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**City of Naples (Port Royal)**  
**Habitat Island and Canal Dredging Project**  
**Geotechnical Condition Report**

**1.0 Introduction**

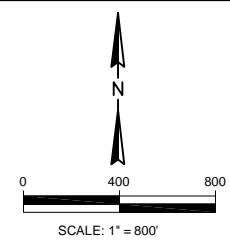
The proposed habitat island and Port Royal canals are located adjacent (north) to Gordon Pass in the City of Naples, Florida (Figure 1). The purpose of the Project is to create a habitat island to achieve:

- (1) Reduction of shoreline erosion of the mangroves;
- (2) Increased flows and therefore improve circulation within the embayment east of the waterway and specifically between the habitat island and the easterly shoreline; and
- (3) Creation of an enhanced habitat for birds, fish and invertebrates.



The sediment to construct the island will be excavated from the nearby Port Royal Canal System. This provides an added benefit of restoring the navigable canal system for the residents of the Port Royal subdivision and constructing a sustainable project based upon sustainability's triple bottom line (environmental, economic and social benefits).

The purpose of this Geotechnical Report is to document the field investigations conducted to evaluate sub-surface sediment characteristics within the canals and habitat island areas.





**NOTE:**  
 1. AERIAL FLIGHT 2011  
 (CITY OF NAPLES)


**LEGEND:**  
 PRIMARY DREDGE AREA  
 OPTIONAL DREDGE AREA

DESIGNED	CP	CHECKED	CP
DRAWN	DP		
DATE: 8/11/2012			
JOB NO. 12-227			
SCALE: AS NOTED			

CITY OF NAPLES - PORT ROYAL  
 CITY OF NAPLES

**PROJECT LOCATION**

Erickson Consulting Engineers, Inc.  
 7201 Delaney Court  
 Sarasota, FL 32420  
 (941) 373-6460



**FIGURE 1**



## **2.0 Phase 1 Geotechnical Investigations (Jet Probes and Sediment Samples)**

In the design of marine dredging projects, ECE employs sequential geotechnical investigation procedures that maximize resources to effectively characterize the subsurface sediment deposits. The first “reconnaissance” phase of the geotechnical investigations includes the collection of preliminary data over relatively large expanses of initial areas of interest in the form of jet probes and surface grab samples. The second “detailed” investigation phase includes the collection of vibracores in precise target areas. The technical methods, analytical tools, and equipment used in the geotechnical investigations are described below.

## **3.0 GPS Positioning**

The navigation and positioning system used during the Phase 1 geotechnical investigations was a Trimble DGPS Global Positioning System (GPS). A Pathfinder Pro XRS receiver provided differential GPS correction utilizing a Satellite Based Augmented Signal (SBAS). The GPS accuracy, with differential correction used in this study, provides for a position accuracy of one (1) to four (4) feet, which is within the accuracy needed for geotechnical investigations of this nature.

## **4.0 Jet Probes**

Jet probes were used to ascertain the sediment thickness and other selected parameters (e.g. grain size, composition, layers of fine materials or coarse rock fragments, shells) that are relevant to the design of the canal dredging and habitat island creation project. Information obtained from jet probes and surface sand samples collectively provide an indication of deposit architecture (presence of fine- or coarse-grained layers, cementation lenses), thickness and general sedimentology of unconsolidated layers.

The jet probing procedure utilizes 12-foot long high pressure “water jet” by driving a galvanized steel pipe into the seafloor using a deck mounted water pump. As the probe penetrates the

sediment on the seafloor, an ECE engineer observes the depth of the probe and the characteristics of the sub-surface sediment. The engineer is able to estimate the resistance of subsurface sediments during jetting (e.g. the "feel" of the probe as it penetrates the sub-surface) to assess the depth of hard layers and rock. Further, the engineer is able to observe the sediments flushed out of the hole during jetting to assess the relative quality of the subsurface strata. For this study, the jet probes extended a minimum of 2 ft below the tentative design dredge depths as specified in the Resolution. A total of 15 jet probes were performed at the locations shown in Figure 2. The results are provided in Table 1.

## **5.0 Vibracores**

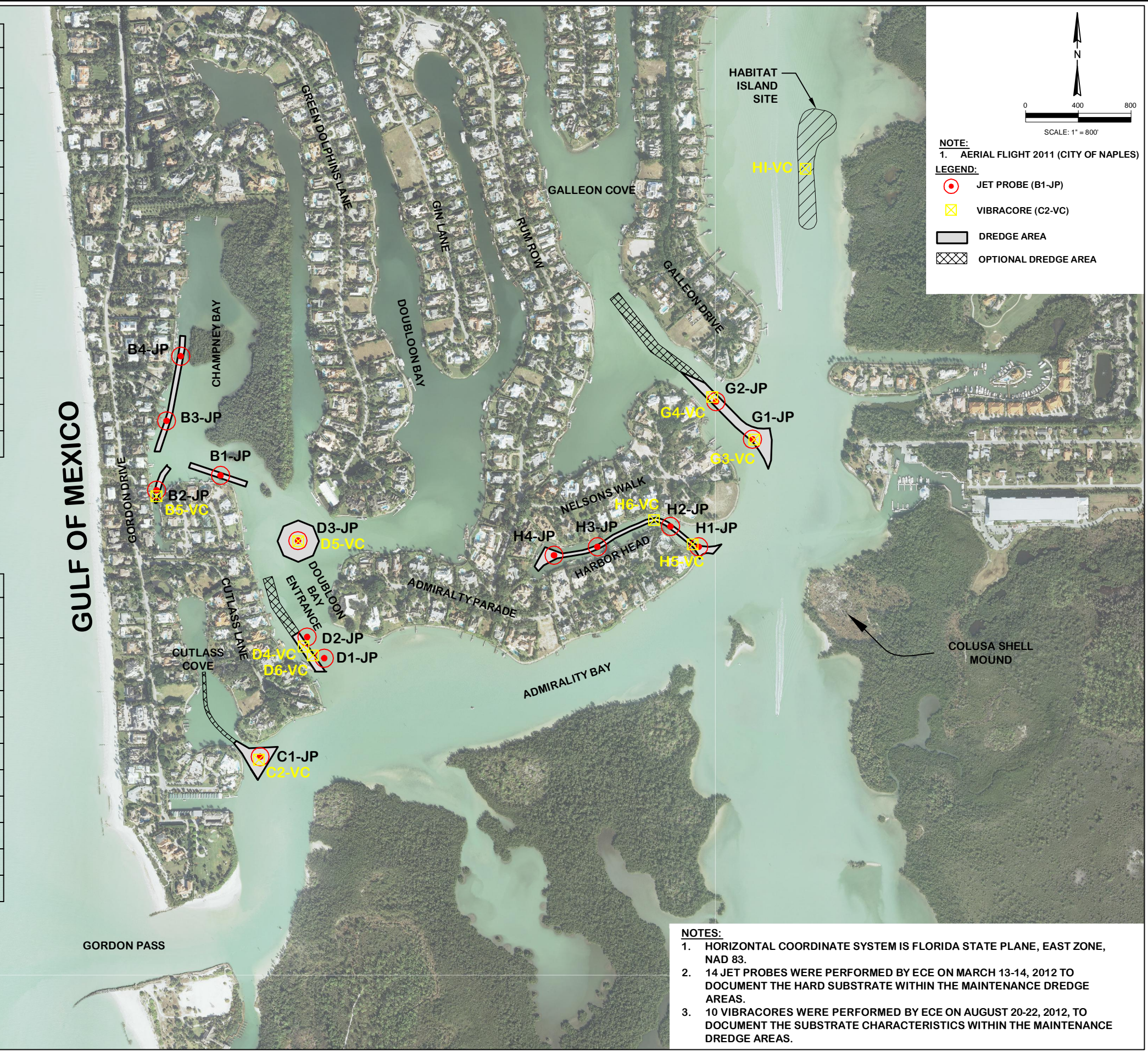
Vibracoring is a technology used to collect relatively undisturbed core samples in water or wet environment. A typical vibracore is a layered column of various natural sediment types, typically including silt, sand, gravel, clay, shells, and organic matter depending on the site conditions. A self-contained vibracore unit consisting of a gas-driven vibratory hammer mounted assembly, an aluminum coring pipe, and lifting gantry was used to obtain vibracores as shown in the Figure 2.

An aluminum coring pipe (3 inch outside diameter) was utilized to collect the sediment core sample in the field. Each core was cut, capped, and sealed onsite to ensure no loss or disturbance of sampled sediments. After extraction, each core was split offsite and a visual inspection of the material contained within the core was performed. The contents of the core were visually segmented into sediment layers and sediment samples were collected for each observed layer. Sediment layers within the dredge templates were then sent for laboratory sieve analysis to obtain their quantitative sediment characteristics such as mean grain size and silt content. The testing sieve stack included 19 phi intervals from -4.25 phi (19.03mm) to 4.00 phi (0.0625mm). Using the laboratory data, quantitative sediment characteristics, including mean grain size, sorting and percent silt, were computed. The quantitative sediment characteristics for the dredge areas are provided in Table 2.



JET PROBE COORDINATES				
POINT #ID	NORTHING	EASTING	LONGITUDE	LATITUDE
B1-JP	643771.0200	393769.8300	W81.799573	N26.102556
B2-JP	643658.8700	393286.8100	W81.801043	N26.102239
B3-JP	644182.6812	393363.1261	W81.800820	N26.103682
B4-JP	644670.1732	393469.8112	W81.800504	N26.105025
C1-JP	641648.9600	394068.8200	W81.798623	N26.096723
D1-JP	642392.0200	394552.2600	W81.797164	N26.098776
D2-JP	642552.1800	394423.2600	W81.797560	N26.099214
D3-JP	643278.6000	394354.3400	W81.797783	N26.101211
G1-JP	644043.0328	397783.5004	W81.787349	N26.104150
G2-JP	644327.6902	397507.6903	W81.788194	N26.103372
H1-JP	643232.1339	397377.3127	W81.788572	N26.101134
H2-JP	643386.0019	397164.0930	W81.789224	N26.101554
H3-JP	643232.1678	396612.9754	W81.790900	N26.101122
H4-JP	643167.9998	396285.4651	W81.791897	N26.100940

VIBRACORE COORDINATES				
POINT #ID	NORTHING	EASTING	LONGITUDE	LATITUDE
B5-VC	643613.2396	393286.1713	W81.801046	N26.102110
C2-VC	641626.2413	394058.6023	W81.798656	N26.096657
D4-VC	642480.0575	394396.6111	W81.797642	N26.099012
D5-VC	643275.3490	394356.6702	W81.797778	N26.101199
D6-VC	642411.8100	394466.2600	W81.797428	N26.098825
G3-VC	644040.9720	397795.1856	W81.787316	N26.103363
G4-VC	644361.3953	397479.2285	W81.788284	N26.104239
H5-VC	643251.3004	397330.7708	W81.788716	N26.101183
H6-VC	643433.4992	397040.8820	W81.789603	N26.101679
HI-VC	646083.4200	398182.9800	W81.786172	N26.108988



- NOTES:**
- HORIZONTAL COORDINATE SYSTEM IS FLORIDA STATE PLANE, EAST ZONE, NAD 83.
  - 14 JET PROBES WERE PERFORMED BY ECE ON MARCH 13-14, 2012 TO DOCUMENT THE HARD SUBSTRATE WITHIN THE MAINTENANCE DREDGE AREAS.
  - 10 VIBRACORES WERE PERFORMED BY ECE ON AUGUST 20-22, 2012, TO DOCUMENT THE SUBSTRATE CHARACTERISTICS WITHIN THE MAINTENANCE DREDGE AREAS.

DESIGNED	CP
DRAWN	DP
CHECKED	CP
DATE:	10/23/12
JOB NO.:	12-227
SCALE:	AS NOTED

CITY OF NAPLES - PORT ROYAL  
CITY OF NAPLES

**GEOTECHNICAL FIELD INVESTIGATIONS**

Erickson Consulting Engineers, Inc.  
**ECE**  
 Erickson Consulting Engineers  
 7201 Delaney Court  
 Sarasota, FL 34240  
 (941) 373-6460

**FIGURE 2**



**Table 1. Jet Probe Summary Table**

Probe ID	Canal ID	Northing (ft)	Easting (ft)	Probe Penetration (ft)	Bottom Elev (ft NAVD)	Elev of Hard Substrate (ft NAVD)	Design Dredge Depth (ft NAVD)	Condition at Refusal Notes
G-1	Galleon Cove	644041.7	397782.8	7	-7.6	-14.6	-10.3	Hard Refusal
G-2		644326.5	397506.9	10	-8.6	-18.6		No Refusal
H-1	Harbor Head	643231.0	397376.5	6.5	-6.3	-12.8	-9.3	Hard Refusal
H-2		643384.6	397163.4	10	-6.9	-16.9		No Refusal
H-3		643230.9	396612.1	10	-6.6	-16.6		No Refusal
H-4		643166.7	396284.5	10	-6.8	-16.8		No Refusal
C-1	Cutlass Cove	641649.0	394068.8	10	-5.4	-15.4	-9.3	Chunky Refusal +/- 3 ft below
D-1	Doubloon Bay Entrance	642392.0	394552.3	10	-8.4	-18.4	-11.3	No Refusal
D-2		642552.2	394423.3	10	-7.9	-17.9		No Refusal
D-3	Doubloon Circle	643278.6	394354.3	10	-7.8	-17.8	-9.3	No Refusal
B-1	Champney East	643771.0	393769.8	10	-8.0	-18.0	-8.3	No Refusal; chunky substrata
B-2	Champney South	643658.9	393286.8	10	-6.4	-16.4		No Refusal
B-3	Champney North	644182.7	393363.1	10	-8.4	-18.4		No Refusal
B-4		644708.6	393448.5	10	-9.2	-19.2		No Real Refusal; possible shell hash +/- 8.5-9 ft pen

Notes: (1) Jet probes performed March 2012 by Erickson Consulting Engineers, Inc.  
 (2) Hard refusal refers to an impenetrable layer (dense sand, shell or rock).  
 (3) Horizontal positions refer to State Plane East NAD83



The core logs for each of the fourteen vibracores performed are provided in Appendix A. Granularmetric reports for the sediment layers within the dredge templates are provided in Appendix B. Photographs of the split cores are provided in Appendix C.

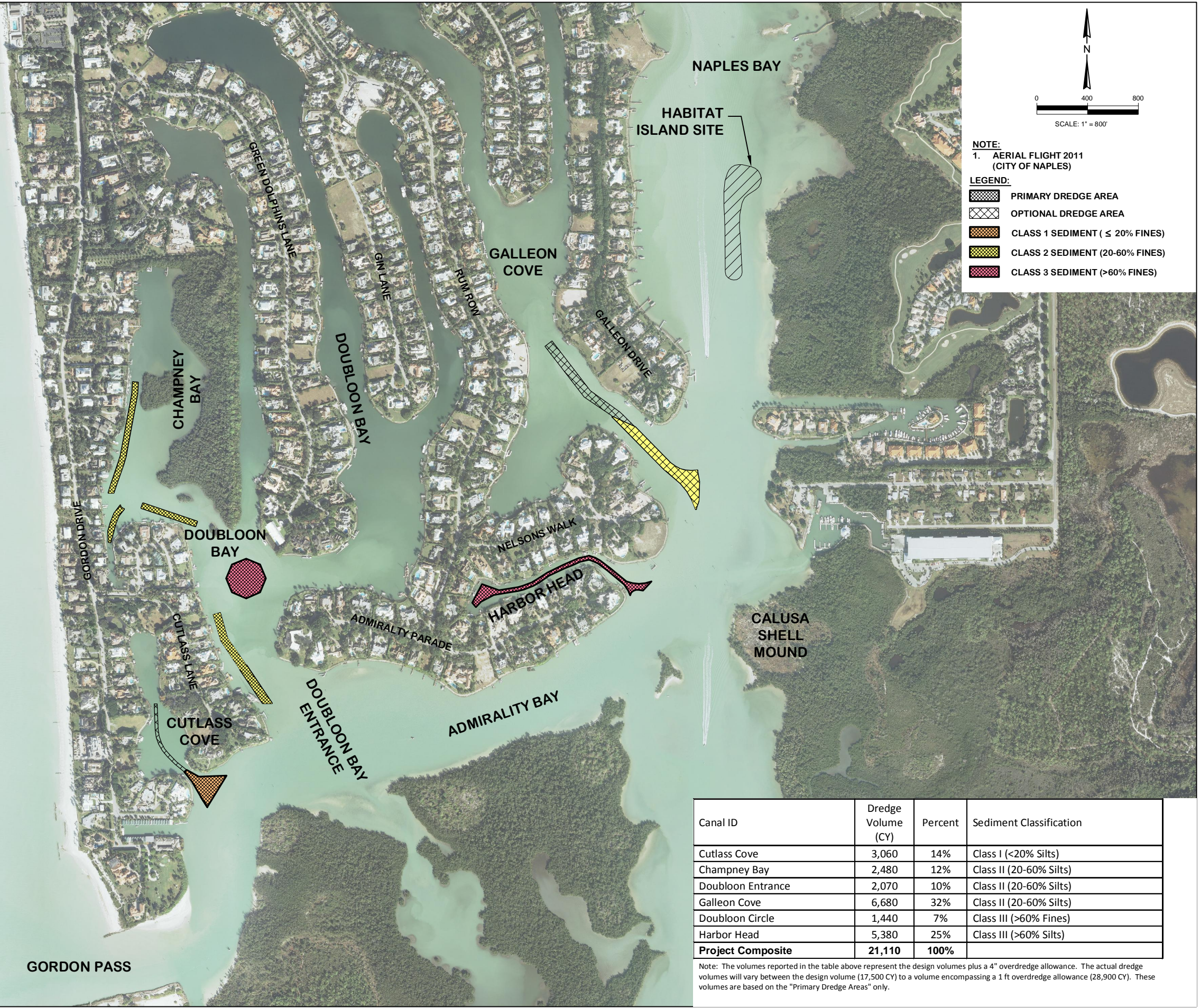
Upon completion of the quantitative laboratory assessment, the dredge locations were then assessed for sediment quality by assigning them to one of three sediment categories: (1) Class I Sediment - sediment with less than or equal to 20% fines, (2) Class II Sediment - sediment with 20%-60% fines and (3) Class III Sediment – sediment with greater than 60% fines as shown in Figure 3.

## **6.0 Summary of Findings**

The excavation areas were divided into three major classifications based on the quality of sediment. Approximately 14% of the sediment to be dredged is composed of fine sand with less than 20% fines (Class I Sediment), 53% is composed of sediment with a fines content between 20-60% (Class II Sediment) and the remaining 32% is composed of sediment with a fines content exceeding 60% (Class III Sediment). The handling requirements and final disposal location for each type of sediment is discussed in the stand alone report entitled “Sediment Management Plan.”



# GULF OF MEXICO



**NOTE:**  
1. AERIAL FLIGHT 2011  
(CITY OF NAPLES)

**LEGEND:**

- PRIMARY DREDGE AREA
- OPTIONAL DREDGE AREA
- CLASS 1 SEDIMENT (≤ 20% FINES)
- CLASS 2 SEDIMENT (20-60% FINES)
- CLASS 3 SEDIMENT (>60% FINES)

Canal ID	Dredge Volume (CY)	Percent	Sediment Classification
Cutlass Cove	3,060	14%	Class I (<20% Silts)
Champney Bay	2,480	12%	Class II (20-60% Silts)
Doubleloon Entrance	2,070	10%	Class II (20-60% Silts)
Galleon Cove	6,680	32%	Class II (20-60% Silts)
Doubleloon Circle	1,440	7%	Class III (>60% Fines)
Harbor Head	5,380	25%	Class III (>60% Silts)
<b>Project Composite</b>	<b>21,110</b>	<b>100%</b>	

Note: The volumes reported in the table above represent the design volumes plus a 4" overdredge allowance. The actual dredge volumes will vary between the design volume (17,500 CY) to a volume encompassing a 1 ft overdredge allowance (28,900 CY). These volumes are based on the "Primary Dredge Areas" only.

DESIGNED	DRAWN	CHECKED
CP	DP	CP
DATE: 10/23/12		
JOB NO. 12-227		
SCALE: AS NOTED		

CITY OF NAPLES - PORT ROYAL  
CITY OF NAPLES  
**SEDIMENT CHARACTERIZATION**

Erickson Consulting Engineers, Inc.

**ECE**  
Erickson Consulting Engineers

7201 Delaney Court  
Sarasota, FL 32420  
(941) 373-6460

**FIGURE 3**



**Table 2. Summary of Sediment Within the Dredge Cut Templates**

Canal ID	Dredge Volume (CY)	Percent	Sediment Classification
Champney Bay	2,480	12%	Class II (20-60% Silts)
Cutlass Cove	3,060	14%	Class I (<20% Silts)
Doubloon Entrance	2,070	10%	Class II (20-60% Silts)
Doubloon Circle	1,440	7%	Class III (>60% Fines)
Galleon Cove	6,680	32%	Class III (>60% Silts)
Harbor Head	5,380	25%	Class III (>60% Silts)
<b>Project Composite</b>	<b>21,110</b>	<b>100%</b>	

Note: The volumes reported in the table above represent the design volumes plus a 4" overdredge allowance. The actual dredge volumes will vary between the design volume (17,500 CY) to a volume encompassing a 1 ft overdredge allowance (28,900 CY). These volumes are based on the "Primary Dredge Areas" only.

Canal ID	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Parameters in Phi Units			Munsell Color	Silt %
					Sorting ( $\sigma$ )	Skewness ( $\alpha$ )	Kurtosis ( $\beta$ )		
Champney Bay	4.27	0.06	6.26	0.09	-3.52	-0.59	0.69	10YR 5/1	47.93
Cutlass Cove	3.36	0.10	3.38	0.10	-0.02	-0.44	5.50	10YR 5/1	19.73
Doubloon Entrance	3.75	0.07	3.95	0.08	-0.85	-0.22	0.45	10YR 5/1	41.69
Doubloon Circle	9.03	0.00	9.03	0.03	-5.10	-0.01	0.30	10YR 5/1	83.51
Galleon Cove	5.51	0.05	5.43	0.06	-1.28	-1.93	15.75	10YR 5/1	53.12
Harbor Head	4.07	0.06	4.30	0.07	-1.19	-0.18	0.40	10YR 5/1	81.79
<b>Project Composite</b>	<b>4.75</b>	<b>0.06</b>	<b>5.04</b>	<b>0.07</b>	<b>-1.56</b>	<b>-0.81</b>	<b>6.03</b>	<b>10YR 5/1</b>	<b>55.93</b>



# **Appendix A**

## **Core Logs**

Boring Designation B5-VC

<b>DRILLING LOG</b>		<b>DIVISION</b>	<b>INSTALLATION</b>	<b>SHEET 1</b> <b>OF 1 SHEETS</b>
<b>1. PROJECT</b> Port Royal - Champney Bay Naples, FL			<b>9. SIZE AND TYPE OF BIT</b> 3.0 In. Vibracore	
<b>2. BORING DESIGNATION</b> B5-VC			<b>10. COORDINATE SYSTEM/DATUM</b> Florida State Plane East	
<b>LOCATION COORDINATES</b> X = 393,286 Y = 643,613			<b>HORIZONTAL</b> NAD 1983	
<b>3. TESTING AGENCY</b> Ardaman & Associates			<b>11. MANUFACTURER'S DESIGNATION OF DRILL</b> <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
<b>TESTER'S FILE NO.</b> 11-7482			<b>12. TOTAL SAMPLES</b> <b>DISTURBED</b> <b>UNDISTURBED (UD)</b> 4	
<b>4. NAME OF TESTER</b> Jerry H. Kuehn, P.E.			<b>13. TOTAL NUMBER CORE BOXES</b>	
<b>5. DIRECTION OF BORING</b> <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			<b>14. WATER DEPTH</b> 8.3 Ft.	
<b>DEG. FROM VERTICAL</b>			<b>15. DATE BORING</b> <b>STARTED</b> 08-20-12 15:50 <b>COMPLETED</b> 08-20-12	
<b>BEARING</b>			<b>16. ELEVATION TOP OF BORING</b> -5.5 Ft.	
<b>6. THICKNESS OF OVERBURDEN</b> 0.0 Ft.			<b>17. TOTAL RECOVERY FOR BORING</b> 6.8 Ft.	
<b>7. DEPTH DRILLED INTO ROCK</b> 0.0 Ft.			<b>18. SIGNATURE AND TITLE OF INSPECTOR</b>	
<b>8. TOTAL DEPTH OF BORING</b> 8.3 Ft.				

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-5.5	0.0					
			Gray sandy silt with organics (trace shell fragments), (MH).		1	Sample #B5-VC-1, Depth = 1.8' Mean (mm): 0.08, Phi Sorting: -4.49 Fines (230): 52.00% (MH) 10YR5/1
-8.2	2.7		Very dark grayish brown sandy silt with organics, (MH).		2	Sample #B5-VC-2, Depth = 3.0' Mean (mm): 0.07, Phi Sorting: -2.08 Fines (230): 59.10% (MH) 10YR3/2
-8.9	3.4					
			Brown fine sand, (SP).		3	Sample #B5-VC-3, Depth = 5.5' Mean (mm): 0.15, Phi Sorting: 0.46 Fines (230): 1.90% (SP) 10YR5/3
					4	Sample #B5-VC-4, Depth=7.5', Not Tested.
-13.8	8.3		End of Boring			

FLORIDA DEP ROSS 08-2012 FDEP ROSS CORE LOGS\_NAPLES.GPJ FL DEP ROSS.GDT 9/26/12



Boring Designation C2-VC

<b>DRILLING LOG</b>		<b>DIVISION</b>	<b>INSTALLATION</b>	<b>SHEET 1</b> OF 1 SHEETS
<b>1. PROJECT</b> Port Royal - Cutlass Cove Naples, FL			<b>9. SIZE AND TYPE OF BIT</b> 3.0 In. Vibracore	
<b>2. BORING DESIGNATION</b> C2-VC			<b>10. COORDINATE SYSTEM/DATUM</b> Florida State Plane East	
<b>3. TESTING AGENCY</b> Ardaman & Associates			<b>11. MANUFACTURER'S DESIGNATION OF DRILL</b> <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
<b>4. NAME OF TESTER</b> Jerry H. Kuehn, P.E.			<b>12. TOTAL SAMPLES</b> DISTURBED UNDISTURBED (UD) 5	
<b>5. DIRECTION OF BORING</b> <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			<b>13. TOTAL NUMBER CORE BOXES</b>	
<b>6. THICKNESS OF OVERBURDEN</b> 0.0 Ft.			<b>14. WATER DEPTH</b> 4.4 Ft.	
<b>7. DEPTH DRILLED INTO ROCK</b> 0.0 Ft.			<b>15. DATE BORING</b> STARTED 08-21-12 10:20 COMPLETED 08-21-12	
<b>8. TOTAL DEPTH OF BORING</b> 11.1 Ft.			<b>16. ELEVATION TOP OF BORING</b> -6.0 Ft.	
			<b>17. TOTAL RECOVERY FOR BORING</b> 10.2 Ft.	
			<b>18. SIGNATURE AND TITLE OF INSPECTOR</b>	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-6.0	0.0					
-7.6	1.6		Light gray to gray fine sand with silt, (SP-SM).			Sample #C2-VC-1, Depth = 1.0' Mean (mm): 0.12, Phi Sorting: 0.34 Fines (230): 8.90% (SP-SM) 10YR6/1
-8.2	2.2		Gray sandy silt, (MH).			Depth = 1.6' - 2.2' Sample #C2-VC-2, Depth = 1.6' - 2.2' Mean (mm): 0.07, Phi Sorting: -1.11 Fines (230): 47.10% (MH) 10YR5/1
-8.5	2.5		Gray silty fine sand, (SM-H).			Depth = 2.2' - 2.5' Not Sampled or Tested
-9.5	3.5		Light gray to gray fine sand with silt, (SP-SM).			Sample #C2-VC-3, Depth = 4.0' Mean (mm): 0.07, Phi Sorting: -1.11 Fines (230): 47.10% (MH) 10YR5/1
-10.4	4.4		Gray sandy silt, (MH).			Depth = 4.0' - 4.4' Not Sampled or Tested
-10.7	4.7		Gray silty fine sand, (SM-H).			Depth = 4.4' - 4.7', Not Sampled or Tested
-11.4	5.4		Light gray to gray fine sand with silt, (SP-SM).			Depth = 4.7' - 5.4' Not Sampled or Tested
-12.2	6.2		Gray silty fine sand, (SM-H).			Depth = 5.4' - 6.2' Not Sampled or Tested
-12.9	6.9		Gray sandy silt, (MH).			Depth = 6.2' - 6.9' Not Sampled or Tested
-13.4	7.4		Gray fine sand with silt, (SP-SM).			Sample #C2-VC-4, Depth = 7.2' Not Tested
-13.8	7.8		Light gray to gray fine sand with silt, (SP-SM).			Depth = 7.4' - 7.8' Not Sampled or Tested
-14.4	8.4		Gray sandy silt, (MH).			Depth = 7.8' - 8.4' Not Sampled or Tested
-17.1	11.1		Gray fine sand, (SM).		5	Sample #C2-VC-5, Depth = 9.8' Not Tested
			End of Boring			

FLORIDA DEP ROSS 08-2012 FDEP ROSS CORE LOGS\_NAPLES.GPJ\_FL DEP ROSS.GDT 9/26/12

Boring Designation D4-VC

<b>DRILLING LOG</b>		<b>DIVISION</b>	<b>INSTALLATION</b>	<b>SHEET 1</b> <b>OF 1 SHEETS</b>
<b>1. PROJECT</b> Port Royal - Doubloon Bay Naples, FL			<b>9. SIZE AND TYPE OF BIT</b> 3.0 In. Vibracore	
<b>2. BORING DESIGNATION</b> D4-VC			<b>10. COORDINATE SYSTEM/DATUM</b> Florida State Plane East	
<b>LOCATION COORDINATES</b> X = 394,397 Y = 642,480			<b>HORIZONTAL</b> NAD 1983	
<b>3. TESTING AGENCY</b> Ardaman & Associates			<b>11. MANUFACTURER'S DESIGNATION OF DRILL</b> <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
<b>TESTER'S FILE NO.</b> 11-7482			<b>12. TOTAL SAMPLES</b> <b>DISTURBED</b> <b>UNDISTURBED (UD)</b> 4	
<b>4. NAME OF TESTER</b> Jerry H. Kuehn, P.E.			<b>13. TOTAL NUMBER CORE BOXES</b>	
<b>5. DIRECTION OF BORING</b> <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			<b>14. WATER DEPTH</b> 8.7 Ft.	
<b>DEG. FROM VERTICAL</b>			<b>15. DATE BORING</b> <b>STARTED</b> 08-21-12 13:40 <b>COMPLETED</b> 08-21-12	
<b>BEARING</b>			<b>16. ELEVATION TOP OF BORING</b> -8.2 Ft.	
<b>6. THICKNESS OF OVERBURDEN</b> 0.0 Ft.			<b>17. TOTAL RECOVERY FOR BORING</b> 6.6 Ft.	
<b>7. DEPTH DRILLED INTO ROCK</b> 0.0 Ft.			<b>18. SIGNATURE AND TITLE OF INSPECTOR</b>	
<b>8. TOTAL DEPTH OF BORING</b> 8.3 Ft.				

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-8.2	0.0					
			Gray clayey silty fine sand (trace shell fragments), (SM-SC).		1	Sample #D4-VC-1, Depth = 1.7' Mean (mm): 0.08, Phi Sorting: -0.84 Fines (230): 40.80% (SM-SC) 10YR5/1
					2	Sample #D4-VC-2, Depth = 4.1', Not Tested.
-14.2	6.0					
-14.5	6.3		Pale brown fine sand, (SM).		3	Sample #D4-VC-3, Depth = 6.1' Not Tested
			Gray clayey silty fine sand, (SM-SC).		4	Sample #D4-VC-4, Depth = 7.3' Not Tested
-16.5	8.3					
			End of Boring			

FLORIDA DEP ROSS 08-2012 FDP ROSS CORE LOGS NAPLES GPJ FL DEP ROSS GDT 9/26/12

Boring Designation D5-VC

<b>DRILLING LOG</b>		<b>DIVISION</b>	<b>INSTALLATION</b>	<b>SHEET 1</b>
<b>1. PROJECT</b> Port Royal Naples, FL			<b>9. SIZE AND TYPE OF BIT</b> 3.0 In. A <b>10. COORDINATE SYSTEM/DATUM</b> HORIZONTAL VERTICAL Florida State Plane East NAD 1983 NAVD 88	<b>OF 1 SHEETS</b>
<b>2. BORING DESIGNATION</b> D5-VC		<b>LOCATION COORDINATES</b> X = 394,357 Y = 643,275		<b>11. MANUFACTURER'S DESIGNATION OF DRILL</b> <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER
<b>3. DRILLING AGENCY</b> Ardaman & Associates		<b>DRILLER'S FILE NO.</b> 11-7482		<b>12. TOTAL SAMPLES</b> <b>DISTURBED</b> <b>UNDISTURBED (UD)</b> 3
<b>4. NAME OF DRILLER</b> Jerry H. Kuehn, P.E.				
<b>5. DIRECTION OF BORING</b> <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		<b>DEG. FROM VERTICAL</b>	<b>BEARING</b>	<b>13. TOTAL NUMBER CORE BOXES</b>
<b>6. THICKNESS OF OVERBURDEN</b> 0.0 Ft.		<b>14. WATER BENCH</b> 7.4 Ft.		
<b>7. DEPTH DRILLED INTO ROCK</b> 0.0 Ft.		<b>15. DATE BORING</b> <b>STARTED</b> <b>COMPLETED</b> 08-21-12 12:40 08-21-12		<b>16. ELEVATION TOP OF BORING</b> -7.8 Ft.
<b>8. TOTAL DEPTH OF BORING</b> 6.3 Ft.		<b>17. TOTAL RECOVERY FOR BORING</b> 4.6 Ft.		
<b>18. SIGNATURE AND TITLE OF INSPECTOR</b>				

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-7.8	0.0					
			Gray silt/clay (trace shell fragments), (ML-CL).			Sample #D5-VC-1, Depth = 0.2' Mean (mm): 0.03, Phi Sorting: -5.10 Fines (230): 83.40% (ML-CL) 10YR5/1
						Sample #D5-VC-2, Depth = 2.5', Not Tested.
-11.8	4.0		Dark gray clay, (ML-CL).			Depth = 4.0' - 4.3' Not Sampled or Tested
-12.1	4.3		Gray silt/clay (trace shell fragments), (ML-CL).			Depth = 4.3' - 5.5' Not Sampled or Tested
-13.3	5.5		Dark brown fine sand with organics, (SM).		3	Sample #D5-VC-3, Depth = 5.7' Not Tested
-14.1	6.3		End of Boring			

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Boring Designation D6-VC

<b>DRILLING LOG</b>		<b>DIVISION</b>	<b>INSTALLATION</b>	<b>SHEET 1</b> <b>OF 1 SHEETS</b>
<b>1. PROJECT</b> Port Royal - Doubloon Bay Naples, FL			<b>9. SIZE AND TYPE OF BIT</b> 3.0 In. Vibracore	
<b>2. BORING DESIGNATION</b> D6-VC			<b>10. COORDINATE SYSTEM/DATUM</b> Florida State Plane East	
<b>LOCATION COORDINATES</b> X = 394,467 Y = 642,376			<b>HORIZONTAL</b> NAD 1983	
<b>3. TESTING AGENCY</b> Ardaman & Associates			<b>11. MANUFACTURER'S DESIGNATION OF DRILL</b> <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
<b>TESTER'S FILE NO.</b> 11-7482			<b>12. TOTAL SAMPLES</b> <b>DISTURBED</b> <b>UNDISTURBED (UD)</b> 4	
<b>4. NAME OF TESTER</b> Jerry H. Kuehn, P.E.			<b>13. TOTAL NUMBER CORE BOXES</b>	
<b>5. DIRECTION OF BORING</b> <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			<b>14. WATER DEPTH</b> 9.5 Ft.	
<b>DEG. FROM VERTICAL</b>			<b>15. DATE BORING</b> <b>STARTED</b> 08-22-12 14:10 <b>COMPLETED</b> 08-22-12	
<b>BEARING</b>			<b>16. ELEVATION TOP OF BORING</b> -9.3 Ft.	
<b>6. THICKNESS OF OVERBURDEN</b> 0.0 Ft.			<b>17. TOTAL RECOVERY FOR BORING</b> 8 Ft.	
<b>7. DEPTH DRILLED INTO ROCK</b> 0.0 Ft.			<b>18. SIGNATURE AND TITLE OF INSPECTOR</b>	
<b>8. TOTAL DEPTH OF BORING</b> 9.7 Ft.				

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-9.3	0.0					
			Gray sandy silt, (MH).		1	Sample #D6-VC-1, Depth = 1.7' Mean (mm): 0.08, Phi Sorting: -0.87 Fines (230): 42.30% (MH) 10YR5/1
					2	Sample #D6-VC-2, Depth = 4.2', Not Tested.
-17.4	8.1					
			Gray silty fine sand, (SM).		3	Sample #D6-VC-3, Depth = 8.7' Not Tested
-18.3	9.0					
			Gray sandy silt, (MH).		4	Sample #D6-VC-4, Depth = 9.4' Not Tested
-19.0	9.7					

FLORIDA DEP ROSS 08-2012 FDEP ROSS CORE LOGS NAPLES.GPJ FL DEP ROSS.GDT 9/26/12

End of Boring

Boring Designation G3-VC

<b>DRILLING LOG</b>		<b>DIVISION</b>	<b>INSTALLATION</b>	<b>SHEET 1</b> <b>OF 1 SHEETS</b>
<b>1. PROJECT</b> Port Royal - Galleon Cove Naples, FL			<b>9. SIZE AND TYPE OF BIT</b> 3.0 In. Vibracore	
<b>2. BORING DESIGNATION</b> G3-VC			<b>10. COORDINATE SYSTEM/DATUM</b> Florida State Plane East	
<b>LOCATION COORDINATES</b> X = 397,795 Y = 644,041			<b>HORIZONTAL</b> NAD 1983	
<b>3. TESTING AGENCY</b> Ardaman & Associates			<b>11. MANUFACTURER'S DESIGNATION OF DRILL</b> <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
<b>TESTER'S FILE NO.</b> 11-7482			<b>12. TOTAL SAMPLES</b> <b>DISTURBED</b> <b>UNDISTURBED (UD)</b> 5	
<b>4. NAME OF TESTER</b> Jerry H. Kuehn, P.E.			<b>13. TOTAL NUMBER CORE BOXES</b>	
<b>5. DIRECTION OF BORING</b> <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			<b>14. WATER DEPTH</b> 6.0 Ft.	
<b>DEG. FROM VERTICAL</b>			<b>15. DATE BORING</b> <b>STARTED</b> 08-22-12 11:20 <b>COMPLETED</b> 08-22-12	
<b>BEARING</b>			<b>16. ELEVATION TOP OF BORING</b> -8.0 Ft.	
<b>6. THICKNESS OF OVERBURDEN</b> 0.0 Ft.			<b>17. TOTAL RECOVERY FOR BORING</b> 6.5 Ft.	
<b>7. DEPTH DRILLED INTO ROCK</b> 0.0 Ft.			<b>18. SIGNATURE AND TITLE OF INSPECTOR</b>	
<b>8. TOTAL DEPTH OF BORING</b> 8.3 Ft.				

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-8.0	0.0					
			Gray silty fine sand (trace shell fragments), (SM).		1	Sample #G3-VC-1, Depth = 1.0' Mean (mm): 0.11, Phi Sorting: 0.52 Fines (230): 15.00% (SM) 10YR5/1
-12.3	4.3				2	Sample #G3-VC-2, Depth = 3.5', Not Tested.
-13.8	5.8		Gray fine sand, (SM).		3	Sample #G3-VC-3, Depth = 5.0' Not Tested
-14.9	6.9		Dark gray fine sand, (SM).		4	Sample #G3-VC-4, Depth = 6.5' Not Tested
-16.3	8.3		Gray clayey silty fine sand (trace shell fragments), (SM-SC).		5	Sample #G3-VC-5, Depth = 7.8' Not Tested
			End of Boring			

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Boring Designation G4-VC

<b>DRILLING LOG</b>		<b>DIVISION</b>	<b>INSTALLATION</b>	<b>SHEET 1</b> OF 1 SHEETS
<b>1. PROJECT</b> Port Royal - Galleon Cove Naples, FL			<b>9. SIZE AND TYPE OF BIT</b> 3.0 In. Vibracore	
<b>2. BORING DESIGNATION</b> G4-VC		<b>LOCATION COORDINATES</b> X = 397,479 Y = 644,361		<b>10. COORDINATE SYSTEM/DATUM</b> Florida State Plane East
<b>3. DRILLING AGENCY</b> Ardaman & Associates		<b>DRILLER'S FILE NO.</b> 11-7482		<b>HORIZONTAL</b> NAD 1983 <b>VERTICAL</b> NAVD 88
<b>4. NAME OF DRILLER</b> Jerry H. Kuehn, P.E.			<b>11. MANUFACTURER'S DESIGNATION OF DRILL</b> <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
<b>5. DIRECTION OF BORING</b> <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		<b>DEG. FROM VERTICAL</b>	<b>BEARING</b>	<b>12. TOTAL SAMPLES</b> <b>DISTURBED</b> <b>UNDISTURBED (UD)</b> 3
<b>6. THICKNESS OF OVERBURDEN</b> 0.0 Ft.		<b>13. TOTAL NUMBER CORE BOXES</b>		
<b>7. DEPTH DRILLED INTO ROCK</b> 0.0 Ft.		<b>14. WATER BENCH</b> 7.5 Ft.		
<b>8. TOTAL DEPTH OF BORING</b> 9.3 Ft.		<b>15. DATE BORING</b>		<b>STARTED</b> 08-22-12 09:00 <b>COMPLETED</b> 08-22-12
			<b>16. ELEVATION TOP OF BORING</b> -8.4 Ft.	
			<b>17. TOTAL RECOVERY FOR BORING</b> 7.5 Ft.	
<b>18. SIGNATURE AND TITLE OF INSPECTOR</b>				

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-8.4	0.0					
					1	Sample #G4-VC-1, Depth = 1' Not Tested
			Gray silt/clay with organics, (ML-CL).		2	Sample #G4-VC-2; Depth = 5.1' Mean (mm): 0.02, Phi Sorting: -3.04 Fines (230): 90.40% (ML-CL) 10YR5/1
-15.1	6.7					
-15.6	7.2		Brown fine sand, (SM).		3	Sample #G4-VC-3, Depth = 6.9' Not Tested
			Gray silt/clay with organics, (ML-CL).			Depth = 7.2' - 8.6' Not Sampled or Tested
-17.0	8.6					
-17.7	9.3		Brown fine sand, (SM).			Depth = 8.6' - 9.3' Not Sampled or Tested
			End of Boring			

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Boring Designation H5-VC

<b>DRILLING LOG</b>		<b>DIVISION</b>	<b>INSTALLATION</b>	<b>SHEET 1</b> <b>OF 1 SHEETS</b>
<b>1. PROJECT</b> Port Royal - Harbor Head Naples, FL			<b>9. SIZE AND TYPE OF BIT</b> 3.0 In. Vibracore	
<b>2. BORING DESIGNATION</b> H5-VC			<b>10. COORDINATE SYSTEM/DATUM</b> Florida State Plane East	
<b>LOCATION COORDINATES</b> X = 397,331 Y = 643,251			<b>HORIZONTAL</b> NAD 1983	
<b>3. TESTING AGENCY</b> Ardaman & Associates			<b>11. MANUFACTURER'S DESIGNATION OF DRILL</b> <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
<b>TESTER'S FILE NO.</b> 11-7482			<b>12. TOTAL SAMPLES</b> <b>DISTURBED</b> <b>UNDISTURBED (UD)</b> 6	
<b>4. NAME OF TESTER</b> Jerry H. Kuehn, P.E.			<b>13. TOTAL NUMBER CORE BOXES</b>	
<b>5. DIRECTION OF BORING</b> <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			<b>14. WATER DEPTH</b> 8.5 Ft.	
<b>DEG. FROM VERTICAL</b>			<b>15. DATE BORING</b> <b>STARTED</b> 08-21-12 15:45 <b>COMPLETED</b> 08-21-12	
<b>BEARING</b>			<b>16. ELEVATION TOP OF BORING</b> -6.0 Ft.	
<b>6. THICKNESS OF OVERBURDEN</b> 0.0 Ft.			<b>17. TOTAL RECOVERY FOR BORING</b> 6.4 Ft.	
<b>7. DEPTH DRILLED INTO ROCK</b> 0.0 Ft.			<b>18. SIGNATURE AND TITLE OF INSPECTOR</b>	
<b>8. TOTAL DEPTH OF BORING</b> 7.9 Ft.				

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-6.0	0.0					
-7.5	1.5		Gray sandy silt/clay with organics (trace shell fragments), (ML-CL).		1	Sample #H5-VC-1, Depth = 0.5' Mean (mm): 0.07, Phi Sorting: -1.49 Fines (230): 53.80% (ML-CL) 10YR5/1
-10.7	4.7		Gray sandy silt/clay with organics (trace shell fragments), (ML-CL).		2	Sample #H5-VC-2, Depth = 3.0' Mean (mm): 0.07, Phi Sorting: -1.02 Fines (230): 49.50% (ML-CL) 10YR5/1
-11.3	5.3		Dark brown fine sand with organics, (SM).		3	Sample #H5-VC-3, Depth = 5.0' Not Tested
-12.4	6.4		Very fine dark silty gray sand, (SP-SM).		4	Sample #H5-VC-4, Depth = 5.7' Not Tested
-12.7	6.7		Gray clayey silts, (ML).			Depth = 6.4' - 6.7' Not Sampled or Tested
-13.2	7.2		Dark brown clayey fine sand with organics, (SM-SC).		5	Sample #H5-VC-5, Depth = 7.0' Not Tested
-13.9	7.9		Brown fine sand, (SM).		6	Sample #H5-VC-6, Depth = 7.6' Not Tested

FLORIDA DEP ROSS 08-2012 FDP ROSS CORE LOGS NAPLES GPJ FL DEP ROSS GDT 9/26/12

Boring Designation H6-VC

<b>DRILLING LOG</b>		<b>DIVISION</b>	<b>INSTALLATION</b>	<b>SHEET 1</b> <b>OF 1 SHEETS</b>
<b>1. PROJECT</b> Port Royal - Harbor Head Naples, FL			<b>9. SIZE AND TYPE OF BIT</b> 3.0 In. Vibracore	
<b>2. BORING DESIGNATION</b> H6-VC			<b>10. COORDINATE SYSTEM/DATUM</b> Florida State Plane East	
<b>LOCATION COORDINATES</b> X = 397,041 Y = 643,433			<b>HORIZONTAL</b> NAD 1983	
<b>3. TESTING AGENCY</b> Ardaman & Associates			<b>11. MANUFACTURER'S DESIGNATION OF DRILL</b> <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
<b>TESTER'S FILE NO.</b> 11-7482			<b>12. TOTAL SAMPLES</b> <b>DISTURBED</b> <b>UNDISTURBED (UD)</b> 4	
<b>4. NAME OF TESTER</b> Jerry H. Kuehn, P.E.			<b>13. TOTAL NUMBER CORE BOXES</b>	
<b>5. DIRECTION OF BORING</b> <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			<b>14. WATER DEPTH</b> 5.5 Ft.	
<b>DEG. FROM VERTICAL</b>			<b>15. DATE BORING</b> <b>STARTED</b> 08-22-12 10:05 <b>COMPLETED</b> 08-22-12	
<b>BEARING</b>			<b>16. ELEVATION TOP OF BORING</b> -7.0 Ft.	
<b>6. THICKNESS OF OVERBURDEN</b> 0.0 Ft.			<b>17. TOTAL RECOVERY FOR BORING</b> 5.9 Ft.	
<b>7. DEPTH DRILLED INTO ROCK</b> 0.0 Ft.			<b>18. SIGNATURE AND TITLE OF INSPECTOR</b>	
<b>8. TOTAL DEPTH OF BORING</b> 7.9 Ft.				

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-7.0	0.0					
			Gray silt/clay with organics (trace shell fragments), (ML-CL).		1	Sample #H6-VC-1, Depth = 1.5' Mean (mm): 0.03, Phi Sorting: -2.83 Fines (230): 87.80% (ML-CL) 10YR5/1
					2	Sample #H6-VC-2, Depth = 3', Not Tested.
-11.0	4.0		Organics with dark brown fine sand, (PT).		3	Sample #H6-VC-3, Depth = 4.5' Not Tested
-12.1	5.1					
			Brown fine sand with organics, (SM).		4	Sample #H6-VC-4, Depth = 6.5' Not Tested
-14.9	7.9					

FLORIDA DEP ROSS 08-2012 FDP ROSS CORE LOGS NAPLES GPJ FL DEP ROSS GDT 9/26/12

Boring Designation HI-VC

<b>DRILLING LOG</b>		<b>DIVISION</b>	<b>INSTALLATION</b>	<b>SHEET 1</b>
<b>1. PROJECT</b> Port Royal - Habitat Island Site Naples, FL		<b>9. SIZE AND TYPE OF BIT</b> 3.0 In. Vibracore		
<b>2. BORING DESIGNATION</b> HI-VC		<b>10. COORDINATE SYSTEM/DATUM</b> Florida State Plane East		
<b>LOCATION COORDINATES</b> X = 398,196 Y = 646,239		<b>HORIZONTAL</b> NAD 1983	<b>VERTICAL</b> NAVD 88	
<b>3. TESTING AGENCY</b> Ardaman & Associates		<b>11. MANUFACTURER'S DESIGNATION OF DRILL</b>		<input type="checkbox"/> <b>AUTO HAMMER</b>
<b>TESTER'S FILE NO.</b> 11-7482				<input type="checkbox"/> <b>MANUAL HAMMER</b>
<b>4. NAME OF TESTER</b> Jerry H. Kuehn, P.E.		<b>12. TOTAL SAMPLES</b>		<b>DISTURBED</b>
<b>5. DIRECTION OF BORING</b> <input checked="" type="checkbox"/> <b>VERTICAL</b> <input type="checkbox"/> <b>INCLINED</b>		<b>13. TOTAL NUMBER CORE BOXES</b>		<b>UNDISTURBED (UD)</b> 3
<b>6. THICKNESS OF OVERBURDEN</b> 0.0 Ft.		<b>14. WATER DEPTH</b> 5.6 Ft.		
<b>7. DEPTH DRILLED INTO ROCK</b> 0.0 Ft.		<b>15. DATE BORING</b>		<b>STARTED</b> 08-22-12 13:00
<b>8. TOTAL DEPTH OF BORING</b> 6.6 Ft.		<b>16. ELEVATION TOP OF BORING</b> -5.8 Ft.		<b>COMPLETED</b> 08-22-12
		<b>17. TOTAL RECOVERY FOR BORING</b> 4.8 Ft.		
		<b>18. SIGNATURE AND TITLE OF INSPECTOR</b>		

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-5.8	0.0					
-7.8	2.0		Gray silty fine sand (trace shell fragments), (SM).		1	Sample #HI-VC-1, Depth = 0.9' Mean (mm): 0.11, Phi Sorting: -0.95 Fines (230): 30.30% (SM) 10YR5/1
-10.0	4.2		Dark gray silty fine sand with shell, (SM).		2	Sample #HI-VC-2, Depth = 3.1' Mean (mm): 0.41, Phi Sorting: 2.58 Fines (230): 25.20% (SM) 10YR4/1
-12.4	6.6		Gray silty fine sand (trace organics), (SM).		3	Sample #HI-VC-3, Depth = 5.5' Mean (mm): 0.17, Phi Sorting: 0.52 Fines (230): 11.60% (SM) 10YR5/1
			End of Boring			

FLORIDA DEP ROSS 08-2012 FDP ROSS CORE LOGS NAPLES.GPJ FL DEP ROSS.GDT 9/26/12



## **Appendix B**

### **Granulometric Reports Cover**



**Granulometric Report**

Project Name: Port Royal File No.: 11-7482  
 Sample Name: B5-VC-1 Date Sampled (by others): 8/20-8/22/12  
 Sample Description: Gray sandy silt with organics Date Received in Lab: 8/28/12  
 (trace shell fragments) Date Tested: 9/12/12

Dry Weight (gms): 93.3	Munsell Color (damp): 10YR5/1	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.0	0.0	0.0	0.0	100.0
3.5	-2.5	5.66	0.0	0.0	0.0	0.0	100.0
5	-2	4.00	0.0	0.0	0.0	0.0	100.0
7	-1.5	2.83	0.2	0.2	0.2	0.2	99.8
10	-1	2.00	0.1	0.3	0.1	0.3	99.7
14	-0.5	1.41	0.1	0.4	0.1	0.4	99.6
18	0	1.00	0.1	0.5	0.1	0.5	99.5
25	0.5	0.71	0.2	0.7	0.2	0.8	99.2
35	1	0.50	0.3	1.0	0.3	1.1	98.9
45	1.5	0.35	0.3	1.3	0.3	1.4	98.6
60	2	0.25	1.4	2.7	1.5	2.9	97.1
80	2.5	0.18	6.6	9.3	7.1	10.0	90.0
120	3	0.13	21.4	30.7	22.9	32.9	67.1
170	3.5	0.09	11.2	41.9	12.0	44.9	55.1
200	3.75	0.07	1.9	43.8	2.0	46.9	53.1
230	4	0.06	1.1	44.9	1.2	48.1	51.9

Jerry H. Kuehn, P.E.  
Fl. License No. 35557



**Granulometric Report**

Project Name:	Port Royal	File No.:	11-7482
Sample Name:	B5-VC-2	Date Sampled (by others):	8/20-8/22/12
Sample Description:	Very dark grayish brown sandy silt with organics	Date Received in Lab:	8/28/12
		Date Tested:	9/12/12

Dry Weight (gms): 33.98	Munsell Color (damp): 10YR3/2	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.0	0.0	0.0	0.0	100.0
3.5	-2.5	5.66	0.0	0.0	0.0	0.0	100.0
5	-2	4.00	0.0	0.0	0.0	0.0	100.0
7	-1.5	2.83	0.0	0.0	0.0	0.0	100.0
10	-1	2.00	0.0	0.0	0.0	0.0	100.0
14	-0.5	1.41	0.1	0.1	0.3	0.3	99.7
18	0	1.00	0.0	0.1	0.0	0.3	99.7
25	0.5	0.71	0.0	0.1	0.0	0.3	99.7
35	1	0.50	0.1	0.2	0.3	0.6	99.4
45	1.5	0.35	0.2	0.4	0.6	1.2	98.8
60	2	0.25	0.5	0.9	1.5	2.6	97.4
80	2.5	0.18	1.2	2.1	3.5	6.2	93.8
120	3	0.13	4.2	6.3	12.4	18.5	81.5
170	3.5	0.09	4.7	11.0	13.8	32.4	67.6
200	3.75	0.07	1.7	12.7	5.0	37.4	62.6
230	4	0.06	1.2	13.9	3.5	40.9	59.1

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**Granularmetric Report**

Project Name: Port Royal File No.: 11-7482  
 Sample Name: B5-VC-3 Date Sampled (by others): 8/20-8/22/12  
 Sample Description: Brown fine sand Date Received in Lab: 8/28/12  
 Date Tested: 9/12/12

Dry Weight (gms): 277.5	Munsell Color (damp): 10YR5/3	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.0	0.0	0.0	0.0	100.0
3.5	-2.5	5.66	0.0	0.0	0.0	0.0	100.0
5	-2	4.00	0.0	0.0	0.0	0.0	100.0
7	-1.5	2.83	0.0	0.0	0.0	0.0	100.0
10	-1	2.00	0.0	0.0	0.0	0.0	100.0
14	-0.5	1.41	0.1	0.1	0.0	0.0	100.0
18	0	1.00	0.1	0.2	0.0	0.1	99.9
25	0.5	0.71	0.1	0.3	0.0	0.1	99.9
35	1	0.50	0.5	0.8	0.2	0.3	99.7
45	1.5	0.35	2.2	3.0	0.8	1.1	98.9
60	2	0.25	12.6	15.6	4.5	5.6	94.4
80	2.5	0.18	55.8	71.4	20.1	25.7	74.3
120	3	0.13	127.7	199.1	46.0	71.7	28.3
170	3.5	0.09	64.7	263.8	23.3	95.1	4.9
200	3.75	0.07	6.7	270.5	2.4	97.5	2.5
230	4	0.06	2.1	272.6	0.8	98.2	1.8

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**Granularmetric Report**

Project Name: Port Royal File No.: 11-7482  
 Sample Name: C2-VC-1 Date Sampled (by others): 8/20-8/22/12  
 Sample Description: Light gray to gray fine sand with silt Date Received in Lab: 8/28/12  
 Date Tested: 9/13/12

Dry Weight (gms): 218.6	Munsell Color (damp): 10YR6/1	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.0	0.0	0.0	0.0	100.0
3.5	-2.5	5.66	0.0	0.0	0.0	0.0	100.0
5	-2	4.00	0.1	0.1	0.0	0.0	100.0
7	-1.5	2.83	0.1	0.2	0.0	0.1	99.9
10	-1	2.00	0.0	0.2	0.0	0.1	99.9
14	-0.5	1.41	0.0	0.2	0.0	0.1	99.9
18	0	1.00	0.1	0.3	0.0	0.1	99.9
25	0.5	0.71	0.1	0.4	0.0	0.2	99.8
35	1	0.50	0.2	0.6	0.1	0.3	99.7
45	1.5	0.35	0.0	0.6	0.0	0.3	99.7
60	2	0.25	0.2	0.8	0.1	0.4	99.6
80	2.5	0.18	2.5	3.3	1.1	1.5	98.5
120	3	0.13	75.8	79.1	34.7	36.2	63.8
170	3.5	0.09	96.3	175.4	44.1	80.2	19.8
200	3.75	0.07	18.0	193.4	8.2	88.5	11.5
230	4	0.06	6.2	199.6	2.8	91.3	8.7

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**Granularmetric Report**

Project Name:	Port Royal	File No.:	11-7482
Sample Name:	C2-VC-2	Date Sampled (by others):	8/20-8/22/12
Sample Description:	Gray silty fine sand	Date Received in Lab:	8/28/12
		Date Tested:	9/13/12

Dry Weight (gms): 133.0	Munsell Color (damp): 10YR5/1	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.0	0.0	0.0	0.0	100.0
3.5	-2.5	5.66	0.0	0.0	0.0	0.0	100.0
5	-2	4.00	0.0	0.0	0.0	0.0	100.0
7	-1.5	2.83	0.0	0.0	0.0	0.0	100.0
10	-1	2.00	0.1	0.1	0.1	0.1	99.9
14	-0.5	1.41	0.0	0.1	0.0	0.1	99.9
18	0	1.00	0.0	0.1	0.0	0.1	99.9
25	0.5	0.71	0.0	0.1	0.0	0.1	99.9
35	1	0.50	0.0	0.1	0.0	0.1	99.9
45	1.5	0.35	0.1	0.2	0.1	0.2	99.8
60	2	0.25	0.0	0.2	0.0	0.2	99.8
80	2.5	0.18	1.2	1.4	0.9	1.1	98.9
120	3	0.13	33.3	34.7	25.0	26.1	73.9
170	3.5	0.09	49.0	83.7	36.8	62.9	37.1
200	3.75	0.07	16.2	99.9	12.2	75.1	24.9
230	4	0.06	7.7	107.6	5.8	80.9	19.1

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**Granulometric Report**

Project Name: Port Royal File No.: 11-7482  
 Sample Name: C2-VC-3 Date Sampled (by others): 8/20-8/22/12  
 Sample Description: Gray sandy silt Date Received in Lab: 8/28/12  
 Date Tested: 9/13/12

Dry Weight (gms): 116.7	Munsell Color (damp): 10YR5/1	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.0	0.0	0.0	0.0	100.0
3.5	-2.5	5.66	0.0	0.0	0.0	0.0	100.0
5	-2	4.00	0.0	0.0	0.0	0.0	100.0
7	-1.5	2.83	0.0	0.0	0.0	0.0	100.0
10	-1	2.00	0.0	0.0	0.0	0.0	100.0
14	-0.5	1.41	0.0	0.0	0.0	0.0	100.0
18	0	1.00	0.0	0.0	0.0	0.0	100.0
25	0.5	0.71	0.0	0.0	0.0	0.0	100.0
35	1	0.50	0.1	0.1	0.1	0.1	99.9
45	1.5	0.35	0.0	0.1	0.0	0.1	99.9
60	2	0.25	0.1	0.2	0.1	0.2	99.8
80	2.5	0.18	0.6	0.8	0.5	0.7	99.3
120	3	0.13	12.9	13.7	11.1	11.7	88.3
170	3.5	0.09	28.7	42.4	24.6	36.3	63.7
200	3.75	0.07	12.3	54.7	10.5	46.9	53.1
230	4	0.06	7.0	61.7	6.0	52.9	47.1

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**Granularmetric Report**

Project Name:	Port Royal	File No.:	11-7482
Sample Name:	D4-VC-1	Date Sampled (by others):	8/20-8/22/12
Sample Description:	Gray clayey silty fine sand (trace shell fragments)	Date Received in Lab:	8/28/12
		Date Tested:	9/12/12

Dry Weight (gms): 185.6	Munsell Color (damp): 10YR5/1	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.0	0.0	0.0	0.0	100.0
3.5	-2.5	5.66	0.0	0.0	0.0	0.0	100.0
5	-2	4.00	0.1	0.1	0.1	0.1	99.9
7	-1.5	2.83	0.2	0.3	0.1	0.2	99.8
10	-1	2.00	0.1	0.4	0.1	0.2	99.8
14	-0.5	1.41	0.0	0.4	0.0	0.2	99.8
18	0	1.00	0.2	0.6	0.1	0.3	99.7
25	0.5	0.71	0.3	0.9	0.2	0.5	99.5
35	1	0.50	0.3	1.2	0.2	0.6	99.4
45	1.5	0.35	0.3	1.5	0.2	0.8	99.2
60	2	0.25	0.6	2.1	0.3	1.1	98.9
80	2.5	0.18	1.2	3.3	0.6	1.8	98.2
120	3	0.13	15.7	19.0	8.5	10.2	89.8
170	3.5	0.09	50.6	69.6	27.3	37.5	62.5
200	3.75	0.07	25.1	94.7	13.5	51.0	49.0
230	4	0.06	14.8	109.5	8.0	59.0	41.0

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**Granularmetric Report**

Project Name: Port Royal File No.: 11-7482  
 Sample Name: D5-VC-1 Date Sampled (by others): 8/20-8/22/12  
 Sample Description: Gray silt/clay Date Received in Lab: 8/28/12  
 (trace shell fragments) Date Tested: 9/12/12

Dry Weight (gms): 114.0	Munsell Color (damp): 10YR5/1	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.6	0.6	0.5	0.5	99.5
3.5	-2.5	5.66	0.0	0.6	0.0	0.5	99.5
5	-2	4.00	0.0	0.6	0.0	0.5	99.5
7	-1.5	2.83	0.0	0.6	0.0	0.5	99.5
10	-1	2.00	0.0	0.6	0.0	0.5	99.5
14	-0.5	1.41	0.0	0.6	0.0	0.5	99.5
18	0	1.00	0.0	0.6	0.0	0.5	99.5
25	0.5	0.71	0.1	0.7	0.1	0.6	99.4
35	1	0.50	0.2	0.9	0.2	0.8	99.2
45	1.5	0.35	0.1	1.0	0.1	0.9	99.1
60	2	0.25	1.4	2.4	1.2	2.1	97.9
80	2.5	0.18	2.7	5.1	2.4	4.5	95.5
120	3	0.13	5.6	10.7	4.9	9.4	90.6
170	3.5	0.09	3.4	14.1	3.0	12.4	87.6
200	3.75	0.07	2.8	16.9	2.5	14.8	85.2
230	4	0.06	1.9	18.8	1.7	16.5	83.5

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**Granularmetric Report**

Project Name:	Port Royal	File No.:	11-7482
Sample Name:	D6-VC-1	Date Sampled (by others):	8/20-8/22/12
Sample Description:	Gray sandy silt	Date Received in Lab:	8/28/12
		Date Tested:	9/13/12

Dry Weight (gms): 172.0	Munsell Color (damp): 10YR5/1	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.0	0.0	0.0	0.0	100.0
3.5	-2.5	5.66	0.0	0.0	0.0	0.0	100.0
5	-2	4.00	0.1	0.1	0.1	0.1	99.9
7	-1.5	2.83	0.0	0.1	0.0	0.1	99.9
10	-1	2.00	0.1	0.2	0.1	0.1	99.9
14	-0.5	1.41	0.0	0.2	0.0	0.1	99.9
18	0	1.00	0.1	0.3	0.1	0.2	99.8
25	0.5	0.71	0.3	0.6	0.2	0.3	99.7
35	1	0.50	0.4	1.0	0.2	0.6	99.4
45	1.5	0.35	0.4	1.4	0.2	0.8	99.2
60	2	0.25	0.5	1.9	0.3	1.1	98.9
80	2.5	0.18	1.4	3.3	0.8	1.9	98.1
120	3	0.13	16.6	19.9	9.7	11.6	88.4
170	3.5	0.09	43.4	63.3	25.2	36.8	63.2
200	3.75	0.07	22.1	85.4	12.8	49.7	50.3
230	4	0.06	13.7	99.1	8.0	57.6	42.4

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**Granularmetric Report**

Project Name: Port Royal File No.: 11-7482  
 Sample Name: G3-VC-1 Date Sampled (by others): 8/20-8/22/12  
 Sample Description: Gray silty fine sand (trace shell fragments) Date Received in Lab: 8/28/12  
 Date Tested: 9/12/12

Dry Weight (gms): 248.5	Munsell Color (damp): 10YR5/1	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.0	0.0	0.0	0.0	100.0
3.5	-2.5	5.66	0.0	0.0	0.0	0.0	100.0
5	-2	4.00	0.3	0.3	0.1	0.1	99.9
7	-1.5	2.83	0.1	0.4	0.0	0.2	99.8
10	-1	2.00	0.3	0.7	0.1	0.3	99.7
14	-0.5	1.41	0.1	0.8	0.0	0.3	99.7
18	0	1.00	0.7	1.5	0.3	0.6	99.4
25	0.5	0.71	0.6	2.1	0.2	0.8	99.2
35	1	0.50	0.6	2.7	0.2	1.1	98.9
45	1.5	0.35	0.4	3.1	0.2	1.2	98.8
60	2	0.25	0.9	4.0	0.4	1.6	98.4
80	2.5	0.18	3.3	7.3	1.3	2.9	97.1
120	3	0.13	41.3	48.6	16.6	19.6	80.4
170	3.5	0.09	111.1	159.7	44.7	64.3	35.7
200	3.75	0.07	36.0	195.7	14.5	78.8	21.2
230	4	0.06	15.9	211.6	6.4	85.2	14.8

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**Granulometric Report**

Project Name: Port Royal File No.: 11-7482  
 Sample Name: G4-VC-2 Date Sampled (by others): 8/20-8/22/12  
 Sample Description: Gray silt/clay with organics Date Received in Lab: 8/28/12  
 Date Tested: 9/12/12

Dry Weight (gms): 128.7	Munsell Color (damp): 10YR5/1	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.0	0.0	0.0	0.0	100.0
3.5	-2.5	5.66	0.0	0.0	0.0	0.0	100.0
5	-2	4.00	0.0	0.0	0.0	0.0	100.0
7	-1.5	2.83	0.0	0.0	0.0	0.0	100.0
10	-1	2.00	0.0	0.0	0.0	0.0	100.0
14	-0.5	1.41	0.1	0.1	0.1	0.1	99.9
18	0	1.00	0.0	0.1	0.0	0.1	99.9
25	0.5	0.71	0.0	0.1	0.0	0.1	99.9
35	1	0.50	0.1	0.2	0.1	0.2	99.8
45	1.5	0.35	0.2	0.4	0.2	0.3	99.7
60	2	0.25	0.2	0.6	0.2	0.5	99.5
80	2.5	0.18	0.3	0.9	0.2	0.7	99.3
120	3	0.13	1.0	1.9	0.8	1.5	98.5
170	3.5	0.09	3.3	5.2	2.6	4.0	96.0
200	3.75	0.07	3.4	8.6	2.6	6.7	93.3
230	4	0.06	3.6	12.2	2.8	9.5	90.5

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**Granulometric Report**

Project Name: Port Royal File No.: 11-7482  
 Sample Name: H5-VC-1 Date Sampled (by others): 8/20-8/22/12  
 Sample Description: Gray sandy silt/clay with organics Date Received in Lab: 8/28/12  
 (trace shell fragments) Date Tested: 9/12/12

Dry Weight (gms): 115.9	Munsell Color (damp): 10YR5/1	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.0	0.0	0.0	0.0	100.0
3.5	-2.5	5.66	0.3	0.3	0.3	0.3	99.7
5	-2	4.00	0.0	0.3	0.0	0.3	99.7
7	-1.5	2.83	0.0	0.3	0.0	0.3	99.7
10	-1	2.00	0.1	0.4	0.1	0.3	99.7
14	-0.5	1.41	0.1	0.5	0.1	0.4	99.6
18	0	1.00	0.1	0.6	0.1	0.5	99.5
25	0.5	0.71	0.1	0.7	0.1	0.6	99.4
35	1	0.50	0.3	1.0	0.3	0.9	99.1
45	1.5	0.35	0.3	1.3	0.3	1.1	98.9
60	2	0.25	0.6	1.9	0.5	1.6	98.4
80	2.5	0.18	1.3	3.2	1.1	2.8	97.2
120	3	0.13	10.9	14.1	9.4	12.2	87.8
170	3.5	0.09	24.7	38.8	21.3	33.5	66.5
200	3.75	0.07	9.3	48.1	8.0	41.5	58.5
230	4	0.06	5.3	53.4	4.6	46.1	53.9

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**Granularmetric Report**

Project Name: Port Royal File No.: 11-7482  
 Sample Name: H5-VC-2 Date Sampled (by others): 8/20-8/22/12  
 Sample Description: Gray sandy silt/clay with organics (trace shell fragments) Date Received in Lab: 8/28/12  
 Date Tested: 9/12/12

Dry Weight (gms): 128.3	Munsell Color (damp): 10YR5/1	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.0	0.0	0.0	0.0	100.0
3.5	-2.5	5.66	0.0	0.0	0.0	0.0	100.0
5	-2	4.00	0.0	0.0	0.0	0.0	100.0
7	-1.5	2.83	0.1	0.1	0.1	0.1	99.9
10	-1	2.00	0.2	0.3	0.2	0.2	99.8
14	-0.5	1.41	0.1	0.4	0.1	0.3	99.7
18	0	1.00	0.3	0.7	0.2	0.5	99.5
25	0.5	0.71	0.4	1.1	0.3	0.9	99.1
35	1	0.50	0.2	1.3	0.2	1.0	99.0
45	1.5	0.35	0.5	1.8	0.4	1.4	98.6
60	2	0.25	0.7	2.5	0.5	1.9	98.1
80	2.5	0.18	1.4	3.9	1.1	3.0	97.0
120	3	0.13	9.6	13.5	7.5	10.5	89.5
170	3.5	0.09	28.6	42.1	22.3	32.8	67.2
200	3.75	0.07	13.4	55.5	10.4	43.3	56.7
230	4	0.06	9.2	64.7	7.2	50.4	49.6

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**Granularmetric Report**

Project Name:	Port Royal	File No.:	11-7482
Sample Name:	H6-VC-1	Date Sampled (by others):	8/20-8/22/12
Sample Description:	Gray silt/clay with organics (trace shell fragments)	Date Received in Lab:	8/28/12
		Date Tested:	9/12/12

Dry Weight (gms): 93.3	Munsell Color (damp): 10YR5/1	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.0	0.0	0.0	0.0	100.0
3.5	-2.5	5.66	0.0	0.0	0.0	0.0	100.0
5	-2	4.00	0.0	0.0	0.0	0.0	100.0
7	-1.5	2.83	0.0	0.0	0.0	0.0	100.0
10	-1	2.00	0.0	0.0	0.0	0.0	100.0
14	-0.5	1.41	0.0	0.0	0.0	0.0	100.0
18	0	1.00	0.1	0.1	0.1	0.1	99.9
25	0.5	0.71	0.1	0.2	0.1	0.2	99.8
35	1	0.50	0.1	0.3	0.1	0.3	99.7
45	1.5	0.35	0.1	0.4	0.1	0.4	99.6
60	2	0.25	0.1	0.5	0.1	0.5	99.5
80	2.5	0.18	0.7	1.2	0.8	1.3	98.7
120	3	0.13	2.2	3.4	2.4	3.6	96.4
170	3.5	0.09	2.7	6.1	2.9	6.5	93.5
200	3.75	0.07	2.4	8.5	2.6	9.1	90.9
230	4	0.06	2.8	11.3	3.0	12.1	87.9

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**Granulometric Report**

Project Name: Port Royal File No.: 11-7482  
 Sample Name: HI-VC-1 Date Sampled (by others): 8/20-8/22/12  
 Sample Description: Gray silty fine sand (trace shell fragments) Date Received in Lab: 8/28/12  
 Date Tested: 9/14/12

Dry Weight (gms): 242.0	Munsell Color (damp): 10YR5/1	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.2	0.2	0.1	0.1	99.9
3.5	-2.5	5.66	0.4	0.6	0.2	0.2	99.8
5	-2	4.00	0.4	1.0	0.2	0.4	99.6
7	-1.5	2.83	1.0	2.0	0.4	0.8	99.2
10	-1	2.00	1.4	3.4	0.6	1.4	98.6
14	-0.5	1.41	0.6	4.0	0.2	1.7	98.3
18	0	1.00	1.3	5.3	0.5	2.2	97.8
25	0.5	0.71	2.0	7.3	0.8	3.0	97.0
35	1	0.50	2.2	9.5	0.9	3.9	96.1
45	1.5	0.35	2.0	11.5	0.8	4.8	95.2
60	2	0.25	4.4	15.9	1.8	6.6	93.4
80	2.5	0.18	18.4	34.3	7.6	14.2	85.8
120	3	0.13	53.1	87.4	21.9	36.1	63.9
170	3.5	0.09	39.1	126.5	16.2	52.3	47.7
200	3.75	0.07	22.2	148.7	9.2	61.4	38.6
230	4	0.06	20.0	168.7	8.3	69.7	30.3

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**Granulometric Report**

Project Name: Port Royal File No.: 11-7482  
 Sample Name: HI-VC-2 Date Sampled (by others): 8/20-8/22/12  
 Sample Description: Dark gray silty fine sand with shell Date Received in Lab: 8/28/12  
 Date Tested: 9/14/12

Dry Weight (gms): 144.0	Munsell Color (damp): 10YR4/1	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	8.7	8.7	6.0	6.0	94.0
7/16"	-3.5	11.31	7.1	15.8	4.9	11.0	89.0
5/16"	-3	8.00	1.2	17.0	0.8	11.8	88.2
3.5	-2.5	5.66	1.4	18.4	1.0	12.8	87.2
5	-2	4.00	0.9	19.3	0.6	13.4	86.6
7	-1.5	2.83	1.5	20.8	1.0	14.4	85.6
10	-1	2.00	2.1	22.9	1.5	15.9	84.1
14	-0.5	1.41	0.8	23.7	0.6	16.5	83.5
18	0	1.00	1.3	25.0	0.9	17.4	82.6
25	0.5	0.71	2.1	27.1	1.5	18.8	81.2
35	1	0.50	2.1	29.2	1.5	20.3	79.7
45	1.5	0.35	2.6	31.8	1.8	22.1	77.9
60	2	0.25	5.5	37.3	3.8	25.9	74.1
80	2.5	0.18	15.7	53.0	10.9	36.8	63.2
120	3	0.13	30.9	83.9	21.5	58.3	41.7
170	3.5	0.09	15.2	99.1	10.6	68.8	31.2
200	3.75	0.07	5.0	104.1	3.5	72.3	27.7
230	4	0.06	3.5	107.6	2.4	74.7	25.3

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**Granularmetric Report**

Project Name:	Port Royal	File No.:	11-7482
Sample Name:	HI-VC-3	Date Sampled (by others):	8/20-8/22/12
Sample Description:	Gray silty fine sand (trace organics)	Date Received in Lab:	8/28/12
		Date Tested:	9/14/12

Dry Weight (gms): 253.8	Munsell Color (damp): 10YR5/1	Calcium Carbonate (%): N.A.	Sampled by: Client
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Sieve Number	Sieve Size (phi)	Sieve Size (mm)	Grams Retained	Cum. Grams Retained	% Weight Retained	Cum. % Weight Retained	Cum. % Weight Passing
3/4"	-4.25	19.03	0.0	0.0	0.0	0.0	100.0
5/8"	-4	16.00	0.0	0.0	0.0	0.0	100.0
7/16"	-3.5	11.31	0.0	0.0	0.0	0.0	100.0
5/16"	-3	8.00	0.0	0.0	0.0	0.0	100.0
3.5	-2.5	5.66	0.0	0.0	0.0	0.0	100.0
5	-2	4.00	0.0	0.0	0.0	0.0	100.0
7	-1.5	2.83	0.1	0.1	0.0	0.0	100.0
10	-1	2.00	0.0	0.1	0.0	0.0	100.0
14	-0.5	1.41	0.1	0.2	0.0	0.1	99.9
18	0	1.00	0.1	0.3	0.0	0.1	99.9
25	0.5	0.71	0.3	0.6	0.1	0.2	99.8
35	1	0.50	1.5	2.1	0.6	0.8	99.2
45	1.5	0.35	5.4	7.5	2.1	3.0	97.0
60	2	0.25	17.2	24.7	6.8	9.7	90.3
80	2.5	0.18	59.3	84.0	23.4	33.1	66.9
120	3	0.13	102.4	186.4	40.3	73.4	26.6
170	3.5	0.09	31.6	218.0	12.5	85.9	14.1
200	3.75	0.07	4.5	222.5	1.8	87.7	12.3
230	4	0.06	2.1	224.6	0.8	88.5	11.5

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# **Appendix C**

## **Core Photos**

Core  
B-5

Core  
B-5

Core  
B-5

Core  
B-5



Core  
C-2

Core  
C-2

Core  
C-2

Core  
C-2

Core  
C-2





Core  
D-4

Core  
D-4

Core  
D-4

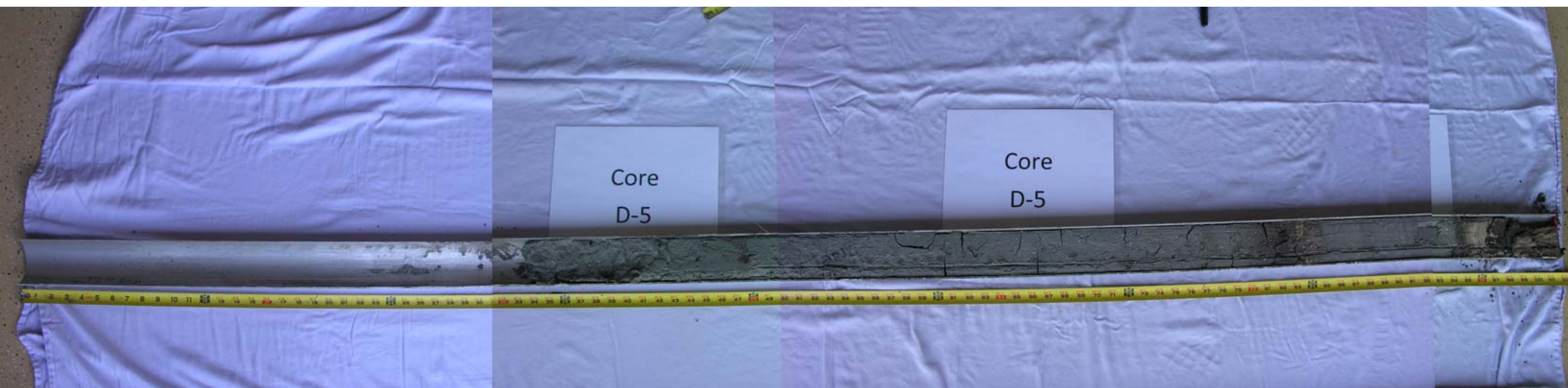
Core  
D-4

Cut  
Top



Core  
D-5

Core  
D-5



D-6

D-6

D-6

D-6

D-6

D-6

← TOS





Core  
G-3

Core  
G-3

Core  
G-3

Core  
G-3



Core  
G-4

Core  
G-4

Core  
G-4

Core  
G-4



Core  
H-5

Core  
H-5

Core  
H-5

Core  
H-5





Core  
H-6

Core  
H-6

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Core  
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H-6



HI

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HI

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