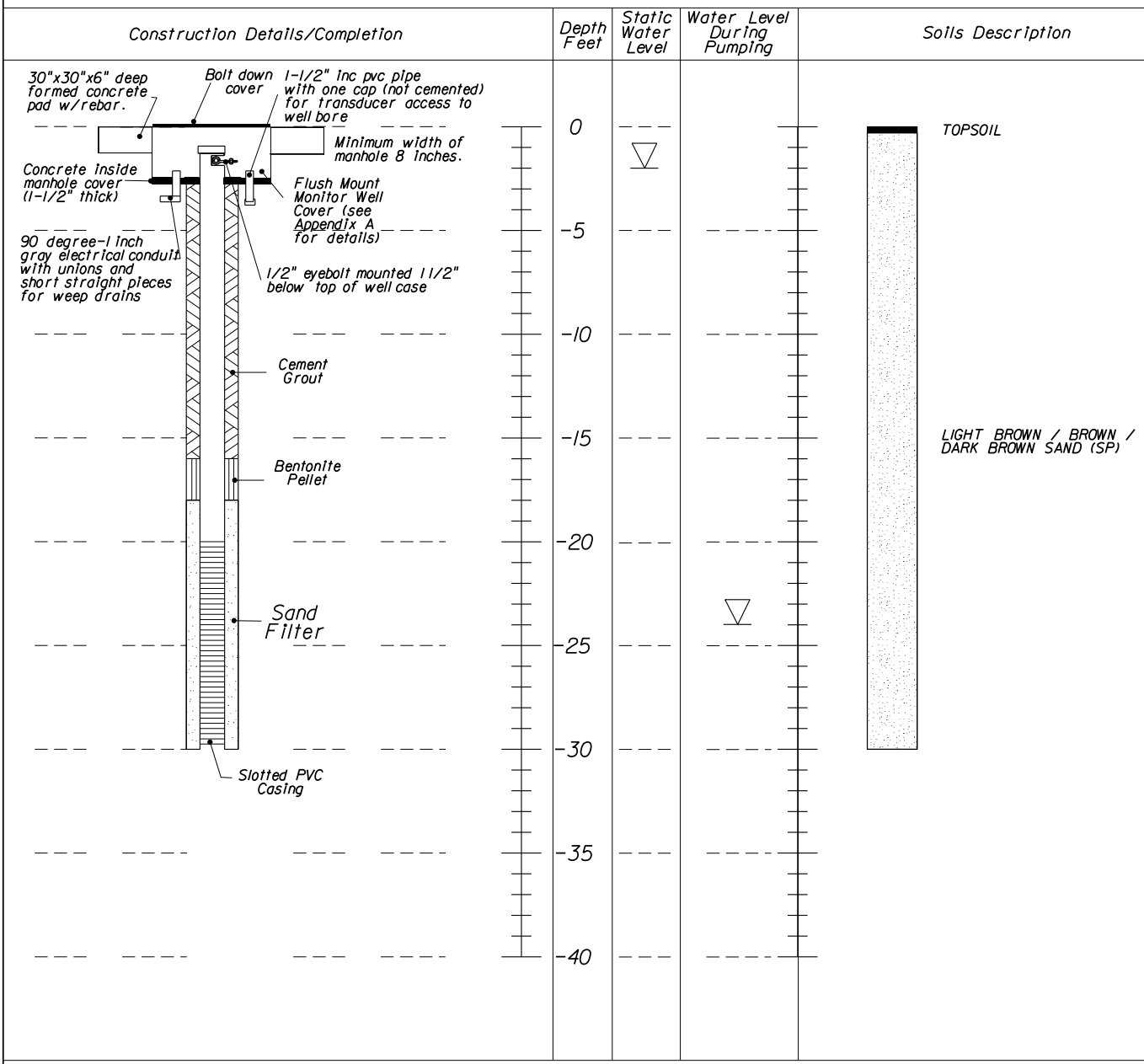
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-3
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/5/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 751203.67
Easting: 664067.4
County: Hendry



Well Contruction Details / Notes:

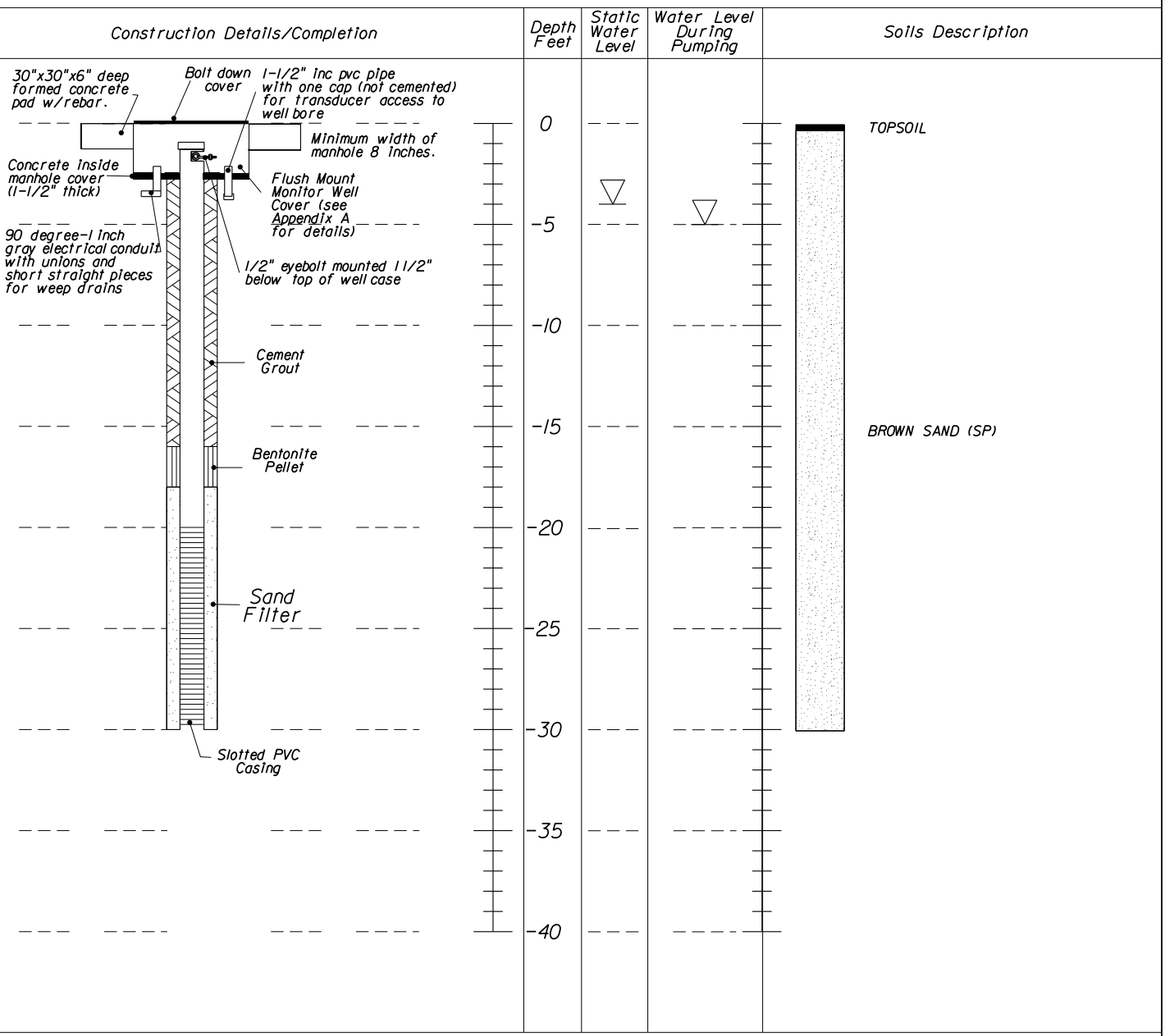
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-4
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/7/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 745932.85
Easting: 670674.72
County: Hendry



Well Contruction Details / Notes:

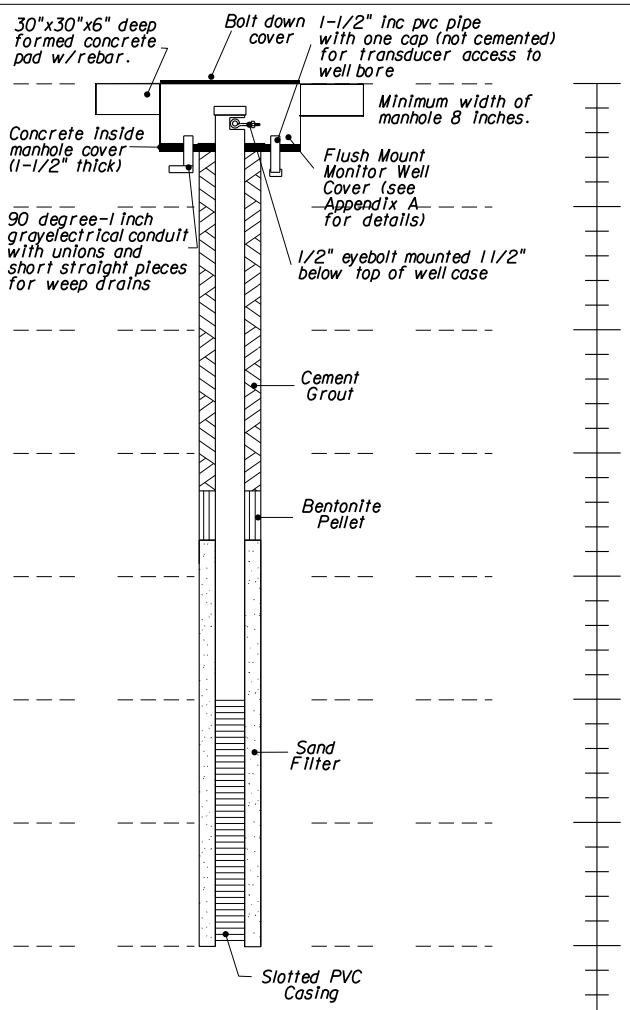
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-4D
Project Site: Annex-C-139
Boring Depth (ft): 100 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/29/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 745932.85
Easting: 670674.72
County: Hendry



Depth Feet	Static Water Level	Water Level During Pumping	Blow Counts (N)	Soils Description
0			12 13 9 17 21	TOPSOIL
-10			14 14 18 18 19 16 10 9	BROWN TO LIGHT BROWN SAND (SP)
-20			15 15 20 14 14 15 32 28	
-30			16 27 23 31 19 31	LIGHT GRAY WEAKLY CEMENTED LIMESTONE WITH SHELL FRAGMENTS
-40			25 27 26 23 19 29 31	
-50			46 38 41 41 33 25	
-60			29 25 28 35 26 39 31	LIGHT GRAY MODERATELY CEMENTED LIMESTONE WITH SHELL FRAGMENTS
-100			31 34 31	
-120				

Well Contruction Details / Notes:

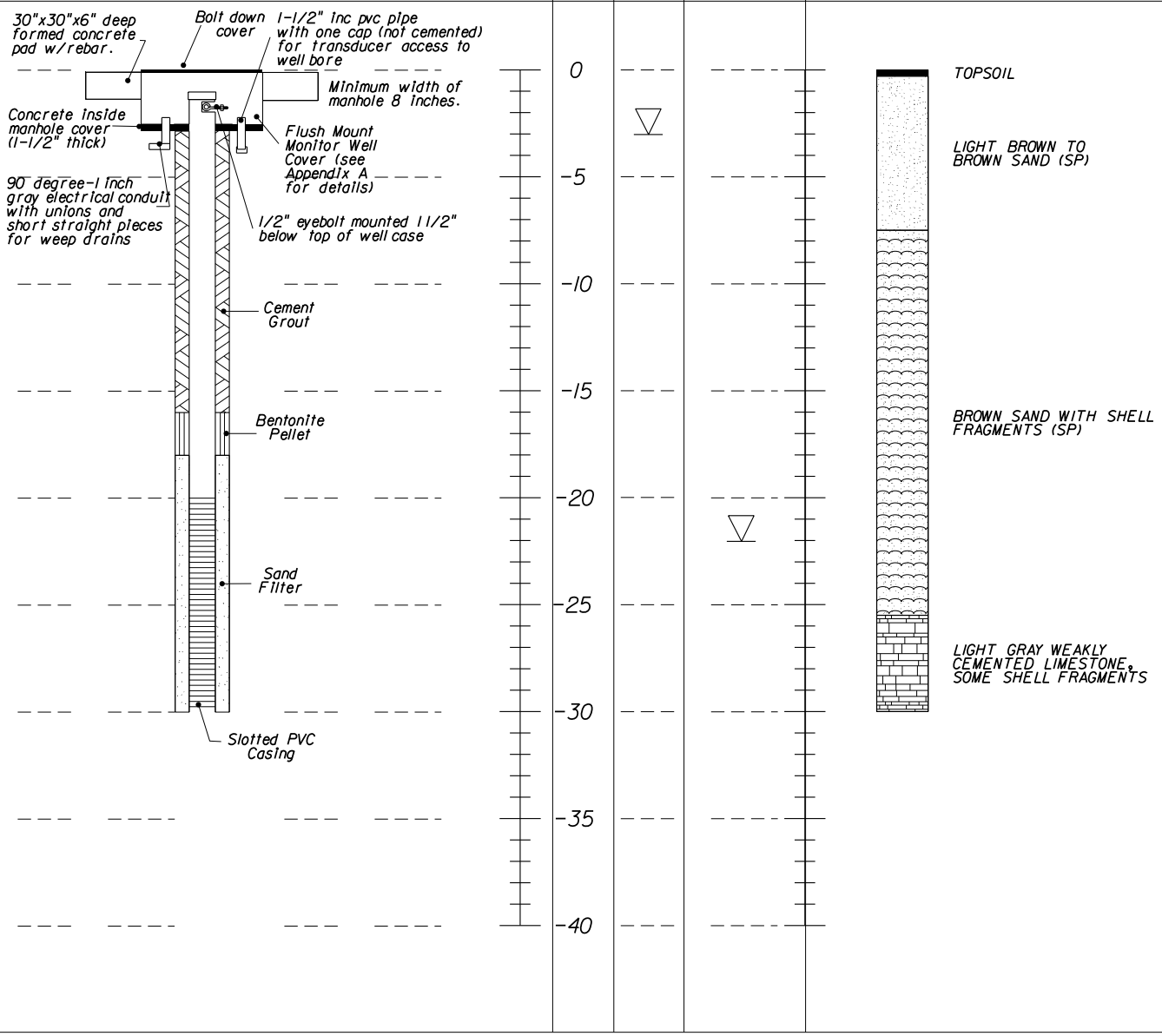
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-5
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/27/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 746036.84
Easting: 677601.16
County: Hendry



Well Contruction Details / Notes:

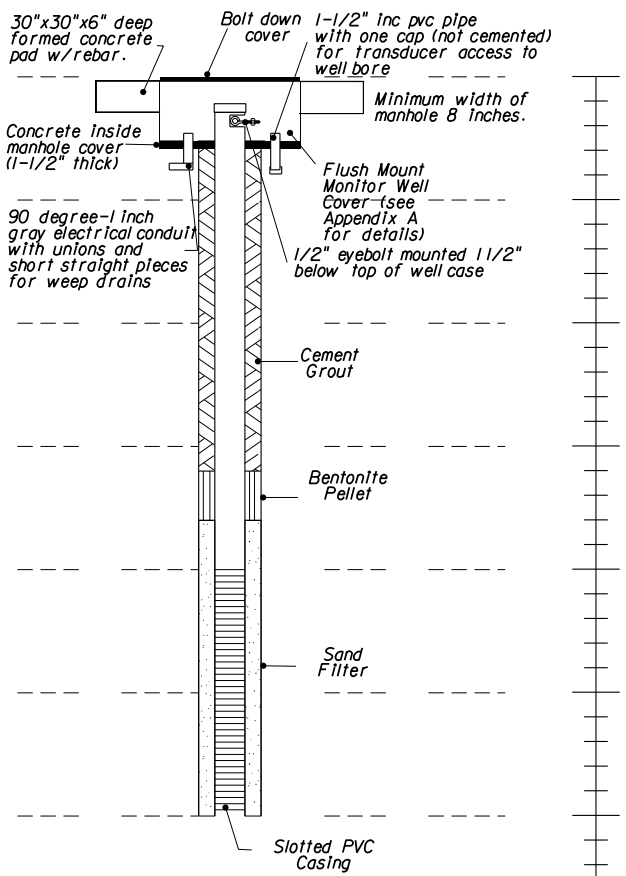
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-6
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/27/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 746041.78
Easting: 678711.59
County: Hendry

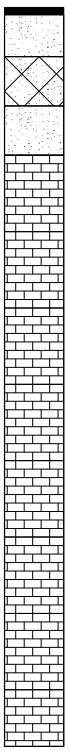


Depth Feet
0
-5
-10
-15
-20
-25
-30
-35
-40

Static Water Level

Water Level During Pumping

Soils Description



TOPSOIL
LIGHT BROWN TO BROWN SAND (SP)
DARK BROWN ORGANIC CEMENTED SAND (OL)
LIGHT BROWN TO BROWN SAND (SP)
VERY PALE BROWN LIMESTONE

Well Contruction Details / Notes:

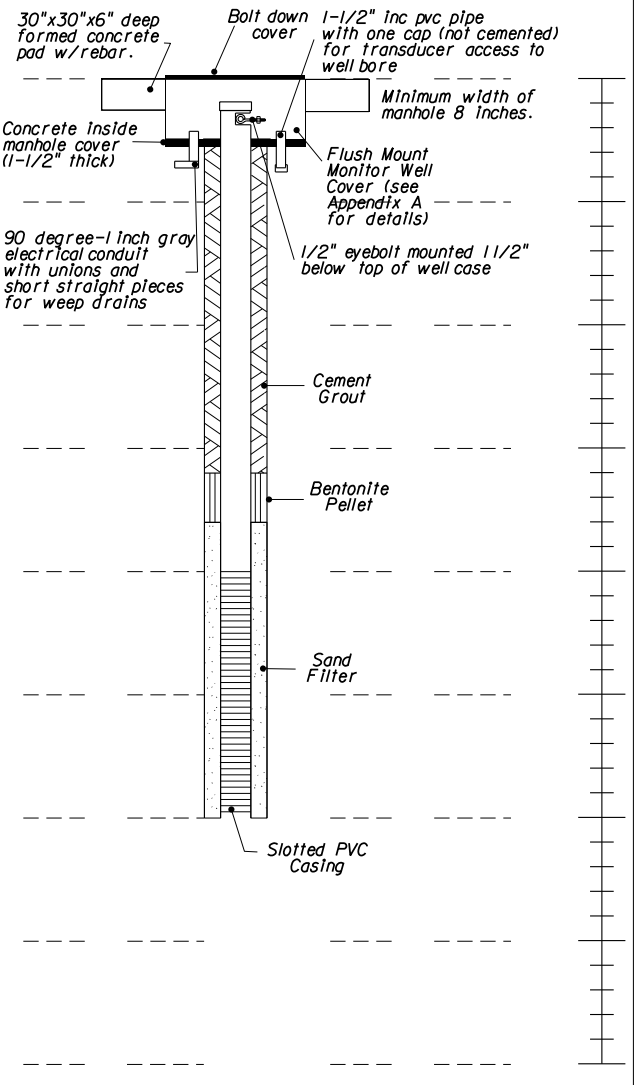
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-9
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/9/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 740499.18
Easting: 663262.34
County: Hendry



Depth Feet	Static Water Level	Water Level During Pumping	Blow Counts (N)	Soils Description
0				
			10	TOPSOIL
			15	
-5	▽		25	
		▽	24	
			29	BROWN TO LIGHT BROWN SAND (SP)
-10			21	
			14	
-15			38	
			5	
-20			7	
			4	LIGHT GRAY SAND WITH SILT (SP/SM)
			2	
-25			8	
			2	GRAY LIMESTONE, WEAKLY CEMENTED, SHELL FRAGMENTS
			6	
-30				
-35				
-40				

Sample @ 10' to 12'
MC=21
OC=3

Well Contruction Details / Notes:

Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-10

Project Site: Annex-C-139

Boring Depth (ft): 30 Feet

Boring Diameter (in): 5 3/4"

Drilling Method: Auger

Well Contractor Name: TSF / Jose Oliva

License Number: 11346

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

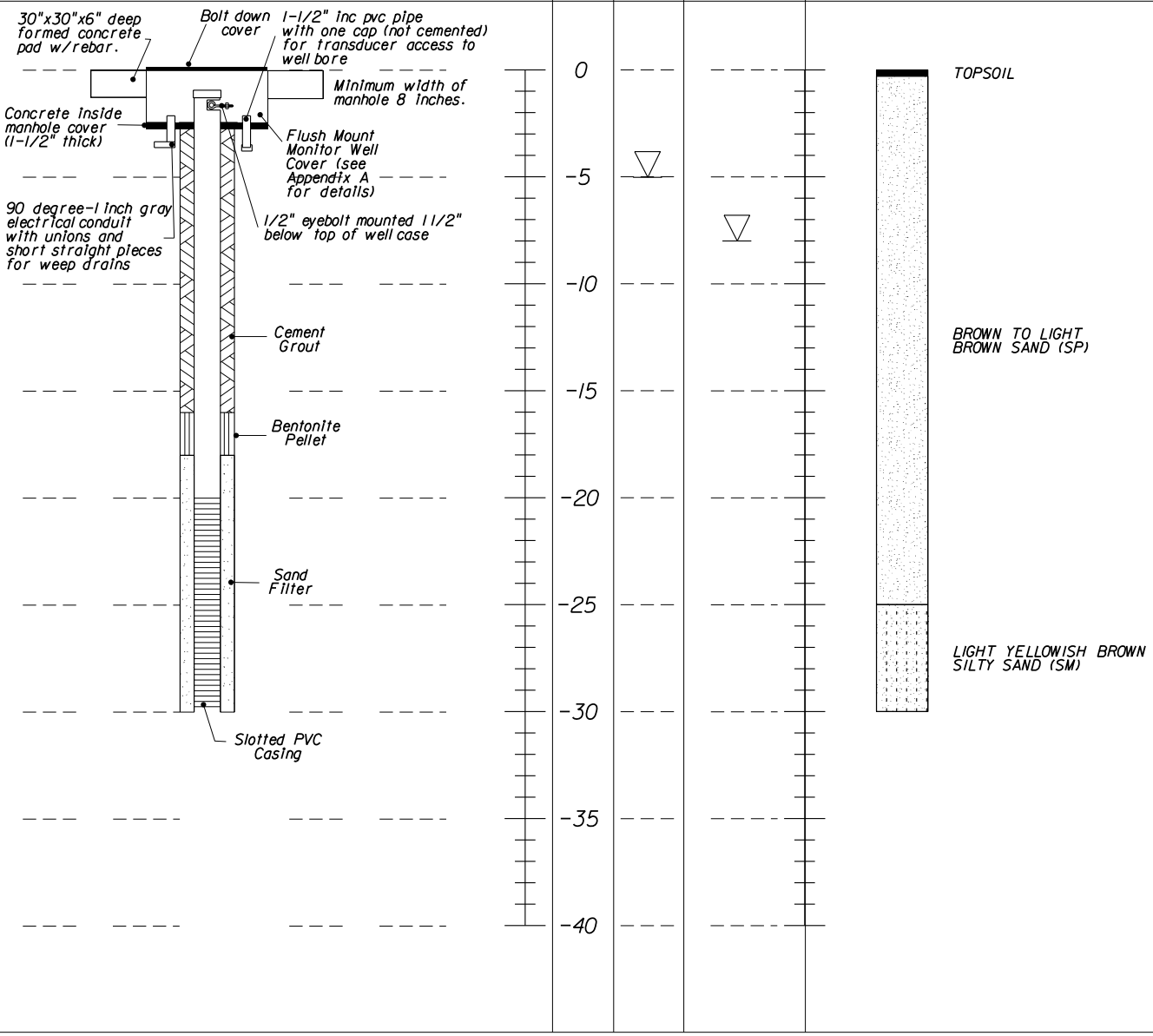
Date (Start / Finish): 7/9/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 740357.23

Easting: 664196.47

County: Hendry



Well Contruction Details / Notes:

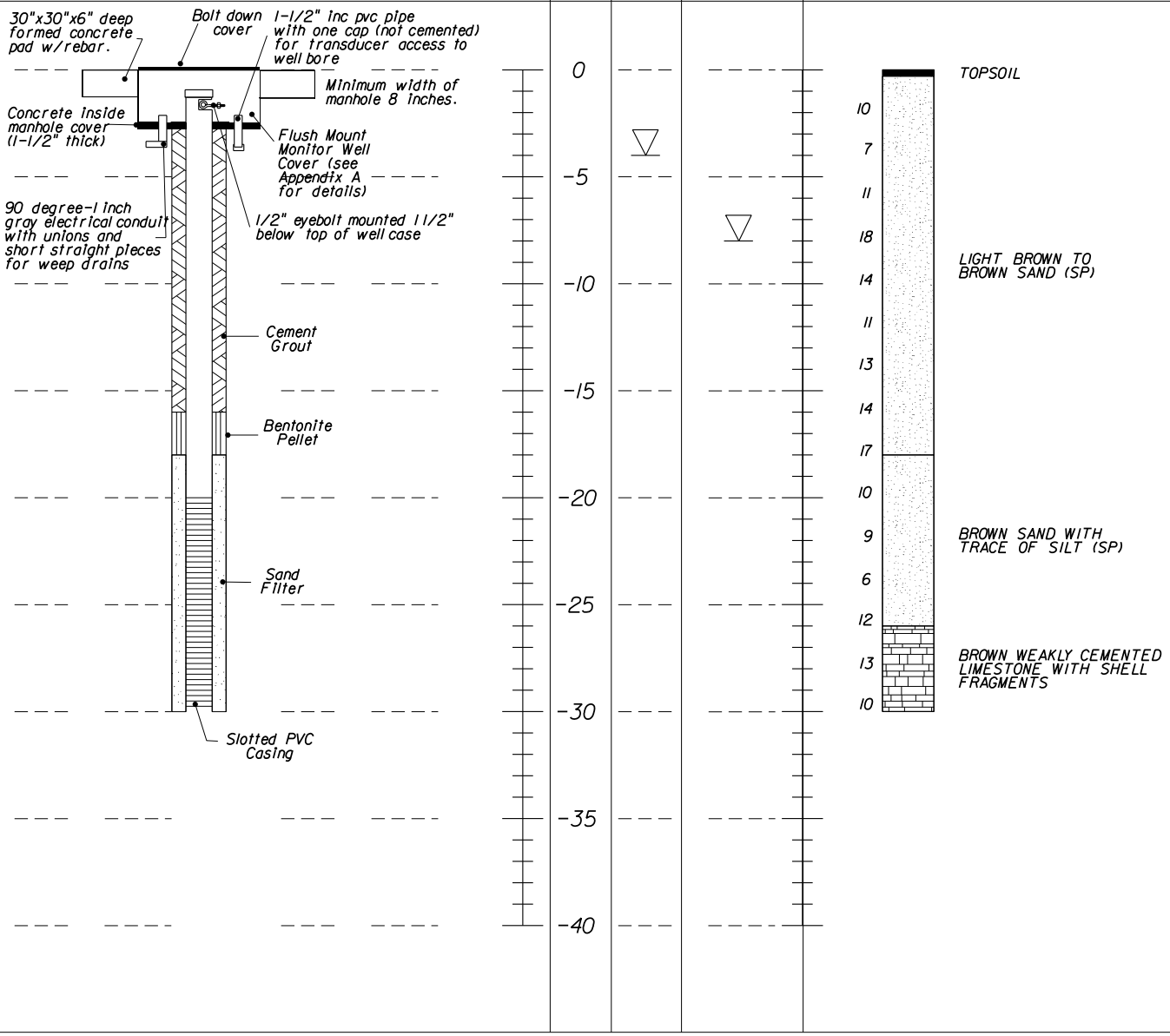
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-11
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/23/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 737591.62
Easting: 671445.13
County: Hendry



Well Contruction Details / Notes:

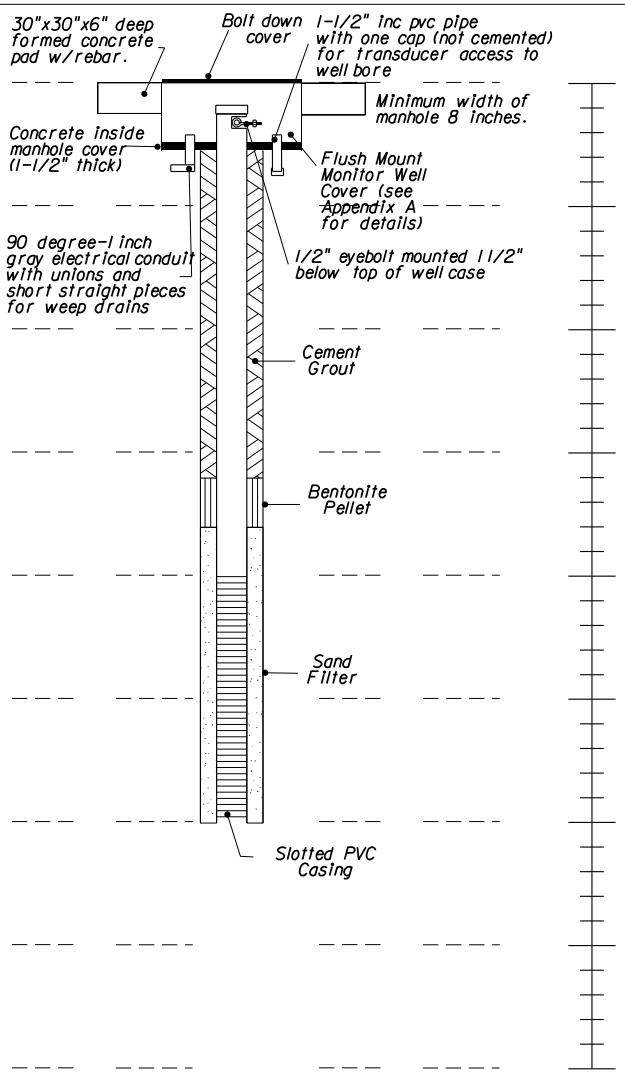
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sands; 1/4" coated bentonite pellets; portland cement

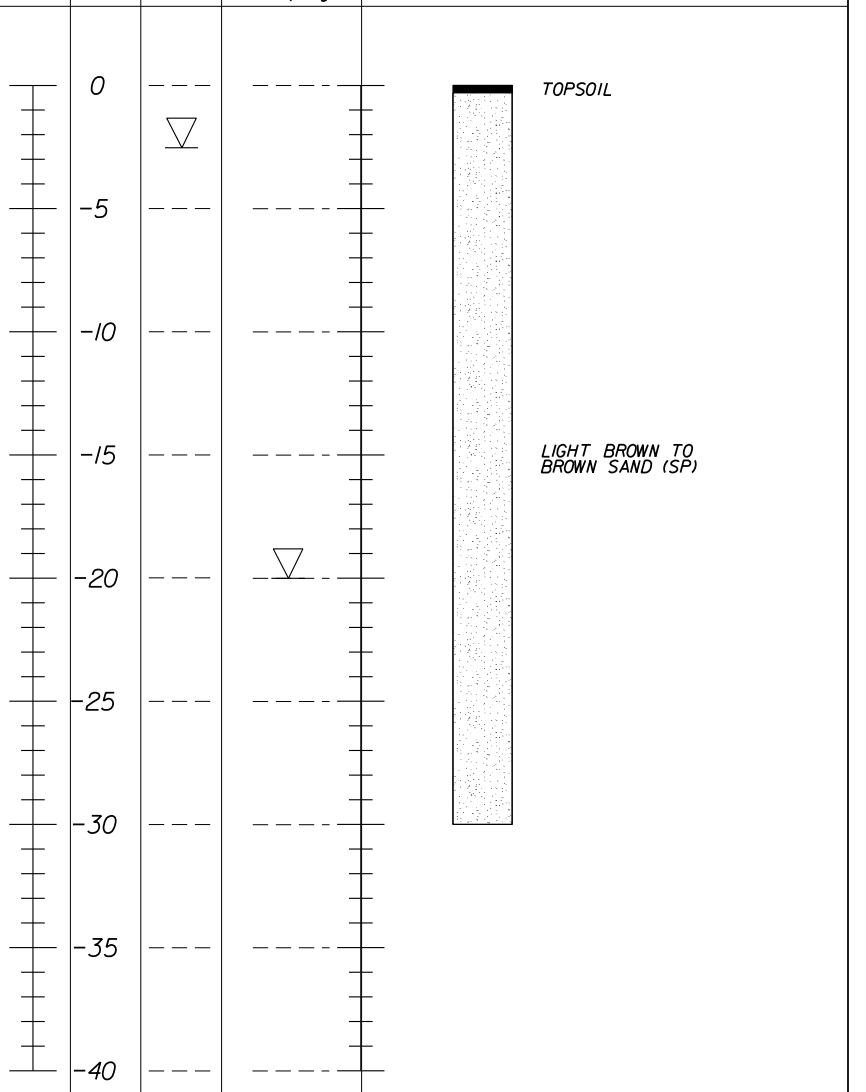
Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-14
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/22/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 729938.48
Easting: 668171.28
County: Hendry





Well Contruction Details / Notes:

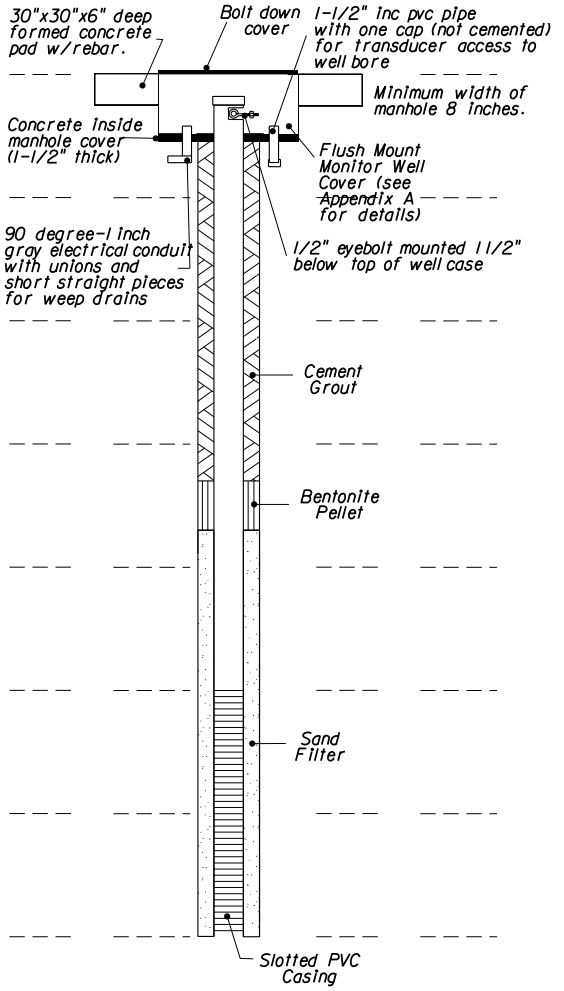
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-14D
Project Site: Annex-C-139
Boring Depth (ft): 100 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/31/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 729938.48
Easting: 668171.28
County: Hendry



Depth Feet	Static Water Level	Water Level During Pumping	Blow Counts (N)	Soils Description
0	▽		9, 9, 8, 12, 16, 17	TOPSOIL DARK BROWN ORGANIC STAINED SAND (SP)
-10		▽	17, 30, 29, 39, 36, 36, 25	LIGHT BROWN SAND (SP)
-20			25, 3, 12, 7, 7, 11	
-30			6, 5, 10, 2, 3, 3	GRAY / DARK GRAY SILTY SAND (SM)
-40			16, 13, 41, 34, 17, 23	
-50			24, 23, 24, 27, 26, 23	LIGHT GRAY SANDY LIMESTONE, WEAKLY CEMENTED, SHELL FRAGMENTS
-60			25, 24, 22, 28, 33, 37	
-100			47, 39, 36, 39, 39, 46, 37	LIGHT GRAY / LIGHT BROWN MODERATELY CEMENTED LIMESTONE, SHELL FRAGMENTS
-120				

Well Contruction Details / Notes:

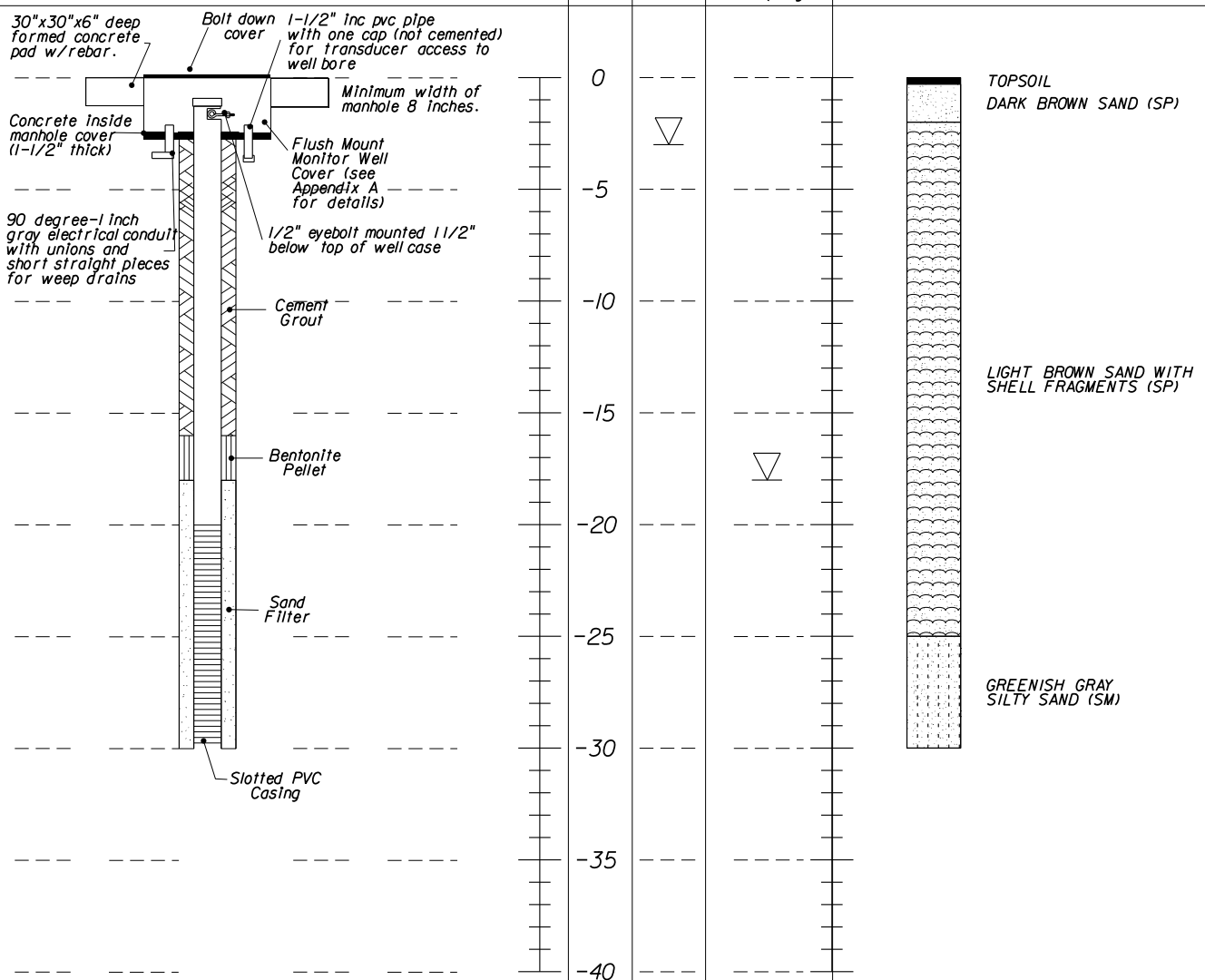
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-16
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/26/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 729086.16
Easting: 681272.2
County: Hendry



Well Contruction Details / Notes:

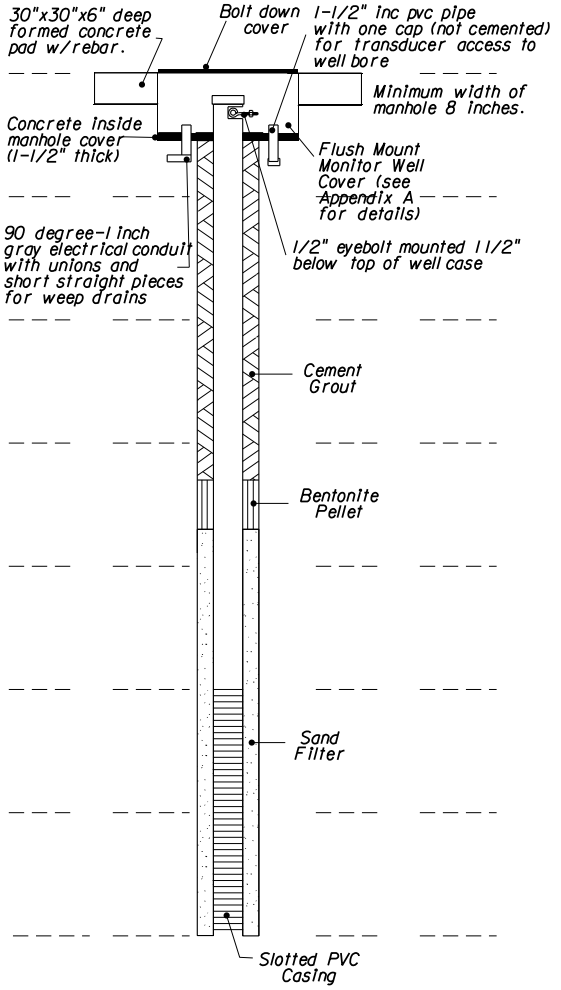
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-16D
Project Site: Annex-C-139
Boring Depth (ft): 100 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 8/6/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 729087.16
Easting: 681272.2
County: Hendry



Depth Feet	Static Water Level	Water Level During Pumping
0	▽	
-10		▽
-20		
-30		
-40		
-50		
-60		
-100		
-120		

Blow Counts (N)	Soils Description
8, 21, 30, 14, 18	TOPSOIL DARK BROWN SAND WITH TRACE OF ORGANIC AND ROOTS (SP)
22, 20, 10, 14	LIGHT GRAY WEAKLY CEMENTED LIMESTONE WITH SHELL FRAGMENTS
8, 8, 8, 5, 6	LIGHT BROWN SAND WITH SHELL FRAGMENTS (SP)
18, 52, 30, 21, 34, 14, 16, 8, 17, 81, 66, 81, 61, 47, 33, 35, 37, 23, 30, 33, 22, 28, 27, 53, 24, 31, 20, 33, 15, 55, 48, 36, 29, 41, 81, 99	LIGHT GRAY SILTY SAND (SM) LIGHT GRAY LIMESTONE WITH SHELL FRAGMENTS

Well Contruction Details / Notes:

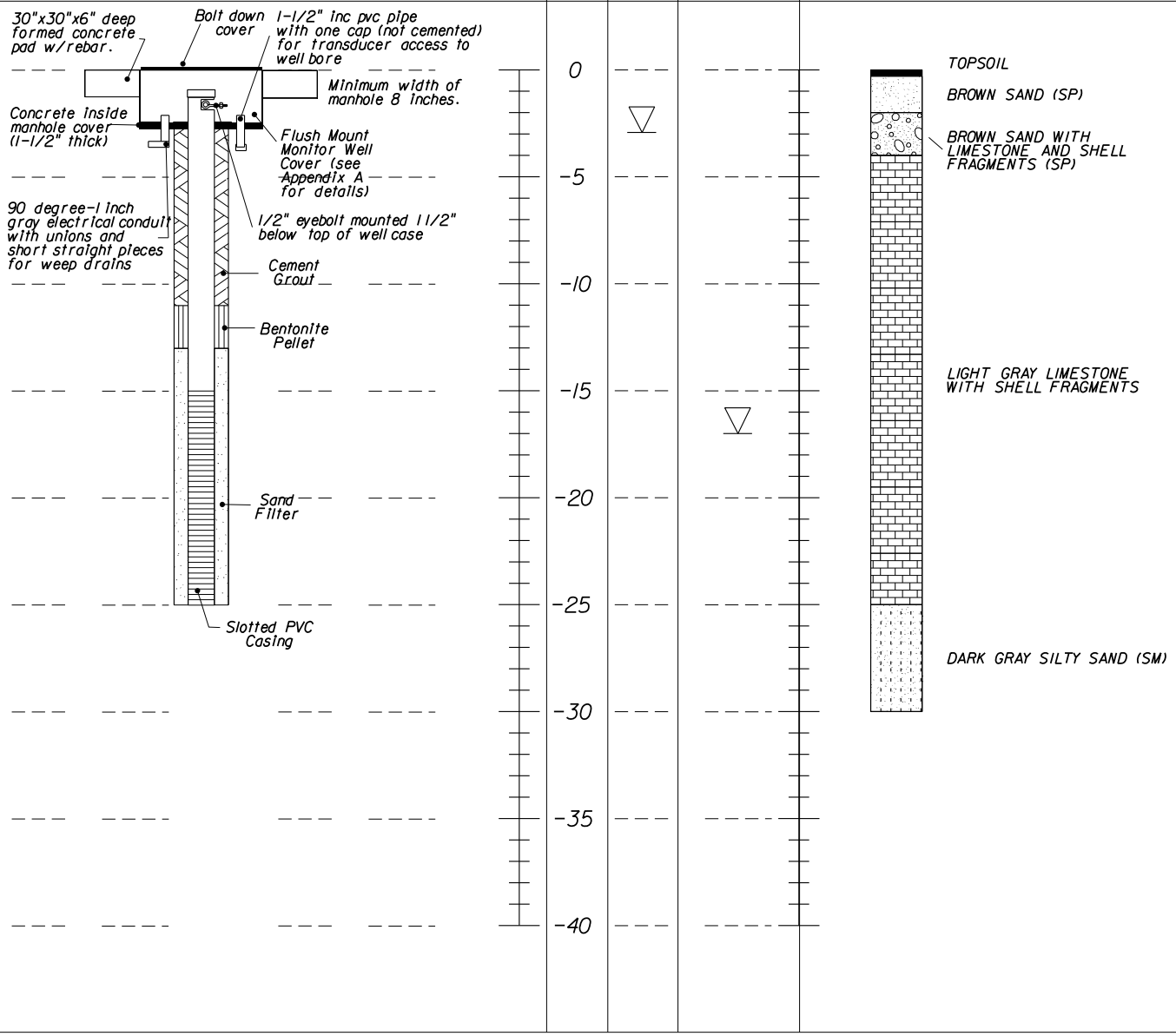
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-17
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/26/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 728381.3
Easting: 681279.17
County: Hendry



Well Contruction Details / Notes:

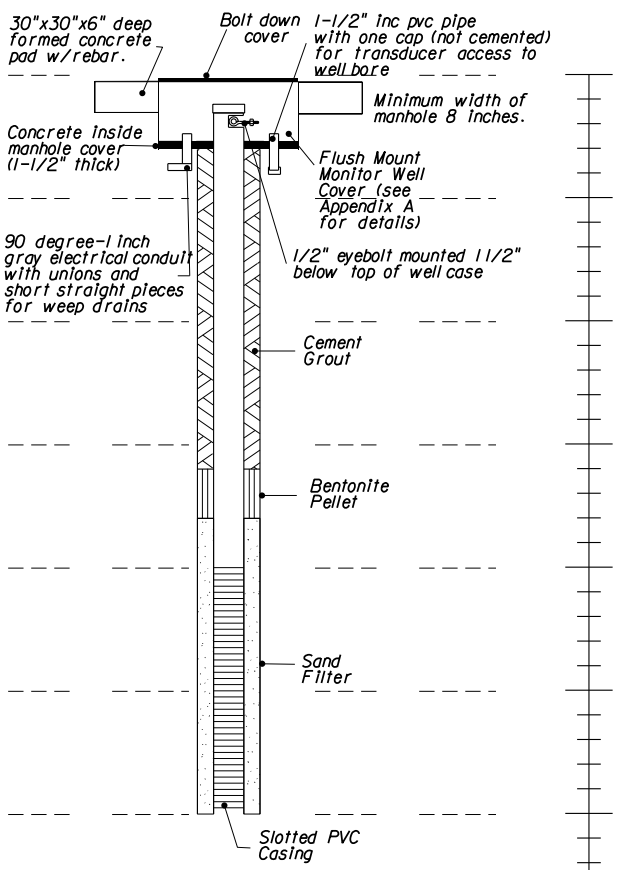
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-19
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/21/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 720646.9
Easting: 668955.49
County: Hendry



Depth Feet	Static Water Level	Water Level During Pumping	Soils Description
0			TOPSOIL
-5	▽		GRAY TO BROWN SAND (SP)
-10		▽	
-15			
-20			LIGHT GRAY WEAKLY CEMENTED SAND WITH SHELL FRAGMENTS (SP)
-25			
-30			
-35			
-40			

Well Contruction Details / Notes:

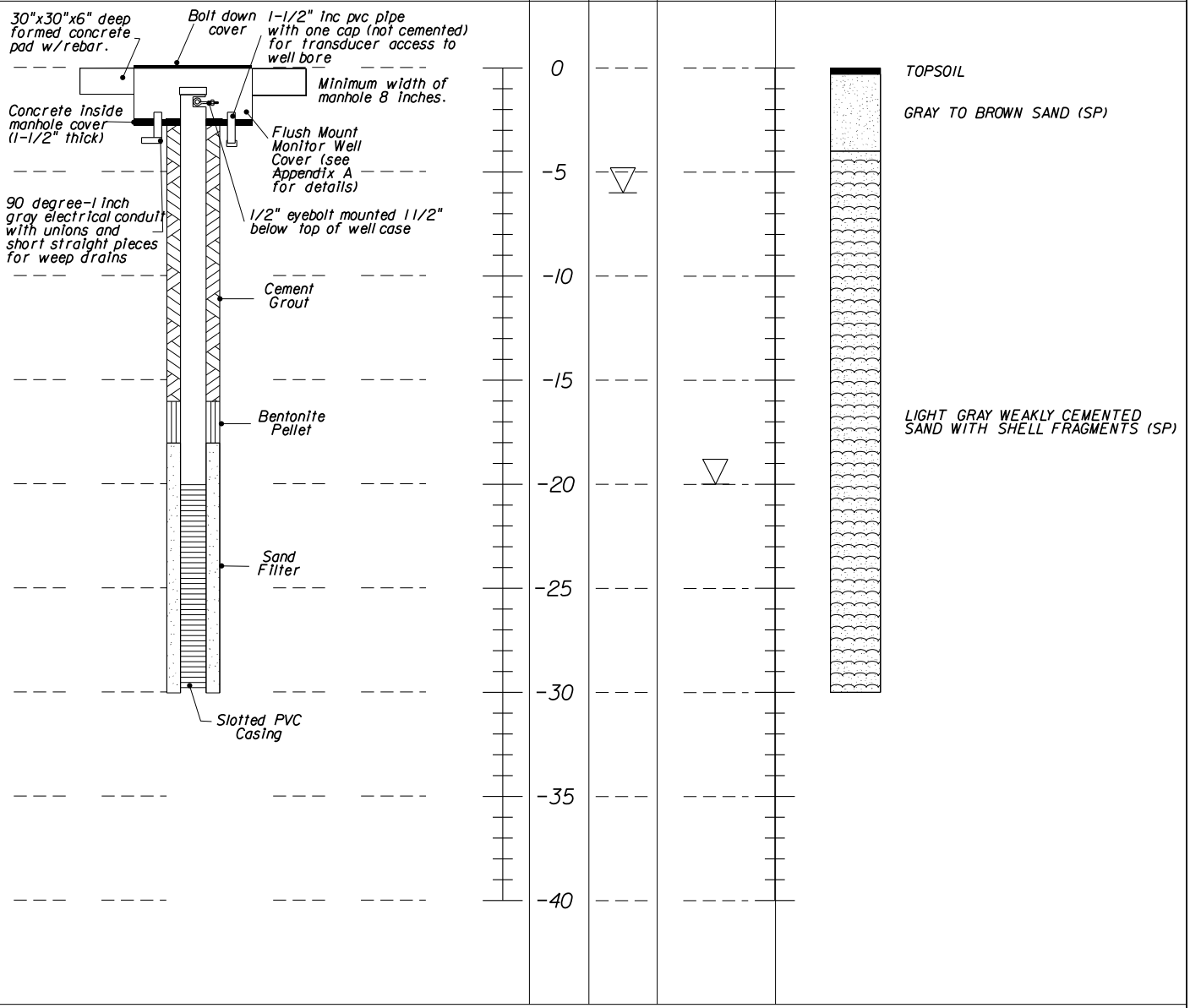
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-20
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/26/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 721279.26
Easting: 681034.76
County: Hendry



Well Contruction Details / Notes:

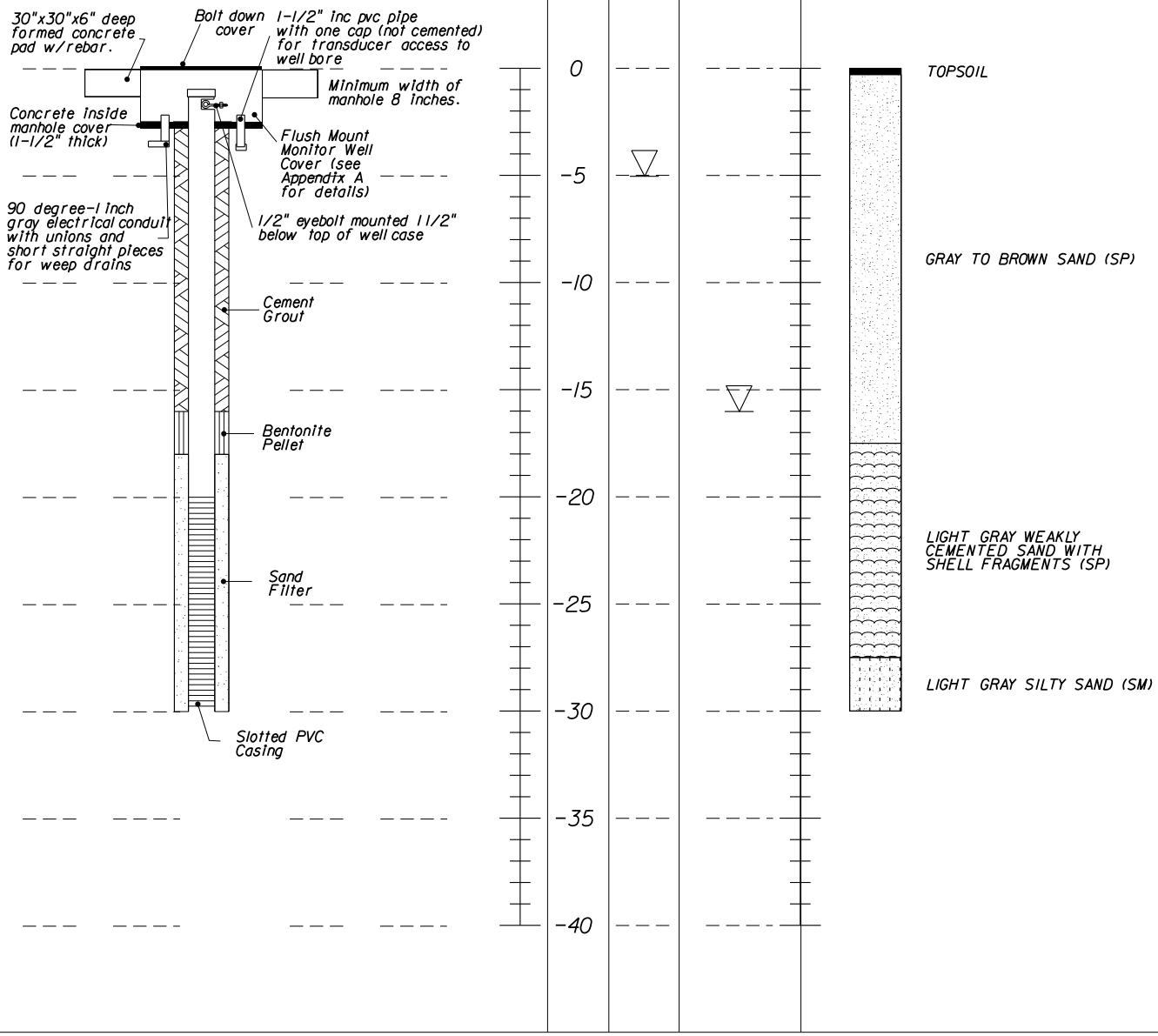
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-21
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/14/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 721074.1
Easting: 689745.44
County: Hendry



Well Contruction Details / Notes:

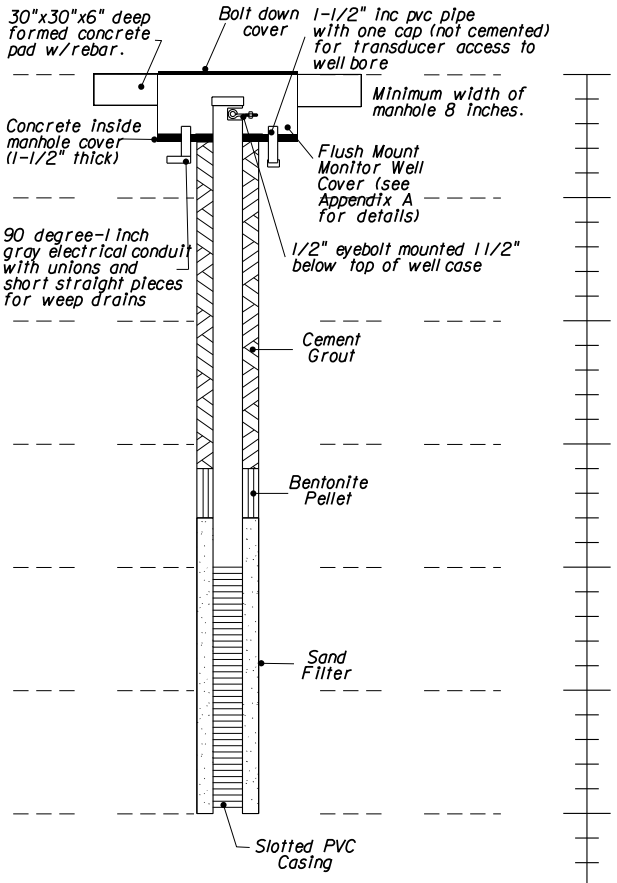
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-22
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 8/28/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 720843.094
Easting: 681028.797
County: Hendry



Depth Feet	Static Water Level	Water Level During Pumping	Blow Counts (N)	Soils Description
0			16	TOPSOIL
	▽		27	BROWN TO LIGHT BROWN SAND (SP)
-5			11	
			31	LIGHT BROWN WEAKLY CEMENTED LIMESTONE WITH SHELL FRAGMENTS
-10			22	
			24	LIGHT GRAY SAND WITH TRACE OF SILT AND SHELL (SP)
-15			15	
			11	
		▽	14	
-20			7	
			8	LIGHT GRAY SILTY SAND (SM)
-25			11	
			5	
			10	
-30			29	LIGHT GRAY LIMESTONE
-35				
-40				

Well Contruction Details / Notes:

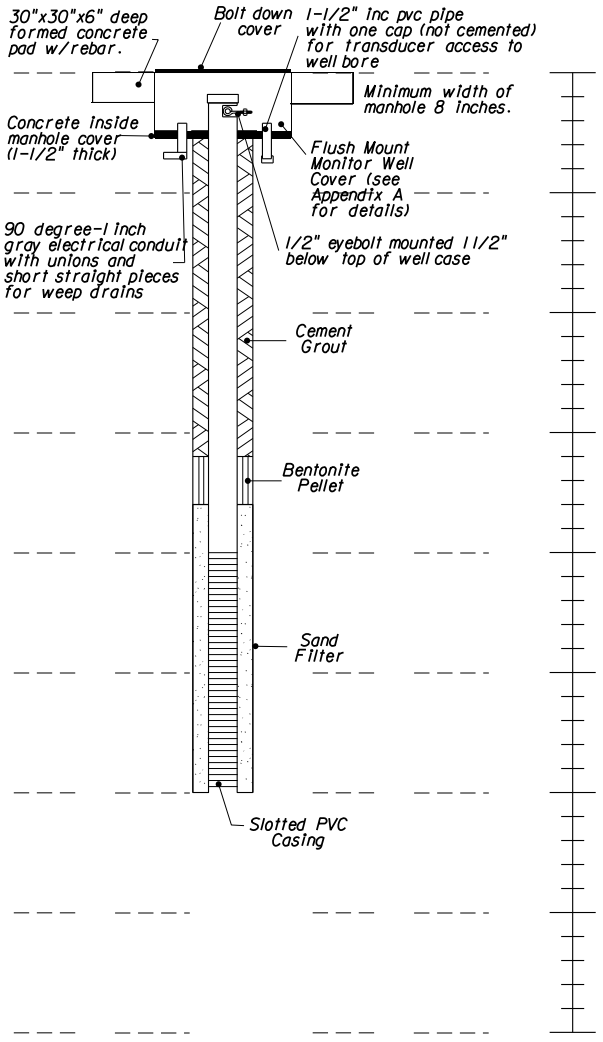
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-22A
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/19/2014
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 720562.42
Easting: 681034.42
County: Hendry



Depth Feet	Static Water Level	Water Level During Pumping	Blow Counts (N)	Soils Description
0	▽		5	TOPSOIL
			14	LIGHT BROWN SAND TRACE ROOTS (SP)
-5			12	DARK BROWN ORGANIC STAINED SAND (SP)
			27	DARK BROWN SAND (SP)
-10			20	
			10	
			16	VERY PALE BROWN SAND TRACE SILT (SP)
-15			17	
			14	
-20			8	VERY PALE BROWN CLAYEY/SILTY SAND (SC/SM)
			6	
-25		▽	13	LIGHT GRAY FRAGMENTED SANDY LIMESTONE WITH SOME SHELL
			9	
-30			16	
			11	
-35				
-40				

Well Contruction Details / Notes:

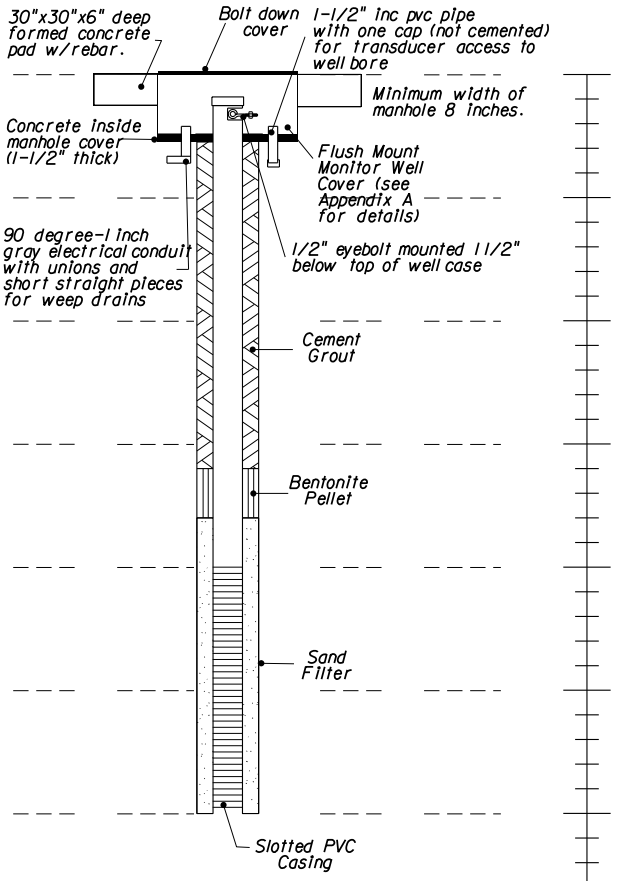
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-23
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 8/29/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 726267.429
Easting: 692849.182
County: Hendry



Depth Feet	Static Water Level	Water Level During Pumping	Blow Counts (N)	Soils Description
0				
			37	TOPSOIL
			6	DARK BROWN SAND, WITH LIMESTONE FRAGMENTS (SP/FILL)
-5			10	BROWN SILTY SAND (SM)
			15	
			20	BROWN SAND (SP)
-10	▽		30	
			15	LIGHT GRAY WEAKLY CEMENTED LIMESTONE
-15			30	
			21	
			14	GRAY SILTY SAND (SM)
-20			7	
			11	
			14	LIGHT GRAY SILTY SAND WITH LIMESTONE FRAGMENTS (SM)
-25		▽	14	
			6	LIGHT GRAY SILTY SAND (SM)
-30				
-35				
-40				

Well Contruction Details / Notes:

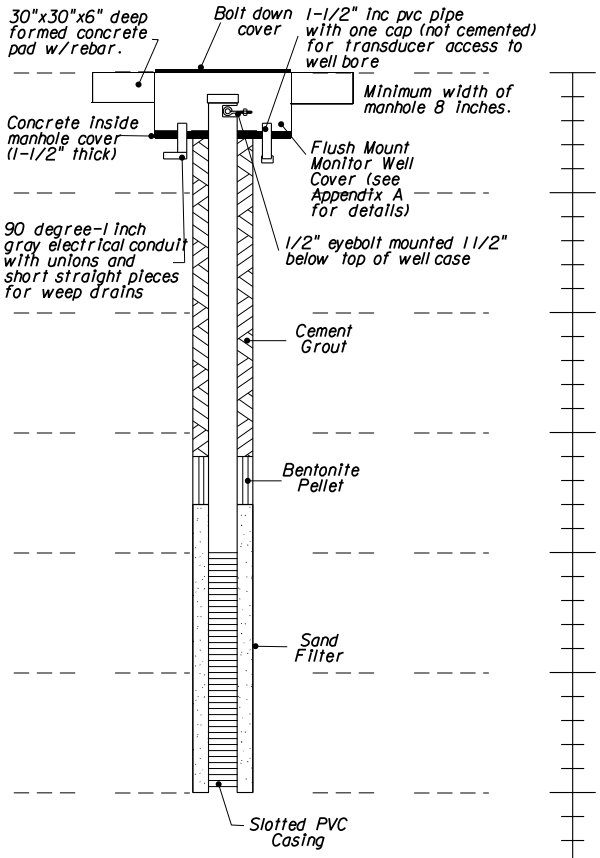
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-23A
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/17/2014
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 725949.48
Easting: 692953.28
County: Hendry



Depth Feet	Static Water Level	Water Level During Pumping	Blow Counts (N)	Soils Description
0	▽			
			5	TOPSOIL
			11	BROWN SAND TRACE SILT (SP)
-5			15	LIGHT BROWNISH GRAY SILTY LIMESTONE
			18	LIGHT GREENISH GRAY CLAY/SILT (CL/ML)
-10			14	
			12	
-15			7	LIGHT GRAY SILTY LIMESTONE WITH FEW SHELL
			6	
			9	
-20			11	PINKISH GRAY CLAYEY/SILTY SAND WITH LITTLE SHELL (SC/SM)
			11	
-25		▽	24	
			13	GRAY FRAGMENTED SANDY LIMESTONE
-30			11	
			21	
-35				
-40				

Well Contruction Details / Notes:

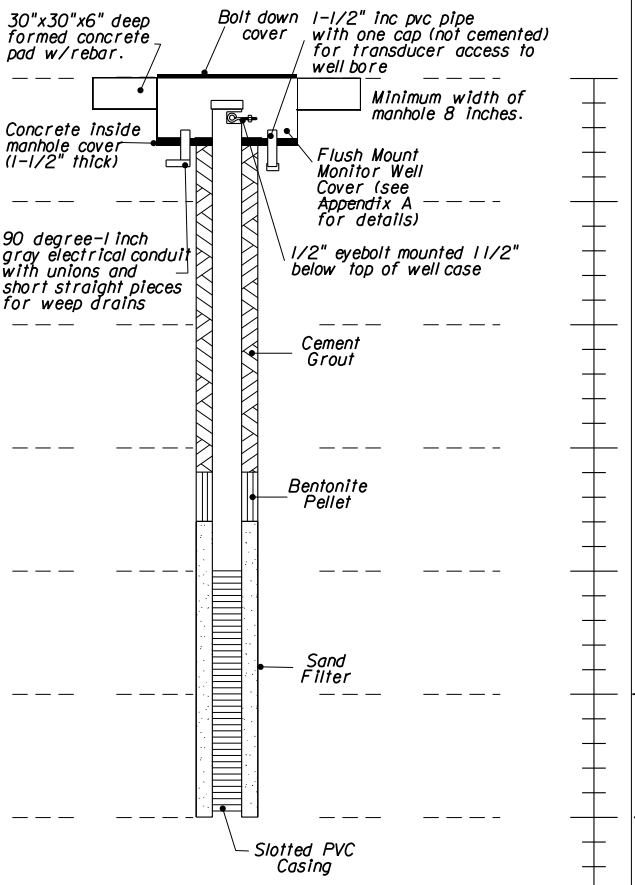
Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

Monitoring Well Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-24
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 5 3/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/10/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 735263.54
Easting: 680441.82
County: Hendry



Depth Feet	Static Water Level	Water Level During Pumping	Blow Counts (N)	Soils Description
0			11	TOPSOIL
				LIGHT BROWN SAND (SP)
-5	▽	▽	21	LIGHT GRAY WEAKLY CEMENTED LIMESTONE
			24	
			13	
-10			24	LIGHT GRAY TO LIGHT BROWN SAND (SP)
			10	
-15			7	LIGHT GRAY SAND WITH SHELL FRAGMENTS (SP)
			8	BROWN SAND (SP)
			7	LIGHT GRAY SAND WITH SHELL FRAGMENTS (SP)
-20			15	
			9	
-25			10	LIGHT BROWN SAND (SP)
			10	
			17	
-30			11	
-35				
-40				

Well Contruction Details / Notes:

Schedule 40, 0.010" slotted PVC casing; Schedule 40 solid PVC casing; 6-20 silica sand; 1/4" coated bentonite pellets; portland cement

BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : B-1

Project Site: Annex-C-139

Boring Depth (ft) : 15.0

Groundwater Depth (ft): 7.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

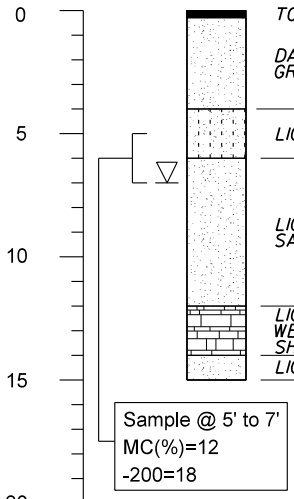
Date (Start / Finish): 06/03/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 737939.65

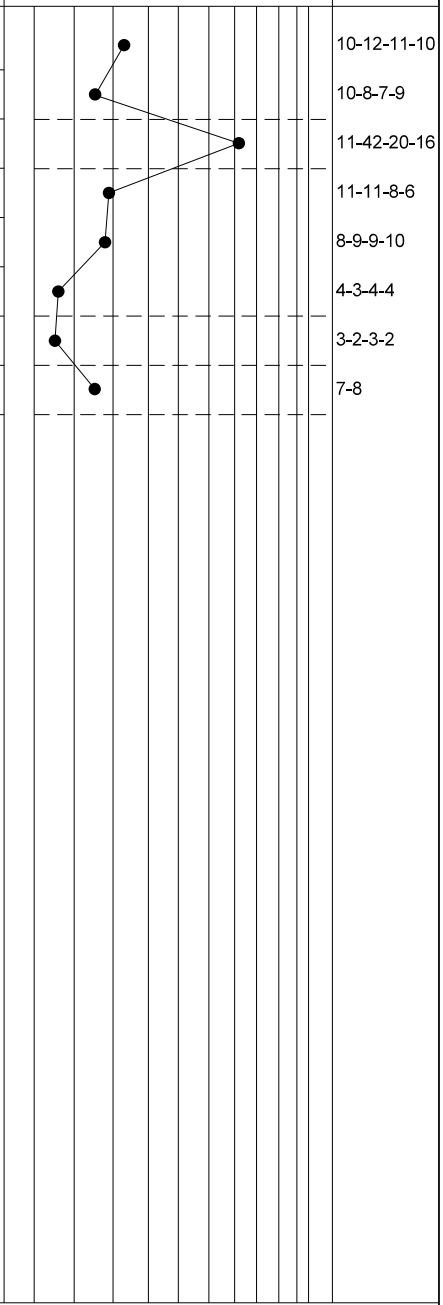
Easting: 681721.70

County: HENDRY



DEEP FEET	LITHOLOGY	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	BLOWS ON SAMPLER PER 6"
0		TOPSOIL	S-1	1.8	90	10-12-11-10
		DARK BROWN TO LIGHT GRAY SAND (SP)	S-2	1.7	85	10-8-7-9
5		LIGHT BROWN SILTY SAND (SM)	S-3	1.8	90	11-42-20-16
			S-4	1.9	95	11-11-8-6
		LIGHT GRAY TO BROWN SAND (SP)	S-5	1.9	95	8-9-9-10
10			S-6	1.6	80	4-3-4-4
		LIGHT GRAY LIMESTONE, WEAKLY CEMENTED WITH SHELL FRAGMENTS	S-7	1.4	70	3-2-3-2
15		LIGHT GRAY SAND (SP)	S-8	1.7	85	7-8
20						
25						
30						
35						
40						
45						
50						

STANDARD PENETRATION TEST
Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX"



BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : B-2

Project Site: Annex-C-139

Boring Depth (ft) : 15.0

Groundwater Depth (ft): 5.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

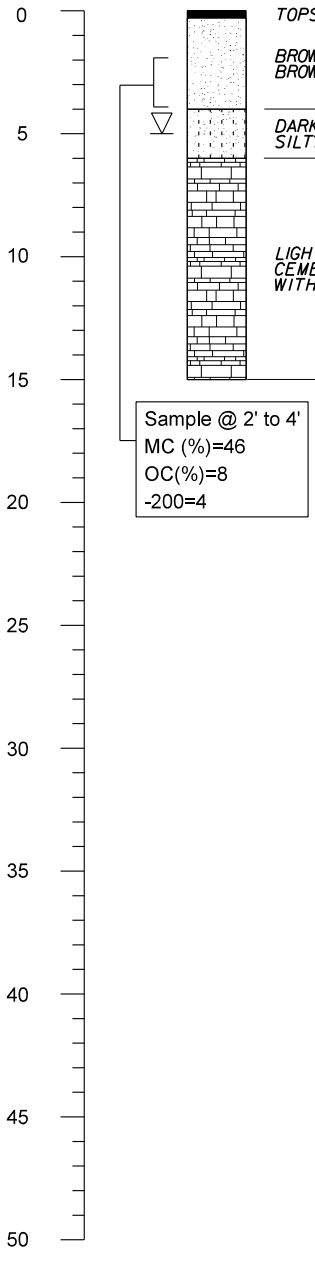
Date (Start / Finish): 6/3/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 733965.59

Easting: 684383.63

County: HENDRY



DEEP FEET	LITHOLOGY	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	STANDARD PENETRATION TEST Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX"	BLOWS ON SAMPLER PER 6"
						10 30 50 70 90	
0		TOPSOIL	S-1	1.7	85		2-3-2-2
		BROWN TO DARK BROWN SAND (SP)	S-2	1.9	95		2-2-2-2
5		DARK GRAYISH BROWN SILTY SAND (SM)	S-3	1.5	75		2-2-2-3
			S-4	1.6	80		4-5-4-3
			S-5	1.7	85		4-4-5-4
10		LIGHT GRAY WEAKLY CEMENTED LIMESTONE WITH SHELL FRAGMENTS	S-6	1.8	90		6-7-3-5
			S-7	1.5	75		4-4-3-4
15			S-8	1.7	75		3-4
20							
25							
30							
35							
40							
45							
50							

BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : B-3

Project Site: Annex-C-139

Boring Depth (ft) : 30.0

Groundwater Depth (ft): 5.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

Date (Start / Finish): 06/03/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

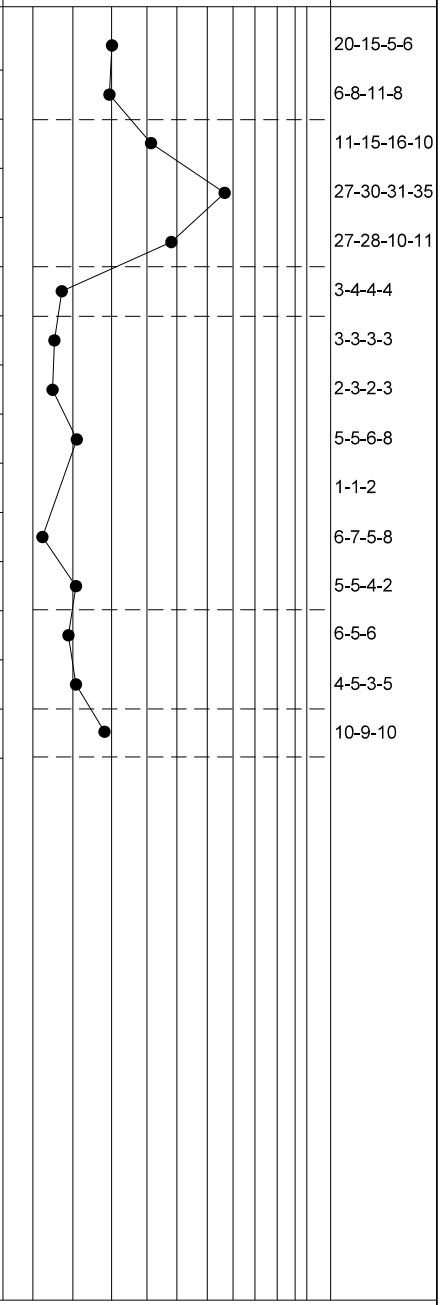
Northing: 732019.97

Easting: 687573.80

County: HENDRY

DEEP FEET	LITHOLOGY	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	BLOWS ON SAMPLER PER 6"
0		TOPSOIL	S-1	1.9	95	20-15-5-6
		LIGHT GRAY TO BROWN SAND (SP)	S-2	1.9	95	6-8-11-8
5	▽		S-3	1.9	95	11-15-16-10
		LIGHT BROWN SANDY LIMESTONE	S-4	1.9	95	27-30-31-35
			S-5	1.8	90	27-28-10-11
10		WHITE SAND (SP)	S-6	1.7	85	3-4-4-4
			S-7	1.6	80	3-3-3-3
15			S-8	1.5	75	2-3-2-3
		LIGHT GRAY WEAKLY CEMENTED LIMESTONE WITH SHELL FRAGMENTS	S-9	1.5	75	5-5-6-8
			S-10	1.6	80	1-1-2
20			S-11	1.6	80	6-7-5-8
			S-12	1.7	85	5-5-4-2
25		GRAY CLAYEY / SILTY SAND (SC / SM)	S-13	1.8	90	6-5-6
			S-14	1.8	90	4-5-3-5
		GRAY SANDY LIMESTONE	S-15	1.8	90	10-9-10
30						
35						
40						
45						
50						

STANDARD PENETRATION TEST
Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX"



BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : B-4

Project Site: Annex-C-139

Boring Depth (ft) : 30.0

Groundwater Depth (ft): 10.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-550 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

Date (Start / Finish): 06/14/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 730374.75

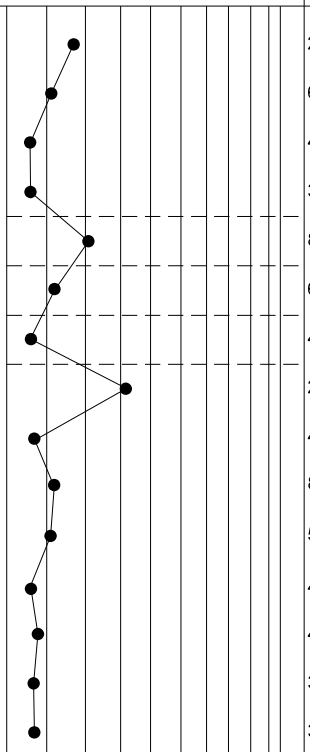
Easting: 691317.54

County: HENDRY

DEEP FEET	LITHOLOGY	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	BLOWS ON SAMPLER PER 6"
0		TOPSOIL	S-1	1.7	85	25-8-9-6
		BROWN SLIGHTLY SILTY SAND (SP / SM)	S-2	NO RECOVERY	-	6-6-5-6
5			S-3	NO RECOVERY	-	4-3-3-4
			S-4	1.5	75	3-3-3-3
		DARK BROWN SAND WITH ORGANIC (SP-SM/OL)	S-5	1.8	90	8-10-11-11
10		GRAY SAND (SP)	S-6	1.8	90	6-7-5-4
		GRAYISH BROWN SILTY SAND (SM)	S-7	1.8	90	4-3-3-4
15			S-8	1.8	90	26-20-12
			S-9	1.6	80	4-4-3-4
			S-10	1.4	70	8-7-5
20		LIGHT GRAY TO GRAY WEAKLY CEMENTED LIMESTONE, WITH SILT AND SHELL FRAGMENTS	S-11	1.4	70	5-4-7-8
			S-12	1.4	70	4-3-3-3
25			S-13	1.5	75	4-4-4
			S-14	1.5	75	3-4-3-2
			S-15	1.4	70	3-3-4
30						
35						
40						
45						
50						

STANDARD PENETRATION TEST
Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX"

10 30 50 70 90



Sample @ 8' to 10'
MC (%)=46
OC(%)=8

Sample @ 0.3' to 2'
MC(%)=7
-200=11

BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : B-5

Project Site: Annex-C-139

Boring Depth (ft) : 30.0

Groundwater Depth (ft): Grounwater Not Encountered (GNE)

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

Date (Start / Finish): 06/4/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 728815.75

Easting: 688450.36

County: HENDRY

DEEP FEET	LITHOLOGY	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	STANDARD PENETRATION TEST Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX"	BLOWS ON SAMPLER PER 6"
						10 30 50 70 90	
0	GNE	TOPSOIL	S-1	1.6	80		3-2-2-2
			S-2	1.7	85		5-4-3-3
5		LIGHT BROWN TO BROWN SAND (SP)	S-3	1.7	85		3-2-3-3
			S-4	1.8	90		2-2-2-2
			S-5	1.6	80		2-2-2-2
10			S-6	1.8	80		4-6-8-7
		LIGHT GRAY WEAKLY CEMENTED LIMESTONE WITH SHELL FRAGMENTS	S-7	1.8	80		7-6-5-5
15			S-8	1.8	90		4-4-4
			S-9	1.9	95		3-4-3-6
		BROWNISH GRAY SAND (SP)	S-10	1.9	95		6-8-7
20			S-11	1.9	95		7-7-7-6
		LIGHT GRAY WEAKLY CEMENTED LIMESTONE WITH SHELL FRAGMENTS	S-12	1.5	75		5-3-3-3
25			S-13	1.7	85		8-4-6
		LIGHT GRAY SILTY SAND WITH TRACE OF SHELL FRAGMENTS (SM)	S-14	1.8	90		4-4-4-5
			S-15	1.9	95		6-5-4
30							
35							
40							
45							
50							

Sample @ 13.5' to 15'
MC(%)=18
-200=3

BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : B-6

Project Site: Annex-C-139

Boring Depth (ft) : 30.0

Groundwater Depth (ft): 7.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

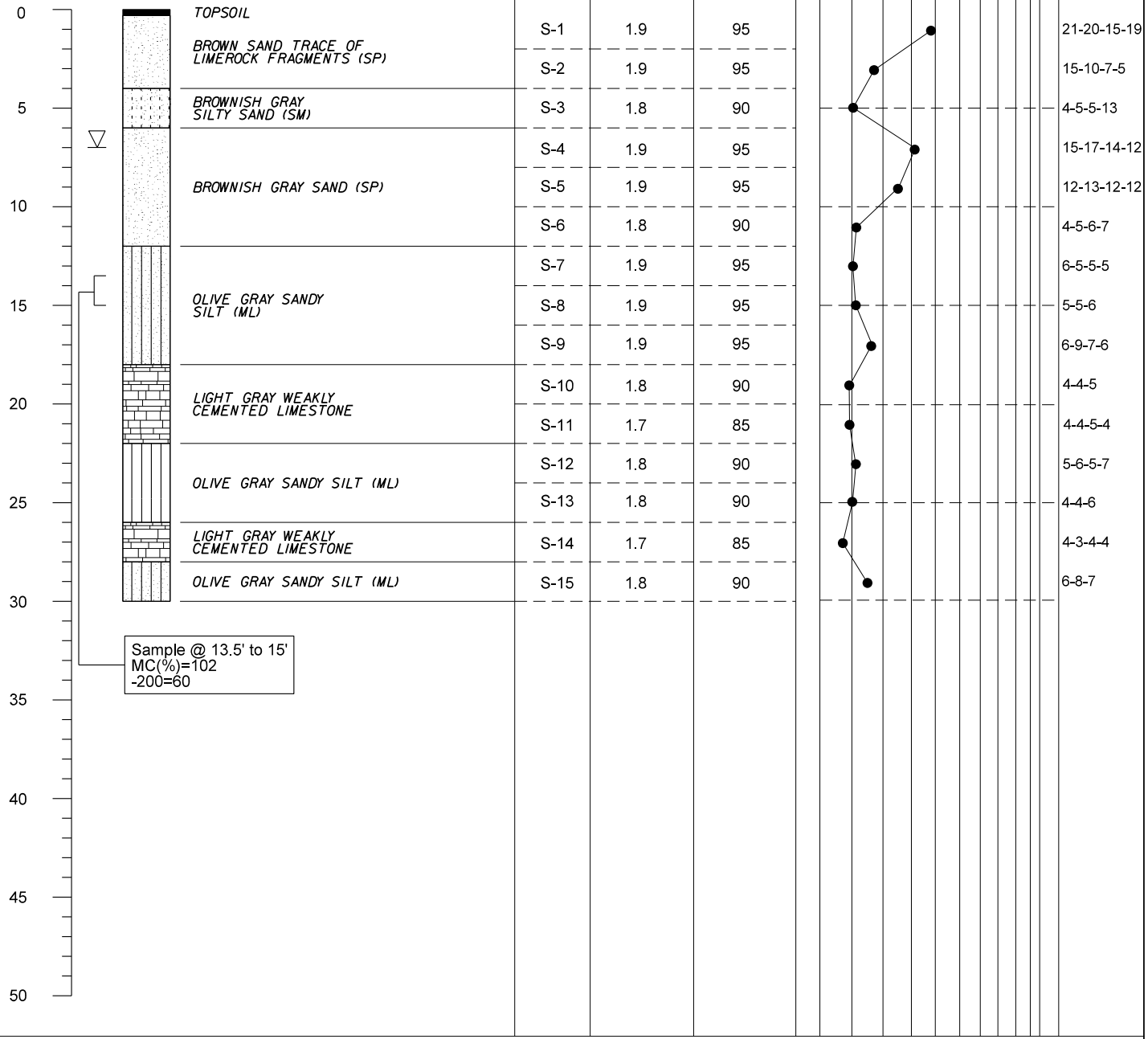
Date (Start / Finish): 06/12/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 726193.27

Easting: 689787.81

County: HENDRY



SAMPLE #	RECOVERY (FT)	RECOVERY (%)	BLOWS ON SAMPLER PER 6"
S-1	1.9	95	21-20-15-19
S-2	1.9	95	15-10-7-5
S-3	1.8	90	4-5-5-13
S-4	1.9	95	15-17-14-12
S-5	1.9	95	12-13-12-12
S-6	1.8	90	4-5-6-7
S-7	1.9	95	6-5-5-5
S-8	1.9	95	5-5-6
S-9	1.9	95	6-9-7-6
S-10	1.8	90	4-4-5
S-11	1.7	85	4-4-5-4
S-12	1.8	90	5-6-5-7
S-13	1.8	90	4-4-6
S-14	1.7	85	4-3-4-4
S-15	1.8	90	6-8-7

BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : B-7

Project Site: Annex-C-139

Boring Depth (ft) : 30.0

Groundwater Depth (ft): 4.5

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-550 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

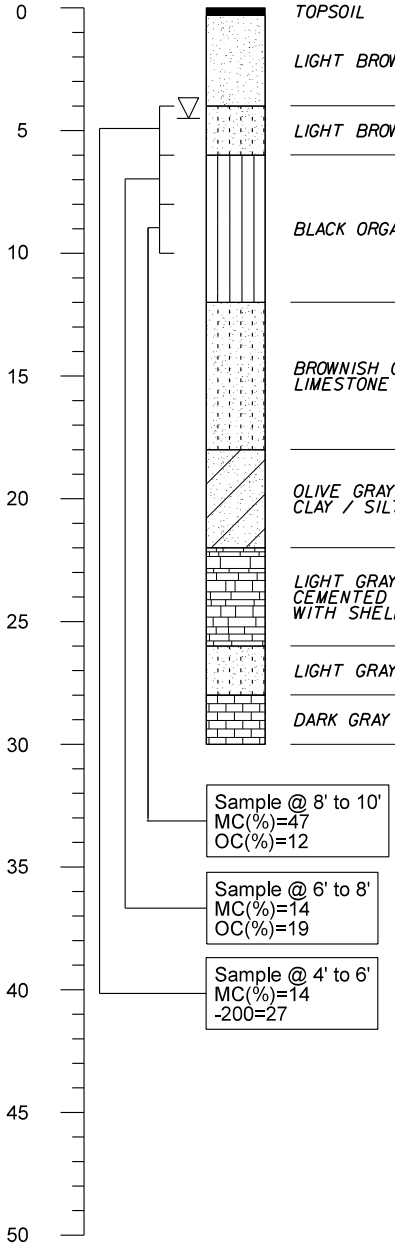
Date (Start / Finish): 06/12/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 726331.93

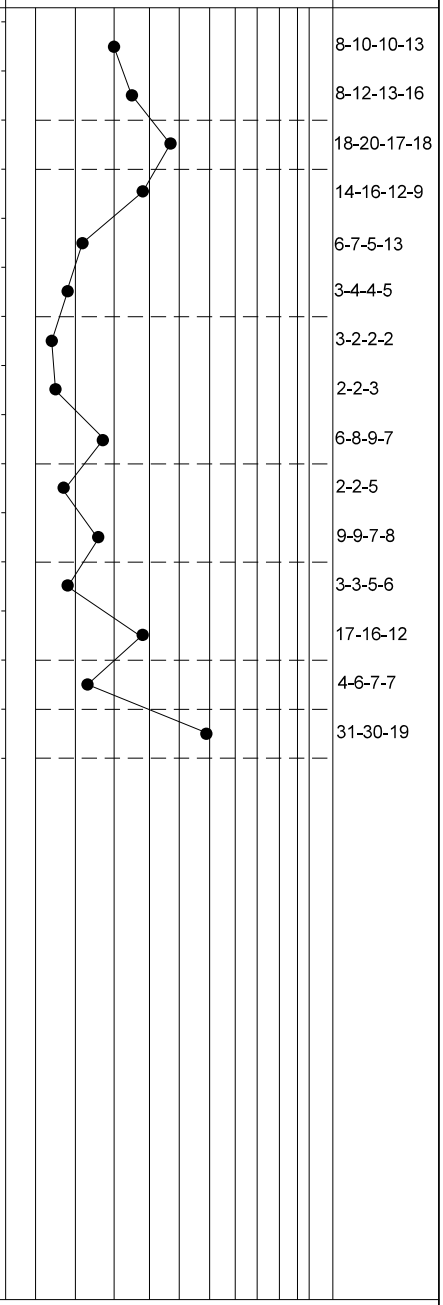
Easting: 694225.04

County: HENDRY



DEEP FEET	LITHOLOGY	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	BLOWS ON SAMPLER PER 6"
0		TOPSOIL	S-1	1.95	97	8-10-10-13
		LIGHT BROWN SAND (SP)	S-2	1.95	97	8-12-13-16
5		LIGHT BROWN SILTY SAND (SM)	S-3	1.9	95	18-20-17-18
			S-4	1.8	90	14-16-12-9
		BLACK ORGANIC SILT (OL)	S-5	1.7	85	6-7-5-13
10			S-6	1.5	75	3-4-4-5
			S-7	1.5	75	3-2-2-2
15		BROWNISH GRAY SILTY SAND WITH LIMESTONE FRAGMENTS (SM)	S-8	1.4	70	2-2-3
			S-9	1.7	85	6-8-9-7
20		OLIVE GRAY SANDY CLAY / SILT (CL / ML)	S-10	1.4	70	2-2-5
			S-11	1.6	80	9-9-7-8
		LIGHT GRAY WEAKLY CEMENTED LIMESTONE WITH SHELL FRAGMENTS	S-12	1.5	75	3-3-5-6
25			S-13	1.8	90	17-16-12
		LIGHT GRAY SILTY SAND (SM)	S-14	1.8	90	4-6-7-7
		DARK GRAY LIMESTONE	S-15	1.5	75	31-30-19
30						
35						
40						
45						
50						

STANDARD PENETRATION TEST
Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX"



BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : B-8

Project Site: Annex-C-139

Boring Depth (ft) : 30.0

Groundwater Depth (ft): 7.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-550 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

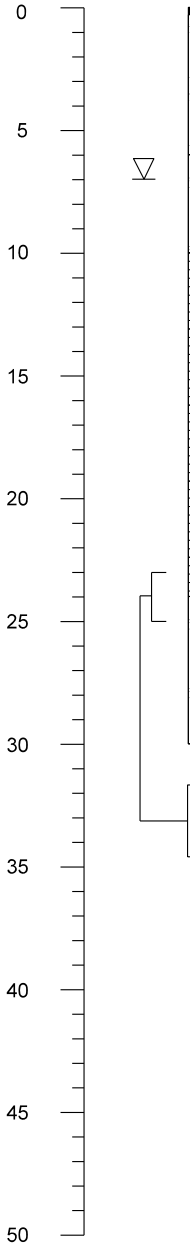
Date (Start / Finish): 06/12/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 720754.90

Easting: 689557.90

County: HENDRY



DEEP FEET	LITHOLOGY	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	STANDARD PENETRATION TEST Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX" (10 30 50 70 90)	BLOWS ON SAMPLER PER 6"
0		TOPSOIL	S-1	1.4	70		2-2-2-2
		LIGHT BROWN TO BROWN SAND WITH TRACE OF LIMEROCK (SP)	S-2	1.6	80		2-3-5-7
5			S-3	1.7	85		10-8-9-9
		GRAYISH BROWN SILTY SAND (SM)	S-4	1.8	90		6-6-6-13
			S-5	1.9	95		29-30-32-44
10		LIGHT GRAY WEAKLY CEMENTED LIMESTONE	S-6	1.9	95		6-8-9-7
			S-7	1.7	85		7-6-5-5
15			S-8	1.5	75		4-3-4
			S-9	1.5	75		7-5-4-4
			S-10	1.6	80		4-4-5
20			S-11	1.6	80		7-5-5
			S-12	1.8	90		5-4-4
25		LIGHT GRAY SILTY SAND (SM)	S-13	1.7	85		2-3-3
			S-14	1.6	80		2-3-2-2
			S-15	1.8	90		6-4-6
30							
35							
40							
45							
50							

BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : B-9

Project Site: Annex-C-139

Boring Depth (ft) : 50.0

Groundwater Depth (ft): 5.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-550 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

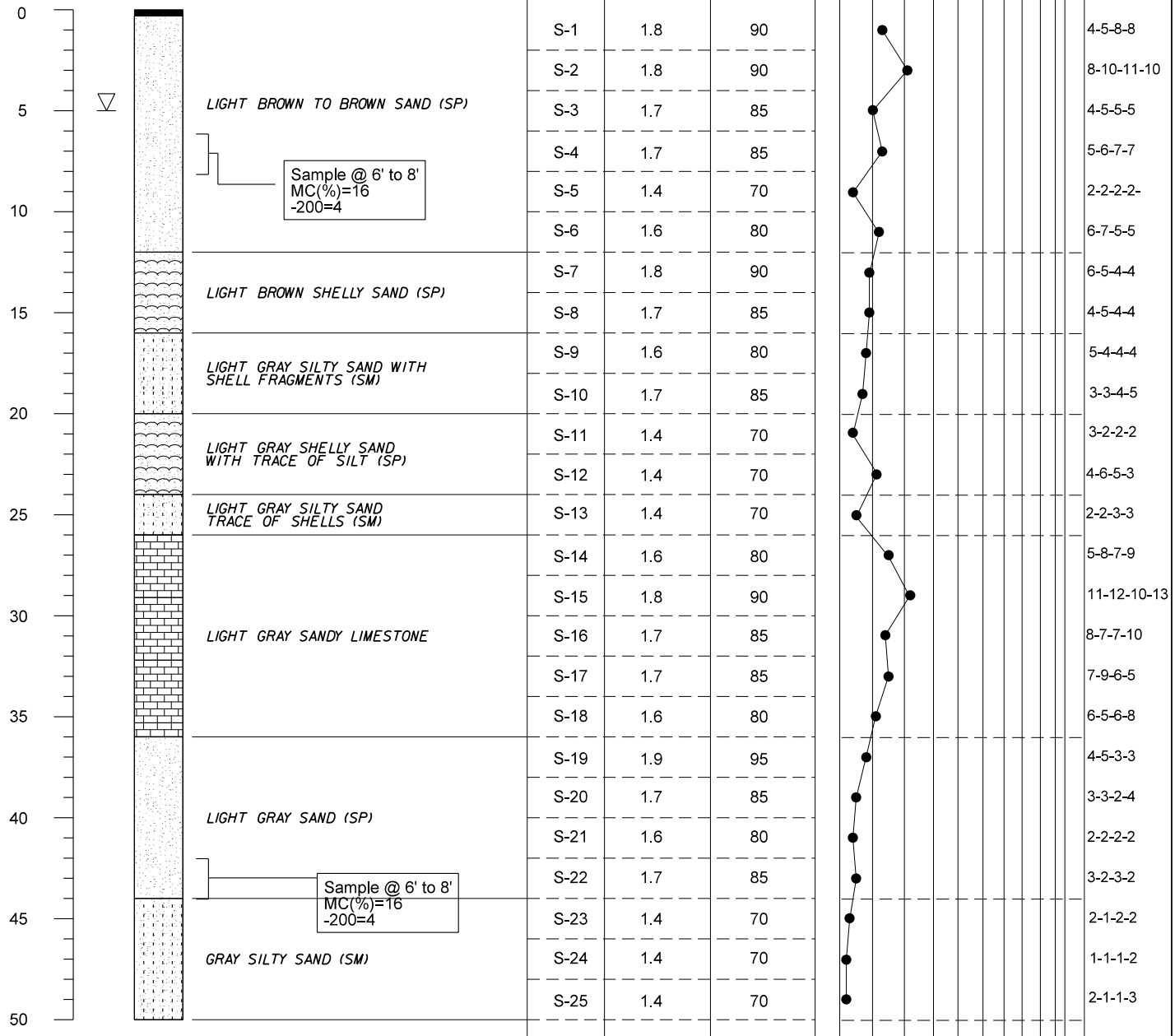
Date (Start / Finish): 07/25/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 720754.90

Easting: 680683.95

County: HENDRY



BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : B-10

Project Site: Annex-C-139

Boring Depth (ft) : 15.0

Groundwater Depth (ft): 5.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-550/ Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

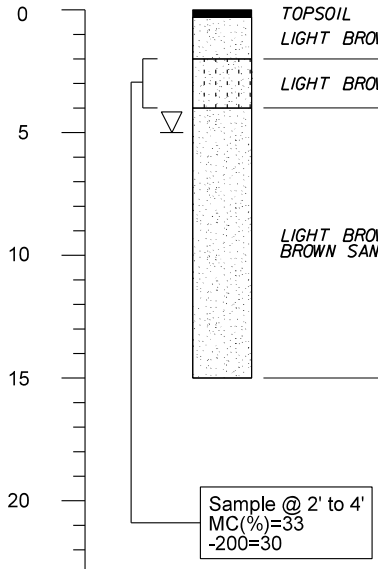
Date (Start / Finish): 07/25/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 720563.91

Easting: 669187.46

County: HENDRY



DEEP FEET	LITHOLOGY	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	STANDARD PENETRATION TEST Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX" (10 30 50 70 90)	BLOWS ON SAMPLER PER 6"
0		TOPSOIL LIGHT BROWN SAND (SP)	S-1	1.6	80		3-3-3-4
		LIGHT BROWN SILTY SAND (SM)	S-2	1.7	85		7-6-8-8
5			S-3	1.8	90		12-10-11-13
			S-4	1.95	97		11-13-14-15
		LIGHT BROWN / PALE BROWN / BROWN SAND (SP)	S-5	1.6	80		8-5-4-7
10			S-6	1.7	85		5-4-4-4
			S-7	1.8	90		7-9-10-8
15			S-8	1.7	85		6-5-5-6
20		Sample @ 2' to 4' MC(%)=33 -200=30					
25							
30							
35							
40							
45							
50							

BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : W-2

Project Site: Annex-C-139

Boring Depth (ft) : 30.0

Groundwater Depth (ft): 5.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

Date (Start / Finish): 07/05/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 751143.17

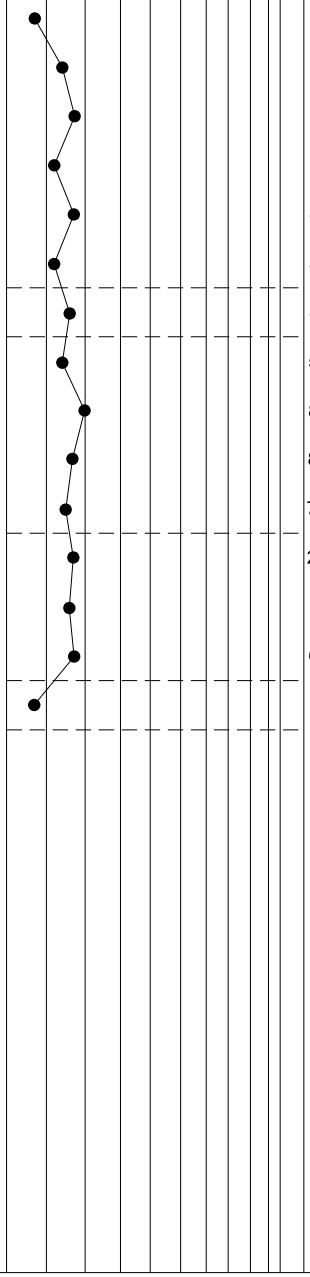
Easting: 663146.31

County: HENDRY

DEEP FEET	LITHOLOGY	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	BLOWS ON SAMPLER PER 6"
0		TOPSOIL	S-1	1.7	85	2-3-4-11
			S-2	1.8	90	7-7-7-9
5	▽	DARK BROWN / LIGHT BROWN / LIGHT GRAY SAND (SP)	S-3	1.4	70	8-8-9-8
			S-4	1.9	95	4-5-7-8
			S-5	1.8	90	8-10-7-8
10			S-6	1.8	90	8-6-6-7
		LIGHT BROWN SLIGHTLY SILTY SAND (SP/SP-SM)	S-7	1.7	85	8-8-8-8
15		LIGHT BROWN SAND (SP)	S-8	1.6	80	5-6-8-8
			S-9	1.7	85	8-10-10-10
			S-10	1.8	90	8-8-9-14
20			S-11	1.9	95	7-8-7-7
		LIGHT BROWN SLIGHTLY SILTY SAND (SP/SP-SM)	S-12	1.9	95	2-6-11-11
25			S-13	1.8	90	7-8-8-10
			S-14	1.9	95	6-10-8-8
		LIGHT BROWN SAND WITH SHELL FRAGMENTS (SP)	S-15	1.7	85	3-3-4-10
30						
35						
40						
45						
50						

STANDARD PENETRATION TEST
Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX"

10 30 50 70 90



BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : W-4D

Project Site: Annex-C-139

Boring Depth (ft) : 100.0

Groundwater Depth (ft): 4.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

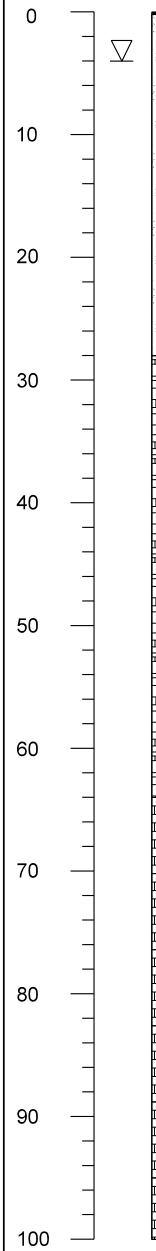
Date (Start / Finish): 07/29/2013 - 07-30-13

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 745932.85

Easting: 670674.72

County: HENDRY



SAMPLE #	RECOVERY (FT)	RECOVERY (%)	BLOWS ON SAMPLER PER 6"
S-1	1.7	85	3-5-7-7
S-2	1.8	90	7-6-7-9
S-3	1.6	80	5-5-4-6
S-4	1.8	90	7-8-9-9
S-5	1.9	95	9-10-11-12
S-6	1.7	85	7-7-7-7
S-7	1.7	85	6-7-7-7
S-8	1.9	95	8-9-9-10
S-9	1.5	75	8-9-9-8
S-10	1.7	85	5-9-10-9
S-11	1.8	90	7-8-8-9
S-12	1.9	95	5-5-5-6
S-13	1.7	85	4-4-5-5
S-14	1.7	85	5-7-8-8
S-15	1.9	95	6-7-8-7
S-16	1.4	70	10-11-9-9
S-17	1.5	75	7-8-6-7
S-18	1.5	75	6-6-8-7
S-19	1.6	80	6-7-8-9
S-20	1.9	95	12-17-15-14
S-21	1.9	95	12-15-13-10
S-22	1.8	90	9-8-8-9
S-23	1.9	95	9-12-15-14
S-24	1.8	90	11-12-11-12
S-25	1.9	95	11-15-16-15
S-26	1.4	70	13-14-15-14
S-27	1.5	75	11-15-16-10
S-28	1.5	75	12-13-12-13
S-29	1.4	70	11-14-13-12
S-30	1.6	80	11-14-12-11
S-31	1.5	75	10-11-12-12
S-32	1.4	70	9-9-10-9
S-33	1.7	85	13-14-15-15
S-34	1.8	90	12-15-16-15
S-35	1.8	90	21-21-25-23
S-36	1.6	80	19-20-18-19
S-37	1.7	85	22-21-20-21
S-38	1.6	80	18-20-21-19
S-39	1.7	85	14-18-15-16
S-40	1.5	75	15-15-10-9
S-41	1.6	80	12-15-14-13
S-42	1.7	85	12-12-13-12
S-43	1.6	80	16-15-13-15
S-44	1.6	80	16-18-17-19
S-45	1.6	80	15-17-19-19
S-46	1.6	80	18-19-20-19
S-47	1.7	85	14-16-15-16
S-48	1.8	90	14-15-16-15
S-49	1.7	85	17-16-18-19
S-50	1.7	85	18-16-15-15

STANDARD PENETRATION TEST
Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX"
10 30 50 70 90

BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : W-9

Project Site: Annex-C-139

Boring Depth (ft) : 30.0

Groundwater Depth (ft): 5.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

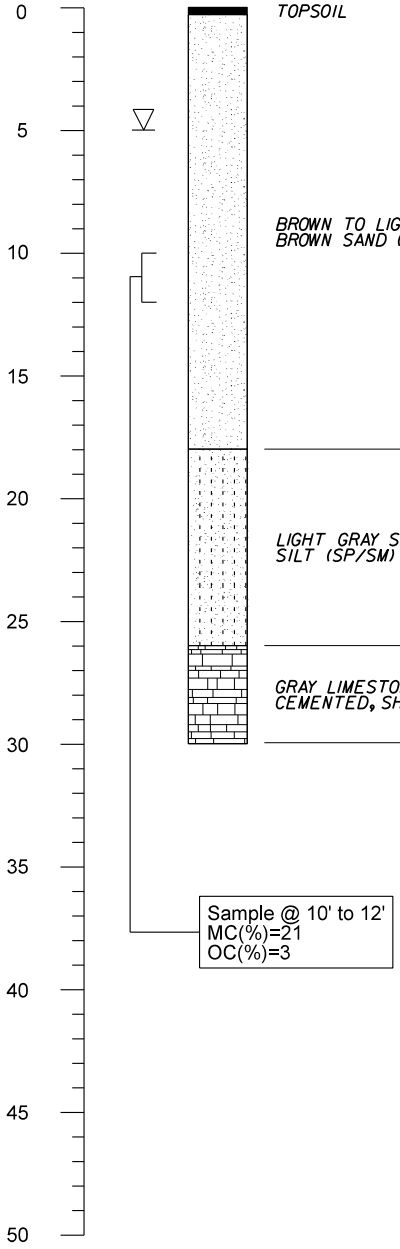
Date (Start / Finish): 07/09/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 740499.18

Easting: 663262.34

County: HENDRY



DEEP FEET	LITHOLOGY	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	STANDARD PENETRATION TEST Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX"	BLOWS ON SAMPLER PER 6"
						10 30 50 70 90	
0		TOPSOIL	S-1	1.7	85		4-5-5-5
			S-2	1.8	90		7-8-7-8
5			S-3	1.9	95		10-11-14-15
			S-4	1.9	95		10-12-12-12
		BROWN TO LIGHT BROWN SAND (SP)	S-5	1.9	95		14-14-15-13
10			S-6	1.8	90		10-11-10-10
			S-7	1.7	85		6-9-7-8
15			S-8	1.9	95		16-18-20-20
			S-9	1.4	70		2-2-3-2
			S-10	1.5	75		3-3-4-5
20		LIGHT GRAY SAND WITH SILT (SP/SM)	S-11	1.6	80		1-2-2-1
			S-12	1.4	70		1-1-1-1
25			S-13	1.4	70		2-4-4-5
			S-14	1.4	70		1-1-1-1
		GRAY LIMESTONE, WEAKLY CEMENTED, SHELL FRAGMENTS	S-15	1.6	80		1-2-4-6
30							
35							
40							
45							
50							

BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : W-11

Project Site: Annex-C-139

Boring Depth (ft) : 30.0

Groundwater Depth (ft): 4.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

Date (Start / Finish): 7/10/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 737591.62

Easting: 671445.13

County: HENDRY

DEEP FEET	LITHOLOGY	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	STANDARD PENETRATION TEST Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX" (10 30 50 70 90)	BLOWS ON SAMPLER PER 6"
0		TOPSOIL	S-1	1.8	90		4-5-5-5
			S-2	1.7	85		3-3-4-5
5			S-3	1.7	85		6-5-6-6
			S-4	1.9	95		7-8-10-10
		LIGHT BROWN TO BROWN SAND (SP)	S-5	1.8	90		8-7-7-7
10			S-6	1.9	95		6-5-6-6
			S-7	1.8	90		5-7-6-7
15			S-8	1.9	95		6-6-8-9
			S-9	1.9	95		6-8-9-10
			S-10	1.7	85		6-5-5-6
20		BROWN SAND WITH TRACE OF SILT (SP)	S-11	1.7	85		4-5-4-4
			S-12	1.7	85		4-3-3-3
25			S-13	1.9	95		6-5-7-7
		BROWN WEAKLY CEMENTED LIMESTONE WITH SHELL FRAGMENTS	S-14	1.6	80		4-6-7-7
30			S-15	1.6	80		5-5-5-6
35							
40							
45							
50							

BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : W-14D

Project Site: Annex-C-139

Boring Depth (ft) : 100.0

Groundwater Depth (ft): 3.5

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

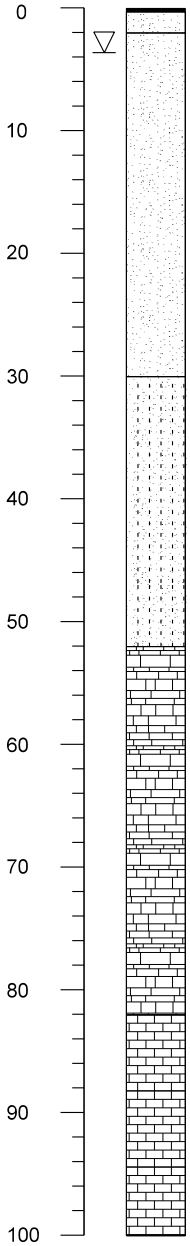
Date (Start / Finish): 07/31/2013 - 08-01-13

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 729938.48

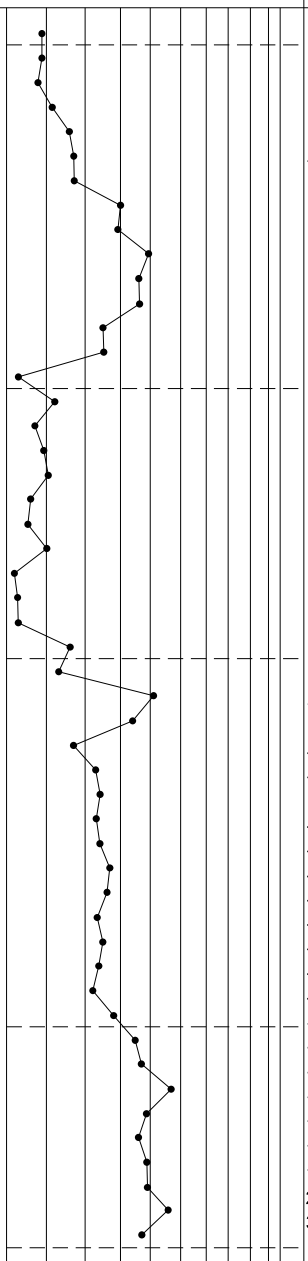
Easting: 668171.28

County: HENDRY



DEEP FEET	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	BLOWS ON SAMPLER PER 6"
0	TOPSOIL DARK BROWN ORGANIC STAINED SAND (SP)	S-1	1.8	90	4-5-4-4
		S-2	1.8	90	6-5-4-4
		S-3	1.9	95	3-4-4-5
		S-4	1.7	85	5-6-6-10
		S-5	1.8	90	7-8-8-7
10		S-6	1.8	90	6-9-8-7
		S-7	1.9	95	7-8-9-9
		S-8	1.9	95	7-14-16-18
	LIGHT BROWN SAND (SP)	S-9	1.9	95	12-14-15-16
		S-10	1.9	95	16-19-20-19
20		S-11	1.8	90	17-18-18-19
		S-12	1.9	95	16-17-19-19
		S-13	1.9	95	10-13-12-11
		S-14	1.9	95	12-13-12-12
		S-15	1.8	90	2-1-2-2
30		S-16	1.8	90	4-6-6-6
		S-17	1.6	80	4-4-3-4
		S-18	1.6	80	2-4-5-4
		S-19	1.8	90	5-6-5-6
		S-20	1.7	85	2-3-3-3
40		S-21	1.7	85	2-3-2-3
	GRAY / DARK GRAY SILTY SAND (SM)	S-22	1.7	85	4-5-5-6
		S-23	1.7	85	1-1-1-2
		S-24	1.7	85	2-1-2-2
		S-25	1.6	80	1-1-2-2
50		S-26	1.6	80	2-7-9-10
		S-27	1.9	95	4-7-6-9
		S-28	1.7	85	12-20-21-22
		S-29	1.7	85	14-16-18-20
		S-30	1.7	85	12-10-7-8
60		S-31	1.7	85	12-14-10-14
		S-32	1.7	85	12-13-11-12
		S-33	1.8	90	7-13-10-11
	LIGHT GRAY SANDY LIMESTONE, WEAKLY CEMENTED, SHELL FRAGMENTS	S-34	1.7	85	12-11-13-10
		S-35	1.7	85	12-13-14-15
70		S-36	1.7	85	12-14-12-13
		S-37	1.8	90	14-12-11-13
		S-38	1.8	90	12-14-11-12
		S-39	1.3	65	12-13-11-13
		S-40	1.8	90	11-12-10-12
80		S-41	1.7	85	14-15-13-14
		S-42	1.7	85	16-18-15-16
		S-43	1.6	80	17-18-19-18
		S-44	1.6	80	19-23-25-29
		S-45	1.6	80	17-19-20-19
90		S-46	1.8	90	18-19-17-18
	LIGHT GRAY / LIGHT BROWN MODERATELY CEMENTED LIMESTONE, SHELL FRAGMENTS	S-47	1.8	90	16-25-14-19
		S-48	1.8	90	18-19-20-19
		S-49	1.7	85	20-22-24-30
		S-50	1.8	90	32-19-18-17
100					

STANDARD PENETRATION TEST
Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX"



BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : W-16D

Project Site: Annex-C-139

Boring Depth (ft) : 100.0

Groundwater Depth (ft): 5.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

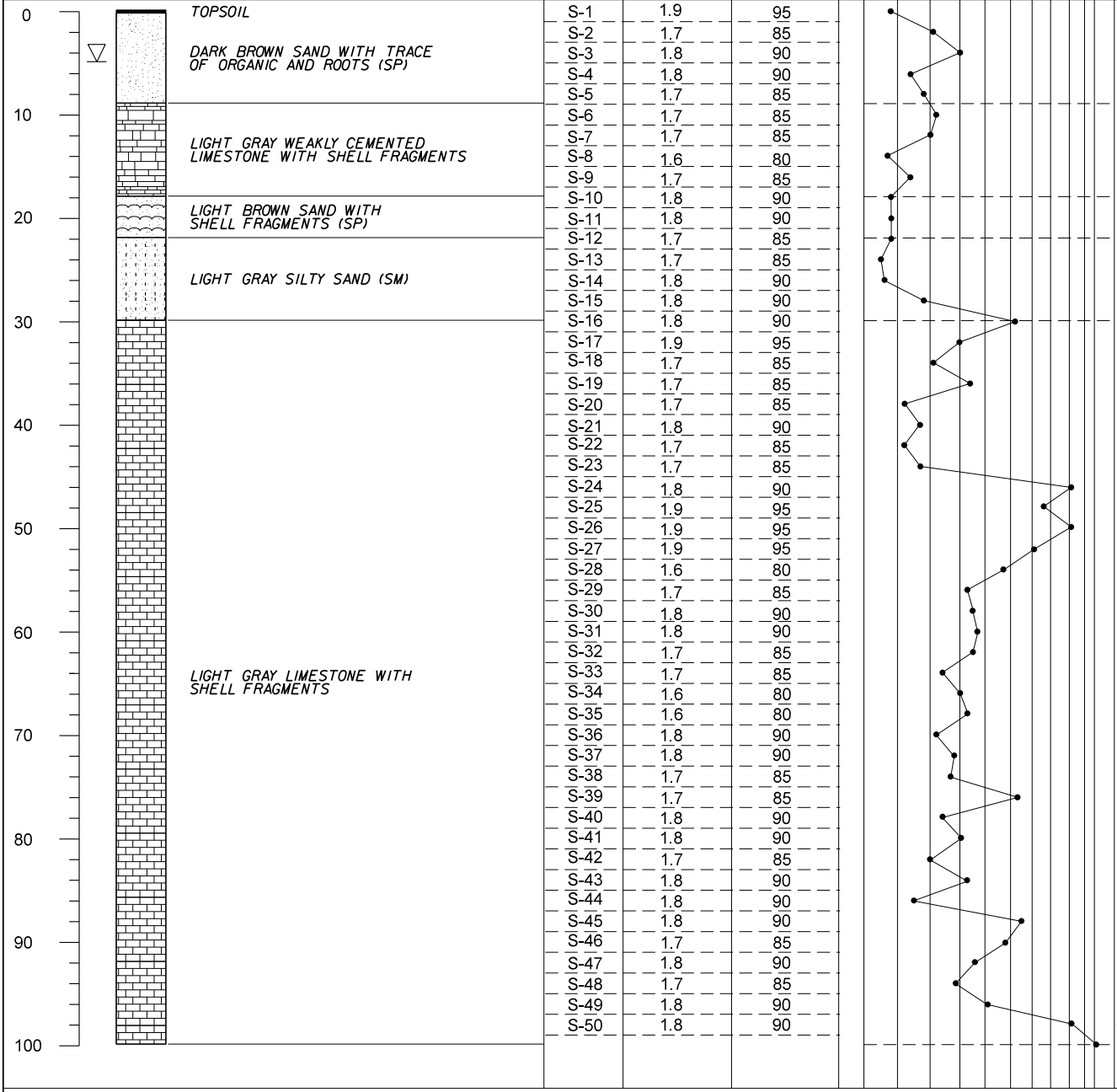
Date (Start / Finish): 08-05-13

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 729087.16

Easting: 681272.2

County: HENDRY



SAMPLE #	RECOVERY (FT)	RECOVERY (%)	BLOWS ON SAMPLER PER 6"
S-1	1.9	95	3-4-4-4
S-2	1.7	85	10-11-10-14
S-3	1.8	90	11-15-15-14
S-4	1.8	90	3-5-9-14
S-5	1.7	85	11-10-8-10
S-6	1.7	85	10-11-11-11
S-7	1.7	85	9-10-10-11
S-8	1.6	80	10-6-4-3
S-9	1.7	85	8-7-7-8
S-10	1.8	90	3-4-4-4
S-11	1.8	90	5-4-4-4
S-12	1.7	85	3-4-4-5
S-13	1.7	85	2-3-2-2
S-14	1.8	90	4-3-3-5
S-15	1.8	90	7-8-10-15
S-16	1.8	90	20-27-25-21
S-17	1.9	95	16-15-15-14
S-18	1.7	85	8-11-10-10
S-19	1.7	85	16-17-17-15
S-20	1.7	85	11-8-6-7
S-21	1.8	90	6-8-8-8
S-22	1.7	85	4-5-3-7
S-23	1.7	85	6-8-9-10
S-24	1.8	90	45-40-41-40
S-25	1.9	95	35-36-30-30
S-26	1.9	95	50-40-41-47
S-27	1.9	95	35-30-31-34
S-28	1.6	80	25-27-20-20
S-29	1.7	85	17-18-15-15
S-30	1.8	90	13-20-15-14
S-31	1.8	90	19-20-17-17
S-32	1.7	85	10-11-12-13
S-33	1.7	85	15-16-14-15
S-34	1.6	80	14-17-16-13
S-35	1.6	80	10-11-11-12
S-36	1.8	90	10-13-15-14
S-37	1.8	90	13-12-15-15
S-38	1.7	85	17-25-28-30
S-39	1.7	85	10-12-12-12
S-40	1.8	90	13-16-15-15
S-41	1.8	90	12-10-10-11
S-42	1.7	85	16-18-15-12
S-43	1.8	90	6-7-8-8
S-44	1.8	90	21-25-30-36
S-45	1.8	90	20-21-27-20
S-46	1.7	85	16-17-19-15
S-47	1.8	90	18-15-14-16
S-48	1.7	85	17-20-21-24
S-49	1.8	90	37-40-41-40
S-50	1.8	90	47-50-49-50

BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : W-22

Project Site: Annex-C-139

Boring Depth (ft) : 30.0

Groundwater Depth (ft): 4.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

Date (Start / Finish): 8/28/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

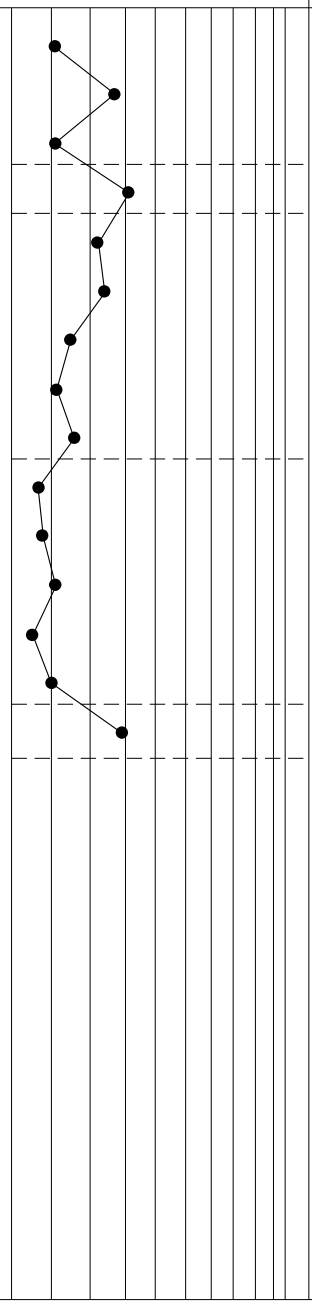
Northing: 720843.094

Easting: 681028.797

County: HENDRY

DEEP FEET	LITHOLOGY	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	STANDARD PENETRATION TEST Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX"	BLOWS ON SAMPLER PER 6"
0		TOPSOIL	S-1	1.9	95		6-8-8-8
		BROWN TO LIGHT BROWN SAND (SP)	S-2	1.7	85		15-15-12-9
5			S-3	1.6	80		6-6-5-7
		LIGHT BROWN WEAKLY CEMENTED LIMESTONE WITH SHELL FRAGMENTS	S-4	1.6	80		12-15-16-16
			S-5	1.6	80		12-11-11-10
10			S-6	1.6	80		10-11-13-12
		LIGHT GRAY SAND WITH TRACE OF SILT AND SHELL (SP)	S-7	1.8	90		6-8-7-8
15			S-8	1.6	80		4-6-5-7
			S-9	1.6	80		6-6-8-9
			S-10	1.8	90		3-4-3-3
20			S-11	1.8	90		5-4-4-3
		LIGHT GRAY SILTY SAND (SM)	S-12	1.8	90		3-5-6-4
25			S-13	1.8	90		4-3-2-6
			S-14	1.5	75		4-5-5-6
		LIGHT GRAY LIMESTONE	S-15	1.6	80		11-14-15-17
30							
35							
40							
45							
50							

STANDARD PENETRATION TEST: 10 30 50 70 90



BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : W-22A

Project Site: Annex-C-139

Boring Depth (ft) : 30.0

Groundwater Depth (ft): 7.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

Date (Start / Finish): 6/19/2014

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 720562.42

Easting: 681034.42

County: HENDRY

DEEP FEET	LITHOLOGY	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	STANDARD PENETRATION TEST Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX" (10 30 50 70 90)	BLOWS ON SAMPLER PER 6"
0		TOPSOIL	S-1	1.0	50		2-2-3-4
		LIGHT BROWN SAND TRACE ROOTS (SP)	S-2	1.6	80		6-8-6-6
5		DARK BROWN ORGANIC STAINED SAND (SP)	S-3	1.5	75		2-4-8-12
		DARK BROWN SAND (SP)	S-4	1.8	90		14-15-12-12
			S-5	1.7	87		11-11-9-12
10			S-6	1.2	62		3-5-5-6
			S-7	1.9	96		7-8-8-9
15			S-8	1.2	62		9-9-8-9
			S-9	1.9	96		6-7-7-8
		VERY PALE BROWN SAND TRACE SILT (SP)	S-10	1.9	96		2-3-5-5
20		VERY PALE BROWN CLAYEY/SILTY SAND (SC/SM)	S-11	1.0	50		2-2-4-5
			S-12	1.8	90		6-7-6-7
			S-13	1.0	50		4-4-5-5
25			S-14	1.3	66		6-8-8-8
		LIGHT GRAY FRAGMENTED SANDY LIMESTONE WITH SOME SHELL	S-15	0.9	46		7-5-6-5
30							
35							
40							
45							
50							

BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : W-23

Project Site: Annex-C-139

Boring Depth (ft) : 30.0

Groundwater Depth (ft): 10.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

Date (Start / Finish): 8/29/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 726267.429

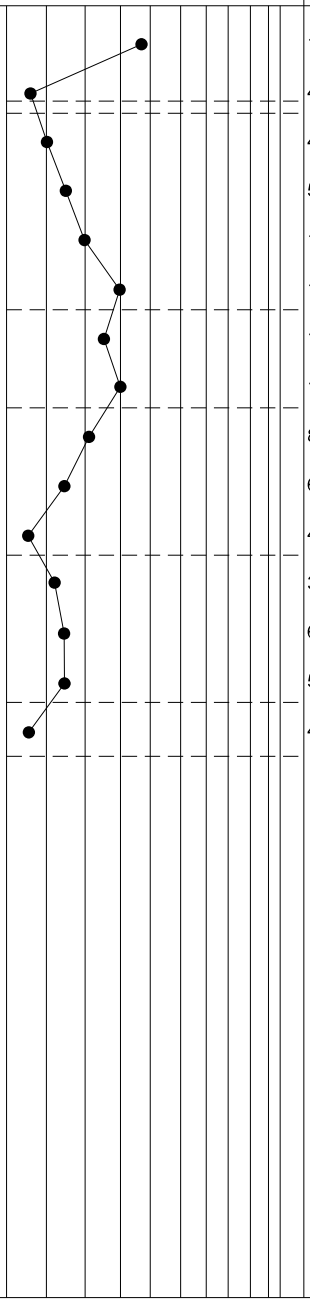
Easting: 692849.182

County: HENDRY

DEEP FEET	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	BLOWS ON SAMPLER PER 6"
0	TOPSOIL				
	DARK BROWN SAND, WITH LIMESTONE FRAGMENTS (SP/FILL)	S-1	1.8	90	13-17-20-10
		S-2	1.8	90	4-3-3-3
5	BROWN SILTY SAND (SM)	S-3	1.9	95	4-5-5-5
		S-4	1.7	85	5-8-7-7
	BROWN SAND (SP)	S-5	1.8	90	15-12-8-8
10		S-6	1.8	90	10-11-19-25
		S-7	1.7	85	12-12-13-14
	LIGHT GRAY WEAKLY CEMENTED LIMESTONE	S-8	1.7	85	15-16-14-14
15		S-9	1.7	85	8-10-11-10
	GRAY SILTY SAND (SM)	S-10	1.6	80	6-6-8-10
20		S-11	1.8	90	4-4-3-4
		S-12	1.8	90	3-5-6-5
	LIGHT GRAY SILTY SAND WITH LIMESTONE FRAGMENTS (SM)	S-13	1.7	85	6-7-7-8
25		S-14	1.6	80	5-7-7-8
	LIGHT GRAY SILTY SAND (SM)	S-15	1.7	85	4-3-3-3
30					
35					
40					
45					
50					

STANDARD PENETRATION TEST
Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX"

10 30 50 70 90



BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : W-23A

Project Site: Annex-C-139

Boring Depth (ft) : 30.0

Groundwater Depth (ft): 4.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

Date (Start / Finish): 6/17/2014

Time (Start / Finish): 8:00 AM / 5:00 PM

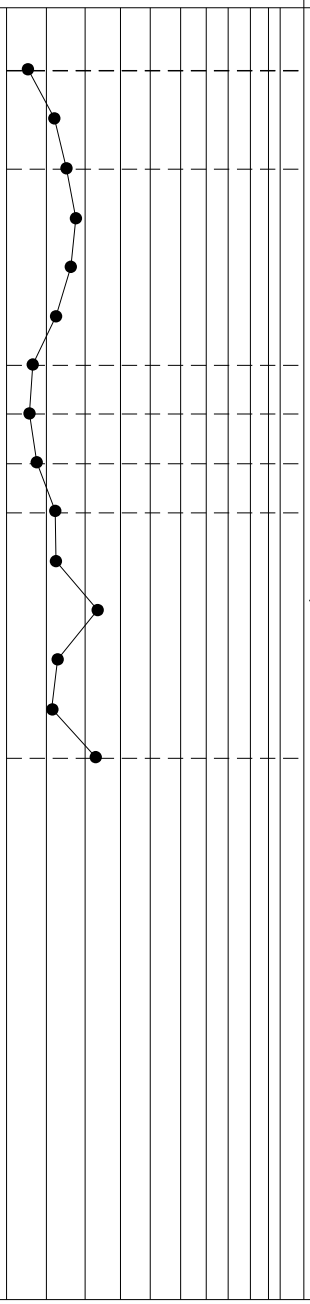
Northing: 725949.48

Easting: 692953.28

County: HENDRY

DEEP FEET	LITHOLOGY	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	BLOWS ON SAMPLER PER 6"
0		TOPSOIL	S-1	1.6	79	2-3-2-2
		BROWN SAND TRACE SILT (SP)	S-2	1.7	83	5-6-5-5
		LIGHT BROWNISH GRAY SILTY LIMESTONE	S-3	1.6	79	6-8-7-8
5			S-4	1.7	83	5-8-10-11
			S-5	1.7	83	6-8-8-6
10			S-6	1.6	79	4-5-7-5
		LIGHT GREENISH GRAY CLAY/SILT (CL/ML)	S-7	1.6	79	4-4-3-5
			S-8	1.7	83	4-3-3-3
15			S-9	1.5	75	6-5-4-4
		LIGHT GRAY SILTY LIMESTONE WITH FEW SHELL	S-10	1.6	79	4-6-5-6
			S-11	1.7	83	5-4-7-8
20			S-12	1.7	83	10-12-12-13
		PINKISH GRAY CLAYEY/SILTY SAND WITH LITTLE SHELL (SC/SM)	S-13	1.6	79	8-7-6-10
			S-14	1.7	83	4-6-5-5
25			S-15	1.6	79	8-12-9-10
		GRAY FRAGMENTED SANDY LIMESTONE				
30						
35						
40						
45						
50						

STANDARD PENETRATION TEST
Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX"



BORING LOG

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring : W-24

Project Site: Annex-C-139

Boring Depth (ft) : 30.0

Groundwater Depth (ft): 4.0

Drilling Method: Bentonite Mud Rotary

Driller: Danny Reeves

Drill Rig: CME-55 / Safety Hammer

Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):

Date (Start / Finish): 7/10/2013

Time (Start / Finish): 8:00 AM / 5:00 PM

Northing: 735263.54

Easting: 680441.82

County: HENDRY

DEEP FEET	LITHOLOGY	CLASSIFICATION	SAMPLE #	RECOVERY (FT)	RECOVERY (%)	STANDARD PENETRATION TEST Blows per foot on 2" O.D. Sampler with 140 lb. hammer falling XX" (10 30 50 70 90)	BLOWS ON SAMPLER PER 6"
0		TOPSOIL					
		LIGHT BROWN SAND (SP)	S-1	1.2	60		2-8-3-7
			S-2	1.5	75		4-6-15-20
5		LIGHT GRAY WEAKLY CEMENTED LIMESTONE	S-3	1.6	80		20-16-8-8
			S-4	1.6	80		6-6-7-8
			S-5	1.8	90		10-12-12-13
10		LIGHT GRAY TO LIGHT BROWN SAND (SP)	S-6	1.5	75		3-5-5-8
			S-7	1.5	75		2-3-4-5
15		LIGHT GRAY SAND WITH SHELL FRAGMENTS (SP)	S-8	1.4	70		3-3-5-6
		BROWN SAND (SP)	S-9	1.3	65		3-4-3-3
		LIGHT GRAY SAND WITH SHELL FRAGMENTS (SP)	S-10	1.5	75		6-7-8-10
20			S-11	1.5	75		2-3-6-6
			S-12	1.5	75		4-5-5-5
25		LIGHT BROWN SAND (SP)	S-13	1.7	85		6-3-5-7
			S-14	1.7	85		5-8-9-10
			S-15	1.7	85		5-5-6-8
30							
35							
40							
45							
50							

Summary of Permeability Test Results

Test Location	Test Depth (ft)	Soil Type (USCS)	GWT Depth (ft)	Hc (ft)	d (ft)	L (ft)	Q (gpm)	Q (cfs)	Kh (ft/s-ft ²)	Kh (ft/day)	*K (to compare)
W-3	0-10	SP	2.00	2.00	0.50	10	2.5	5.6E-03	**1.60E-04**	13.8	N/A
W-3	10-15	SP	2.00	2.00	0.33	5	2.4	5.3E-03	**5.14E-04**	44.4	2.51E-04
W-3	15-25	SP	2.00	2.00	0.33	10	1.9	4.3E-03	**2.08E-04**	18.0	2.02E-04
W-6	0-10	SP / OL	3.00	3.00	0.50	10	3.4	7.6E-03	**1.86E-04**	16.1	N/A
W-6	10-15	Limestone	3.00	3.00	0.33	5	5.1	1.1E-02	**1.09E-03**	94.2	5.33E-04
W-6	15-25	Limestone	3.00	3.00	0.33	10	4.6	1.0E-02	**4.89E-04**	42.2	4.76E-04
W-10	0-10	SP	2.00	2.00	0.50	10	1.6	3.6E-03	**1.24E-04**	10.7	N/A
W-10	10-15	SP	2.00	2.00	0.33	5	1.2	2.7E-03	**2.59E-04**	22.4	1.26E-04
W-10	15-25	SP	2.00	2.00	0.33	10	1.0	2.3E-03	**1.10E-04**	9.5	1.07E-04
W-14	0-10	SP	3.00	3.00	0.50	10	5.5	1.2E-02	**3.01E-04**	26.0	N/A
W-14	10-15	SP	3.00	3.00	0.33	5	4.7	1.0E-02	**9.99E-04**	86.3	4.87E-04
W-14	15-25	SP	3.00	3.00	0.33	10	4.6	1.0E-02	**4.98E-04**	43.0	4.85E-04
W-16	0-10	SP	4.00	4.00	0.50	10	9.1	2.0E-02	**3.96E-04**	34.2	na
W-16	10-15	SP	4.00	4.00	0.33	5	5.0	1.1E-02	**5.40E-04**	46.7	5.26E-04
W-16	15-25	SP	4.00	4.00	0.33	10	6.3	1.4E-02	**3.37E-04**	29.1	6.58E-04
W-20	0-10	SP	2.50	2.50	0.50	10	5.4	1.2E-02	**7.61E-04**	65.8	N/A
W-20	10-15	SP	2.50	2.50	0.33	5	3.9	8.8E-03	**6.77E-04**	58.5	4.13E-04
W-20	15-25	SP	2.50	2.50	0.33	10	3.1	6.8E-03	**2.62E-04**	22.6	3.19E-03
W-22A	0-10	SP	7.00	7.00	0.50	10	3.7	8.2E-03	**1.15E-04**	9.9	1.40E-04
W-22A	10-15	SP	7.00	7.00	0.33	5	1.5	3.3E-03	**9.21E-05**	8.0	4.48E-05
W-22A	15-25	SM / Limestone	7.00	7.00	0.33	10	1.2	2.8E-03	**3.81E-05**	3.3	2.24E-05
W-23A	0-10	SP / Limestone / CL	1.50	1.50	0.50	10	0.5	1.1E-03	**5.11E-05**	4.4	3.78E-05
W-23A	10-15	Limestone / CL	1.50	1.50	0.33	5	0.7	1.6E-03	**2.01E-04**	17.4	9.77E-05
W-23A	15-25	Limestone / CL	1.50	1.50	0.33	10	1.4	3.1E-03	**2.01E-04**	17.4	1.18E-04

Equations for K value:

0-10'

$$k=\frac{4Q}{\pi*d(2H_2^2 + 4H_2D_s + H_2d)}$$

Equation for comparation

$$*k=\frac{q\ Ln\left[\frac{mL}{D}+\sqrt{1+\left(\frac{mL}{D}\right)}\right]}{2\pi*L*Hc}$$

Lambe-Whitman, case G (from Hvorslev, 1951)

Case tests
10'-15'
15'-25'

$$k=\frac{P}{\pi*d*D_2*Du}$$

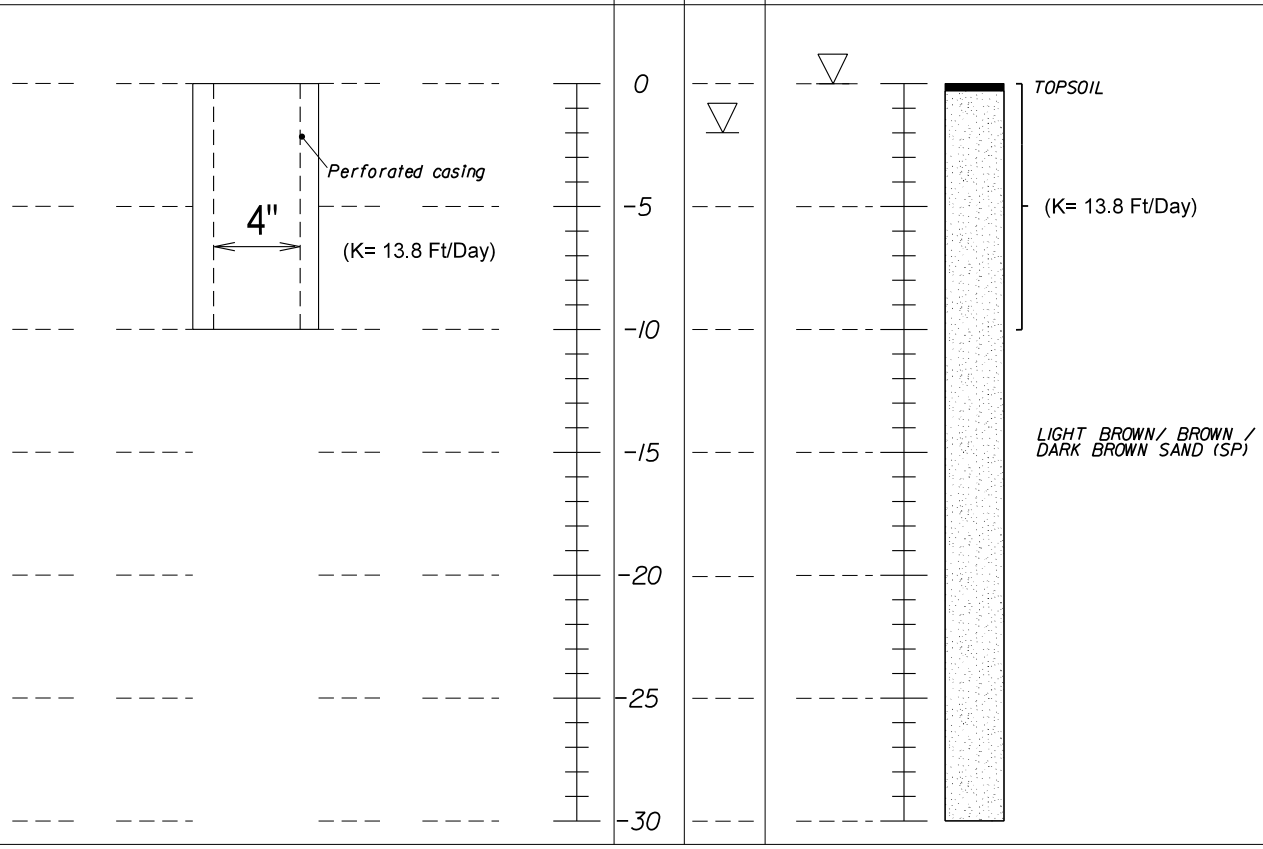
Hc=Du-constant piezometer head
L=D_2-Effective length of screen (test length)
M-Transformation ratio, Kh/Kv, (assumed =1)
D=d-Diameter of borehole
Q-Stabilized flow rate
H_2-Groundwater Depth

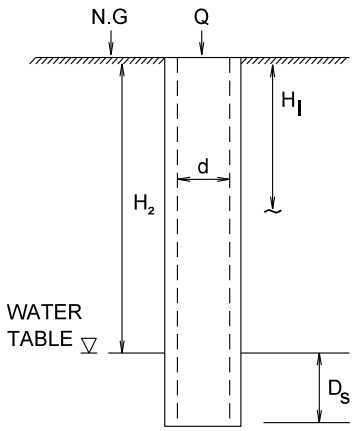
Borehole Permeability Test (BHP) Schematic

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-3
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/5/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 751203.67
Easting: 664067.4
County: Hendry





$$K = \frac{4Q}{\pi d\,(2H_2^2 + 4H_2D_S + H_2d)}$$

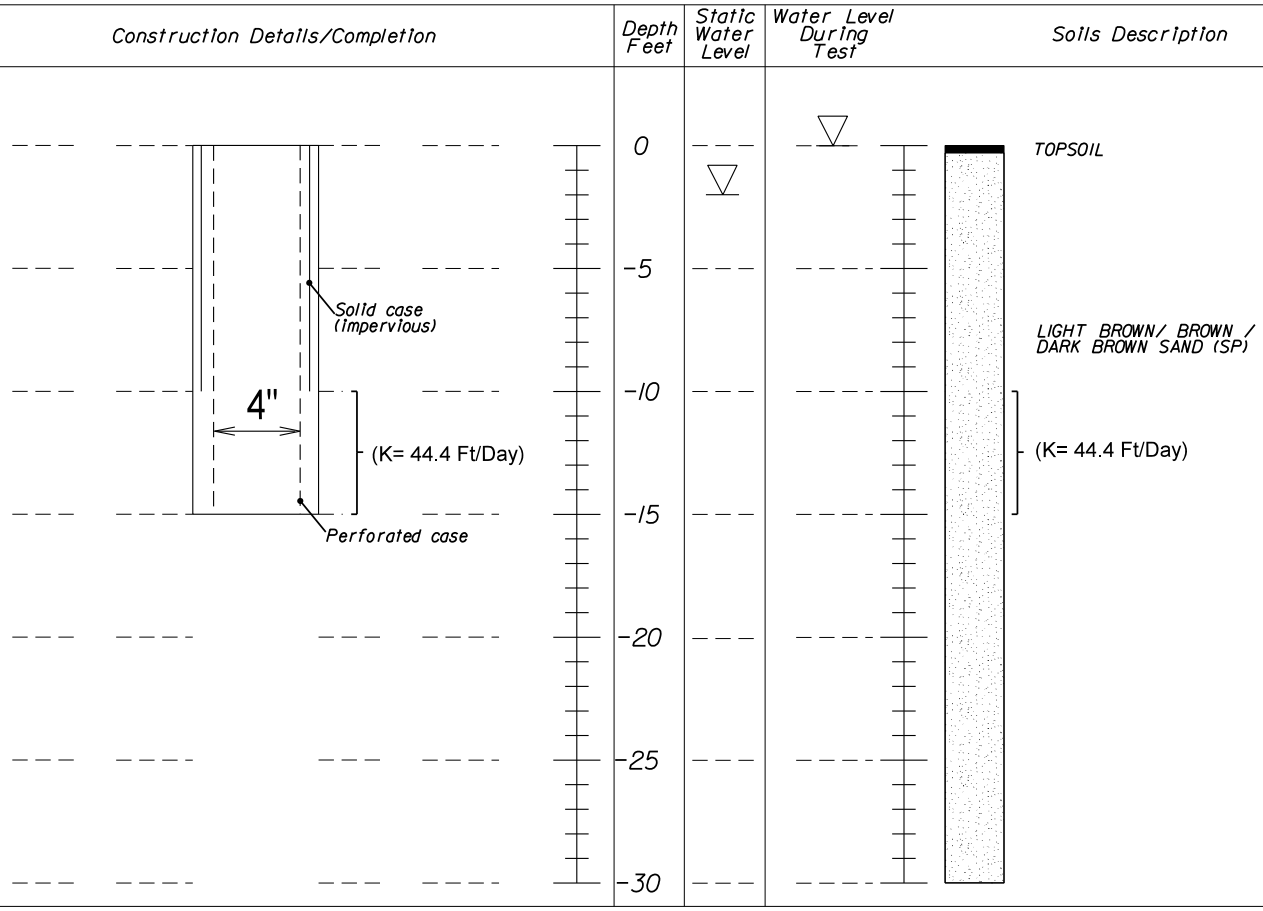
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_S= SATURATED HOLE DEPTH (FEET)
H_2= DEPTH TO WATER TABLE (FEET)
H_1= UNSATURATED HOLE SURFACE (FT.HEAD)

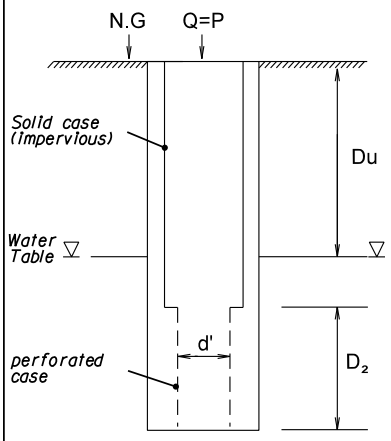
Borehole Permeability Test (BHP) Schematic

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-3
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/5/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 751203.67
Easting: 664067.4
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_2 Du}$$

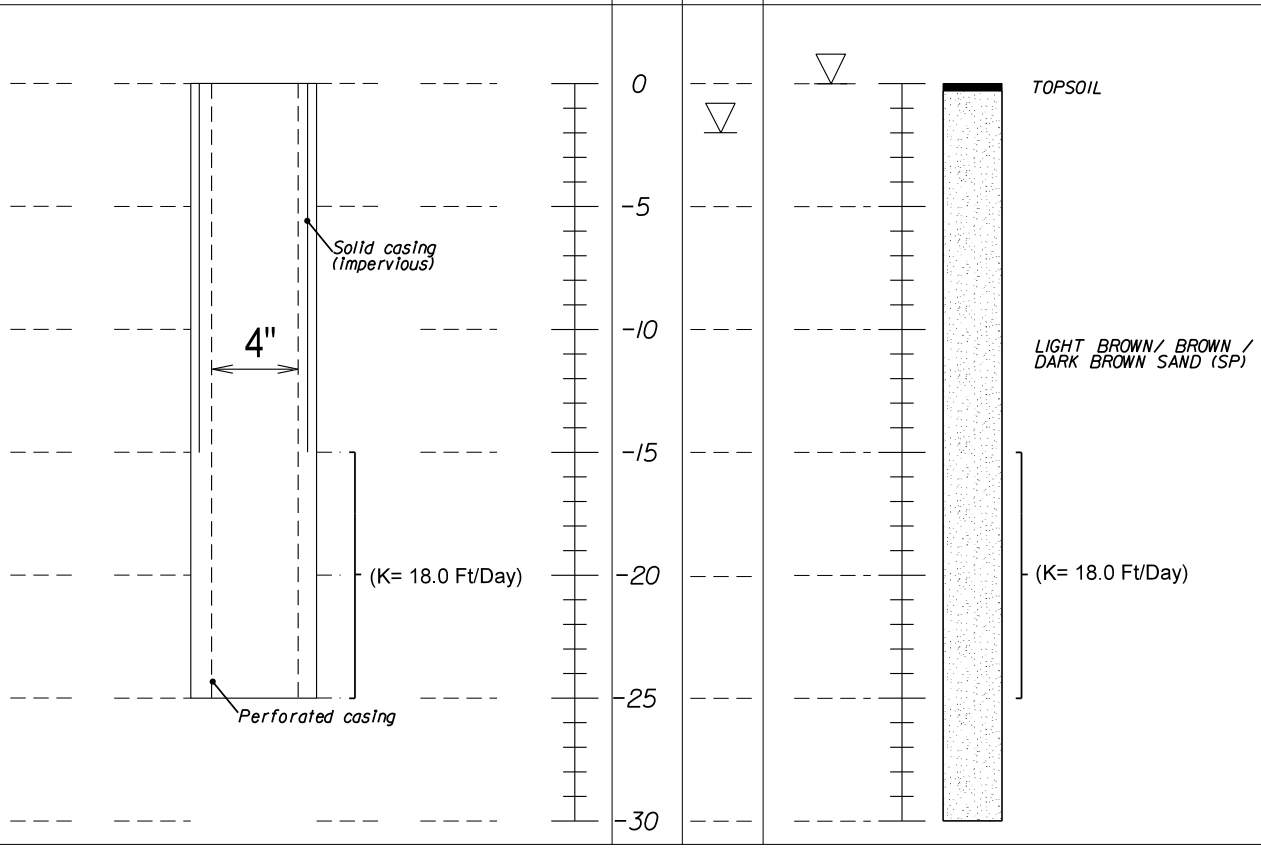
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_2= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

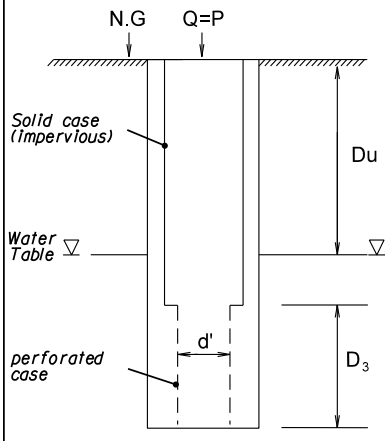
Borehole Permeability Test (BHP) Schematic

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-3
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/5/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 751203.67
Easting: 664067.4
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_3 Du}$$

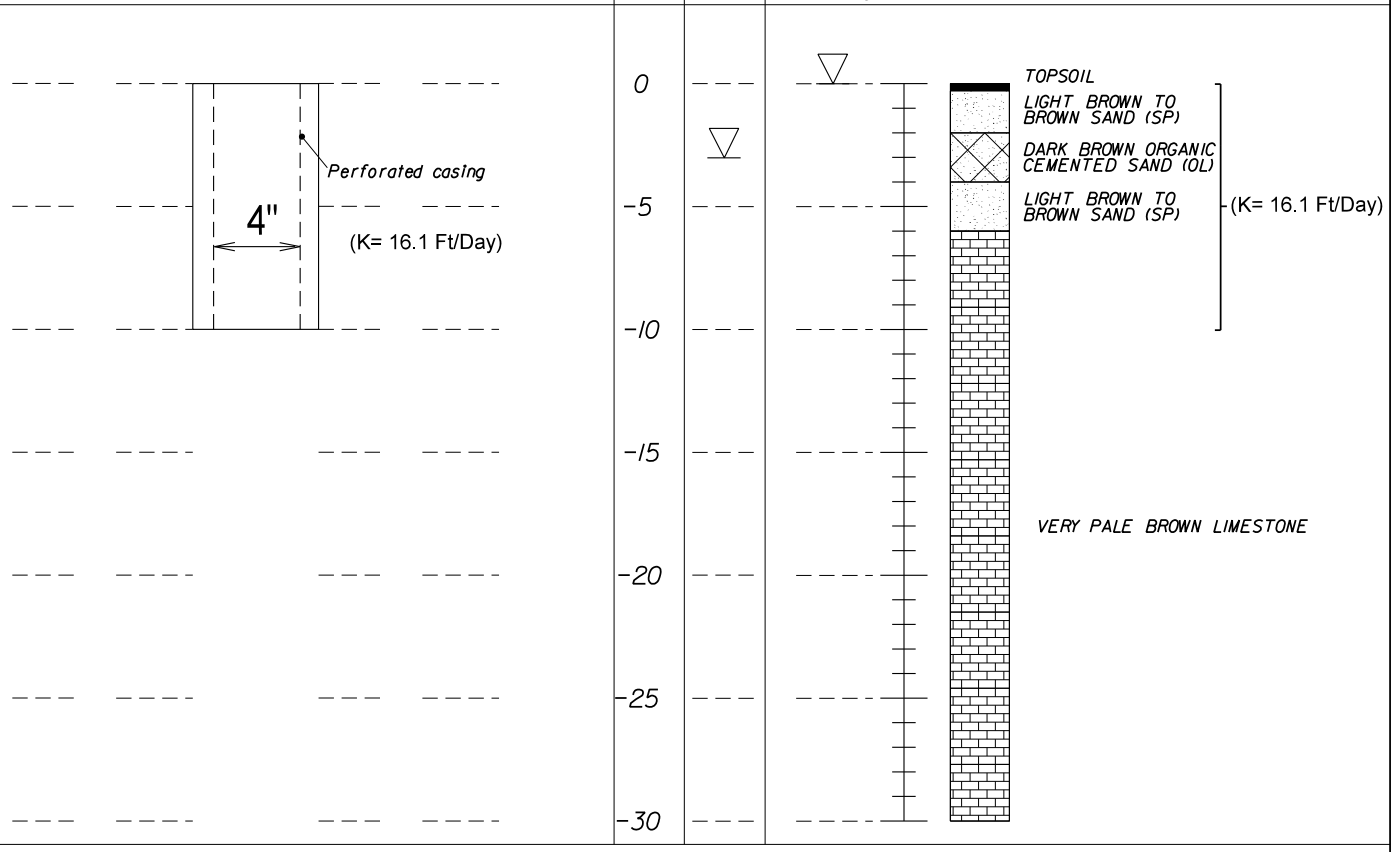
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_3= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

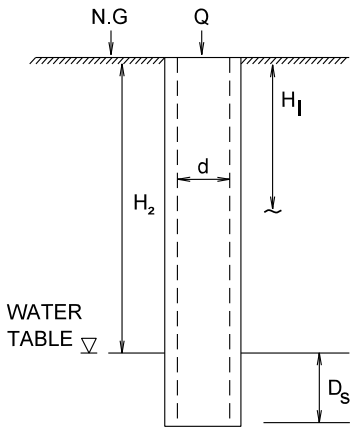
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-6
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/27/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 746041.78
Easting: 678711.59
County: Hendry





$$K = \frac{4Q}{\pi d\,(2H_2^2 + 4H_2D_S + H_2d)}$$

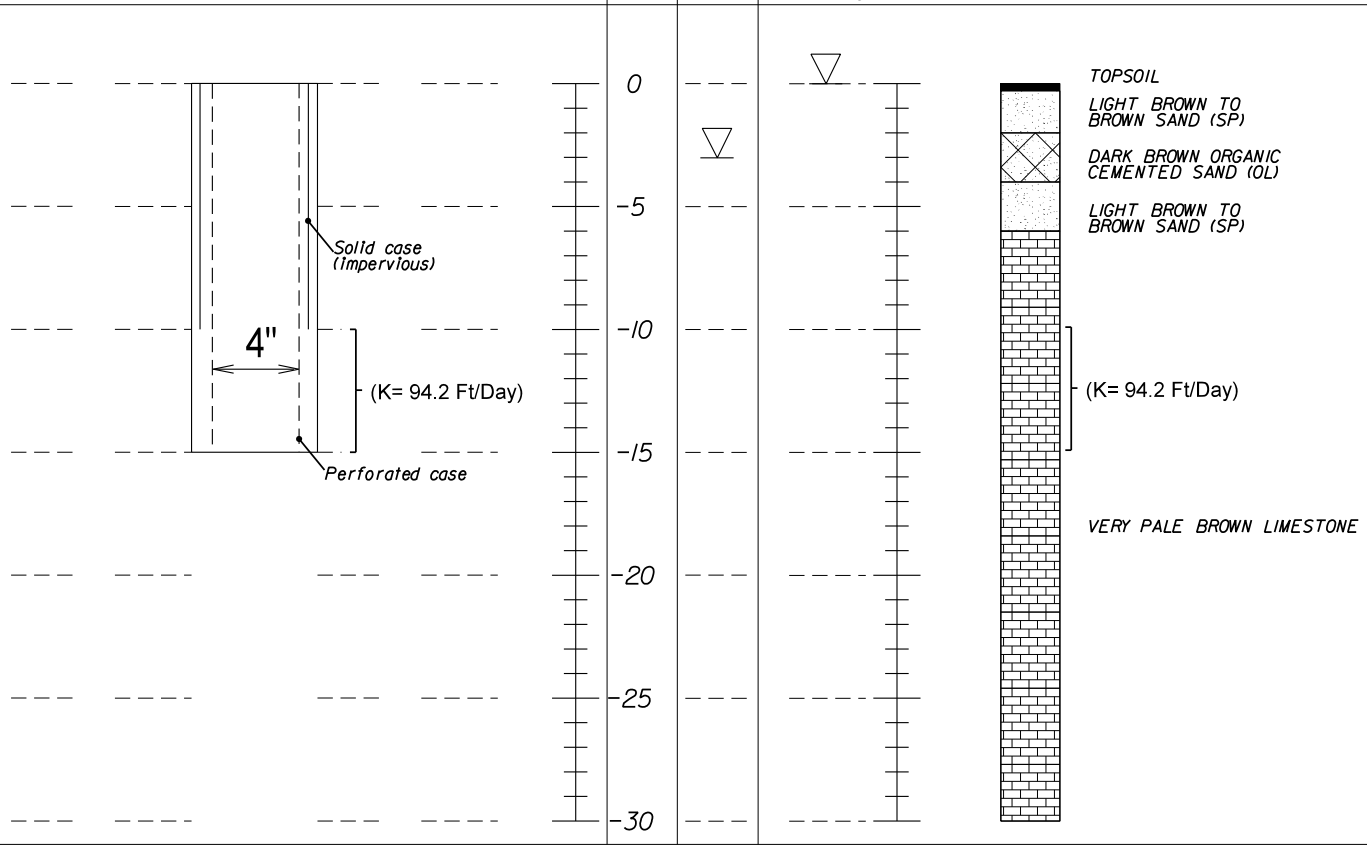
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_S= SATURATED HOLE DEPTH (FEET)
H_2= DEPTH TO WATER TABLE (FEET)
H_1= UNSATURATED HOLE SURFACE (FT.HEAD)

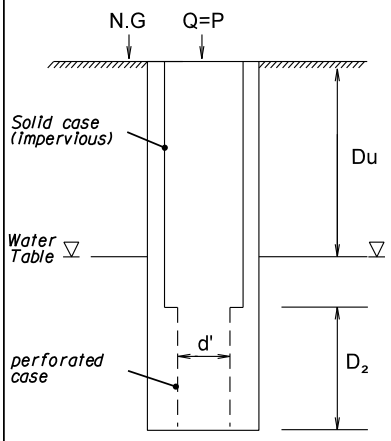
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-6
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/27/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 746041.78
Easting: 678711.59
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_2 Du}$$

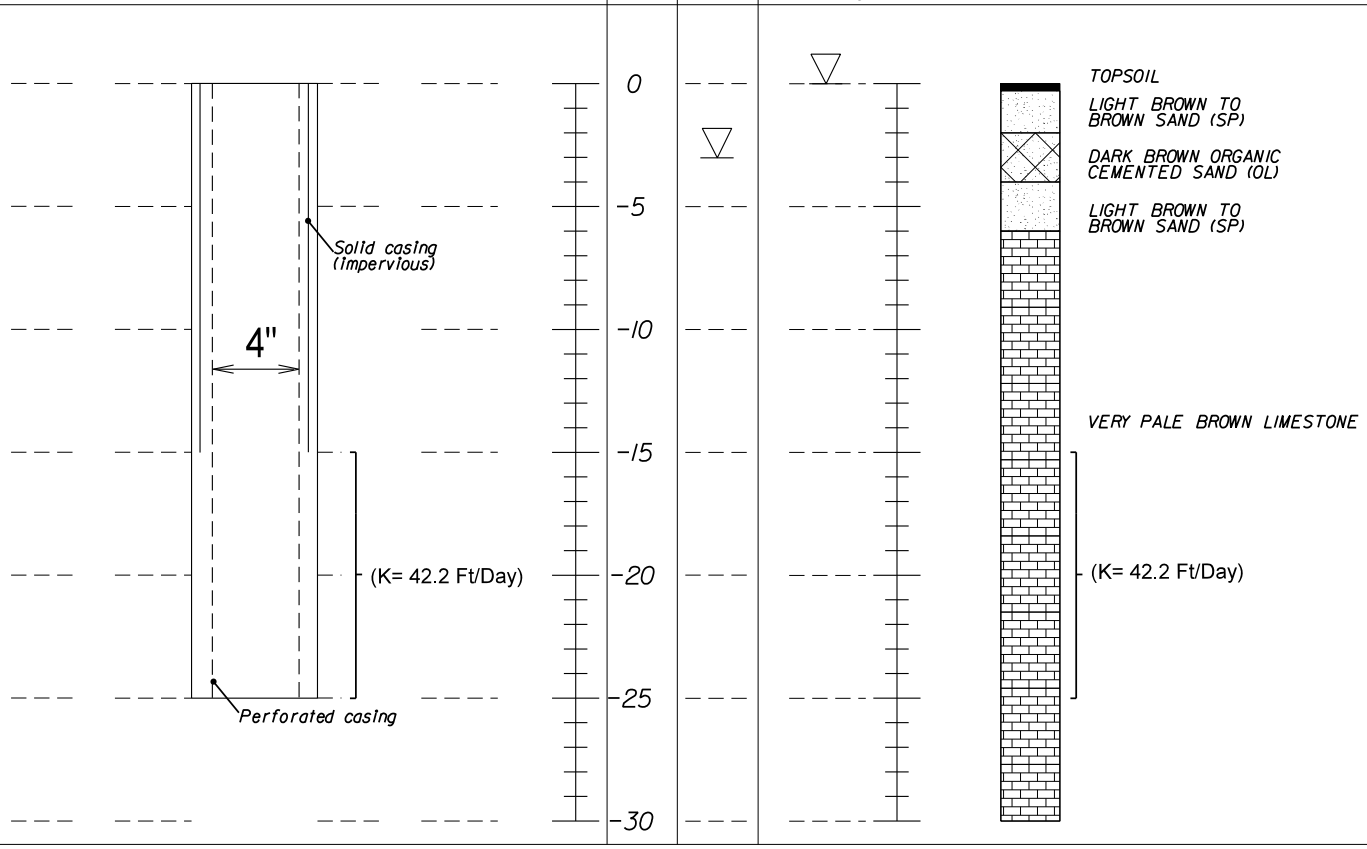
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_2= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

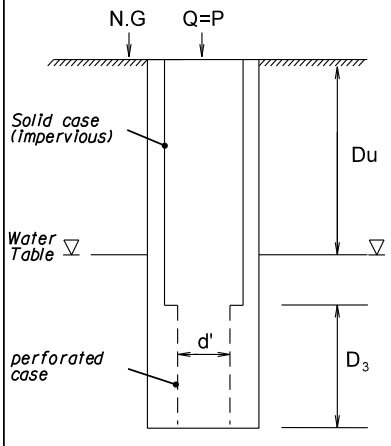
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-6
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/27/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 746041.78
Easting: 678711.59
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_3 Du}$$

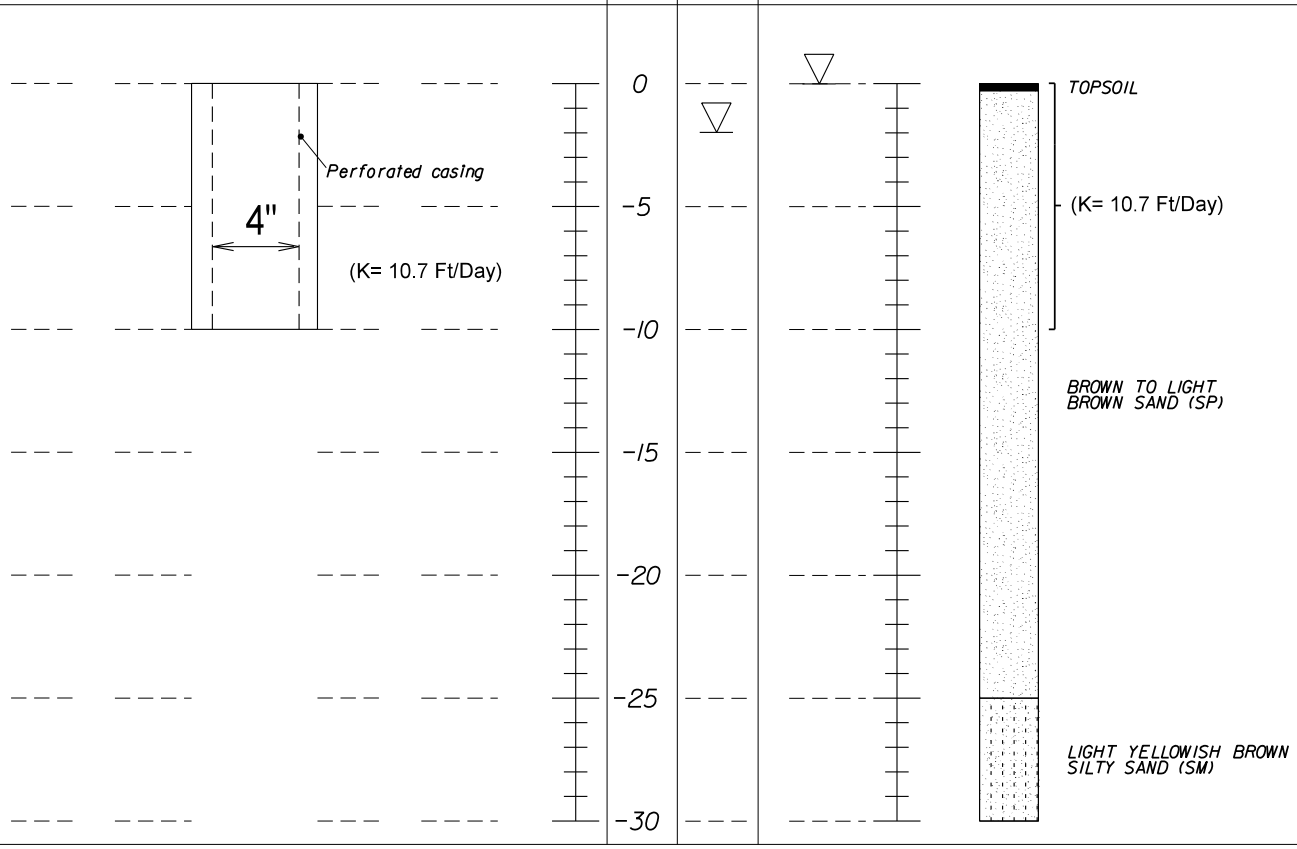
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_3= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

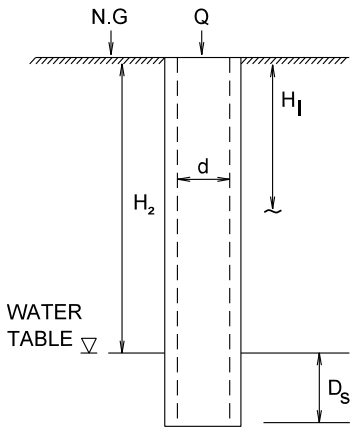
Borehole Permeability Test (BHP) Schematic

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-10
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/9/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 740357.23
Easting: 664196.47
County: Hendry





$$K = \frac{4Q}{\pi d\,(2H_2^2 + 4H_2D_S + H_2d)}$$

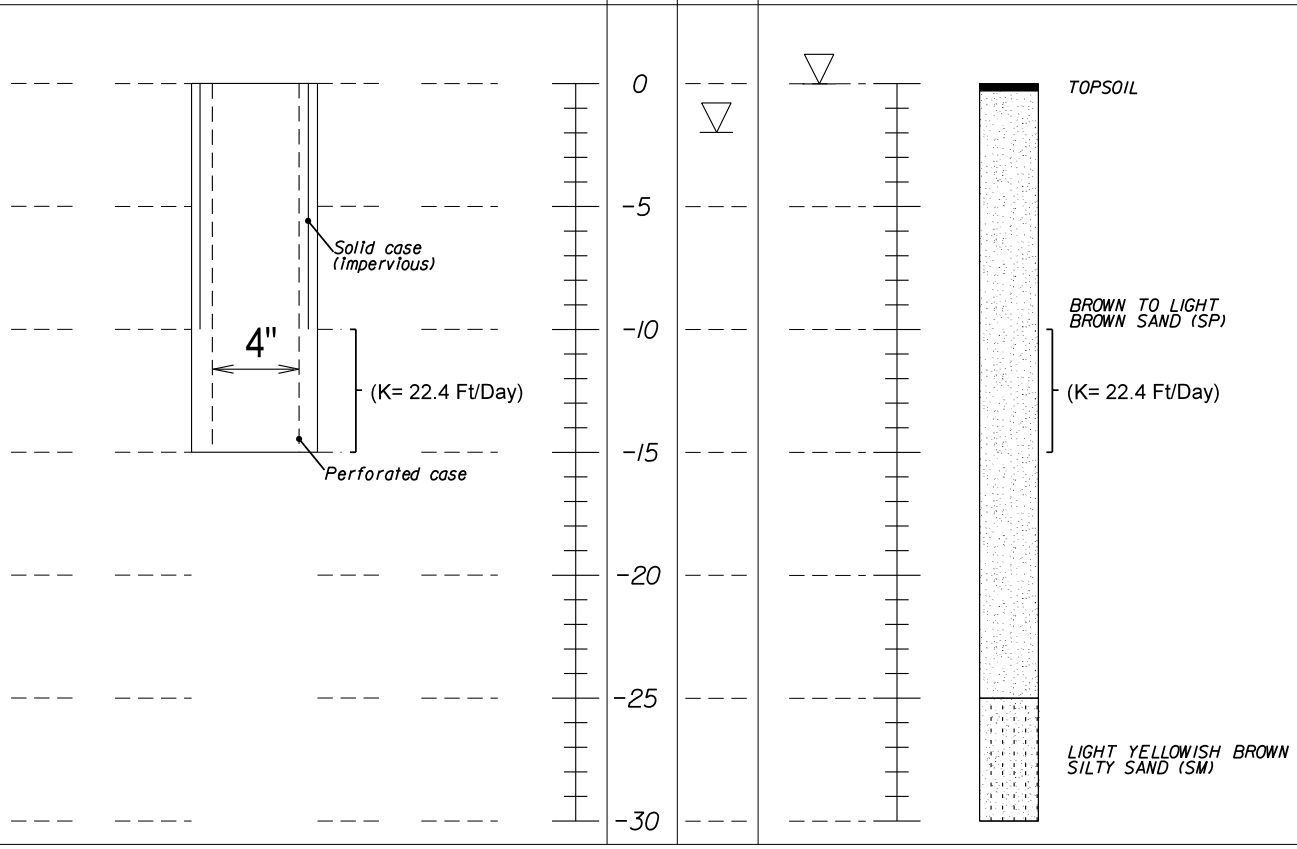
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_S= SATURATED HOLE DEPTH (FEET)
H_2= DEPTH TO WATER TABLE (FEET)
H_1= UNSATURATED HOLE SURFACE (FT.HEAD)

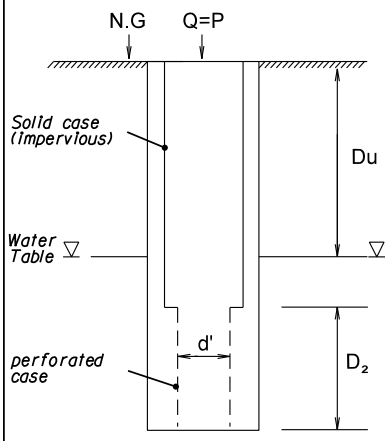
Borehole Permeability Test (BHP) Schematic

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-10
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/9/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 740357.23
Easting: 664196.47
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_2 Du}$$

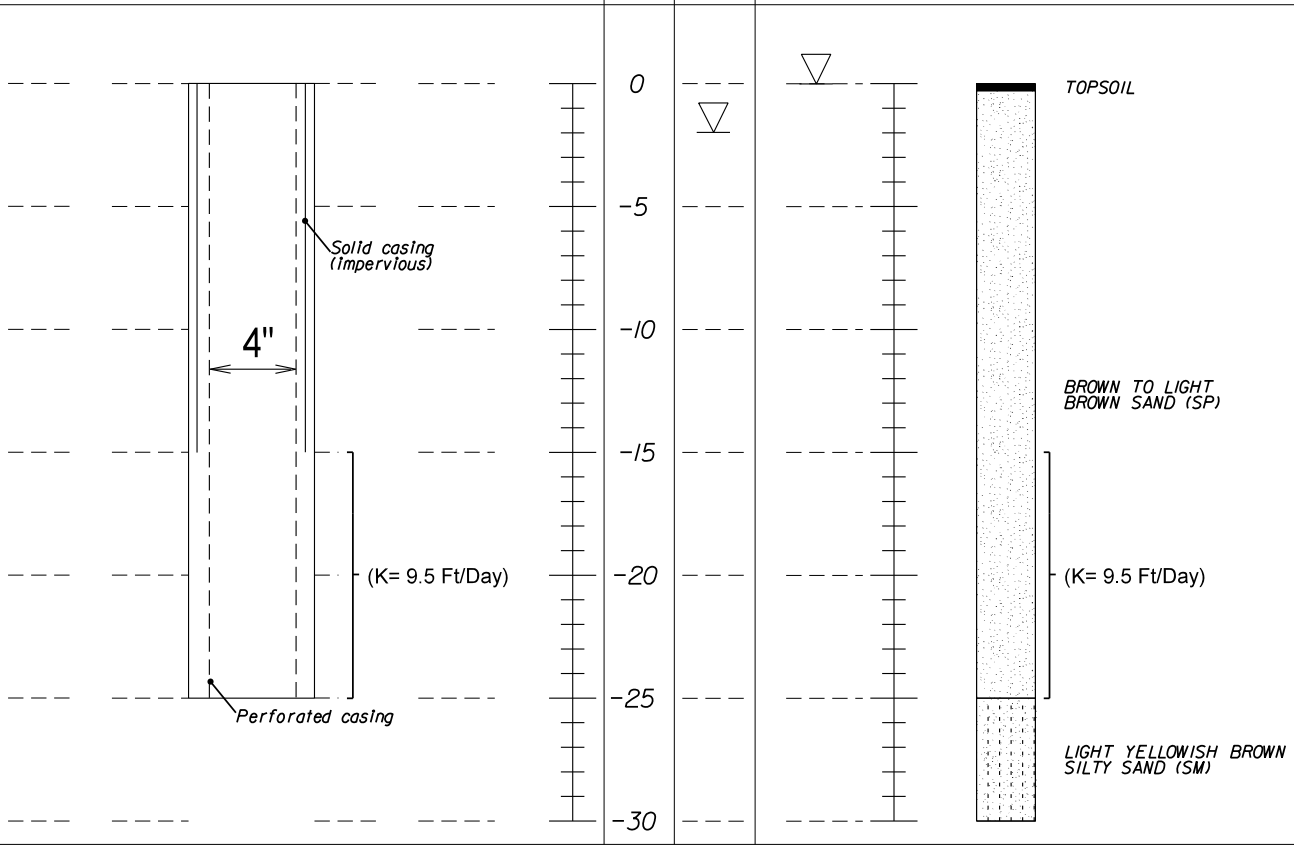
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_2= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

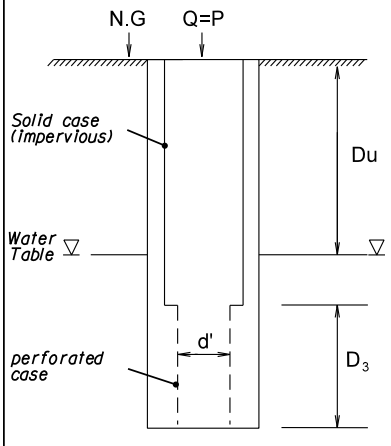
Borehole Permeability Test (BHP) Schematic

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-10
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/9/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 740357.23
Easting: 664196.47
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_3 Du}$$

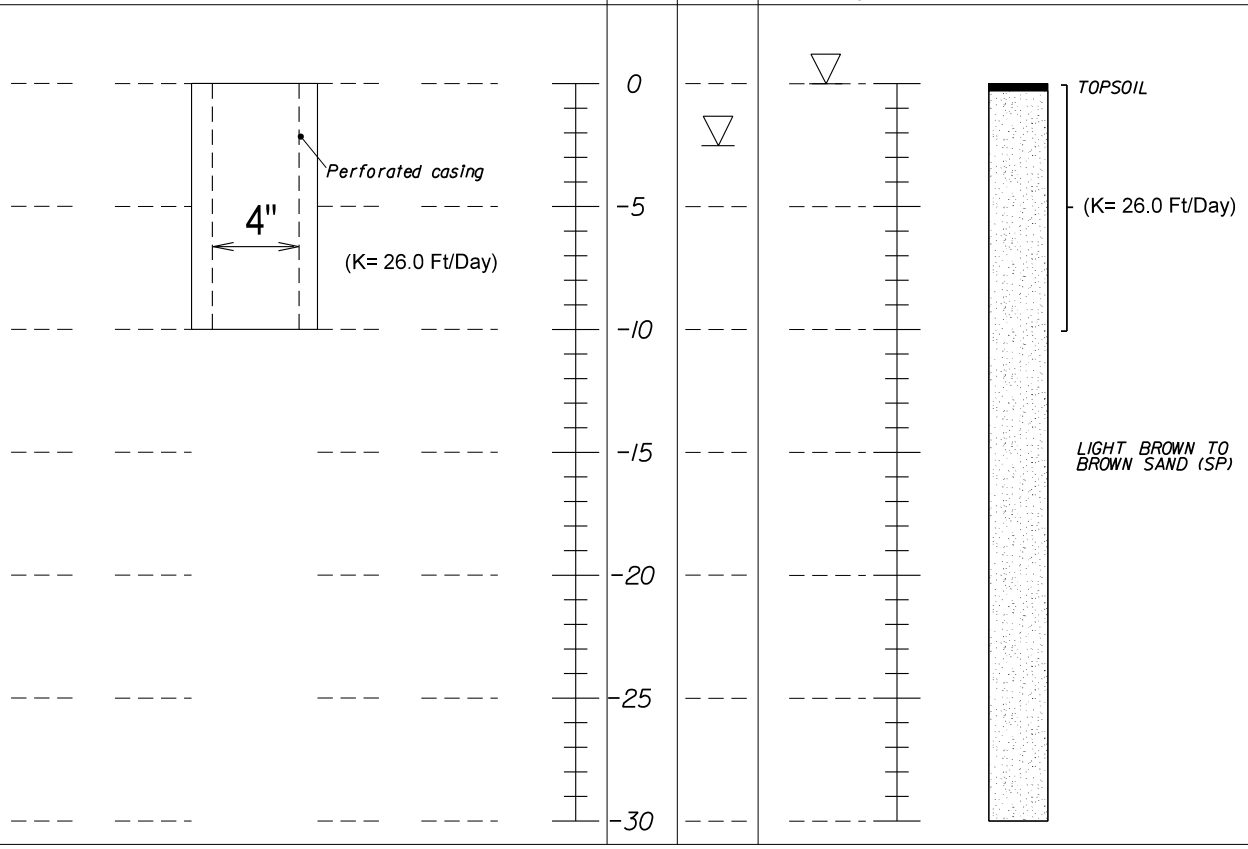
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_3= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

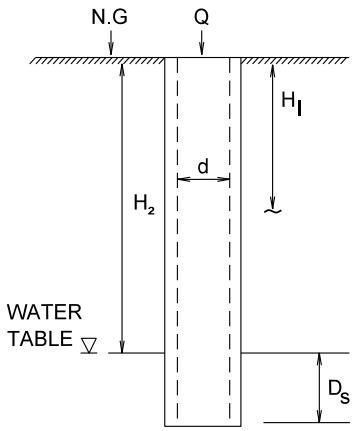
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-14
Project Site: Annex-C-139
Boring Depth (ft): 100 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/31/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 729938.48
Easting: 668171.28
County: Hendry





$$K = \frac{4Q}{\pi d\,(2H_2^2 + 4H_2D_S + H_2d)}$$

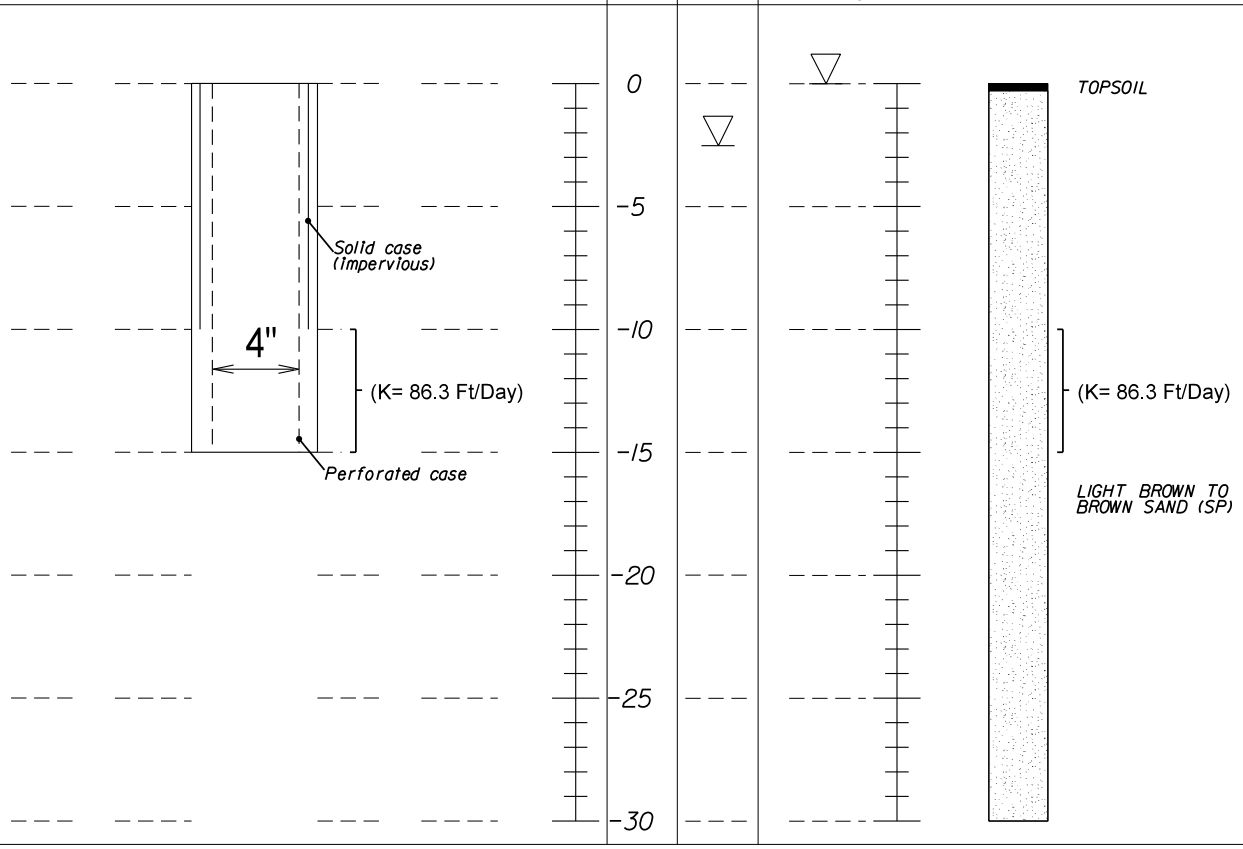
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_S= SATURATED HOLE DEPTH (FEET)
H_2= DEPTH TO WATER TABLE (FEET)
H_1= UNSATURATED HOLE SURFACE (FT.HEAD)

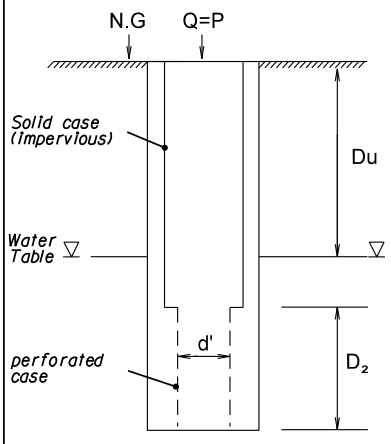
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-14
Project Site: Annex-C-139
Boring Depth (ft): 100 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/31/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 729938.48
Easting: 668171.28
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_2 Du}$$

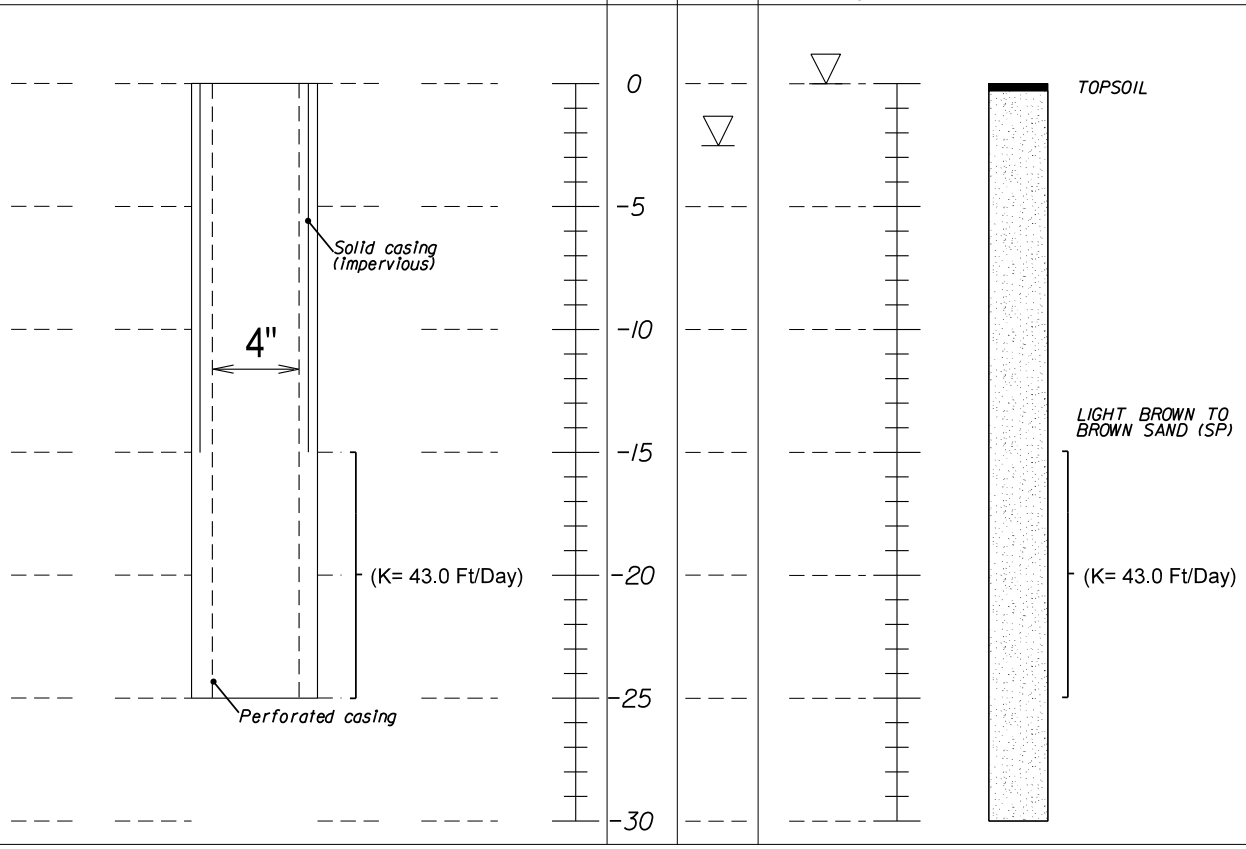
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_2= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

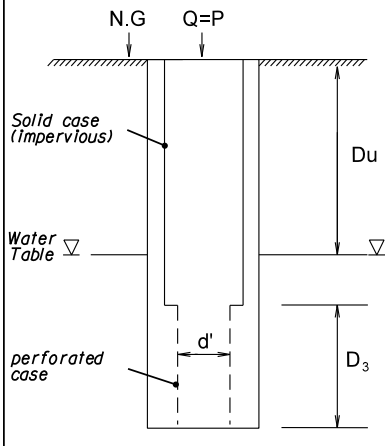
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-14
Project Site: Annex-C-139
Boring Depth (ft): 100 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 7/31/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 729938.48
Easting: 668171.28
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_3 Du}$$

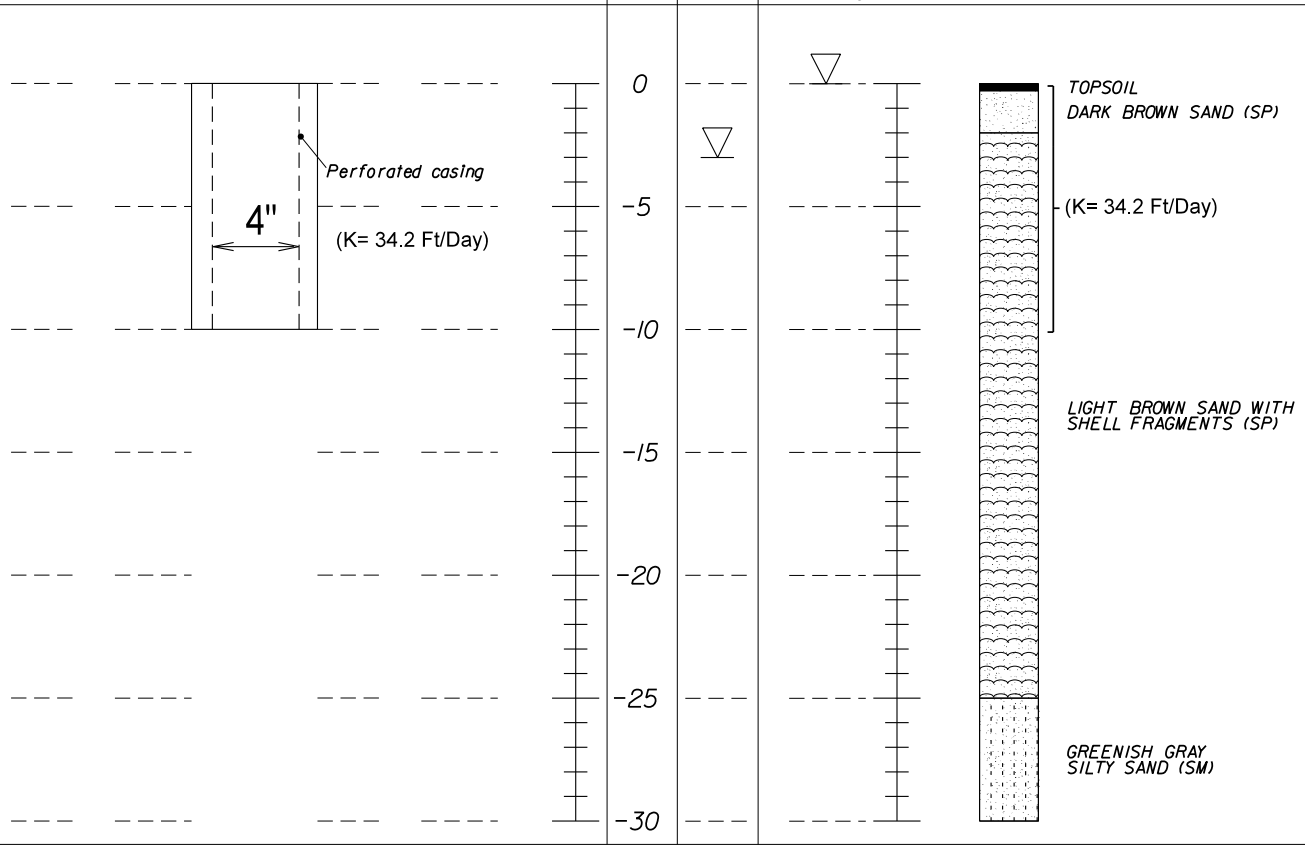
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_3= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

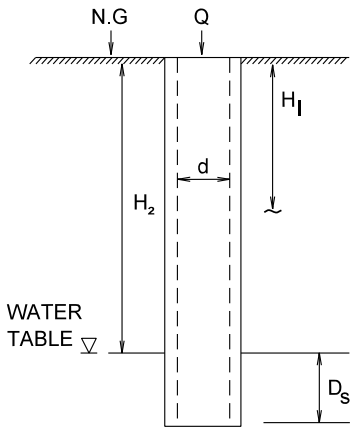
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-16
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/26/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 729086.16
Easting: 681272.2
County: Hendry





$$K = \frac{4Q}{\pi d\,(2H_2^2 + 4H_2D_S + H_2d)}$$

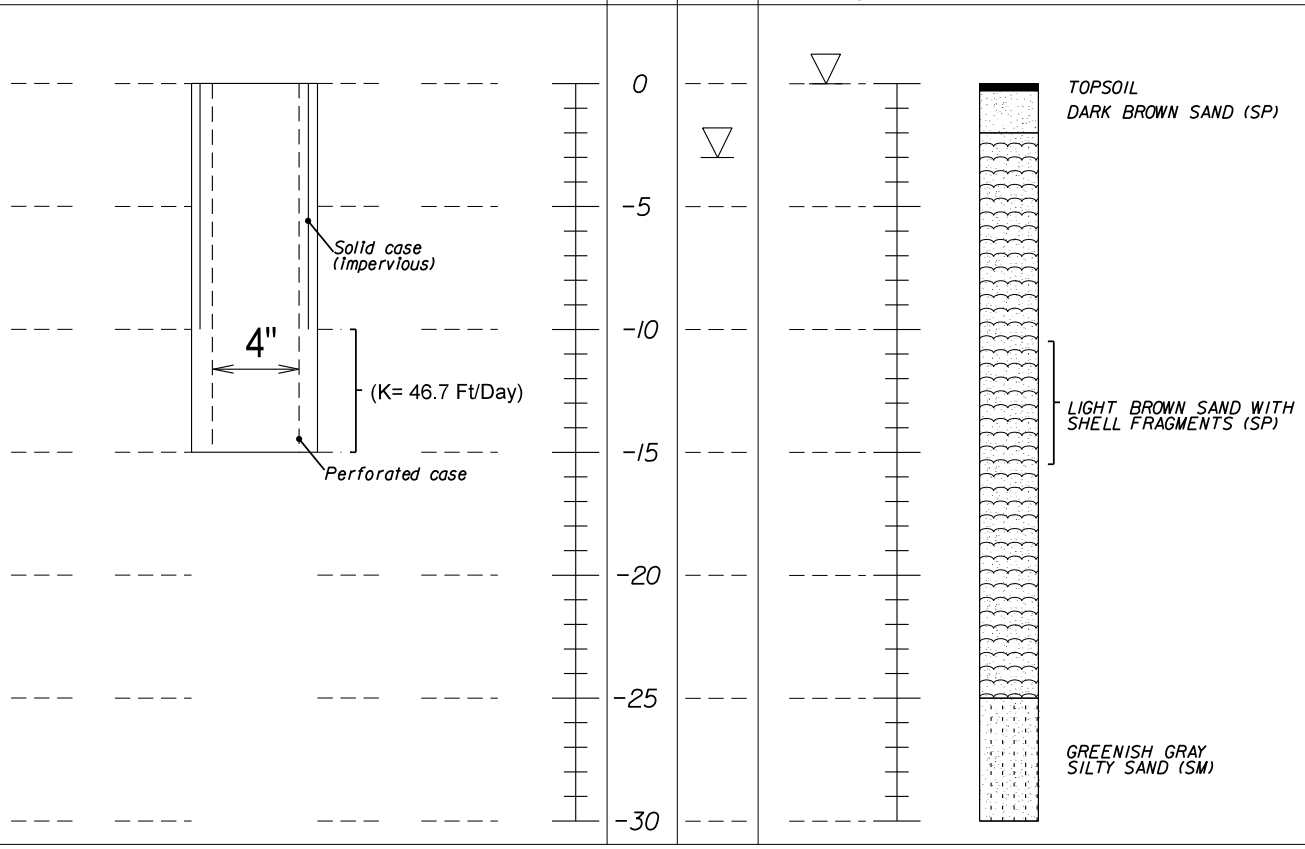
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_S= SATURATED HOLE DEPTH (FEET)
H_2= DEPTH TO WATER TABLE (FEET)
H_1= UNSATURATED HOLE SURFACE (FT.HEAD)

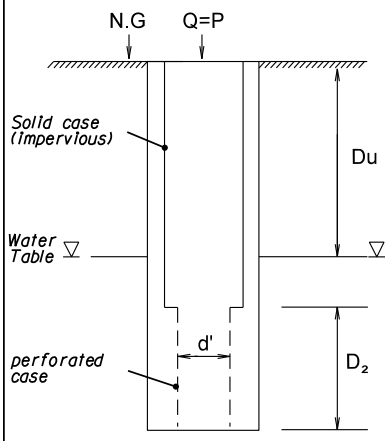
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-16
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/26/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 729086.16
Easting: 681272.2
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_2 Du}$$

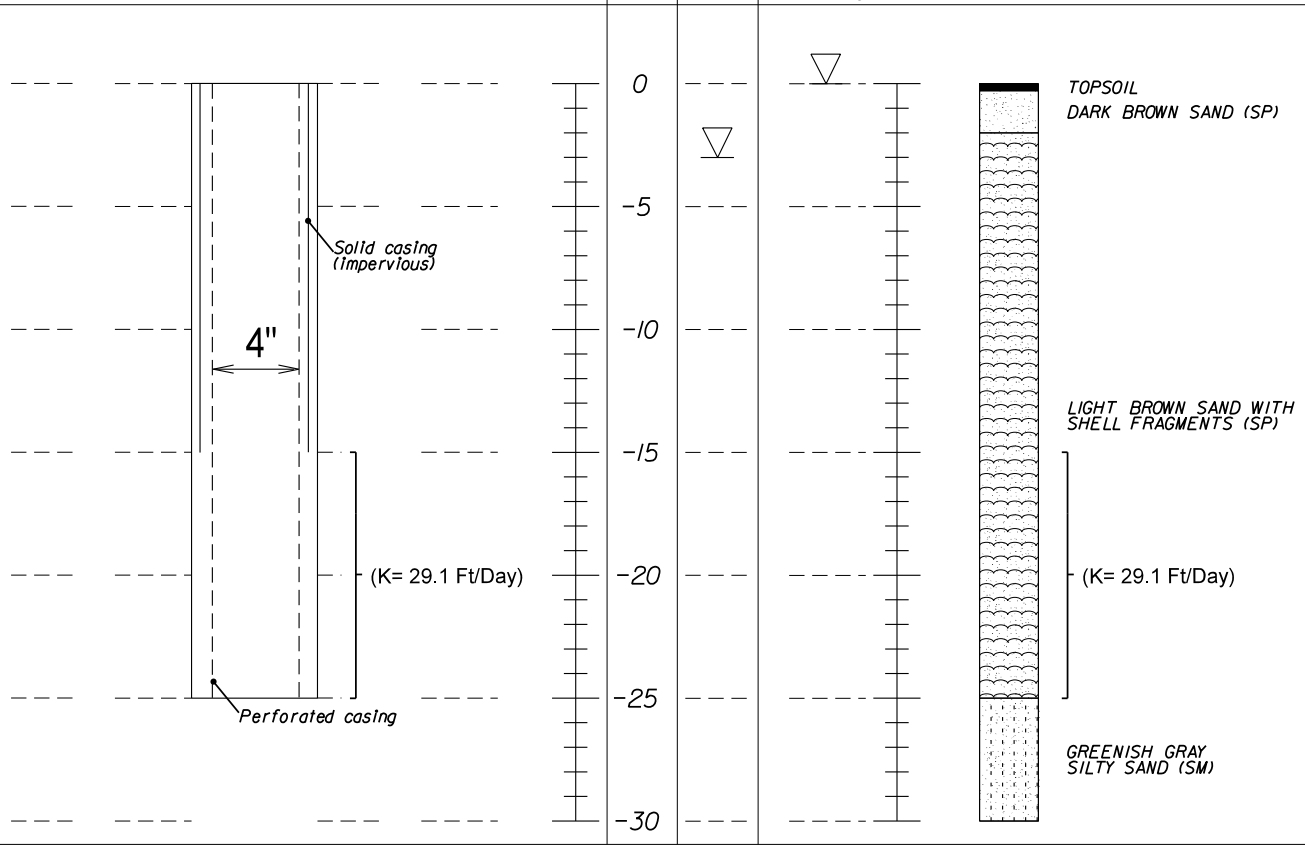
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_2= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

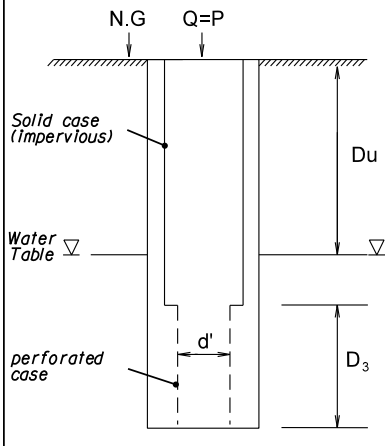
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-16
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/26/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 729086.16
Easting: 681272.2
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_3 Du}$$

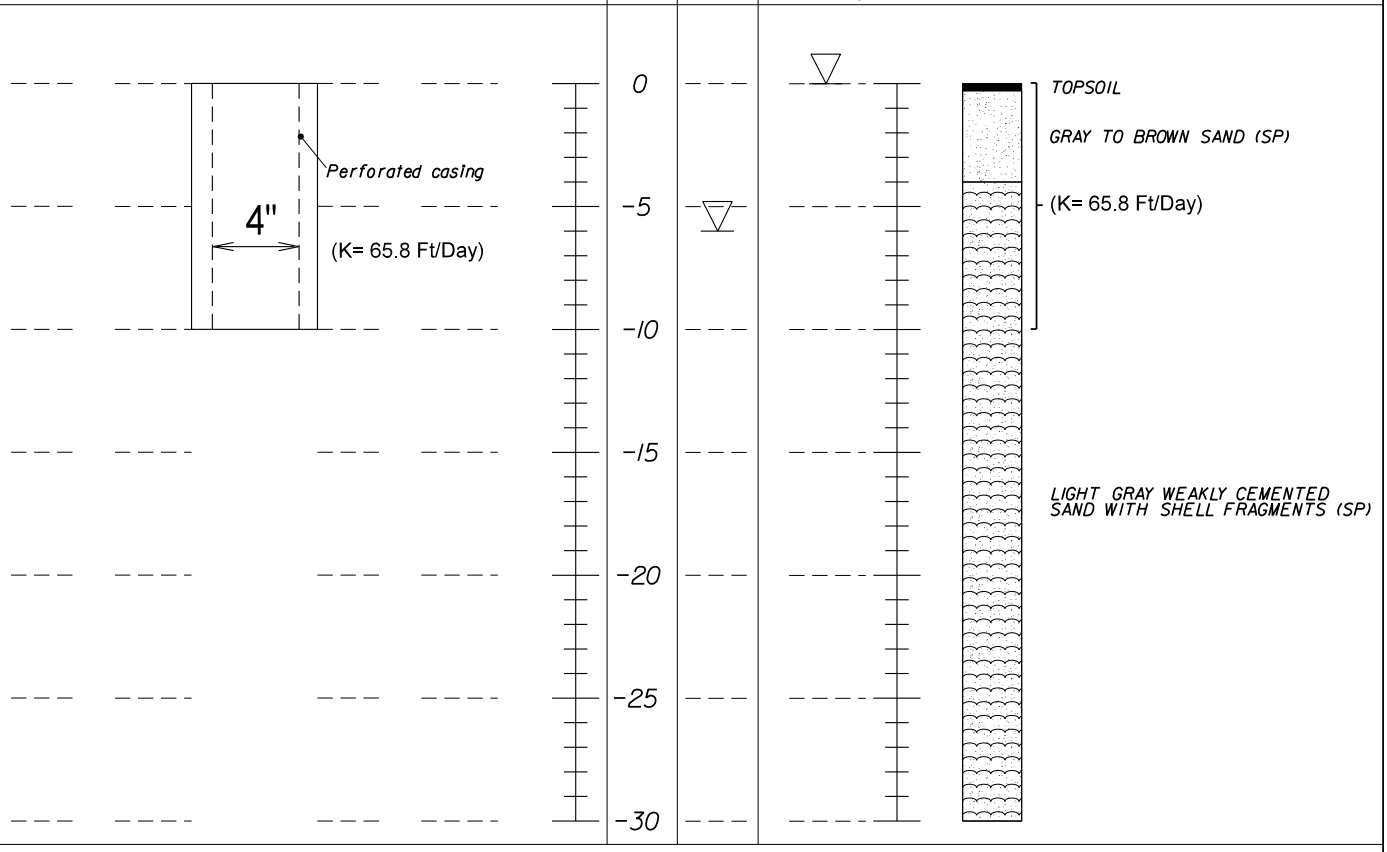
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_3= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

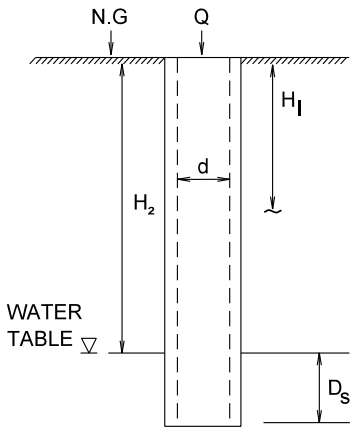
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-20
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/26/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 721279.26
Easting: 681034.76
County: Hendry





$$K = \frac{4Q}{\pi d\,(2H_2^2 + 4H_2D_S + H_2d)}$$

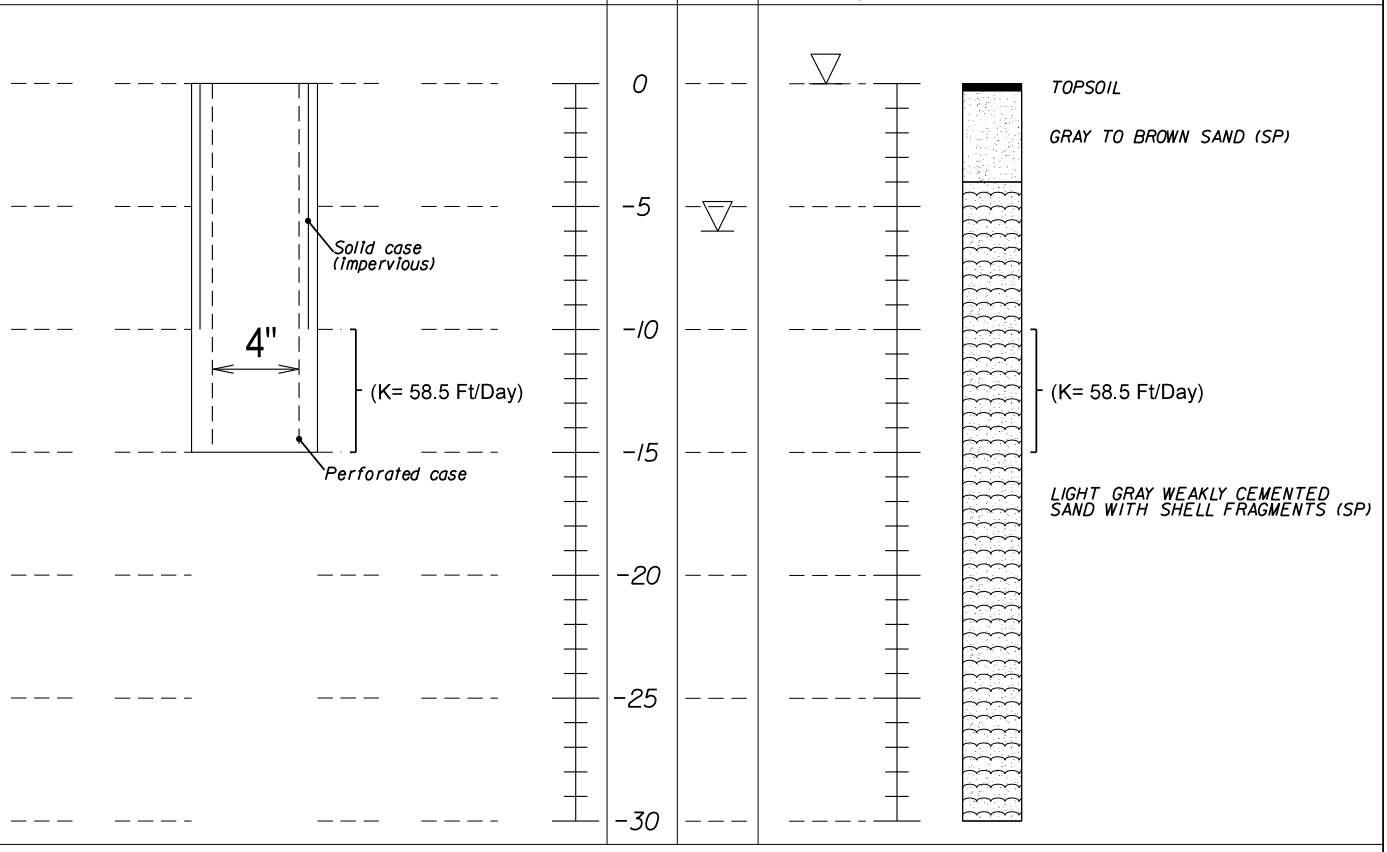
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_S= SATURATED HOLE DEPTH (FEET)
H_2= DEPTH TO WATER TABLE (FEET)
H_1= UNSATURATED HOLE SURFACE (FT.HEAD)

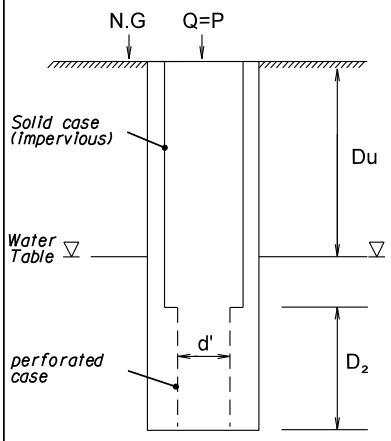
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-20
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/26/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 721279.26
Easting: 681034.76
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_2 Du}$$

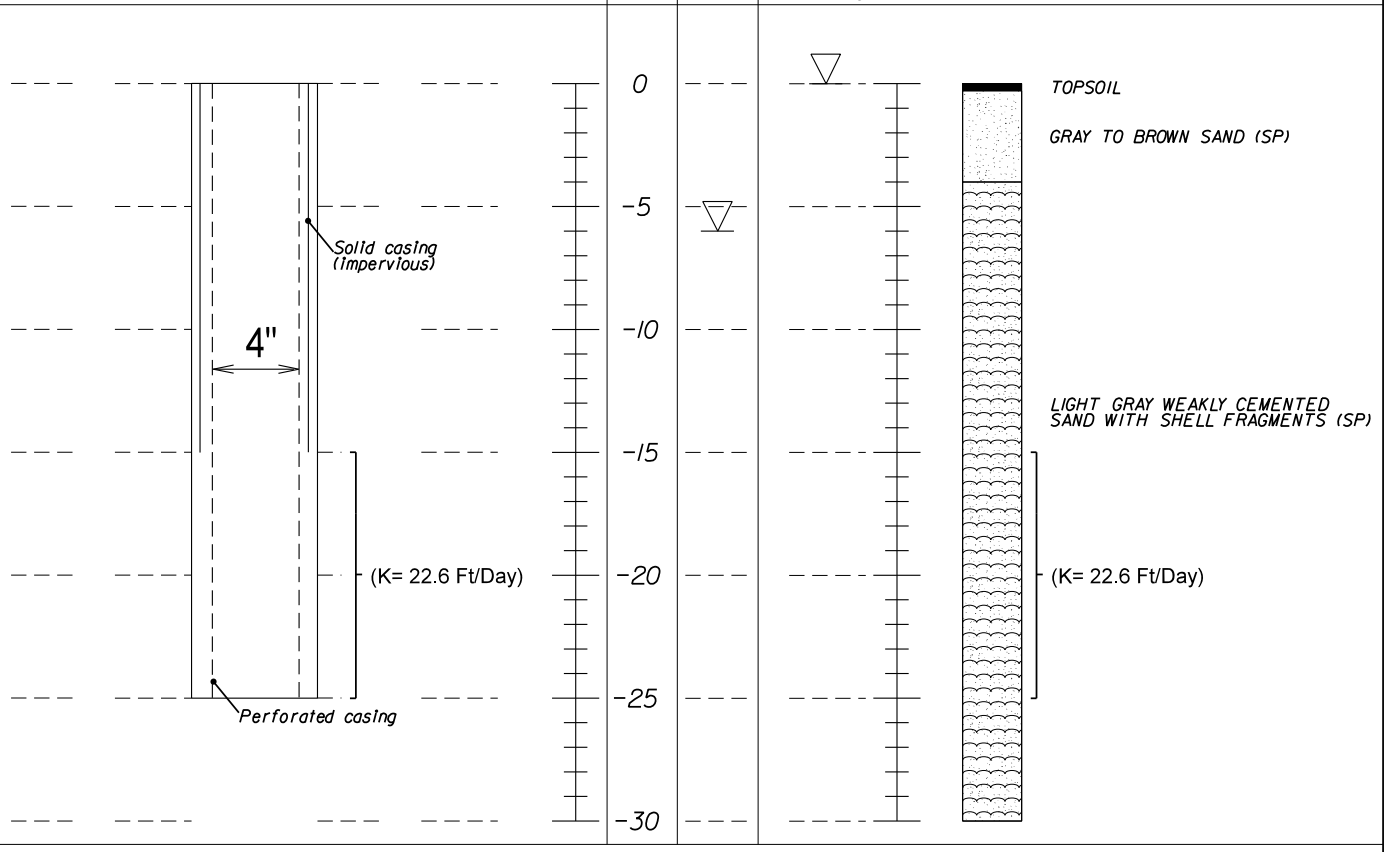
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_2= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

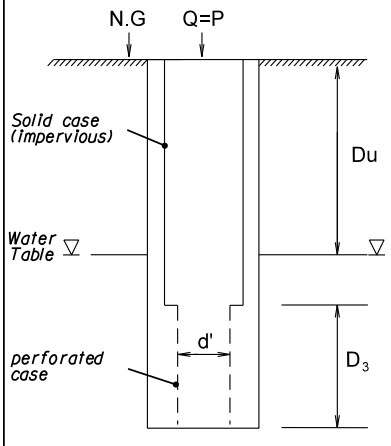
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-20
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Auger
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/26/2013
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 721279.26
Easting: 681034.76
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_3 Du}$$

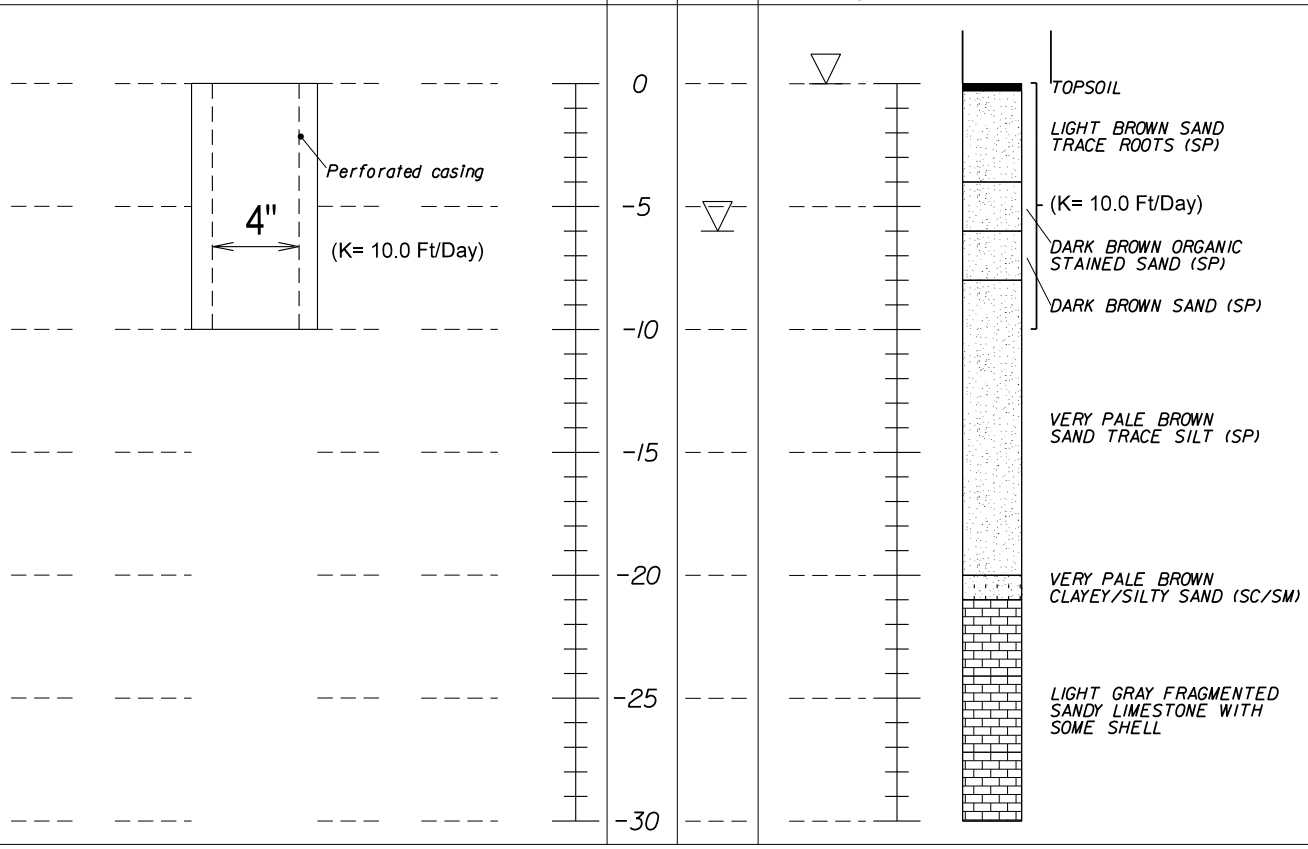
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_3= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

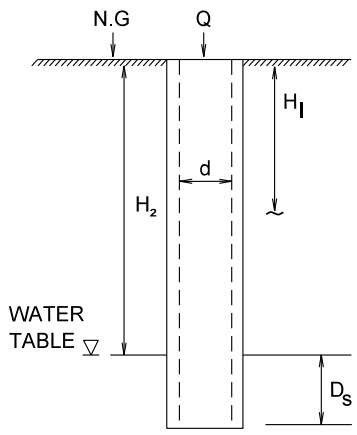
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-22A
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/19/2014
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 720562.42
Easting: 681034.42
County: Hendry





$$K = \frac{4Q}{\pi d\,(2H_2^2 + 4H_2D_S + H_2d)}$$

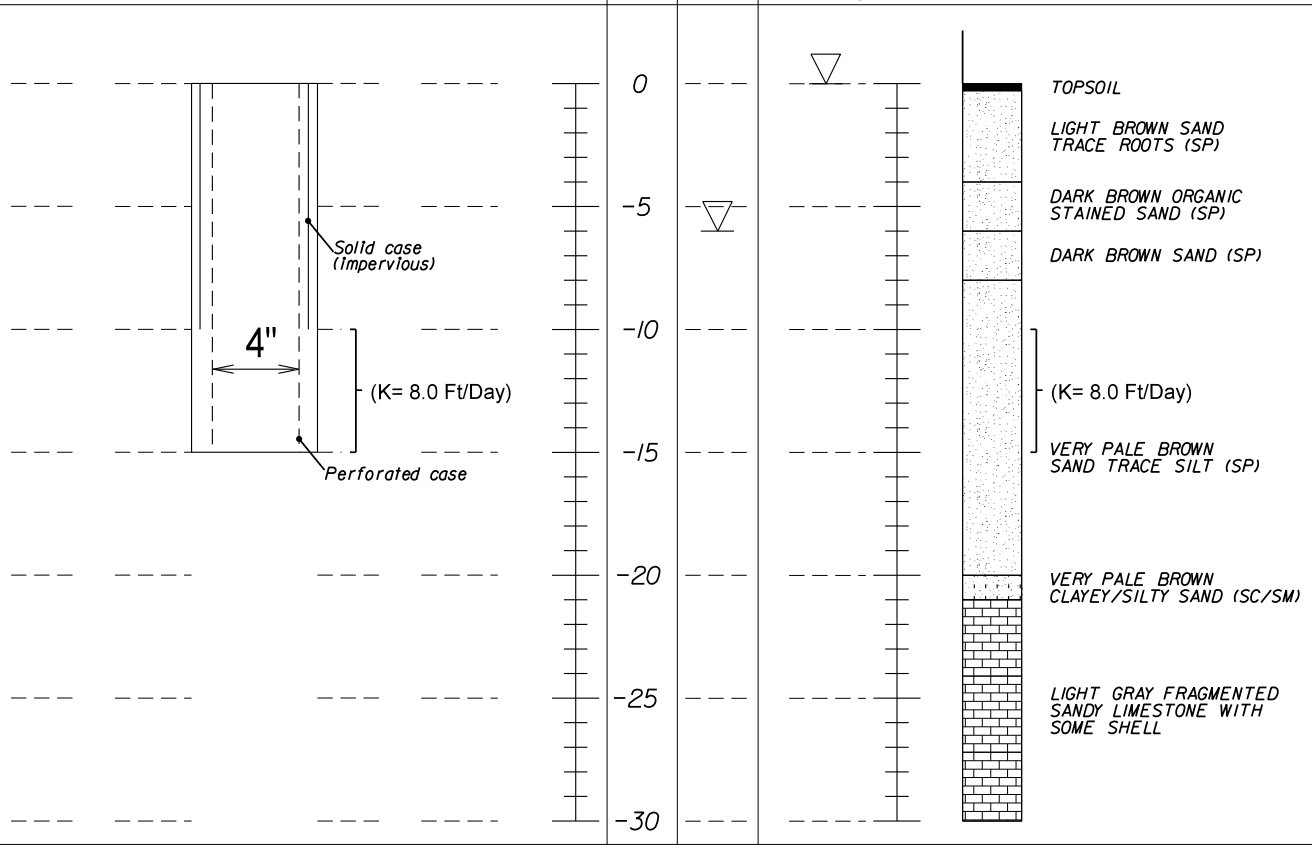
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_S= SATURATED HOLE DEPTH (FEET)
H_2= DEPTH TO WATER TABLE (FEET)
H_1= UNSATURATED HOLE SURFACE (FT.HEAD)

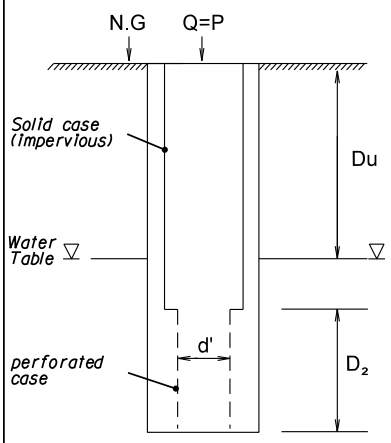
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-22A
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/19/2014
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 720562.42
Easting: 681034.42
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_2 Du}$$

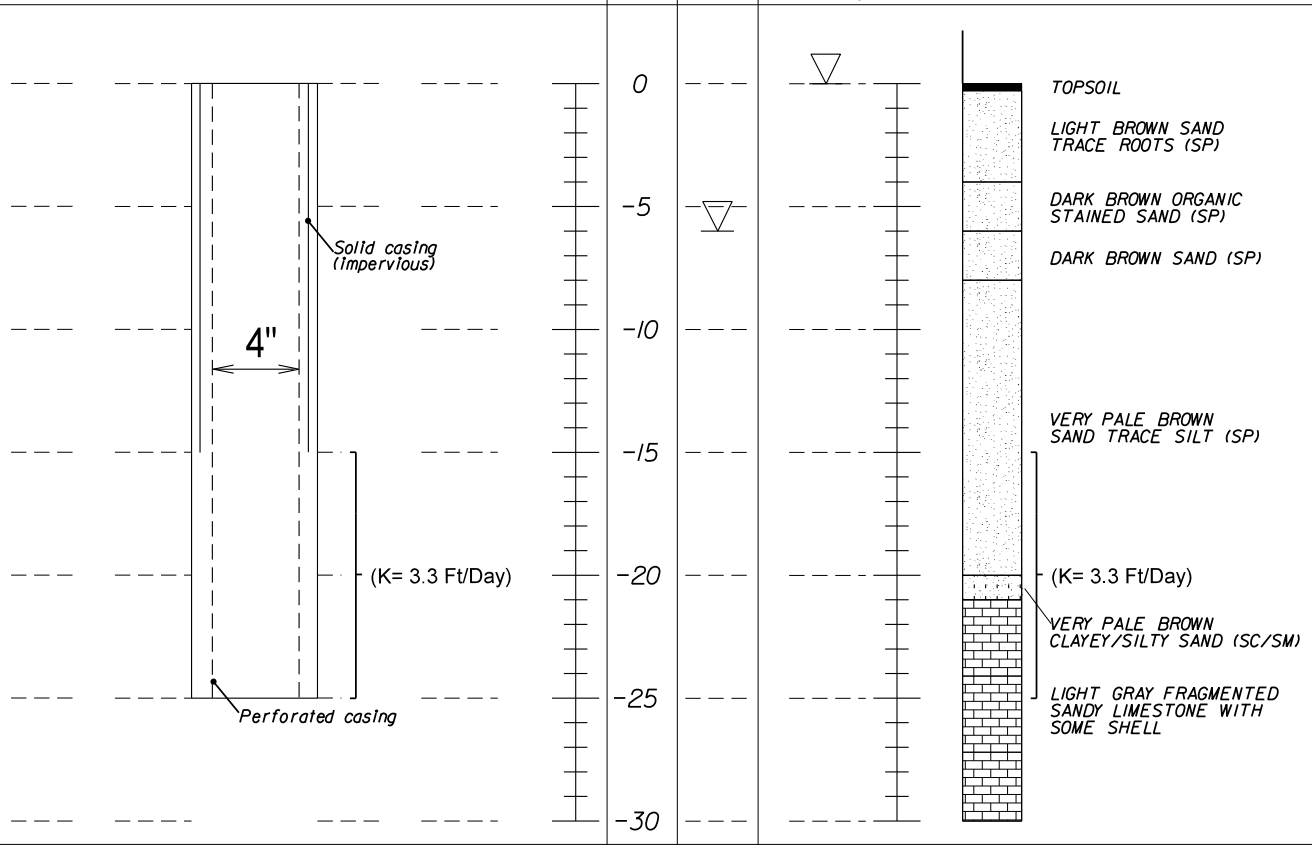
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_2= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

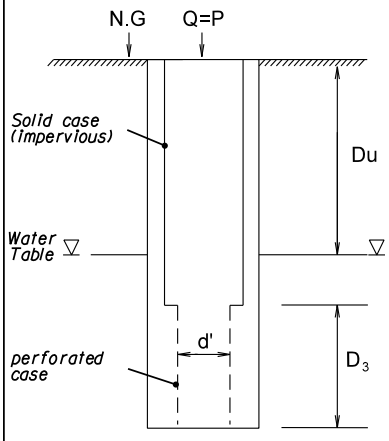
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-22A
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/19/2014
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 720562.42
Easting: 681034.42
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_3 Du}$$

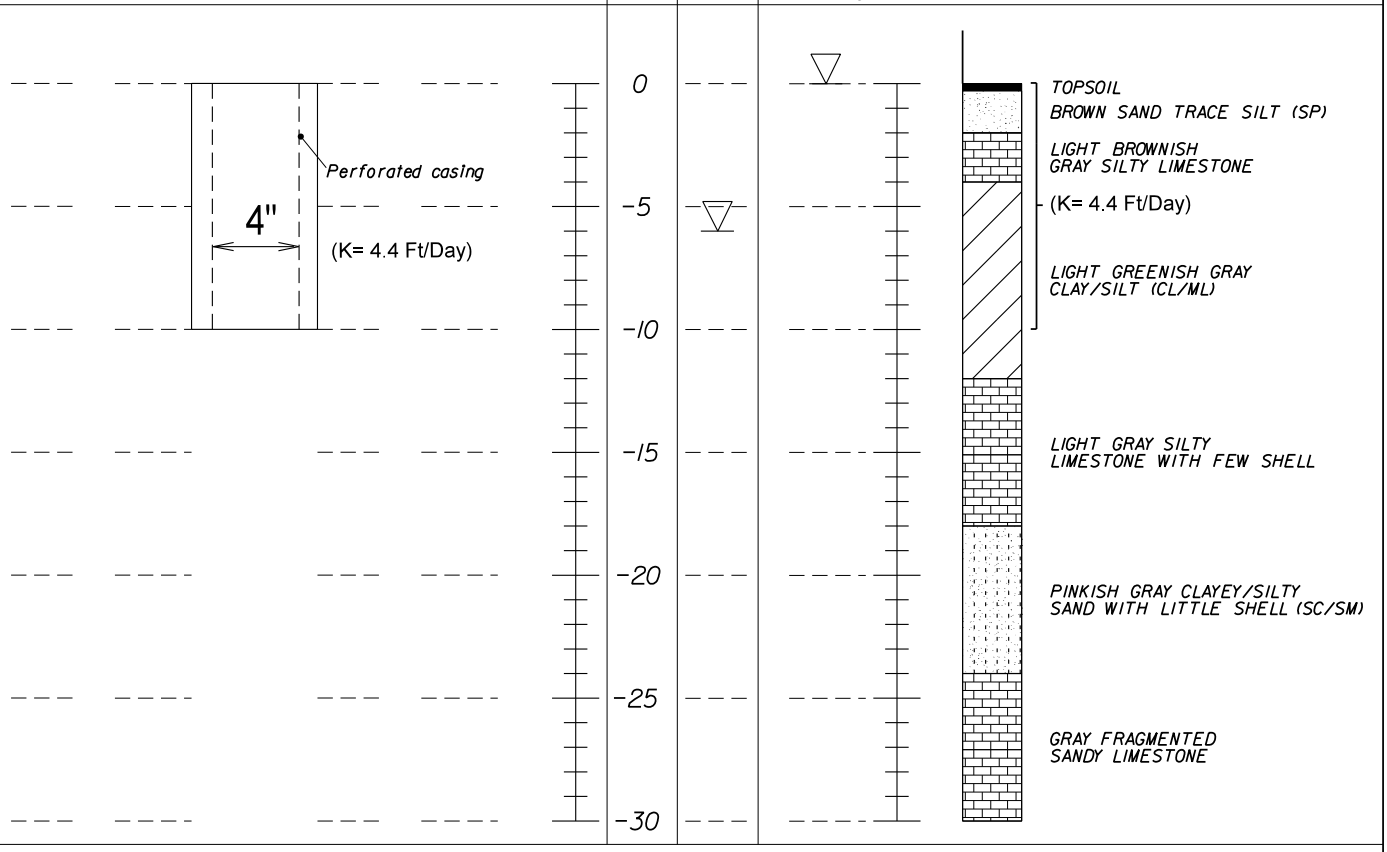
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_3= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

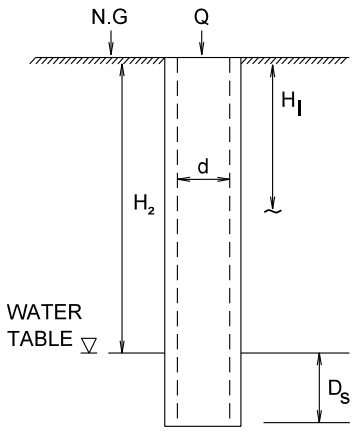
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-23A
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/17/2014
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 725949.48
Easting: 692953.28
County: Hendry





$$K = \frac{4Q}{\pi d\,(2H_2^2 + 4H_2D_S + H_2d)}$$

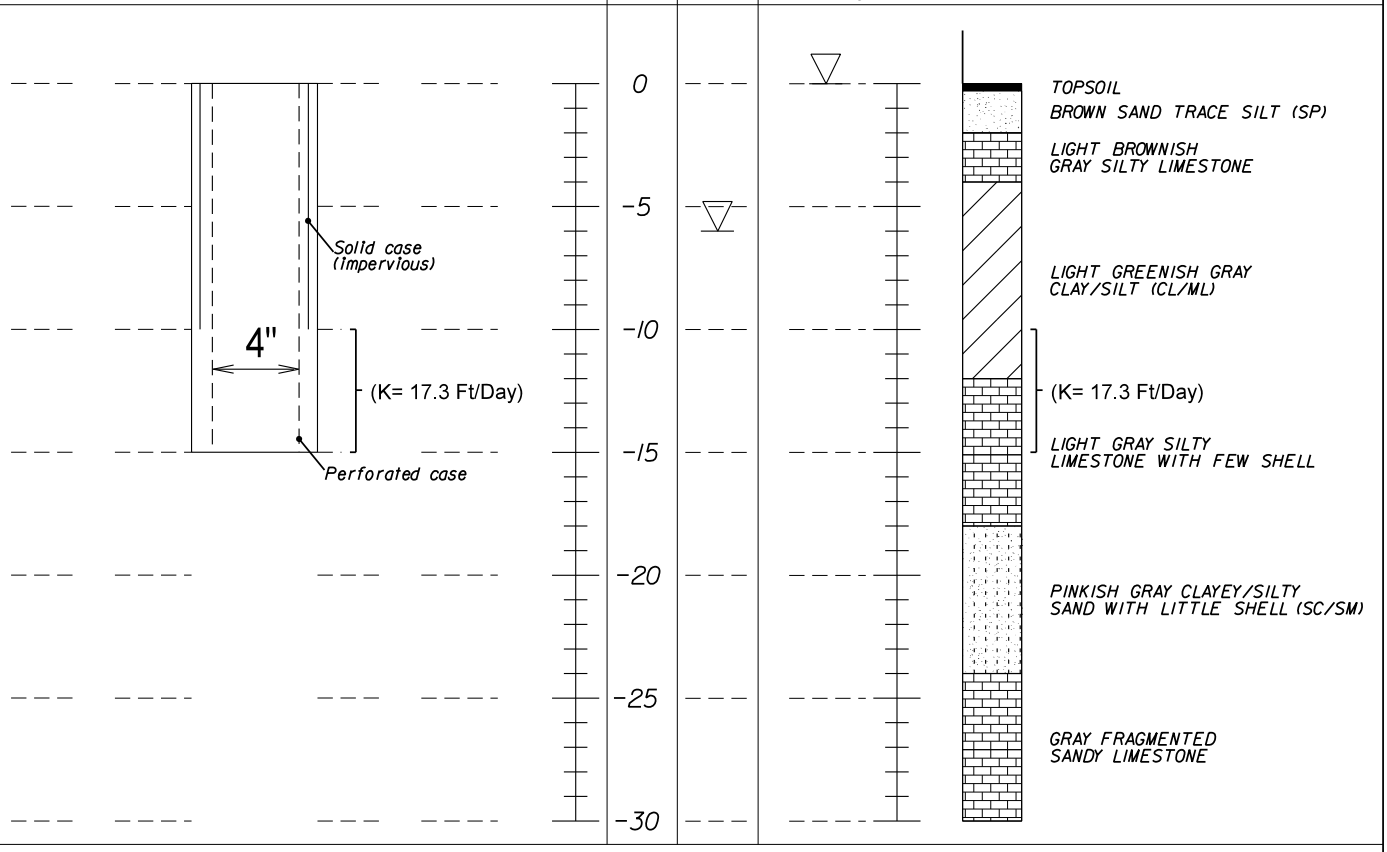
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_S= SATURATED HOLE DEPTH (FEET)
H_2= DEPTH TO WATER TABLE (FEET)
H_1= UNSATURATED HOLE SURFACE (FT.HEAD)

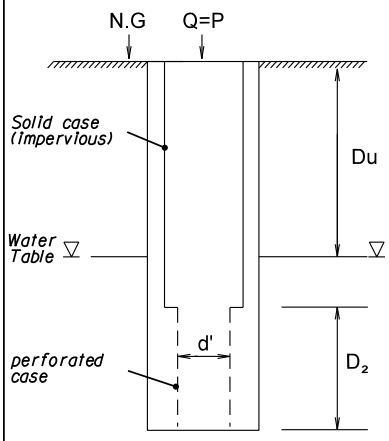
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-23A
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/17/2014
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 725949.48
Easting: 692953.28
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_2 Du}$$

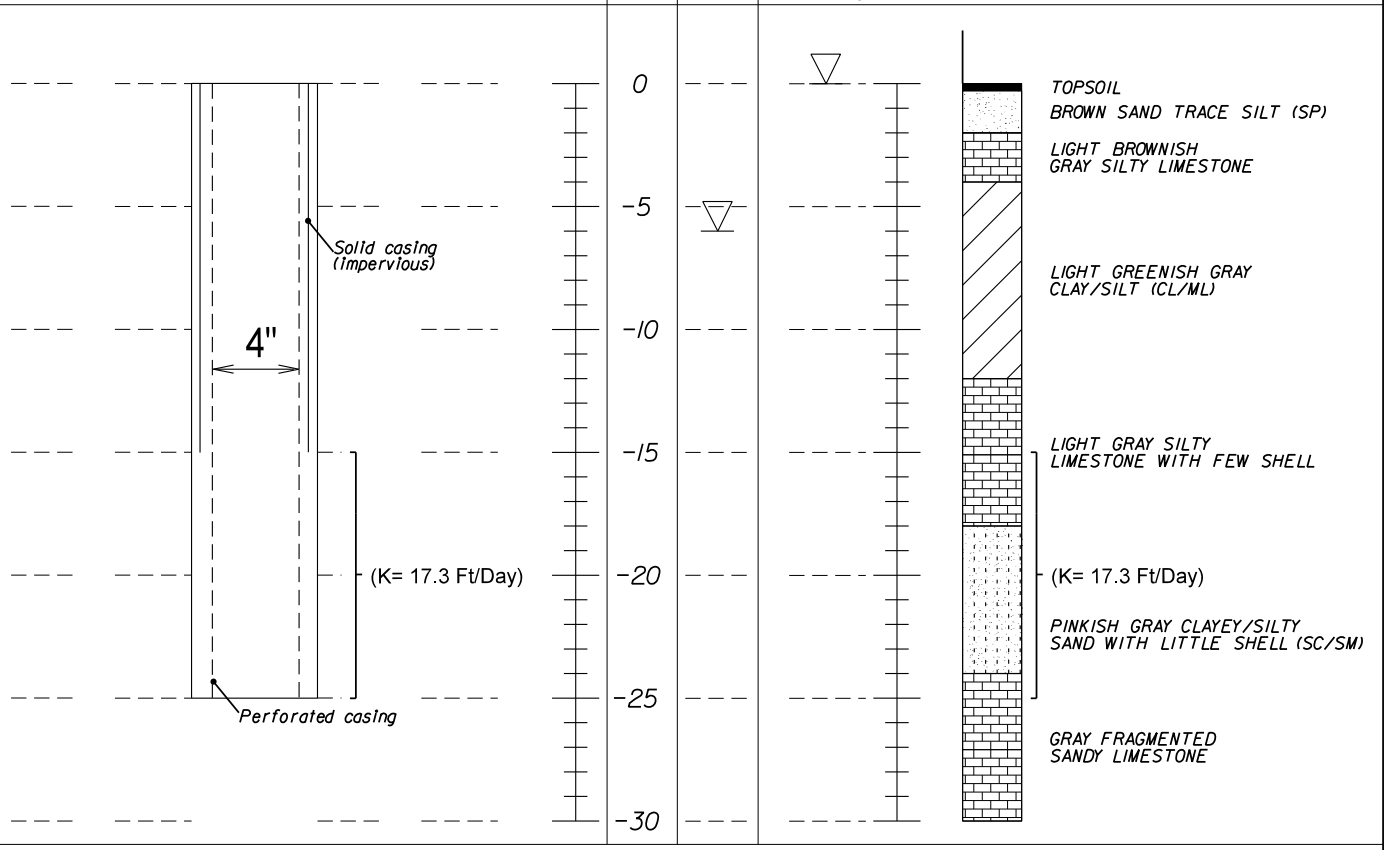
K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_2= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

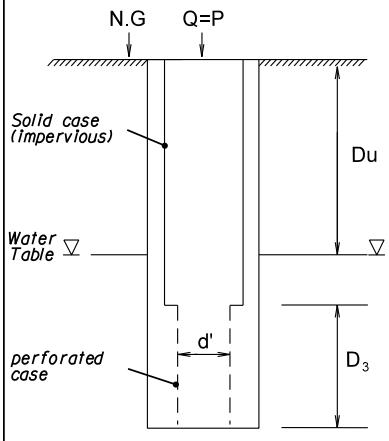
Borehole Permeability Test (BHP) Diagram

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

Boring / Well Number: W-23A
Project Site: Annex-C-139
Boring Depth (ft): 30 Feet
Boring Diameter (in): 6 1/4"
Drilling Method: Bentonite "Mud' Rotary
Well Contractor Name: TSF / Jose Oliva
License Number: 11346
Logged by: Maximiliano Peralta

Elevation (NAVD 88 / NGVD 29):
Date (Start / Finish): 6/17/2014
Time (Start / Finish): 8:00 AM / 5:00 PM
Northing: 725949.48
Easting: 692953.28
County: Hendry





$$K_{15} = \frac{P}{\pi d' D_3 Du}$$

K= HYDRAULIC CONDUCTIVITY (CFS/FT -FT. HEAD)
P=Q= STABILIZED FLOW RATE (CFS)
d= DIAMETER OF TEST HOLE (FEET)
D_3= L= LENGHT OF PERFORATED CASE, TEST DEPTH AREA (FEET)
D_u= Hc= UNSATURATED HOLE DEPTH (CONSTANT PIEZOMETER HEAD)(FEET)

tierra SOUTH FLORIDA
GEOTECHNICAL ENGINEERING / MATERIAL TESTING / INSPECTION SERVICES

USUAL OPEN - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-3	Date:	08/13/13
Project:	C-139 Annex Restoration	Well Depth:	10.0 Feet	Analyst:	RK
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	2.50	2.50
2	5.00	2.50
3	7.50	2.50
4	10.00	2.50
5	12.50	2.50
6	15.00	2.50
7	17.50	2.50
8	20.00	2.50
9	22.50	2.50
10	25.00	2.50
11	27.50	2.50
12	30.0	2.50
13	32.5	2.50
14	35.0	2.50
15	37.5	2.50
Constant Flow Rate (gpm)		2.50

Equation for K Value: $\frac{4Q}{\pi * d(2H_2^2 + 4H_2D_s + H_2d)}$

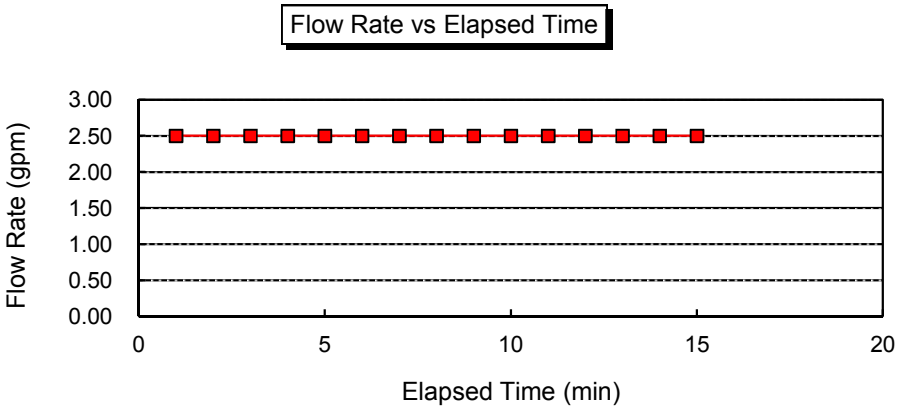
Soil Profile
0-14' Sand (SP)
14'-25' Sand (SP)

d	=	0.5	feet
H_2	=	2.0	feet
D_s	=	8.0	feet
GWT	=	2.0	feet

Where:

Hydraulic Conductivity

K= 1.60E-04 CF/S/Ft^2 - Ft Head



tierra SOUTH FLORIDA
GEOTECHNICAL ENGINEERING / MATERIAL TESTING / INSPECTION SERVICES

CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-3	Date:	08/13/13
Project:	C-139 Annex Restoration	Well Depth:	15.0 Feet	Analyst:	RK
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	2.50	2.50
2	5.10	2.60
3	7.60	2.50
4	10.10	2.50
5	12.40	2.30
6	15.00	2.60
7	17.40	2.40
8	19.80	2.40
9	22.00	2.20
10	24.20	2.20
11	26.80	2.60
12	29.1	2.30
13	31.4	2.30
14	33.7	2.30
15	35.9	2.20
Constant Flow Rate (gpm)		2.39

Equation for K Value: $\frac{Q}{\pi * d * D_2 * Du}$

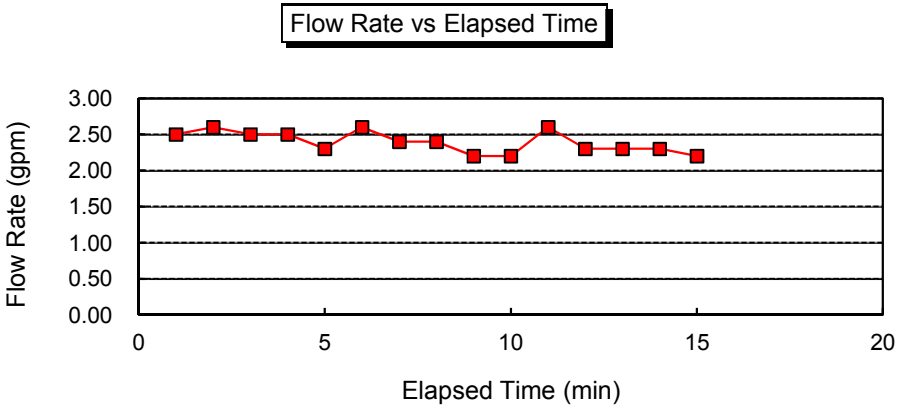
d	=	0.3	feet
D_2	=	5.0	feet
D_u	=	2.0	feet
GWT	=	2.0	feet

Where:

Hydraulic Conductivity

K= 5.14E-04 CF/S/Ft^2 - Ft Head

Soil Profile
0-14' Sand (SP)
14'-25' Sand (SP)



tierra SOUTH FLORIDA
GEOTECHNICAL ENGINEERING / MATERIAL TESTING / INSPECTION SERVICES

CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-3	Date:	08/13/13
Project:	C-139 Annex Restoration	Well Depth:	25.0 Feet	Analyst:	RK
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	2.00	2.00
2	3.90	1.90
3	5.90	2.00
4	7.80	1.90
5	9.70	1.90
6	11.60	1.90
7	13.60	2.00
8	15.60	2.00
9	17.50	1.90
10	19.50	2.00
11	21.40	1.90
12	23.3	1.90
13	25.2	1.90
14	27.1	1.90
15	29.0	1.90
Constant Flow Rate (gpm)		1.93

Equation for K Value: $\frac{Q}{\pi * d * D_3 * Du}$

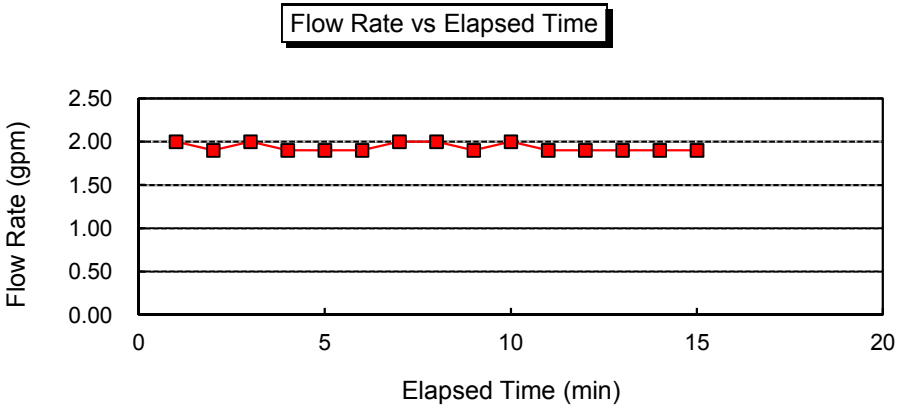
Soil Profile
0-14' Sand (SP)
14'-25' Sand (SP)

d	=	0.3	feet
D_3	=	10.0	feet
Du	=	2.0	feet
GWT	=	2.0	feet

Where:

Hydraulic Conductivity

K= 2.08E-04 CF/S/Ft^2 - Ft Head



tierra SOUTH FLORIDA
GEOTECHNICAL ENGINEERING / MATERIAL TESTING / INSPECTION SERVICES

USUAL OPEN - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-6	Date:	08/13/13
Project:	C-139 Annex Restoration	Well Depth:	10.0 Feet	Analyst:	RK
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	3.40	3.40
2	6.80	3.40
3	10.20	3.40
4	13.60	3.40
5	17.00	3.40
6	20.40	3.40
7	23.80	3.40
8	27.20	3.40
9	30.60	3.40
10	34.00	3.40
11	37.40	3.40
12	40.8	3.40
13	44.2	3.40
14	47.6	3.40
15	51.0	3.40
Constant Flow Rate (gpm)		3.40

Equation for K Value: $\frac{4Q}{\pi * d(2H_2^2 + 4H_2D_s + H_2d)}$

d	=	0.5	feet
H_2	=	3.0	feet
Ds	=	7.0	feet
GWT	=	3.0	feet

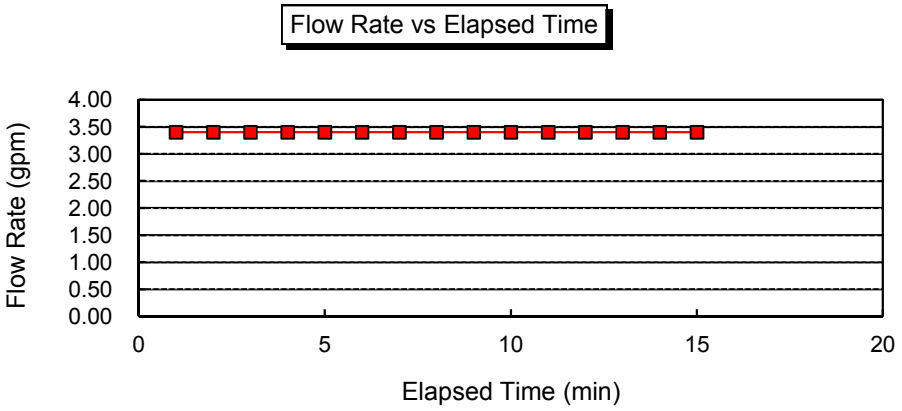
Soil Profile

0-2'	Sand (SP)
2'-4'	Silt (OL)
4'-6'	Sand (SP)
6'-25'	Limestone

Where:

Hydraulic Conductivity

K= 1.86E-04 CF/S/Ft^2 - Ft Head



tierra SOUTH FLORIDA
GEOTECHNICAL ENGINEERING / MATERIAL TESTING / INSPECTION SERVICES

CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-6	Date:	08/13/13
Project:	C-139 Annex Restoration	Well Depth:	15.0 Feet	Analyst:	RK
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	5.00	5.00
2	10.10	5.10
3	15.20	5.10
4	20.30	5.10
5	25.40	5.10
6	30.50	5.10
7	35.60	5.10
8	40.20	4.60
9	45.80	5.60
10	50.90	5.10
11	56.00	5.10
12	61.0	5.00
13	66.1	5.10
14	71.1	5.00
15	76.3	5.20
Constant Flow Rate (gpm)		5.09

Equation for K Value: $\frac{Q}{\pi * d * D_2 * Du}$

d	=	0.3	feet
D_2	=	5.0	feet
Du	=	2.0	feet
GWT	=	3.0	feet

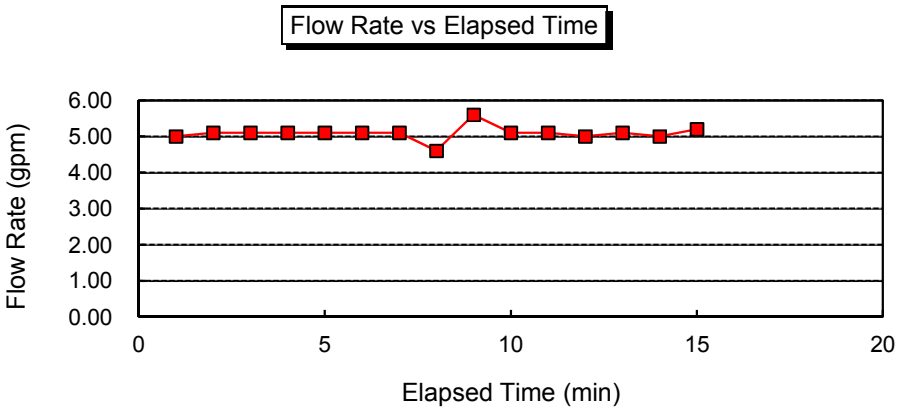
Where:

Hydraulic Conductivity

K= 1.09E-03 CF/S/Ft^2 - Ft Head

Soil Profile

0-2'	Sand (SP)
2'-4'	Silt (OL)
4'-6'	Sand (SP)
6'-25'	Limestone



tierra SOUTH FLORIDA
GEOTECHNICAL ENGINEERING / MATERIAL TESTING / INSPECTION SERVICES

CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-6	Date:	08/13/13
Project:	C-139 Annex Restoration	Well Depth:	25.0 Feet	Analyst:	RK
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	4.60	4.60
2	9.20	4.60
3	13.80	4.60
4	18.30	4.50
5	22.80	4.50
6	27.30	4.50
7	32.00	4.70
8	36.60	4.60
9	41.20	4.60
10	45.70	4.50
11	50.30	4.60
12	54.8	4.50
13	59.3	4.50
14	63.8	4.50
15	68.2	4.40
Constant Flow Rate (gpm)		4.55

Equation for K Value: $\frac{Q}{\pi * d * D_3 * Du}$

d	=	0.3	feet
D_3	=	10.0	feet
Du	=	2.0	feet
GWT	=	3.0	feet

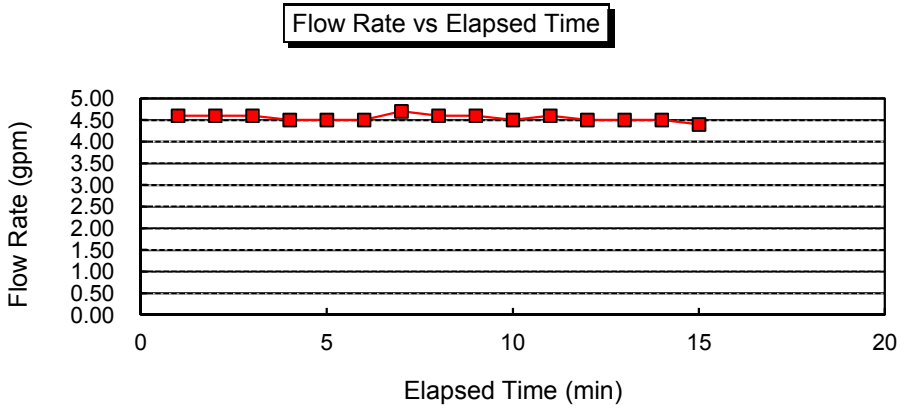
Soil Profile

0-2'	Sand (SP)
2'-4'	Silt (OL)
4'-6'	Sand (SP)
6'-25'	Limestone

Where:

Hydraulic Conductivity

K= 4.89E-04 CF/S/Ft^2 - Ft Head



tierra SOUTH FLORIDA
GEOTECHNICAL ENGINEERING / MATERIAL TESTING / INSPECTION SERVICES

USUAL OPEN - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-10	Date:	08/13/13
Project:	C-139 Annex Restoration	Well Depth:	10.0 Feet	Analyst:	RK
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	1.60	1.60
2	3.20	1.60
3	4.80	1.60
4	6.40	1.60
5	8.00	1.60
6	9.60	1.60
7	11.20	1.60
8	12.80	1.60
9	14.40	1.60
10	16.00	1.60
11	17.60	1.60
12	19.2	1.60
13	20.8	1.60
14	22.4	1.60
15	24.0	1.60
Constant Flow Rate (gpm)		1.60

Equation for K Value: $\frac{4Q}{\pi * d(2H_2^2 + 4H_2D_s + H_2d)}$

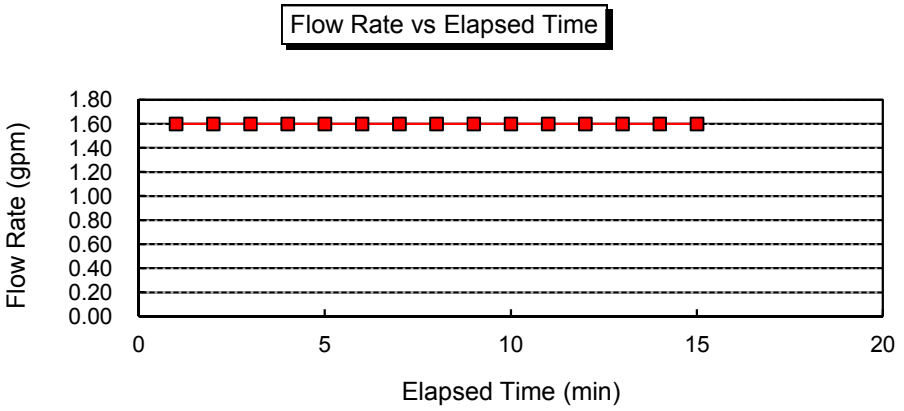
Soil Profile
0-25' Sand (SP)

d	=	0.5	feet
H_2	=	2.0	feet
Ds	=	8.0	feet
GWT	=	2.0	feet

Where:

Hydraulic Conductivity

K= 1.24E-04 CF/S/Ft^2 - Ft Head



tierra SOUTH FLORIDA
GEOTECHNICAL ENGINEERING / MATERIAL TESTING / INSPECTION SERVICES

CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-10	Date:	08/13/13
Project:	C-139 Annex Restoration	Well Depth:	15.0 Feet	Analyst:	RK
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	1.20	1.20
2	2.40	1.20
3	3.60	1.20
4	4.80	1.20
5	6.00	1.20
6	7.20	1.20
7	8.40	1.20
8	9.60	1.20
9	10.80	1.20
10	12.00	1.20
11	13.20	1.20
12	14.4	1.20
13	15.6	1.20
14	16.9	1.30
15	18.1	1.20
Constant Flow Rate (gpm)		1.21

Equation for K Value: $\frac{Q}{\pi * d * D_2 * Du}$

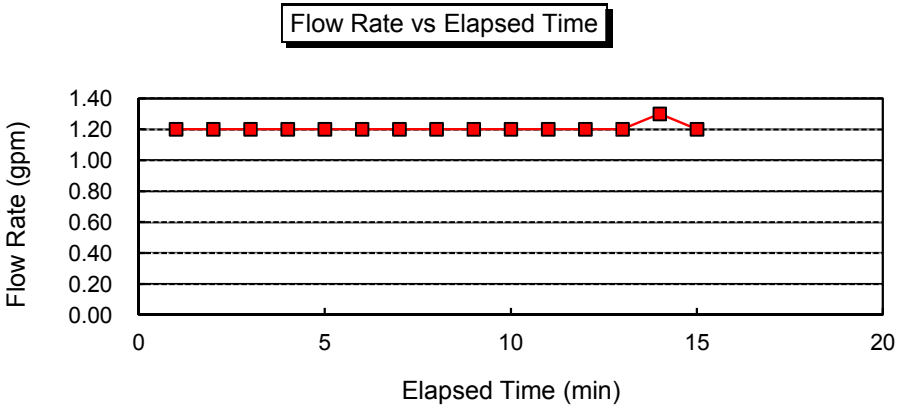
Soil Profile
0-25' Sand (SP)

d	=	0.3	feet
D_2	=	5.0	feet
Du	=	2.0	feet
GWT	=	2.0	feet

Where:

Hydraulic Conductivity

K= 2.59E-04 CF/S/Ft^2 - Ft Head



tierra SOUTH FLORIDA
GEOTECHNICAL ENGINEERING / MATERIAL TESTING / INSPECTION SERVICES

CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-10	Date:	08/13/13
Project:	C-139 Annex Restoration	Well Depth:	25.0 Feet	Analyst:	RK
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	1.00	1.00
2	2.00	1.00
3	3.00	1.00
4	4.00	1.00
5	5.00	1.00
6	6.00	1.00
7	7.00	1.00
8	8.10	1.10
9	9.10	1.00
10	10.20	1.10
11	11.30	1.10
12	12.1	0.80
13	13.2	1.10
14	14.3	1.10
15	15.3	1.00
Constant Flow Rate (gpm)		1.02

Equation for K Value: $\frac{Q}{\pi * d * D_3 * Du}$

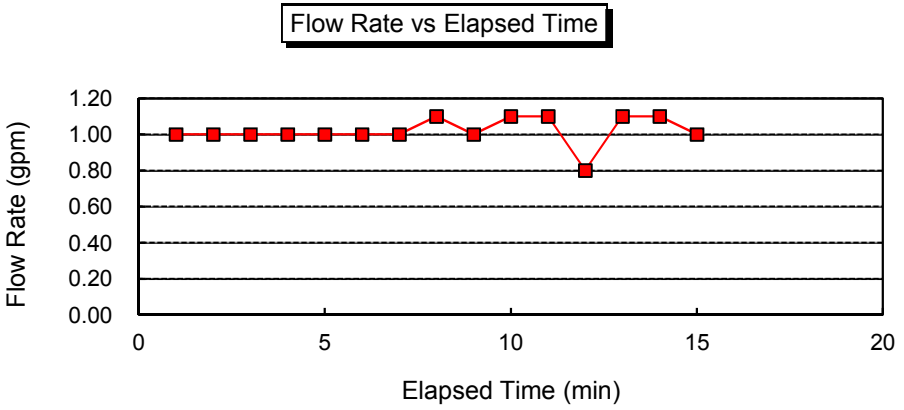
Soil Profile
0-25' Sand (SP)

d	=	0.3	feet
D_3	=	10.0	feet
Du	=	2.0	feet
GWT	=	2.0	feet

Where:

Hydraulic Conductivity

K= 1.10E-04 CF/S/Ft^2 - Ft Head



USUAL OPEN - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-14	Date:	08/19/13
Project:	C-139 Annex Restoration	Well Depth:	10.0 Feet	Analyst:	JO
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	5.50	5.50
2	11.00	5.50
3	16.50	5.50
4	22.00	5.50
5	27.50	5.50
6	33.00	5.50
7	38.50	5.50
8	44.00	5.50
9	49.50	5.50
10	55.00	5.50
11	60.50	5.50
12	66.0	5.50
13	71.5	5.50
14	77.0	5.50
15	82.5	5.50
Constant Flow Rate (gpm)		5.50

Equation for K Value: $\frac{4Q}{\pi * d(2H_2^2 + 4H_2D_s + H_2d)}$

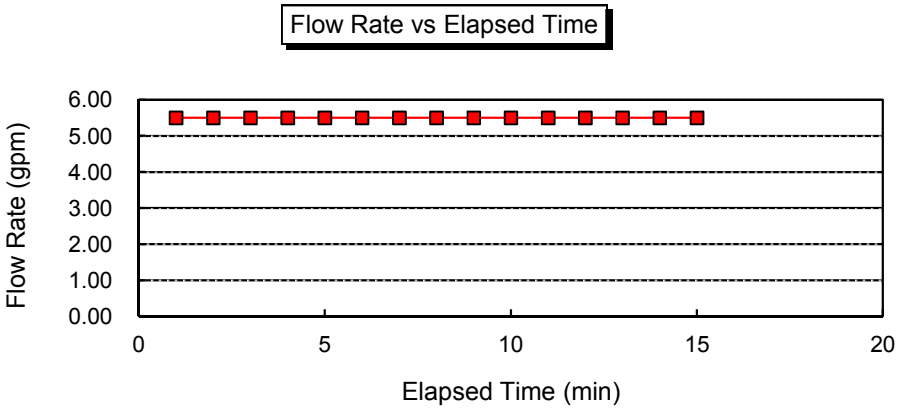
Soil Profile
0-25' Sand (SP)

d	=	0.5	feet
H_2	=	3.0	feet
Ds	=	7.0	feet
GWT	=	3.0	feet

Where:

Hydraulic Conductivity

K= 3.01E-04 CF/S/Ft^2 - Ft Head



CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-14	Date:	08/19/13
Project:	C-139 Annex Restoration	Well Depth:	15.0 Feet	Analyst:	JO
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	4.70	4.70
2	9.40	4.70
3	13.80	4.40
4	18.50	4.70
5	23.10	4.60
6	27.70	4.60
7	32.40	4.70
8	37.00	4.60
9	41.60	4.60
10	46.30	4.70
11	51.00	4.70
12	55.7	4.70
13	60.3	4.60
14	65.0	4.70
15	69.7	4.70
Constant Flow Rate (gpm)		4.65

Equation for K Value: $\frac{Q}{\pi * d * D_2 * Du}$

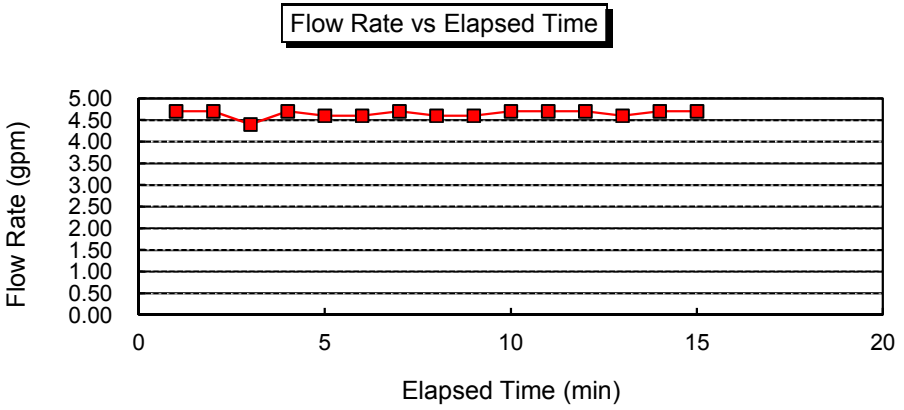
Soil Profile
0-25' Sand (SP)

d	=	0.3	feet
D_2	=	5.0	feet
Du	=	2.0	feet
GWT	=	3.0	feet

Where:

Hydraulic Conductivity

K= 9.99E-04 CF/S/Ft^2 - Ft Head



tierra SOUTH FLORIDA
GEOTECHNICAL ENGINEERING / MATERIAL TESTING / INSPECTION SERVICES

CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-14	Date:	08/19/13
Project:	C-139 Annex Restoration	Well Depth:	25.0 Feet	Analyst:	JO
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	4.50	4.50
2	9.00	4.50
3	13.50	4.50
4	18.00	4.50
5	22.50	4.50
6	27.00	4.50
7	31.50	4.50
8	35.00	3.50
9	39.50	4.50
10	44.00	4.50
11	49.50	5.50
12	54.0	4.50
13	59.5	5.50
14	64.0	4.50
15	69.5	5.50
Constant Flow Rate (gpm)		4.63

Equation for K Value: $\frac{Q}{\pi * d * D_3 * Du}$

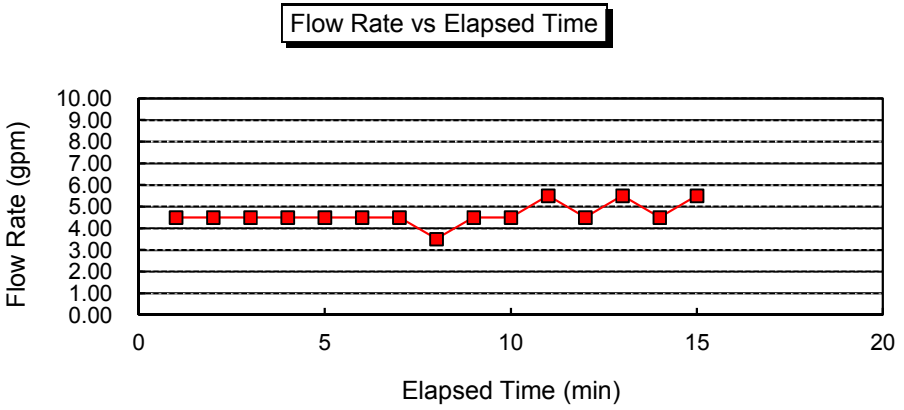
Soil Profile
0-25' Sand (SP)

d	=	0.3	feet
D_3	=	10.0	feet
Du	=	2.0	feet
GWT	=	3.0	feet

Where:

Hydraulic Conductivity

K= 4.98E-04 CF/S/Ft^2 - Ft Head



USUAL OPEN - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-16	Date:	08/19/13
Project:	C-139 Annex Restoration	Well Depth:	10.0 Feet	Analyst:	JO
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	9.00	9.00
2	18.00	9.00
3	27.10	9.10
4	36.10	9.00
5	45.20	9.10
6	54.30	9.10
7	63.40	9.10
8	72.50	9.10
9	81.50	9.00
10	90.60	9.10
11	99.70	9.10
12	108.8	9.10
13	117.9	9.10
14	127.0	9.10
15	136.1	9.10
Constant Flow Rate (gpm)		9.07

Equation for K Value: $\frac{4Q}{\pi * d(2H_2^2 + 4H_2D_s + H_2d)}$

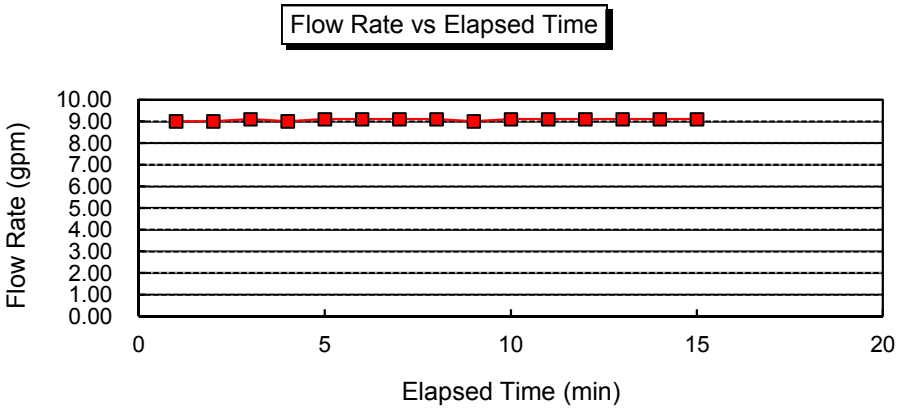
d	=	0.5	feet
H_2	=	4.0	feet
D_s	=	6.0	feet
GWT	=	4.0	feet

Where:

Soil Profile
0-23' Sand (SP)
23'-25' Sand with shell (SP)

Hydraulic Conductivity

K= 3.96E-04 CF/S/Ft^2 - Ft Head



tierra SOUTH FLORIDA
GEOTECHNICAL ENGINEERING / MATERIAL TESTING / INSPECTION SERVICES

CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-16	Date:	08/19/13
Project:	C-139 Annex Restoration	Well Depth:	15.0 Feet	Analyst:	JO
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	5.00	5.00
2	10.00	5.00
3	15.00	5.00
4	20.00	5.00
5	25.00	5.00
6	30.10	5.10
7	35.20	5.10
8	40.20	5.00
9	45.20	5.00
10	50.30	5.10
11	55.20	4.90
12	60.4	5.20
13	65.3	4.90
14	70.4	5.10
15	75.4	5.00
Constant Flow Rate (gpm)		5.03

Equation for K Value: $\frac{Q}{\pi * d * D_2 * Du}$

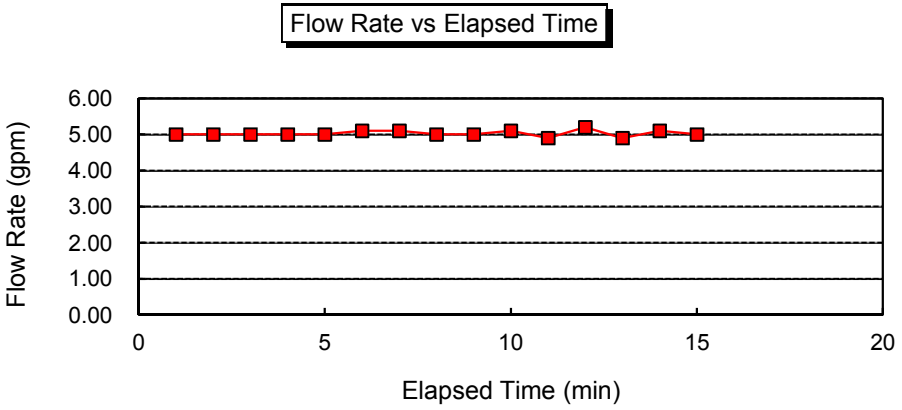
d	=	0.3	feet
D_2	=	5.0	feet
D_u	=	4.0	feet
GWT	=	4.0	feet

Where:

Hydraulic Conductivity

K= 5.40E-04 CF/S/Ft^2 - Ft Head

Soil Profile
0-23' Sand (SP)
23'-25' Sand with shell (SP)



tierra SOUTH FLORIDA
GEOTECHNICAL ENGINEERING / MATERIAL TESTING / INSPECTION SERVICES

CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-16	Date:	08/19/13
Project:	C-139 Annex Restoration	Well Depth:	25.0 Feet	Analyst:	JO
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	6.20	6.20
2	12.40	6.20
3	18.60	6.20
4	24.90	6.30
5	31.20	6.30
6	37.40	6.20
7	43.60	6.20
8	50.00	6.40
9	56.40	6.40
10	62.70	6.30
11	69.00	6.30
12	75.3	6.30
13	81.6	6.30
14	87.9	6.30
15	94.2	6.30
Constant Flow Rate (gpm)		6.28

Equation for K Value: $\frac{Q}{\pi * d * D_3 * Du}$

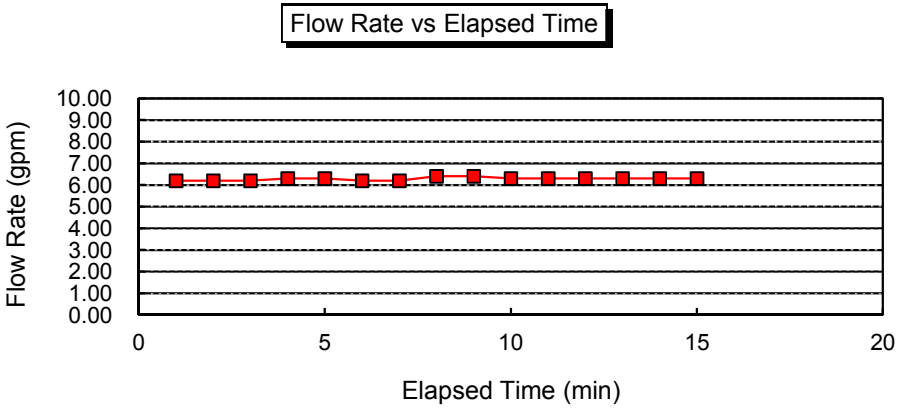
d	=	0.3	feet
D_3	=	10.0	feet
Du	=	4.0	feet
GWT	=	4.0	feet

Where:

Hydraulic Conductivity

K= 3.37E-04 CF/S/Ft^2 - Ft Head

Soil Profile
0-23' Sand (SP)
23'-25' Sand with shell (SP)



USUAL OPEN - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-20	Date:	08/19/13
Project:	C-139 Annex Restoration	Well Depth:	10.0 Feet	Analyst:	JO
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	5.60	5.60
2	11.00	5.40
3	16.60	5.60
4	22.10	5.50
5	27.50	5.40
6	33.00	5.50
7	38.40	5.40
8	43.80	5.40
9	49.20	5.40
10	54.60	5.40
11	59.80	5.20
12	65.0	5.20
13	70.2	5.20
14	75.4	5.20
15	80.5	5.10
Constant Flow Rate (gpm)		5.37

Equation for K Value: $\frac{4Q}{\pi * d(2H_2^2 + 4H_2D_s + H_2d)}$

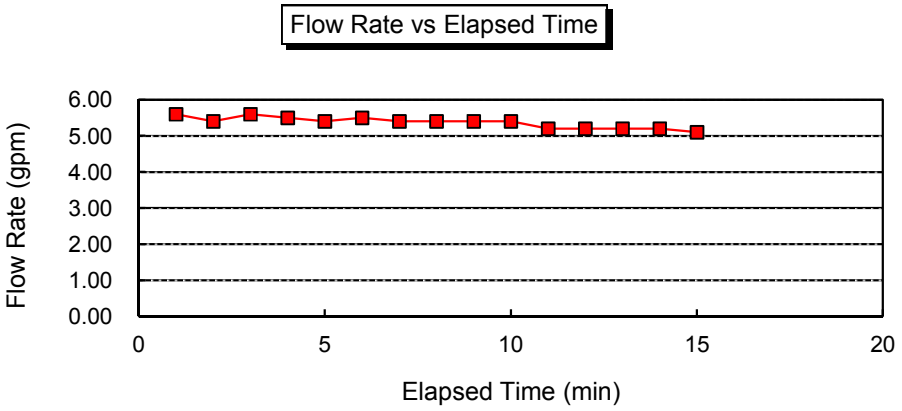
d	=	0.5	feet
H_2	=	2.5	feet
D_s	=	7.5	feet
GWT	=	2.5	feet

Where:

Hydraulic Conductivity

K= 7.61E-04 CF/S/Ft^2 - Ft Head

Soil Profile
0-4' Sand (SP)
7'-25' Cemented Sand with shell fragments



CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-20	Date:	08/19/13
Project:	C-139 Annex Restoration	Well Depth:	15.0 Feet	Analyst:	JO
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	4.00	4.00
2	8.20	4.20
3	12.30	4.10
4	16.40	4.10
5	20.40	4.00
6	24.40	4.00
7	28.50	4.10
8	32.50	4.00
9	36.40	3.90
10	40.30	3.90
11	44.20	3.90
12	47.9	3.70
13	51.7	3.80
14	55.4	3.70
15	59.1	3.70
Constant Flow Rate (gpm)		3.94

Equation for K Value: $\frac{Q}{\pi * d * D_2 * Du}$

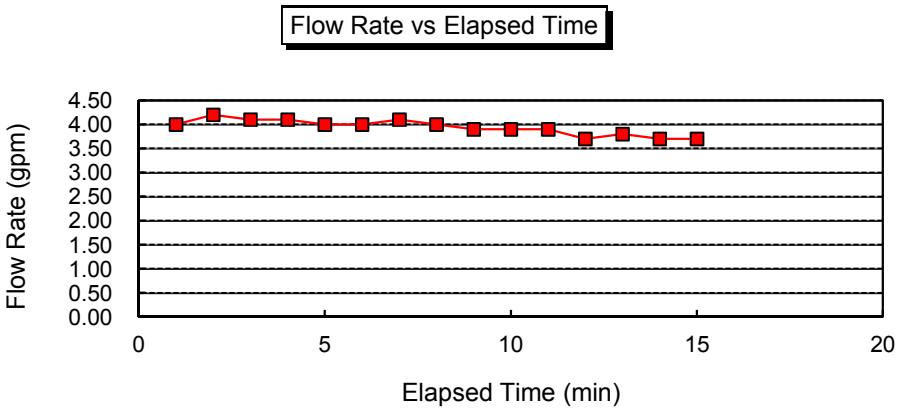
d	=	0.3	feet
D_2	=	5.0	feet
Du	=	2.5	feet
GWT	=	2.5	feet

Where:

Hydraulic Conductivity

K= 6.77E-04 CF/S/Ft^2 - Ft Head

Soil Profile
0-4' Sand (SP)
7'-25' Cemented Sand with shell fragments



CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-20	Date:	08/19/13
Project:	C-139 Annex Restoration	Well Depth:	25.0 Feet	Analyst:	JO
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	3.00	3.00
2	6.10	3.10
3	9.10	3.00
4	12.10	3.00
5	15.20	3.10
6	18.10	2.90
7	21.30	3.20
8	24.40	3.10
9	27.20	2.80
10	30.30	3.10
11	33.40	3.10
12	36.5	3.10
13	39.7	3.20
14	42.7	3.00
15	45.7	3.00
Constant Flow Rate (gpm)		3.05

Equation for K Value: $\frac{Q}{\pi * d * D_3 * Du}$

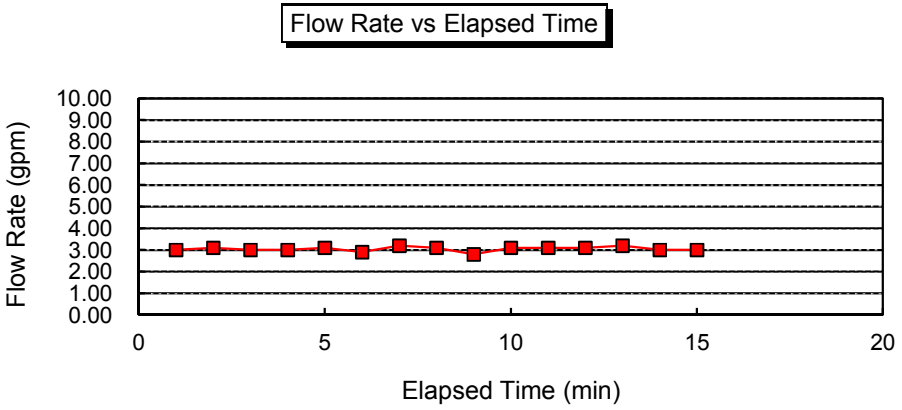
d	=	0.3	feet
D_3	=	10.0	feet
D_u	=	2.5	feet
GWT	=	2.5	feet

Where:

Hydraulic Conductivity

K= 2.62E-04 CF/S/Ft^2 - Ft Head

Soil Profile
0-4' Sand (SP)
7'-25' Cemented Sand with shell fragments



USUAL OPEN - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-22A	Date:	06/19/14
Project:	C-139 Annex Restoration	Well Depth:	10.0 Feet	Analyst:	MP
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	3.70	3.70
2	7.40	3.70
3	11.10	3.70
4	14.80	3.70
5	18.50	3.70
6	22.20	3.70
7	25.90	3.70
8	29.60	3.70
9	33.30	3.70
10	37.00	3.70
Constant Flow Rate (gpm)		3.70

Equation for K Value: $\frac{4Q}{\pi * d(2H_2^2 + 4H_2D_s + H_2d)}$

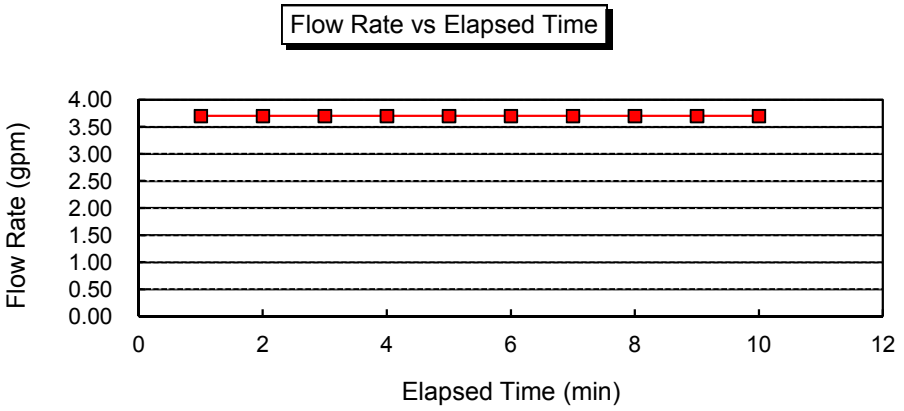
d	=	0.5	feet
H_2	=	7.0	feet
D_s	=	3.0	feet
GWT	=	7.0	feet

Where:

Soil Profile
0-20' Sand (SP)
20'-21' SiltySand (SM)
21'-25' Limestone

Hydraulic Conductivity

K= 1.15E-04 CF/S/Ft^2 - Ft Head



tierra SOUTH FLORIDA
GEOTECHNICAL ENGINEERING / MATERIAL TESTING / INSPECTION SERVICES

CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-22A	Date:	06/19/14
Project:	C-139 Annex Restoration	Well Depth:	15.0 Feet	Analyst:	MP
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	1.50	1.50
2	3.00	1.50
3	4.50	1.50
4	6.00	1.50
5	7.50	1.50
6	9.00	1.50
7	10.50	1.50
8	12.00	1.50
9	13.50	1.50
10	15.00	1.50
Constant Flow Rate (gpm)		1.50

Equation for K Value: $\frac{Q}{\pi * d * D_2 * Du}$

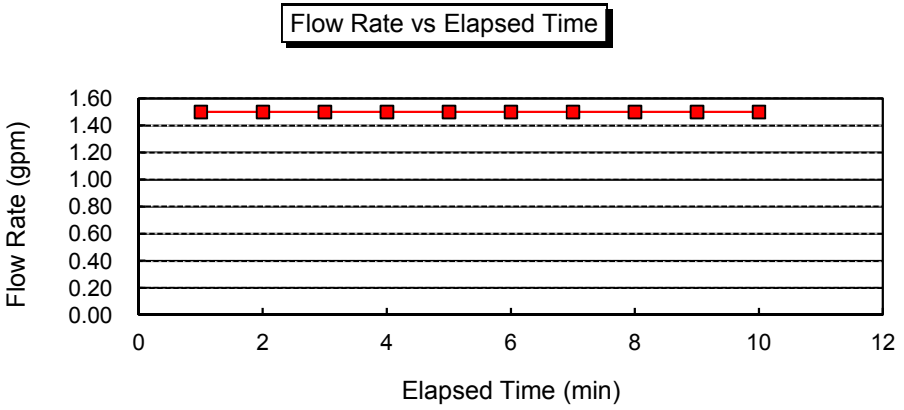
d	=	0.3	feet
D_2	=	5.0	feet
Du	=	7.0	feet
GWT	=	7.0	feet

Where:

Hydraulic Conductivity

K= 9.21E-05 CF/S/Ft^2 - Ft Head

Soil Profile
0-20' Sand (SP)
20'-21' SiltySand (SM)
21'-25' Limestone



tierra SOUTH FLORIDA
GEOTECHNICAL ENGINEERING / MATERIAL TESTING / INSPECTION SERVICES

CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-22A	Date:	06/19/14
Project:	C-139 Annex Restoration	Well Depth:	25.0 Feet	Analyst:	MP
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	1.20	1.20
2	2.40	1.20
3	3.60	1.20
4	4.80	1.20
5	6.00	1.20
6	7.20	1.20
7	8.60	1.40
8	10.00	1.40
9	11.20	1.20
10	12.40	1.20
Constant Flow Rate (gpm)		1.24

Equation for K Value: $\frac{Q}{\pi * d * D_3 * Du}$

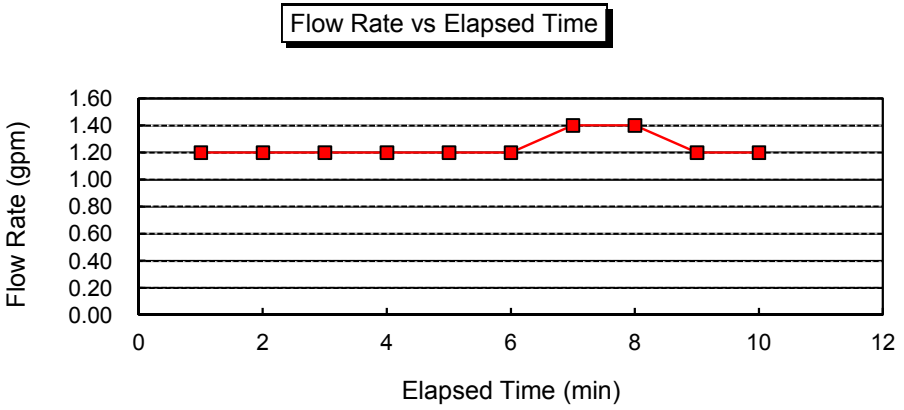
d	=	0.3	feet
D_3	=	10.0	feet
Du	=	7.0	feet
GWT	=	7.0	feet

Where:

Soil Profile
0-20' Sand (SP)
20'-21' SiltySand (SM)
21'-25' Limestone

Hydraulic Conductivity

K= 3.81E-05 CF/S/Ft^2 - Ft Head



USUAL OPEN - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-23A	Date:	06/19/14
Project:	C-139 Annex Restoration	Well Depth:	10.0 Feet	Analyst:	MP
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	0.50	0.50
2	1.00	0.50
3	1.50	0.50
4	2.00	0.50
5	2.50	0.50
6	3.00	0.50
7	3.50	0.50
8	4.00	0.50
9	4.50	0.50
10	5.00	0.50
Constant Flow Rate (gpm)		0.50

Equation for K Value: $\frac{4Q}{\pi * d(2H_2^2 + 4H_2D_s + H_2d)}$

d	=	0.5	feet
H_2	=	1.5	feet
Ds	=	8.5	feet
GWT	=	1.5	feet

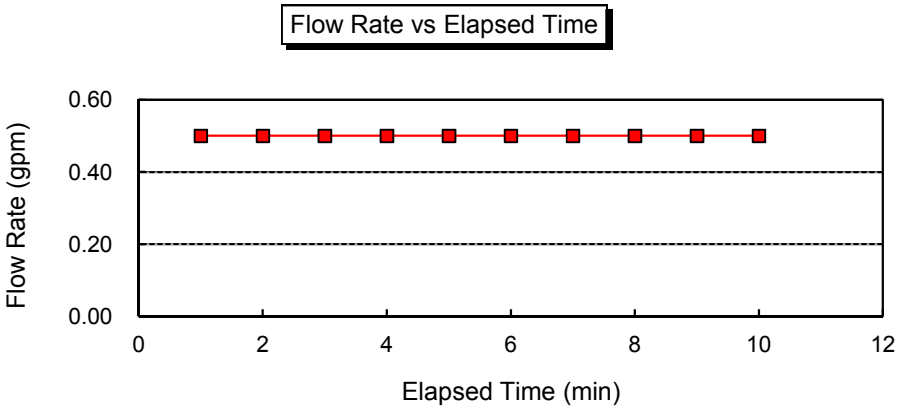
Soil Profile

0-2'	Sand (SP)
2'-4'	Limestone
4'-12'	Clay (CL)
12'-18'	Limestone
18'-24'	SiltySand (SM)
24'-25'	Limestone

Where:

Hydraulic Conductivity

K= 5.11E-05 CF/S/Ft^2 - Ft Head



CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-23A	Date:	06/19/14
Project:	C-139 Annex Restoration	Well Depth:	15.0 Feet	Analyst:	MP
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	0.70	0.70
2	1.40	0.70
3	2.10	0.70
4	2.80	0.70
5	3.50	0.70
6	4.20	0.70
7	4.90	0.70
8	5.60	0.70
9	6.30	0.70
10	7.00	0.70
Constant Flow Rate (gpm)		0.70

Equation for K Value: $\frac{Q}{\pi * d * D_2 * Du}$

d	=	0.3	feet
D_2	=	5.0	feet
Du	=	1.5	feet
GWT	=	1.5	feet

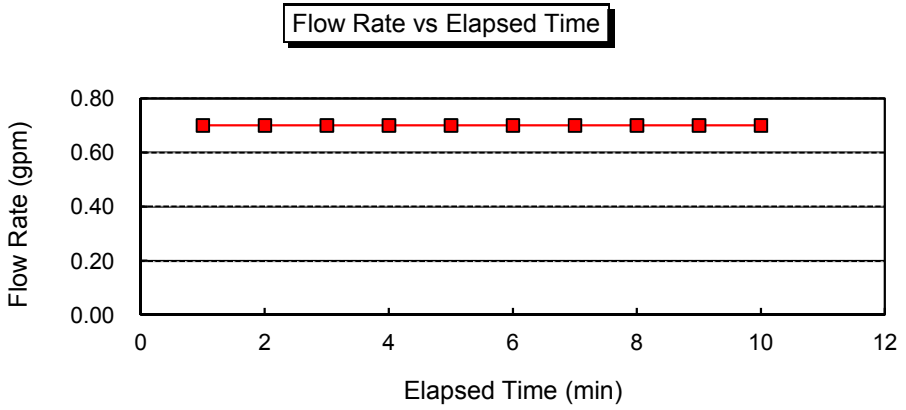
Soil Profile

0-2' Sand (SP)
2'-4' Limestone
4'-12' Clay (CL)
12'-18' Limestone
18'-24' SiltySand (SM)
24'-25' Limestone

Where:

Hydraulic Conductivity

K= 2.01E-04 CF/S/Ft^2 - Ft Head



tierra SOUTH FLORIDA
GEOTECHNICAL ENGINEERING / MATERIAL TESTING / INSPECTION SERVICES

CASE - HOLE TEST EVALUATION
SOUTH FLORIDA WATER MANAGEMENT METHOD

Client:	SFWMD	Test No.:	W-23A	Date:	06/19/14
Project:	C-139 Annex Restoration	Well Depth:	25.0 Feet	Analyst:	MP
Job No.:	7111-13-142	Location:	Hendry County		

Elapsed Time (min)	Reading	Flow Rate (gpm)
0	0.00	0.00
1	1.40	1.40
2	2.80	1.40
3	4.20	1.40
4	5.60	1.40
5	7.00	1.40
6	8.40	1.40
7	9.80	1.40
8	11.20	1.40
9	12.60	1.40
10	14.00	1.40
Constant Flow Rate (gpm)		1.40

Equation for K Value: $\frac{Q}{\pi * d * D_3 * Du}$

d	=	0.3	feet
D_3	=	10.0	feet
Du	=	1.5	feet
GWT	=	1.5	feet

Soil Profile

0-2'	Sand (SP)
2'-4'	Limestone
4'-12'	Clay (CL)
12'-18'	Limestone
18'-24'	SiltySand (SM)
24'-25'	Limestone

Where:

Hydraulic Conductivity

K= 2.01E-04 CF/S/Ft^2 - Ft Head