



ANALYTICAL REPORT

Lab Number:	L1009778
Client:	NOAA Restoration Center 55 Great Republic Drive Gloucester, MA 01930
ATTN:	Mathias Collins
Phone:	(978) 282-8483
Project Name:	LARKIN MILL DAM
Project Number:	Not Specified
Report Date:	07/13/10

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: LARKIN MILL DAM
Project Number: Not Specified

Lab Number: L1009778
Report Date: 07/13/10

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1009778-01	LMD-07-01	NEWBURY, MA	06/07/10 00:00
L1009778-02	LMD-07-02	NEWBURY, MA	06/07/10 00:00
L1009778-03	LMD-07-03	NEWBURY, MA	06/07/10 00:00
L1009778-04	LMD-08-01	NEWBURY, MA	06/08/10 00:00
L1009778-05	LMD-08-02	NEWBURY, MA	06/08/10 00:00
L1009778-06	LMD-10-01	NEWBURY, MA	06/09/10 00:00
L1009778-07	LMD-10-02	NEWBURY, MA	06/09/10 00:00
L1009778-08	LMD-10-03	NEWBURY, MA	06/09/10 00:00

Project Name: LARKIN MILL DAM
Project Number: Not Specified

Lab Number: L1009778
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Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

Grain Size

The WG420797-1 Laboratory Duplicate RPD, performed on L1009778-01, is outside the acceptance criteria for Sieve #200/Fines (25%). The elevated RPD has been attributed to the non-homogeneous nature of the sample utilized for the laboratory duplicate.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Cynthia McQueen

Title: Technical Director/Representative

Date: 07/13/10

INORGANICS & MISCELLANEOUS

Project Name: LARKIN MILL DAM

Project Number: Not Specified

Lab Number: L1009778

Report Date: 07/13/10

SAMPLE RESULTS

Lab ID: L1009778-01

Client ID: LMD-07-01

Sample Location: NEWBURY, MA

Matrix: Sediment

Date Collected: 06/07/10 00:00

Date Received: 06/29/10

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Grain Size Analysis - Mansfield Lab										
Sieve, #4	98.3		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #10	94.0		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #40	86.0		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #60	77.7		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #200	26.5		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE



Project Name: LARKIN MILL DAM

Project Number: Not Specified

Lab Number: L1009778

Report Date: 07/13/10

SAMPLE RESULTS

Lab ID: L1009778-02

Client ID: LMD-07-02

Sample Location: NEWBURY, MA

Matrix: Sediment

Date Collected: 06/07/10 00:00

Date Received: 06/29/10

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Grain Size Analysis - Mansfield Lab										
Sieve, #4	98.3		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #10	94.3		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #40	86.3		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #60	75.9		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #200	8.70		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE



Project Name: LARKIN MILL DAM

Project Number: Not Specified

Lab Number: L1009778

Report Date: 07/13/10

SAMPLE RESULTS

Lab ID: L1009778-03

Client ID: LMD-07-03

Sample Location: NEWBURY, MA

Matrix: Sediment

Date Collected: 06/07/10 00:00

Date Received: 06/29/10

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Grain Size Analysis - Mansfield Lab										
Sieve, #4	99.9		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #10	99.5		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #40	98.1		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #60	88.7		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #200	32.0		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE

Project Name: LARKIN MILL DAM

Project Number: Not Specified

Lab Number: L1009778

Report Date: 07/13/10

SAMPLE RESULTS

Lab ID: L1009778-04

Client ID: LMD-08-01

Sample Location: NEWBURY, MA

Matrix: Sediment

Date Collected: 06/08/10 00:00

Date Received: 06/29/10

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Grain Size Analysis - Mansfield Lab										
Sieve, #4	95.9		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #10	95.1		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #40	92.3		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #60	75.5		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #200	2.10		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE



Project Name: LARKIN MILL DAM

Project Number: Not Specified

Lab Number: L1009778

Report Date: 07/13/10

SAMPLE RESULTS

Lab ID: L1009778-05

Client ID: LMD-08-02

Sample Location: NEWBURY, MA

Matrix: Sediment

Date Collected: 06/08/10 00:00

Date Received: 06/29/10

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Grain Size Analysis - Mansfield Lab										
Sieve, #4	99.5		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #10	99.0		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #40	93.4		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #60	87.4		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #200	25.6		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE

Project Name: LARKIN MILL DAM

Project Number: Not Specified

Lab Number: L1009778

Report Date: 07/13/10

SAMPLE RESULTS

Lab ID: L1009778-06

Client ID: LMD-10-01

Sample Location: NEWBURY, MA

Matrix: Sediment

Date Collected: 06/09/10 00:00

Date Received: 06/29/10

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Grain Size Analysis - Mansfield Lab										
Sieve, #4	99.4		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #10	98.9		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #40	97.2		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #60	86.3		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #200	54.4		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE



Project Name: LARKIN MILL DAM

Project Number: Not Specified

Lab Number: L1009778

Report Date: 07/13/10

SAMPLE RESULTS

Lab ID: L1009778-07

Client ID: LMD-10-02

Sample Location: NEWBURY, MA

Matrix: Sediment

Date Collected: 06/09/10 00:00

Date Received: 06/29/10

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Grain Size Analysis - Mansfield Lab										
Sieve, #4	99.1		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #10	98.1		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #40	90.7		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #60	74.0		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #200	26.7		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE



Project Name: LARKIN MILL DAM

Project Number: Not Specified

Lab Number: L1009778

Report Date: 07/13/10

SAMPLE RESULTS

Lab ID: L1009778-08

Client ID: LMD-10-03

Sample Location: NEWBURY, MA

Matrix: Sediment

Date Collected: 06/09/10 00:00

Date Received: 06/29/10

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Grain Size Analysis - Mansfield Lab										
Sieve, #4	99.9		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #10	98.8		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #40	84.5		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #60	62.5		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE
Sieve, #200	30.0		%	0.100	NA	1	-	07/01/10 00:00	12,D422	SE



Lab Duplicate Analysis

Batch Quality Control

Project Name: LARKIN MILL DAM

Project Number: Not Specified

Lab Number: L1009778

Report Date: 07/13/10

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Grain Size Analysis - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG420797-1 QC Sample: L1009778-01 Client ID: LMD-07-01						
Sieve, #4	98.3	98.4	%	0		20
Sieve, #10	94.0	94.7	%	1		20
Sieve, #40	86.0	86.7	%	1		20
Sieve, #60	77.7	80.5	%	4		20
Sieve, #200	26.5	34.2	%	25		20

Project Name: LARKIN MILL DAM

Project Number: Not Specified

Lab Number: L1009778

Report Date: 07/13/10

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal

Cooler

A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1009778-01A	Bag	A	N/A	6	Y	Absent	A2-SIEVE_#10(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#200(7)
L1009778-01B	Glass 100ml unpreserved split	A	N/A	6	Y	Absent	A2-SUB()
L1009778-02A	Bag	A	N/A	6	Y	Absent	A2-SIEVE_#10(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#200(7)
L1009778-03A	Bag	A	N/A	6	Y	Absent	A2-SIEVE_#10(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#200(7)
L1009778-04A	Bag	A	N/A	6	Y	Absent	A2-SIEVE_#10(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#200(7)
L1009778-05A	Bag	A	N/A	6	Y	Absent	A2-SIEVE_#10(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#200(7)
L1009778-05B	Glass 100ml unpreserved split	A	N/A	6	Y	Absent	A2-SUB()
L1009778-06A	Bag	A	N/A	6	Y	Absent	A2-SIEVE_#10(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#200(7)
L1009778-07A	Bag	A	N/A	6	Y	Absent	A2-SIEVE_#10(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#200(7)
L1009778-07B	Glass 100ml unpreserved split	A	N/A	6	Y	Absent	A2-SUB()

*Values in parentheses indicate holding time in days

Project Name: LARKIN MILL DAM**Project Number:** Not Specified**Lab Number:** L1009778**Report Date:** 07/13/10**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1009778-08A	Bag	A	N/A	6	Y	Absent	A2-SIEVE_#10(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#200(7)

Container Comments

L1009778-01B	to Geotesting
L1009778-05B	to Geotesting
L1009778-07B	to Geotesting

*Values in parentheses indicate holding time in days

Project Name: LARKIN MILL DAM
Project Number: Not Specified

Lab Number: L1009778
Report Date: 07/13/10

GLOSSARY

Acronyms

EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NI	- Not Ignitable.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
D	- Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
E	- Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
H	- The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
P	- The RPD between the results for the two columns exceeds the method-specified criteria.
Q	- The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
R	- Analytical results are from sample re-analysis.
RE	- Analytical results are from sample re-extraction.

Report Format: Data Usability Report



Project Name: LARKIN MILL DAM**Lab Number:** L1009778**Project Number:** Not Specified**Report Date:** 07/13/10***Data Qualifiers*****J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).**ND** - Not detected at the reporting limit (RL) for the sample.

Project Name: LARKIN MILL DAM
Project Number: Not Specified

Lab Number: L1009778
Report Date: 07/13/10

REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

LIMITATION OF LIABILITIES

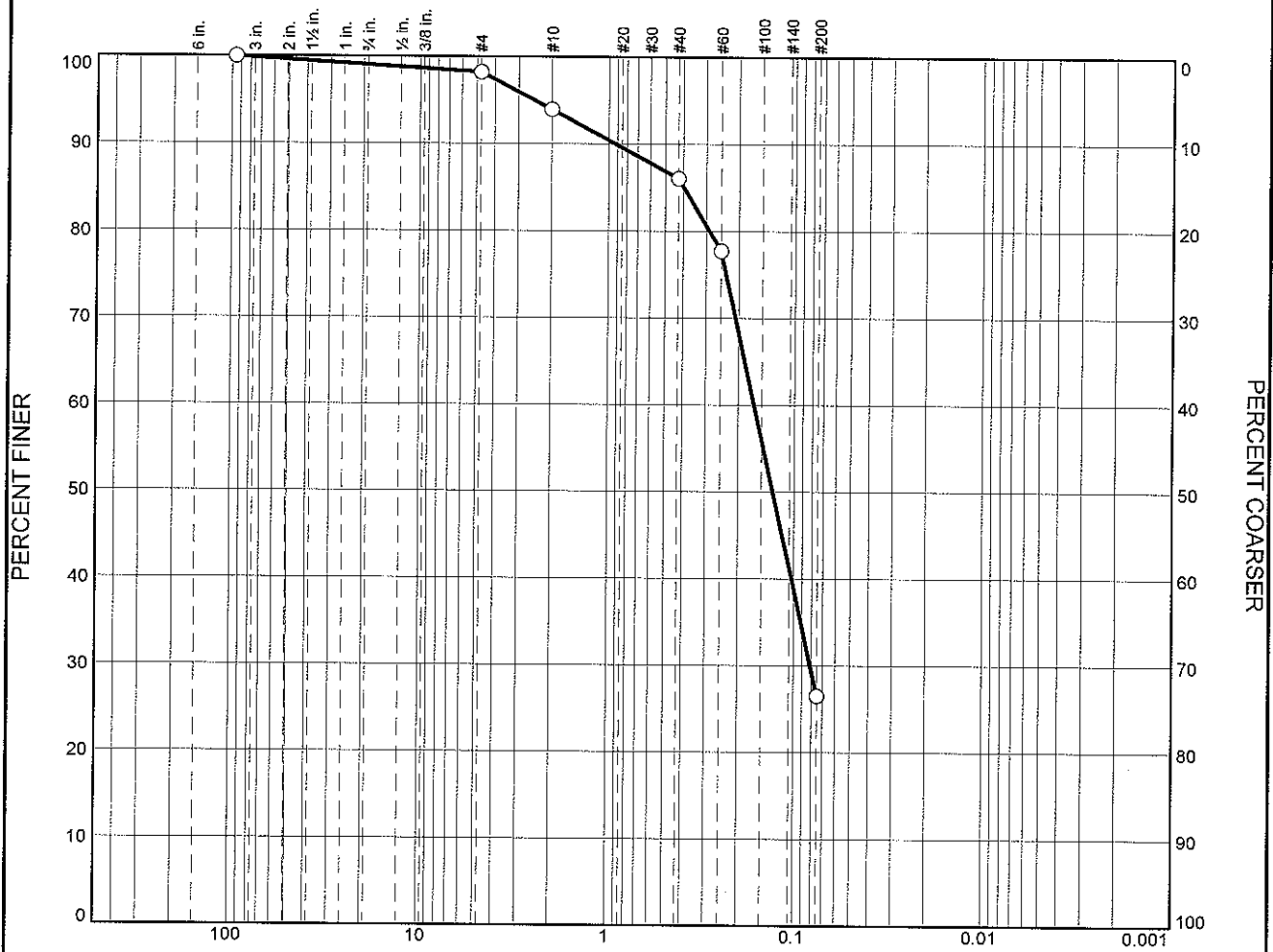
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We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



ASTM D422 Bulk Sedimentation Grain Size Analysis

Particle Size Distribution Report



GRAIN SIZE - mm.

GRAIN SIZE - mm.												
% Cobbles		% Gravel		% Sand			% Fines					
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay			
○	0.1		0.8	0.8	4.3	8.0	59.5	26.5				
×	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
○				0.3983	0.1648	0.1303	0.0814					

Material Description								USCS	AASHTO
○									

Project No. L1009778 Client: NOAA

Project: Larkin Mill Dam

○ Source of Sample: LMD- 07- 01

Sample Number: L1009778-01

Date: ○

Alpha Analytical

Mansfield, MA

Remarks:

Project

GRAIN SIZE DISTRIBUTION TEST DATA

7/7/2010

Client: NOAA

Project: Larkin Mill Dam

Project Number: L1009778

Location: LMD- 07- 01

Sample Number: L1009778-01

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
155.39	7.61	3.75	575.00	575.00	100.0	0.0
		#4	530.28	527.70	98.3	1.7
		#10	499.99	493.66	94.0	6.0
		#40	386.53	374.77	86.0	14.0
		#60	373.03	360.79	77.7	22.3
		#200	415.49	339.79	26.5	73.5

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.1	0.8	0.8	1.6	4.3	8.0	59.5	71.8			26.5

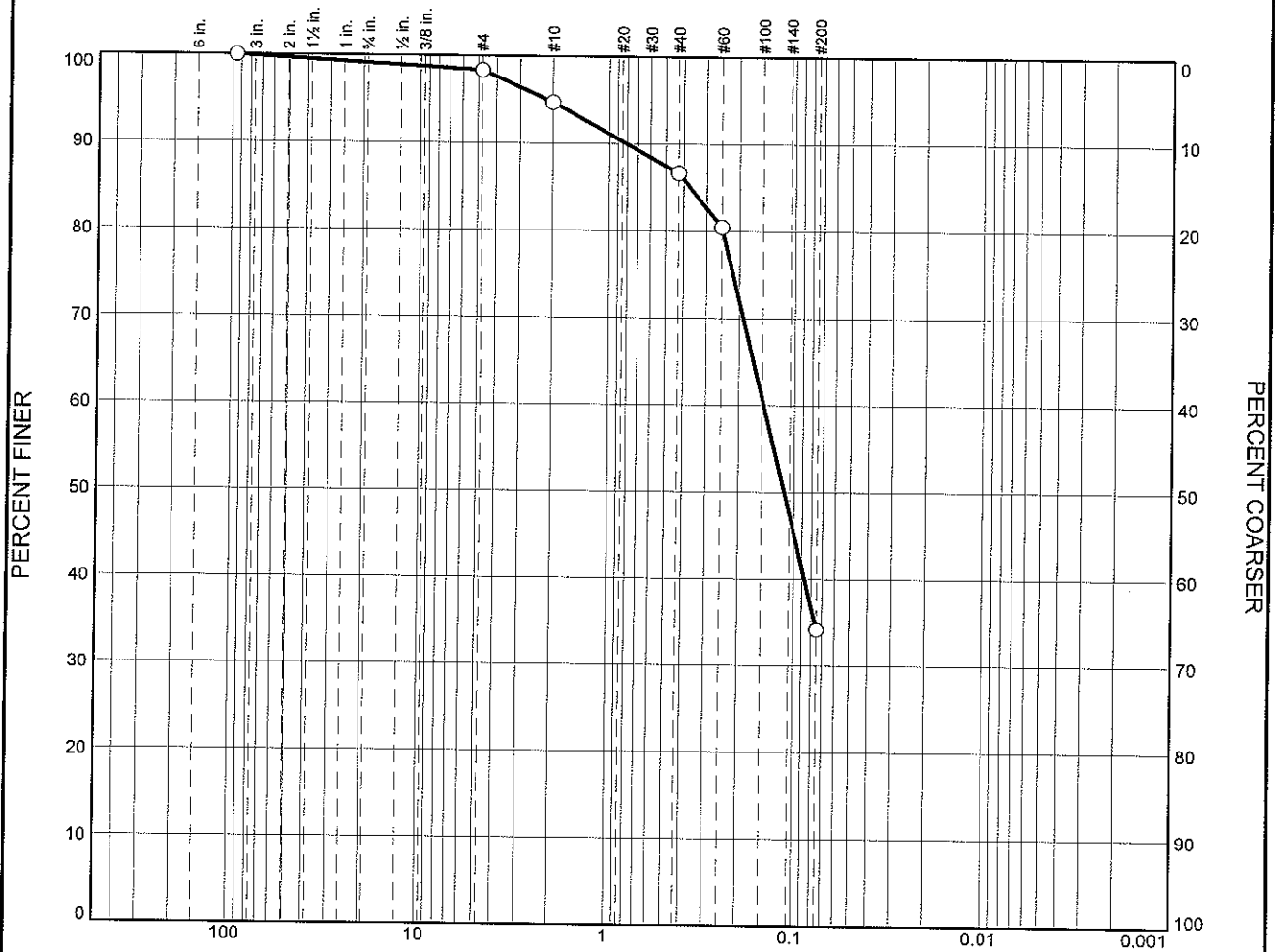
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0814	0.1303	0.1648	0.2891	0.3983	0.9234	2.4620

Fineness Modulus

0.94

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.

GRAIN SIZE - mm.											
	% Cobbles		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.1		0.8	0.7	3.7	8.0	52.5	34.2			
×	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○				0.3689	0.1468	0.1132					

Material Description							USCS	AASHTO
○								

Project No. L1009778 Client: NOAA Project: Larkin Mill Dam ○ Source of Sample: LMD- 07- 01 Sample Number: WG420797-01 Date: ○	Remarks: Project
Alpha Analytical Mansfield, MA	

GRAIN SIZE DISTRIBUTION TEST DATA

7/7/2010

Client: NOAA

Project: Larkin Mill Dam

Project Number: L1009778

Location: LMD- 07- 01

Sample Number: WG420797-01

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
164.74	7.69	3.75	575.00	575.00	100.0	0.0
		#4	530.80	528.22	98.4	1.6
		#10	499.18	493.39	94.7	5.3
		#40	389.06	376.47	86.7	13.3
		#60	375.73	365.99	80.5	19.5
		#200	410.16	337.51	34.2	65.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.1	0.8	0.7	1.5	3.7	8.0	52.5	64.2			34.2

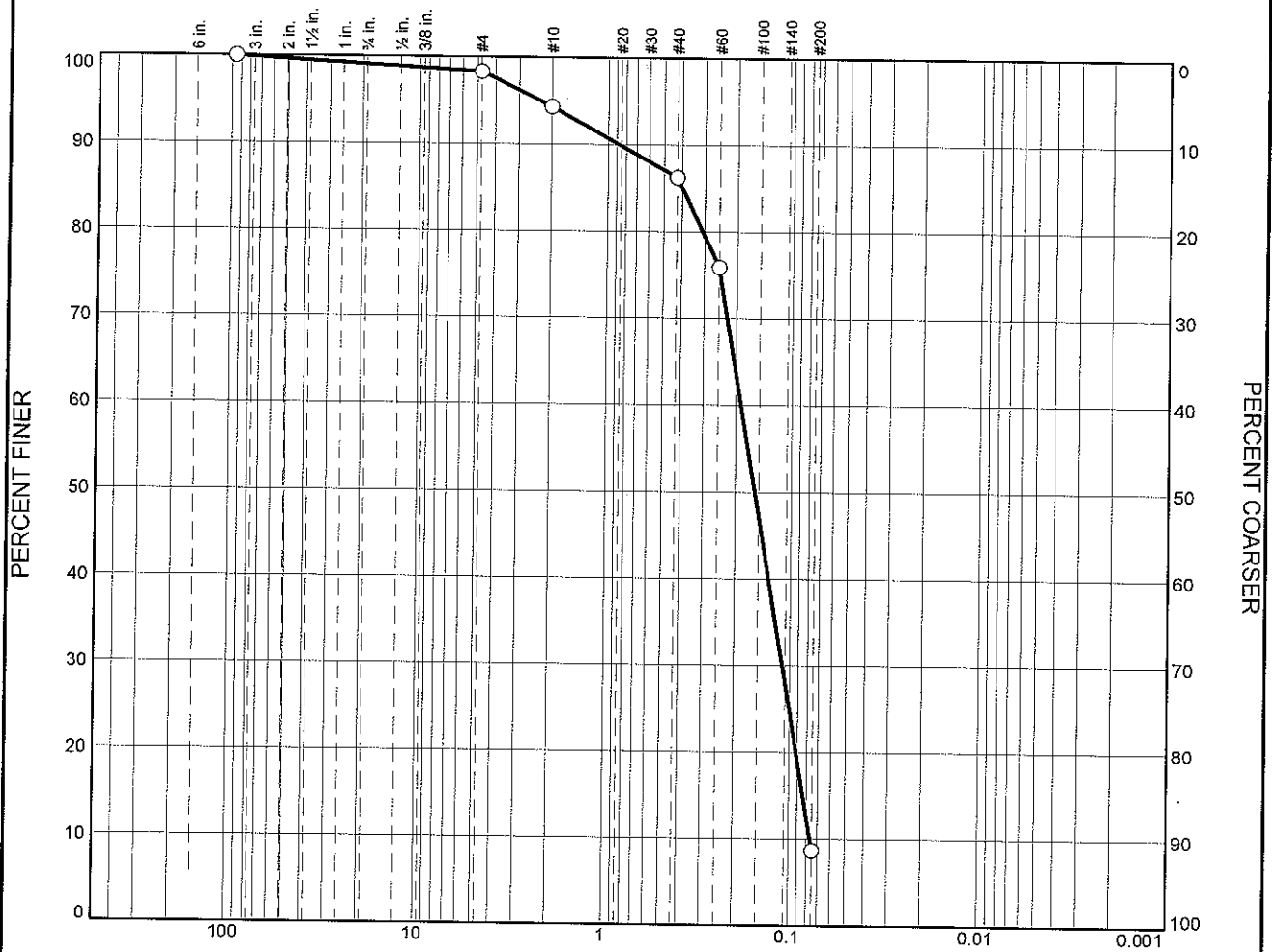
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.1132	0.1468	0.2471	0.3689	0.8112	2.1608

Fineness
Modulus

0.85

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.

GRAIN SIZE - mm.											
% Cobbles			% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.1		0.8	0.8	4.0	8.0	77.6	8.7			
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.3983	0.1881	0.1572	0.1099	0.0840	0.0768	0.84	2.45

Material Description								USCS	AASHTO
<input type="radio"/>									

Project No. L1009778 Client: NOAA
 Project: Larkin Mill Dam
 Source of Sample: LMD-07-02 Sample Number: L1009778-02
 Date: ☐

Alpha Analytical
 Mansfield, MA

Remarks:

Project

GRAIN SIZE DISTRIBUTION TEST DATA

7/7/2010

Client: NOAA

Project: Larkin Mill Dam

Project Number: L1009778

Location: LMD- 07 -02

Sample Number: L1009778-02

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
300.11	7.63	3.75	575.00	575.00	100.0	0.0
		#4	532.57	527.70	98.3	1.7
		#10	505.51	493.66	94.3	5.7
		#40	398.21	374.77	86.3	13.7
		#60	391.14	360.79	75.9	24.1
		#200	536.37	339.79	8.7	91.3

Fractional Components

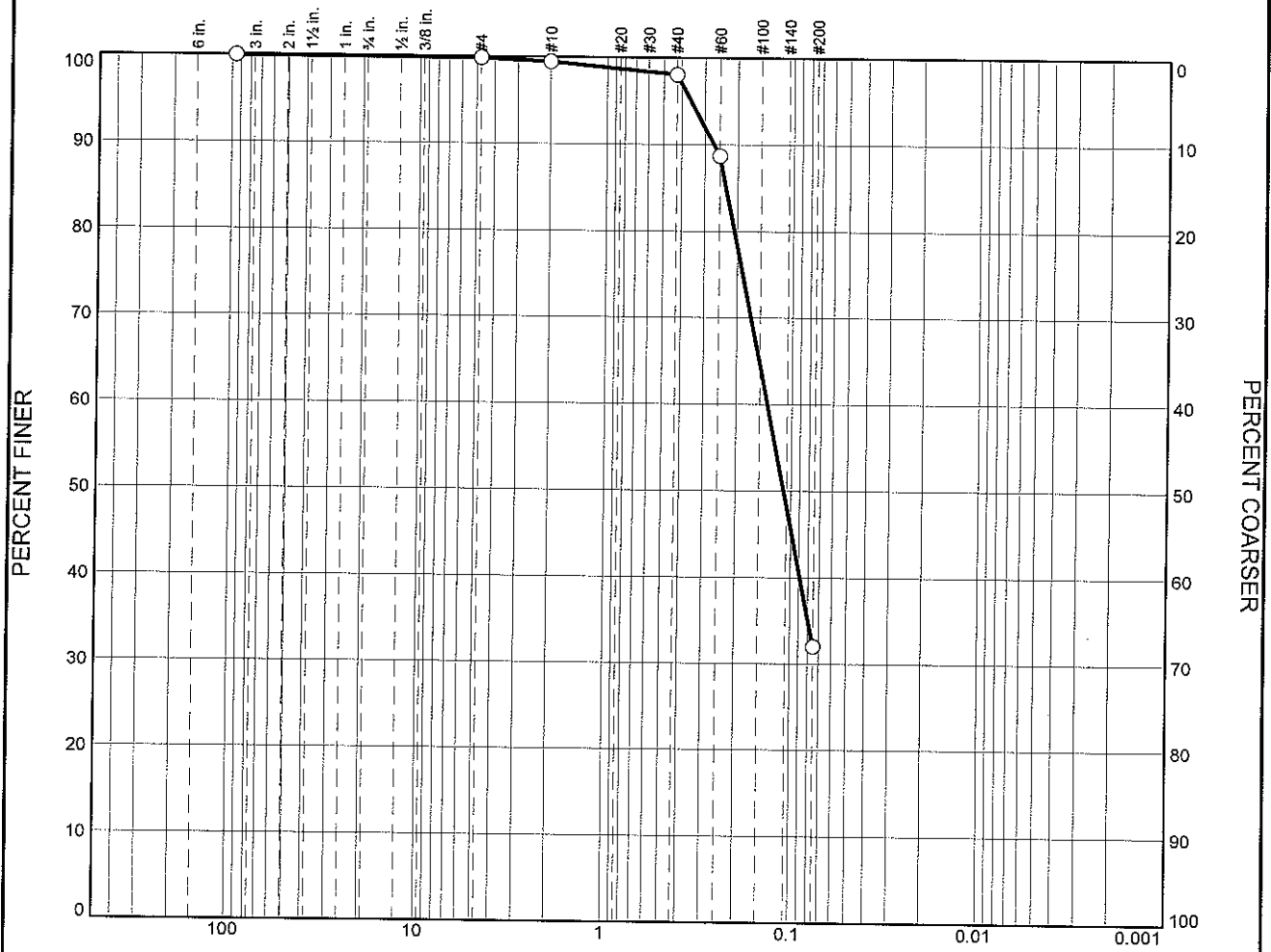
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.1	0.8	0.8	1.6	4.0	8.0	77.6	89.6			8.7

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0768	0.0840	0.0919	0.1099	0.1572	0.1881	0.3084	0.3983	0.8740	2.3306

Fineness Modulus	C _u	C _c
1.03	2.45	0.84

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.

GRAIN SIZE - mm.												
% Cobbles		% Gravel		% Sand			% Fines					
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay			
○	0.0		0.1	0.0	0.4	1.4	66.1	32.0				
⊗	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
○				0.2312	0.1359	0.1099						
Material Description									USCS		AASHTO	
○												

Project No. L1009778 Client: NOAA

Project: Larkin Mill Dam

Source of Sample: LMD- 07- 03

Sample Number: L1009778-03

Date: ○

Alpha Analytical

Mansfield, MA

Remarks:

Project

GRAIN SIZE DISTRIBUTION TEST DATA

7/7/2010

Client: NOAA

Project: Larkin Mill Dam

Project Number: L1009778

Location: LMD- 07- 03

Sample Number: L1009778-03

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
106.21	7.61	3.75	575.00	575.00	100.0	0.0
		#4	528.36	528.22	99.9	0.1
		#10	493.76	493.39	99.5	0.5
		#40	377.85	376.47	98.1	1.9
		#60	375.26	365.99	88.7	11.3
		#200	393.39	337.51	32.0	68.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.1	0.0	0.1	0.4	1.4	66.1	67.9			32.0

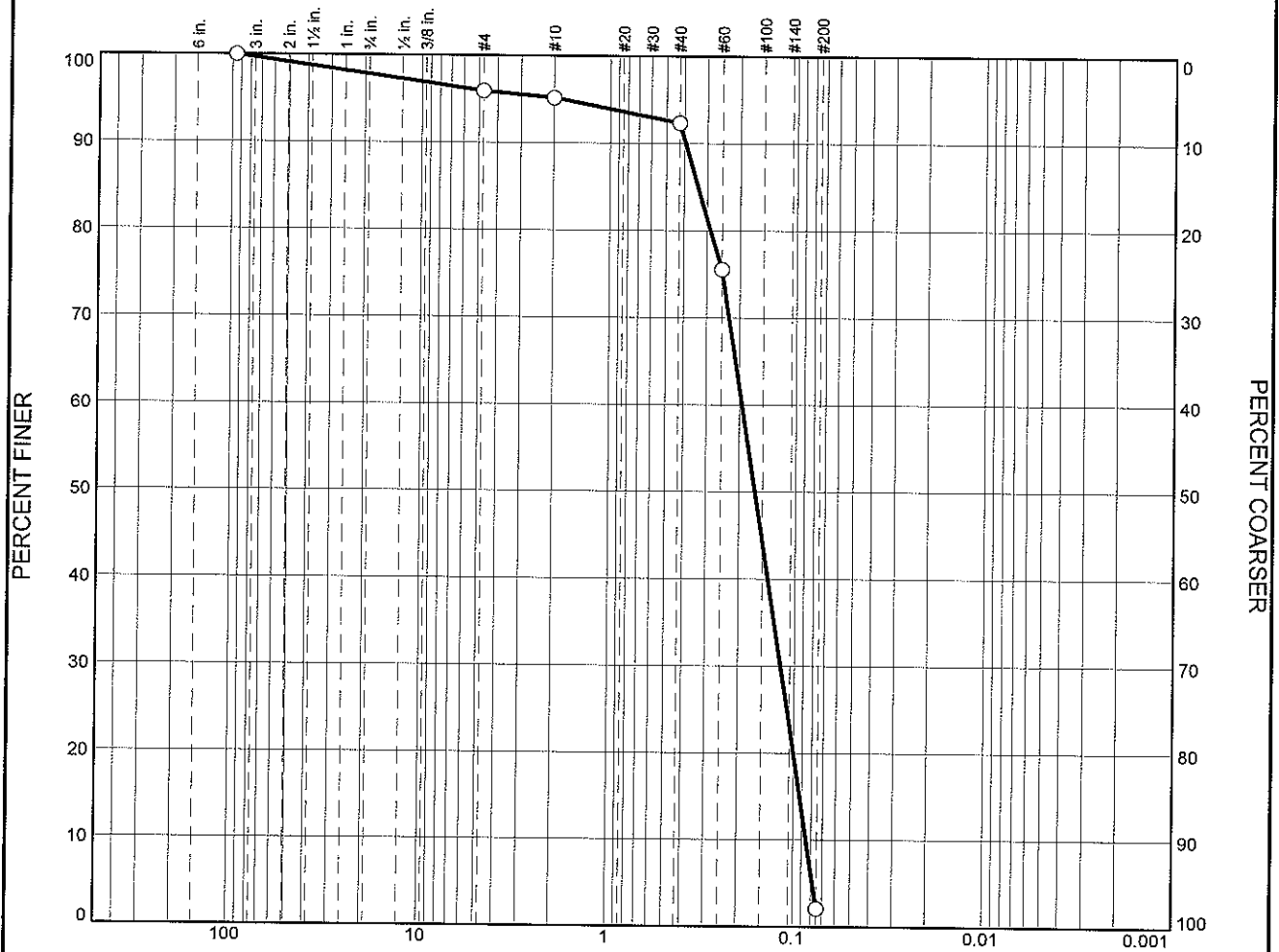
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.1099	0.1359	0.2079	0.2312	0.2693	0.3571

Fineness Modulus

0.47

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.

GRAIN SIZE - mm.												
% Cobbles		% Gravel		% Sand			% Fines					
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay			
<input type="radio"/>	0.3		1.9	1.9	0.8	2.8	90.2	2.1				
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
<input type="radio"/>				0.3372	0.1938	0.1645	0.1185	0.0927	0.0854	0.85	2.27	

Material Description								USCS	AASHTO
<input type="radio"/>								SP	

Project No. L1009778 Client: NOAA Project: Larkin Mill Dam <input type="radio"/> Source of Sample: LMD- 08 -01 Sample Number: L1009778-04 Date: <input type="radio"/> <div style="text-align: center;"> Alpha Analytical Mansfield, MA </div>	Remarks: <div style="text-align: right;">Project</div>
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GRAIN SIZE DISTRIBUTION TEST DATA

7/7/2010

Client: NOAA

Project: Larkin Mill Dam

Project Number: L1009778

Location: LMD- 08 -01

Sample Number: L1009778-04

USCS Classification: SP

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
324.56	7.89	3.75	575.00	575.00	100.0	0.0
		#4	540.64	527.70	95.9	4.1
		#10	496.08	493.66	95.1	4.9
		#40	383.70	374.77	92.3	7.7
		#60	414.02	360.79	75.5	24.5
		#200	572.26	339.79	2.1	97.9

Fractional Components

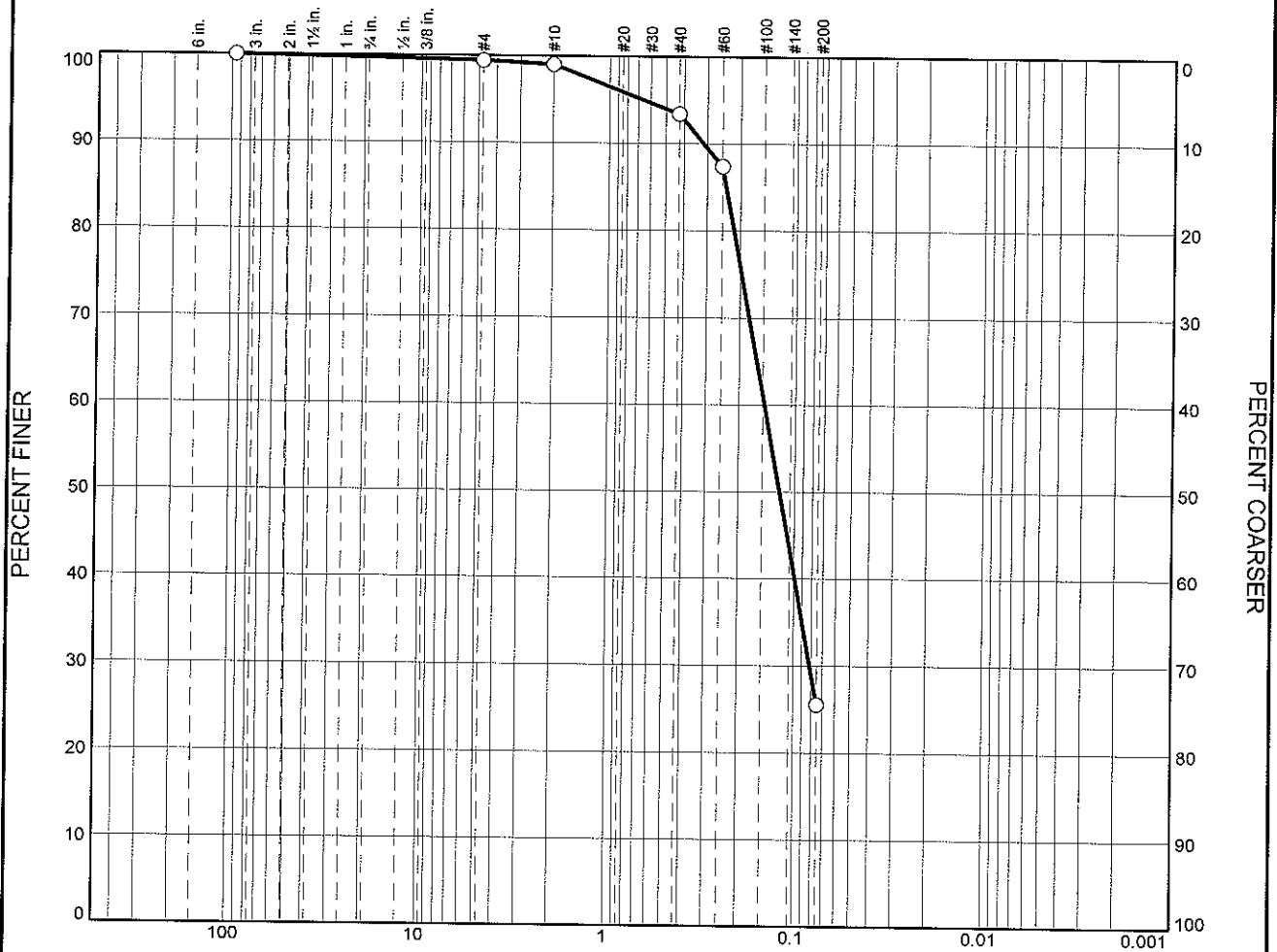
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.3	1.9	1.9	3.8	0.8	2.8	90.2	93.8			2.1

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
0.0854	0.0927	0.1006	0.1185	0.1645	0.1938	0.2880	0.3372	0.3949	1.8423

Fineness Modulus	C _u	C _c
1.03	2.27	0.85

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.

GRAIN SIZE - mm.												
% Cobbles		% Gravel		% Sand			% Fines					
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay			
<input type="radio"/>	0.0		0.3	0.2	0.5	5.6	67.8	25.6				
<input type="radio"/>												
<input type="radio"/>												
<input checked="" type="radio"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
<input type="radio"/>				0.2387	0.1467	0.1207	0.0817					
<input type="radio"/>												
<input type="radio"/>												
Material Description									USCS		AASHTO	
<input type="radio"/>												

Project No. L1009778 Client: NOAA

Project: Larkin Mill Dam

Source of Sample: LMD- 08- 02

Sample Number: L1009778-05

Date: ☐

Alpha Analytical

Mansfield, MA

Remarks:

Project

GRAIN SIZE DISTRIBUTION TEST DATA

7/7/2010

Client: NOAA

Project: Larkin Mill Dam

Project Number: L1009778

Location: LMD- 08- 02

Sample Number: L1009778-05

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
147.67	7.68	3.75	575.00	575.00	100.0	0.0
		#4	528.97	528.22	99.5	0.5
		#10	493.99	493.39	99.0	1.0
		#40	384.35	376.47	93.4	6.6
		#60	374.45	365.99	87.4	12.6
		#200	423.98	337.51	25.6	74.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.3	0.2	0.5	0.5	5.6	67.8	73.9			25.6

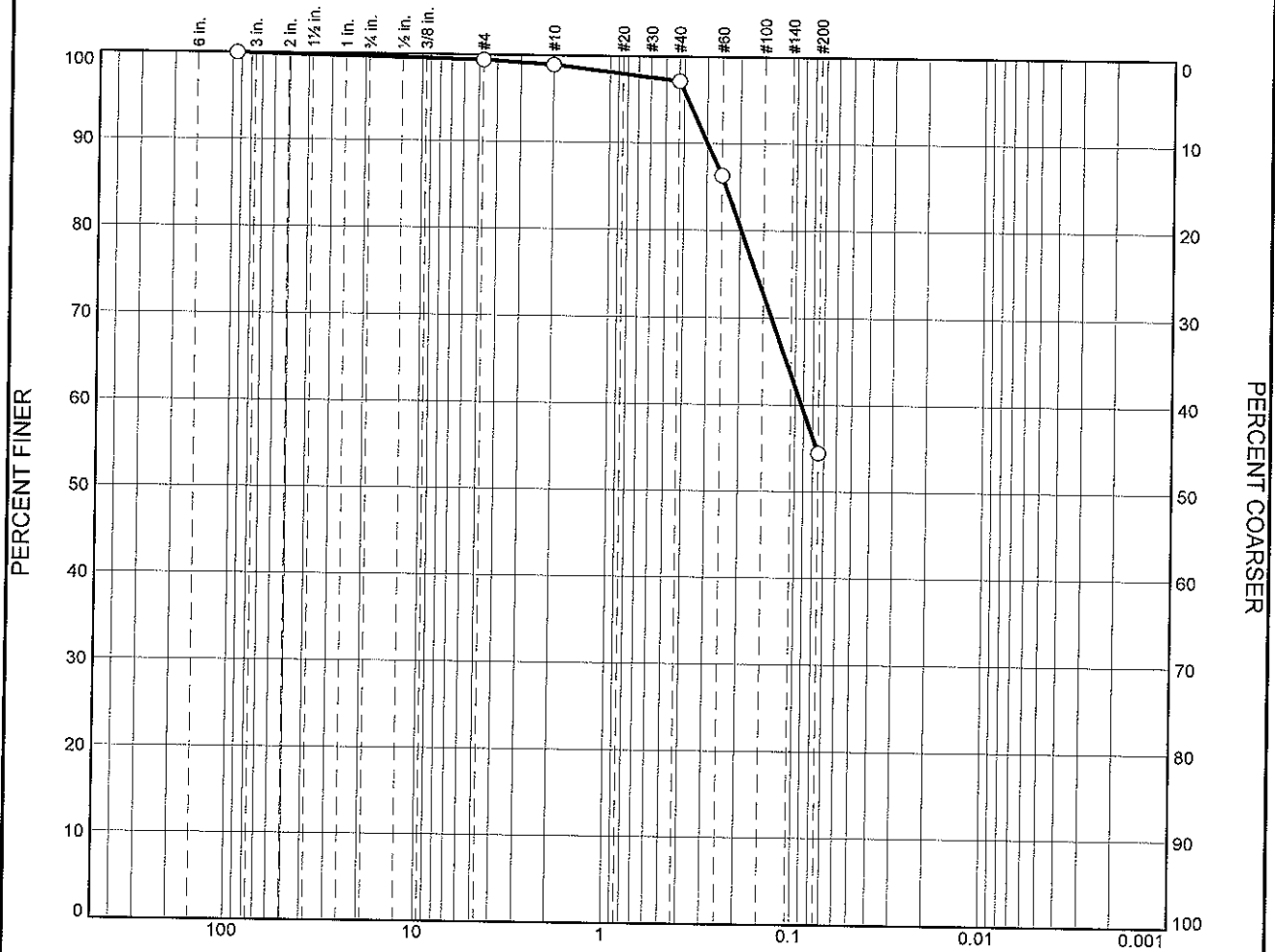
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0817	0.1207	0.1467	0.2166	0.2387	0.3151	0.6588

Fineness
Modulus

0.60

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.

GRAIN SIZE - mm.											
	% Cobbles		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>	0.0		0.3	0.3	0.5	1.7	42.8	54.4			
<input checked="" type="checkbox"/>	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>				0.2380	0.0926						

Material Description							USCS	AASHTO

Project No. L1009778 Client: NOAA

Project: Larkin Mill Dam

Source of Sample: LMD- 10- 01

Sample Number: L1009778-06

Remarks:

Date: ☐

Alpha Analytical

Mansfield, MA

Project

GRAIN SIZE DISTRIBUTION TEST DATA

7/7/2010

Client: NOAA

Project: Larkin Mill Dam

Project Number: L1009778

Location: LMD- 10- 01

Sample Number: L1009778-06

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
103.70	7.73	3.75	575.00	575.00	100.0	0.0
		#4	527.77	527.22	99.4	0.6
		#10	494.13	493.66	98.9	1.1
		#40	376.18	374.47	97.2	2.8
		#60	371.20	360.79	86.3	13.7
		#200	370.39	339.79	54.4	45.6

Fractional Components

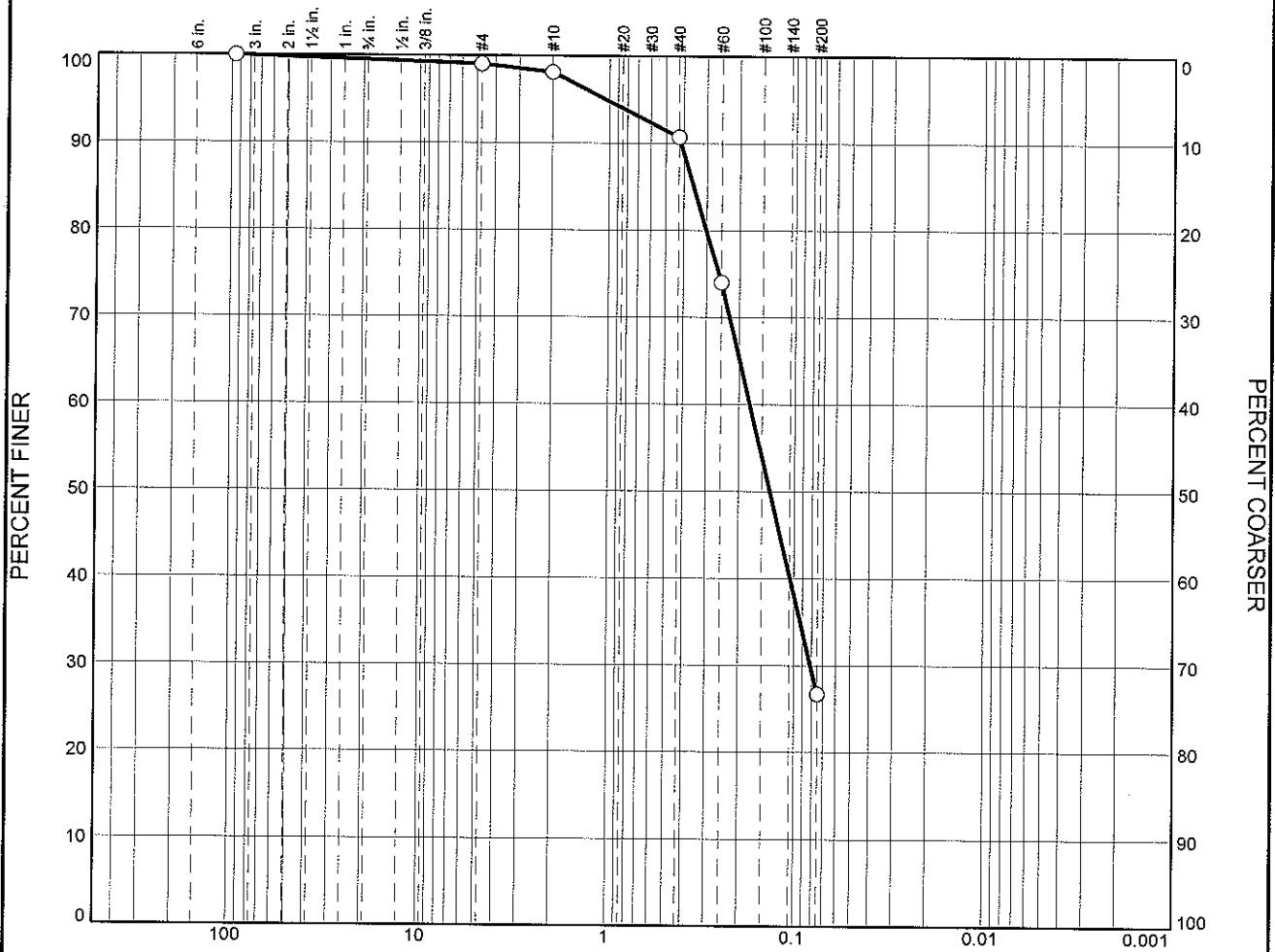
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.3	0.3	0.6	0.5	1.7	42.8	45.0			54.4

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
					0.0926	0.1970	0.2380	0.2995	0.3825

Fineness Modulus
0.44

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.

GRAIN SIZE - mm.												
% Cobbles		% Gravel		% Sand			% Fines					
		Coarse	Fine	Coarse	Medium	Fine	Silt		Clay			
○	0.1		0.4	0.4	1.0	7.4	64.0	26.7				
×	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
○				0.3545	0.1750	0.1356	0.0815					
Material Description									USCS		AASHTO	
○												

Project No. L1009778 Client: NOAA

Project: Larkin Mill Dam

○ Source of Sample: LMD- 10- 02

Sample Number: L1009778-07

Date: ○

Alpha Analytical

Mansfield, MA

Remarks:

Project

GRAIN SIZE DISTRIBUTION TEST DATA

7/7/2010

Client: NOAA

Project: Larkin Mill Dam

Project Number: L1009778

Location: LMD- 10- 02

Sample Number: L1009778-07

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
77.98	7.81	3.75	575.00	575.00	100.0	0.0
		#4	528.87	528.22	99.1	0.9
		#10	494.05	493.39	98.1	1.9
		#40	381.68	376.47	90.7	9.3
		#60	377.70	365.99	74.0	26.0
		#200	370.70	337.51	26.7	73.3

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.1	0.4	0.4	0.8	1.0	7.4	64.0	72.4			26.7

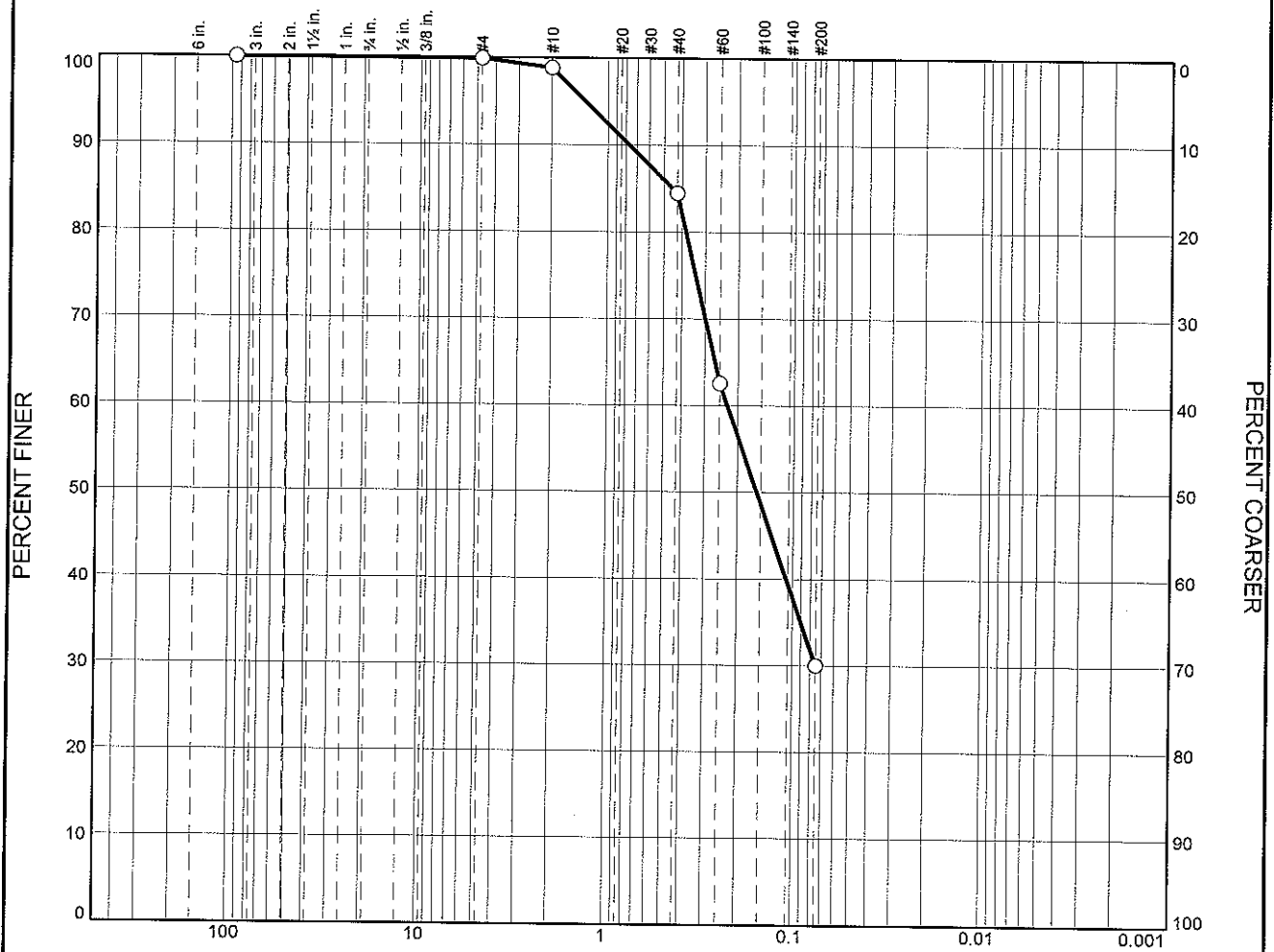
D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
			0.0815	0.1356	0.1750	0.3024	0.3545	0.4155	1.0404

Fineness
Modulus

0.83

Alpha Analytical

Particle Size Distribution Report



GRAIN SIZE - mm.

	% Cobbles		% Gravel		% Sand			% Fines		
	Coarse	Fine	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
○	0.0	0.1	0.0	1.1	14.3	54.5	30.0			
×	Colloids	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c
○				0.4480	0.2277	0.1572				

Material Description								USCS	AASHTO
○									

Project No. L1009778 Client: NOAA Project: Larkin Mill Dam ○ Source of Sample: LMD- 10- 03 Sample Number: L1009778-08 Date: ○ Alpha Analytical Mansfield, MA	Remarks: Project
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GRAIN SIZE DISTRIBUTION TEST DATA

7/7/2010

Client: NOAA

Project: Larkin Mill Dam

Project Number: L1009778

Location: LMD- 10- 03

Sample Number: L1009778-08

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer	Percent Retained
70.22	7.65	3.75	575.00	575.00	100.0	0.0
		#4	527.76	527.70	99.9	0.1
		#10	494.33	493.66	98.8	1.2
		#40	383.73	374.77	84.5	15.5
		#60	374.55	360.79	62.5	37.5
		#200	360.13	339.79	30.0	70.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.1	0.0	0.1	1.1	14.3	54.5	69.9			30.0

D ₁₀	D ₁₅	D ₂₀	D ₃₀	D ₅₀	D ₆₀	D ₈₀	D ₈₅	D ₉₀	D ₉₅
				0.1572	0.2277	0.3811	0.4480	0.7693	1.3212

Fineness Modulus
1.01

Alpha Analytical

Certificate/Approval Program Summary

Last revised June 1, 2010 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0141.

Wastewater/Non-Potable Water (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

Solid Waste/Soil (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.*

Non-Potable Water (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

Solid & Chemical Materials (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

Air & Emissions (EPA TO-15.)

Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.*

Non-Potable Water (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270,)

Solid & Chemical Materials (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

Biological Tissue (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.

Non-Potable Water (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.*

Non-Potable Water (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. *NELAP Accredited.*

Non-Potable Water (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

Atmospheric Organic Parameters (EPA TO-15)

Biological Tissue (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

New York Department of Health Certificate/Lab ID: 11627. **NELAP Accredited.**

Non-Potable Water (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

Air & Emissions (EPA TO-15.)

Rhode Island Department of Health Certificate/Lab ID: LAO00299. **NELAP Accredited via LA-DEQ.**

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. **NELAP Accredited.**

Solid & Chemical Materials (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

Air (Organic Parameters: EPA TO-15)

U.S. Army Corps of Engineers

Department of Defense Certificate/Lab ID: L2217.01.

Non-Potable Water (Inorganic Parameters: EPA 3005A, 3020, 6020, 245.1, 245.7, 1631E, 7470A, 7474, 9014, 120.1, 9050A, 180.1, SM4500H-B, 2320B, 2510B, 2540D, 9040. Organic Parameters: EPA 3510C, 5030B, 9010B, 624, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 3051, 6020, 747A, 7474, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).)

Air & Emissions (EPA TO-15.)

Analytes Not Accredited by NELAP

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.

