152-12

M66B09005037

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LABORATORY ITEM 439

M66B09005037

A SUMMARY OF SEDIMENT SIZE AND CHEMISTRY OF ELEVEN GRABS FROM NEW LONDON, CONNECTICUT. NAVY TWR 681. OCTOBER - NOVEMBER, 1972.

SEDIMENT SIZE AND CHEMISTRY

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Prepared for: Marine Chemistry Branch
Code 7310

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Oceanographic Surveys Department

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WASHINGTON, D. C. 20390

The results of the sediment size and composition analyses are printed out in tabular form.

The following is an explanation of the terms encountered on the data printout sheet:

CRUISE	A number assigned to each cruise for identification purposes.
SAMPLE	A consecutive number applied to each core taken successively throughout the cruise.
LATITUDE	Expressed in degrees, minutes, and tenths of minutes.
LONGITUDE	Expressed in degrees, minutes and tenths of minutes.
TAKEN	Date in day, month, and year that core was taken.
CORER TYPE	Letters corresponding to sampling device code below.

Corers		Grabs	
HYP	Hydroplastic piston	SPK	Shipek Sediment Sampler
HYG	Hydroplastic gravity	HLP	Alpine Heavy Duty Grab
KUP	Kullenberg piston	SMS	Small Mud Snapper
KUG	Kullenberg gravity	VVS	Van Veen Grab
PHL	Phlegar gravity	BED	Birge-Ekman Dredge
MEG	Modified Ewing gravity	DLS	Dietz-LaFond Snapper
MEP	Modified Ewing piston	OPG	Orange Peel Grab
VIB	Vibrocorer	SBS	Scoopfish Bottom Sampler
BOM	Boomerang		
EWP	Ewing piston		
EWG	Ewing gravity		

LENGTH	Length of core recorded in centimeters as observed in the laboratory.
PENETRATION	Penetration of coring device recorded in centimeters as observed in the field.
DEPTH	The uncorrected sonic sounding in meters.
ANALYZED	Date in day, month, and year that core was analyzed in the laboratory.
I.D. No.	Three or four digit laboratory project number followed by consecutive number assigned to each subsample analyzed.
INTERVAL	Interval of subsample as measured in centimeters from the top of the core.
MM	Particle diameter size intervals based on Wentworth size grades in millimeters.
PER	Percent of total sample weight within the given size interval.

GRAVEL, SAND SILT, CLAY — Percent of total sample weight within the four size classes.

Class ranges are:

1. Gravel - coarser than 2 mm
2. Sand - 2 to 0.0625 mm
3. Silt - 0.0625 to 0.0039 mm
4. Clay - finer than 0.0039

MEAN (MM) — The geometric mean of the distribution expressed in millimeters.

MEAN (PHI) — The logarithmic mean of the distribution expressed in phi units ($-\log_2$) of the diameter in millimeters.

STAN DEV — Standard deviation. A measure of the degree of spread or dispersion of the distribution about the mean expressed in phi units.

$$s = \sqrt{\sum f \quad (X_i - \bar{X})^2 / 100}$$

SKEWNESS — A measure of the asymmetry of the distribution. Positive values denote skewness of the distribution toward the fine particles; negative values denote skewness toward the coarse particles. A normal distribtuion has a skewness of 0.

$$\text{Skewness} = \frac{1}{100} \cdot 2\, s^{-3} \sum f \quad (X_i - X)^3$$

KURTOSIS — A measure of the peakedness of the distribution. Positive values denote a "leptokurtic" distribution more "peaked" than normal. Negative values denote a "platykurtic" distribution, or a distribution more "flat" than normal. When using the following formula, a normal curve has a kurtosis of 0.

$$\text{Kurtosis} = \frac{1}{100} \quad s^{-4} \left[\sum f \quad (X_i - \bar{X})^4 \right] - 3$$

$CACO_3$ — Percent of the total sample weight soluble in 3.9N HCL.

ORG CARBON — Percent organic carbon of the total sample weight as determined using a Leco carbon analyzer.

COLOR — Wet sediment color, based on the Geological Society of America Rock-Color Chart, as determined in the laboratory.

NITROGEN — Percent nitrogen of the total sample weight as determined by the Kjeldahl method.

LOG FOR GRAB SAMPLES WGG09005037

Project No: 439
Location: NEW LONDON, CONN. 152-12

Logged By C.M. ROSS
Date Logged 20 NOV. 72

	La No.	Color	Calc. Mat.	Sediment Type	Remarks
Sample No: 4 Lat: 41° 16.2' N. *Long: 72° 4.6' W. Date: OCT. 1972 Water depth:	439 1				*THIS DATE AND LOCATION APPLIES TO ALL SAMPLES. STRONG H_2S WORM TUBE AND SHELL FRAGMENTS.
Sample No: 5 Lat: Long: Date: Water depth:	439 2				NUMEROUS SHELL FRAGMENTS.
Sample No: 6 Lat: Long: Date: Water depth:	439 3				SHELL FRAGMENTS.
Sample No: 7 Lat: Long: Date: Water depth:	439 4				SHELL FRAGMENTS.
Sample No: 8 Lat: Long: Date: Water depth:	439 5				SHELL FRAGMENTS.
Sample No: 9 Lat: Long: Date: Water depth:	439 6				SHELL FRAGMENTS.
Sample No: 10 Lat: Long: Date: Water depth:	439 7				SHELL FRAGMENTS.
Sample No: 11 Lat: Long: Date: Water depth:	439 8				SOFT PARTS OF INVERTEBRATE (GASTROPOD?)
Sample No: 12 Lat: Long: Date: Water depth:	439 9				SMALL SHELL FRAGMENTS.

LOG FOR GRAB SAMPLES

MGG09005037

Project No: 439
Location: NEW LONDON, CONN.

152-12

Logged By C. M. ROSS
Date Logged 20 NOV. 72

	Lab. No.	Color	Calc. Mat.	Sediment Type	Remarks
Sample No: 13 Lat: Long: Date: Water depth:	439 10				SHELL FRAGMENTS.
Sample No: 14 Lat: Long: Date: Water depth:	439 11				SHELL FRAGMENTS. WORM TUBES. H_2S ODOR.
Sample No: Lat: Long: Date: Water depth:					
Sample No: Lat: Long: Date: Water depth:					
Sample No: Lat: Long: Date: Water depth:					
Sample No: Lat: Long: Date: Water depth:					
Sample No: Lat: Long: Date: Water depth:					
Sample No: Lat: Long: Date: Water depth:					
Sample No: Lat: Long: Date: Water depth:					

SEDIMENT SIZE AND COMPOSITION DATA

CRUISE TWR681 TAKEN OCT72 LATITUDE 41 16.20 N MARSDEN SQUARE 152-12 LENGTH ANALYZED NOV72
SAMPLE 4 DEPTH LONGITUDE 72 4.60 W CORER TYPE SPK PENETRATION

SUBSAMPLE ID. 439 1

DIAM (PHI)	DIAM (MM)	PERCENT
<-4	>16.000	.000
-4 TO -3	16.000 TO 8.000	.000
-3 TO -2	8.000 TO 4.000	.000
-2 TO -1	4.000 TO 2.000	.705
-1 TO 0	2.000 TO 1.000	.166
0 TO 1	1.000 TO .500	.249
1 TO 2	.500 TO .250	.705
2 TO 3	.250 TO .125	4.066
3 TO 4	.125 TO .063	7.801
4 TO 5	.063 TO .031	4.066
5 TO 6	.031 TO .016	8.216
6 TO 7	.016 TO .008	8.506
7 TO 8	.008 TO .004	10.747
8 TO 9	.004 TO .002	10.871
9 TO 10	.002 TO .001	6.141
>10	<.001	37.759

GRAVEL (>2.0 MM)	.705
SAND (2.0-.063 MM)	12.988
SILT (.063-.004 MM)	31.535
CLAY (<.004 MM)	54.772

MEAN (MM)	.0044
MEAN (PHI)	7.841
STANDARD DEVIATION	2.781
SKEWNESS	-.405
KURTOSIS	-.186

CALCIUM CARBONATE	20.800
ORGANIC CARBON	1.478
NITROGEN (KJELDAHL)	.311

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SEDIMENT SIZE AND COMPOSITION DATA

CRUISE TWR681 TAKEN OCT72 LATITUDE 41 16.20 N MARSDEN SQUARE 152-12 LENGTH ANALYZED NOV72
SAMPLE 5 DEPTH LONGITUDE 72 4.60 W CORER TYPE SPK PENETRATION

SUBSAMPLE ID. 439.2

DIAM (PHI)	DIAM (MM)	PERCENT
<-4	>16.000	.000
-4 TO -3	16.000 TO 8.000	1.384
-3 TO -2	8.000 TO 4.000	2.517
-2 TO -1	4.000 TO 2.000	3.272
-1 TO 0	2.000 TO 1.000	3.801
0 TO 1	1.000 TO .500	7.048
1 TO 2	.500 TO .250	13.164
2 TO 3	.250 TO .125	31.387
3 TO 4	.125 TO .063	15.857
4 TO 5	.063 TO .031	4.002
5 TO 6	.031 TO .016	3.524
6 TO 7	.016 TO .008	1.988
7 TO 8	.008 TO .004	1.888
8 TO 9	.004 TO .002	1.686
9 TO 10	.002 TO .001	1.133
>10	<.001	7.350

GRAVEL (>2.0 MM)	7.173
SAND (2.0-.063 MM)	71.256
SILT (.063-.004 MM)	11.402
CLAY (<.004 MM)	10.169
MEAN (MM)	.1199
MEAN (PHI)	3.060
STANDARD DEVIATION	3.063
SKEWNESS	.423
KURTOSIS	.914
CALCIUM CARBONATE	20.100
ORGANIC CARBON	.592
NITROGEN (KJELDAHL)	.132

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SEDIMENT SIZE AND COMPOSITION DATA

CRUISE TWR681 TAKEN OCT72 LATITUDE 41 16.20 N MARSDEN SQUARE 152-0 LENGTH ANALYZED NOV72
SAMPLE 6 DEPTH LONGITUDE 72 4.60 W CORER TYPE SPK PENETRATION

SUBSAMPLE ID. 439 3

DIAM (PHI)	DIAM (MM)	PERCENT
<-4	>16.000	.000
-4 TO -3	16.000 TO 8.000	.000
-3 TO -2	8.000 TO 4.000	.635
-2 TO -1	4.000 TO 2.000	.896
-1 TO 0	2.000 TO 1.000	1.530
0 TO 1	1.000 TO .500	1.624
1 TO 2	.500 TO .250	7.111
2 TO 3	.250 TO .125	32.885
3 TO 4	.125 TO .063	27.790
4 TO 5	.063 TO .031	5.189
5 TO 6	.031 TO .016	4.386
6 TO 7	.016 TO .008	2.202
7 TO 8	.008 TO .004	2.688
8 TO 9	.004 TO .002	2.370
9 TO 10	.002 TO .001	1.474
>10	<.001	9.220

GRAVEL (>2.0 MM)	1.530
SAND (2.0-.063 MM)	70.941
SILT (.063-.004 MM)	14.464
CLAY (<.004 MM)	13.065

MEAN (MM)	.0624
MEAN (PHI)	4.002
STANDARD DEVIATION	2.775
SKEWNESS	.561
KURTOSIS	.801

CALCIUM CARBONATE	12.600
ORGANIC CARBON	.638
NITROGEN (KJELDAHL)	.090

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SEDIMENT SIZE AND COMPOSITION DATA

CRUISE TWR681 TAKEN OCT72 LATITUDE 41 16.20 N MARSDEN SQUARE 152-12 LENGTH ANALYZED NOV72
SAMPLE 7 DEPTH LONGITUDE 72. 4.60 W CORER TYPE SPK PENETRATION

SUBSAMPLE ID. 439 4

DIAM (PHI)	DIAM (MM)	PERCENT
<=4	>16.000	.000
-4 TO -3	16.000 TO 8.000	3.044
-3 TO -2	8.000 TO 4.000	.999
-2 TO -1	4.000 TO 2.000	1.268
-1 TO 0	2.000 TO 1.000	2.204
0 TO 1	1.000 TO .500	5.486
1 TO 2	.500 TO .250	17.653
2 TO 3	.250 TO .125	29.697
3 TO 4	.125 TO .063	20.105
4 TO 5	.063 TO .031	5.375
5 TO 6	.031 TO .016	3.441
6 TO 7	.016 TO .008	1.300
7 TO 8	.008 TO .004	1.316
8 TO 9	.004 TO .002	1.094
9 TO 10	.002 TO .001	.713
>10	<.001	6.104

GRAVEL (>2.0 MM)	5.312
SAND (2.0-.063 MM)	75.345
SILT (.063-.004 MM)	11.432
CLAY (<.004 MM)	7.912

MEAN (MM)	.1254
MEAN (PHI)	2.996
STANDARD DEVIATION	2.795
SKEWNESS	.424
KURTOSIS	1.920

CALCIUM CARBONATE	9.100
ORGANIC CARBON	.666
NITROGEN (KJELDAHL)	.074

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SEDIMENT SIZE AND COMPOSITION DATA

CRUISE TWR681 TAKEN OCT72 LATITUDE 41 16.20 N MARSDEN SQUARE 152-12 LENGTH ANALYZED NOV72
SAMPLE 8 DEPTH LONGITUDE 72 4.60 W CORER TYPE SPK PENETRATION

SUBSAMPLE ID. 439 5

DIAM (PHI)	DIAM (MM)	PERCENT
<-4	>16.000	.000
-4 TO -3	16.000 TO 8.000	.000
-3 TO -2	8.000 TO 4.000	.000
-2 TO -1	4.000 TO 2.000	3.003
-1 TO 0	2.000 TO 1.000	3.239
0 TO 1	1.000 TO .500	7.169
1 TO 2	.500 TO .250	15.266
2 TO 3	.250 TO .125	31.194
3 TO 4	.125 TO .063	19.726
4 TO 5	.063 TO .031	3.209
5 TO 6	.031 TO .016	3.474
6 TO 7	.016 TO .008	1.943
7 TO 8	.008 TO .004	2.606
8 TO 9	.004 TO .002	2.400
9 TO 10	.002 TO .001	1.104
>10	<.001	5.668

GRAVEL (>2.0 MM)	3.003
SAND (2.0-.063 MM)	76.594
SILT (.063-.004 MM)	11.232
CLAY (<.004 MM)	9.171

MEAN (MM)	.1062
MEAN (PHI)	3.235
STANDARD DEVIATION	2.703
SKEWNESS	.604
KURTOSIS	1.350

CALCIUM CARBONATE	10.900
ORGANIC CARBON	.792
NITROGEN (KJELDAHL)	.082

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SEDIMENT SIZE AND COMPOSITION DATA

CRUISE TWR681 TAKEN OCT72 LATITUDE 41 16.20 N MARSDEN SQUARE 152-12 LENGTH ANALYZED NOV72
SAMPLE 9 DEPTH LONGITUDE 72 4.60 W CORER TYPE SPK PENETRATION

SUBSAMPLE ID. 439 6

DIAM (PHI)	DIAM (MM)	PERCENT
<=4	>16.000	.000
-4 TO -3	16.000 TO 8.000	3.523
-3 TO -2	8.000 TO 4.000	2.455
-2 TO -1	4.000 TO 2.000	2.886
-1 TO 0	2.000 TO 1.000	4.122
0 TO 1	1.000 TO .500	6.183
1 TO 2	.500 TO .250	9.612
2 TO 3	.250 TO .125	20.274
3 TO 4	.125 TO .063	17.575
4 TO 5	.063 TO .031	3.541
5 TO 6	.031 TO .016	4.422
6 TO 7	.016 TO .008	2.492
7 TO 8	.008 TO .004	4.722
8 TO 9	.004 TO .002	4.422
9 TO 10	.002 TO .001	2.305
>10	<.001	11.467

GRAVEL (>2.0 MM)	8.863
SAND (2.0-.063 MM)	57.767
SILT (.063-.004 MM)	15.177
CLAY (<.004 MM)	18.194

MEAN (MM)	.0735
MEAN (PHI)	3.766
STANDARD DEVIATION	3.716
SKEWNESS	.162
KURTOSIS	-.505

CALCIUM CARBONATE	21.300
ORGANIC CARBON	.999
NITROGEN (KJELDAHL)	.110

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SEDIMENT SIZE AND COMPOSITION DATA

CRUISE TWR681 TAKEN OCT72 LATITUDE 41 16.20 N MARSDEN SQUARE 152-12 LENGTH ANALYZED NOV72
SAMPLE 10 DEPTH LONGITUDE 72 4.60 W CORER TYPE SPK PENETRATION

SUBSAMPLE ID. 439 7

DIAM (PHI)	DIAM (MM)	PERCENT
<-4	>16.000	.000
-4 TO -3	16.000 TO 8.000	.741
-3 TO -2	8.000 TO 4.000	3.106
-2 TO -1	4.000 TO 2.000	1.343
-1 TO 0	2.000 TO 1.000	1.824
0 TO 1	1.000 TO .500	3.146
1 TO 2	.500 TO .250	11.283
2 TO 3	.250 TO .125	24.228
3 TO 4	.125 TO .063	17.435
4 TO 5	.063 TO .031	4.228
5 TO 6	.031 TO .016	4.810
6 TO 7	.016 TO .008	2.946
7 TO 8	.008 TO .004	5.491
8 TO 9	.004 TO .002	5.291
9 TO 10	.002 TO .001	2.204
>10	<.001	11.924

GRAVEL (>2.0 MM)	5.190
SAND (2.0-.063 MM)	57.916
SILT (.063-.004 MM)	17.475
CLAY (<.004 MM)	19.419

MEAN (MM)	.0530
MEAN (PHI)	4.237
STANDARD DEVIATION	3.447
SKEWNESS	.198
KURTOSIS	-.492

CALCIUM CARBONATE	18.300
ORGANIC CARBON	.562
NITROGEN (KJELDAHL)	.099

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SEDIMENT SIZE AND COMPOSITION DATA

CRUISE TWR681 TAKEN 10CT72 LATITUDE 41 16.20 N MARSDEN SQUARE 152-12 LENGTH ANALYZED NOV72
SAMPLE 11 DEPTH LONGITUDE 72 4.60 W CORER TYPE SPK PENETRATION

SUBSAMPLE ID. 439 8

DIAM (PHI)	DIAM (MM)	PERCENT
<-4	>16.000	.000
-4 TO -3	16.000 TO 8.000	.000
-3 TO -2	8.000 TO 4.000	.000
-2 TO -1	4.000 TO 2.000	.368
-1 TO 0	2.000 TO 1.000	.263
0 TO 1	1.000 TO .500	.500
1 TO 2	.500 TO .250	.631
2 TO 3	.250 TO .125	1.236
3 TO 4	.125 TO .063	2.393
4 TO 5	.063 TO .031	4.786
5 TO 6	.031 TO .016	20.011
6 TO 7	.016 TO .008	16.461
7 TO 8	.008 TO .004	14.515
8 TO 9	.004 TO .002	7.415
9 TO 10	.002 TO .001	4.602
>10	<.001	26.821

GRAVEL (>2.0 MM)	.368
SAND (2.0-.063 MM)	5.022
SILT (.063-.004 MM)	55.772
CLAY (<.004 MM)	38.838
MEAN (MM)	.0056
MEAN (PHI)	7.478
STANDARD DEVIATION	2.387
SKEWNESS	-.190
KURTOSIS	.027
CALCIUM CARBONATE	13.800
ORGANIC CARBON	1.136
NITROGEN (KJELDAHL)	.162

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SEDIMENT SIZE AND COMPOSITION DATA

CRUISE TWR681 TAKEN OCT72 LATITUDE 41 16.20 N MARSDEN SQUARE 152-12 LENGTH ANALYZED NOV72
SAMPLE 12 DEPTH LONGITUDE 72 4.60 W CORER TYPE SPK PENETRATION

SUBSAMPLE ID. 439 9

DIAM (PHI)	DIAM (MM)	PERCENT
<-4	>16.000	.000
-4 TO -3	16.000 TO 8.000	.000
-3 TO -2	8.000 TO 4.000	.000
-2 TO -1	4.000 TO 2.000	.294
-1 TO 0	2.000 TO 1.000	.441
0 TO 1	1.000 TO .500	.693
1 TO 2	.500 TO .250	1.030
2 TO 3	.250 TO .125	11.746
3 TO 4	.125 TO .063	35.512
4 TO 5	.063 TO .031	10.086
5 TO 6	.031 TO .016	10.464
6 TO 7	.016 TO .008	4.938
7 TO 8	.008 TO .004	5.337
8 TO 9	.004 TO .002	3.068
9 TO 10	.002 TO .001	2.185
>10	<.001	14.205

GRAVEL (>2.0 MM)	.294
SAND (2.0-.063 MM)	49.422
SILT (.063-.004 MM)	30.826
CLAY (<.004 MM)	19.458

MEAN (MM)	.0261
MEAN (PHI)	5.259
STANDARD DEVIATION	2.757
SKEWNESS	.390
KURTOSIS	-.475

CALCIUM CARBONATE	9.200
ORGANIC CARBON	1.679
NITROGEN (KJELDAHL)	.135

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SEDIMENT SIZE AND COMPOSITION DATA

CRUISE TWR681 TAKEN OCT72 LATITUDE 41 16.20 N MARSDEN SQUARE 152-13 LENGTH ANALYZED NOV72
SAMPLE 13 DEPTH LONGITUDE 72 4.60 W CORER TYPE SPK PENETRATION

SUBSAMPLE ID. 439 10

DIAM (PHI)	DIAM (MM)	PERCENT
<-4	>16.000	.000
-4 TO -3	16.000 TO 8.000	.000
-3 TO -2	8.000 TO 4.000	.074
-2 TO -1	4.000 TO 2.000	.149
-1 TO 0	2.000 TO 1.000	.149
0 TO 1	1.000 TO .500	.186
1 TO 2	.500 TO .250	.223
2 TO 3	.250 TO .125	12.726
3 TO 4	.125 TO .063	43.702
4 TO 5	.063 TO .031	11.256
5 TO 6	.031 TO .016	9.879
6 TO 7	.016 TO .008	4.502
7 TO 8	.008 TO .004	2.381
8 TO 9	.004 TO .002	1.898
9 TO 10	.002 TO .001	1.265
>10	<.001	11.609

GRAVEL (>2.0 MM)	.223
SAND (2.0-.063 MM)	56.986
SILT (.063-.004 MM)	28.019
CLAY (<.004 MM)	14.772

MEAN (MM)	.0342
MEAN (PHI)	4.869
STANDARD DEVIATION	2.506
SKEWNESS	.622
KURTOSIS	.543

CALCIUM CARBONATE	10.300
ORGANIC CARBON	.629
NITROGEN (KJELDAHL)	.109

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SEDIMENT SIZE AND COMPOSITION DATA

CRUISE TWR681 TAKEN OCT72 LATITUDE 41 16.20 N MARSDEN SQUARE 152-12 LENGTH ANALYZED NOV72
SAMPLE 14 DEPTH LONGITUDE 72 4.60 W CORER TYPE SPK PENETRATION

SUBSAMPLE ID. 439 11

DIAM (PHI)	DIAM (MM)	PERCENT
<-4	>16.000	.000
-4 TO -3	16.000 TO 8.000	.000
-3 TO -2	8.000 TO 4.000	.000
-2 TO -1	4.000 TO 2.000	3.758
-1 TO 0	2.000 TO 1.000	.724
0 TO 1	1.000 TO .500	1.058
1 TO 2	.500 TO .250	2.116
2 TO 3	.250 TO .125	5.707
3 TO 4	.125 TO .063	12.333
4 TO 5	.063 TO .031	4.761
5 TO 6	.031 TO .016	8.964
6 TO 7	.016 TO .008	7.489
7 TO 8	.008 TO .004	8.268
8 TO 9	.004 TO .002	6.932
9 TO 10	.002 TO .001	5.345
>10	<.001	32.545

GRAVEL (>2.0 MM)	3.758
SAND (2.0-.063 MM)	21.938
SILT (.063-.004 MM)	29.482
CLAY (<.004 MM)	44.822

MEAN (MM)	.0085
MEAN (PHI)	6.880
STANDARD DEVIATION	3.446
SKEWNESS	-.303
KURTOSIS	-.590

CALCIUM CARBONATE	19.600
ORGANIC CARBON	1.566
NITROGEN (KJELDAHL)	.303

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