Aqua Survey, Inc.

Technical Report on the Sampling and Physical Testing of Sediment from the Sandy Hook Channel

W912DS-12-D-0013
Delivery Order No. 0029

Prepared for

Army Corps of Engineers, New York District
26 Federal Plaza
New York, NY 10278-0090

March 21, 2017

ASI Job No. 37-018

469 Point Breeze Road
Flemington, NJ 08822

Phone: 908-788-8700
Fax: 908-788-9165
mail@aquasurvey.com
www.aquasurvey.com

Table of Contents

		Page
Table of Contents		2
Information Page		3
Signature Page		4
I.	**Introduction**	5
II.	**Correspondence**	5
III.	**Test Administration**	9
	A. Sponsor	9
	B. Testing Facilities	9
	C. Dates of Experimentation	9
	D. Study Participants	9
IV.	**Materials and Methods**	9
	A. Sampling	9
	B. Homogenizing and Compositing	10
	C. Physical Analysis	10
V.	**Physical Analysis Results**	10

Figures and Tables

Figure 1	Site Map, Sandy Hook Channel	11
Table 1	DGPS Coordinates (NJ NAD 83)	12
Table 2	Sample Identification	12
Table 3a	Grain Size Distribution (NJDEP Classification)	13
Table 3b	Grain Size Distribution (Wentworth Classification)	13

Appendices

Appendix A: Sediment Core Logs	15
Appendix B: Photographs	25
Appendix C: Chains of Custody	35
Appendix D: Sample Use Forms	39
Appendix E: Grain Size Distribution Calculations, Graphs and Raw Data	52

Information Page

Technical Report on the Sampling and Physical Testing of Sediment from the Sandy Hook Channel

W912DS-12-D-0013
Delivery Order No. 0029

STUDY INITIATION DATE

February 14, 2017

STUDY COMPLETION DATE

March 21, 2017

PERFORMING LABORATORY

Aqua Survey, Inc.
469 Point Breeze Road
Flemington, New Jersey 08822

SPONSOR

Army Corps of Engineers, New York District
26 Federal Plaza
New York, NY 10278-0090

LABORATORY PROJECT ID

ASI STUDY No. 37-018

Signature Page

Technical Report on the Sampling and Physical Testing of Sediment from the Sandy Hook Channel

W912DS-12-D-0013
Delivery Order No. 0029

Prepared for

Army Corps of Engineers, New York District
26 Federal Plaza
New York, NY 10278-0090

This report, as well as all records and raw data were audited and found to be an accurate reflection of the study. Copies of raw data will be maintained by Aqua Survey, Inc, 469 Point Breeze Road, Flemington, New Jersey, 08822.

Cheryl Hall — 3/21/17
Cheryl Hall — Date
Quality Assurance Officer

Michelle Thomas — 3/21/17
Michelle Thomas — Date
Laboratory Manager

Jon Doi — 3-21-17
Jon Doi, Ph.D. — Date
Executive Vice President

I. INTRODUCTION

The objective of this project was to collect and analyze sediment from the Sandy Hook Channel, New Jersey. This work was conducted in accordance with Appendix B, Attachment 1, of the technical manual entitled "The Management and Regulation of Dredging Activities and Dredged Material in New Jersey's Tidal Waters" (Dredging Manual).

Aqua Survey, Inc. (ASI) performed the sampling and the physical analysis (grain size distribution).

II. CORRESPONDENCE

The following page provides correspondence for this project.

Sandy Hook

ORDER FOR SUPPLIES OR SERVICES

1. CONTRACT/PURCH. ORDER/ AGREEMENT NO.	2. DELIVERY ORDER/ CALL NO.	3. DATE OF ORDER/CALL (YYYYMMMDD)	4. REQ./ PURCH. REQUEST NO.	5. PRIORITY
W912DS-12-D-0013	0029	2017 Feb 08	W16ROE70270251	

6. ISSUED BY CODE W912DS
US ARMY CORPS OF ENGINEERS, NEW YORK
26 FEDERAL PLAZA, RM 1843
NEW YORK NY 10278-0090

7. ADMINISTERED BY *(if other than 6)* CODE W912DS
OPERATIONS DIVISION
26 FEDERAL PLAZA ROOM 1937
NEW YORK NY 10278

8. DELIVERY FOB
[X] DESTINATION
[ ] OTHER
(See Schedule if other)

9. CONTRACTOR CODE 0L3C0 FACILITY
NAME AND ADDRESS
AQUA SURVEY, INC.
JON DOI
469 POINT BREEZE RD
FLEMINGTON NJ 08822-4717

10. DELIVER TO FOB POINT BY (Date) *(YYYYMMMDD)*
SEE SCHEDULE

11. MARK IF BUSINESS IS
[ ] SMALL
[ ] SMALL DISADVANTAGED
[ ] WOMEN-OWNED

12. DISCOUNT TERMS
Net 30 Days

13. MAIL INVOICES TO THE ADDRESS IN BLOCK
See Item 15

14. SHIP TO CODE 9622EQ
OPERATIONS DIVISION
BETH NASH
26 FEDERAL PLAZA ROOM 1937
NEW YORK NY 10278

15. PAYMENT WILL BE MADE BY CODE 964145
USACE, FINANCE CENTER MILLINGTON
ATTN: CEFC-AO-P, ACCOUNTS PAYABLE BRANCH
5722 INTEGRITY DRIVE
MILLINGTON TN 38054-5005

MARK ALL PACKAGES AND PAPERS WITH IDENTIFICATION NUMBERS IN BLOCKS 1 AND 2.

16. TYPE OF ORDER

DELIVERY/ CALL	X	This delivery order/call is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.
PURCHASE		Reference your quote dated Furnish the following on terms specified herein. REF:

ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.

NAME OF CONTRACTOR	SIGNATURE	TYPED NAME AND TITLE	DATE SIGNED (YYYYMMMDD)
Aqua Survey, Inc.	Jon Doi	Jon Doi, Executive Vice President	2017Feb10

[ ] If this box is marked, supplier must sign Acceptance and return the following number of copies:

17. ACCOUNTING AND APPROPRIATION DATA/ LOCAL USE
See Schedule

18. ITEM NO.	19. SCHEDULE OF SUPPLIES/ SERVICES	20. QUANTITY ORDERED/ ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT
	SEE SCHEDULE				

** If quantity accepted by the Government is same as quantity ordered, indicate by X. If different, enter actual quantity accepted below quantity ordered and encircle.*

24. UNITED STATES OF AMERICA
TEL: 917-790-8089
EMAIL: matthew.e.lubiak@usace.army.mil
BY: MATTHEW E LUBIAK
CONTRACTING / ORDERING OFFICER

25. TOTAL $19,574.00
26. DIFFERENCES

27a. QUANTITY IN COLUMN 20 HAS BEEN
[ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED

b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE
c. DATE *(YYYYMMMDD)*
d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE
28. SHIP NO.
29. DO VOUCHER NO.
30. INITIALS

f. TELEPHONE NUMBER
g. E-MAIL ADDRESS
[ ] PARTIAL
[ ] FINAL
32. PAID BY
33. AMOUNT VERIFIED CORRECT FOR

36. I certify this account is correct and proper for payment.
a. DATE *(YYYYMMMDD)*
b. SIGNATURE AND TITLE OF CERTIFYING OFFICER
31. PAYMENT
[ ] COMPLETE
[ ] PARTIAL
[ ] FINAL
34. CHECK NUMBER
35. BILL OF LADING NO.

37. RECEIVED AT
38. RECEIVED BY
39. DATE RECEIVED *(YYYYMMMDD)*
40. TOTAL CONTAINERS
41. S/R ACCOUNT NO
42. S/R VOUCHER NO.

Michelle Thomas

From: Jon Doi
Sent: Thursday, February 2, 2017 9:43 AM
To: Tom Dolce
Cc: Lisa Pipolo; Michelle Thomas
Subject: RE[3]: Sandy Hook Channel bathy charts

Tom, compositing info below.

Take care,
Jon

-----Original Message-----
From: Nash, Beth K CIV USARMY CENAN (US) [mailto:beth.k.nash@usace.army.mil]
Sent: Thursday, February 2, 2017 8:24 AM
To: Jon Doi <doi@aquasurvey.com>
Subject: RE: RE[2]: Sandy Hook Channel bathy charts

Jon,

Great, that's easy. I don't recall if I emailed the compositing scheme. If not, here it is:

Comp A: 1, 2, 3

Comp B: 4, 5

Comp C: 6, 7, 8, 9

Thanks,

Beth

-----Original Message-----
From: Jon Doi [mailto:doi@aquasurvey.com]
Sent: Wednesday, February 01, 2017 3:39 PM
To: Nash, Beth K CIV USARMY CENAN (US) <beth.k.nash@usace.army.mil>
Subject: [EXTERNAL] RE[2]: Sandy Hook Channel bathy charts

Beth:
The PDF'd maps are okay. No need to send the hard copy maps.

Take care,
Jon

Jon Doi, Ph.D.
Principal/Executive Vice President
Aqua Survey, Inc.
469 Point Breeze Road
Flemington, NJ 08822

Phone: 908-788-8700
Fax: 908-788-9165
Cell: 908-347-3935
doi@aquasurvey.com
Blockedwww.aquasurvey.com

-----Original Message-----
From: Nash, Beth K CIV USARMY CENAN (US) [mailto:beth.k.nash@usace.army.mil]
Sent: Wednesday, February 1, 2017 11:00 AM
To: Jon Doi <doi@aquasurvey.com>
Subject: Sandy Hook Channel bathy charts

Jon,

Here are the charts in pdf for Sandy Hook Channel. Are these okay, or do you also want a hard copy?

Thanks,

Beth

III. TEST ADMINISTRATION

A. Sponsor

Army Corps of Engineers, New York District
26 Federal Plaza
New York, NY 10278-0090

B. Testing Facilities

Aqua Survey, Inc.
469 Point Breeze Road
Flemington, NJ 08822

C. Dates of Experimentation

Date of Study Initiation:	February 14, 2017
Date of Study Completion:	March 21, 2017

D. Study Participants

Jon Doi, Ph.D.	Executive Vice President
Tom Dolce	Marine Operations Manager
Cheryl Hall	Quality Assurance Officer
Elizabeth Horn	Staff Scientist
Kevin Sondag	Field Operations Specialist
Matthew Shappell	Field Operations Specialist
Will Reasoner	Field Operations Support
Nick Jack	Field Operations Support
Michelle Thomas	Laboratory Manager

IV. MATERIALS AND METHODS

All sampling and testing were performed in accordance with Appendix B, Attachment 1 of the technical manual "The Management and Regulation of Dredging Activities and Dredged Material in New Jersey's Tidal Waters" (NJDEP Dredging Manual), October 1997.

A. Sampling

Test sediment from nine locations in the Sandy Hook Channel were collected by ASI personnel on February 14, 15 and 21, 2017.

The vessels used for sampling, the R/V Prattis and the R/V Edison were positioned using a Trimble SP 855 Differential Global Positioning System (DGPS). Sediment collection was performed using a Rossfelder P-3 vibracore with flexible plastic core liners. The cores were inspected and photographed and the characteristics were recorded on Sediment Core Logs. All samples were assigned unique ASI sample numbers. All samples were received under chain of custody on ice at ASI in Flemington, NJ, and

stored at 2-4 °C until testing. See Figure 1 for the site map and Table 1 for the DGPS coordinates.

The appendices contain all supporting documentation including sediment core logs (Appendix A), photographs (Appendix B), chains of custody (Appendix C), sample use forms (Appendix D), grain size distribution (Appendix E).

B. Homogenizing and Compositing

The sediment samples were carefully homogenized using a stainless steel mixer. This procedure followed the specific guidelines found on pages 9-11 and in Appendix A of the Dredging Manual and in ASI's standard operating procedure SOP/PRP/008. Samples were mixed until uniform in color and texture. Three composites were created from the nine samples. See Table 2 for the sample identification numbers and compositing scheme.

Sub-samples of each of the sediment samples, both cores and composites, were reserved for the appropriate physical analyses. Subsamples of the composites were archived in the freezer.

C. Physical Analysis

Sub-samples of each of the cores were analyzed by ASI for percent moisture and grain size in accordance with the *Standard Test Method for Particle-Size Analysis of Soils*, Designation: D422-63 (Re-approved 2002).

It should be noted that due to a high silt content four of the samples, Locations #1-3 and Composite A, were analyzed using the hydrometer method. The other eight samples, Locations #4-9 and Composites B and C, were analyzed using the sieve method.

See Appendix E for the grain size raw data, calculations and distribution graphs.

V. PHYSICAL ANALYSIS RESULTS

The results of the analyses for percent moisture and grain size distribution for the sediment samples are provided in Table 3a and 3b.

Figure 1: Site Map

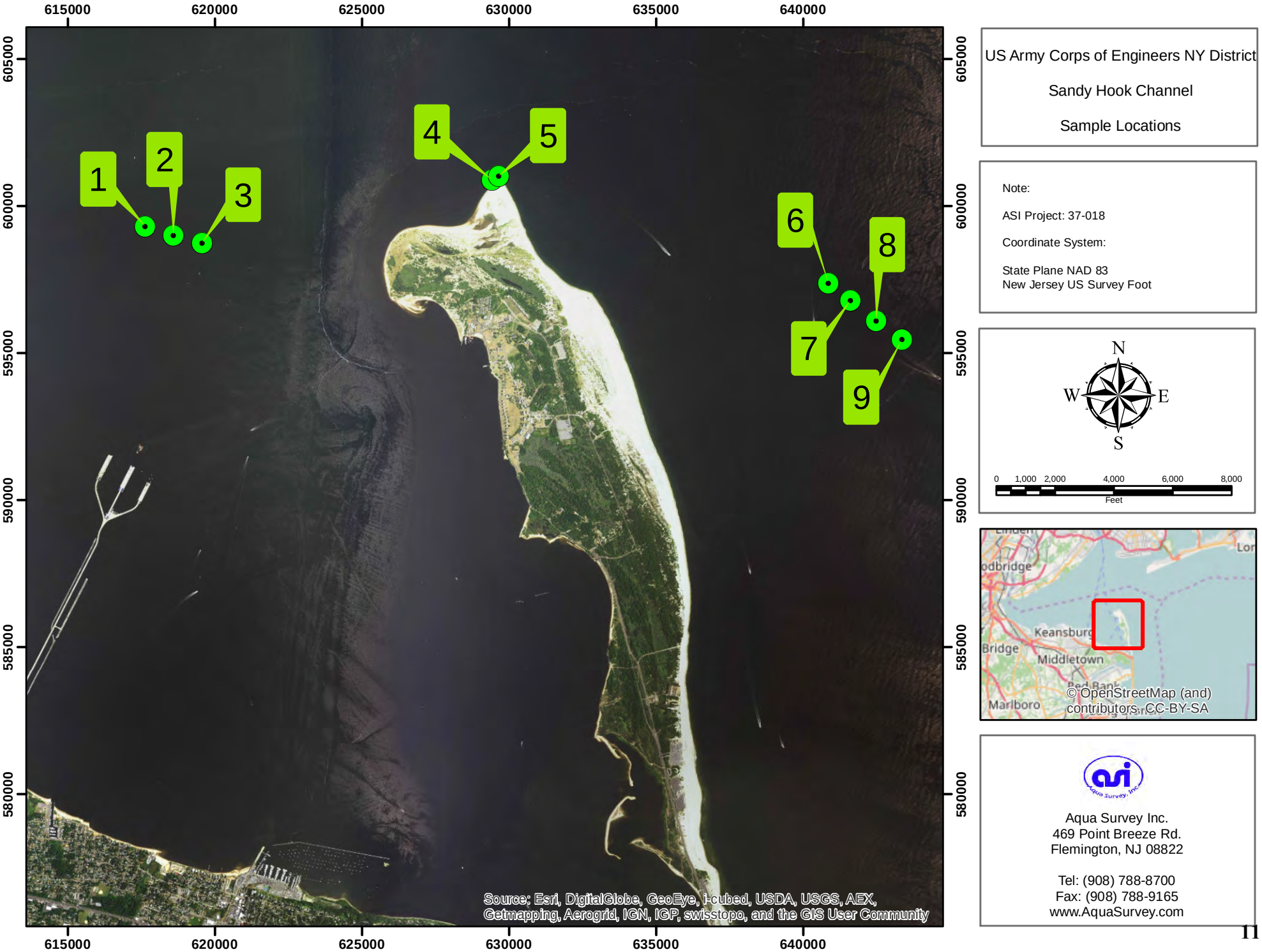


Table 1 DGPS Coordinates

Location	Northings	Eastings
1	599306.2	617607.1
2	598992.2	618580.3
3	598738.4	619547.9
4	600886.4	629406.1
5	601007.8	629630.7
6	597375.3	640856.2
7	596780.3	641612.0
8	596092.5	642484.7
9	595459.6	643345.1

Table 2 Sample Identification and Compositing Scheme

Sample Name	Sample ID No.	Composite ID No.
#1	20170034	Composite A 20170043
#2	20170035	
#3	20170036	
#4	20170037	Composite B 20170044
#5	20170038	
#6	20170039	Composite C 20170045
#7	20170040	
#8	20170041	
#9	20170042	

Table 3a **Grain Size Distribution (NJDEP Classification)**

Sample Name	ASI ID #	Total % Gravel	Total % Sand	Total % Silt	Total % Clay
#1	20170034	0.0	14.0	62.2	23.8
#2	20170035	0.0	17.4	61.2	21.4
#3	20170036	0.0	14.6	60.9	24.5
Composite A	20170043	0.0	16.1	60.1	23.8
Composite A Dup	20170043 dup	0.0	16.3	57.1	26.6
Composite A Trp	20170043 trp	0.0	16.2	55.3	28.5

Table 3b **Grain Size Distribution (Wentworth Classification)**

Sample Name	ASI ID #	% Boulder	% Pebble	% Granule	% Sand					% Fines
					V. Crs	Crs.	Med.	Fine	V. Fine	
#4	20170037	0.0	15.0	19.5	20.2	21.6	21.4	1.6	0.0	0.7
#5	20170038	0.0	3.1	11.2	27.5	33.4	22.9	1.2	0.0	0.7
#6	20170039	0.0	2.3	6.4	35.2	39.4	14.5	1.3	0.0	0.9
#7	20170040	0.0	9.1	8.8	24.4	31.7	24.0	1.2	0.0	0.8
#8	20170041	0.0	3.0	2.6	9.9	16.2	61.9	5.2	0.0	1.2
#9	20170042	0.0	0.0	0.2	1.5	2.8	78.7	15.2	0.0	1.6
#9 Dup	20170042 dup	0.0	0.0	0.2	1.7	3.0	78.9	14.6	0.0	1.6
#9 Trp	20170042 trp	0.0	0.1	0.3	1.8	3.2	79.5	13.5	0.0	1.6
Composite B	20170044	0.0	10.7	14.8	23.2	27.0	22.3	1.3	0.0	0.7
Composite C	20170045	0.0	3.6	4.1	3.1	24.6	56.1	7.2	0.0	1.3

APPENDICES

Appendix A

Sediment Core Logs

AQUA SURVEY, INC.

SEDIMENT CORE LOG

Client :	U.S. Army Corps of Engineers		Project :	Sandy Hook Channel		Logger:	KS	
Job#:	37-018	Date:	2/15/17	Time:	1357	Crew:	WR	
Coordinates:	N	599306.2	E	617607.1		Vessel:	Prattis	
Core # : 1	Zone: NJ	Datum	NAD 83			Deploy:	1	2	3

Project Depth (incl .2 ft. Overdredge) [PD] [ft] MLLW:	37.0	Core Penetration Length (ft.):	8.5		
Measured Water Depth [MWD] [ft.]:	37.9	Recovered Core Length (ft.):	7.3		
Tide Adjust [TA] (+/- ft. from MLLW) [ft.]:	4.0	Sample Length Retained (ft.):	3.1		
Corrected Depth @ MLLW [ft.]:	33.9	Core Volume Retained (gal.):	1.5		
		Collected to Project Depth:	Y	N	
Required Sample Core Length [SCL] [ft.]:	3.1				

All Length Measurements are in Decimal Feet

Sample Interval (ft.)	Sample Id #	Description
Top 0.0 – 3.1	20170034	Soft, dark gray-black silt w/ trace amounts of sand (fine)
Bottom		

# of containers:	1			
Type of container:	bucket	hardliner	cup	other

Conditions:

Comments:

Core Volumes

Nominal core-barrel diameter		EST. Volume
3.0"		.25 gal/ft
3.5"	8.0"	.33 gal/ft
4.0"		.50 gal/ft

Liner Type: Soft Hard

Vibracorer: P3 P5 VT6 Other

Live Organisms Present	N
Oil Present	N
Odor Present	Y
Debris Present	N
Within 10% of Req'd Core Length	Y
Photo	Y

Pushcorer Slambar

Eckman Ponar: Standard / Petite

Box Core

MLW #td ver 030615

AQUA SURVEY, INC.

SEDIMENT CORE LOG

Client :	U.S. Army Corps of Engineers		Project :	Sandy Hook Channel		Logger:	KS	
Job#:	37-018	Date:	2/15/17	Time:	1427	Crew:	WR	
Coordinates:	N	598992.2	E	618580.3		Vessel:	Prattis	
Core # : 2	Zone: NJ	Datum	NAD 83			Deploy:	1	2	3

Project Depth (incl .2 ft. Overdredge) [PD] [ft] MLLW:	37.0	Core Penetration Length (ft.):	7.9		
Measured Water Depth [MWD] [ft.]:	36.6	Recovered Core Length (ft.):	5.8		
Tide Adjust [TA] (+/- ft. from MLLW) [ft.]:	3.4	Sample Length Retained (ft.):	3.8		
Corrected Depth @ MLLW [ft.]:	33.2	Core Volume Retained (gal.):	1.9		
		Collected to Project Depth:	Y / N		
Required Sample Core Length [SCL] [ft.]:	3.8				

All Length Measurements are in Decimal Feet

Sample Interval (ft.)	Sample Id #	Description
Top 0.0 – 3.8	20170035	Soft, dark gray-black silt w/ trace amounts of fine sand
Bottom		

# of containers:	1			
Type of container:	bucket	hardliner	cup	other

Conditions:

Comments:

Core Volumes

Nominal core-barrel diameter		EST. Volume
3.0"		.25 gal/ft
3.5"	8.0"	.33 gal/ft
4.0"		.50 gal/ft

Liner Type: Soft Hard

Vibracorer: P3 P5 VT6 Other

Live Organisms Present	N
Oil Present	N
Odor Present	Y
Debris Present	N
Within 10% of Req'd Core Length	Y
Photo	Y

Pushcorer Slambar

Eckman Ponar: Standard / Petite

Box Core

MLW #td ver 030615

AQUA SURVEY, INC.

SEDIMENT CORE LOG

Client :	U.S. Army Corps of Engineers		Project :	Sandy Hook Channel			Logger:	KS
Job#:	37-018	Date:	2/15/17	Time:	1458	Crew:	WR	
Coordinates:	N	598738.4	E	619547.9		Vessel:	Prattis	
Core # :	3	Zone: NJ	Datum	NAD 83		Deploy:	1	2	3

Project Depth (incl .2 ft. Overdredge) [PD] [ft] MLLW:	37.0	Core Penetration Length (ft.):	8.1		
Measured Water Depth [MWD] [ft.]:	35.9	Recovered Core Length (ft.):	5.3		
Tide Adjust [TA] (+/- ft. from MLLW) [ft.]:	2.8	Sample Length Retained (ft.):	3.9		
Corrected Depth @ MLLW [ft.]:	33.1	Core Volume Retained (gal.):	1.9		
		Collected to Project Depth:	Y / N		
Required Sample Core Length [SCL] [ft.]:	3.9				

All Length Measurements are in Decimal Feet

Sample Interval (ft.)	Sample Id #	Description
Top 0.0 – 3.9	20170036	Soft, dark gray-black silt, w/ trace amounts of fine sand
Bottom		

# of containers:	1			
Type of container:	bucket	hardliner	cup	other

Conditions:

Comments:

Core Volumes

Nominal core-barrel diameter		EST. Volume
3.0"		.25 gal/ft
3.5"	8.0"	.33 gal/ft
4.0"		.50 gal/ft

Liner Type: Soft Hard

Vibracorer: P3 P5 VT6 Other

Live Organisms Present	N
Oil Present	N
Odor Present	Y
Debris Present	N
Within 10% of Req'd Core Length	Y
Photo	Y

Pushcorer Slambar

Eckman Ponar: Standard / Petite

Box Core

MLW #td ver 030615

AQUA SURVEY, INC.

SEDIMENT CORE LOG

Client :	U.S. Army Corps of Engineers		Project :	Sandy Hook Channel		Logger:	MS	
Job#:	37-018	Date:	2/21/17	Time:	1102	Crew:	NJ, WR	
Coordinates:	N	600886.41	E	629406.13		Vessel:	Edison	
Core # : 4	Zone: NJ	Datum	NAD 83			Deploy:	1	2	3
Project Depth (incl .2 ft. Overdredge) [PD] [ft] MLLW:			37.0	Core Penetration Length (ft.):			15.0	12.5	13.0
Measured Water Depth [MWD] [ft.]:			11.9	Recovered Core Length (ft.):			5.0	4.0	2.0
Tide Adjust [TA] (+/- ft. from MLLW) [ft.]:			0.8	Sample Length Retained (ft.):			5.0		
Corrected Depth @ MLLW [ft.]:			16.7	Core Volume Retained (gal.):			2.5		
				Collected to Project Depth:			Y / (N)		
Required Sample Core Length [SCL] [ft.]:			20.3						

All Length Measurements are in Decimal Feet

Sample Interval (ft.)	Sample Id #	Description
Top 0.0	20170037	Tan coarse sand w/ cobble
5.0		
		Deploy 4: Core Penetration Length (ft): 12.0 Recovered Core Length: 3.0
Bottom		

# of containers:				
Type of container:	bucket	hardliner	cup	other

Conditions: 2 - 3 ft. waves

Comments: Refusal at 15 ft.
Having to vibrate to retrieve vibracore.

Core Volumes		
Nominal core-barrel diameter		EST. Volume
3.0"		.25 gal/ft
3.5"	8.0"	.33 gal/ft
(4.0")		.50 gal/ft
Liner Type: (Soft) Hard		
Vibracorer: P3 (P5) VT6 Other		

Live Organisms Present	N
Oil Present	N
Odor Present	N
Debris Present	N
Within 10% of Req'd Core Length	N
Photo	Y

Pushcorer	Slambar
Eckman	Ponar: Standard / Petite
Box Core	

MLW #td ver 030615

AQUA SURVEY, INC.

SEDIMENT CORE LOG

Client :	U.S. Army Corps of Engineers	Project :	Sandy Hook Channel		Logger:	MS	
Job#:	37-018	Date:	2/21/17	1330	Crew:	NJ, WR	
Coordinates:	N 601007.79	E	629630.66		Vessel:	Edison	
Core # : 5	Zone: NJ	Datum NAD 83			Deploy:	1	2	3
Project Depth (incl .2 ft. Overdredge) [PD] [ft] MLLW:		37.0		Core Penetration Length (ft.):		17.0	10.0	12.0
Measured Water Depth [MWD] [ft.]:		12.5		Recovered Core Length (ft.):		3.3	2.8	4.9
Tide Adjust [TA] (+/- ft. from MLLW) [ft.]:		2.3		Sample Length Retained (ft.):				4.9
Corrected Depth @ MLLW [ft.]:		10.2		Core Volume Retained (gal.):				2.5
				Collected to Project Depth:		Y / N	
Required Sample Core Length [SCL] [ft.]:		26.8					

All Length Measurements are in Decimal Feet

Sample Interval (ft.)	Sample Id #	Description
Top 0.0	20170038	Tan coarse sand, cobble throughout.
4.9		
Bottom		

# of containers:	1			
Type of container:	bucket	hardliner	cup	other

Conditions: Wind SE 10+ mph

Comments: Core moved toward channel due to breaking waves and depth.

Core Volumes

Nominal core-barrel diameter		EST. Volume
3.0"		.25 gal/ft
3.5"	8.0"	.33 gal/ft
4.0"		.50 gal/ft

Liner Type: Soft / Hard

Vibracorer: P3 / P5 / T6 Other

Live Organisms Present	N
Oil Present	N
Odor Present	N
Debris Present	N
Within 10% of Req'd Core Length	N
Photo	Y

Pushcorer Slambar

Eckman Ponar: Standard / Petite

Box Core

MLW #td ver 030615

AQUA SURVEY, INC.

SEDIMENT CORE LOG

Client :	U.S. Army Corps of Engineers		Project :	Sandy Hook Channel			Logger:	KS
Job#:	37-018	Date:	2/14/17	Time:	1105	Crew:	WR	
Coordinates:	N	597375.3	E	640856.2		Vessel:	Prattis	
Core # : 6	Zone: NJ	Datum NAD 83				Deploy:	1	2	3

Project Depth (incl .2 ft. Overdredge) [PD] [ft] MLLW:	37.0	Core Penetration Length (ft.):	9.0		
Measured Water Depth [MWD] [ft.]:	39.4	Recovered Core Length (ft.):	7.5		
Tide Adjust [TA] (+/- ft. from MLLW) [ft.]:	6.2	Sample Length Retained (ft.):	3.8		
Corrected Depth @ MLLW [ft.]:	33.2	Core Volume Retained (gal.):	2.0		
		Collected to Project Depth:	Y	N	
Required Sample Core Length [SCL] [ft.]:	3.8				

All Length Measurements are in Decimal Feet

Sample Interval (ft.)	Sample Id #	Description
Top 0.0 – 2.0	20170039	Grayish-tan coarse sand w/ some larger cobble
2.0 – 3.8		Grayish-black coarse sand w/ some cobble
Bottom		

# of containers:	1			
Type of container:	bucket	hardliner	cup	other

Conditions:

Comments: Samples were combined. Confirmed it wasn't a change in composition, just a change in color.

Core Volumes

Nominal core-barrel diameter		EST. Volume
3.0"		.25 gal/ft
3.5"	8.0"	.33 gal/ft
4.0"		.50 gal/ft

Liner Type: Soft Hard

Vibracorer: P3 P5 VT6 Other

Live Organisms Present	N
Oil Present	N
Odor Present	Y
Debris Present	N
Within 10% of Req'd Core Length	Y
Photo	Y

Pushcorer Slambar

Eckman Ponar: Standard / Petite

Box Core

MLW #td ver 030615

AQUA SURVEY, INC.

SEDIMENT CORE LOG

Client :	U.S. Army Corps of Engineers	Project :	Sandy Hook Channel			Logger:	KS
Job#:	37-018	Date:	2/15/17	Time:	1058	Crew:	WR
Coordinates:	N 596780.3	E	641612.0			Vessel:	Prattis
Core # : 7	Zone: NJ	Datum NAD 83				Deploy:	1 2 3

Project Depth (incl .2 ft. Overdredge) [PD] [ft] MLLW:	37.0	Core Penetration Length (ft.):	7.0		
Measured Water Depth [MWD] [ft.]:	39.7	Recovered Core Length (ft.):	4.3		
Tide Adjust [TA] (+/- ft. from MLLW) [ft.]:	5.8	Sample Length Retained (ft.):	3.1		
Corrected Depth @ MLLW [ft.]:	33.9	Core Volume Retained (gal.):	1.5		
		Collected to Project Depth:	Y / N		
Required Sample Core Length [SCL] [ft.]:	3.1				

All Length Measurements are in Decimal Feet

Sample Interval (ft.)	Sample Id #	Description
Top 0.0	20170040	Coarse tan sand, transitions to coarse gray sand at about 1.3 feet. Some larger cobble mixed throughout.
3.1		
Bottom		

# of containers:	1			
Type of container:	bucket	hardliner	cup	other

Conditions:

Comments:

Core Volumes

Nominal core-barrel diameter		EST. Volume
3.0"		.25 gal/ft
3.5"	8.0"	.33 gal/ft
4.0"		.50 gal/ft

Liner Type: Soft / Hard

Vibracorer: P3 P5 VT6 Other

Live Organisms Present	N
Oil Present	N
Odor Present	N
Debris Present	N
Within 10% of Req'd Core Length	Y
Photo	Y

Pushcorer Slambar

Eckman Ponar: Standard / Petite

Box Core

MLW #Id ver 030615

AQUA SURVEY, INC.

SEDIMENT CORE LOG

Client :	U.S. Army Corps of Engineers	Project :	Sandy Hook Channel			Logger:	KS
Job#:	37-018	Date:	2/15/17	Time:	1200	Crew:	WR
Coordinates:	N 596092.5	E	642484.7			Vessel:	Prattis
Core # :	8	Zone: NJ	Datum NAD 83			Deploy:	1 / 2 / 3

Project Depth (incl .2 ft. Overdredge) [PD] [ft] MLLW:	37.0	Core Penetration Length (ft.):	5.0		
Measured Water Depth [MWD] [ft.]:	39.4	Recovered Core Length (ft.):	3.1		
Tide Adjust [TA] (+/- ft. from MLLW) [ft.]:	5.7	Sample Length Retained (ft.):	3.1		
Corrected Depth @ MLLW [ft.]:	33.7	Core Volume Retained (gal.):	1.5		
		Collected to Project Depth:	Y / N		
Required Sample Core Length [SCL] [ft.]:	3.3				

All Length Measurements are in Decimal Feet

Sample Interval (ft.)	Sample Id #	Description
Top 0.0 – 3.1	20170041	Tan, medium to medium-fine sand, transitions to a gray color at about 1 foot.
Bottom		

# of containers:	1			
Type of container:	bucket	hardliner	cup	other

Conditions:

Comments:

Core Volumes

Nominal core-barrel diameter		EST. Volume
3.0"		.25 gal/ft
3.5"	8.0"	.33 gal/ft
4.0"		.50 gal/ft

Liner Type: Soft / Hard

Vibracorer: P3 / P5 VT6 Other

Live Organisms Present	N
Oil Present	N
Odor Present	N
Debris Present	N
Within 10% of Req'd Core Length	Y
Photo	Y

Pushcorer Slambar

Eckman Ponar: Standard / Petite

Box Core

MLW #td ver 030615

AQUA SURVEY, INC.

SEDIMENT CORE LOG

Client :	U.S. Army Corps of Engineers		Project :	Sandy Hook Channel			Logger:	KS
Job#:	37-018	Date:	2/15/17	Time:	1244	Crew:	WR	
Coordinates:	N	595459.6	E	643345.1		Vessel:	Prattis	
Core # :	9	Zone: NJ	Datum	NAD 83		Deploy:	1	2	3

Project Depth (incl .2 ft. Overdredge) [PD] [ft] MLLW:	37.0	Core Penetration Length (ft.):	6.0		
Measured Water Depth [MWD] [ft.]:	39.0	Recovered Core Length (ft.):	3.8		
Tide Adjust [TA] (+/- ft. from MLLW) [ft.]:	5.2	Sample Length Retained (ft.):	3.2		
Corrected Depth @ MLLW [ft.]:	33.8	Core Volume Retained (gal.):	1.5		
		Collected to Project Depth:	Y / N		
Required Sample Core Length [SCL] [ft.]:	3.2				

All Length Measurements are in Decimal Feet

Sample Interval (ft.)	Sample Id #	Description
Top 0.0 – 3.2	20170042	Tan medium-fine to fine sand. Transitions to more of a gray color at about 1.5 feet.
Bottom		

# of containers:	1			
Type of container:	bucket	hardliner	cup	other

Conditions:

Comments:

Core Volumes

Nominal core-barrel diameter		EST. Volume
3.0"		.25 gal/ft
3.5"	8.0"	.33 gal/ft
4.0"		.50 gal/ft

Liner Type: Soft / Hard

Vibracorer: P3 / P5 VT6 Other

Live Organisms Present	N
Oil Present	N
Odor Present	N
Debris Present	N
Within 10% of Req'd Core Length	Y
Photo	Y

Pushcorer Slambar

Eckman Ponar: Standard / Petite

Box Core

MI W #Id ver 030615

Appendix B

Photographs

Core 1, 0 – 2.0’, 2/15/17, ASI ID # 20170034

Core 1, 2.0’ – 3.1’, 2/15/17, ASI ID #20170034

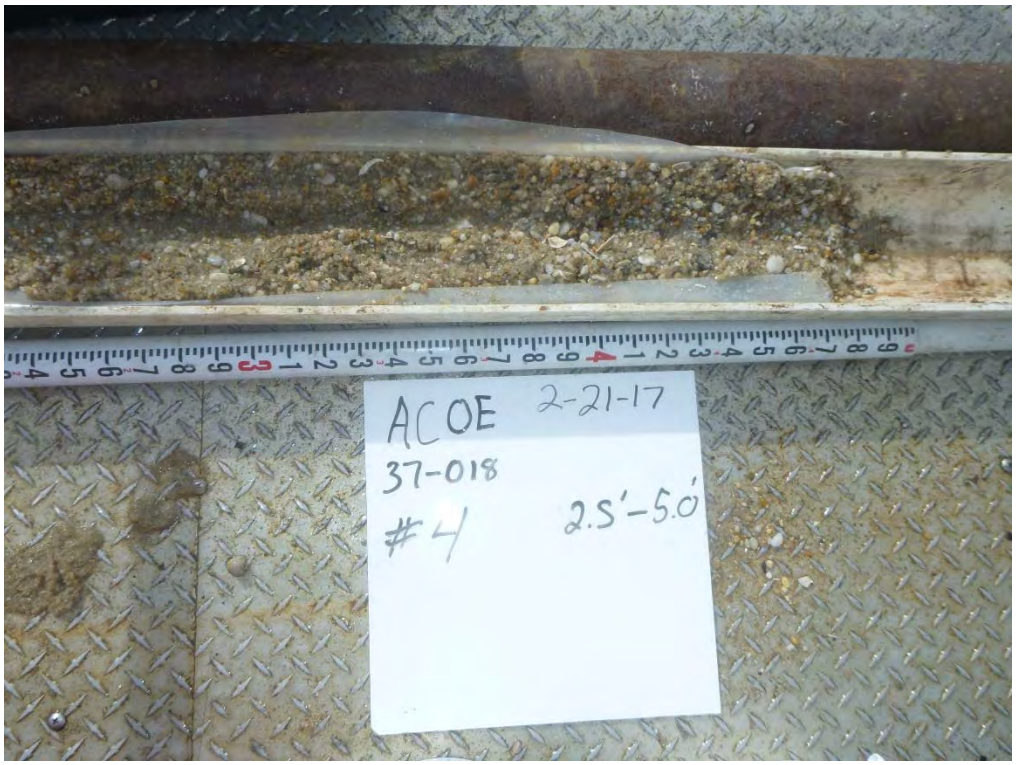
Core 2, 0 – 2.0’, 2/15/17, ASI ID # 20170035

Core 2, 2.0’ – 3.8’, 2/15/17, ASI ID # 20170035

Core 3, 0 – 2.0’, 2/15/17, ASI ID # 20170036

Core 3, 2.0’ – 3.9’, 2/15/17, ASI ID # 20170036

Core 4, 0- 2.5’, 2/21/17, ASI ID # 20170037



Core 4, 2.5’ – 5.0’, 2/21/17, ASI ID # 20170037

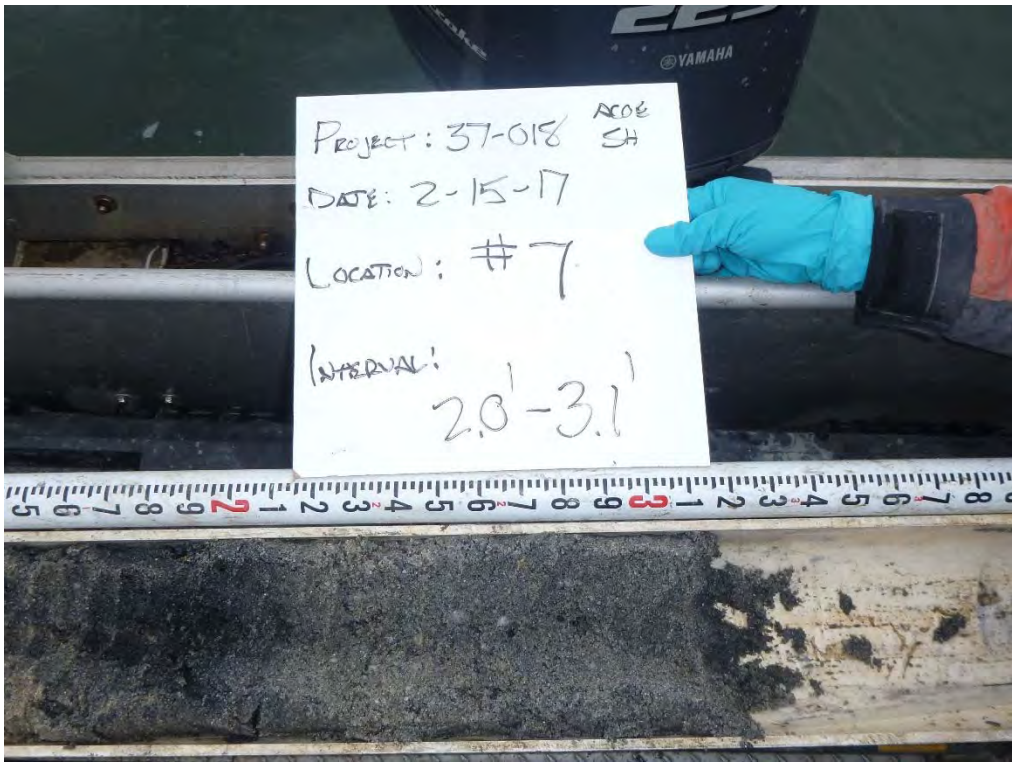
Core 5, 0 – 2.0’, 2/21/17, ASI ID # 20170038

Core 5, 2.0’ - 4.9’, 2/21/17, ASI ID # 20170038

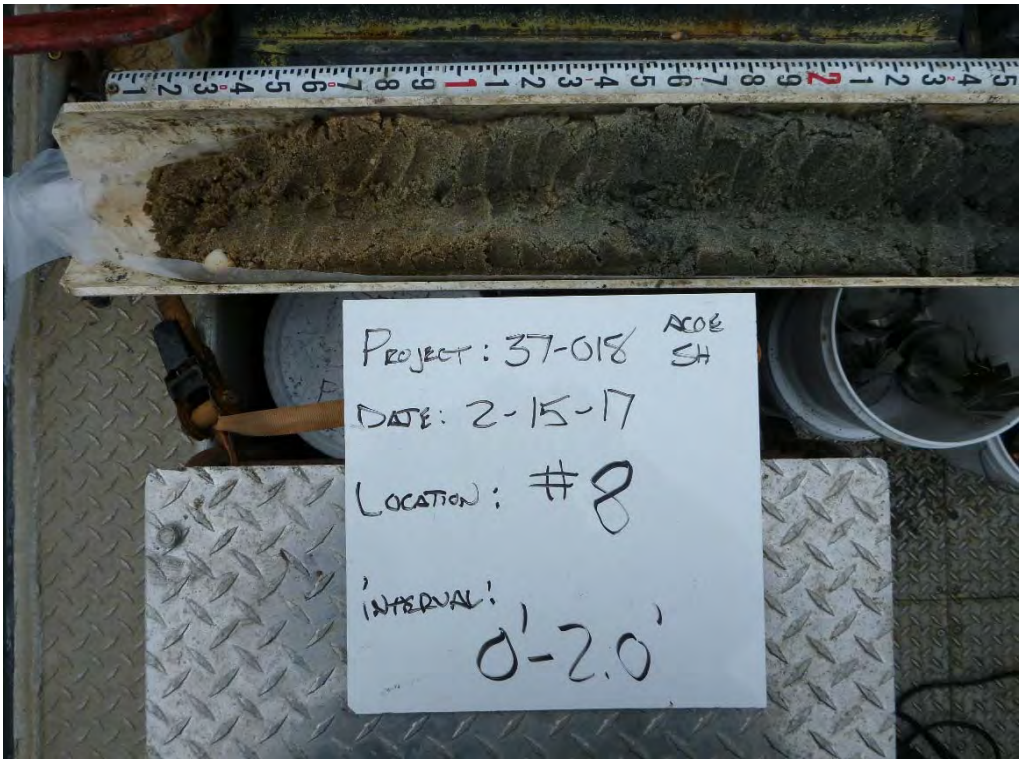
Core 6, 0 – 2.0’, 2/14/17, ASI ID # 20170039

Core 6, 2.0’ – 3.8’, 2/14/17, ASI ID # 20170039

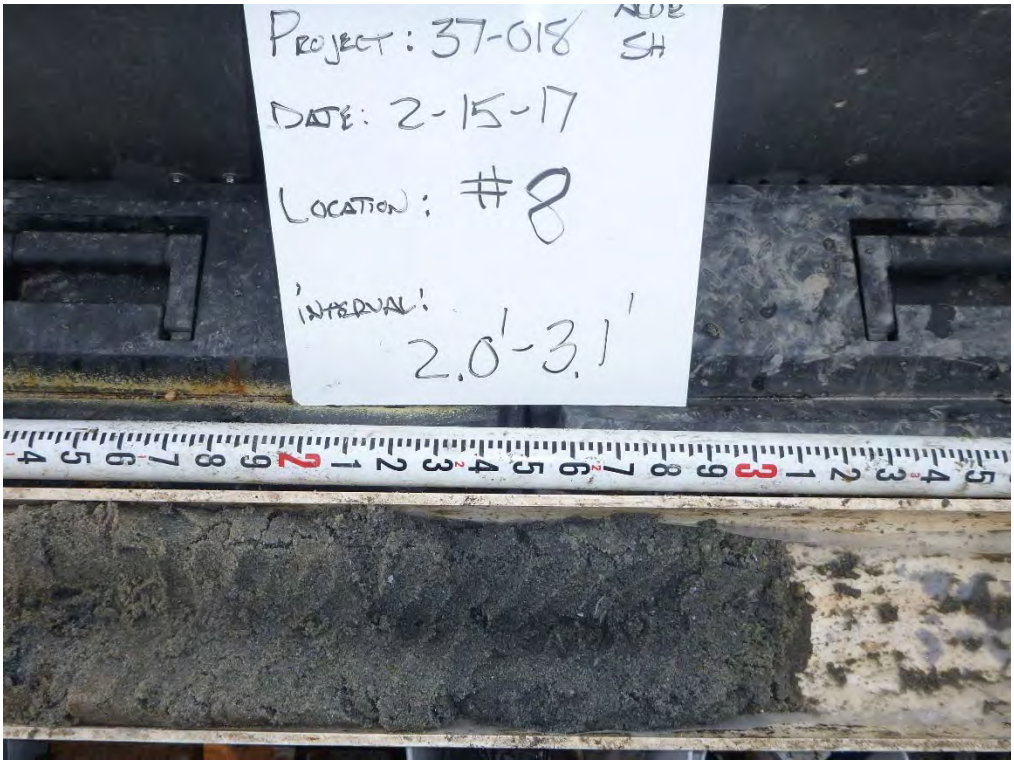
Core 7, 0 – 2.0’, 2/15/17, ASI ID # 20170040



Core 7, 2.0’ – 3.1’, 2/15/17, ASI ID # 20170040



Core 8, 0 – 2.0’, 2/15/17, ASI ID # 20170041



Core 8, 2.0’ – 3.1’, 2/15/17, ASI ID # 20170041

Core 9, 0 – 2.0’, 2/15/17, ASI ID # 20170042

Core 9, 2.0’ – 3.2’, 2/15/17, ASI ID # 20170042

Appendix C

Chains of Custody

CHAIN OF CUSTODY RECORD

AQUA SURVEY, INC.

469 POINT BREEZE ROAD
FLEMINGTON, NJ 08822
(908) 788-8700 OFFICE
(908) 788-9165 FAX

www.aquasurvey.com

CLIENT: US ARMY CORPS OF ENGINEERS

METHOD OF SHIPMENT: ASI TRUCK

PROJECT/SITE NAME: SANDY HOOK CHANNEL

TO: ASI - FLEMINGTON, NJ

ASI JOB NUMBER: 37-018

FROM: ATLANTIC HIGHLANDS MUN. HARBOR

SAMPLING & ANALYSIS AUTHORIZED BY:

DATE: 2-14-17

SAMPLE NUMBER	SAMPLING LOCATION AND DESCRIPTION	DATE	TIME	SAMPLE TYPE SED	WTR	COM	GRB		NO. CNT.	ANALYSES REQUIRED *	SEE WORK ORD.
20170039	#6	2-14-17	1105	X			X	1			

SAMPLE COLLECTED BY: KEVIN SONDAG, WILL REASONER

DATE

TIME

EXACT SAMPLING LOCATION: SANDY HOOK CHANNEL - HIGHLANDS, NJ

SAMPLE RELINQUISHED BY: [signature]

DATE: 2-14-17

TIME: 1445

SAMPLE RECEIVED BY: [signature]

DATE: 2/15/17

TIME: 0800

SAMPLE RELINQUISHED BY:

SAMPLE RECEIVED BY:

DATE

TIME

SAMPLE RELINQUISHED BY:

SAMPLE RECEIVED BY:

DATE

TIME

SPECIAL INSTRUCTIONS:

* Attach Separate Sheet If Necessary

102412

CHAIN OF CUSTODY RECORD

AQUA SURVEY, INC.

469 POINT BREEZE ROAD
FLEMINGTON, NJ 08822
(908) 788-8700 OFFICE
(908) 788-9165 FAX

www.aquasurvey.com

CLIENT: US ARMY CORPS OF ENGINEERS

METHOD OF SHIPMENT: ASI TRUCK

PROJECT/SITE NAME: SANDY HOOK CHANNEL

TO: ASI - FLEMINGTON, NJ

ASI JOB NUMBER: 37-018

FROM: ATLANTIC HIGHLANDS MUN. HARBOR

SAMPLING & ANALYSIS AUTHORIZED BY:

DATE: 2-15-17

SAMPLE NUMBER	SAMPLING LOCATION AND DESCRIPTION	DATE	TIME	SAMPLE TYPE SED	WTR	COM	GRB		NO. CNT.	ANALYSES REQUIRED *	SEE WORK ORD.
20170040	#7	2-15-17	1058	X			X		1		
20170041	#8		1200	X			X		1		
20170042	#9		1244	X			X		1		
20170034	#1		1357	X			X		1		
20170035	#2		1427	X			X		1		
20170036	#3		1458	X			X		1		

SAMPLE COLLECTED BY: KEVIN SONDAG, WILL REASONER

EXACT SAMPLING LOCATION: SANDY HOOK CHANNEL - HIGHLANDS, NJ

	DATE	TIME		DATE	TIME
SAMPLE RELINQUISHED BY:	2-15-17	1530	SAMPLE RECEIVED BY:	2/16/17	0800
SAMPLE RELINQUISHED BY:			SAMPLE RECEIVED BY:		
SAMPLE RELINQUISHED BY:			SAMPLE RECEIVED BY:		

SPECIAL INSTRUCTIONS:

* Attach Separate Sheet If Necessary

102412

CHAIN OF CUSTODY RECORD

AQUA SURVEY, INC.

469 POINT BREEZE ROAD
FLEMINGTON, NJ 08822
(908) 788-8700 OFFICE
(908) 788-9165 FAX

www.aquasurvey.com

CLIENT: ACOE

METHOD OF SHIPMENT: Auto

PROJECT/SITE NAME: Sandy Hook Channel

TO: ASI Flemington NJ

ASI JOB NUMBER: 37-018

FROM: Atlantic Highlands NJ

SAMPLING & ANALYSIS AUTHORIZED BY:

DATE: 2-21-17

SAMPLE NUMBER	SAMPLING LOCATION AND DESCRIPTION	DATE	TIME	SAMPLE TYPE SED	WTR	COM	GRB		NO. CNT.	ANALYSES REQUIRED *	SEE WORK ORD.
20170037	SH #4	2-21-17	1130	✓					1	Grain size	
20170038	SH #5	2-21-17	1400	✓					1	↓	

SAMPLE COLLECTED BY: ASI — DATE: 2-21-17 — TIME: 1400

EXACT SAMPLING LOCATION: Sandy Hook Point.

	DATE	TIME		DATE	TIME
SAMPLE RELINQUISHED BY:	2-21-17	1700	SAMPLE RECEIVED BY: Tom Dohe	2-21-17	1705
SAMPLE RELINQUISHED BY:			SAMPLE RECEIVED BY:	DATE	TIME
SAMPLE RELINQUISHED BY:			SAMPLE RECEIVED BY:	DATE	TIME

SPECIAL INSTRUCTIONS:

* Attach Separate Sheet If Necessary

102412

Appendix D

Sample Use Forms

AQUA SURVEY, INC.
SPECIAL STUDIES DEPARTMENT

SAMPLE USE FORM

Job #: 37-018 **Client:** ACOE-Sandy Hook **ASI #:** 20170034 **Sample ID:** #1

SEDIMENT CHARACTERIZATION

Odor:
- ☐ None
- ☑ Slight
- ☐ Moderate
- ☐ Strong
- ☐ Other

Color:
- ☐ Black
- ☐ Brown
- ☑ Gray Dark
- ☑ Olive
- ☐ Other

Consistency:
- ☑ Sandy
- ☑ Silty
- ☐ Clayey
- ☐ Other

HOMOGENIZATION/ COMPOSITING/ AMENDING

Method Used: ☑ Drill, ☐ Spoon, ☐ Other

Duration of Mixing: ☐ ~2 mins, ☑ ~3 mins, ☐ ~5 mins, ☐ Other

Total Sample Volume: ~1½ gallons Date/ Initials: 2/17/17 DM

SAMPLE NOTES:

RECORD OF SAMPLE USE:

DATE	AMOUNT USED	AMOUNT REMAINING	USED FOR	INITIALS
2/17/17	~1L ~500mL		Grain Size/%moisture	DM
2/21/17	1L		Composite A #20170043	DM

TOC sample frozen to preserve hold time: _____
(Date/Initials)

AQUA SURVEY, INC.
SPECIAL STUDIES DEPARTMENT

SAMPLE USE FORM

Job #: 37-018 **Client:** ACOE-Sandy Hook **ASI #:** 20170035 **Sample ID:** #2

SEDIMENT CHARACTERIZATION

Odor:
- □ None
- ☑ Slight very
- □ Moderate
- □ Strong
- □ Other

Color:
- □ Black
- □ Brown
- ☑ Gray Dark
- ☑ Olive
- □ Other

Consistency:
- ☑ Sandy
- ☑ Silty
- □ Clayey
- □ Other

HOMOGENIZATION/ COMPOSITING/ AMENDING

Method Used: ☑ Drill, □ Spoon, □ Other

Duration of Mixing: □ ~2 mins, ☑ ~3 mins, □ ~5 mins, □ Other

Total Sample Volume: ~2 gallons Date/ Initials: 2/17/17 DMA

SAMPLE NOTES:

RECORD OF SAMPLE USE:

DATE	AMOUNT USED	AMOUNT REMAINING	USED FOR	INITIALS
2/17/17	~500 mL		Grain Size/%moisture	DMA
2/21/17	1L		Composite A #20170043	DMA

TOC sample frozen to preserve hold time: _____
(Date/Initials)

AQUA SURVEY, INC.
SPECIAL STUDIES DEPARTMENT

SAMPLE USE FORM

Job #: 37-018 **Client:** ACOE-Sandy Hook **ASI #:** 20170036 **Sample ID:** #3

SEDIMENT CHARACTERIZATION

Odor:
- ☐ None
- ☐ Slight
- ☑ Moderate
- ☐ Strong
- ☐ Other

Color:
- ☐ Black
- ☐ Brown
- ☑ Gray Dark
- ☑ Olive
- ☐ Other

Consistency:
- ☑ Sandy
- ☑ Silty
- ☐ Clayey
- ☐ Other

HOMOGENIZATION/ COMPOSITING/ AMENDING

Method Used: ☑ Drill, ☐ Spoon, ☐ Other

Duration of Mixing: ☐ ~2 mins, ☑ ~3 mins, ☐ ~5 mins ☐ Other

Total Sample Volume: ~2gallons Date/ Initials: 2 / 17 /17 [illegible]

SAMPLE NOTES:

RECORD OF SAMPLE USE:

DATE	AMOUNT USED	AMOUNT REMAINING	USED FOR	INITIALS
2/17/17	~500mL		Grain Size/%moisture	[illegible]
2/21/17	1L		Composite A #20170043	[illegible]

TOC sample frozen to preserve hold time: _____
(Date/Initials)

AQUA SURVEY, INC.
SPECIAL STUDIES DEPARTMENT

SAMPLE USE FORM

Job #: 37-018 **Client:** ACOE-Sandy Hook **ASI #:** 20170043 **Sample ID:** Composite A

SEDIMENT CHARACTERIZATION

Odor:
- □ None
- ☑ Slight
- □ Moderate
- □ Strong
- □ Other

Color:
- □ Black
- □ Brown
- ☑ Gray Dark
- ☑ Olive
- □ Other

Consistency:
- ☑ Sandy
- ☑ Silty
- □ Clayey
- □ Other

HOMOGENIZATION/ **COMPOSITING**/ AMENDING

Method Used: ☑ Drill, □ Spoon, □ Other

Duration of Mixing: □ ~2 mins, ☑ ~3 mins, □ ~5 mins, □ Other

#20170034 - 1L	
#20170035 - 1L	
#20170036 - 1L	

Total Sample Volume: 3L Date/ Initials: 2/21/17

SAMPLE NOTES:

RECORD OF SAMPLE USE:

DATE	AMOUNT USED	AMOUNT REMAINING	USED FOR	INITIALS
2/21/17	~500mL		Grain Size/%moisture	

TOC sample frozen to preserve hold time: _____
(Date/Initials)

AQUA SURVEY, INC.
SPECIAL STUDIES DEPARTMENT

SAMPLE USE FORM

Job #: 37-018 **Client:** ACOE-Sandy Hook **ASI #:** 20170037 **Sample ID:** #4

SEDIMENT CHARACTERIZATION

Odor:
- ☑ None
- ☐ Slight
- ☐ Moderate
- ☐ Strong
- ☐ Other

Color:
- ☐ Black
- ☑ Brown
- ☐ Gray
- ☐ Olive
- ☐ Other

Consistency:
- ☑ Sandy w/gravel, pebbles, & shell
- ☐ Silty
- ☐ Clayey
- ☐ Other

HOMOGENIZATION/ COMPOSITING/ AMENDING

Method Used: ☐ Drill, ☑ Spoon, ☐ Other

Duration of Mixing: ☐ ~2 mins, ☐ ~3 mins, ☑ ~5 mins ☐ Other

Total Sample Volume: ~2gallons Date/ Initials: 2/22/17 DH

SAMPLE NOTES:

RECORD OF SAMPLE USE:

DATE	AMOUNT USED	AMOUNT REMAINING	USED FOR	INITIALS
2/22/17	~500mL		Grain Size/%moisture	DH
2/22/17	1500 mL		Composite B #20170044	DH

TOC sample frozen to preserve hold time: _____
(Date/Initials)

AQUA SURVEY, INC.
SPECIAL STUDIES DEPARTMENT

SAMPLE USE FORM

Job #: 37-018 **Client:** ACOE-Sandy Hook **ASI #:** 20170038 **Sample ID:** #5

SEDIMENT CHARACTERIZATION

Odor:
- ☑ None
- ☐ Slight
- ☐ Moderate
- ☐ Strong
- ☐ Other

Color:
- ☐ Black
- ☑ Brown
- ☐ Gray
- ☐ Olive
- ☐ Other

Consistency:
- ☑ Sandy w/ pebbles & shells
- ☐ Silty
- ☐ Clayey
- ☐ Other

HOMOGENIZATION/ COMPOSITING/ AMENDING

Method Used: ☐ Drill, ☑ Spoon, ☐ Other

Duration of Mixing: ☐ ~2 mins, ☐ ~3 mins, ☑ ~5 mins ☐ Other

Total Sample Volume: ~2 gallons Date/ Initials: 2/22/17 JDH

SAMPLE NOTES:

RECORD OF SAMPLE USE:

DATE	AMOUNT USED	AMOUNT REMAINING	USED FOR	INITIALS
2/22/17	~500mL		Grain Size/%moisture	JDH
2/22/17	1500mL		Composite B #20170044	JDH

TOC sample frozen to preserve hold time: _____
(Date/Initials)

AQUA SURVEY, INC.
SPECIAL STUDIES DEPARTMENT

SAMPLE USE FORM

Job #: 37-018 **Client:** ACOE-Sandy Hook **ASI #:** 20170039 **Sample ID:** #6

SEDIMENT CHARACTERIZATION

Odor:	**Color:**	**Consistency:**
☑ None	☐ Black	☑ Sandy w/shells
☐ Slight	☑ Brown	☐ Silty
☐ Moderate	☐ Gray	☐ Clayey
☐ Strong	☐ Olive	☐ Other
☐ Other	☐ Other	

HOMOGENIZATION/ COMPOSITING/ AMENDING

Method Used: ☐ Drill, ☐ Spoon, ☑ Other Hand

Duration of Mixing: ☐ ~2 mins, ☑ ~3 mins, ☐ ~5 mins, ☐ Other

Total Sample Volume: ~2 1/2 gallons Date/ Initials: 2/17/17 [illegible]

SAMPLE NOTES:

RECORD OF SAMPLE USE:

DATE	AMOUNT USED	AMOUNT REMAINING	USED FOR	INITIALS
2/17/17	~500 mL		Grain Size/%moisture	[illegible]
2/21/17	750 mL		Composite C #20170045	[illegible]

TOC sample frozen to preserve hold time: _____
(Date/Initials)

AQUA SURVEY, INC.
SPECIAL STUDIES DEPARTMENT

SAMPLE USE FORM

Job #: 37-018 **Client:** ACOE-Sandy Hook **ASI #:** 20170044 **Sample ID:** Composite B

SEDIMENT CHARACTERIZATION

Odor:
- ☑ None
- ☐ Slight
- ☐ Moderate
- ☐ Strong
- ☐ Other

Color:
- ☑ Black
- ☑ Brown
- ☐ Gray
- ☐ Olive
- ☐ Other

Consistency:
- ☑ Sandy w/gravel, pebbles, & shell
- ☐ Silty
- ☐ Clayey
- ☐ Other

HOMOGENIZATION/ **COMPOSITING**/ AMENDING

Method Used: ☐ Drill, ☑ Spoon, ☐ Other

Duration of Mixing: ☐ ~2 mins, ☐ ~3 mins, ☑ ~5 mins, ☐ Other

#20170037 - 1500mL	
#20170038 - 1500mL	

Total Sample Volume: 3L Date/ Initials: 2/22/17 [illegible]

SAMPLE NOTES:

RECORD OF SAMPLE USE:

DATE	AMOUNT USED	AMOUNT REMAINING	USED FOR	INITIALS
2/22/17	~500 mL		Grain Size/%moisture	[illegible]

TOC sample frozen to preserve hold time: _____
(Date/Initials)

AQUA SURVEY, INC.
SPECIAL STUDIES DEPARTMENT

SAMPLE USE FORM

Job #: 37-018 **Client:** ACOE-Sandy Hook **ASI #:** 20170040 **Sample ID:** #7

SEDIMENT CHARACTERIZATION

Odor:	**Color:**	**Consistency:**
☑ None	□ Black	☑ Sandy w/pebbles
□ Slight	☑ Brown	□ Silty
□ Moderate	□ Gray	□ Clayey
□ Strong	□ Olive	□ Other
□ Other	□ Other	

HOMOGENIZATION/ COMPOSITING/ AMENDING

Method Used: ☑ Drill, □ Spoon, ☑ Other hand

Duration of Mixing: □ ~2 mins, □ ~3 mins, ☑ ~5 mins □ Other

Total Sample Volume: ~2 gallons Date/ Initials: 2/17/17

SAMPLE NOTES:

RECORD OF SAMPLE USE:

DATE	AMOUNT USED	AMOUNT REMAINING	USED FOR	INITIALS
2/17/17	~500mL		Grain Size/%moisture	
2/21/17	750mL		Composite C #20170045	

TOC sample frozen to preserve hold time: _____
(Date/Initials)

AQUA SURVEY, INC.
SPECIAL STUDIES DEPARTMENT

SAMPLE USE FORM

Job #: 37-018 **Client:** ACOE-Sandy Hook **ASI #:** 2017004 **Sample ID:** #8

SEDIMENT CHARACTERIZATION

Odor:	**Color:**	**Consistency:**
☑ None	☐ Black	☑ Sandy w/ pebbles & shells
☐ Slight	☑ Brown	☐ Silty
☐ Moderate	☐ Gray	☐ Clayey
☐ Strong	☐ Olive	☐ Other
☐ Other	☐ Other	

HOMOGENIZATION/ COMPOSITING/ AMENDING

Method Used: ☑ Drill, ☐ Spoon, ☑ Other Hand

Duration of Mixing: ☐ ~2 mins, ☐ ~3 mins, ☑ ~5 mins ☐ Other

Total Sample Volume: ~1 1/2 gallons Date/ Initials: 2/ 17 /17 [illegible]

SAMPLE NOTES:

RECORD OF SAMPLE USE:

DATE	AMOUNT USED	AMOUNT REMAINING	USED FOR	INITIALS
2/17/17	~500 mL		Grain Size/%moisture	[illegible]
2/21/17	750 mL		Composite C #20170045	[illegible]

TOC sample frozen to preserve hold time: _____
(Date/Initials)

AQUA SURVEY, INC.
SPECIAL STUDIES DEPARTMENT

SAMPLE USE FORM

Job #: 37-018 **Client:** ACOE-Sandy Hook **ASI #:** 2017 0042 **Sample ID:** #9

SEDIMENT CHARACTERIZATION

Odor:	**Color:**	**Consistency:**
☑ None	☑ Black	☑ Sandy w/ some shell
□ Slight	☑ Brown	□ Silty
□ Moderate	□ Gray	□ Clayey
□ Strong	□ Olive	□ Other
□ Other	□ Other	

HOMOGENIZATION/ COMPOSITING/ AMENDING

Method Used: ☑ Drill, □ Spoon, ☑ Other Hand

Duration of Mixing: □ ~2 mins, □ ~3 mins, ☑ ~5 mins, □ Other

Total Sample Volume: ~2 gallons Date/ Initials: 2/17/17 [illegible]

SAMPLE NOTES:

RECORD OF SAMPLE USE:

DATE	AMOUNT USED	AMOUNT REMAINING	USED FOR	INITIALS
2/17/17	~500 mL		Grain Size/%moisture	[illegible]
2/21/17	750 mL		Composite @ #2017 0045	[illegible]

TOC sample frozen to preserve hold time: _____
(Date/Initials)

AQUA SURVEY, INC.
SPECIAL STUDIES DEPARTMENT

SAMPLE USE FORM

Job #: 37-018 **Client:** ACOE-Sandy Hook **ASI #:** 20170045 **Sample ID:** Composite C

SEDIMENT CHARACTERIZATION

Odor:
- ☑ None
- □ Slight
- □ Moderate
- □ Strong
- □ Other

Color:
- □ Black
- ☑ Brown
- □ Gray
- □ Olive
- □ Other

Consistency:
- ☑ Sandy w/ pebbles & Shells
- □ Silty
- □ Clayey
- □ Other

HOMOGENIZATION/ **COMPOSITING**/ AMENDING

Method Used: □ Drill, ☑ Spoon, ☑ Other Hand

Duration of Mixing: □ ~2 mins, ☑ ~3 mins, □ ~5 mins, □ Other

#20170039 - 750mL	
#20170040 - 750mL	
#20170041 - 750mL	
#20170042 - 750mL	

Total Sample Volume: 3L Date/ Initials: 2/21/17 [illegible]

SAMPLE NOTES:

RECORD OF SAMPLE USE:

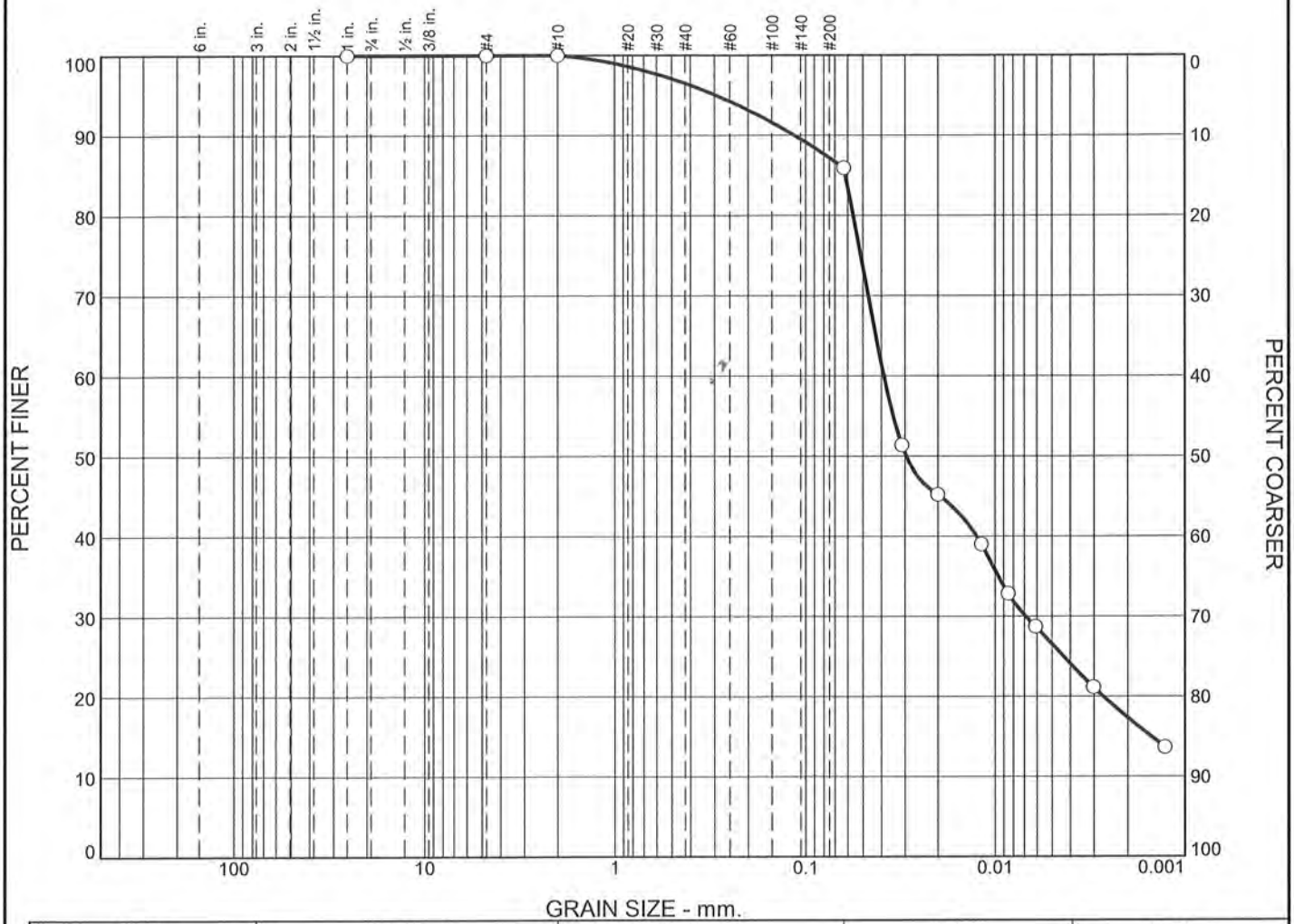
DATE	AMOUNT USED	AMOUNT REMAINING	USED FOR	INITIALS
2/21/17	~500mL		Grain Size/%moisture	[illegible]

TOC sample frozen to preserve hold time: _____
(Date/Initials)

Appendix E

Grain Size Distribution Raw Data, Calculations and Graphs

Particle Size Distribution Report



	% +3"	% Gravel	% Sand	% Silt	% Clay
○	0.0	0.0	14.0	62.2	23.8

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.0618	0.0387	0.0295	0.0069	0.0015			

Material Description	USCS	AASHTO
○ Sediment		

Project No. 37-018 **Client:** Army Corps of Engineers

Project: Sandy Hook Channel

○ **Source of Sample:** SH-1 **Sample Number:** #20170034

Remarks:

Aqua Survey, Inc.

Flemington, NJ

Figure

Tested By: M. Thomas **Checked By:** C. Hall

CH

GRAIN SIZE DISTRIBUTION TEST DATA

3/15/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: SH-1
Sample Number: #20170034
Material Description: Sediment
Tested by: M. Thomas **Checked by:** C. Hall

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
73.18	11.65	1	0.00	0.00	100.0	0.0
		#4	11.65	11.65	100.0	0.0
		#10	11.65	11.65	100.0	0.0
50.00	0.00	#230	175.10	168.08	86.0	14.0

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.00
Hygroscopic moisture correction:
Moist weight and tare = 14.17
Dry weight and tare = 13.80
Tare weight = 1.32
Hygroscopic moisture = 3.0%
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -5
Meniscus correction only = 0.5
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
2.00	24.0	29.0	25.0	0.0130	29.5	11.5	0.0311	51.4	48.6
5.00	24.0	26.0	22.0	0.0130	26.5	11.9	0.0201	45.2	54.8
15.00	24.0	23.0	19.0	0.0130	23.5	12.4	0.0118	39.0	61.0
30.00	24.0	20.0	16.0	0.0130	20.5	12.9	0.0085	32.9	67.1
60.00	24.0	18.0	14.0	0.0130	18.5	13.3	0.0061	28.7	71.3
250.00	25.0	14.0	10.3	0.0128	14.5	13.9	0.0030	21.2	78.8
1440.00	26.0	10.0	6.6	0.0127	10.5	14.6	0.0013	13.7	86.3

Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	0.0	14.0	62.2	23.8

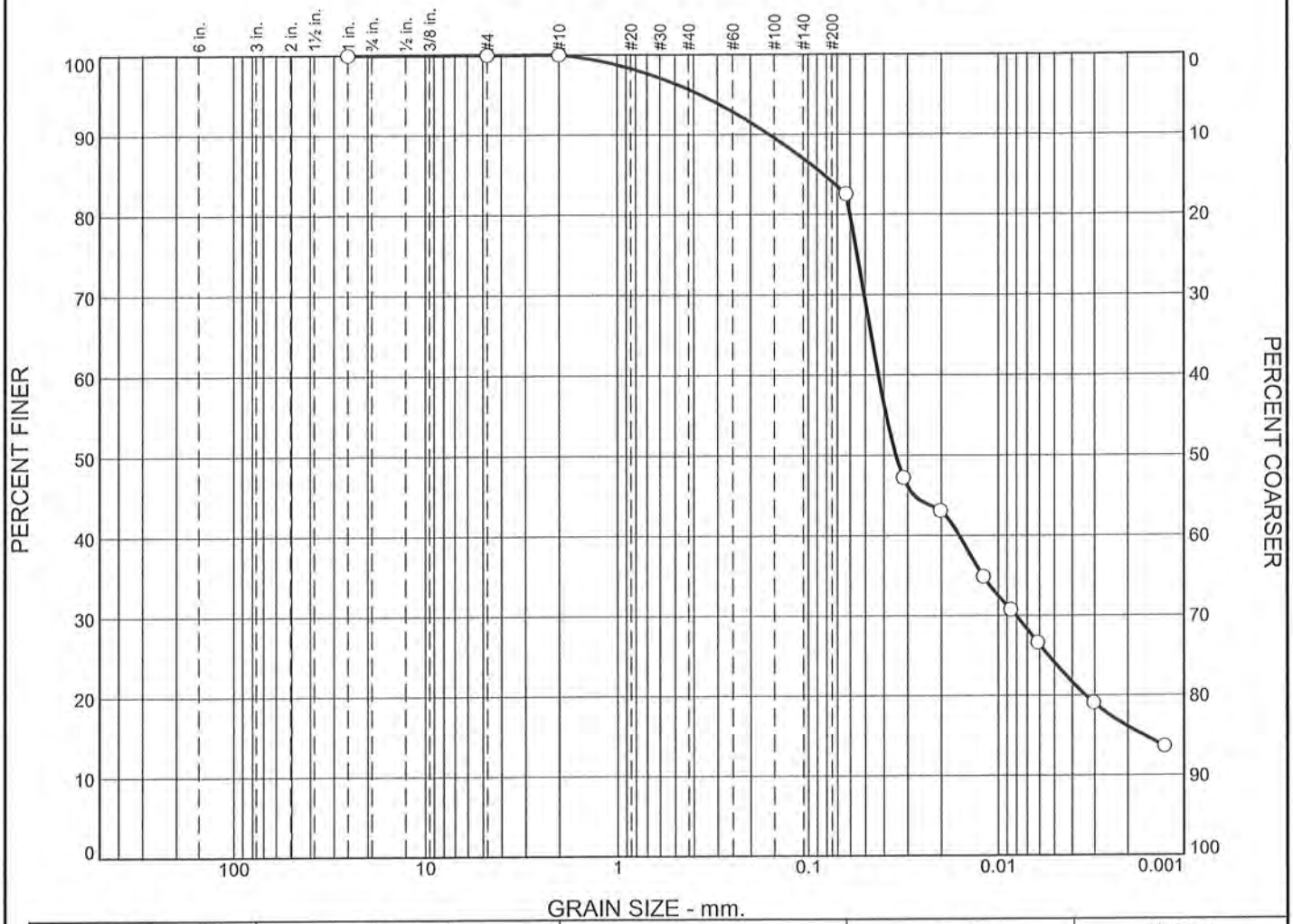
D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.0015	0.0027	0.0069	0.0125	0.0295	0.0387	0.0562	0.0618	0.1147	0.2947

Fineness Modulus
0.16

CH

Aqua Survey, Inc.

Particle Size Distribution Report



	% +3"	% Gravel	% Sand	% Silt	% Clay
○	0.0	0.0	17.4	61.2	21.4

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.0831	0.0427	0.0345	0.0080	0.0017			

Material Description	USCS	AASHTO
○ Sediment		

Project No. 37-018 **Client:** Army Corps of Engineers

Project: Sandy Hook Channel

○ **Source of Sample:** SH-2 **Sample Number:** #20170035

Remarks:

Aqua Survey, Inc.

Flemington, NJ

Figure

Tested By: M. Thomas **Checked By:** C. Hall

CH

GRAIN SIZE DISTRIBUTION TEST DATA

3/15/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: SH-2
Sample Number: #20170035
Material Description: Sediment
Tested by: M. Thomas **Checked by:** C. Hall

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
71.96	11.67	1	0.00	0.00	100.0	0.0
		#4	11.67	11.67	100.0	0.0
		#10	11.67	11.67	100.0	0.0
50.00	0.00	#230	173.68	164.97	82.6	17.4

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.00
Hygroscopic moisture correction:
Moist weight and tare = 12.80
Dry weight and tare = 12.47
Tare weight = 1.32
Hygroscopic moisture = 2.9%
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -5
Meniscus correction only = 0.5
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
2.00	24.0	27.0	23.0	0.0130	27.5	11.8	0.0316	47.2	52.8
5.00	24.0	25.0	21.0	0.0130	25.5	12.1	0.0202	43.1	56.9
15.00	24.0	21.0	17.0	0.0130	21.5	12.8	0.0120	34.9	65.1
30.00	24.0	19.0	15.0	0.0130	19.5	13.1	0.0086	30.8	69.2
60.00	24.0	17.0	13.0	0.0130	17.5	13.4	0.0061	26.7	73.3
250.00	25.0	13.0	9.3	0.0128	13.5	14.1	0.0030	19.1	80.9
1440.00	26.0	10.0	6.6	0.0127	10.5	14.6	0.0013	13.7	86.3

Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	0.0	17.4	61.2	21.4

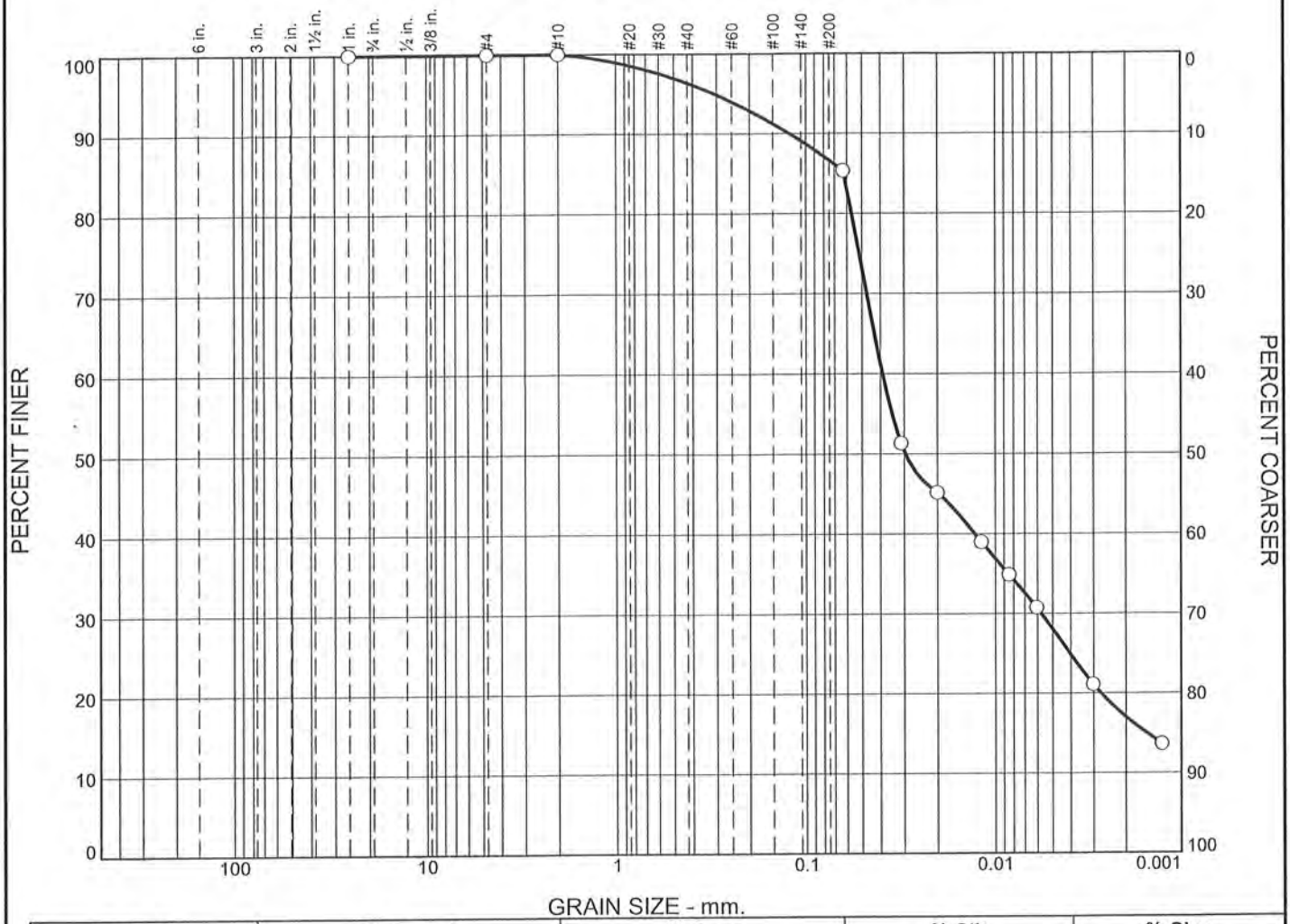
D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.0017	0.0034	0.0080	0.0160	0.0345	0.0427	0.0602	0.0831	0.1596	0.3715

Fineness Modulus
0.20

CH

Aqua Survey, Inc.

Particle Size Distribution Report



	% +3"	% Gravel	% Sand	% Silt	% Clay
○	0.0	0.0	14.6	60.9	24.5

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.0625	0.0389	0.0295	0.0057	0.0015			

Material Description	USCS	AASHTO
○ Sediment		

Project No. 37-018 **Client:** Army Corps of Engineers

Project: Sandy Hook Channel

○ **Source of Sample:** SH-3 **Sample Number:** #20170036

Remarks:

Aqua Survey, Inc.

Flemington, NJ

Figure

Tested By: M. Thomas **Checked By:** C. Hall

GRAIN SIZE DISTRIBUTION TEST DATA

3/15/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: SH-3
Sample Number: #20170036
Material Description: Sediment
Tested by: M. Thomas **Checked by:** C. Hall

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
95.06	11.70	1	0.00	0.00	100.0	0.0
		#4	11.70	11.70	100.0	0.0
		#10	11.70	11.70	100.0	0.0
50.00	0.00	#230	142.58	135.26	85.4	14.6

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.00
Hygroscopic moisture correction:
Moist weight and tare = 10.78
Dry weight and tare = 10.51
Tare weight = 1.32
Hygroscopic moisture = 2.9%
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -5
Meniscus correction only = 0.5
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 **x Rm**

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
2.00	24.0	29.0	25.0	0.0130	29.5	11.5	0.0311	51.4	48.6
5.00	24.0	26.0	22.0	0.0130	26.5	11.9	0.0201	45.2	54.8
15.00	24.0	23.0	19.0	0.0130	23.5	12.4	0.0118	39.0	61.0
30.00	24.0	21.0	17.0	0.0130	21.5	12.8	0.0085	34.9	65.1
60.00	24.0	19.0	15.0	0.0130	19.5	13.1	0.0061	30.8	69.2
250.00	25.0	14.0	10.3	0.0128	14.5	13.9	0.0030	21.2	78.8
1440.00	26.0	10.0	6.6	0.0127	10.5	14.6	0.0013	13.7	86.3

Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	0.0	14.6	60.9	24.5

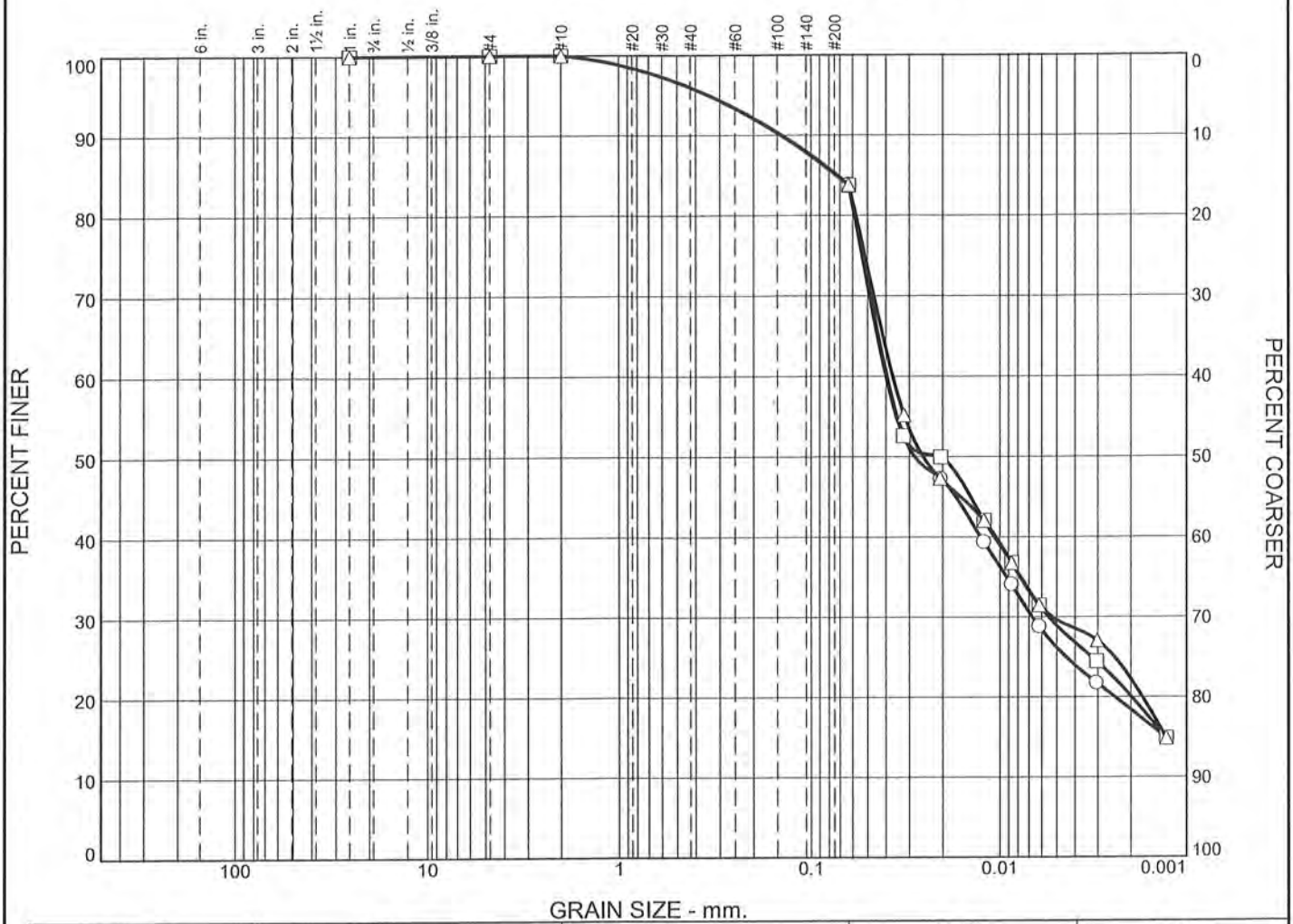
D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.0015	0.0027	0.0057	0.0128	0.0295	0.0389	0.0568	0.0625	0.1226	0.3089

Fineness Modulus
0.17

CH

Aqua Survey, Inc.

Particle Size Distribution Report



	% +3"	% Gravel	% Sand	% Silt	% Clay
○	0.0	0.0	16.1	60.1	23.8
□	0.0	0.0	16.3	57.1	26.6
△	0.0	0.0	16.2	55.3	28.5

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.0720	0.0395	0.0281	0.0067	0.0013			
□			0.0735	0.0400	0.0206	0.0055	0.0013			
△			0.0729	0.0367	0.0254	0.0053	0.0013			

Material Description	USCS	AASHTO
○ Composite Sediment		
□ Composite Sediment		
△ Composite Sediment		

Project No. 37-018 **Client:** Army Corps of Engineers

Project: Sandy Hook Channel

○ **Source of Sample:** Composite A **Sample Number:** #20170043

□ **Source of Sample:** Composite A **Sample Number:** #20170043 dup

△ **Source of Sample:** Composite A **Sample Number:** #20170043 trp

Remarks:

Aqua Survey, Inc.

Flemington, NJ

Figure

Tested By: M. Thomas **Checked By:** C. Hall

GRAIN SIZE DISTRIBUTION TEST DATA

3/15/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: Composite A
Sample Number: #20170043
Material Description: Composite Sediment
Tested by: M. Thomas **Checked by:** C. Hall

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
52.20	11.86	1	0.00	0.00	100.0	0.0
		#4	11.86	11.86	100.0	0.0
		#10	11.86	11.86	100.0	0.0
39.00	0.00	#230	174.14	167.86	83.9	16.1

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =39.00
Hygroscopic moisture correction:
Moist weight and tare = 11.95
Dry weight and tare = 11.66
Tare weight = 1.33
Hygroscopic moisture = 2.8%
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -5
Meniscus correction only = 0.5
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
2.00	24.0	24.0	20.0	0.0130	24.5	12.3	0.0322	52.6	47.4
5.00	24.0	22.0	18.0	0.0130	22.5	12.6	0.0206	47.3	52.7
15.00	24.0	19.0	15.0	0.0130	19.5	13.1	0.0121	39.4	60.6
30.00	24.0	17.0	13.0	0.0130	17.5	13.4	0.0087	34.1	65.9
60.00	24.0	15.0	11.0	0.0130	15.5	13.8	0.0062	28.9	71.1
250.00	25.0	12.0	8.3	0.0128	12.5	14.2	0.0031	21.8	78.2
1440.00	26.0	9.0	5.6	0.0127	9.5	14.7	0.0013	14.9	85.1

Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	0.0	16.1	60.1	23.8

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.0013	0.0024	0.0067	0.0126	0.0281	0.0395	0.0583	0.0720	0.1420	0.3424

Fineness Modulus
0.19

CH

Aqua Survey, Inc.

GRAIN SIZE DISTRIBUTION TEST DATA

3/15/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: Composite A
Sample Number: #20170043 dup
Material Description: Composite Sediment
Tested by: M. Thomas **Checked by:** C. Hall

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
50.95	11.75	1	0.00	0.00	100.0	0.0
		#4	11.75	11.75	100.0	0.0
		#10	11.75	11.75	100.0	0.0
39.00	0.00	#230	166.63	160.28	83.7	16.3

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =39.00
Hygroscopic moisture correction:
Moist weight and tare = 11.95
Dry weight and tare = 11.66
Tare weight = 1.33
Hygroscopic moisture = 2.8%
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -5
Meniscus correction only = 0.5
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
2.00	24.0	24.0	20.0	0.0130	24.5	12.3	0.0322	52.6	47.4
5.00	24.0	23.0	19.0	0.0130	23.5	12.4	0.0205	50.0	50.0
15.00	24.0	20.0	16.0	0.0130	20.5	12.9	0.0121	42.1	57.9
30.00	24.0	18.0	14.0	0.0130	18.5	13.3	0.0086	36.8	63.2
60.00	24.0	16.0	12.0	0.0130	16.5	13.6	0.0062	31.5	68.5
250.00	25.0	13.0	9.3	0.0128	13.5	14.1	0.0030	24.5	75.5
1440.00	26.0	9.0	5.6	0.0127	9.5	14.7	0.0013	14.9	85.1

Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	0.0	16.3	57.1	26.6

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.0013	0.0020	0.0055	0.0106	0.0206	0.0400	0.0587	0.0735	0.1444	0.3465

Fineness Modulus
0.19

CH

Aqua Survey, Inc.

GRAIN SIZE DISTRIBUTION TEST DATA

3/15/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: Composite A
Sample Number: #20170043 trp
Material Description: Composite Sediment

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
52.05	11.55	1	0.00	0.00	100.0	0.0
		#4	11.55	11.55	100.0	0.0
		#10	11.55	11.55	100.0	0.0
39.00	0.00	#230	184.29	177.97	83.8	16.2

Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =39.00
Hygroscopic moisture correction:
Moist weight and tare = 11.95
Dry weight and tare = 11.66
Tare weight = 1.33
Hygroscopic moisture = 2.8%
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -5
Meniscus correction only = 0.5
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

Elapsed Time (min.)	Temp. (deg. C.)	Actual Reading	Corrected Reading	K	Rm	Eff. Depth	Diameter (mm.)	Percent Finer	Percent Retained
2.00	24.0	25.0	21.0	0.0130	25.5	12.1	0.0320	55.2	44.8
5.00	24.0	22.0	18.0	0.0130	22.5	12.6	0.0206	47.3	52.7
15.00	24.0	20.0	16.0	0.0130	20.5	12.9	0.0121	42.1	57.9
30.00	24.0	18.0	14.0	0.0130	18.5	13.3	0.0086	36.8	63.2
60.00	24.0	16.0	12.0	0.0130	16.5	13.6	0.0062	31.5	68.5
250.00	25.0	14.0	10.3	0.0128	14.5	13.9	0.0030	27.1	72.9
1440.00	26.0	9.0	5.6	0.0127	9.5	14.7	0.0013	14.9	85.1

Fractional Components

Cobbles	Gravel	Sand	Silt	Clay
0.0	0.0	16.2	55.3	28.5

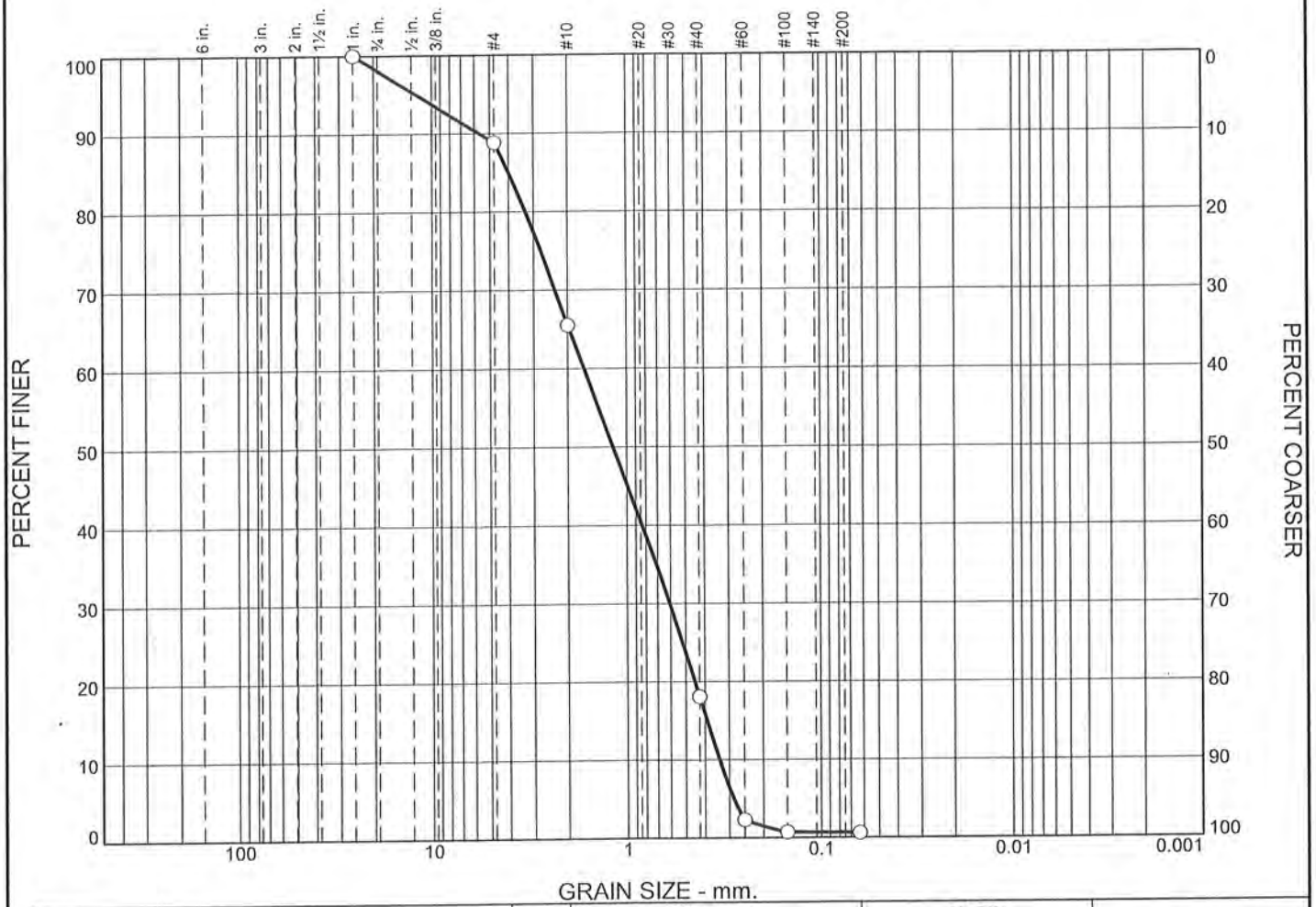
D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.0013	0.0017	0.0053	0.0105	0.0254	0.0367	0.0577	0.0729	0.1434	0.3447

Fineness Modulus
0.19

CH

Aqua Survey, Inc.

Particle Size Distribution Report



	% Boulders	% +3"	% Pebbles	% Granules	% Sand V. Crs.	% Sand Crs.	% Sand Med.	% Sand Fine	% Sand V. Fine	% Silt Crs.	% Silt Med.	% Silt Fine	% Silt V. Fine	% Clay
○	0.0	0.0	15.0	19.5	20.2	21.6	21.4	1.6					0.7	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			4.0006	1.6558	1.1740	0.6068	0.3896	0.3369	0.66	4.92

Material Description	USCS	AASHTO
○ Sediment	SP	

Project No. 37-018 **Client:** Army Corps of Engineers

Project: Sandy Hook Channel

○ **Source of Sample:** SH-4 **Sample Number:** #20170037

Remarks:
○ #10- w/ few pieces of shell
#40- w/ few pieces of shell

Aqua Survey, Inc.

Flemington, NJ

Figure

CH

Tested By: M. Thomas **Checked By:** C. Hall

GRAIN SIZE DISTRIBUTION TEST DATA

3/10/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: SH-4
Sample Number: #20170037
Material Description: Sediment
USCS Classification: SP
Testing Remarks: #10- w/ few pieces of shell
#40- w/ few pieces of shell

Tested by: M. Thomas **Checked by:** C. Hall

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
334.98	134.98	1	0.00	0.00	100.0	0.0
		#4	519.55	497.19	88.8	11.2
		#10	602.17	555.61	65.5	34.5
		#40	431.75	336.82	18.1	81.9
		#60	377.77	346.23	2.3	97.7
		#100	332.92	329.76	0.7	99.3
		#230	299.65	299.40	0.6	99.4

Fractional Components

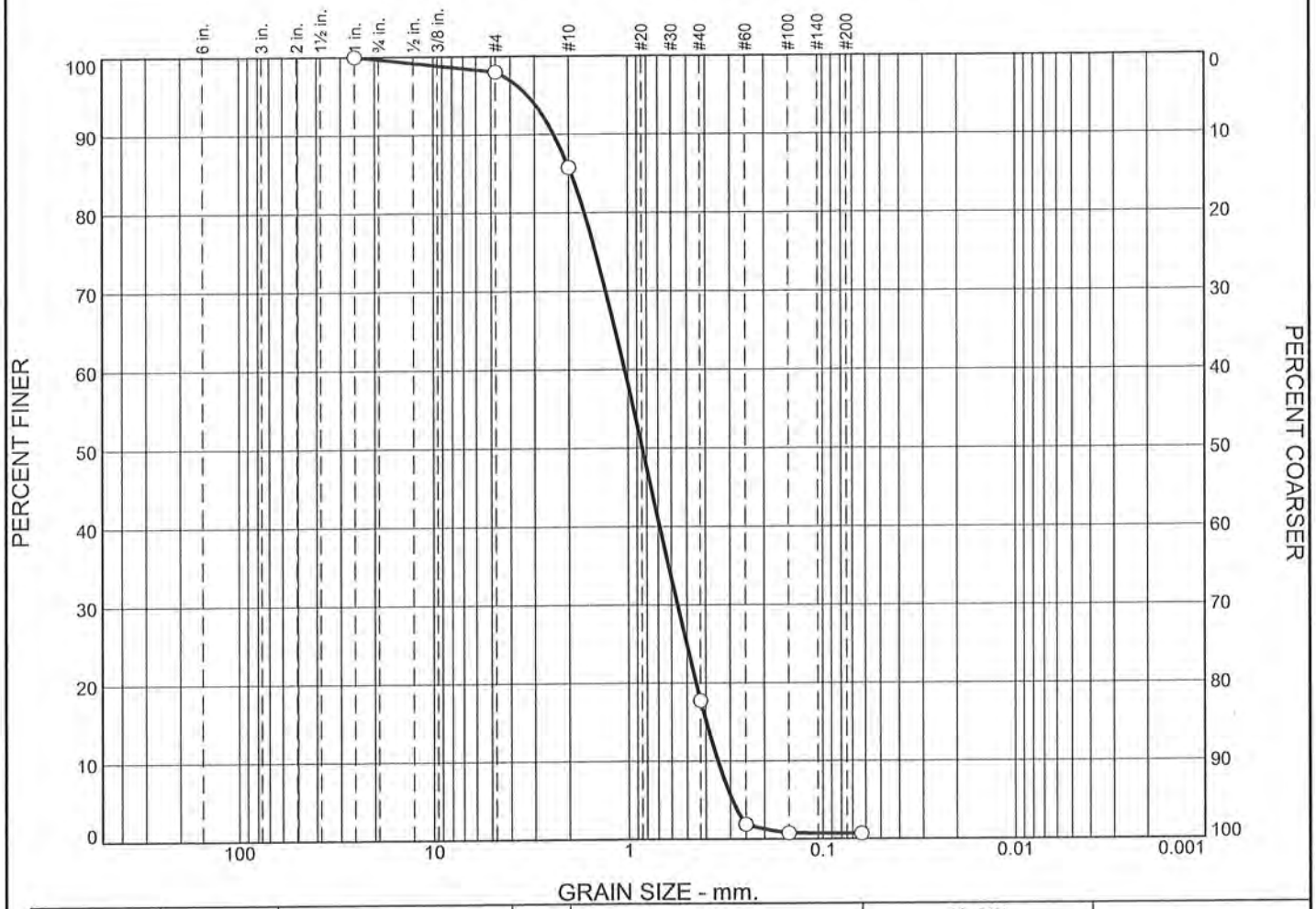
Boulders	Cobbles	Pebbles	Granules	Sand						Silt					Clay
				V. Crs.	Crs.	Med.	Fine	V. Fine	Total	Crs.	Med.	Fine	V. Fine	Total	
0.0	0.0	15.0	19.5	20.2	21.6	21.4	1.6								

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.2843	0.3369	0.3896	0.4491	0.6068	0.8374	1.1740	1.6558	3.2928	4.0006	5.6695	12.0002

Fineness Modulus	C_u	C_c
3.62	4.92	0.66

CH

Particle Size Distribution Report



	% Boulders	% +3"	% Pebbles	% Granules	% Sand V. Crs.	% Sand Crs.	% Sand Med.	% Sand Fine	% Sand V. Fine	% Silt Crs.	% Silt Med.	% Silt Fine	% Silt V. Fine	% Clay
○	0.0	0.0	3.1	11.2	27.5	33.4	22.9	1.2					0.7	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			1.9489	1.0378	0.8435	0.5595	0.3969	0.3465	0.87	2.99

Material Description	USCS	AASHTO
○ Sediment	SP	

Project No. 37-018 **Client:** Army Corps of Engineers

Project: Sandy Hook Channel

○ **Source of Sample:** SH-5 **Sample Number:** #20170038

Remarks:
○ #10- w/ some shell frag.
#40- w/ few shell frag.

Aqua Survey, Inc.

Flemington, NJ

Figure

CH

Tested By: M. Thomas **Checked By:** C. Hall

GRAIN SIZE DISTRIBUTION TEST DATA

3/15/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: SH-5
Sample Number: #20170038
Material Description: Sediment
USCS Classification: SP
Testing Remarks: #10- w/ some shell frag.
#40- w/ few shell frag.

Tested by: M. Thomas **Checked by:** C. Hall

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
275.91	175.91	1	0.00	0.00	100.0	0.0
		#4	499.13	497.14	98.0	2.0
		#10	567.84	555.57	85.7	14.3
		#40	404.81	336.83	17.8	82.2
		#60	362.12	346.22	1.9	98.1
		#100	330.84	329.74	0.8	99.2
		#230	299.51	299.41	0.7	99.3

Fractional Components

Boulders	Cobbles	Pebbles	Granules	Sand						Silt					Clay
				V. Crs.	Crs.	Med.	Fine	V. Fine	Total	Crs.	Med.	Fine	V. Fine	Total	
0.0	0.0	3.1	11.2	27.5	33.4	22.9	1.2								

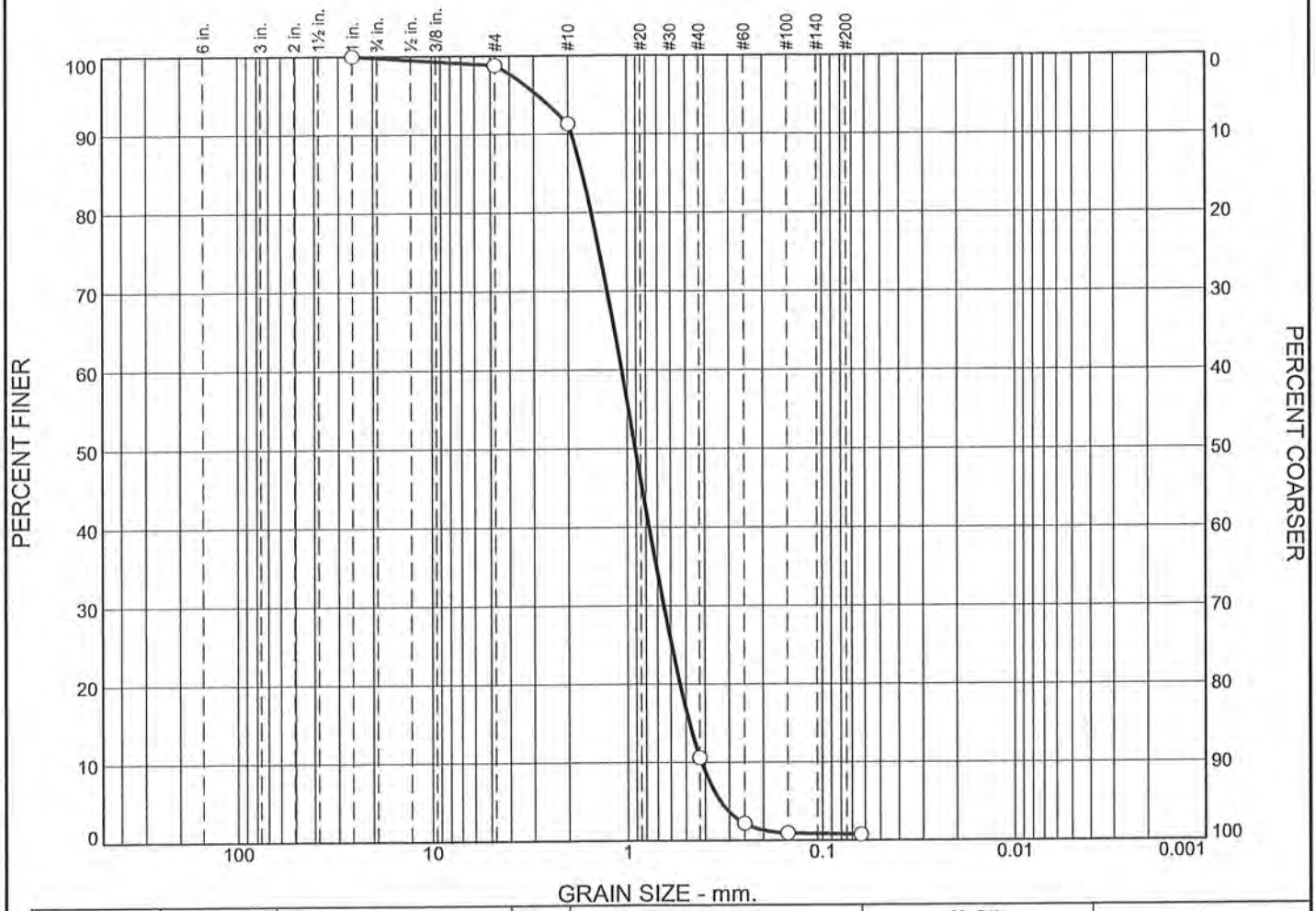
D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.2929	0.3465	0.3969	0.4482	0.5595	0.6884	0.8435	1.0378	1.6695	1.9489	2.3815	3.2634

Fineness Modulus	C_u	C_c
3.08	2.99	0.87

CH

Aqua Survey, Inc.

Particle Size Distribution Report



	% Boulders	% +3"	% Pebbles	% Granules	% Sand					% Silt				% Clay
					V. Crs.	Crs.	Med.	Fine	V. Fine	Crs.	Med.	Fine	V. Fine	
○	0.0	0.0	2.3	6.4	35.2	39.4	14.5	1.3					0.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			1.6907	1.0654	0.9070	0.6509	0.4799	0.4168	0.95	2.56

Material Description	USCS	AASHTO
○ Sediment	SP	

Project No. 37-018 **Client:** Army Corps of Engineers

Project: Sandy Hook Channel

○ **Source of Sample:** SH-6 **Sample Number:** #20170039

Remarks:
○ #10- w/ some shell frag
#40- w/ some shell frag

Aqua Survey, Inc.

Flemington, NJ

Figure

Tested By: M. Thomas **Checked By:** C. Hall

GRAIN SIZE DISTRIBUTION TEST DATA

3/11/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: SH-6
Sample Number: #20170039
Material Description: Sediment
USCS Classification: SP
Testing Remarks: #10- w/ some shell frag
#40- w/ some shell frag

Tested by: M. Thomas **Checked by:** C. Hall

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
246.73	146.73	1	0.00	0.00	100.0	0.0
		#4	498.31	497.12	98.8	1.2
		#10	563.08	555.57	91.3	8.7
		#40	417.54	336.84	10.6	89.4
		#60	354.65	346.22	2.2	97.8
		#100	330.97	329.73	0.9	99.1
		#230	299.57	299.40	0.8	99.2

Fractional Components

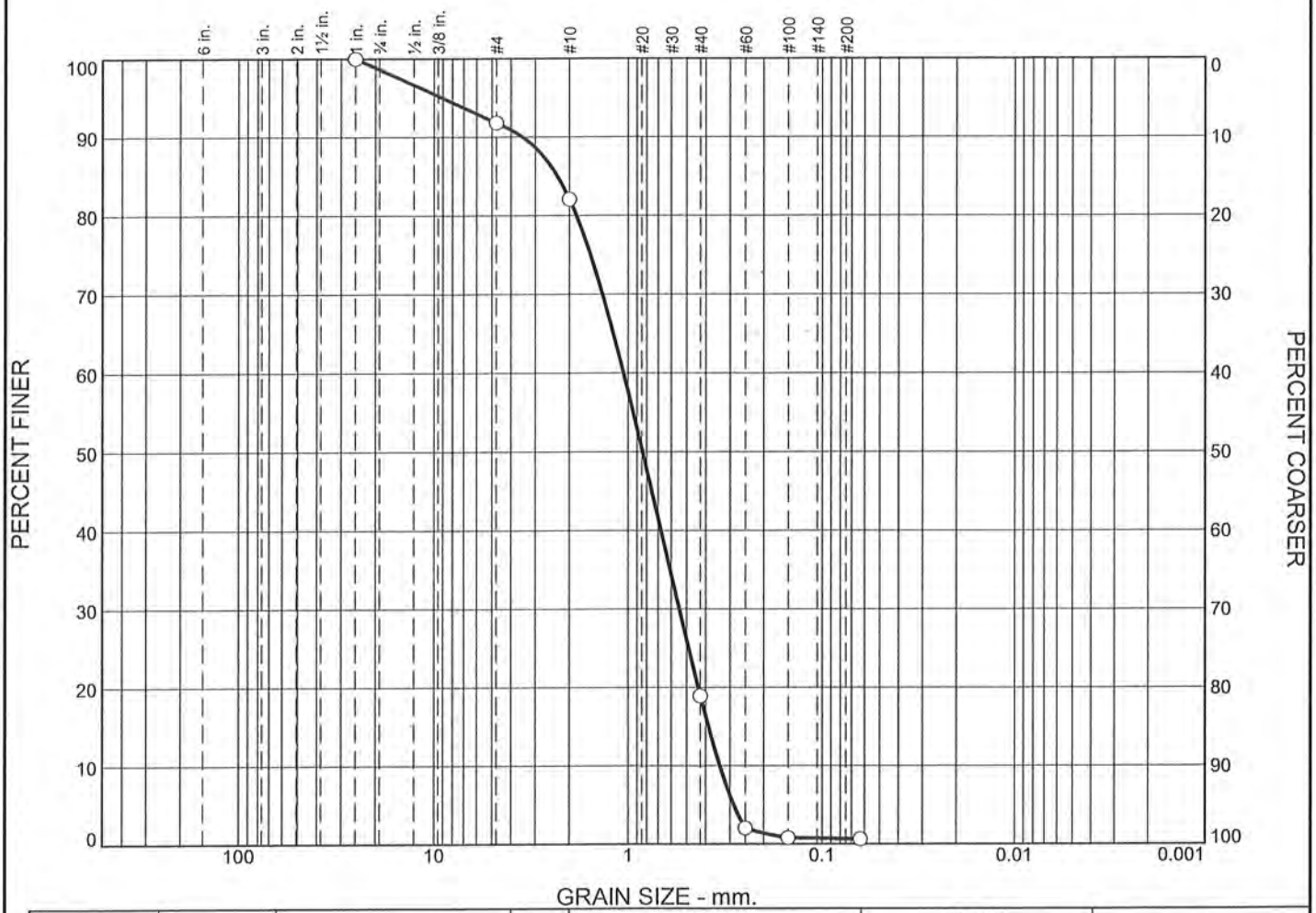
Boulders	Cobbles	Pebbles	Granules	Sand						Silt					Clay
				V. Crs.	Crs.	Med.	Fine	V. Fine	Total	Crs.	Med.	Fine	V. Fine	Total	
0.0	0.0	2.3	6.4	35.2	39.4	14.5	1.3								

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.3334	0.4168	0.4799	0.5375	0.6509	0.7716	0.9070	1.0654	1.5182	1.6907	1.9223	2.8680

Fineness Modulus	C_u	C_c
3.13	2.56	0.95

Aqua Survey, Inc.

Particle Size Distribution Report



	% Boulders	% +3"	% Pebbles	% Granules	% Sand					% Silt				% Clay
					V. Crs.	Crs.	Med.	Fine	V. Fine	Crs.	Med.	Fine	V. Fine	
○	0.0	0.0	9.1	8.8	24.4	31.7	24.0	1.2					0.8	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			2.3042	1.0545	0.8417	0.5463	0.3867	0.3386	0.84	3.11

Material Description	USCS	AASHTO
○ Sediment	SP	

Project No. 37-018 **Client:** Army Corps of Engineers

Project: Sandy Hook Channel

○ **Source of Sample:** SH-7 **Sample Number:** #20170040

Remarks:

Aqua Survey, Inc.

Flemington, NJ

Figure

Tested By: M. Thomas **Checked By:** C. Hall

GRAIN SIZE DISTRIBUTION TEST DATA

3/11/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: SH-7
Sample Number: #20170040
Material Description: Sediment
USCS Classification: SP
Tested by: M. Thomas **Checked by:** C. Hall

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
233.61	133.61	1	0.00	0.00	100.0	0.0
		#4	505.33	497.12	91.8	8.2
		#10	565.28	555.56	82.1	17.9
		#40	400.00	336.83	18.9	81.1
		#60	363.08	346.22	2.0	98.0
		#100	330.95	329.71	0.8	99.2
		#230	299.56	299.40	0.6	99.4

Fractional Components

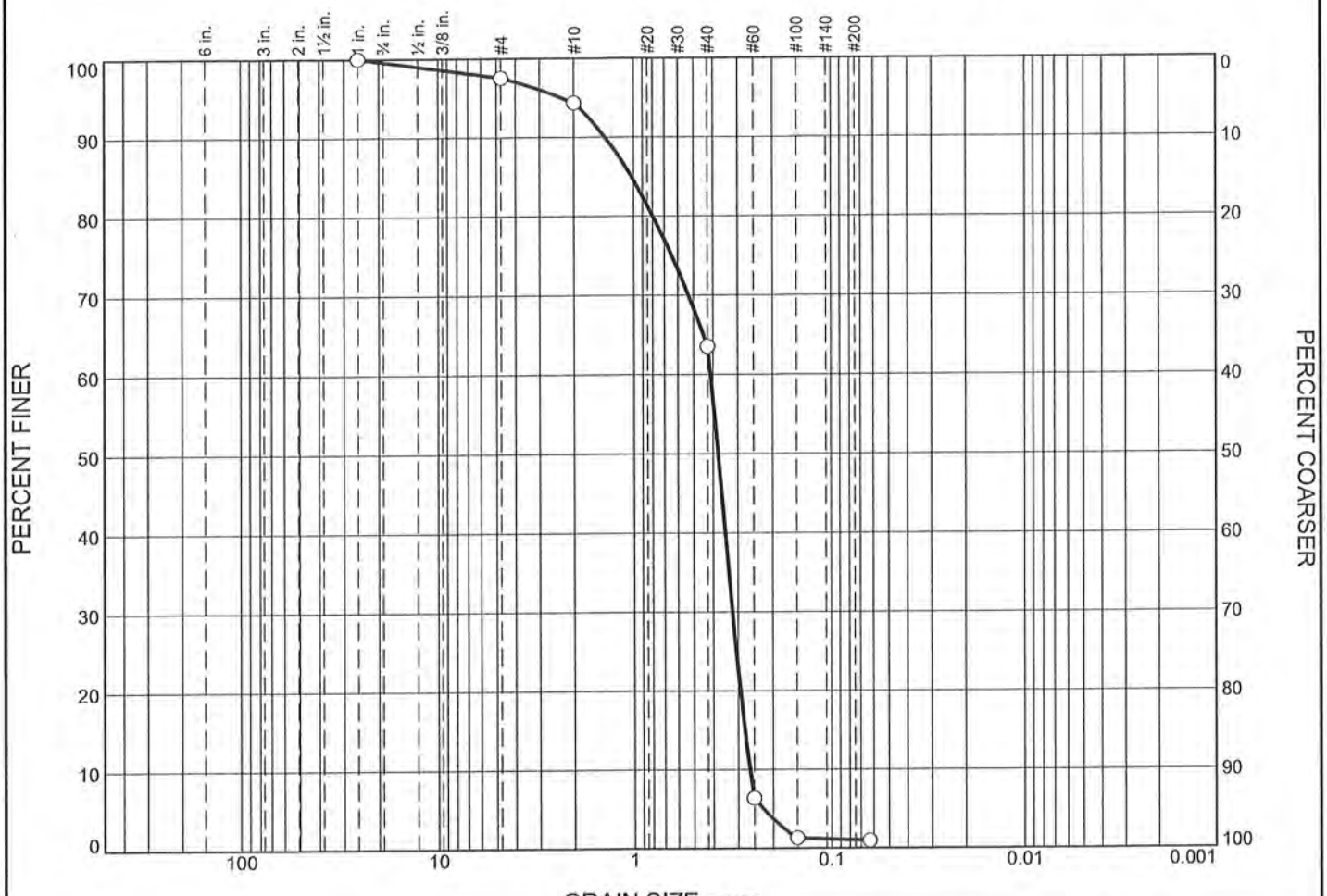
Boulders	Cobbles	Pebbles	Granules	Sand						Silt					Clay
				V. Crs.	Crs.	Med.	Fine	V. Fine	Total	Crs.	Med.	Fine	V. Fine	Total	
0.0	0.0	9.1	8.8	24.4	31.7	24.0	1.2								

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.2879	0.3386	0.3867	0.4361	0.5463	0.6781	0.8417	1.0545	1.8426	2.3042	3.4952	9.0691

Fineness Modulus	C_u	C_c
3.23	3.11	0.84

CH

Particle Size Distribution Report



	% Boulders	% +3"	% Pebbles	% Granules	% Sand					% Silt				% Clay
					V. Crs.	Crs.	Med.	Fine	V. Fine	Crs.	Med.	Fine	V. Fine	
○	0.0	0.0	3.0	2.6	9.9	16.2	61.9	5.2					1.2	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			1.0246	0.4112	0.3772	0.3198	0.2782	0.2628	0.95	1.56

Material Description	USCS	AASHTO
○ Sediment	SP	

Project No. 37-018 **Client:** Army Corps of Engineers

Project: Sandy Hook Channel

○ **Source of Sample:** SH-8 **Sample Number:** #20170041

Remarks:
○ #10- w/ few shell frag

Aqua Survey, Inc.

Flemington, NJ

Figure

Tested By: M. Thomas **Checked By:** C. Hall

GRAIN SIZE DISTRIBUTION TEST DATA

3/11/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: SH-8
Sample Number: #20170041
Material Description: Sediment
USCS Classification: SP
Testing Remarks: #10- w/ few shell frag
Tested by: M. Thomas **Checked by:** C. Hall

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
260.80	160.80	1	0.00	0.00	100.0	0.0
		#4	499.55	497.12	97.6	2.4
		#10	558.77	555.56	94.4	5.6
		#40	367.64	336.83	63.5	36.5
		#60	403.37	346.22	6.4	93.6
		#100	334.79	329.71	1.3	98.7
		#230	299.75	299.39	1.0	99.0

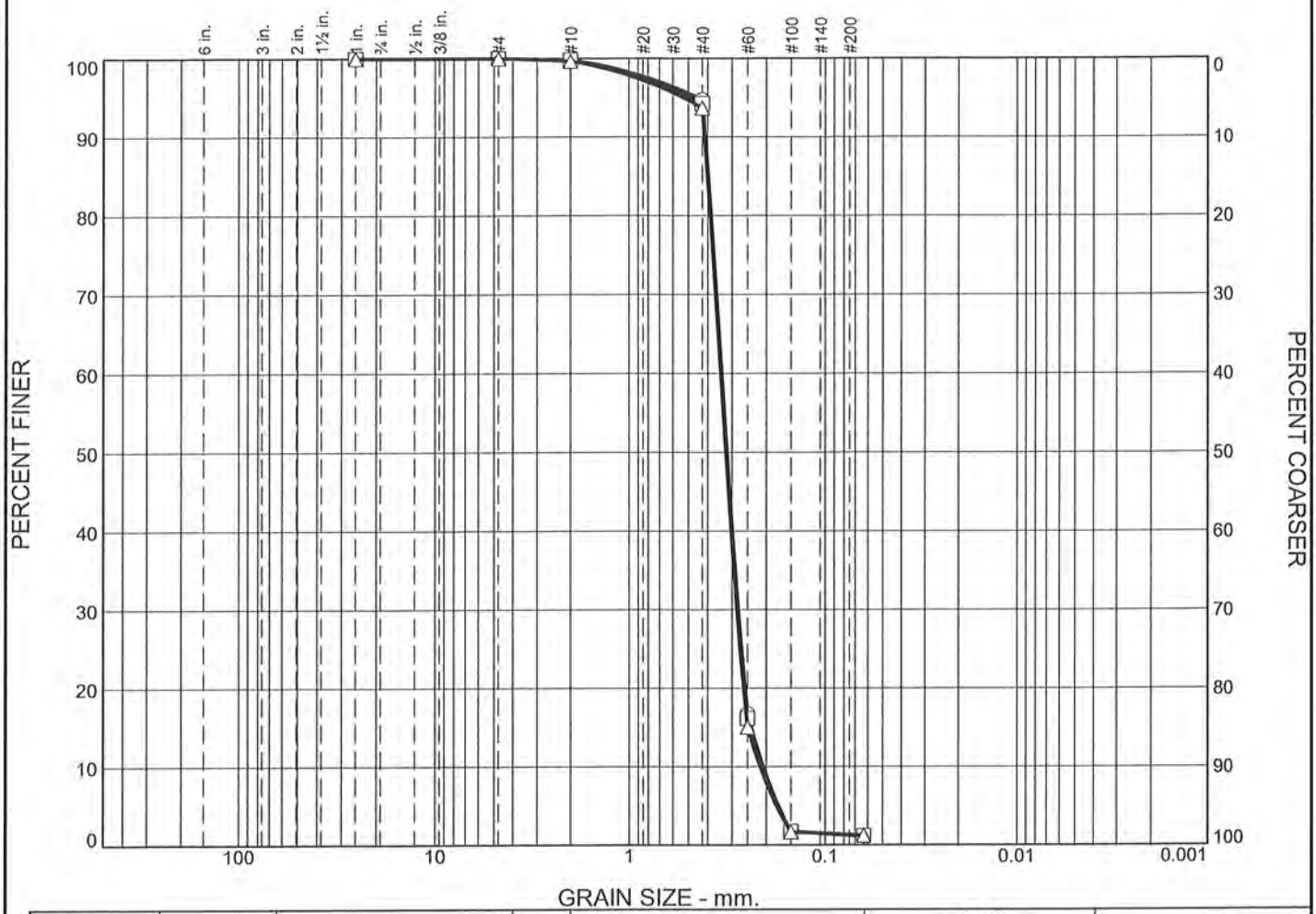
Fractional Components

Boulders	Cobbles	Pebbles	Granules	Sand						Silt					Clay
				V. Crs.	Crs.	Med.	Fine	V. Fine	Total	Crs.	Med.	Fine	V. Fine	Total	
0.0	0.0	3.0	2.6	9.9	16.2	61.9	5.2								

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.2239	0.2628	0.2782	0.2925	0.3198	0.3475	0.3772	0.4112	0.7993	1.0246	1.3888	2.3170

Fineness Modulus	C_u	C_c
2.24	1.56	0.95

Particle Size Distribution Report



	% Boulders	% +3"	% Pebbles	% Granules	% Sand V. Crs.	Crs.	Med.	Fine	V. Fine	% Silt Crs.	Med.	Fine	V. Fine	% Clay
○	0.0	0.0	0.0	0.2	1.5	2.8	78.7	15.2					1.6	
□	0.0	0.0	0.0	0.2	1.7	3.0	78.9	14.6					1.6	
△	0.0	0.0	0.1	0.3	1.8	3.2	79.5	13.5					1.6	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.3966	0.3389	0.3188	0.2792	0.2389	0.2073	1.11	1.63
□			0.3980	0.3402	0.3200	0.2806	0.2425	0.2096	1.10	1.62
△			0.3998	0.3421	0.3220	0.2828	0.2497	0.2144	1.09	1.60

Material Description	USCS	AASHTO
○ Sediment	SP	
□ Sediment	SP	
△ Sediment	SP	

Project No. 37-018 **Client:** Army Corps of Engineers

Project: Sandy Hook Channel

○ **Source of Sample:** SH-9 **Sample Number:** #20170042

□ **Source of Sample:** SH-9 **Sample Number:** #20170042 dup

△ **Source of Sample:** SH-9 **Sample Number:** #20170042 trp

Remarks:

○#10- w/ few shell frag

□#10- w/ few shell frag

Aqua Survey, Inc.

Flemington, NJ

Figure

Tested By: M. Thomas **Checked By:** C. Hall

CH

GRAIN SIZE DISTRIBUTION TEST DATA

3/11/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: SH-9
Sample Number: #20170042
Material Description: Sediment
USCS Classification: SP
Testing Remarks: #10- w/ few shell frag
Tested by: M. Thomas **Checked by:** C. Hall

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
245.90	145.90	1	0.00	0.00	100.0	0.0
		#4	497.11	497.11	100.0	0.0
		#10	555.79	555.56	99.8	0.2
		#40	341.86	336.83	94.7	5.3
		#60	424.18	346.22	16.8	83.2
		#100	344.78	329.72	1.7	98.3
		#230	300.03	299.39	1.1	98.9

Fractional Components

Boulders	Cobbles	Pebbles	Granules	Sand						Silt					Clay
				V. Crs.	Crs.	Med.	Fine	V. Fine	Total	Crs.	Med.	Fine	V. Fine	Total	
0.0	0.0	0.0	0.2	1.5	2.8	78.7	15.2								

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1742	0.2073	0.2389	0.2578	0.2792	0.2991	0.3188	0.3389	0.3837	0.3966	0.4105	0.4472

Fineness Modulus	C_u	C_c
1.63	1.63	1.11

CH

GRAIN SIZE DISTRIBUTION TEST DATA

3/15/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: SH-9
Sample Number: #20170042 dup
Material Description: Sediment
USCS Classification: SP
Testing Remarks: #10- w/ few shell frag
Tested by: M. Thomas **Checked by:** C. Hall

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
235.50	135.50	1	0.00	0.00	100.0	0.0
		#4	497.11	497.11	100.0	0.0
		#10	555.76	555.56	99.8	0.2
		#40	342.38	336.83	94.2	5.8
		#60	424.31	346.23	16.2	83.8
		#100	344.12	329.71	1.8	98.2
		#230	299.98	299.39	1.2	98.8

Fractional Components

Boulders	Cobbles	Pebbles	Granules	Sand						Silt					Clay
				V. Crs.	Crs.	Med.	Fine	V. Fine	Total	Crs.	Med.	Fine	V. Fine	Total	
0.0	0.0	0.0	0.2	1.7	3.0	78.9	14.6								

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1749	0.2095	0.2424	0.2592	0.2806	0.3004	0.3200	0.3402	0.3851	0.3980	0.4120	0.4865

Fineness Modulus	C_u	C_c
1.64	1.62	1.10

CH

Aqua Survey, Inc.

GRAIN SIZE DISTRIBUTION TEST DATA

3/11/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: SH-9
Sample Number: #20170042 trp
Material Description: Sediment
USCS Classification: SP
Tested by: M. Thomas **Checked by:** C. Hall

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
275.74	175.74	1	0.00	0.00	100.0	0.0
		#4	497.11	497.11	100.0	0.0
		#10	555.92	555.56	99.6	0.4
		#40	342.77	336.81	93.7	6.3
		#60	424.89	346.26	15.1	84.9
		#100	343.08	329.70	1.7	98.3
		#230	299.82	299.39	1.2	98.8

Fractional Components

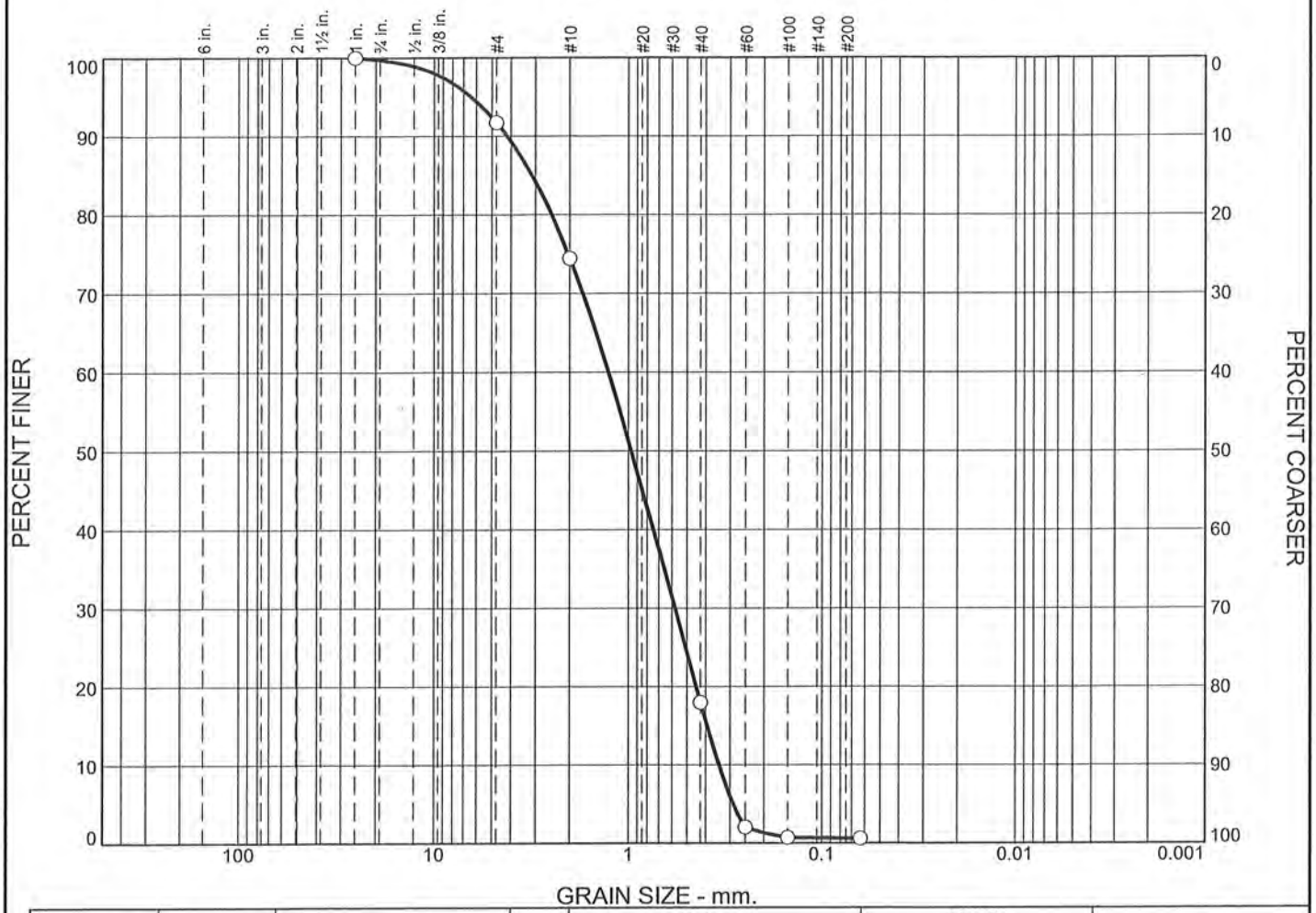
Boulders	Cobbles	Pebbles	Granules	Sand						Silt					Clay
				V. Crs.	Crs.	Med.	Fine	V. Fine	Total	Crs.	Med.	Fine	V. Fine	Total	
0.0	0.0	0.1	0.3	1.8	3.2	79.5	13.5								

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1775	0.2144	0.2497	0.2618	0.2828	0.3025	0.3220	0.3421	0.3869	0.3998	0.4138	0.5353

Fineness Modulus	C_u	C_c
1.66	1.60	1.09

CH

Particle Size Distribution Report



	% Boulders	% +3"	% Pebbles	% Granules	% Sand					% Silt				% Clay
					V. Crs.	Crs.	Med.	Fine	V. Fine	Crs.	Med.	Fine	V. Fine	
○	0.0	0.0	10.7	14.8	23.2	27.0	22.3	1.3					0.7	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			3.1287	1.2695	0.9661	0.5787	0.3930	0.3416	0.77	3.72

Material Description	USCS	AASHTO
○ Composite Sediment	SP	

Project No. 37-018 **Client:** Army Corps of Engineers

Project: Sandy Hook Channel

○ **Source of Sample:** Composite B **Sample Number:** #20170044

Remarks:

○ #10- w/ few shell pieces

Aqua Survey, Inc.

Flemington, NJ

Figure

Tested By: M. Thomas **Checked By:** C. Hall

GRAIN SIZE DISTRIBUTION TEST DATA

3/11/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: Composite B
Sample Number: #20170044
Material Description: Composite Sediment
USCS Classification: SP
Testing Remarks: #10- w/ few shell pieces
Tested by: M. Thomas **Checked by:** C. Hall

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
362.77	162.77	1	0.00	0.00	100.0	0.0
		#4	513.62	497.11	91.7	8.3
		#10	590.18	555.59	74.5	25.5
		#40	449.80	336.82	18.0	82.0
		#60	378.15	346.26	2.0	98.0
		#100	332.37	329.73	0.7	99.3
		#230	299.62	299.40	0.6	99.4

Fractional Components

Boulders	Cobbles	Pebbles	Granules	Sand						Silt					Clay
				V. Crs.	Crs.	Med.	Fine	V. Fine	Total	Crs.	Med.	Fine	V. Fine	Total	
0.0	0.0	10.7	14.8	23.2	27.0	22.3	1.3								

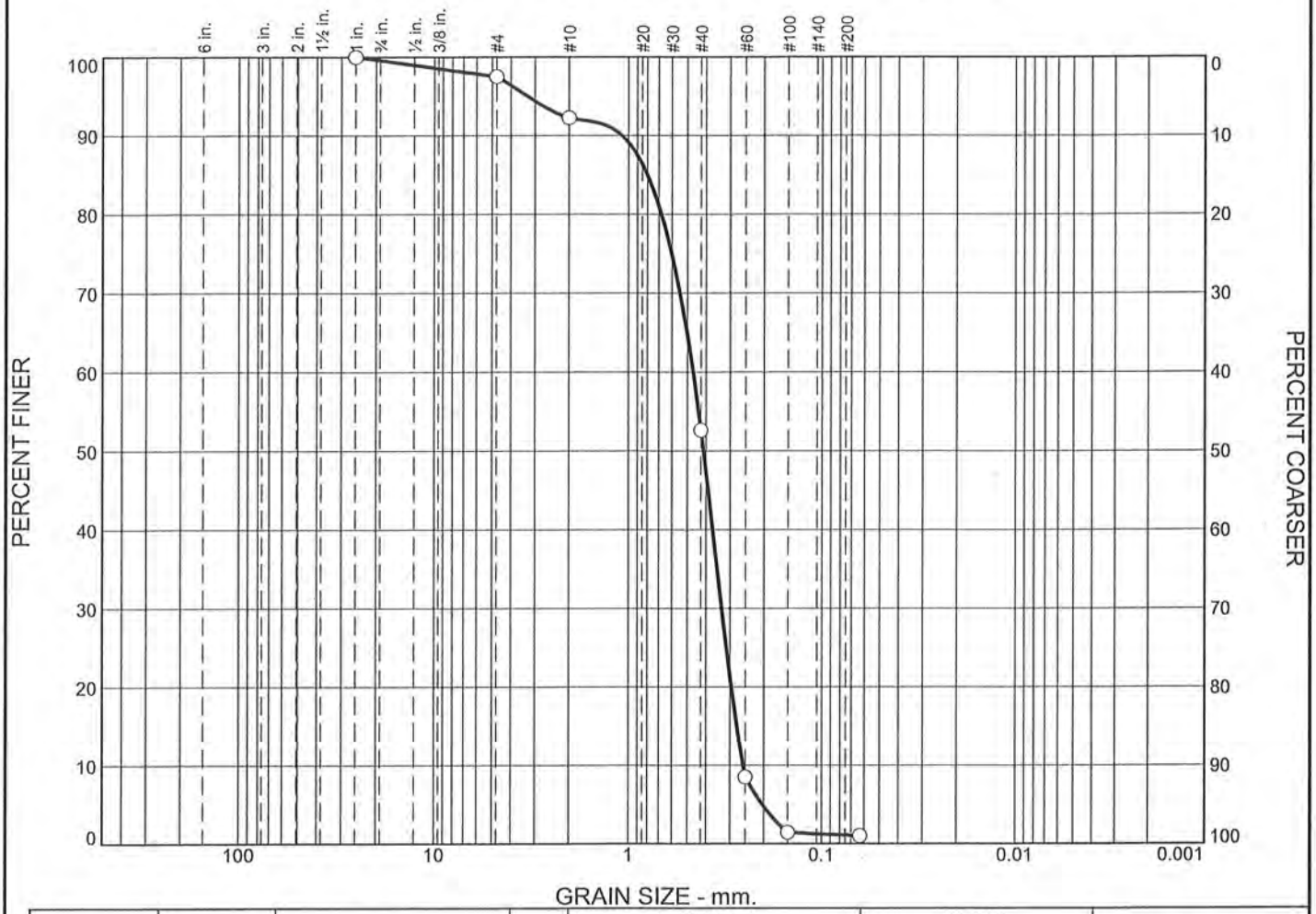
D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.2889	0.3416	0.3930	0.4482	0.5787	0.7458	0.9661	1.2695	2.4815	3.1287	4.1890	6.3940

Fineness Modulus	C_u	C_c
3.36	3.72	0.77

CH

Aqua Survey, Inc.

Particle Size Distribution Report



	% Boulders	% +3"	% Pebbles	% Granules	% Sand					% Silt				% Clay
					V. Crs.	Crs.	Med.	Fine	V. Fine	Crs.	Med.	Fine	V. Fine	
○	0.0	0.0	3.6	4.1	3.1	24.6	56.1	7.2					1.3	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.8009	0.4675	0.4120	0.3312	0.2771	0.2569	0.91	1.82

Material Description	USCS	AASHTO
○ Composite Sediment	SP	

Project No. 37-018 **Client:** Army Corps of Engineers

Project: Sandy Hook Channel

○ **Source of Sample:** Composite C **Sample Number:** #20170045

Remarks:

Aqua Survey, Inc.

Flemington, NJ

Figure

Tested By: M. Thomas **Checked By:** C. Hall

Ctt

GRAIN SIZE DISTRIBUTION TEST DATA

3/11/2017

Client: Army Corps of Engineers
Project: Sandy Hook Channel
Project Number: 37-018
Location: Composite C
Sample Number: #20170045
Material Description: Composite Sediment
USCS Classification: SP
Tested by: M. Thomas **Checked by:** C. Hall

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
276.04	176.04	1	0.00	0.00	100.0	0.0
		#4	499.60	497.10	97.5	2.5
		#10	560.82	555.58	92.3	7.7
		#40	376.45	336.82	52.6	47.4
		#60	390.40	346.26	8.5	91.5
		#100	336.81	329.73	1.4	98.6
		#230	299.79	299.40	1.0	99.0

Fractional Components

Boulders	Cobbles	Pebbles	Granules	Sand						Silt					Clay
				V. Crs.	Crs.	Med.	Fine	V. Fine	Total	Crs.	Med.	Fine	V. Fine	Total	
0.0	0.0	3.6	4.1	3.1	24.6	56.1	7.2								

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.2031	0.2569	0.2771	0.2955	0.3312	0.3688	0.4120	0.4675	0.6804	0.8009	1.0765	3.2904

Fineness Modulus	C_u	C_c
2.23	1.82	0.91

CH

AQUA SURVEY, INC

GRAIN SIZE BENCHSHEET
PRE-HYDROMETER SEPARATION SIEVING

Job #: 37-014

Client: ACOE- Sandy Hook

Balance: My Weigh i601

Calibration: YES ✓ NO ____

Sample ID	Container Mass (g)	Sample Mass and Container (g)	Sample Mass (g)	Sample Mass Retained on #4 Sieve (4.75mm) and Container (g)	Sample Mass Retained on #10 Sieve (2.0mm) and Container (g)	Sample Mass to Hydrometer (g)
20170034	11.65	73.18	61.53	11.65	11.65	50.00
20170035	11.67	71.96	60.29	11.67	11.67	50.00
20170036	11.70	95.06	53.36	11.70	11.70	50.00
20170043	11.86	52.20	40.34	11.86	11.86	39.00
20170043dup	11.75	50.95	39.20	11.75	11.75	39.00
20170043trp	11.55	52.05	40.50	11.55	11.55	39.00
Date/ Initials	3/5/17					

HYDROMETRIC READINGS FOR GRAIN SIZE ANALYSIS

Job #: 37-014

Client: ACOE- Sandy Hook

Sample: 20170034 Grams Used: 50.00 DC: 5.0

Clock Time	M	R_h	Initials/Date	T(°C)
10:12	0	XXXX	3/6/17	24.0
10:14	2	29.0		
10:17	5	26.0		
10:27	15	23.0		
10:42	30	20.0		
11:12	60	18.0		
2:22	250	14.0		25.0
10:12	1440	10.0	3/7/17	26.0

Sample: 20170043 Grams Used: 39.00 DC: 5.0

Clock Time	T	R_h	Initials/Date	T(°C)
10:24	0	XXXX	3/6/17	24.0
10:26	2	24.0		
10:29	5	22.0		
10:39	15	19.0		
10:54	30	17.0		
11:24	60	15.0		
2:34	250	12.0		25.0
10:24	1440	9.0	3/7/17	26.0

Sample: 20170035 Grams Used: 50.00 DC: 5.0

Clock Time	M	R_h	Initials/Date	T(°C)
10:16	0	XXXX	3/6/17	24.0
10:18	2	27.0		
10:21	5	25.0		
10:31	15	21.0		
10:46	30	19.0		
11:16	60	17.0		
2:26	250	13.0		25.0
10:16	1440	10.0	3/7/17	26.0

Sample: 20170043dup Grams Used: 39.00 DC: 5.0

Clock Time	T	R_h	Initials/Date	T(°C)
10:28	0	XXXX	3/6/17	24.0
10:30	2	24.0		
10:33	5	23.0		
10:43	15	20.0		
10:58	30	18.0		
11:28	60	16.0		
2:38	250	13.0		25.0
10:28	1440	9.0	3/7/17	26.0

Sample: 20170036 Grams Used: 50.00 DC: 5.0

Clock Time	M	R_h	Initials/Date	T(°C)
10:20	0	XXXX	3/6/17	24.0
10:22	2	29.0		
10:25	5	26.0		
10:35	15	23.0		
10:50	30	21.0		
11:20	60	19.0		
2:30	250	14.0		25.0
10:20	1440	10.0	3/7/17	26.0

Sample: 20170043trp Grams Used: ~~40.00~~ 39.00 DC: 5.0

Clock Time	T	R_h	Initials/Date	T(°C)
10:32	0	XXXX	3/6/17	24.0
10:34	2	25.0		
10:37	5	22.0		
10:47	15	20.0		
11:02	30	18.0		
11:32	60	16.0		
2:42	250	14.0		25.0
10:32	1440	9.0	3/7/17	26.0

DC= Dispersant Constant M= Time in minutes after initial mixing R_h= Hydrometer Reading T=Water Temp (°C)

AQUA SURVEY, INC

GRAIN SIZE BENCHSHEET
SANDS RECOVERED FROM HYDROMETER

Job #: 37-018
Client: ACOE Sandy Hook
Balance: AND GF-8K2 Calibration: Yes: √ No: ____

Oven: ____ Date In: 3/7/17 Oven Temp: 110 °C
Date Out: 3/8/17 Oven Temp: 110 °C

Sample ID	Container Mass (g)	Sample Mass and Container (g)	Sample Mass Retained on #230 Sieve (g)
20170034	168.08	175.10	7.02
20170035	164.97	173.68	8.71
20170036	135.26	142.58	7.32
20170043	167.86	174.14	6.28
20170043 dup	160.28	166.63	6.35
20170043 trp	177.97	184.29	6.32
Date/ Initials	3/7/17	3/8/17	→

Aqua Survey, Inc.
Special Studies Department
Grain Size

Job #: 37-018 **Client:** ACOE-Sandy Hook

Sample #: 20170037 SH-4

For % Moisture:

Wet Sample + Container: _____ (g)
Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

☑ Mortared Sample + Container: 334.98 (g)
Container Tare:- 134.98 (g)
Mortared Sample: 200.00 (g)
Initials/ Date: 3/7/17

☑ Sample soaked and washed 3/7/17
☑ Sample back to oven 3/7/17
☑ Sample re-mortared (after weighing below; prior to being put thru sieve nest) 3/8/17

#200 Sieve (Retained)

Dry Material + Container: _____ (g)
Container Tare:- _____ (g)
Dry Material: _____ (g)
Initials/ Date: _____

#230 Sieve (Retained)

Dry Material + Container: 333.85 (g)
Container Tare:- 134.98 (g)
Dry Material: 198.87 (g)
Initials/ Date: 3/8/17

SAND RANGE GRAIN SIZE

ASI Job #: 37-018

Client: ACOE- Sandy Hook

Sample ID : #20170037 SH-4

Wet Sample + Container _____ g

Dry Sample + Container _____ g

Initials/ Date: 3/8/17

Container Tare _____ g

#4 sieve (gravel)

Dry sand 519.55 g

Container tare 497.19 g

Dry sand _____ g

#10 sieve (Coarse sand)

Dry sand 602.17 g w/few pieces of shell

Container tare 555.61 g

Dry sand _____ g

40 sieve (sand)

Dry sand 431.75 g w/few pieces of shell

Container tare 336.82 g

Dry sand _____ g

#60 sieve (sand)

Dry sand 377.77 g

Container tare 346.23 g

Dry sand _____ g

100 sieve (fine sand)

Dry sand 332.92 g

Container tare 329.76 g

Dry sand _____ g

230 sieve (fine sand)

Dry sand 299.65 g

Container tare 299.40 g

Dry sand _____ g

Fines (passing #200 / #230 sieve)

Dry sand 488.88 g

Container tare 488.86 g

Dry sand _____ g

Aqua Survey, Inc.
Special Studies Department
Grain Size

Job #: 37-018

Client: ACOE-Sandy Hook

Sample #: 1710038 SH-5

For % Moisture:

Wet Sample + Container: _____ (g)
Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

- Mortared Sample + Container: 275.91 (g)
  Container Tare:- 175.91 (g)
  Mortared Sample: 100.00 (g)
  Initials/ Date: 7/3/17
- Sample soaked and washed 7/3/17
- Sample back to oven 7/3/17
- Sample re-mortared (after weighing below; prior to being put thru sieve nest) 7/3/17

#200 Sieve (Retained)

Dry Material + Container: _____ (g)
Container Tare:- _____ (g)
Dry Material: _____ (g)
Initials/ Date: _____

#230 Sieve (Retained)

Dry Material + Container: 275.23 (g)
Container Tare:- 175.91 (g)
Dry Material: 99.32 (g)
Initials/ Date: 7/3/17

SAND RANGE GRAIN SIZE

ASI Job #: 37-018

Client: ACOE- Sandy Hook

Sample ID : #20170038 SH-5

Wet Sample + Container _____ g

Dry Sample + Container _____ g

Initials/ Date: N 3/8/17

Container Tare _____ g

#4 sieve (gravel)

Dry sand	499.13	g
Container tare	497.14	g
Dry sand		g

#10 sieve (Coarse sand)

Dry sand	567.84	g
Container tare	555.57	g w/few pieces of shell
Dry sand		g

40 sieve (sand)

Dry sand	404.81	g
Container tare	336.83	g w/few pieces of shell
Dry sand		g

#60 sieve (sand)

Dry sand	342.12	g
Container tare	346.22	g
Dry sand		g

100 sieve (fine sand)

Dry sand	330.84	g
Container tare	329.74	g
Dry sand		g

230 sieve (fine sand)

Dry sand	299.51	g
Container tare	299.41	g
Dry sand		g

Fines (passing #200 / #230 sieve)

Dry sand	488.86	g
Container tare	488.86	g
Dry sand		g

Aqua Survey, Inc.
Special Studies Department
Grain Size

Job #: 37-018 **Client:** ACOE-Sandy Hook

Sample #: #20170039-SH-6

For % Moisture:

Wet Sample + Container: _____ (g)
Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

☑ Mortared Sample + Container: 246.73 (g)
Container Tare:- 146.73 (g)
Mortared Sample: 100.00 (g)
Initials/ Date: 3/7/17

☑ Sample soaked and washed 3/7/17
☑ Sample back to oven 3/7/17
☐ Sample re-mortared (after weighing below; prior to being put thru sieve nest) 3/8/17

#200 Sieve (Retained)

Dry Material + Container: _____ (g)
Container Tare:- _____ (g)
Dry Material: _____ (g)
Initials/ Date: _____

#230 Sieve (Retained)

Dry Material + Container: 245.99 (g)
Container Tare:- 146.73 (g)
Dry Material: 99.26 (g)
Initials/ Date: 3/8/17

SAND RANGE GRAIN SIZE

ASI Job #: 37-018

Client: ACOE- Sandy Hook

Sample ID : #20170039 SH-6

Wet Sample + Container _____ g

Dry Sample + Container _____ g

Initials/ Date: N 3/8/17

Container Tare _____ g

#4 sieve (gravel)

Dry sand	498.31 g	
Container tare	497.12 g	
Dry sand	_____ g	

#10 sieve (Coarse sand)

Dry sand	563.08 g	
Container tare	555.1/557 g	w/some shell frag
Dry sand	_____ g	

40 sieve (sand)

Dry sand	417.54 g	
Container tare	336.84 g	w/few shell frag
Dry sand	_____ g	

#60 sieve (sand)

Dry sand	354.65 g
Container tare	346.82 g
Dry sand	_____ g

100 sieve (fine sand)

Dry sand	330.97 g
Container tare	329.73 g
Dry sand	_____ g

230 sieve (fine sand)

Dry sand	299.587 g
Container tare	299.40 g
Dry sand	_____ g

Fines (passing #200 / #230 sieve)

Dry sand	488.87 g
Container tare	488.86 g
Dry sand	_____ g

Aqua Survey, Inc.
Special Studies Department
Grain Size

Job #: 37-018 **Client:** ACOE-Sandy Hook

Sample #: #20170040-SH-7

For % Moisture:

Wet Sample + Container: _____ (g)
Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

- Mortared Sample + Container: 233.61 (g)
  Container Tare:- 133.61 (g)
  Mortared Sample: 100.00 (g)
  Initials/ Date: N 3/7/17
- Sample soaked and washed N 3/7/17
- Sample back to oven N 3/7/17
- Sample re-mortared (after weighing below; prior to being put thru sieve nest) N 3/8/17

#200 Sieve (Retained)

Dry Material + Container: _____ (g)
Container Tare:- _____ (g)
Dry Material: _____ (g)
Initials/ Date: _____

#230 Sieve (Retained)

Dry Material + Container: 232.96 (g)
Container Tare:- 133.61 (g)
Dry Material: 99.35 (g)
Initials/ Date: N 3/8/17

SAND RANGE GRAIN SIZE

ASI Job #: 37-018

Client: ACOE- Sandy Hook

Sample ID : #20170040 - SH-7

Wet Sample + Container _____ g

Dry Sample + Container _____ g

Initials/ Date: N 3/8/17

Container Tare _____ g

#4 sieve (gravel)

Dry sand	505.33 g
Container tare	497.12 g
Dry sand	_____ g

#10 sieve (Coarse sand)

Dry sand	565.28 g
Container tare	555.56 g
Dry sand	_____ g

40 sieve (sand)

Dry sand	400.00 g
Container tare	336.83 g
Dry sand	_____ g

#60 sieve (sand)

Dry sand	363.08 g
Container tare	346.22 g
Dry sand	_____ g

100 sieve (fine sand)

Dry sand	330.95 g
Container tare	309.71 g
Dry sand	_____ g

230 sieve (fine sand)

Dry sand	299.56 ~~304.71~~ g
Container tare	299.40 g
Dry sand	_____ g

Fines (passing #200 / #230 sieve)

Dry sand	488.86 g
Container tare	488.86 g
Dry sand	_____ g

Aqua Survey, Inc.
Special Studies Department
Grain Size

Job #: 37-018 **Client:** ACOE-Sandy Hook

Sample #: #20170041-SH-8

For % Moisture:

Wet Sample + Container: _____ (g)
Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

☑ Mortared Sample + Container: 260.80 (g)
Container Tare:- 160.80 (g)
Mortared Sample: 100.00 (g)
Initials/ Date: JS 3/7/17

☑ Sample soaked and washed
☑ Sample back to oven
☑ Sample re-mortared (after weighing below; prior to being put thru sieve nest) JS 3/8/17

#200 Sieve (Retained)

Dry Material + Container: _____ (g)
Container Tare:- _____ (g)
Dry Material: _____ (g)
Initials/ Date: _____

#230 Sieve (Retained)

Dry Material + Container: 259.83 (g)
Container Tare:- 160.80 (g)
Dry Material: 99.03 (g)
Initials/ Date: JS 3/8/17

SAND RANGE GRAIN SIZE

ASI Job #: 37-018

Client: ACOE- Sandy Hook

Sample ID : #20170041 SH.8

Wet Sample + Container _____ g

Dry Sample + Container _____ g

Initials/ Date: N 3/8/17

Container Tare _____ g

#4 sieve (gravel)

Dry sand	499.55	g
Container tare	497.12	g
Dry sand		g

#10 sieve (Coarse sand)

Dry sand	558.77	g
Container tare	555.56	g w/few shell frag
Dry sand		g

40 sieve (sand)

Dry sand	367.64	g
Container tare	336.83	g
Dry sand		g

#60 sieve (sand)

Dry sand	403.37	g
Container tare	346.22	g
Dry sand		g

100 sieve (fine sand)

Dry sand	334.79	g
Container tare	329.71	g
Dry sand		g

230 sieve (fine sand)

Dry sand	299.75	g
Container tare	299.39	g
Dry sand		g

Fines (passing #200 / #230 sieve)

Dry sand	488.88	g
Container tare	488.85	g
Dry sand		g

Aqua Survey, Inc.
Special Studies Department
Grain Size

Job #: 37-018 **Client:** ACOE-Sandy Hook

Sample #: #201700142 SH-9

For % Moisture:

Wet Sample + Container: _____ (g)
Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

☑ Mortared Sample + Container: 245.90 (g)
Container Tare:- 145.90 (g)
Mortared Sample: 100.00 (g)
Initials/ Date: 1/9/17

☑ Sample soaked and washed
☑ Sample back to oven
☑ Sample re-mortared (after weighing below; prior to being put thru sieve nest) 1/3/17

#200 Sieve (Retained)

Dry Material + Container: _____ (g)
Container Tare:- _____ (g)
Dry Material: _____ (g)
Initials/ Date: _____

#230 Sieve (Retained)

Dry Material + Container: 244.83 (g)
Container Tare:- 145.90 (g)
Dry Material: 98.93 (g)
Initials/ Date: 1/3/17

SAND RANGE GRAIN SIZE

ASI Job #: 37-018

Client: ACOE- Sandy Hook

Sample ID : #20170042 SH-9

Wet Sample + Container _____ g

Dry Sample + Container _____ g

Initials/ Date: N.S/8/17

Container Tare _____ g

#4 sieve (gravel)

Dry sand	497.11	g
Container tare	497.11	g
Dry sand		g

#10 sieve (Coarse sand)

Dry sand	555.79	g w/ fine shell frag
Container tare	555.560	g
Dry sand		g

40 sieve (sand)

Dry sand	341.86	g
Container tare	336.83	g
Dry sand		g

#60 sieve (sand)

Dry sand	424.18	g
Container tare	346.22	g
Dry sand		g

100 sieve (fine sand)

Dry sand	344.78 ~~346.27~~	g
Container tare	329.72	g
Dry sand		g

230 sieve (fine sand)

Dry sand	300.03	g
Container tare	299.39	g
Dry sand		g

Fines (passing #200 / #230 sieve)

Dry sand	488.88	g
Container tare	488.85	g
Dry sand		g

Aqua Survey, Inc.
Special Studies Department
Grain Size

Job #: 37-018

Client: ACOE-Sandy Hook

Sample #: 20170042 dup

For % Moisture:

Wet Sample + Container: _____ (g)
Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

- Mortared Sample + Container: 235.50 (g)
  Container Tare:- 135.50 (g)
  Mortared Sample: 100.00 (g)
  Initials/ Date: 1/3/17
- Sample soaked and washed 1/3/17
- Sample back to oven 1/3/17
- Sample re-mortared (after weighing below; prior to being put thru sieve nest) 1/3/17

#200 Sieve (Retained)

Dry Material + Container: _____ (g)
Container Tare:- _____ (g)
Dry Material: _____ (g)
Initials/ Date: _____

#230 Sieve (Retained)

Dry Material + Container: 234.31 (g)
Container Tare:- 135.50 (g)
Dry Material: 98.81 (g)
Initials/ Date: 1/3/17

SAND RANGE GRAIN SIZE

ASI Job #: 37-018

Client: ACOE- Sandy Hook

Sample ID : #20170042 dup

Wet Sample + Container _____ g

Dry Sample + Container _____ g

Initials/ Date: 4/3/17

Container Tare _____ g

#4 sieve (gravel)

Dry sand	497.11	g
Container tare	497.11	g
Dry sand		g

#10 sieve (Coarse sand)

Dry sand	555.78	g
Container tare	555.56	g w/few shell frag
Dry sand		g

40 sieve (sand)

Dry sand	342.38	g
Container tare	330.83	g
Dry sand		g

#60 sieve (sand)

Dry sand	424.31	g
Container tare	346.23	g
Dry sand		g

100 sieve (fine sand)

Dry sand	344.12	g
Container tare	329.71	g
Dry sand		g

230 sieve (fine sand)

Dry sand	299.98	g
Container tare	299.39	g
Dry sand		g

Fines (passing #200 / #230 sieve)

Dry sand	488.89	g
Container tare	488.86	g
Dry sand		g

Aqua Survey, Inc.
Special Studies Department
Grain Size

Job #: 37-018

Client: ACOE-Sandy Hook

Sample #: #20170042 trp

For % Moisture:

Wet Sample + Container: _____ (g)
Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

☑ Mortared Sample + Container: 275.74 (g)
Container Tare:- 175.74 (g)
Mortared Sample: 100.00 (g)
Initials/ Date: 13/7/17

☑ Sample soaked and washed 13/7/17
☑ Sample back to oven 13/7/17
☑ Sample re-mortared (after weighing below; prior to being put thru sieve nest) 13/8/17

#200 Sieve (Retained)

Dry Material + Container: _____ (g)
Container Tare:- _____ (g)
Dry Material: _____ (g)
Initials/ Date: _____

#230 Sieve (Retained)

Dry Material + Container: 274.53 (g)
Container Tare:- 175.74 (g)
Dry Material: 98.79 (g)
Initials/ Date: 13/8/17

SAND RANGE GRAIN SIZE

ASI Job #: 37-018

Client: ACOE- Sandy Hook

Sample ID : #20170042 trp

Wet Sample + Container _____ g

Dry Sample + Container _____ g

Initials/ Date: N 3/8/17

Container Tare _____ g

#4 sieve (gravel)		
Dry sand	497.11	g
Container tare	497.11	g
Dry sand		g
#10 sieve (Coarse sand)		
Dry sand	555.92	g
Container tare	555.56	g
Dry sand		g
# 40 sieve (sand)		
Dry sand	342.77	g
Container tare	336.81	g
Dry sand		g
#60 sieve (sand)		
Dry sand	424.89	g
Container tare	346.26	g
Dry sand		g
# 100 sieve (fine sand)		
Dry sand	343.08	g
Container tare	329.70	g
Dry sand		g
# 230 sieve (fine sand)		
Dry sand	299.82	g
Container tare	299.39	g
Dry sand		g
Fines (passing #200 / #230 sieve)		
Dry sand	488.86	g
Container tare	488.86	g
Dry sand		g

Aqua Survey, Inc.
Special Studies Department
Grain Size

Job #: 37-018 **Client:** ACOE-Sandy Hook

Sample #: #20170044 Comp B

For % Moisture:

Wet Sample + Container: _____ (g)
Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

☑ Mortared Sample + Container: 362.77 (g)
Container Tare:- 162.797 (g)
Mortared Sample: 200.00 (g)
Initials/ Date: 1/3/7/17

☑ Sample soaked and washed 1/3/7/17
☑ Sample back to oven 1/3/7/17
☑ Sample re-mortared (after weighing below; prior to being put thru sieve nest) 3/9/17

#200 Sieve (Retained)

Dry Material + Container: _____ (g)
Container Tare:- _____ (g)
Dry Material: _____ (g)
Initials/ Date: _____

#230 Sieve (Retained)

Dry Material + Container: 361.64 (g)
Container Tare:- 162.77 (g)
Dry Material: 198.87 (g)
Initials/ Date: 1/3/8/17

SAND RANGE GRAIN SIZE

ASI Job #: 37-018

Client: ACOE- Sandy Hook

Sample ID : #20170014 Comp B

Wet Sample + Container _____ g

Dry Sample + Container _____ g

Initials/ Date: 11/9/17

Container Tare _____ g

#4 sieve (gravel)

Dry sand	513.62	g
Container tare	497.11	g
Dry sand		g

#10 sieve (Coarse sand)

Dry sand	590.18	g	few shell pieces
Container tare	555.59	g	
Dry sand		g	

40 sieve (sand)

Dry sand	449.80	g
Container tare	336.82	g
Dry sand		g

#60 sieve (sand)

Dry sand	378.15	g
Container tare	346.26	g
Dry sand		g

100 sieve (fine sand)

Dry sand	338.37	g
Container tare	329.73	g
Dry sand		g

230 sieve (fine sand)

Dry sand	299.62	g
Container tare	299.40	g
Dry sand		g

Fines (passing #200 / #230 sieve)

Dry sand	488.88	g
Container tare	488.88	g
Dry sand		g

Aqua Survey, Inc.
Special Studies Department
Grain Size

Job #: 37-018 **Client:** ACOE-Sandy Hook

Sample #: 20170245 - Comp C

For % Moisture:

Wet Sample + Container: _____ (g)
Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

Dry Sample + Container: _____ (g)
Container Tare:- _____ (g)
Dry Sample: _____ (g)
Initials/ Date: _____

☑ Mortared Sample + Container: 276.04 (g)
Container Tare:- 176.04 (g)
Mortared Sample: 100.00 (g)
Initials/ Date: 1/3/7/17

☑ Sample soaked and washed 1/3/7/17
☑ Sample back to oven 1/3/7/17
☑ Sample re-mortared (after weighing below; prior to being put thru sieve nest) 5/9/17

#200 Sieve (Retained)

Dry Material + Container: _____ (g)
Container Tare:- _____ (g)
Dry Material: _____ (g)
Initials/ Date: _____

#230 Sieve (Retained)

Dry Material + Container: 275.03 (g)
Container Tare:- 176.04 (g)
Dry Material: 98.99 (g)
Initials/ Date: 1/3/8/17

SAND RANGE GRAIN SIZE

ASI Job #: 37-018

Client: ACOE- Sandy Hook

Sample ID : #20170045 - Comp C

Wet Sample + Container _____ g

Dry Sample + Container _____ g

Initials/ Date: 3/9/17

Container Tare _____ g

#4 sieve (gravel)

Dry sand	499.60 g
Container tare	497.10 g
Dry sand	_____ g

#10 sieve (Coarse sand)

Dry sand	560.82 g
Container tare	555.58 g
Dry sand	_____ g

40 sieve (sand)

Dry sand	376.45 g
Container tare	336.82 g
Dry sand	_____ g

#60 sieve (sand)

Dry sand	390.40 g
Container tare	346.26 g
Dry sand	_____ g

100 sieve (fine sand)

Dry sand	336.81 g
Container tare	329.73 g
Dry sand	_____ g

230 sieve (fine sand)

Dry sand	299.79 g
Container tare	299.40 g
Dry sand	_____ g

Fines (passing #200 / #230 sieve)

Dry sand	488.86 g
Container tare	488.86 g
Dry sand	_____ g