Report of:

WELL INSTALLATION AND GEOTECHNICAL TESTING
WEST JEFFERSON NORTH SITE

Prepared For:
Battelle Memorial Institute
505 King Ave.
Columbus, Ohio 43201

DLZ Ohio, Inc.
6121 Huntley Road
Columbus, Ohio 43229

September 24, 2002

DLZ Job No. 0221-4009.00

DLZ

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ENGINEERS • ARCHITECTS • SCIENTISTS
PLANNERS • SURVEYORS

September 17, 2002

Dr. Thomas G. Naymik
Environmental Restoration Department
Battelle Memorial Institute
505 King Ave.
Columbus, Ohio 43201

Re: Data Report
Well Installation and Geotechnical Testing
West Jefferson North Site
DLZ Job No. 0221-4009.00

Dear Mr. Naymik,

Please find enclosed the data developed for the well installation and geotechnical testing at the West Jefferson North Site. Please do not hesitate to call if you should have any questions, or if we may be of further assistance.

We wish to take this opportunity to thank all concerned with utilizing our services.

Sincerely

DLZ Ohio, Inc.

Paul de Verteuil, MSCE, P.E.
Field Services Division Manager

PDV/asg

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DATA REPORT
WELL INSTALLATION AND GEOTECHNICAL TESTING
WEST JEFFERSON NORTH SITE

For

Battelle Memorial Institute
505 King Ave.
Columbus, Ohio 43201

By

DLZ Ohio, Inc.
6121 Huntley Road
Columbus, Ohio 43229

September 18, 2002
DLZ Job No. 0221-4009-00

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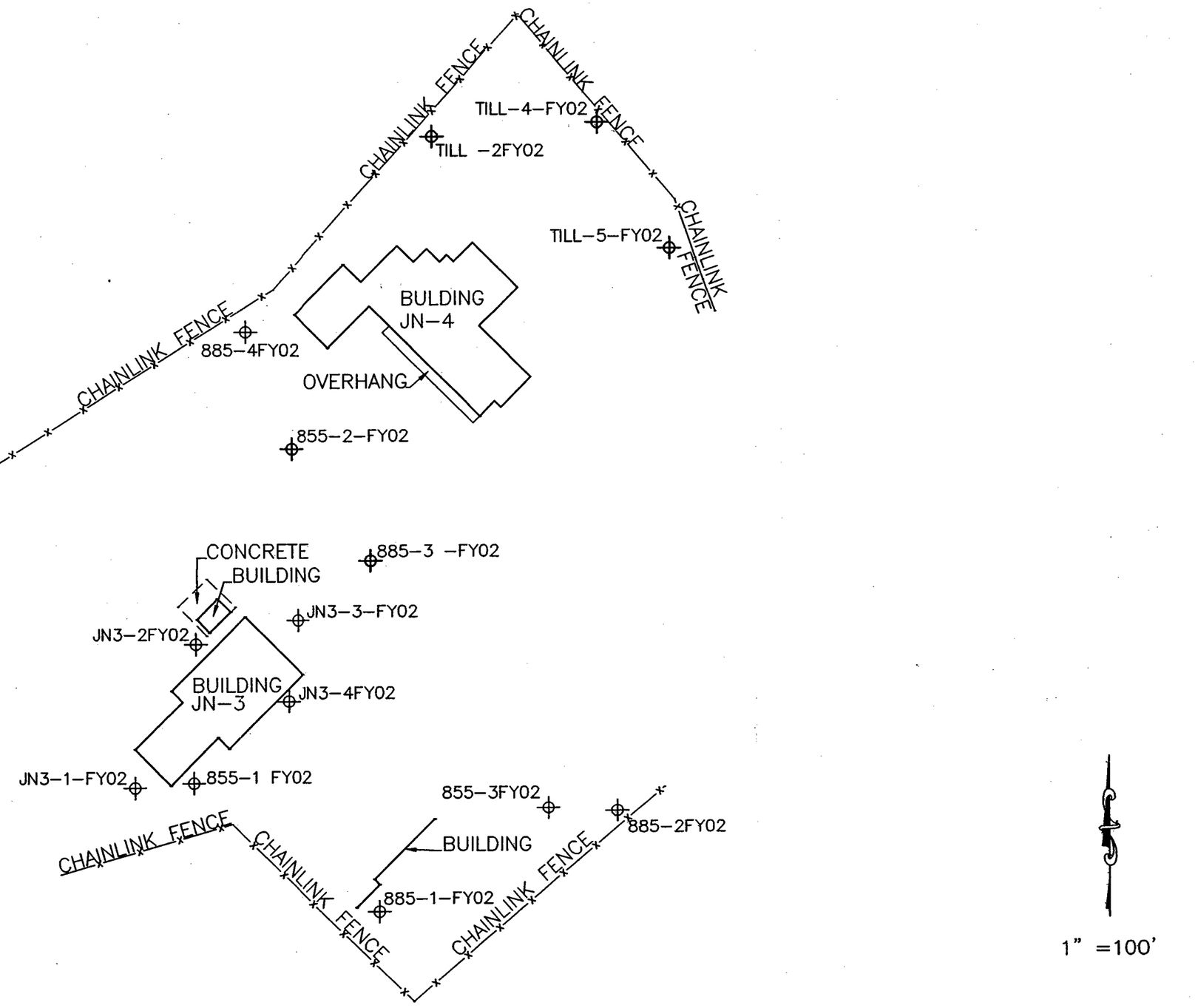
BORING/MONITORING LOCATION PLAN
SURVEY DATA



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BORING/MONITORING WELL LOCATION PLAN
WEST JEFFERSON NORTH SITE

DRAWN	JMD
CHK'D.	
APPRV'D	
DATE	9-13-02
PROJECT NUMBER	0221-4009.00

NO.	REVISION	BY	DATE

REFERENCE SHEET:

DRAWING NUMBER

BATTELLE BORING LOCATIONS

BORING NAME/#	NORTHING	EASTING	ELEVATION	DESCRIPTION
855-1-FY02	717251.49	1758008.02	914.03	GROUND
			916.37	TOP OF CASING
			916.26	TOP HIGH SIDE OF RISER
855-2-FY02	717547.97	1758096.11	916.03	GROUND
			918.85	TOP OF CASING
			918.665	TOP HIGH SIDE OF RISER
855-3-FY02	717228.21	1758322.68	912.24	GROUND
			914.685	TOP OF CASING
			914.435	TOP HIGH SIDE OF RISER
JN3-1-FY02	717247.65	1757955.51	911.61	GROUND
			914.24	TOP OF CASING
			914.005	TOP HIGH SIDE OF RISER
JN3-2-FY02	717374.60	1758010.09	914.5	GROUND
			916.875	TOP OF CASING
			916.66	TOP HIGH SIDE OF RISER
JN3-3-FY02	717395.46	1758101.02	914.67	GROUND
			916.85	TOP OF CASING
			916.65	TOP HIGH SIDE OF RISER
JN3-4-FY02	717323.79	1758092.39	914.79	GROUND
			917.18	TOP OF CASING
			917.005	TOP HIGH SIDE OF RISER
885-1-FY02	717135.93	1758172.35	913.84	GROUND
			916.395	TOP OF CASING
			916.24	TOP HIGH SIDE OF RISER
885-2-FY02	717225.45	1758383.41	911.48	GROUND
			914.135	TOP OF CASING
			913.82	TOP HIGH SIDE OF RISER
885-3 -FY02	717448.32	1758165.85	916.10	GROUND
885-4-FY02	717652.06	1758055.56	915.76	GROUND
			918.335	TOP OF CASING
			918.22	TOP HIGH SIDE OF RISER
TILL -2FY02	717825.74	1758222.30	913.25	GROUND
TILL-4-FY02	717838.17	1758368.62	911.02	GROUND
TILL-5-FY02	717725.04	1758432.17	909.78	GROUND

LEGEND - BORING LOG TERMINOLOGY
BORING LOGS - 2 BORINGS

LEGEND – BORING LOG TERMINOLOGY

Explanation of each column, progressing from left to right

1. Depth (in feet) – refers to distance below the ground surface.

2. Elevation (in feet) – is referenced to mean sea level, unless otherwise noted.

3. Standard Penetration (N) – the number of blows required to drive a 2-inch O.D., 1-3/8 inch I.D., split-barrel sampler, using a 140-pound hammer with a 30-inch free fall. The blows are recorded in 6-inch drive increments. Standard penetration resistance is determined from the total number of blows required for one foot of penetration by summing the second and third 6-inch increments of an 18-inch drive.

   50/n – indicates number of blows (50) to drive a split-barrel sampler a certain number of inches (n) other than the normal 6-inch increment.

4. The length of the sampler drive is indicated graphically by horizontal lines across the "Standard Penetration" and "Recovery" columns.

5. Sample recovery from each drive is indicated numerically in the column headed "Recovery".

6. The drive sample location is designated by the heavy vertical bar in the "Sample No., Drive" column.

7. The length of hydraulically pressed "Undisturbed" samples is indicated graphically by horizontal lines across the "Press" column.

8. Sample numbers are designated consecutively, increasing in depth.

9. Soil Description

   a. The following terms are used to describe the relative compactness and consistency of soils:

   Granular Soils – Compactness

Term	Blows/Foot Standard Penetration
Very Loose	0 – 4
Loose	4 – 10
Medium Dense	10 – 30
Dense	30 – 50
Very Dense	over 50

   Cohesive Soils – Consistency

Term	Unconfined Compression tons/sq.ft.	Blows/Foot Standard Penetration	Hand Manipulation
Very Soft	less than 0.25	below 2	Easily penetrated by fist
Soft	0.25 – 0.50	2 – 4	Easily penetrated by thumb
Medium Stiff	0.50 – 1.0	4 – 8	Penetrated by thumb with moderate pressure
Stiff	1.0 – 2.0	8 – 15	Readily indented by thumb but not penetrated
Very Stiff	2.0 – 4.0	15 – 30	Readily indented by thumb nail
Hard	over 4.0	over 30	Indented with difficulty by thumb nail

   b. Color – If a soil is a uniform color throughout, the term is single, modified by such adjective as light and dark. If the predominant color is shaded by a secondary color, the secondary color precedes the primary color. If two major and distinct colors are swirled throughout the soil, the colors are modified by the term "mottled".

   c. Texture is based on the Unified Classification System. Soil particle size definitions are as follows:

Description		Size	Description		Size
Boulders		Larger than 8"	Sand	– Coarse	4.76 mm to 2.0 mm
Cobbles		8" to 3"		– Medium	2.0 mm to 0.42 mm
Gravel	– Coarse	3" to 0.75"		– Fine	0.42 mm to 0.074 mm
	– Fine	0.75" to 0.1875"	Silt		0.074 mm to 0.005 mm
			Clay		smaller than 0.005 mm

d. The main soil component is listed first. The minor components are listed in order of decreasing percentage of particle size.

e. Modifiers to main soil descriptions are indicated as a percentage by weight of particle sizes.

trace	0 to 10%
little	10 to 20%
some	20 to 35%
"and"	35 to 50%

f. Moisture content of **cohesionless soils** (sands and gravels) is described as follows:

Term	Relative Moisture or Appearance
Dry	No moisture present
Damp	Internal moisture, but none to little surface moisture
Moist	Free water on surface
Wet	Voids filled with free water

g. The moisture content of **cohesive soils** (silts and clays) is expressed relative to plastic properties.

Term	Relative Moisture or Appearance
Dry	Powdery
Damp	Moisture content slightly below plastic limit
Moist	Moisture content above plastic limit but below liquid limit
Wet	Moisture content above liquid limit

10. Rock Hardness and Rock Quality Designation

a. The following terms are used to describe the relative hardness of the **bedrock**.

Term	Description
Very Soft	Permits denting by moderate pressure of the fingers. Resembles hard soil but has rock structure. (Crushes under pressure of fingers and/or thumb)
Soft	Resists denting by fingers, but can be abraded and pierced to shallow depth by a pencil point. (Crushes under pressure of pressed hammer)
Medium Hard	Resists pencil point, but can be scratched with a knife blade. (Breaks easily under single hammer blow, but with crumbly edges.)
Hard	Can be deformed or broken by light to moderate hammer blows. (Breaks under one or two strong hammer blow, but with resistant sharp edges.)
Very Hard	Can be broken only by heavy and in some rocks repeated hammer blows.

b. Rock Quality Designation, RQD – This value is expressed in percent and is an indirect measure of rock soundness. It is obtained by summing the total length of all core pieces which are at least four inches long, and then dividing this sum by the total length of the core run.

11. Gradation – when tests are performed, the percentage of each particle size is listed in the appropriate column (defined in Item 9c).

12. When a test is performed to determine the natural moisture content, liquid limit moisture content, or plastic limit moisture content, the moisture content is indicated graphically.

13. The standard penetration (N) value in blows per foot is indicated graphically.

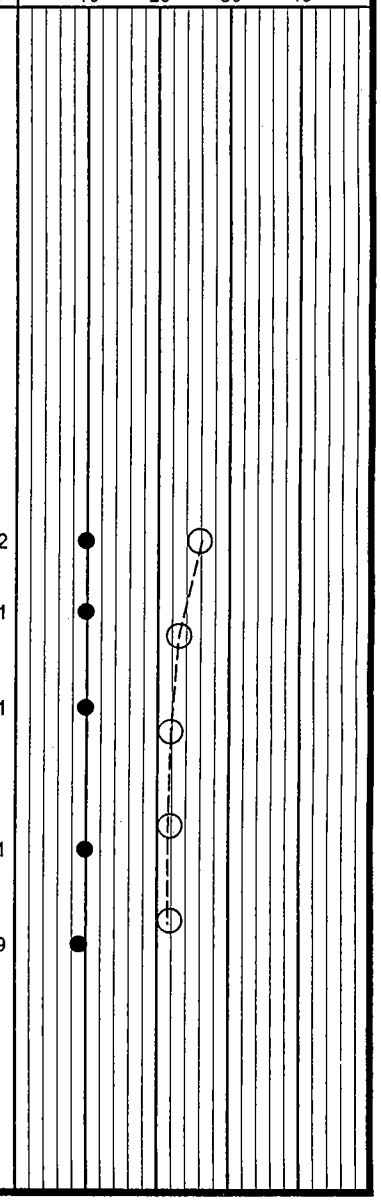
Client: Battelle	Project: West Jefferson North Site	Job No. 0221-4009.00
LOG OF: Till #5 FY-02	**Location:** N-717725.04, E-1758432.17	**Date Drilled:** 7-23-02

WATER OBSERVATIONS:
Water seepage at: NA
Water level at completion: No Free Water

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay
0	909.8		0										
							Augered without sampling to 20 feet.						
15	894.8												
20	889.8												
		6 11 15		1		4.5+	Hard dark gray CLAYEY SILT (CL-ML) "and" fine to coarse sand, trace fine gravel; damp.						
21.9	887.9							2	4	11	21	39	22
22.0	887.8	16	24	2a/2b		4.5+							
		4 9 14		3		4.5+	Medium dense brown fine to coarse SAND (SC-SM) "and" clayey silt, trace fine gravel; moist.	6	4	11	20	40	21
		17	24	4		4.5+	Hard dark gray CLAYEY SILT (CL-ML) "and" fine to coarse sand, trace fine gravel; damp.						
25	884.8	5 9 13		5		4.5+		3	4	12	23	37	21
		18	24	6		4.5+							
		7 9 13		7		4.5+							
		18	24	8		4.5+		3	3	14	22	37	21
		4 8 14		9		4.5+							
30	879.8	18	24	10		4.5+		1	3	13	26	38	19
							Bottom of Boring - 30.3'						
35	874.8												

STANDARD PENETRATION (N) — Blows per foot: 10 20 30 40

Moisture Content - % — PL Natural LL: 10 20 30 40



Client: Battelle | **Project:** West Jefferson North Site | **Job No.** 0221-4009.00

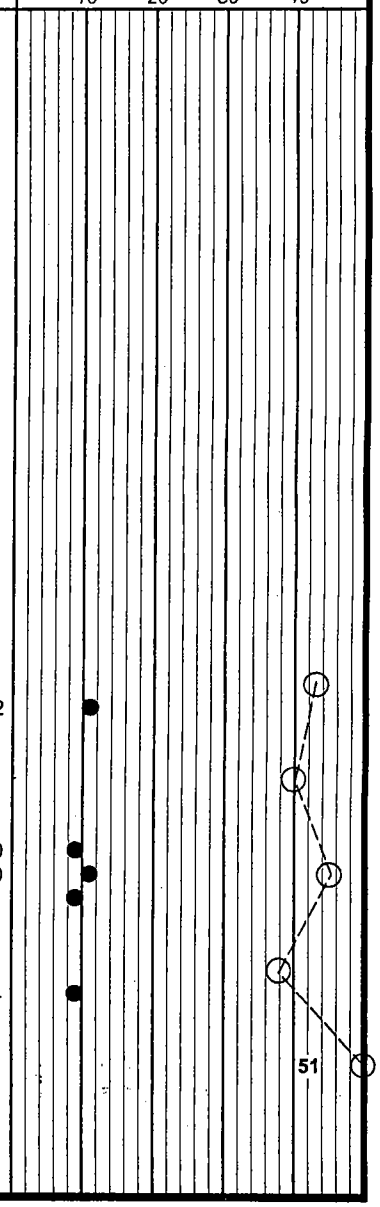
LOG OF: 885 #1 FY-02 | **Location:** N-717135.93, E-1758172.35 | **Date Drilled:** 7-26-02

WATER OBSERVATIONS:
Water seepage at: NA
Water level at completion: No Free Water

STANDARD PENETRATION (N) — Blows per foot (10, 20, 30, 40)

Moisture Content - % — PL, Natural, LL (10, 20, 30, 40)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay
0	913.8		0										
15	898.8						Augered without sampling to 23 feet.						
20	893.8												
23.0	890.8												
		10 17 26		1		4.5+	Hard dark gray CLAYEY SILT (CL-ML) "and" fine to coarse sand, trace fine gravel; damp.						
25	888.8	28	24	2		4.5+		5	3	12	21	38	22
		9 15 25		3		4.5+							
		25	24	4		4.5+							
28.3	885.7	11 21		5a		4.5+		4	3	12	22	39	20
28.4	885.6	24		5b		NA	Medium dense dark gray fine to coarse SAND (SC-SM), "and" clayey silt, trace fine gravel; moist-damp.	3	6	12	21	39	20
		29	24	6		4.5+		3	3	12	21	40	21
30	883.8	14 15 23		7		4.5+	Hard dark gray CLAYEY SILT (CL-ML) "and" fine to coarse sand, trace fine gravel; damp.						
		43	24	8		4.5+		3	3	11	18	41	24
		10 19 32		9		4.5+							
33.0	880.8	49	24	10		4.5+							
35	878.8						Bottom of Boring - 33.0'						



Client: Battelle | **Project:** West Jefferson North Site | **Job No.** 0221-4009.00

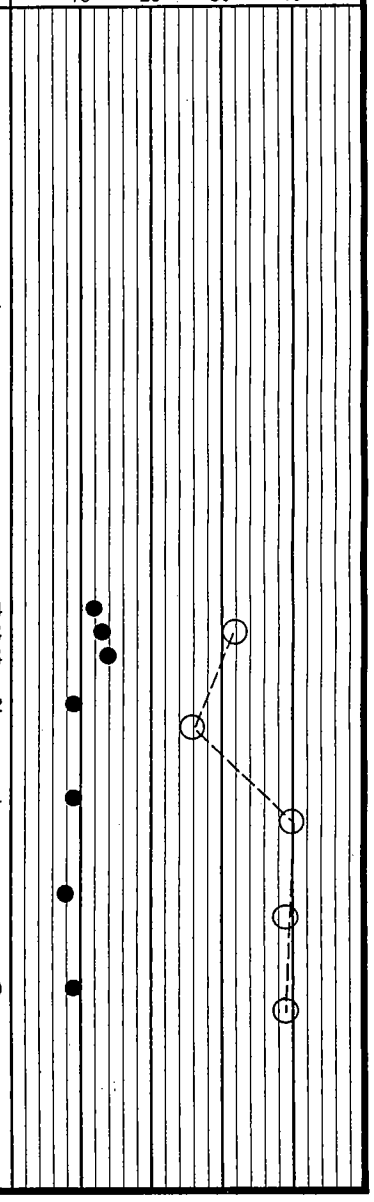
LOG OF: 885 #2 FY-02 | **Location:** N-717225.45, E-1758383.41 | **Date Drilled:** 8-5-02

WATER OBSERVATIONS:
Water seepage at: NA
Water level at completion: No Free Water

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press	Hand Penetro-meter (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay
0	911.5												
							Augered without sampling to 22 feet.						
15	896.5												
20	891.5												
22.0	889.5												
		6 14		1		4.5+	Hard dark gray CLAYEY SILT (CL-ML), some fine to coarse sand, trace fine gravel; damp.	5	3	9	19	41	24
23.8	887.7	18		2a		4.5+		6	3	11	19	38	24
24.0	887.5	24	24	2b		NA	Medium dense dark gray fine to coarse SAND (SC-SM), little clayey silt, trace fine to coarse gravel; moist.	1	2	17	24	34	24
25	886.5	10 11 15		3		4.5+		2	4	11	21	41	22
		22	24	4		4.5+	Hard dark gray CLAYEY SILT (CL-ML) "and" fine to coarse sand, trace fine gravel; damp.						
		7 15		5		4.5+		2	4	12	20	39	24
		25		6		4.5+							
		37	15										
		11 19 20		7		4.5+		6	4	12	21	36	21
30	881.5	24	24	8		4.5+							
		10 18 21		9		4.5+		3	5	10	25	38	20
32.0	879.5	22	24	10		4.5+							
							Bottom of Boring - 32.0'						
35	876.5												

STANDARD PENETRATION (N) — Blows per foot: 10 20 30 40

Moisture Content - % — PL Natural LL: 10 20 30 40



Client: Battelle | **Project:** West Jefferson North Site | **Job No.** 0221-4009.00

LOG OF: 885 #3 FY-02 | **Location:** N-717448.32, E-1758165.85 | **Date Drilled:** 8-7-02

WATER OBSERVATIONS:
Water seepage at: NA
Water level at completion: No Free Water

STANDARD PENETRATION (N) — Blows per foot (10, 20, 30, 40)

Moisture Content - % — PL, Natural, LL (10, 20, 30, 40)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural	LL
0	916.1														
20	896.1						Augered without sampling to 26 feet.								
25	891.1														
26.0	890.1														
		11 16 21		1		4.5+									
		25	24	2		4.5+	Hard dark gray CLAYEY SILT (CL-ML), "and" fine to coarse sand, trace fine gravel; damp.	3	3	9	21	38	25		
		14 21 27		3		4.5+									
30	886.1	32	24	4		4.5+		4	5	11	21	37	23		
		13 27 30		5		4.5+									
		38	24	6		4.5+		3	4	10	23	38	22	57	
		12 12 22		7		4.5+									
		34	24	8		4.5+									
35	881.1	20 31 41		9		4.5+		3	6	11	23	35	22	72	
36.0	880.1	49	24	10		4.5+									
							Bottom of Boring - 36.0'								
40	876.1														

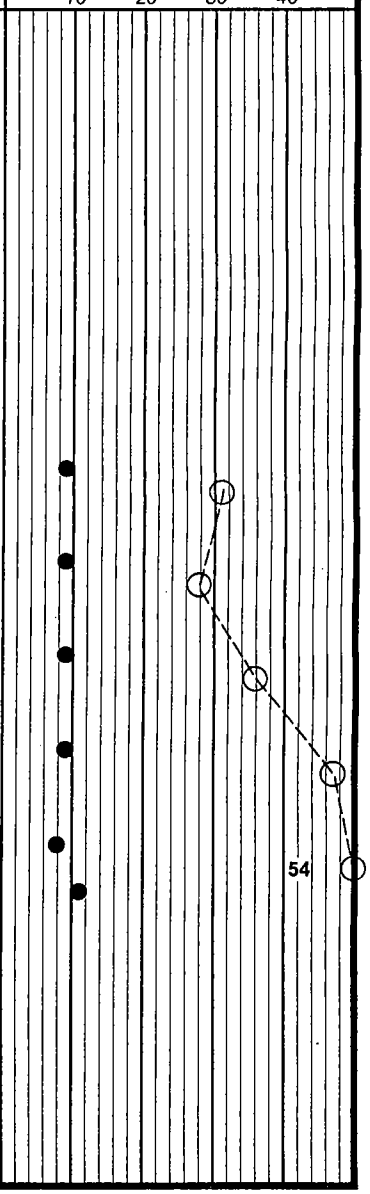
Client: Battelle	Project: West Jefferson North Site	Job No. 0221-4009.00
LOG OF: 885 #4 FY-02	**Location:** N-717652.06, E-1758055.56	**Date Drilled:** 8-6-02

WATER OBSERVATIONS:
Water seepage at: NA
Water level at completion: No Free Water

STANDARD PENETRATION (N) — Blows per foot (10, 20, 30, 40)

Moisture Content - % — PL, Natural, LL (10, 20, 30, 40)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	N
0	915.8													
							Augered without sampling to 24 feet.							
20	895.8													
24.0	891.8													
25	890.8	9 13 18		1		4.5+	Hard dark gray CLAYEY SILT (CL-ML), "and" fine to coarse sand, trace fine gravel; damp.	3	3	12	20	38	25	
		24	24	2		4.5+								
		7 11 17		3		4.5+		4	3	10	21	39	24	
		20	24	4		4.5+								
		12 13 23		5		4.5+		2	3	13	19	38	24	
30	885.8	21	24	6		4.5+								
		10 15 32		7		4.5+		3	3	11	20	40	24	
		45	19	8		NA	Dense dark gray fine to coarse SAND (SC-SM), some clayey silt, trace fine gravel; moist.							
33.4	882.4	17 21		9		4.5+		6	3	10	20	39	23	
33.5	882.3	33		10a		NA	Hard dark gray CLAYEY SILT (CL-ML), "and" fine to coarse sand, trace fine gravel; moist.							54
34.0	881.8	34	24	10b		4.5+		3	4	11	28	37	17	
35	880.8													
							Bottom of Boring - 34.0'							
37.0	878.8													
40	875.8													



Client: Battelle | **Project:** West Jefferson North Site | **Job No.** 0221-4009.00

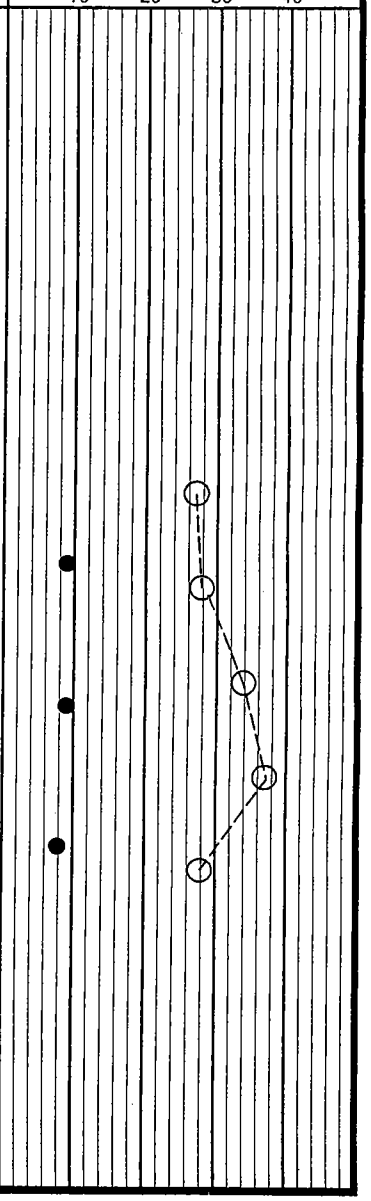
LOG OF: 855 #1 FY-02 | **Location:** N-717251.49, E-1758008.02 | **Date Drilled:** 7-29-02

WATER OBSERVATIONS:
Water seepage at: 57.7'
Water level at completion: 11.06'
(Water level taken after washing out borehole)

STANDARD PENETRATION (N) — Blows per foot (10, 20, 30, 40)

Moisture Content - % — PL, Natural, LL (10, 20, 30, 40)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay
0	914.0												
20	894.0						Augered without sampling to 24 feet.						
24.0	890.0												
25	889.0	9 11 16		1		4.5+	Hard dark gray CLAYEY SILT (CL-ML) "and" fine to coarse sand; damp.						
		19	24	2		4.5+							
		9 10 18		3		4.5+		0	7	8	20	40	24
		17	24	4		4.5+							
		10 14 20		5		4.5+							
30	884.0	23	24	6		4.5+		0	4	10	20	42	24
		13 17 20		7		4.5+							
		21	24	8		4.5+							
		10 14 14		9		4.5+		0	9	10	23	38	20
34.0	880.0	22	24	10		4.5+							
35	879.0						Augered without sampling from 34 to 54 feet.						
40	874.0												



Client: Battelle	Project: West Jefferson North Site	Job No. 0221-4009.00
LOG OF: 855 #1 FY-02	Location: N-717251.49, E-1758008.02	Date Drilled: 7-29-02

WATER OBSERVATIONS:
Water seepage at: 57.7'
Water level at completion: 11.06'
(Water level taken after washing out borehole)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Standard Penetration (N) Blows per foot	Moisture Content - % PL / Natural / LL
40	874.0														
45	869.0						Augered without sampling from 34 to 54 feet.								
50	864.0														
54.0	860.0														
55	859.0	26 50/3		11		4.5+	Hard dark gray CLAYEY SILT (CL-ML) "and" fine to coarse sand, trace fine gravel; damp.	6	5	14	26	34	16	50+	
		- -	8	12		No Smpl									
		22 34		13		4.5+									
57.7	856.3	40 50/4	22	14a 14b		4.5+ NA		0	9	14	27	36	14	74	
60	854.0	10 11 10 16	17	15 16		NA NA	Dense to very dense dark gray fine to coarse SAND (SP), "and" fine gravel, trace clayey silt; contains shale fragments; wet.	24 21	14 18	48 44	11 12	2 2	1 3		
		46 49 49 50/4	14	17 18		NA NA	Approximate porosity (n) = 25%	6	11	46	22	10	6	98	
64.0	850.0	27 40 43 47	17	19 20		NA NA		16	22	31	18	10	3	83	
65	849.0						Bottom of Boring - 64.0'								

Client: Battelle | **Project:** West Jefferson North Site | **Job No.** 0221-4009.00

LOG OF: 855 #2 FY-02 | **Location:** N-717547.97, E-1758096.11 | **Date Drilled:** 8-1-02

WATER OBSERVATIONS:
Water seepage at: 58.0'
Water level at completion: 14.08'
(Water level taken after washing out borehole)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Moisture Content - % (PL X, Natural ●, LL X; 10 20 30 40)	Standard Penetration (N) Blows per foot (○)
0	916.0														
							Augered without sampling to 26 feet.								
25	891.0														
26.0	890.0														
26.3	889.7	21		1a		4.5+	Hard dark gray CLAYEY SILT (CL-ML), some fine to coarse sand, trace fine gravel; damp.	2	3	11	18	41	26		
27.0	889.0	48		1b		NA		0	1	1	6	86	7		
		32		2a		4.5+	Dense dark gray SILT (ML), trace fine to coarse sand, trace clay; moist.	1	3	9	16	42	29		80
27.8	888.2	50/4	22	2b		NA		0	0	1	8	81	10		
		29					Hard dark gray CLAYEY SILT (CL-ML), trace to some fine to coarse sand, trace fine gravel; damp.								
		43		3		NA		0	0	2	12	81	6		
		37					Dense dark gray SILT (ML), trace to little fine to medium sand, trace clay; moist.								80
		44	24	4		NA									
30.5	885.5	25													
		35		5		4.5+	Hard dark gray CLAYEY SILT (CL-ML), "and" fine to coarse sand, trace fine gravel; damp to moist.	3	4	12	19	39	23		
		36													71
		49	24	6		4.5+									
		21													
		36		7		4.5+									
		36													72
		48	24	8		4.5+									
		15													
35	881.0	36		9		4.5+									
		50/5		10		4.5+		4	6	13	22	36	20		50+
36.0	880.0	-	17												
							Augered without sampling to 56 feet.								
40	876.0														
45	871.0														

Client: Battelle | **Project:** West Jefferson North Site | **Job No.** 0221-4009.00

LOG OF: 855 #2 FY-02 | **Location:** N-717547.97, E-1758096.11 | **Date Drilled:** 8-1-02

WATER OBSERVATIONS:
Water seepage at: 58.0'
Water level at completion: 14.08'
(Water level taken after washing out borehole)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Standard Penetration (N) Blows per foot	Moisture Content - % (PL / Natural / LL)
45	871.0														
50	866.0						Augered without sampling to 56 feet.								
55	861.0														
56.0	860.0														
		15 23 46		11		4.5+	Medium dense to dense brown fine to coarse SAND (SC-SM), "and" clayey silt, trace to little fine gravel; damp.	18	4	13	23	30	14	69	
58.0	858.0	49	24	12		4.5+		4	5	17	26	36	13		
		13 19 36		13		NA	Medium dense to dense brown and dark gray fine to coarse SAND (SP), trace to some fine to coarse gravel, trace to some clayey silt; wet.	26	11	30	21	9	4	55	
60	856.0	38	24	14		NA		8	5	15	35	29	7		
		15 11		15		NA	Approximate porosity (n) =22%	2	8	44	35	9	3		
61.6	854.4	15		16a		NA		22	1	36	30	8	4		
		49	24	16b		4.5+		9	5	16	24	32	14		
		8 50/5		17		4.5+	Hard dark gray CLAYEY SILT (CL-ML) "and" fine to coarse sand, trace fine gravel; damp.							50+	
		- -	5	18		No Smpl									
		50/5 -		19		4.5+		8	3	13	23	34	19		
65	851.0	-												50+	
66.0	850.0	-	5	20		No Smpl									
70	846.0						Bottom of Boring - 66.0'								

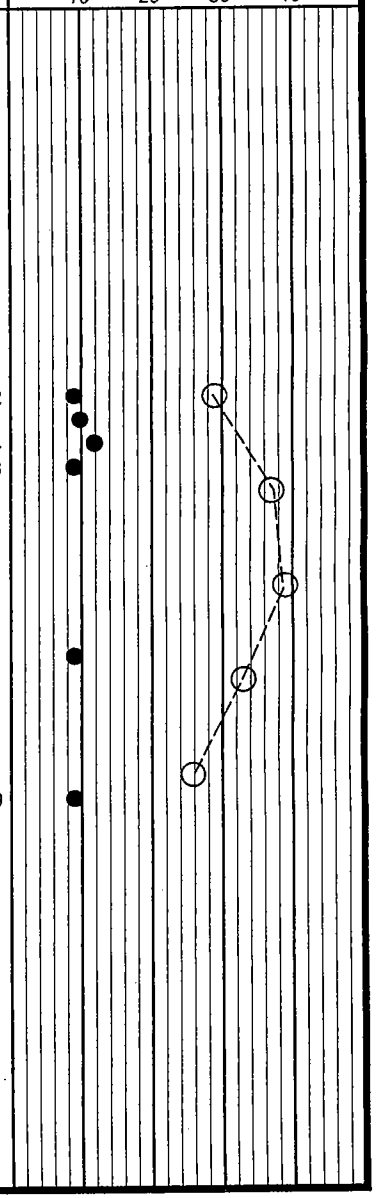
Client: Battelle	Project: West Jefferson North Site	Job No. 0221-4009.00
LOG OF: 855 #3 FY-02	**Location:** N-717228.21, E-1758322.68	**Date Drilled:** 7-23-02

WATER OBSERVATIONS:
Water seepage at: NA
Water level at completion: 56.05'

Depth (ft)	Elev. (ft)	Blows per 6	Recovery (in)	Sample No. Drive	Sample No. Press	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay
0	912.2												
							Augered without sampling to 22 feet.						
20	892.2												
22.0	890.2												
		6 12 17		1		4.5+	Hard dark gray CLAYEY SILT (CL-ML) "and" fine to coarse sand, trace fine gravel; damp.	3	3	11	21	40	22
23.7	888.5	18	24	2a/2b		4.5+		6	7	19	25	33	11
24.2	888.0	7		3a			Medium dense brown fine to coarse SAND (SC-SM), "and" clayey silt, trace fine gravel; damp to moist.	7	6	16	26	31	14
		16 21		3b		4.5+		4	3	13	19	38	23
		28	24	4		4.5+							
		10 18 21		5		4.5+	Hard dark gray CLAYEY SILT (CL-ML) "and" fine to coarse sand, trace fine gravel; damp.						
		24	24	6		4.5+							
		9 14 19		7		4.5+		6	4	12	23	36	21
30	882.2	26	24	8		4.5+							
		10 11 15		9		4.5+							
32.0	880.2	25	24	10		4.5+		6	3	13	24	36	19
35	877.2						Augered without sampling from 32-52 feet.						
40	872.2												

STANDARD PENETRATION (N) — Blows per foot: 10 20 30 40

Moisture Content - % — PL, Natural, LL: 10 20 30 40



Client: Battelle | **Project:** West Jefferson North Site | **Job No.** 0221-4009.00

LOG OF: 855 #3 FY-02 | **Location:** N-717228.21, E-1758322.68 | **Date Drilled:** 7-23-02

WATER OBSERVATIONS:
Water seepage at: NA
Water level at completion: 56.05'

Depth (ft)	Elev. (ft)	Blows per 6	Recovery	Sample No. Drive	Sample No. Press	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Moisture Content - % (PL X, Natural ●, LL X)	STANDARD PENETRATION (N) Blows per foot
40	872.2														
45	867.2						Augered without sampling from 32-52 feet.								
50	862.2														
52.0	860.2														
		23 40 43		11		4.5+	Hard dark gray CLAYEY SILT (CL-ML), some fine to coarse sand, trace fine gravel; moist.								83
54.2	858.0	50/5	23	12		4.5+		3	2	6	20	37	33	●	
		26 50/5 50/3 50/4	18	13a 13b 14a 14b		4.5+	Very dense dark gray fine to coarse SAND (SC-SM), "and" clayey silt, trace to little fine gravel; moist to wet. Approximate porosity (n) = 27%	11 0 0 0	3 0 0 0	9 0 0 0	27 33 25 17	19 46 51 49	31 21 24 34	● ● ● ●	50+
55.5	856.7														
		18 27 50/5 -	17	15 16		4.5+ 4.5+	Hard dark gray CLAYEY SILT (CL-ML), some fine to coarse sand, trace fine gravel; moist.	4	1	2	22	41	30	●	50+
		25 37 50/5 -	17	17 18		4.5+ 4.5+		3	2	6	19	39	32	●	50+
60	852.2														
		18 34 48 50/4	22	19 20		4.5+ 4.5+									82
62.0	850.2														
							Bottom of Boring - 62.0'								
65	847.2														

Client: Battelle | **Project:** West Jefferson North Site | **Job No.** 0221-4009.00

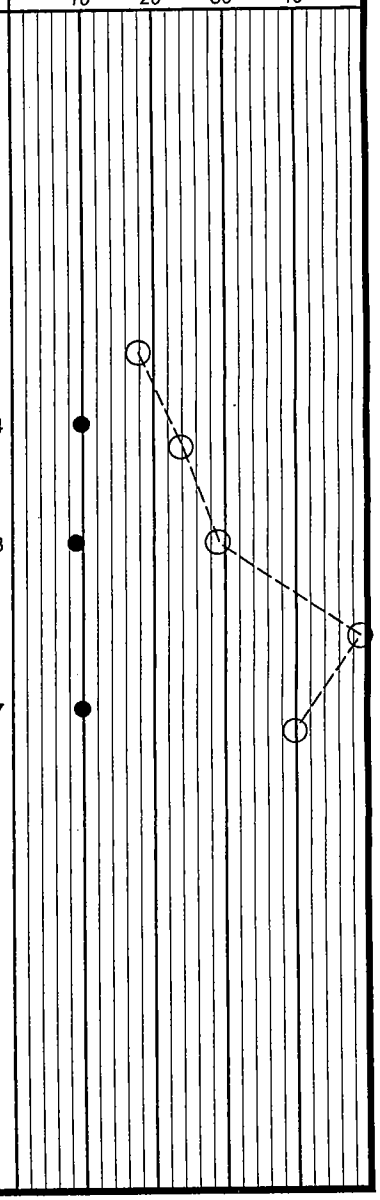
LOG OF: JN-3 #1 FY-02 | **Location:** N-717247.65, E-1757955.51 | **Date Drilled:** 8-19-02

WATER OBSERVATIONS:
Water seepage at: NA
Water level at completion: No Free Water

STANDARD PENETRATION (N) — Blows per foot: 10 20 30 40

Moisture Content - % — PL Natural LL: 10 20 30 40

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay
0	911.6												
							Augered without sampling to 21.0'						
20	891.6												
21.0	890.6												
		4 8 10		1		4.5+	Hard dark gray CLAYEY SILT (CL-ML), some fine to coarse sand, trace fine gravel; damp.						
		14	24	2		4.5+							
		8 12 12		3		4.5+		7	3	11	18	38	24
25	886.6	17	24	4		4.5+							
		9 13 16		5		4.5+							
				6		4.5+		2	4	12	21	38	23
		21	20										
		9 20 29		AU-7		NA	Note: No recovery on Samples 7 and 8, collected auger samples (AU-7, AU-8).						
		34	0	AU-8		NA							
30	881.6	4 20 20		9		4.5+		2	3	9	19	41	27
31.0	880.6	32	7	10		No Smpl							
							Bottom of Boring - 31.0'						
35	876.6												
40	871.6												



Client: Battelle | **Project:** West Jefferson North Site | **Job No.** 0221-4009.00

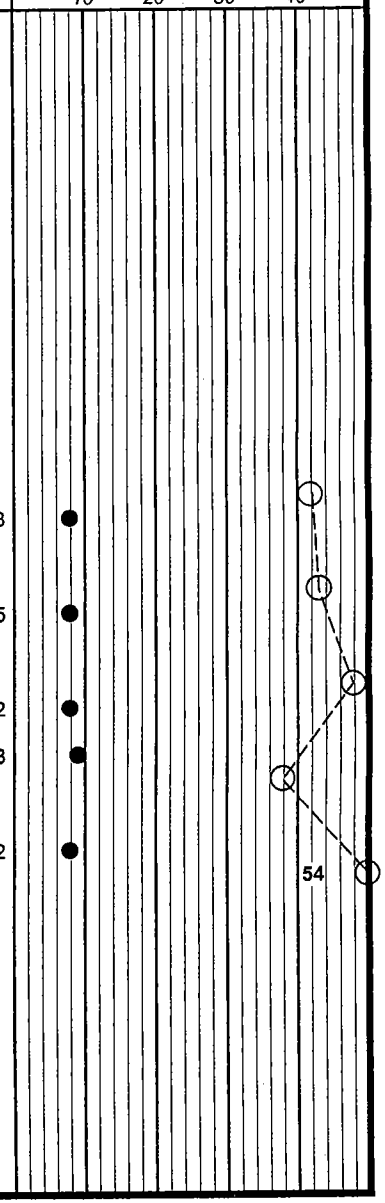
LOG OF: JN-3 #2 FY-02 | **Location:** N-717374.60, E-1758010.09 | **Date Drilled:** 8-15-02

WATER OBSERVATIONS:
Water seepage at: NA
Water level at completion: No Free Water

STANDARD PENETRATION (N) — Blows per foot (10, 20, 30, 40)

Moisture Content - % — PL, Natural, LL (10, 20, 30, 40)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay
0	914.5												
20	894.5						Augered without sampling to 24.0'						
24.0	890.5												
25	889.5	6 17 25		1		4.5+	Hard dark gray CLAYEY SILT (CL-ML), some fine to coarse sand, trace fine gravel; damp.						
		25	24	2		4.5+		2	3	11	20	41	23
		10 20 23		3		4.5+							
		36	24	4		4.5+		3	3	13	18	39	25
		10 20 28		5		4.5+							
30	884.5	32	24	6		4.5+		4	3	12	20	39	22
		14 15 23		7		4.5+		5	4	9	21	39	23
		32	24	8		4.5+							
		19 26 28		9		4.5+		3	4	12	20	39	22
34.0	880.5	40	24	10		4.5+							
35	879.5						Bottom of Boring - 34.0'						
40	874.5												



Client: Battelle	Project: West Jefferson North Site	Job No. 0221-4009.00
LOG OF: JN-3 #3 FY-02	Location: N-717395.46, E-1758101.02	Date Drilled: 8-8-02

WATER OBSERVATIONS:
Water seepage at: NA
Water level at completion: No Free Water

STANDARD PENETRATION (N) — Blows per foot (10, 20, 30, 40)

Moisture Content - % — PL, Natural, LL (10, 20, 30, 40)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	N
0	914.7													
							Augered without sampling to 25 feet.							
20	894.7													
25	889.7													
		10 24 27		1		4.5+	Hard dark gray CLAYEY SILT (CL-ML), some fine to coarse sand, trace fine gravel; damp.							51
27.0	887.7	27	24	2		4.5+		4	4	9	20	38	26	
27.2	887.5	44		3a		NA	Dense dark gray fine to coarse SAND (SC-SM), some clayey silt, little fine gravel; damp.	14	12	37	18	12	8	
		40		3b		4.5+		4	3	7	16	35	36	
		37 49	24	4		4.5+								77
30	884.7	13 25 42		5		4.5+		7	4	10	20	37	22	
		48	24	6		4.5+								67
		14 24 33		7		4.5+	Hard dark gray CLAYEY SILT (CL-ML), "and" fine to coarse sand, trace fine gravel; damp to moist.							57
		33	24	8		4.5+		2	4	13	23	37	21	
		17 21 22		9		4.5+								
35	879.7	29	24	10		4.5+								
							Bottom of Boring - 35.0'							
40	874.7													

Client: Battelle	Project: West Jefferson North Site	Job No. 0221-4009.00
LOG OF: JN-3 #4 FY-02	Location: N-717323.79, E-1758092.39	Date Drilled: 8-9-02

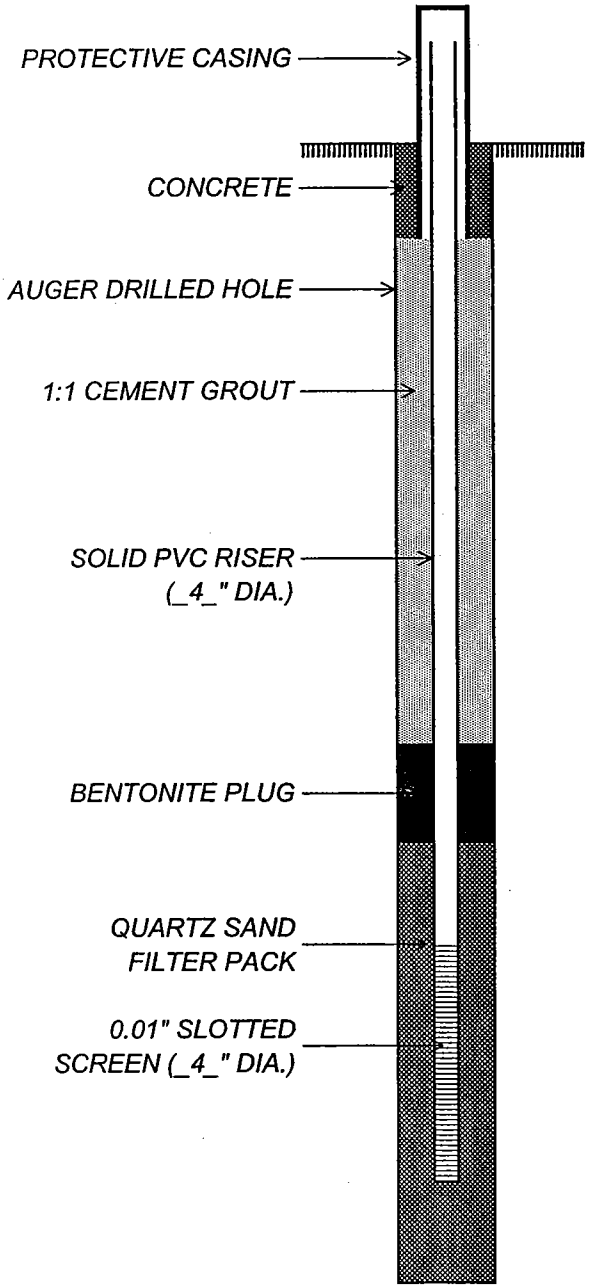
WATER OBSERVATIONS:
Water seepage at: NA
Water level at completion: No Free Water

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Moisture Content - % (PL / Natural / LL)	Blows per foot
0	914.8														
20	894.8						Augered without sampling to 25.0'								
25	889.8														
		15 21 28		1		4.5+	Hard dark gray CLAYEY SILT (CL-ML), some fine to coarse sand, trace fine gravel; damp.								
		39	24	2		4.5+		5	3	13	19	38	22		
		14 26 36		3		4.5+									
		40	24	4		4.5+		3	3	10	20	40	24		62
30	884.8	18 28 36		5		4.5+									
31.0	883.8	43	24	6		4.5+		3	3	10	17	40	27		64
31.1	883.7	13		7a		NA	Medium dense dark gray fine to coarse SAND (SC-SM), "and" clayey silt, trace fine gravel; moist.								
		18 21		7b		4.5+		5	3	10	22	38	22		
		34	24	8		4.5+	Hard dark gray CLAYEY SILT (CL-ML), "and" fine to coarse sand, trace fine gravel; damp.								
		12 19 25		9		4.5+		4	3	12	23	38	22		
35	879.8	28	24	10		4.5+									
40	874.8						Bottom of Boring - 35.0'								

MONITORING WELL INSTALLATION REPORTS-6 WELLS
DEWATERING WELL INSTALLATION REPORTS-4 WELLS

MONITORING WELL INSTALLATION REPORT

PROJECT:	Battelle	*BORING NO.:*	885#1 FY-02
PROJECT NO:	0221-4009.00	*DATE INSTALLED:*	7/29/02
GROUND SURFACE ELEVATION:	913.8	*LOGGED BY:*	Mark Evener
TOP OF RISER PIPE ELEVATION:	916.2	*GROUND WATER LEVEL AT COMPLETION:*	No Free Water



DEPTH BELOW GROUND SURFACE		*REMARKS AND NOTES*
20'	*TOP OF PLUG*	
22.5'	*TOP OF SAND*	
24.5'	*TOP OF SCREEN*	
29.5'	*BOTTOM OF SCREEN*	
33'	*BOTTOM OF SAND PACK*	

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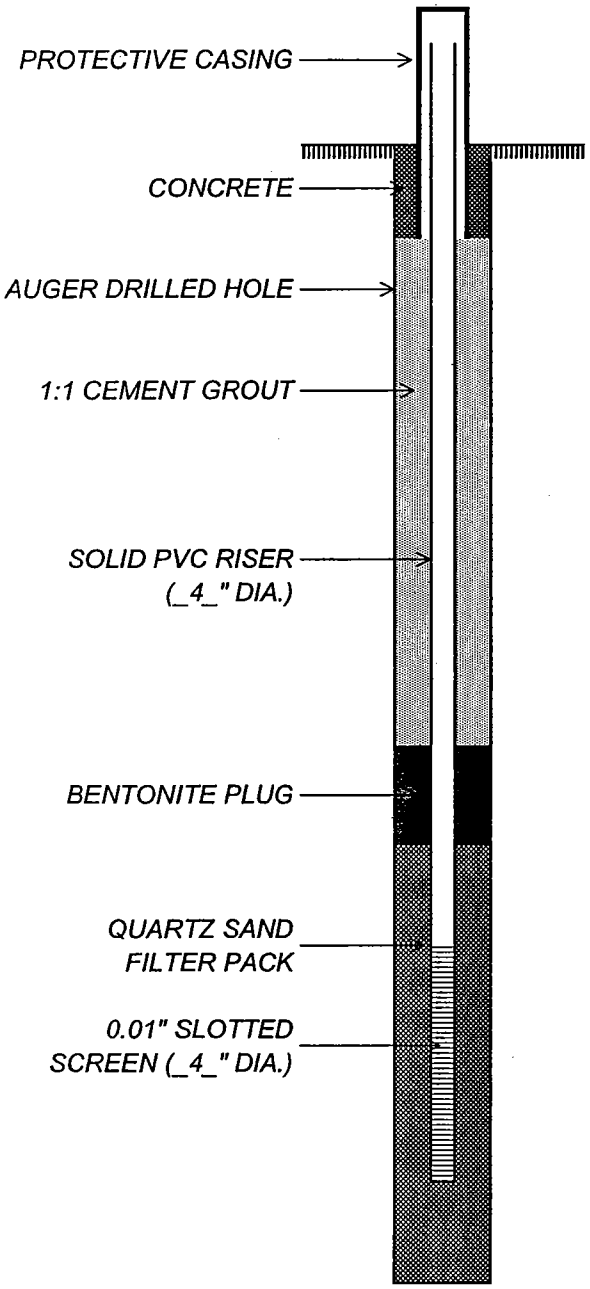
MONITORING WELL INSTALLATION REPORT

PROJECT:	Battelle	*BORING NO.:*	885 #2 FY-02
PROJECT NO:	0221-4009.00	*DATE INSTALLED:*	8/6/02
GROUND SURFACE ELEVATION:	911.5	*LOGGED BY:*	Mark Evener
TOP OF RISER PIPE ELEVATION:	913.8	*GROUND WATER LEVEL AT COMPLETION:*	No Free Water



DEPTH BELOW GROUND SURFACE	*REMARKS AND NOTES*
20'	*TOP OF PLUG*
21.5'	*TOP OF SAND*
23.5'	*TOP OF SCREEN*
28.5'	*BOTTOM OF SCREEN*
32'	*BOTTOM OF SAND PACK*

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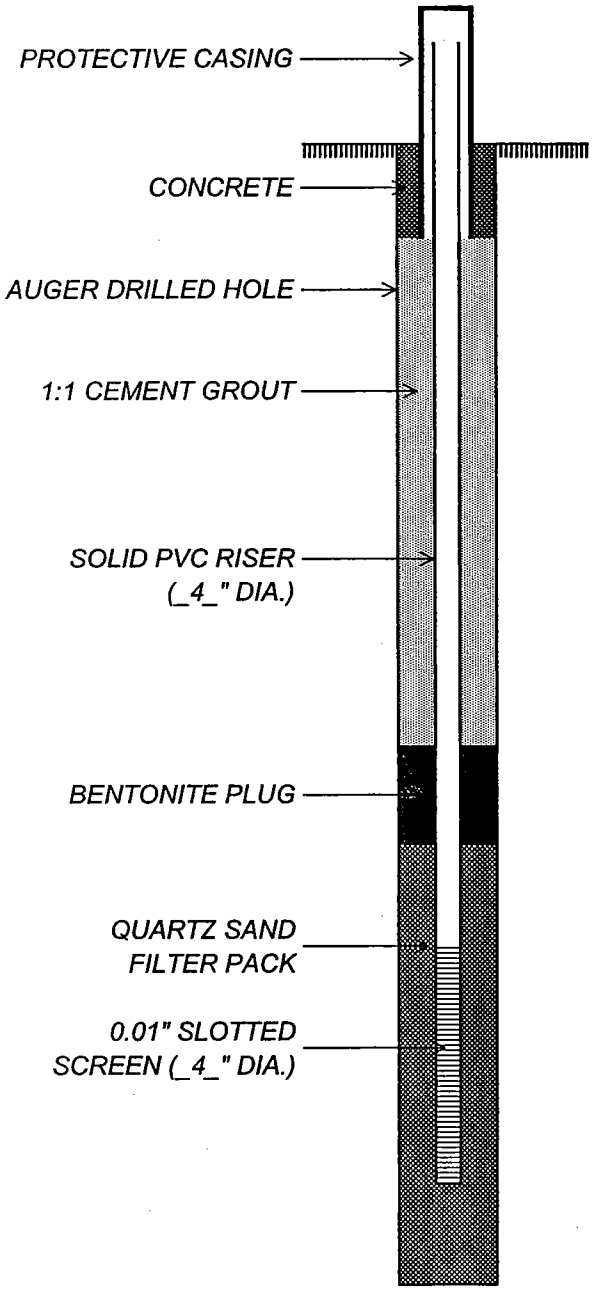
MONITORING WELL INSTALLATION REPORT

PROJECT:	Battelle	*BORING NO.:*	885 #4 FY-02
PROJECT NO:	0221-4009.00	*DATE INSTALLED:*	8/7/02
GROUND SURFACE ELEVATION:	915.8	*LOGGED BY:*	Mark Evener
TOP OF RISER PIPE ELEVATION:	918.2	*GROUND WATER LEVEL AT COMPLETION:*	No Free Water



DEPTH BELOW GROUND SURFACE		*REMARKS AND NOTES*
23'	*TOP OF PLUG*	
25'	*TOP OF SAND*	
27'	*TOP OF SCREEN*	
32'	*BOTTOM OF SCREEN*	
34'	*BOTTOM OF SAND PACK*	

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MONITORING WELL INSTALLATION REPORT

PROJECT: Battelle

PROJECT NO: 0221-4009.00

GROUND SURFACE ELEVATION: 914

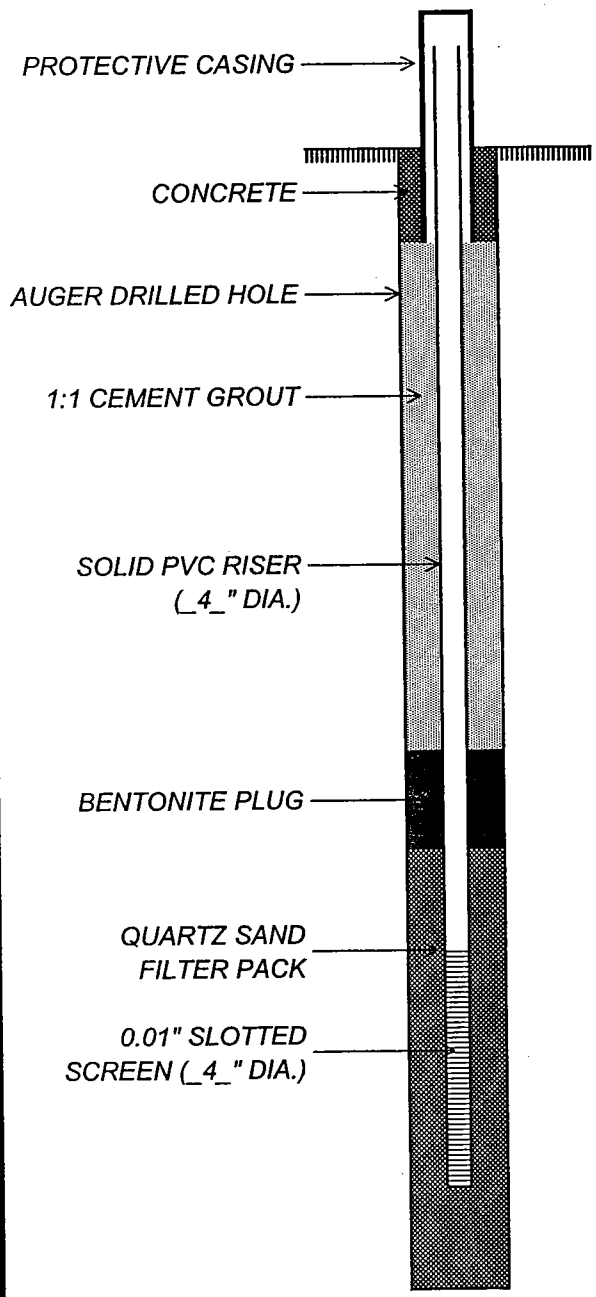
TOP OF RISER PIPE ELEVATION: 916.3

BORING NO.: 855 #1 FY-02

DATE INSTALLED: 7/31/02

LOGGED BY: Mark Evener

GROUND WATER LEVEL AT COMPLETION: 11.06' *



DEPTH BELOW GROUND SURFACE	
53'	TOP OF PLUG
55.5'	TOP OF SAND
57.5'	TOP OF SCREEN
62.5'	BOTTOM OF SCREEN
64'	BOTTOM OF SAND PACK

REMARKS AND NOTES

* Water level includes water used during drilling

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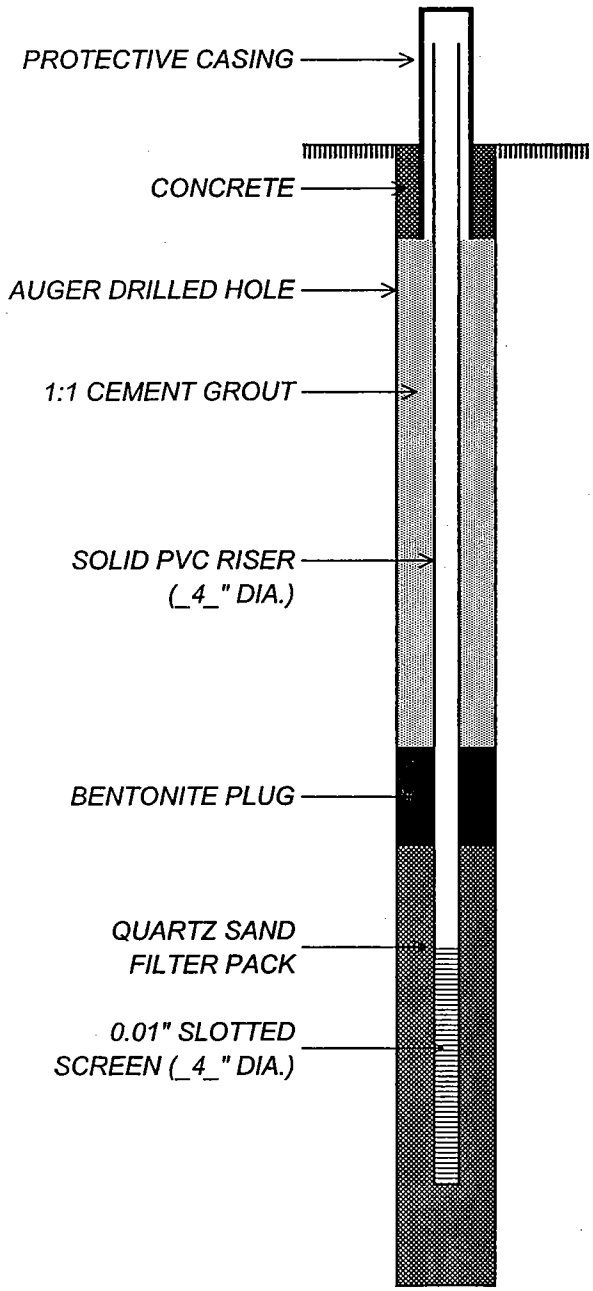
MONITORING WELL INSTALLATION REPORT

PROJECT:	Battelle	*BORING NO.:*	855 #2 FY-02
PROJECT NO:	0221-4009.00	*DATE INSTALLED:*	8/2/02
GROUND SURFACE ELEVATION:	916	*LOGGED BY:*	Mark Evener
TOP OF RISER PIPE ELEVATION:	918.7	*GROUND WATER LEVEL AT COMPLETION:*	14.08' *



DEPTH BELOW GROUND SURFACE	
51'	*TOP OF PLUG*
53.5'	*TOP OF SAND*
55.5'	*TOP OF SCREEN*
60.5'	*BOTTOM OF SCREEN*
66'	*BOTTOM OF SAND PACK*

REMARKS AND NOTES

* Water level includes water used during drilling

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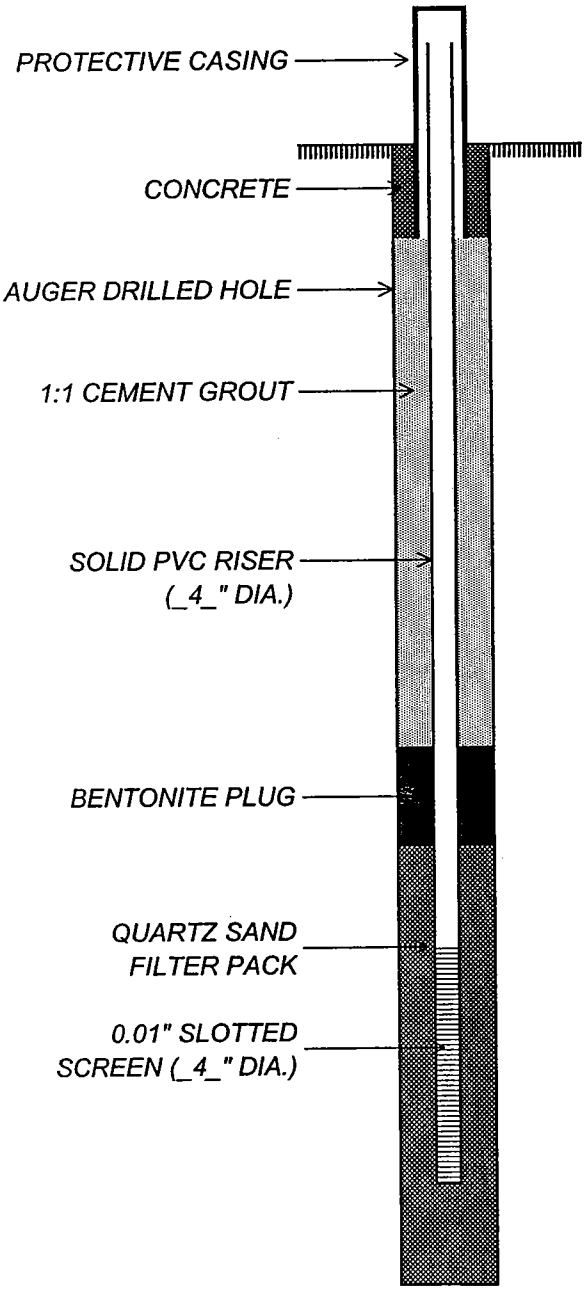
MONITORING WELL INSTALLATION REPORT

PROJECT:	Battelle	BORING NO.:	855 #3 FY-02
PROJECT NO:	0221-4009.00	DATE INSTALLED:	7/25/02
GROUND SURFACE ELEVATION:	912.2	LOGGED BY:	Mark Evener
TOP OF RISER PIPE ELEVATION:	914.4	GROUND WATER LEVEL AT COMPLETION:	56.05'



DEPTH BELOW GROUND SURFACE		REMARKS AND NOTES
48.5'	TOP OF PLUG	
51'	TOP OF SAND	
53'	TOP OF SCREEN	
58'	BOTTOM OF SCREEN	
62'	BOTTOM OF SAND PACK	

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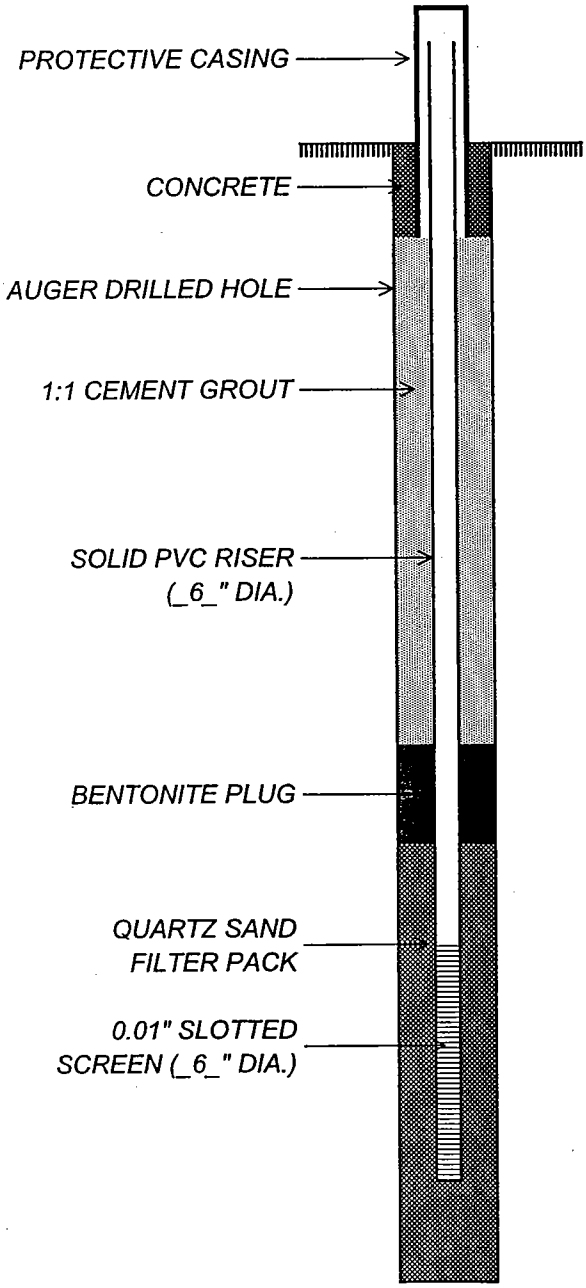
DEWATERING WELL INSTALLATION REPORT

PROJECT:	Battelle	*BORING NO.:*	JN-3 #1 FY-02
PROJECT NO:	0221-4009.00	*DATE INSTALLED:*	8/19/02
GROUND SURFACE ELEVATION:	911.6	*LOGGED BY:*	Mark Evener
TOP OF RISER PIPE ELEVATION:	914	*GROUND WATER LEVEL AT COMPLETION:*	No Free Water



DEPTH BELOW GROUND SURFACE		*REMARKS AND NOTES*
4.5'	*TOP OF PLUG*	
7'	*TOP OF SAND*	
9'	*TOP OF SCREEN*	
29'	*BOTTOM OF SCREEN*	
31'	*BOTTOM OF SAND PACK*	

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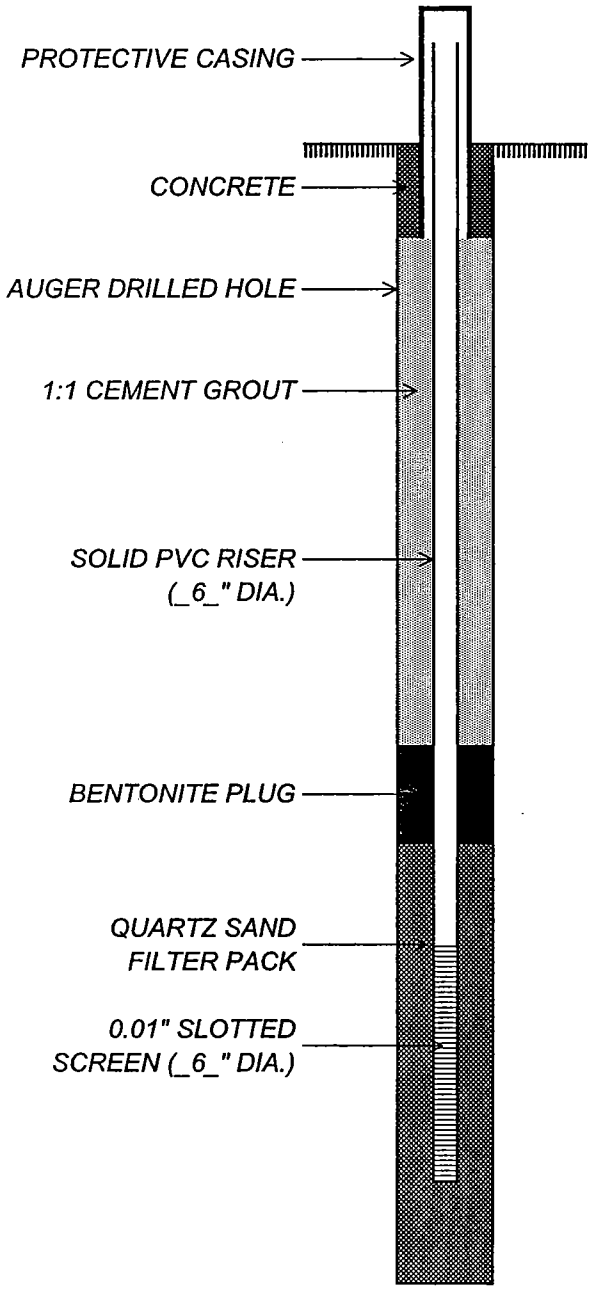
DEWATERING WELL INSTALLATION REPORT

PROJECT:	Battelle	*BORING NO.:*	JN-3 #2 FY-02
PROJECT NO:	0221-4009.00	*DATE INSTALLED:*	8/15/02
GROUND SURFACE ELEVATION:	914.5	*LOGGED BY:*	Mark Evener
TOP OF RISER PIPE ELEVATION:	916.7	*GROUND WATER LEVEL AT COMPLETION:*	No Free Water



DEPTH BELOW GROUND SURFACE		*REMARKS AND NOTES*
4.5'	*TOP OF PLUG*	
7'	*TOP OF SAND*	
9'	*TOP OF SCREEN*	
29'	*BOTTOM OF SCREEN*	
34'	*BOTTOM OF SAND PACK*	

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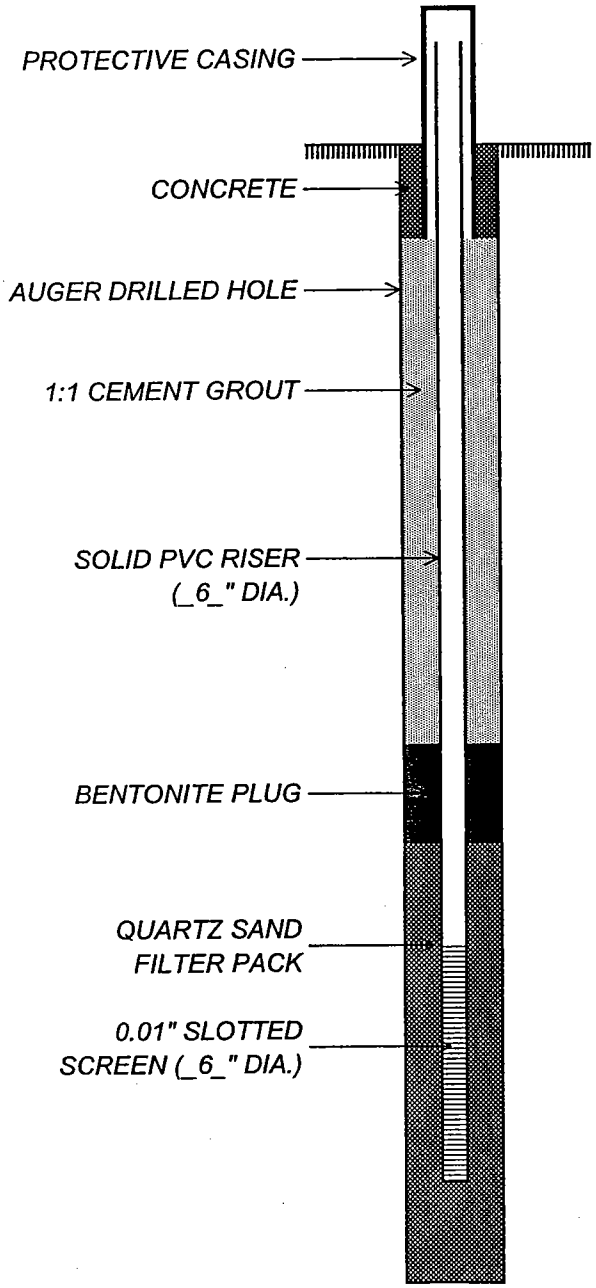
DEWATERING WELL INSTALLATION REPORT

PROJECT:	Battelle	*BORING NO.:*	JN-3 #3 FY-02
PROJECT NO:	0221-4009.00	*DATE INSTALLED:*	8/8/02
GROUND SURFACE ELEVATION:	914.7	*LOGGED BY:*	Mark Evener
TOP OF RISER PIPE ELEVATION:	916.7	*GROUND WATER LEVEL AT COMPLETION:*	No Free Water



DEPTH BELOW GROUND SURFACE		*REMARKS AND NOTES*
5'	*TOP OF PLUG*	
7.5'	*TOP OF SAND*	
9.5'	*TOP OF SCREEN*	
29.5'	*BOTTOM OF SCREEN*	
35'	*BOTTOM OF SAND PACK*	

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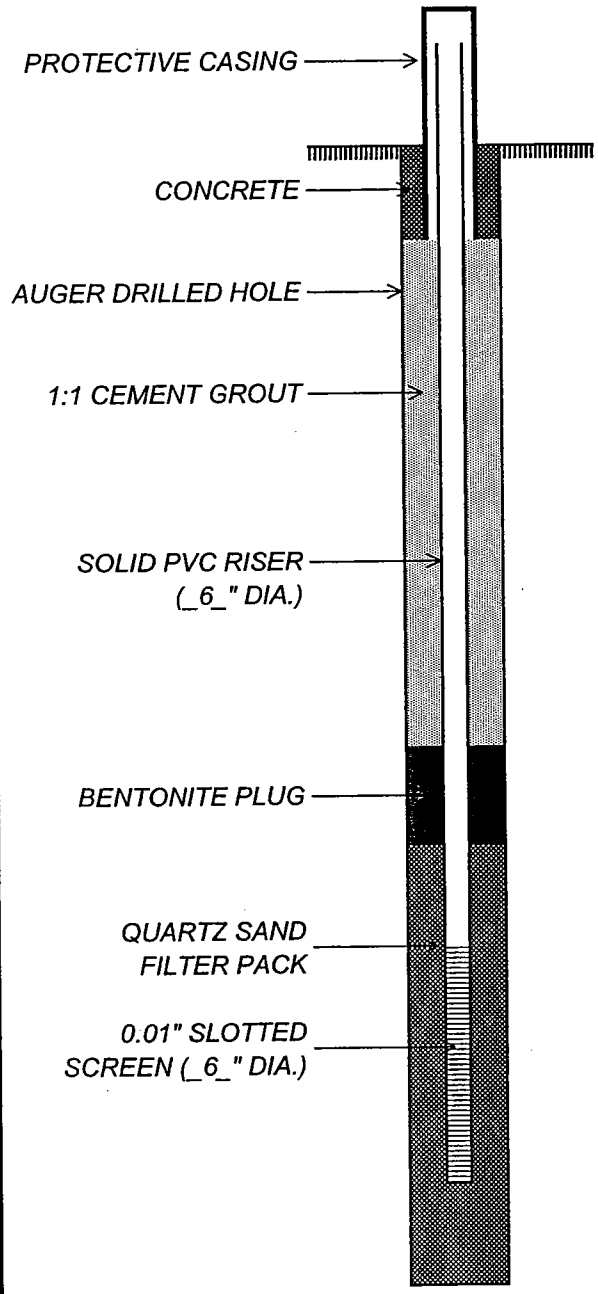
DEWATERING WELL INSTALLATION REPORT

PROJECT:	Battelle	*BORING NO.:*	JN-3 #4 FY-02
PROJECT NO:	0221-4009.00	*DATE INSTALLED:*	8/12/02
GROUND SURFACE ELEVATION:	914.8	*LOGGED BY:*	Mark Evener
TOP OF RISER PIPE ELEVATION:	917	*GROUND WATER LEVEL AT COMPLETION:*	No Free Water



DEPTH BELOW GROUND SURFACE	*REMARKS AND NOTES*
7'	*TOP OF PLUG*
9.5'	*TOP OF SAND*
11.5'	*TOP OF SCREEN*
31.5'	*BOTTOM OF SCREEN*
35'	*BOTTOM OF SAND PACK*

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WELL DEVELOPMENT DATA

DLZ Job No. 0221-4009.00

WEST JEFFERSON NORTH SITE

WELL DEVELOPMENT SUMMARY

In accordance with the Statement of Work attached to the request for Proposal dated May 16, 2002, DLZ developed all newly installed groundwater-monitoring wells and de-watering wells. The wells were developed between August 22, 2002 and September 10, 2002, under the supervision of Dr. Thomas Naymik and Mr. Thomas Worthington of Battelle.

The static water level, initial pH, temperature, and specific conductivity were measured at the beginning of development for all wells that contained water. The following Well Development Table refers to these measurements as "sampling". All sampling data can be observed in the Well Development Sheets. Note that monitoring well 885 #1 FY-02, as well as dewatering wells JN-3 #1 FY-02, and JN-3 #4 FY-02 were not sampled for pH, temperature or specific conductivity, since these wells contained no free water at the time of sampling.

All well screens were mechanically surged slowly, except for 855 #2 FY-02, which Battelle considered properly developed upon sampling and purging the monitoring well. During the surging process, difficulties were encountered on monitoring wells 885#1 FY-02 and 885 #4 FY-02, in which the bottom PVC cap to the well was damaged. A replacement plug was seated near the broken end cap in each case, with no further problems encountered.

All wells were purged using either a submersible pump or baler until they were either dry or had three consecutive measurements of pH, temperature, and specific conductivity that varied by less than 10%.

Difficulties were experienced during the sampling and purging process of development due to lack of water in the wells. Dr. Thomas Naymik instructed DLZ to continue the development process using a modified method. All wells, with the exception of monitoring well 885 #2 FY-02 had water added, were mechanically surged, flushed with a high pressure hose placed on the bottom of the well, and then purged with a submersible pump. The water used in the flushing process was obtained from a water hydrant located on site and no pH, temperature, and specific conductivity testing was performed by DLZ during this process due to the influence of the water that was introduced.

All well locations and elevations were surveyed by DLZ upon completion.

WELL DEVELOPMENT SUMMARY

Well No.	Surged?	Flushed?	Purged?	Sampled?
885 #1	Yes	Yes	Yes	No
885 #2	Yes	No	Yes	Yes
885 #4	Yes	Yes	Yes	Yes
855 #1	Yes	Yes	Yes	Yes
855 #2	No	No	Yes	Yes
855 #3	Yes	Yes	Yes	Yes
JN-3 #1	Yes	Yes	Yes	No
JN-3 #2	Yes	Yes	Yes	Yes
JN-3 #3	Yes	Yes	Yes	Yes
JN-3 #4	Yes	Yes	Yes	No

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 8/23/02

WELL NUMBER: 885 #1 FY-02 EQUIPMENT USED: Baler

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 31.9'

Top of riser elevation (msl) 916.24

Depth to water below riser 30.7'

Groundwater elevation (msl) 885.54

PURGING DATA

Date of purge NA Time of purge NA

Volume of water in casing (gal.) NA Purge volume (gal.) NA

Purge water appearance NA

OBSERVATIONS No free water in well

WELL SECURED UPON DEPARTURE? YES

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 9/10/02

WELL NUMBER: 885 #1 FY-02 EQUIPMENT USED: Pump

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 31.95'

Top of riser elevation (msl) 916.24

Depth to water below riser 29.66'

Groundwater elevation (msl) 886.58

PURGING DATA

Date of purge 9/10/02 Time of purge 11:45

Volume of water in casing (gal.) 2.3 Purge volume (gal.) 63

Purge water appearance cloudy-brown

OBSERVATIONS Surged well twice and flushed as per instructions given by Dr. Thomas Naymik.

WELL SECURED UPON DEPARTURE? YES

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 8/23/02

WELL NUMBER: 885 #2 FY-02 EQUIPMENT USED: Baler

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 30.5'

Top of riser elevation (msl) 913.82

Depth to water below riser 15.68'

Groundwater elevation (msl) 898.14

PURGING DATA

Date of purge 8/23/02 Time of purge 10:20

Volume of water in casing (gal.) 8.29 Purge volume (gal.) 12

Purge water appearance Cloudy brown

OBSERVATIONS Baled well dry at 18 gallons

WELL SECURED UPON DEPARTURE? YES

PROJECT NUMBER: 0221-4009.00

DATE: 8/23/02

WELL NUMBER: 885 #2 FY-02

Approx. Volume Gal.	Temp. C	pH	Conductivity mS/cm	Turbidity NTU
4	17.4	11.7	6	
8	18.2	11.63	3.56	
12	18.7	11.79	6.21	

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 9/9/02

WELL NUMBER: 885 #2 FY-02 EQUIPMENT USED: Pump

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 30.92'

Top of riser elevation (msl) 913.82

Depth to water below riser 20.72'

Groundwater elevation (msl) 893.1

PURGING DATA

Date of purge 9/9/02 Time of purge 9:45

Volume of water in casing (gal.) 5 Purge volume (gal.) 68

Purge water appearance clear-brown

OBSERVATIONS Surged well 3 times as per instructions given by Dr. Thomas Naymik.

WELL SECURED UPON DEPARTURE? YES

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 8/23/02

WELL NUMBER: 885 #4 FY-02 EQUIPMENT USED: Baler

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 36.25'

Top of riser elevation (msl) 918.22

Depth to water below riser 8.54'

Groundwater elevation (msl) 909.68

PURGING DATA

Date of purge 8/23/02 Time of purge 10:00

Volume of water in casing (gal.) 16.25 Purge volume (gal.) 18

Purge water appearance Cloudy brown

OBSERVATIONS Baled well dry at 18 gallons

WELL SECURED UPON DEPARTURE? YES

PROJECT NUMBER: 0221-4009.00

DATE: 8/23/02

WELL NUMBER: 885 #4 FY-02

Approx. Volume Gal.	Temp. C	pH	Conductivity mS/cm	Turbidity NTU
8	22.1	11.37	4.57	
16	21	11.43	3.54	

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 9/9/02

WELL NUMBER: 885 #4 FY-02 EQUIPMENT USED: Pump

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 34.5'

Top of riser elevation (msl) 918.22

Depth to water below riser 29.37'

Groundwater elevation (msl) 888.85

PURGING DATA

Date of purge 9/9/02 Time of purge 9:00

Volume of water in casing (gal.) 3 Purge volume (gal.) 3

Purge water appearance clear-brown

OBSERVATIONS Surged well 3 times and flushed twice as per instructions given by Dr. Thomas Naymik.

WELL SECURED UPON DEPARTURE? YES

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 8/26/02

WELL NUMBER: 855 #1 FY-02 EQUIPMENT USED: Pump

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 62.8'

Top of riser elevation (msl) 916.26

Depth to water below riser 41.3'

Groundwater elevation (msl) 874.96

PURGING DATA

Date of purge 8/26/02 Time of purge 10:20

Volume of water in casing (gal.) 12.9 Purge volume (gal.) 52

Purge water appearance Cloudy brown-clear

OBSERVATIONS Pumped well dry at 55 gallons

WELL SECURED UPON DEPARTURE? YES

PROJECT NUMBER: 0221-4009.00

DATE: 8/26/02

WELL NUMBER: 855 #1 FY-02

Approx. Volume Gal.	Temp. C	pH	Conductivity mS/cm	Turbidity NTU
6.5	21.7	7.15	376	
13	21	7.19	568	
19.5	21	7.26	736	
26	17.1	7.23	801	
32.5	15.7	7.36	434	
39	15.2	7.37	837	
45.5	16.3	7.32	855	
52	16.1	7.31	836	

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 8/22/02

WELL NUMBER: 855 #2 FY-02 EQUIPMENT USED: Pump

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 63.65'

Top of riser elevation (msl) 918.67

Depth to water below riser 43.05'

Groundwater elevation (msl) 875.62

PURGING DATA

Date of purge 8/22/02 Time of purge 1:45

Volume of water in casing (gal.) 12.36 Purge volume (gal.) 37.5

Purge water appearance Clear

OBSERVATIONS Pumped well dry at 107 gallons

WELL SECURED UPON DEPARTURE? YES

PROJECT NUMBER: 0221-4009.00

DATE: 8/22/02

WELL NUMBER: 855#2 FY-02

Approx. Volume Gal.	Temp. C	pH	Conductivity mS/cm	Turbidity NTU
12.5	22.5	9.79	735	
18.75	22	9.24	650	
25	16.2	9.21	745	
31.25	14.3	8.96	801	
37.5	13.9	10.13	1110	
43.75	13.5	8.44	860	
50	14.4	7.47	771	
56.25	13.3	7.56	853	
62.5	13.8	7.6	858	
68.75	13.8	7.56	855	
75	13.4	7.58	765	
81.25	13.2	7.53	667	
87.5	13.3	7.53	843	
93.75	13.2	7.53	843	
100	13.1	7.82	863	
106.25	13.1	8.23	523	

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 8/23/02

WELL NUMBER: 855 #3 FY-02 EQUIPMENT USED: Pump

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 60.6'

Top of riser elevation (msl) 914.43

Depth to water below riser 36.06'

Groundwater elevation (msl) 878.37

PURGING DATA

Date of purge 8/23/02 Time of purge 1:30

Volume of water in casing (gal.) 14.72 Purge volume (gal.) 25

Purge water appearance Clear

OBSERVATIONS Pumped well dry at 25 gallons

WELL SECURED UPON DEPARTURE? YES

PROJECT NUMBER: 0221-4009.00

DATE: 8/23/02

WELL NUMBER: 855 #3 FY-02

Approx. Volume Gal.	Temp. C	pH	Conductivity mS/cm	Turbidity NTU
7.5	19.9	10.5	1216	
15	18.5	10.42	573	
22.5	20	9.6	990	

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 9/9/02

WELL NUMBER: 855 #3 FY-02 EQUIPMENT USED: Pump

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 60.4'

Top of riser elevation (msl) 914.43

Depth to water below riser 35.88'

Groundwater elevation (msl) 878.55

PURGING DATA

Date of purge 9/9/02 Time of purge 11:10

Volume of water in casing (gal.) 14.7 Purge volume (gal.) 65

Purge water appearance clear-brown

OBSERVATIONS Surged well and flushed well as per intructions given by . Dr. Thomas Naymik

WELL SECURED UPON DEPARTURE? YES

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 9/10/02

WELL NUMBER: JN-3 #1 FY-02 EQUIPMENT USED: Pump

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 33.05'

Top of riser elevation (msl) 914.01

Depth to water below riser 29.69'

Groundwater elevation (msl) 884.32

PURGING DATA

Date of purge 9/10/02 Time of purge 12:30

Volume of water in casing (gal.) 4 Purge volume (gal.) 72

Purge water appearance cloudy-brown

OBSERVATIONS Surged well and flushed as per instructions given by Dr. Thomas Naymik.

WELL SECURED UPON DEPARTURE? YES

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 8/26/02

WELL NUMBER: JN-3 #2 FY-02 EQUIPMENT USED: Pump

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 32.15'

Top of riser elevation (msl) 916.66

Depth to water below riser 8.2'

Groundwater elevation (msl) 908.46

PURGING DATA

Date of purge 8/26/02 Time of purge 11:15

Volume of water in casing (gal.) 36 Purge volume (gal.) 75

Purge water appearance Cloudy brown-clear

OBSERVATIONS Well pumped dry at 75 gallons

WELL SECURED UPON DEPARTURE? YES

PROJECT NUMBER: 0221-4009.00

DATE: 8/26/02

WELL NUMBER: JN-3 #2 FY-02

Approx. Volume Gal.	Temp. C	pH	Conductivity mS/cm	Turbidity NTU
18	15.7	7.47	850	
36	16.4	7.34	871	
54	16.5	7.36	885	
72	15.7	7.47	862	

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 9/10/02

WELL NUMBER: JN-3 #2 FY-02 EQUIPMENT USED: Pump

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 31.8'

Top of riser elevation (msl) 916.66

Depth to water below riser 9.42'

Groundwater elevation (msl) 907.24

PURGING DATA

Date of purge 9/10/02 Time of purge 1:30

Volume of water in casing (gal.) 27 Purge volume (gal.) 77

Purge water appearance clear-brown

OBSERVATIONS Surged well and flushed as per instructions given by Dr. Thomas Naymik.

WELL SECURED UPON DEPARTURE? YES

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 8/26/02

WELL NUMBER: JN-3 #3 FY-02 EQUIPMENT USED: Pump

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 31.6'

Top of riser elevation (msl) 916.65

Depth to water below riser 10.55'

Groundwater elevation (msl) 906.1

PURGING DATA

Date of purge 8/26/02 Time of purge 1:30

Volume of water in casing (gal.) 32 Purge volume (gal.) 96

Purge water appearance Cloudy brown-clear

OBSERVATIONS Well baled dry at 55 gallons

WELL SECURED UPON DEPARTURE? YES

PROJECT NUMBER: 0221-4009.00

DATE: 8/26/02

WELL NUMBER: JN-3 #3 FY-02

Approx. Volume Gal.	Temp. C	pH	Conductivity mS/cm	Turbidity NTU
16	19.2	7.16	2.35	
32	16.9	7.17	2.75	
48	15.2	7.14	2.73	

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 9/9/02

WELL NUMBER: JN-3 #3 FY-02 EQUIPMENT USED: Pump

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 31.39'

Top of riser elevation (msl) 916.65

Depth to water below riser 15.75'

Groundwater elevation (msl) 900.9

PURGING DATA

Date of purge 9/9/02 Time of purge 12:30

Volume of water in casing (gal.) 19 Purge volume (gal.) 183

Purge water appearance clear-brown

OBSERVATIONS Surged well twice and flushed as per instructions given by Dr. Thomas Naymik.

WELL SECURED UPON DEPARTURE? YES

WELL DEVELOPMENT SHEET

PROJECT: 0221-4009.00 DATE: 9/10/02

WELL NUMBER: JN-3 #4 EQUIPMENT USED: Pump

FIELD PERSONNEL: Mark Evener SIGNATURE:

WELL DATA

Well secure upon arrival? Yes Well condition Good

Observations upon well opening (i.e. odors, etc.) None

Well depth 33.6'

Top of riser elevation (msl) 917.01

Depth to water below riser 28.58'

Groundwater elevation (msl) 888.43

PURGING DATA

Date of purge 9/10/02 Time of purge 8:45

Volume of water in casing (gal.) 6 Purge volume (gal.) 216

Purge water appearance clear-brown

OBSERVATIONS Surged well twice and flushed as per instructions given by Dr. Thomas Naymik.

WELL SECURED UPON DEPARTURE? YES

SLUG TEST DATA

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September 23, 2002

Mr. Thomas G. Namik, PhD
Environmental Restoration Department
Battelle Memorial Institute
505 King Avenue
Columbus, Ohio 43201-2693

Re: Slug Testing
West Jefferson North Site
DLZ Project No. 0021-4009.00

Dear Mr. Namik:

DLZ Ohio, Inc. (DLZ) has completed the slug testing of several wells at the West Jefferson North site located near West Jefferson, Ohio. Three wells were tested on September 5, 2002, and are identified as 855 No. 1, 855 No. 2, and 855 No. 3. All three wells are located inside the facility's controlled area.

The slug tests were conducted by inserting a slug bar into the well and measuring the displacement over time. The slug bar was constructed of flush threaded 2-inch by 5-feet long PVC pipe with end caps. For added weight, the internal void of the pipe was filled with silica sand. A threaded steel I-bolt was attached to connect a polyethylene retrieval cord.

Water displacement was measured using an In-Situ Mini Troll Pro (S.N.00350). The Mini Troll utilizes a vented pressure transducer to measure changes in head pressure of the water column and compensate for barometric pressure variations. The Mini Troll was programmed using the Win-Situ software via a cable to a laptop computer at the surface. Each test data was logged onto a logarithmic time scale, in seconds, over a depth of water column, or change in water column, in feet of water. Tests were terminated when the water level had returned to within a few 100ths of a foot of its pre-displacement levels, with one exception. The slug test for well 855 No. 3 was terminated after monitoring for approximately one hour without significant alteration in water level. This action was approved by Mr. Thomas Worthington, Project Field Supervisor for Battelle.

Two slug tests were performed on each well; a slug in test where the slug bar was inserted into the water columns of the well, and a slug out test where the slug bar was removed from the well. Due to the extremely low water recovery rate, a slug out test for well 855 No. 3 was not conducted. Electronic data collected by the troll data logger from these tests was stored on magnetic media for later analysis.

The slug test data was analyzed with AqteSolv® for Windows® version 3.01. Well construction and geologic formation data were input into the software for each well. Because the Anisotropy Ratio for the formation was unknown, a value of 1 was used. Additionally, the porosity of the course sand filter pack was assumed to be 39 percent, based on a value presented in Johnson, 1986. Data from the data logger was imported into AqteSolv®. Slug in test data was edited to eliminate extraneous information from the initial insertion of the slug bar into the well. The slug out test displacement data was manipulated to

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invert the recovery curve to assist the software in completing the analysis. This data was also edited to remove extraneous data at the beginning of the slug test.

Computer analysis of the data was conducted using the Bouwer-Rice straight-line method to assess the hydraulic conductivity of the wells. The Bouwer-Rice method assumes the following conditions: the aquifer has infinite aerial extent; it is homogenous and of uniform thickness; the potentiometric head is initially horizontal; the slug is instantaneously inserted or removed from the well; flow is steady and the aquifer is confined. Based on geological information collected from the well construction, the sands that encounter the screened interval are over run by lower permeability units. Based on the field observations, the sand layer appears to be confined.

Data from the aquifer analysis indicates that "slug in" and "slug out" data is similar for each well. Significant variances were noted between wells set in the same elevation. Results from 855-No. 1 and 855 No. 2 had hydraulic conductivity (K) values 10^{-3} and 10^{-4} ft/sec, respectively. The K value for the range of 855 No. 3 showed a significantly lower hydraulic conductivity of 10^{-6} ft/sec. Raw data from the data logger and the AqteSolv® data sheets is provided as an enclosure.

If you have any questions, or require additional information, please do not hesitate to call us at 614/888-0040.

Sincerely,

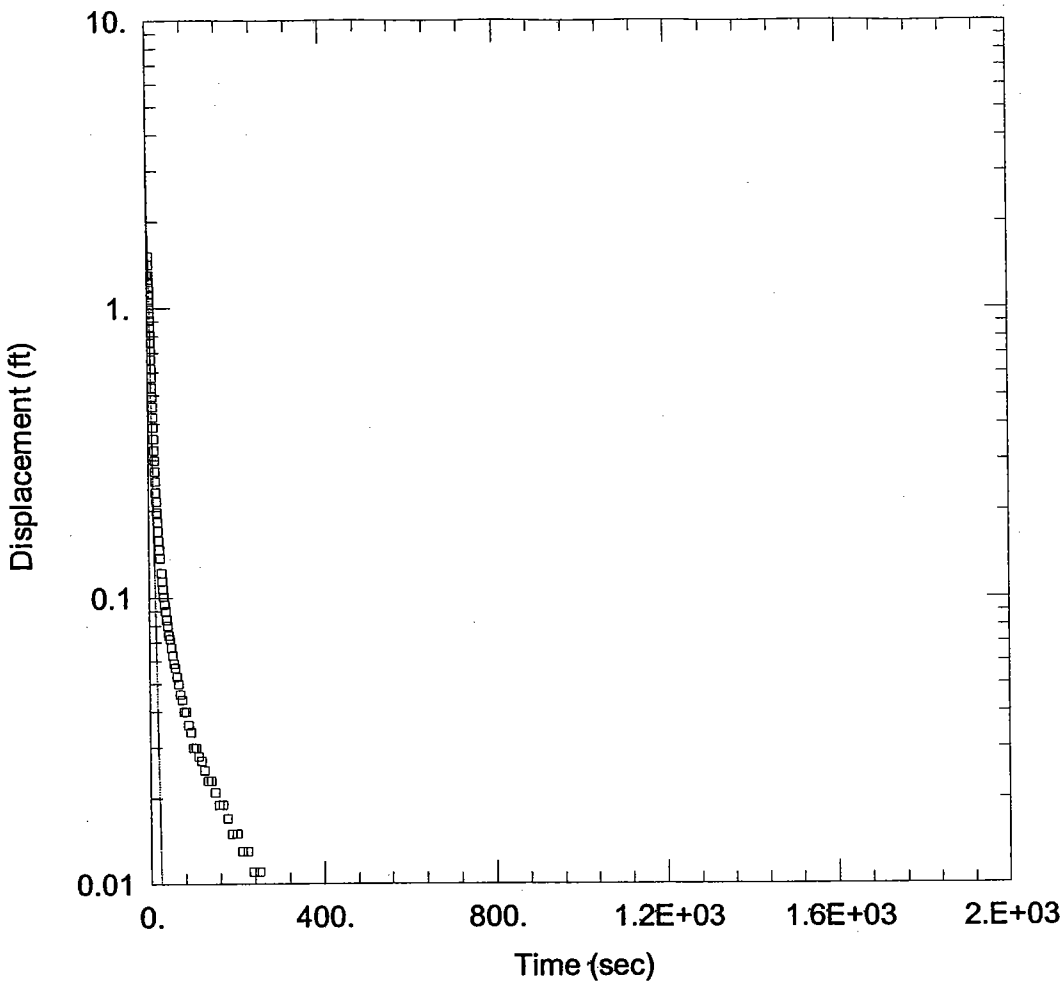
DLZ OHIO, INC.

Brian Mott
Senior Geologist

Enclosure

BM:mo

M:\proj\0233\0021-4009.00Battelle\SlugTestLtr.doc



SLUG OUT WELL NO. 1

Data Set: C:\...\Battelle 855 No 1 slugout.aqt
Date: 09/18/02 Time: 09:17:47

PROJECT INFORMATION

Company: DLZ Ohio, Inc
Client: Battelle
Project: 0221-4009-00
Test Location: North Facility
Test Well: 855 No.2
Test Date: 9-5-02

AQUIFER DATA

Saturated Thickness: 3.6 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (855 No. 1)

Initial Displacement: 1.3 ft
Wellbore Radius: 0.875 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.39
Casing Radius: 0.3355 ft
Well Skin Radius: 0.875 ft
Total Well Penetration Depth: 2.5 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.00372 ft/sec
y0 = 3.495 ft

In-Situ Inc. MiniTroll Pro

Report generated: 09/18/02 08:55:43
Report from file: ...\SN00350 2002-09-05 151754 855 No 1 slugout.bin
Win-Situ Version 4.21

Serial number: 00000350
Firmware Version 3.04
Unit name:

Test name: 855 No 1 slugout

Test defined on: 09/05/02 15:17:32
Test started on: 09/05/02 15:17:54
Test stopped on: 09/05/02 15:34:06
Test extracted on: N/A N/A

Data gathered using Logarithmic testing
Maximum time between data points: 600.0 Seconds.
Number of data samples: 109

TOTAL DATA SAMPLES 109

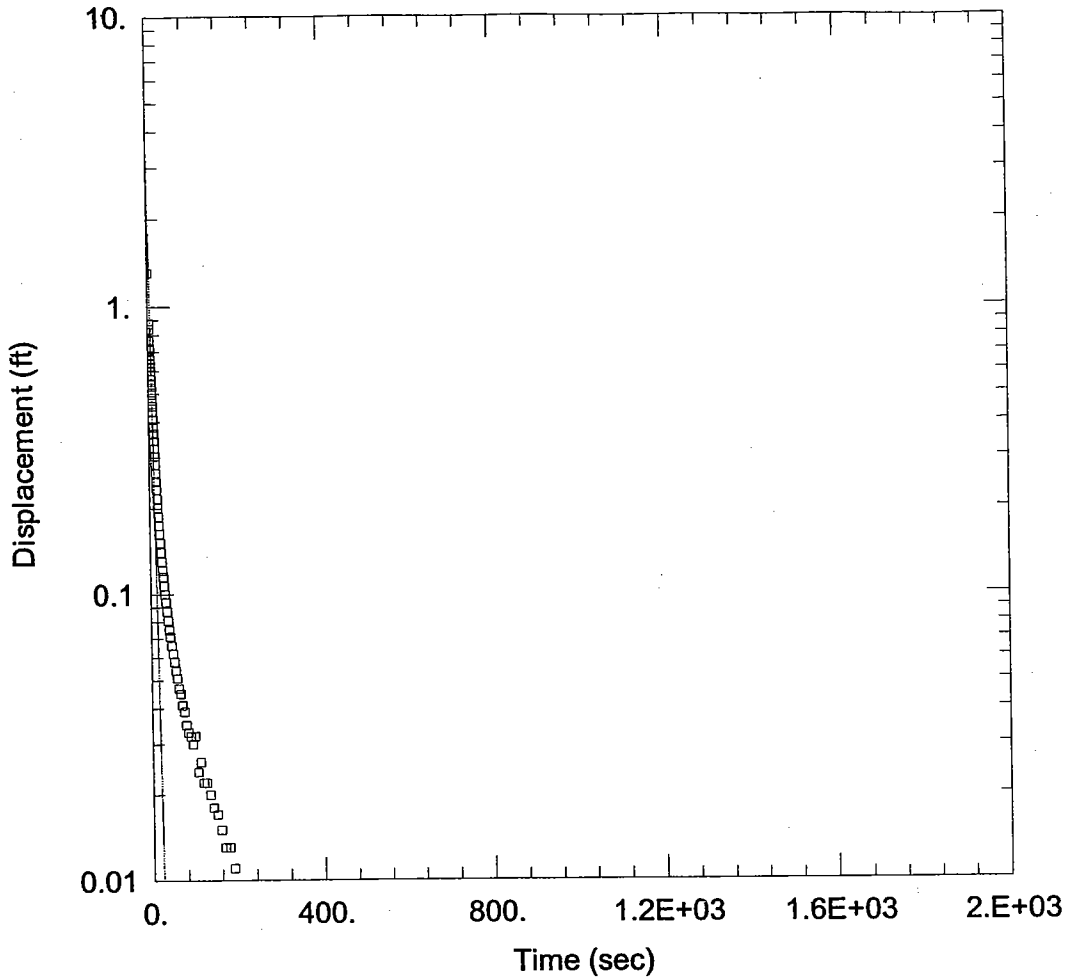
Channel number [1]
Measurement type: Temperature
Channel name: OnBoard Temp

Channel number [2]
Measurement type: Pressure
Channel name: Level-Surface
Sensor Range: 30 PSI.
Specific gravity: 1.000
Mode: Surface
User-defined reference: 0.000 Feet H2O
Referenced on: test start
Pressure head at reference: 18.588 Feet H2O

Date	Time	ET (sec)	Chan[1] Fahrenheit	Chan[2] Feet H2O
09/05/02	15:17:54	0.0	58.22	0.000
09/05/02	15:17:55	0.3	58.24	0.198
09/05/02	15:17:55	0.6	58.26	-0.118
09/05/02	15:17:55	0.9	58.26	-0.246
09/05/02	15:17:56	1.2	58.26	-0.143
09/05/02	15:17:56	1.5	58.26	-0.019
09/05/02	15:17:56	1.8	58.26	-0.612
09/05/02	15:17:56	2.1	58.28	-1.073
09/05/02	15:17:57	2.4	58.28	-1.195
09/05/02	15:17:57	2.7	58.28	-1.357
09/05/02	15:17:57	3.0	58.28	-1.519
09/05/02	15:17:58	3.3	58.28	-1.557
09/05/02	15:17:58	3.6	58.28	-1.456
09/05/02	15:17:58	3.9	58.28	-1.343
09/05/02	15:17:59	4.2	58.28	-1.277
09/05/02	15:17:59	4.5	58.28	-1.218
09/05/02	15:17:59	4.8	58.28	-1.157
09/05/02	15:17:59	5.1	58.31	-1.096
09/05/02	15:18:00	5.4	58.31	-1.046
09/05/02	15:18:00	5.7	58.31	-0.997
09/05/02	15:18:00	6.0	58.31	-0.949
09/05/02	15:18:01	6.4	58.31	-0.899
09/05/02	15:18:01	6.7	58.31	-0.850
09/05/02	15:18:01	7.1	58.31	-0.804
09/05/02	15:18:02	7.5	58.31	-0.753
09/05/02	15:18:02	8.0	58.31	-0.707
09/05/02	15:18:03	8.4	58.31	-0.659
09/05/02	15:18:03	8.9	58.31	-0.618
09/05/02	15:18:04	9.5	58.31	-0.574
09/05/02	15:18:04	10.0	58.28	-0.536

09/05/02	15:18:05	10.6	58.28	-0.499
09/05/02	15:18:06	11.3	58.28	-0.463
09/05/02	15:18:06	11.9	58.28	-0.431
09/05/02	15:18:07	12.6	58.28	-0.396
09/05/02	15:18:08	13.4	58.26	-0.366
09/05/02	15:18:09	14.2	58.28	-0.341
09/05/02	15:18:09	15.0	58.26	-0.316
09/05/02	15:18:10	15.9	58.26	-0.295
09/05/02	15:18:11	16.8	58.26	-0.274
09/05/02	15:18:12	17.8	58.26	-0.257
09/05/02	15:18:13	18.9	58.26	-0.240
09/05/02	15:18:14	20.0	58.26	-0.225
09/05/02	15:18:16	21.2	58.26	-0.212
09/05/02	15:18:17	22.4	58.26	-0.200
09/05/02	15:18:18	23.8	58.26	-0.189
09/05/02	15:18:20	25.2	58.26	-0.179
09/05/02	15:18:21	26.7	58.26	-0.174
09/05/02	15:18:23	28.2	58.26	-0.164
09/05/02	15:18:24	29.8	58.26	-0.156
09/05/02	15:18:26	31.5	58.26	-0.149
09/05/02	15:18:28	33.3	58.26	-0.143
09/05/02	15:18:30	35.2	58.26	-0.137
09/05/02	15:18:32	37.3	58.26	-0.132
09/05/02	15:18:34	39.5	58.26	-0.126
09/05/02	15:18:36	41.8	58.26	-0.122
09/05/02	15:18:39	44.3	58.26	-0.116
09/05/02	15:18:41	46.9	58.24	-0.114
09/05/02	15:18:44	49.7	58.24	-0.109
09/05/02	15:18:47	52.6	58.24	-0.105
09/05/02	15:18:50	55.7	58.24	-0.101
09/05/02	15:18:53	59.0	58.24	-0.099
09/05/02	15:18:57	62.5	58.24	-0.095
09/05/02	15:19:01	66.2	58.24	-0.092
09/05/02	15:19:04	70.1	58.24	-0.088
09/05/02	15:19:09	74.3	58.24	-0.086
09/05/02	15:19:13	78.7	58.24	-0.082
09/05/02	15:19:18	83.4	58.22	-0.082
09/05/02	15:19:23	88.4	58.24	-0.078
09/05/02	15:19:28	93.7	58.22	-0.076
09/05/02	15:19:34	99.3	58.22	-0.072
09/05/02	15:19:40	105.2	58.22	-0.072
09/05/02	15:19:46	111.5	58.22	-0.070
09/05/02	15:19:52	118.1	58.22	-0.069
09/05/02	15:19:59	125.1	58.22	-0.067
09/05/02	15:20:07	132.6	58.22	-0.065
09/05/02	15:20:15	140.5	58.22	-0.065
09/05/02	15:20:23	148.9	58.19	-0.063
09/05/02	15:20:32	157.8	58.19	-0.061
09/05/02	15:20:42	167.2	58.19	-0.061
09/05/02	15:20:52	177.2	58.19	-0.059
09/05/02	15:21:02	187.8	58.19	-0.057
09/05/02	15:21:13	199.0	58.19	-0.057
09/05/02	15:21:25	210.9	58.19	-0.055
09/05/02	15:21:38	223.5	58.19	-0.055
09/05/02	15:21:51	236.8	58.19	-0.053
09/05/02	15:22:05	250.9	58.19	-0.053
09/05/02	15:22:20	265.8	58.19	-0.051
09/05/02	15:22:36	281.6	58.19	-0.051
09/05/02	15:22:53	298.4	58.19	-0.051
09/05/02	15:23:11	316.2	58.19	-0.051
09/05/02	15:23:29	335.0	58.19	-0.049
09/05/02	15:23:49	354.9	58.17	-0.049
09/05/02	15:24:10	376.0	58.17	-0.049
09/05/02	15:24:33	398.4	58.17	-0.047
09/05/02	15:24:56	422.1	58.17	-0.049
09/05/02	15:25:22	447.2	58.17	-0.046
09/05/02	15:25:48	473.8	58.17	-0.047
09/05/02	15:26:16	502.0	58.17	-0.046
09/05/02	15:26:46	531.9	58.17	-0.046
09/05/02	15:27:18	563.5	58.17	-0.046
09/05/02	15:27:51	597.0	58.17	-0.044
09/05/02	15:28:27	632.5	58.17	-0.044

09/05/02	15:29:04	670.1	58.17	-0.044
09/05/02	15:29:44	709.9	58.17	-0.044
09/05/02	15:30:26	752.1	58.17	-0.042
09/05/02	15:31:11	796.8	58.17	-0.042
09/05/02	15:31:59	844.2	58.17	-0.044
09/05/02	15:32:49	894.4	58.17	-0.044
09/05/02	15:33:42	947.5	58.17	-0.042



SLUG IN WELL NO. 1

Data Set: C:\Program Files\HydroSOLVE\AQTESOLV for Windows Pro 3.0\Battelle 855 No 1 slugin.aqt
Date: 09/18/02 Time: 09:18:25

PROJECT INFORMATION

Company: DLZ Ohio, Inc
Client: Battelle
Project: 0221-4009-00
Test Location: North Facility
Test Well: 855 No.2
Test Date: 9-5-02

AQUIFER DATA

Saturated Thickness: 3.6 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (855 No. 1)

Initial Displacement: 1.3 ft
Wellbore Radius: 0.875 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.39
Casing Radius: 0.3355 ft
Well Skin Radius: 0.875 ft
Total Well Penetration Depth: 2.5 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.00372 ft/sec
y0 = 3.495 ft

In-Situ Inc. MiniTroll Pro

Report generated: 09/18/02 08:55:33
Report from file: ...\SN00350 2002-09-05 150348 855 no 1 slugin.bin
Win-Situ Version 4.21

Serial number: 00000350
Firmware Version 3.04
Unit name:

Test name: 855 no 1 slugin

Test defined on: 09/05/02 15:02:35
Test started on: 09/05/02 15:03:48
Test stopped on: 09/05/02 15:16:19
Test extracted on: N/A N/A

Data gathered using Logarithmic testing
Maximum time between data points: 600.0 Seconds.
Number of data samples: 104

TOTAL DATA SAMPLES 104

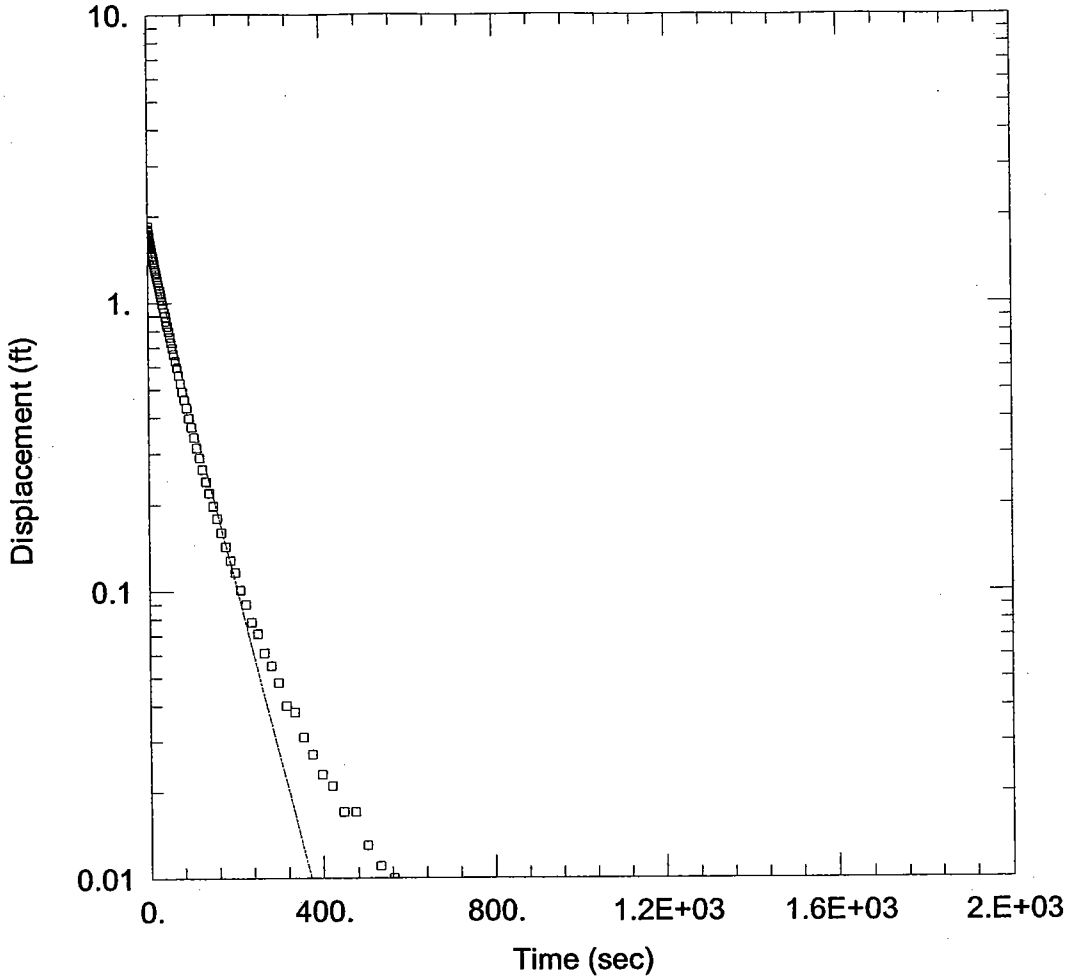
Channel number [1]
Measurement type: Temperature
Channel name: OnBoard Temp

Channel number [2]
Measurement type: Pressure
Channel name: Level-Surface
Sensor Range: 30 PSI.
Specific gravity: 1.000
Mode: Surface
User-defined reference: 0.000 Feet H2O
Referenced on: test start
Pressure head at reference: 19.852 Feet H2O

Date	Time	ET (sec)	Chan[1] Fahrenheit	Chan[2] Feet H2O
09/05/02	15:03:48	0.0	58.35	0.000
09/05/02	15:03:48	0.3	58.40	0.145
09/05/02	15:03:49	0.6	58.40	-0.097
09/05/02	15:03:49	0.9	58.40	-0.278
09/05/02	15:03:49	1.2	58.42	-0.642
09/05/02	15:03:50	1.5	58.42	-0.663
09/05/02	15:03:50	1.8	58.42	-0.170
09/05/02	15:03:50	2.1	58.42	-0.118
09/05/02	15:03:51	2.4	58.42	-0.503
09/05/02	15:03:51	2.7	58.42	-0.629
09/05/02	15:03:51	3.0	58.44	-0.463
09/05/02	15:03:51	3.3	58.44	-0.425
09/05/02	15:03:52	3.6	58.44	-0.536
09/05/02	15:03:52	3.9	58.44	-0.583
09/05/02	15:03:52	4.2	58.44	-0.579
09/05/02	15:03:53	4.5	58.44	-0.591
09/05/02	15:03:53	4.8	58.44	-0.621
09/05/02	15:03:53	5.1	58.44	-0.644
09/05/02	15:03:54	5.4	58.44	-0.661
09/05/02	15:03:54	5.7	58.44	-0.680
09/05/02	15:03:54	6.0	58.44	-0.698
09/05/02	15:03:55	6.4	58.44	-0.718
09/05/02	15:03:55	6.7	58.44	-0.739
09/05/02	15:03:55	7.1	58.44	-0.760
09/05/02	15:03:56	7.5	58.44	-0.783
09/05/02	15:03:56	8.0	58.44	-0.802
09/05/02	15:03:57	8.4	58.44	-0.825
09/05/02	15:03:57	8.9	58.44	-0.846
09/05/02	15:03:58	9.5	58.44	-0.867
09/05/02	15:03:58	10.0	58.44	-0.892

09/05/02	15:03:59	10.6	58.42	-0.916
09/05/02	15:03:59	11.3	58.42	-0.936
09/05/02	15:04:00	11.9	58.42	-0.956
09/05/02	15:04:01	12.6	58.42	-0.977
09/05/02	15:04:02	13.4	58.42	-0.996
09/05/02	15:04:02	14.2	58.42	-1.016
09/05/02	15:04:03	15.0	58.42	-1.035
09/05/02	15:04:04	15.9	58.42	-1.052
09/05/02	15:04:05	16.8	58.40	-1.067
09/05/02	15:04:06	17.8	58.40	-1.084
09/05/02	15:04:07	18.9	58.40	-1.099
09/05/02	15:04:08	20.0	58.40	-1.113
09/05/02	15:04:09	21.2	58.40	-1.126
09/05/02	15:04:11	22.4	58.40	-1.137
09/05/02	15:04:12	23.8	58.40	-1.149
09/05/02	15:04:13	25.2	58.38	-1.160
09/05/02	15:04:15	26.7	58.40	-1.170
09/05/02	15:04:16	28.2	58.38	-1.179
09/05/02	15:04:18	29.8	58.38	-1.185
09/05/02	15:04:20	31.5	58.38	-1.193
09/05/02	15:04:21	33.3	58.38	-1.200
09/05/02	15:04:23	35.2	58.38	-1.206
09/05/02	15:04:25	37.3	58.38	-1.213
09/05/02	15:04:28	39.5	58.38	-1.219
09/05/02	15:04:30	41.8	58.38	-1.225
09/05/02	15:04:32	44.3	58.35	-1.229
09/05/02	15:04:35	46.9	58.35	-1.234
09/05/02	15:04:38	49.7	58.35	-1.238
09/05/02	15:04:41	52.6	58.35	-1.242
09/05/02	15:04:44	55.7	58.35	-1.246
09/05/02	15:04:47	59.0	58.33	-1.249
09/05/02	15:04:51	62.5	58.33	-1.253
09/05/02	15:04:54	66.2	58.33	-1.255
09/05/02	15:04:58	70.1	58.33	-1.259
09/05/02	15:05:02	74.3	58.33	-1.261
09/05/02	15:05:07	78.7	58.33	-1.265
09/05/02	15:05:12	83.4	58.31	-1.267
09/05/02	15:05:17	88.4	58.31	-1.268
09/05/02	15:05:22	93.7	58.31	-1.270
09/05/02	15:05:27	99.3	58.31	-1.268
09/05/02	15:05:33	105.2	58.31	-1.276
09/05/02	15:05:40	111.5	58.31	-1.274
09/05/02	15:05:46	118.1	58.28	-1.278
09/05/02	15:05:53	125.1	58.28	-1.278
09/05/02	15:06:01	132.6	58.28	-1.280
09/05/02	15:06:09	140.5	58.28	-1.282
09/05/02	15:06:17	148.9	58.26	-1.283
09/05/02	15:06:26	157.8	58.26	-1.285
09/05/02	15:06:35	167.2	58.26	-1.287
09/05/02	15:06:45	177.2	58.26	-1.287
09/05/02	15:06:56	187.8	58.26	-1.289
09/05/02	15:07:07	199.0	58.26	-1.291
09/05/02	15:07:19	210.9	58.24	-1.291
09/05/02	15:07:32	223.5	58.24	-1.291
09/05/02	15:07:45	236.8	58.24	-1.291
09/05/02	15:07:59	250.9	58.24	-1.293
09/05/02	15:08:14	265.8	58.24	-1.293
09/05/02	15:08:30	281.6	58.24	-1.295
09/05/02	15:08:47	298.4	58.22	-1.297
09/05/02	15:09:04	316.2	58.22	-1.297
09/05/02	15:09:23	335.0	58.22	-1.297
09/05/02	15:09:43	354.9	58.22	-1.297
09/05/02	15:10:04	376.0	58.22	-1.297
09/05/02	15:10:27	398.4	58.22	-1.299
09/05/02	15:10:50	422.1	58.22	-1.299
09/05/02	15:11:15	447.2	58.22	-1.299
09/05/02	15:11:42	473.8	58.22	-1.299
09/05/02	15:12:10	502.0	58.22	-1.299
09/05/02	15:12:40	531.9	58.22	-1.299
09/05/02	15:13:12	563.5	58.22	-1.300
09/05/02	15:13:45	597.0	58.22	-1.300
09/05/02	15:14:21	632.5	58.22	-1.300

09/05/02	15:14:58	670.1	58.22	-1.302
09/05/02	15:15:38	709.9	58.22	-1.300



SLUG OUT WELL NO. 2

Data Set: C:\...\Battelle 855 No 2 slugout.aqt
Date: 09/18/02 Time: 09:16:18

PROJECT INFORMATION

Company: DLZ Ohio, Inc
Client: Battelle
Project: 0221-4009-00
Test Location: North Facility
Test Well: 855 No.2
Test Date: 9-5-02

AQUIFER DATA

Saturated Thickness: 3.6 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (855 No. 2)

Initial Displacement: 1.842 ft
Wellbore Radius: 0.875 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.39
Casing Radius: 0.3355 ft
Well Skin Radius: 0.875 ft
Total Well Penetration Depth: 2.5 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0002061 ft/sec
y0 = 1.646 ft

In-Situ Inc. MiniTroll Pro

Report generated: 09/18/02 08:56:13
Report from file: ...\SN00350 2002-09-05 161241 855 #2 slug out.bin
Win-Situ Version 4.21

Serial number: 00000350
Firmware Version 3.04
Unit name:

Test name: 855 #2 slug out

Test defined on: 09/05/02 16:11:37
Test started on: 09/05/02 16:12:41
Test stopped on: 09/05/02 16:29:45
Test extracted on: N/A N/A

Data gathered using Logarithmic testing
Maximum time between data points: 600.0 Seconds.
Number of data samples: 110

TOTAL DATA SAMPLES 110

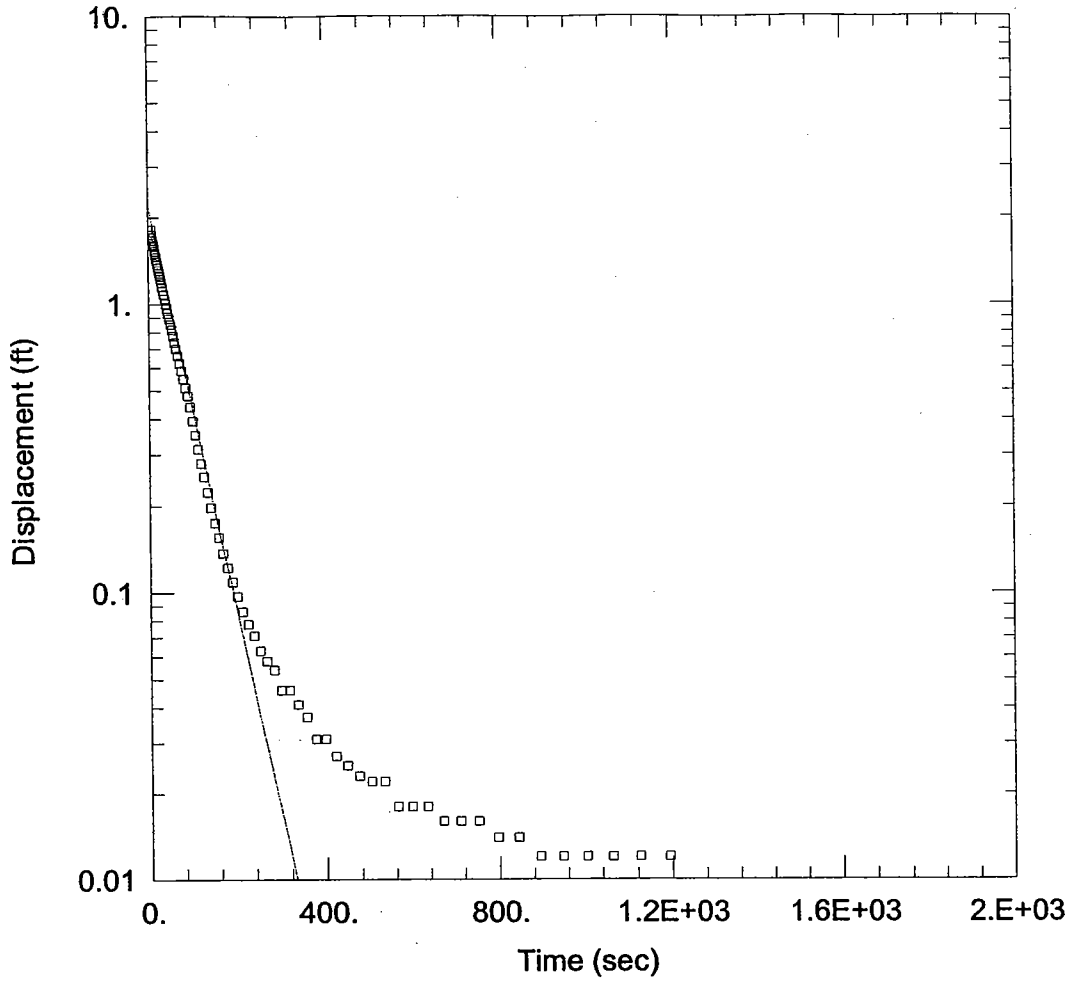
Channel number [1]
Measurement type: Temperature
Channel name: OnBoard Temp

Channel number [2]
Measurement type: Pressure
Channel name: Level-Surface
Sensor Range: 30 PSI.
Specific gravity: 1.000
Mode: Surface
User-defined reference: 0.000 Feet H2O
Referenced on: test start
Pressure head at reference: 18.083 Feet H2O

Date	Time	ET (sec)	Chan[1] Fahrenheit	Chan[2] Feet H2O
09/05/02	16:12:41	0.0	56.29	0.000
09/05/02	16:12:42	0.3	56.32	0.042
09/05/02	16:12:42	0.6	56.34	0.057
09/05/02	16:12:42	0.9	56.34	0.072
09/05/02	16:12:43	1.2	56.34	0.084
09/05/02	16:12:43	1.5	56.34	0.105
09/05/02	16:12:43	1.8	56.36	0.114
09/05/02	16:12:44	2.1	56.36	0.131
09/05/02	16:12:44	2.4	56.36	0.139
09/05/02	16:12:44	2.7	56.36	0.154
09/05/02	16:12:44	3.0	56.36	0.160
09/05/02	16:12:45	3.3	56.36	0.173
09/05/02	16:12:45	3.6	56.36	0.184
09/05/02	16:12:45	3.9	56.36	0.192
09/05/02	16:12:46	4.2	56.36	0.204
09/05/02	16:12:46	4.5	56.36	0.213
09/05/02	16:12:46	4.8	56.39	0.224
09/05/02	16:12:47	5.1	56.39	0.236
09/05/02	16:12:47	5.4	56.39	0.245
09/05/02	16:12:47	5.7	56.39	0.253
09/05/02	16:12:47	6.0	56.39	0.261
09/05/02	16:12:48	6.4	56.39	0.272
09/05/02	16:12:48	6.7	56.39	0.287
09/05/02	16:12:49	7.1	56.39	0.297
09/05/02	16:12:49	7.5	56.39	0.306
09/05/02	16:12:49	8.0	56.39	0.323
09/05/02	16:12:50	8.4	56.39	0.342
09/05/02	16:12:50	8.9	56.39	0.346
09/05/02	16:12:51	9.5	56.39	0.363
09/05/02	16:12:52	10.0	56.36	0.379

09/05/02	16:12:52	10.6	56.36	0.390
09/05/02	16:12:53	11.3	56.36	0.405
09/05/02	16:12:53	11.9	56.36	0.419
09/05/02	16:12:54	12.6	56.34	0.442
09/05/02	16:12:55	13.4	56.36	0.459
09/05/02	16:12:56	14.2	56.34	0.478
09/05/02	16:12:56	15.0	56.34	0.499
09/05/02	16:12:57	15.9	56.34	0.518
09/05/02	16:12:58	16.8	56.34	0.541
09/05/02	16:12:59	17.8	56.34	0.562
09/05/02	16:13:00	18.9	56.34	0.585
09/05/02	16:13:01	20.0	56.34	0.607
09/05/02	16:13:03	21.2	56.34	0.632
09/05/02	16:13:04	22.4	56.34	0.657
09/05/02	16:13:05	23.8	56.34	0.684
09/05/02	16:13:07	25.2	56.34	0.710
09/05/02	16:13:08	26.7	56.34	0.739
09/05/02	16:13:10	28.2	56.34	0.766
09/05/02	16:13:11	29.8	56.34	0.794
09/05/02	16:13:13	31.5	56.34	0.823
09/05/02	16:13:15	33.3	56.34	0.851
09/05/02	16:13:17	35.2	56.34	0.882
09/05/02	16:13:19	37.3	56.34	0.914
09/05/02	16:13:21	39.5	56.34	0.945
09/05/02	16:13:23	41.8	56.34	0.979
09/05/02	16:13:26	44.3	56.34	1.011
09/05/02	16:13:28	46.9	56.34	1.045
09/05/02	16:13:31	49.7	56.34	1.080
09/05/02	16:13:34	52.6	56.34	1.112
09/05/02	16:13:37	55.7	56.34	1.146
09/05/02	16:13:40	59.0	56.32	1.179
09/05/02	16:13:44	62.5	56.32	1.213
09/05/02	16:13:48	66.2	56.32	1.247
09/05/02	16:13:52	70.1	56.32	1.280
09/05/02	16:13:56	74.3	56.32	1.316
09/05/02	16:14:00	78.7	56.32	1.350
09/05/02	16:14:05	83.4	56.32	1.381
09/05/02	16:14:10	88.4	56.32	1.411
09/05/02	16:14:15	93.7	56.32	1.444
09/05/02	16:14:21	99.3	56.32	1.472
09/05/02	16:14:27	105.2	56.32	1.501
09/05/02	16:14:33	111.5	56.29	1.528
09/05/02	16:14:40	118.1	56.29	1.552
09/05/02	16:14:47	125.1	56.29	1.577
09/05/02	16:14:54	132.6	56.29	1.602
09/05/02	16:15:02	140.5	56.29	1.623
09/05/02	16:15:10	148.9	56.29	1.644
09/05/02	16:15:19	157.8	56.29	1.663
09/05/02	16:15:29	167.2	56.29	1.682
09/05/02	16:15:39	177.2	56.29	1.699
09/05/02	16:15:49	187.8	56.29	1.714
09/05/02	16:16:00	199.0	56.29	1.726
09/05/02	16:16:12	210.9	56.27	1.741
09/05/02	16:16:25	223.5	56.27	1.752
09/05/02	16:16:38	236.8	56.27	1.764
09/05/02	16:16:52	250.9	56.27	1.771
09/05/02	16:17:07	265.8	56.27	1.781
09/05/02	16:17:23	281.6	56.27	1.787
09/05/02	16:17:40	298.4	56.27	1.794
09/05/02	16:17:58	316.2	56.27	1.802
09/05/02	16:18:16	335.0	56.27	1.804
09/05/02	16:18:36	354.9	56.25	1.811
09/05/02	16:18:57	376.0	56.25	1.815
09/05/02	16:19:20	398.4	56.25	1.819
09/05/02	16:19:44	422.1	56.25	1.821
09/05/02	16:20:09	447.2	56.25	1.825
09/05/02	16:20:35	473.8	56.25	1.825
09/05/02	16:21:03	502.0	56.25	1.829
09/05/02	16:21:33	531.9	56.25	1.831
09/05/02	16:22:05	563.5	56.25	1.832
09/05/02	16:22:38	597.0	56.25	1.834
09/05/02	16:23:14	632.5	56.25	1.834

09/05/02	16:23:52	670.1	56.25	1.838
09/05/02	16:24:31	709.9	56.25	1.836
09/05/02	16:25:14	752.1	56.25	1.838
09/05/02	16:25:58	796.8	56.25	1.838
09/05/02	16:26:46	844.2	56.25	1.836
09/05/02	16:27:36	894.4	56.25	1.840
09/05/02	16:28:29	947.5	56.25	1.840
09/05/02	16:29:25	1003.8	56.25	1.842



SLUG IN WELL NO. 2

Data Set: C:\Program Files\HydroSOLVE\AQTESOLV for Windows Pro 3.0\Battelle 855 No 2 slugin.aqt
Date: 09/18/02 Time: 09:15:05

PROJECT INFORMATION

Company: DLZ Ohio, Inc
Client: Battelle
Project: 0221-4009-00
Test Location: North Facility
Test Well: 855 No.2
Test Date: 9-5-02

AQUIFER DATA

Saturated Thickness: 3.6 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (855 No. 2)

Initial Displacement: 1.811 ft
Wellbore Radius: 0.875 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.39
Casing Radius: 0.3355 ft
Well Skin Radius: 0.875 ft
Total Well Penetration Depth: 2.5 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0002451 ft/sec
y0 = 2.206 ft

In-Situ Inc. MiniTroll Pro

Report generated: 09/18/02 08:55:50
Report from file: ...\SN00350 2002-09-05 155029 855 #2 slugin.bin
Win-Situ Version 4.21

Serial number: 00000350
Firmware Version 3.04
Unit name:

Test name: 855 #2 slugin

Test defined on: 09/05/02 15:47:36
Test started on: 09/05/02 15:50:29
Test stopped on: 09/05/02 16:10:43
Test extracted on: N/A N/A

Data gathered using Logarithmic testing
Maximum time between data points: 600.0 Seconds.
Number of data samples: 113

TOTAL DATA SAMPLES 113

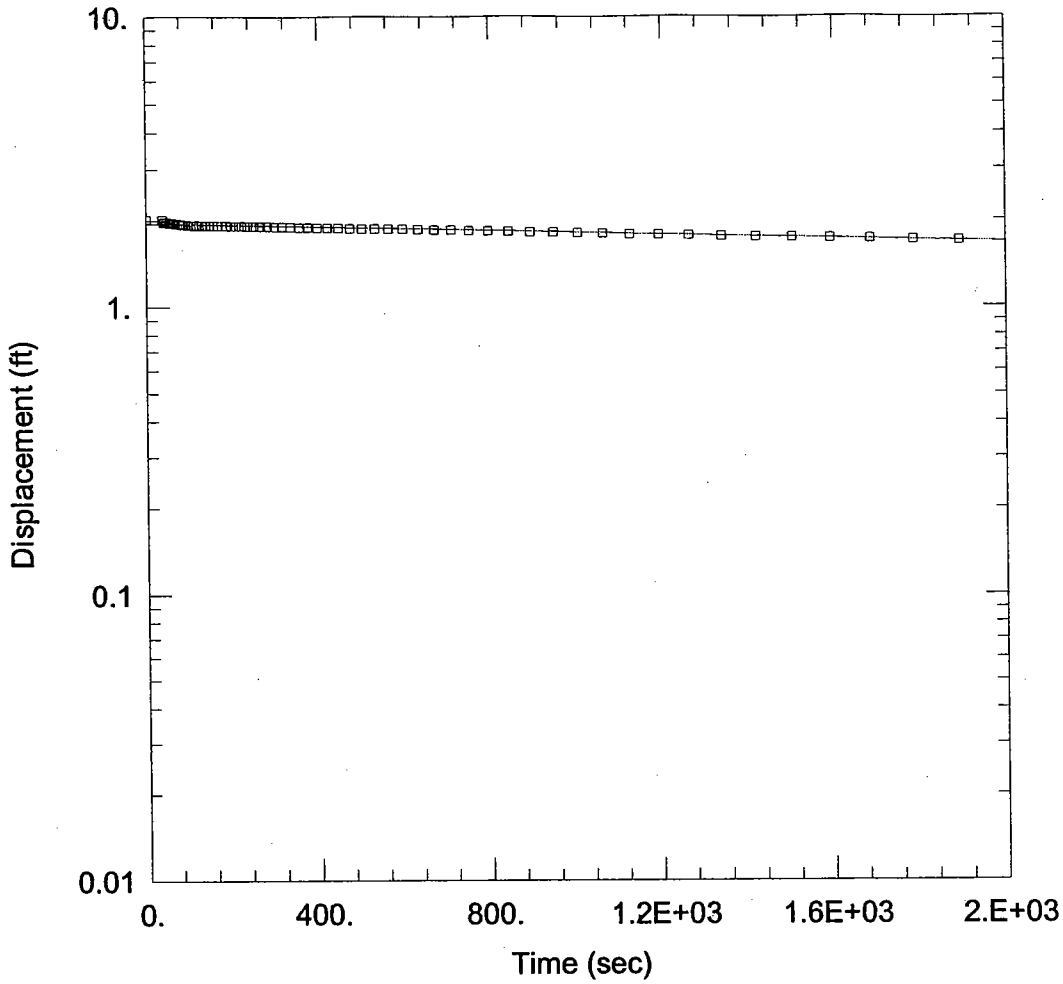
Channel number [1]
Measurement type: Temperature
Channel name: OnBoard Temp

Channel number [2]
Measurement type: Pressure
Channel name: Level-Surface
Sensor Range: 30 PSI.
Specific gravity: 1.000
Mode: Surface
User-defined reference: 0.000 Feet H2O
Referenced on: test start
Pressure head at reference: 19.914 Feet H2O

Date	Time	ET (sec)	Chan[1] Fahrenheit	Chan[2] Feet H2O
09/05/02	15:50:29	0.0	56.52	0.000
09/05/02	15:50:29	0.3	56.57	0.007
09/05/02	15:50:29	0.6	56.59	0.011
09/05/02	15:50:30	0.9	56.59	0.506
09/05/02	15:50:30	1.2	56.59	0.718
09/05/02	15:50:30	1.5	56.59	1.577
09/05/02	15:50:31	1.8	56.61	1.845
09/05/02	15:50:31	2.1	56.61	1.877
09/05/02	15:50:31	2.4	56.61	1.883
09/05/02	15:50:32	2.7	56.61	1.818
09/05/02	15:50:32	3.0	56.61	1.148
09/05/02	15:50:32	3.3	56.61	2.009
09/05/02	15:50:32	3.6	56.61	2.255
09/05/02	15:50:33	3.9	56.61	2.007
09/05/02	15:50:33	4.2	56.61	1.641
09/05/02	15:50:33	4.5	56.61	1.775
09/05/02	15:50:34	4.8	56.61	2.013
09/05/02	15:50:34	5.1	56.61	2.045
09/05/02	15:50:34	5.4	56.61	1.803
09/05/02	15:50:35	5.7	56.64	1.569
09/05/02	15:50:35	6.0	56.64	1.767
09/05/02	15:50:35	6.4	56.61	1.929
09/05/02	15:50:36	6.7	56.64	1.738
09/05/02	15:50:36	7.1	56.64	1.736
09/05/02	15:50:36	7.5	56.64	1.811
09/05/02	15:50:37	8.0	56.64	1.704
09/05/02	15:50:37	8.4	56.64	1.746
09/05/02	15:50:38	8.9	56.64	1.708
09/05/02	15:50:38	9.5	56.64	1.698
09/05/02	15:50:39	10.0	56.61	1.676

09/05/02	15:50:39	10.6	56.61	1.657
09/05/02	15:50:40	11.3	56.59	1.638
09/05/02	15:50:41	11.9	56.59	1.617
09/05/02	15:50:41	12.6	56.59	1.596
09/05/02	15:50:42	13.4	56.59	1.577
09/05/02	15:50:43	14.2	56.59	1.554
09/05/02	15:50:44	15.0	56.59	1.529
09/05/02	15:50:45	15.9	56.59	1.504
09/05/02	15:50:46	16.8	56.59	1.480
09/05/02	15:50:47	17.8	56.59	1.455
09/05/02	15:50:48	18.9	56.59	1.426
09/05/02	15:50:49	20.0	56.57	1.400
09/05/02	15:50:50	21.2	56.57	1.371
09/05/02	15:50:51	22.4	56.57	1.341
09/05/02	15:50:53	23.8	56.57	1.310
09/05/02	15:50:54	25.2	56.57	1.280
09/05/02	15:50:56	26.7	56.57	1.247
09/05/02	15:50:57	28.2	56.57	1.217
09/05/02	15:50:59	29.8	56.57	1.183
09/05/02	15:51:00	31.5	56.57	1.150
09/05/02	15:51:02	33.3	56.57	1.114
09/05/02	15:51:04	35.2	56.57	1.080
09/05/02	15:51:06	37.3	56.57	1.043
09/05/02	15:51:08	39.5	56.57	1.005
09/05/02	15:51:11	41.8	56.57	0.965
09/05/02	15:51:13	44.3	56.55	0.929
09/05/02	15:51:16	46.9	56.55	0.891
09/05/02	15:51:19	49.7	56.55	0.853
09/05/02	15:51:21	52.6	56.55	0.817
09/05/02	15:51:25	55.7	56.55	0.777
09/05/02	15:51:28	59.0	56.55	0.737
09/05/02	15:51:31	62.5	56.55	0.699
09/05/02	15:51:35	66.2	56.52	0.661
09/05/02	15:51:39	70.1	56.52	0.623
09/05/02	15:51:43	74.3	56.52	0.587
09/05/02	15:51:48	78.7	56.52	0.549
09/05/02	15:51:52	83.4	56.52	0.512
09/05/02	15:51:57	88.4	56.52	0.480
09/05/02	15:52:03	93.7	56.50	0.440
09/05/02	15:52:08	99.3	56.50	0.394
09/05/02	15:52:14	105.2	56.50	0.352
09/05/02	15:52:20	111.5	56.50	0.314
09/05/02	15:52:27	118.1	56.50	0.280
09/05/02	15:52:34	125.1	56.48	0.252
09/05/02	15:52:41	132.6	56.48	0.223
09/05/02	15:52:49	140.5	56.48	0.198
09/05/02	15:52:58	148.9	56.45	0.175
09/05/02	15:53:07	157.8	56.45	0.156
09/05/02	15:53:16	167.2	56.45	0.137
09/05/02	15:53:26	177.2	56.45	0.122
09/05/02	15:53:37	187.8	56.45	0.109
09/05/02	15:53:48	199.0	56.43	0.097
09/05/02	15:54:00	210.9	56.43	0.086
09/05/02	15:54:12	223.5	56.43	0.078
09/05/02	15:54:26	236.8	56.43	0.071
09/05/02	15:54:40	250.9	56.43	0.063
09/05/02	15:54:55	265.8	56.41	0.058
09/05/02	15:55:10	281.6	56.41	0.054
09/05/02	15:55:27	298.4	56.41	0.046
09/05/02	15:55:45	316.2	56.39	0.046
09/05/02	15:56:04	335.0	56.39	0.041
09/05/02	15:56:24	354.9	56.39	0.037
09/05/02	15:56:45	376.0	56.39	0.031
09/05/02	15:57:07	398.4	56.39	0.031
09/05/02	15:57:31	422.1	56.39	0.027
09/05/02	15:57:56	447.2	56.36	0.025
09/05/02	15:58:23	473.8	56.36	0.023
09/05/02	15:58:51	502.0	56.36	0.022
09/05/02	15:59:21	531.9	56.36	0.022
09/05/02	15:59:52	563.5	56.34	0.018
09/05/02	16:00:26	597.0	56.34	0.018
09/05/02	16:01:01	632.5	56.34	0.018

09/05/02	16:01:39	670.1	56.34	0.016
09/05/02	16:02:19	709.9	56.32	0.016
09/05/02	16:03:01	752.1	56.32	0.016
09/05/02	16:03:46	796.8	56.32	0.014
09/05/02	16:04:33	844.2	56.32	0.014
09/05/02	16:05:23	894.4	56.32	0.012
09/05/02	16:06:16	947.5	56.32	0.012
09/05/02	16:07:13	1003.8	56.32	0.012
09/05/02	16:08:12	1063.4	56.29	0.012
09/05/02	16:09:15	1126.6	56.29	0.012
09/05/02	16:10:22	1193.5	56.29	0.012



SLUG IN WELL NO. 3

Data Set: C:\Program Files\HydroSOLVE\AQTESOLV for Windows Pro 3.0\Battelle 855 No 3 slugin.aqt
Date: 09/18/02 Time: 10:13:19

PROJECT INFORMATION

Company: DLZ Ohio, Inc
Client: Battelle
Project: 0221-4009-00
Test Location: North Facility
Test Well: 855 No.2
Test Date: 9-5-02

AQUIFER DATA

Saturated Thickness: 3.6 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (855 No. 3)

Initial Displacement: 2.015 ft
Wellbore Radius: 0.875 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.39
Casing Radius: 0.3355 ft
Well Skin Radius: 0.875 ft
Total Well Penetration Depth: 2.5 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 1.158E-06 ft/sec
y0 = 1.953 ft

In-Situ Inc. MiniTroll Pro

Report generated: 09/18/02 08:56:22
Report from file: ...\SN00350 2002-09-05 134220 855 No 3 slugin.bin
Win-Situ Version 4.21

Serial number: 00000350
Firmware Version 3.04
Unit name:

Test name: 855 No 3 slugin

Test defined on: 09/05/02 13:34:10
Test started on: 09/05/02 13:42:20
Test stopped on: 09/05/02 14:43:07
Test extracted on: N/A N/A

Data gathered using Logarithmic testing
Maximum time between data points: 600.0 Seconds.
Number of data samples: 132

TOTAL DATA SAMPLES 132

Channel number [1]
Measurement type: Temperature
Channel name: OnBoard Temp

Channel number [2]
Measurement type: Pressure
Channel name: Level-Surface
Sensor Range: 30 PSI.
Specific gravity: 1.000
Mode: Surface
User-defined reference: 0.000 Feet H2O
Referenced on: test start
Pressure head at reference: 24.970 Feet H2O

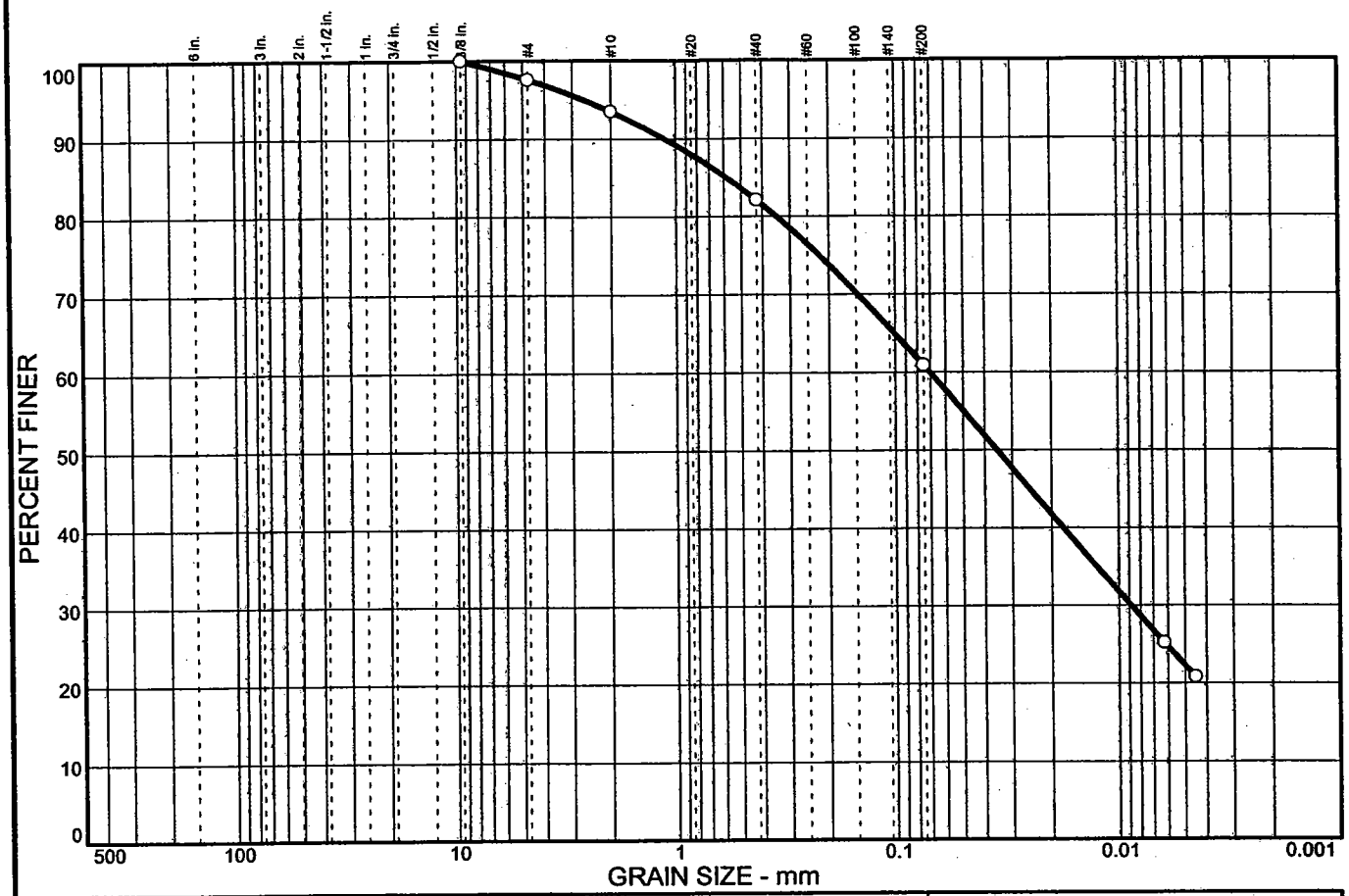
Date	Time	ET (sec)	Chan[1] Fahrenheit	Chan[2] Feet H2O
09/05/02	13:42:20	0.0	57.00	0.000
09/05/02	13:42:20	0.3	57.05	0.015
09/05/02	13:42:21	0.6	57.07	0.017
09/05/02	13:42:21	0.9	57.07	0.023
09/05/02	13:42:21	1.2	57.07	0.025
09/05/02	13:42:22	1.5	57.07	0.025
09/05/02	13:42:22	1.8	57.07	0.023
09/05/02	13:42:22	2.1	57.07	0.026
09/05/02	13:42:23	2.4	57.07	0.026
09/05/02	13:42:23	2.7	57.07	0.026
09/05/02	13:42:23	3.0	57.07	0.026
09/05/02	13:42:23	3.3	57.07	0.028
09/05/02	13:42:24	3.6	57.07	0.026
09/05/02	13:42:24	3.9	57.07	0.028
09/05/02	13:42:24	4.2	57.07	0.028
09/05/02	13:42:25	4.5	57.07	0.026
09/05/02	13:42:25	4.8	57.07	0.028
09/05/02	13:42:25	5.1	57.07	0.028
09/05/02	13:42:26	5.4	57.07	0.028
09/05/02	13:42:26	5.7	57.07	0.028
09/05/02	13:42:26	6.0	57.07	0.028
09/05/02	13:42:27	6.4	57.07	0.028
09/05/02	13:42:27	6.7	57.07	0.028
09/05/02	13:42:27	7.1	57.05	0.026
09/05/02	13:42:28	7.5	57.05	0.026
09/05/02	13:42:28	8.0	57.05	0.028
09/05/02	13:42:29	8.4	57.05	0.028
09/05/02	13:42:29	8.9	57.05	0.028
09/05/02	13:42:30	9.5	57.05	0.028
09/05/02	13:42:30	10.0	57.03	0.021

09/05/02	13:42:31	10.6	57.00	0.019
09/05/02	13:42:31	11.3	57.00	0.019
09/05/02	13:42:32	11.9	57.00	0.017
09/05/02	13:42:33	12.6	57.00	0.017
09/05/02	13:42:34	13.4	56.98	0.017
09/05/02	13:42:34	14.2	56.98	0.015
09/05/02	13:42:35	15.0	56.96	0.015
09/05/02	13:42:36	15.9	56.96	0.015
09/05/02	13:42:37	16.8	56.96	0.013
09/05/02	13:42:38	17.8	56.93	0.014
09/05/02	13:42:39	18.9	56.93	0.012
09/05/02	13:42:40	20.0	56.93	0.012
09/05/02	13:42:41	21.2	56.91	0.010
09/05/02	13:42:43	22.4	56.91	0.314
09/05/02	13:42:44	23.8	56.89	0.638
09/05/02	13:42:45	25.2	56.89	1.118
09/05/02	13:42:47	26.7	56.89	1.621
09/05/02	13:42:48	28.2	56.87	2.169
09/05/02	13:42:50	29.8	56.84	1.893
09/05/02	13:42:52	31.5	56.84	2.103
09/05/02	13:42:53	33.3	56.82	1.870
09/05/02	13:42:55	35.2	56.82	2.063
09/05/02	13:42:57	37.3	56.80	2.015
09/05/02	13:43:00	39.5	56.80	2.013
09/05/02	13:43:02	41.8	56.77	1.973
09/05/02	13:43:04	44.3	56.77	1.975
09/05/02	13:43:07	46.9	56.75	1.971
09/05/02	13:43:10	49.7	56.73	1.968
09/05/02	13:43:13	52.6	56.71	1.968
09/05/02	13:43:16	55.7	56.71	1.964
09/05/02	13:43:19	59.0	56.68	1.960
09/05/02	13:43:23	62.5	56.66	1.957
09/05/02	13:43:26	66.2	56.64	1.955
09/05/02	13:43:30	70.1	56.64	1.949
09/05/02	13:43:34	74.3	56.59	1.945
09/05/02	13:43:39	78.7	56.59	1.942
09/05/02	13:43:44	83.4	56.55	1.938
09/05/02	13:43:49	88.4	56.55	1.934
09/05/02	13:43:54	93.7	56.52	1.930
09/05/02	13:43:59	99.3	56.50	1.925
09/05/02	13:44:05	105.2	56.48	1.923
09/05/02	13:44:12	111.5	56.45	1.923
09/05/02	13:44:18	118.1	56.43	1.921
09/05/02	13:44:25	125.1	56.41	1.919
09/05/02	13:44:33	132.6	56.39	1.919
09/05/02	13:44:41	140.5	56.36	1.918
09/05/02	13:44:49	148.9	56.34	1.916
09/05/02	13:44:58	157.8	56.32	1.916
09/05/02	13:45:07	167.2	56.29	1.914
09/05/02	13:45:17	177.2	56.27	1.912
09/05/02	13:45:28	187.8	56.25	1.912
09/05/02	13:45:39	199.0	56.23	1.908
09/05/02	13:45:51	210.9	56.20	1.909
09/05/02	13:46:04	223.5	56.18	1.907
09/05/02	13:46:17	236.8	56.16	1.903
09/05/02	13:46:31	250.9	56.16	1.901
09/05/02	13:46:46	265.8	56.13	1.899
09/05/02	13:47:02	281.6	56.11	1.897
09/05/02	13:47:19	298.4	56.09	1.894
09/05/02	13:47:36	316.2	56.09	1.892
09/05/02	13:47:55	335.0	56.07	1.888
09/05/02	13:48:15	354.9	56.04	1.886
09/05/02	13:48:36	376.0	56.04	1.884
09/05/02	13:48:59	398.4	56.02	1.881
09/05/02	13:49:22	422.1	56.02	1.879
09/05/02	13:49:47	447.2	56.00	1.873
09/05/02	13:50:14	473.8	56.00	1.869
09/05/02	13:50:42	502.0	55.97	1.866
09/05/02	13:51:12	531.9	55.97	1.864
09/05/02	13:51:44	563.5	55.95	1.858
09/05/02	13:52:17	597.0	55.95	1.854
09/05/02	13:52:53	632.5	55.95	1.848

09/05/02	13:53:30	670.1	55.93	1.843
09/05/02	13:54:10	709.9	55.93	1.839
09/05/02	13:54:52	752.1	55.93	1.831
09/05/02	13:55:37	796.8	55.91	1.826
09/05/02	13:56:24	844.2	55.91	1.820
09/05/02	13:57:15	894.4	55.91	1.814
09/05/02	13:58:08	947.5	55.91	1.807
09/05/02	13:59:04	1003.8	55.88	1.799
09/05/02	14:00:04	1063.4	55.88	1.792
09/05/02	14:01:07	1126.6	55.88	1.782
09/05/02	14:02:14	1193.5	55.86	1.775
09/05/02	14:03:25	1264.4	55.86	1.767
09/05/02	14:04:40	1339.5	55.86	1.755
09/05/02	14:05:59	1419.0	55.86	1.746
09/05/02	14:07:23	1503.3	55.84	1.737
09/05/02	14:08:53	1592.6	55.84	1.727
09/05/02	14:10:27	1687.1	55.84	1.716
09/05/02	14:12:07	1787.2	55.84	1.704
09/05/02	14:13:53	1893.3	55.84	1.693
09/05/02	14:15:46	2005.7	55.81	1.679
09/05/02	14:17:45	2124.7	55.81	1.668
09/05/02	14:19:51	2250.8	55.81	1.653
09/05/02	14:22:05	2384.4	55.81	1.638
09/05/02	14:24:26	2525.9	55.81	1.622
09/05/02	14:26:56	2675.8	55.81	1.607
09/05/02	14:29:35	2834.6	55.79	1.590
09/05/02	14:32:23	3002.8	55.79	1.573
09/05/02	14:35:21	3180.9	55.79	1.558
09/05/02	14:38:30	3369.6	55.79	1.537
09/05/02	14:41:50	3569.5	55.79	1.520

LABORATORY TEST DATA

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.4	4.1	11.4	21.2	38.6	22.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	97.6		
#10	93.5		
#40	82.1		
#200	60.9		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.583 D_{60}= 0.0703 D_{50}= 0.0351
D_{30}= 0.0088 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

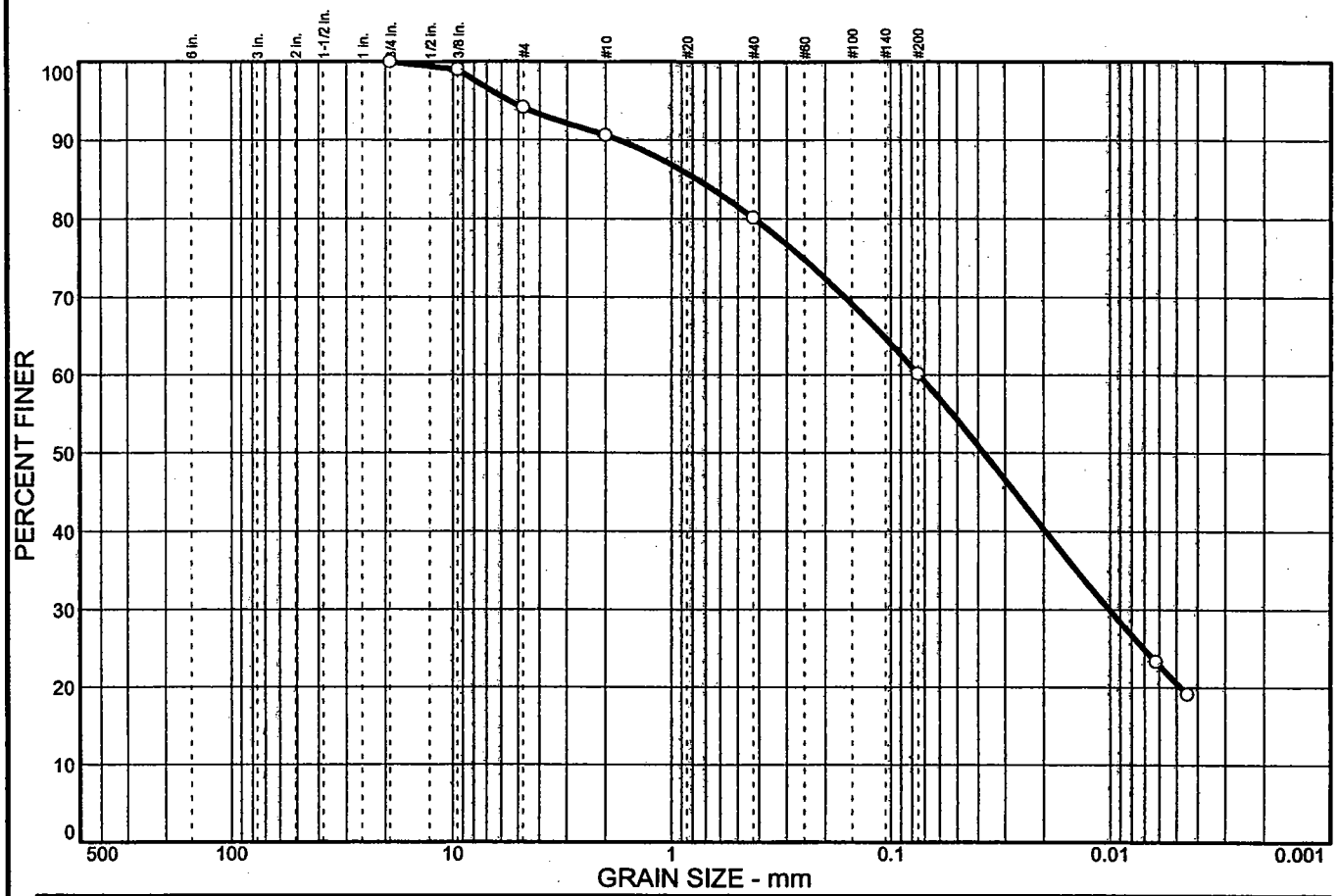
Moisture Content= 9.8%

Sample No.: Till-5, S-2A **Source of Sample:** **Date:** 8/19/02
Location: **Elev./Depth:** 21.0'-22.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.9	3.5	10.5	20.0	39.6	20.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.0		
#4	94.1		
#10	90.6		
#40	80.1		
#200	60.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.766 D_{60}= 0.0745 D_{50}= 0.0376
D_{30}= 0.0101 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

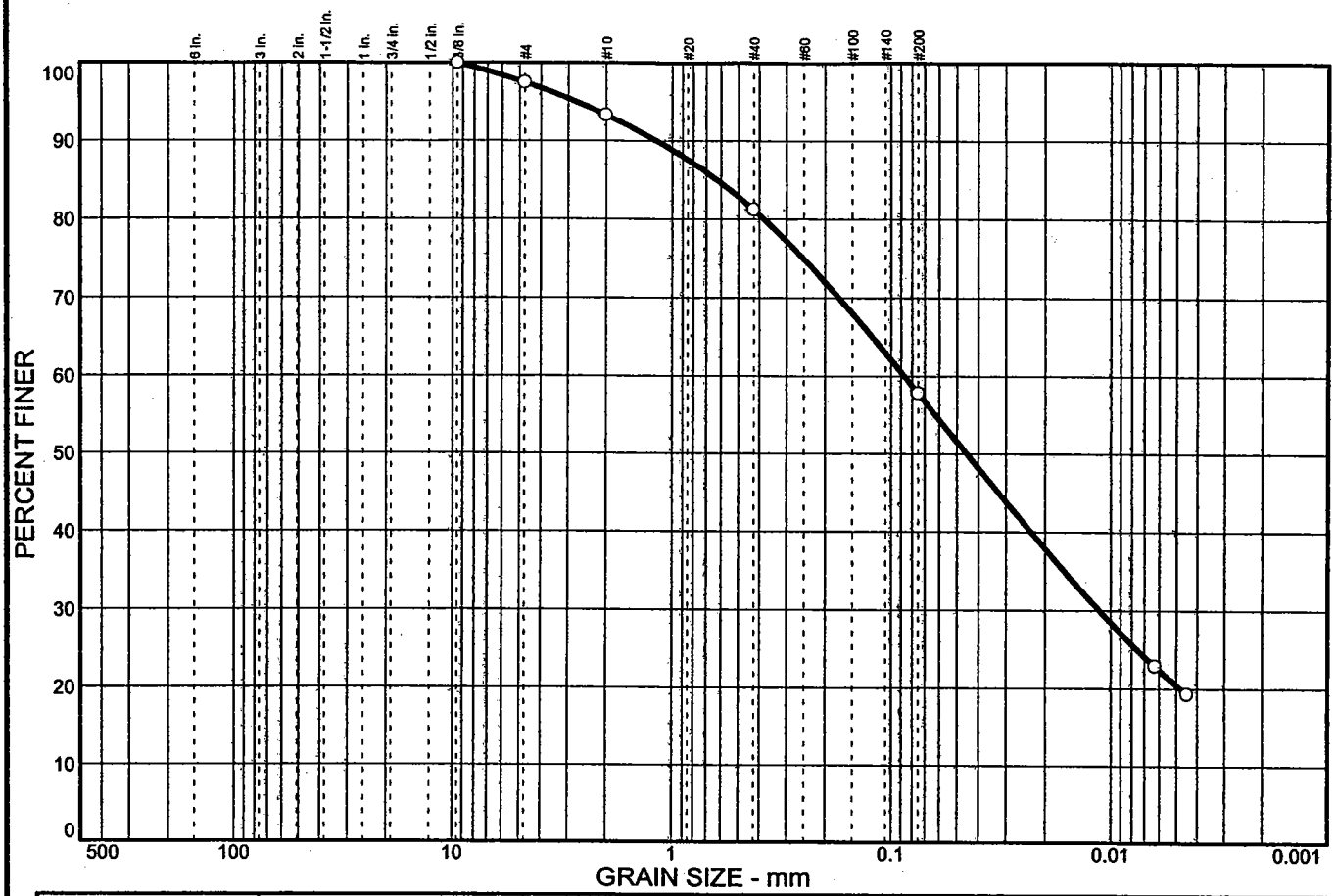
Moisture Content= 10.0%

Sample No.: Till-5, S-3 **Source of Sample:** **Date:** 8/19/02
Location: **Elev./Depth:** 22.0'-23.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.5	4.2	12.1	23.4	37.3	20.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	97.5		
#10	93.3		
#40	81.2		
#200	57.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.626 D_{60}= 0.0867 D_{50}= 0.0450
D_{30}= 0.0113 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

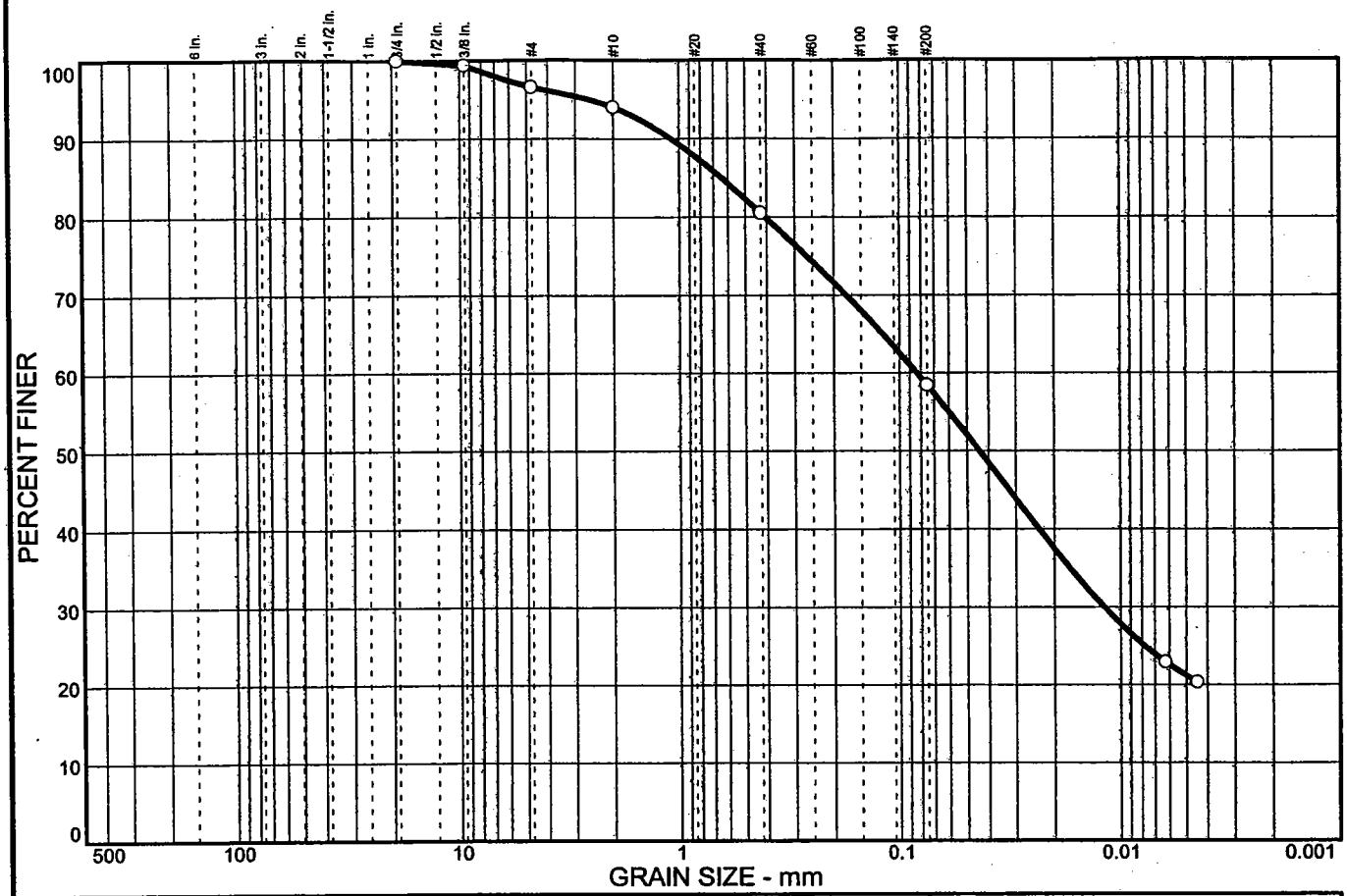
Moisture Content= 9.7%

Sample No.: Till-5, S-5 **Source of Sample:** **Date:** 8/19/02
Location: **Elev./Depth:** 24.0'-25.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.4	2.6	13.5	22.1	37.2	21.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.4		
#4	96.6		
#10	94.0		
#40	80.5		
#200	58.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.644 D_{60}= 0.0836 D_{50}= 0.0439
D_{30}= 0.0118 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

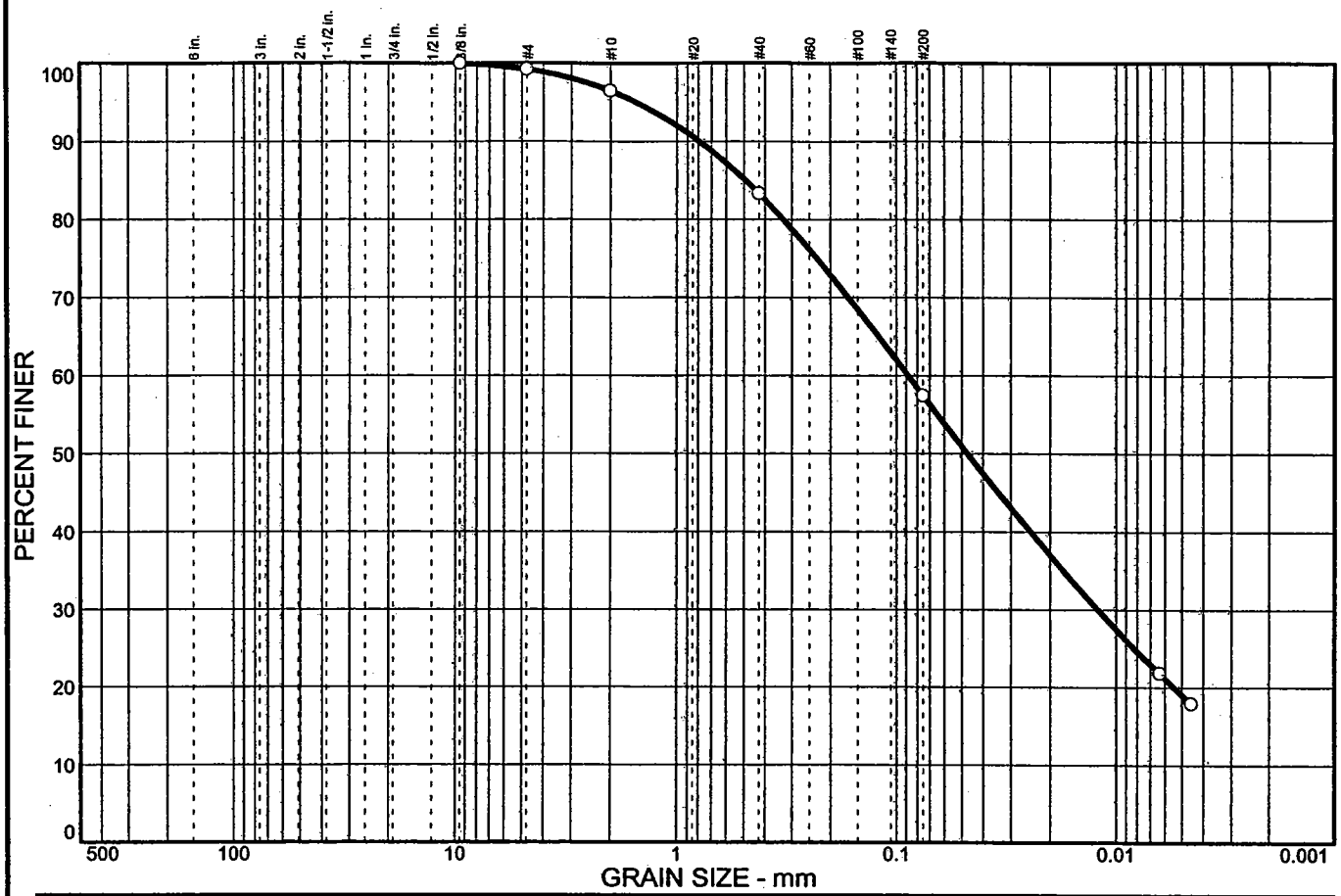
Moisture Content= 10.1%

Sample No.: Till-5, S-8 **Source of Sample:** **Date:** 8/19/02
Location: **Elev./Depth:** 27.0'-28.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.8	2.7	13.2	25.9	38.4	19.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	99.2		
#10	96.5		
#40	83.3		
#200	57.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.490 D_{60}= 0.0882 D_{50}= 0.0470
D_{30}= 0.0121 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

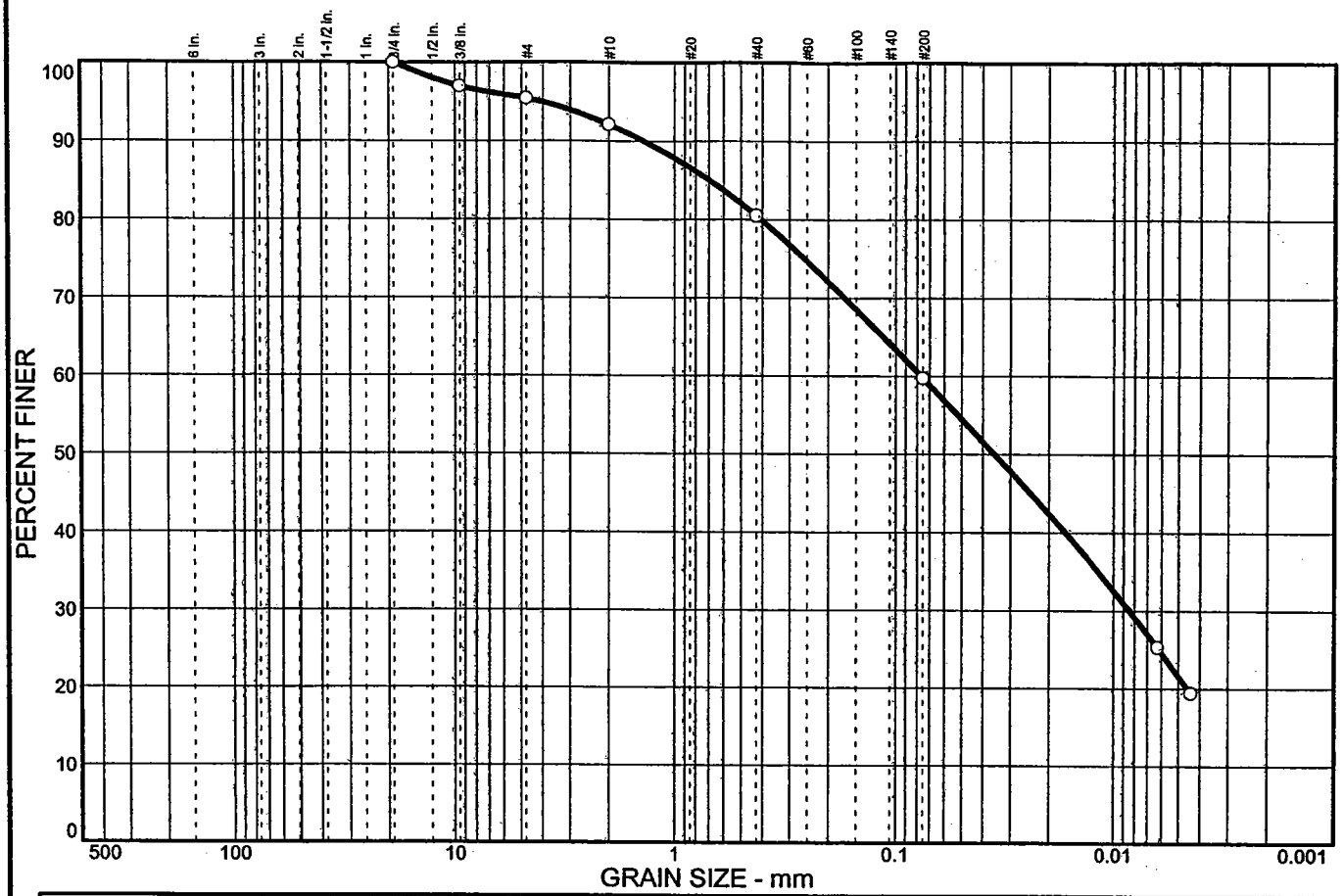
Moisture Content= 8.8%

Sample No.: Till-5, S-10 **Source of Sample:** **Date:** 8/19/02
Location: **Elev./Depth:** 29.0'-30.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	4.6	3.3	11.6	20.8	38.1	21.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	97.0		
#4	95.4		
#10	92.1		
#40	80.5		
#200	59.7		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.693 D_{60}= 0.0768 D_{50}= 0.0353
D_{30}= 0.0084 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

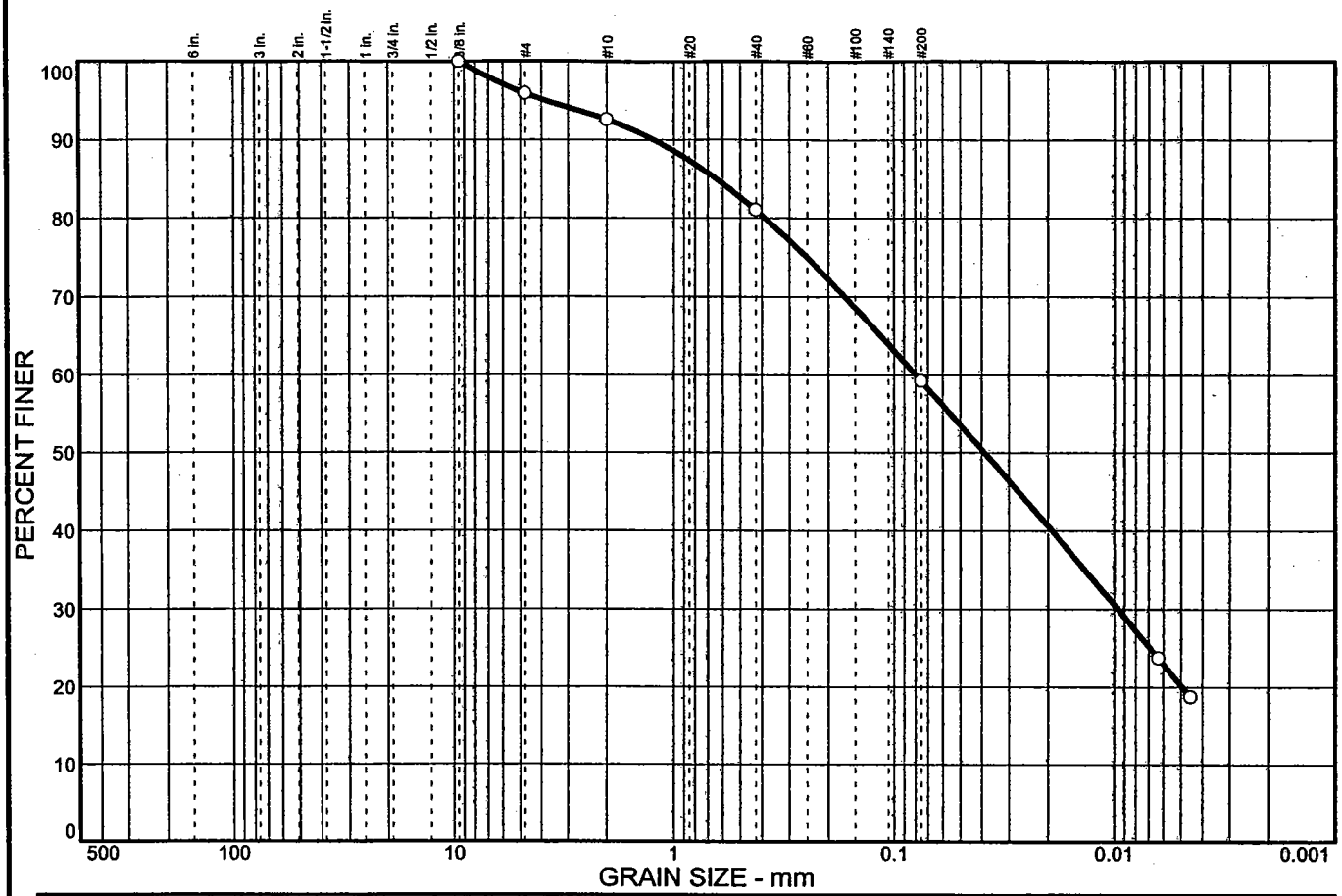
Moisture Content= 10.6%

Sample No.: 885 # 1, S-2 **Source of Sample:** **Date:** 8/20/02
Location: **Elev./Depth:** 24.0'-25.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	4.1	3.3	11.6	21.8	39.0	20.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	95.9		
#10	92.6		
#40	81.0		
#200	59.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.642 D_{60}= 0.0795 D_{50}= 0.0387
D_{30}= 0.0096 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

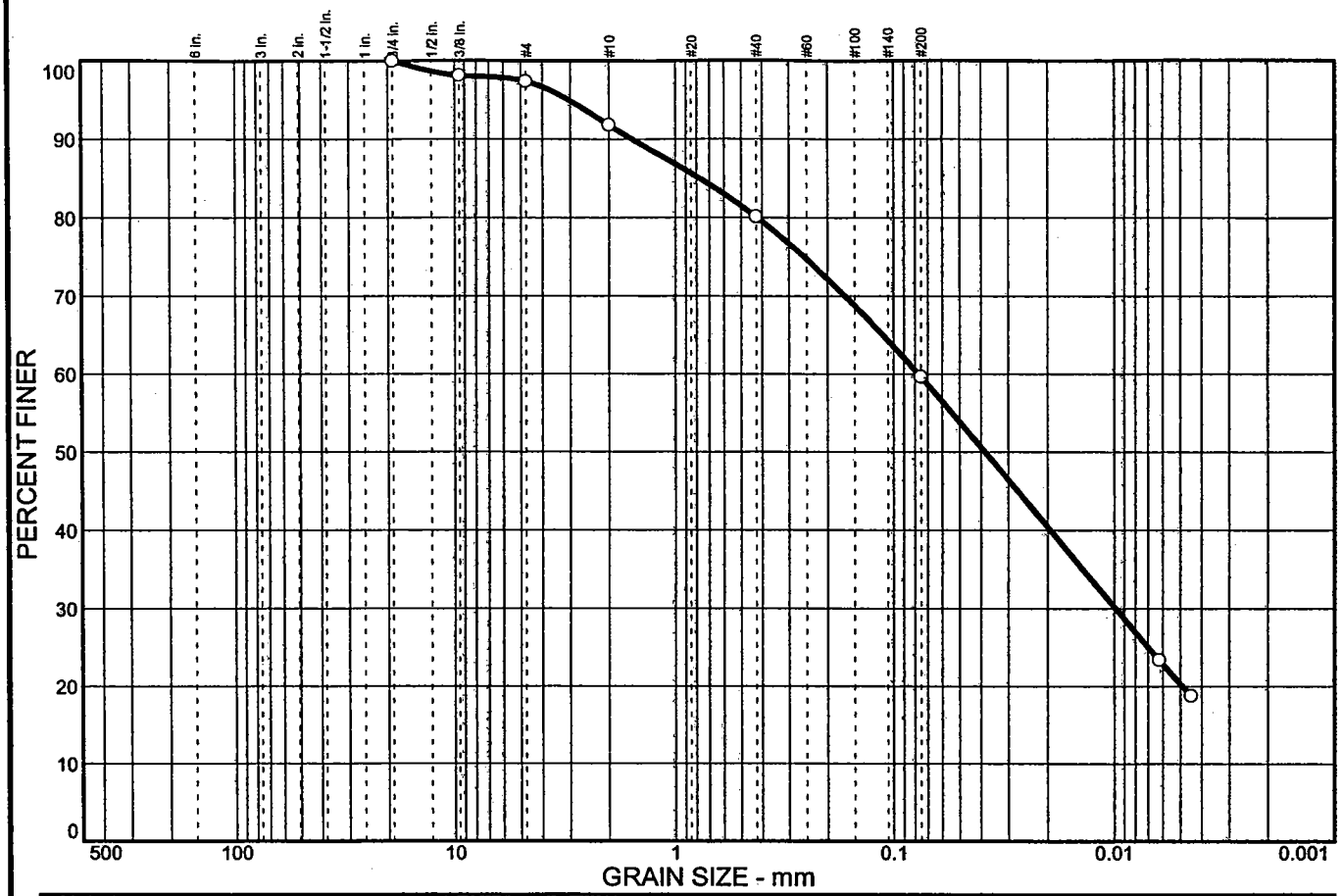
Moisture Content= 8.7%

Sample No.: 885 # 1, S-5A **Source of Sample:** **Date:** 8/20/02
Location: **Elev./Depth:** 27.0'-28.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.6	5.6	11.7	20.5	39.3	20.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.1		
#4	97.4		
#10	91.8		
#40	80.1		
#200	59.6		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.779 D_{60}= 0.0772 D_{50}= 0.0382
D_{30}= 0.0098 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

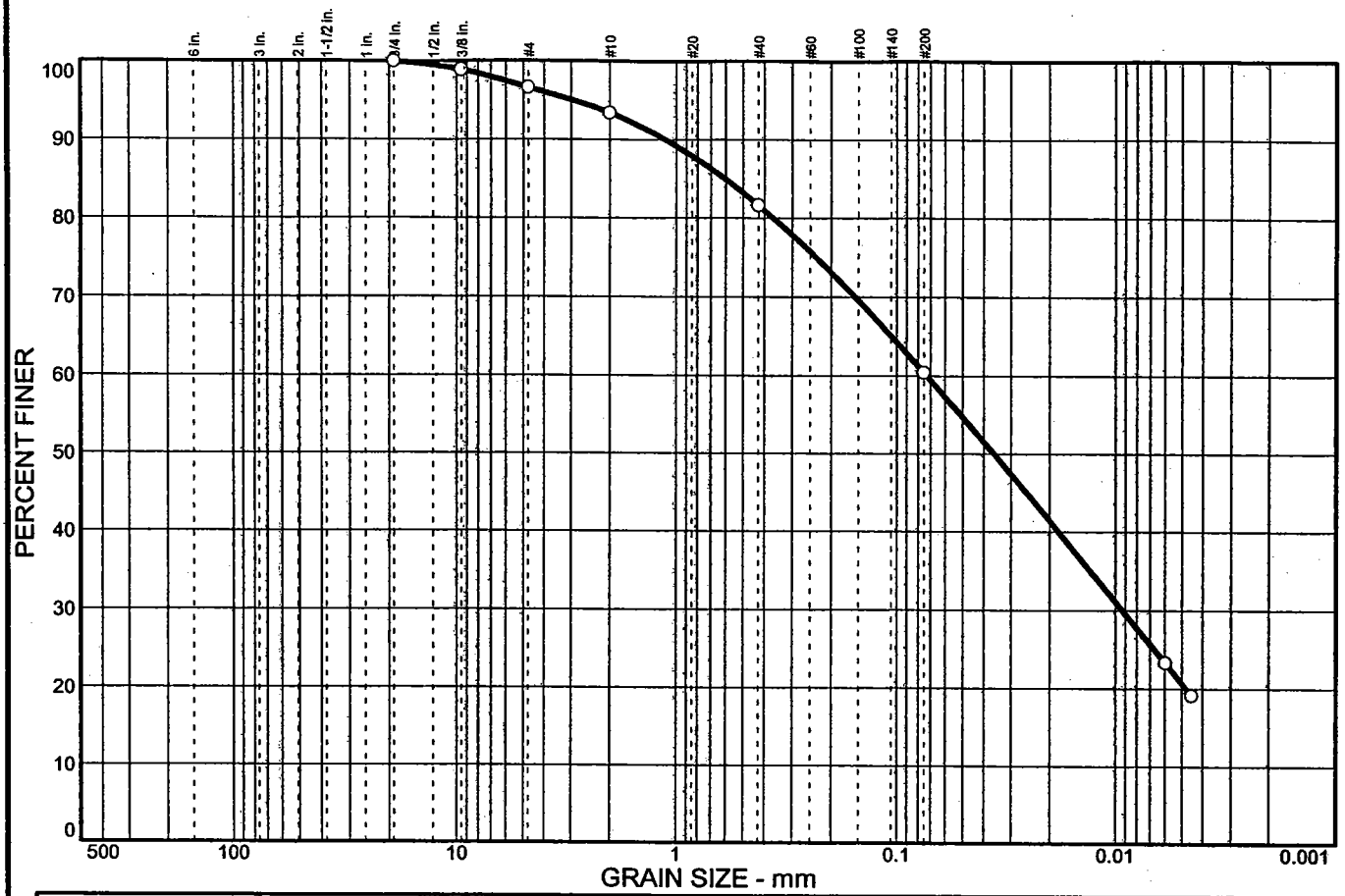
Moisture Content= 11.1%

Sample No.: 885 # 1, S-5B **Source of Sample:** **Date:** 8/20/02
Location: **Elev./Depth:** 27.0'-28.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.4	3.2	11.8	21.2	39.7	20.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.9		
#4	96.6		
#10	93.4		
#40	81.6		
#200	60.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.604 D_{60}= 0.0728 D_{50}= 0.0359
D_{30}= 0.0093 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

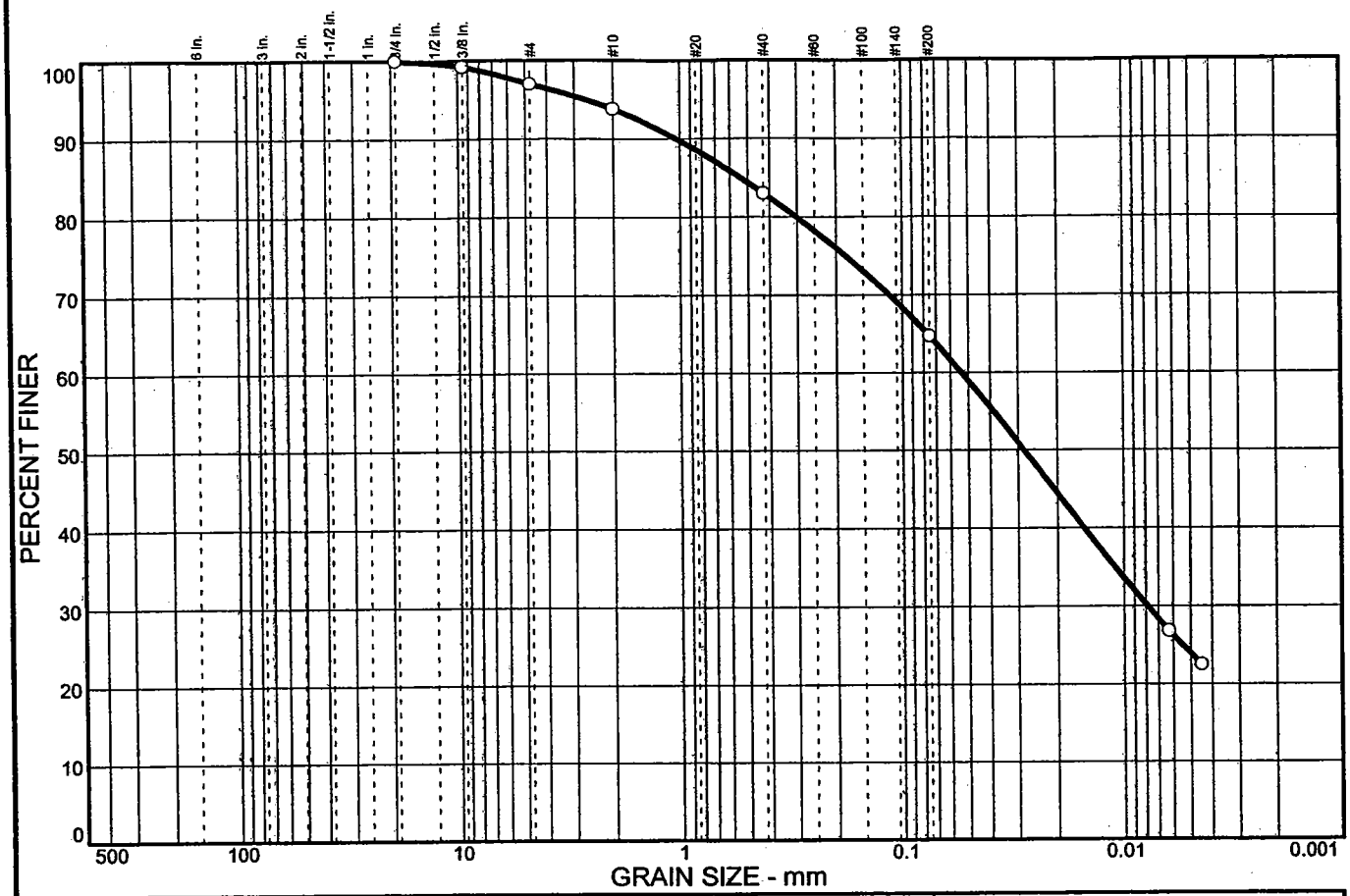
Moisture Content= 8.6%

Sample No.: 885 # 1, S-6 **Source of Sample:** **Date:** 8/20/02
Location: **Elev./Depth:** 28.0'-29.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.0	3.2	10.8	18.3	40.7	24.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.2		
#4	97.0		
#10	93.8		
#40	83.0		
#200	64.7		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.539 D_{60}= 0.0537 D_{50}= 0.0282
D_{30}= 0.0078 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

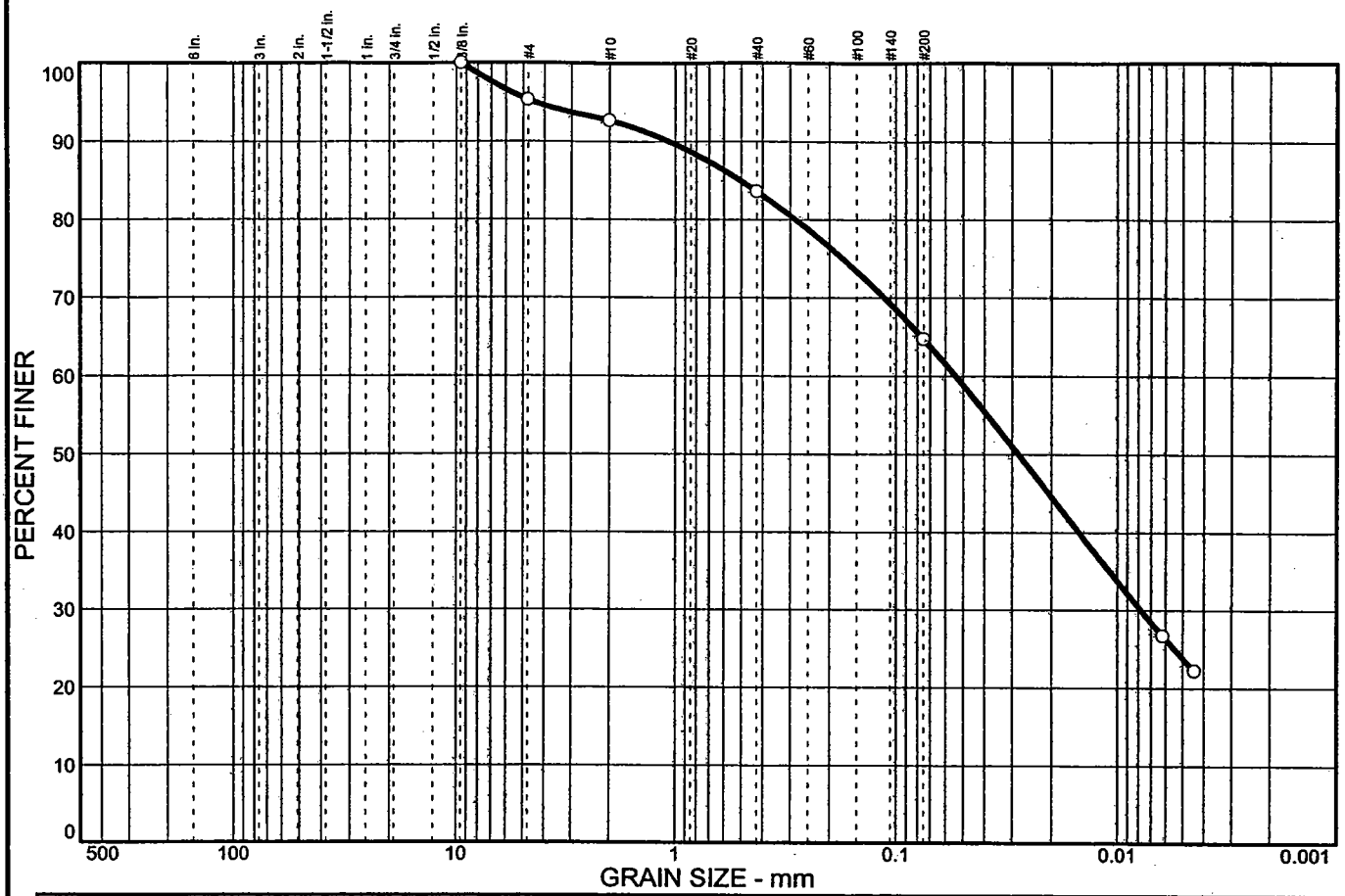
Moisture Content= 9.2%

Sample No.: 885 # 1, S-8 **Source of Sample:** **Date:** 8/20/02
Location: **Elev./Depth:** 30.0'-31.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	4.7	2.6	9.1	18.9	40.9	23.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	95.3		
#10	92.7		
#40	83.6		
#200	64.7		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.505 D_{60}= 0.0539 D_{50}= 0.0281
D_{30}= 0.0078 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

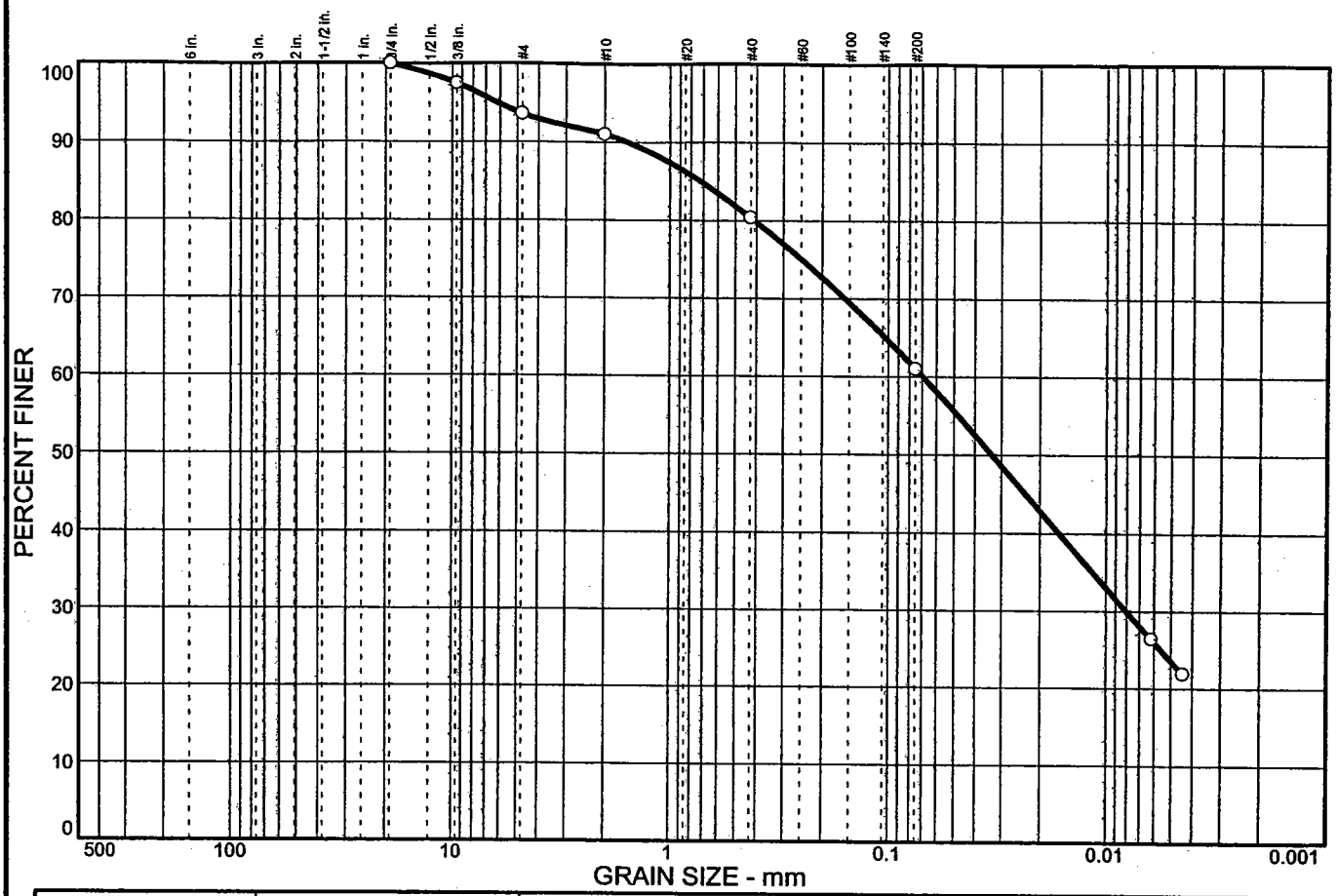
Moisture Content= 12.2%

Sample No.: 885 # 2, S-1 **Source of Sample:** **Date:** 8/21/02
Location: **Elev./Depth:** 22.0'-23.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	6.4	2.6	10.6	19.4	37.5	23.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	97.5		
#4	93.6		
#10	91.0		
#40	80.4		
#200	61.0		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.720 D_{60}= 0.0694 D_{50}= 0.0331
D_{30}= 0.0080 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

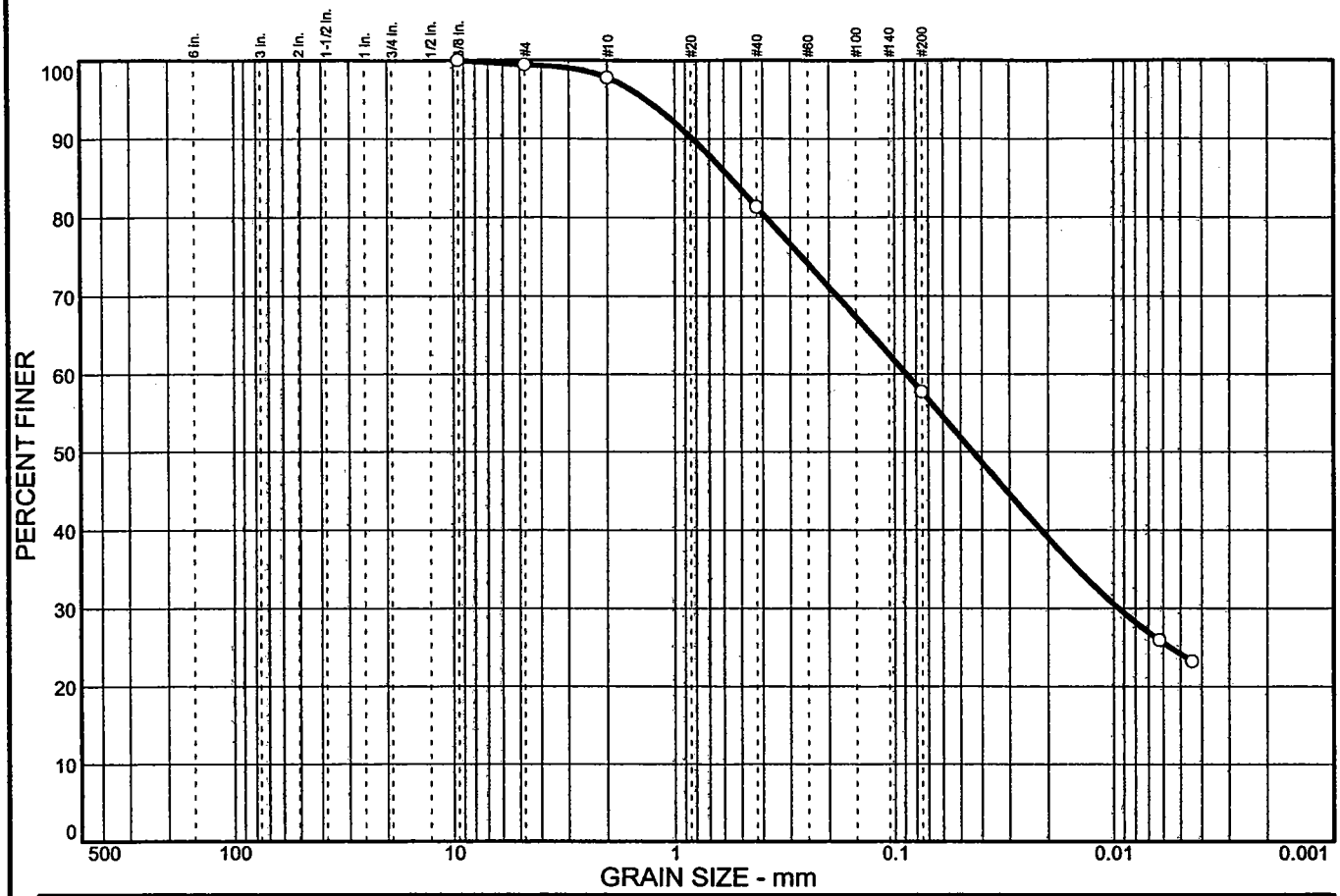
Moisture Content= 13.1%

Sample No.: 885 # 2, S-2A **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 23.0'-24.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.6	1.6	16.5	23.6	33.6	24.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	99.4		
#10	97.8		
#40	81.3		
#200	57.7		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.561 D_{60}= 0.0883 D_{50}= 0.0439
D_{30}= 0.0095 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

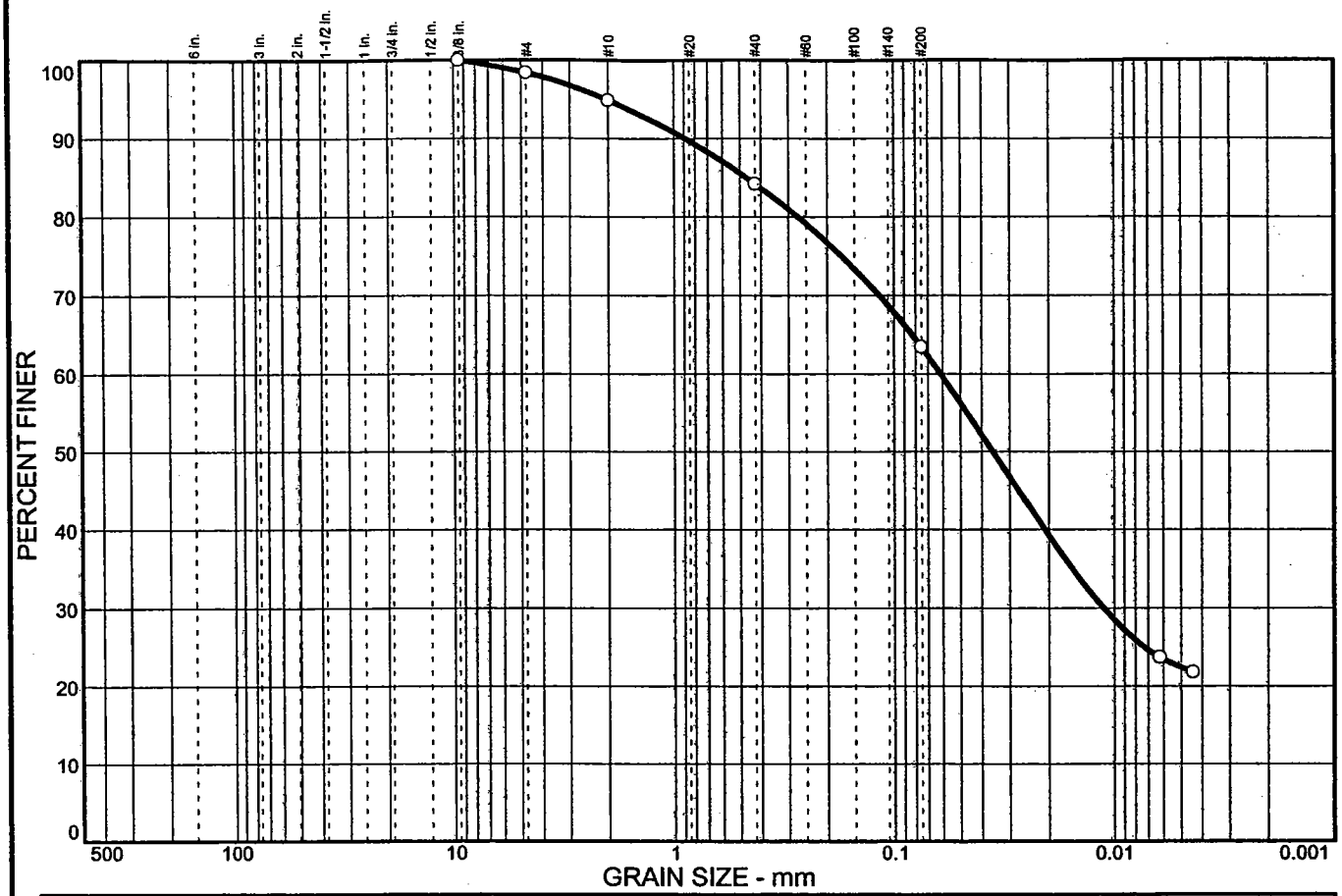
Moisture Content= 13.5%

Sample No.: 885 # 2, S-2B **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 23.0'-24.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.6	3.5	10.7	20.8	41.0	22.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	98.4		
#10	94.9		
#40	84.2		
#200	63.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.466 D_{60}= 0.0614 D_{50}= 0.0356
D_{30}= 0.0112 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

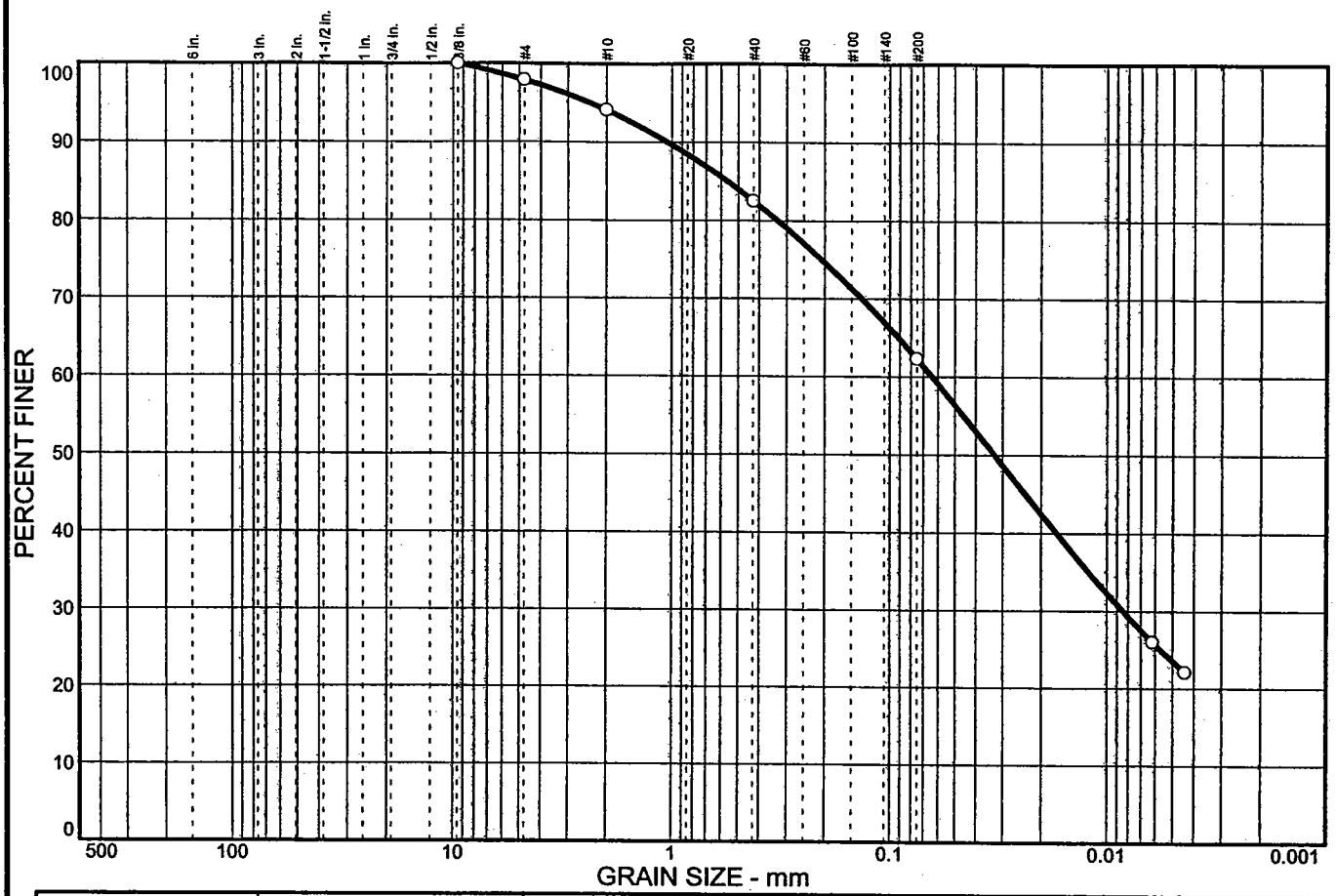
Moisture Content= 9.0%

Sample No.: 885 # 2, S-3 **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 24.0'-25.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.1	3.8	11.6	20.2	38.7	23.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	97.9		
#10	94.1		
#40	82.5		
#200	62.3		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.559 D_{60}= 0.0638 D_{50}= 0.0327
D_{30}= 0.0084 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

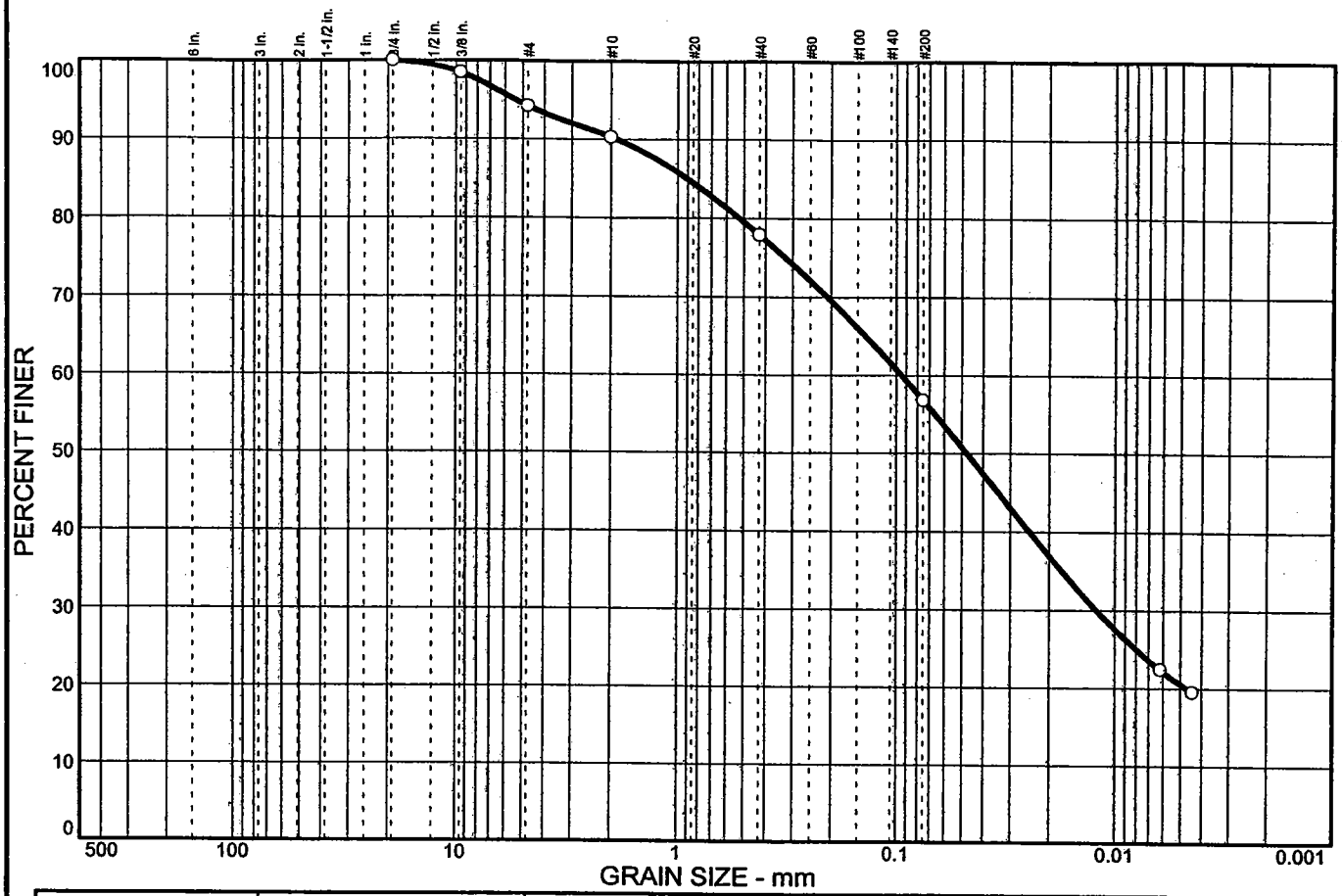
Moisture Content= 8.9%

Sample No.: 885 # 2, S-5 **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 26.0'-27.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.8	3.9	12.4	21.1	36.3	20.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.5		
#4	94.2		
#10	90.3		
#40	77.9		
#200	56.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.907 D_{60}= 0.0943 D_{50}= 0.0474
D_{30}= 0.0121 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

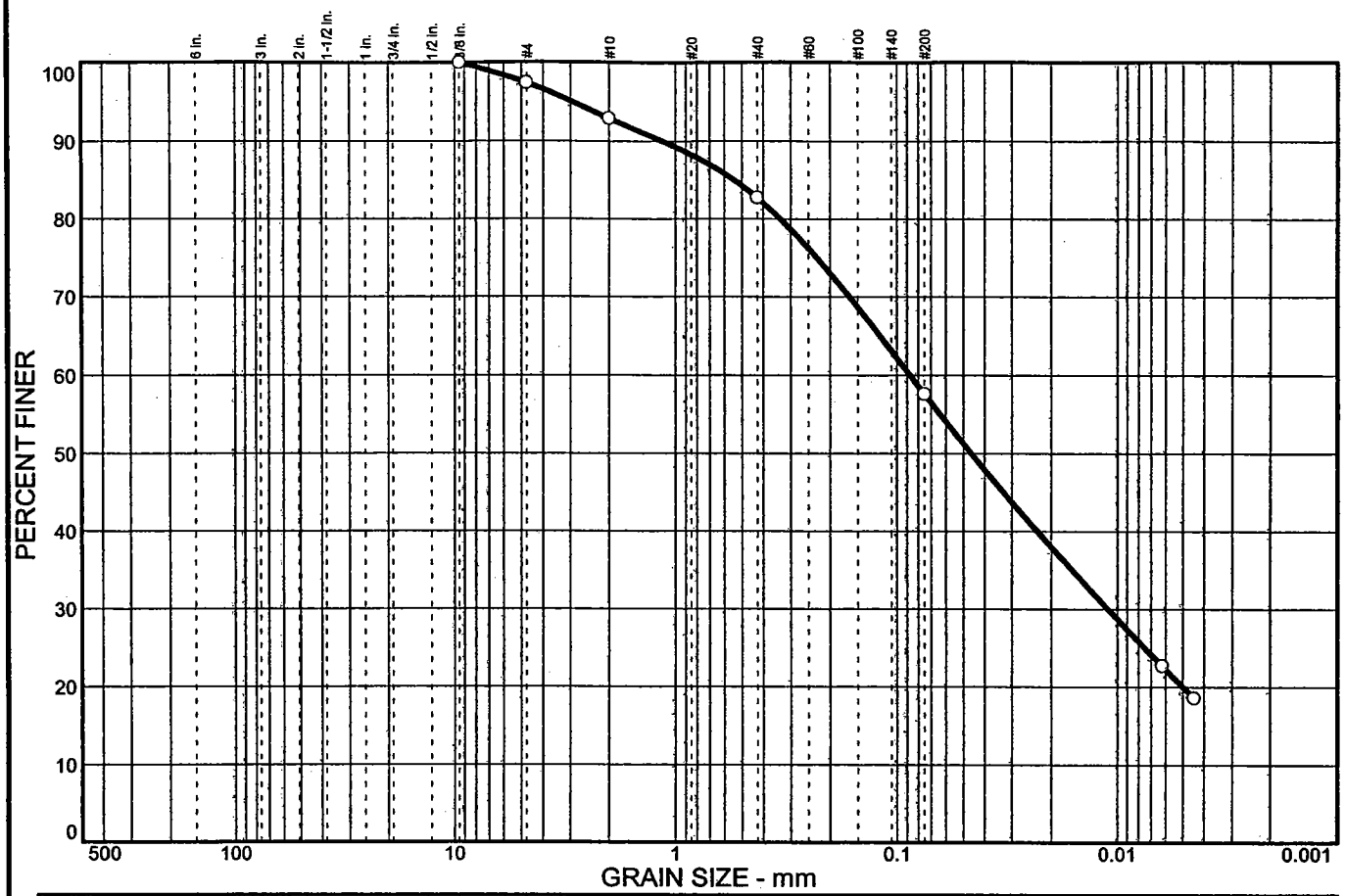
Moisture Content= 8.3%

Sample No.: 885 # 2, S-7 **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 28.0'-29.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.6	4.5	10.2	25.1	37.6	20.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	97.4		
#10	92.9		
#40	82.7		
#200	57.6		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.543 D_{60}= 0.0872 D_{50}= 0.0458
D_{30}= 0.0110 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

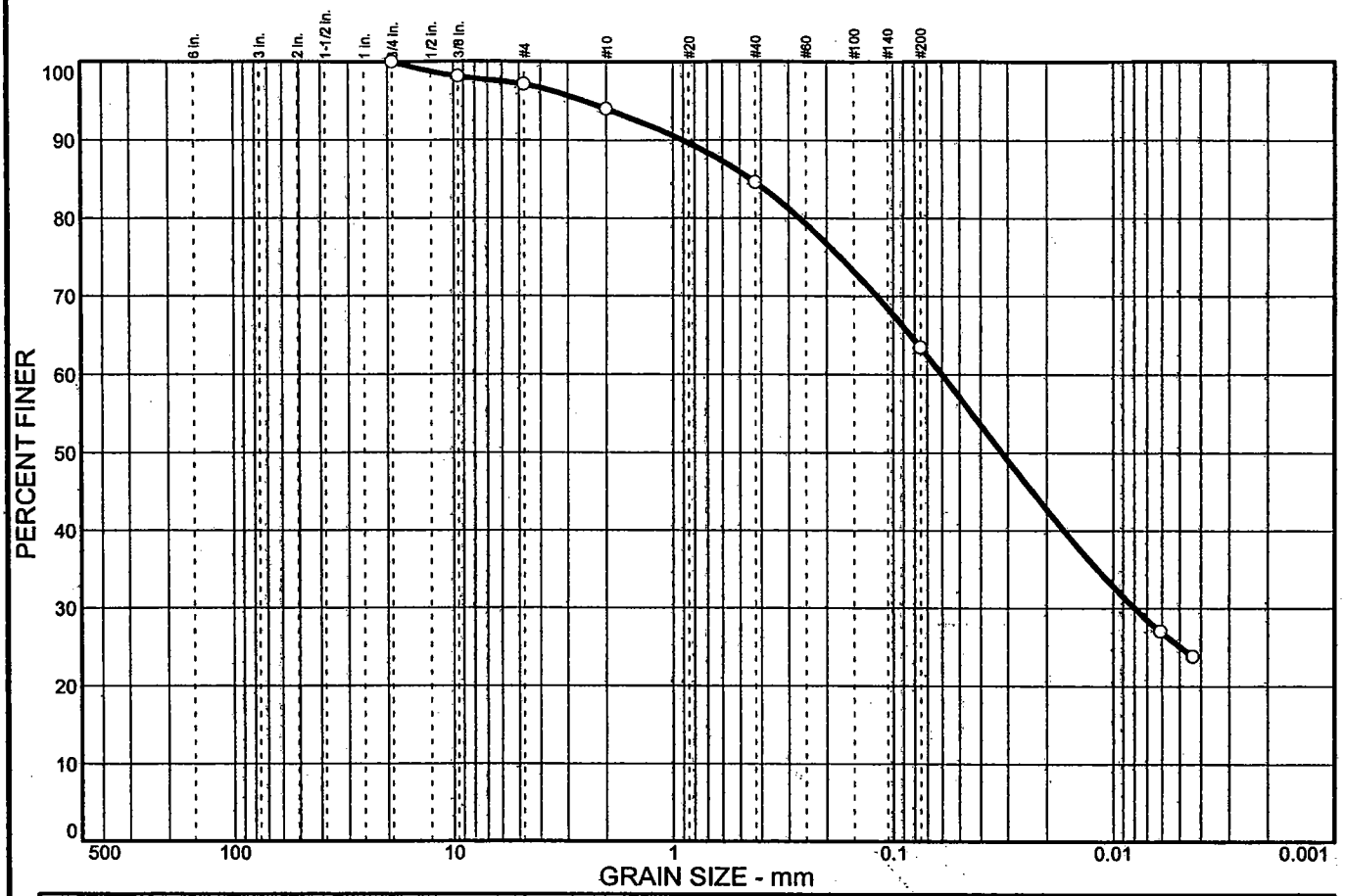
Moisture Content= 9.1%

Sample No.: 885 # 2, S-9 **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 30.0'-31.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.9	3.1	9.4	21.2	38.3	25.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.1		
#4	97.1		
#10	94.0		
#40	84.6		
#200	63.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.445 D_{60}= 0.0600 D_{50}= 0.0319
D_{30}= 0.0080 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

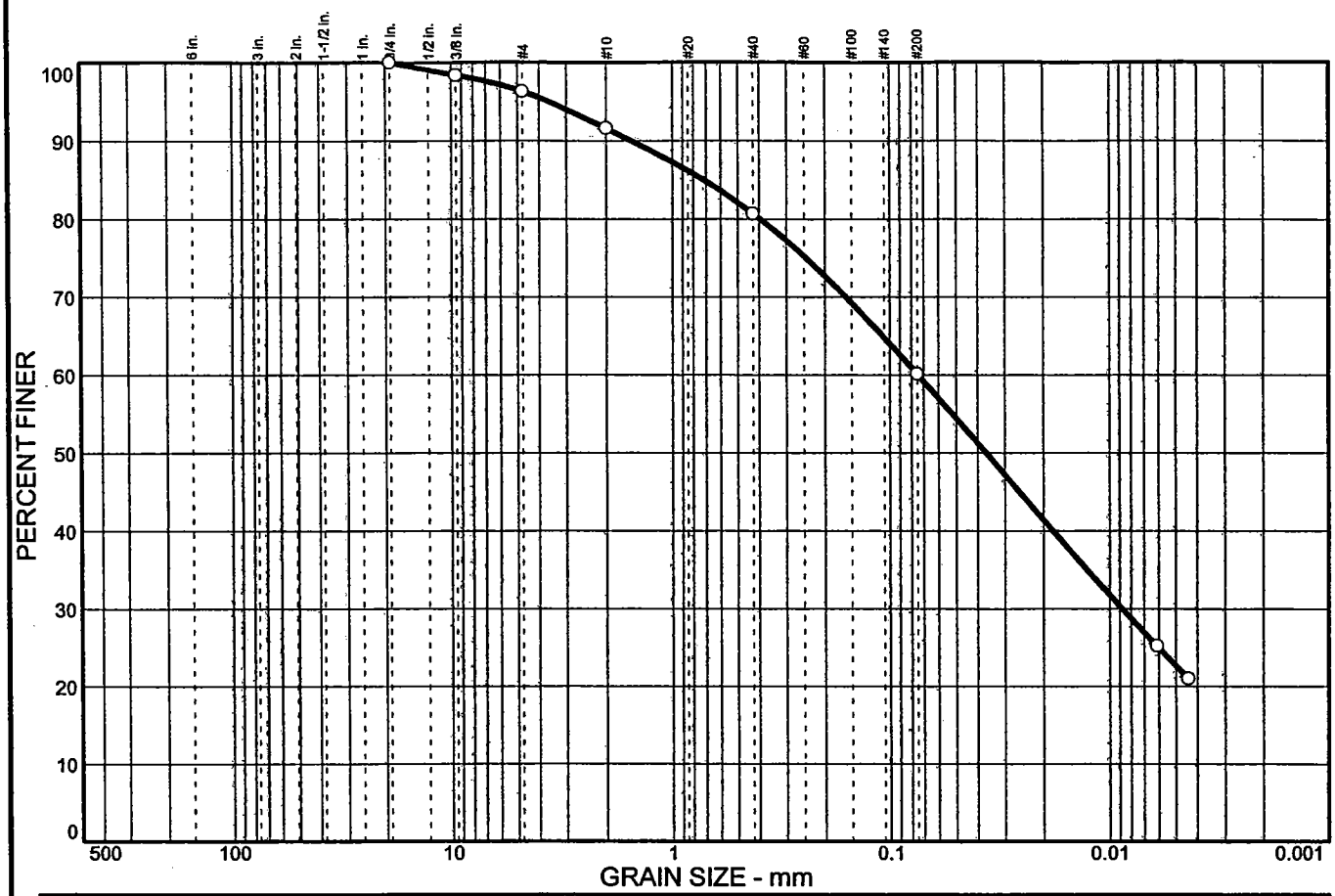
Moisture Content= 8.0%

Sample No.: 885 # 3, S-2 **Source of Sample:** **Date:** 9/5/02
Location: **Elev./Depth:** 27.0'-28.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.7	4.7	10.9	20.6	37.4	22.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.4		
#4	96.3		
#10	91.6		
#40	80.7		
#200	60.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.719 D_{60}= 0.0745 D_{50}= 0.0365
D_{30}= 0.0088 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

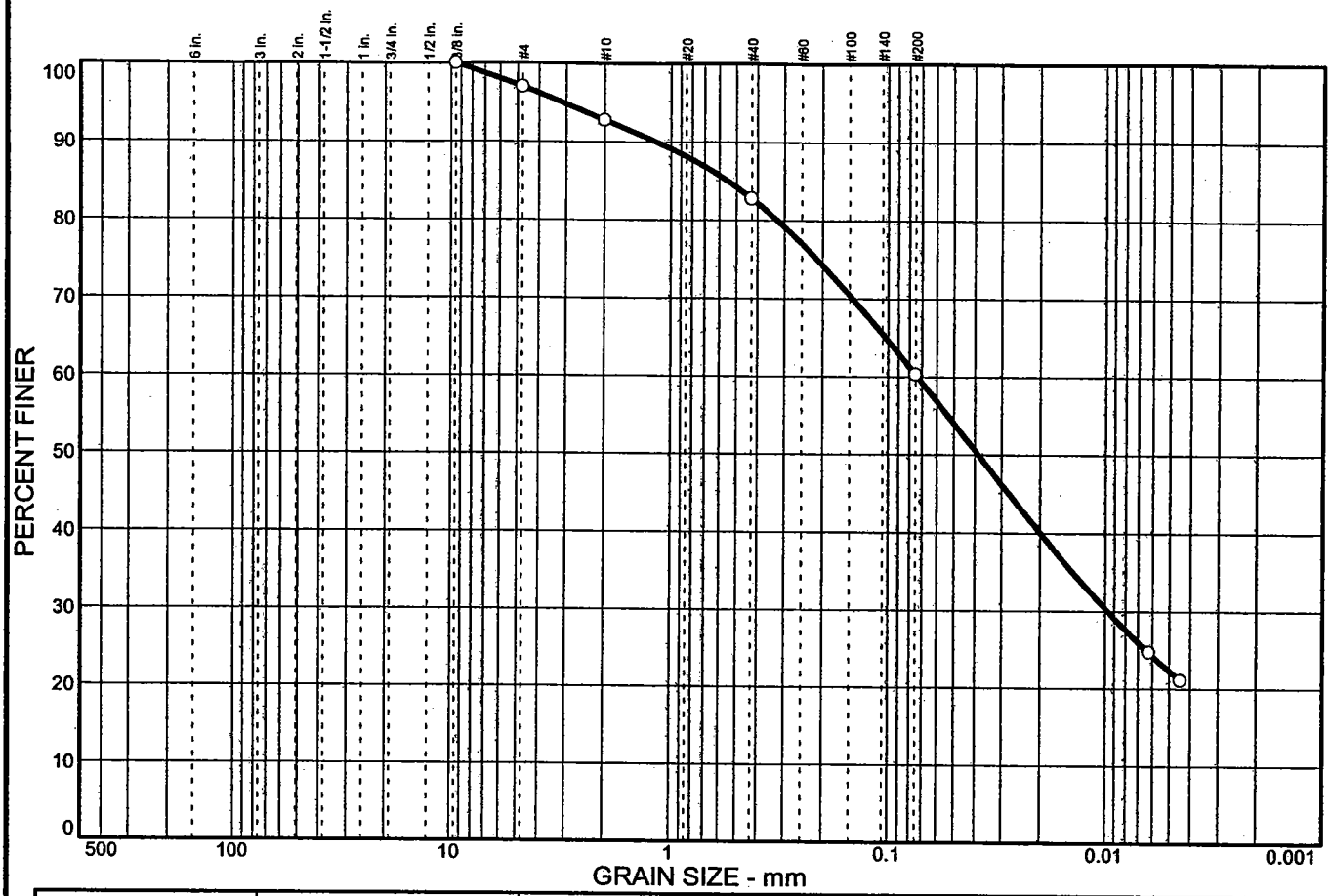
Moisture Content= 7.8%

Sample No.: 885 # 3, S-4 **Source of Sample:** **Date:** 9/5/02
Location: **Elev./Depth:** 29.0'-30.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.0	4.2	10.0	22.5	38.0	22.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	97.0		
#10	92.8		
#40	82.8		
#200	60.3		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.547 D_{60}= 0.0735 D_{50}= 0.0384
D_{30}= 0.0097 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

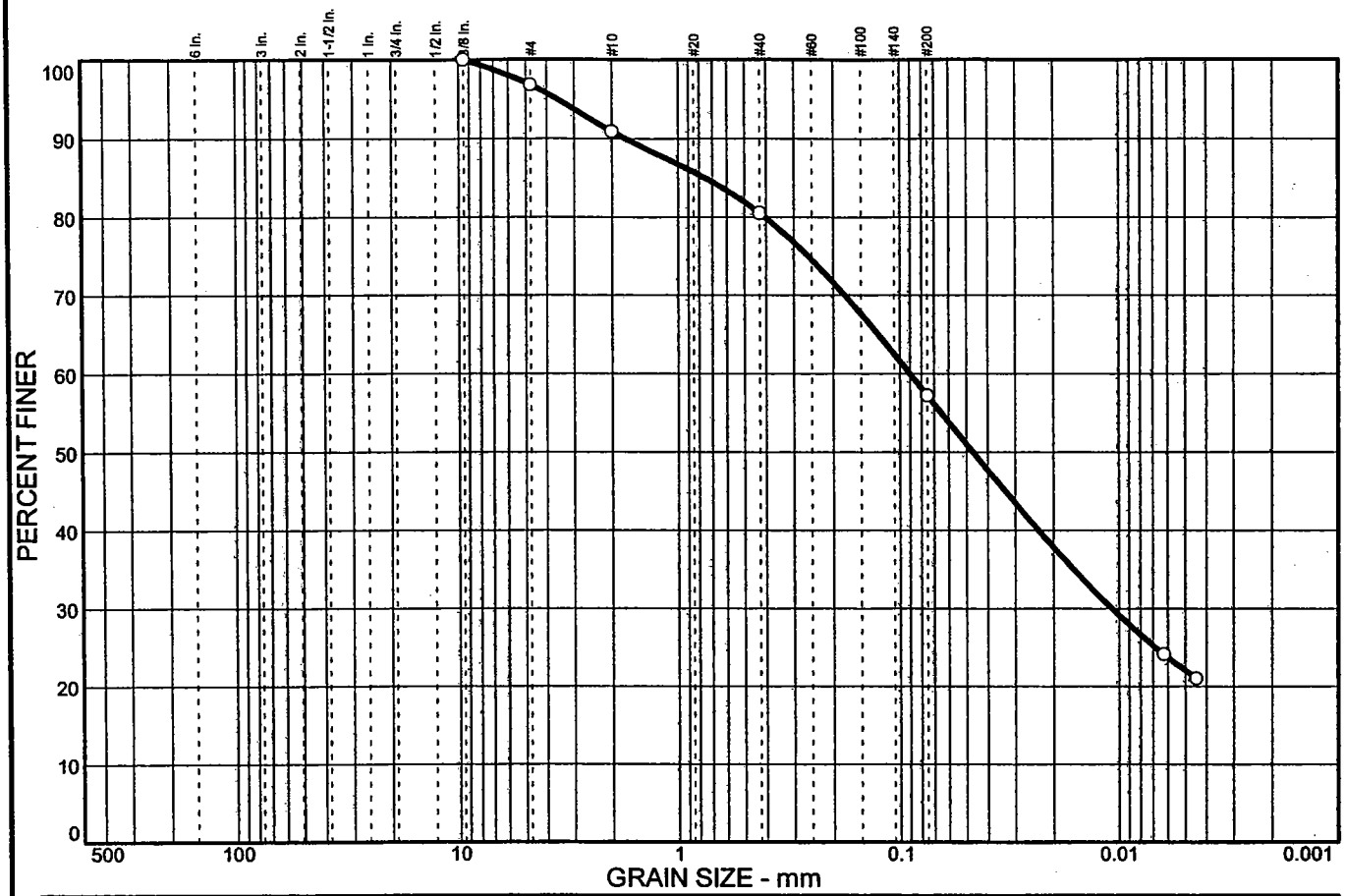
Moisture Content= 7.2%

Sample No.: 885 # 3, S-6 **Source of Sample:** **Date:** 9/5/02
Location: **Elev./Depth:** 31.0'-32.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.2	5.9	10.4	23.3	35.1	22.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	96.8		
#10	90.9		
#40	80.5		
#200	57.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.755 D_{60}= 0.0901 D_{50}= 0.0466
D_{30}= 0.0108 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

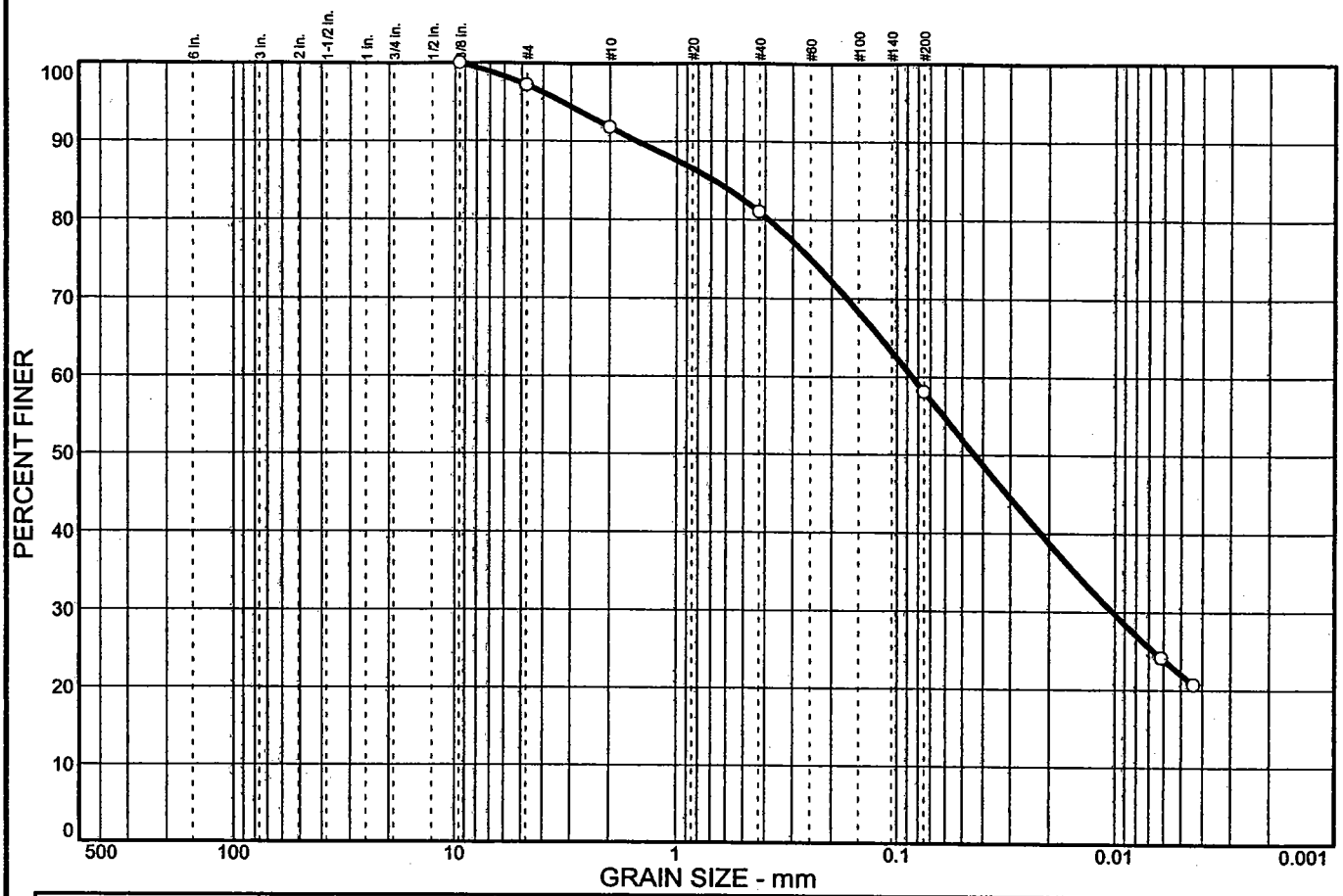
Moisture Content= 7.4%

Sample No.: 885 # 3, S-9 **Source of Sample:** **Date:** 9/5/02
Location: **Elev./Depth:** 34.0'-35.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.8	5.4	10.8	22.9	36.1	22.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	97.2		
#10	91.8		
#40	81.0		
#200	58.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.685 D_{60}= 0.0851 D_{50}= 0.0436
D_{30}= 0.0102 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

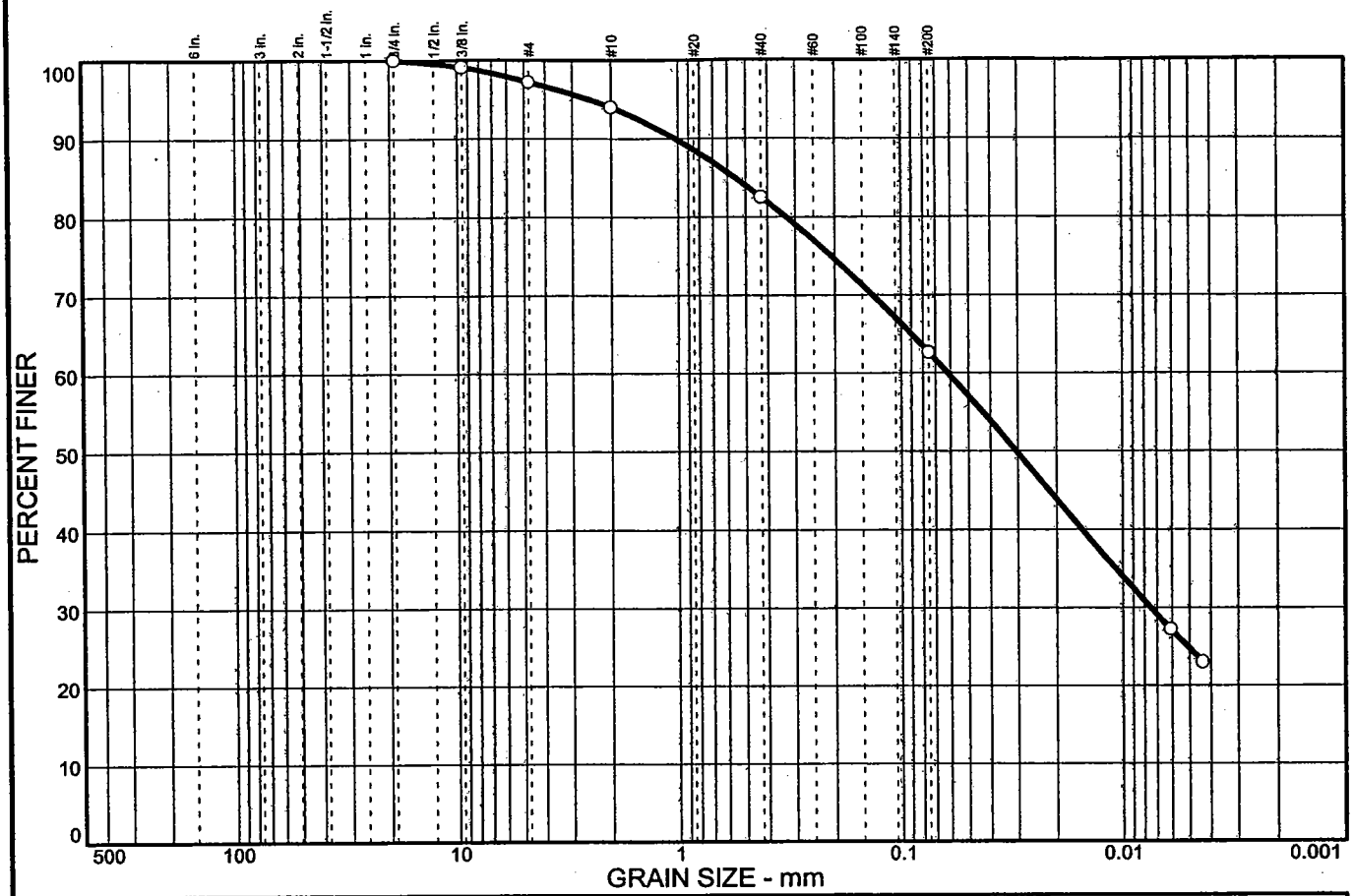
Moisture Content= 7.4%

Sample No.: 885 # 3, S-10 **Source of Sample:** **Date:** 9/5/02
Location: **Elev./Depth:** 35.0'-36.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.8	3.2	11.5	19.9	37.8	24.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.1		
#4	97.2		
#10	94.0		
#40	82.5		
#200	62.6		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.557 D_{60}= 0.0618 D_{50}= 0.0305
D_{30}= 0.0075 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

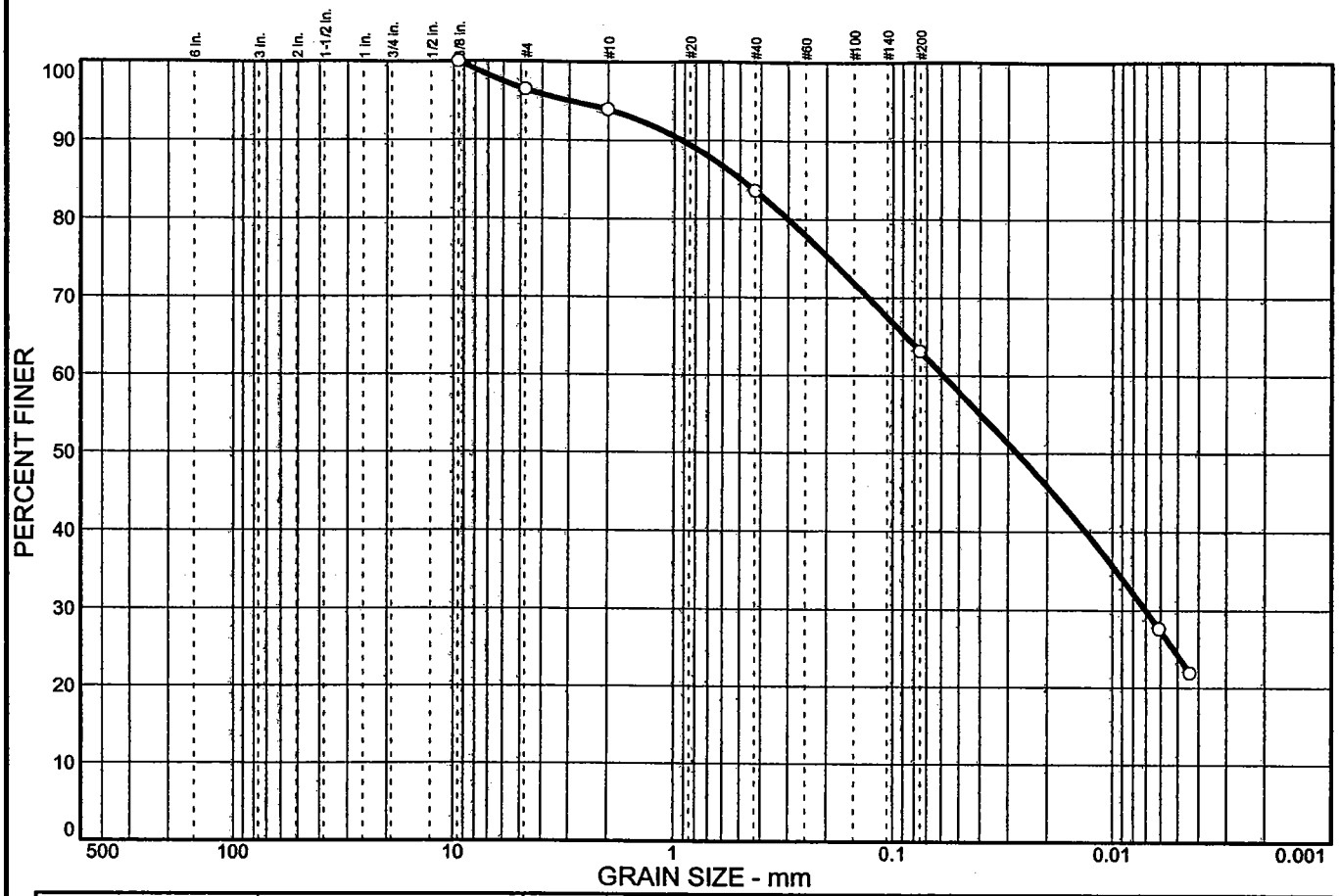
Moisture Content= 8.8%

Sample No.: 885 # 4, S-1 **Source of Sample:** **Date:** 8/29/02
Location: **Elev./Depth:** 24.0'-25.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.6	2.5	10.3	20.5	38.9	24.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	96.4		
#10	93.9		
#40	83.6		
#200	63.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.493 D_{60}= 0.0588 D_{50}= 0.0272
D_{30}= 0.0070 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

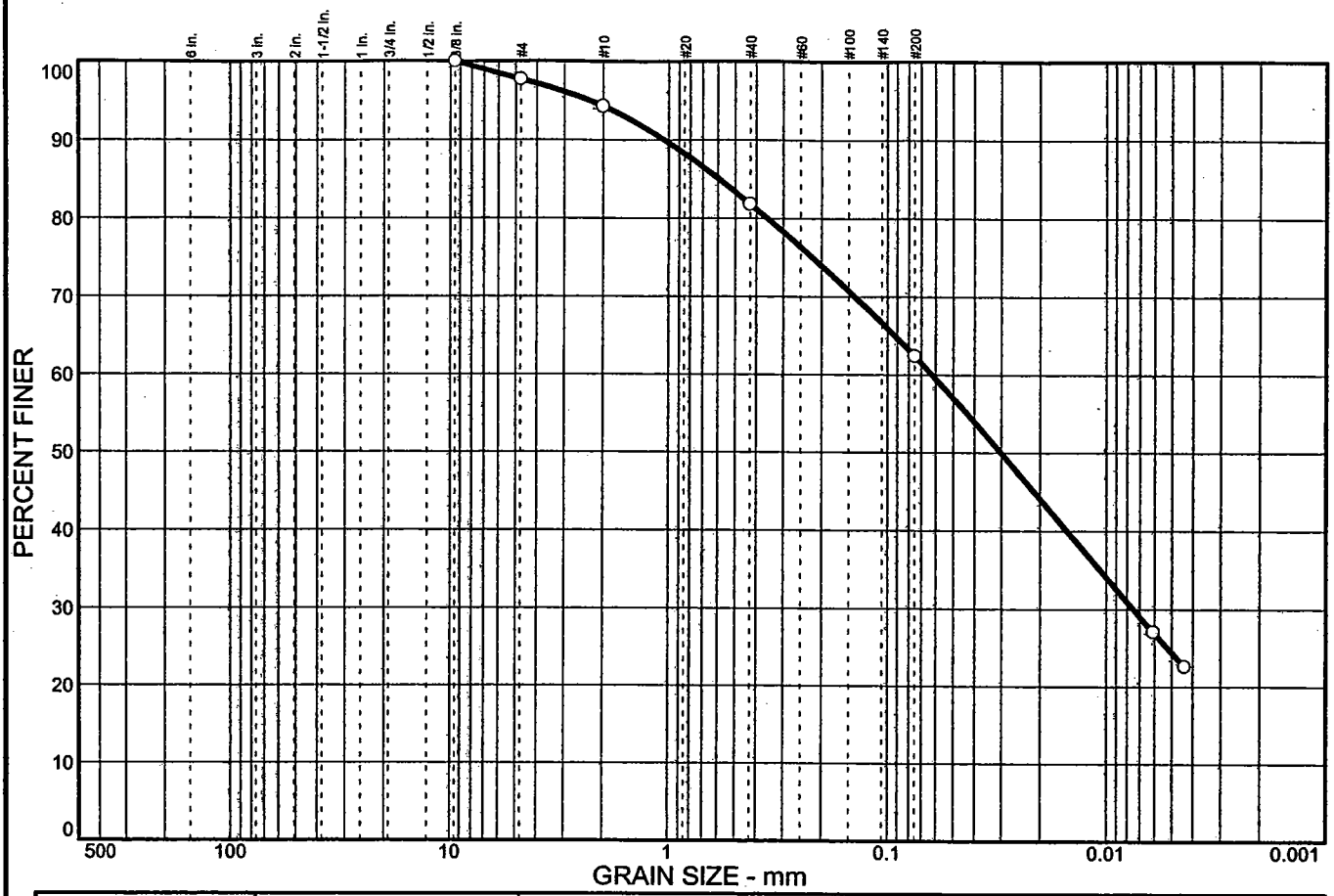
Moisture Content= 8.8%

Sample No.: 885 # 4, S-3 **Source of Sample:** **Date:** 8/29/02
Location: **Elev./Depth:** 26.0'-27.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.3	3.4	12.5	19.4	38.0	24.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	97.7		
#10	94.3		
#40	81.8		
#200	62.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.592 D_{60}= 0.0623 D_{50}= 0.0301
D_{30}= 0.0075 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

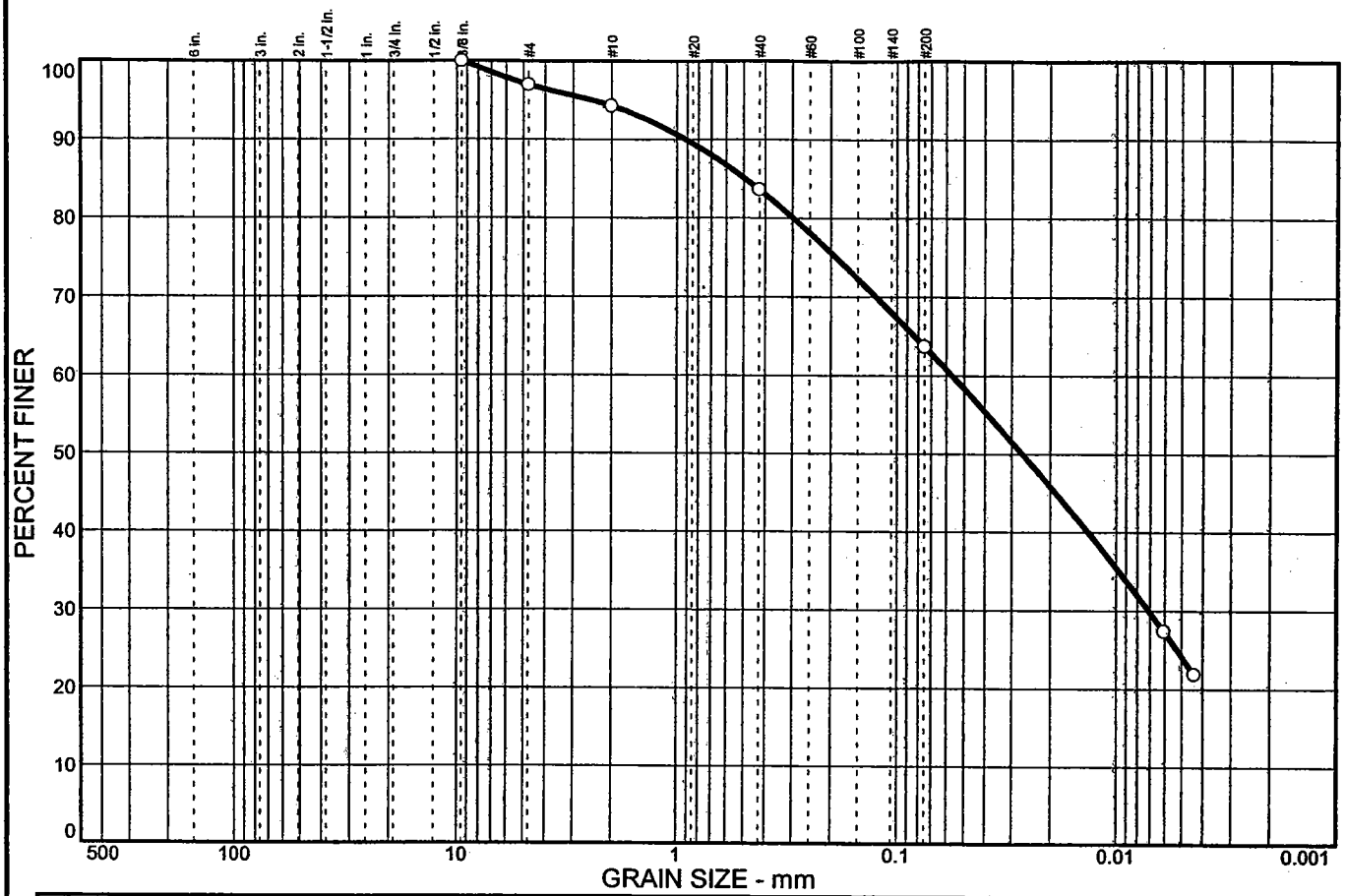
Moisture Content= 8.6%

Sample No.: 885 # 4, S-5 **Source of Sample:** **Date:** 8/29/02
Location: **Elev./Depth:** 28.0'-29.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.0	2.7	10.7	19.9	39.5	24.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	97.0		
#10	94.3		
#40	83.6		
#200	63.7		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.494 D_{60}= 0.0563 D_{50}= 0.0268
D_{30}= 0.0071 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

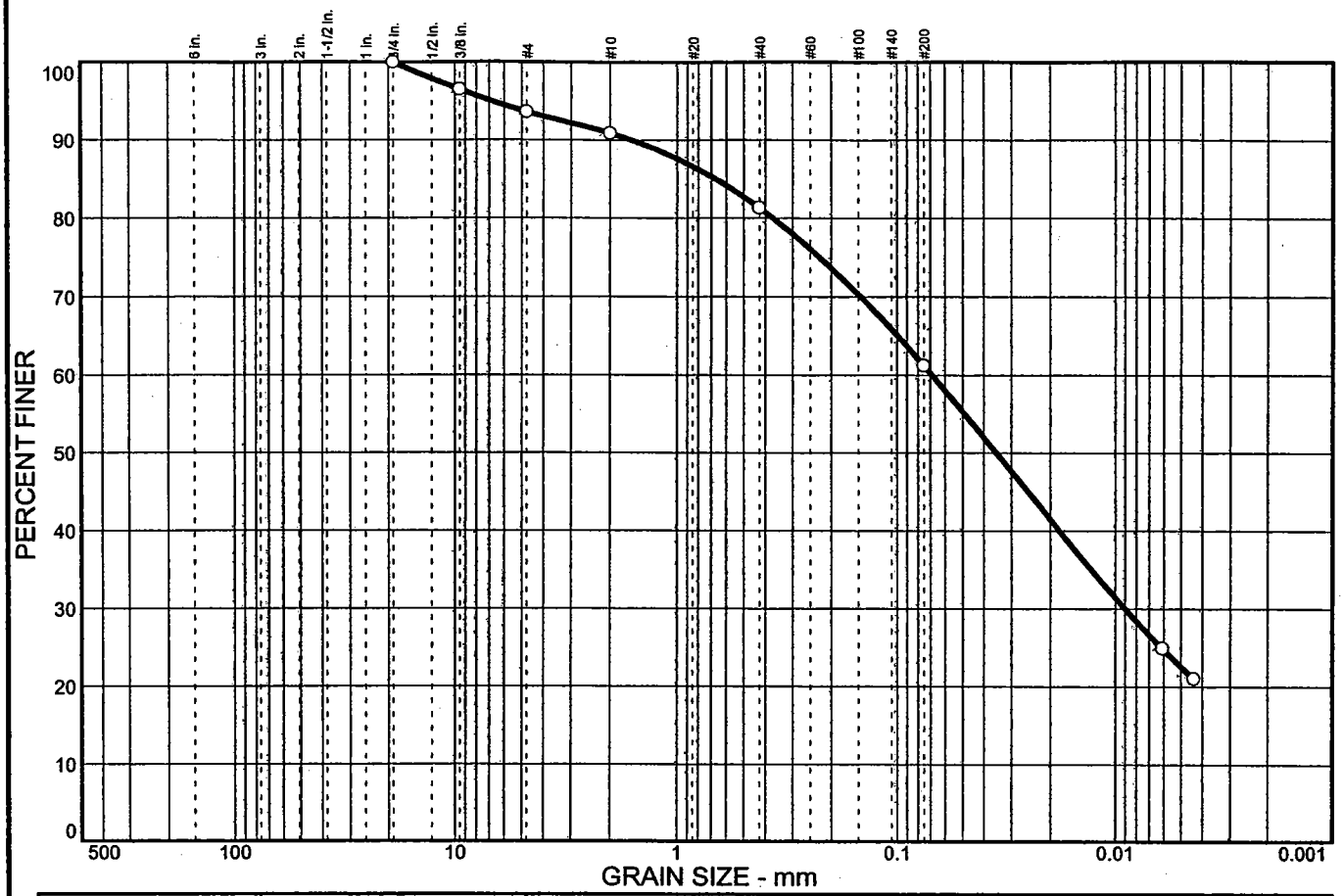
Moisture Content= 9.2%

Sample No.: 885 # 4, S-7 **Source of Sample:** **Date:** 8/29/02
Location: **Elev./Depth:** 30.0'-31.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	6.4	2.7	9.6	20.1	38.6	22.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	96.5		
#4	93.6		
#10	90.9		
#40	81.3		
#200	61.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.674 D_{60}= 0.0689 D_{50}= 0.0350
D_{30}= 0.0090 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

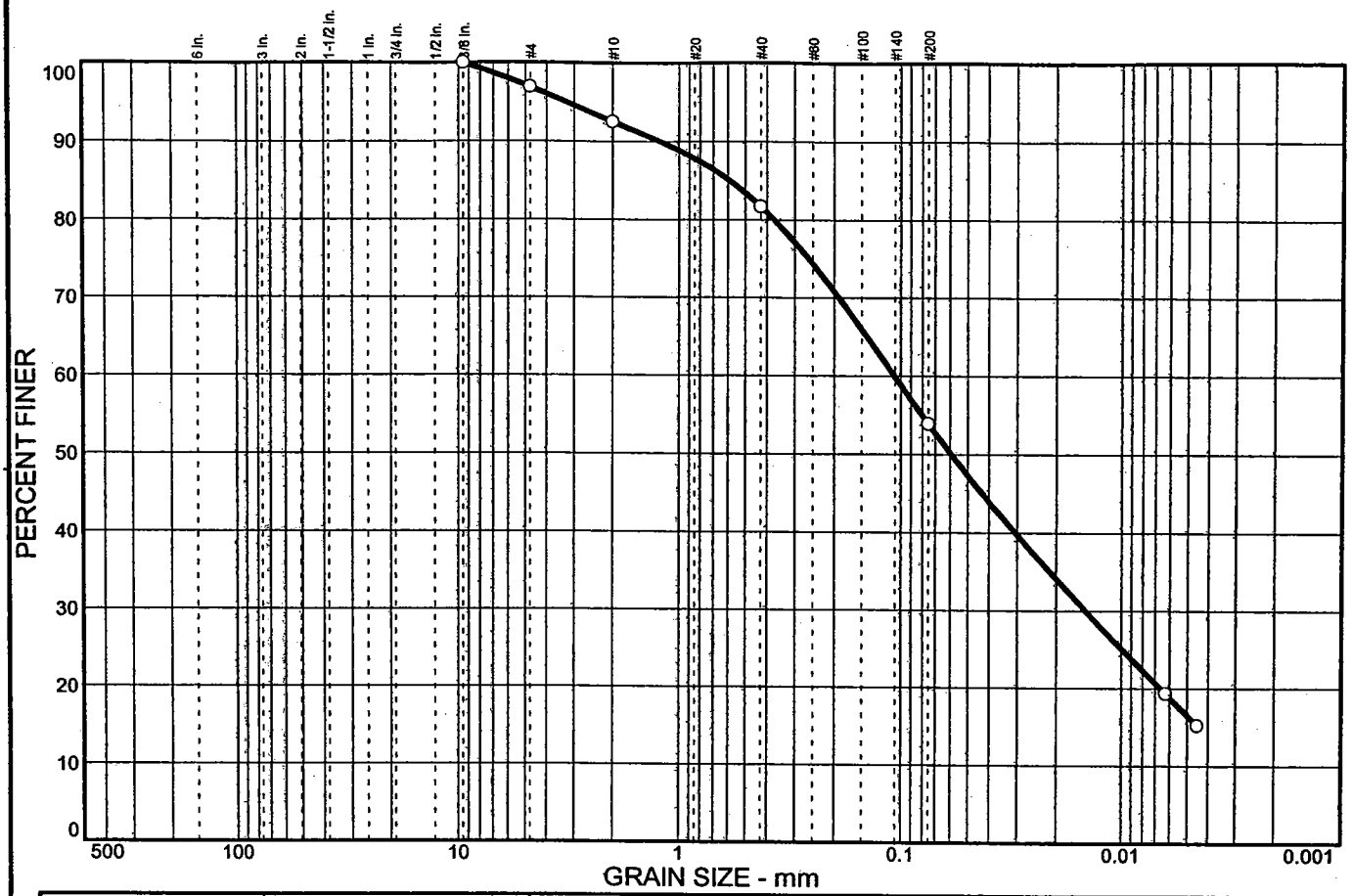
Moisture Content= 8.1%

Sample No.: 885 # 4, S-9 **Source of Sample:** **Date:** 8/29/02
Location: **Elev./Depth:** 32.0'-33.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.1	4.4	10.8	27.8	37.4	16.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	96.9		
#10	92.5		
#40	81.7		
#200	53.9		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.588 D_{60}= 0.107 D_{50}= 0.0591
D_{30}= 0.0146 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

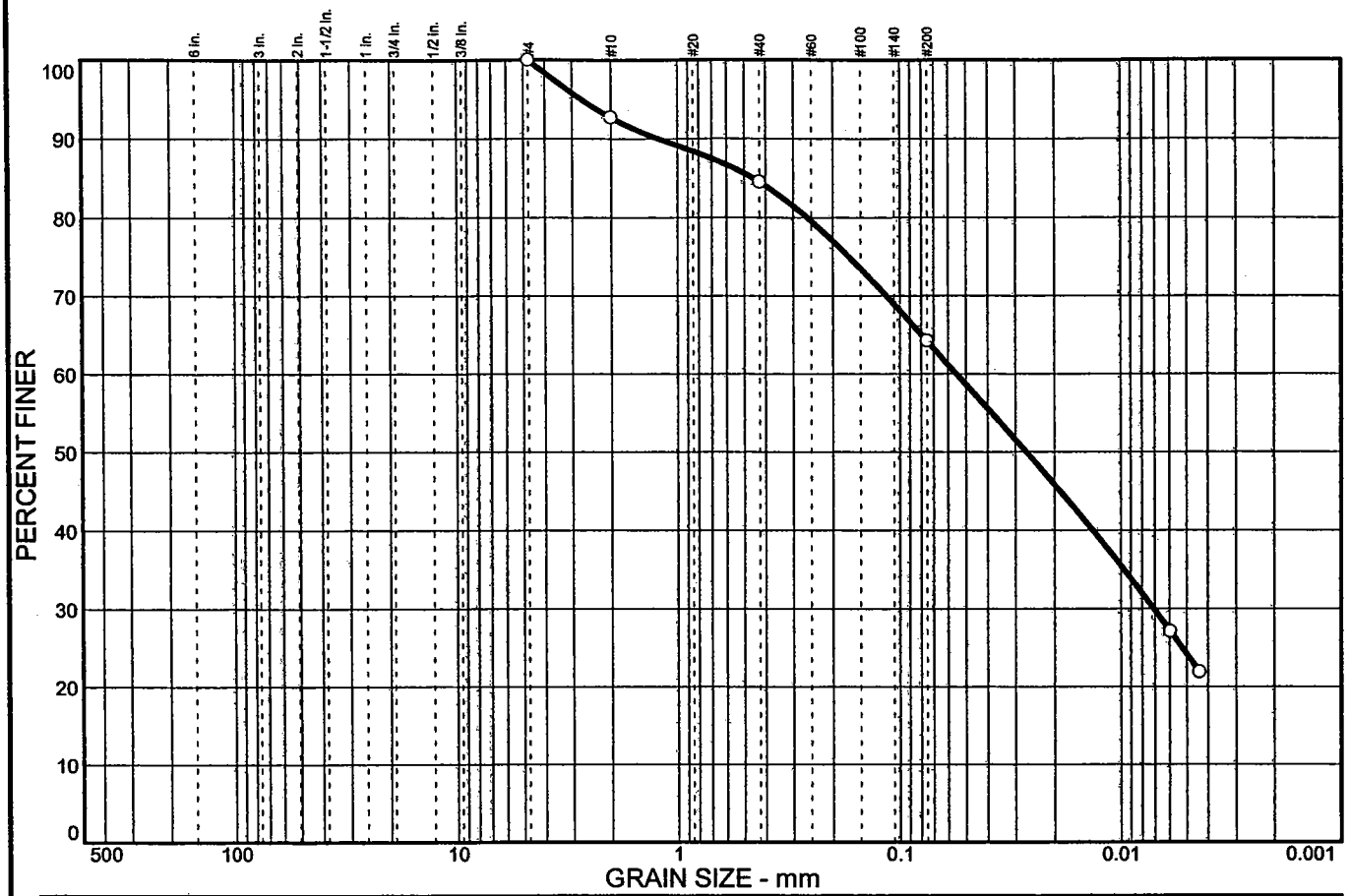
Moisture Content= 10.6%

Sample No.: 885 # 4, S-10B **Source of Sample:** **Date:** 8/29/02
Location: **Elev./Depth:** 33.0'-34.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	7.3	8.2	20.3	40.0	24.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	92.7		
#40	84.5		
#200	64.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.455 D_{60}= 0.0552 D_{50}= 0.0268
D_{30}= 0.0071 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

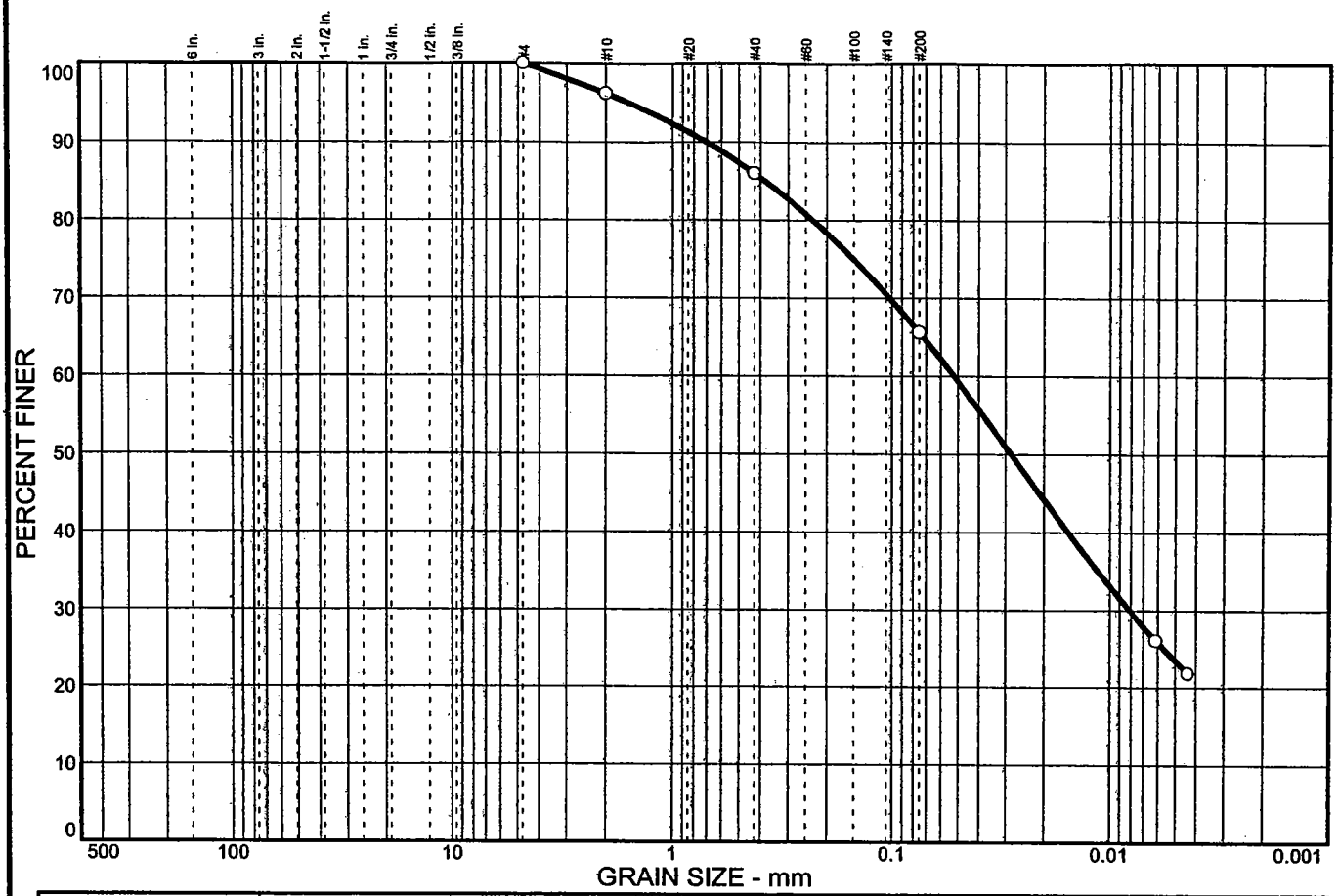
Moisture Content= 8.8%

Sample No.: 855 # 1, S-3 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 26.0'-27.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	3.8	10.2	20.4	42.1	23.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	96.2		
#40	86.0		
#200	65.6		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.380 D_{60}= 0.0521 D_{50}= 0.0282
D_{30}= 0.0081 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

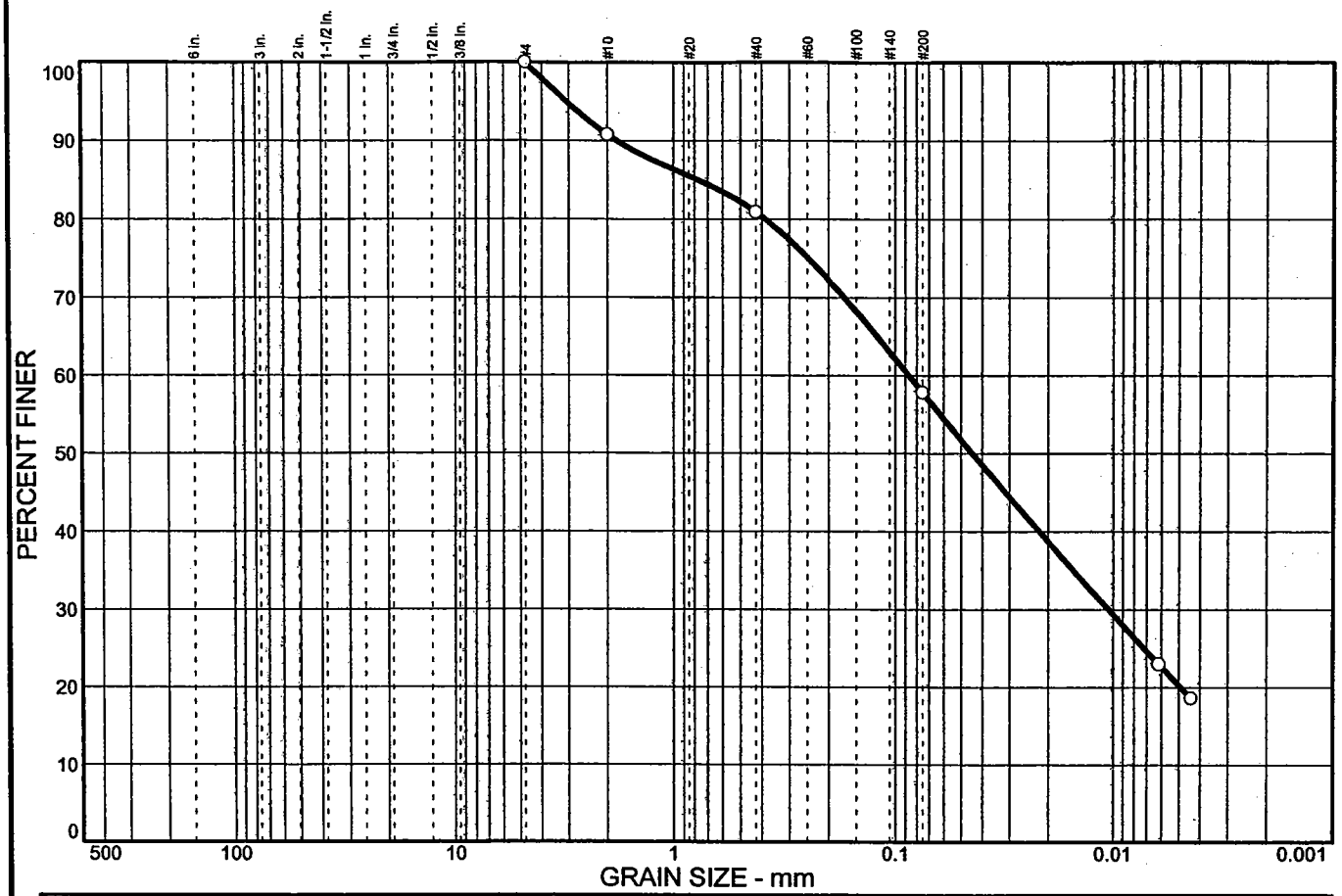
Moisture Content= 9.1%

Sample No.: 855 # 1, S-6 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 29.0'-30.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	9.2	9.9	23.1	37.5	20.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	90.8		
#40	80.9		
#200	57.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.776 D_{60}= 0.0867 D_{50}= 0.0442
D_{30}= 0.0105 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

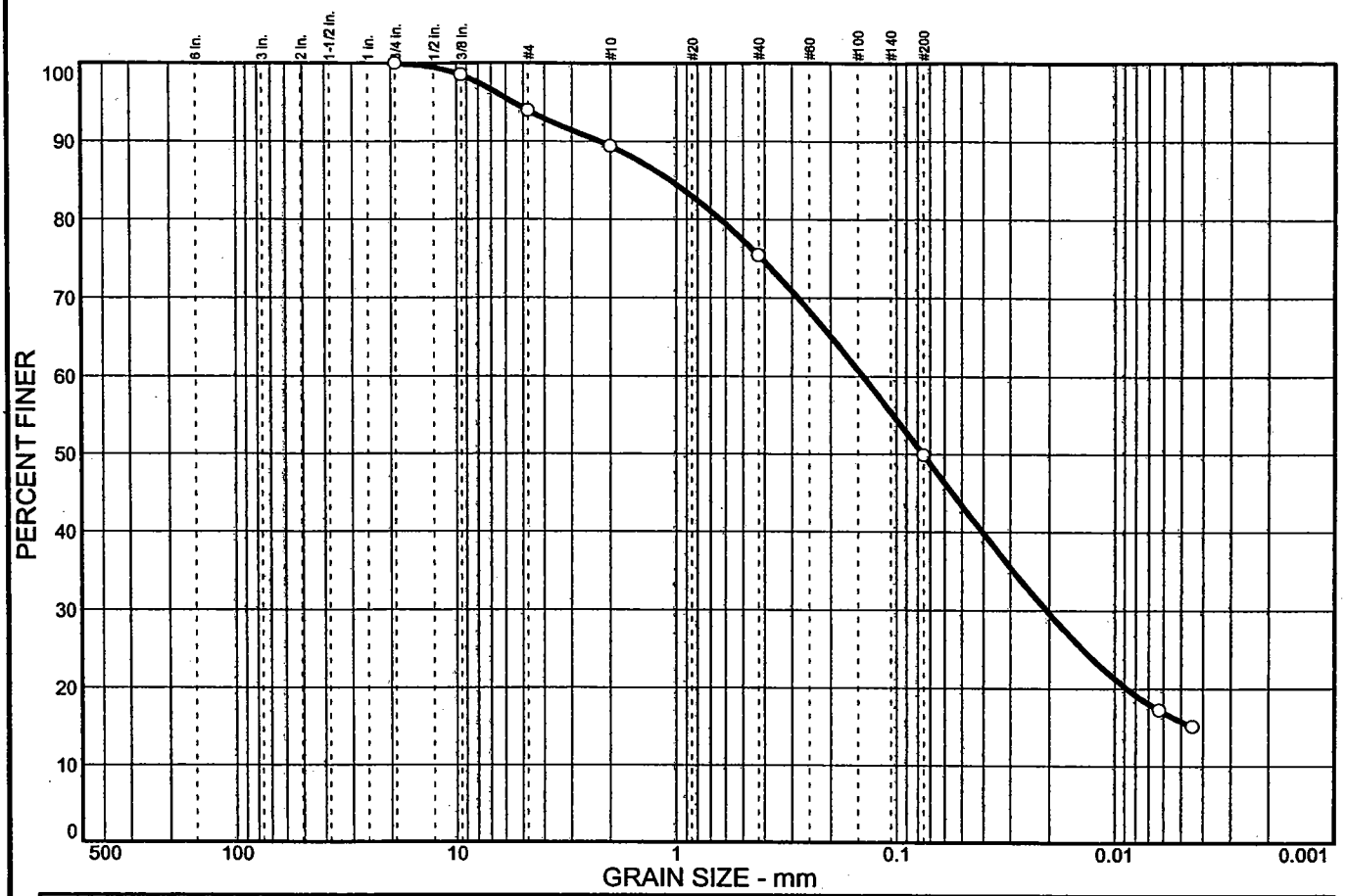
Moisture Content= 8.3%

Sample No.: 855 # 1, S-9 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 32.0'-33.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	6.1	4.5	14.0	25.5	34.1	15.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.5		
#4	93.9		
#10	89.4		
#40	75.4		
#200	49.9		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 1.07 D_{60}= 0.142 D_{50}= 0.0755
D_{30}= 0.0205 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

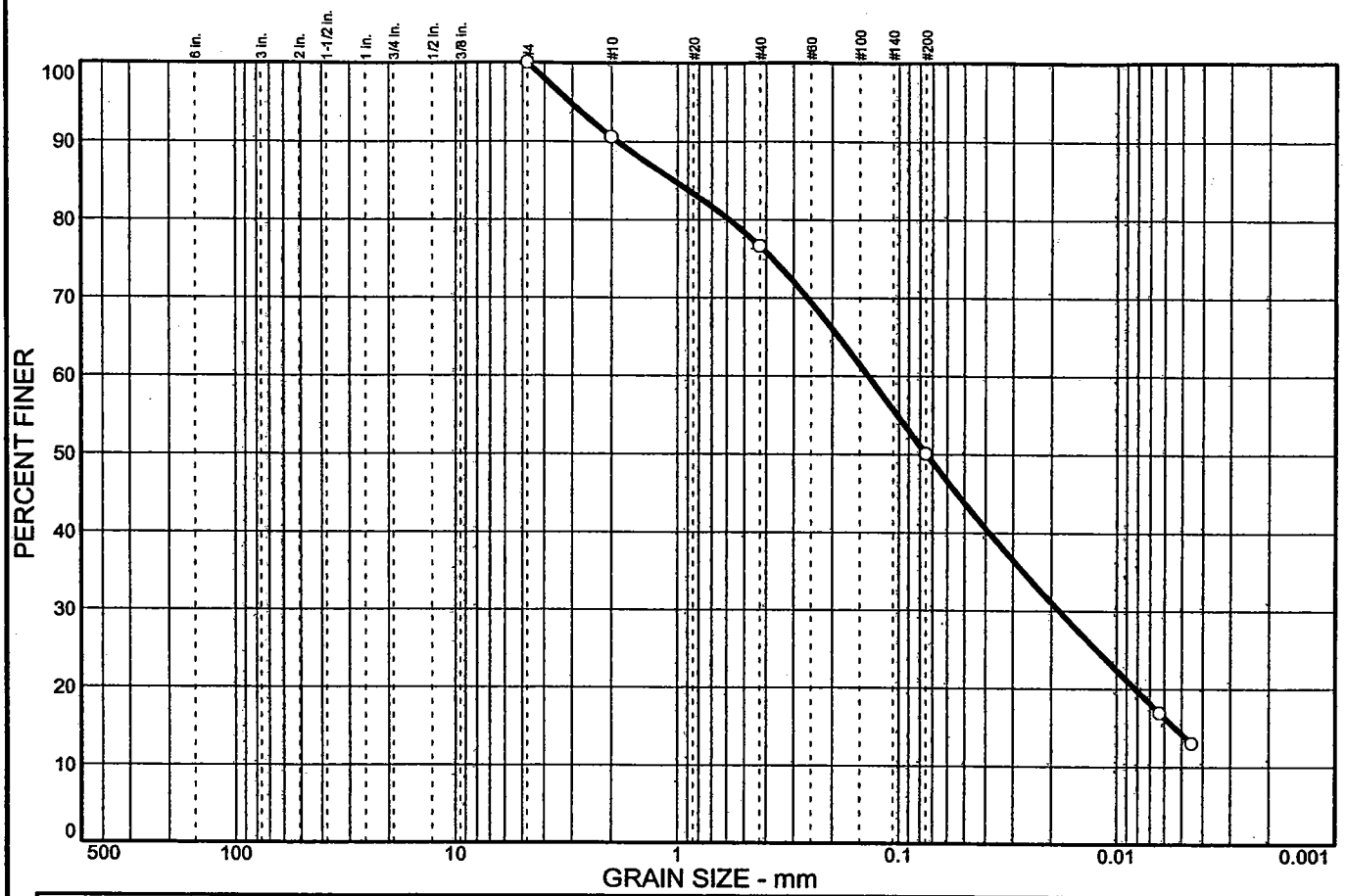
Moisture Content= 8.0%

Sample No.: 855 # 1, S-11 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 54.0'-55.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	9.4	14.0	26.5	35.9	14.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	90.6		
#40	76.6		
#200	50.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 1.04 D_{60}= 0.137 D_{50}= 0.0745
D_{30}= 0.0184 D_{15}= 0.0053 D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

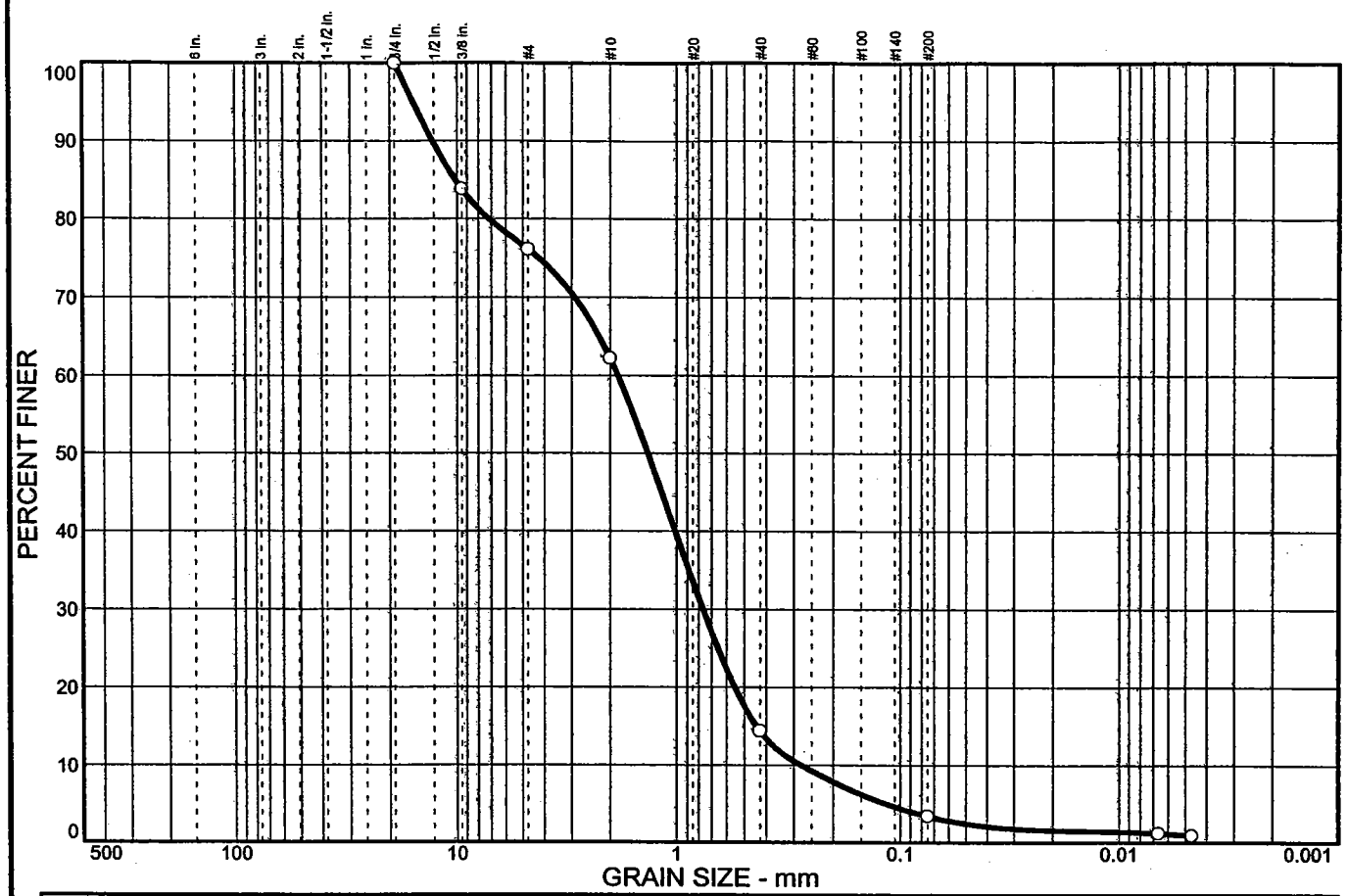
Moisture Content= 6.9%

Sample No.: 855 # 1, S-14A **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 57.0'-58.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	23.9	13.9	47.8	11.0	2.4	1.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	83.8		
#4	76.1		
#10	62.2		
#40	14.4		
#200	3.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 10.2 D_{60}= 1.84 D_{50}= 1.35
D_{30}= 0.765 D_{15}= 0.440 D_{10}= 0.279
C_u= 6.62 C_c= 1.14

Classification

USCS= AASHTO=

Remarks

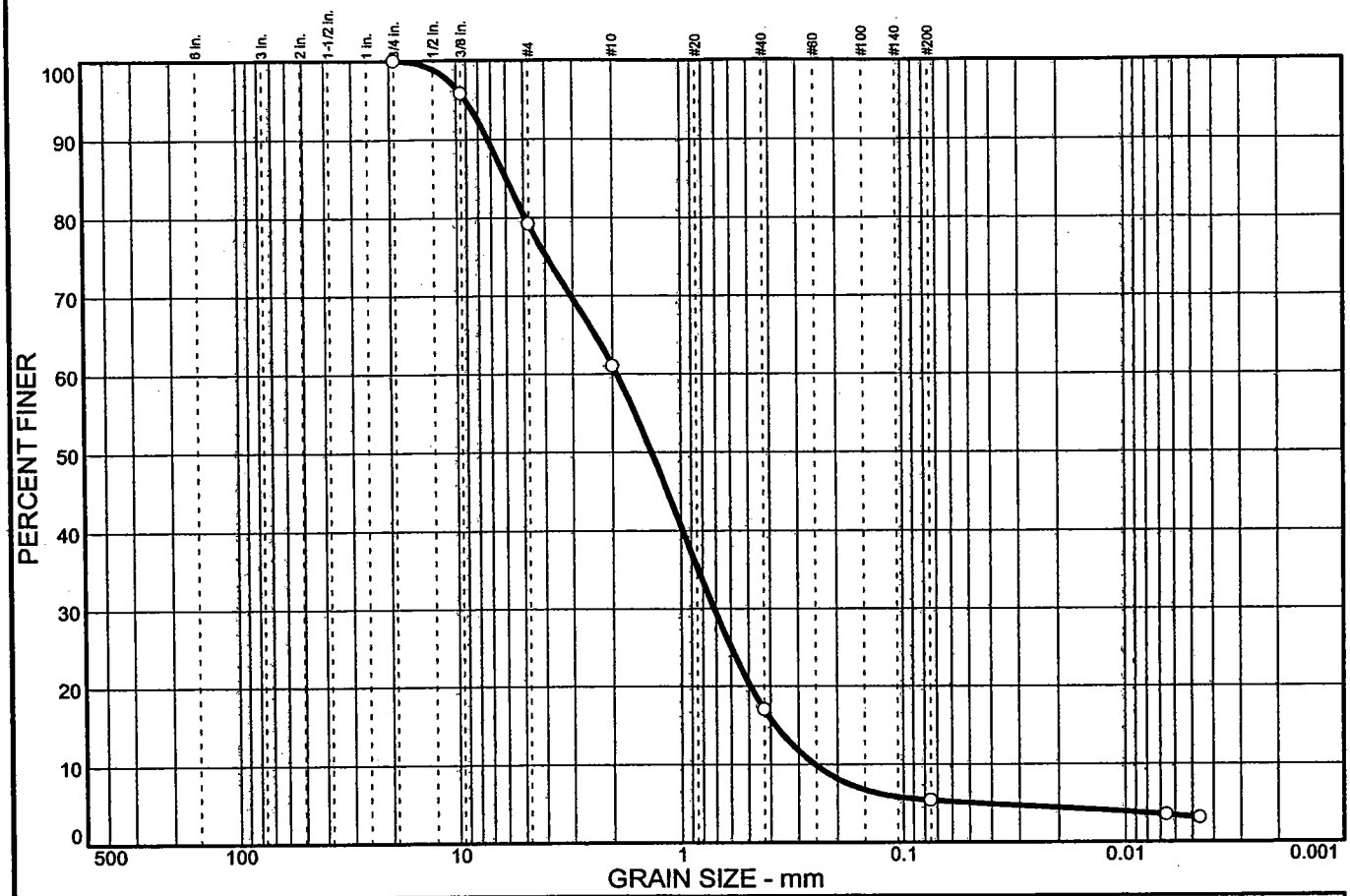
Moisture Content= 12.1%

Sample No.: 855 # 1, S-15 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 58.0'-59.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	20.8	18.2	44.0	11.6	2.2	3.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	95.8		
#4	79.2		
#10	61.0		
#40	17.0		
#200	5.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 5.96 D_{60}= 1.92 D_{50}= 1.35
D_{30}= 0.712 D_{15}= 0.379 D_{10}= 0.253
C_u= 7.59 C_c= 1.04

Classification

USCS= AASHTO=

Remarks

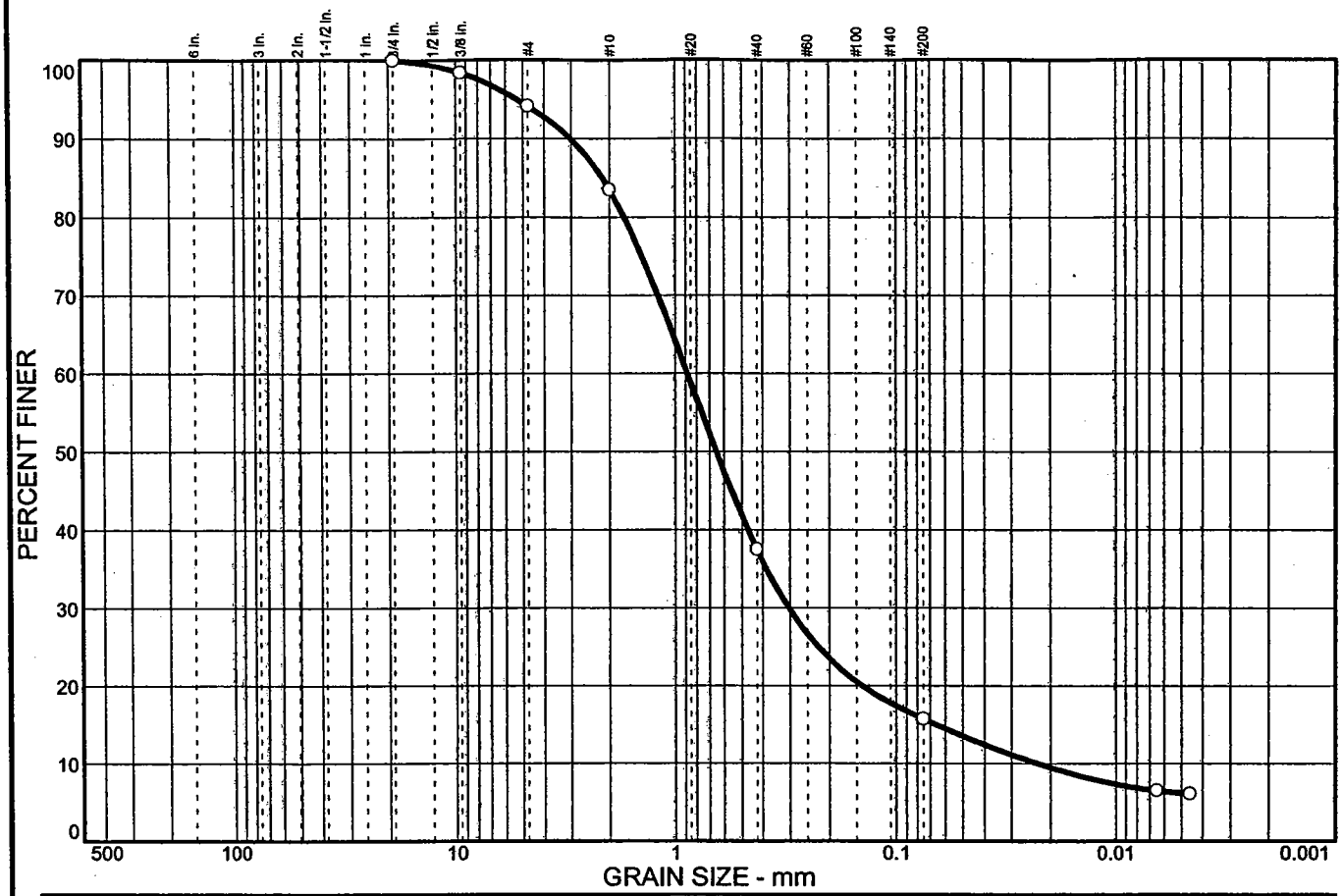
Moisture Content= 13.7%

Sample No.: 855 # 1, S-16 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 59.0'-60.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.9	10.6	46.0	21.8	9.5	6.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.4		
#4	94.1		
#10	83.5		
#40	37.5		
#200	15.7		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 2.16 D_{60}= 0.882 D_{50}= 0.651
D_{30}= 0.303 D_{15}= 0.0660 D_{10}= 0.0230
C_u= 38.31 C_c= 4.51

Classification

USCS= AASHTO=

Remarks

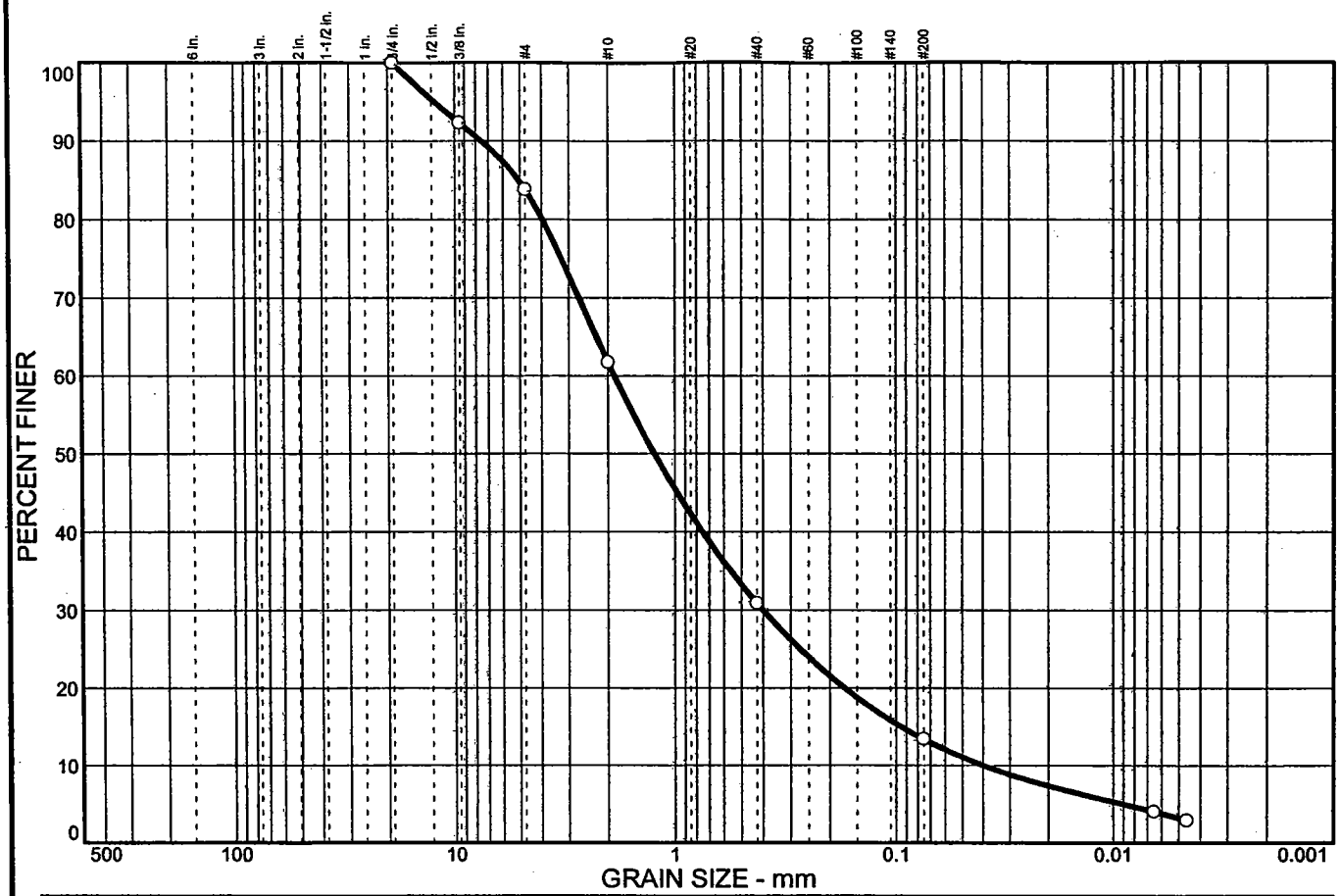
Moisture Content= 11.1%

Sample No.: 855 # 1, S-18 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 61.0'-62.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	16.2	22.1	30.8	17.5	10.2	3.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	92.3		
#4	83.8		
#10	61.7		
#40	30.9		
#200	13.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 5.09 D_{60}= 1.88 D_{50}= 1.24
D_{30}= 0.399 D_{15}= 0.0947 D_{10}= 0.0400
C_u= 46.92 C_c= 2.12

Classification

USCS= AASHTO=

Remarks

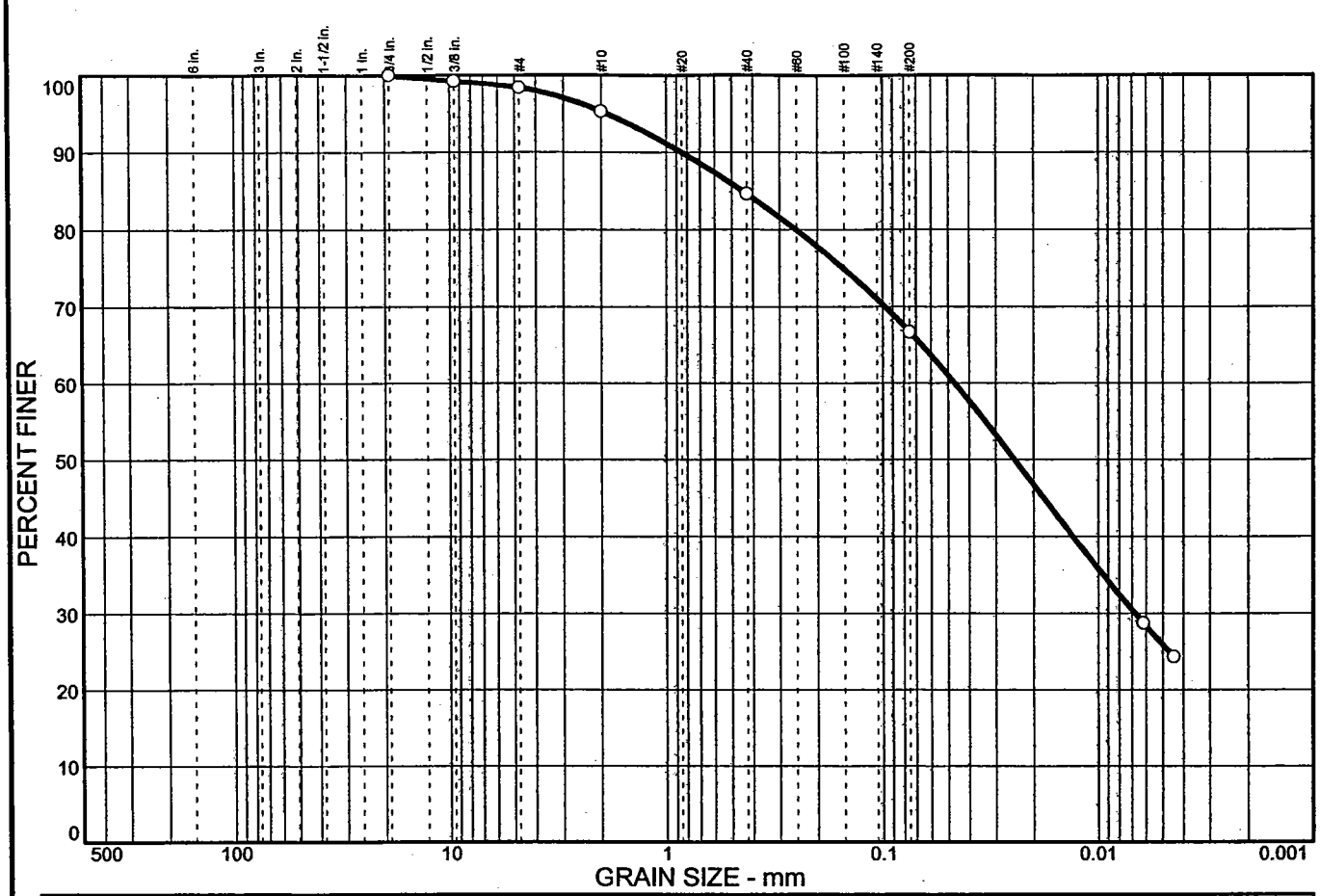
Moisture Content= 13.0%

Sample No.: 855 # 1, S-20 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 63.0'-64.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.6	3.1	10.7	17.9	40.8	25.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.2		
#4	98.4		
#10	95.3		
#40	84.6		
#200	66.7		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.446 D_{60}= 0.0466 D_{50}= 0.0245
D_{30}= 0.0067 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

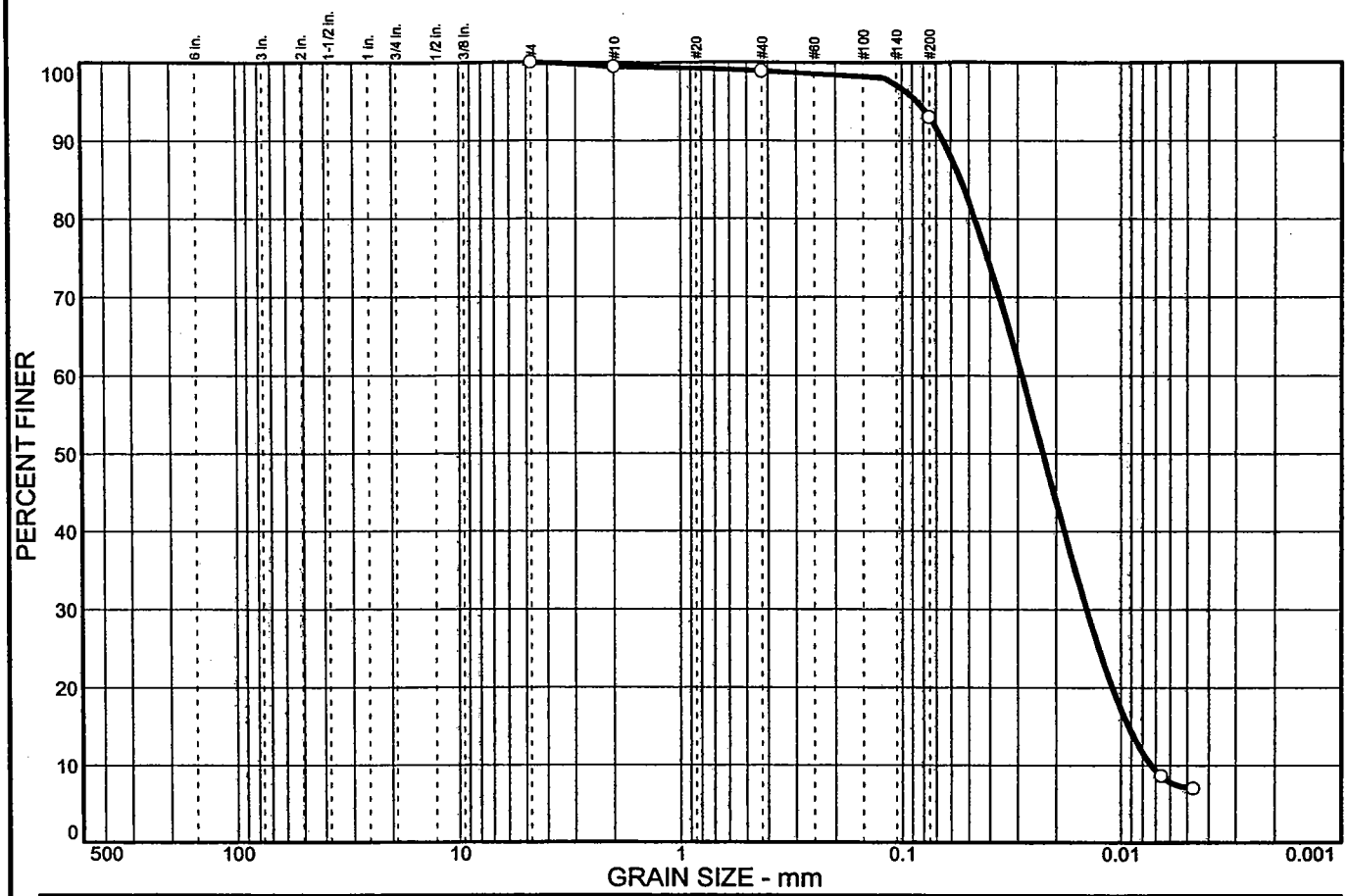
Moisture Content= 8.8%

Sample No.: 855 # 2, S-1A **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 26.0'-27.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.5	0.6	5.9	85.9	7.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.5		
#40	98.9		
#200	93.0		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.0544 D_{60}= 0.0287 D_{50}= 0.0229
D_{30}= 0.0144 D_{15}= 0.0092 D_{10}= 0.0073
C_u= 3.93 C_c= 0.99

Classification

USCS= AASHTO=

Remarks

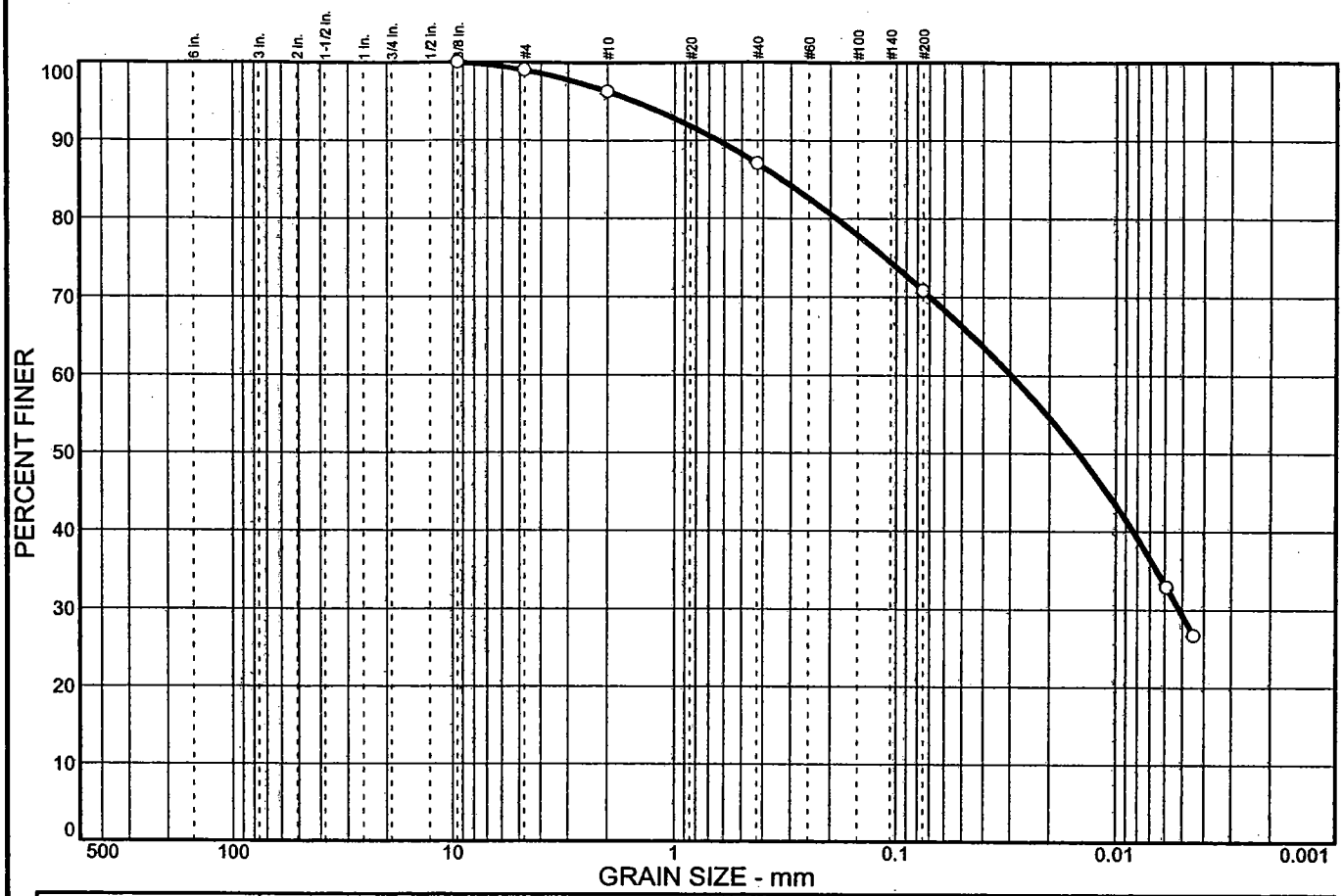
Moisture Content= 16.4%

Sample No.: 855 # 2, S-1B **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 26.0'-27.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.0	2.7	9.3	16.2	41.5	29.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	99.0		
#10	96.3		
#40	87.0		
#200	70.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.331 D_{60}= 0.0297 D_{50}= 0.0147
D_{30}= 0.0051 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

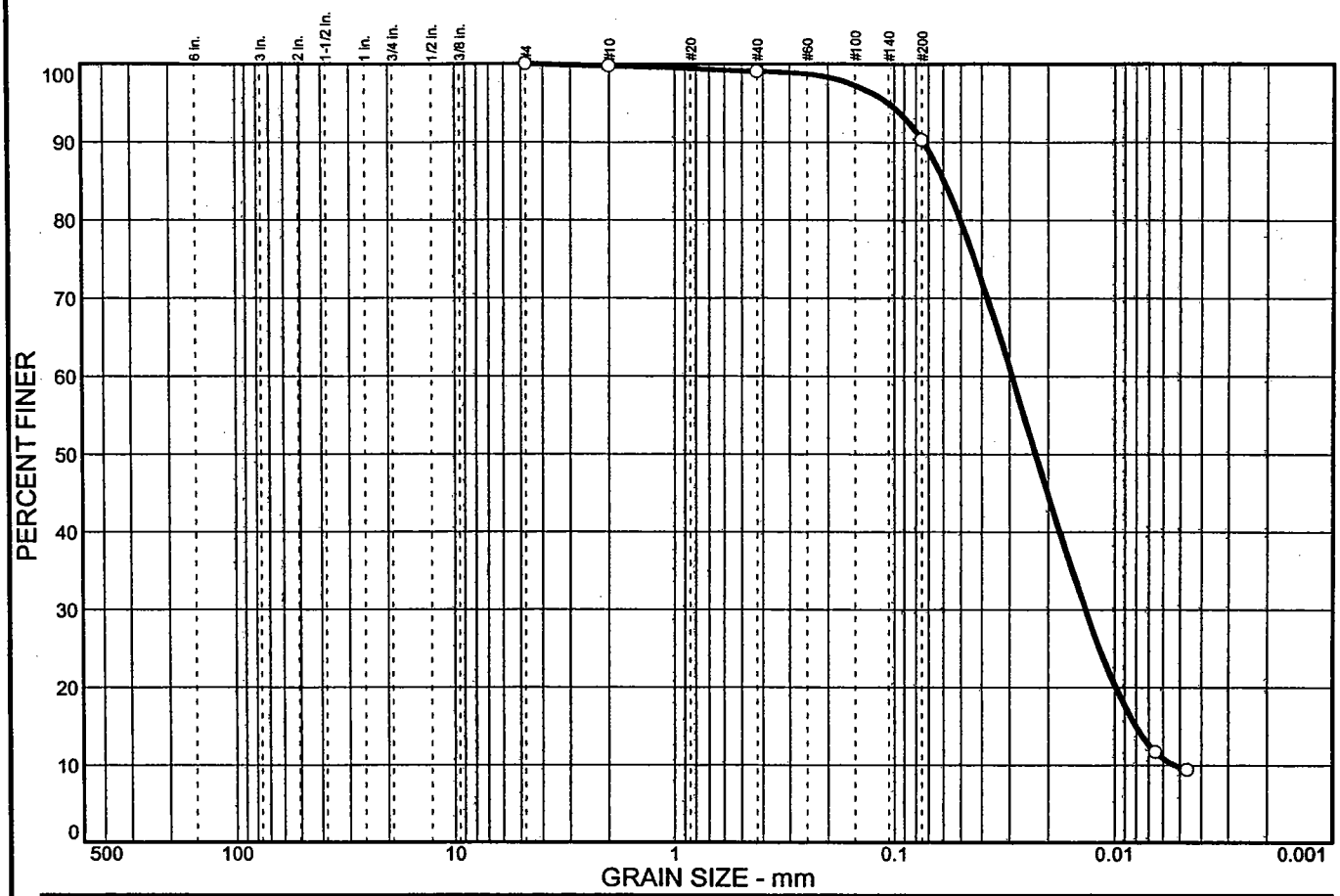
Moisture Content= 9.0%

Sample No.: 855 # 2, S-2A **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 27.0'-28.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.2	0.7	8.8	80.6	9.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.8		
#40	99.1		
#200	90.3		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.0597 D_{60}= 0.0292 D_{50}= 0.0228
D_{30}= 0.0136 D_{15}= 0.0080 D_{10}= 0.0053
C_u= 5.53 C_c= 1.20

Classification

USCS= AASHTO=

Remarks

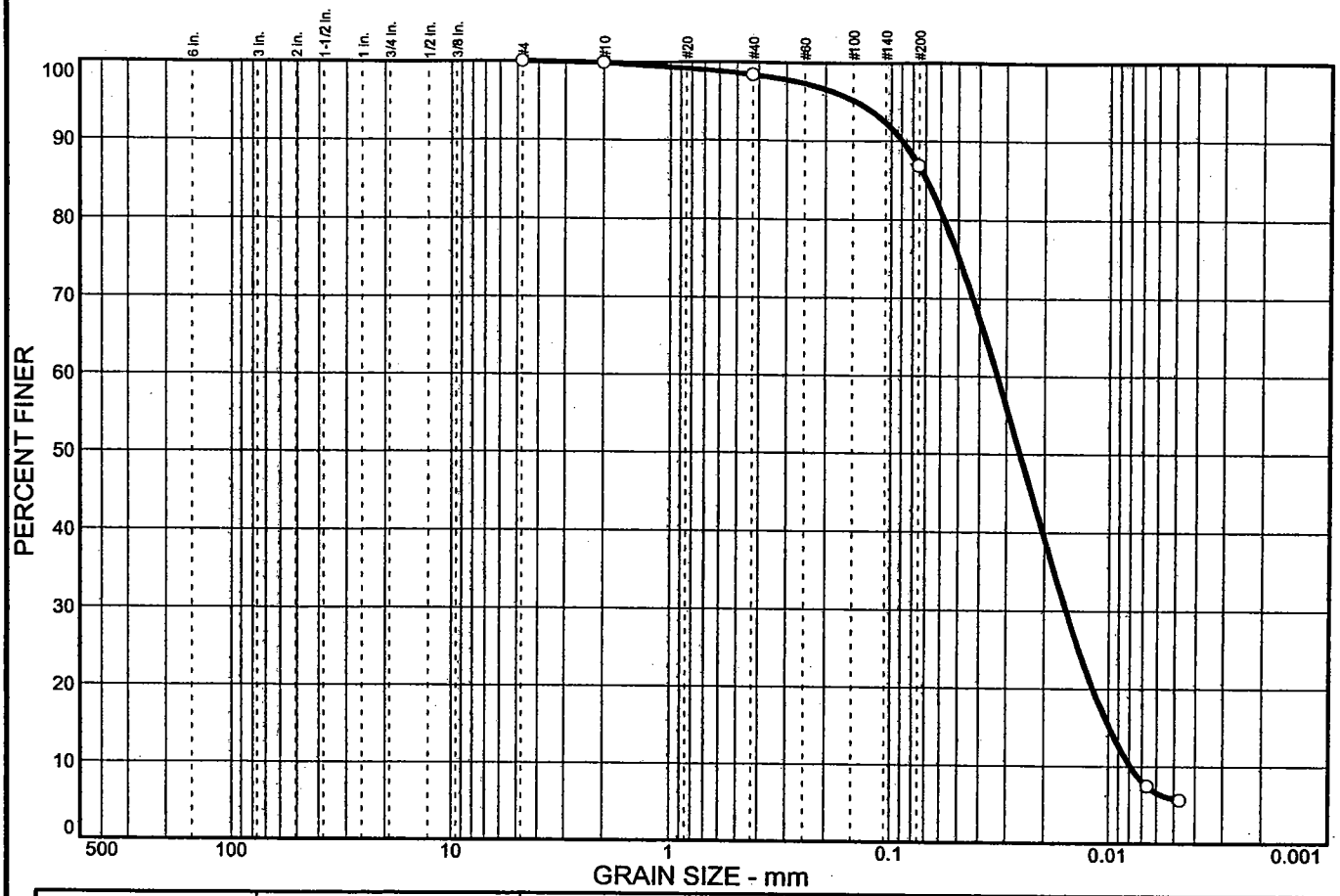
Moisture Content= 18.7%

Sample No.: 855 # 2, S-2B **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 27.0'-28.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.1	1.5	11.6	81.0	5.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.9		
#40	98.4		
#200	86.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.0693 D_{60}= 0.0331 D_{50}= 0.0259
D_{30}= 0.0157 D_{15}= 0.0099 D_{10}= 0.0079
C_u= 4.18 C_c= 0.94

Classification

USCS= AASHTO=

Remarks

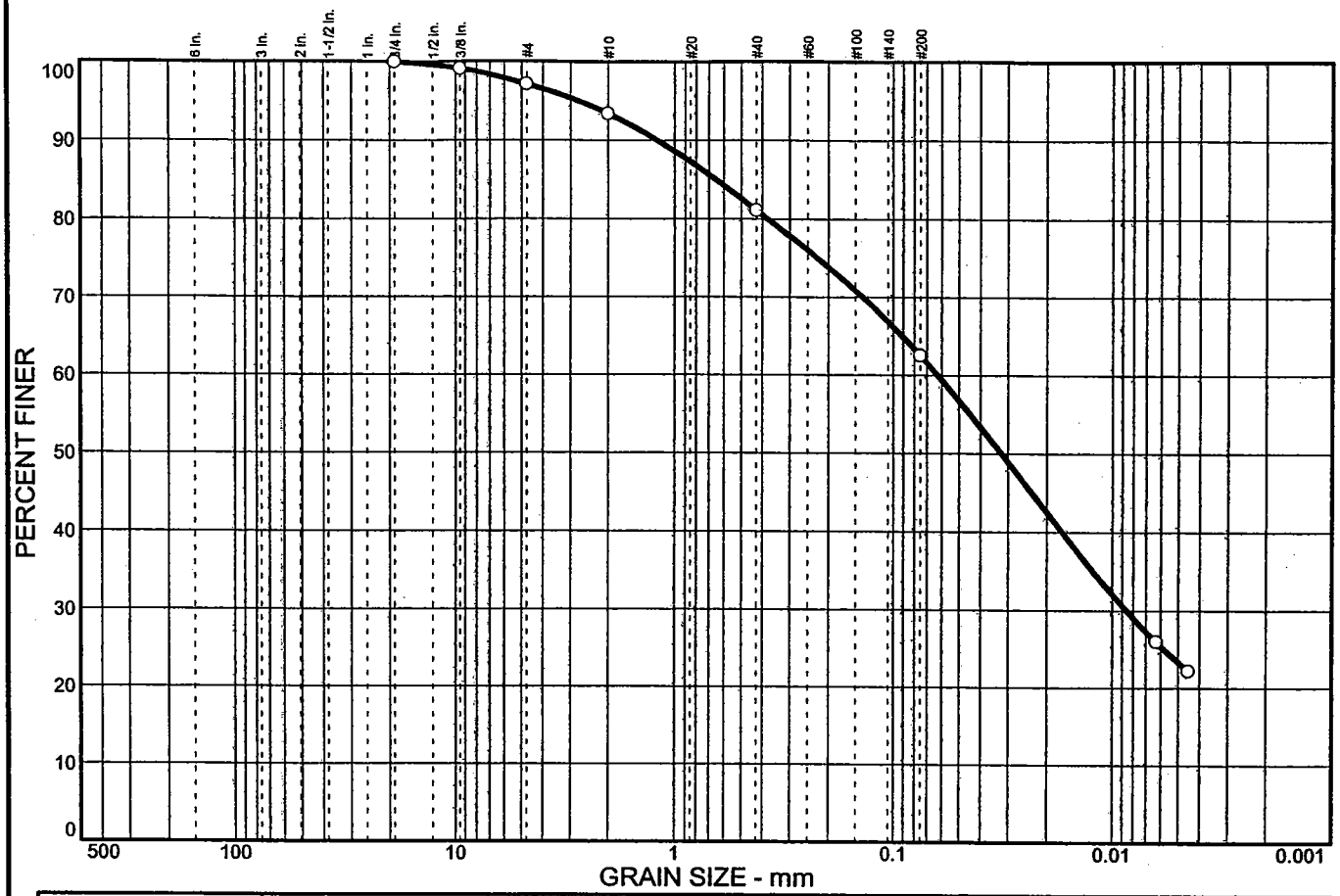
Moisture Content= 16.3%

Sample No.: 855 # 2, S-3 **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 28.0'-29.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.9	3.7	12.3	18.6	39.1	23.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.1		
#4	97.1		
#10	93.4		
#40	81.1		
#200	62.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.653 D_{60}= 0.0625 D_{50}= 0.0321
D_{30}= 0.0086 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

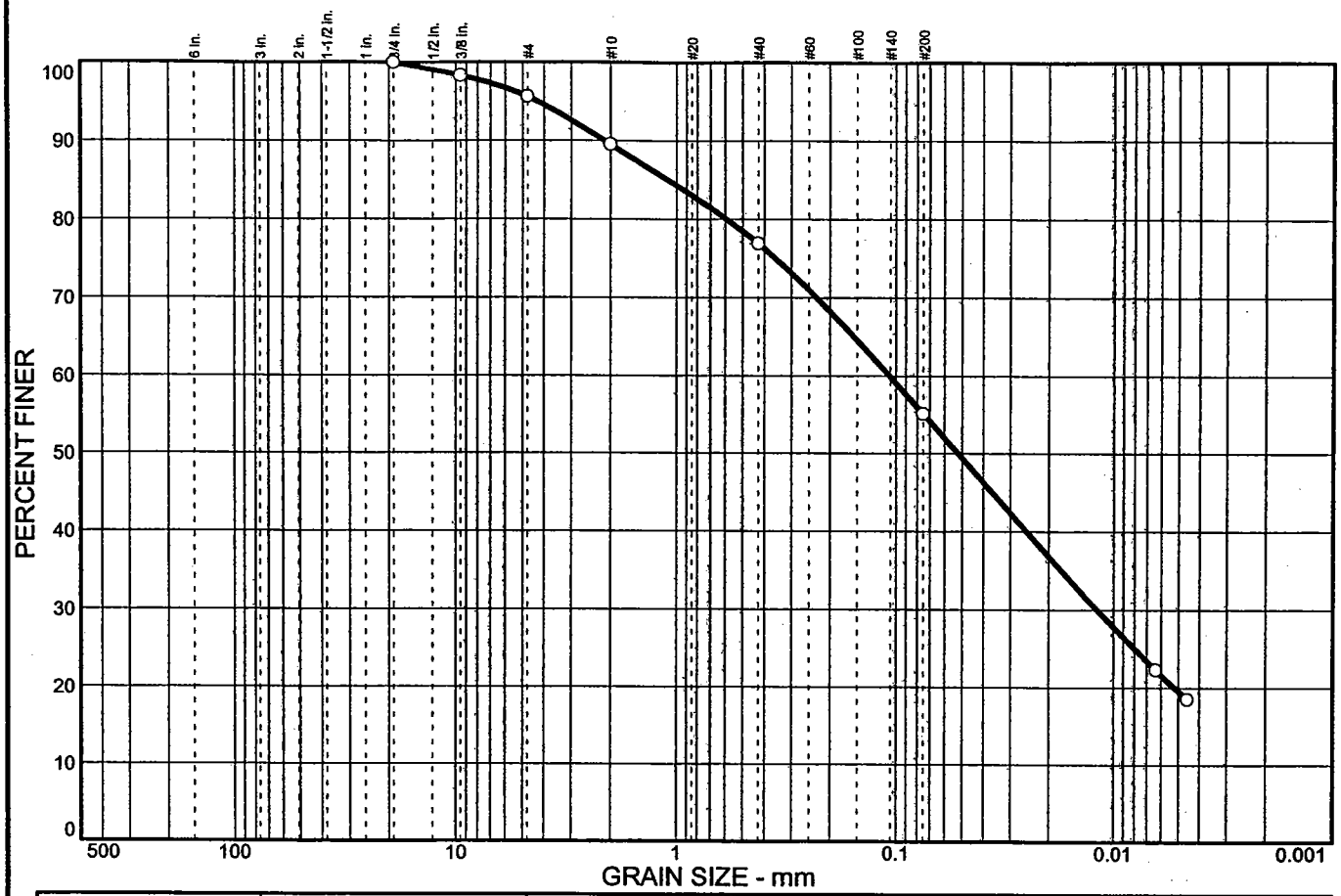
Moisture Content= 7.4%

Sample No.: 855 # 2, S-5 **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 30.0'-31.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	4.4	6.1	12.6	21.8	35.5	19.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.3		
#4	95.6		
#10	89.5		
#40	76.9		
#200	55.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 1.10 D_{60}= 0.107 D_{50}= 0.0520
D_{30}= 0.0119 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

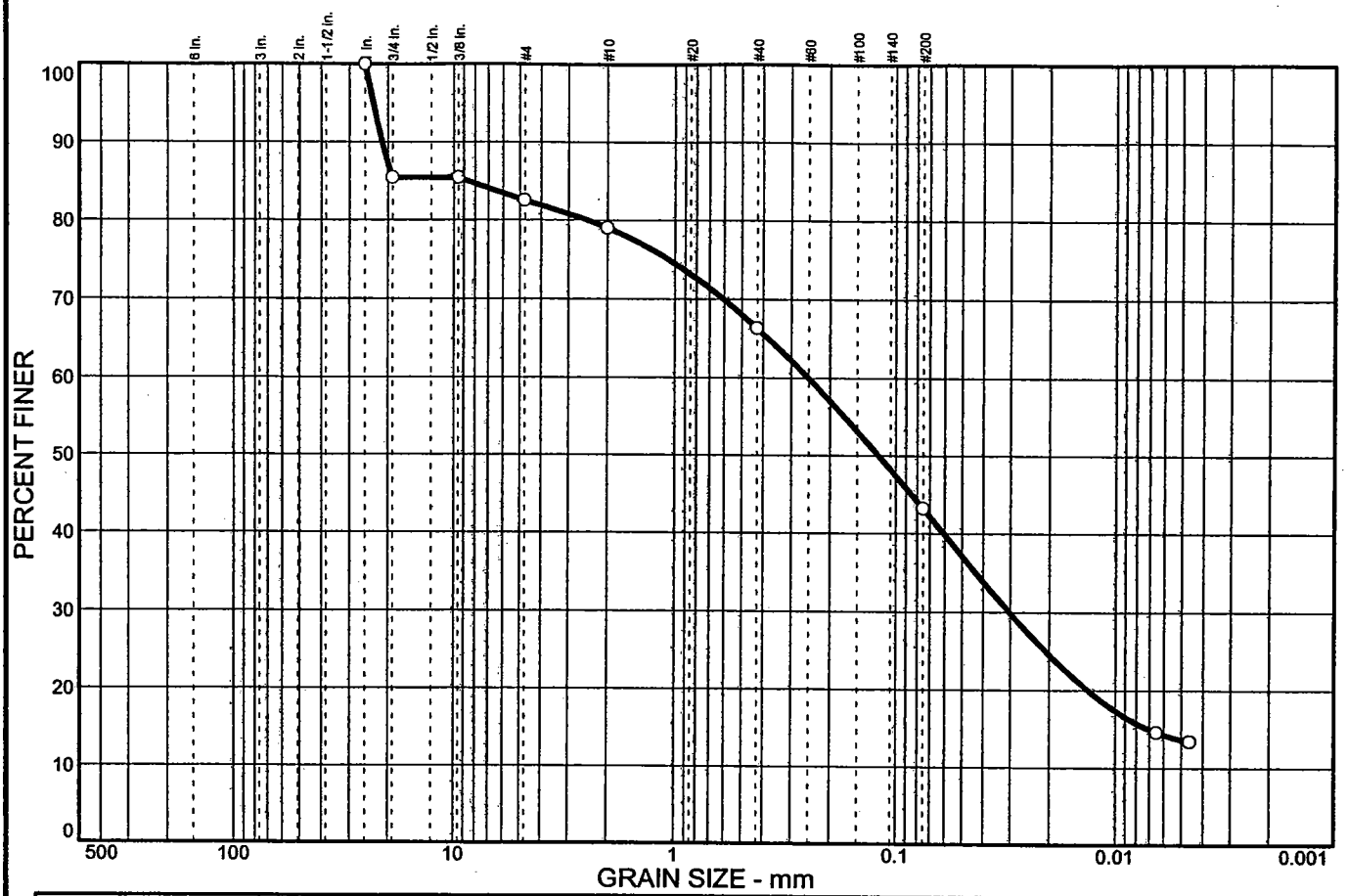
Moisture Content= 12.0%

Sample No.: 855 # 2, S-10 **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 35.0'-36.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	14.6	2.9	3.5	12.7	23.1	29.6	13.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	85.4		
0.375 in.	85.4		
#4	82.5		
#10	79.0		
#40	66.3		
#200	43.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 8.68 D_{60}= 0.251 D_{50}= 0.120
D_{30}= 0.0303 D_{15}= 0.0070 D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

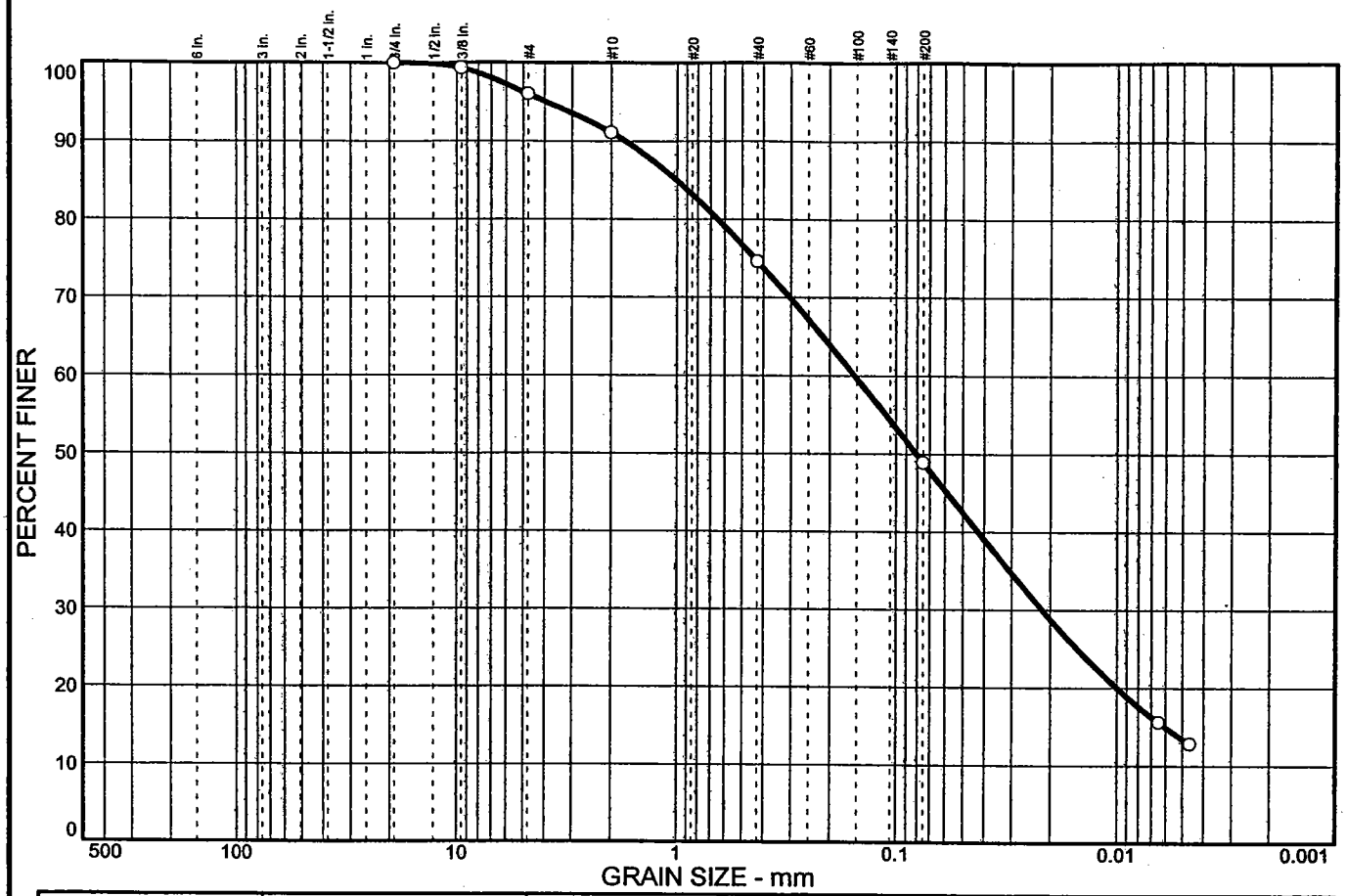
Moisture Content= 6.5%

Sample No.: 855 # 2, S-11 **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 56.0'-57.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	4.0	4.9	16.5	25.7	35.5	13.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.3		
#4	96.0		
#10	91.1		
#40	74.6		
#200	48.9		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 1.01 D_{60}= 0.154 D_{50}= 0.0805
D_{30}= 0.0217 D_{15}= 0.0060 D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

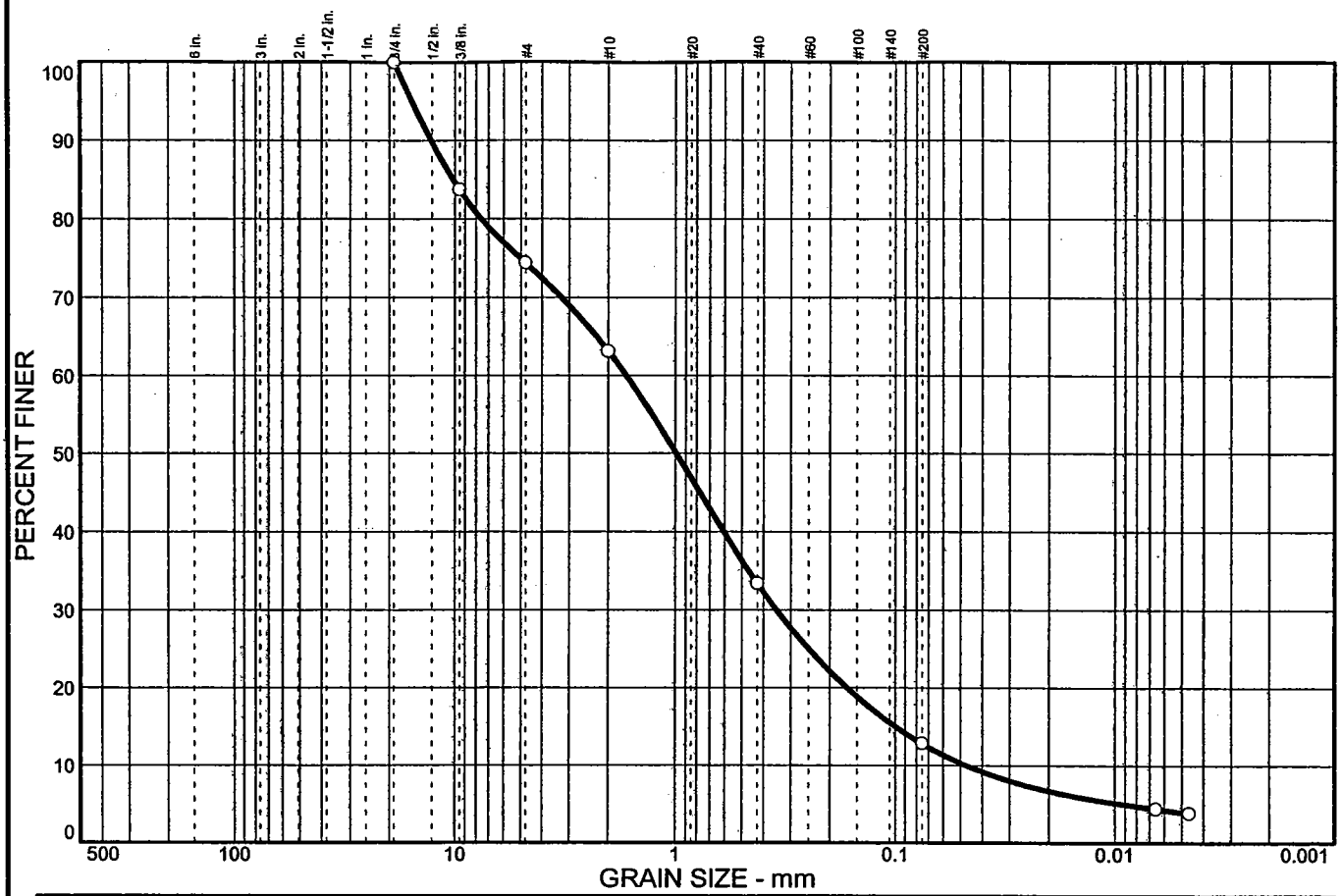
Moisture Content= 8.1%

Sample No.: 855 # 2, S-12 **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 57.0'-58.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	25.6	11.3	29.7	20.6	8.9	3.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	83.7		
#4	74.4		
#10	63.1		
#40	33.4		
#200	12.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 10.2 D_{60}= 1.67 D_{50}= 0.990
D_{30}= 0.348 D_{15}= 0.0998 D_{10}= 0.0473
C_u= 35.25 C_c= 1.53

Classification

USCS= AASHTO=

Remarks

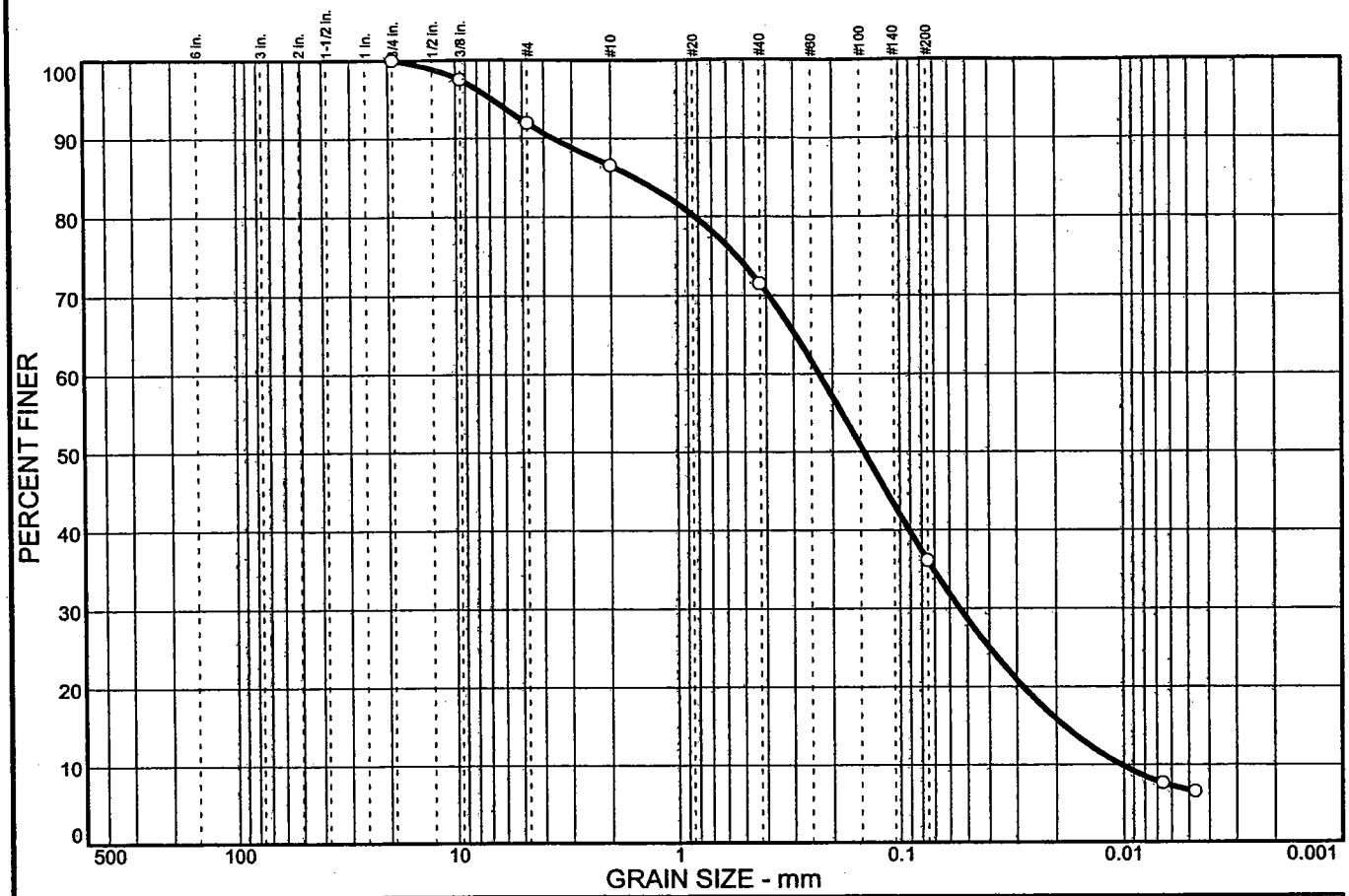
Moisture Content= 9.1%
Specific Gravity= 2.73

Sample No.: 855 # 2, S-13 **Source of Sample:** **Date:** 8/29/02
Location: **Elev./Depth:** 58.0'-59.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-854, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	8.1	5.4	15.0	35.4	29.4	6.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	97.5		
#4	91.9		
#10	86.5		
#40	71.5		
#200	36.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 1.57 D_{60}= 0.230 D_{50}= 0.145
D_{30}= 0.0540 D_{15}= 0.0184 D_{10}= 0.0103
C_u= 22.35 C_c= 1.24

Classification

USCS= AASHTO=

Remarks

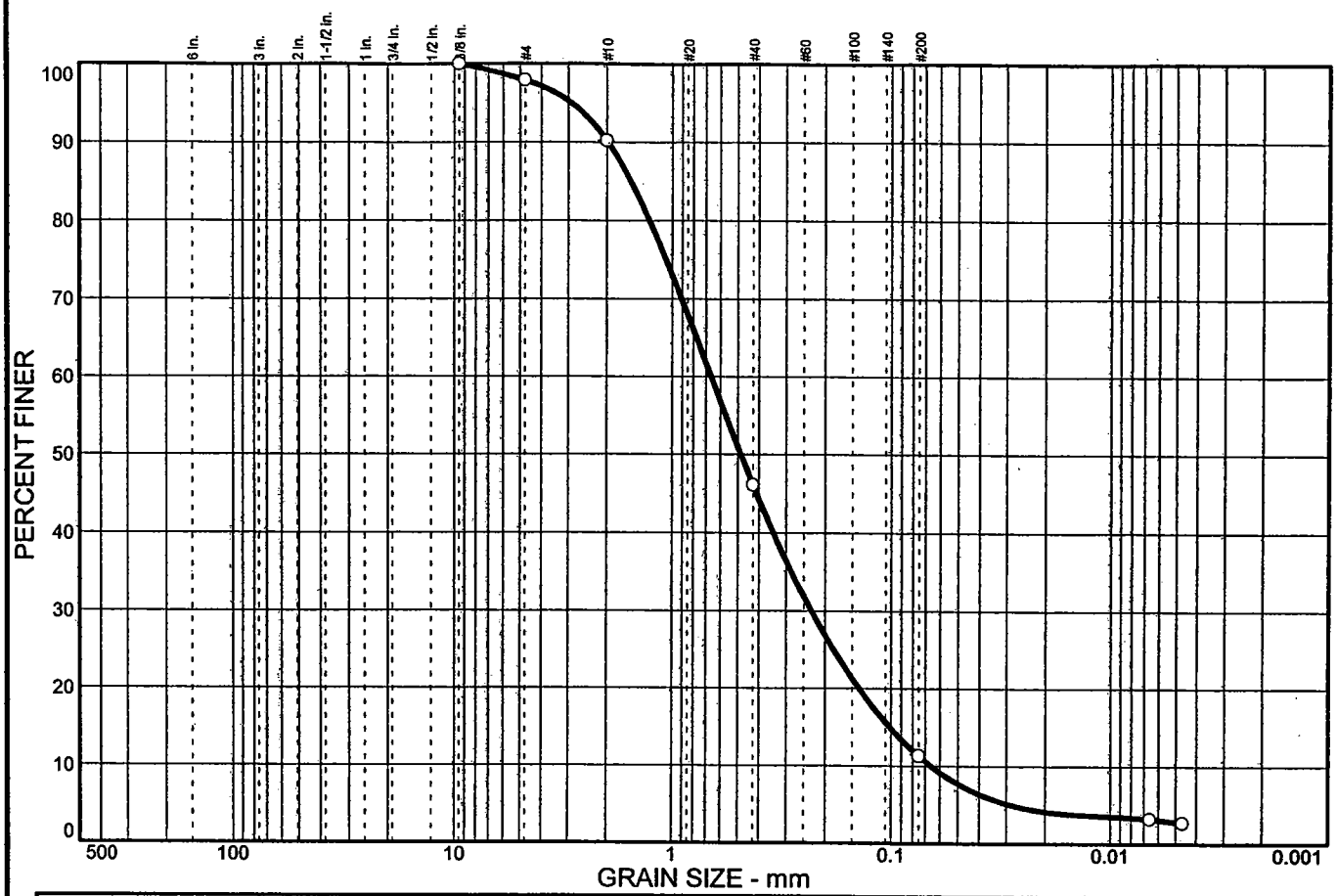
Moisture Content= 10.9%

Sample No.: 855 # 2, S-14 **Source of Sample:** **Date:** 8/28/02
Location: **Elev./Depth:** 59.0'-60.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.1	7.7	44.1	34.8	8.5	2.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	97.9		
#10	90.2		
#40	46.1		
#200	11.3		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 1.55 D_{60}= 0.662 D_{50}= 0.483
D_{30}= 0.230 D_{15}= 0.101 D_{10}= 0.0659
C_u= 10.04 C_c= 1.21

Classification

USCS= AASHTO=

Remarks

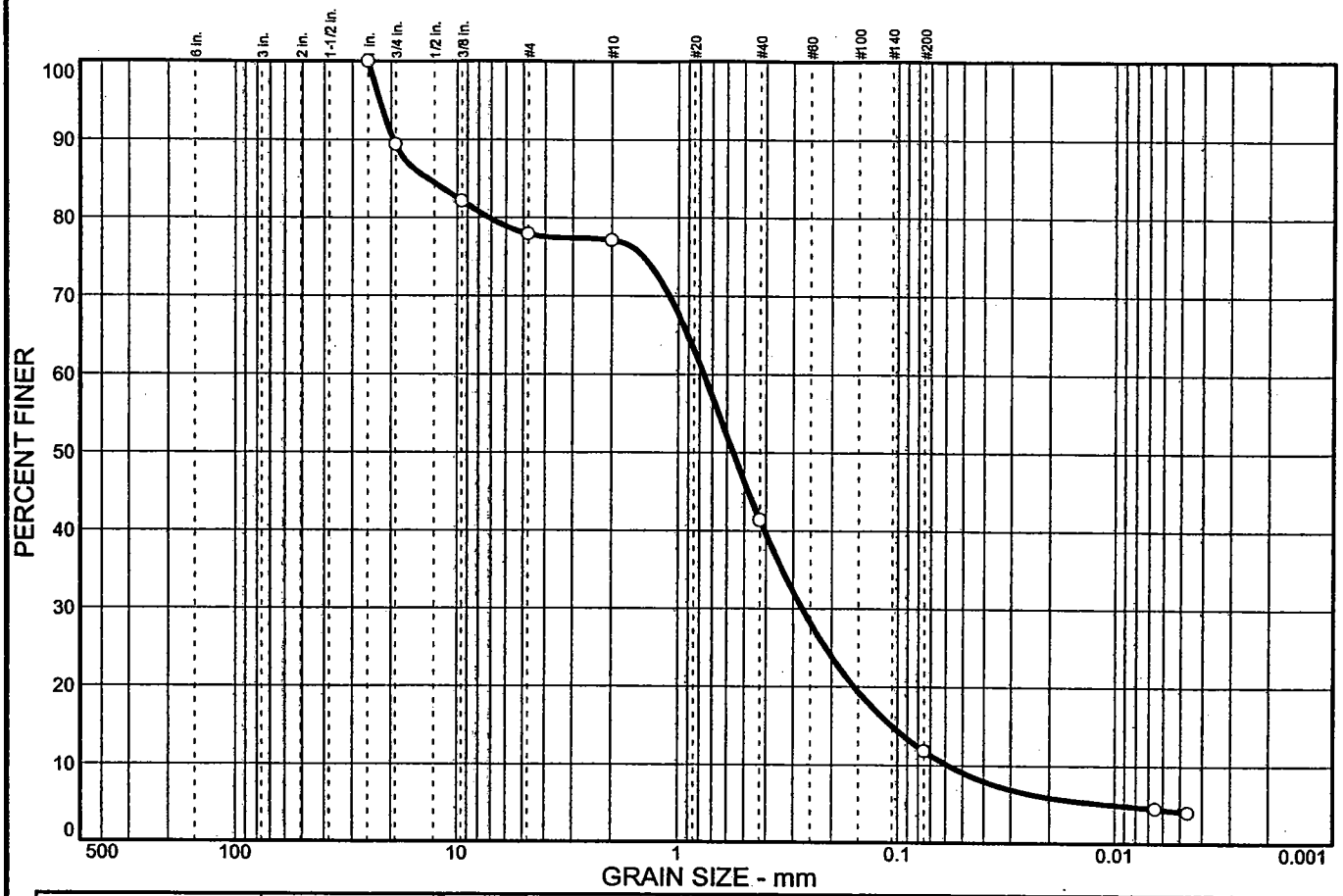
Moisture Content= 15.3%
Specific Gravity= 2.74

Sample No.: 855 # 2, S-15 **Source of Sample:** **Date:** 8/29/02
Location: **Elev./Depth:** 60.0'-61.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-854, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	10.6	11.5	0.8	35.7	29.6	7.7	4.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	89.4		
0.375 in.	82.1		
#4	77.9		
#10	77.1		
#40	41.4		
#200	11.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 13.5 D_{60}= 0.766 D_{50}= 0.560
D_{30}= 0.272 D_{15}= 0.106 D_{10}= 0.0583
C_u= 13.12 C_c= 1.66

Classification

USCS= AASHTO=

Remarks

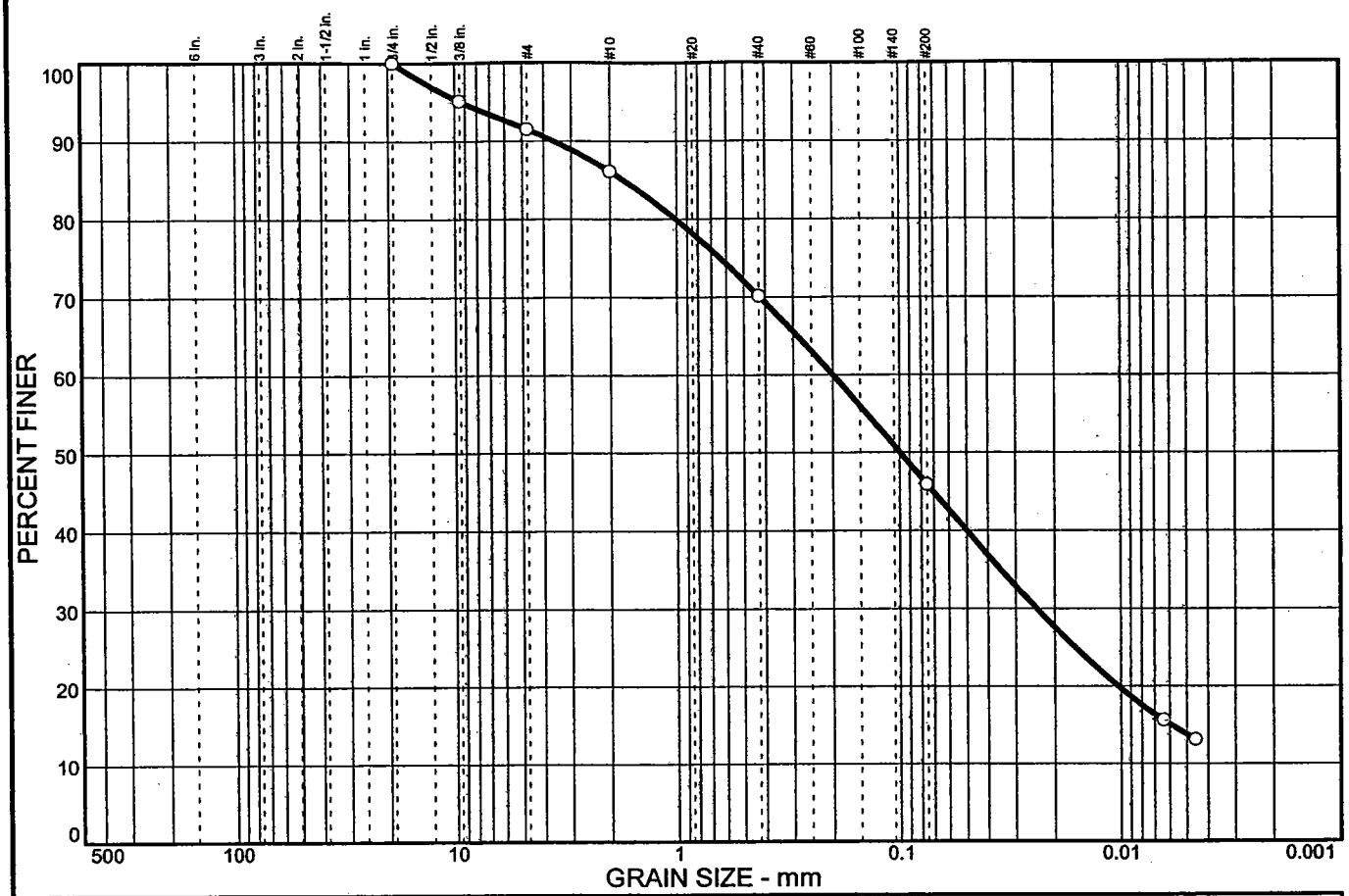
Moisture Content= 8.6%
Specific Gravity= 2.75

Sample No.: 855 # 2, S-16A **Source of Sample:** **Date:** 8/29/02
Location: **Elev./Depth:** 61.0'-62.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-854, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	8.5	5.4	16.0	24.2	32.1	13.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	95.1		
#4	91.5		
#10	86.1		
#40	70.1		
#200	45.9		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 1.74 D_{60}= 0.200 D_{50}= 0.0994
D_{30}= 0.0241 D_{15}= 0.0059 D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

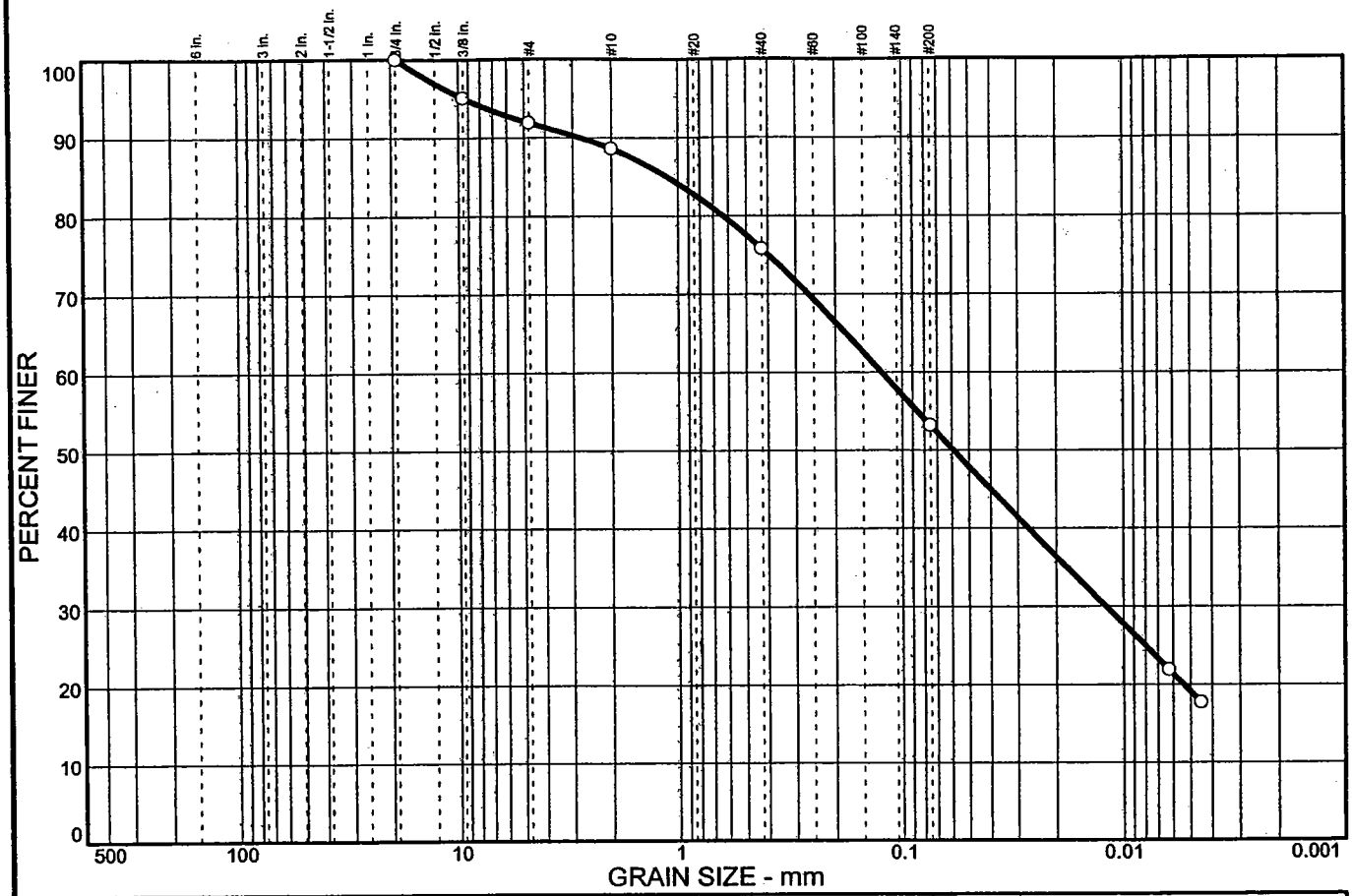
Moisture Content= 9.6%

Sample No.: 855 # 2, S-16B **Source of Sample:** **Date:** 8/29/02
Location: **Elev./Depth:** 61.0'-62.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	8.1	3.3	12.8	22.6	34.1	19.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	95.1		
#4	91.9		
#10	88.6		
#40	75.8		
#200	53.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 1.12 D_{60}= 0.124 D_{50}= 0.0589
D_{30}= 0.0119 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

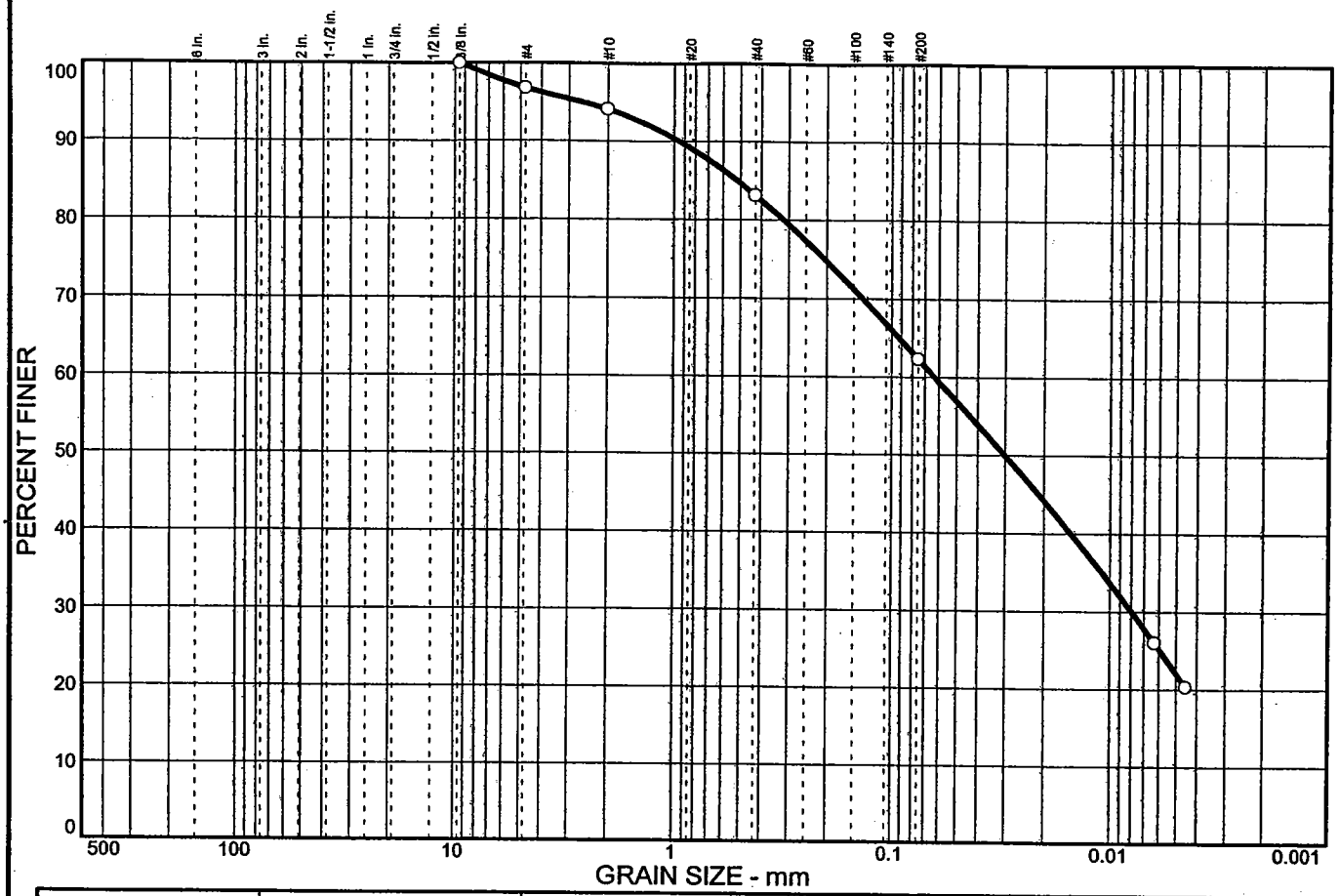
Moisture Content= 9.5%

Sample No.: 855 # 2, S-19 **Source of Sample:** **Date:** 8/29/02
Location: **Elev./Depth:** 64.0'-65.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.2	2.7	11.0	20.8	40.2	22.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	96.8		
#10	94.1		
#40	83.1		
#200	62.3		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.517 D_{60}= 0.0630 D_{50}= 0.0301
D_{30}= 0.0079 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

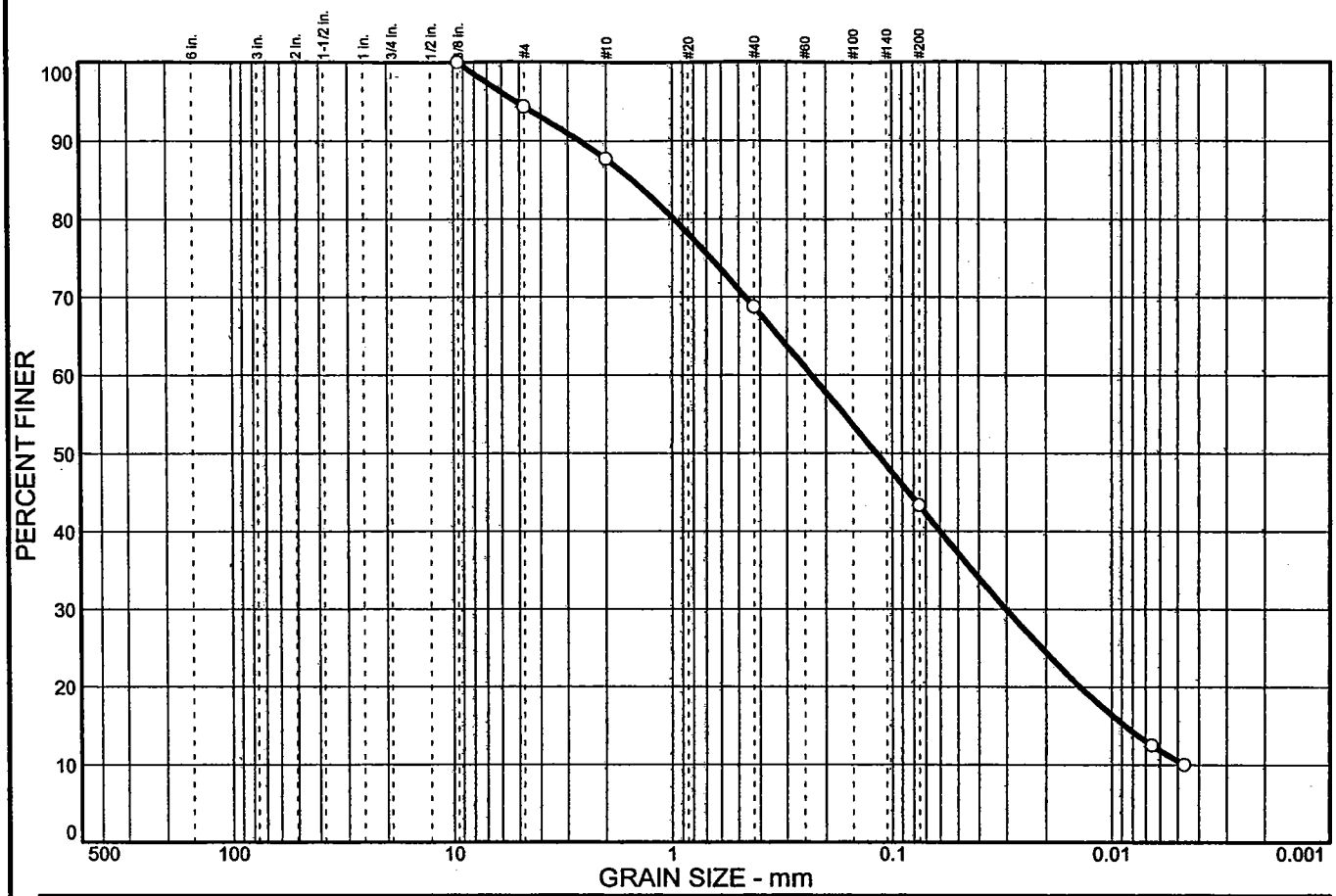
Moisture Content= 9.1%

Sample No.: 855 # 3, S-2A **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 23.0'-24.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.7	6.6	19.0	25.4	32.8	10.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	94.3		
#10	87.7		
#40	68.7		
#200	43.3		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 1.52 D_{60}= 0.232 D_{50}= 0.118
D_{30}= 0.0301 D_{15}= 0.0087 D_{10}= 0.0047
C_u= 49.92 C_c= 0.84

Classification

USCS= AASHTO=

Remarks

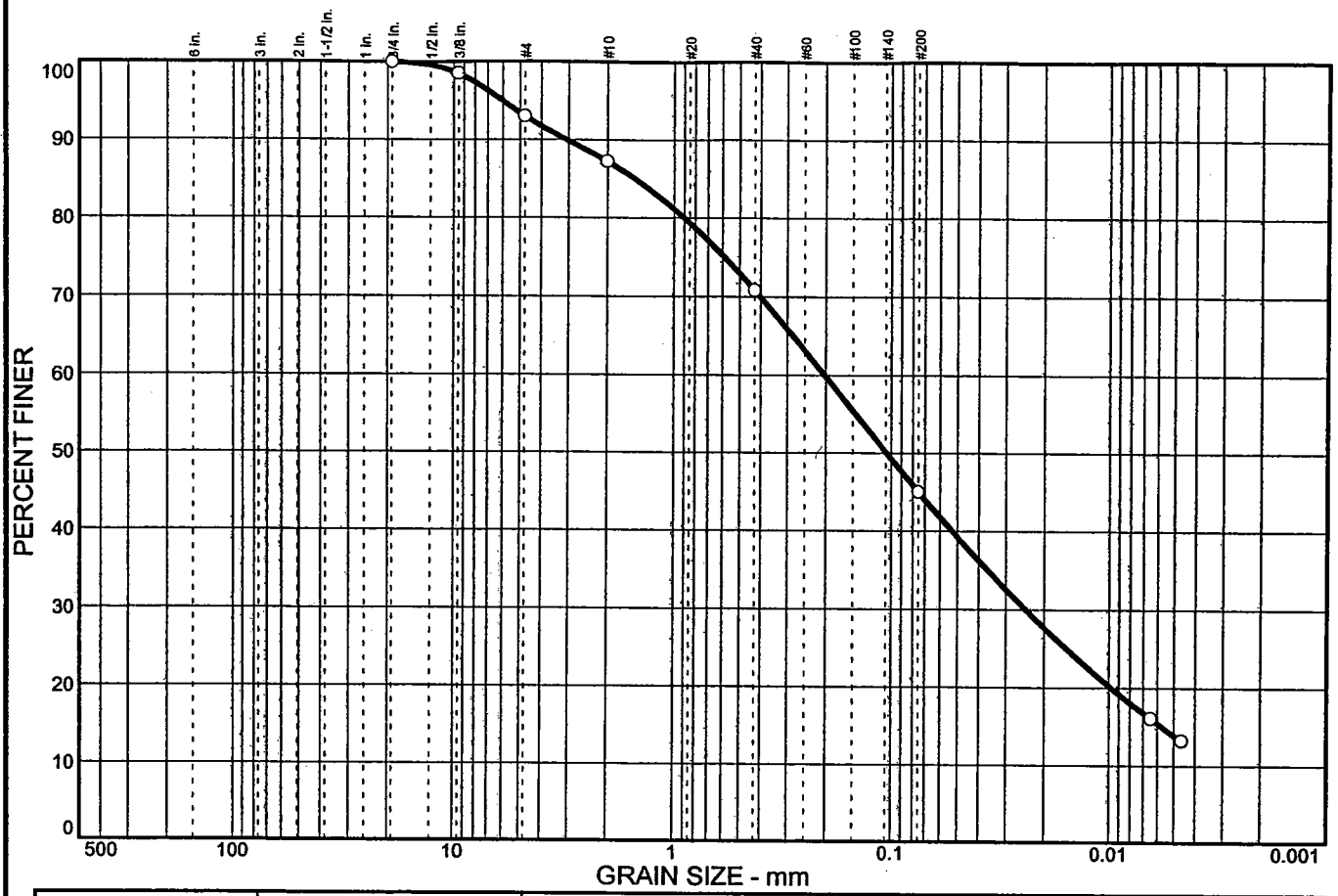
Moisture Content= 10.2%

Sample No.: 855 # 3, S-2B **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 23.0'-24.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	7.0	5.8	16.4	25.8	31.1	13.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.5		
#4	93.0		
#10	87.2		
#40	70.8		
#200	45.0		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 1.51 D_{60}= 0.202 D_{50}= 0.105
D_{30}= 0.0243 D_{15}= 0.0057 D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

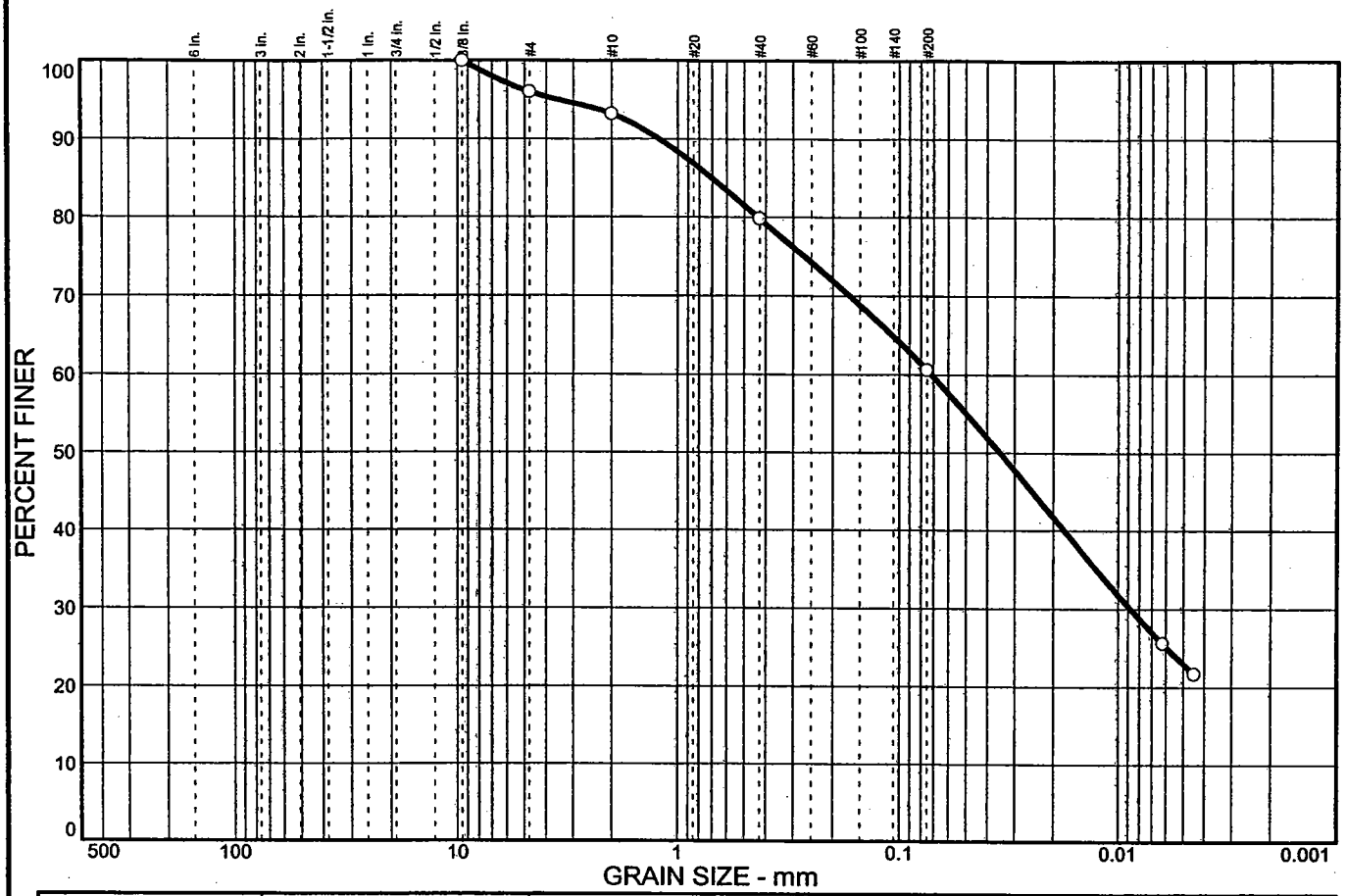
Moisture Content= 11.7%

Sample No.: 855 # 3, S-3A **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 24.0'-25.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	4.0	2.8	13.4	19.2	37.6	23.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	96.0		
#10	93.2		
#40	79.8		
#200	60.6		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.702 D_{60}= 0.0716 D_{50}= 0.0349
D_{30}= 0.0088 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= ML AASHTO= A-4(0)

Remarks

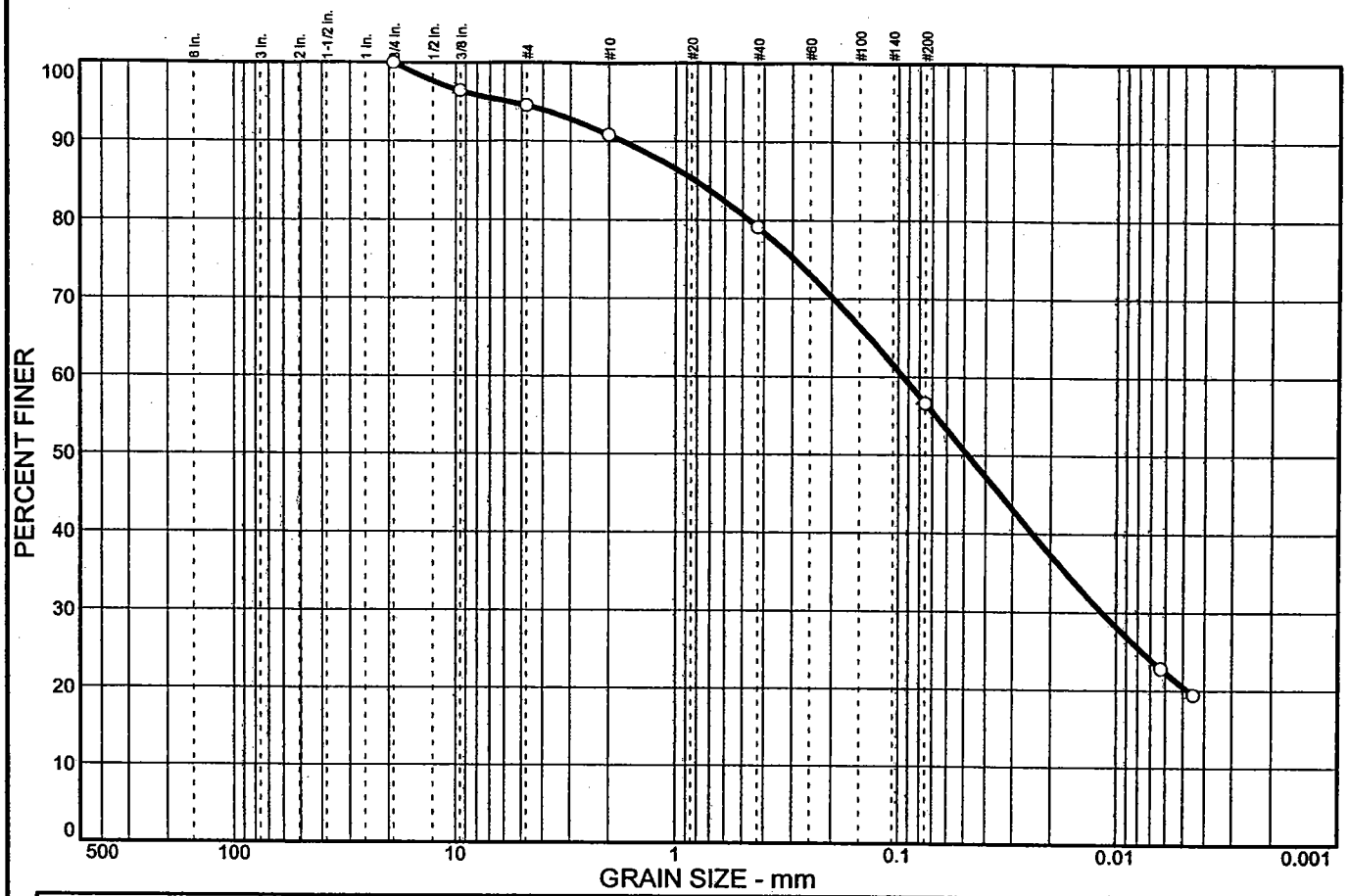
Moisture Content= 8.5%

Sample No.: 855 # 3, S-3B **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 24.0'-25.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216,
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.5	3.7	11.7	22.5	36.1	20.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	96.4		
#4	94.5		
#10	90.8		
#40	79.1		
#200	56.6		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.820 D_{60}= 0.0948 D_{50}= 0.0479
D_{30}= 0.0115 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= ML AASHTO= A-4(0)

Remarks

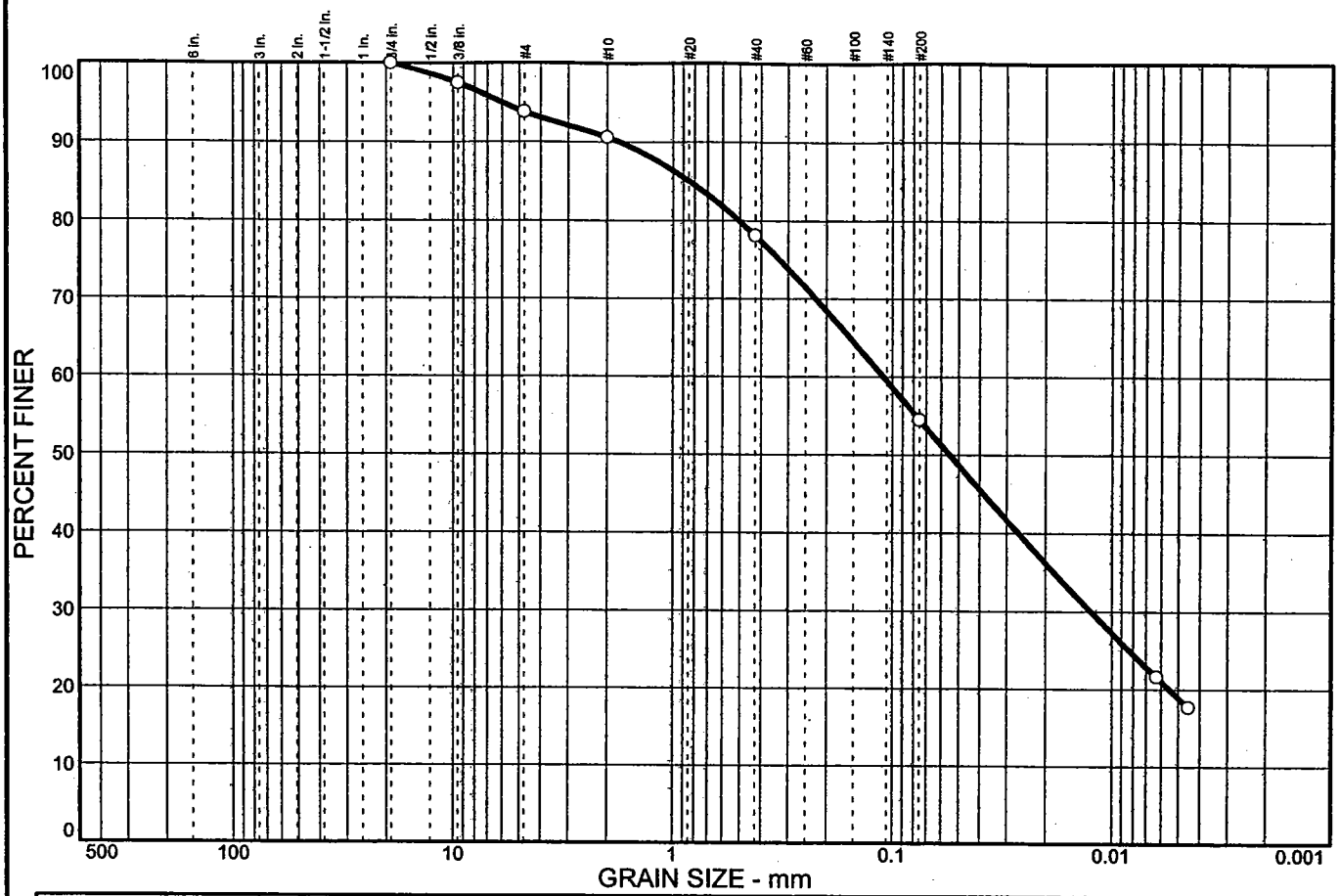
Moisture Content= 8.9%

Sample No.: 855 # 3, S-7 **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 28.0'-29.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216,
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	6.2	3.2	12.5	23.6	35.6	18.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	97.5		
#4	93.8		
#10	90.6		
#40	78.1		
#200	54.5		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.845 D_{60}= 0.110 D_{50}= 0.0547
D_{30}= 0.0124 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= ML AASHTO= A-4(0)

Remarks

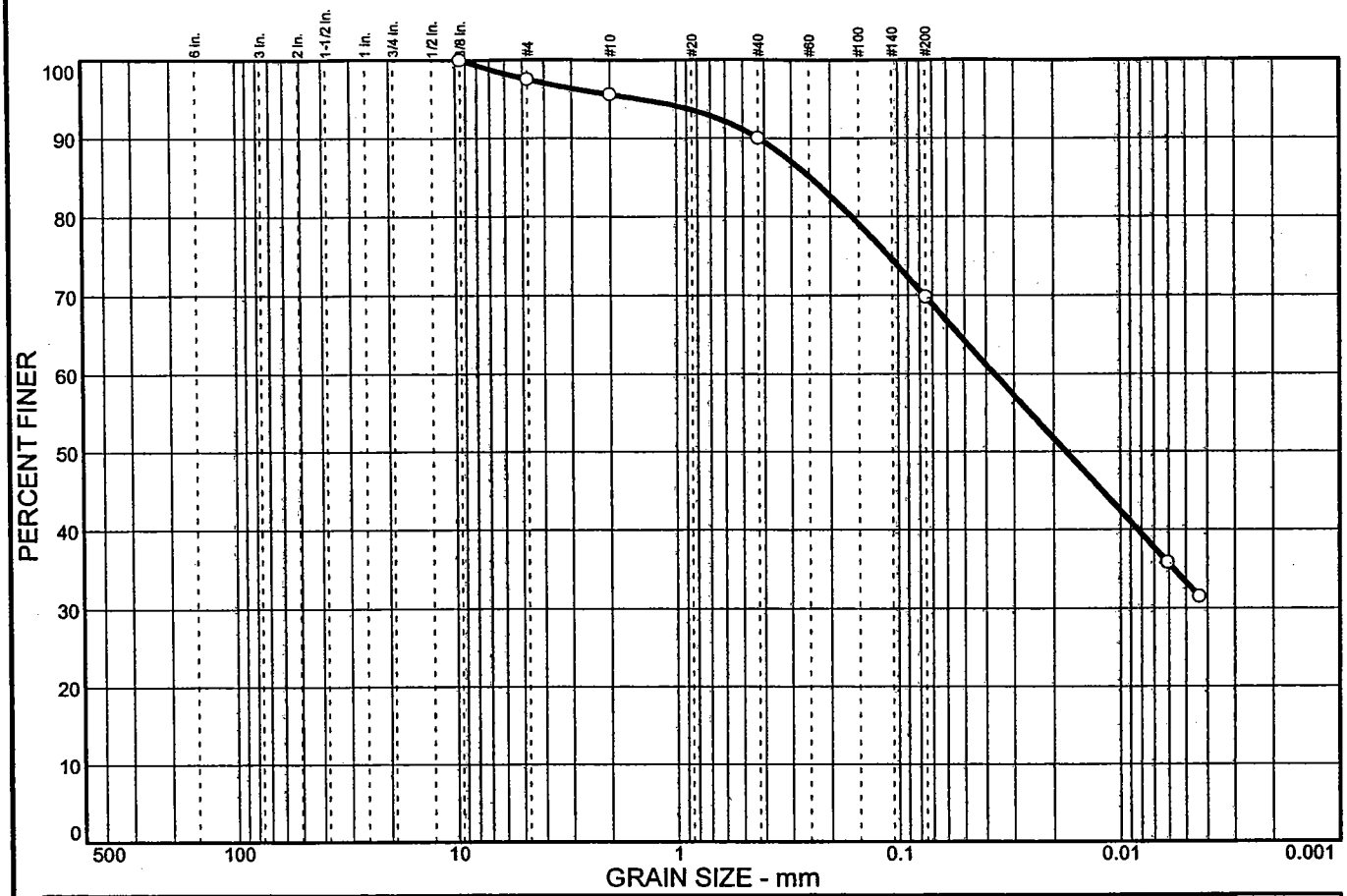
Moisture Content= 8.7%

Sample No.: 855 # 3, S-10 **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 31.0'-32.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216,
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.5	1.9	5.6	20.2	36.5	33.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	97.5		
#10	95.6		
#40	90.0		
#200	69.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.247 D_{60}= 0.0367 D_{50}= 0.0176
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

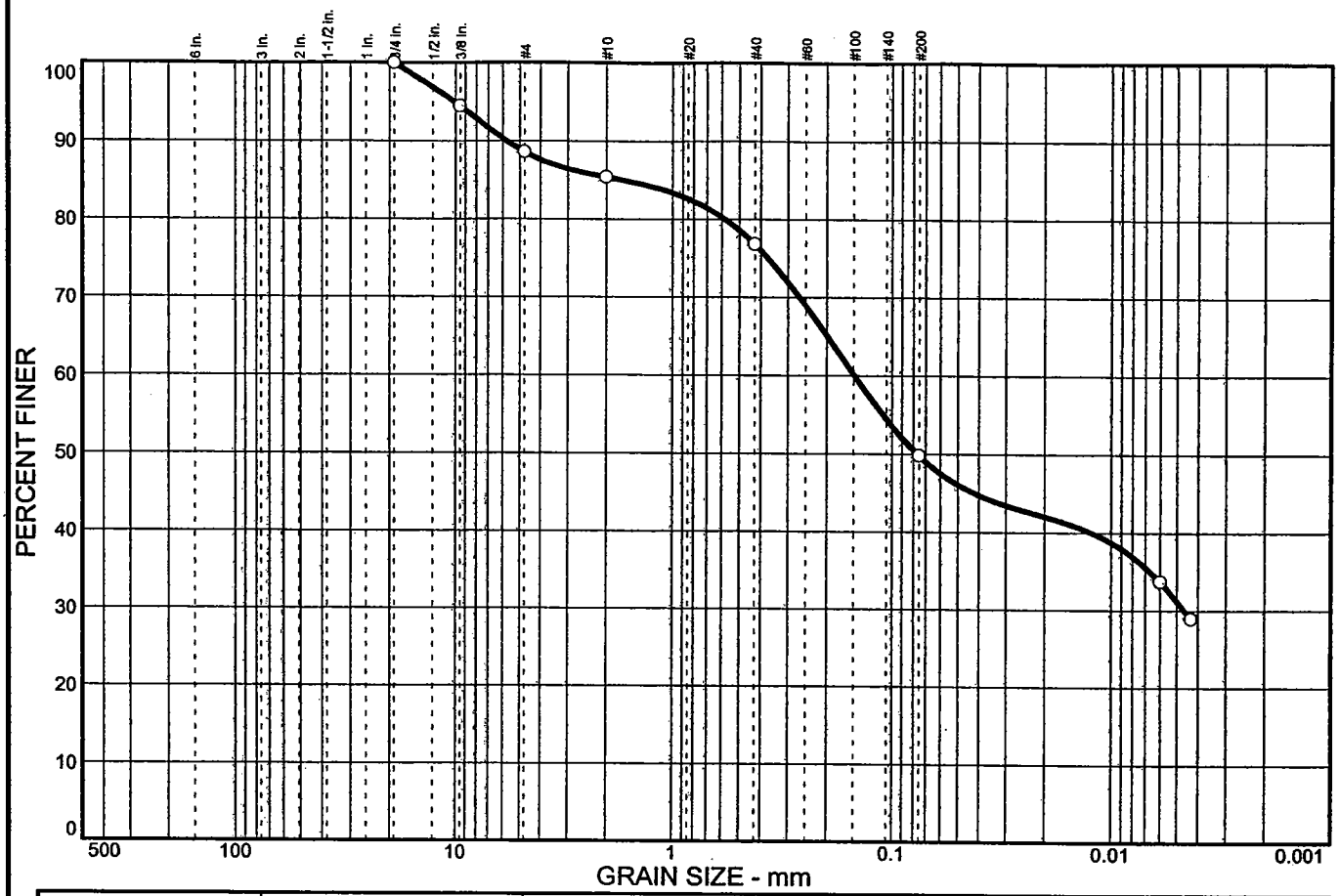
Moisture Content= 11.9%

Sample No.: 855 # 3, S-12 **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 53.0'-54.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216,
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	11.4	3.2	8.6	27.0	18.6	31.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	94.5		
#4	88.6		
#10	85.4		
#40	76.8		
#200	49.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 1.68 D_{60}= 0.149 D_{50}= 0.0763
D_{30}= 0.0046 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

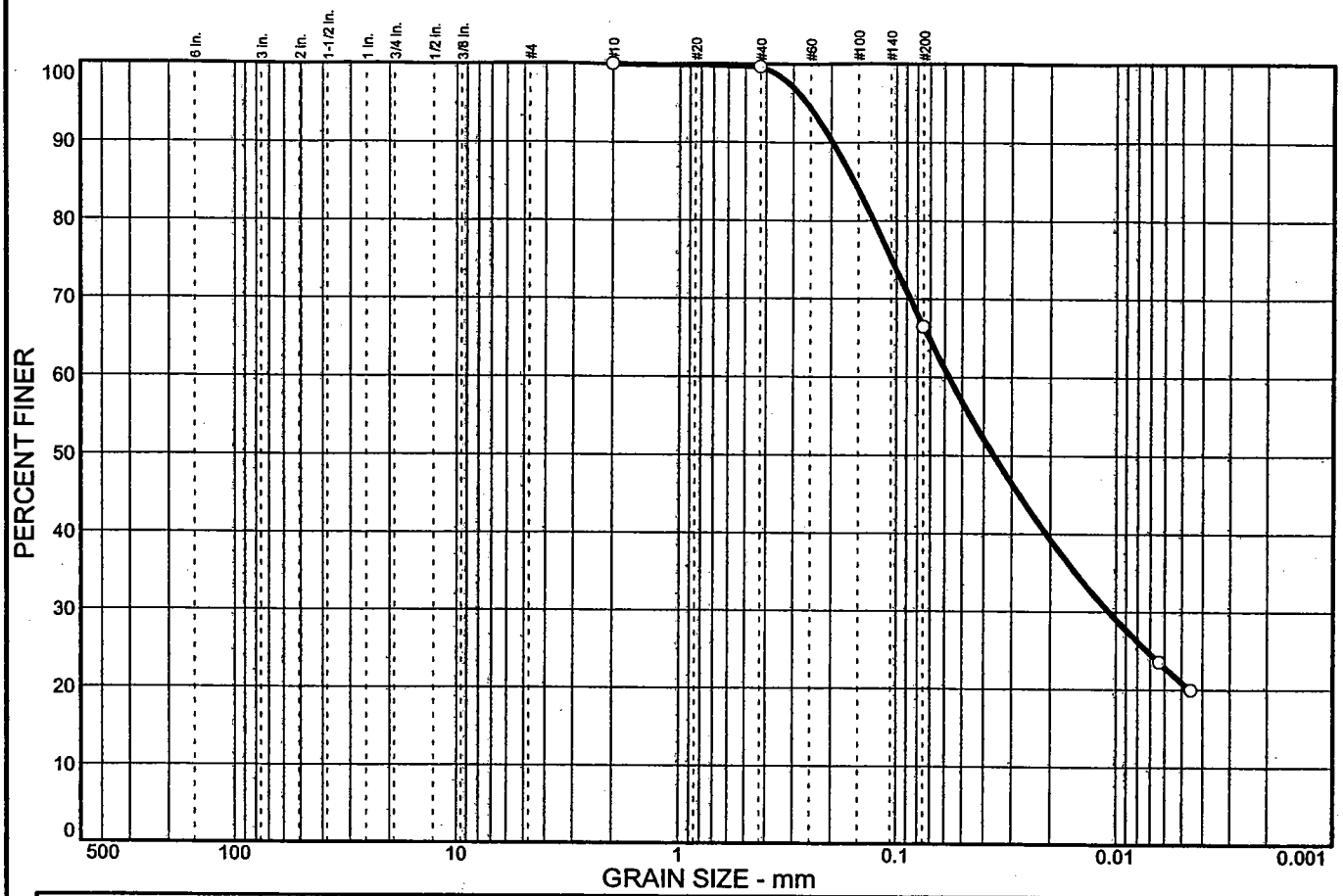
Moisture Content= 13.7%

Sample No.: 855 # 3, S-13A **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 54.0'-55.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216,
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	0.4	33.2	45.5	20.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#40	99.6		
#200	66.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.157 D_{60}= 0.0573 D_{50}= 0.0360
D_{30}= 0.0108 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

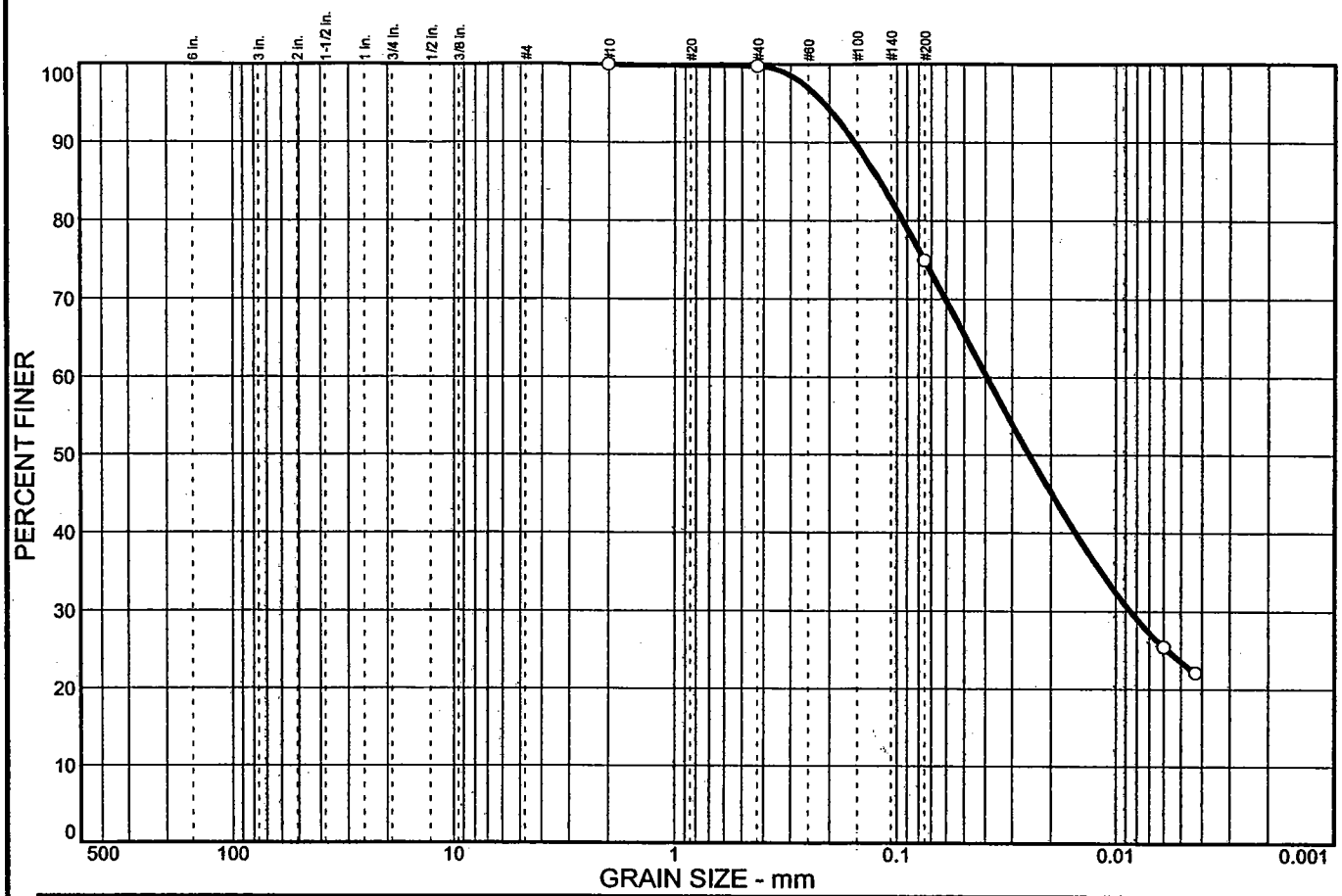
Moisture Content= 14.6%

Sample No.: 855 # 3, S-13B **Source of Sample:** **Date:** 8/22/02
Location: **Elev./Depth:** 54.0'-55.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216,
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	0.3	24.8	51.3	23.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#40	99.7		
#200	74.9		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.119 D_{60}= 0.0392 D_{50}= 0.0250
D_{30}= 0.0085 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

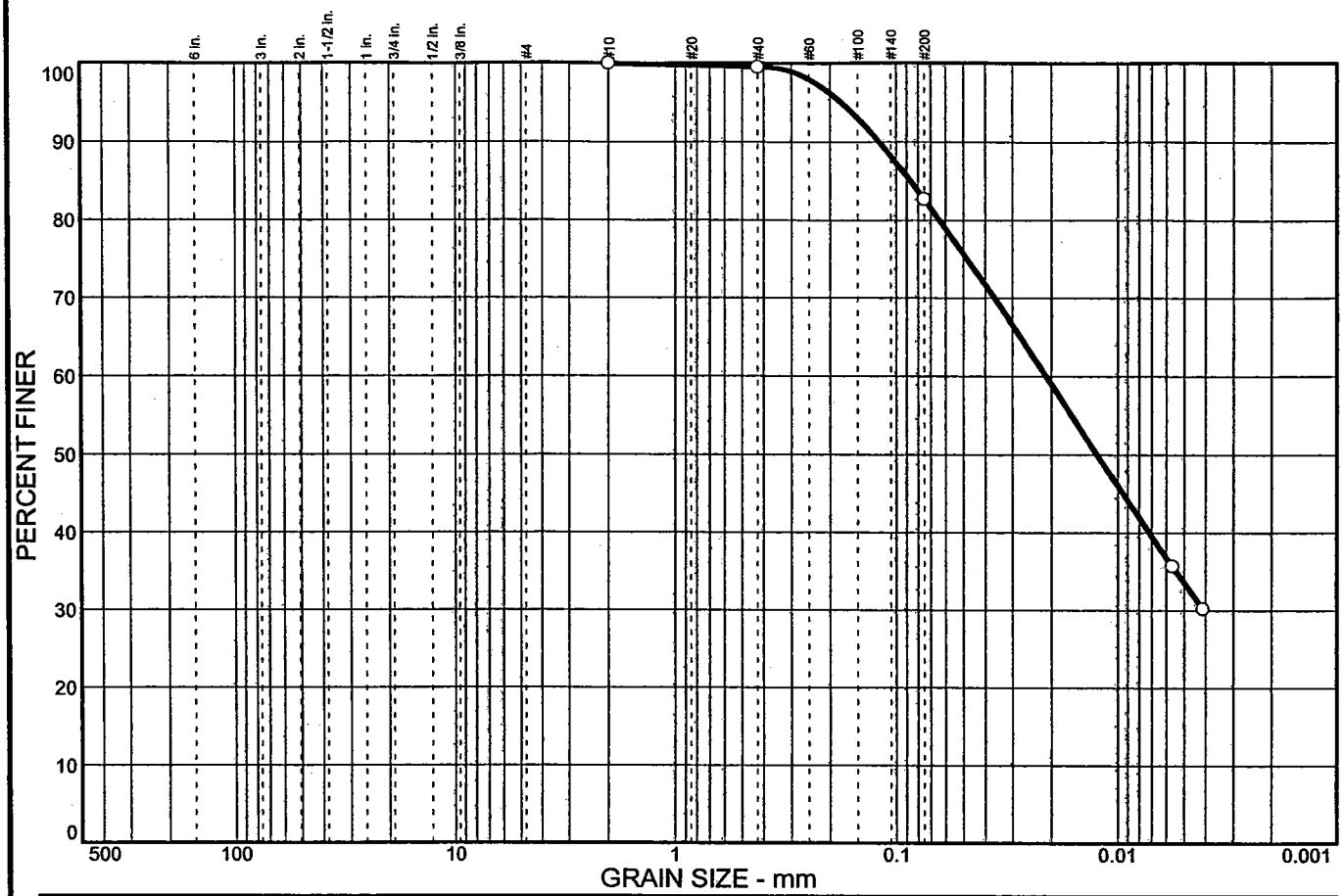
Moisture Content= 14.6%

Sample No.: 855 # 3, S-14A **Source of Sample:** **Date:** 8/28/02
Location: **Elev./Depth:** 55.0'-56.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216,
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	0.5	16.8	49.1	33.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#40	99.5		
#200	82.7		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.0863 D_{60}= 0.0211 D_{50}= 0.0124
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

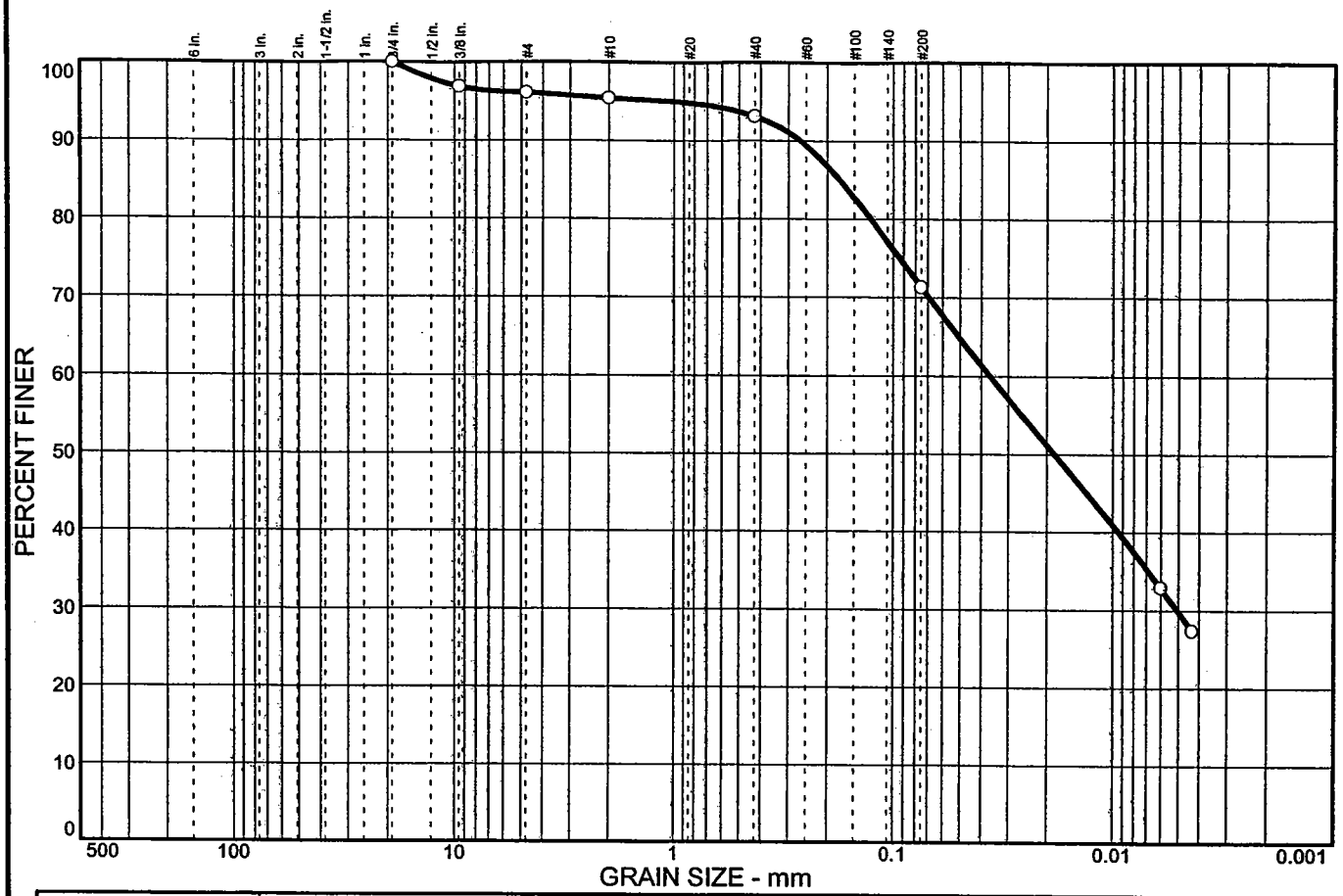
Moisture Content= 14.3%

Sample No.: 855 # 3, S-14B **Source of Sample:** **Date:** 8/28/02
Location: **Elev./Depth:** 55.0'-56.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216,
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.9	0.7	2.3	21.8	41.4	29.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	96.9		
#4	96.1		
#10	95.4		
#40	93.1		
#200	71.3		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.175 D_{60}= 0.0364 D_{50}= 0.0184
D_{30}= 0.0050 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

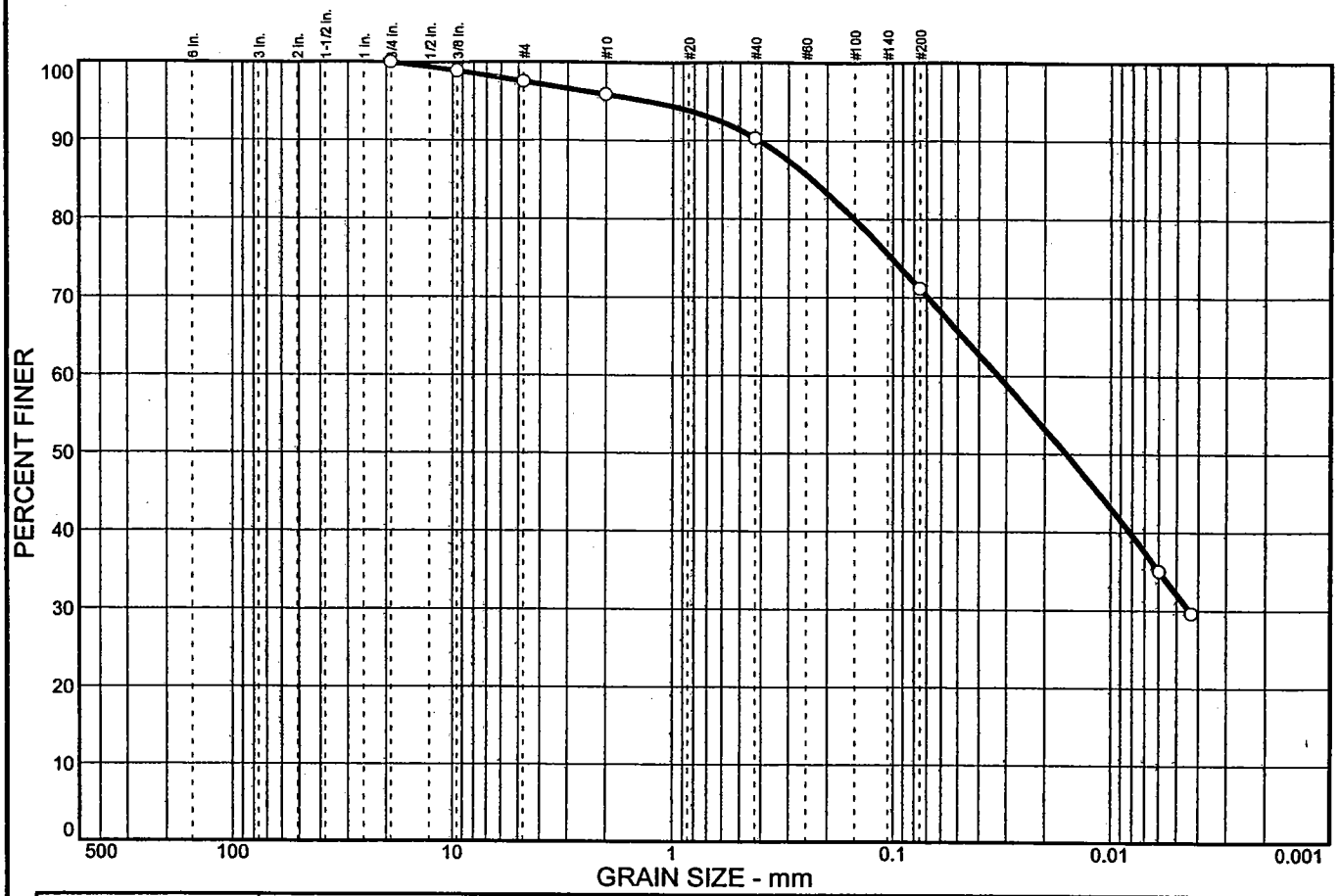
Moisture Content= 12.1%

Sample No.: 855 # 3, S-15 **Source of Sample:** **Date:** 8/28/02
Location: **Elev./Depth:** 56.0'-57.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216,
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.5	1.6	5.6	19.2	39.0	32.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.9		
#4	97.5		
#10	95.9		
#40	90.3		
#200	71.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.234 D_{60}= 0.0326 D_{50}= 0.0159
D_{30}= 0.0044 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

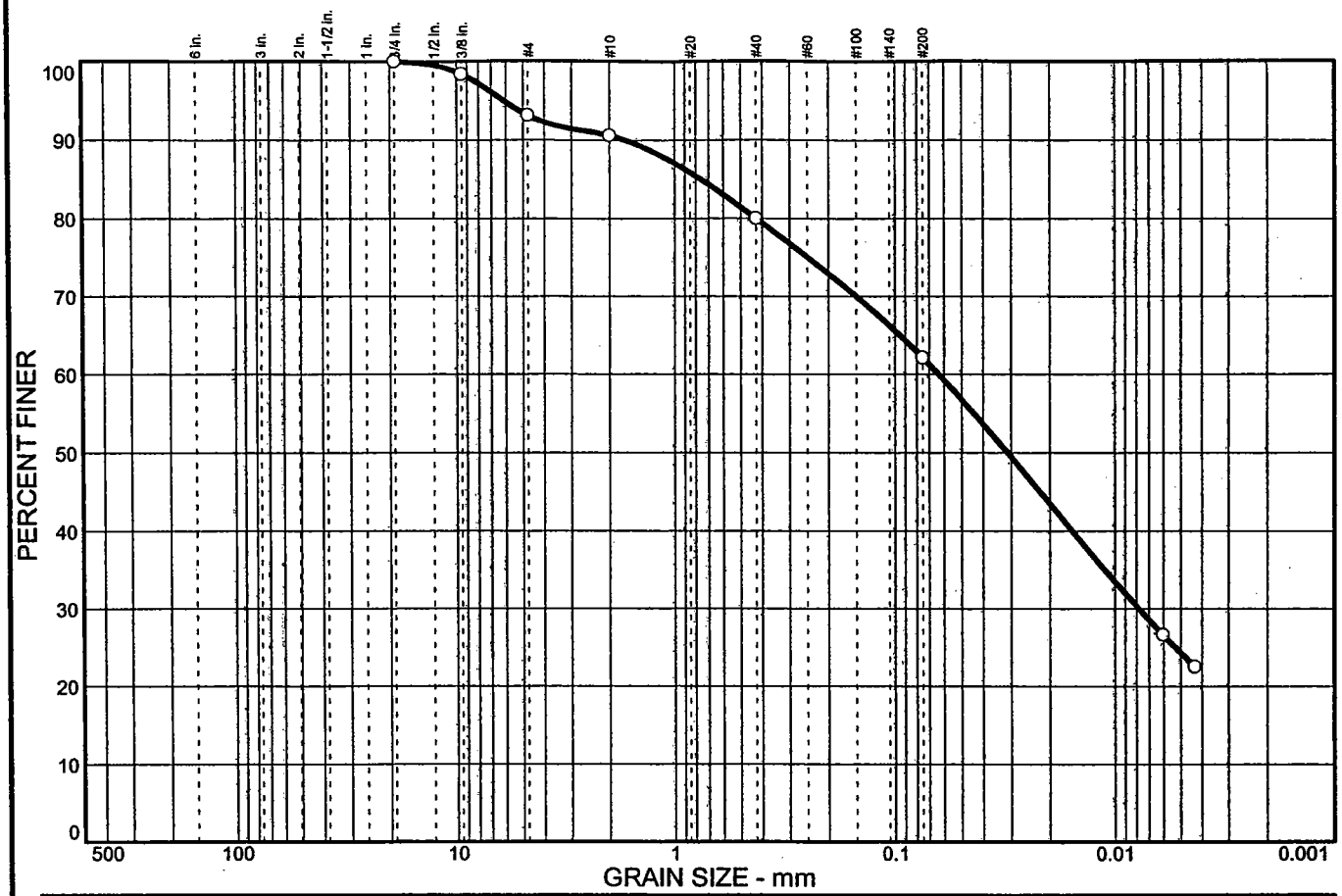
Moisture Content= 13.5%

Sample No.: 855 # 3, S-17 **Source of Sample:** **Date:** 8/28/02
Location: **Elev./Depth:** 58.0'-59.0'

DLZ

Client: Battelle
Project: West Jefferson North Site
Test Methods: ASTM D-421, D-422, D-2216,
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	6.9	2.5	10.6	17.9	37.8	24.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.4		
#4	93.1		
#10	90.6		
#40	80.0		
#200	62.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.760 D_{60}= 0.0636 D_{50}= 0.0310
D_{30}= 0.0078 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

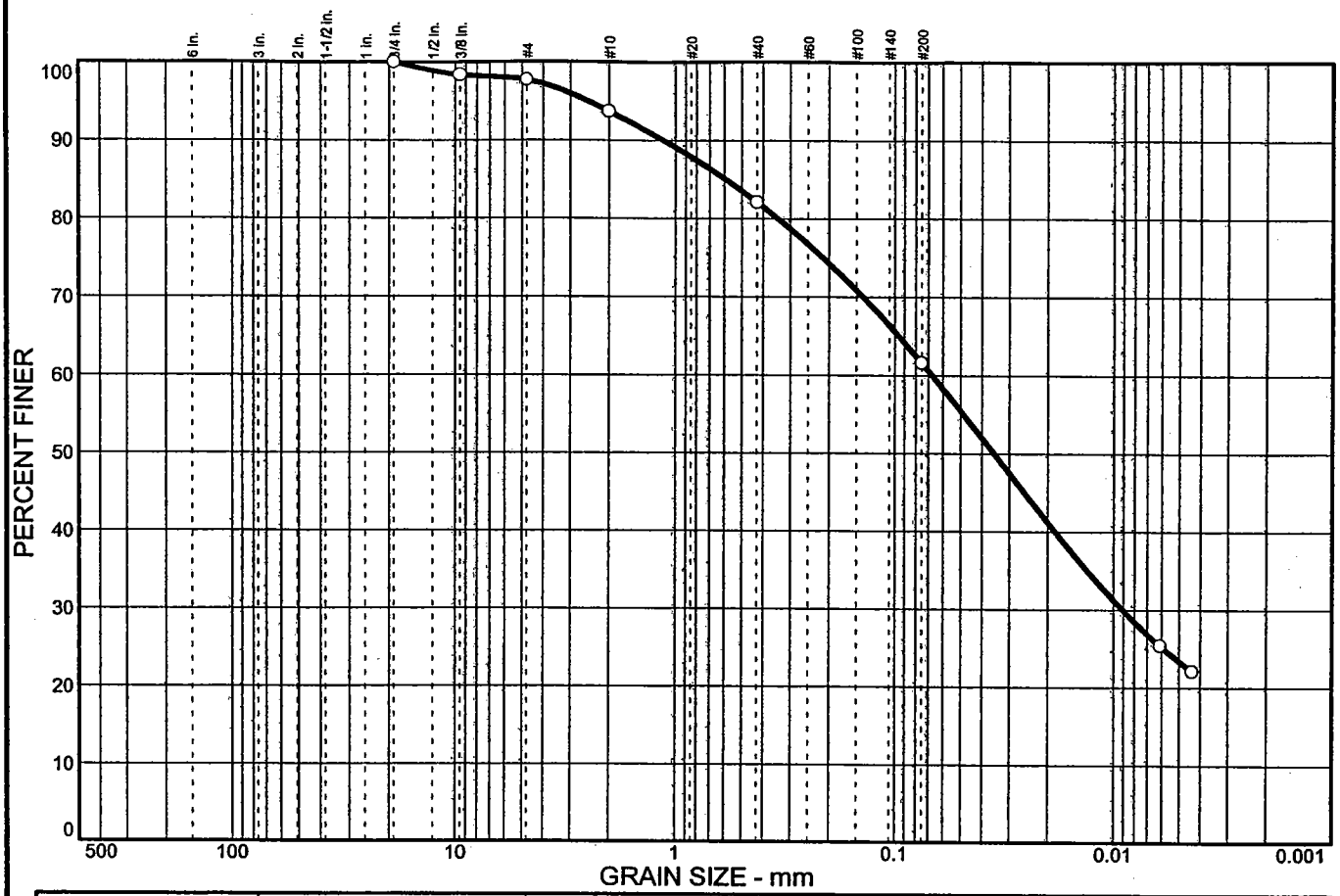
Moisture Content= 9.6%

Sample No.: JN-3 # 1, S-3 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 23.0'-24.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.3	4.0	11.6	20.5	38.2	23.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.4		
#4	97.7		
#10	93.7		
#40	82.1		
#200	61.6		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.590 D_{60}= 0.0672 D_{50}= 0.0351
D_{30}= 0.0091 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

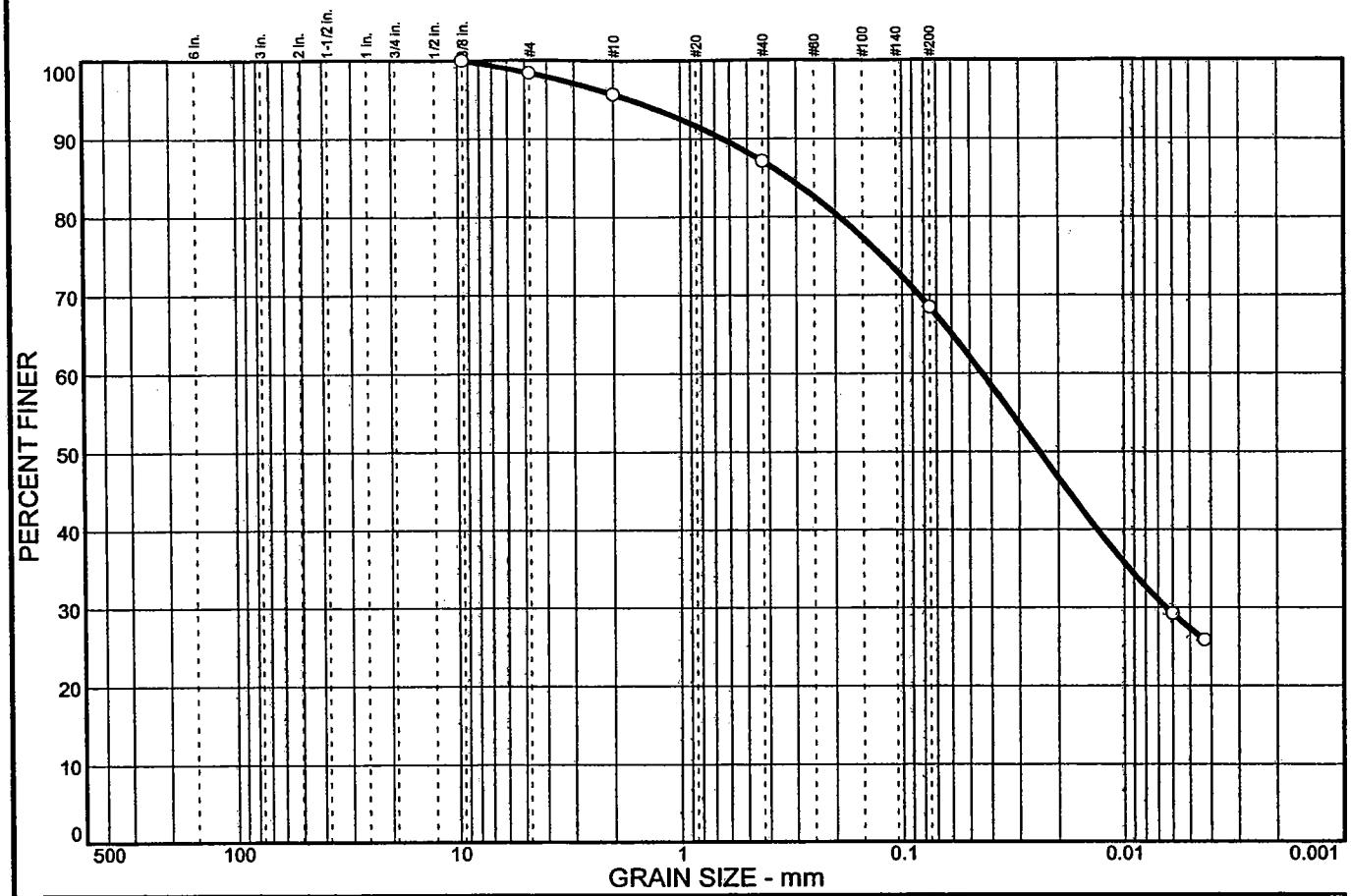
Moisture Content= 9.0%

Sample No.: JN-3 # 1, S-6 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 26.0'-27.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.6	2.7	8.6	18.7	41.1	27.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	98.4		
#10	95.7		
#40	87.1		
#200	68.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.327 D_{60}= 0.0439 D_{50}= 0.0243
D_{30}= 0.0064 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

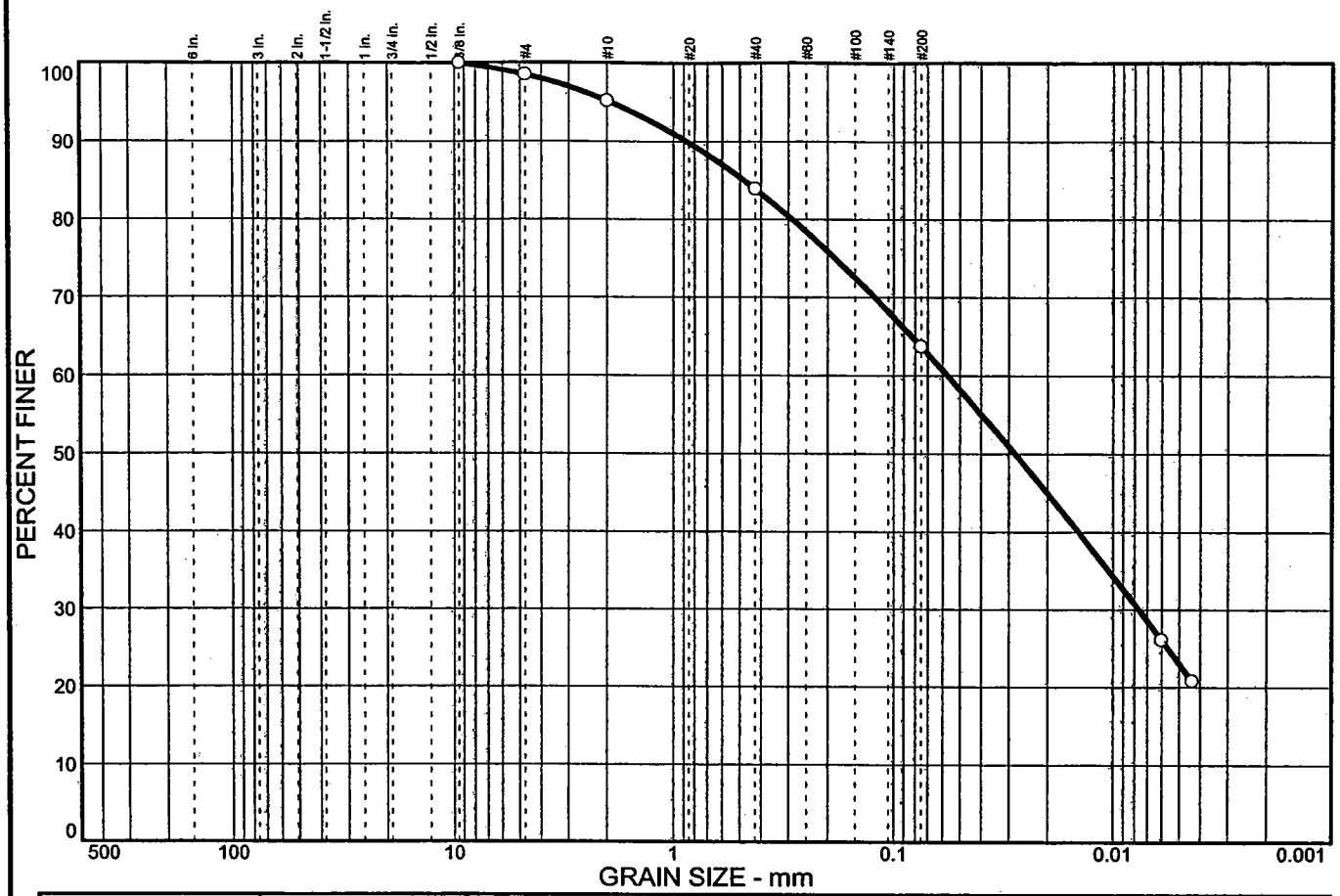
Moisture Content= 9.8%

Sample No.: JN-3 # 1, S-9 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 29.0'-30.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.5	3.3	11.3	20.2	40.6	23.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	98.5		
#10	95.2		
#40	83.9		
#200	63.7		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.478 D_{60}= 0.0570 D_{50}= 0.0280
D_{30}= 0.0076 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

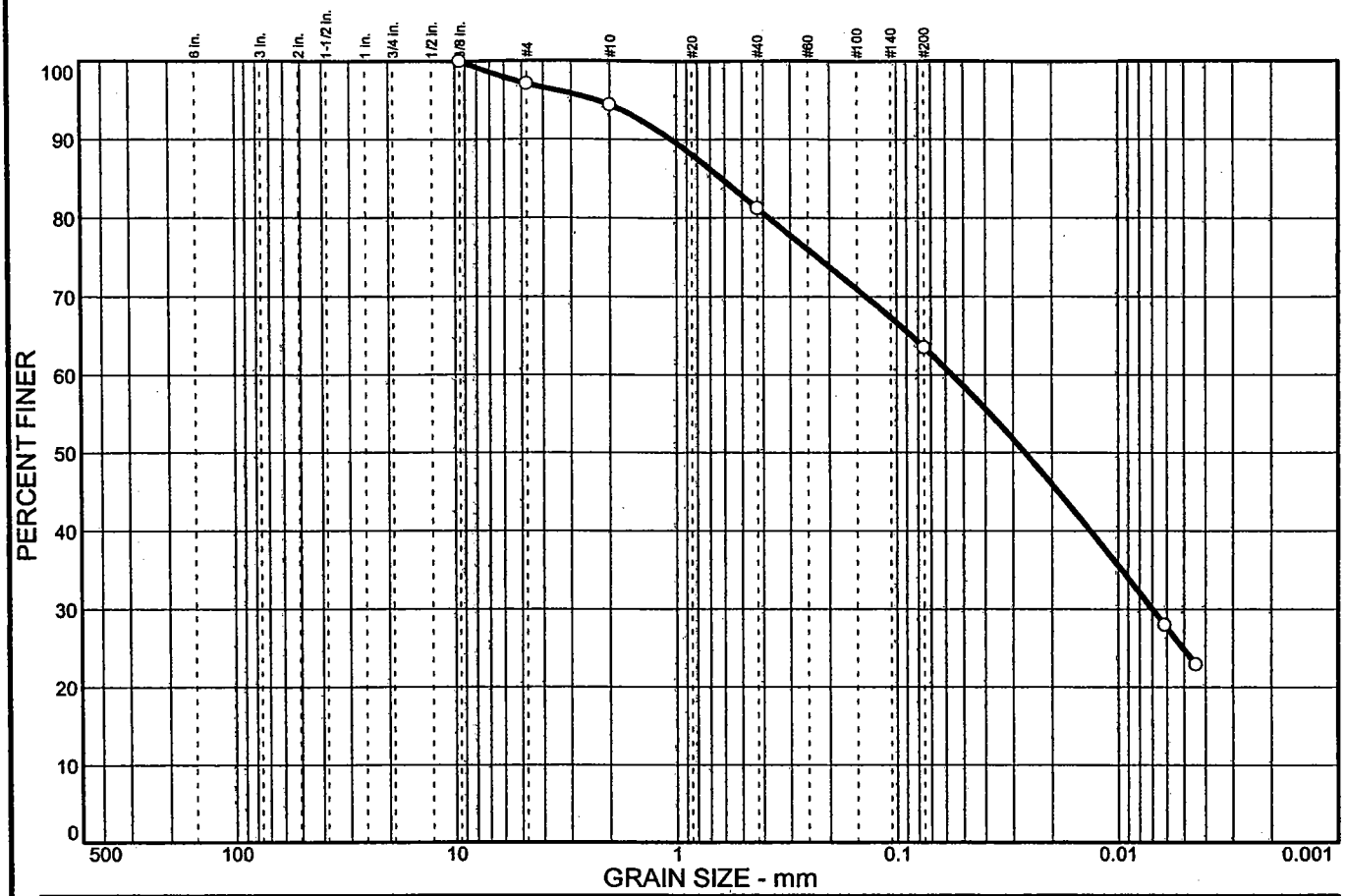
Moisture Content= 8.2%

Sample No.: JN-3 # 2, S-2 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 25.0'-26.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.9	2.7	13.2	17.7	38.7	24.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	97.1		
#10	94.4		
#40	81.2		
#200	63.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.620 D_{60}= 0.0560 D_{50}= 0.0264
D_{30}= 0.0070 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

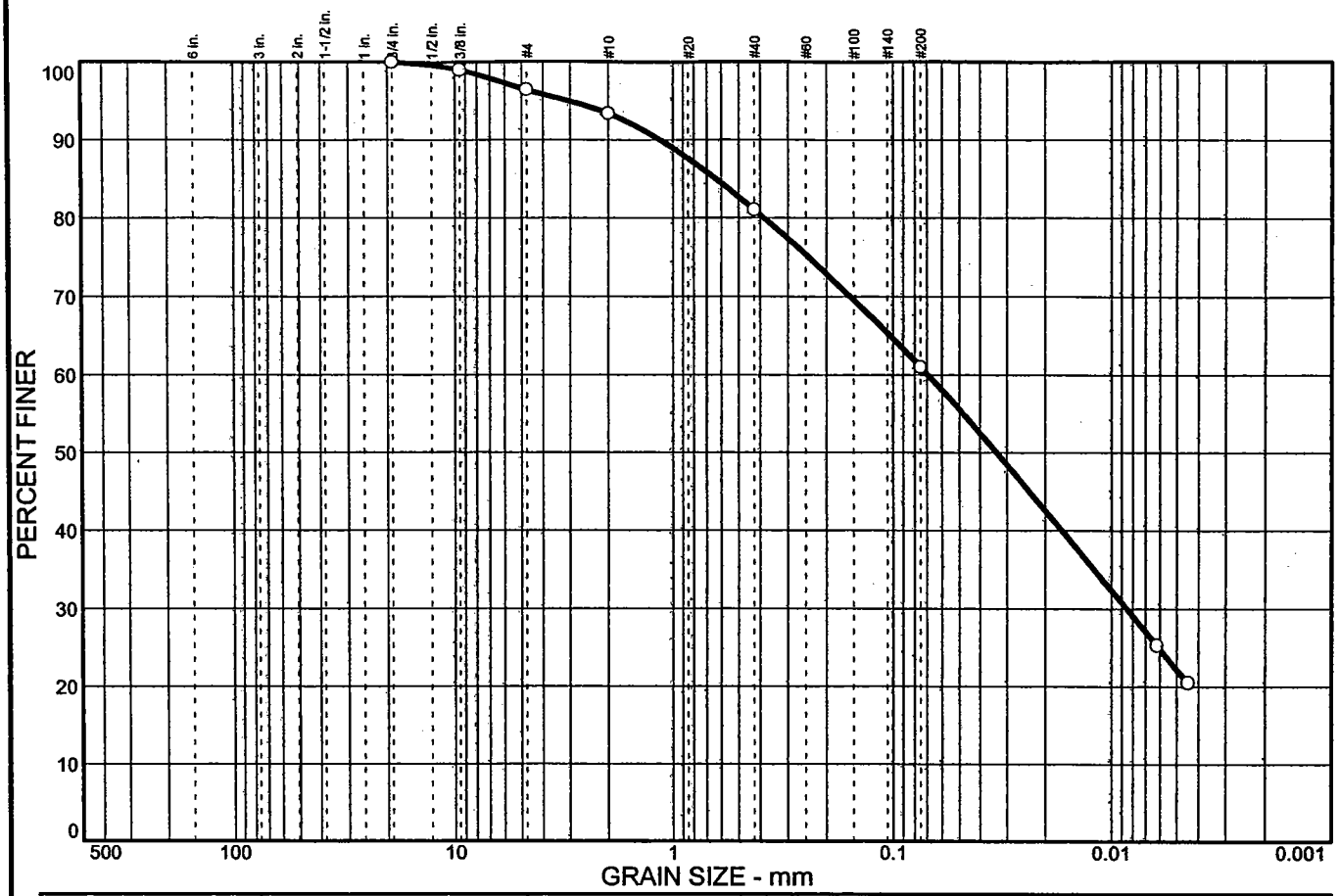
Moisture Content= 8.3%

Sample No.: JN-3 # 2, S-4 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 27.0'-28.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.6	3.0	12.4	20.0	38.8	22.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.0		
#4	96.4		
#10	93.4		
#40	81.0		
#200	61.0		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.638 D_{60}= 0.0695 D_{50}= 0.0335
D_{30}= 0.0085 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

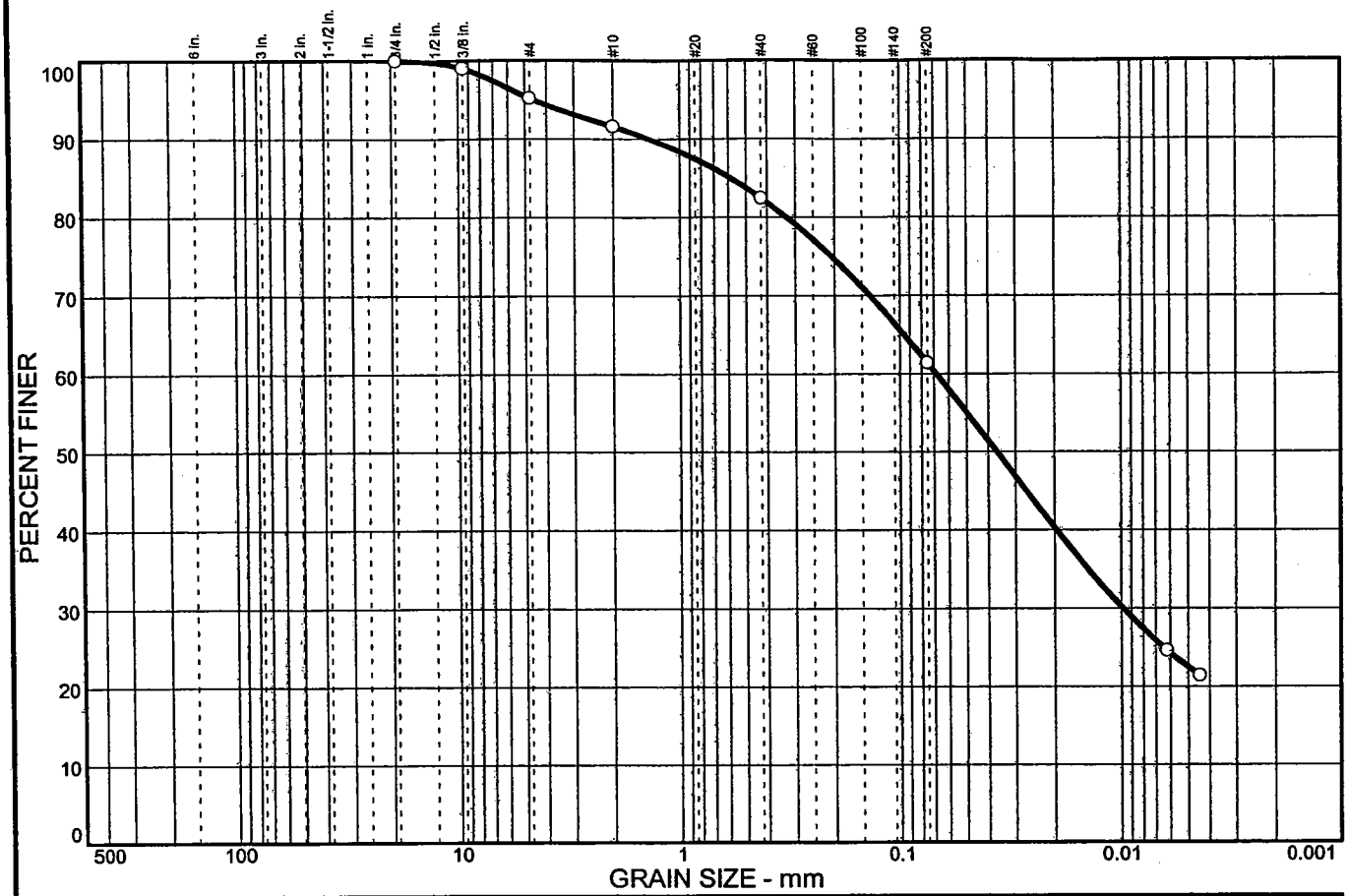
Moisture Content= 7.8%

Sample No.: JN-3 # 2, S-6 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 29.0'-30.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	4.8	3.6	9.2	21.0	38.9	22.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.0		
#4	95.2		
#10	91.6		
#40	82.4		
#200	61.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.589 D_{60}= 0.0684 D_{50}= 0.0365
D_{30}= 0.0098 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

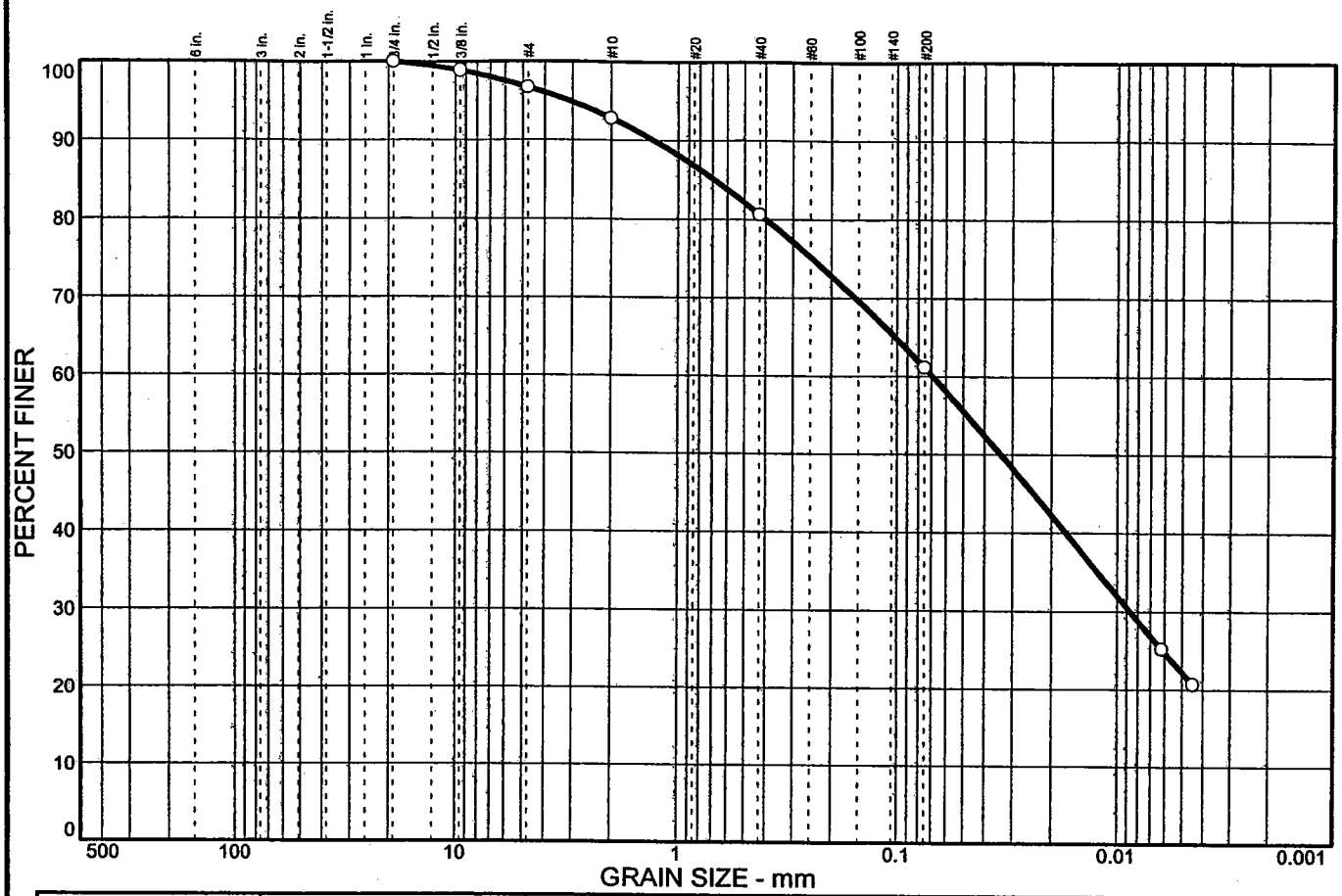
Moisture Content= 8.9%

Sample No.: JN-3 # 2, S-7 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 30.0'-31.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.3	3.9	12.2	19.5	38.8	22.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.9		
#4	96.7		
#10	92.8		
#40	80.6		
#200	61.1		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.686 D_{60}= 0.0690 D_{50}= 0.0338
D_{30}= 0.0087 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

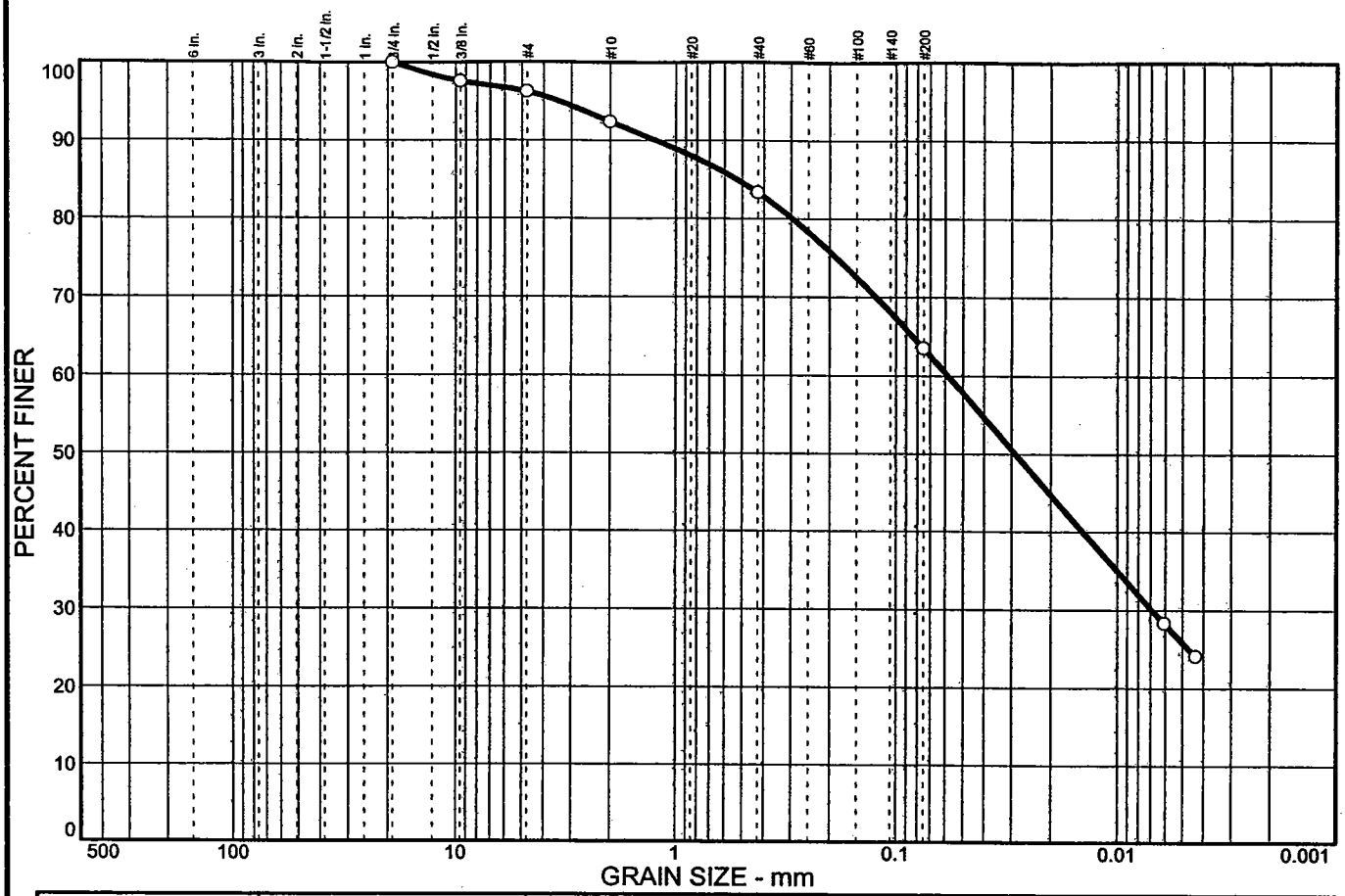
Moisture Content= 8.2%

Sample No.: JN-3 # 2, S-9 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 32.0'-33.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.8	3.8	9.1	19.8	37.6	25.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	97.6		
#4	96.2		
#10	92.4		
#40	83.3		
#200	63.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.530 D_{60}= 0.0582 D_{50}= 0.0288
D_{30}= 0.0069 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

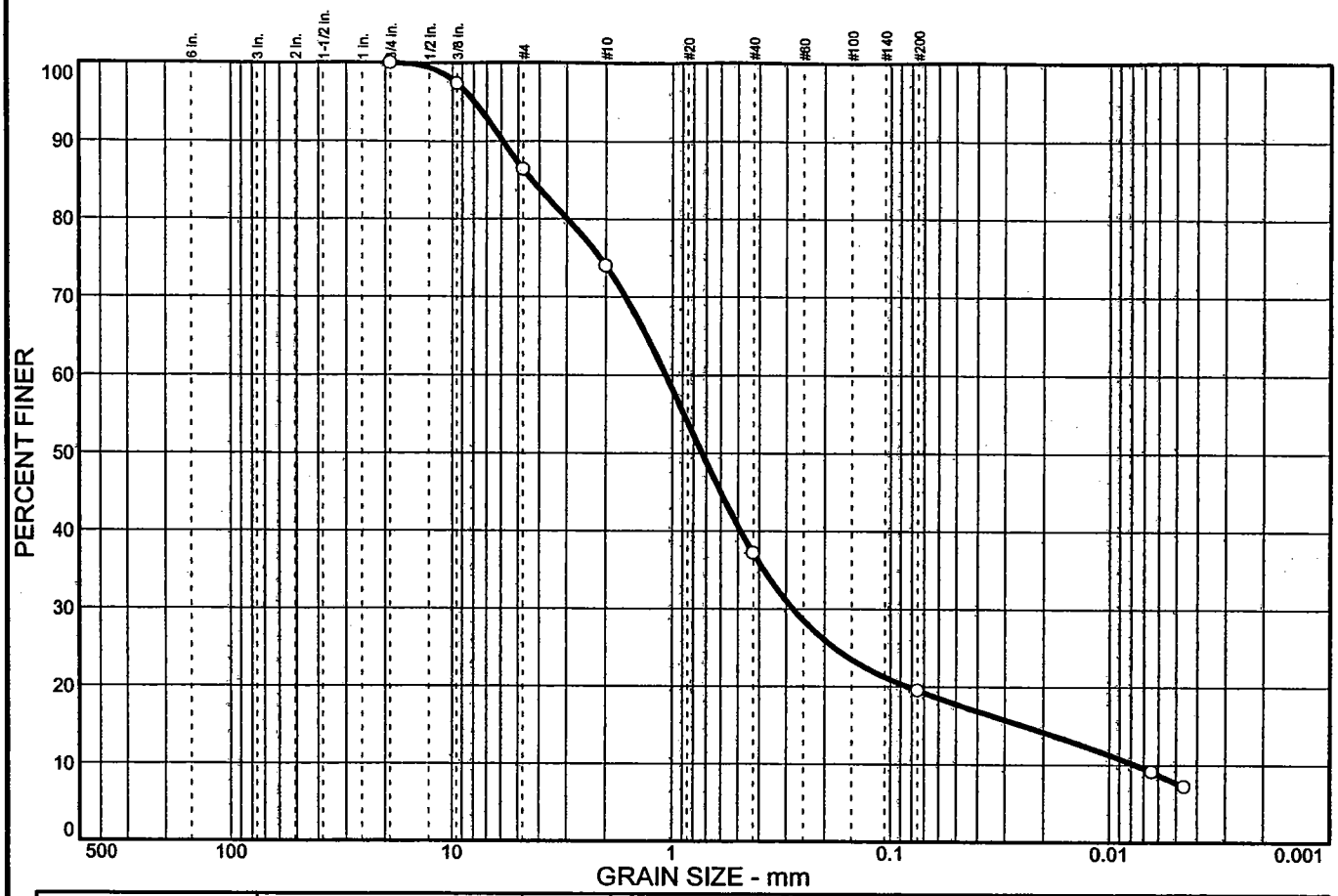
Moisture Content= 8.2%

Sample No.: JN-3 # 3, S-2 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 26.0'-27.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	13.6	12.4	36.8	17.7	11.8	7.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	97.4		
#4	86.4		
#10	74.0		
#40	37.2		
#200	19.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 4.33 D_{60}= 1.07 D_{50}= 0.731
D_{30}= 0.278 D_{15}= 0.0247 D_{10}= 0.0077
C_u= 139.95 C_c= 9.40

Classification

USCS= AASHTO=

Remarks

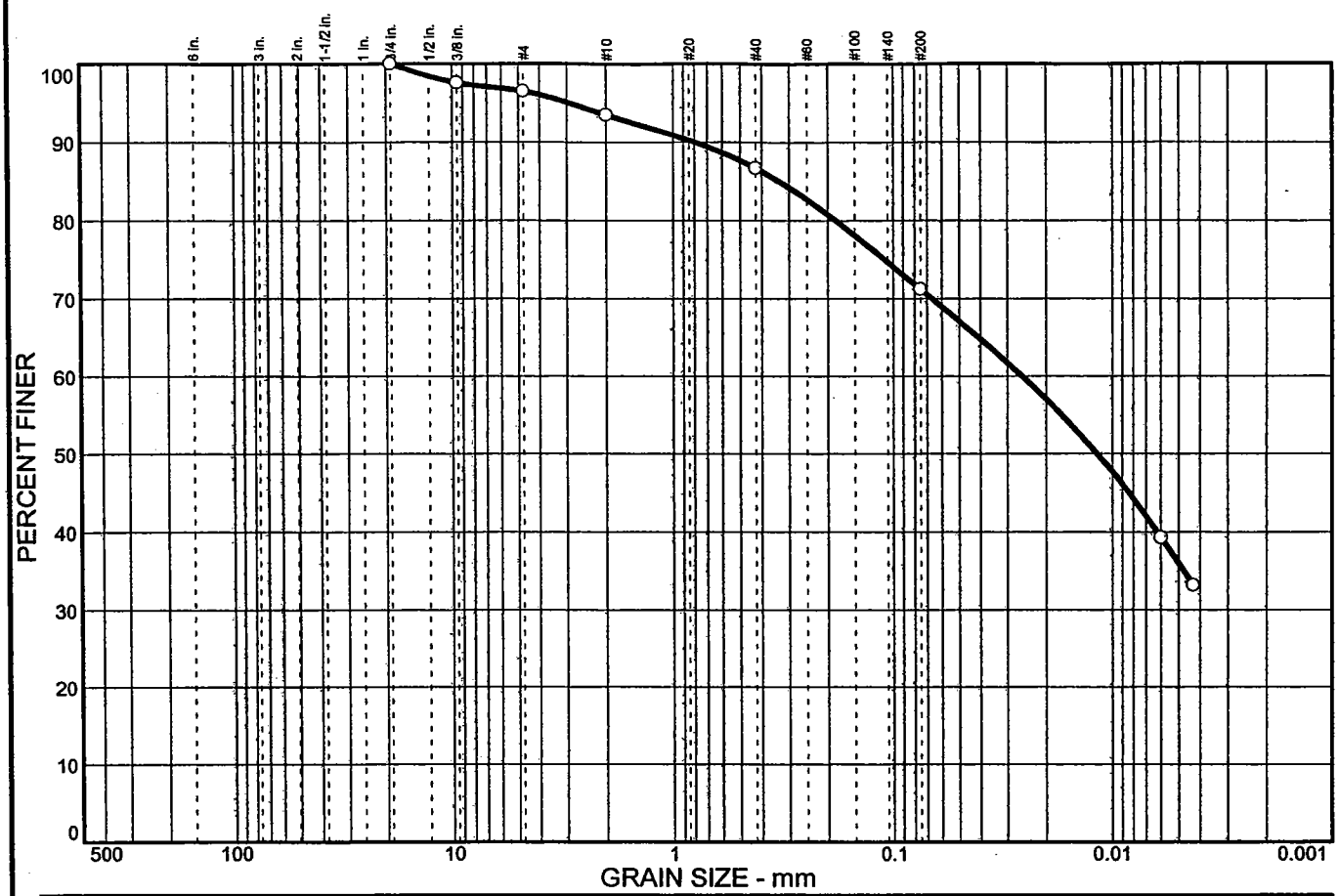
Moisture Content= 7.2%

Sample No.: JN-3 # 3, S-3A **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 27.0'-28.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.5	3.0	6.8	15.5	35.2	36.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	97.6		
#4	96.5		
#10	93.5		
#40	86.7		
#200	71.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.332 D_{60}= 0.0257 D_{50}= 0.0117
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

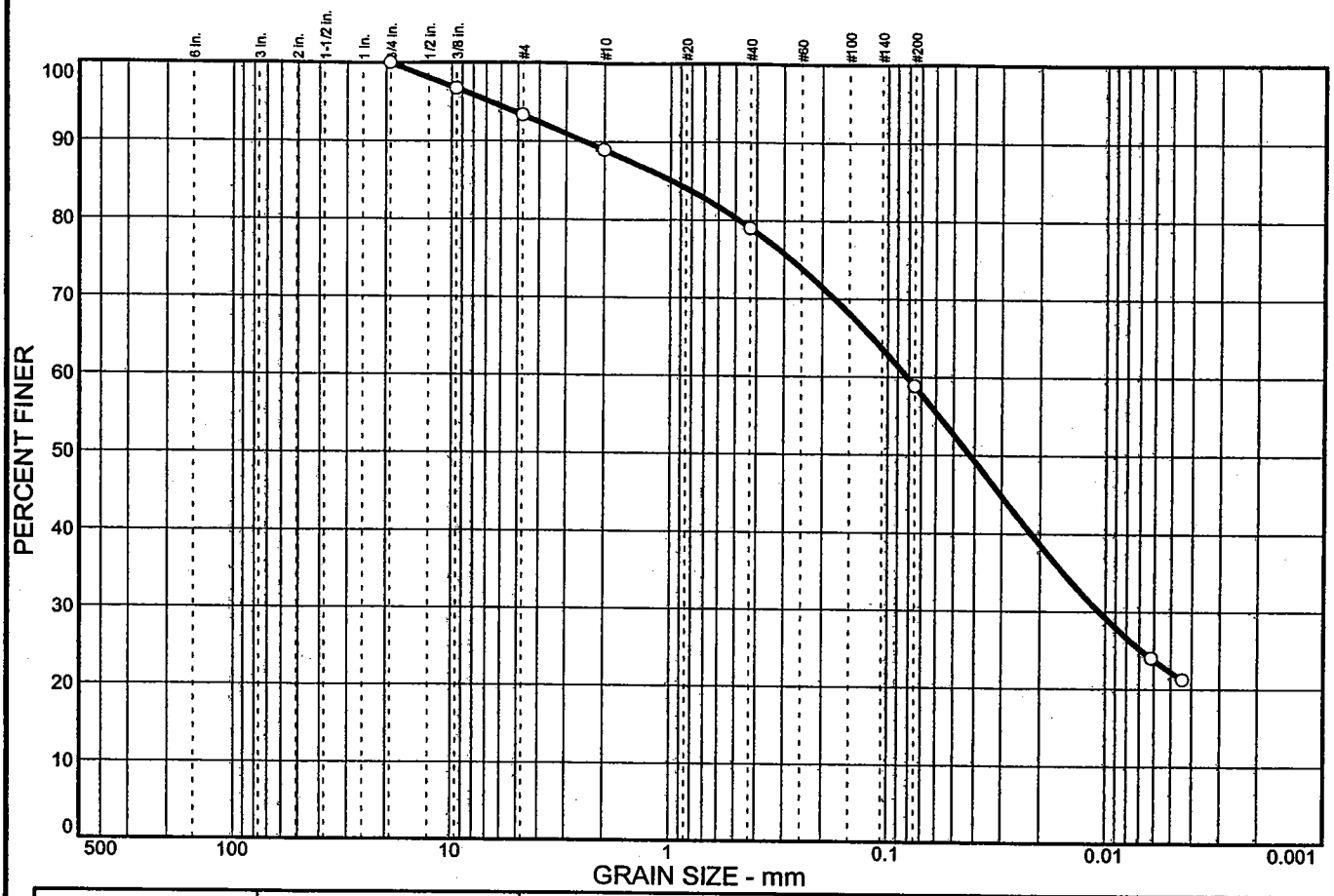
Moisture Content= 10.6%

Sample No.: JN-3 # 3, S-3B **Source of Sample:** **Date:** 9/5/02
Location: **Elev./Depth:** 27.0'-28.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	6.7	4.4	9.9	20.2	36.6	22.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	96.7		
#4	93.3		
#10	88.9		
#40	79.0		
#200	58.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.986 D_{60}= 0.0815 D_{50}= 0.0419
D_{30}= 0.0107 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

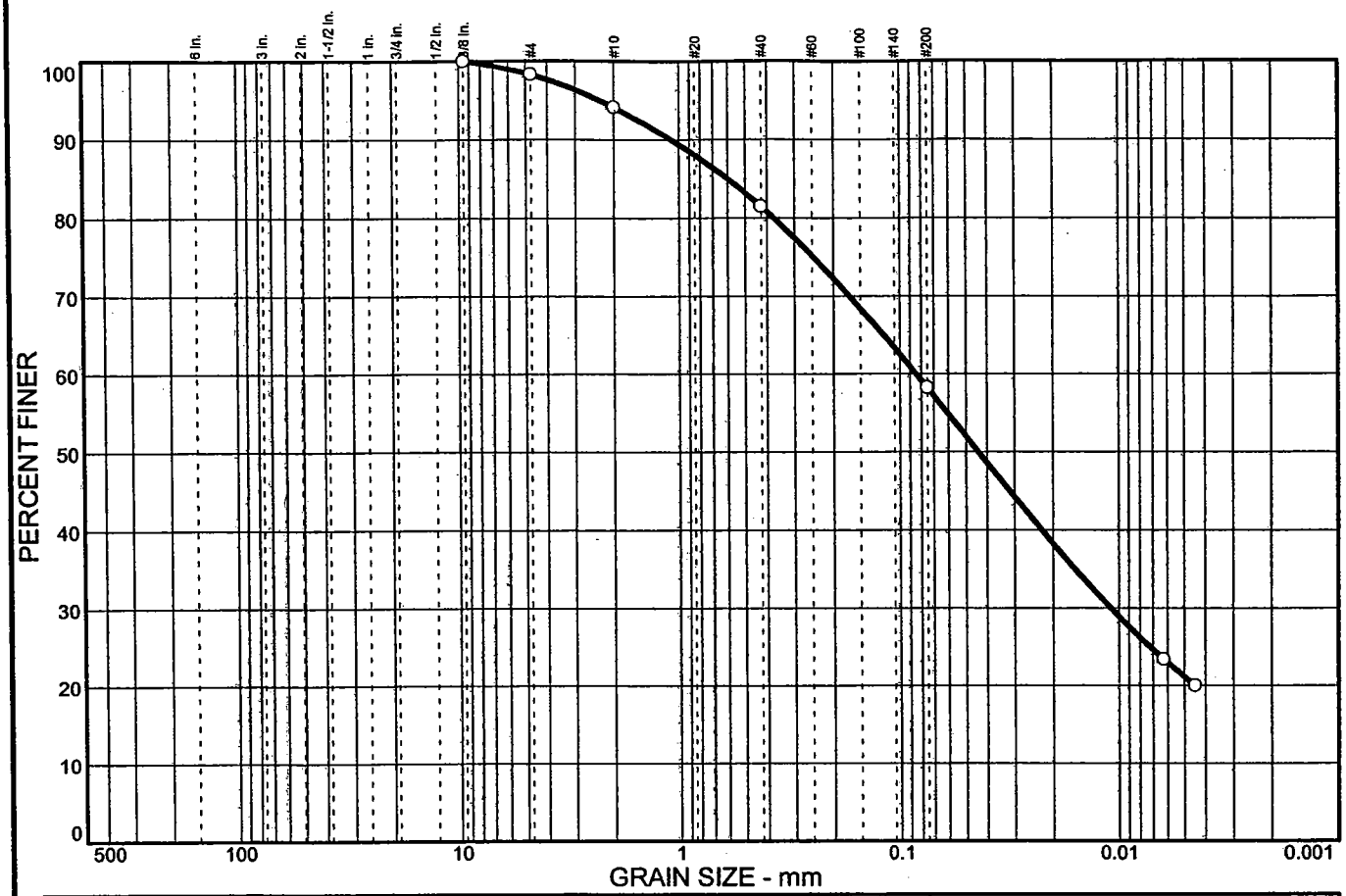
Moisture Content= 7.6%

Sample No.: JN-3 # 3, S-5 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 29.0'-30.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.7	4.2	12.6	23.3	37.1	21.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	98.3		
#10	94.1		
#40	81.5		
#200	58.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.601 D_{60}= 0.0845 D_{50}= 0.0438
D_{30}= 0.0109 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

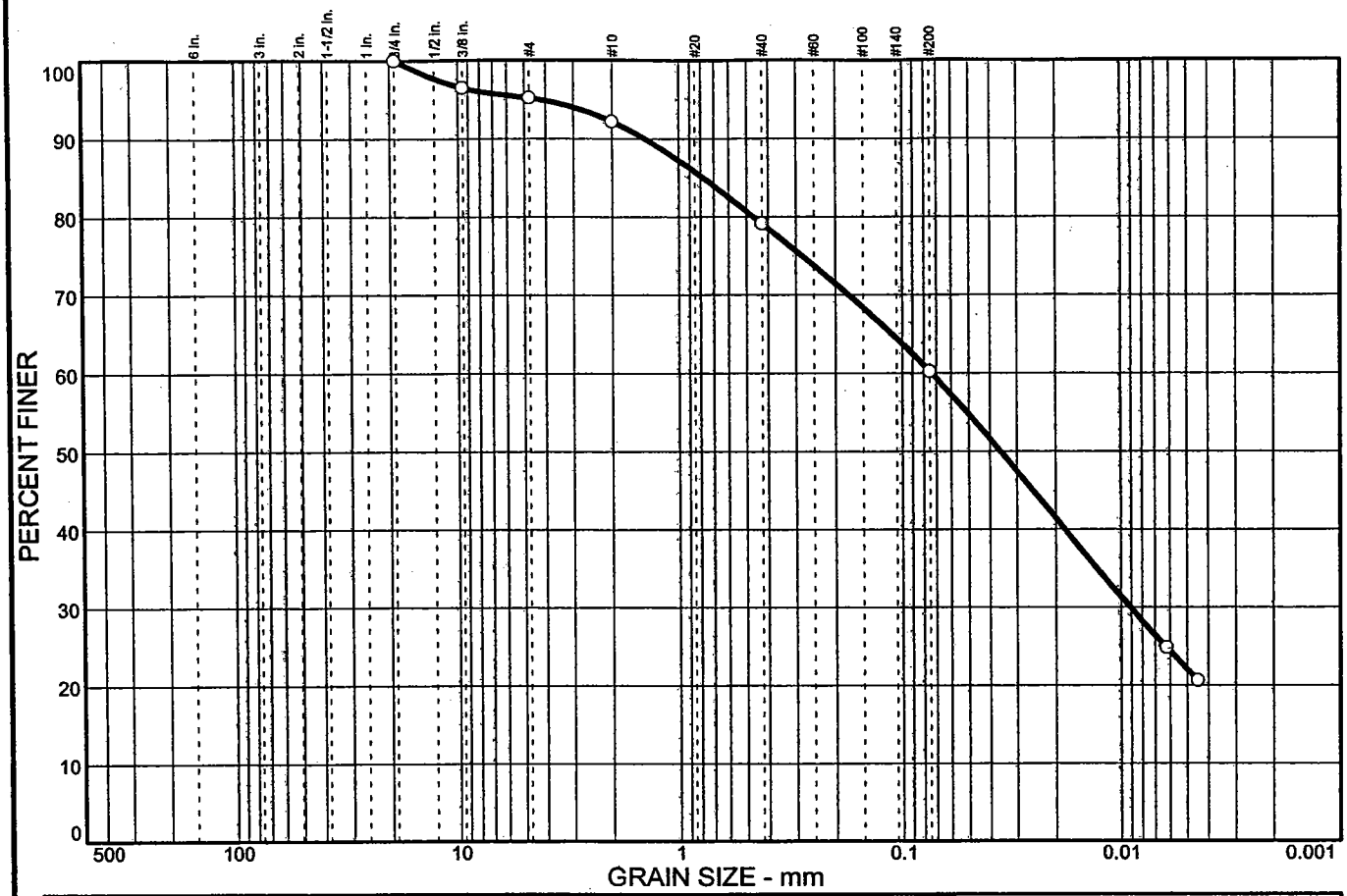
Moisture Content= 7.8%

Sample No.: JN-3 # 3, S-8 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 32.0'-33.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	4.8	3.0	13.1	18.9	38.1	22.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	96.5		
#4	95.2		
#10	92.2		
#40	79.1		
#200	60.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.781 D_{60}= 0.0738 D_{50}= 0.0357
D_{30}= 0.0091 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

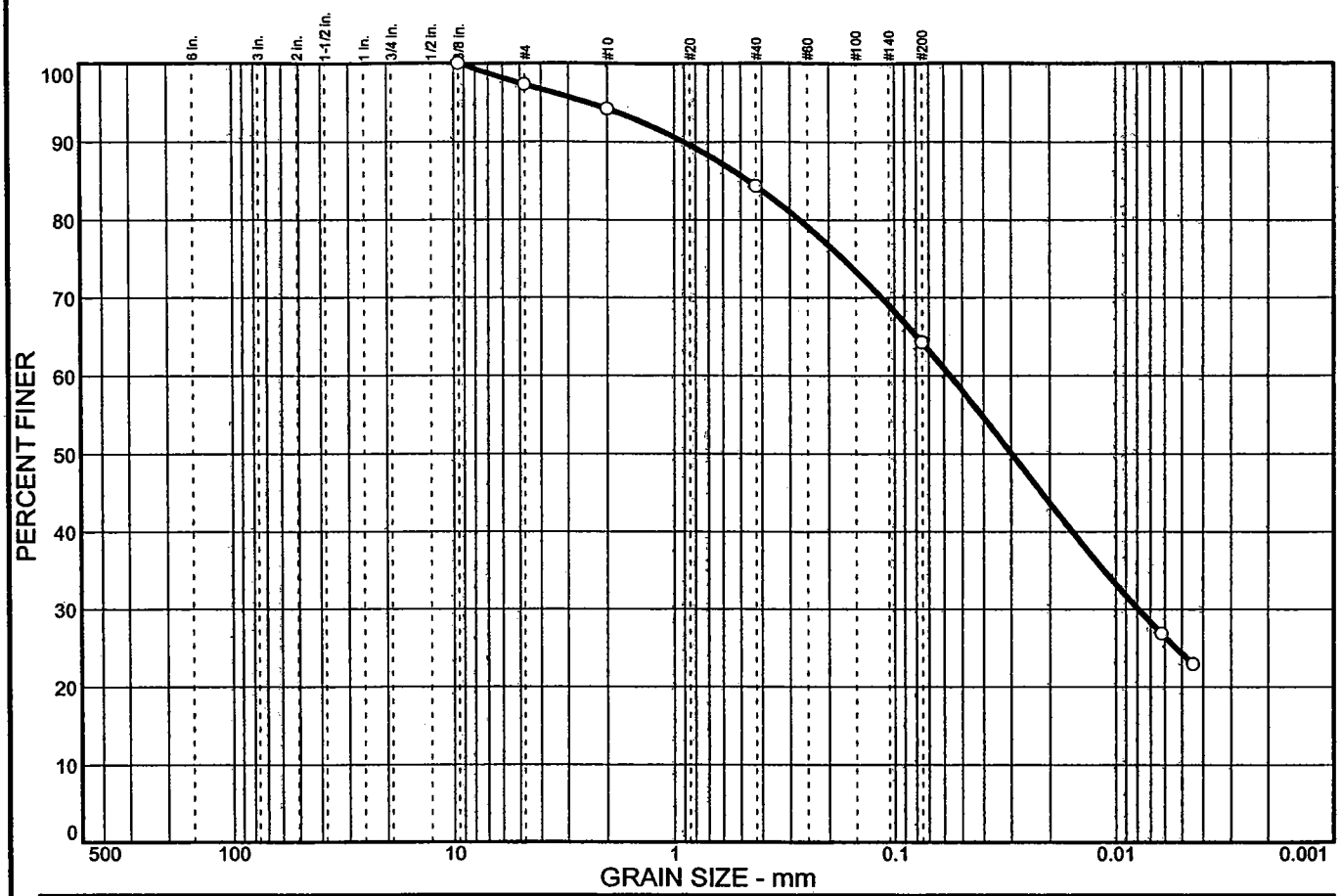
Moisture Content= 7.6%

Sample No.: JN-3 # 4, S-2 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 26.0'-27.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.7	3.1	9.9	20.1	39.9	24.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	97.3		
#10	94.2		
#40	84.3		
#200	64.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.461 D_{60}= 0.0564 D_{50}= 0.0297
D_{30}= 0.0079 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

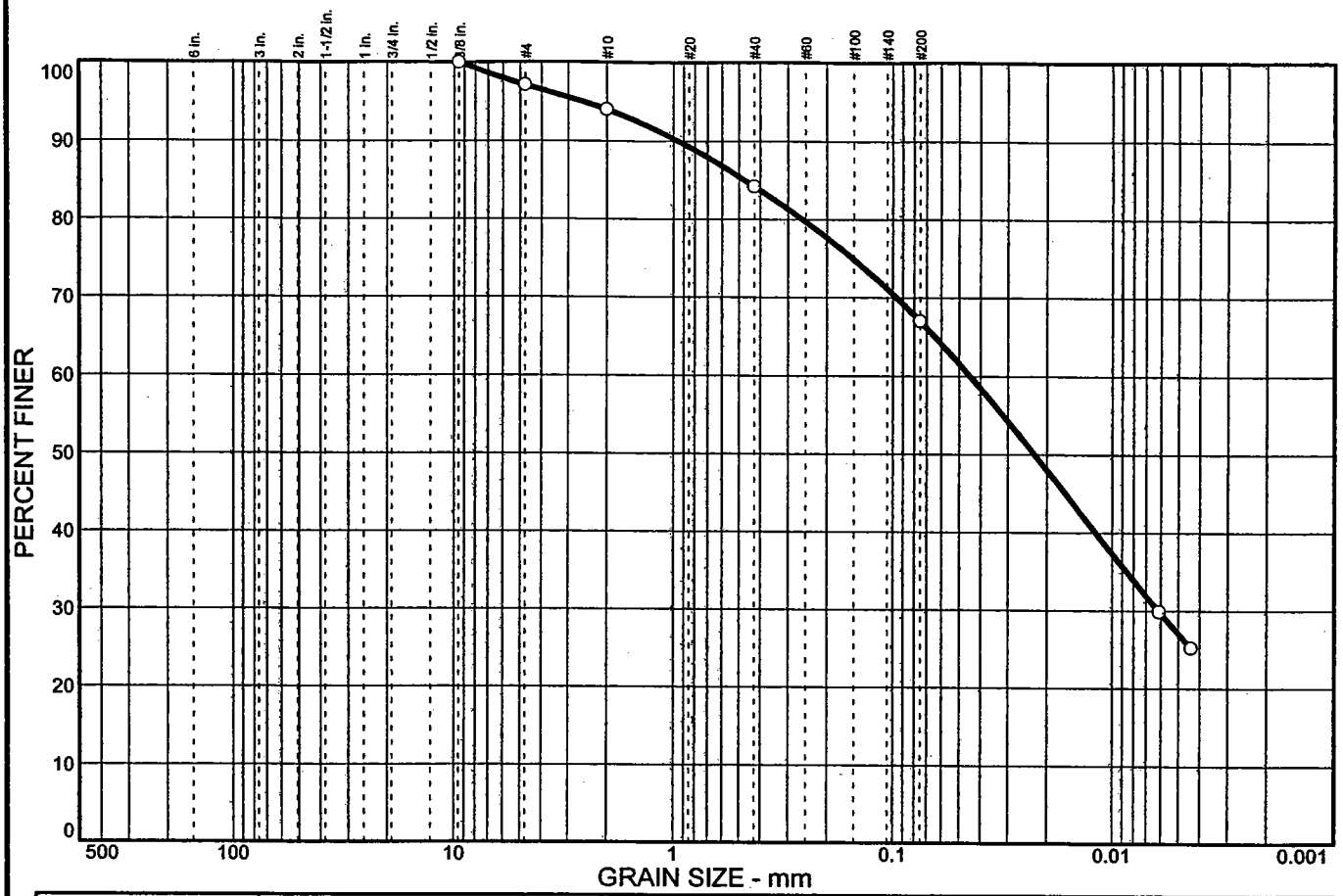
Moisture Content= 8.0%

Sample No.: JN-3 # 4, S-4 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 28.0'-29.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.9	3.1	9.8	17.2	39.9	27.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	97.1		
#10	94.0		
#40	84.2		
#200	67.0		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.470 D_{60}= 0.0445 D_{50}= 0.0227
D_{30}= 0.0061 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

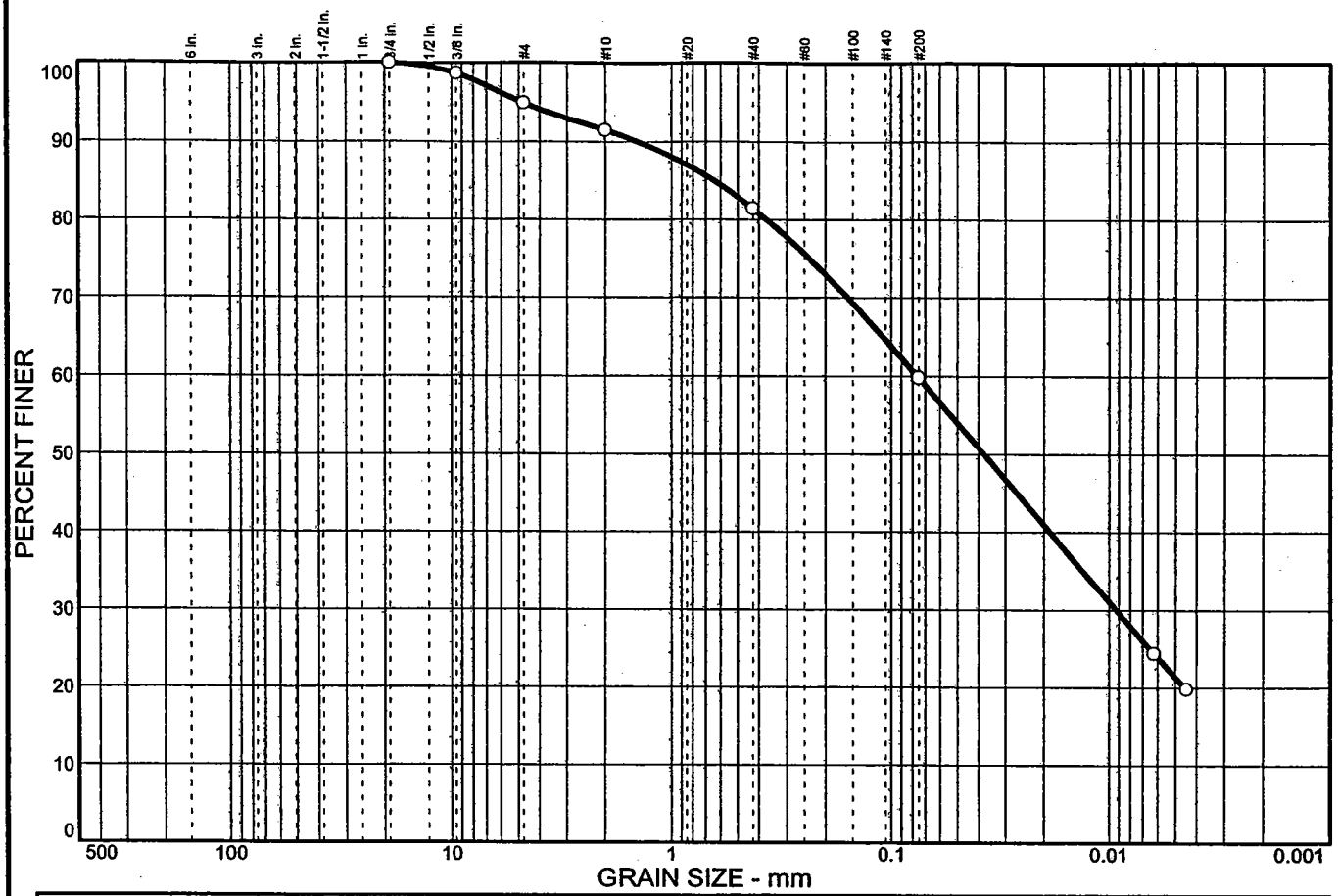
Moisture Content= 8.3%

Sample No.: JN-3 # 4, S-6 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 30.0'-31.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.1	3.4	10.1	21.6	38.4	21.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.7		
#4	94.9		
#10	91.5		
#40	81.4		
#200	59.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.643 D_{60}= 0.0761 D_{50}= 0.0375
D_{30}= 0.0092 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

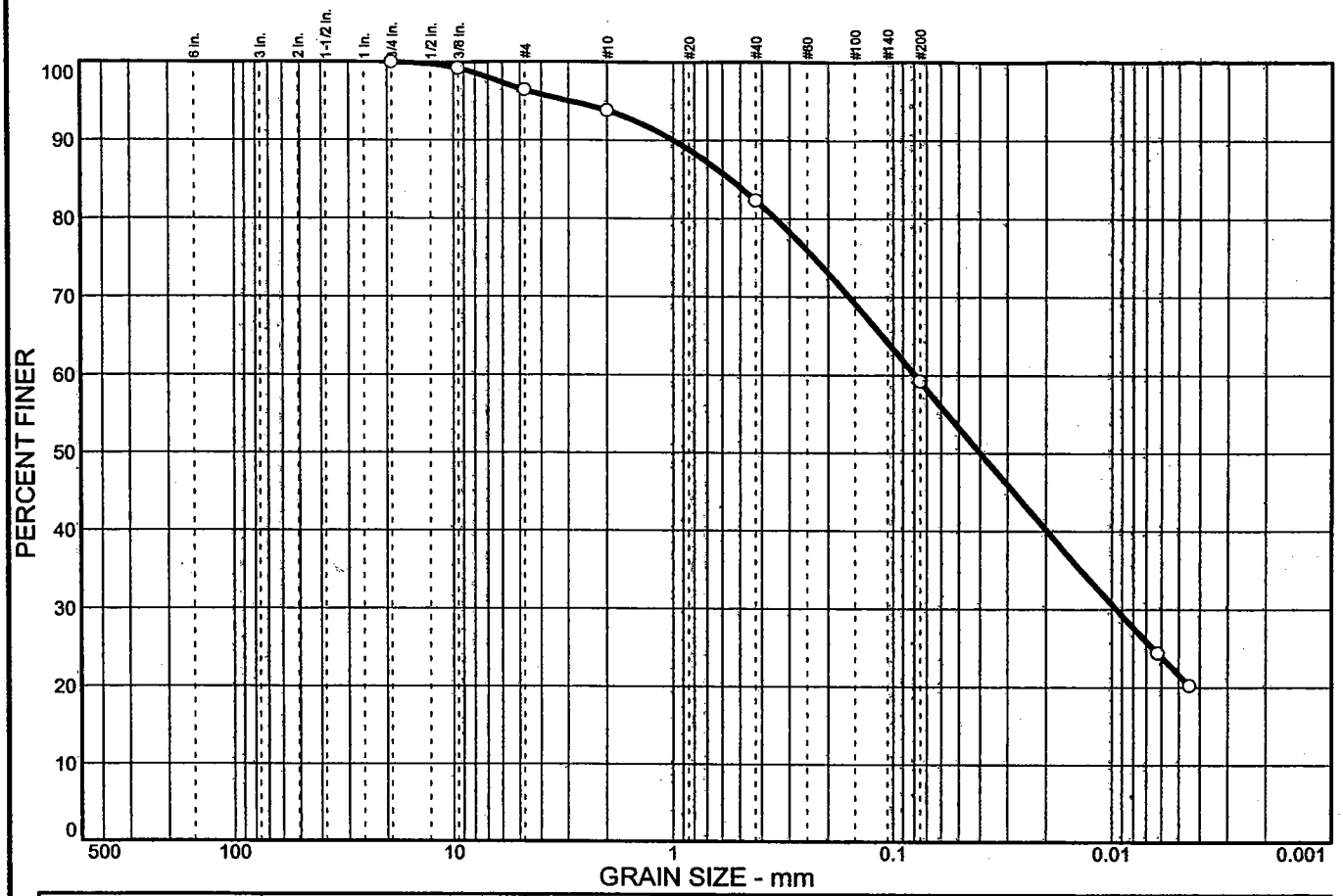
Moisture Content= 8.8%

Sample No.: JN-3 # 4, S-7B **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 26.0'-27.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.6	2.6	11.5	23.1	37.6	21.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.2		
#4	96.4		
#10	93.8		
#40	82.3		
#200	59.2		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.552 D_{60}= 0.0792 D_{50}= 0.0398
D_{30}= 0.0095 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Moisture Content= 8.9%

Sample No.: JN-3 # 4, S-9 **Source of Sample:** **Date:** 9/6/02
Location: **Elev./Depth:** 33.0'-34.0'

DLZ

Client: Battelle
Project: West Jefferson North site
Test Methods: ASTM D-421, D-422, D-2216
Project No: 0221-4009.00 **Plate**