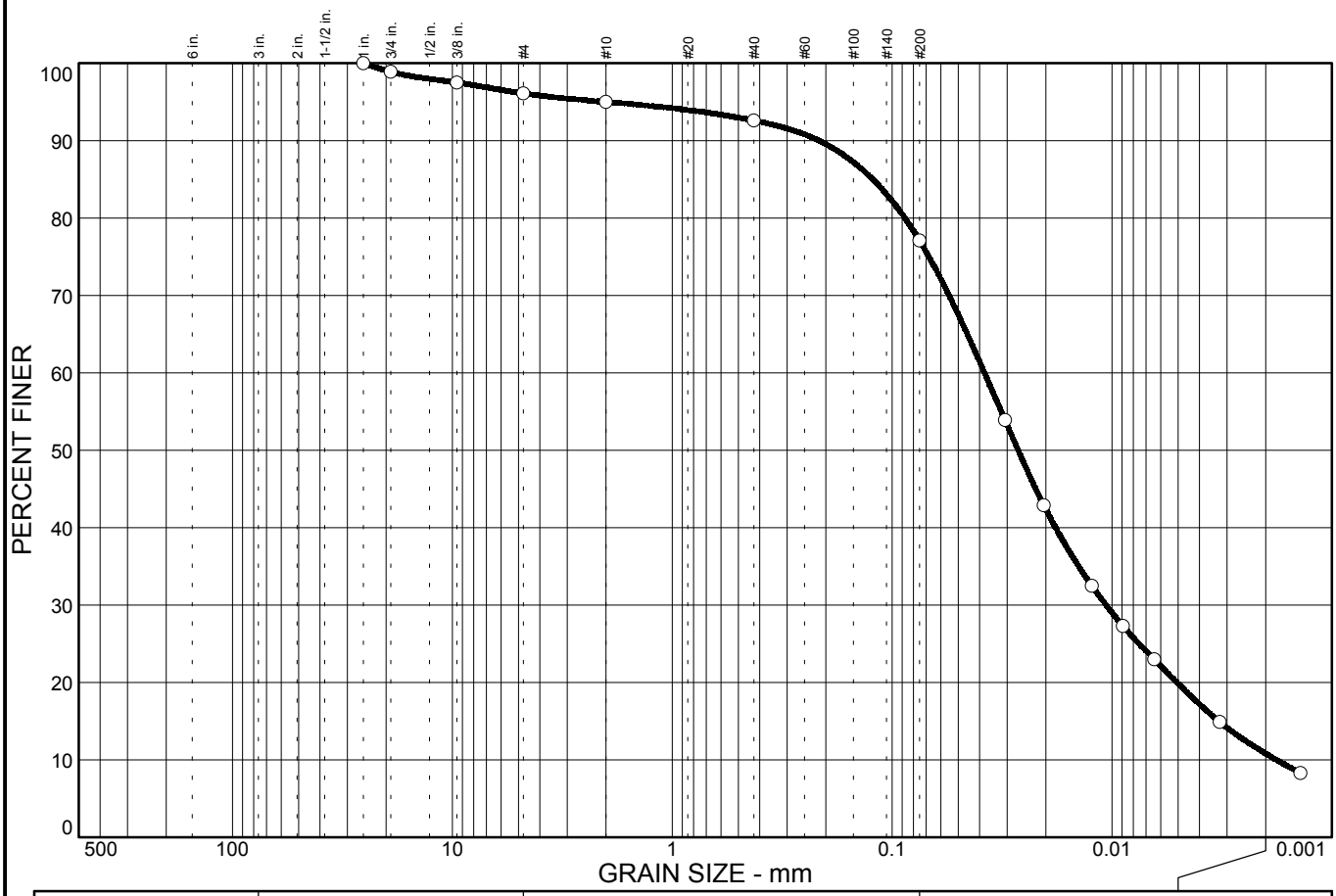
PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	1.1	2.8	1.1	2.4	15.5	66.3	10.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	98.9		
0.375 in.	97.5		
#4	96.1		
#10	95.0		
#40	92.6		
#200	77.1		

* (no specification provided)

Soil Description

Silt with sand

Atterberg Limits

PL= 31 LL= 46 PI= 15

Coefficients

D_{85}= 0.122 D_{60}= 0.0380 D_{50}= 0.0267
D_{30}= 0.0106 D_{15}= 0.0033 D_{10}= 0.0018
C_u= 21.29 C_c= 1.67

Classification

USCS= ML AASHTO= A-7-5(13)

Remarks

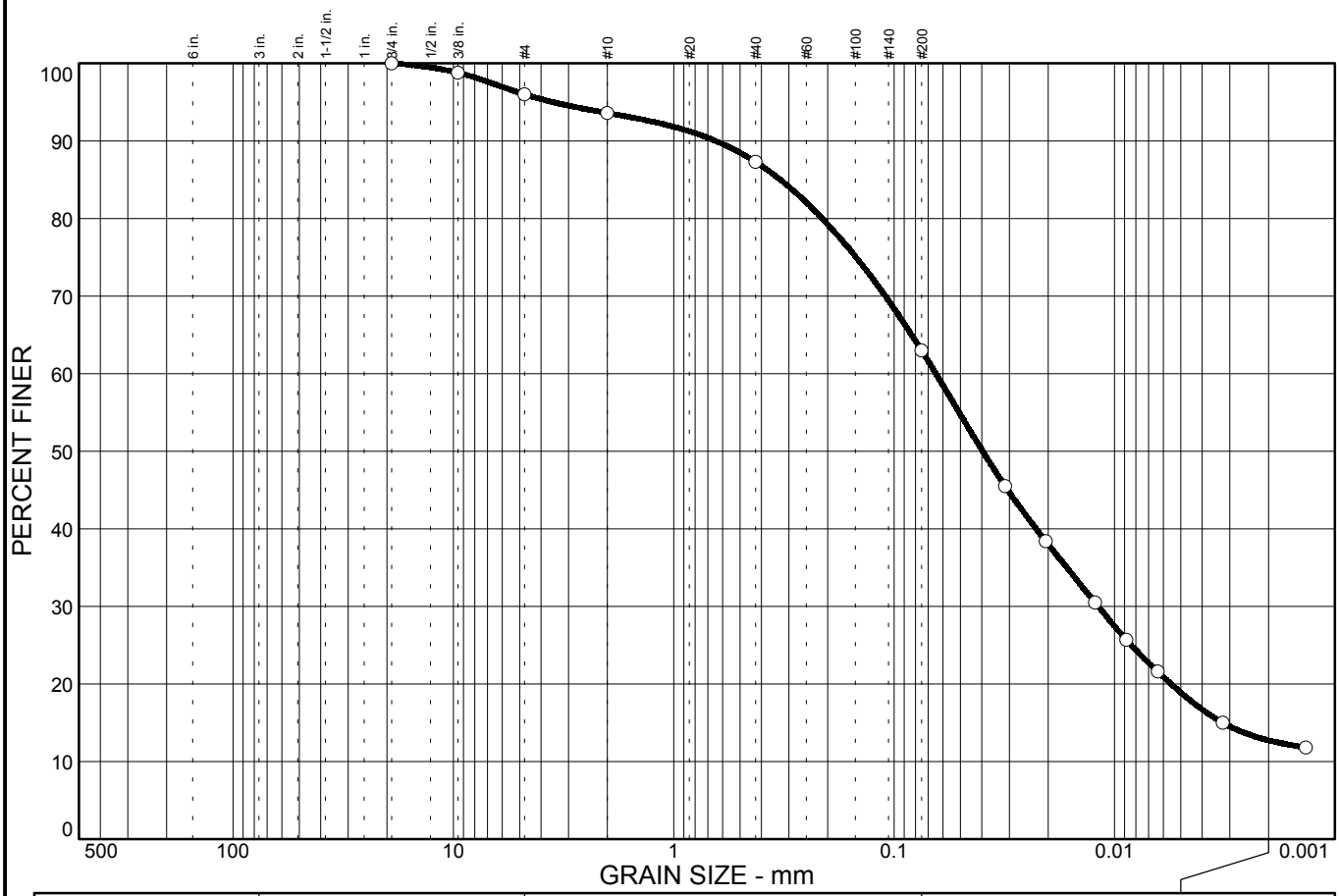
Moisture Content= 55.1%
Specific Gravity= 2.57
Loss on Ignition @ 440 C= 8.0%

Sample No.: 1 BK **Source of Sample:** **Date:** 7/18/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	4.0	2.4	6.3	24.3	50.3	12.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.8		
#4	96.0		
#10	93.6		
#40	87.3		
#200	63.0		

* (no specification provided)

Soil Description

Sandy lean clay

Atterberg Limits

PL= 20 LL= 31 PI= 11

Coefficients

D_{85}= 0.328 D_{60}= 0.0646 D_{50}= 0.0396
D_{30}= 0.0118 D_{15}= 0.0032 D_{10}=
C_u= C_c=

Classification

USCS= CL AASHTO= A-6(5)

Remarks

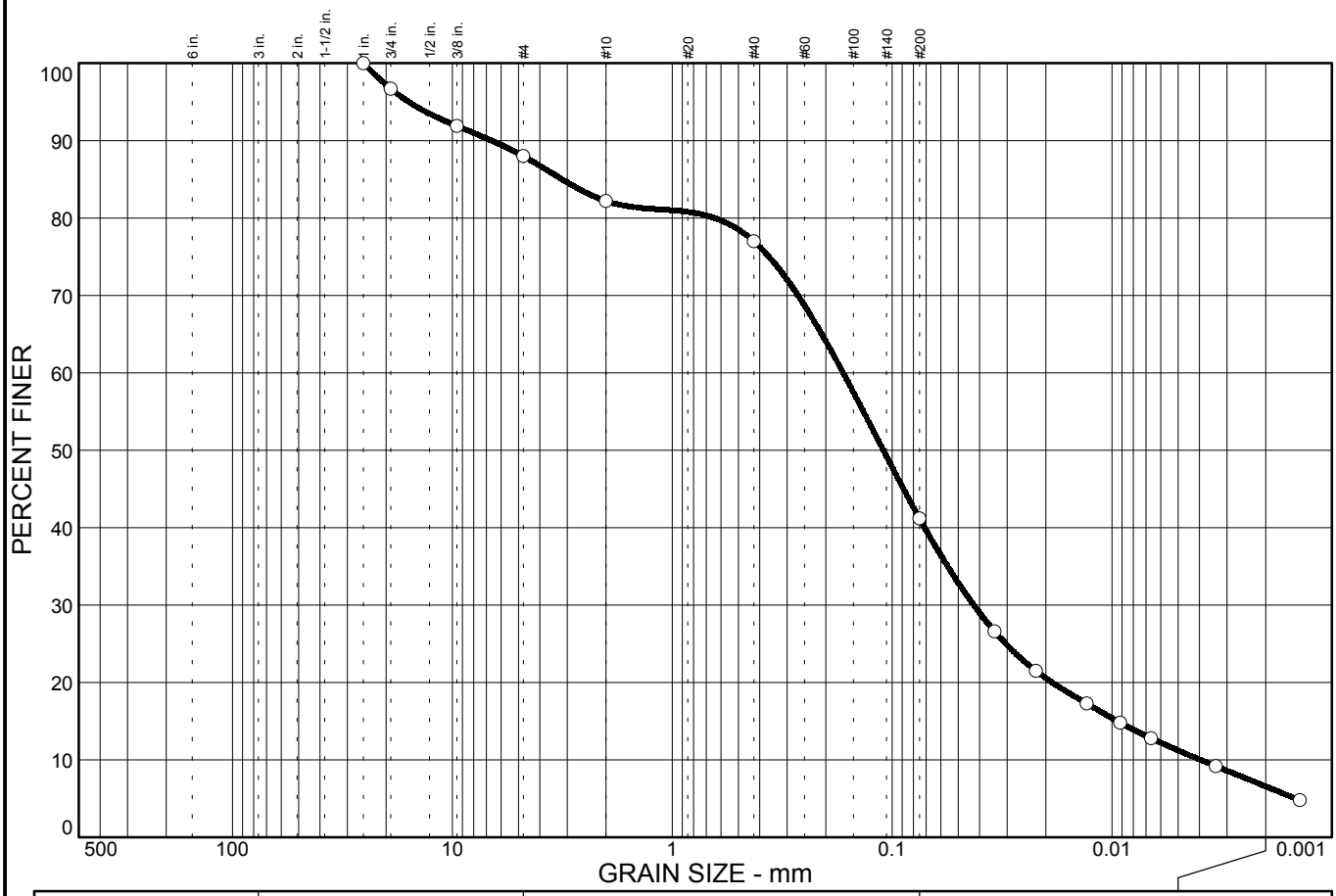
Moisture Content= 69.4%
Specific Gravity= 2.61
Loss on Ignition @ 440 C= 3.2%

Sample No.: 1 IN **Source of Sample:** **Date:** 7/21/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	3.3	8.7	5.8	5.2	35.8	34.6	6.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	96.7		
0.375 in.	91.9		
#4	88.0		
#10	82.2		
#40	77.0		
#200	41.2		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 3.16 D_{60}= 0.167 D_{50}= 0.110
D_{30}= 0.0425 D_{15}= 0.0094 D_{10}= 0.0039
C_u= 42.34 C_c= 2.74

Classification

USCS= SM AASHTO= A-4(0)

Remarks

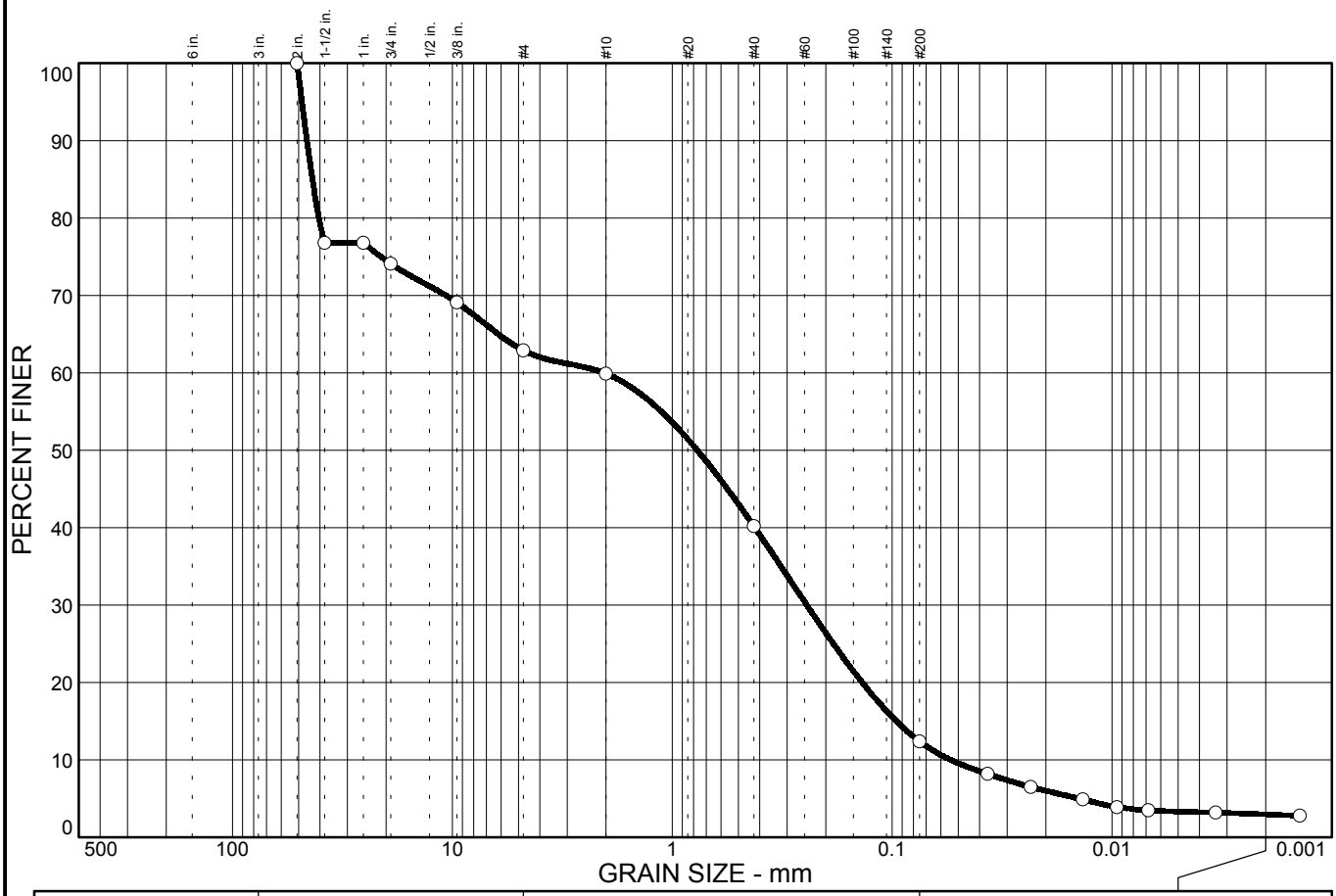
Moisture Content= 32.1%
Specific Gravity= 2.63
Loss on Ignition @ 440 C= 3.2%

Sample No.: 4 BK **Source of Sample:** **Date:** 7/11/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	25.9	11.2	3.0	19.7	27.8	9.4	3.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.00 in.	100.0		
1.50 in.	76.8		
1.00 in.	76.8		
0.75 in.	74.1		
0.375 in.	69.1		
#4	62.9		
#10	59.9		
#40	40.2		
#200	12.4		

* (no specification provided)

Soil Description

Silty sand with gravel

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 43.3 D_{60}= 2.04 D_{50}= 0.768
D_{30}= 0.244 D_{15}= 0.0955 D_{10}= 0.0540
C_u= 37.84 C_c= 0.54

Classification

USCS= SM AASHTO= A-1-b

Remarks

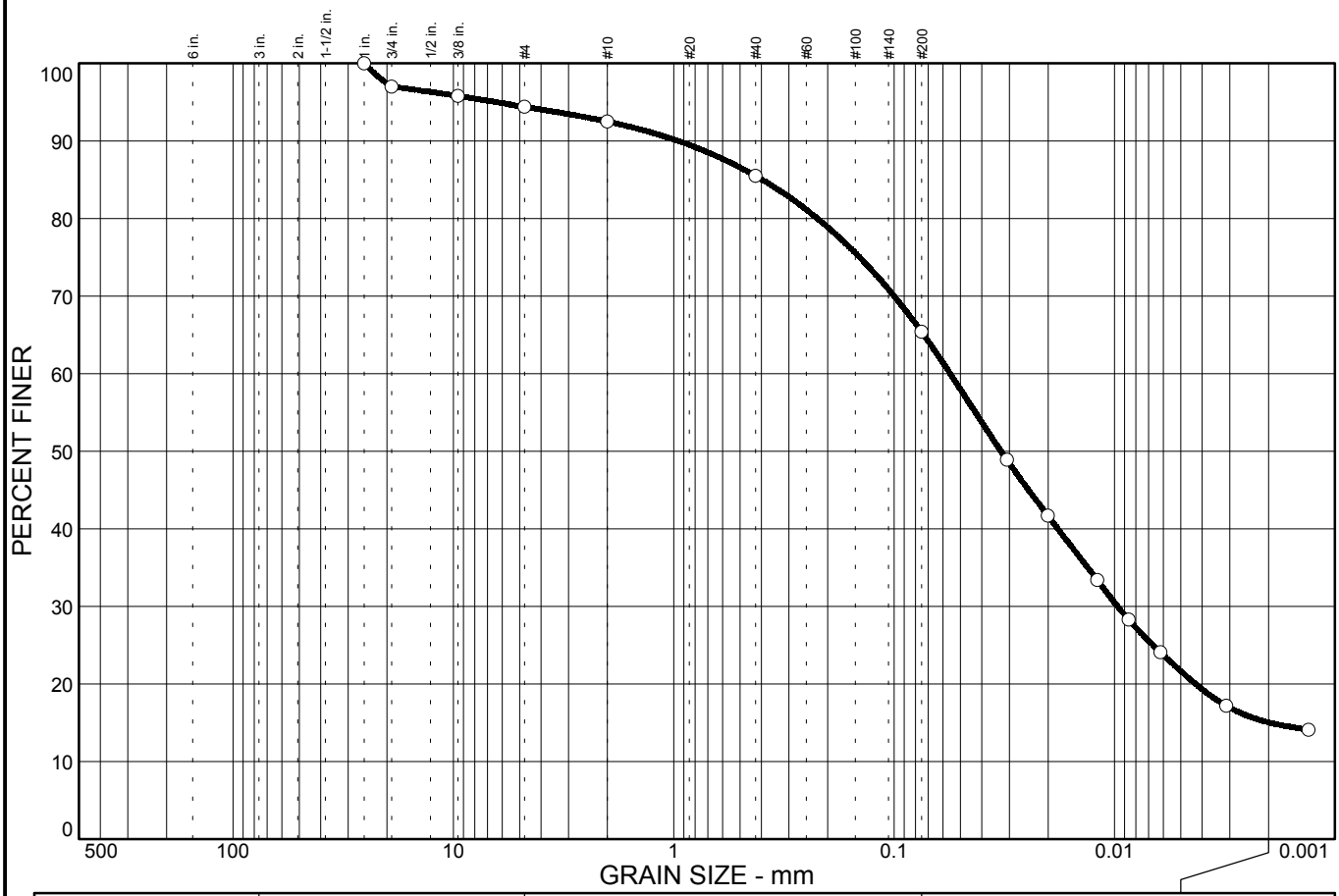
Moisture Content= 23.0%
Specific Gravity= 2.66
Loss on Ignition @ 440 C= 1.7%

Sample No.: 4 IN **Source of Sample:** **Date:** 7/11/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	3.0	2.6	1.9	7.0	20.1	50.4	15.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	97.0		
0.375 in.	95.8		
#4	94.4		
#10	92.5		
#40	85.5		
#200	65.4		

* (no specification provided)

Soil Description

Sandy lean clay

Atterberg Limits

PL= 21 LL= 30 PI= 9

Coefficients

D_{85}= 0.396 D_{60}= 0.0556 D_{50}= 0.0327
D_{30}= 0.0097 D_{15}= 0.0020 D_{10}=
C_u= C_c=

Classification

USCS= CL AASHTO= A-4(4)

Remarks

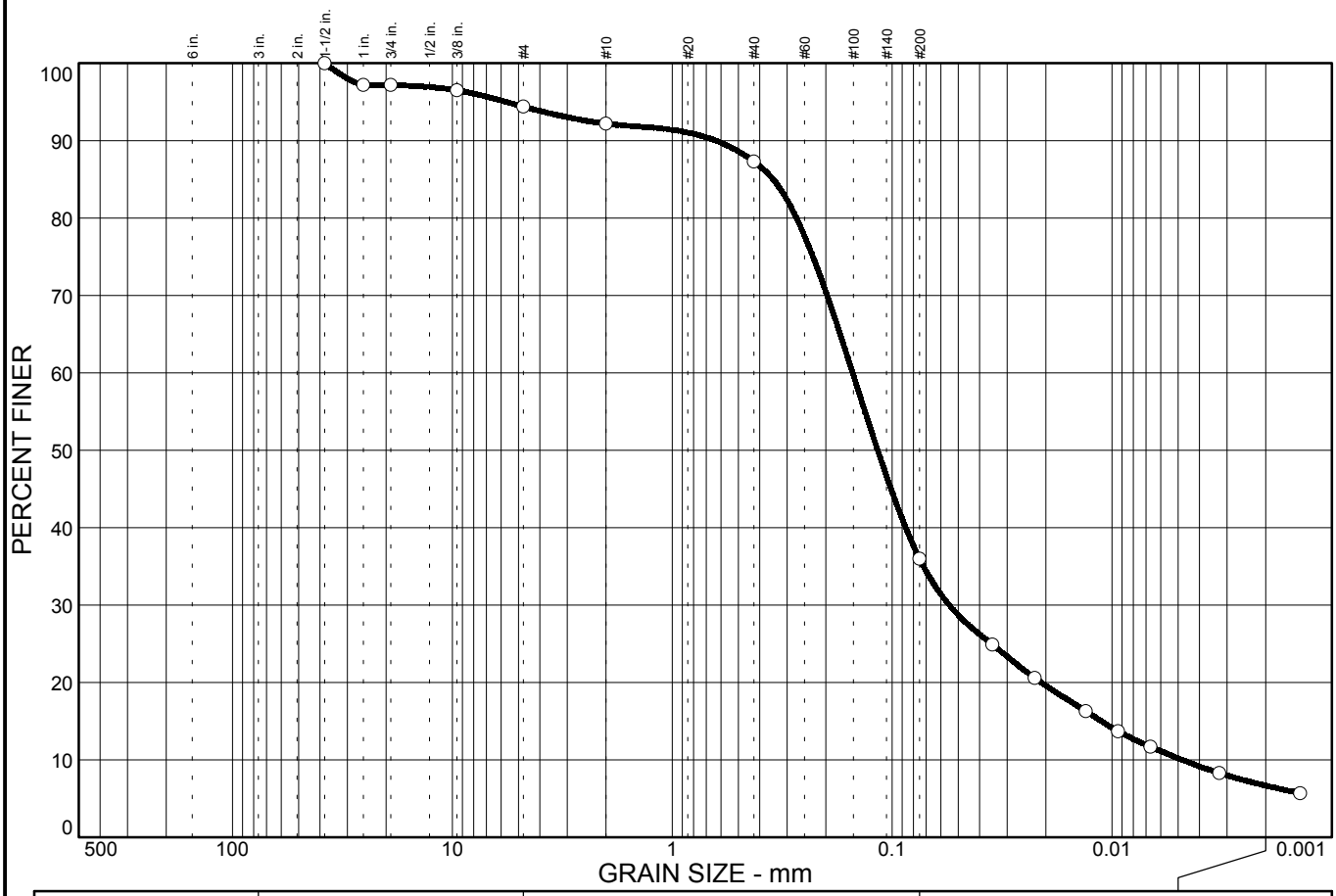
Moiusture Content= 27.7%
Specific Gravity= 2.69
Loss on Ignition @ 440 C= 2.9%

Sample No.: 7 BK **Source of Sample:** **Date:** 8/7/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	2.8	2.8	2.2	4.9	51.3	29.3	6.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.50 in.	100.0		
1.00 in.	97.2		
0.75 in.	97.2		
0.375 in.	96.5		
#4	94.4		
#10	92.2		
#40	87.3		
#200	36.0		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.347 D_{60}= 0.151 D_{50}= 0.116
D_{30}= 0.0550 D_{15}= 0.0112 D_{10}= 0.0048
C_u= 31.61 C_c= 4.18

Classification

USCS= SM AASHTO= A-4(0)

Remarks

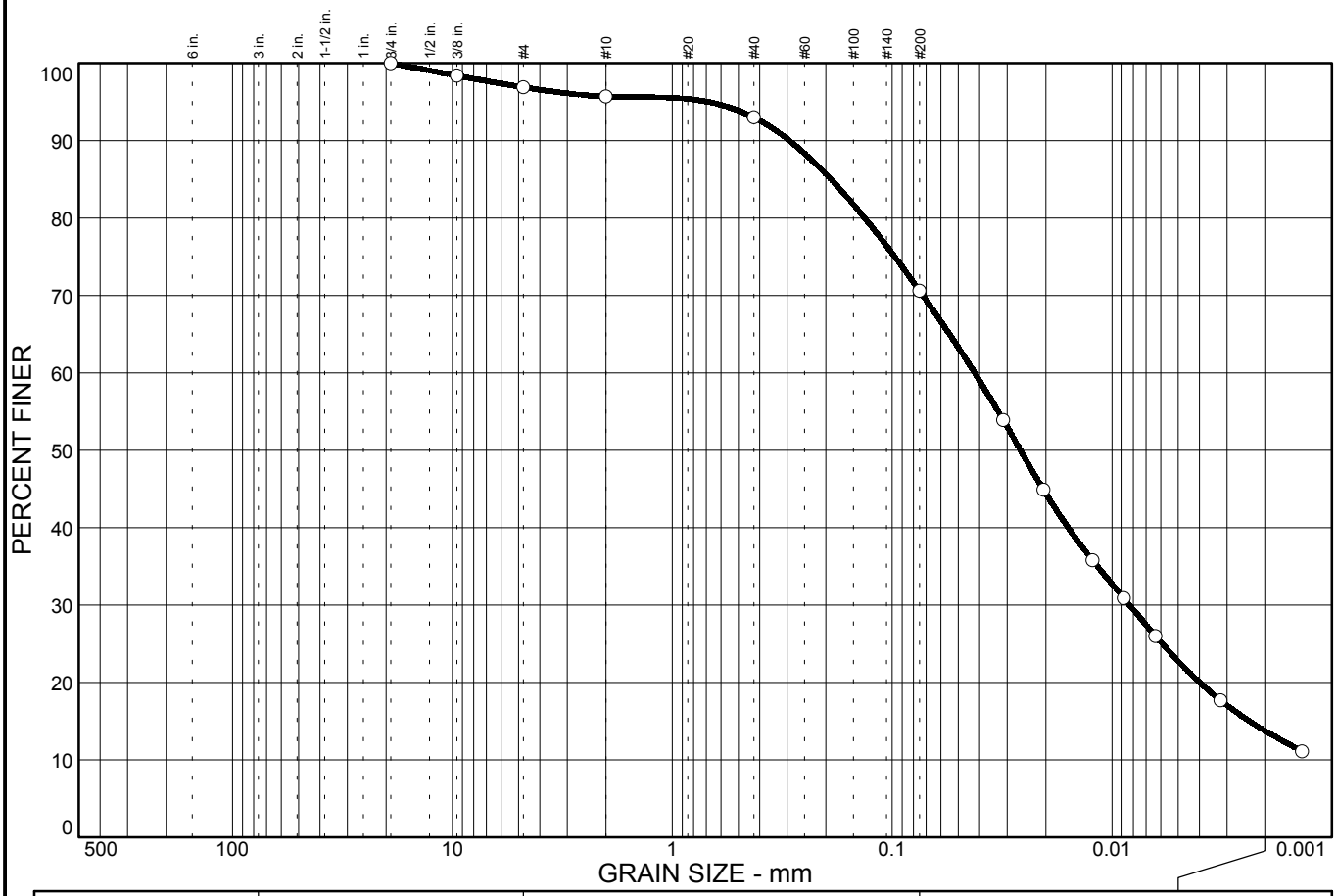
Moisture Content= 72.3%
Specific Gravity= 2.58
Loss on Ignition @ 440 C= 3.9%

Sample No.: 7 IN **Source of Sample:** **Date:** 8/7/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.1	1.2	2.7	22.4	56.9	13.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.4		
#4	96.9		
#10	95.7		
#40	93.0		
#200	70.6		

* (no specification provided)

Soil Description

Silt with sand

Atterberg Limits

PL= 26 LL= 38 PI= 12

Coefficients

D_{85}= 0.190 D_{60}= 0.0421 D_{50}= 0.0261
D_{30}= 0.0083 D_{15}= 0.0024 D_{10}=
C_u= C_c=

Classification

USCS= ML AASHTO= A-6(8)

Remarks

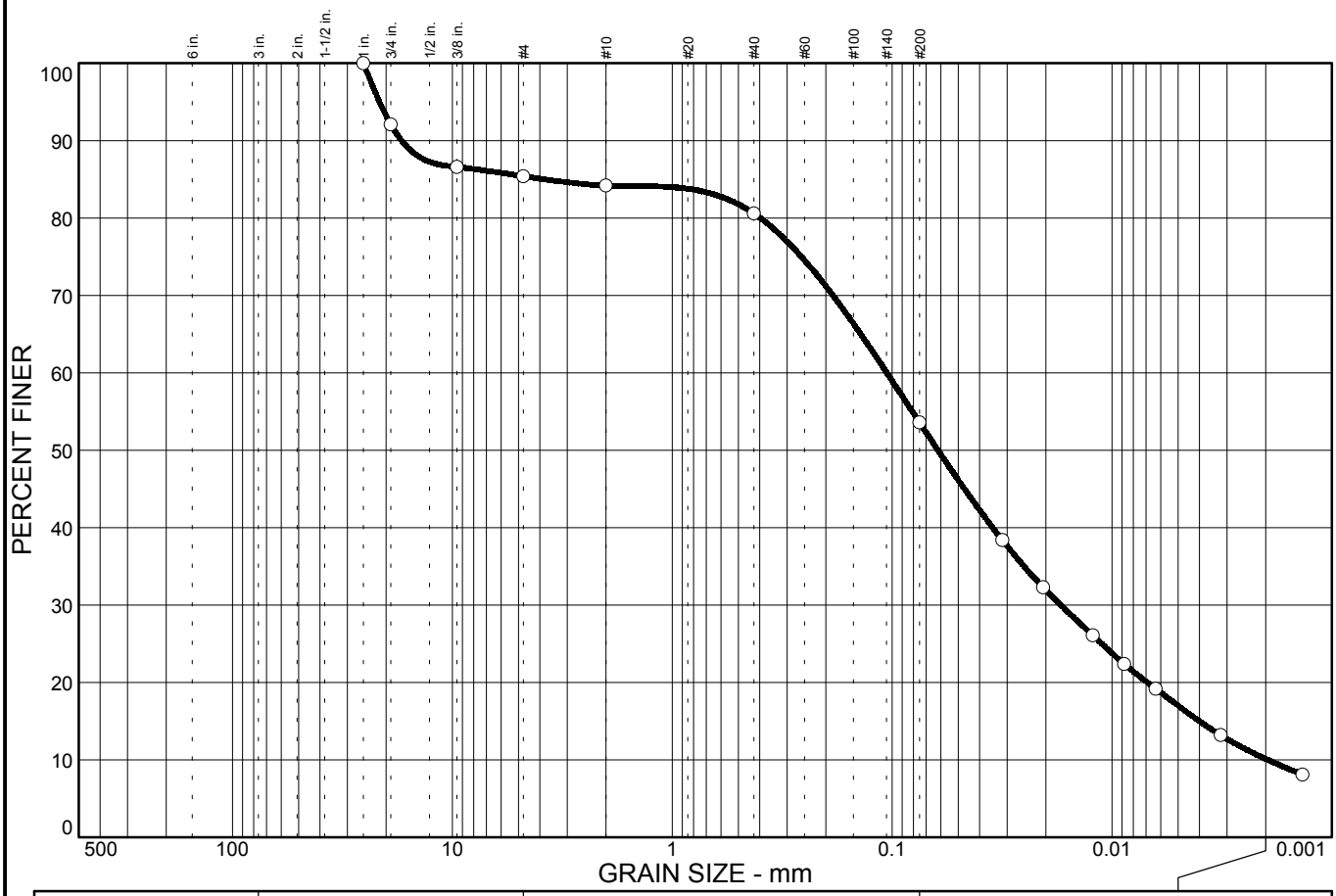
Moisture Content= 42.6%
Specific Gravity= 2.62
Loss on Ignition @ 440 C= 4.9%

Sample No.: 9 BK **Source of Sample:** **Date:** 7/29/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	7.9	6.7	1.2	3.6	27.0	43.5	10.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	92.1		
0.375 in.	86.6		
#4	85.4		
#10	84.2		
#40	80.6		
#200	53.6		

* (no specification provided)

Soil Description

Sandy lean clay

Atterberg Limits

PL= 23 LL= 32 PI= 9

Coefficients

D_{85}= 3.82 D_{60}= 0.106 D_{50}= 0.0618
D_{30}= 0.0171 D_{15}= 0.0040 D_{10}= 0.0019
C_u= 54.13 C_c= 1.42

Classification

USCS= CL AASHTO= A-4(3)

Remarks

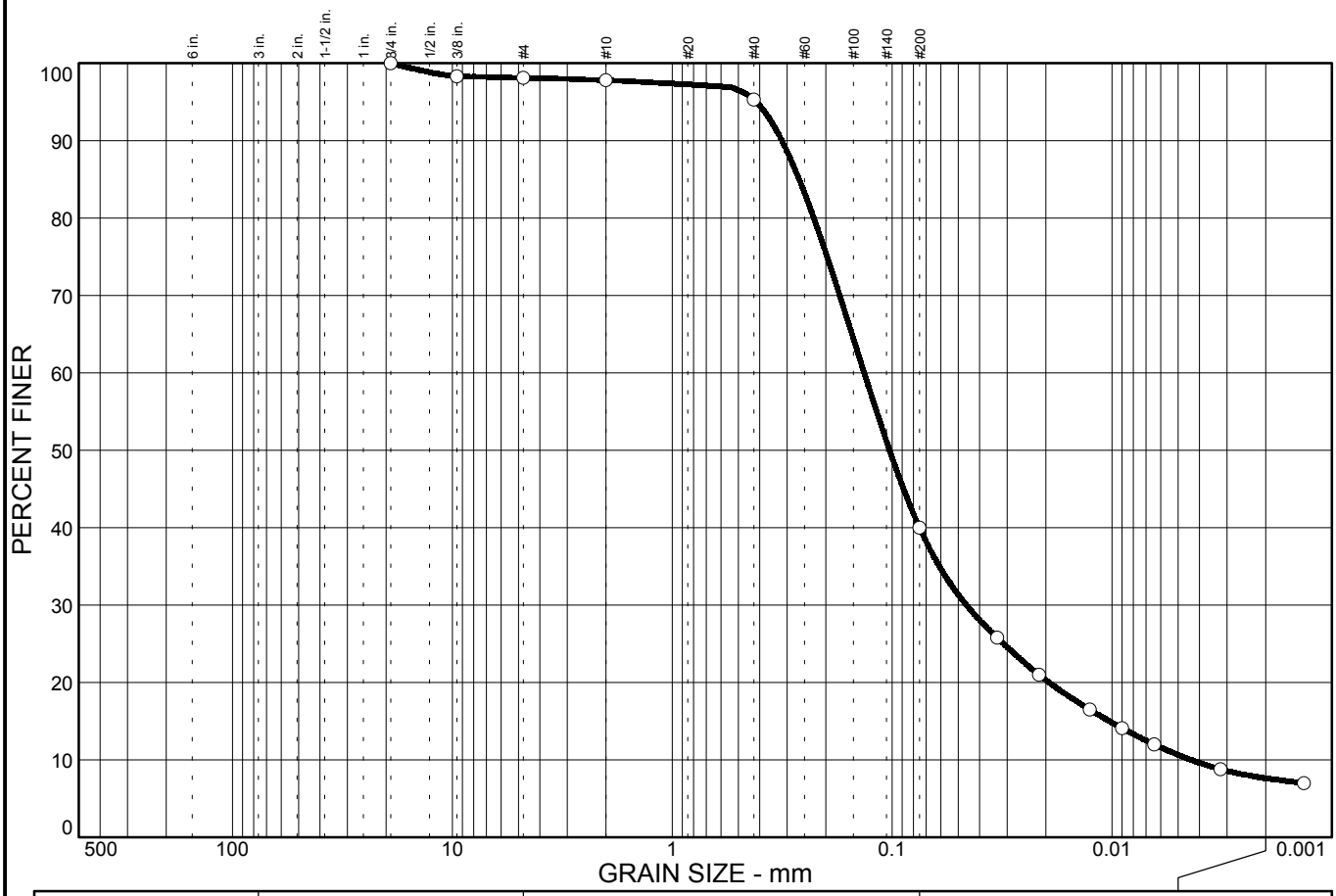
Moisture Content= 32.3%
Specific Gravity= 2.63
Loss on Ignition @ 440 C= 4.5%

Sample No.: 11 BK **Source of Sample:** **Date:** 7/22/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.9	0.3	2.5	55.3	32.4	7.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.3		
#4	98.1		
#10	97.8		
#40	95.3		
#200	40.0		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.265 D_{60}= 0.134 D_{50}= 0.103
D_{30}= 0.0459 D_{15}= 0.0102 D_{10}= 0.0044
C_u= 30.73 C_c= 3.61

Classification

USCS= SM AASHTO= A-4(0)

Remarks

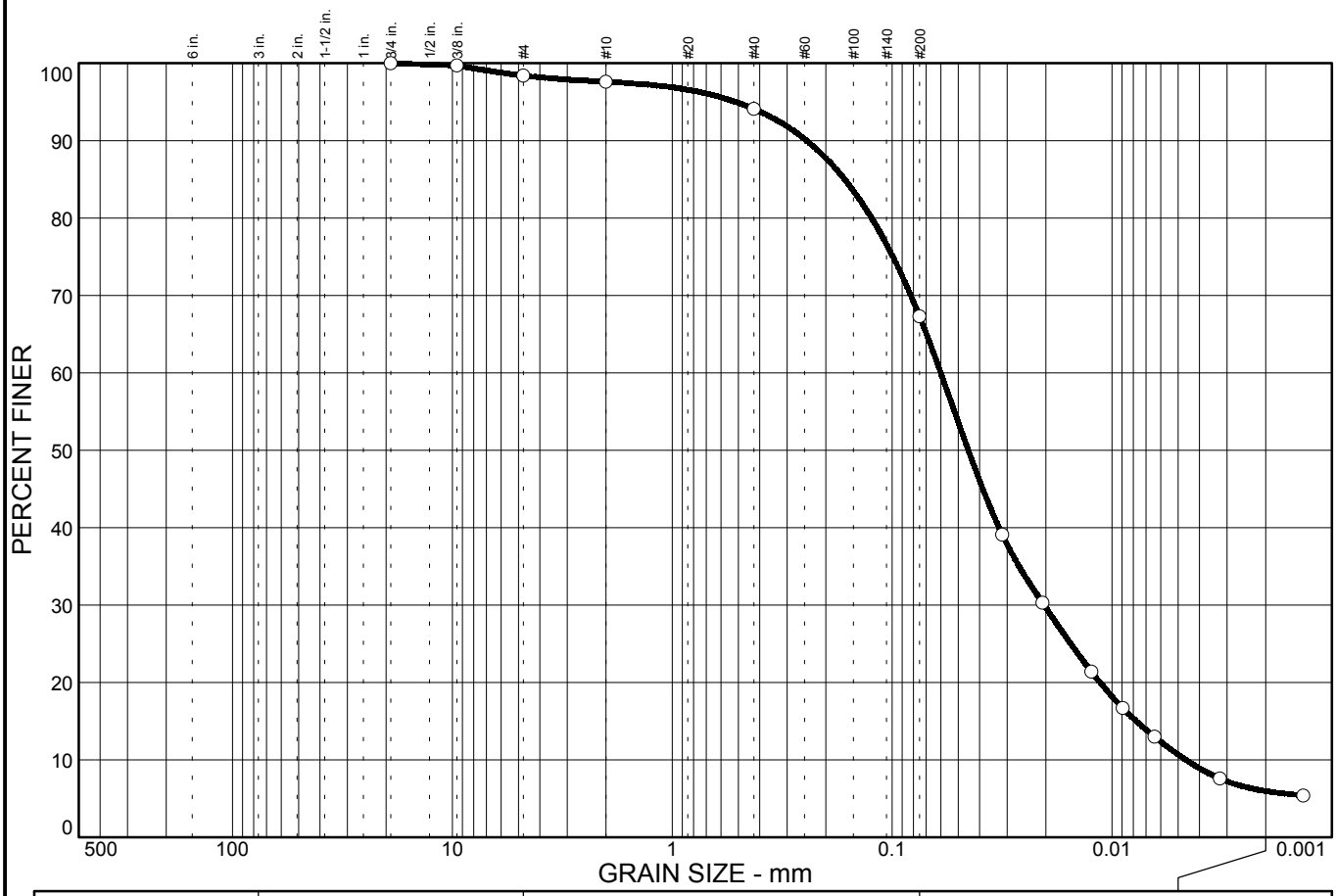
Moisture Content= 22.6%
Specific Gravity= 2.67
Loss on Ignition @ 440 C= 2.1%

Sample No.: 14 BK **Source of Sample:** **Date:** 7/22/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.6	0.8	3.5	26.8	61.3	6.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.7		
#4	98.4		
#10	97.6		
#40	94.1		
#200	67.3		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= 23 LL= 27 PI= 4

Coefficients

D_{85}= 0.164 D_{60}= 0.0600 D_{50}= 0.0450
D_{30}= 0.0204 D_{15}= 0.0077 D_{10}= 0.0046
C_u= 13.03 C_c= 1.50

Classification

USCS= ML AASHTO= A-4(1)

Remarks

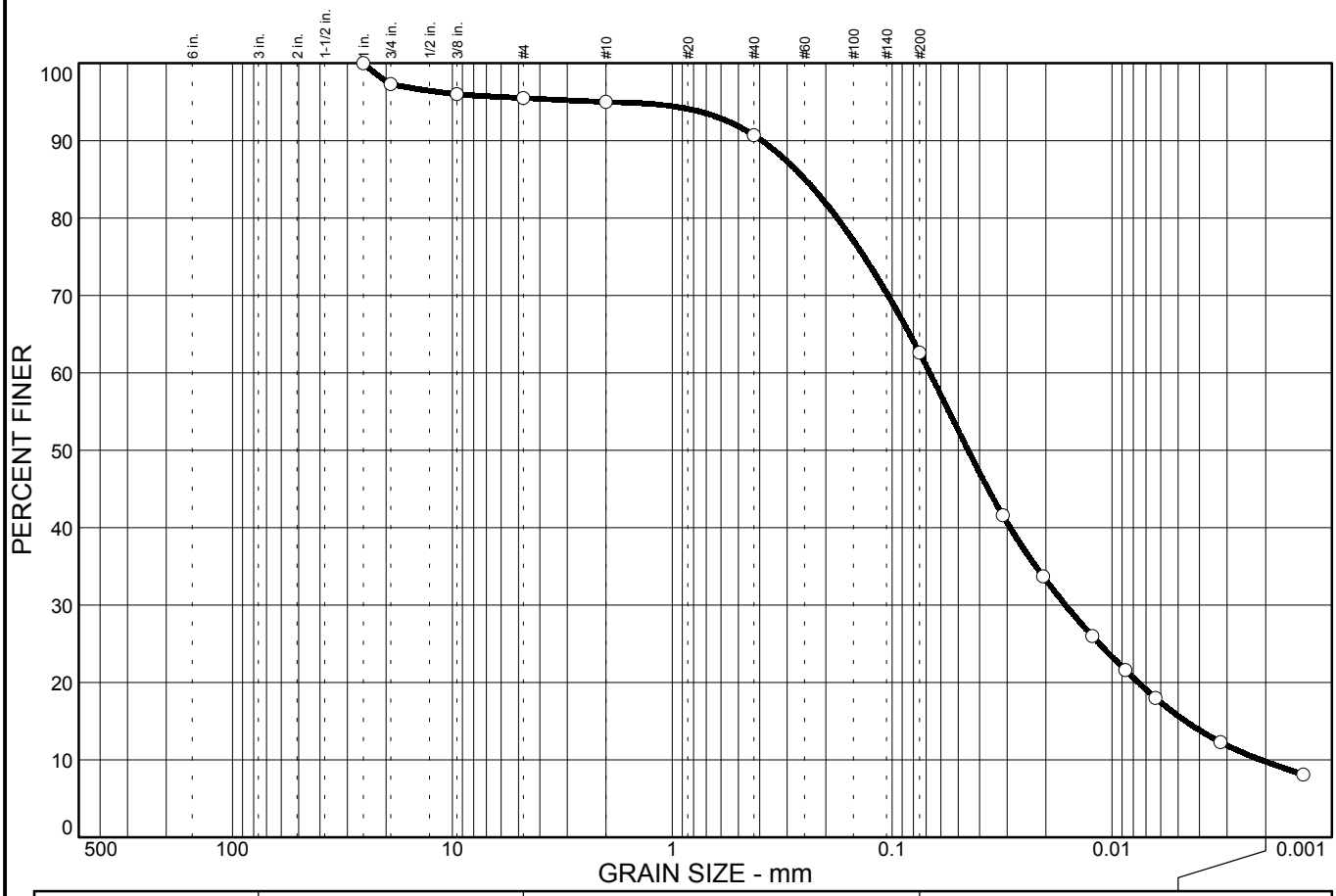
Moisture Content= 40.9%
Specific Gravity= 2.70
Loss on Ignition @ 440 C= 3.4%

Sample No.: 15 BK **Source of Sample:** **Date:** 7/22/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	2.7	1.8	0.5	4.3	28.1	52.8	9.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	97.3		
0.375 in.	96.0		
#4	95.5		
#10	95.0		
#40	90.7		
#200	62.6		

* (no specification provided)

Soil Description

Sandy lean clay

Atterberg Limits

PL= 23 LL= 35 PI= 12

Coefficients

D_{85}= 0.249 D_{60}= 0.0674 D_{50}= 0.0451
D_{30}= 0.0163 D_{15}= 0.0046 D_{10}= 0.0021
C_u= 32.07 C_c= 1.87

Classification

USCS= CL AASHTO= A-6(6)

Remarks

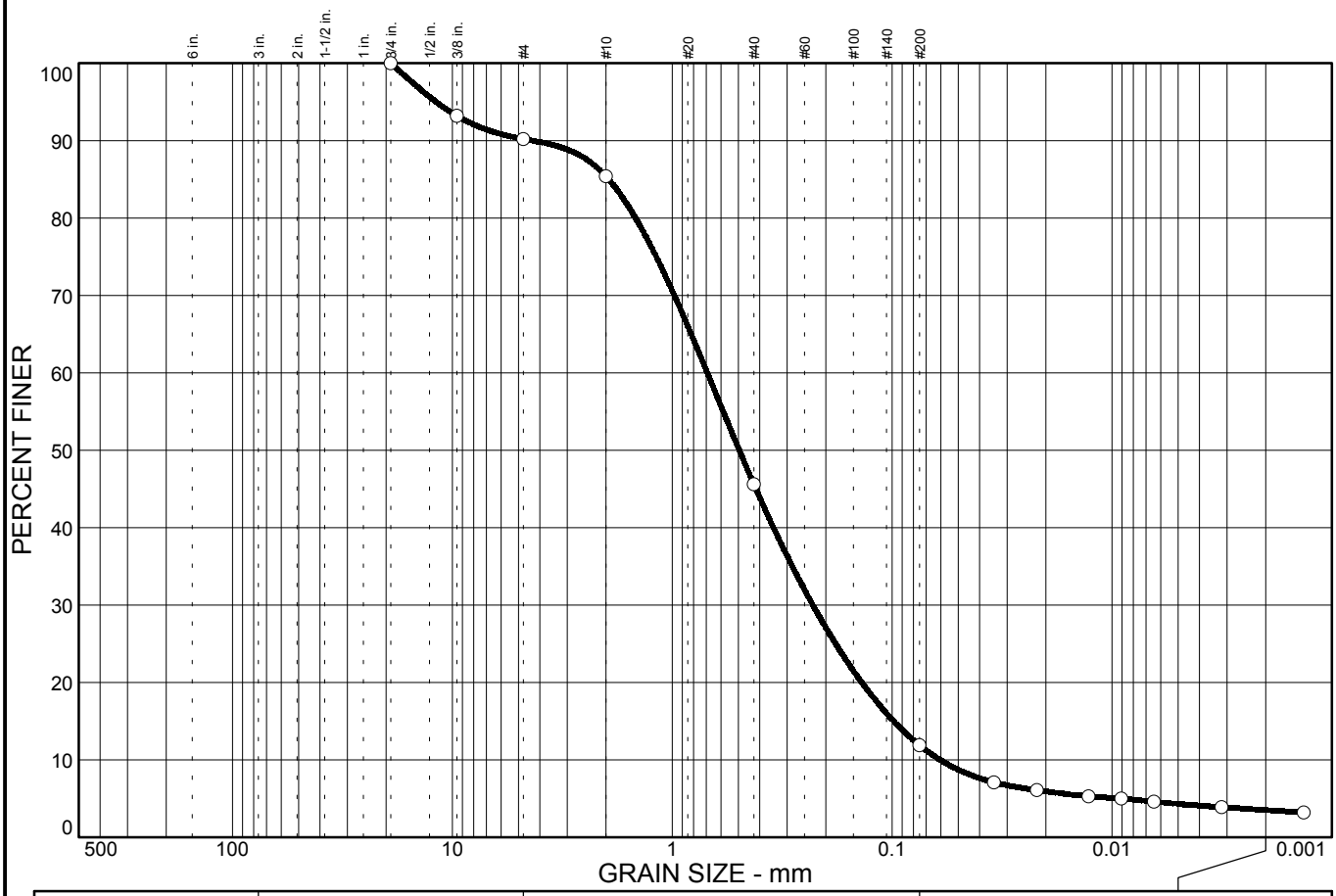
Moisture Content= 39.7%
Specific Gravity= 2.66

Sample No.: 16 BK **Source of Sample:** **Date:** 7/22/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	9.8	4.8	39.8	33.7	8.4	3.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	93.2		
#4	90.2		
#10	85.4		
#40	45.6		
#200	11.9		

* (no specification provided)

Soil Description

Well-graded sand with silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 1.94 D_{60}= 0.692 D_{50}= 0.495
D_{30}= 0.229 D_{15}= 0.0982 D_{10}= 0.0604
C_u= 11.46 C_c= 1.26

Classification

USCS= SW-SM AASHTO= A-1-b

Remarks

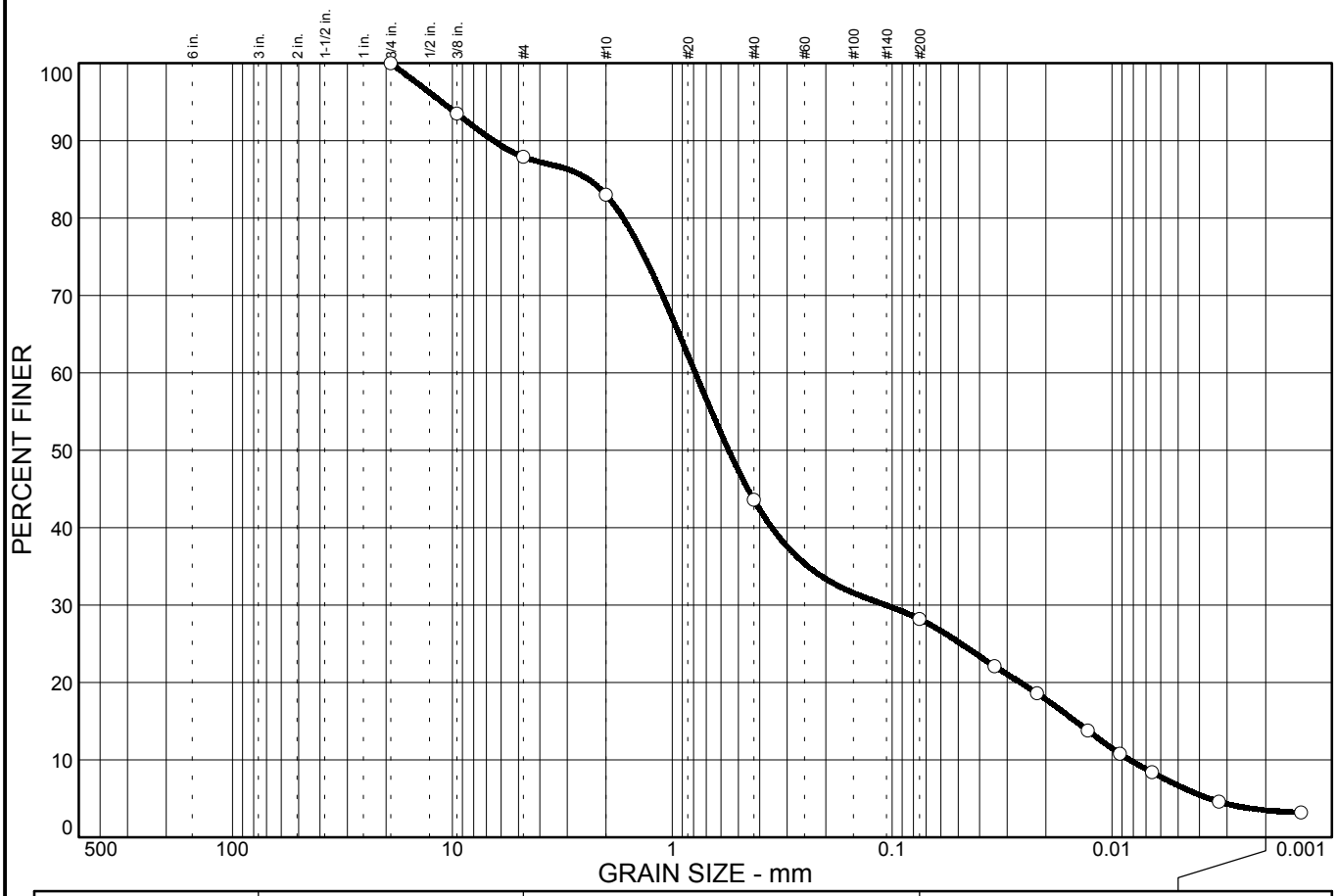
Moisture Content= 31.5%
Specific Gravity= 2.74
Loss on Ignition @ 440 C= 2.1%

Sample No.: 16 IN DEF **Source of Sample:** **Date:** 7/22/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	12.1	4.9	39.4	15.4	24.7	3.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	93.5		
#4	87.9		
#10	83.0		
#40	43.6		
#200	28.2		

* (no specification provided)

Soil Description

Clayey sand

Atterberg Limits

PL= 22 LL= 30 PI= 8

Coefficients

D_{85}= 2.41 D_{60}= 0.785 D_{50}= 0.553
D_{30}= 0.107 D_{15}= 0.0146 D_{10}= 0.0083
C_u= 94.67 C_c= 1.76

Classification

USCS= SC AASHTO= A-2-4(0)

Remarks

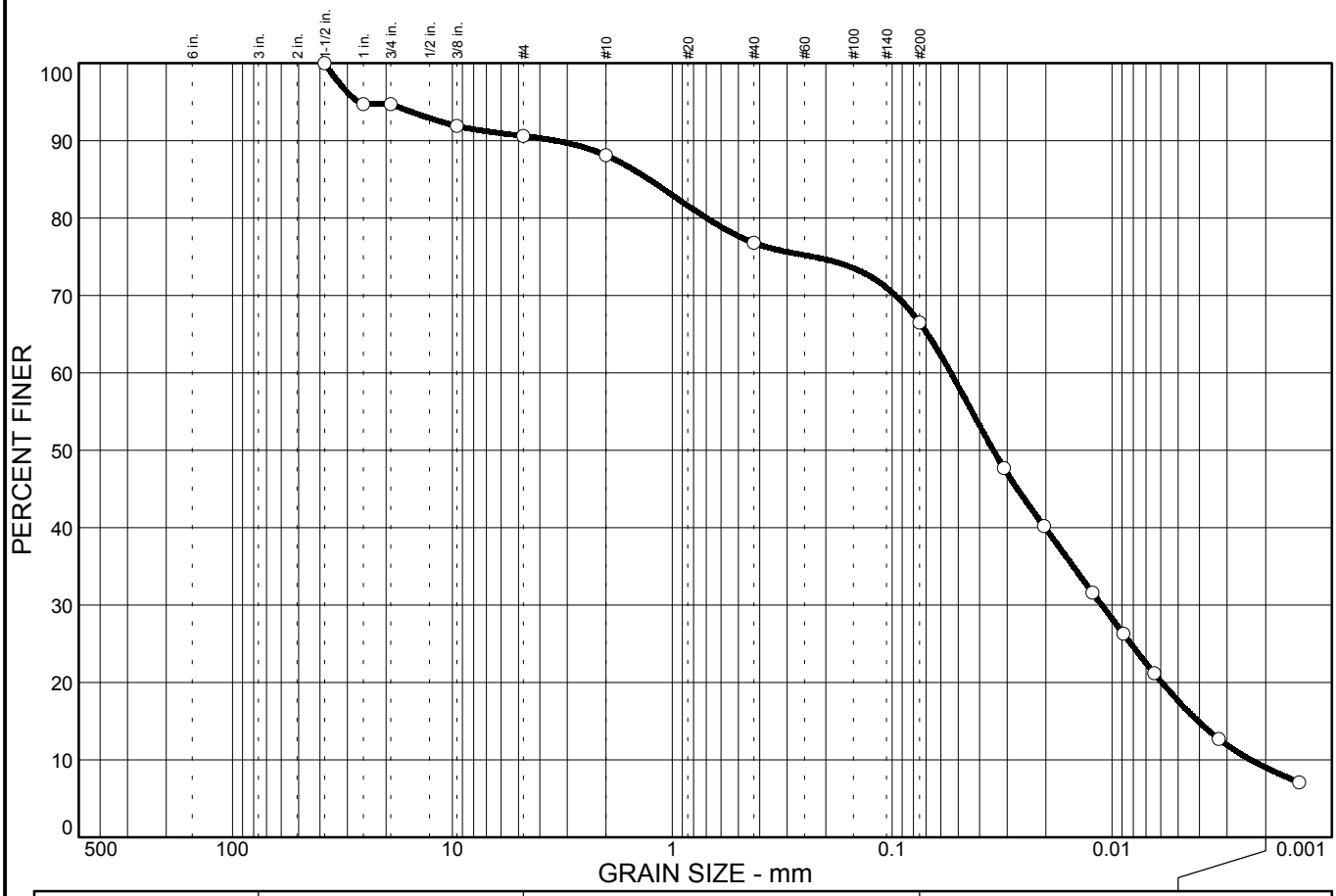
Moisture Content= 40.2%
Specific Gravity= 2.70
Loss on Ignition @ 440 C= 4.2%

Sample No.: 18 BK **Source of Sample:** **Date:** 7/22/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	5.3	4.1	2.5	11.3	10.3	57.5	9.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.50 in.	100.0		
1.00 in.	94.7		
0.75 in.	94.7		
0.375 in.	91.9		
#4	90.6		
#10	88.1		
#40	76.8		
#200	66.5		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= 32 LL= 49 PI= 17

Coefficients

D_{85}= 1.28 D_{60}= 0.0540 D_{50}= 0.0346
D_{30}= 0.0111 D_{15}= 0.0041 D_{10}= 0.0023
C_u= 23.15 C_c= 0.98

Classification

USCS= ML AASHTO= A-7-5(11)

Remarks

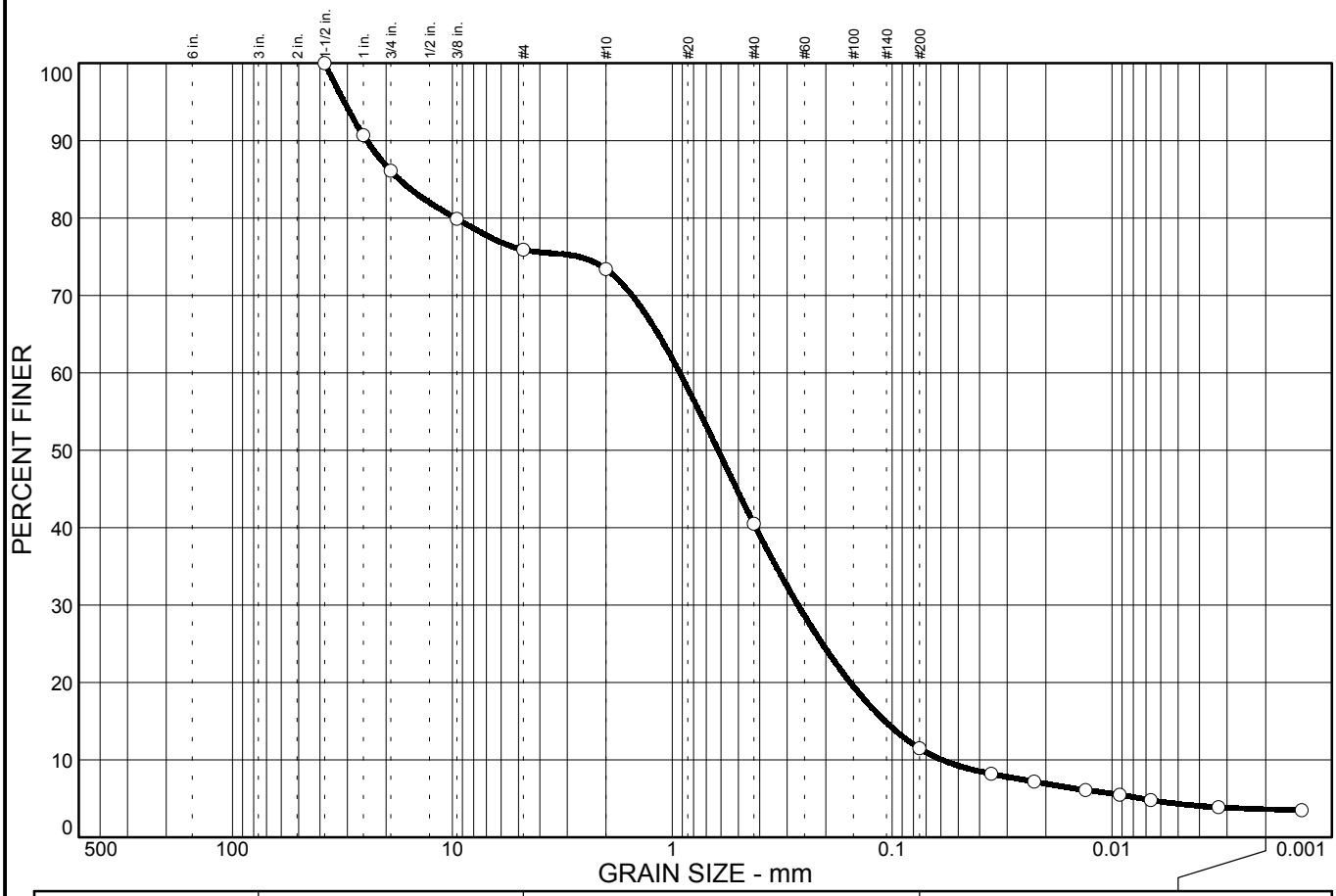
Moisture Content= 68.2%
Specific Gravity= 2.59
Loss on Ignition @ 440 C= 6.1%

Sample No.: 18 IN **Source of Sample:** **Date:** 7/22/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	13.9	10.2	2.5	32.9	29.0	7.9	3.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.50 in.	100.0		
1.00 in.	90.7		
0.75 in.	86.1		
0.375 in.	79.9		
#4	75.9		
#10	73.4		
#40	40.5		
#200	11.5		

* (no specification provided)

Soil Description

Well-graded sand with silt and gravel

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 17.4 D_{60}= 0.923 D_{50}= 0.618
D_{30}= 0.268 D_{15}= 0.108 D_{10}= 0.0592
C_u= 15.61 C_c= 1.31

Classification

USCS= SW-SM AASHTO= A-1-b

Remarks

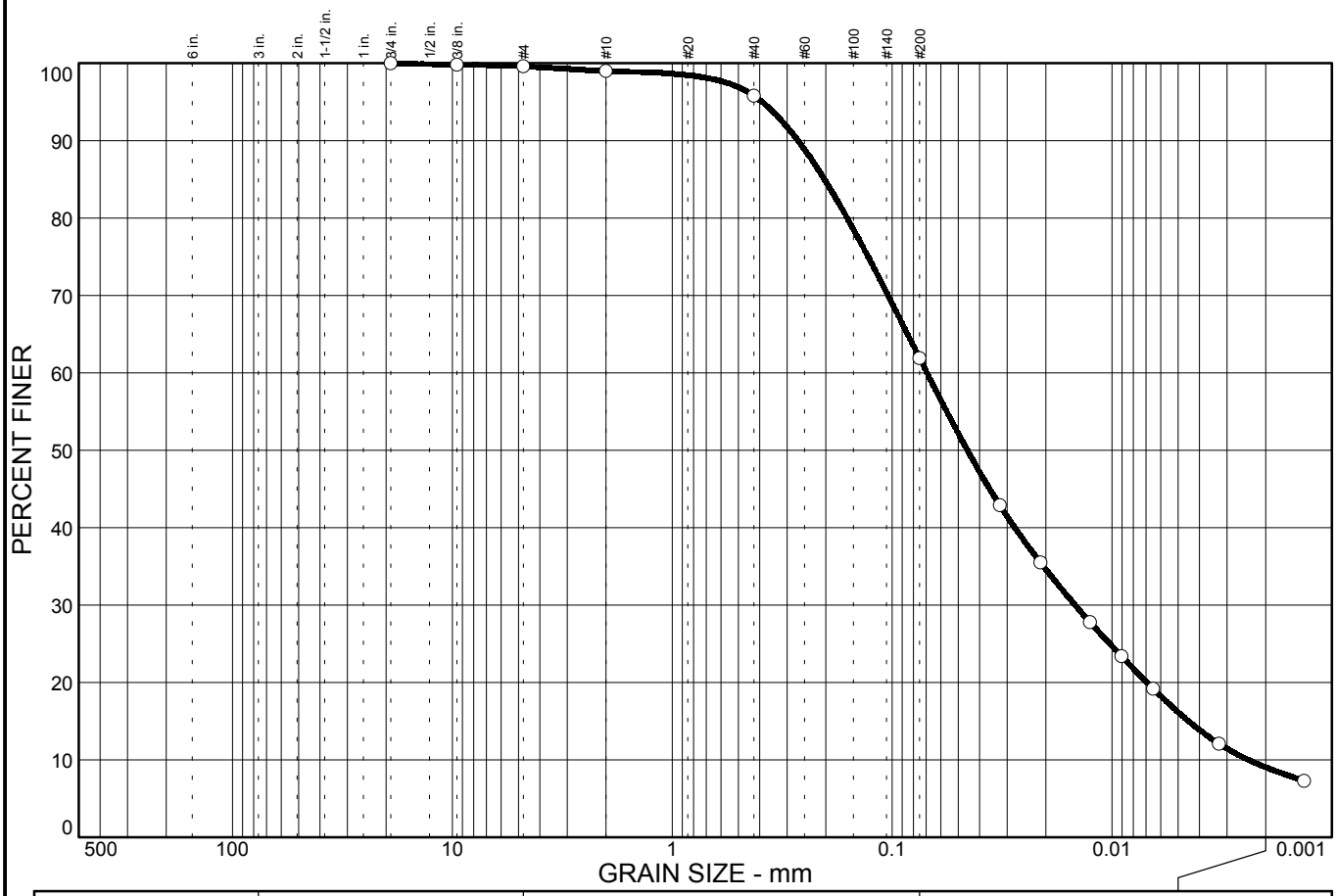
Moisture Content= 33.0%
Specific Gravity= 2.66
Loss on Ignition @ 440 C= 3.8%

Sample No.: 19 DEF IN **Source of Sample:** **Date:** 7/10/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.4	0.6	3.2	33.9	52.8	9.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.8		
#4	99.6		
#10	99.0		
#40	95.8		
#200	61.9		

* (no specification provided)

Soil Description

Sandy silty clay

Atterberg Limits

PL= 21 LL= 25 PI= 4

Coefficients

D_{85}= 0.203 D_{60}= 0.0694 D_{50}= 0.0454
D_{30}= 0.0147 D_{15}= 0.0045 D_{10}= 0.0024
C_u= 29.04 C_c= 1.30

Classification

USCS= CL-ML AASHTO= A-4(1)

Remarks

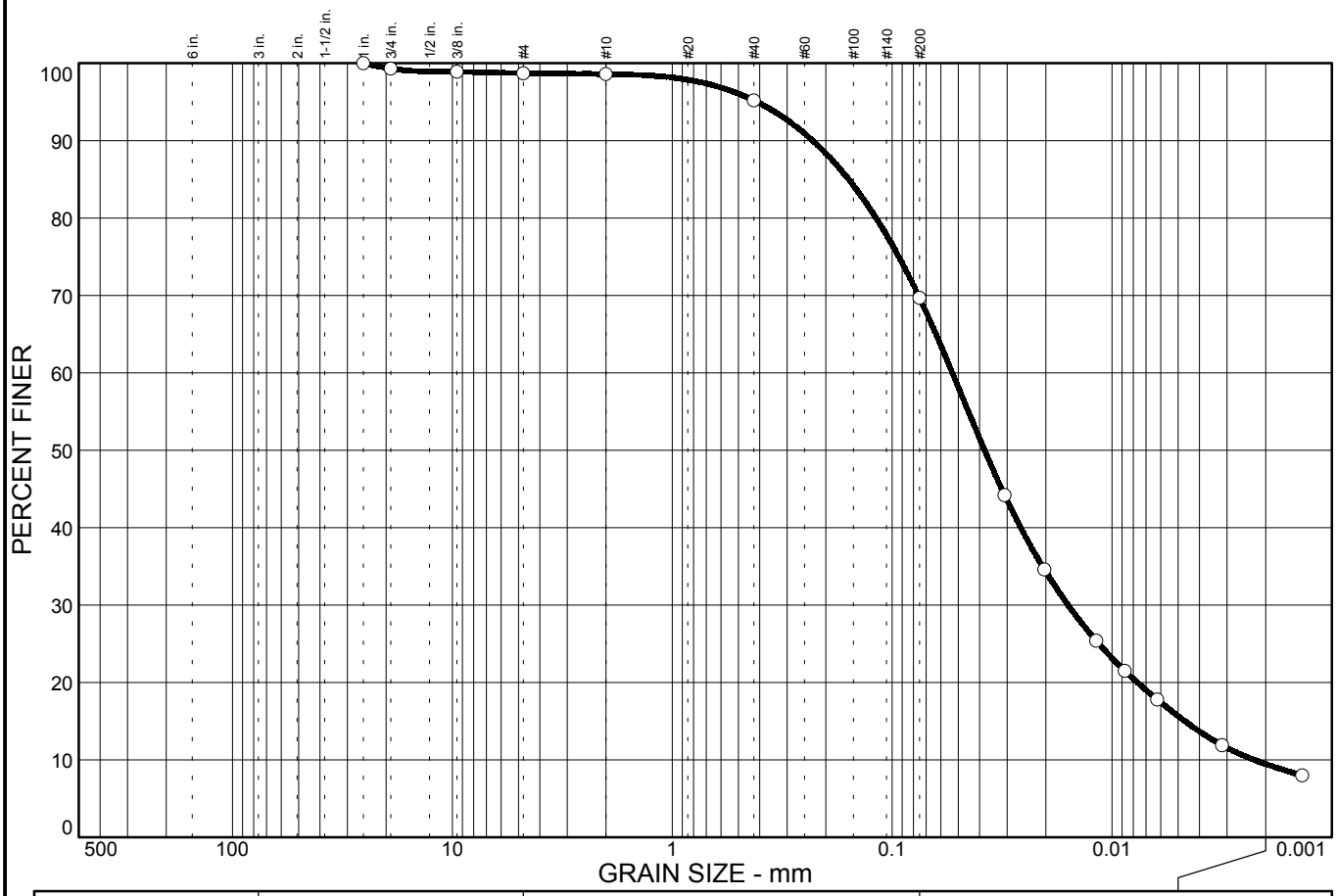
Moisture Content= 46.9%
Specific Gravity= 2.68
Loss on Ignition @ 440 C= 2.6%

Sample No.: 19 GHI BK **Source of Sample:** **Date:** 7/10/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.7	0.6	0.1	3.4	25.5	60.2	9.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	99.3		
0.375 in.	98.9		
#4	98.7		
#10	98.6		
#40	95.2		
#200	69.7		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= 22 LL= 26 PI= 4

Coefficients

D_{85}= 0.158 D_{60}= 0.0532 D_{50}= 0.0379
D_{30}= 0.0158 D_{15}= 0.0047 D_{10}= 0.0023
C_u= 23.62 C_c= 2.09

Classification

USCS= ML AASHTO= A-4(1)

Remarks

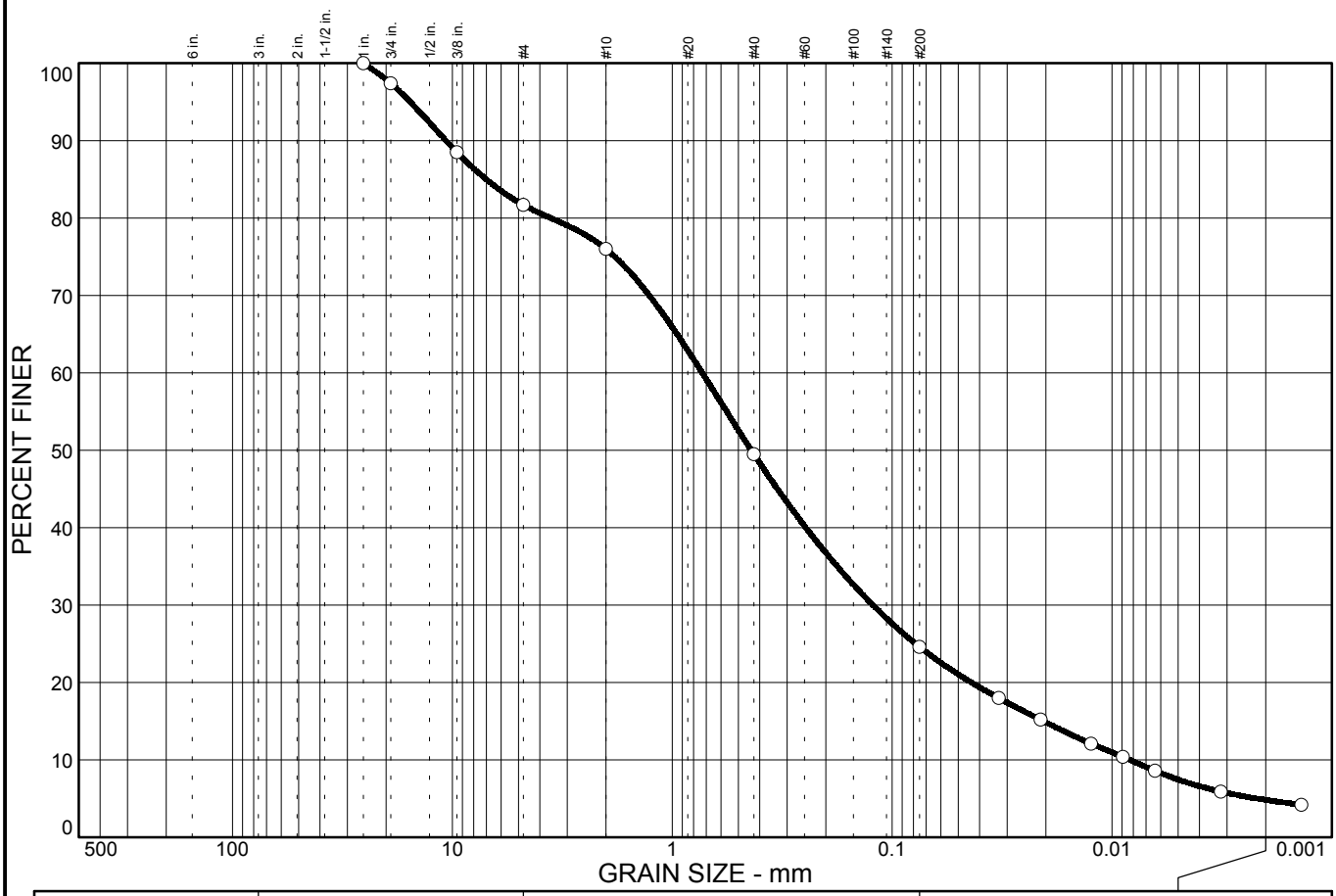
Moisture Content= 33.0%
Specific Gravity= 2.71
Loss on Ignition @ 440 C= 2.4%

Sample No.: 21 BK **Source of Sample:** **Date:** 7/10/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	2.6	15.7	5.7	26.5	24.9	19.8	4.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	97.4		
0.375 in.	88.5		
#4	81.7		
#10	76.0		
#40	49.5		
#200	24.6		

* (no specification provided)

Soil Description

Silty sand with gravel

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 7.01 D_{60}= 0.730 D_{50}= 0.436
D_{30}= 0.122 D_{15}= 0.0204 D_{10}= 0.0083
C_u= 88.26 C_c= 2.47

Classification

USCS= SM AASHTO= A-1-b

Remarks

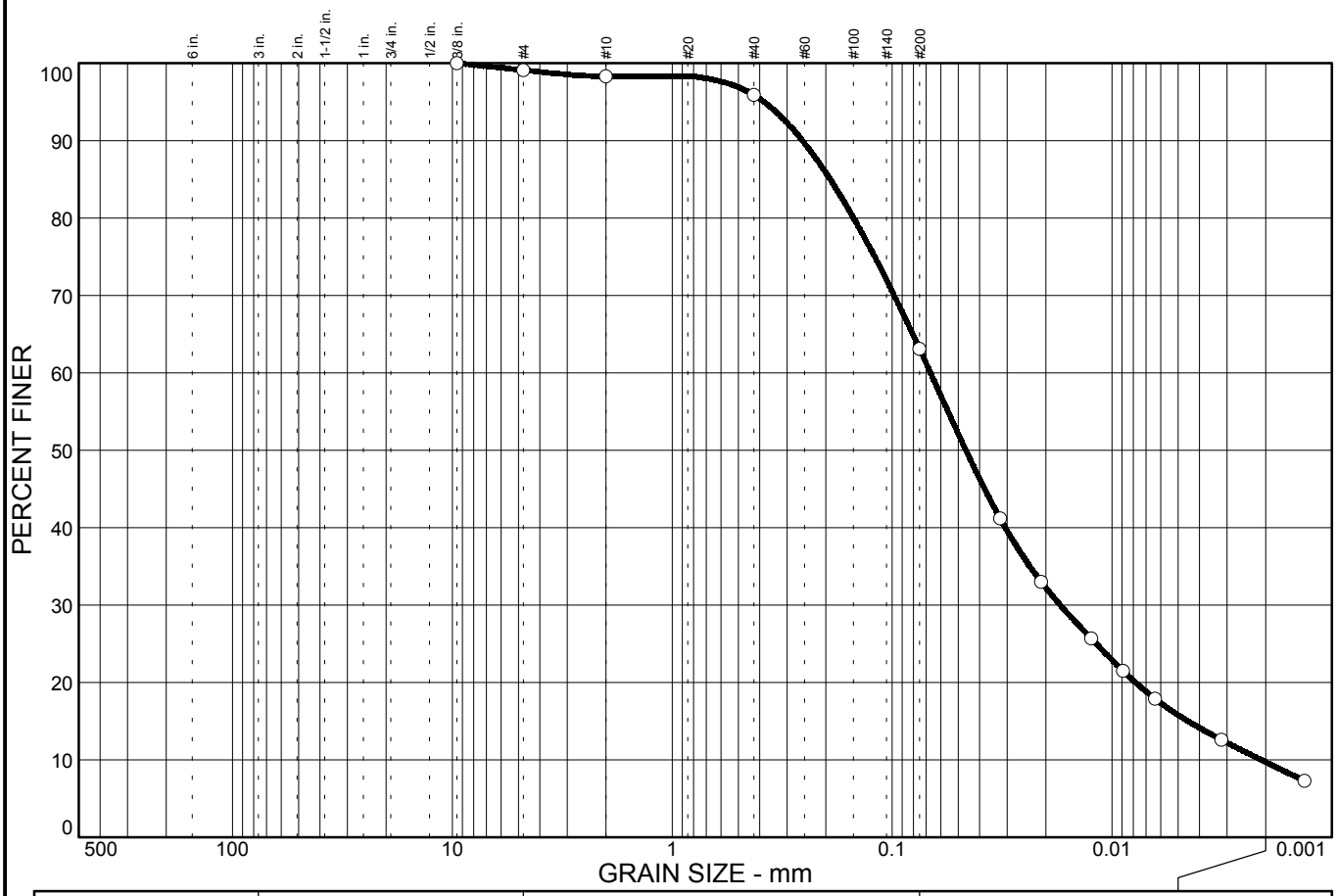
Moisture Content= 60.0%
Specific Gravity= 2.69
Loss on Ignition @ 440 C= 4.0%

Sample No.: 21 IN **Source of Sample:** **Date:** 7/10/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.9	0.8	2.4	32.8	53.4	9.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	99.1		
#10	98.3		
#40	95.9		
#200	63.1		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= 27 LL= 33 PI= 6

Coefficients

D_{85}= 0.191 D_{60}= 0.0669 D_{50}= 0.0461
D_{30}= 0.0172 D_{15}= 0.0045 D_{10}= 0.0021
C_u= 31.95 C_c= 2.11

Classification

USCS= ML AASHTO= A-4(3)

Remarks

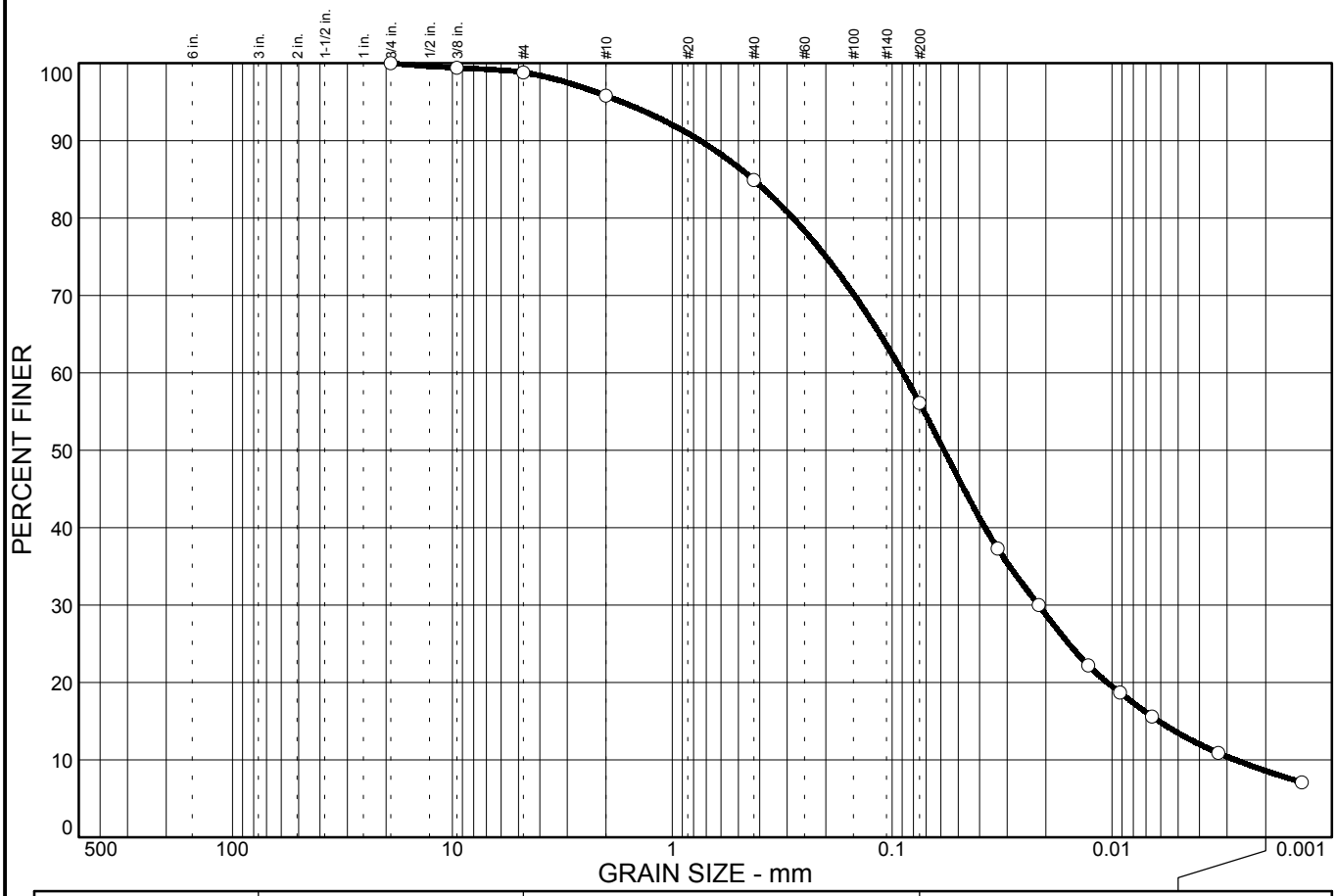
Moisture Content= 49.7%
Specific Gravity= 2.70
Loss on Ignition @ 440 C= 4.2%

Sample No.: 23 BK **Source of Sample:** **Date:** 8/7/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.2	3.0	10.9	28.8	47.5	8.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.4		
#4	98.8		
#10	95.8		
#40	84.9		
#200	56.1		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.429 D_{60}= 0.0893 D_{50}= 0.0580
D_{30}= 0.0215 D_{15}= 0.0061 D_{10}= 0.0027
C_u= 32.54 C_c= 1.89

Classification

USCS= ML AASHTO= A-4(1)

Remarks

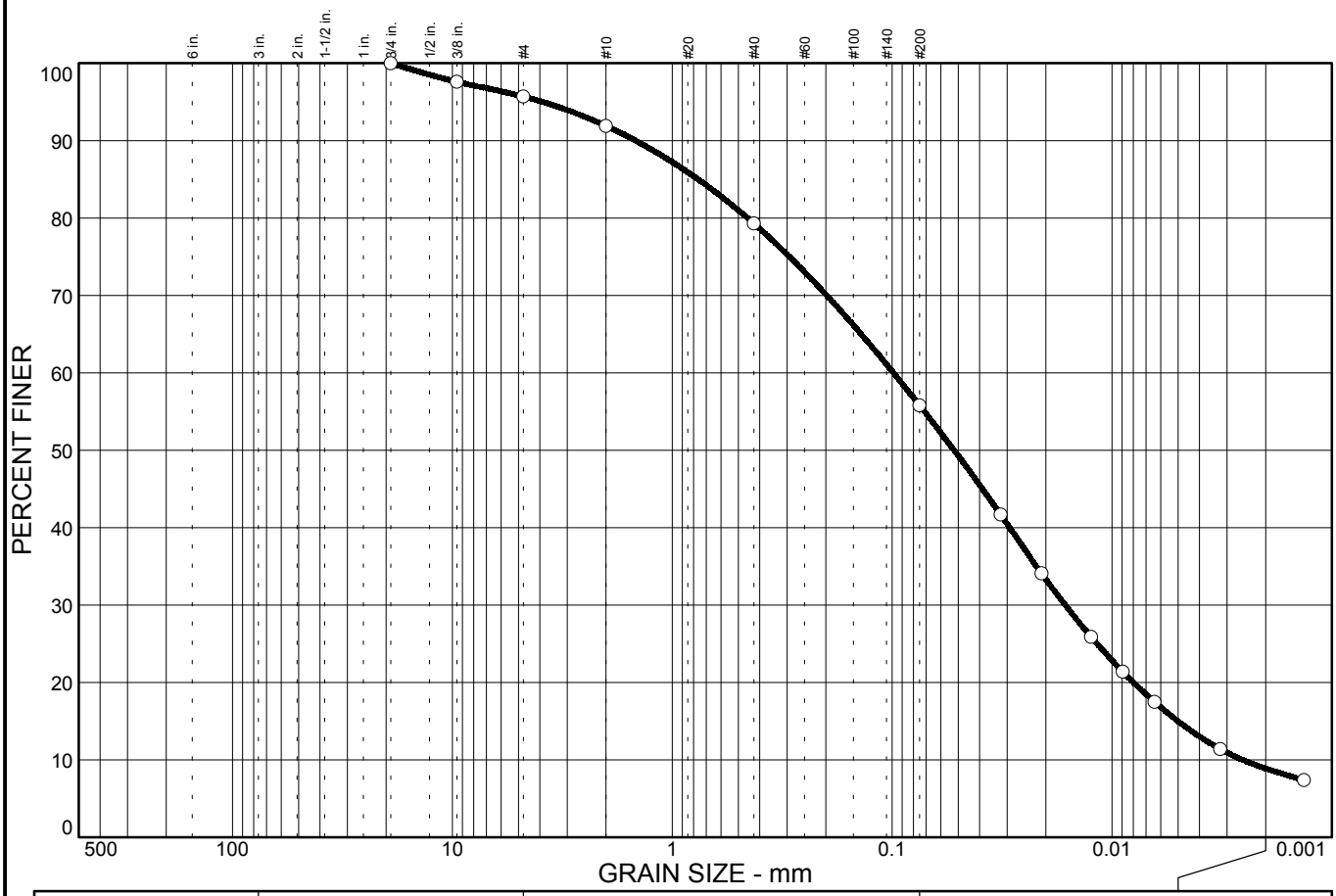
Moisture Content= 49.1%
Specific Gravity= 2.60
Loss on Ignition @ 440 C= 4.1%

Sample No.: 24 BK **Source of Sample:** **Date:** 8/7/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	4.3	3.8	12.6	23.5	46.9	8.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	97.6		
#4	95.7		
#10	91.9		
#40	79.3		
#200	55.8		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= 23 LL= 27 PI= 4

Coefficients

D_{85}= 0.762 D_{60}= 0.0985 D_{50}= 0.0522
D_{30}= 0.0163 D_{15}= 0.0050 D_{10}= 0.0025
C_u= 38.88 C_c= 1.07

Classification

USCS= ML AASHTO= A-4(0)

Remarks

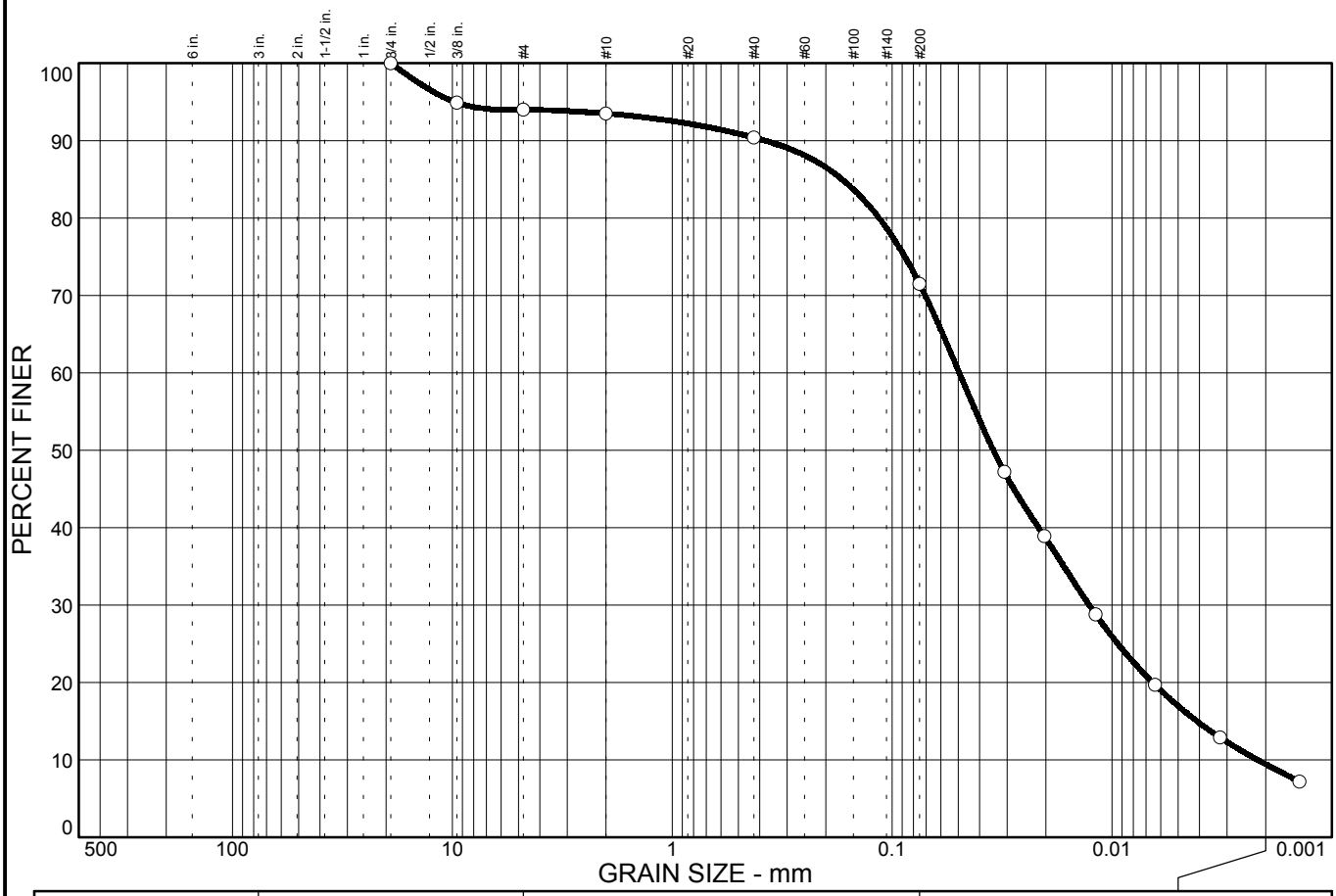
Moisture Content= 46.6%
Specific Gravity= 2.67
Loss on Ignition @ 440 C= 3.0

Sample No.: 24 IN **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	6.0	0.5	3.1	18.9	62.1	9.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	94.9		
#4	94.0		
#10	93.5		
#40	90.4		
#200	71.5		

* (no specification provided)

Soil Description

Silt with sand

Atterberg Limits

PL= 30 LL= 42 PI= 12

Coefficients

D_{85}= 0.169 D_{60}= 0.0495 D_{50}= 0.0346
D_{30}= 0.0127 D_{15}= 0.0041 D_{10}= 0.0022
C_u= 22.76 C_c= 1.50

Classification

USCS= ML AASHTO= A-7-5(9)

Remarks

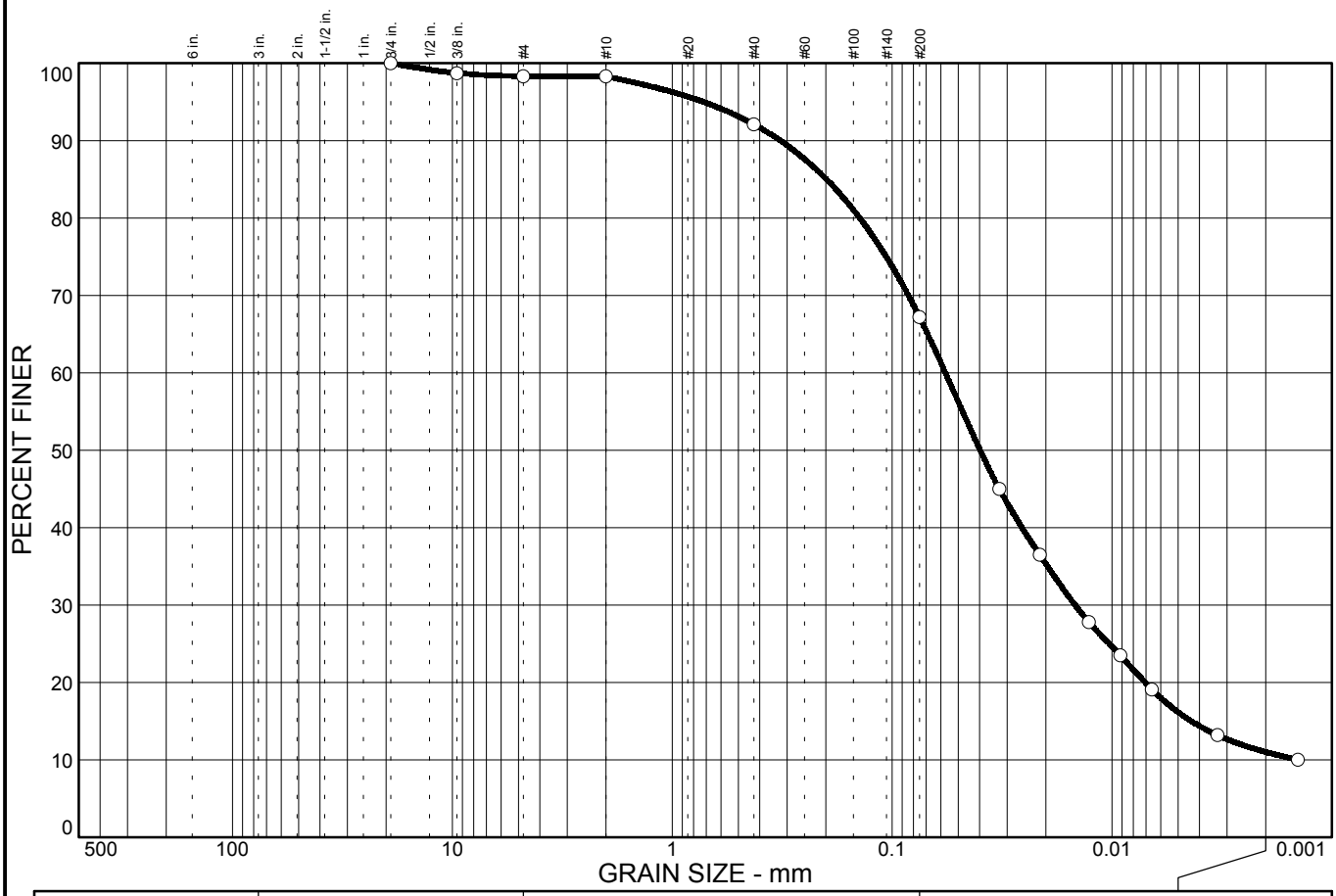
Moisture Content= 72.3%
Specific Gravity= 2.63
Loss on Ignition @ 440 C= 4.9%

Sample No.: 25 BK **Source of Sample:** **Date:** 7/10/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.7	0.0	6.2	24.9	56.2	11.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.7		
#4	98.3		
#10	98.3		
#40	92.1		
#200	67.2		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= 36 LL= 44 PI= 8

Coefficients

D_{85}= 0.199 D_{60}= 0.0572 D_{50}= 0.0397
D_{30}= 0.0147 D_{15}= 0.0043 D_{10}= 0.0014
C_u= 40.10 C_c= 2.65

Classification

USCS= ML AASHTO= A-5(6)

Remarks

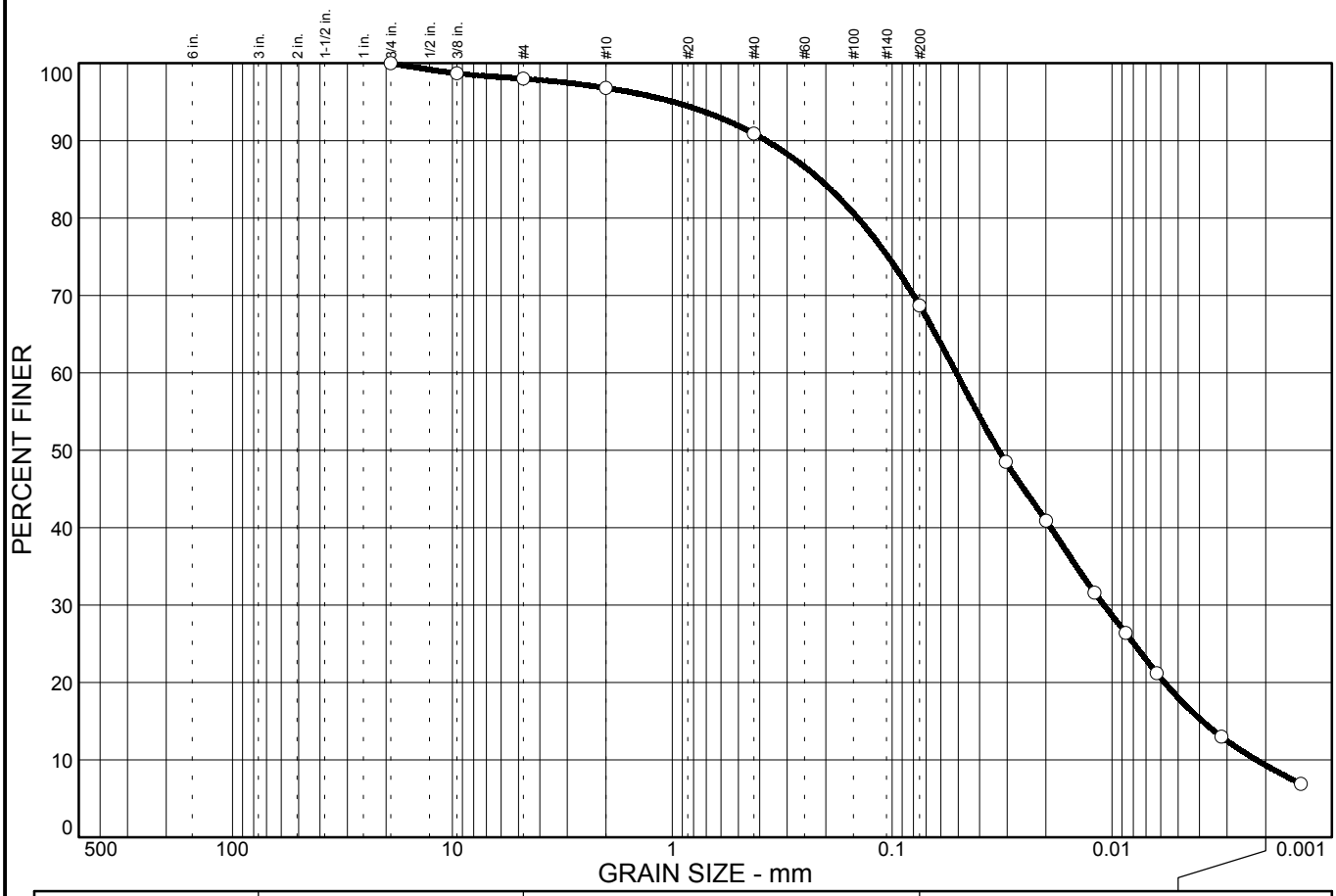
Moisture Content= 99.1%
Specific Gravity= 2.55
Loss on Ignition @ 440 C= 6.5%

Sample No.: 25 IN **Source of Sample:** **Date:** 7/10/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.0	1.2	5.9	22.2	59.4	9.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.7		
#4	98.0		
#10	96.8		
#40	90.9		
#200	68.7		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= 33 LL= 42 PI= 9

Coefficients

D_{85}= 0.214 D_{60}= 0.0510 D_{50}= 0.0327
D_{30}= 0.0109 D_{15}= 0.0039 D_{10}= 0.0022
C_u= 23.16 C_c= 1.05

Classification

USCS= ML AASHTO= A-5(7)

Remarks

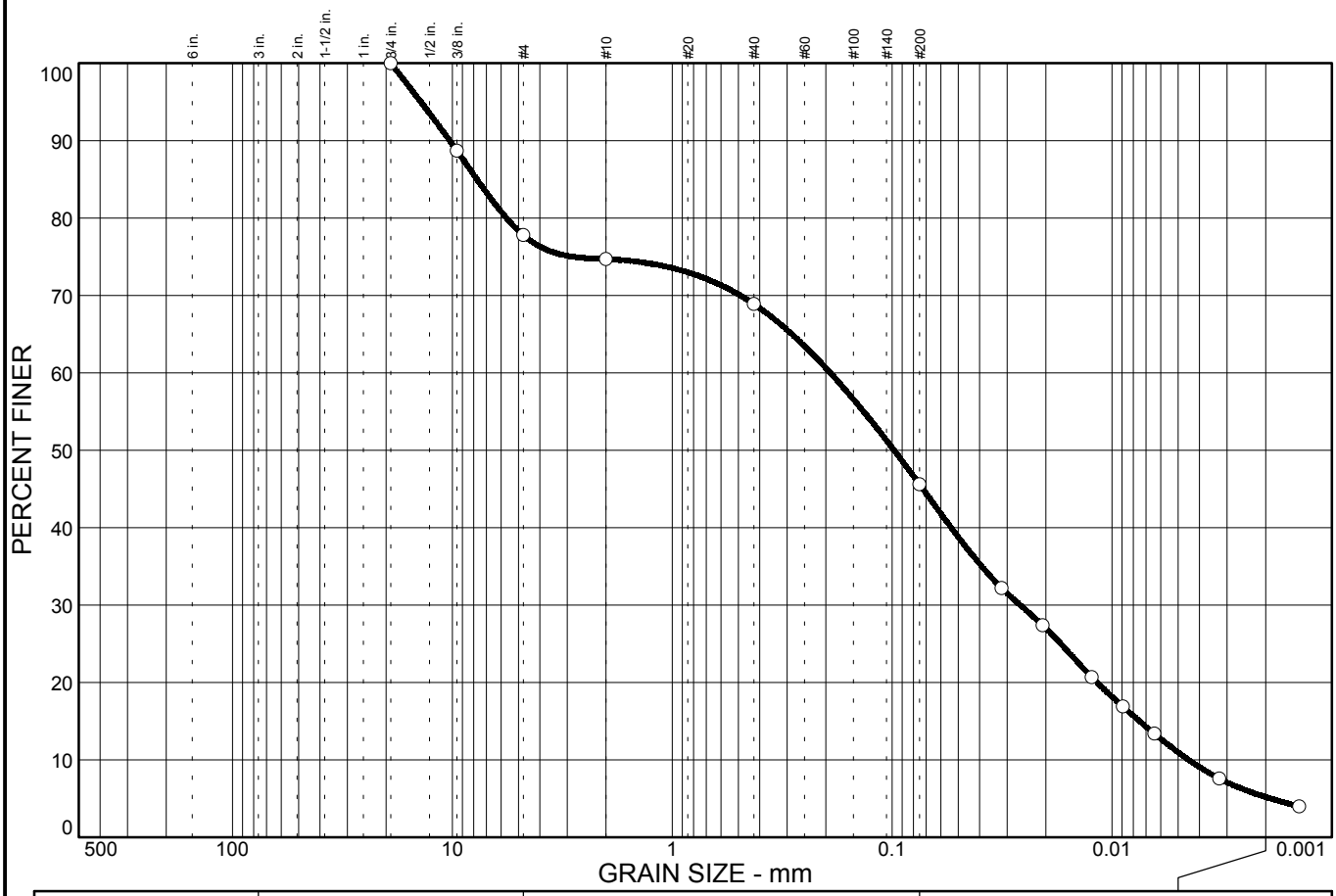
Moisture Content= 56.5
Specific Gravity= 2.68
Loss on Ignition @ 440 C= 5.5%

Sample No.: 26 BK **Source of Sample:** **Date:** 7/10/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	22.2	3.1	5.8	23.3	40.4	5.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	88.7		
#4	77.8		
#10	74.7		
#40	68.9		
#200	45.6		

* (no specification provided)

Soil Description

Silty sand with gravel

Atterberg Limits

PL= 40 LL= 46 PI= 6

Coefficients

D_{85}= 7.72 D_{60}= 0.191 D_{50}= 0.0979
D_{30}= 0.0261 D_{15}= 0.0075 D_{10}= 0.0045
C_u= 42.68 C_c= 0.80

Classification

USCS= SM AASHTO= A-5(1)

Remarks

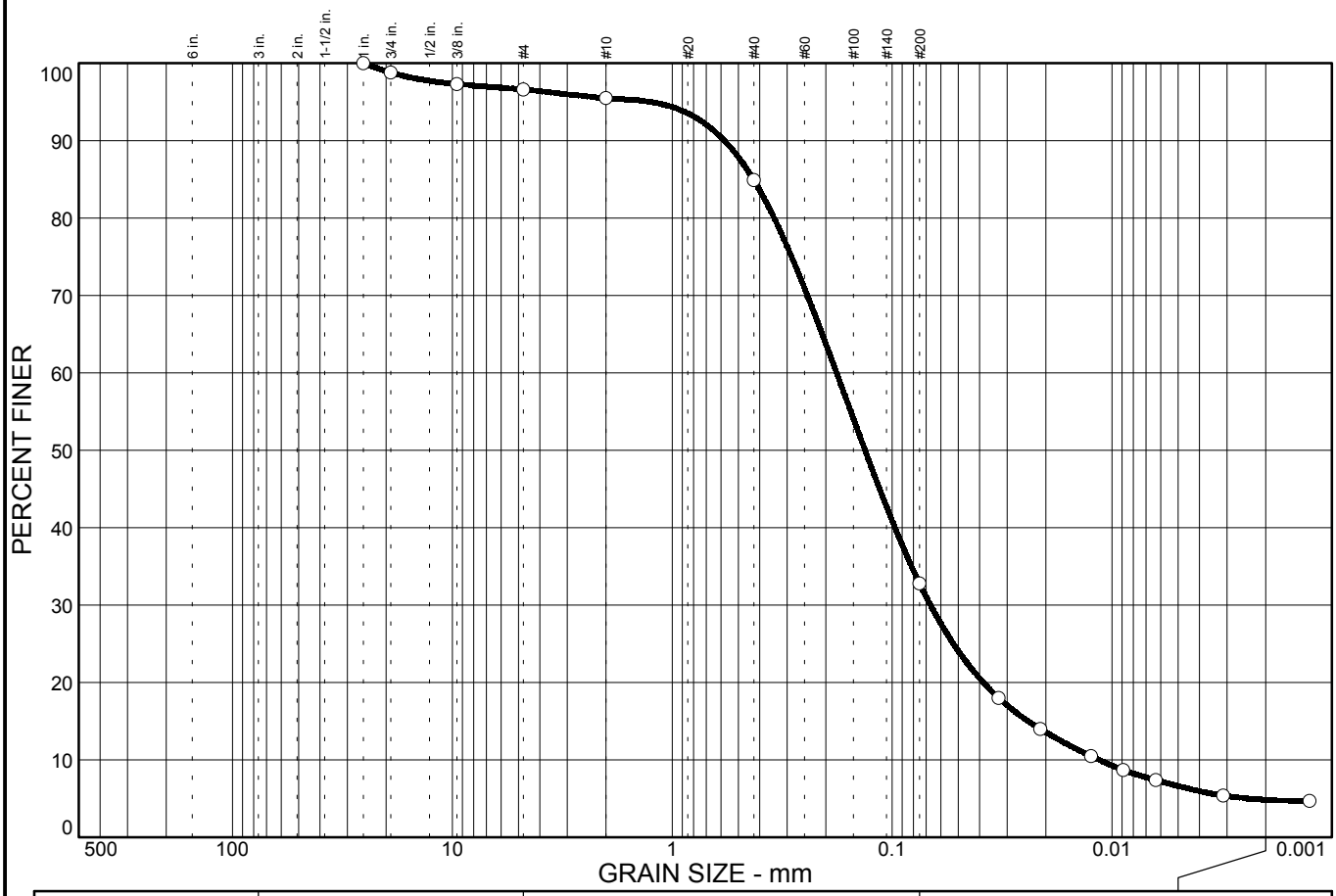
Moisture Content= 87.9%
Specific Gravity= 2.64
Loss on Ignition @ 440 C= 7.5%

Sample No.: 26 IN **Source of Sample:** **Date:** 7/10/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	1.2	2.2	1.1	10.6	52.1	27.9	4.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	98.8		
0.375 in.	97.3		
#4	96.6		
#10	95.5		
#40	84.9		
#200	32.8		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.427 D_{60}= 0.179 D_{50}= 0.133
D_{30}= 0.0668 D_{15}= 0.0240 D_{10}= 0.0114
C_u= 15.66 C_c= 2.19

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

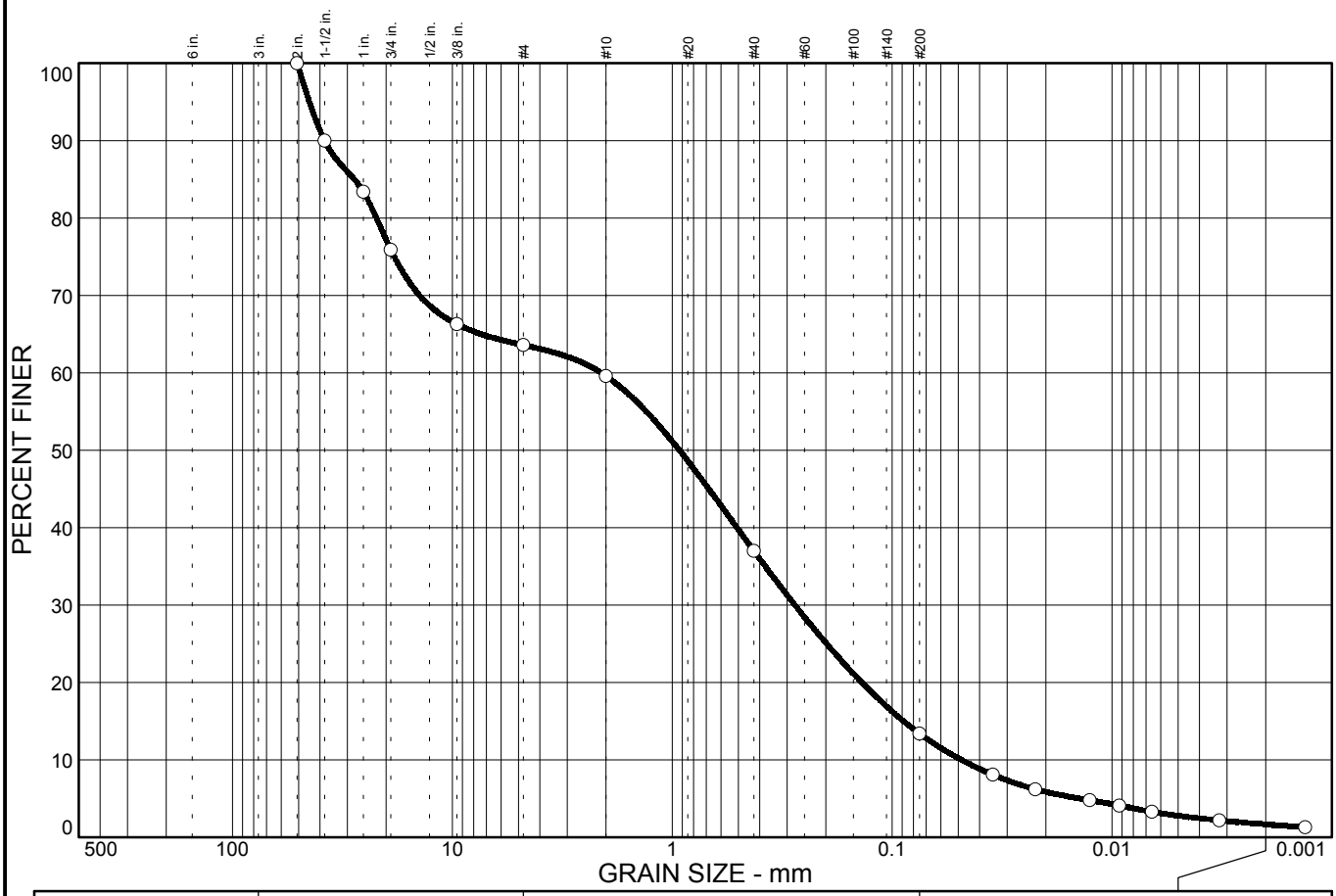
Moisture Content= 52.9%
Specific Gravity= 2.89
Loss on Ignition @ 440 C= 2.9%

Sample No.: 28 BK **Source of Sample:** **Date:** 7/10/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	24.1	12.3	4.0	22.6	23.6	11.7	1.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.00 in.	100.0		
1.50 in.	90.0		
1.00 in.	83.4		
0.75 in.	75.9		
0.375 in.	66.3		
#4	63.6		
#10	59.6		
#40	37.0		
#200	13.4		

* (no specification provided)

Soil Description

Silty sand with gravel

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 27.9 D_{60}= 2.10 D_{50}= 0.926
D_{30}= 0.276 D_{15}= 0.0886 D_{10}= 0.0483
C_u= 43.50 C_c= 0.75

Classification

USCS= SM AASHTO= A-1-b

Remarks

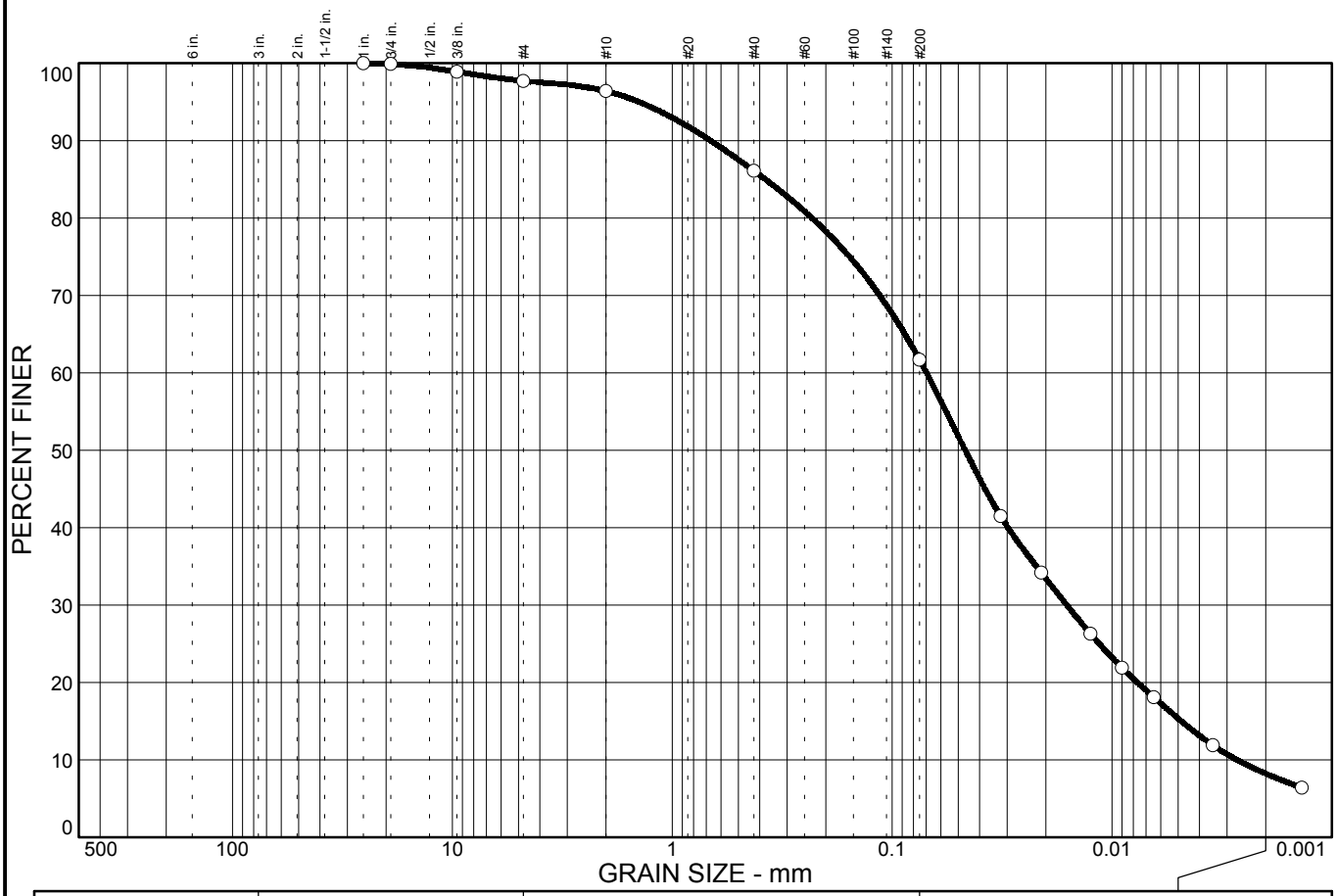
Moisture Content= 42.0%
Specific Gravity= 2.78
Loss on Ignition @ 440 C= 2.6%

Sample No.: 28 IN **Source of Sample:** **Date:** 7/10/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.1	2.2	1.3	10.3	24.4	53.5	8.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	99.9		
0.375 in.	98.9		
#4	97.7		
#10	96.4		
#40	86.1		
#200	61.7		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= 32 LL= 37 PI= 5

Coefficients

D_{85}= 0.377 D_{60}= 0.0697 D_{50}= 0.0465
D_{30}= 0.0160 D_{15}= 0.0048 D_{10}= 0.0027
C_u= 25.88 C_c= 1.37

Classification

USCS= ML AASHTO= A-4(3)

Remarks

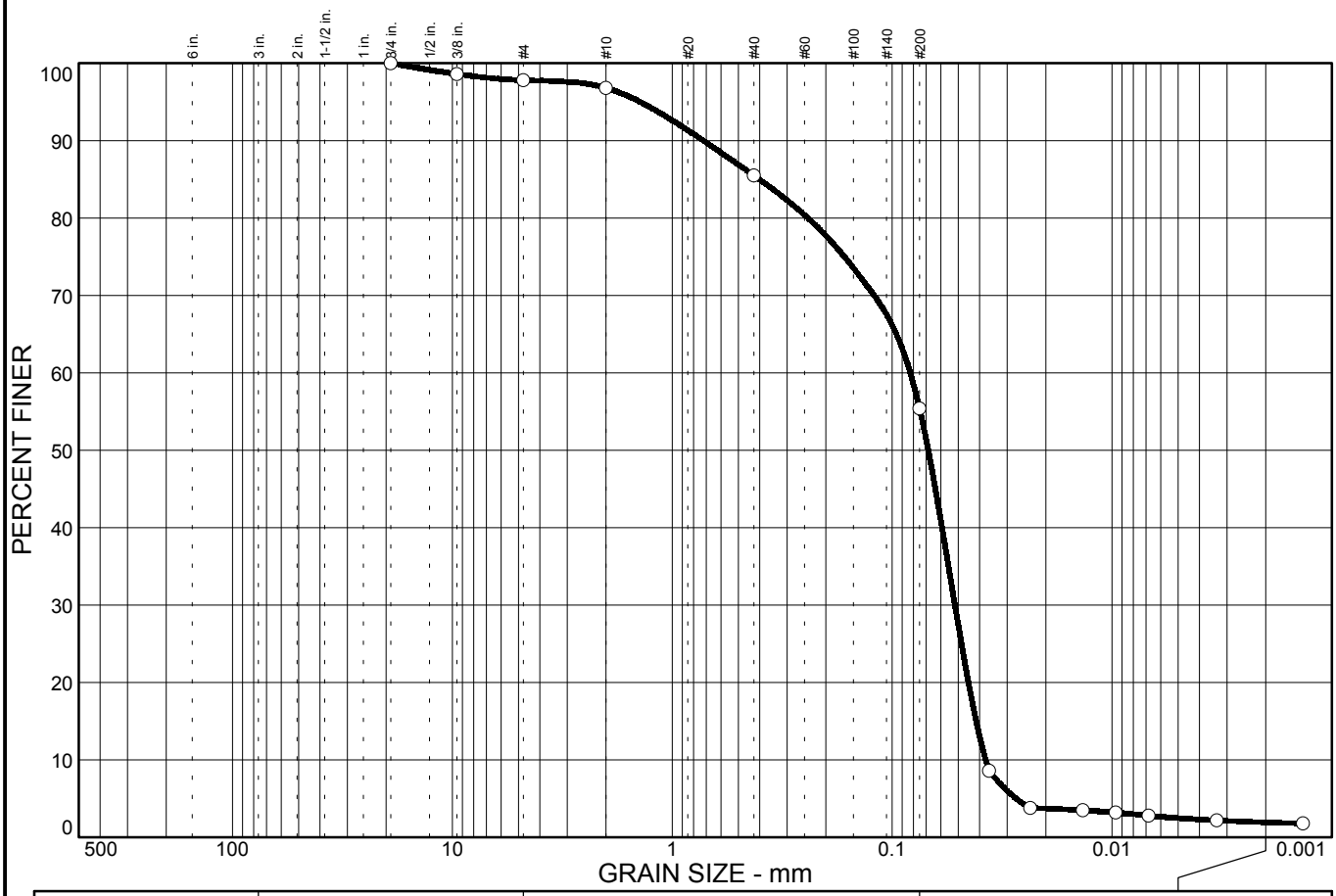
Moisture Content= 51.2%
Specific Gravity= 2.68
Loss on Ignition @ 440 C= 6.8%

Sample No.: 31 BK **Source of Sample:** **Date:** 7/11/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.2	1.0	11.3	30.1	53.5	1.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.6		
#4	97.8		
#10	96.8		
#40	85.5		
#200	55.4		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.401 D_{60}= 0.0826 D_{50}= 0.0685
D_{30}= 0.0518 D_{15}= 0.0414 D_{10}= 0.0375
C_u= 2.20 C_c= 0.87

Classification

USCS= ML AASHTO= A-4(0)

Remarks

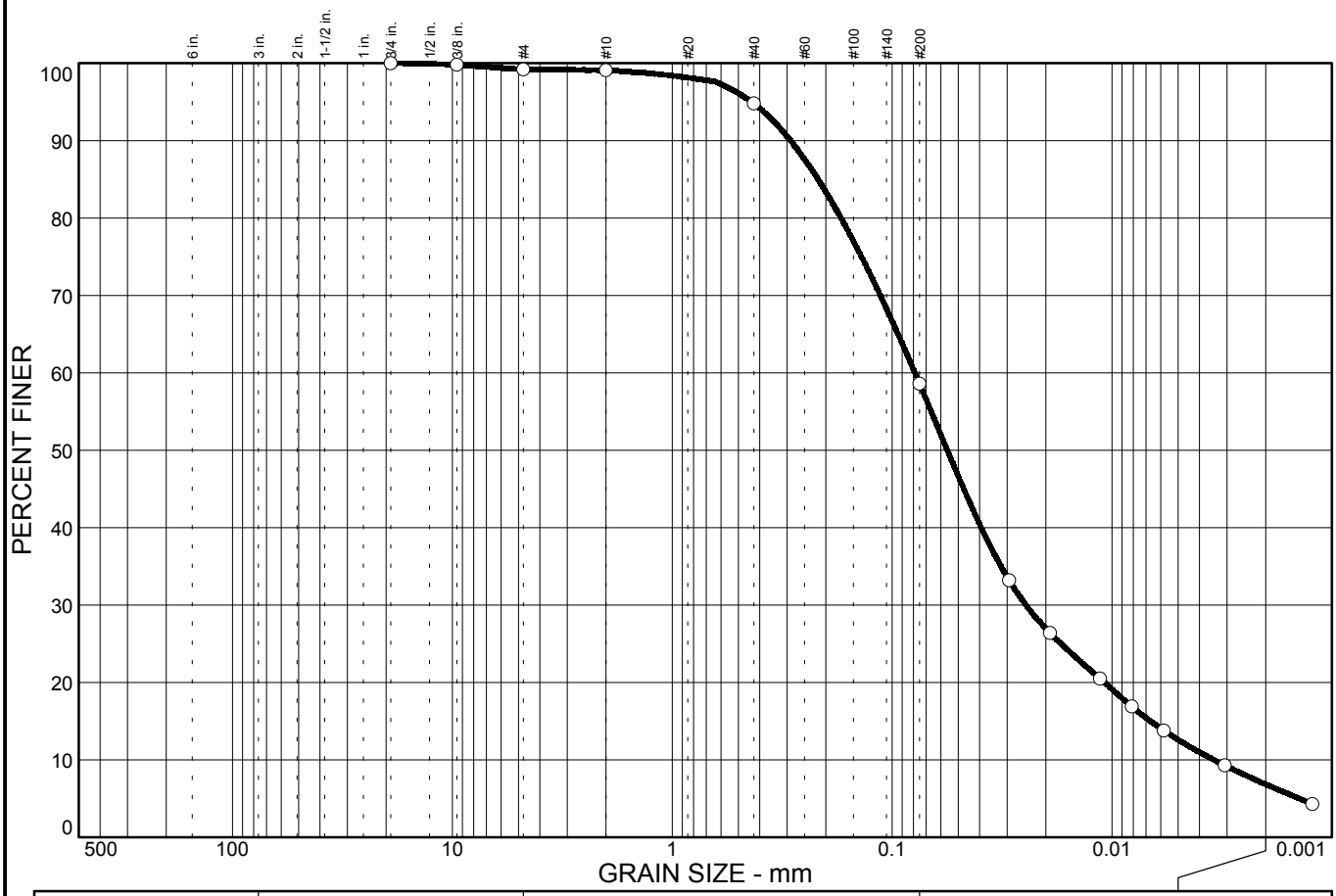
Moisture Content= 91.0%
Specific Gravity= 2.93
Loss on Ignition @ 440 C= 0.6%

Sample No.: 31 IN **Source of Sample:** **Date:** 7/11/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.8	0.1	4.3	36.2	51.7	6.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.8		
#4	99.2		
#10	99.1		
#40	94.8		
#200	58.6		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.217 D_{60}= 0.0787 D_{50}= 0.0561
D_{30}= 0.0246 D_{15}= 0.0067 D_{10}= 0.0034
C_u= 22.92 C_c= 2.24

Classification

USCS= ML AASHTO= A-4(0)

Remarks

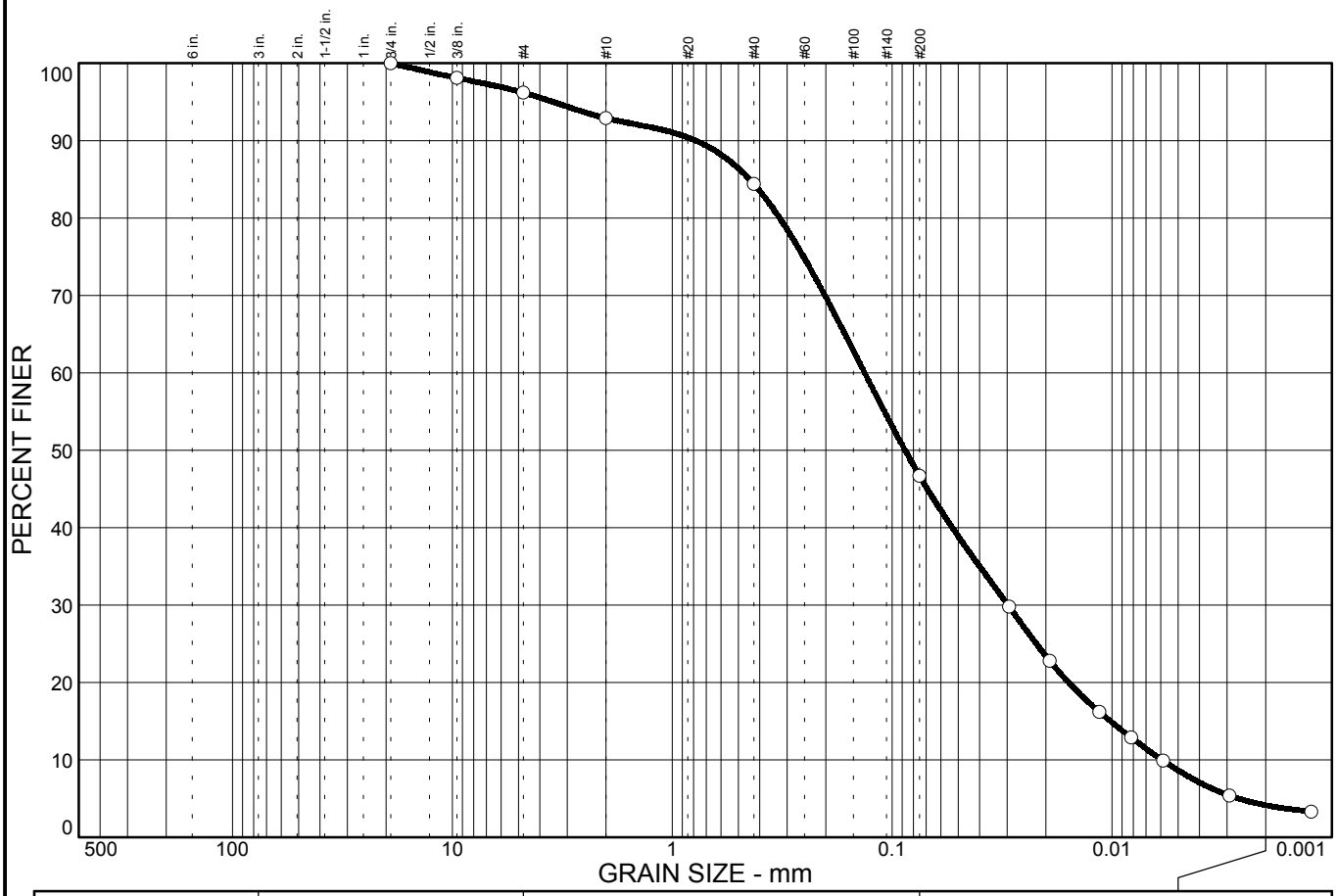
Moisture Content= 42.6%
Specific Gravity= 3.13
Loss on Ignition @ 440 C= 4.0%

Sample No.: 32 BK **Source of Sample:** **Date:** 7/11/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.8	3.3	8.5	37.7	42.6	4.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.1		
#4	96.2		
#10	92.9		
#40	84.4		
#200	46.7		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.444 D_{60}= 0.133 D_{50}= 0.0873
D_{30}= 0.0297 D_{15}= 0.0102 D_{10}= 0.0059
C_u= 22.52 C_c= 1.12

Classification

USCS= SM AASHTO= A-4(0)

Remarks

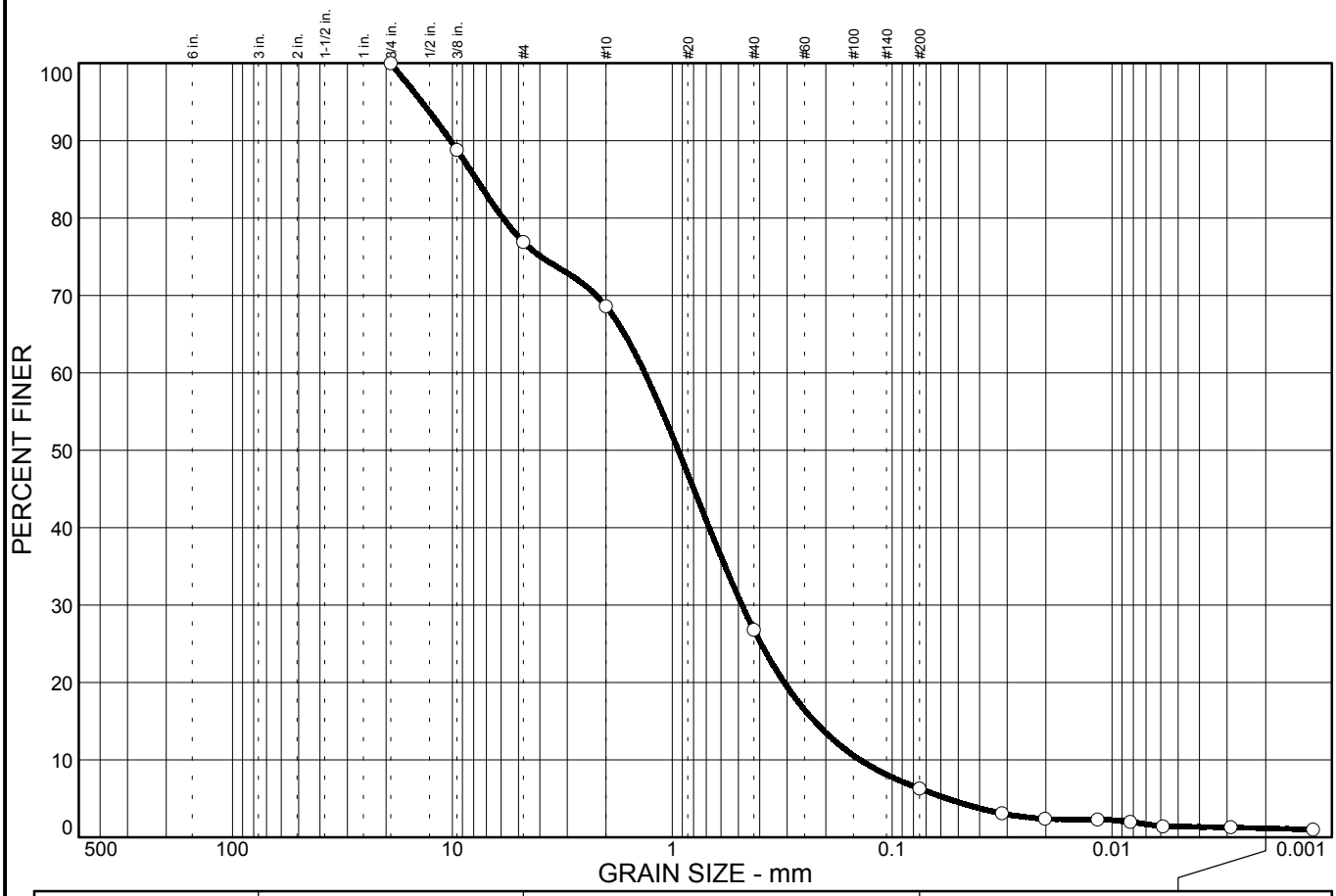
Moisture Content= 64.3
Specific Gravity= 3.06
Loss on Ignition @ 440 C= 6.9%

Sample No.: 34 BK **Source of Sample:** **Date:** 7/11/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	23.1	8.3	41.8	20.5	5.1	1.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	88.8		
#4	76.9		
#10	68.6		
#40	26.8		
#200	6.3		

* (no specification provided)

Soil Description

Well-graded sand with silt and gravel

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 7.77 D_{60}= 1.33 D_{50}= 0.938
D_{30}= 0.481 D_{15}= 0.225 D_{10}= 0.139
C_u= 9.55 C_c= 1.25

Classification

USCS= SW-SM AASHTO= A-1-b

Remarks

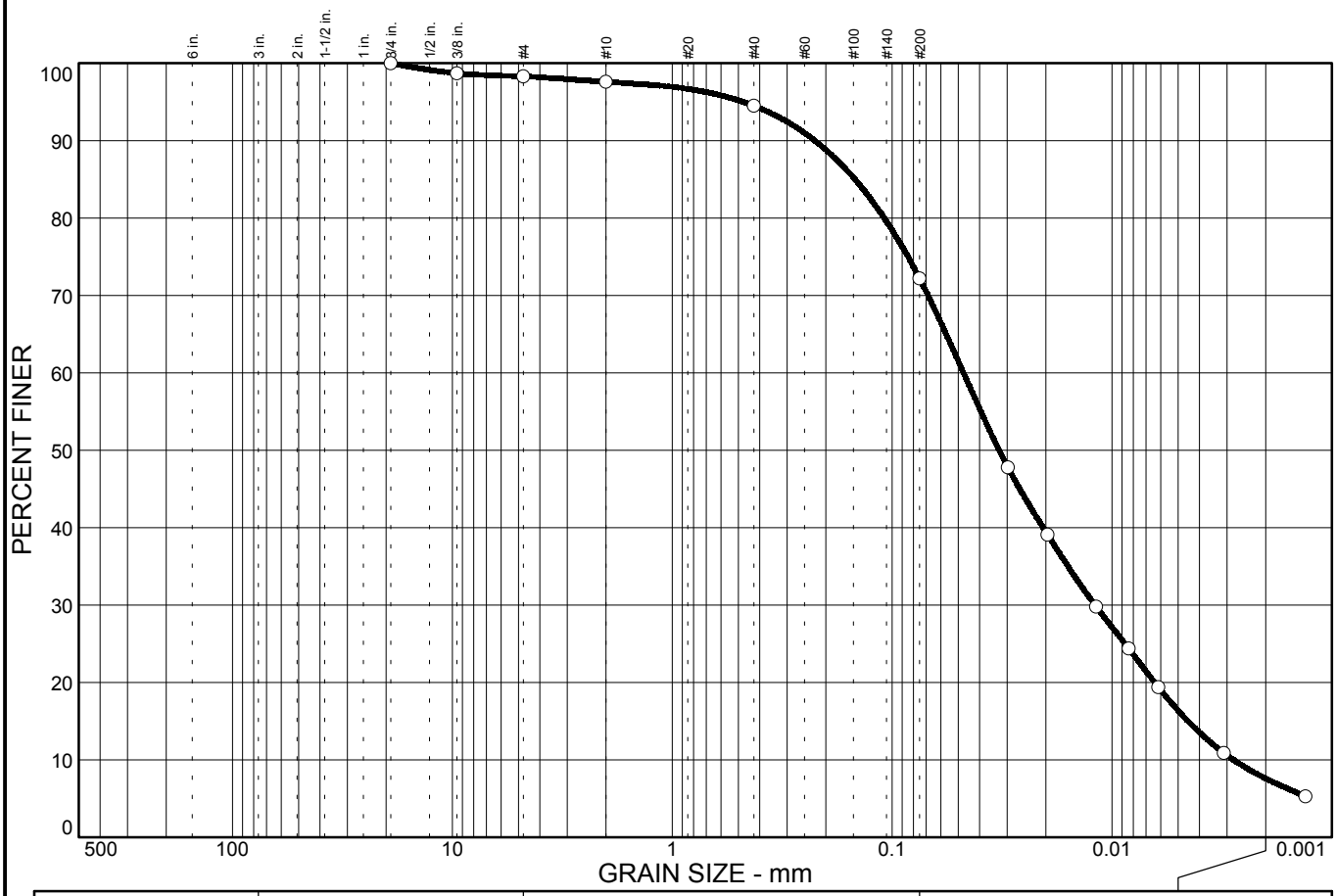
Moisture Content= 32.5%
Specific Gravity= 3.16
Loss on Ignition @ 440 C= 2.4%

Sample No.: 34 IN **Source of Sample:** **Date:** 7/11/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.7	0.7	3.1	22.3	64.6	7.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.7		
#4	98.3		
#10	97.6		
#40	94.5		
#200	72.2		

* (no specification provided)

Soil Description

Silt with sand

Atterberg Limits

PL= 30 LL= 45 PI= 15

Coefficients

D_{85}= 0.148 D_{60}= 0.0473 D_{50}= 0.0326
D_{30}= 0.0119 D_{15}= 0.0045 D_{10}= 0.0028
C_u= 16.93 C_c= 1.08

Classification

USCS= ML AASHTO= A-7-5(11)

Remarks

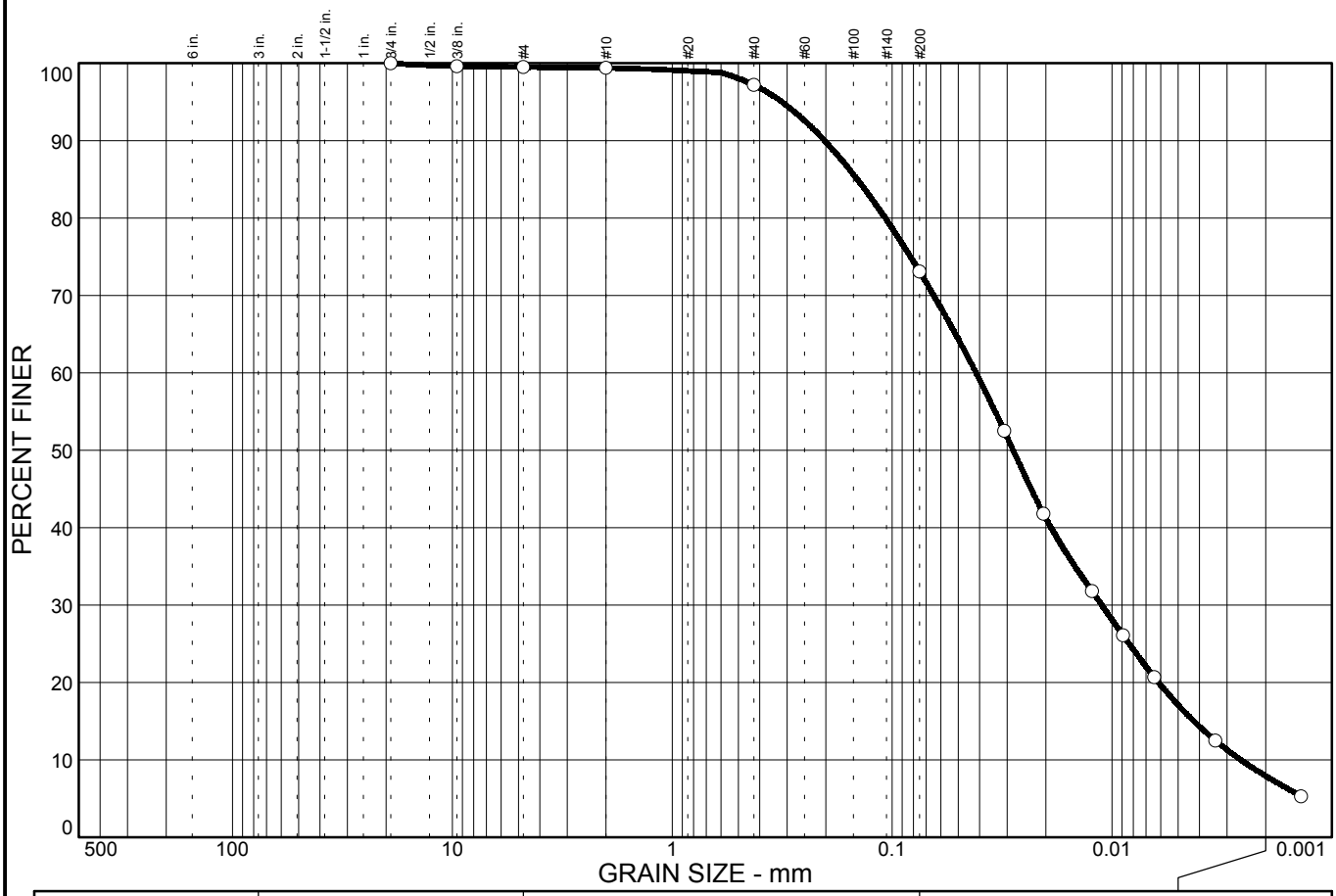
Moisture Content= 64.1%
Specific Gravity= 2.83
Loss on Ignition @ 440 C= 7.8%

Sample No.: 36 BK **Source of Sample:** **Date:** 7/11/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.5	0.1	2.2	24.1	65.2	7.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.6		
#4	99.5		
#10	99.4		
#40	97.2		
#200	73.1		

* (no specification provided)

Soil Description

Silt with sand

Atterberg Limits

PL= 33 LL= 48 PI= 15

Coefficients

D_{85}= 0.144 D_{60}= 0.0415 D_{50}= 0.0281
D_{30}= 0.0111 D_{15}= 0.0042 D_{10}= 0.0026
C_u= 16.03 C_c= 1.15

Classification

USCS= ML AASHTO= A-7-5(12)

Remarks

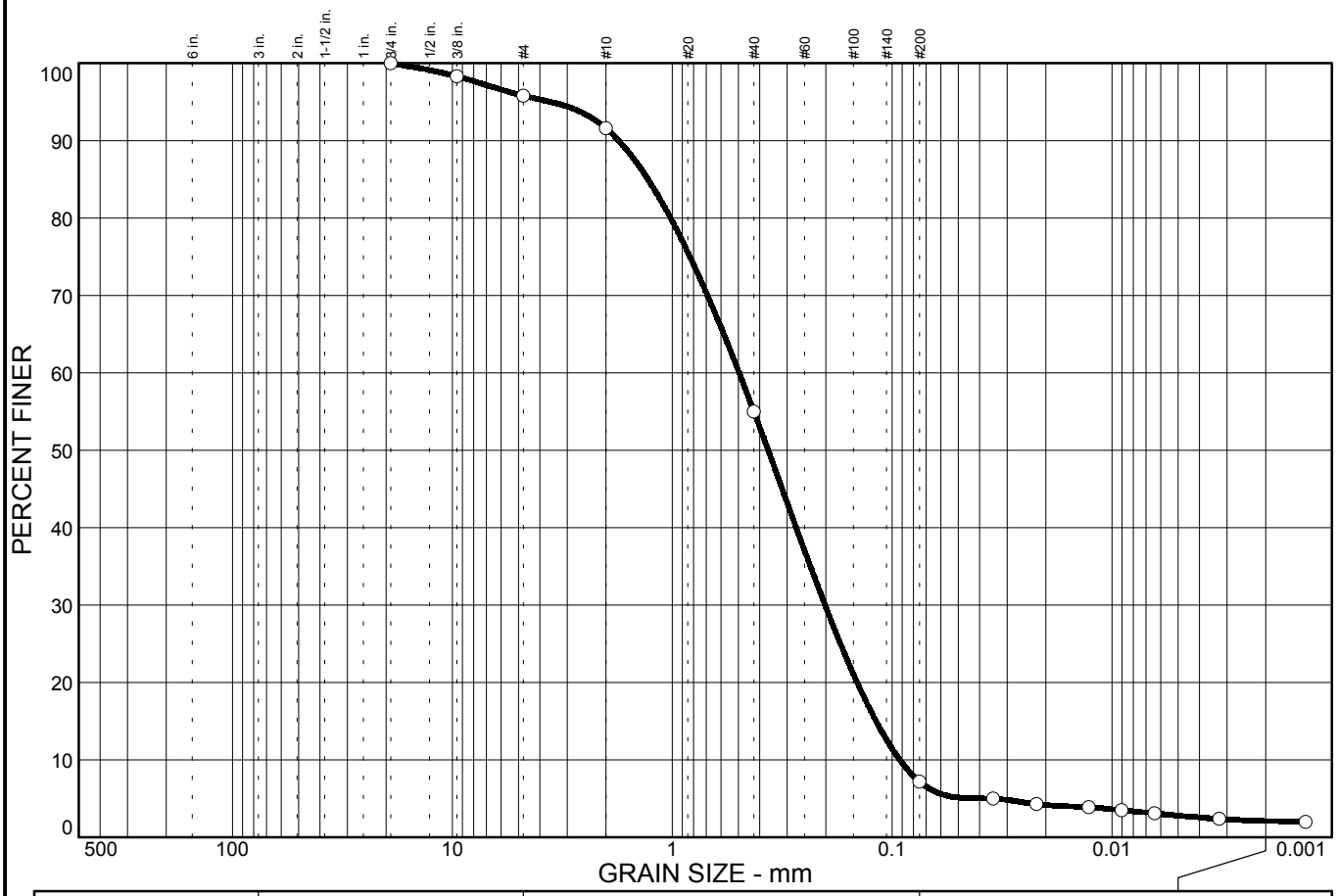
Moisture Content= 63.6%
Specific Gravity= 2.68
Loss on Ignition @ 440 C= 7.7%

Sample No.: 38 BK **Source of Sample:** **Date:** 7/11/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	4.2	4.2	36.6	47.8	5.1	2.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.3		
#4	95.8		
#10	91.6		
#40	55.0		
#200	7.2		

* (no specification provided)

Soil Description

Poorly graded sand with silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 1.29 D_{60}= 0.496 D_{50}= 0.366
D_{30}= 0.202 D_{15}= 0.118 D_{10}= 0.0921
C_u= 5.38 C_c= 0.89

Classification

USCS= SP-SM AASHTO= A-3

Remarks

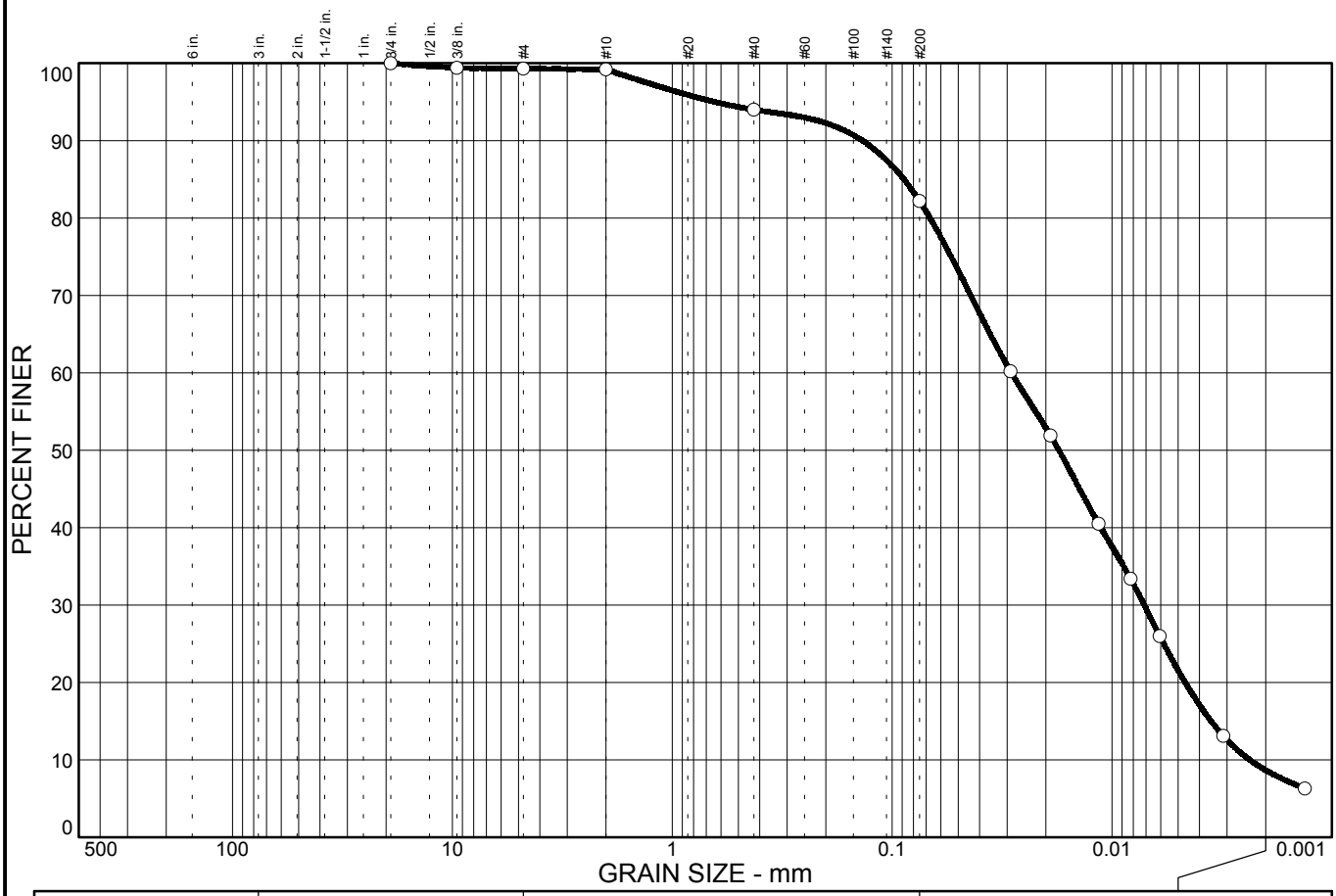
Moisture Content= 30.5%
Specific Gravity= 2.88
Loss on Ignition @ 440 C= 1.2%

Sample No.: 38 IN **Source of Sample:** **Date:** 7/11/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-854, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.7	0.1	5.2	11.8	73.5	8.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.4		
#4	99.3		
#10	99.2		
#40	94.0		
#200	82.2		

* (no specification provided)

Soil Description

Elastic silt with sand

Atterberg Limits

PL= 39 LL= 56 PI= 17

Coefficients

D_{85}= 0.0884 D_{60}= 0.0286 D_{50}= 0.0174
D_{30}= 0.0071 D_{15}= 0.0035 D_{10}= 0.0024
C_u= 12.14 C_c= 0.75

Classification

USCS= MH AASHTO= A-7-5(18)

Remarks

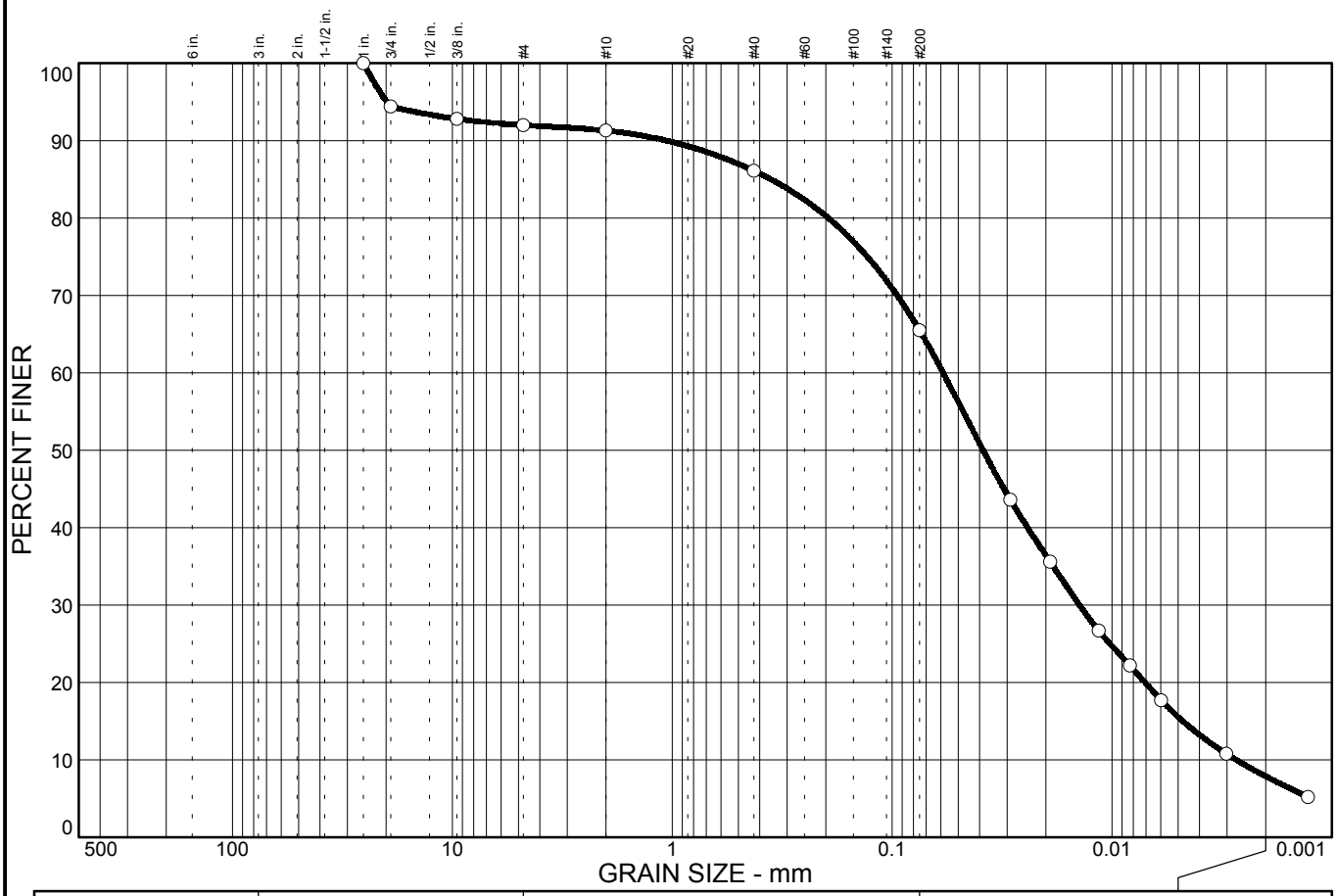
Moisture Content= 103.1%
Specific Gravity= 2.77
Loss on Ignition @ 440 C= 9.5%

Sample No.: 41 BK **Source of Sample:** **Date:** 7/29/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	5.6	2.4	0.7	5.2	20.6	57.6	7.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	94.4		
0.375 in.	92.8		
#4	92.0		
#10	91.3		
#40	86.1		
#200	65.5		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= 33 LL= 47 PI= 14

Coefficients

D_{85}= 0.356 D_{60}= 0.0586 D_{50}= 0.0385
D_{30}= 0.0140 D_{15}= 0.0048 D_{10}= 0.0027
C_u= 21.55 C_c= 1.24

Classification

USCS= ML AASHTO= A-7-5(9)

Remarks

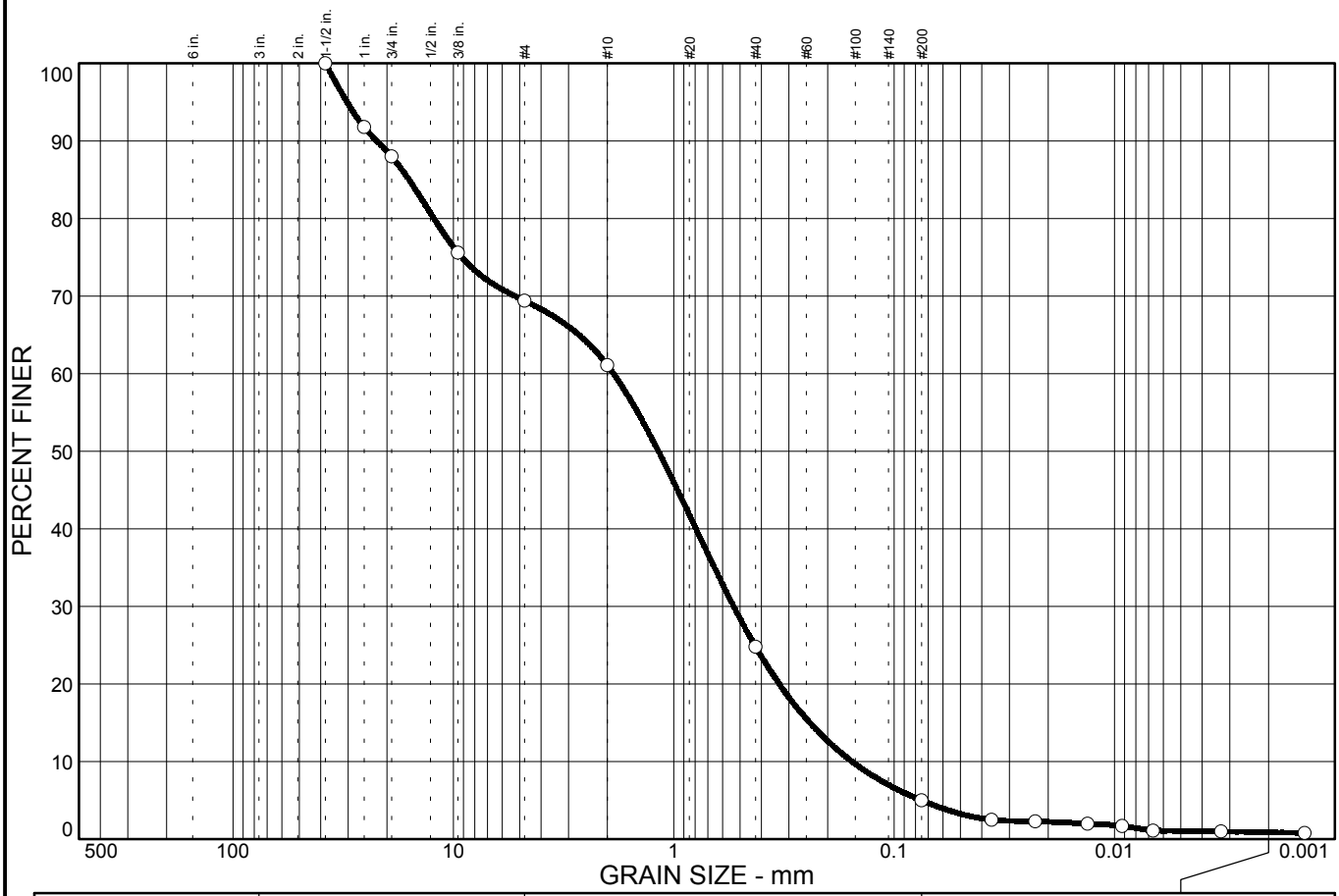
Moisture Content= 63.1%
Specific Gravity= 2.89
Loss on Ignition @ 440 C= 6.8%

Sample No.: 44 BK **Source of Sample:** **Date:** 7/29/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	12.0	18.6	8.3	36.3	19.8	4.1	0.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.50 in.	100.0		
1.00 in.	91.8		
0.75 in.	88.0		
0.375 in.	75.6		
#4	69.4		
#10	61.1		
#40	24.8		
#200	5.0		

* (no specification provided)

Soil Description

Poorly graded sand with silt and gravel

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 15.9 D_{60}= 1.87 D_{50}= 1.17
D_{30}= 0.534 D_{15}= 0.241 D_{10}= 0.155
C_u= 12.09 C_c= 0.98

Classification

USCS= SP-SM AASHTO= A-1-b

Remarks

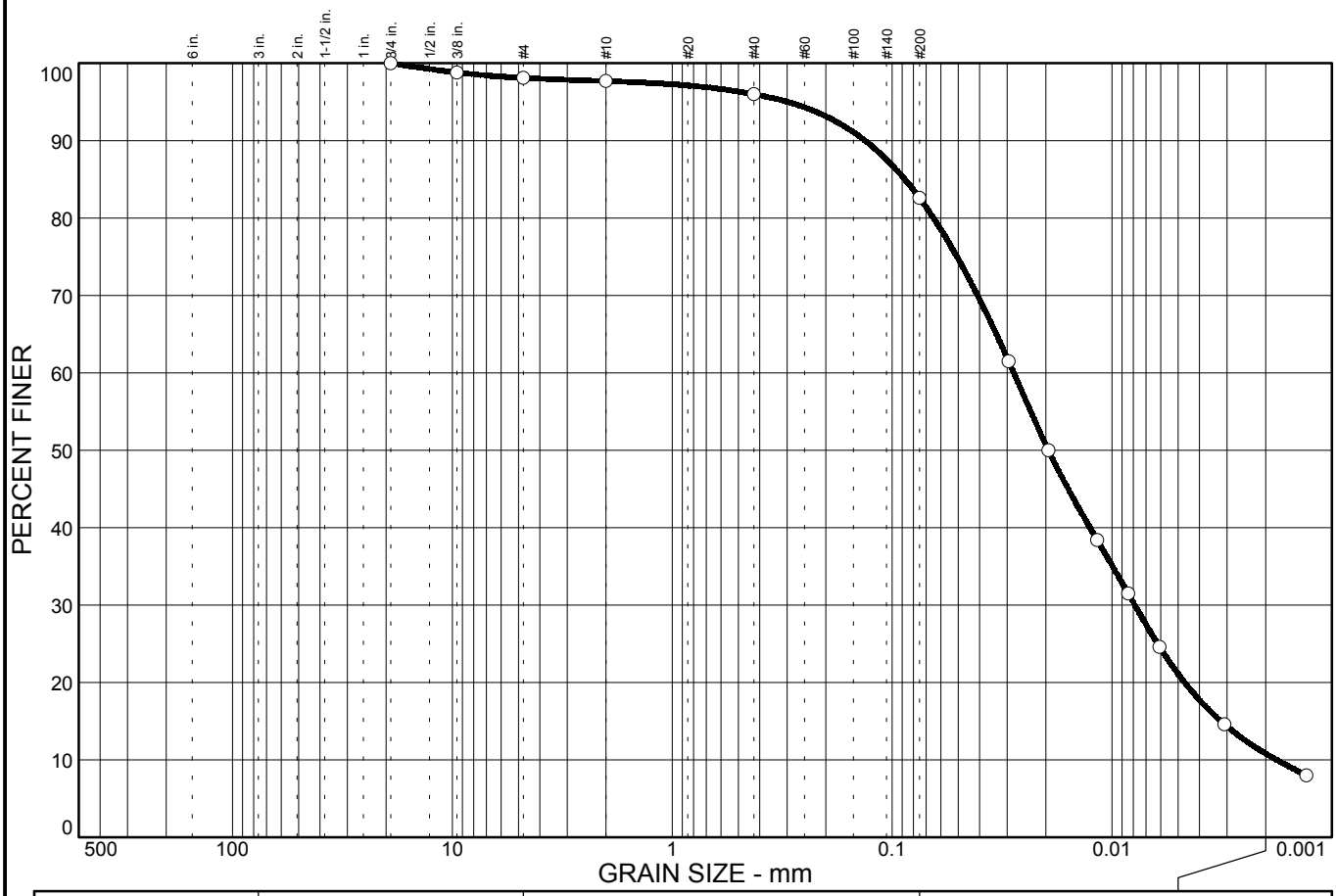
Moisture Content= 17.1%
Specific Gravity= 3.56
Loss on Ignition @ 440 C= 1.3%

Sample No.: 44 IN **Source of Sample:** **Date:** 7/29/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.9	0.4	1.7	13.4	71.8	10.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.8		
#4	98.1		
#10	97.7		
#40	96.0		
#200	82.6		

* (no specification provided)

Soil Description

Elastic silt with sand

Atterberg Limits

PL= 34 LL= 54 PI= 20

Coefficients

D_{85}= 0.0874 D_{60}= 0.0279 D_{50}= 0.0194
D_{30}= 0.0079 D_{15}= 0.0032 D_{10}= 0.0018
C_u= 15.69 C_c= 1.24

Classification

USCS= MH AASHTO= A-7-5(20)

Remarks

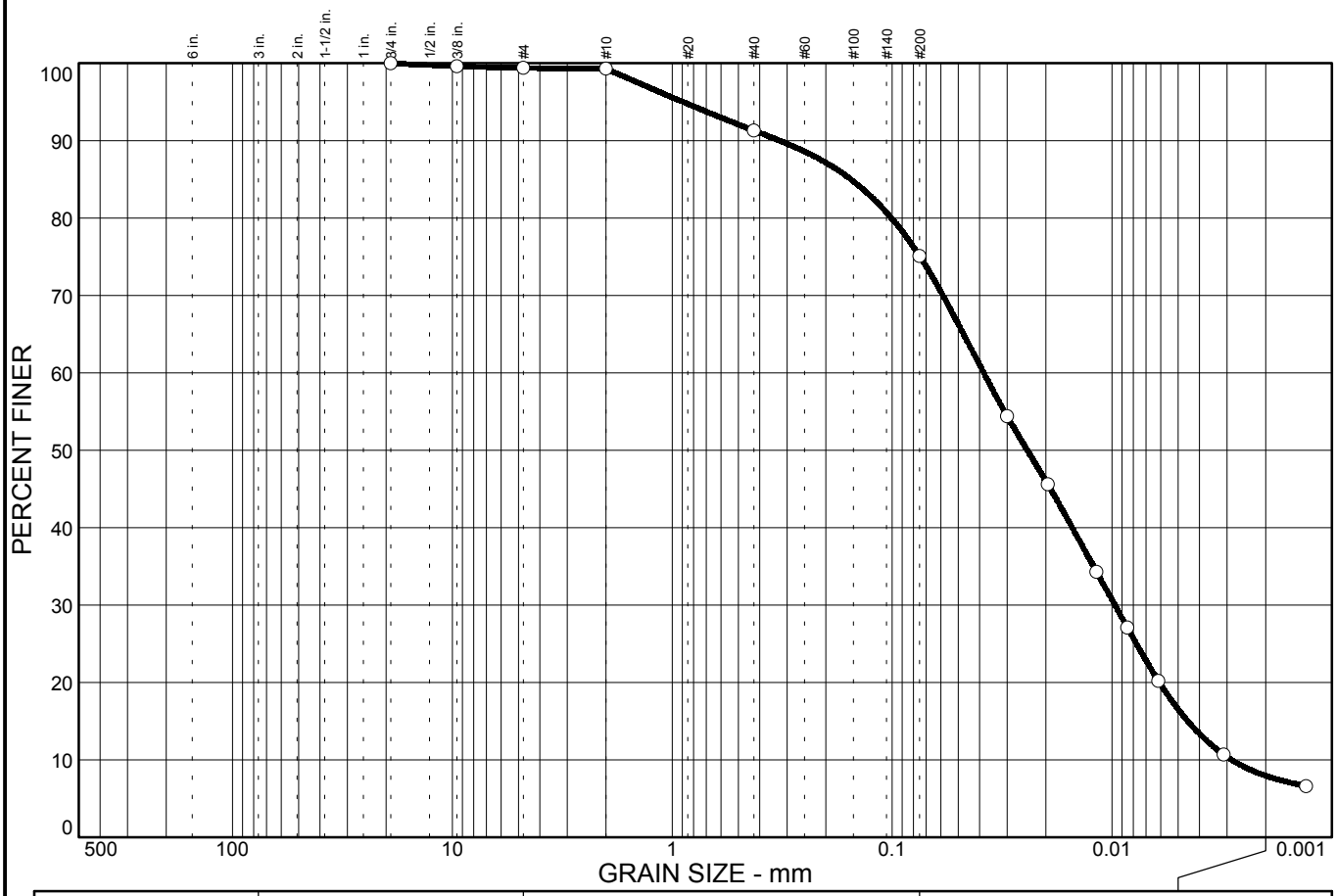
Moisture Content= 88.6%
Specific Gravity= 2.82
Loss on Ignition @ 440 C= 7.4%

Sample No.: 51 BK **Source of Sample:** **Date:** 7/29/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.6	0.1	8.0	16.2	67.1	8.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.6		
#4	99.4		
#10	99.3		
#40	91.3		
#200	75.1		

* (no specification provided)

Soil Description

Elastic silt with sand

Atterberg Limits

PL= 32 LL= 54 PI= 22

Coefficients

D_{85}= 0.154 D_{60}= 0.0383 D_{50}= 0.0243
D_{30}= 0.0097 D_{15}= 0.0045 D_{10}= 0.0029
C_u= 13.44 C_c= 0.86

Classification

USCS= MH AASHTO= A-7-5(18)

Remarks

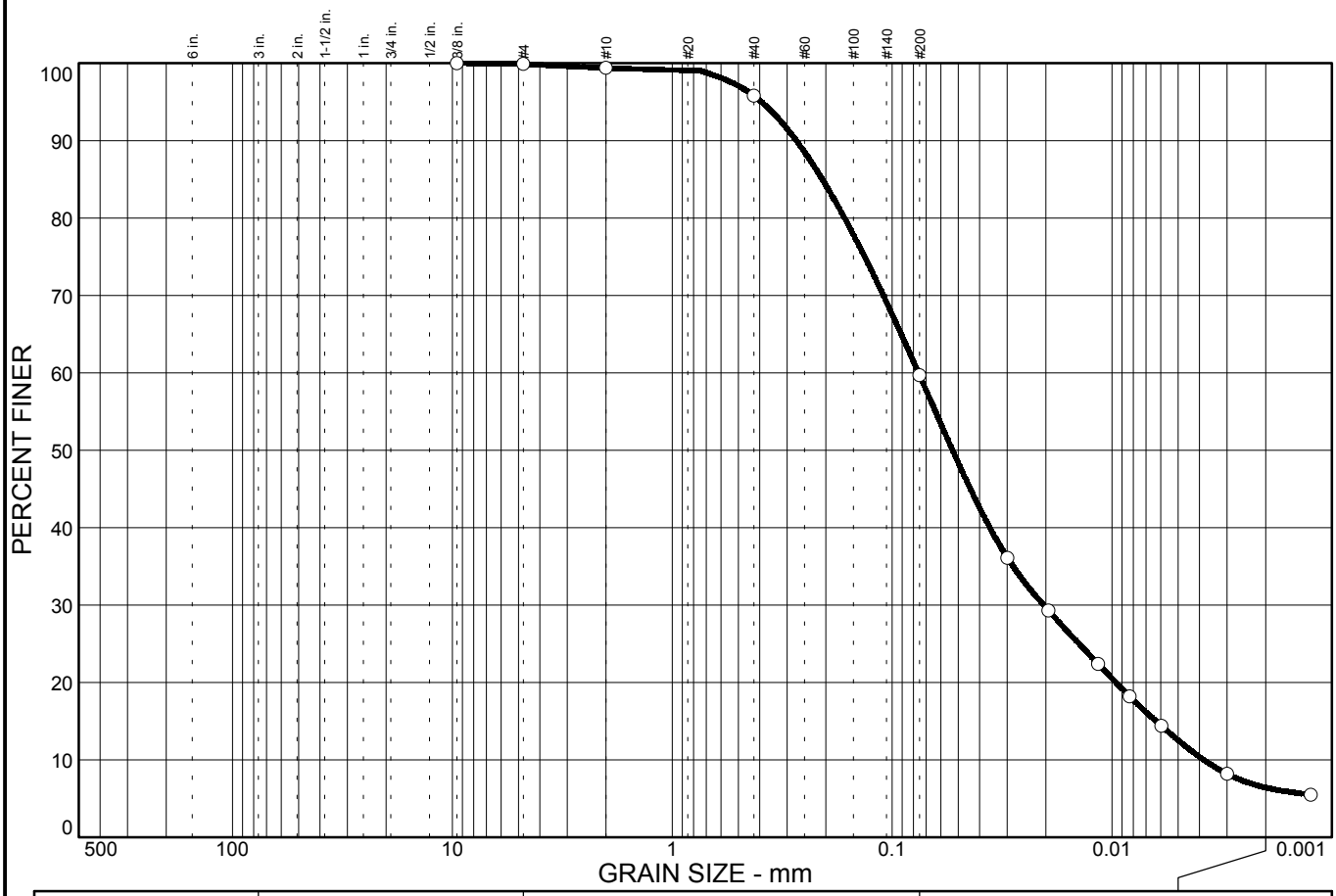
Moisture Content= 123.3%
Specific Gravity= 2.82
Loss on Ignition @ 440 C= 8.2%

Sample No.: 51 DEF **Source of Sample:** **Date:** 7/29/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.1	0.5	3.6	36.1	53.3	6.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	99.9		
#10	99.4		
#40	95.8		
#200	59.7		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.208 D_{60}= 0.0758 D_{50}= 0.0531
D_{30}= 0.0205 D_{15}= 0.0063 D_{10}= 0.0038
C_u= 19.87 C_c= 1.45

Classification

USCS= ML AASHTO= A-4(0)

Remarks

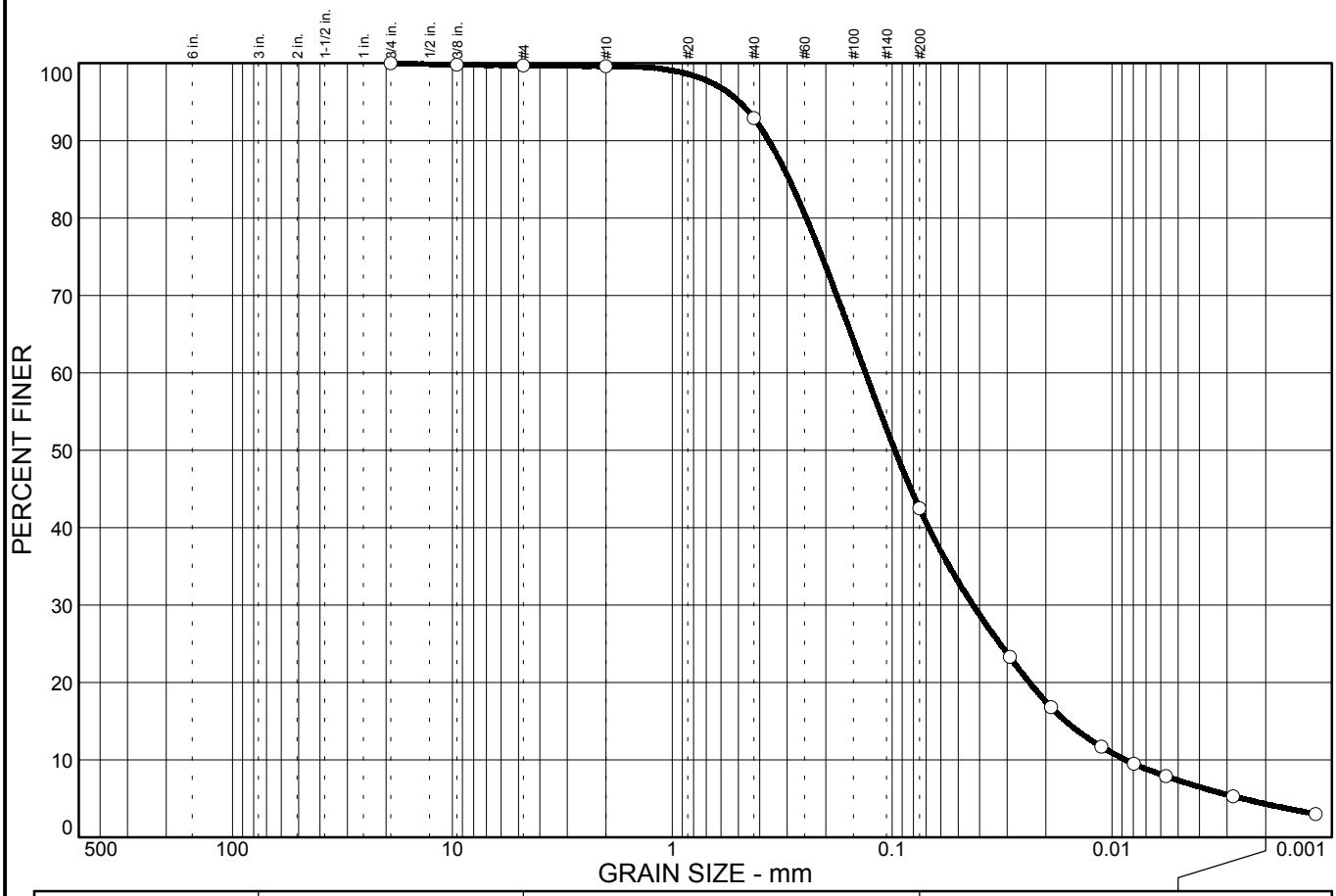
Moisture Content= 73.8%
Specific Gravity= 2.95
Loss on Ignition @ 440 C= 4.9%

Sample No.: 52 BK **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.3	0.1	6.7	50.4	38.2	4.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.8		
#4	99.7		
#10	99.6		
#40	92.9		
#200	42.5		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.294 D_{60}= 0.132 D_{50}= 0.0970
D_{30}= 0.0428 D_{15}= 0.0162 D_{10}= 0.0087
C_u= 15.24 C_c= 1.60

Classification

USCS= SM AASHTO= A-4(0)

Remarks

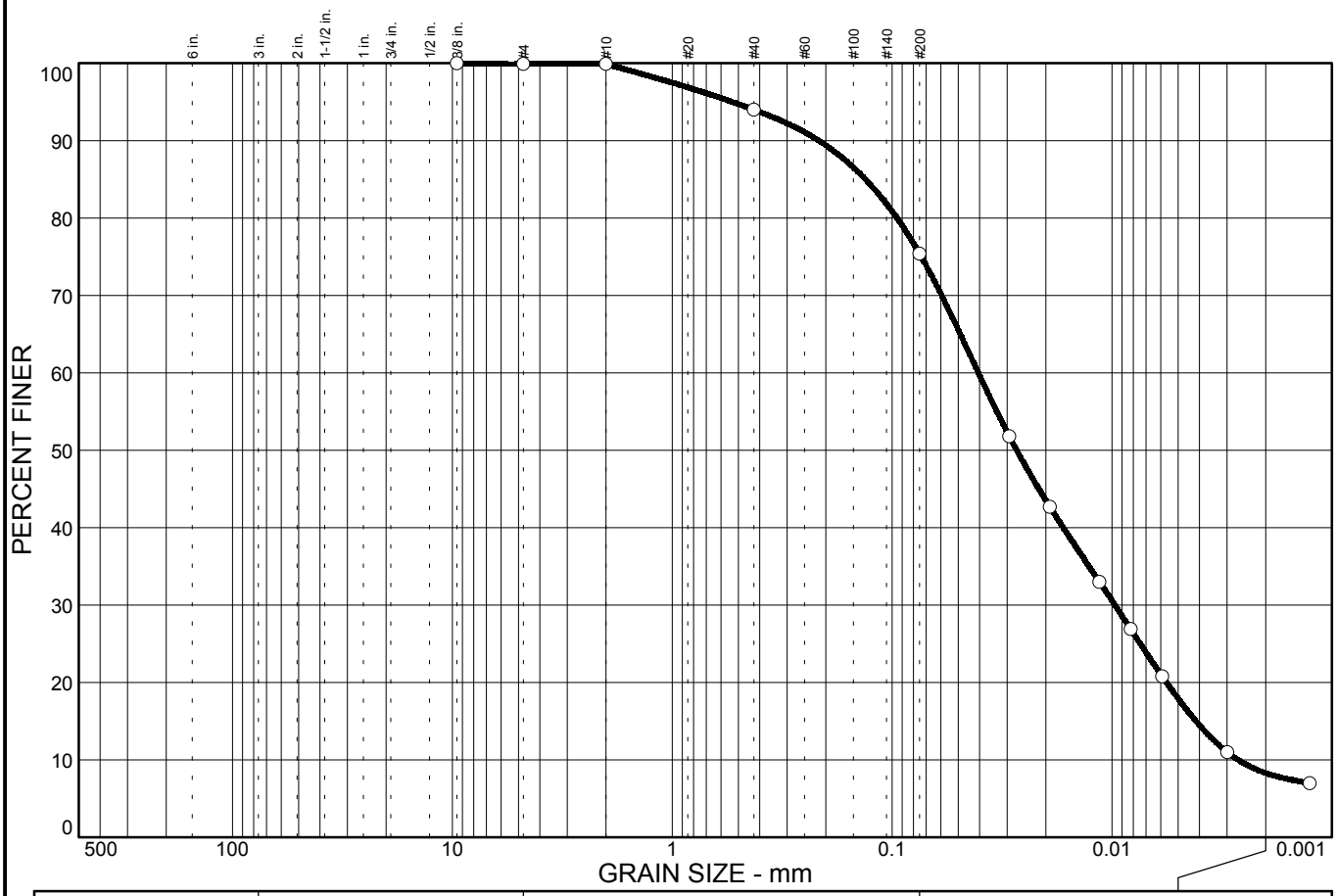
Moisture Content= 80.3%
Specific Gravity= 3.24
Loss on Ignition @ 440 C= 4.0%

Sample No.: 52 IN **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.1	0.0	5.9	18.6	67.1	8.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	99.9		
#10	99.9		
#40	94.0		
#200	75.4		

* (no specification provided)

Soil Description

Silt with sand

Atterberg Limits

PL= 37 LL= 49 PI= 12

Coefficients

D_{85}= 0.132 D_{60}= 0.0405 D_{50}= 0.0271
D_{30}= 0.0097 D_{15}= 0.0041 D_{10}= 0.0027
C_u= 15.21 C_c= 0.87

Classification

USCS= ML AASHTO= A-7-5(11)

Remarks

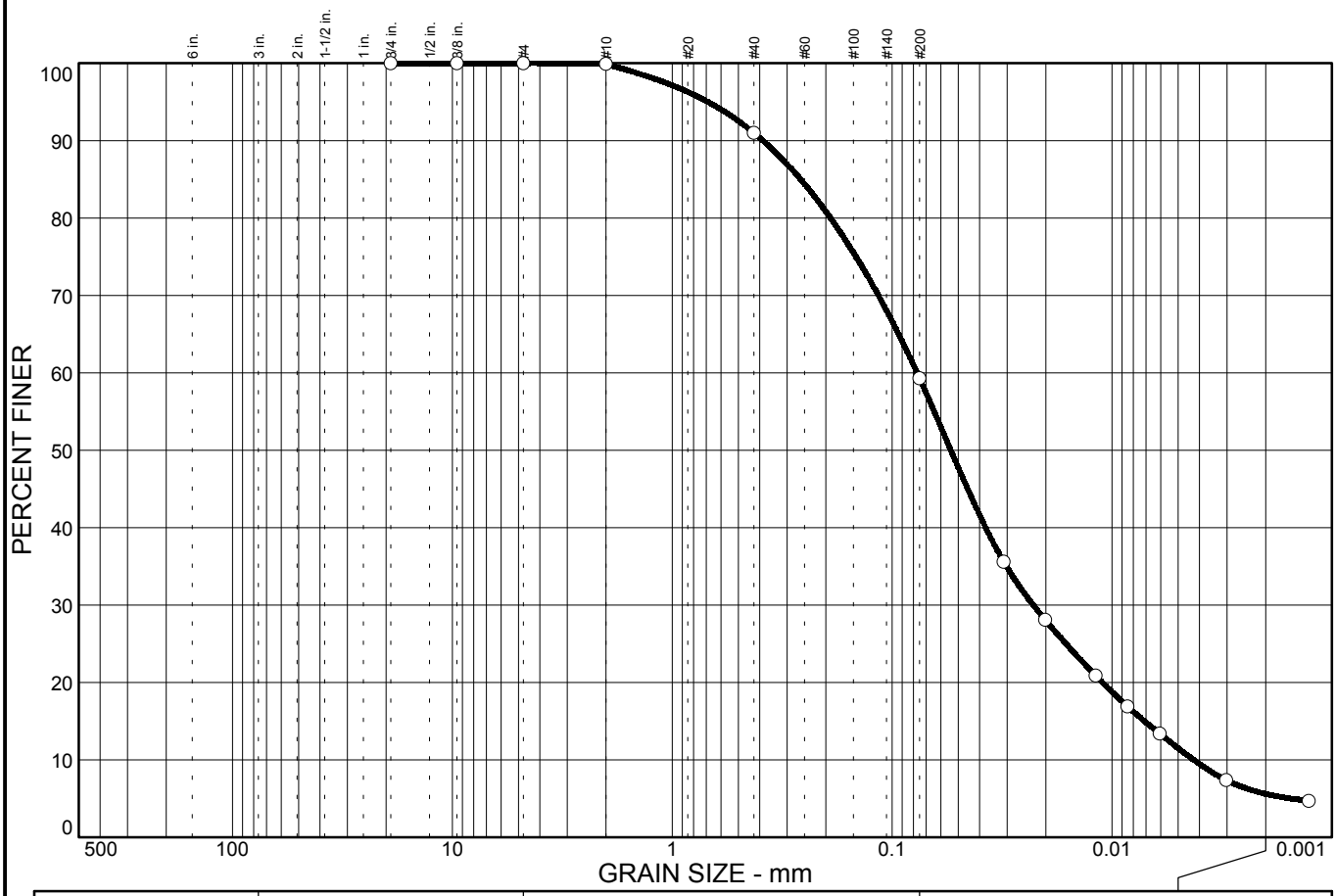
Moisture Content= 86.3%
Specific Gravity= 2.94
Loss on Ignition @ 440 C= 7.6%

Sample No.: 53 BK **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **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	8.9	31.7	53.7	5.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	100.0		
#4	100.0		
#10	99.9		
#40	91.0		
#200	59.3		

* (no specification provided)

Soil Description

Sandy elastic silt

Atterberg Limits

PL= 41 LL= 50 PI= 9

Coefficients

D_{85}= 0.261 D_{60}= 0.0770 D_{50}= 0.0540
D_{30}= 0.0228 D_{15}= 0.0071 D_{10}= 0.0042
C_u= 18.12 C_c= 1.59

Classification

USCS= MH AASHTO= A-5(6)

Remarks

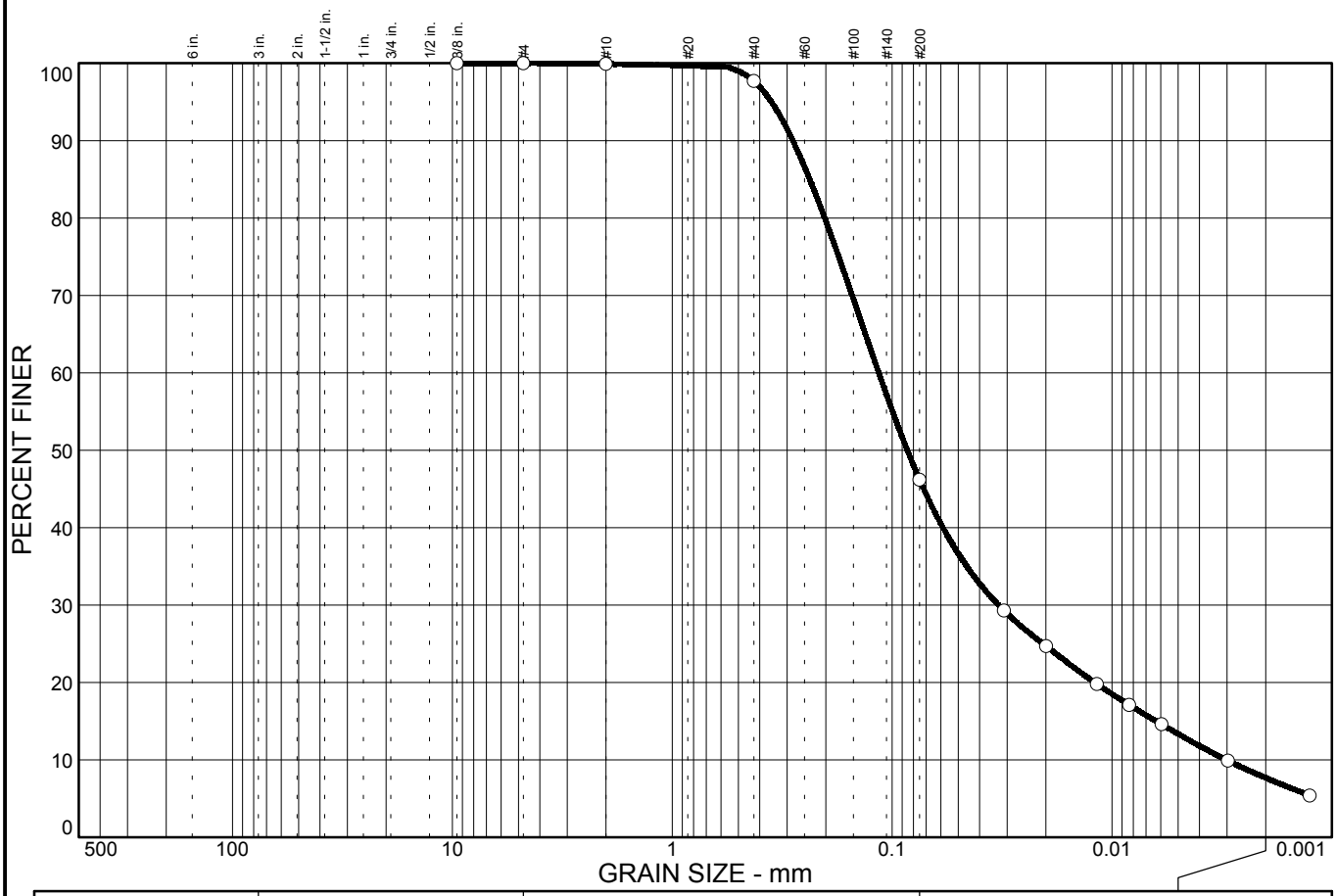
Moisture Content= 134.3%
Specific Gravity= 2.94
Loss on Ignition @ 440 C= 9.4%

Sample No.: 53 IN **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **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	2.2	51.5	38.5	7.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	100.0		
#10	99.9		
#40	97.7		
#200	46.2		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.237 D_{60}= 0.115 D_{50}= 0.0852
D_{30}= 0.0328 D_{15}= 0.0063 D_{10}= 0.0030
C_u= 38.09 C_c= 3.10

Classification

USCS= SM AASHTO= A-4(0)

Remarks

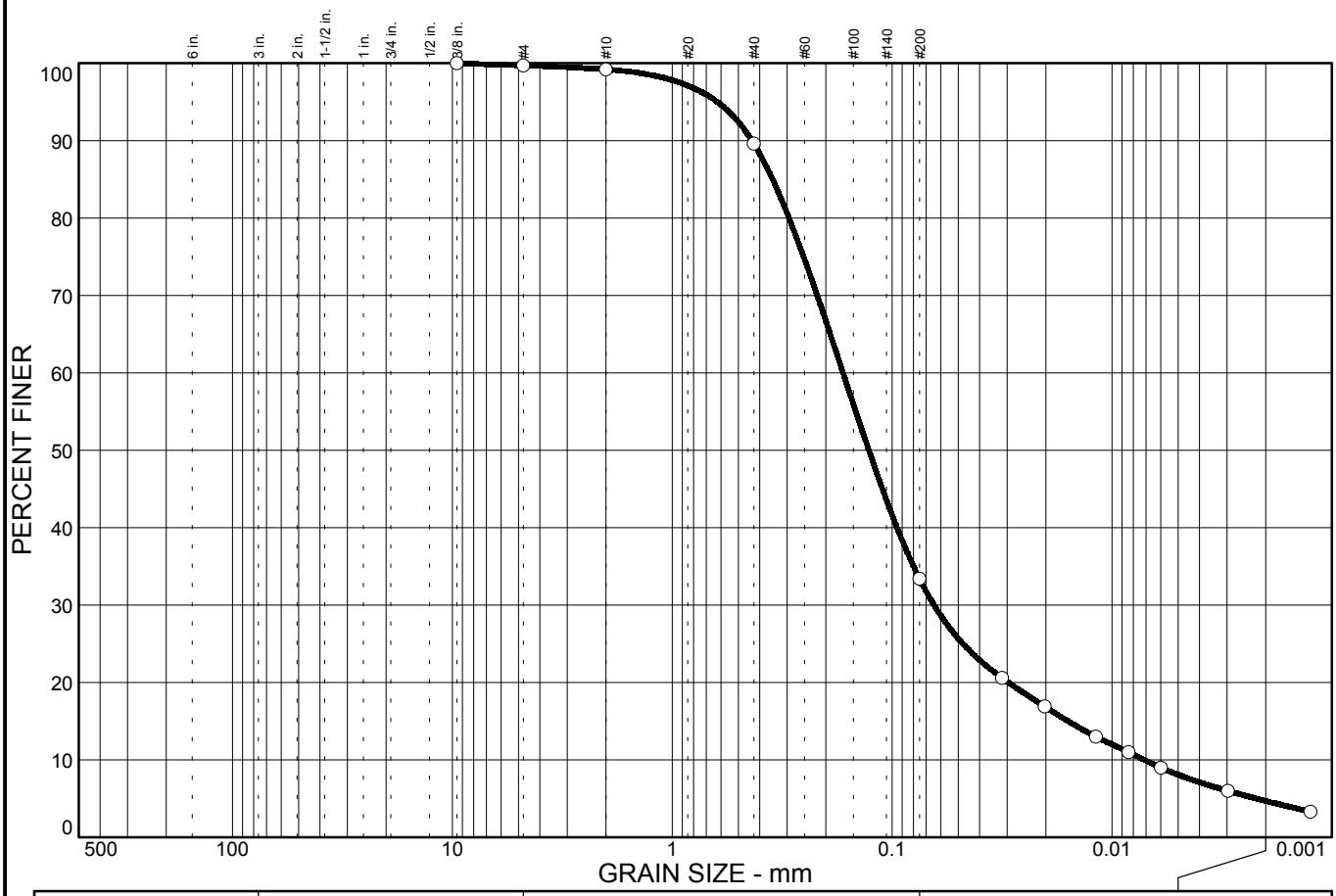
Moisture Content= 44.1%
Specific Gravity= 2.95
Loss on Ignition @ 440 C= 3.7%

Sample No.: 54 BK **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.3	0.5	9.6	56.2	28.7	4.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	99.7		
#10	99.2		
#40	89.6		
#200	33.4		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.350 D_{60}= 0.167 D_{50}= 0.128
D_{30}= 0.0644 D_{15}= 0.0158 D_{10}= 0.0071
C_u= 23.53 C_c= 3.49

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

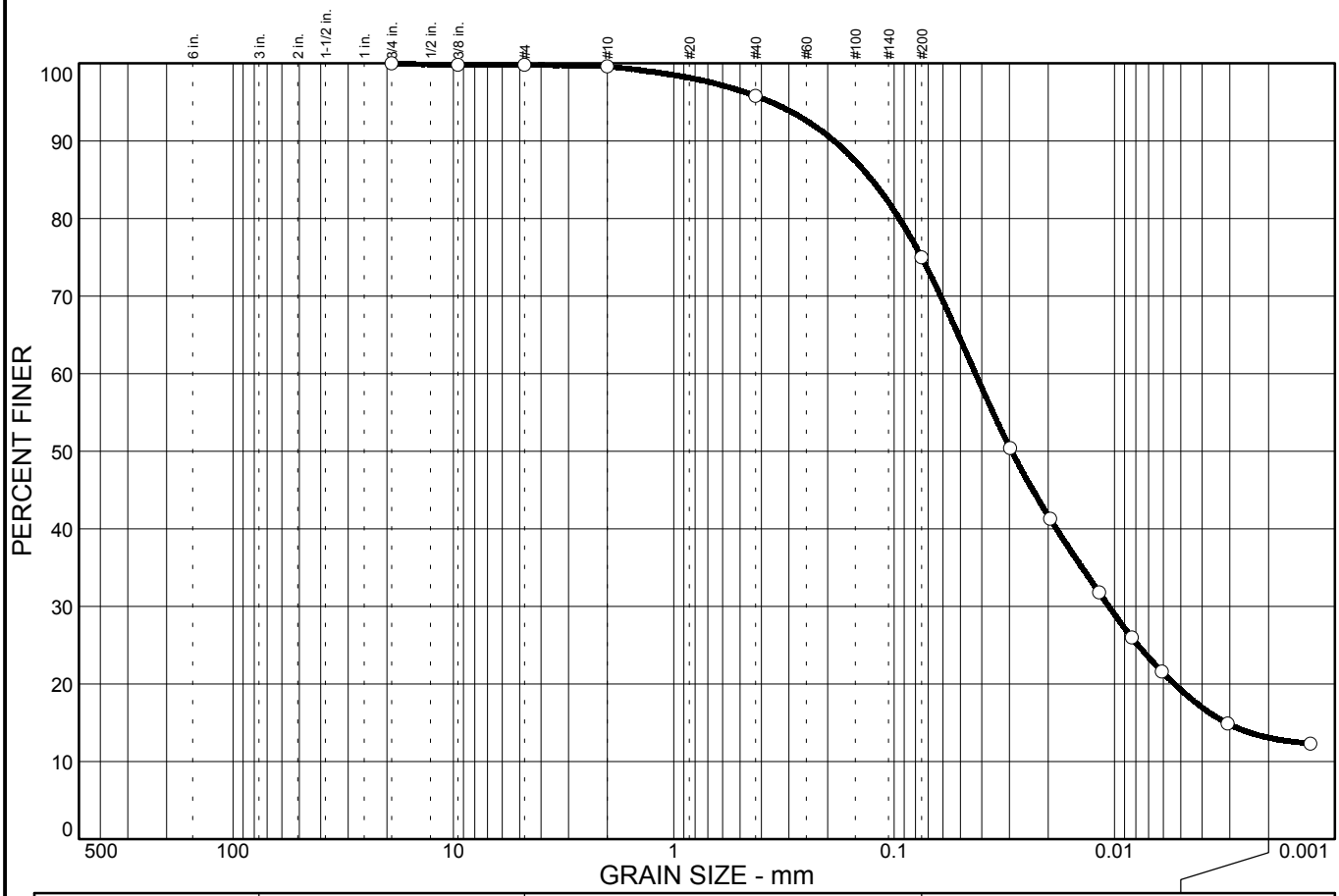
Moisture Content= 66.1%
Specific Gravity= 3.01
Loss on Ignition @ 440 C= 4.1%

Sample No.: 54 IN **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.2	0.2	3.8	20.8	61.9	13.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.8		
#4	99.8		
#10	99.6		
#40	95.8		
#200	75.0		

* (no specification provided)

Soil Description

Elastic silt with sand

Atterberg Limits

PL= 39 LL= 52 PI= 12

Coefficients

D_{85}= 0.126 D_{60}= 0.0427 D_{50}= 0.0292
D_{30}= 0.0106 D_{15}= 0.0031 D_{10}=
C_u= C_c=

Classification

USCS= MH AASHTO= A-7-5(12)

Remarks

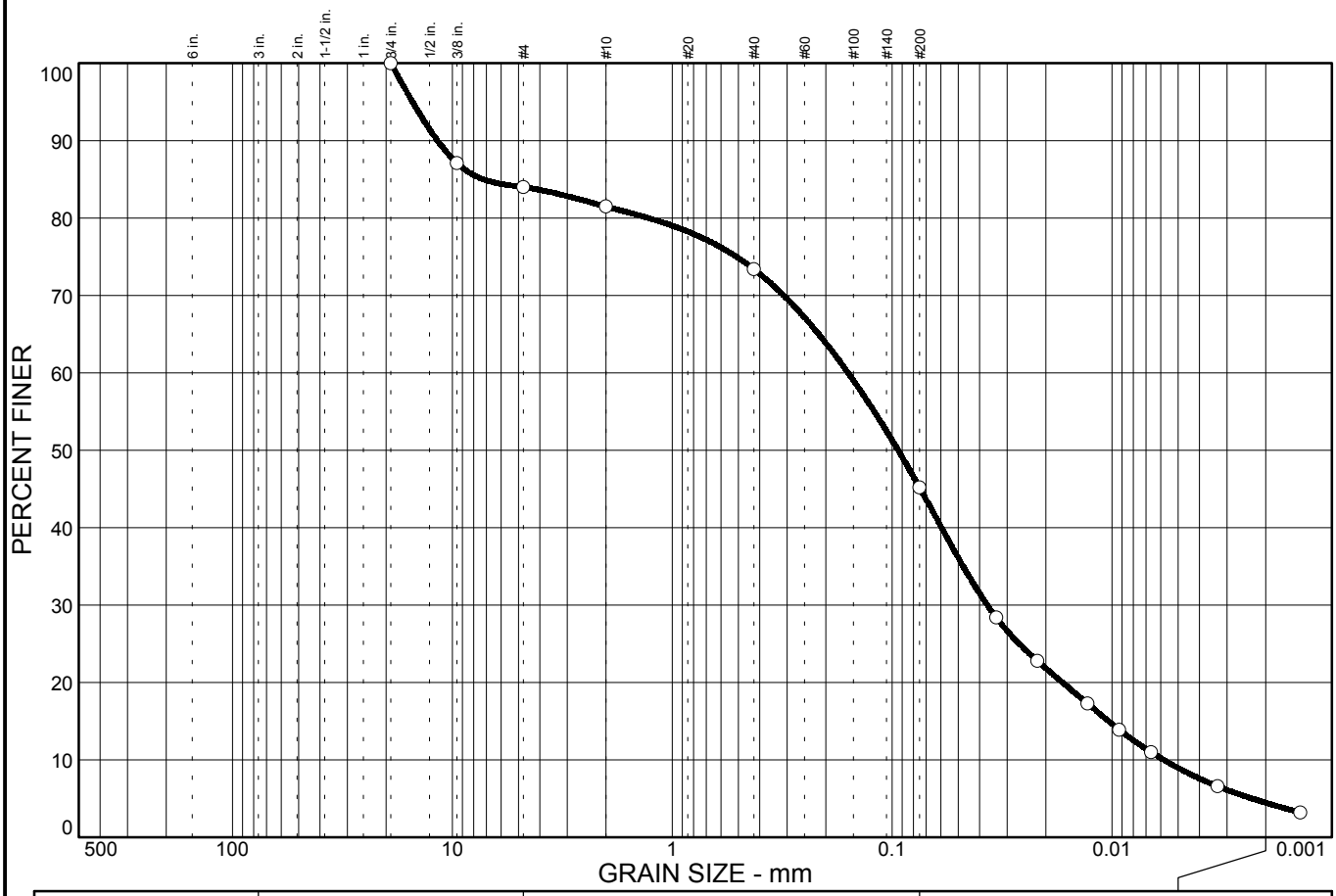
Moisture Content= 79.7%
Specific Gravity= 2.79
Loss on Ignition @ 440 C= 7.7%

Sample No.: 56 BK **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	16.0	2.5	8.1	28.2	40.7	4.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	87.1		
#4	84.0		
#10	81.5		
#40	73.4		
#200	45.2		

* (no specification provided)

Soil Description

Silty sand with gravel

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 7.22 D_{60}= 0.158 D_{50}= 0.0938
D_{30}= 0.0369 D_{15}= 0.0104 D_{10}= 0.0058
C_u= 27.28 C_c= 1.48

Classification

USCS= SM AASHTO= A-4(0)

Remarks

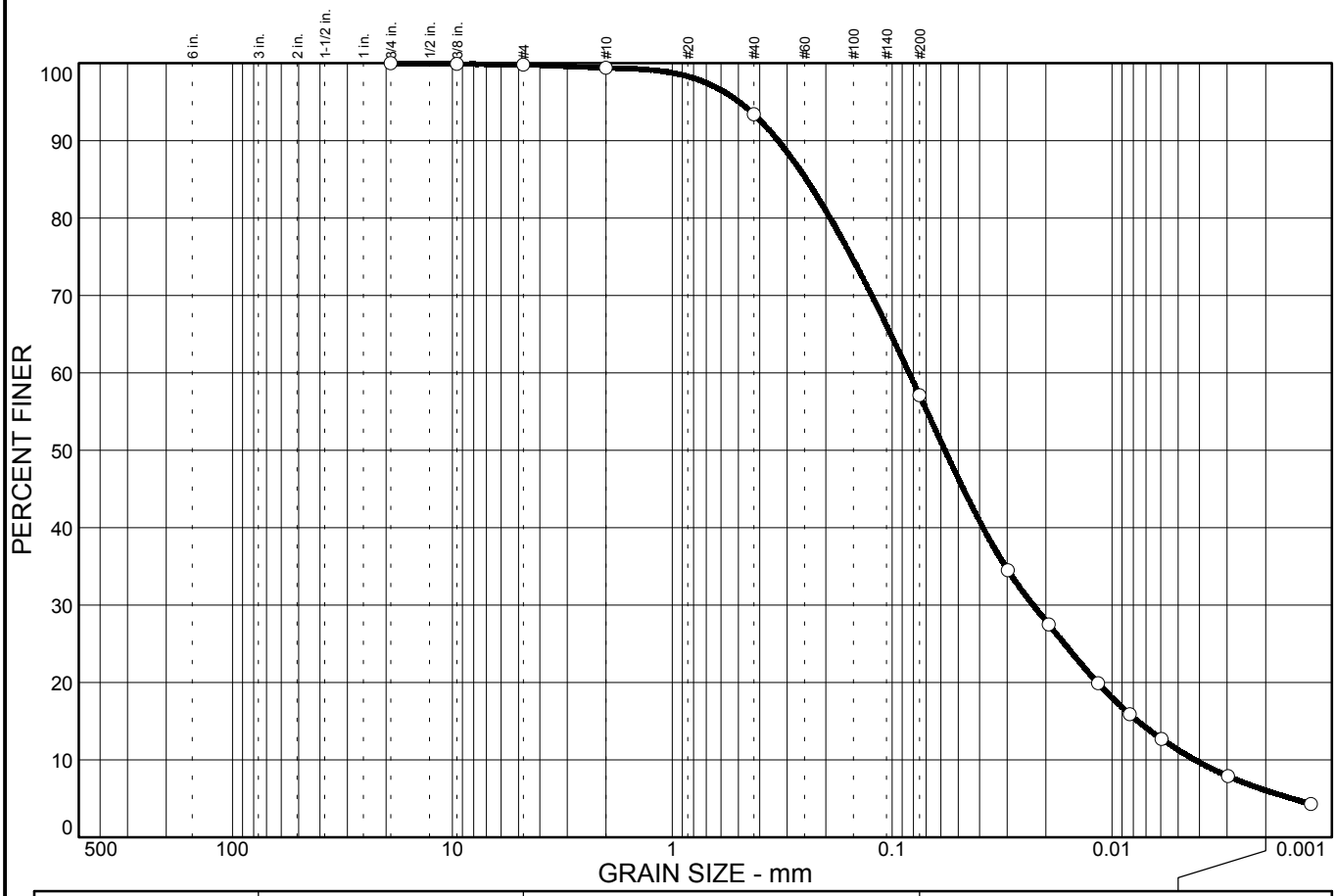
Moisture Content= 81.8%
Specific Gravity= 2.60
Loss on Ignition @ 440 C= 7.2%

Sample No.: 56 IN **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.2	0.4	6.0	36.3	51.0	6.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.9		
#4	99.8		
#10	99.4		
#40	93.4		
#200	57.1		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.245 D_{60}= 0.0837 D_{50}= 0.0575
D_{30}= 0.0228 D_{15}= 0.0076 D_{10}= 0.0042
C_u= 19.98 C_c= 1.49

Classification

USCS= ML AASHTO= A-4(0)

Remarks

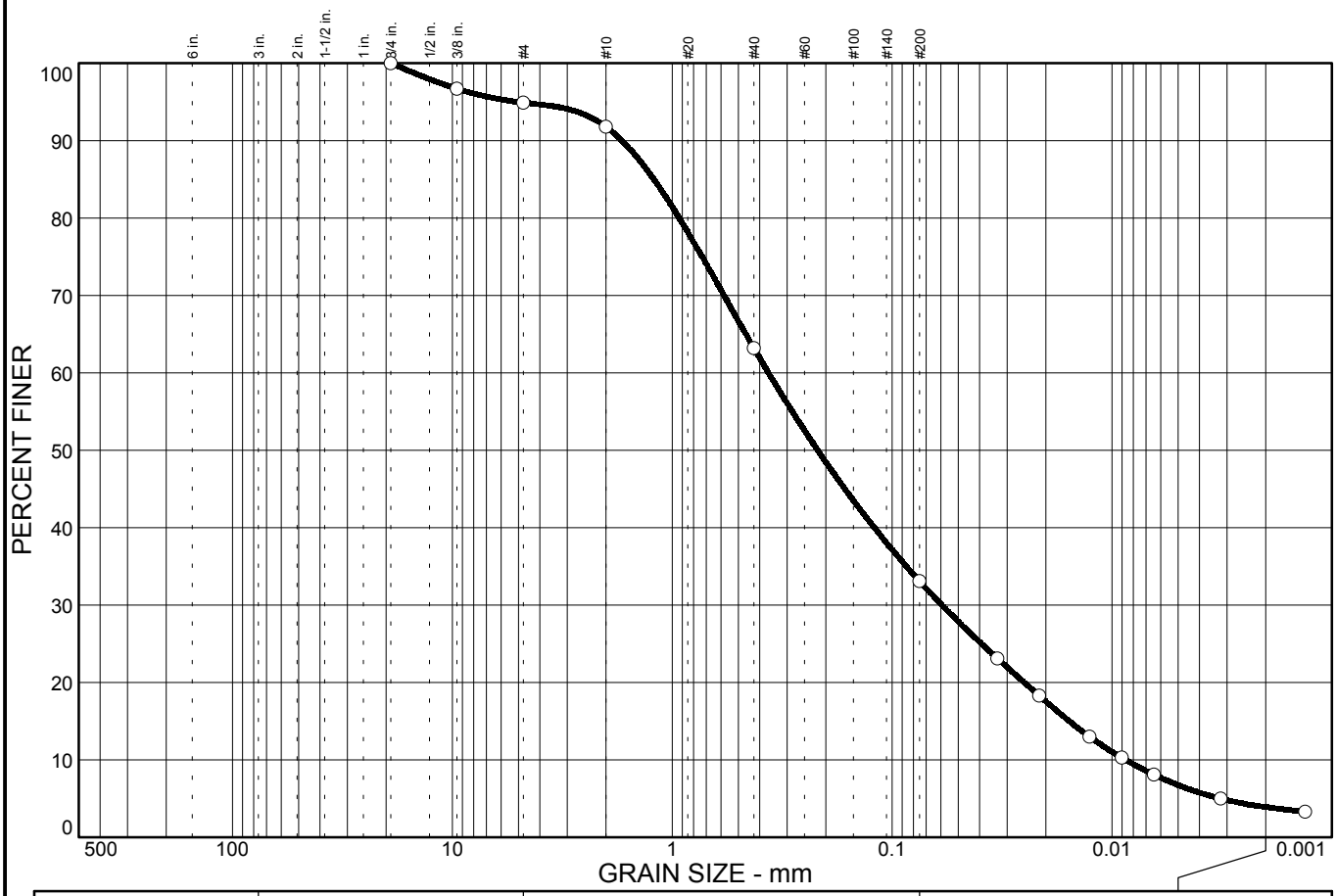
Moisture Content= 97.5%
Specific Gravity= 2.99
Loss on Ignition @ 440 C= 4.1%

Sample No.: 57 BK **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.1	3.1	28.6	30.1	29.2	3.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	96.7		
#4	94.9		
#10	91.8		
#40	63.2		
#200	33.1		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 1.21 D_{60}= 0.365 D_{50}= 0.218
D_{30}= 0.0592 D_{15}= 0.0156 D_{10}= 0.0087
C_u= 42.16 C_c= 1.11

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

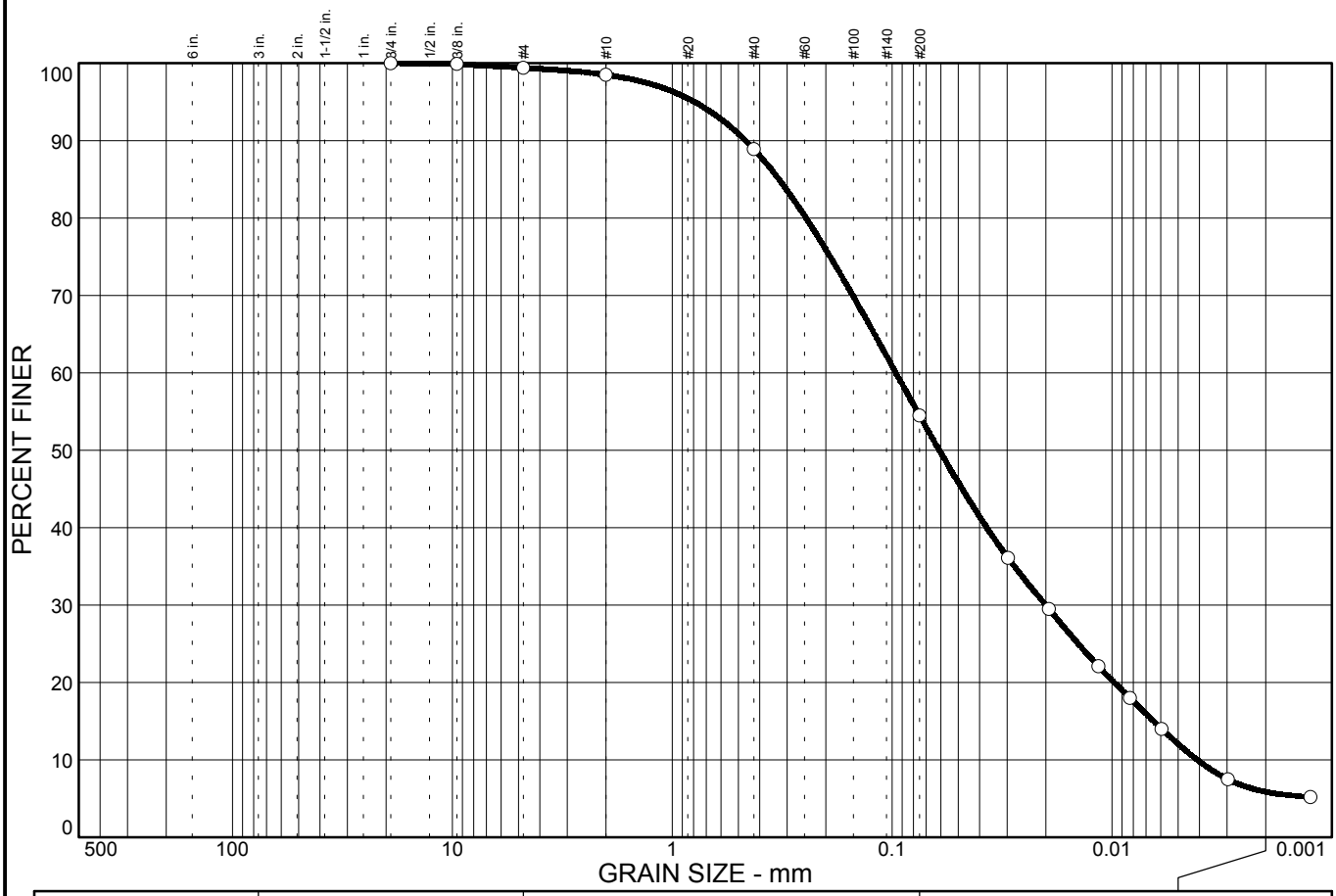
Moisture Content= 83.9%
Specific Gravity= 2.77
Loss on Ignition @ 440 C= 8.5%

Sample No.: 57 IN **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.6	0.9	9.6	34.4	48.6	5.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.9		
#4	99.4		
#10	98.5		
#40	88.9		
#200	54.5		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.327 D_{60}= 0.0960 D_{50}= 0.0610
D_{30}= 0.0200 D_{15}= 0.0065 D_{10}= 0.0041
C_u= 23.52 C_c= 1.02

Classification

USCS= ML AASHTO= A-4(0)

Remarks

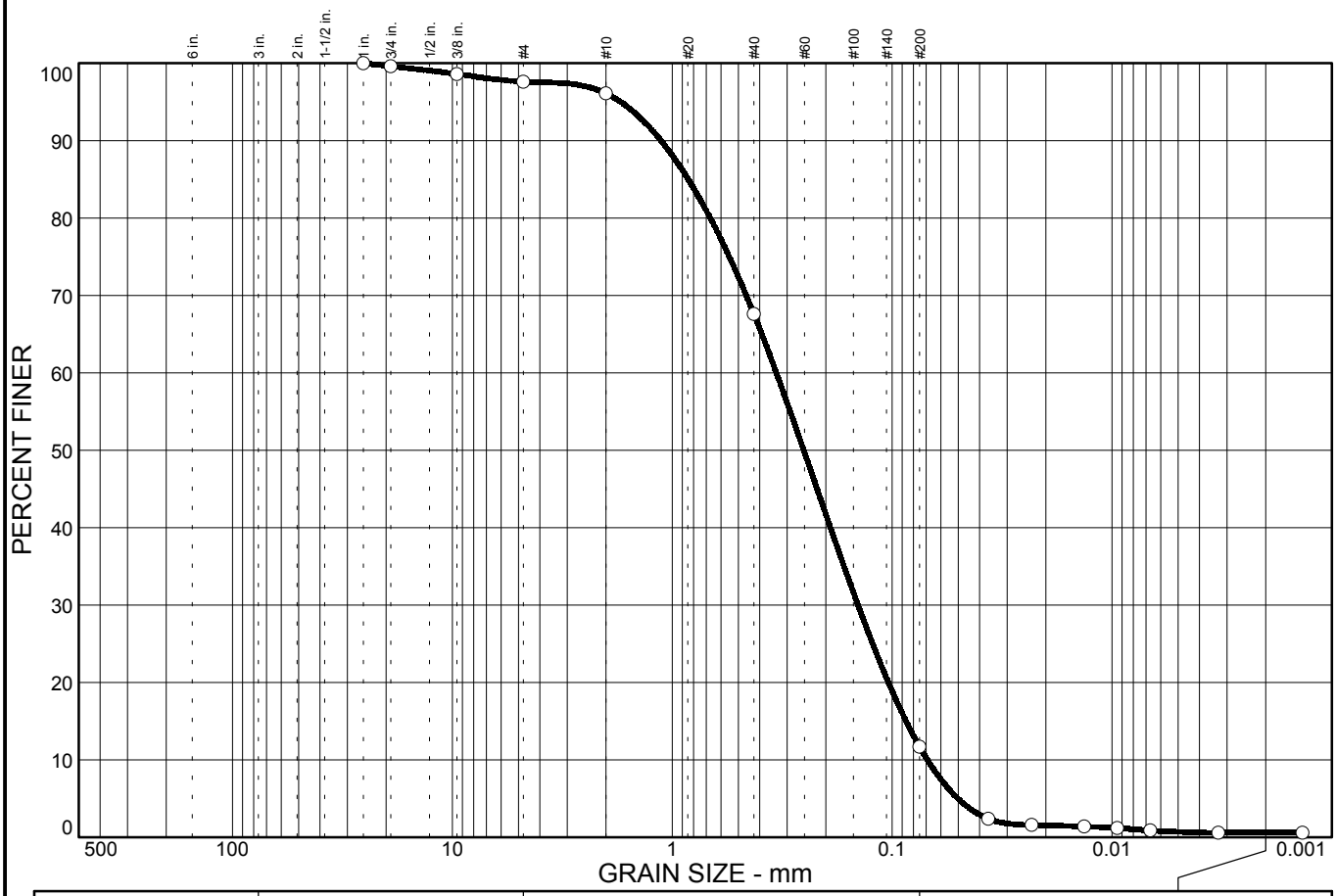
Moisture Content= 73.3%
Specific Gravity= 3.02
Loss on Ignition @ 440 C= 5.7%

Sample No.: 60 BK **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.4	2.0	1.5	28.5	55.9	11.1	0.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	99.6		
0.375 in.	98.6		
#4	97.6		
#10	96.1		
#40	67.6		
#200	11.7		

* (no specification provided)

Soil Description

Poorly graded sand with silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.845 D_{60}= 0.336 D_{50}= 0.252
D_{30}= 0.143 D_{15}= 0.0864 D_{10}= 0.0691
C_u= 4.87 C_c= 0.88

Classification

USCS= SP-SM AASHTO= A-2-4(0)

Remarks

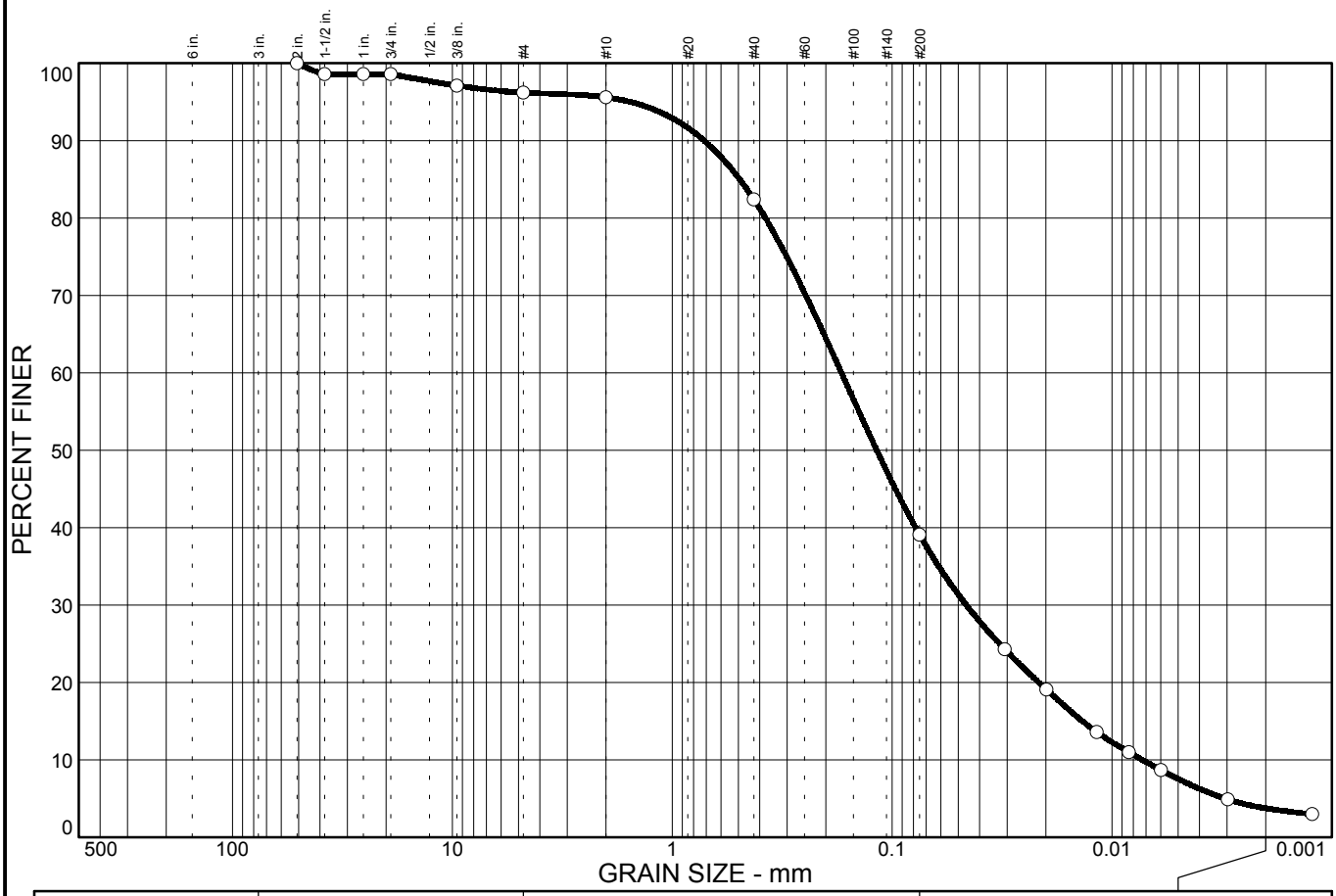
Moisture Content= 44.5%
Specific Gravity= 2.71
Loss on Ignition @ 440 C= 2.2%

Sample No.: 60 IN **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	1.4	2.4	0.6	13.2	43.3	35.3	3.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.00 in.	100.0		
1.50 in.	98.6		
1.00 in.	98.6		
0.75 in.	98.6		
0.375 in.	97.1		
#4	96.2		
#10	95.6		
#40	82.4		
#200	39.1		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.493 D_{60}= 0.170 D_{50}= 0.117
D_{30}= 0.0459 D_{15}= 0.0136 D_{10}= 0.0073
C_u= 23.40 C_c= 1.71

Classification

USCS= SM AASHTO= A-4(0)

Remarks

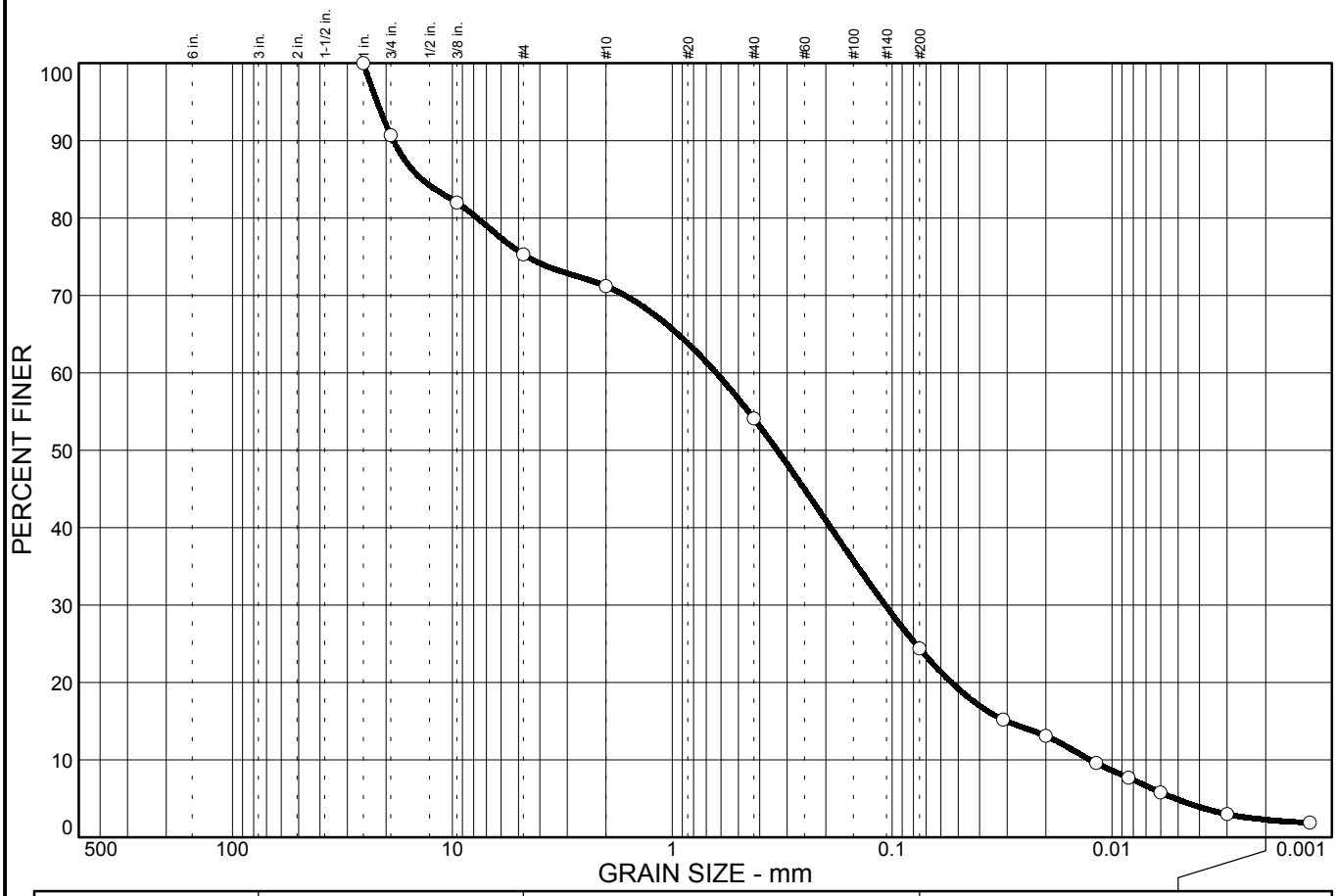
Moisture Content= 49.3%
Specific Gravity= 3.05
Loss on Ignition @ 440 C= 4.1%

Sample No.: 61 BK **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	9.3	15.4	4.1	17.1	29.7	22.1	2.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	90.7		
0.375 in.	82.0		
#4	75.3		
#10	71.2		
#40	54.1		
#200	24.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 13.7 D_{60}= 0.630 D_{50}= 0.332
D_{30}= 0.107 D_{15}= 0.0301 D_{10}= 0.0125
C_u= 50.25 C_c= 1.46

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

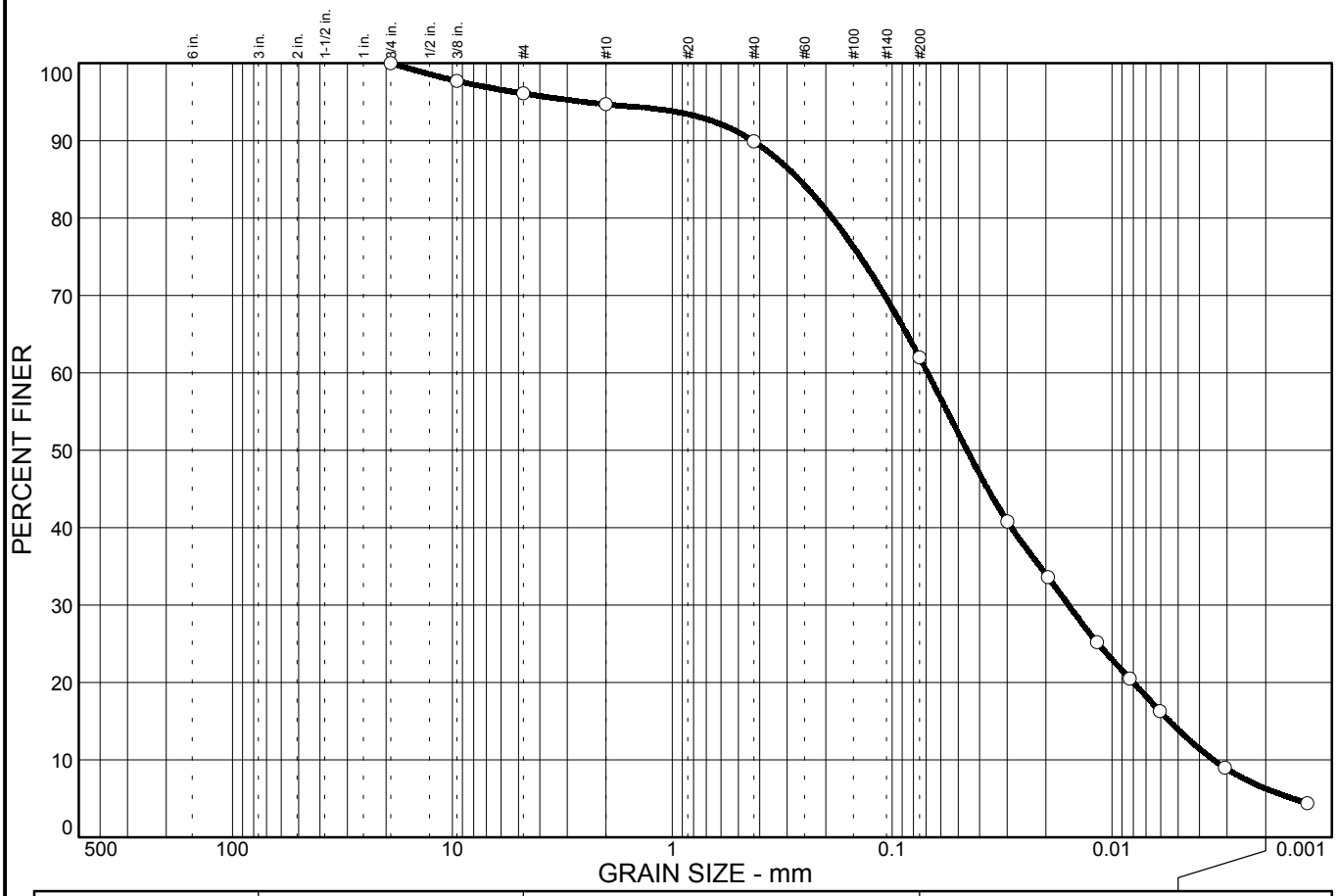
Moisture Content= 77.7%
Specific Gravity= 2.99
Loss on Ignition @ 440 C= 4.5%

Sample No.: 61 IN **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.9	1.4	4.8	27.9	55.7	6.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	97.7		
#4	96.1		
#10	94.7		
#40	89.9		
#200	62.0		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= 33 LL= 41 PI= 8

Coefficients

D_{85}= 0.265 D_{60}= 0.0689 D_{50}= 0.0456
D_{30}= 0.0158 D_{15}= 0.0055 D_{10}= 0.0034
C_u= 20.01 C_c= 1.05

Classification

USCS= ML AASHTO= A-5(5)

Remarks

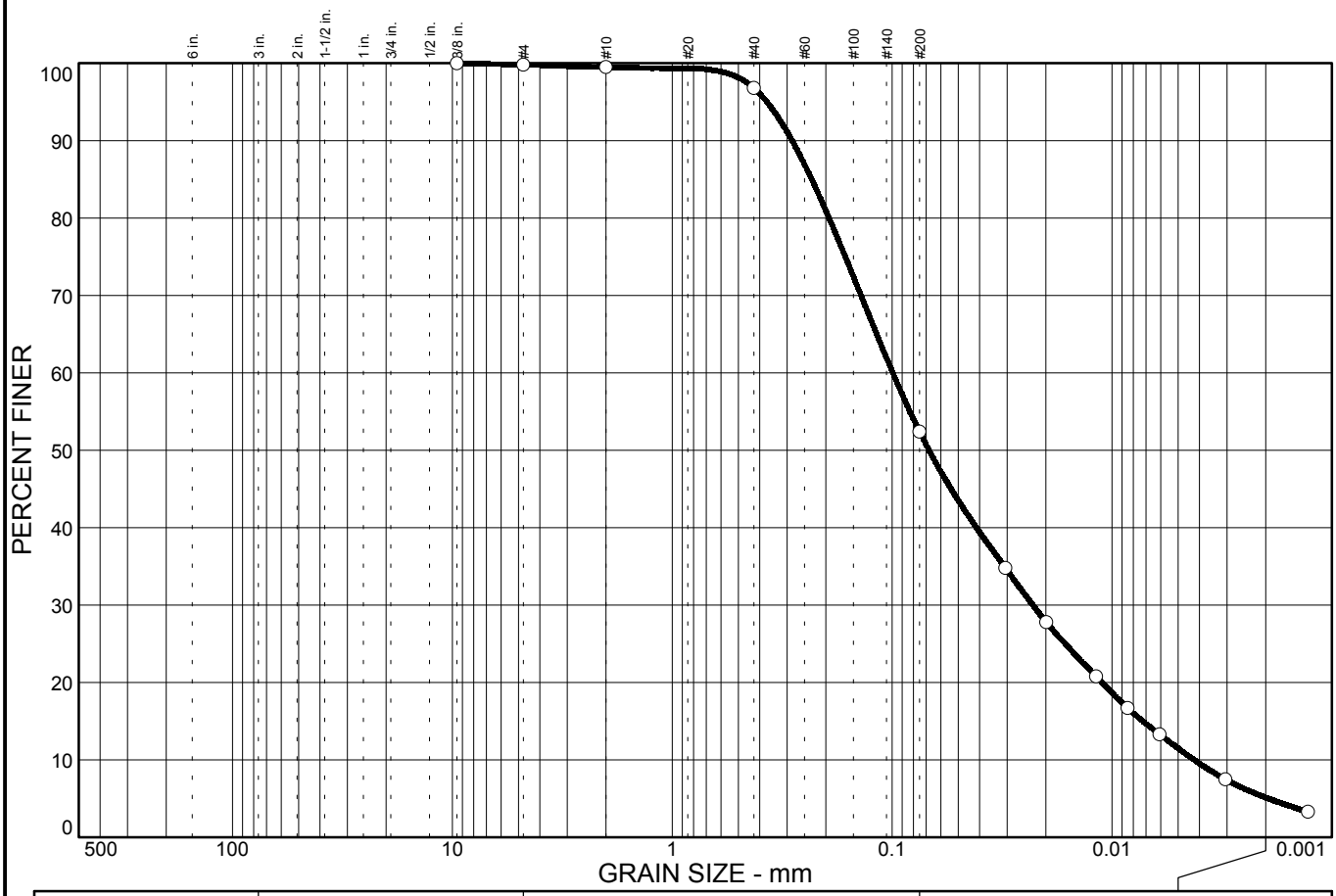
Moisture Content= 63.3%
Specific Gravity= 2.83
Loss on Ignition @ 440 C= 6.9%

Sample No.: 62 BK **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.2	0.3	2.7	44.4	47.3	5.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	99.8		
#10	99.5		
#40	96.8		
#200	52.4		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.232 D_{60}= 0.0992 D_{50}= 0.0679
D_{30}= 0.0229 D_{15}= 0.0072 D_{10}= 0.0042
C_u= 23.51 C_c= 1.25

Classification

USCS= ML AASHTO= A-4(0)

Remarks

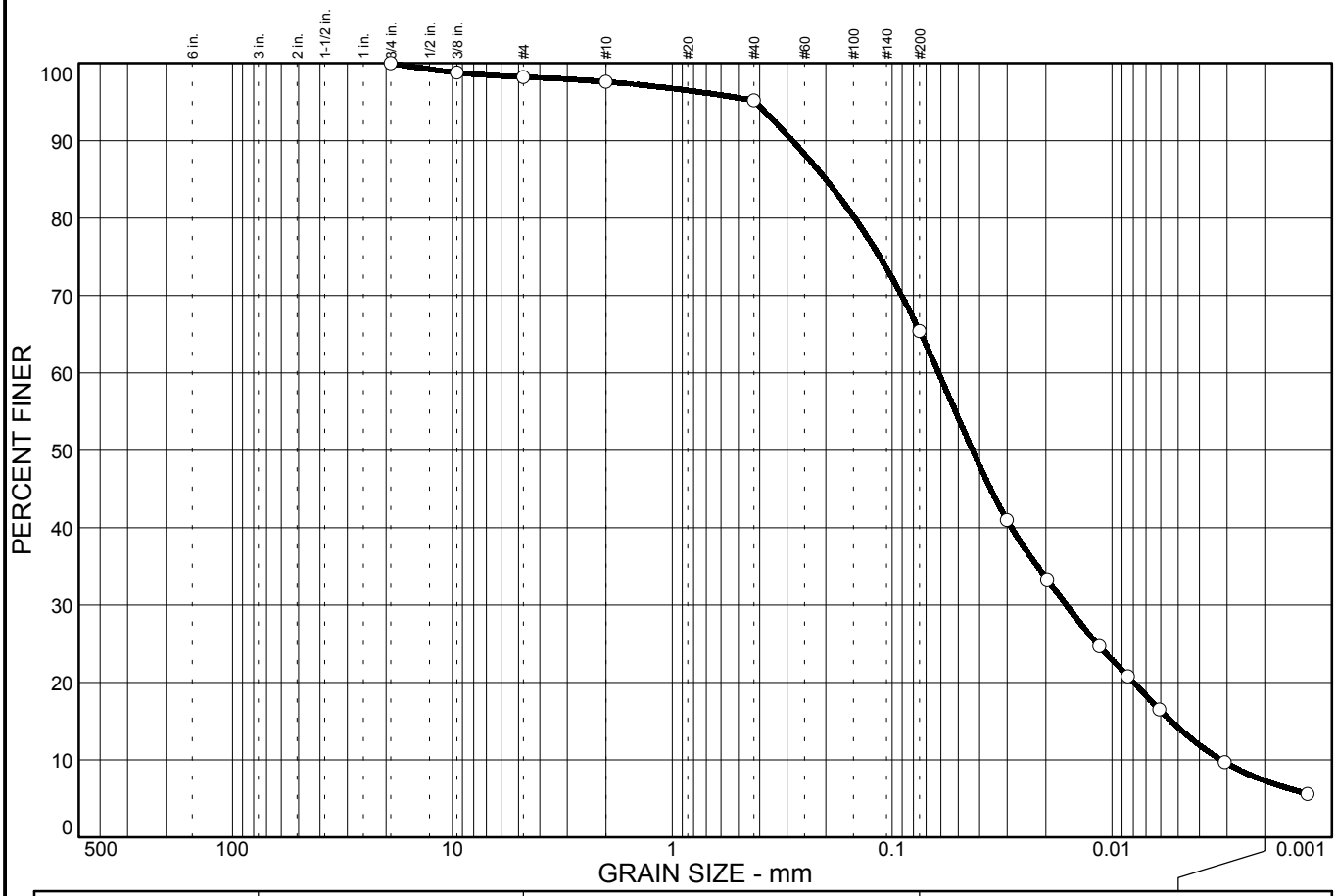
Moisture Content= 82.1%
Specific Gravity= 2.87
Loss on Ignition @ 440 C= 5.8%

Sample No.: 62 IN **Source of Sample:** **Date:** 8/2/032
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.8	0.6	2.4	29.8	58.1	7.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.8		
#4	98.2		
#10	97.6		
#40	95.2		
#200	65.4		

* (no specification provided)

Soil Description

Sandy lean clay

Atterberg Limits

PL= 9 LL= 42 PI= 33

Coefficients

D_{85}= 0.181 D_{60}= 0.0617 D_{50}= 0.0432
D_{30}= 0.0161 D_{15}= 0.0054 D_{10}= 0.0032
C_u= 19.33 C_c= 1.32

Classification

USCS= CL AASHTO= A-7-6(18)

Remarks

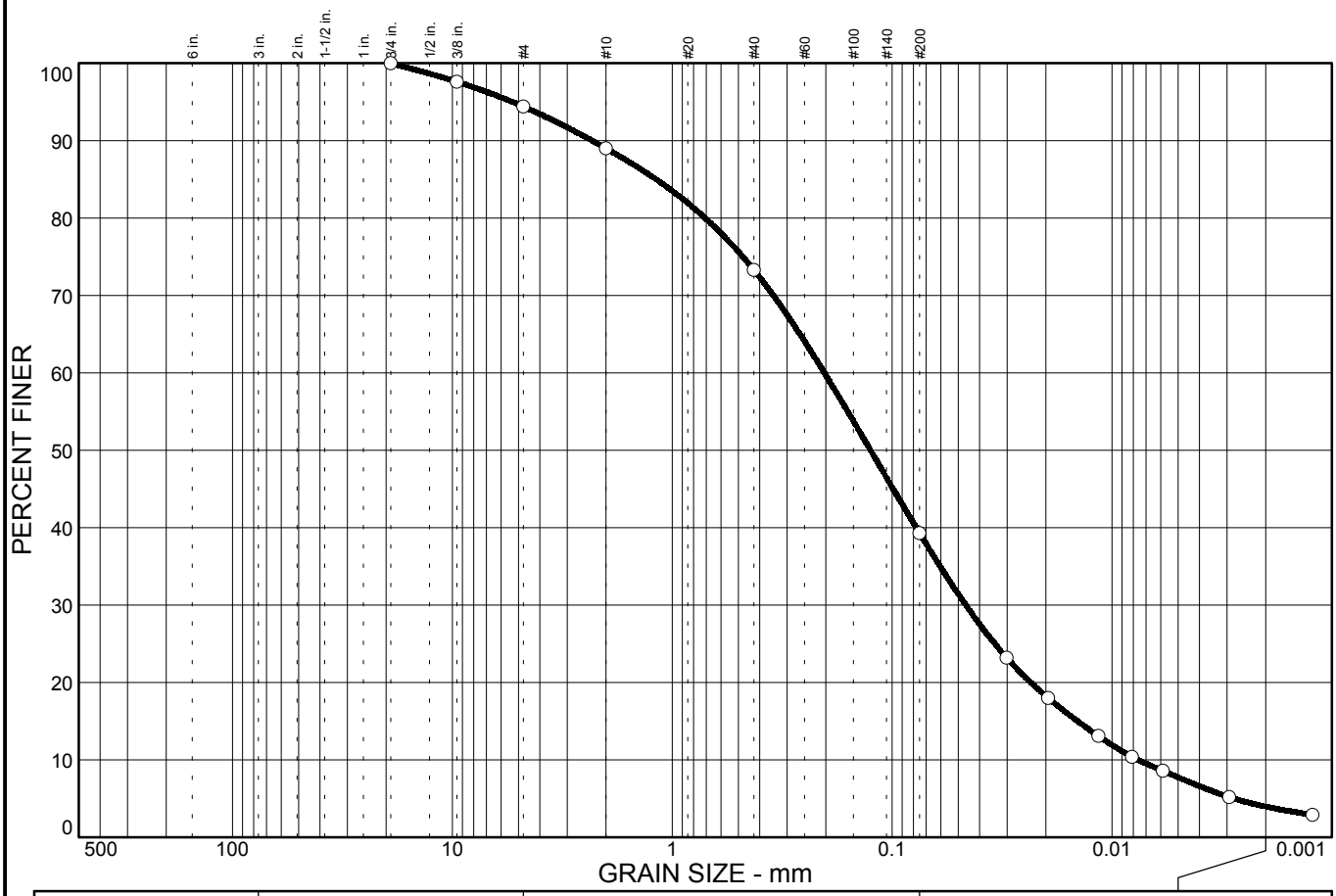
Moisture Content= 71.6%
Specific Gravity= 2.82
Loss on Ignition @ 440 C= 6.6%

Sample No.: 63 BK **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.6	5.4	15.7	34.0	35.3	4.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	97.6		
#4	94.4		
#10	89.0		
#40	73.3		
#200	39.3		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 1.18 D_{60}= 0.203 D_{50}= 0.125
D_{30}= 0.0462 D_{15}= 0.0143 D_{10}= 0.0076
C_u= 26.71 C_c= 1.38

Classification

USCS= SM AASHTO= A-4(0)

Remarks

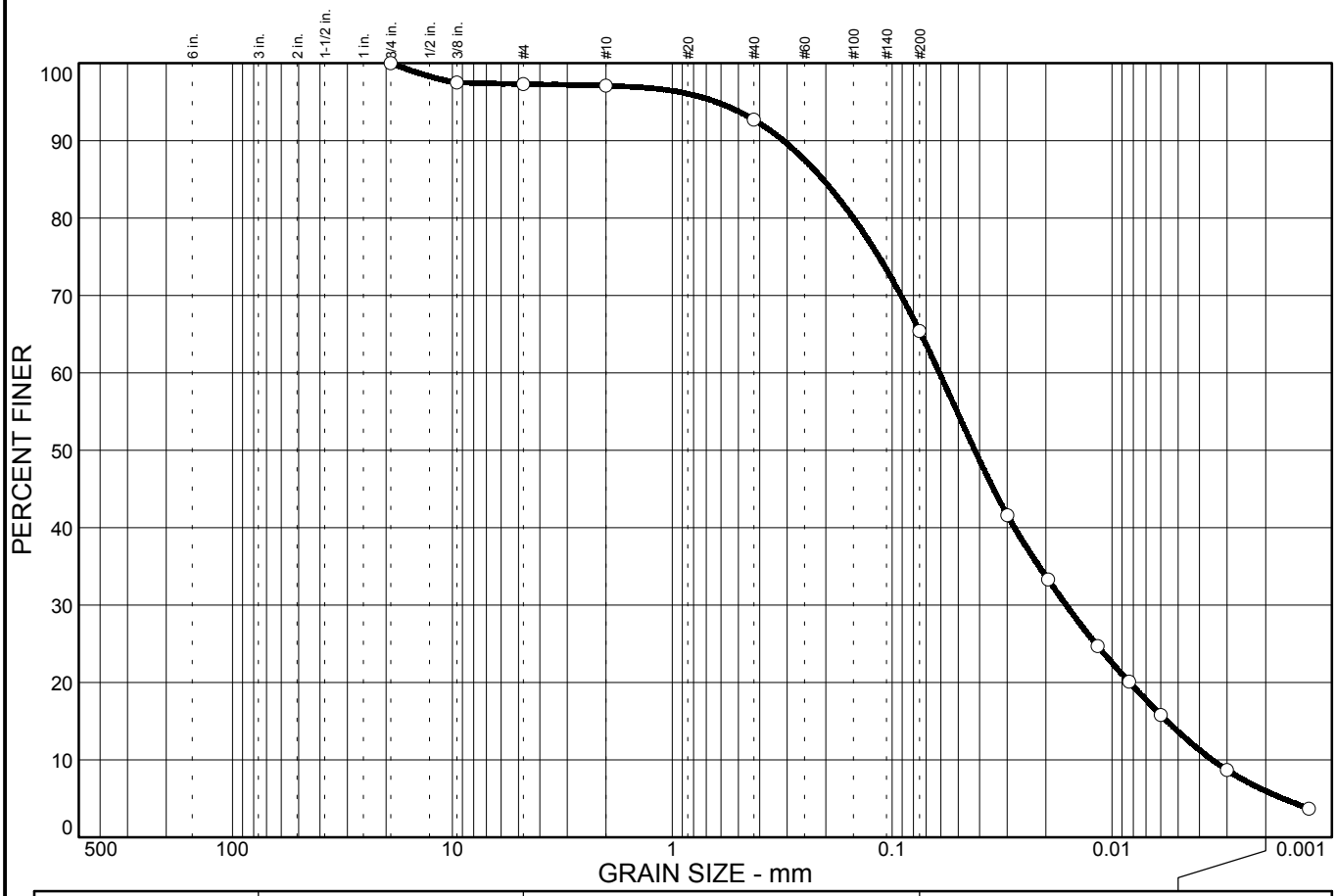
Moisture Content= 52.0%
Specific Gravity= 3.05
Loss on Ignition @ 440 C= 4.8%

Sample No.: 63 IN **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.7	0.2	4.4	27.3	59.4	6.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	97.5		
#4	97.3		
#10	97.1		
#40	92.7		
#200	65.4		

* (no specification provided)

Soil Description

Sandy lean clay

Atterberg Limits

PL= 15 LL= 44 PI= 29

Coefficients

D_{85}= 0.206 D_{60}= 0.0609 D_{50}= 0.0420
D_{30}= 0.0161 D_{15}= 0.0056 D_{10}= 0.0035
C_u= 17.44 C_c= 1.22

Classification

USCS= CL AASHTO= A-7-6(16)

Remarks

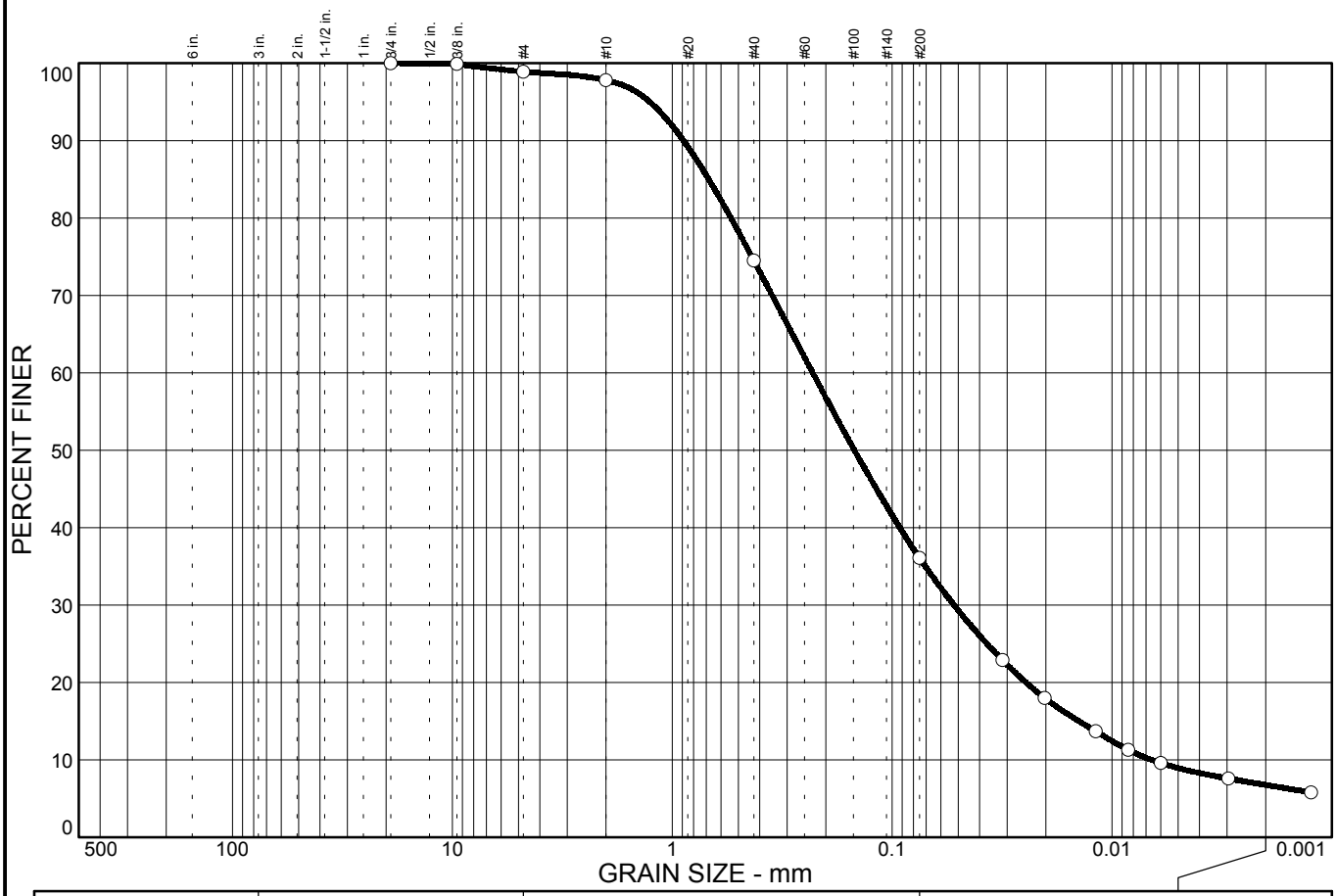
Moisture Content= 71.8%
Specific Gravity= 2.93
Loss on Ignition @ 440 C= 8.3%

Sample No.: 64 BK **Source of Sample:** **Date:** 8/7/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.1	1.1	23.3	38.4	29.3	6.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.9		
#4	98.9		
#10	97.8		
#40	74.5		
#200	36.1		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.682 D_{60}= 0.229 D_{50}= 0.148
D_{30}= 0.0522 D_{15}= 0.0141 D_{10}= 0.0066
C_u= 34.80 C_c= 1.80

Classification

USCS= SM AASHTO= A-4(0)

Remarks

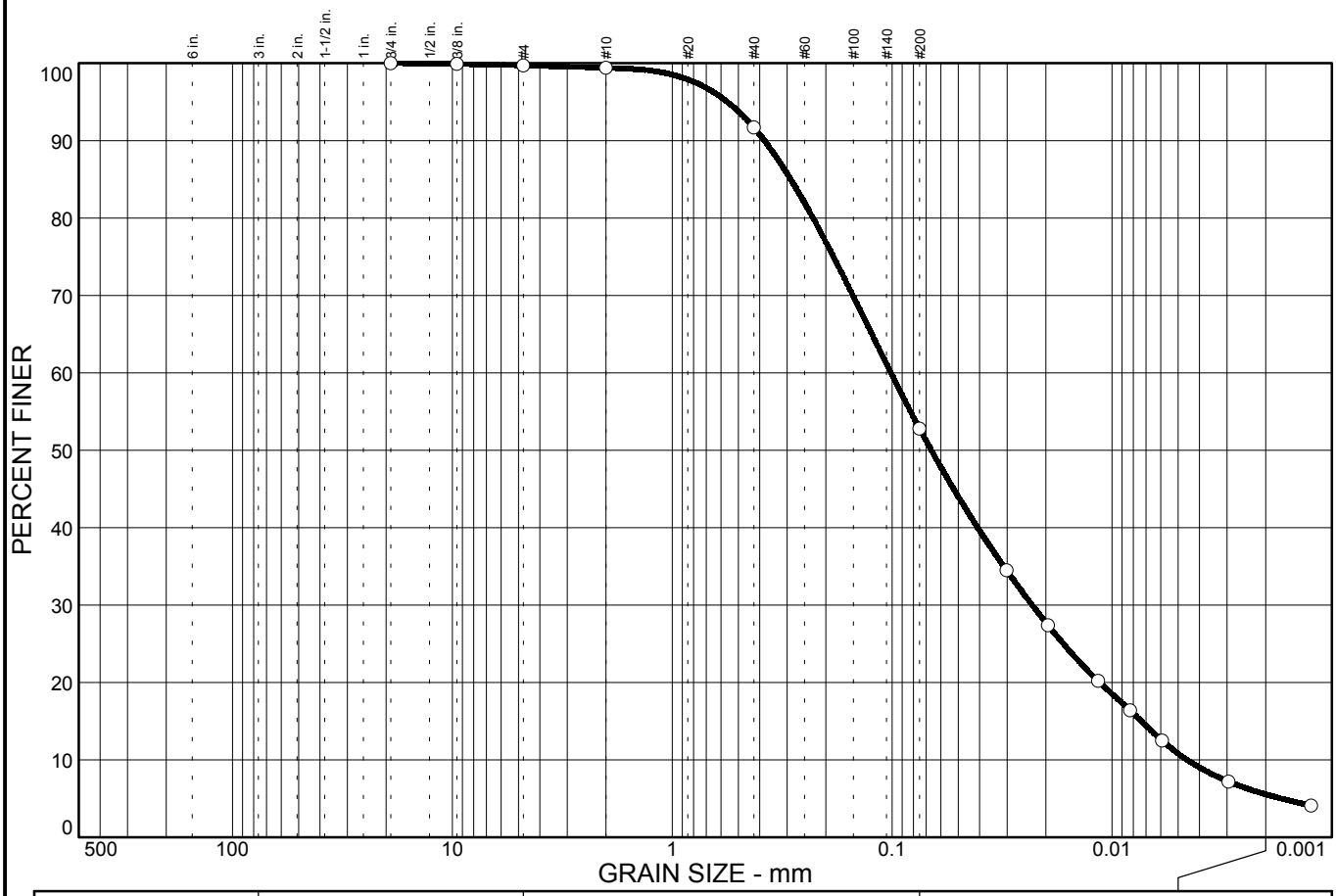
Moisture Content= 76.3%
Specific Gravity= 3.00
Loss on Ignition @ 440 C= 7.7%

Sample No.: 64 IN **Source of Sample:** **Date:** 8/7/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.3	0.3	7.7	38.9	47.2	5.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.9		
#4	99.7		
#10	99.4		
#40	91.7		
#200	52.8		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.289 D_{60}= 0.101 D_{50}= 0.0663
D_{30}= 0.0231 D_{15}= 0.0073 D_{10}= 0.0045
C_u= 22.29 C_c= 1.16

Classification

USCS= ML AASHTO= A-4(0)

Remarks

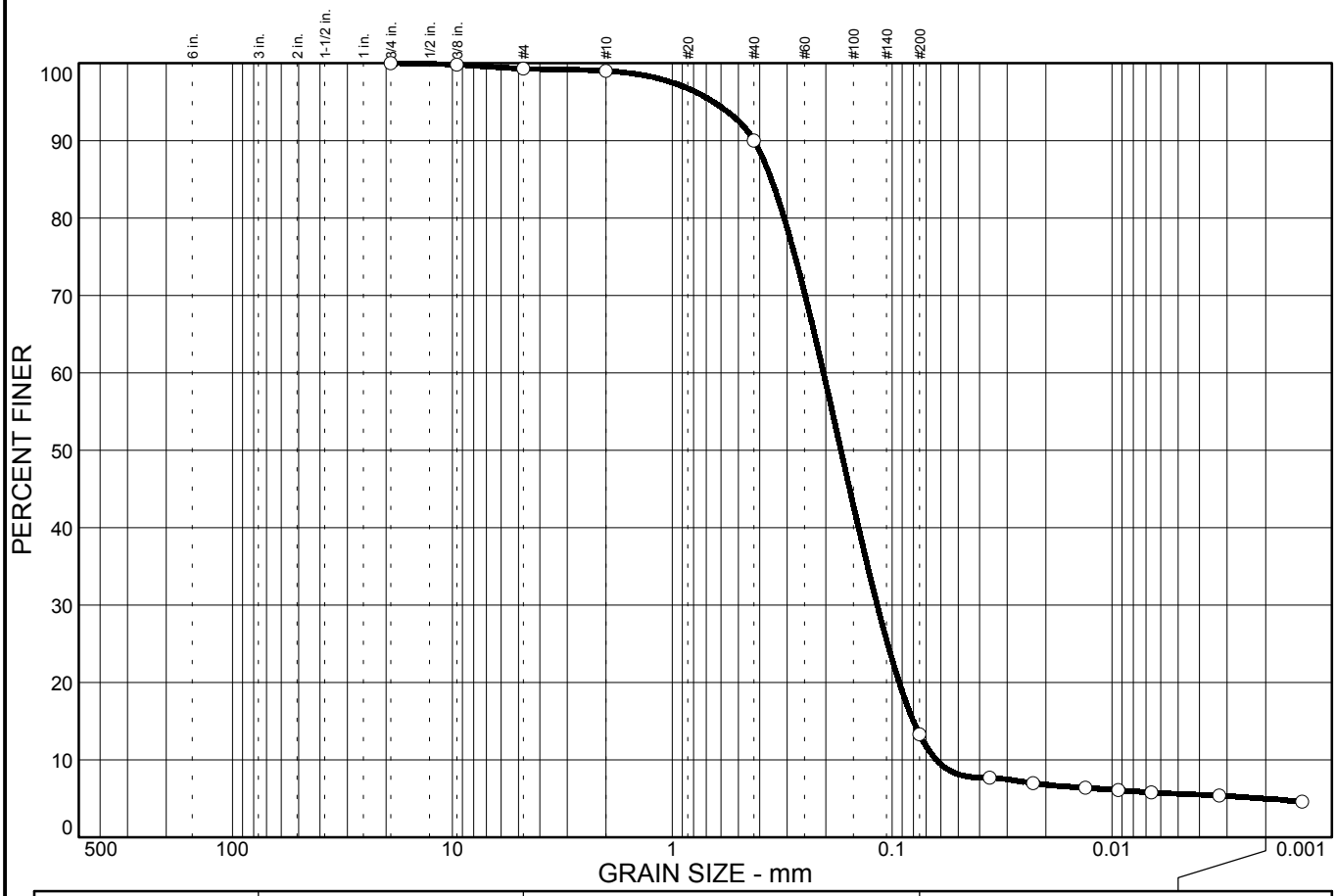
Moisture Content= 46.4%
Specific Gravity= 3.02
Loss on Ignition @ 440 C= 5.6%

Sample No.: 65 BK **Source of Sample:** **Date:** 8/7/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.7	0.3	9.0	76.7	8.3	5.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.8		
#4	99.3		
#10	99.0		
#40	90.0		
#200	13.3		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.354 D_{60}= 0.205 D_{50}= 0.171
D_{30}= 0.117 D_{15}= 0.0799 D_{10}= 0.0628
C_u= 3.27 C_c= 1.06

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

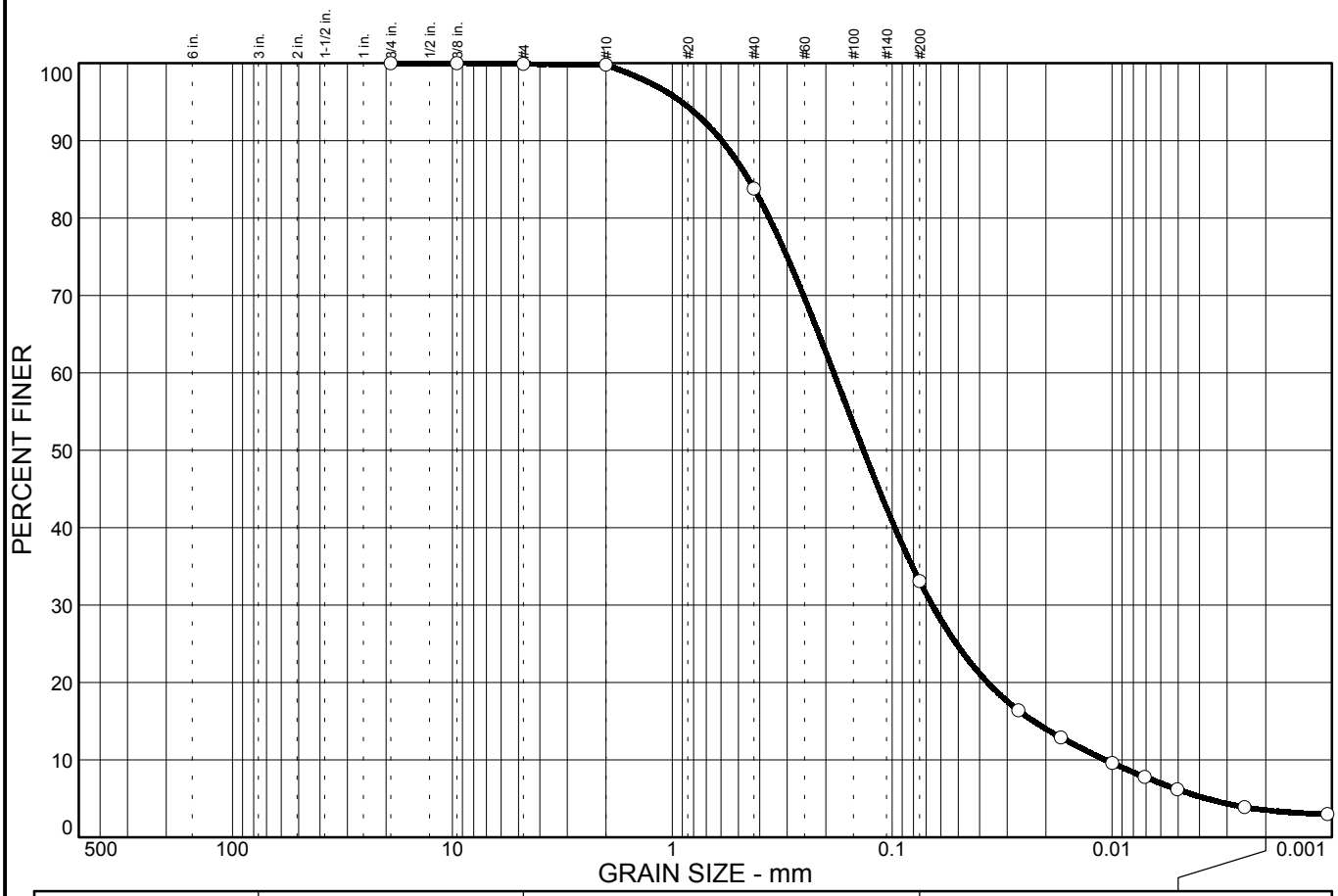
Moisture Content= 35.2%
Specific Gravity= 2.68
Loss on Ignition @ 440 C= 3.1%

Sample No.: 65 IN **Source of Sample:** **Date:** 8/7/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.1	0.1	16.0	50.7	29.6	3.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	100.0		
#4	99.9		
#10	99.8		
#40	83.8		
#200	33.1		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.450 D_{60}= 0.184 D_{50}= 0.135
D_{30}= 0.0656 D_{15}= 0.0227 D_{10}= 0.0107
C_u= 17.20 C_c= 2.19

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

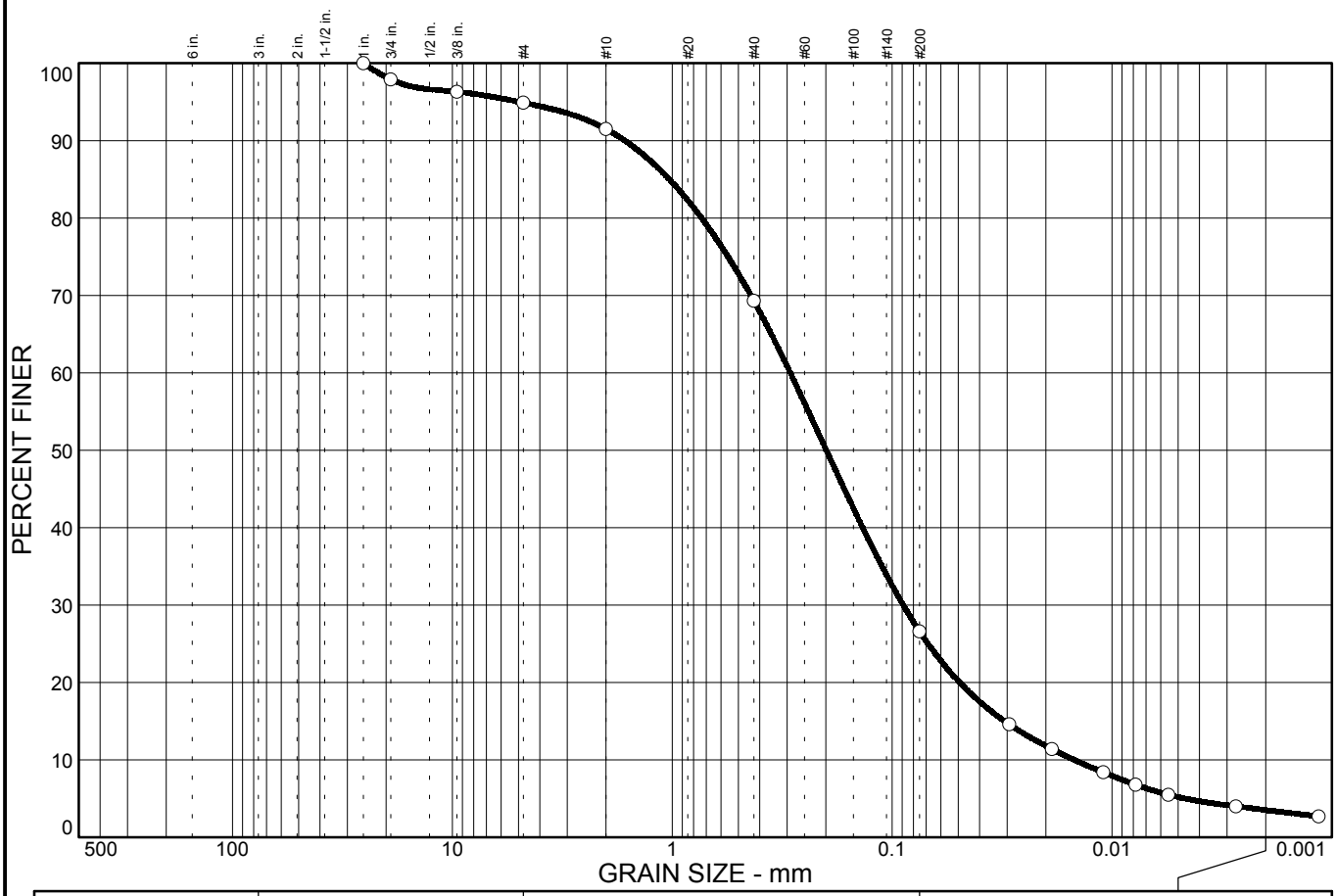
Moisture Content= 48.8%
Specific Gravity= 3.86
Loss on Ignition @ 440 C= 2.7%

Sample No.: 67 BK **Source of Sample:** **Date:** 8/7/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	2.1	3.0	3.4	22.2	42.7	23.1	3.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	97.9		
0.375 in.	96.3		
#4	94.9		
#10	91.5		
#40	69.3		
#200	26.6		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 1.03 D_{60}= 0.290 D_{50}= 0.199
D_{30}= 0.0889 D_{15}= 0.0307 D_{10}= 0.0148
C_u= 19.61 C_c= 1.84

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

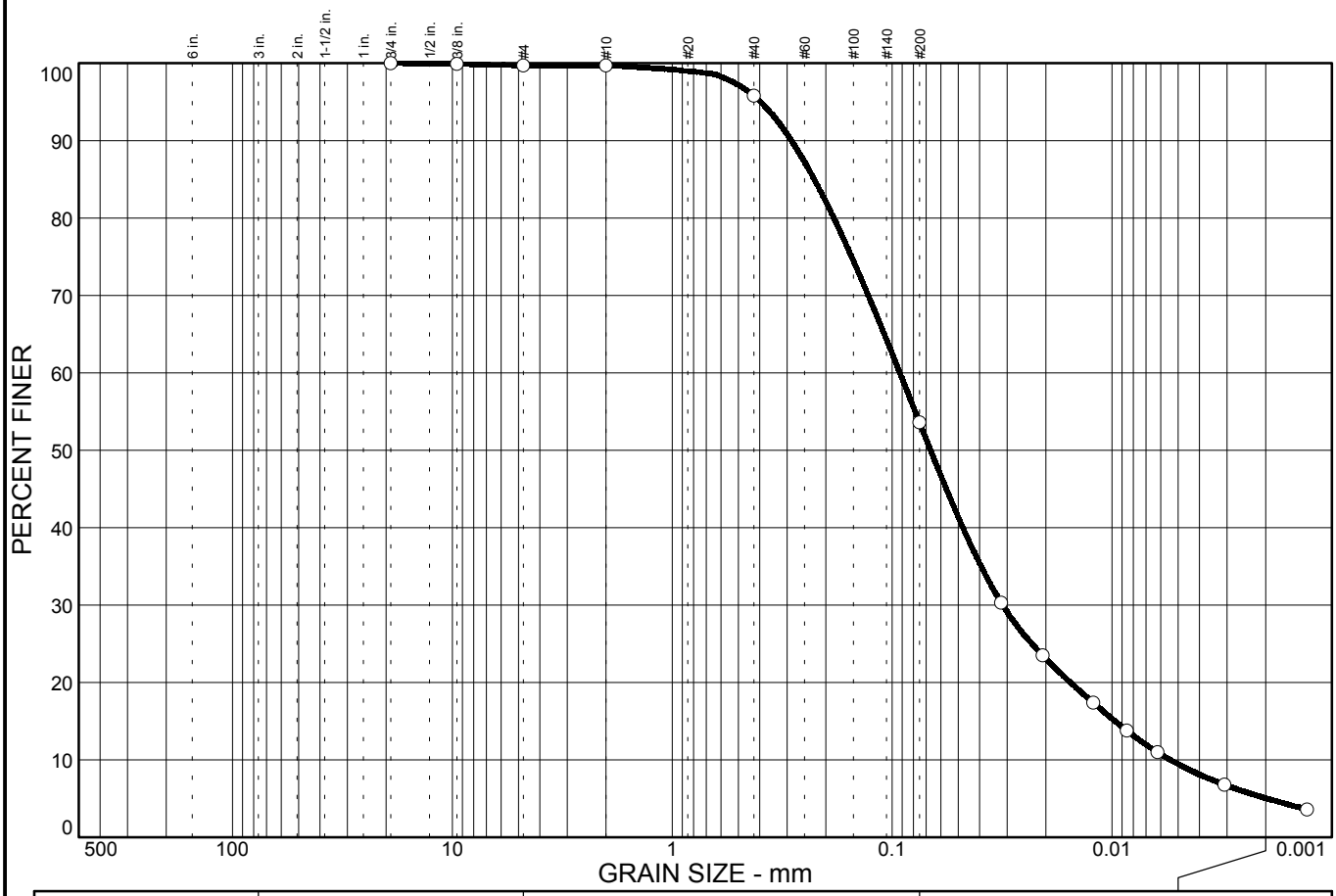
Moisture Content= 52.3%
Specific Gravity= 3.39
Loss on Ignition @ 440 C= 3.3%

Sample No.: 67 IN **Source of Sample:** **Date:** 8/7/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.3	0.0	3.9	42.2	48.5	5.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.9		
#4	99.7		
#10	99.7		
#40	95.8		
#200	53.6		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.226 D_{60}= 0.0922 D_{50}= 0.0668
D_{30}= 0.0314 D_{15}= 0.0097 D_{10}= 0.0054
C_u= 17.02 C_c= 1.98

Classification

USCS= ML AASHTO= A-4(0)

Remarks

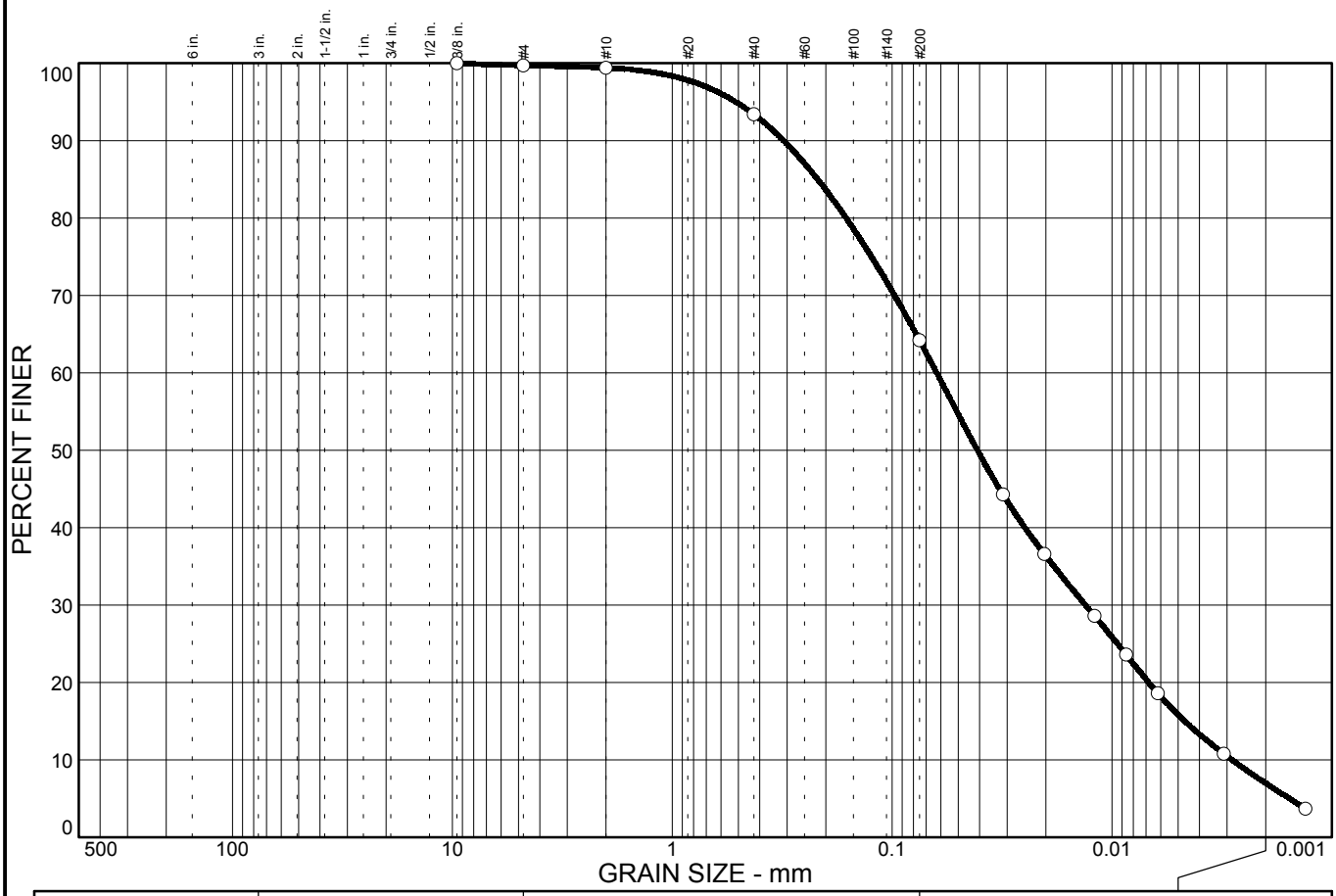
Moisture Content= 58.1%
Specific Gravity= 2.86
Loss on Ignition @ 440 C= 5.4%

Sample No.: 69 BK **Source of Sample:** **Date:** 8/5/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.3	0.3	6.0	29.2	57.2	7.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	99.7		
#10	99.4		
#40	93.4		
#200	64.2		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.218 D_{60}= 0.0627 D_{50}= 0.0409
D_{30}= 0.0132 D_{15}= 0.0047 D_{10}= 0.0028
C_u= 22.06 C_c= 0.98

Classification

USCS= ML AASHTO= A-4(0)

Remarks

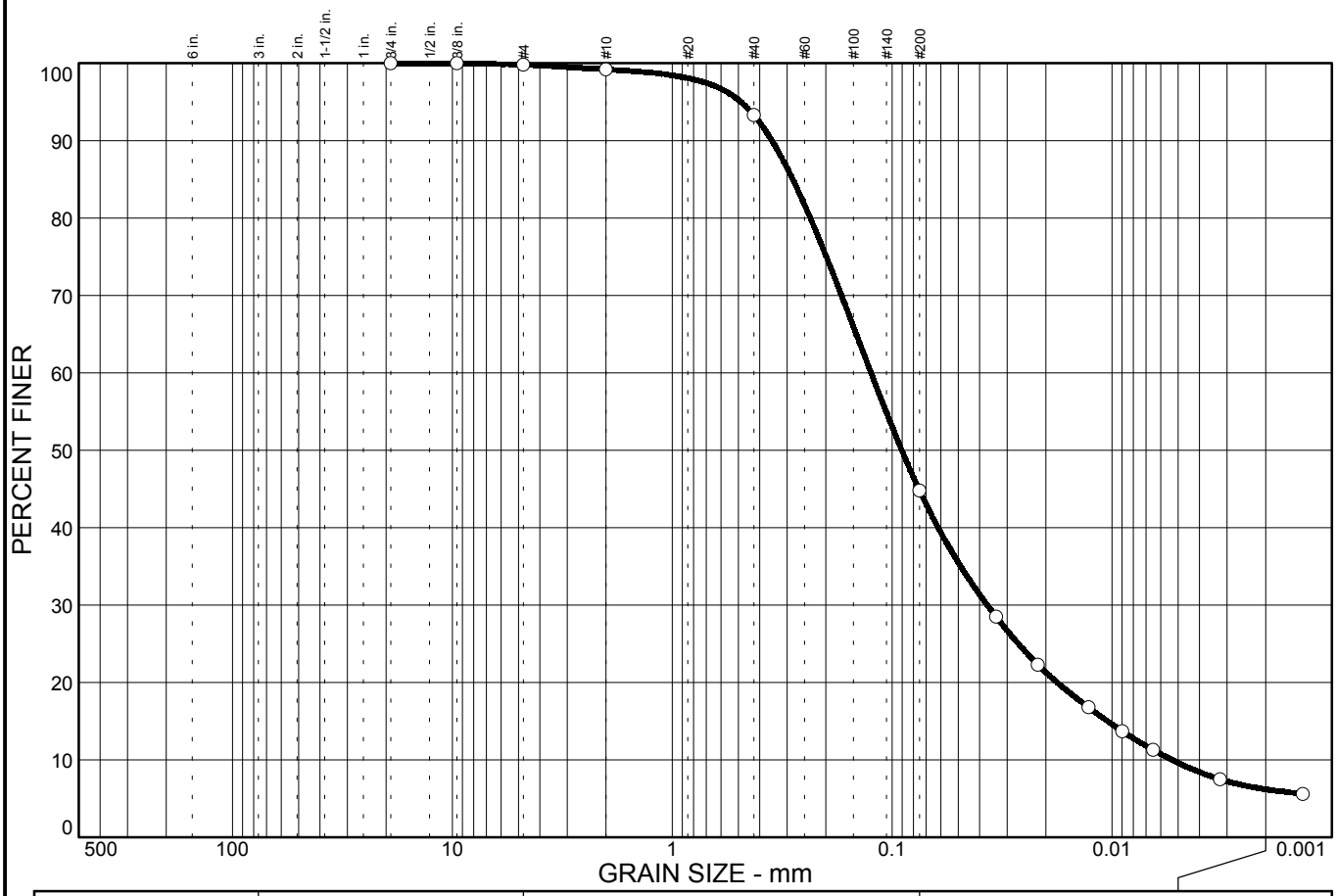
Moisture Content= 133.7%
Specific Gravity= 2.80
Loss on Ignition @ 440 C= 7.7%

Sample No.: 69 IN **Source of Sample:** **Date:** 8/7/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.2	0.6	5.9	48.5	38.6	6.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	100.0		
#4	99.8		
#10	99.2		
#40	93.3		
#200	44.8		

* (no specification provided)

Soil Description

Clayey sand

Atterberg Limits

PL= 20 LL= 28 PI= 8

Coefficients

D_{85}= 0.283 D_{60}= 0.125 D_{50}= 0.0903
D_{30}= 0.0369 D_{15}= 0.0105 D_{10}= 0.0053
C_u= 23.45 C_c= 2.05

Classification

USCS= SC AASHTO= A-4(1)

Remarks

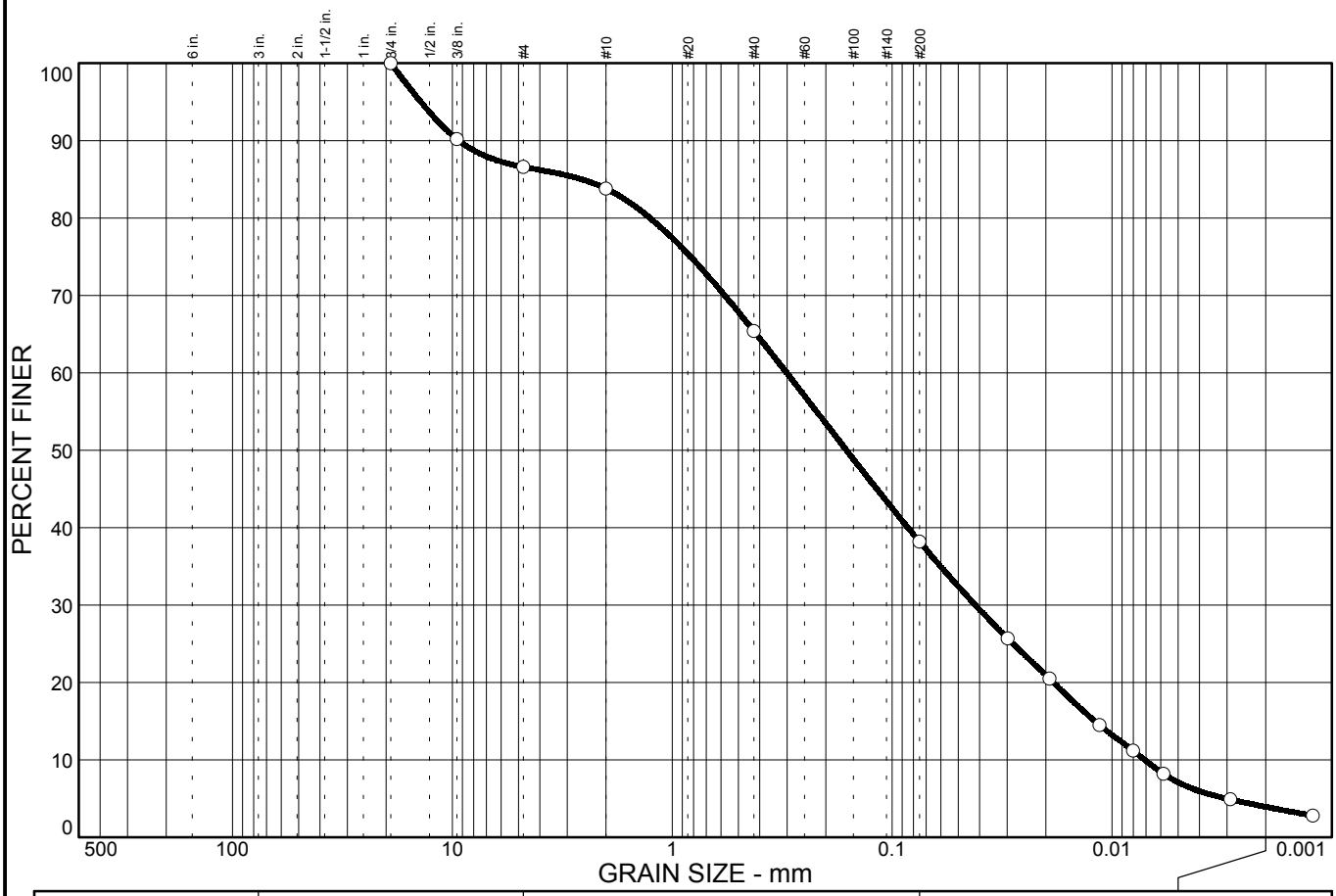
Moistyure Content= 41.3%
Specific Gravity= 2.73
Loss on Ignition @ 440 C= 3.6%

Sample No.: 70 BK **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	13.4	2.8	18.4	27.2	34.3	3.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	90.2		
#4	86.6		
#10	83.8		
#40	65.4		
#200	38.2		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 2.57 D_{60}= 0.301 D_{50}= 0.161
D_{30}= 0.0418 D_{15}= 0.0120 D_{10}= 0.0071
C_u= 42.50 C_c= 0.82

Classification

USCS= SM AASHTO= A-4(0)

Remarks

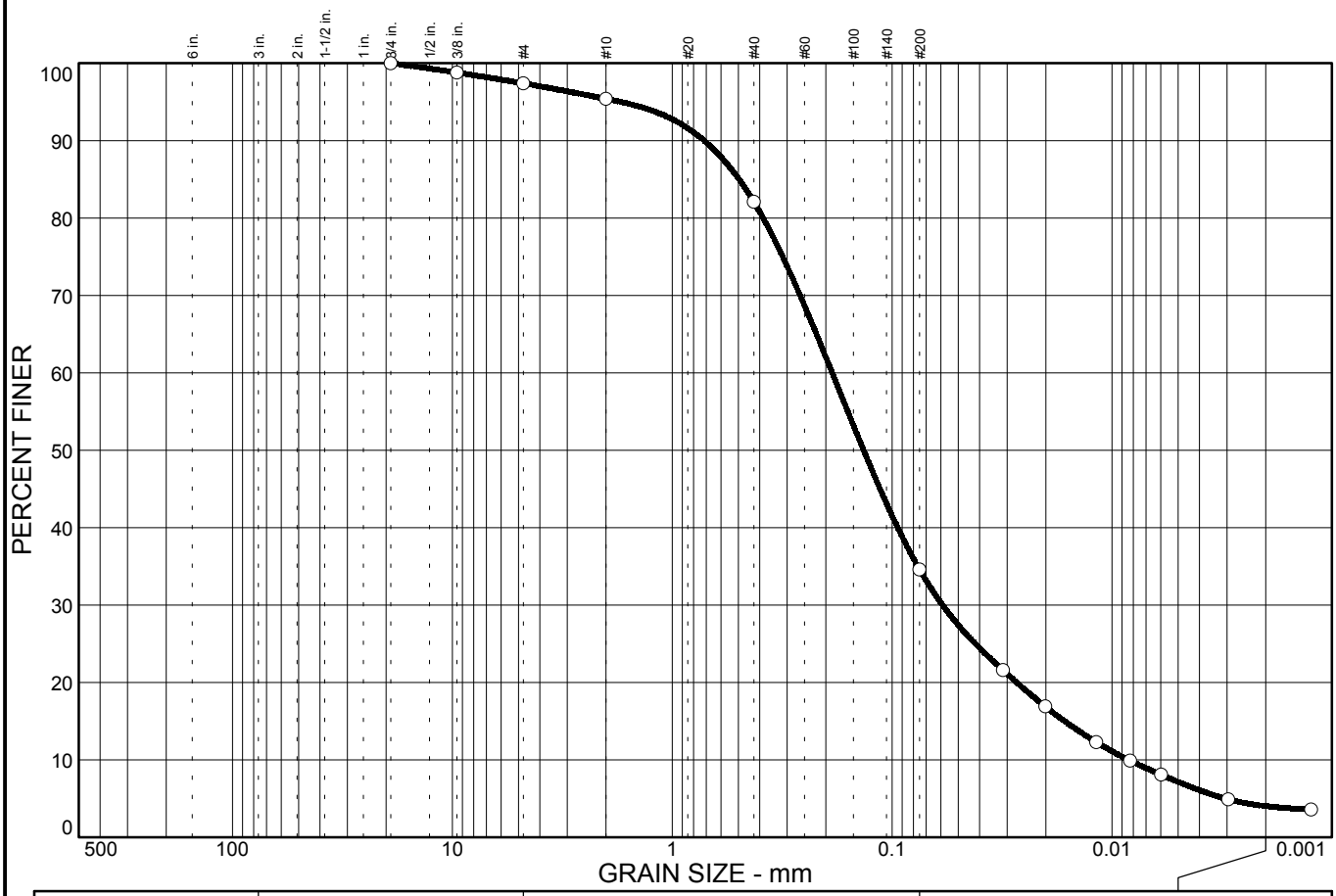
Moisture Content= 72.6%
Specific Gravity= 3.13
Loss on Ignition @ 440 C= 3.5%

Sample No.: 70 IN **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.6	2.0	13.3	47.5	30.6	4.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.8		
#4	97.4		
#10	95.4		
#40	82.1		
#200	34.6		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.496 D_{60}= 0.187 D_{50}= 0.135
D_{30}= 0.0589 D_{15}= 0.0164 D_{10}= 0.0084
C_u= 22.28 C_c= 2.21

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

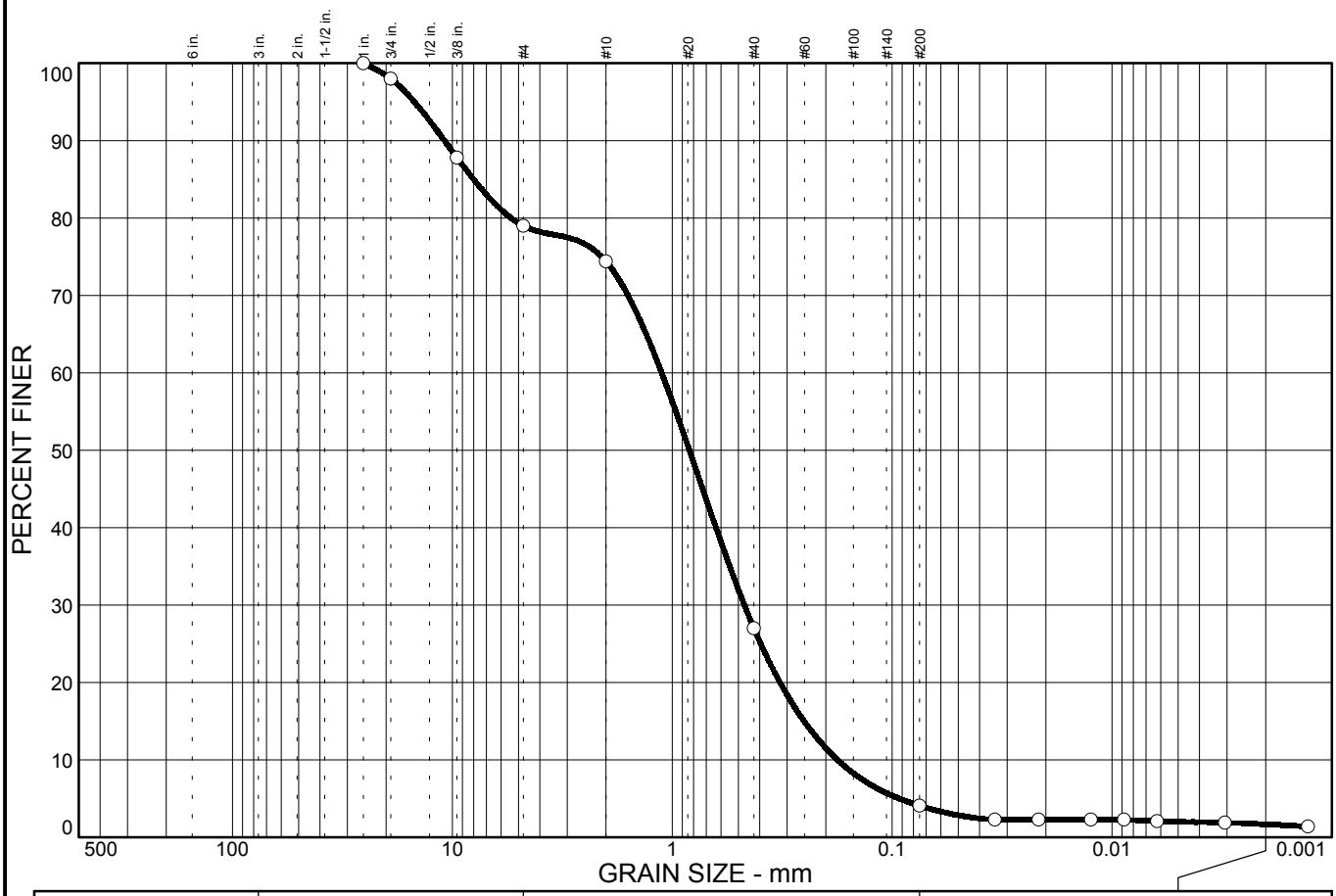
Moisture Content= 41.0%
Specific Gravity= 3.05
Loss on Ignition @ 440 C= 3.6%

Sample No.: 71 BK **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	2.0	19.0	4.6	47.4	22.9	2.4	1.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	98.0		
0.375 in.	87.8		
#4	79.0		
#10	74.4		
#40	27.0		
#200	4.1		

* (no specification provided)

Soil Description

Well-graded sand with gravel

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 8.00 D_{60}= 1.12 D_{50}= 0.835
D_{30}= 0.470 D_{15}= 0.251 D_{10}= 0.177
C_u= 6.31 C_c= 1.12

Classification

USCS= SW AASHTO= A-1-b

Remarks

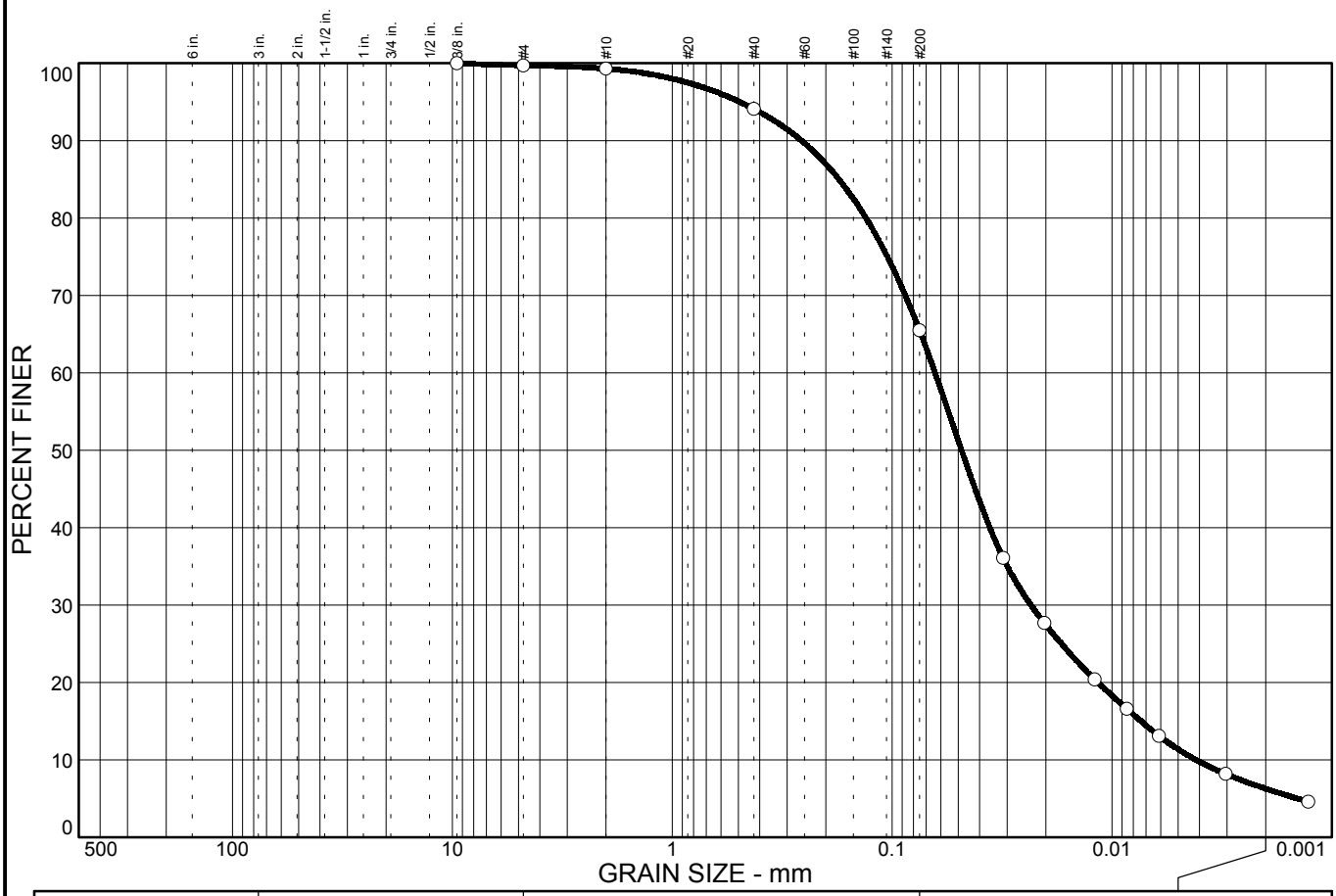
Moisture Content= 23.5%
Specific Gravity= 2.94
Loss on Ignition @ 440 C= 2.3%

Sample No.: 71 IN **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.3	0.4	5.2	28.6	59.2	6.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	99.7		
#10	99.3		
#40	94.1		
#200	65.5		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= 33 LL= 35 PI= 2

Coefficients

D_{85}= 0.174 D_{60}= 0.0637 D_{50}= 0.0483
D_{30}= 0.0234 D_{15}= 0.0074 D_{10}= 0.0041
C_u= 15.42 C_c= 2.07

Classification

USCS= ML AASHTO= A-4(1)

Remarks

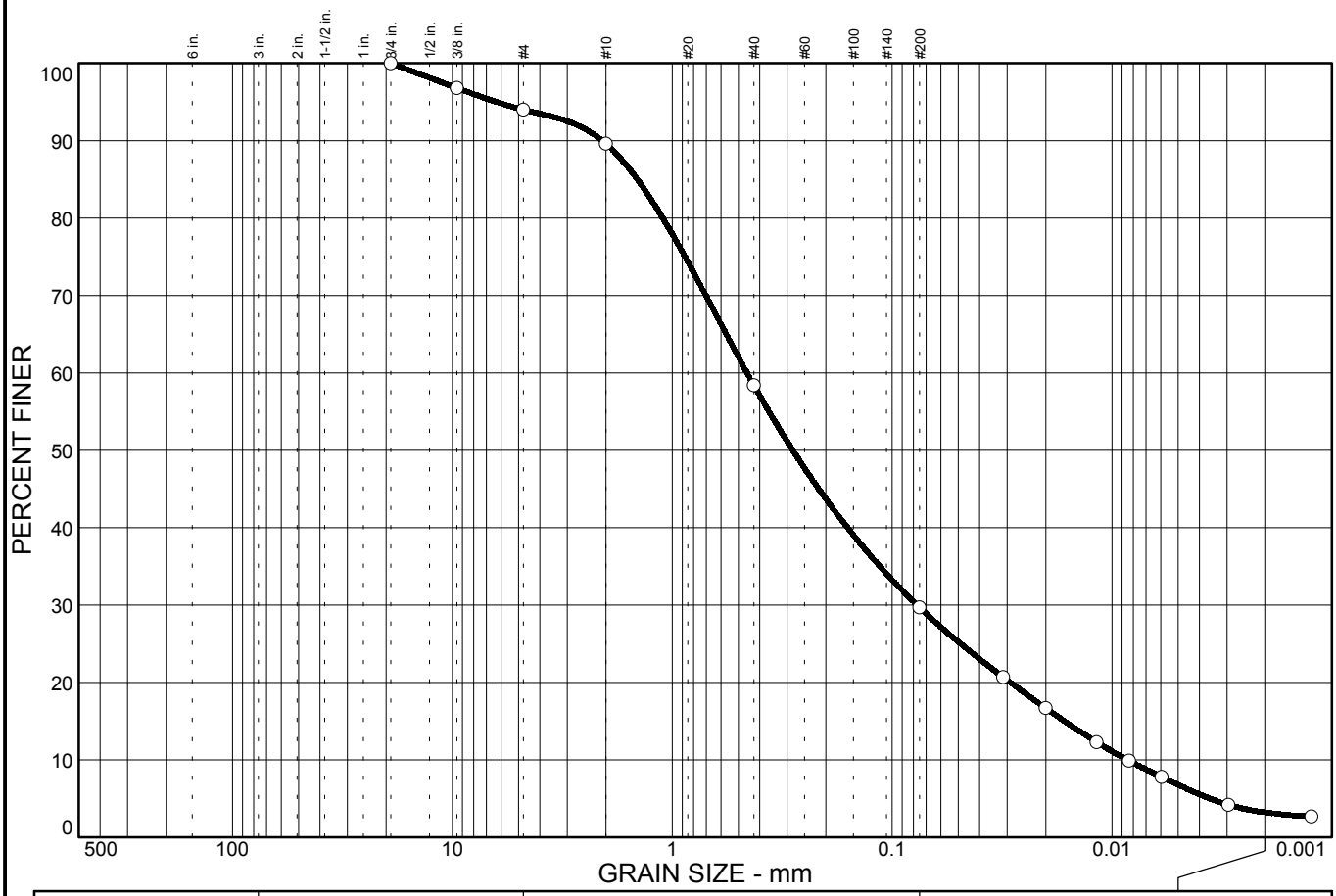
Moisture Content= 64.5%
Specific Gravity= 2.91
Loss on Ignition @ 440 C= 6.1%

Sample No.: 73 BK **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	6.0	4.4	31.2	28.7	26.5	3.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	96.8		
#4	94.0		
#10	89.6		
#40	58.4		
#200	29.7		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= 25 LL= 30 PI= 5

Coefficients

D_{85}= 1.44 D_{60}= 0.457 D_{50}= 0.283
D_{30}= 0.0769 D_{15}= 0.0164 D_{10}= 0.0085
C_u= 53.75 C_c= 1.53

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

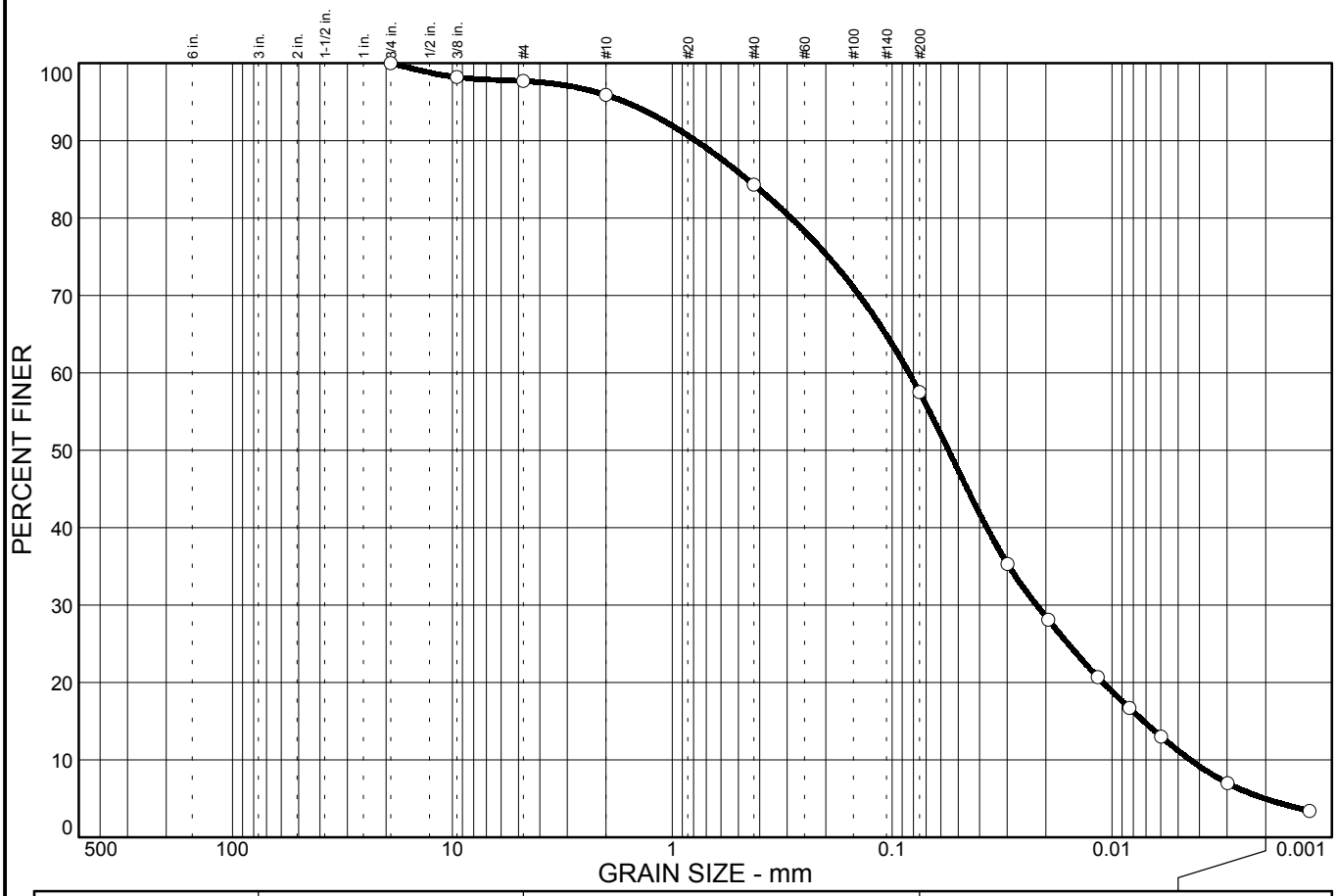
Moisture Content= 56.8%
Specific Gravity= 3.06
Loss on Ignition @ 440 C= 5.8%

Sample No.: 73 IN **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	2.3	1.8	11.6	26.8	52.5	5.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.2		
#4	97.7		
#10	95.9		
#40	84.3		
#200	57.5		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= 31 LL= 39 PI= 8

Coefficients

D_{85}= 0.455 D_{60}= 0.0837 D_{50}= 0.0553
D_{30}= 0.0220 D_{15}= 0.0072 D_{10}= 0.0044
C_u= 19.06 C_c= 1.32

Classification

USCS= ML AASHTO= A-4(4)

Remarks

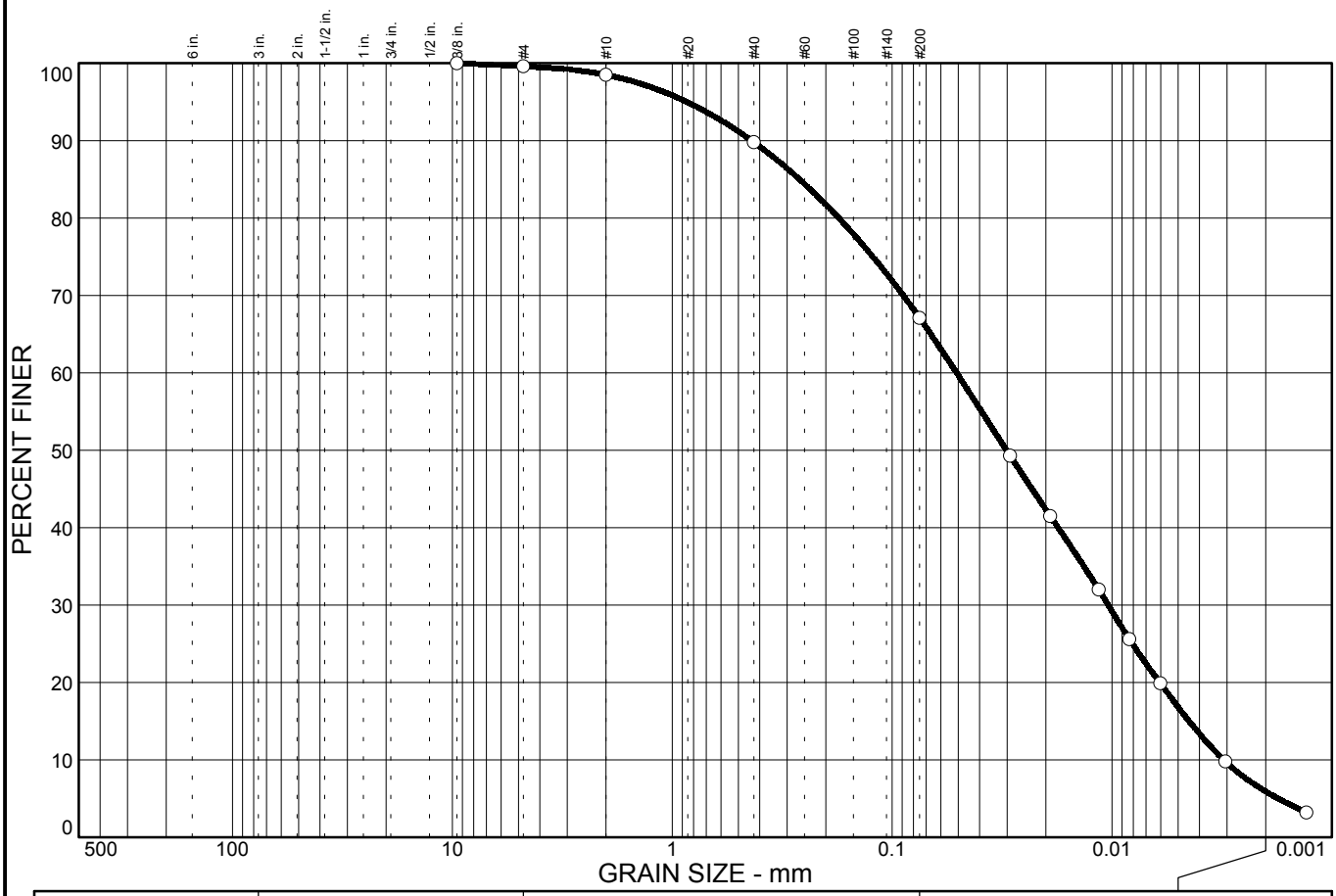
Moisture Content= 59.7%
Specific Gravity= 2.94
Loss on Ignition @ 440 C= 7.6%

Sample No.: 74 BK **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.4	1.1	8.7	22.7	61.2	5.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375 in.	100.0		
#4	99.6		
#10	98.5		
#40	89.8		
#200	67.1		

* (no specification provided)

Soil Description

Sandy elastic silt

Atterberg Limits

PL= 49 LL= 62 PI= 12

Coefficients

D_{85}= 0.264 D_{60}= 0.0508 D_{50}= 0.0301
D_{30}= 0.0104 D_{15}= 0.0045 D_{10}= 0.0031
C_u= 16.41 C_c= 0.69

Classification

USCS= MH AASHTO= A-7-5(11)

Remarks

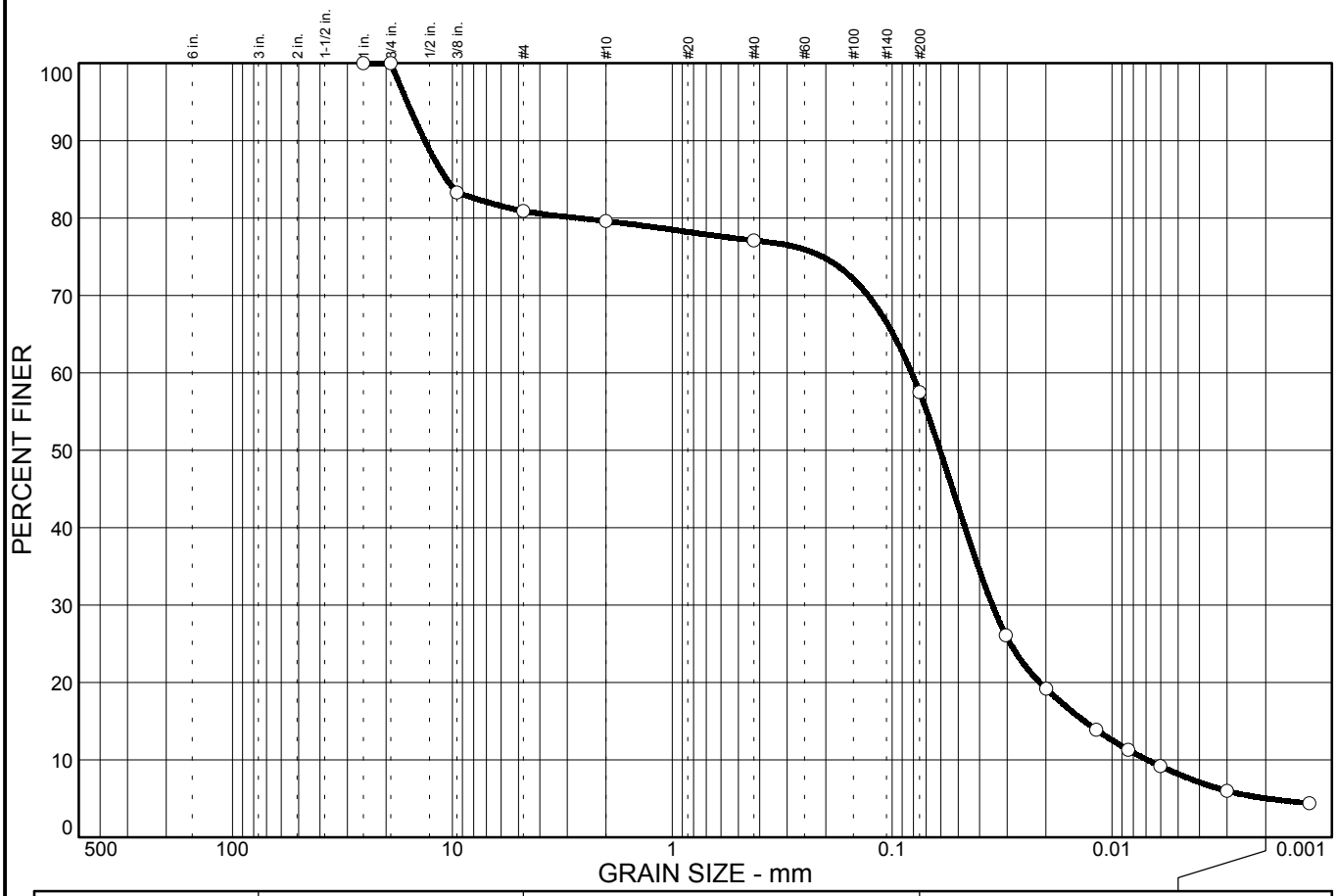
Moisture Content= 133.4%
Specific Gravity= 2.82
Loss on Ignition @ 440 C= 11.3%

Sample No.: 74 IN **Source of Sample:** **Date:** 8/8/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	19.1	1.3	2.5	19.6	52.5	5.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	100.0		
0.375 in.	83.3		
#4	80.9		
#10	79.6		
#40	77.1		
#200	57.5		

* (no specification provided)

Soil Description

Sandy silt with gravel

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 10.6 D_{60}= 0.0814 D_{50}= 0.0605
D_{30}= 0.0350 D_{15}= 0.0133 D_{10}= 0.0069
C_u= 11.80 C_c= 2.18

Classification

USCS= ML AASHTO= A-4(0)

Remarks

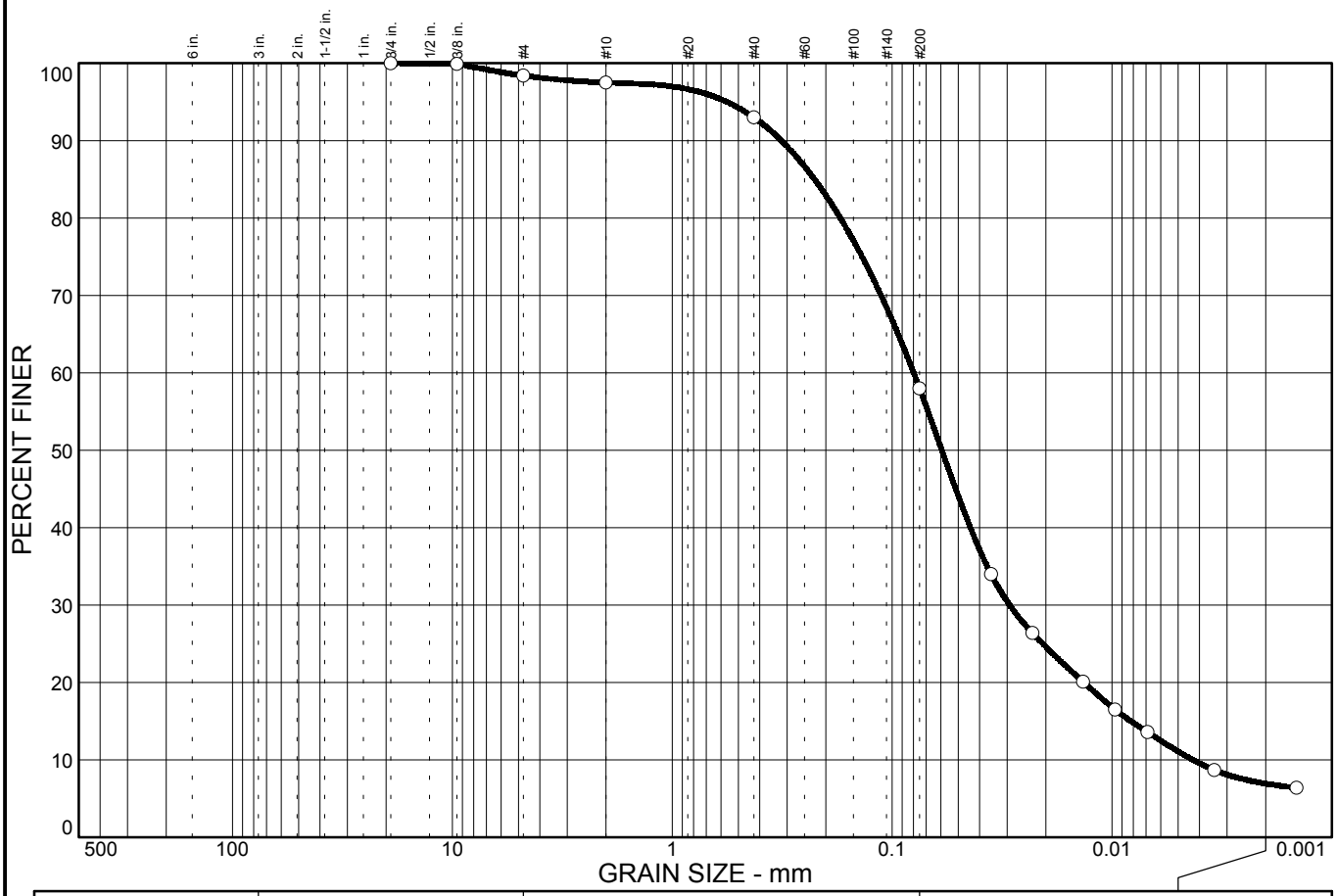
Moisture Content= 59.0%
Specific Gravity= 2.99
Loss on Ignition @ 440 C= 5.3%

Sample No.: 75 BK **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.6	0.9	4.5	35.0	51.1	6.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.9		
#4	98.4		
#10	97.5		
#40	93.0		
#200	58.0		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.225 D_{60}= 0.0798 D_{50}= 0.0594
D_{30}= 0.0292 D_{15}= 0.0082 D_{10}= 0.0043
C_u= 18.67 C_c= 2.50

Classification

USCS= ML AASHTO= A-4(0)

Remarks

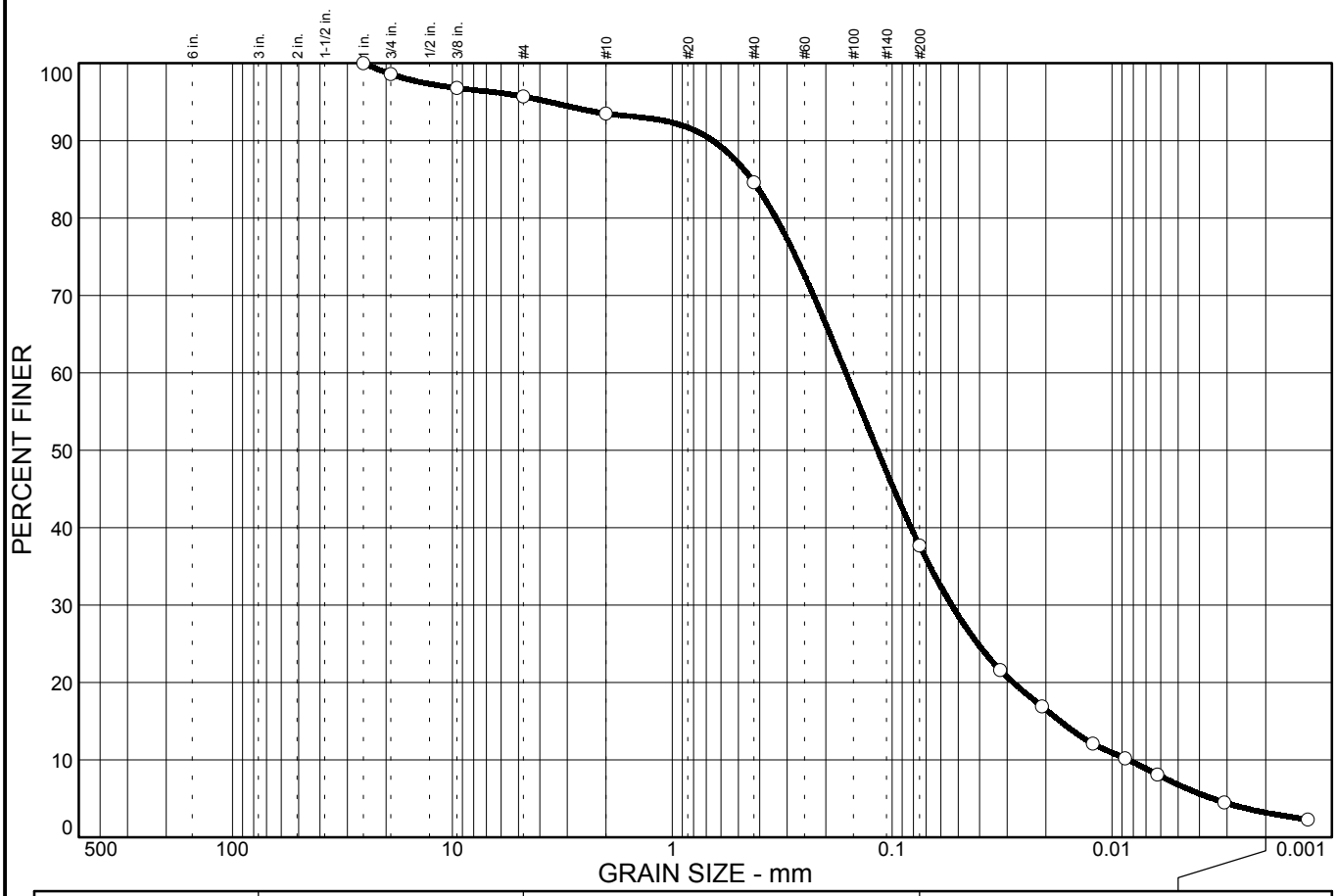
Moisture Content= 98.9%
Specific Gravity= 2.53
Loss on Ignition @ 440 C= 6.6%

Sample No.: 75 IN **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	1.4	2.9	2.2	8.9	46.9	34.5	3.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	98.6		
0.375 in.	96.8		
#4	95.7		
#10	93.5		
#40	84.6		
#200	37.7		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.435 D_{60}= 0.162 D_{50}= 0.116
D_{30}= 0.0535 D_{15}= 0.0172 D_{10}= 0.0084
C_u= 19.27 C_c= 2.10

Classification

USCS= SM AASHTO= A-4(0)

Remarks

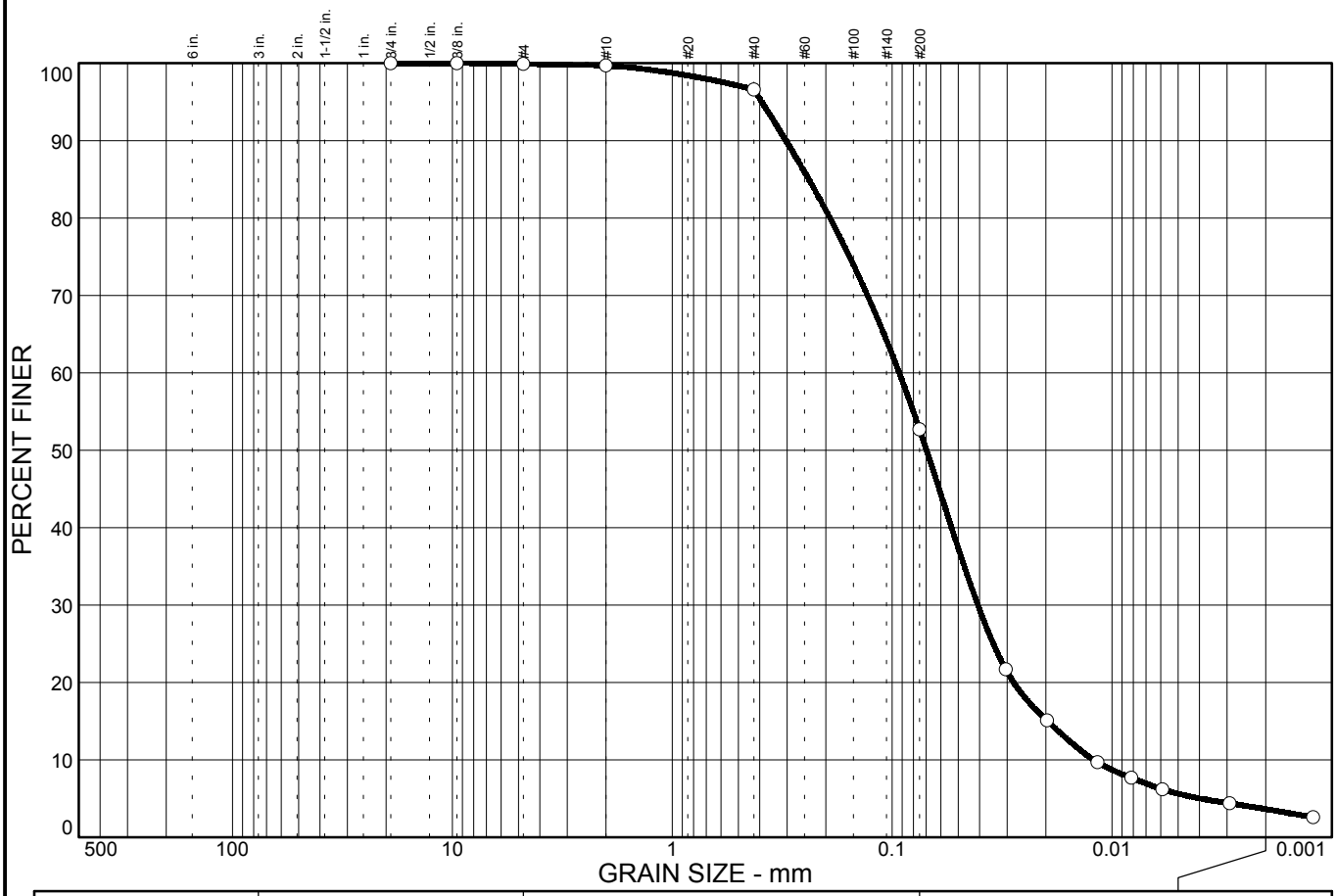
Moisture Content= 52.8%
Specific Gravity= 2.93
Loss on Ignition @ 440 C= 4.9%

Sample No.: 77 BK **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.1	0.2	3.1	43.9	49.1	3.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	100.0		
#4	99.9		
#10	99.7		
#40	96.6		
#200	52.7		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.210 D_{60}= 0.0914 D_{50}= 0.0699
D_{30}= 0.0409 D_{15}= 0.0196 D_{10}= 0.0121
C_u= 7.55 C_c= 1.51

Classification

USCS= ML AASHTO= A-4(0)

Remarks

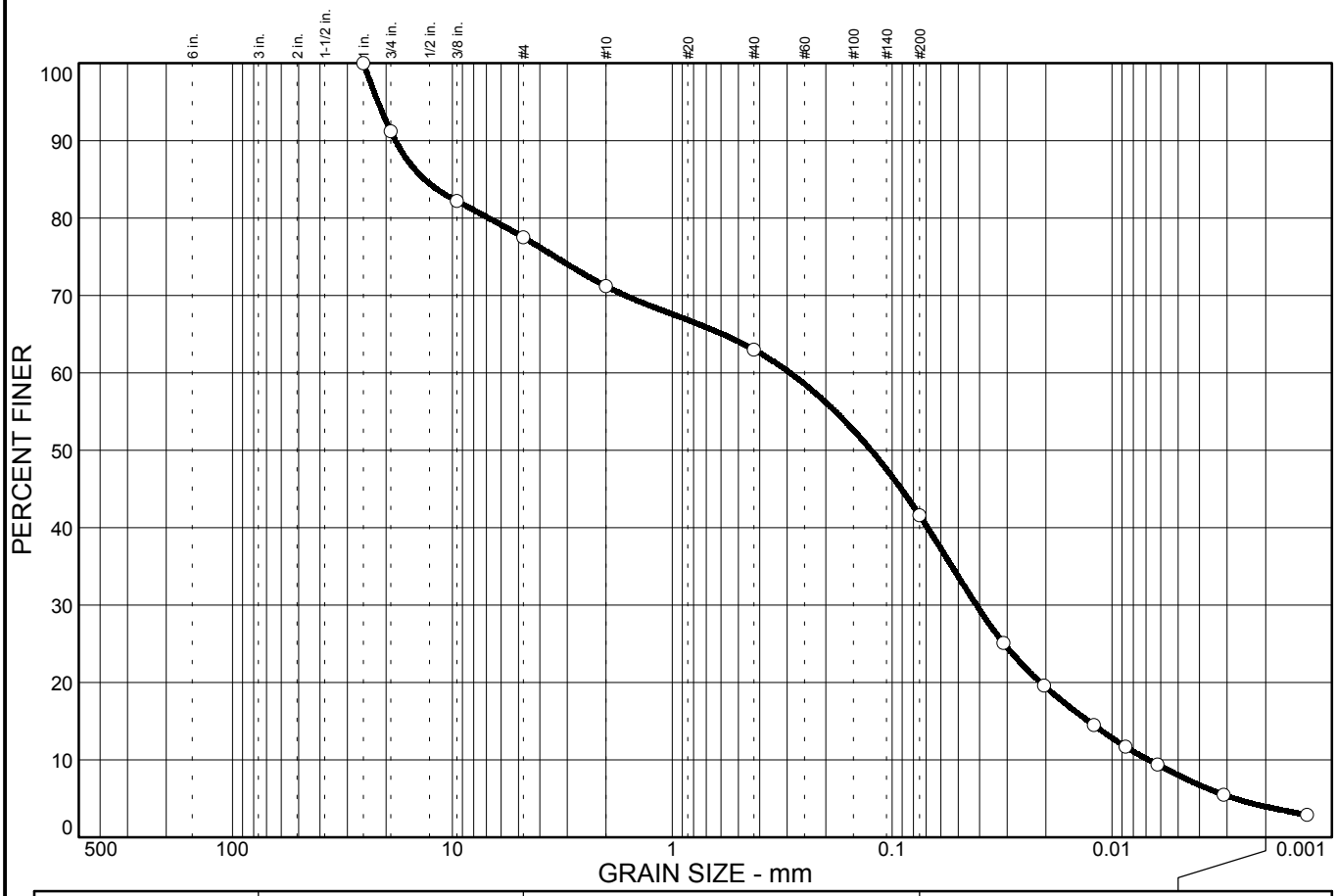
Moisture Content= 50.2%
Specific Gravity= 3.17
Loss on Ignition @ 440 C= 2.9%

Sample No.: 77 IN **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	8.8	13.7	6.3	8.2	21.4	37.6	4.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	91.2		
0.375 in.	82.2		
#4	77.5		
#10	71.2		
#40	63.0		
#200	41.6		

* (no specification provided)

Soil Description

Silty sand with gravel

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 13.4 D_{60}= 0.291 D_{50}= 0.124
D_{30}= 0.0413 D_{15}= 0.0128 D_{10}= 0.0068
C_u= 42.80 C_c= 0.86

Classification

USCS= SM AASHTO= A-4(0)

Remarks

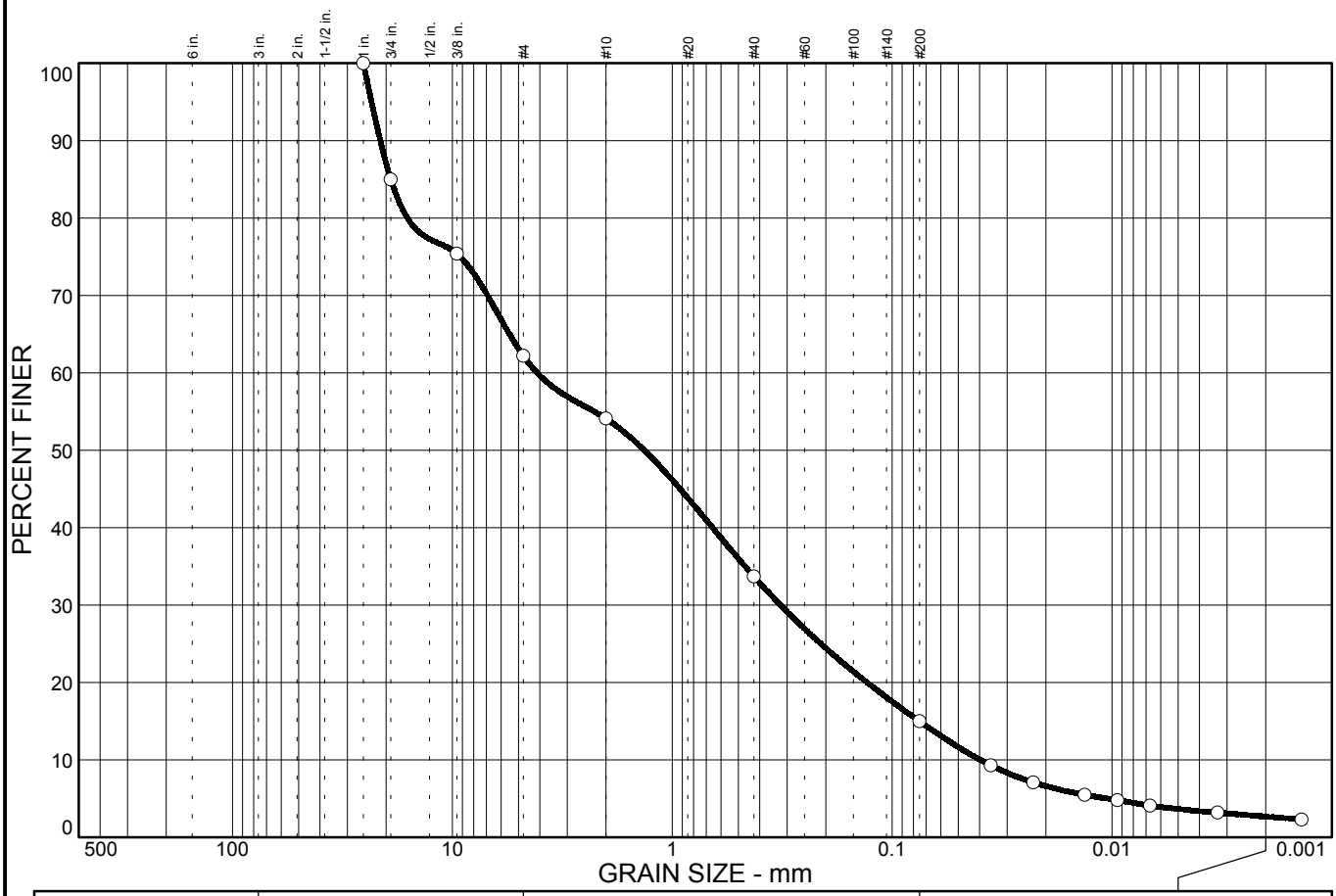
Moisture Content= 50.1%
Specific Gravity= 2.87
Loss on Ignition @ 440 C= 5.3%

Sample No.: 81 BK **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	15.0	22.8	8.1	20.4	18.7	12.3	2.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	85.0		
0.375 in.	75.4		
#4	62.2		
#10	54.1		
#40	33.7		
#200	15.0		

* (no specification provided)

Soil Description

Silty sand with gravel

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 19.0 D_{60}= 4.10 D_{50}= 1.34
D_{30}= 0.322 D_{15}= 0.0750 D_{10}= 0.0397
C_u= 103.46 C_c= 0.64

Classification

USCS= SM AASHTO= A-1-b

Remarks

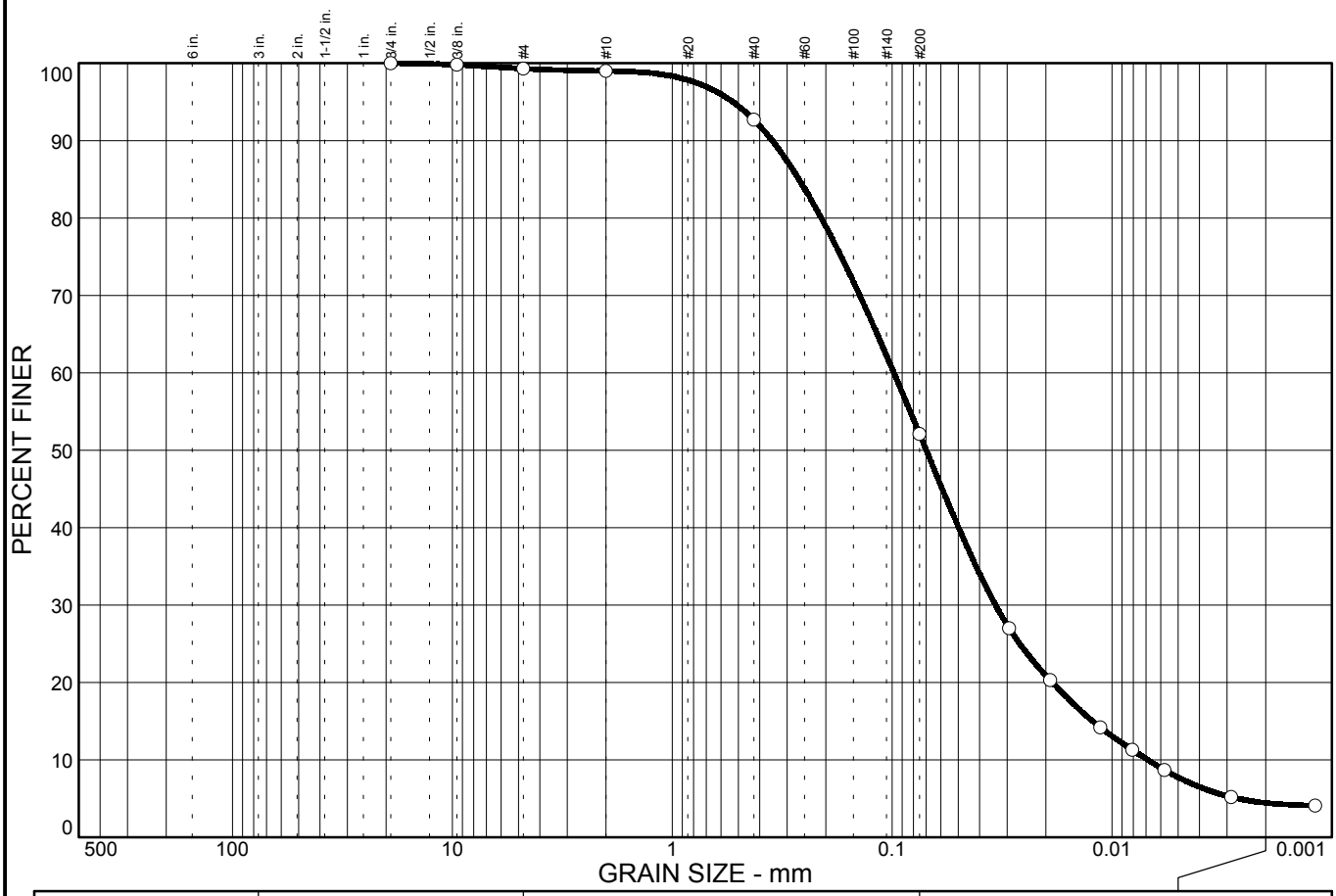
Moisture Content= 25.0%
Specific Gravity= 2.67
Loss on Ignition @ 440 C= 3.9%

Sample No.: 81 IN **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.7	0.3	6.3	40.6	47.6	4.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.8		
#4	99.3		
#10	99.0		
#40	92.7		
#200	52.1		

* (no specification provided)

Soil Description

Sandy silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.265 D_{60}= 0.0981 D_{50}= 0.0699
D_{30}= 0.0338 D_{15}= 0.0122 D_{10}= 0.0069
C_u= 14.29 C_c= 1.70

Classification

USCS= ML AASHTO= A-4(0)

Remarks

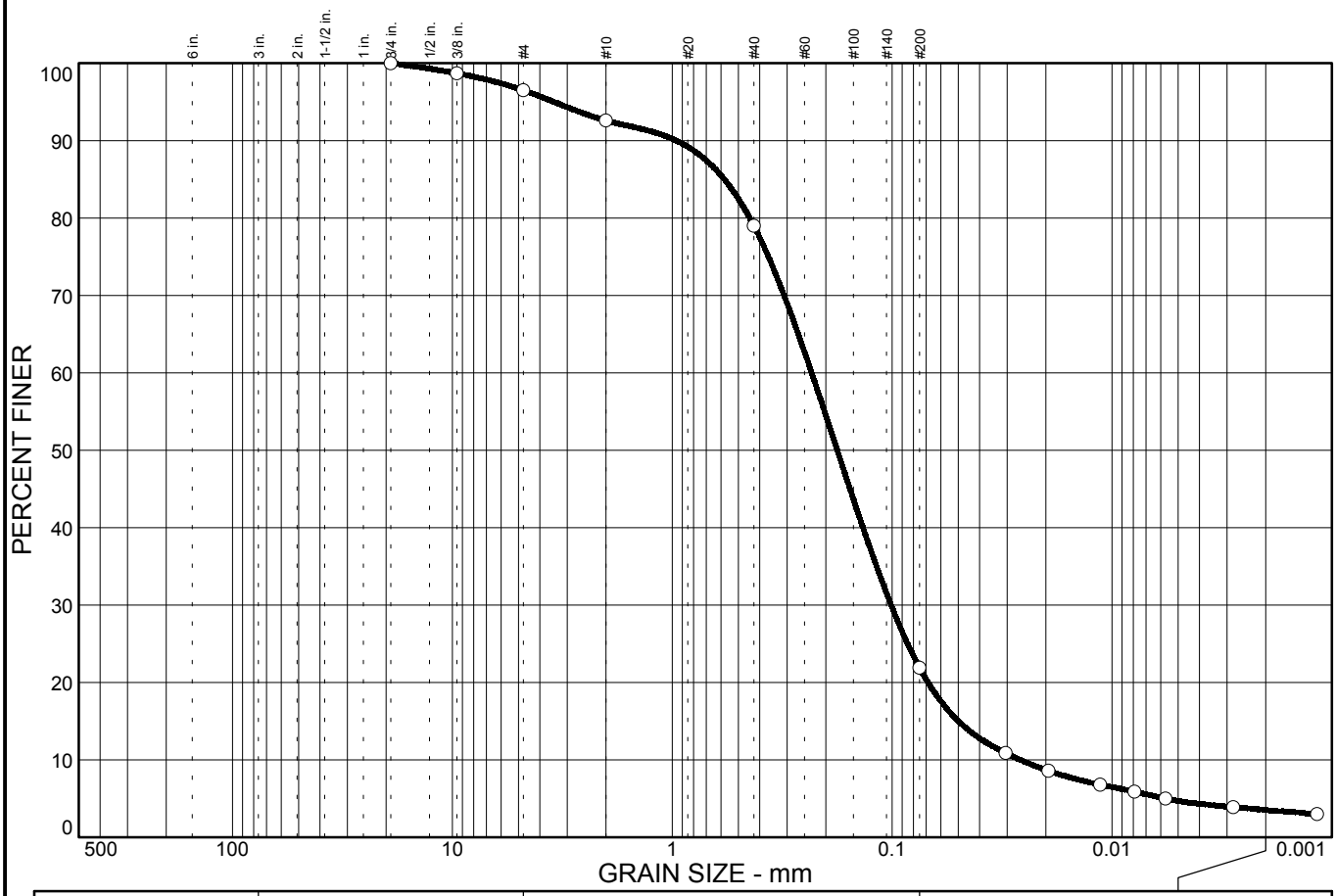
Moisture Content= 62.4%
Specific Gravity= 3.23
Loss on Ignition @ 440 C= 4.4%

Sample No.: 82 BK **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	3.5	3.9	13.6	57.1	18.4	3.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.7		
#4	96.5		
#10	92.6		
#40	79.0		
#200	21.9		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.579 D_{60}= 0.232 D_{50}= 0.178
D_{30}= 0.101 D_{15}= 0.0499 D_{10}= 0.0260
C_u= 8.93 C_c= 1.69

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

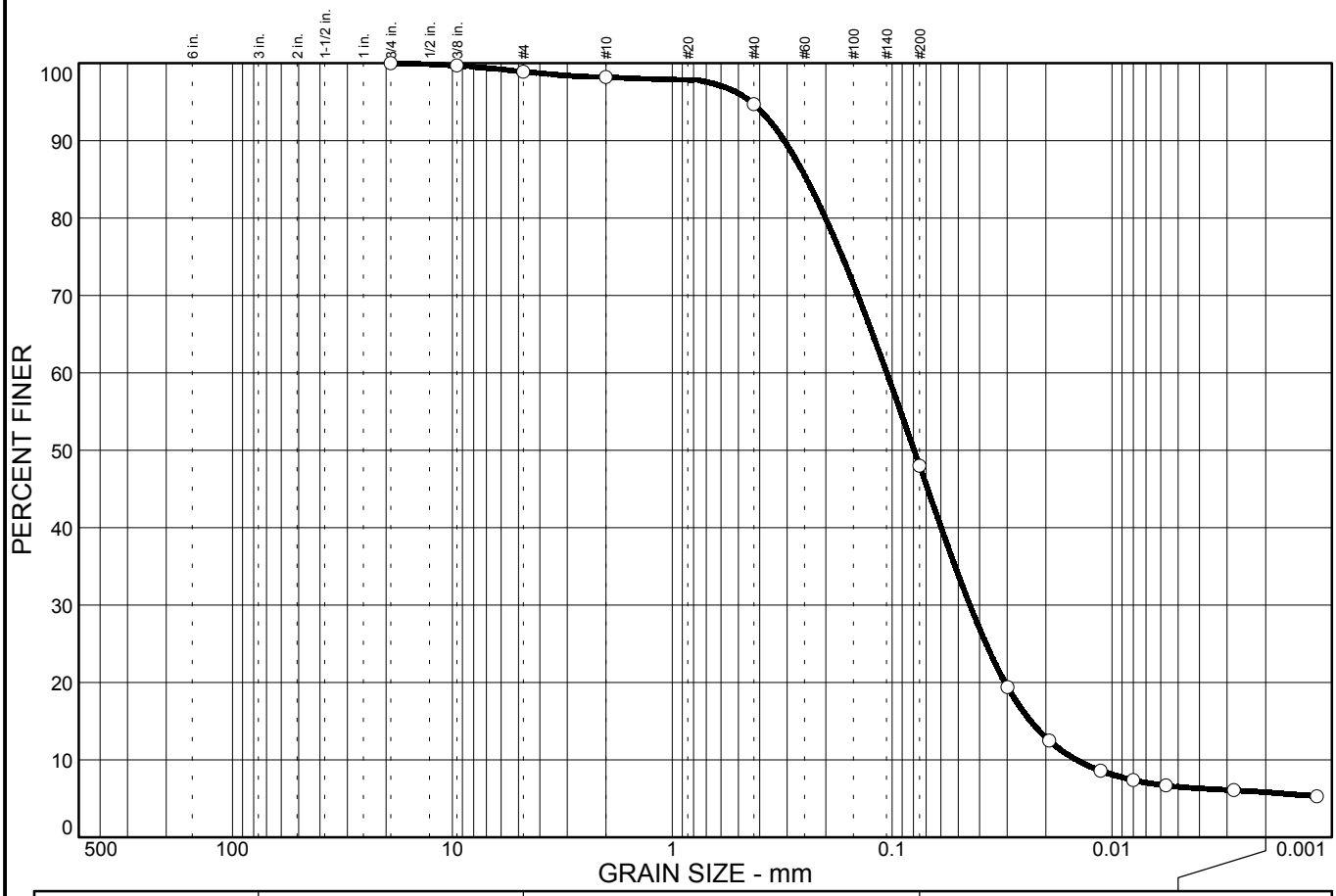
Moisture Content= 40.9%
Specific Gravity= 3.28
Loss on Ignition @ 440 C= 2.9%

Sample No.: 82 IN **Source of Sample:** **Date:** 8/2/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.1	0.7	3.5	46.7	42.2	5.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.7		
#4	98.9		
#10	98.2		
#40	94.7		
#200	48.0		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.244 D_{60}= 0.106 D_{50}= 0.0794
D_{30}= 0.0443 D_{15}= 0.0234 D_{10}= 0.0145
C_u= 7.29 C_c= 1.28

Classification

USCS= SM AASHTO= A-4(0)

Remarks

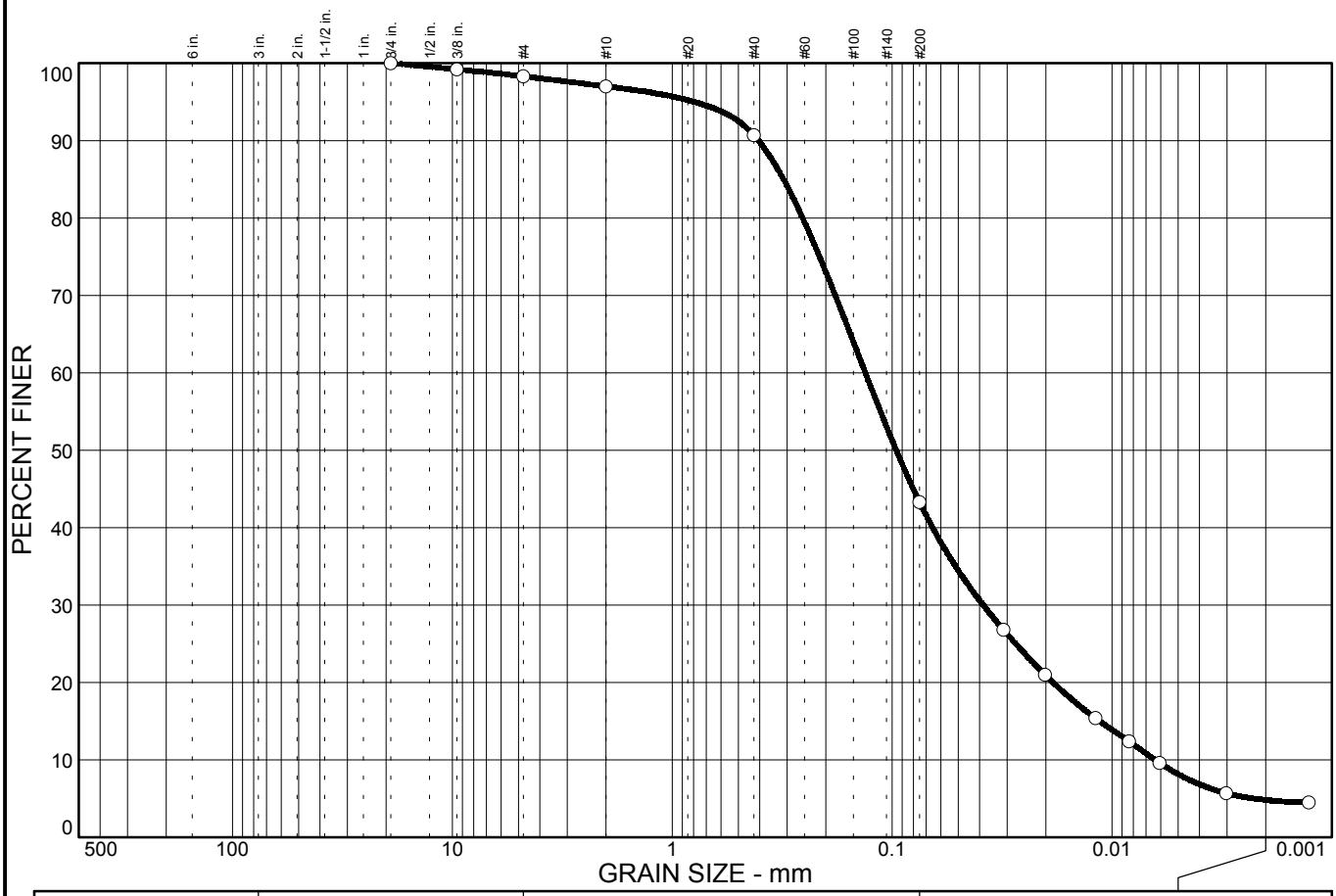
Moisture Content= 46.8%
Specific Gravity= 3.34
Loss on Ignition @ 440 C= 3.3%

Sample No.: 83 BK **Source of Sample:** **Date:** 8/1/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	1.7	1.3	6.3	47.4	38.5	4.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	99.2		
#4	98.3		
#10	97.0		
#40	90.7		
#200	43.3		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.312 D_{60}= 0.132 D_{50}= 0.0957
D_{30}= 0.0385 D_{15}= 0.0114 D_{10}= 0.0064
C_u= 20.77 C_c= 1.76

Classification

USCS= SM AASHTO= A-4(0)

Remarks

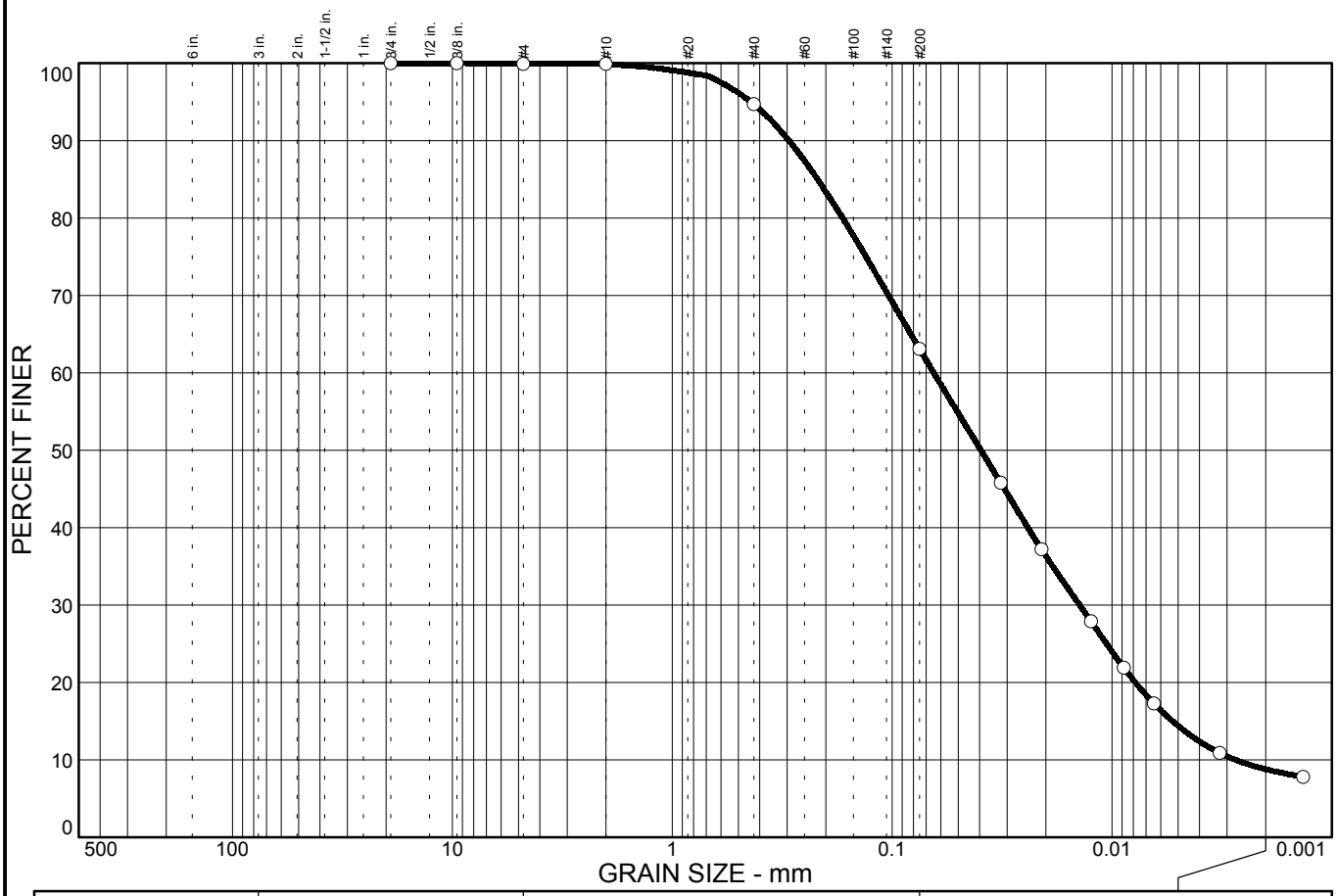
Moisture Content= 69.0%
Specific Gravity= 2.98
Loss on Ignition @ 440 C= 3.7%

Sample No.: 83 IN **Source of Sample:** **Date:** 8/1/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.1	0.0	5.2	31.6	54.3	8.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	100.0		
#4	99.9		
#10	99.9		
#40	94.7		
#200	63.1		

* (no specification provided)

Soil Description

Sandy elastic silt

Atterberg Limits

PL= 33 LL= 53 PI= 20

Coefficients

D_{85}= 0.218 D_{60}= 0.0646 D_{50}= 0.0394
D_{30}= 0.0140 D_{15}= 0.0053 D_{10}= 0.0027
C_u= 23.60 C_c= 1.11

Classification

USCS= MH AASHTO= A-7-5(12)

Remarks

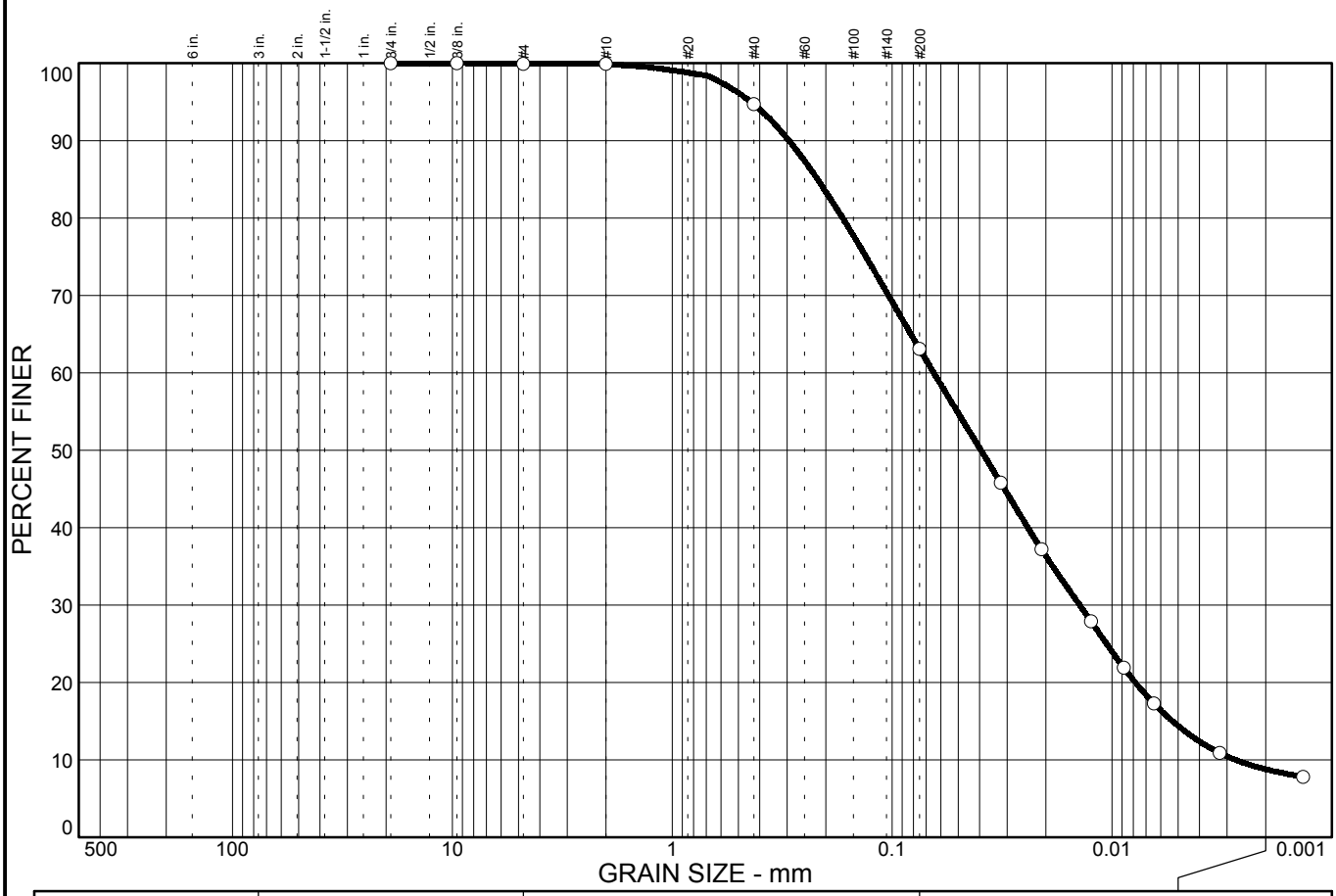
Moisture Content= 85.0%
Specific Gravity= 3.08
Loss on Ignition @ 440 C= 6.0%

Sample No.: 85 BK **Source of Sample:** **Date:** 8/1/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.1	0.0	5.2	31.6	54.3	8.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	100.0		
#4	99.9		
#10	99.9		
#40	94.7		
#200	63.1		

* (no specification provided)

Soil Description

Sandy elastic silt

Atterberg Limits

PL= 33 LL= 53 PI= 20

Coefficients

D_{85}= 0.218 D_{60}= 0.0646 D_{50}= 0.0394
D_{30}= 0.0140 D_{15}= 0.0053 D_{10}= 0.0027
C_u= 23.60 C_c= 1.11

Classification

USCS= MH AASHTO= A-7-5(12)

Remarks

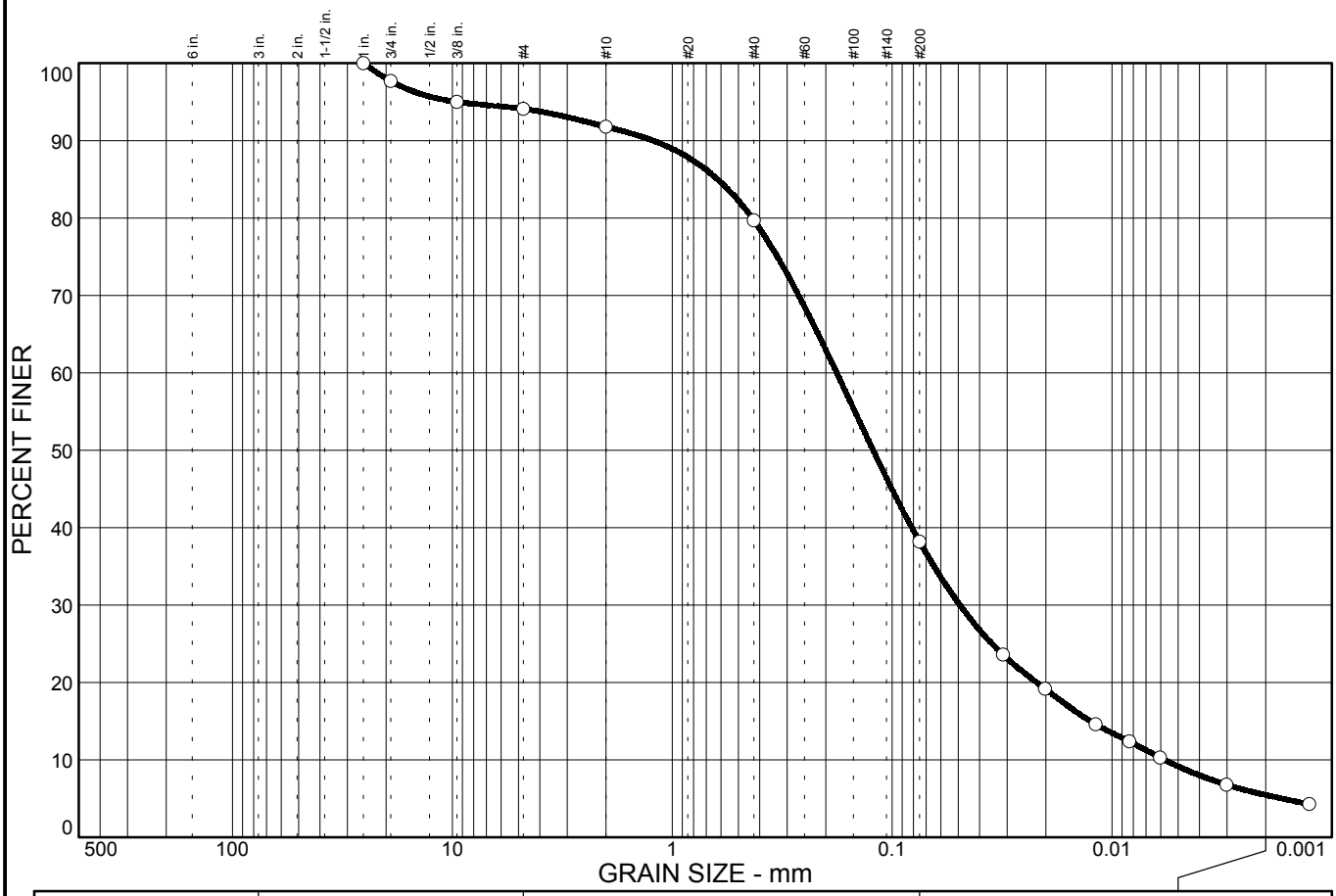
Moisture Content= 85.0%
Specific Gravity= 3.08
Loss on Ignition @ 440 C= 6.0%

Sample No.: 85 BK **Source of Sample:** **Date:** 8/1/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	2.3	3.6	2.3	12.1	41.5	32.7	5.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	97.7		
0.375 in.	95.0		
#4	94.1		
#10	91.8		
#40	79.7		
#200	38.2		

* (no specification provided)

Soil Description

Silty sand

Atterberg Limits

PL= 25 LL= 30 PI= 5

Coefficients

D_{85}= 0.621 D_{60}= 0.179 D_{50}= 0.122
D_{30}= 0.0491 D_{15}= 0.0125 D_{10}= 0.0058
C_u= 31.00 C_c= 2.35

Classification

USCS= SM AASHTO= A-4(0)

Remarks

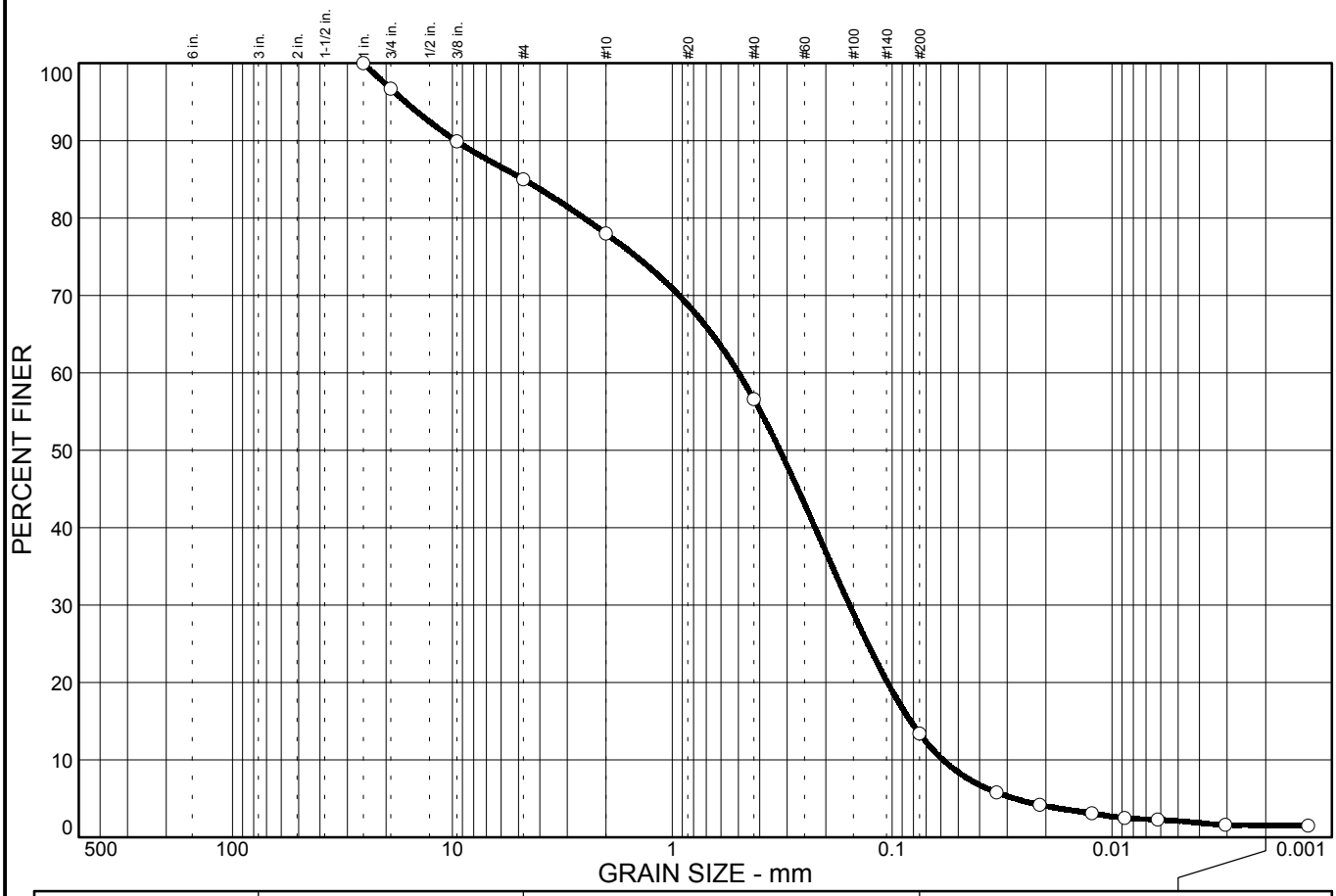
Moisture Content= 54.1%
Specific Gravity= 2.98
Loss on Ignition @ 440 C= 3.8%

Sample No.: 85 IN **Source of Sample:** **Date:** 8/1/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	3.3	11.7	7.0	21.4	43.2	11.9	1.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.00 in.	100.0		
0.75 in.	96.7		
0.375 in.	89.9		
#4	85.0		
#10	78.0		
#40	56.6		
#200	13.4		

* (no specification provided)

Soil Description

Silty sand with gravel

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 4.75 D_{60}= 0.499 D_{50}= 0.324
D_{30}= 0.156 D_{15}= 0.0822 D_{10}= 0.0586
C_u= 8.53 C_c= 0.83

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

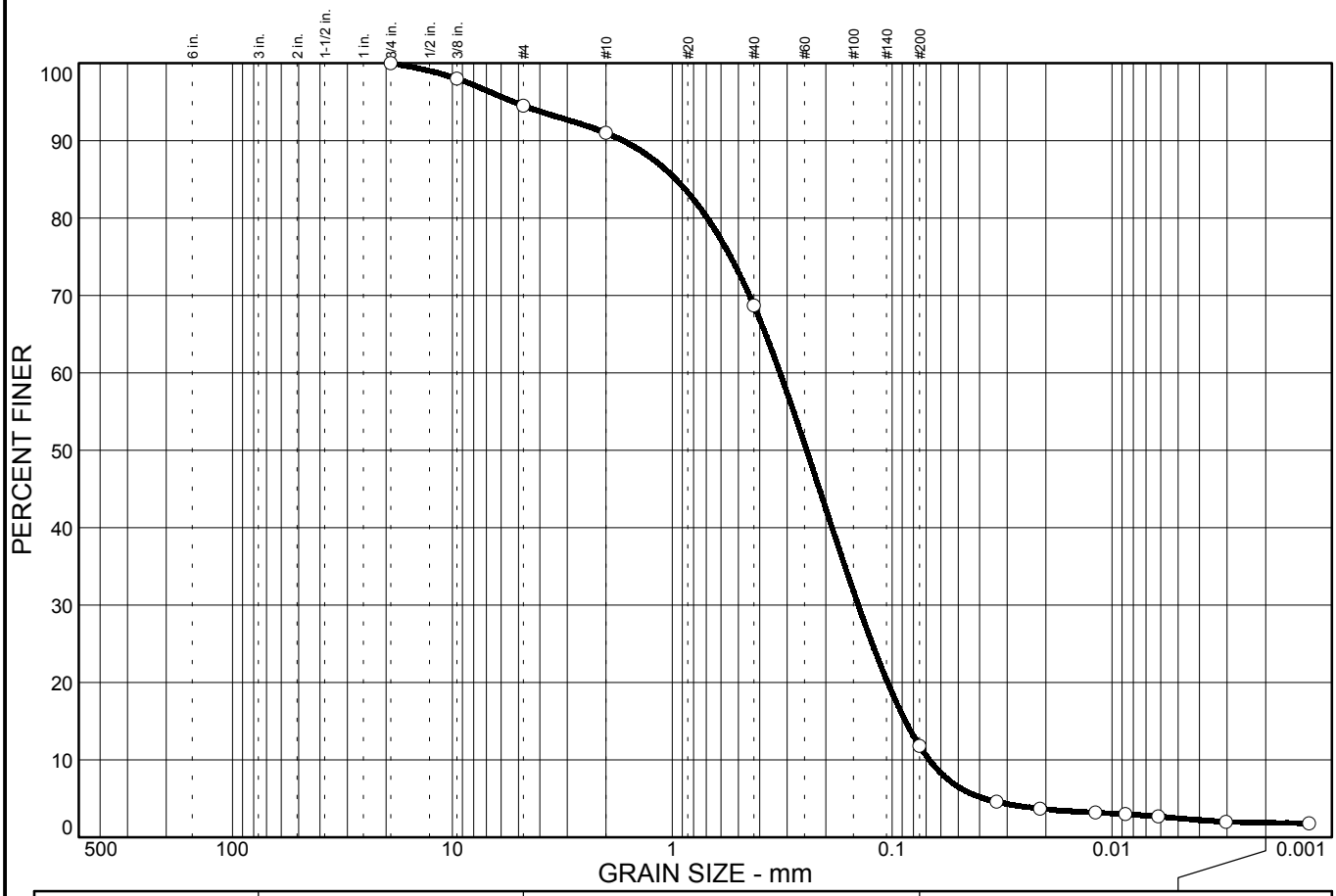
Moisture Content= 29.8%
Specific Gravity= 3.00
Loss on Ignition @ 440 C= 3.4%

Sample No.: 87 BK **Source of Sample:** **Date:** 8/1/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**

PARTICLE SIZE DISTRIBUTION TEST REPORT



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	5.5	3.5	22.3	56.9	9.9	1.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75 in.	100.0		
0.375 in.	98.0		
#4	94.5		
#10	91.0		
#40	68.7		
#200	11.8		

* (no specification provided)

Soil Description

Poorly graded sand with silt

Atterberg Limits

PL= LL= PI= Non-Plastic

Coefficients

D_{85}= 0.962 D_{60}= 0.323 D_{50}= 0.245
D_{30}= 0.143 D_{15}= 0.0869 D_{10}= 0.0676
C_u= 4.78 C_c= 0.93

Classification

USCS= SP-SM AASHTO= A-2-4(0)

Remarks

Moisture Content= 26.6%
Specific Gravity= 3.03
Loss on Ignition @ 440 C= 1.6%

Sample No.: 87 IN **Source of Sample:** **Date:** 8/1/03
Location: **Elev./Depth:** NA

DLZ

Client: Altech
Project: Mahoning River *** Test Methods: ASTM D-421, D-422, D-2216, D-2974 Method C (440 C), D-4318
Project No: 0321-4535.00 **Plate**