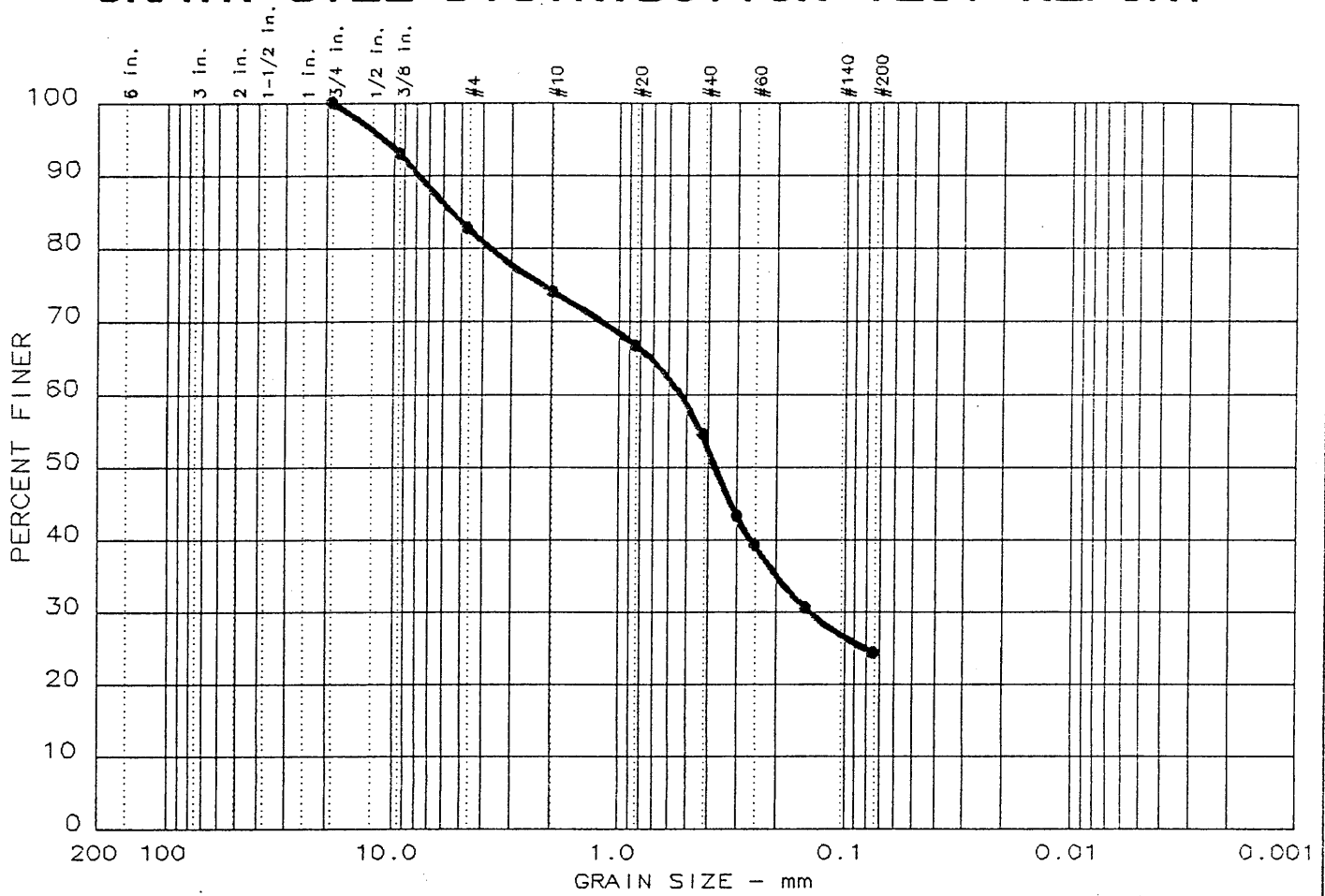


GRAIN SIZE DISTRIBUTION TEST REPORT



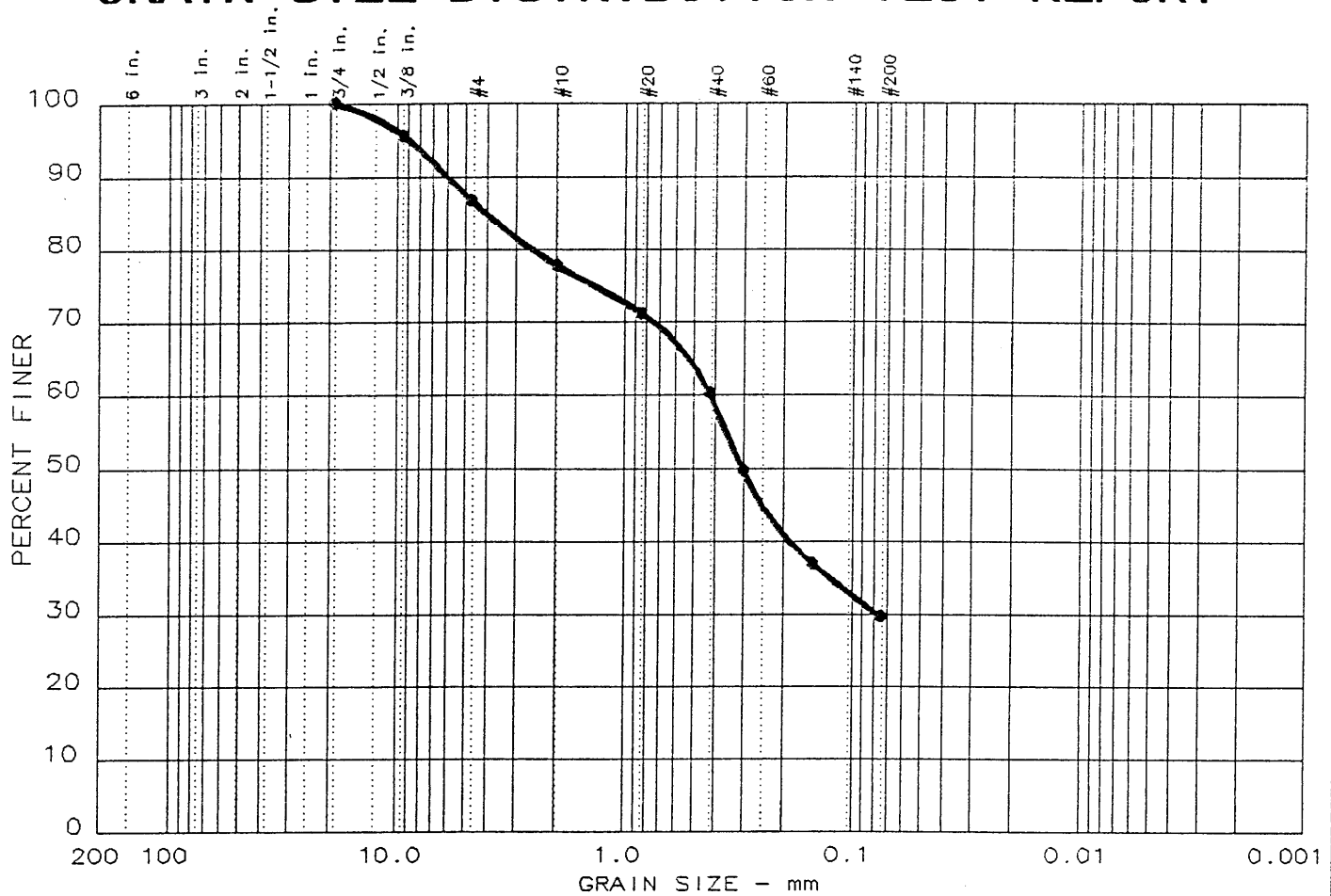
	% +75 mm	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	17.2	58.3	24.5	

LL	PI	D85	D60	D50	D30	D15	D10	C _c	C _u
●		5.56	0.52	0.37	0.142				

MATERIAL DESCRIPTION	USCS	AASHTO
● GRAY SILTY SAND WITH ROCK FRAGMENTS	SM	A-2-4(0.0)

<p>Project No.: C00553 Project: BIG BRANCH SLURRY IMPOUNDMENT ● Location: DH1-12, DEPTH: 90.1' - 99.4'</p> <p>Date: 02/23/2001</p> <p style="text-align: center;">GRAIN SIZE DISTRIBUTION TEST REPORT TRIAD ENGINEERING, INC.</p>	<p>Remarks:</p> <p>Figure No. _____</p>
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GRAIN SIZE DISTRIBUTION TEST REPORT



%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
0.0	13.3	56.9	29.8	

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
		4.12	0.42	0.30	0.076				

MATERIAL DESCRIPTION	USCS	AASHTO
● BROWN SILTY SAND WITH ROCK FRAGMENTS	SM	A-2-4(0.0)

Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: DH1-12, DEPTH: 90.7' - 99.2'

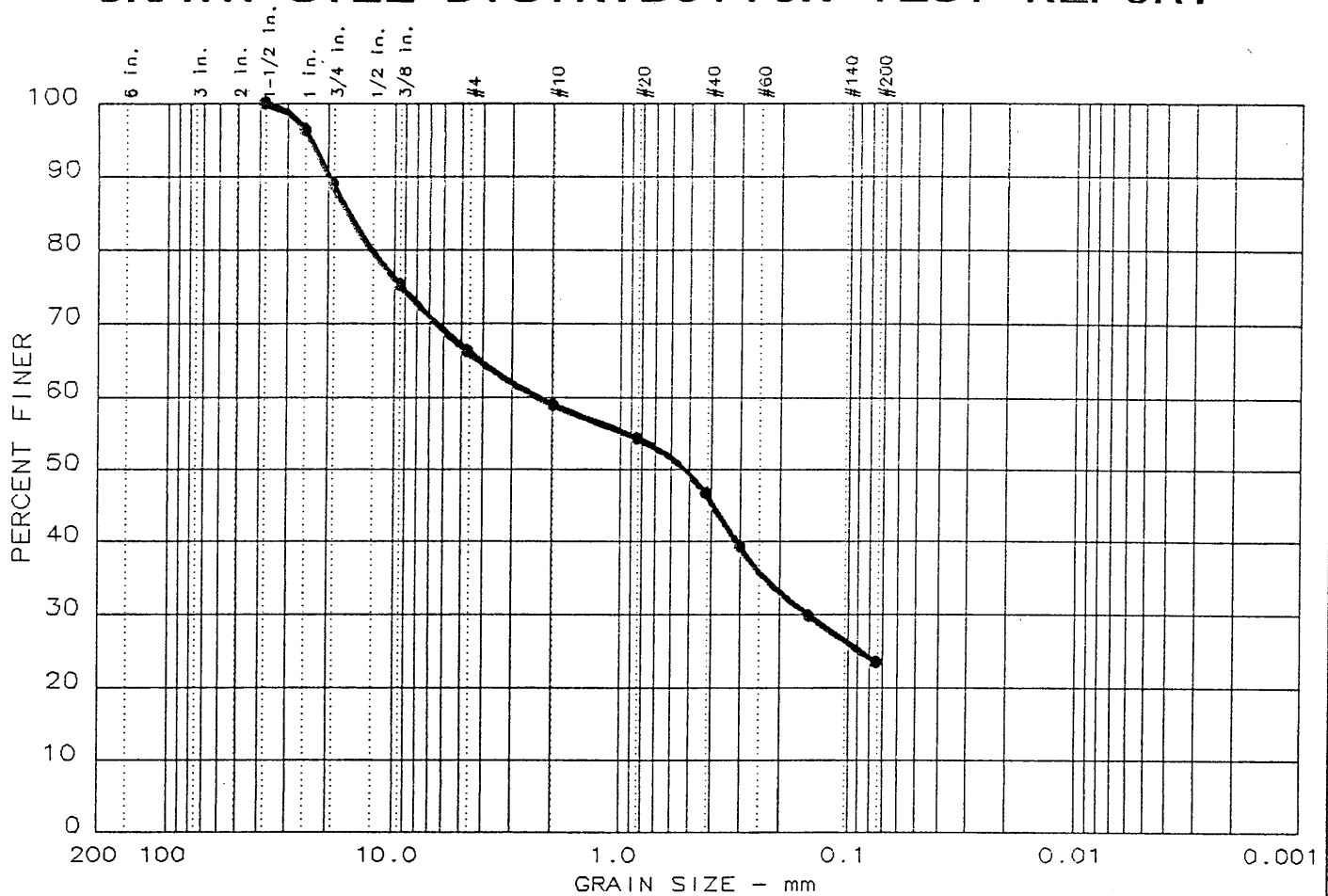
Date: 02/19/2001

GRAIN SIZE DISTRIBUTION TEST REPORT
TRIAD ENGINEERING, INC.

Remarks:

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
0.0	33.7	42.7	23.6	

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
		16.20	2.34	0.52	0.151				

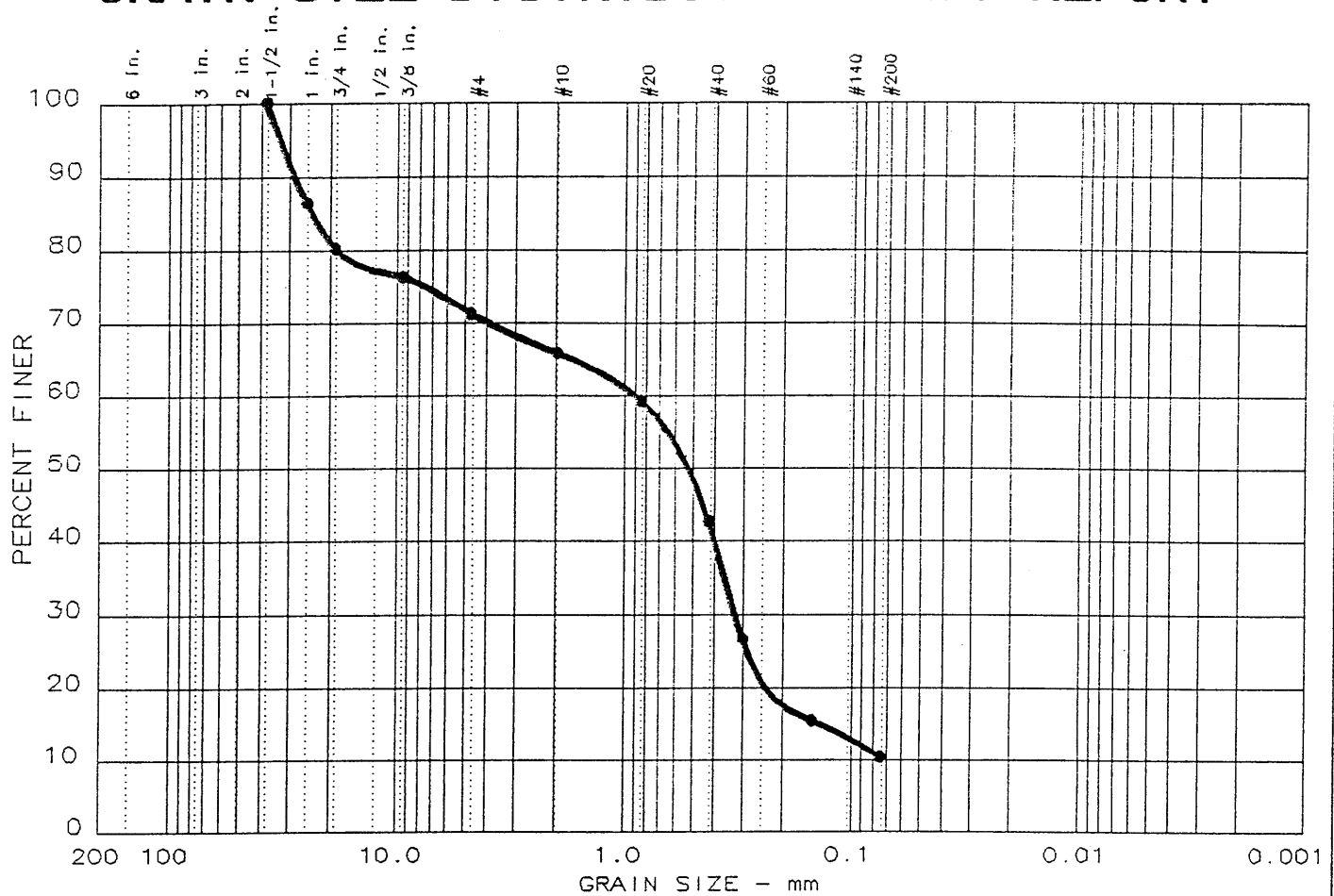
MATERIAL DESCRIPTION	USCS	AASHTO
● BROWN & GRAY SILTY SAND WITH ROCK FRAGMENTS	SM	A-1-b

Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: DH1-13, DEPTH: 87.7' - 89.7'

Date: 02/19/2001

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT



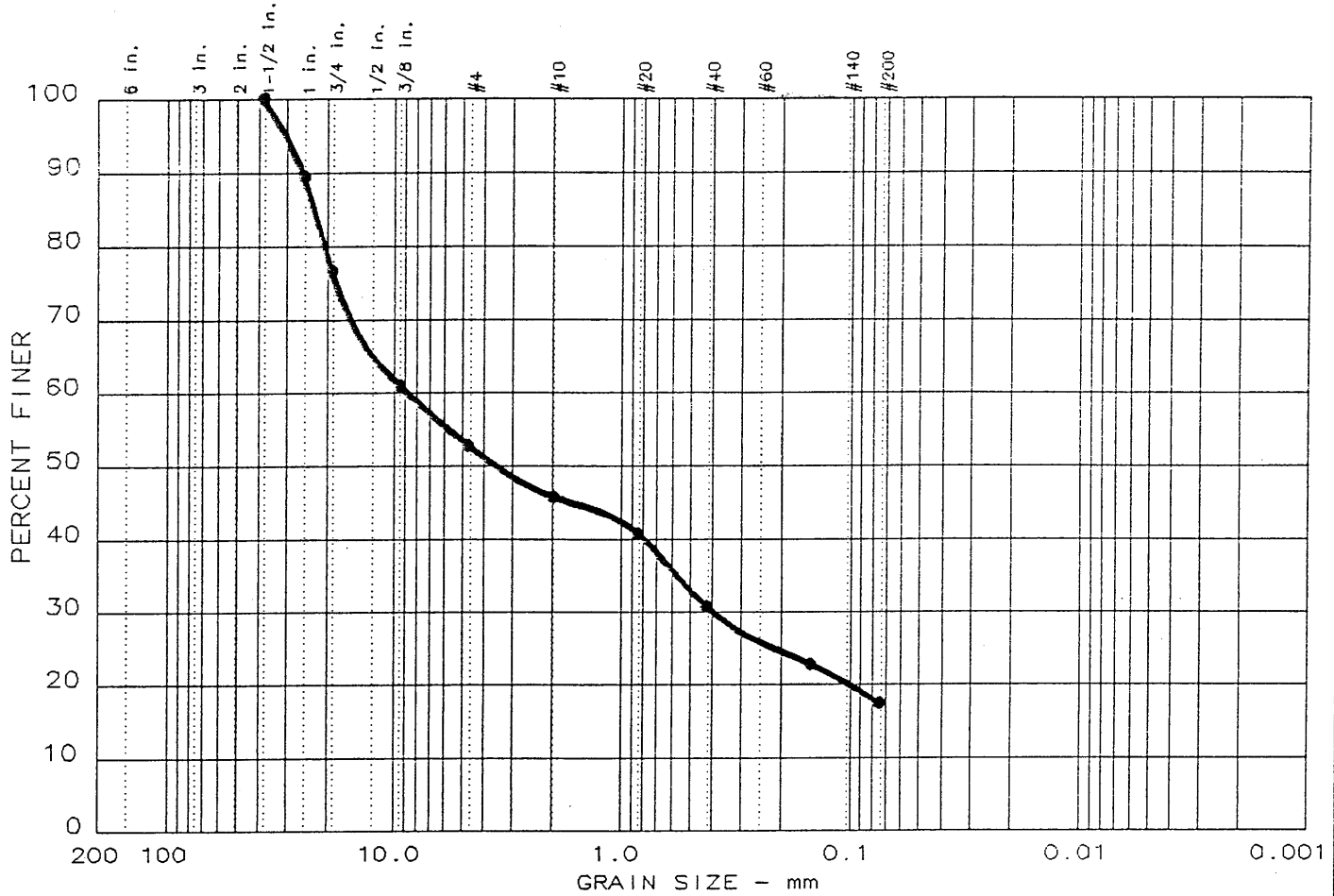
%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
● 0.0	28.8	60.8	10.4	

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
●		23.99	0.90	0.52	0.324	0.1334			

MATERIAL DESCRIPTION	USCS	AASHTO
● BROWN SILTY SAND WITH ROCK FRAGMENTS	SP-SM	A-1-b

Project No.: C00553 Project: BIG BRANCH SLURRY IMPOUNDMENT ● Location: DH1-13, DEPTH: 89.7' - 91.7' Date: 02/19/2001	Remarks:
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GRAIN SIZE DISTRIBUTION TEST REPORT



%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
0.0	47.2	35.3	17.5	

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
		22.91	8.81	3.55	0.398				

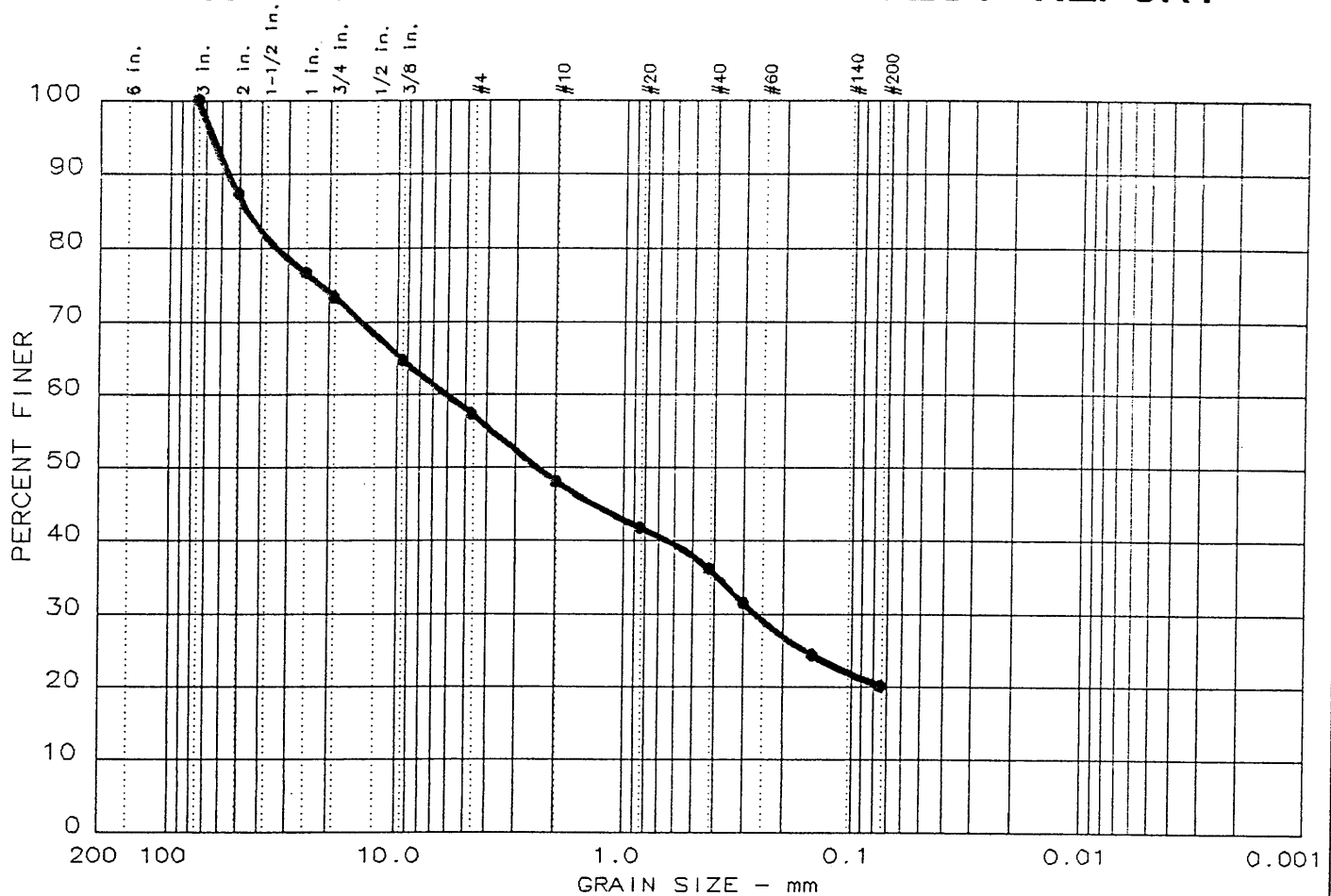
MATERIAL DESCRIPTION	USCS	AASHTO
● BROWN SILTY SAND WITH ROCK FRAGMENTS	GM	A-1-b

Project No.: CD0553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: DH1-13, DEPTH: 91.7' - 93.7'

Date: 02/19/2001

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT



•	% +75mm	% GRAVEL	% SAND	% SILT	% CLAY
•	0.0	42.7	37.2	20.1	

•	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
•			46.18	6.09	2.42	0.266				

MATERIAL DESCRIPTION	USCS	AASHTO
• BROWN SILTY SAND WITH ROCK FRAGMENTS	GM	A-1-b

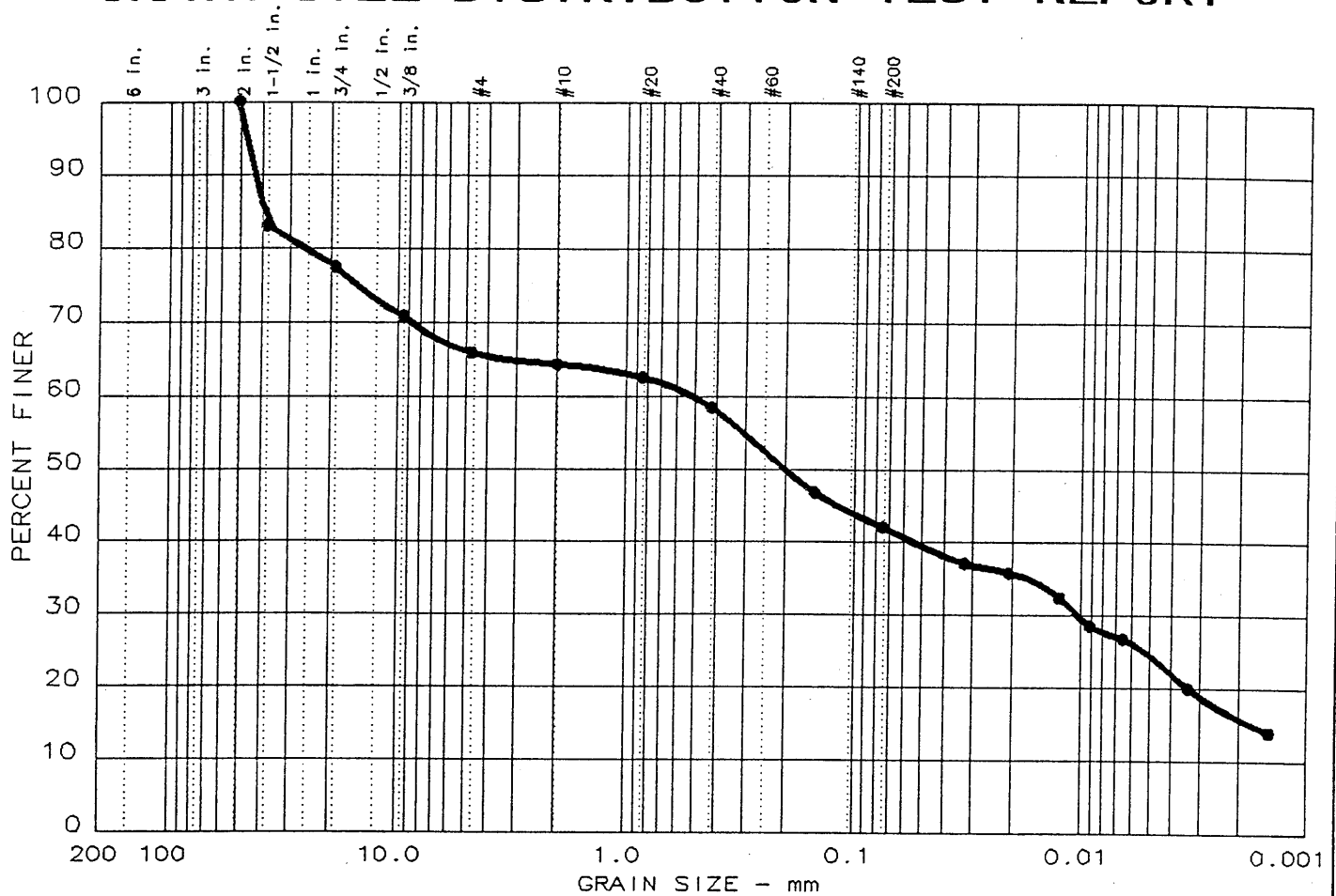
Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 • Location: DH1-13, S-1 & 2, DEPTH: 93.7' - 96.0'

Date: 02/23/2001

Remarks:

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
0.0	34.1	23.9	17.6	24.4

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
		39.36	0.51	0.20	0.010	0.0018			

MATERIAL DESCRIPTION	USCS	AASHTO
● BLACK SANDY SILT WITH ROCK FRAGMENTS (SLURRY)	GM	A-4(0.0)

Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: DH2-9, DEPTH: 91.8' - 93.8'

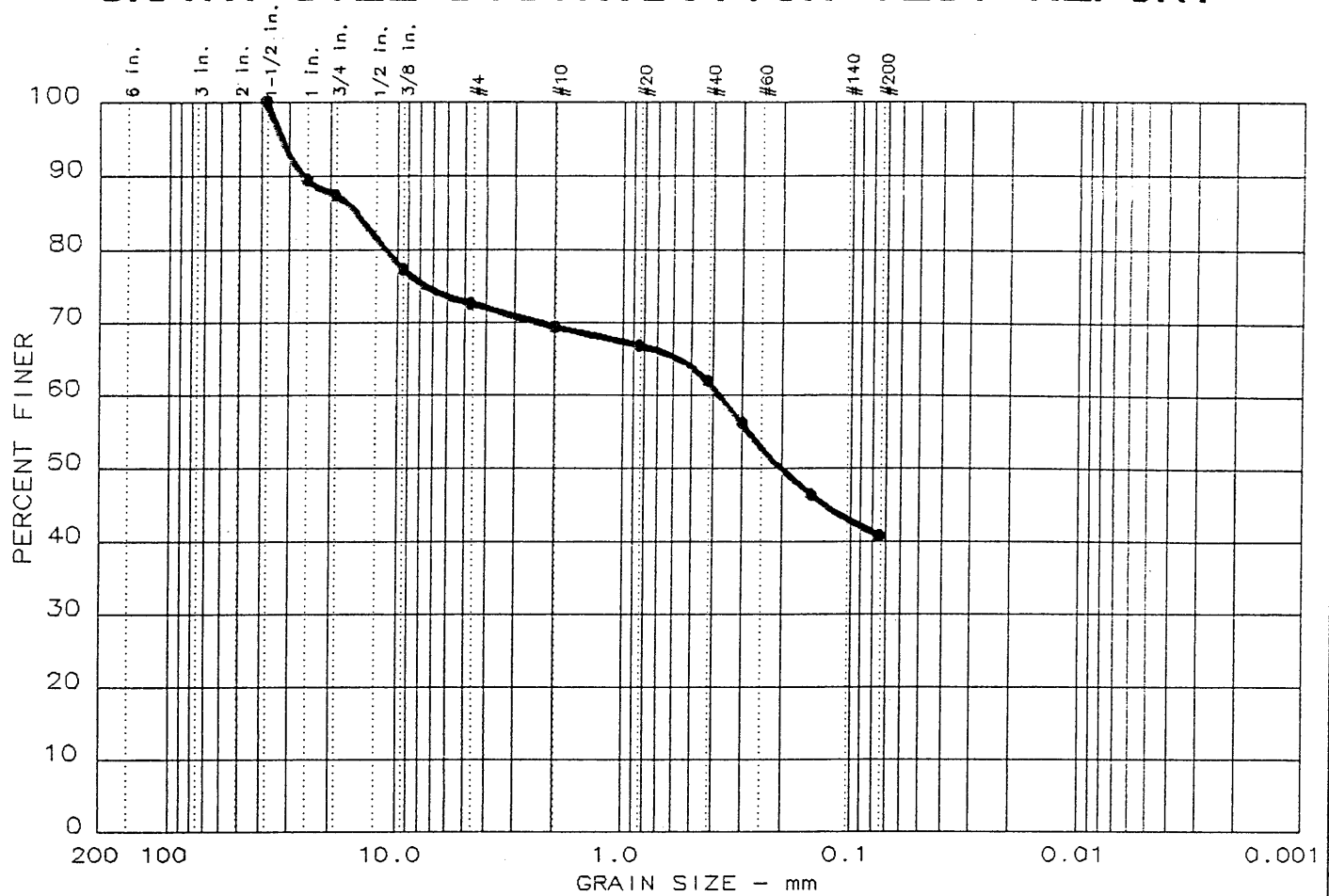
 Date: 02/23/2001

Remarks:

 Specific Gravity = 2.29

 Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
0.0	27.4	31.8	40.8	

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
26.8	6	15.31	0.37	0.20					

MATERIAL DESCRIPTION	USCS	AASHTO
● BLACK SANDY SILT WITH ROCK FRAGMENTS (SLURRY)	SC-SM	A-4(0.0)

Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: DH2-9, DEPTH: 93.8' - 95.8'

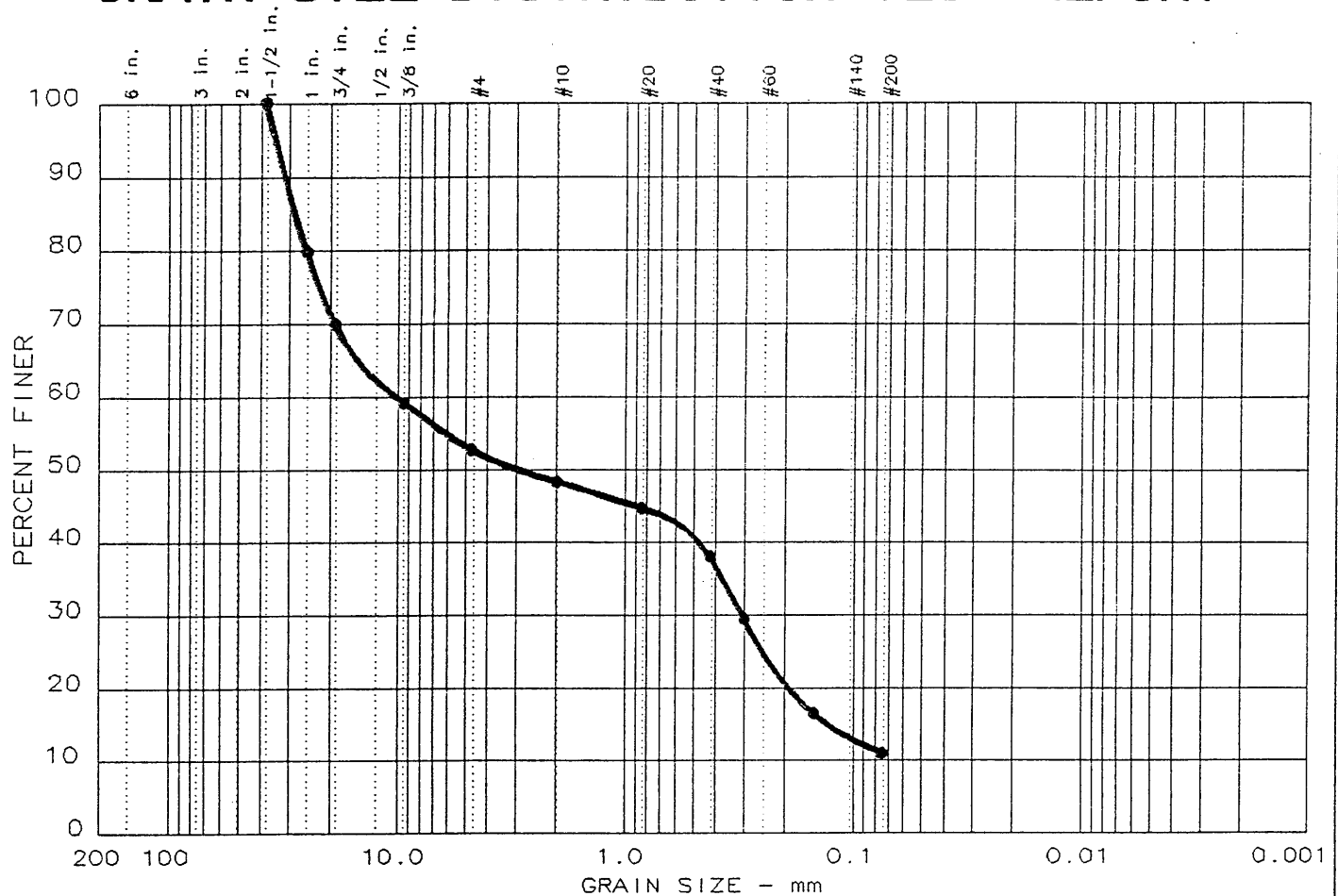
 Date: 02/23/2001

Remarks:

 Specific Gravity = 2.03

 Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



% +75mm	% GRAVEL	% SAND	% SILT	% CLAY
0.0	47.3	41.7	11.0	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		28.48	10.22	2.95	0.305	0.1302			

MATERIAL DESCRIPTION	USCS	AASHTO
GRAY SILTY SAND WITH ROCK FRAGMENTS	GP-GM	A-1-b

Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 • Location: DH2-9, DEPTH: 95.8' - 97.8'

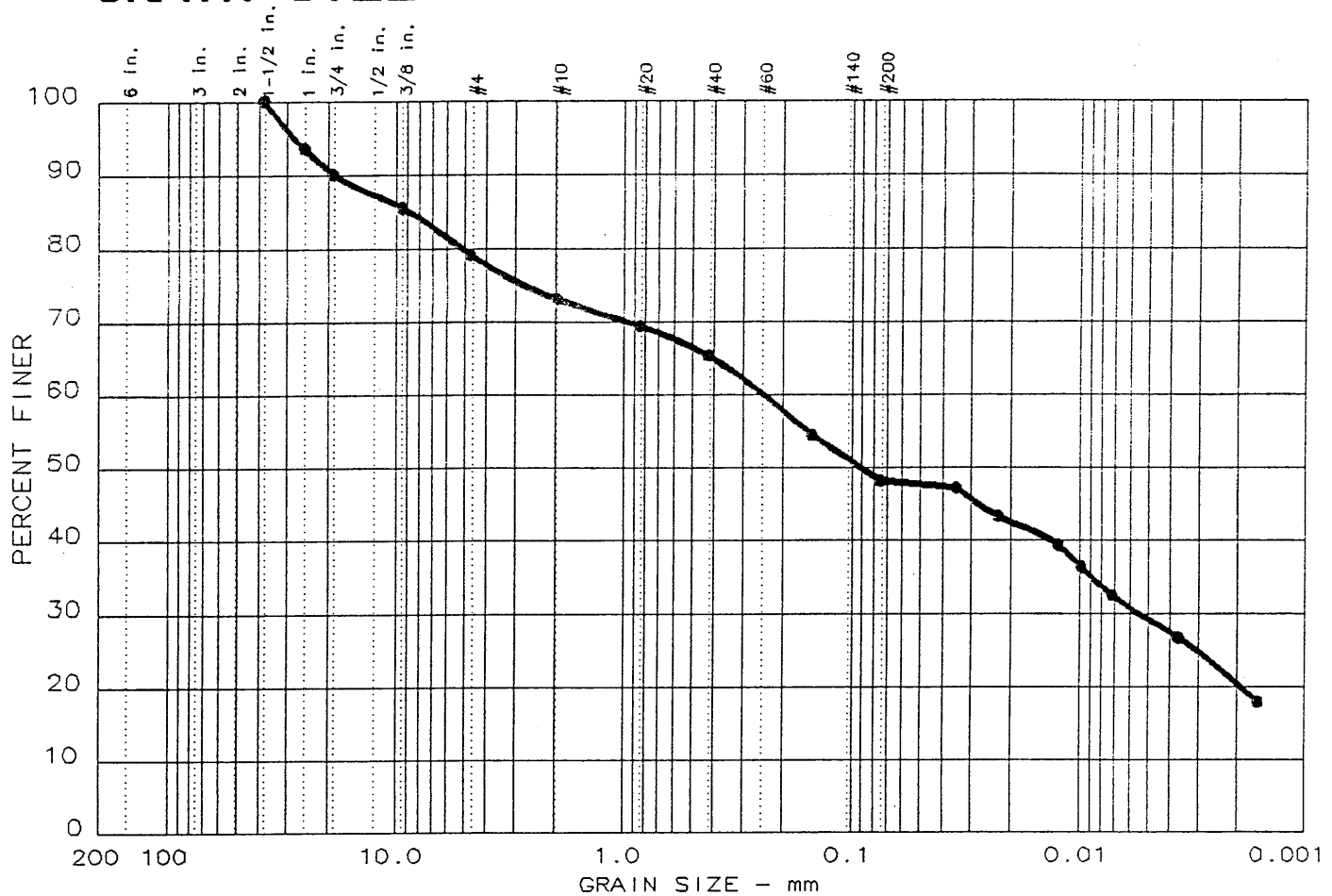
 Date: 02/19/2001

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT
TRIAD ENGINEERING, INC.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



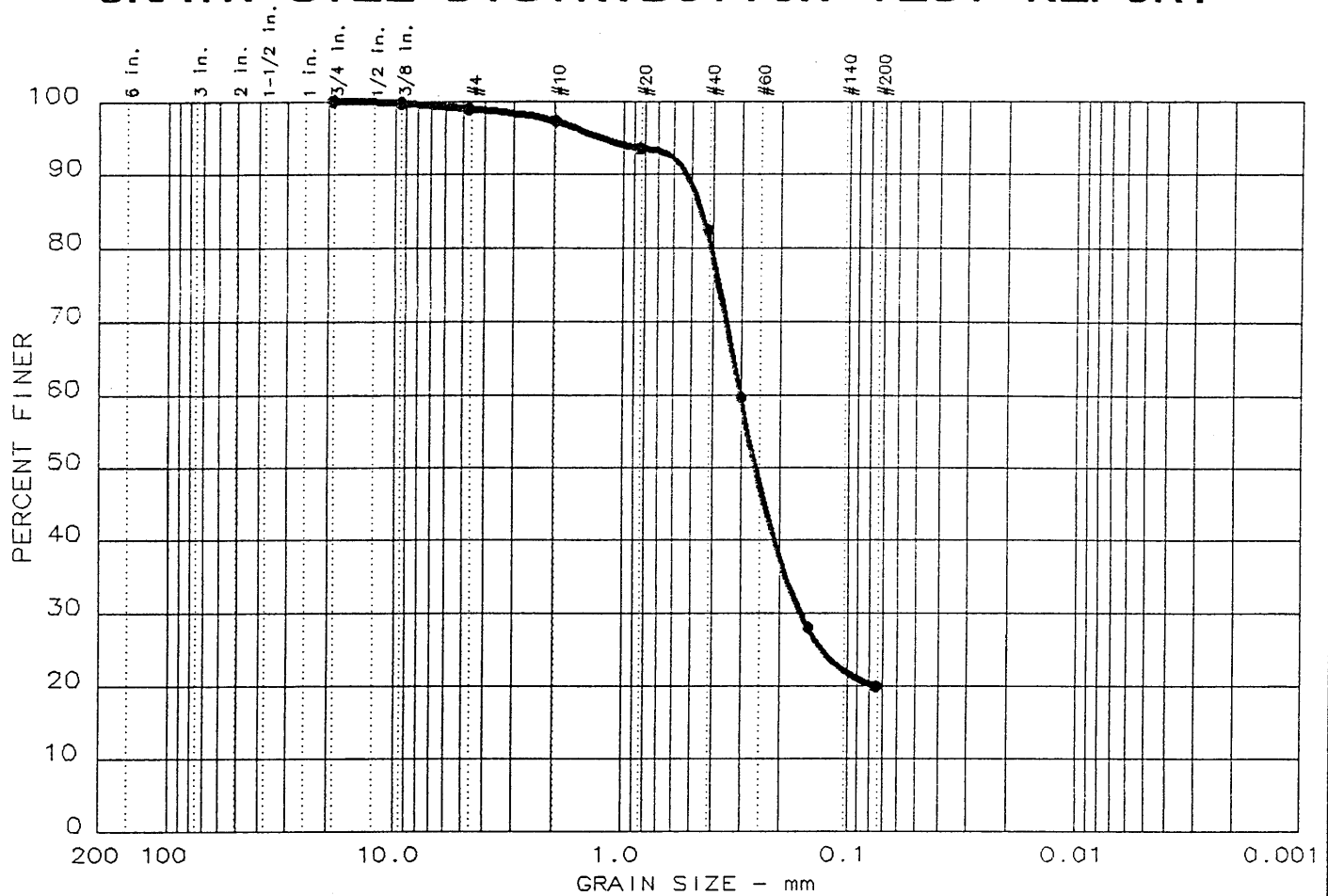
%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
0.0	20.9	30.9	19.0	29.2

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
32.8	6.8	8.91	0.24	0.09	0.005				

MATERIAL DESCRIPTION	USCS	AASHTO
● BLACK SANDY SILT WITH ROCK FRAGMENTS (SLURRY)	SM	A-4(1.2)

Project No.: C00553 Project: BIG BRANCH SLURRY IMPOUNDMENT ● Location: DH2-9, DEPTH: 97.8' - 99.8' Date: 02/23/2001	Remarks:
GRAIN SIZE DISTRIBUTION TEST REPORT TRIAD ENGINEERING, INC.	Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



% +75 mm	% GRAVEL	% SAND	% SILT	% CLAY
0.0	1.1	78.9	20.0	

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
NP	NP	0.45	0.30	0.26	0.160				

MATERIAL DESCRIPTION	USCS	AASHTO
● BLACK SILTY SAND WITH ROCK FRAGMENTS (SLURRY)	SM	A-2-4(0.0)

Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: DH3-4

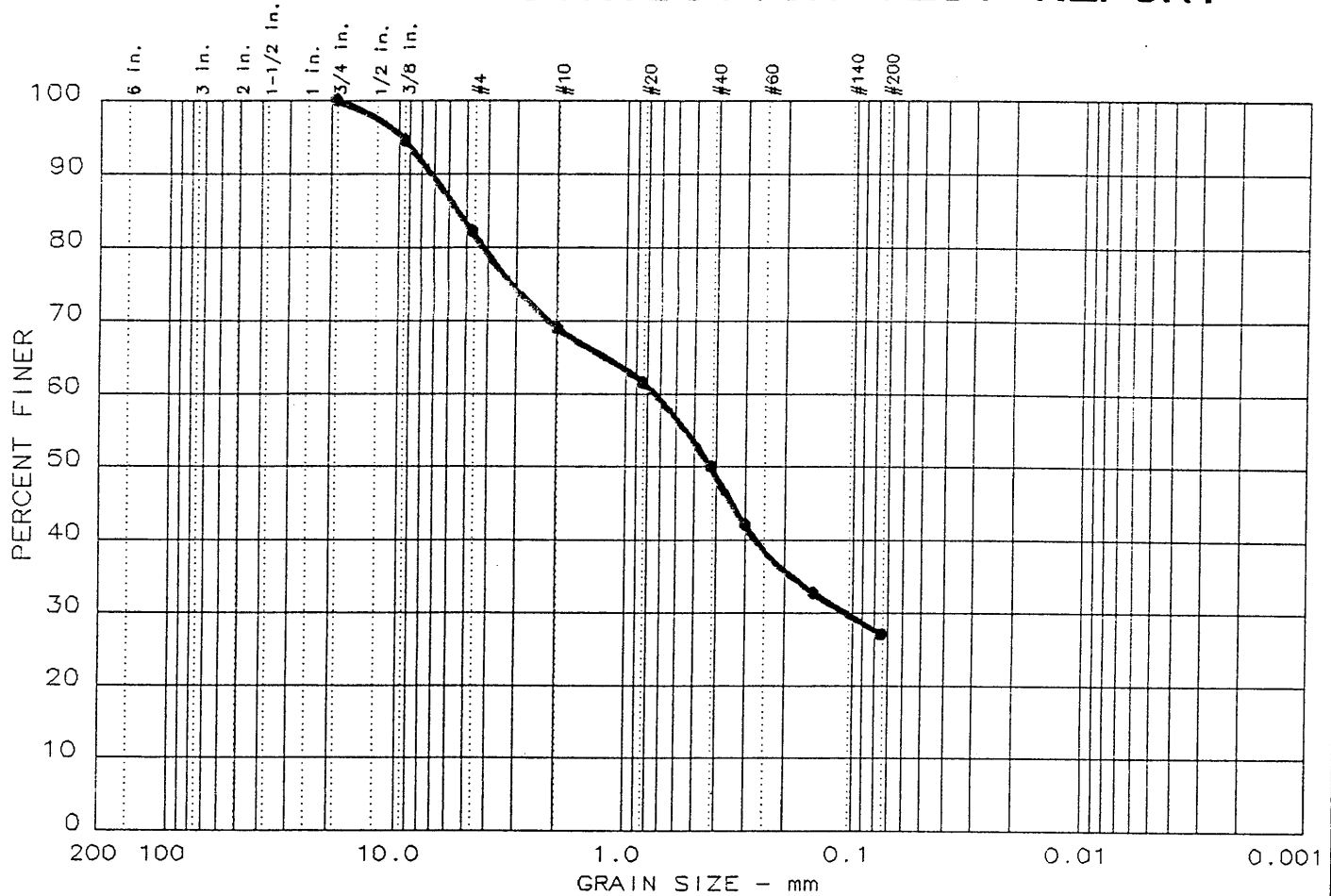
Date: 02/19/2001

Remarks:

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT
TRIAD ENGINEERING, INC.

GRAIN SIZE DISTRIBUTION TEST REPORT



%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
0.0	17.9	55.0	27.1	

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
		5.50	0.74	0.42	0.106				

MATERIAL DESCRIPTION	USCS	AASHTO
● BROWN SILTY SAND WITH ROCK FRAGMENTS	SM	A-2-4(0.0)

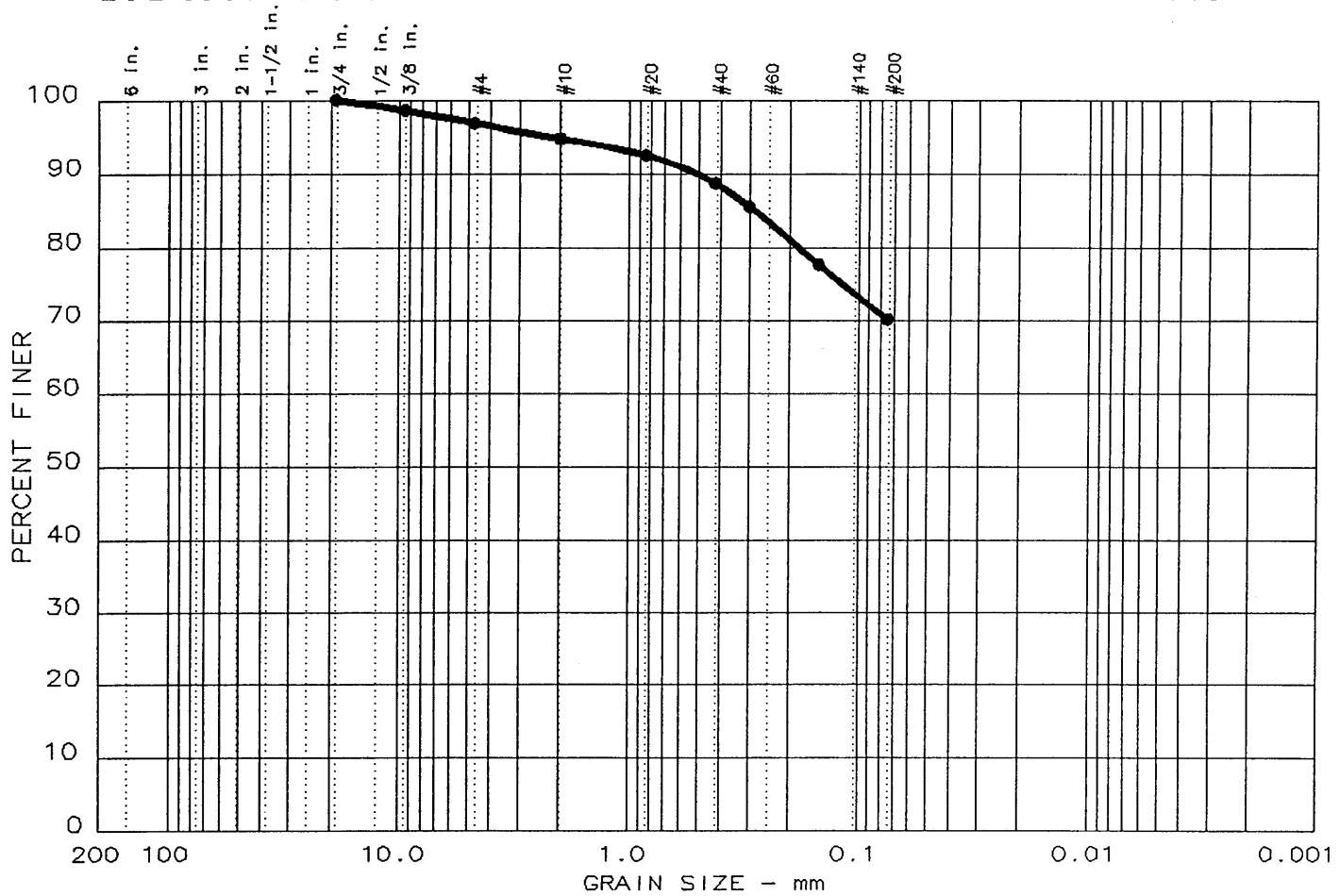
Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: DHX-1, DEPTH: 89.4' - 91.9'

 Date: 02/19/2001

Remarks:

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +75 mm	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	3.2	26.7	70.1	

LL	PI	D85	D60	D50	D30	D15	D10	C _c	C _u
● 36.3	9.7	0.29							

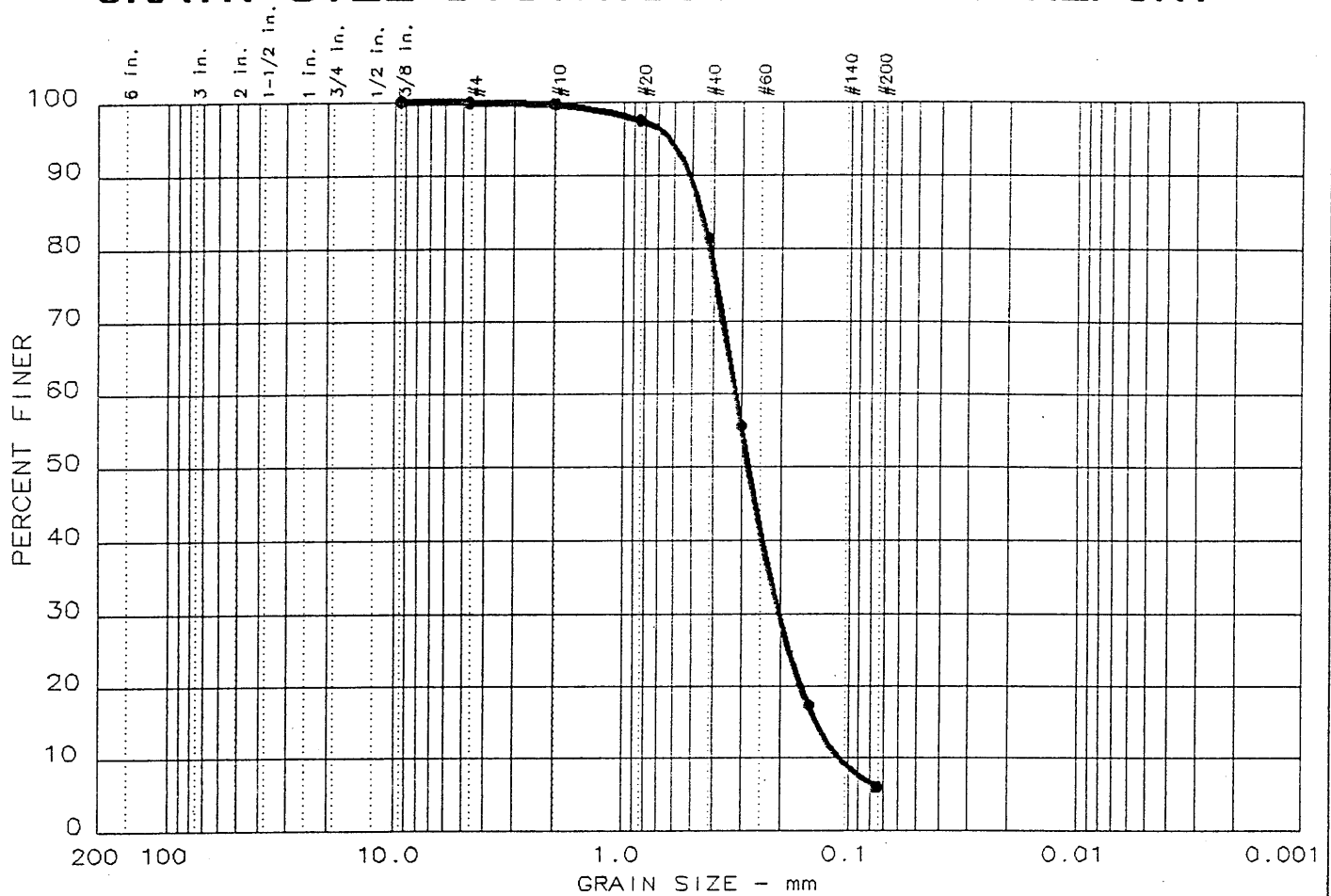
MATERIAL DESCRIPTION	USCS	AASHTO
● BLACK SANDY SILT WITH ROCK FRAGMENTS (SLURRY)	ML	A-4(6.3)

Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: DHX-2, (IN VOID)

Date: 02/19/2001

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT



%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.1	93.9	6.0	

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
		0.45	0.32	0.28	0.202	0.1380	0.1084	1.18	2.9

MATERIAL DESCRIPTION	USCS	AASHTO
● BROWN SILTY SAND	SP-SM	A-3

Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: DHX-5, DEPTH: 79.7' - 82.7'

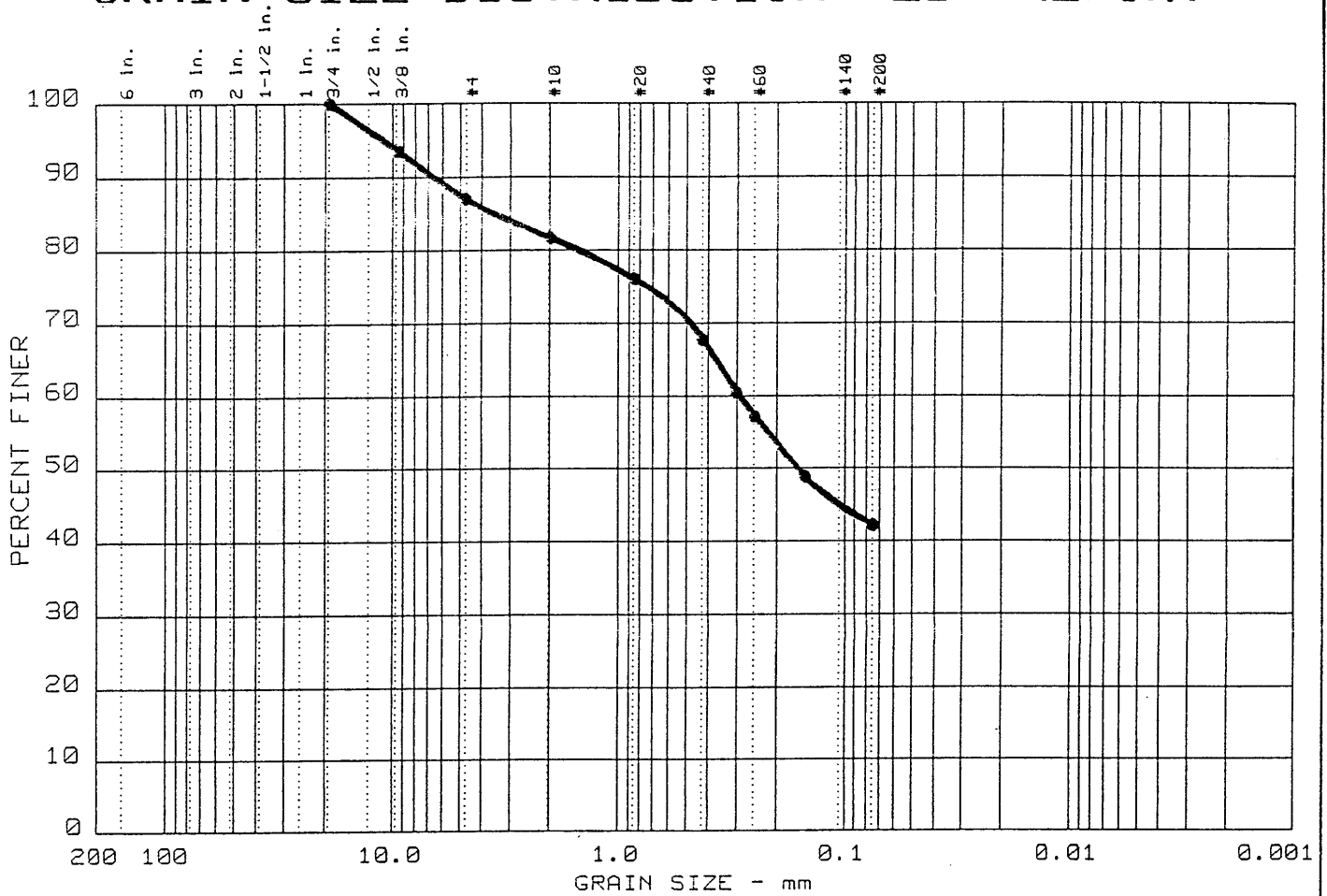
Date: 02/19/2001

Remarks:

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT
TRIAD ENGINEERING, INC.

GRAIN SIZE DISTRIBUTION TEST REPORT



%+75 mm	% GRAVEL	% SAND	% SILT	% CLAY
0.0	12.9	44.8	42.3	

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
		3.51	0.29	0.16					

MATERIAL DESCRIPTION	USCS	AASHTO
● LT. BROWN SANDY SILT WITH ROCK FRAGMENTS	SM	A-4(0.0)

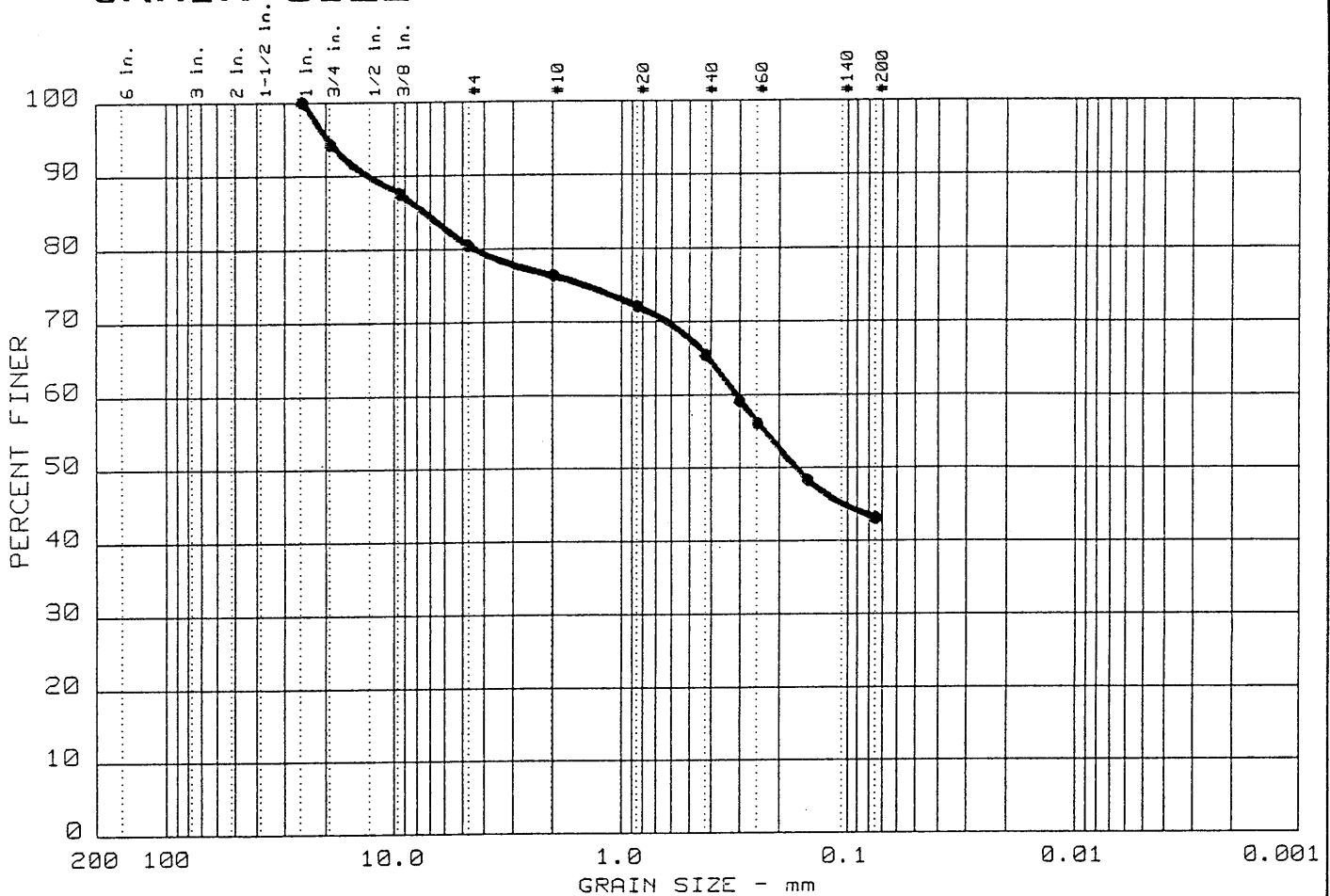
Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: DHX-12, DEPTH: 68.0' - 69.0'

Date: 03/01/01

Remarks:

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



●	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
	0.0	19.4	37.3	43.3	

●	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
			7.33	0.31	0.17					

MATERIAL DESCRIPTION	USCS	AASHTO
● BROWN SANDY SILT WITH ROCK FRAGMENTS	SM	A-4(0.0)

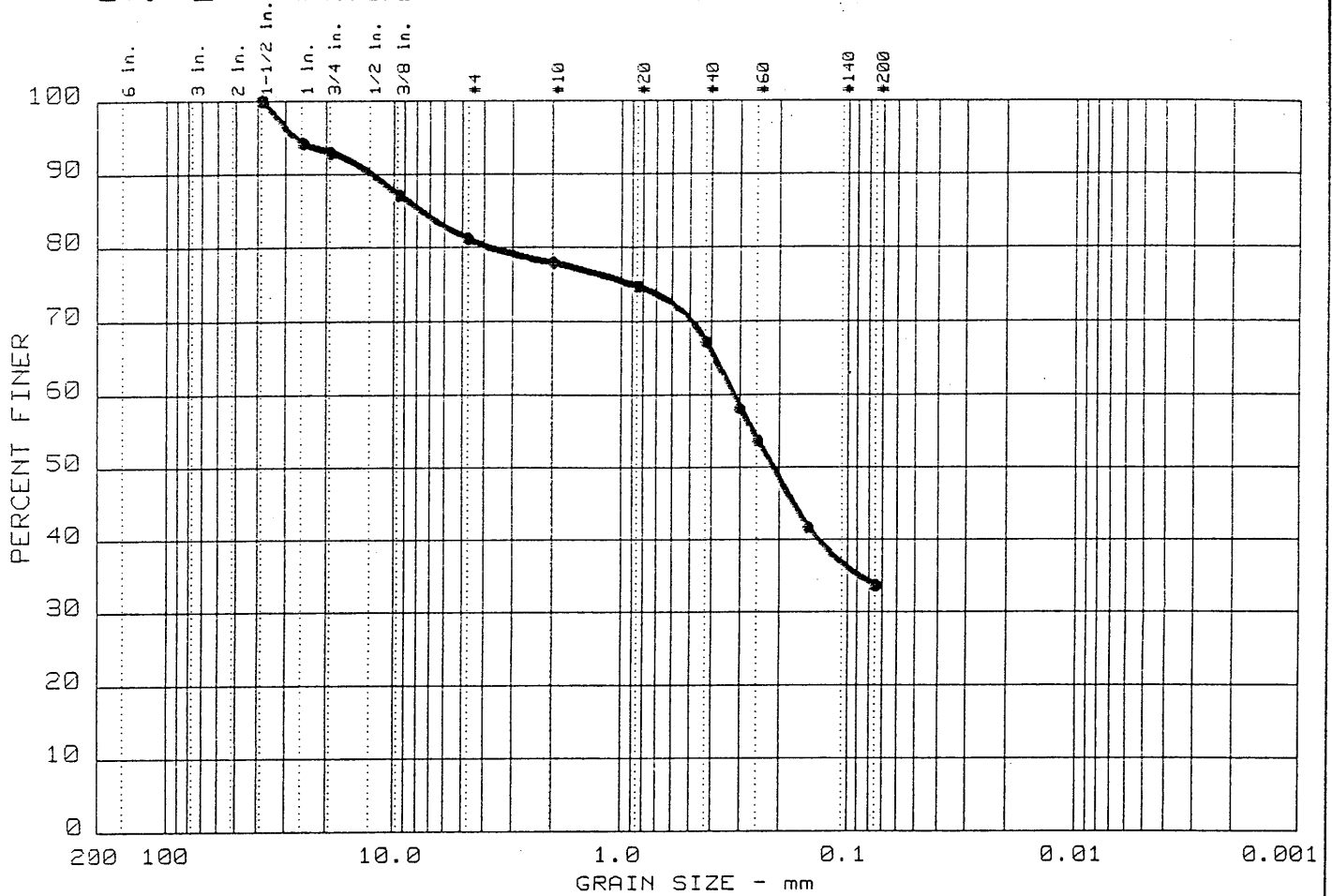
Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: DHX-13, DEPTH: 76.0' - 77.3'

Date: 03/01/01

Remarks:

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



% +75 mm	% GRAVEL	% SAND	% SILT	% CLAY
0.0	18.8	47.5	33.7	

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
		7.50	0.32	0.21					

MATERIAL DESCRIPTION	USCS	AASHTO
● LT. BROWN SILTY SAND WITH ROCK FRAGMENTS	SM	A-2-4(0.0)

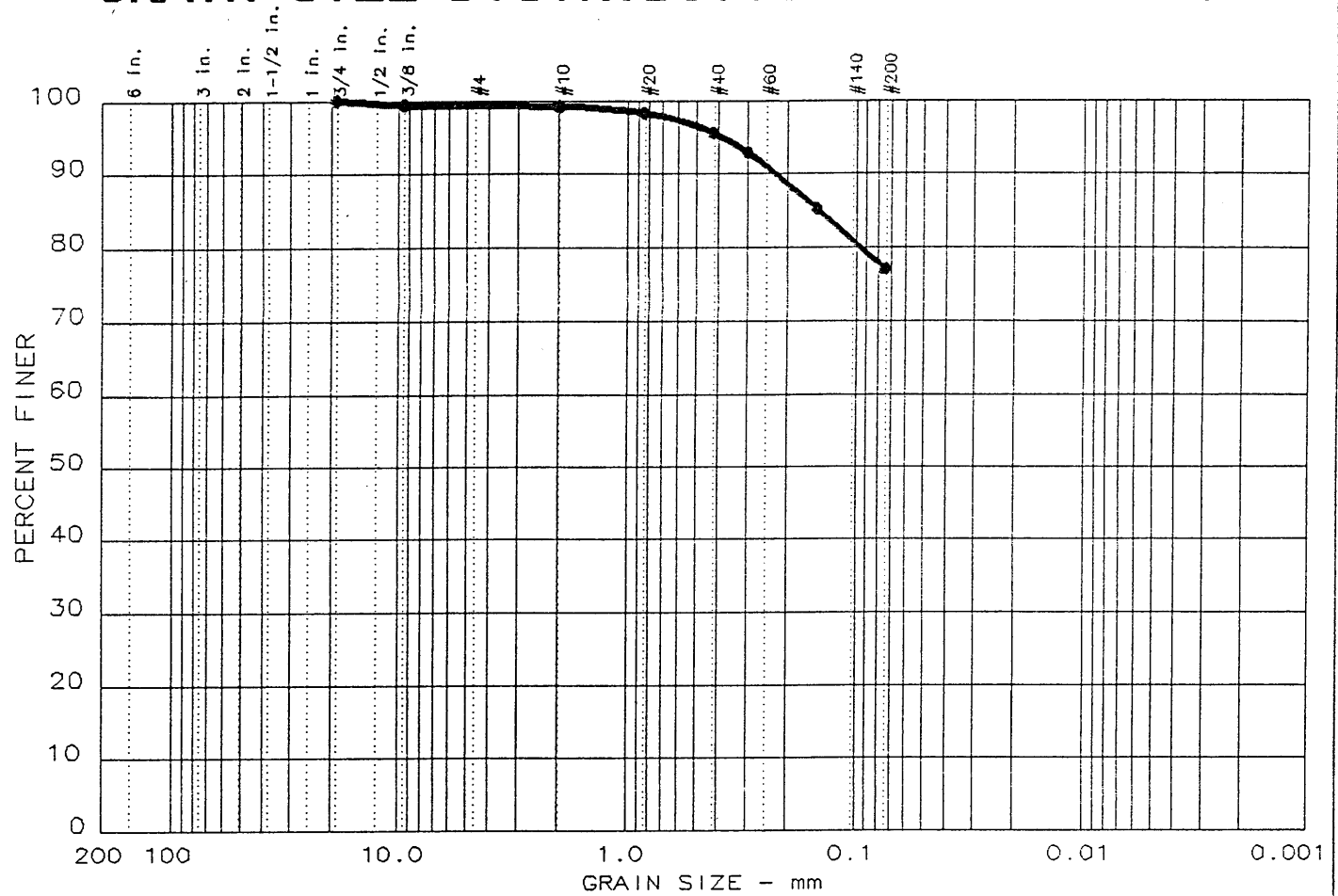
Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: DHX-13, DEPTH: 84.0' - 86.0'

Date: 03/01/01

Remarks:

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.7	22.2	77.1	

	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
●	38.2	10.7	0.15							

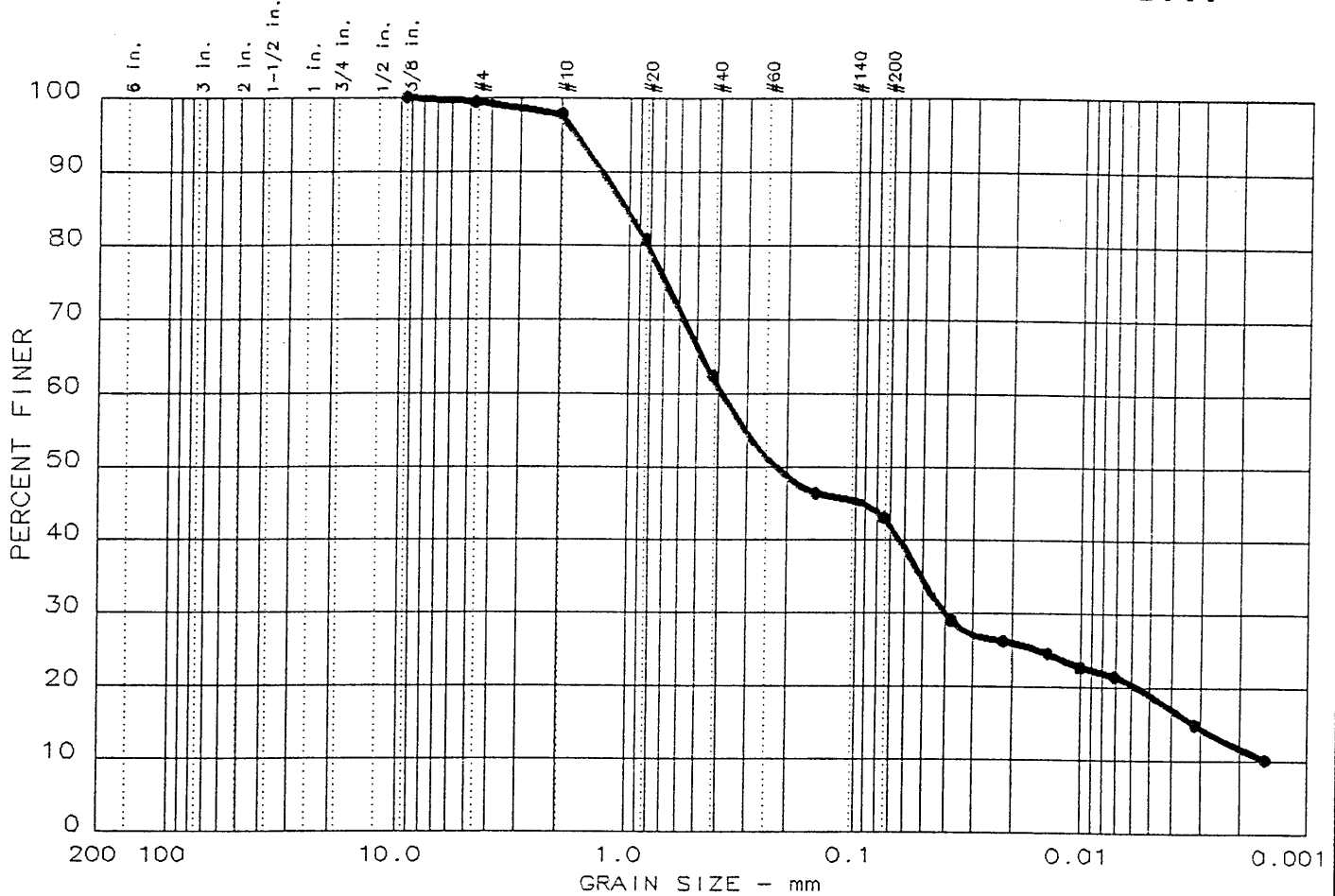
MATERIAL DESCRIPTION	USCS	AASHTO
● BLACK SANDY SILT WITH ROCK FRAGMENTS (SLURRY)	ML	A-6(8.6)

Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: DHX-17, DEPTH: 91.6' - 99.0'

 Date: 02/19/2001

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT



	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.6	56.4	24.1	18.9

	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
●	37	9.9	1.03	0.38	0.22	0.040	0.0032			

MATERIAL DESCRIPTION	USCS	AASHTO
● BLACK SILTY SAND (SLURRY)	SM	A-4(1.5)

Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: SP-1 (BIG BRANCH IMPOUNDMENT)

Date: 02/23/2001

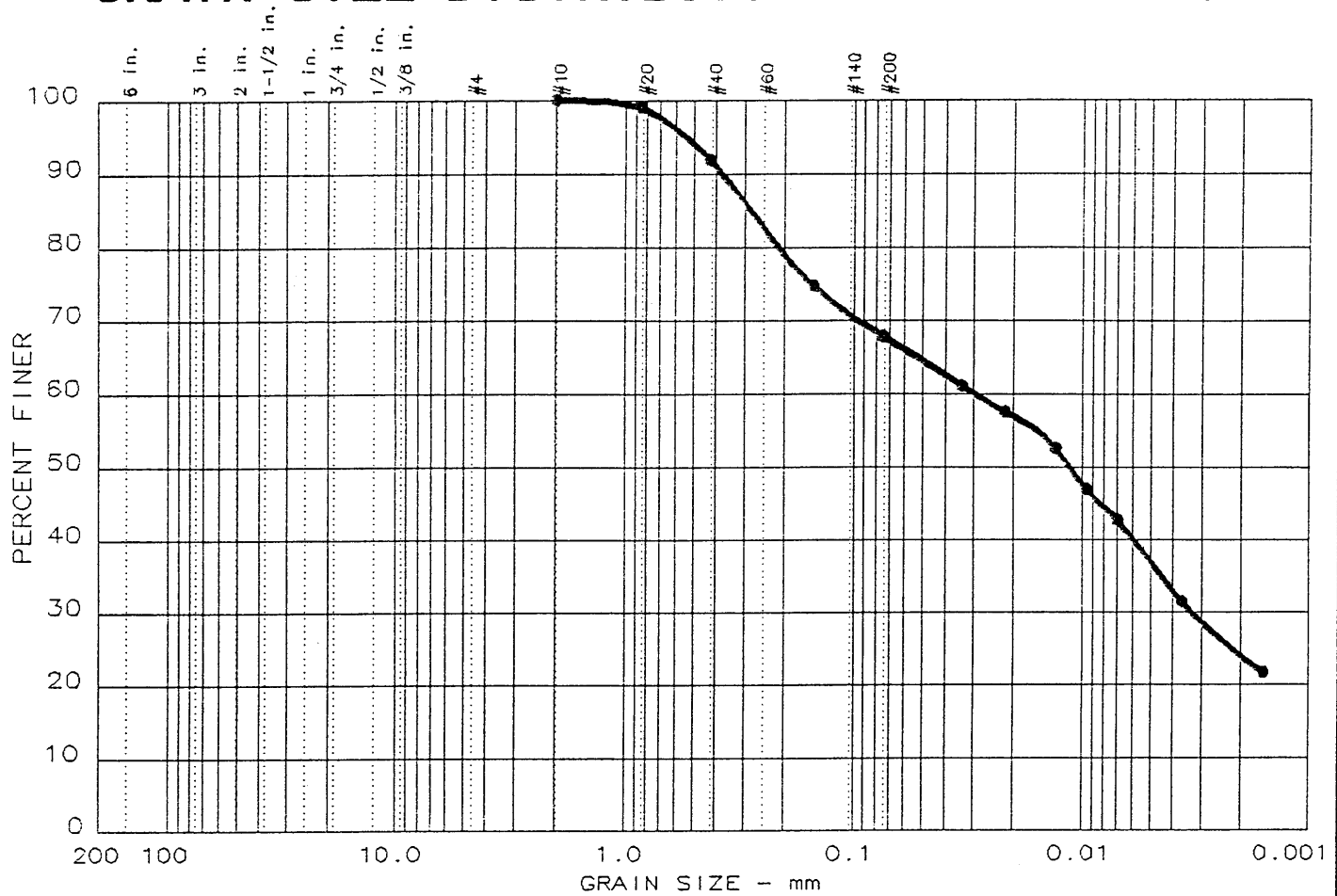
GRAIN SIZE DISTRIBUTION TEST REPORT
TRIAD ENGINEERING, INC.

Remarks:

Specific Gravity = 2.24

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



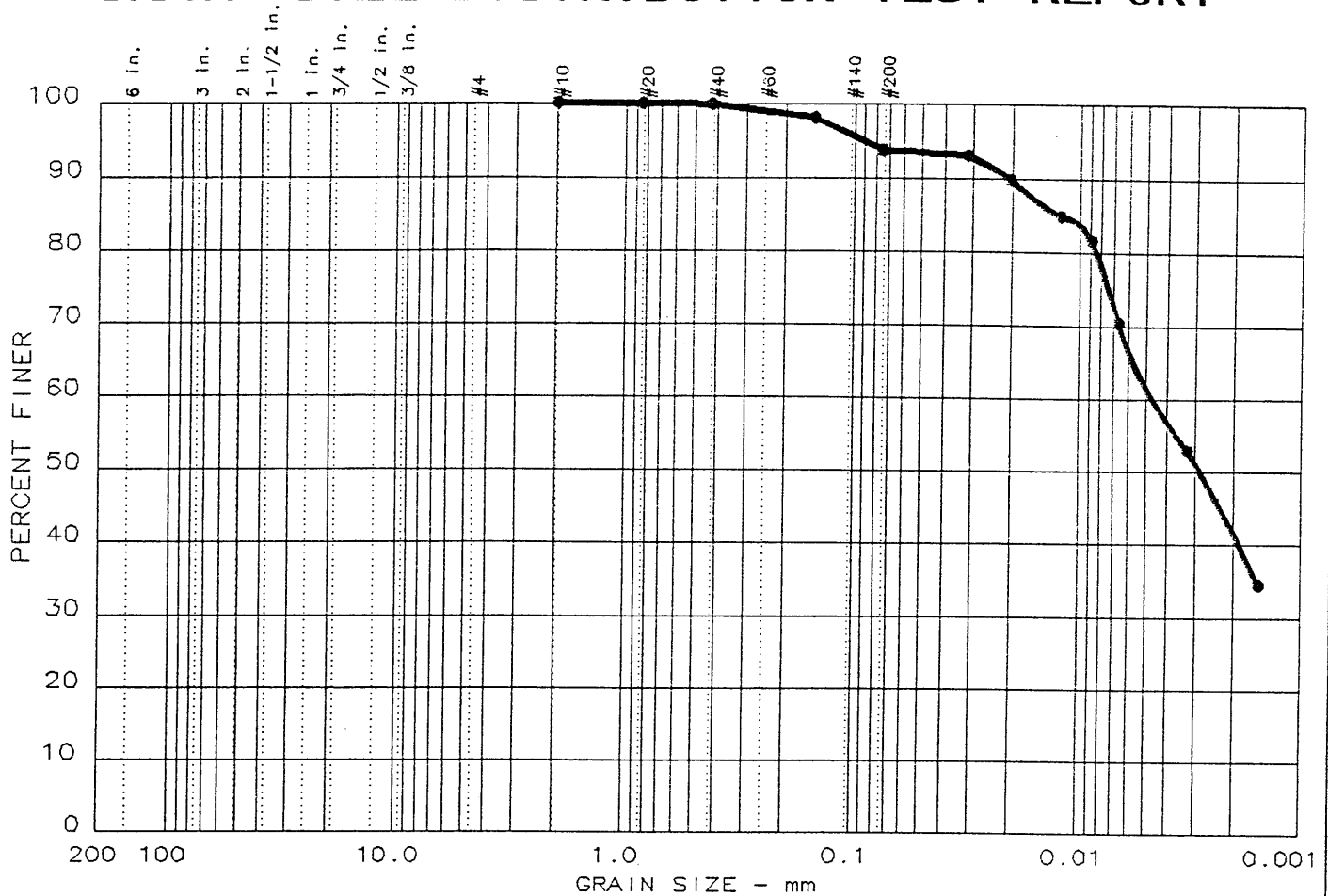
%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	32.2	30.8	37.0

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
32.1	8.1	0.28		0.01	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● BLACK SANDY SILT (SLURRY)	ML	A-4(4.2)

Project No.: C00553 Project: BIG BRANCH SLURRY IMPOUNDMENT ● Location: SP-2 (BIG BRANCH IMPOUNDMENT) Date: 02/23/2001	Remarks: Specific Gravity = 2.07
GRAIN SIZE DISTRIBUTION TEST REPORT TRIAD ENGINEERING, INC.	
Figure No. _____	

GRAIN SIZE DISTRIBUTION TEST REPORT



	%+75 _{mm}	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	6.3	32.2	61.5

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
● 32.1	8.1			0.00					

MATERIAL DESCRIPTION	USCS	AASHTO
● BLACK SANDY SILT (SLURRY)	ML	A-4(7.9)

Project No.: CO0553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: SP-3 (BIG BRANCH IMPOUNDMENT)

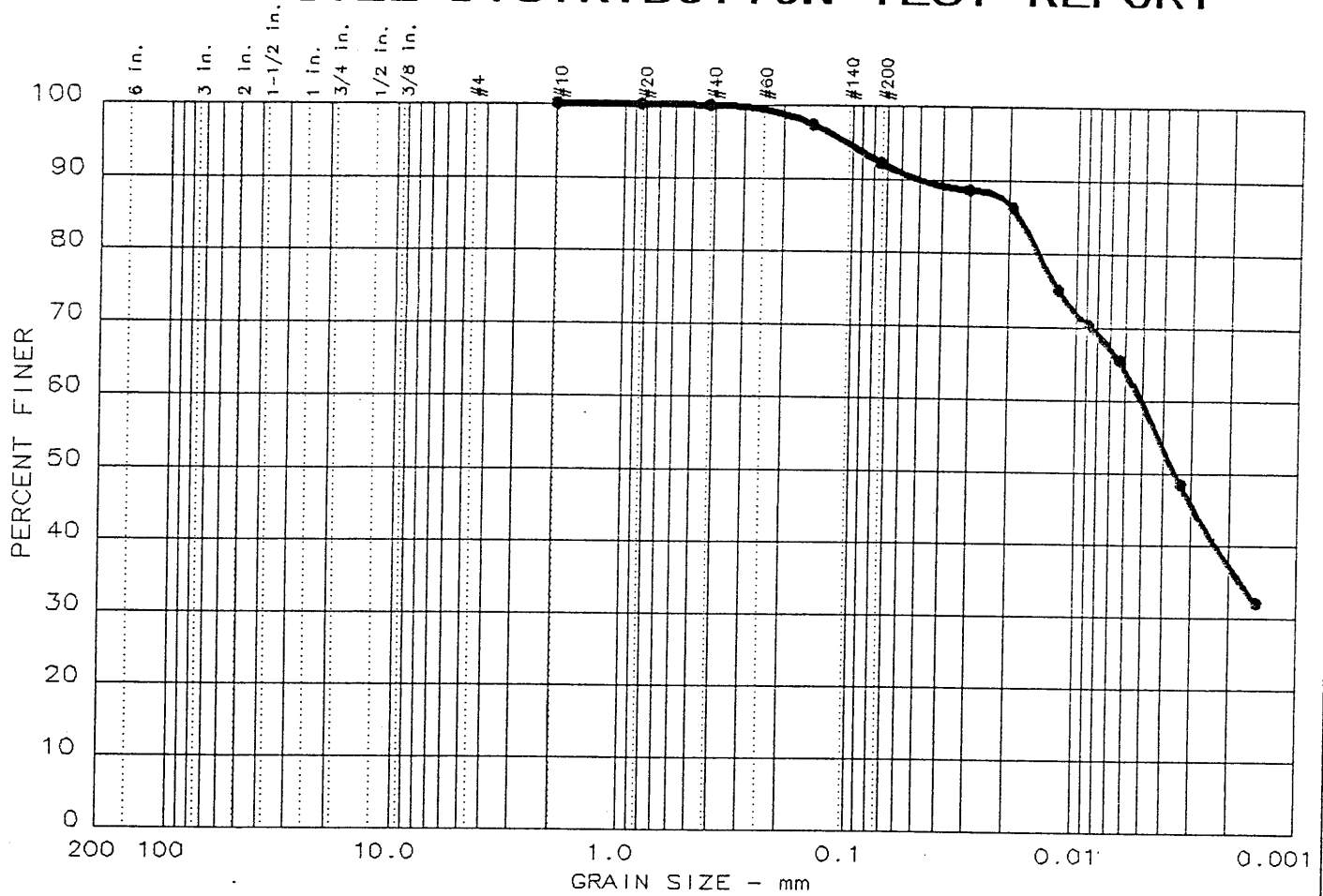
Date: 02/23/2001

Remarks:

Specific Gravity = 2.07

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



●	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	7.8	32.5	59.7

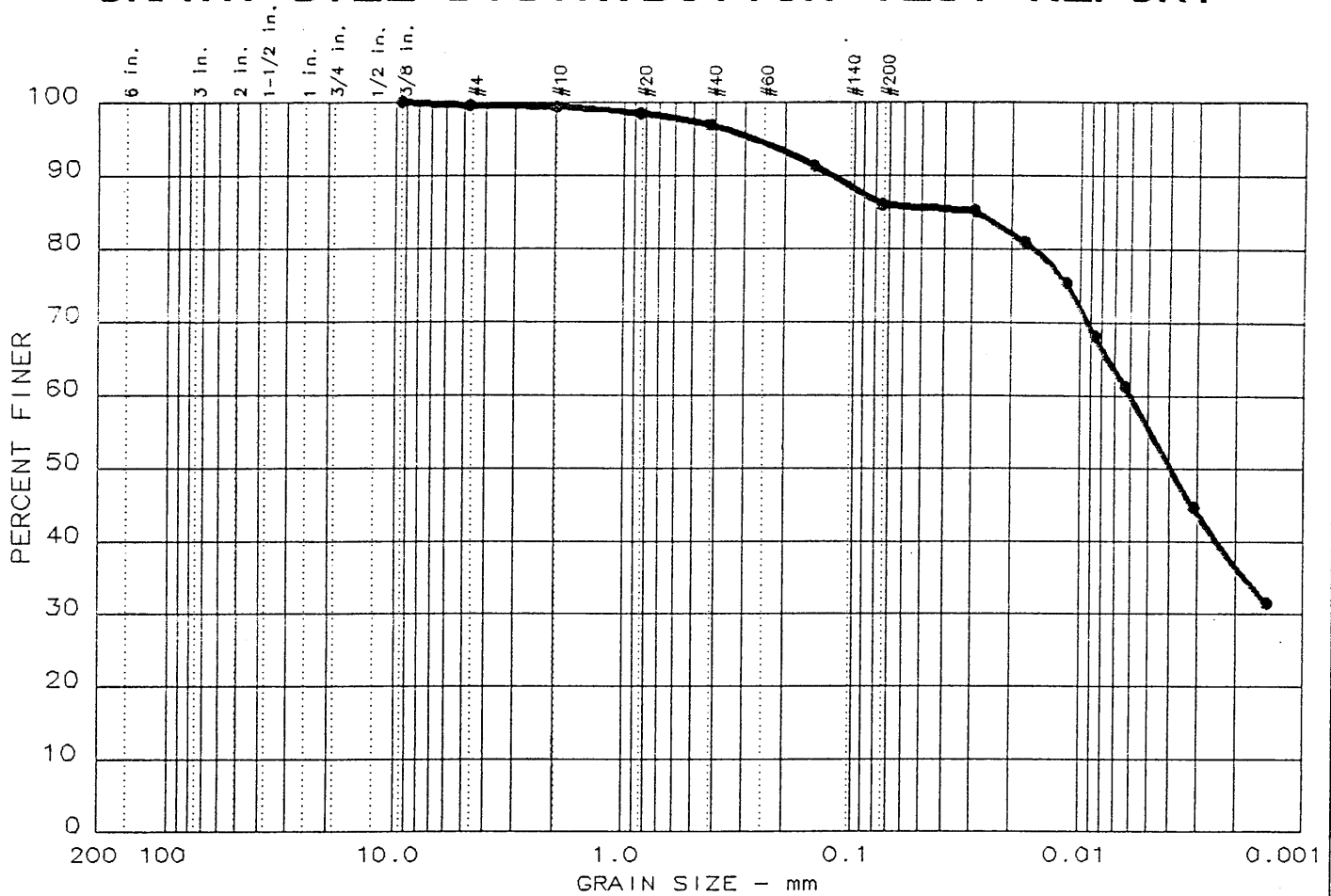
●	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
●	40.2	10.1			0.00					

MATERIAL DESCRIPTION	USCS	AASHTO
● BLACK SANDY CLAY (SLURRY)	ML	A-4(11.4)

Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: SP-4 (BIG BRANCH IMPOUNDMENT)
 Date: 02/23/2001

Remarks:
 Specific Gravity = 2.20
 Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.5	13.6	30.2	55.7

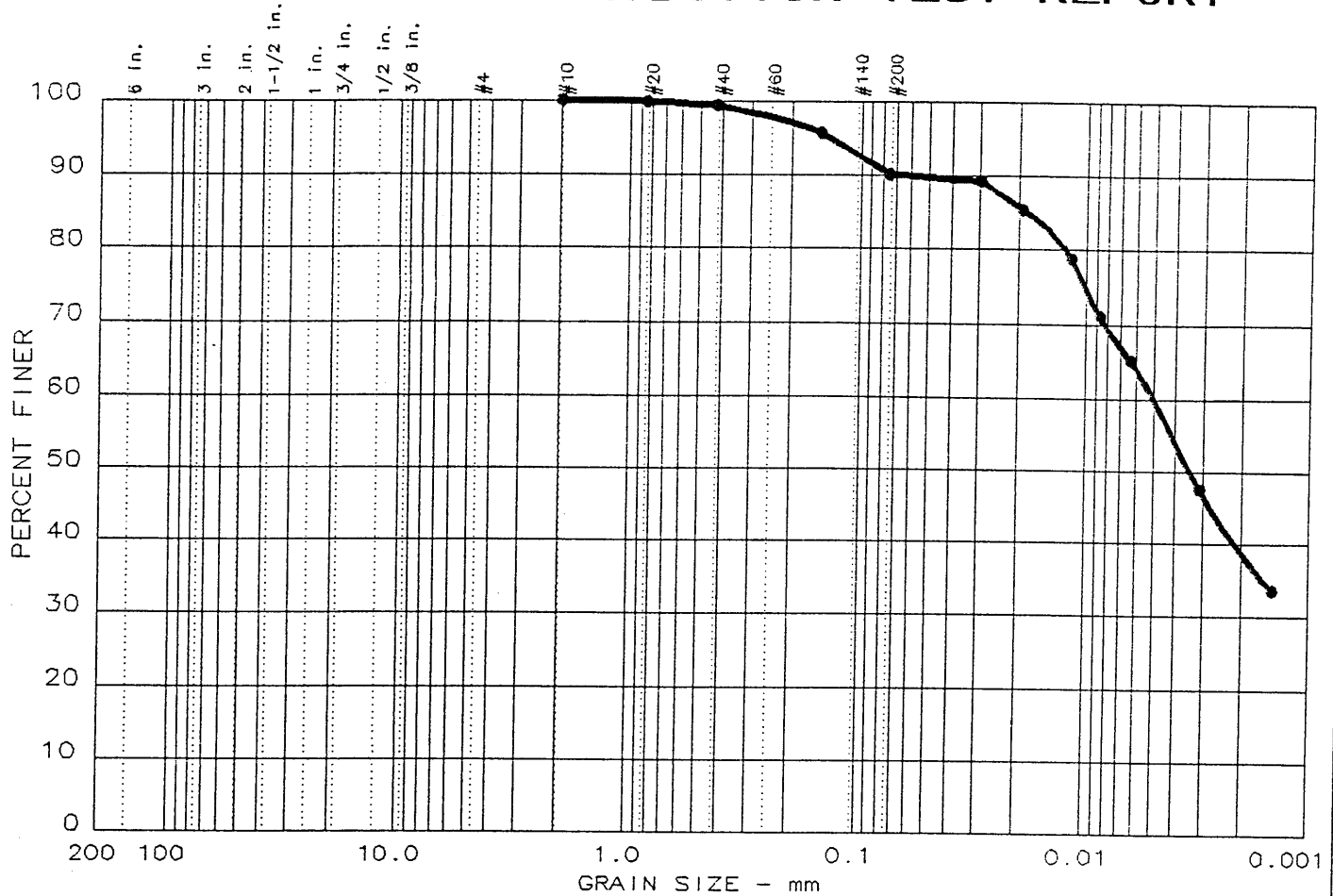
LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
39.7	9.5			0.00					

MATERIAL DESCRIPTION	USCS	AASHTO
● BLACK SANDY CLAY (SLURRY)	ML	A-4(10.2)

Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: CW #1 (COLDWATER FORK)
 Date: 02/23/2001

Remarks:
 Specific Gravity = 2.18

GRAIN SIZE DISTRIBUTION TEST REPORT



	%+75mm	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	10.0	30.1	59.9

	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
●	38.3	9.0			0.00					

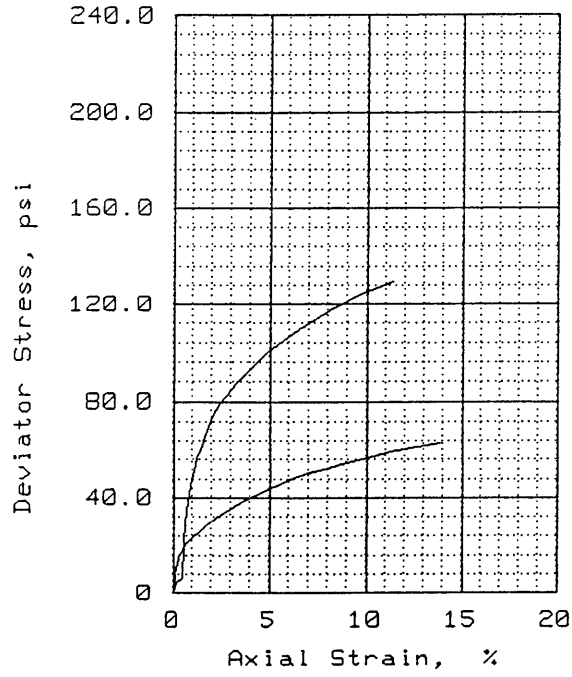
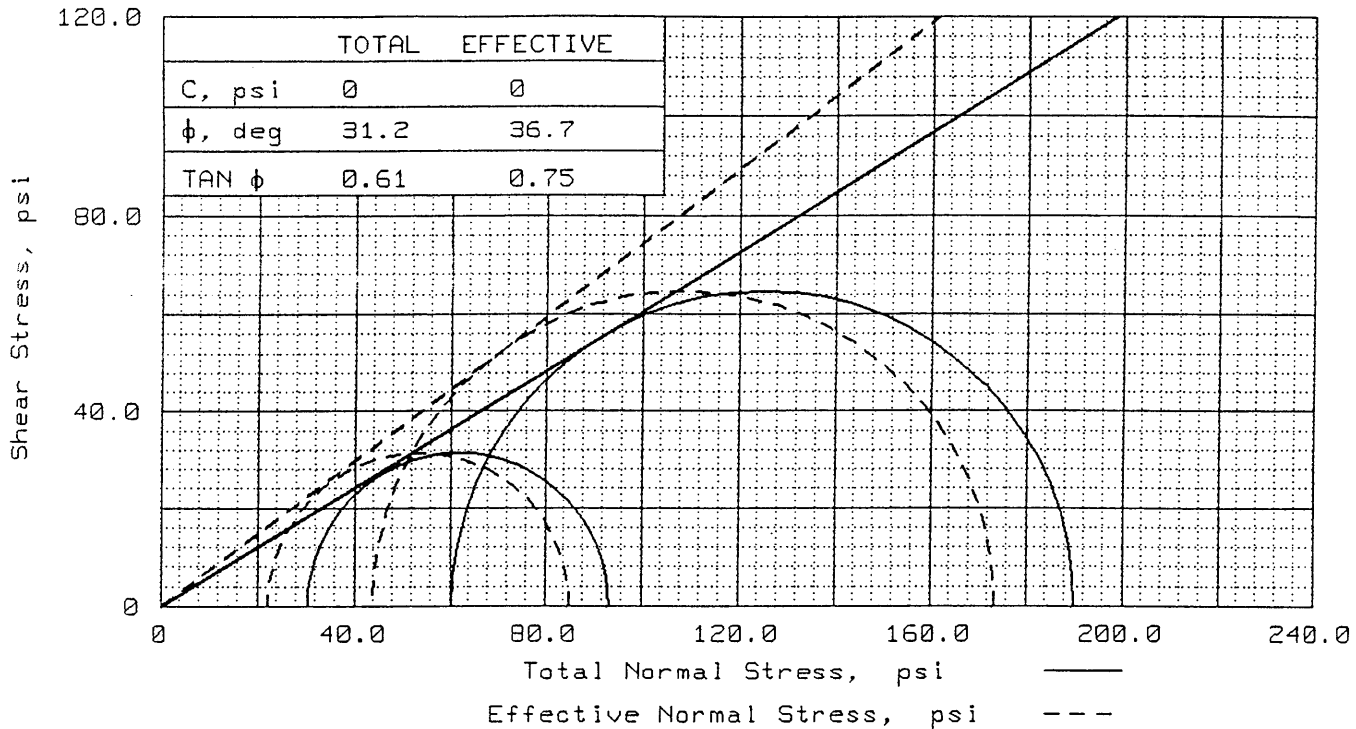
MATERIAL DESCRIPTION	USCS	AASHTO
● BLACK SANDY CLAY (SLURRY)	ML	A-4(9.7)

Project No.: C00553
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 ● Location: WOLF CREEK #1
 Date: 02/23/2001

Remarks:
 Specific Gravity = 2.18
 Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT
TRIAD ENGINEERING, INC.

TRIAXIAL SHEAR STRENGTH



SAMPLE NO.		1	2
INITIAL	WATER CONTENT, %	14.1	11.3
	DRY DENSITY, pcf	122.2	122.4
	SATURATION, %	105.8	85.6
	VOID RATIO	0.354	0.351
	DIAMETER, in	2.80	2.82
	HEIGHT, in	5.85	6.21
AT TEST	WATER CONTENT, %	11.9	12.9
	DRY DENSITY, pcf	125.7	123.3
	SATURATION, %	99.4	99.8
	VOID RATIO	0.316	0.341
	DIAMETER, in	2.77	2.81
	HEIGHT, in	5.80	6.20
Strain rate, %/min		0.015	0.015
BACK PRESSURE, psi		50.0	50.0
CELL PRESSURE, psi		80.0	110.0
FAILURE STRESS, psi		63.0	129.7
PORE PRESSURE, psi		58.2	66.6
ULTIMATE STRESS, psi			
PORE PRESSURE, psi			
$\bar{\sigma}_1$ FAILURE, psi		84.8	173.1
$\bar{\sigma}_3$ FAILURE, psi		21.8	43.4

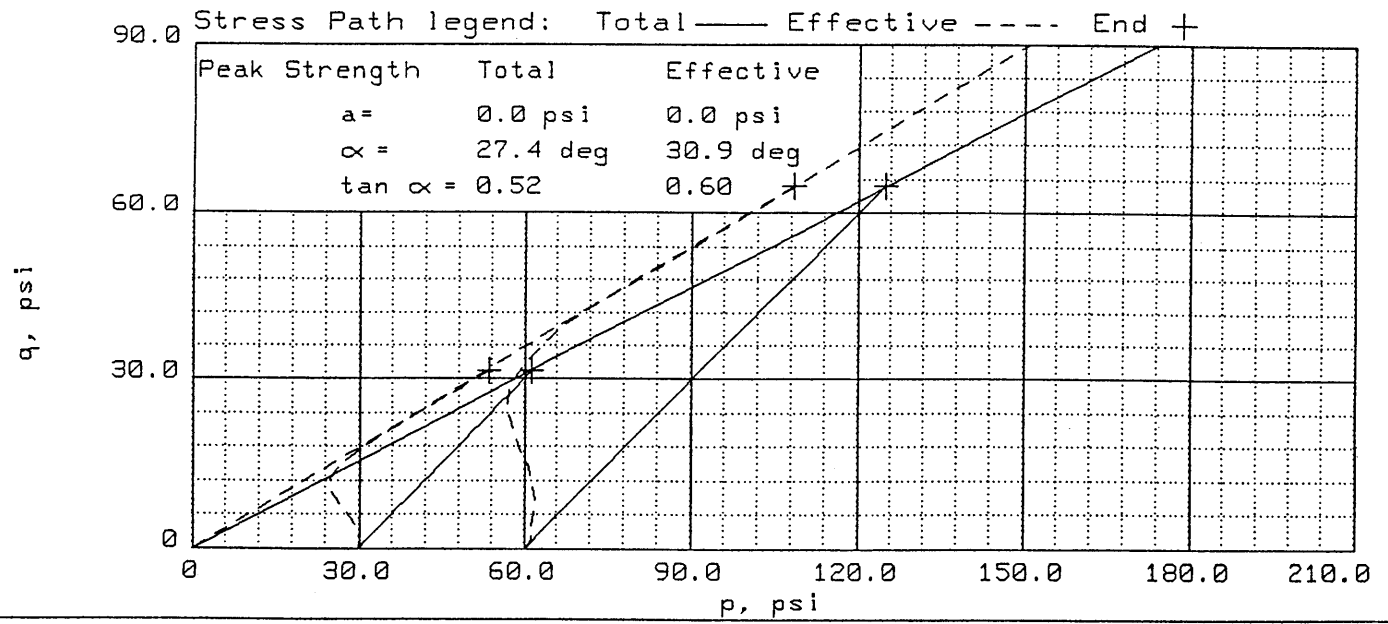
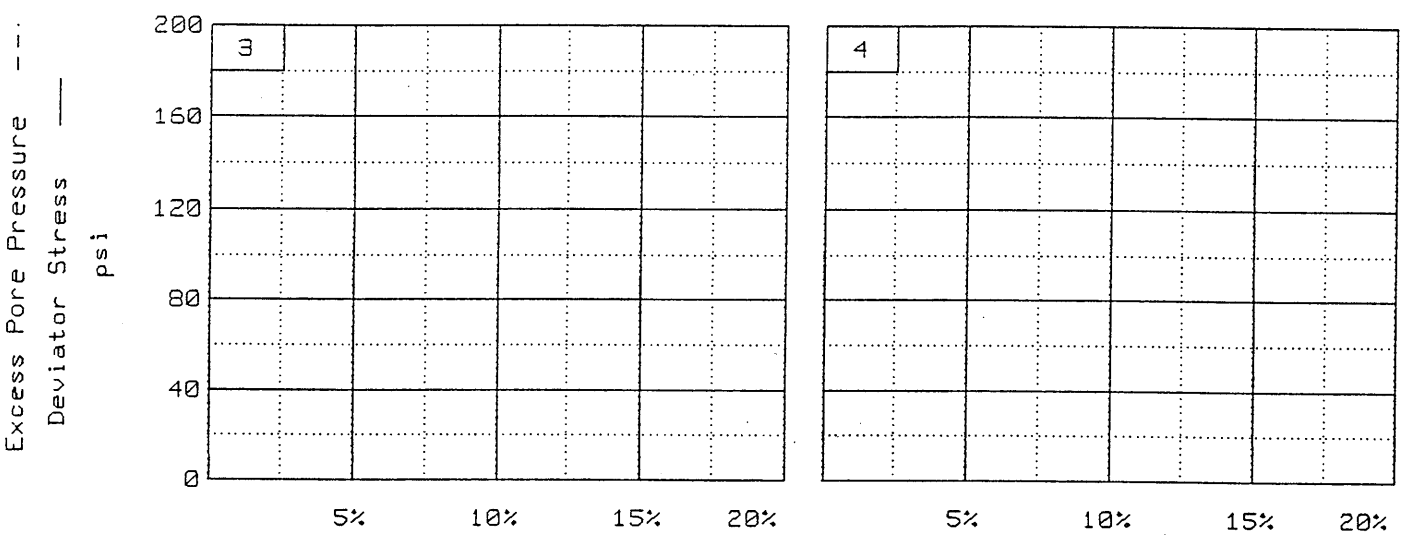
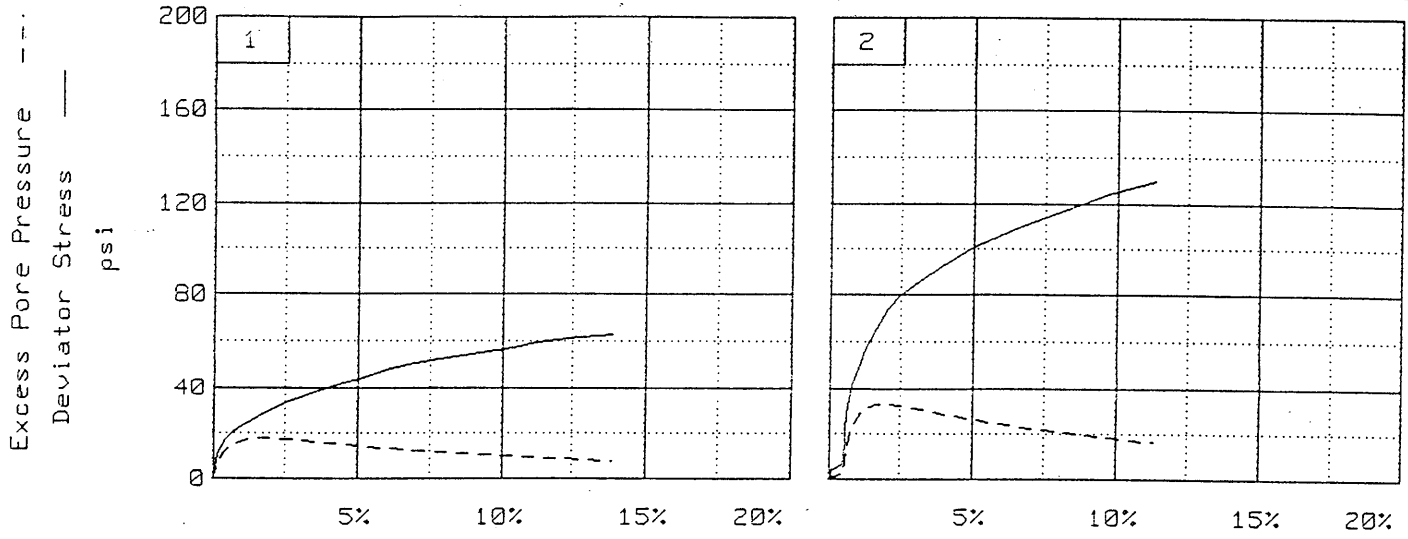
TYPE OF TEST:
 CU with pore pressures
 SAMPLE TYPE: UNDISTURBED
 DESCRIPTION: LT. BROWN SANDY
 SILT WITH ROCK FRAGMENTS
 LL= PL= PI=
 SPECIFIC GRAVITY= 2.65
 REMARKS:

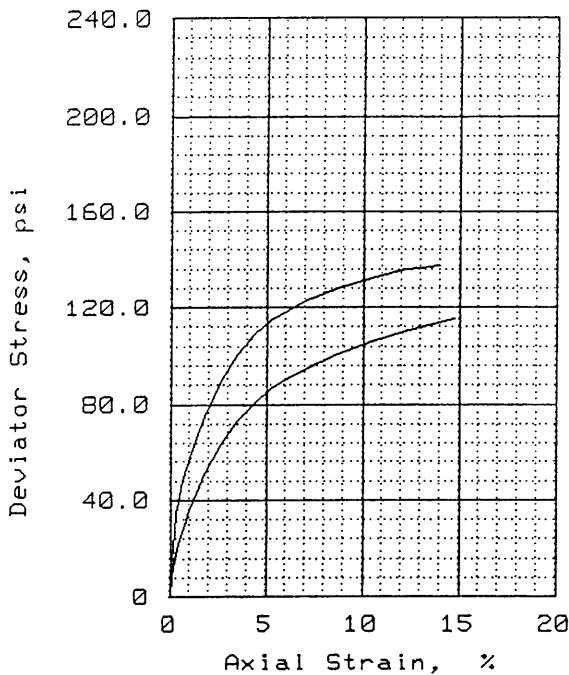
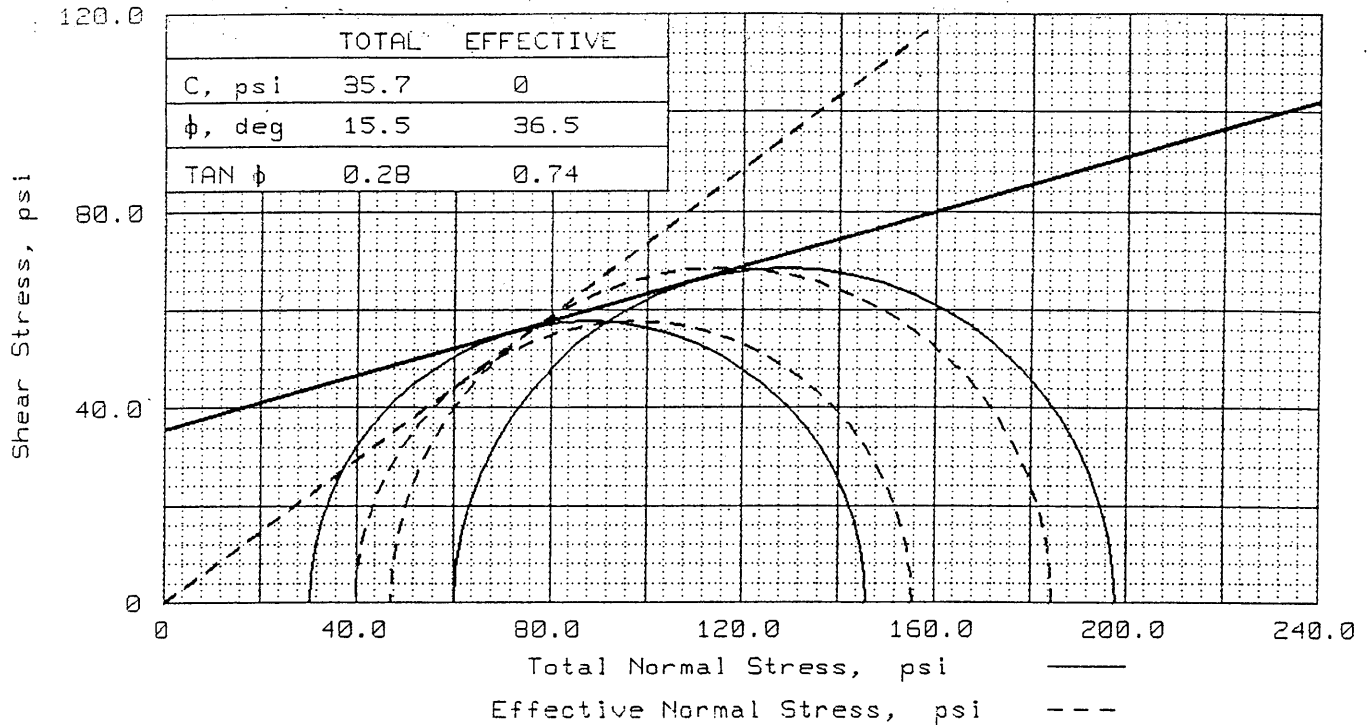
CLIENT: US DEPARTMENT OF LABOR
 PROJECT: BIG BRANCH SLURRY IMPOUNDMENT
 SAMPLE LOCATION: DH1-6, DEPTH: 40.0'-42.0'
 PROJ. NO.: C00553 DATE: 02/27/01

TRIAxIAL SHEAR TEST REPORT

TRIAD ENGINEERING, INC.

FIG. NO.





SAMPLE NO.		1	2
INITIAL	WATER CONTENT, %	12.6	12.6
	DRY DENSITY, pcf	125.3	125.0
	SATURATION, %	104.1	103.3
	VOID RATIO	0.321	0.323
	DIAMETER, in	2.85	2.85
	HEIGHT, in	5.79	5.82
AT TEST	WATER CONTENT, %	11.4	11.1
	DRY DENSITY, pcf	126.7	127.8
	SATURATION, %	99.1	99.7
	VOID RATIO	0.306	0.295
	DIAMETER, in	2.84	2.83
	HEIGHT, in	5.77	5.78
Strain rate, %/min		0.015	0.015
BACK PRESSURE, psi		50.0	50.0
CELL PRESSURE, psi		80.0	110.0
FAILURE STRESS, psi		115.6	137.5
PORE PRESSURE, psi		40.5	63.1
ULTIMATE STRESS, psi			
PORE PRESSURE, psi			
$\bar{\sigma}_1$ FAILURE, psi		155.1	184.4
$\bar{\sigma}_3$ FAILURE, psi		39.5	46.9

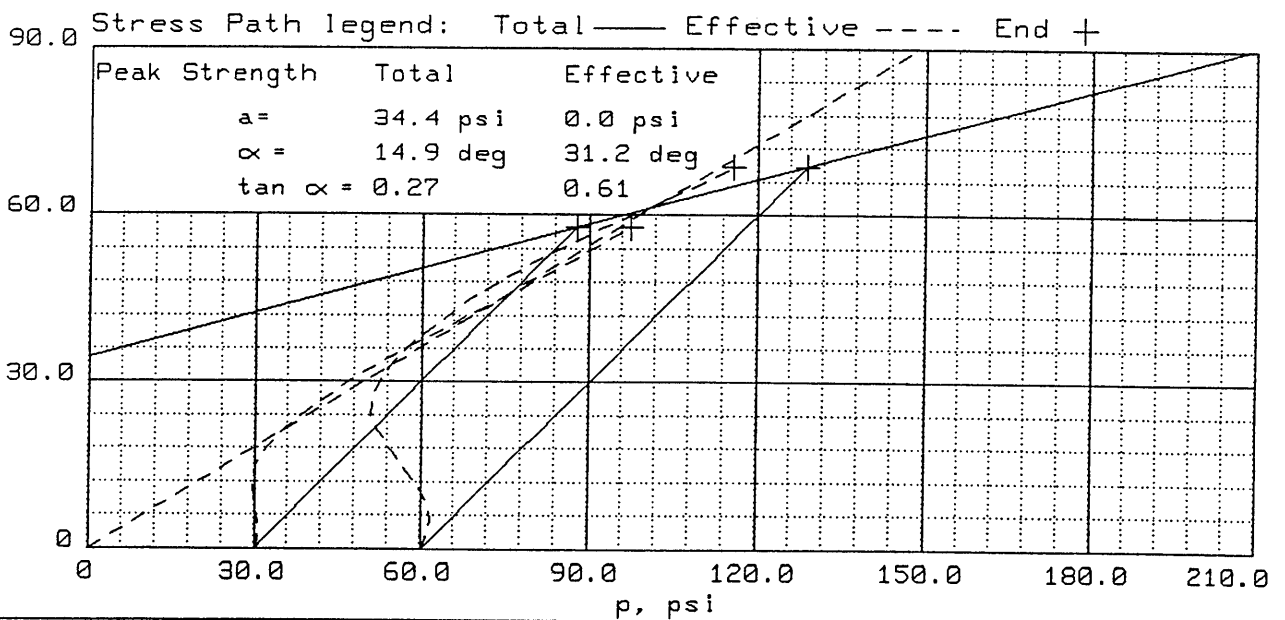
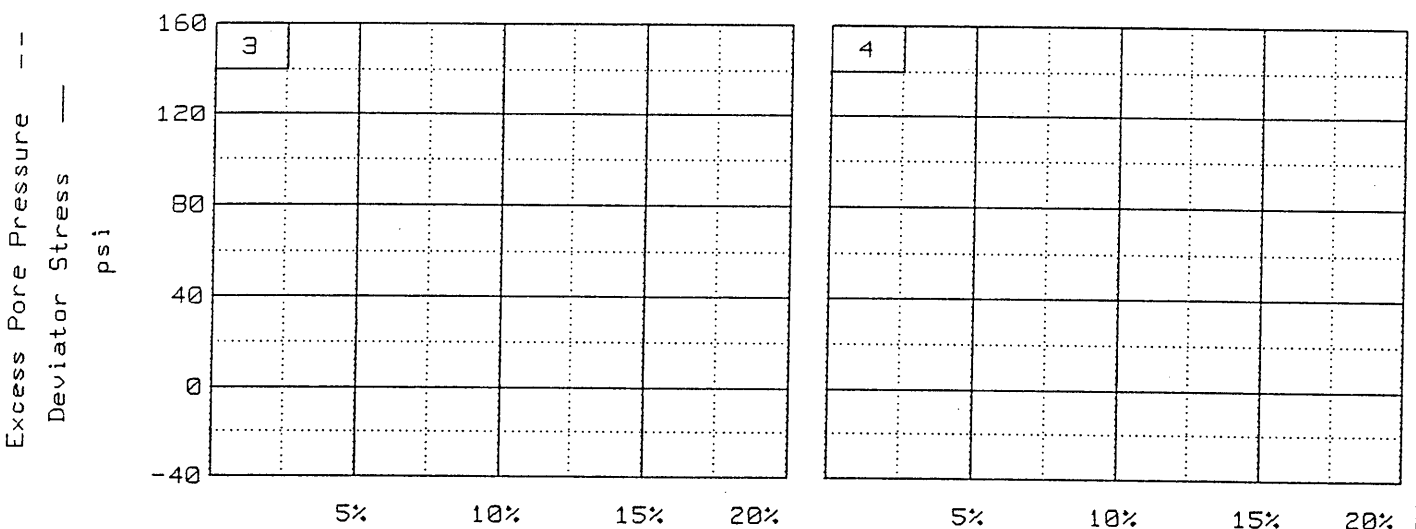
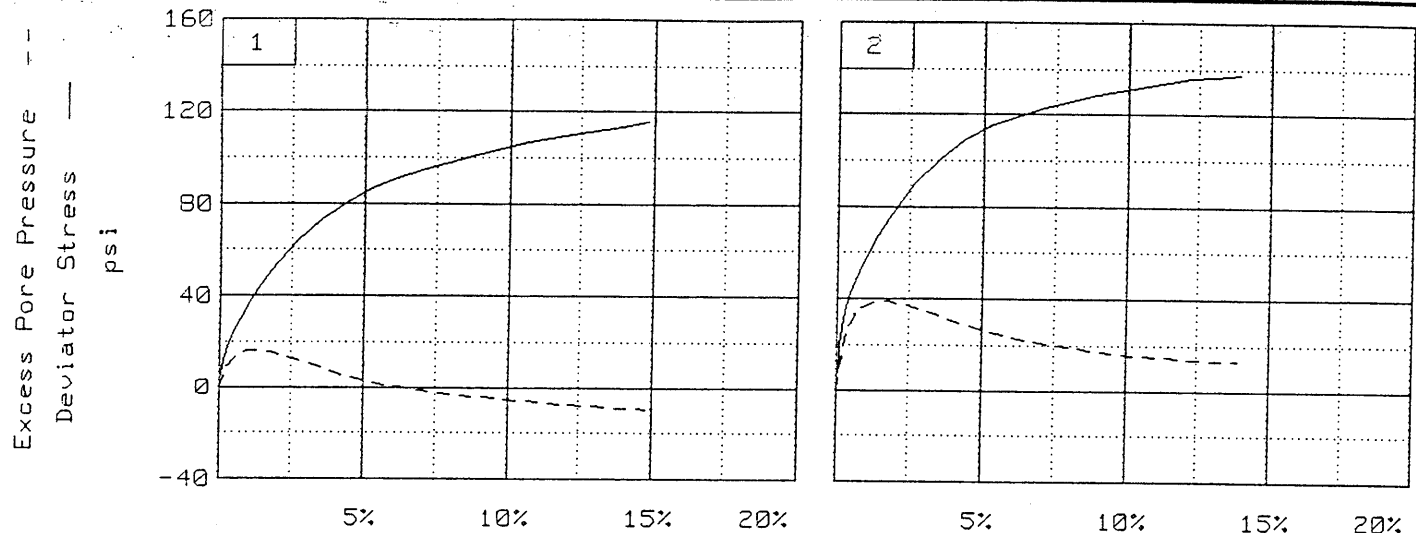
TYPE OF TEST:
 CU with pore pressures
 SAMPLE TYPE: UNDISTURBED
 DESCRIPTION: LT. BROWN SILTY SAND WITH ROCK FRAGMENTS
 LL= PL= PI=
 SPECIFIC GRAVITY= 2.65
 REMARKS:

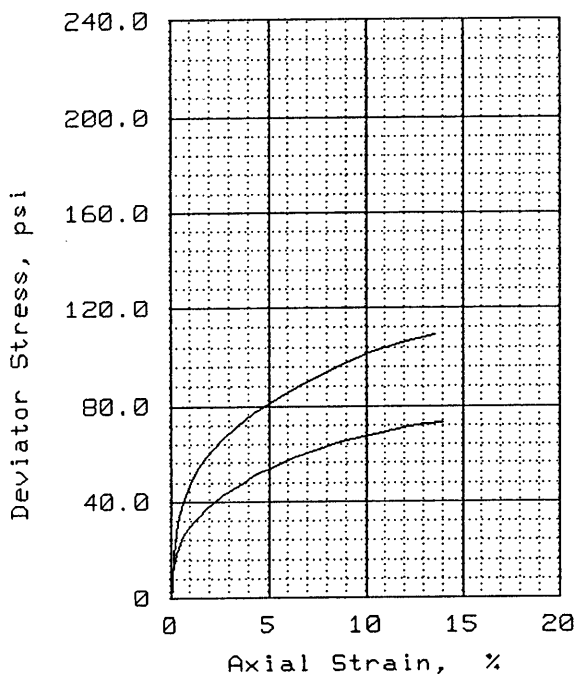
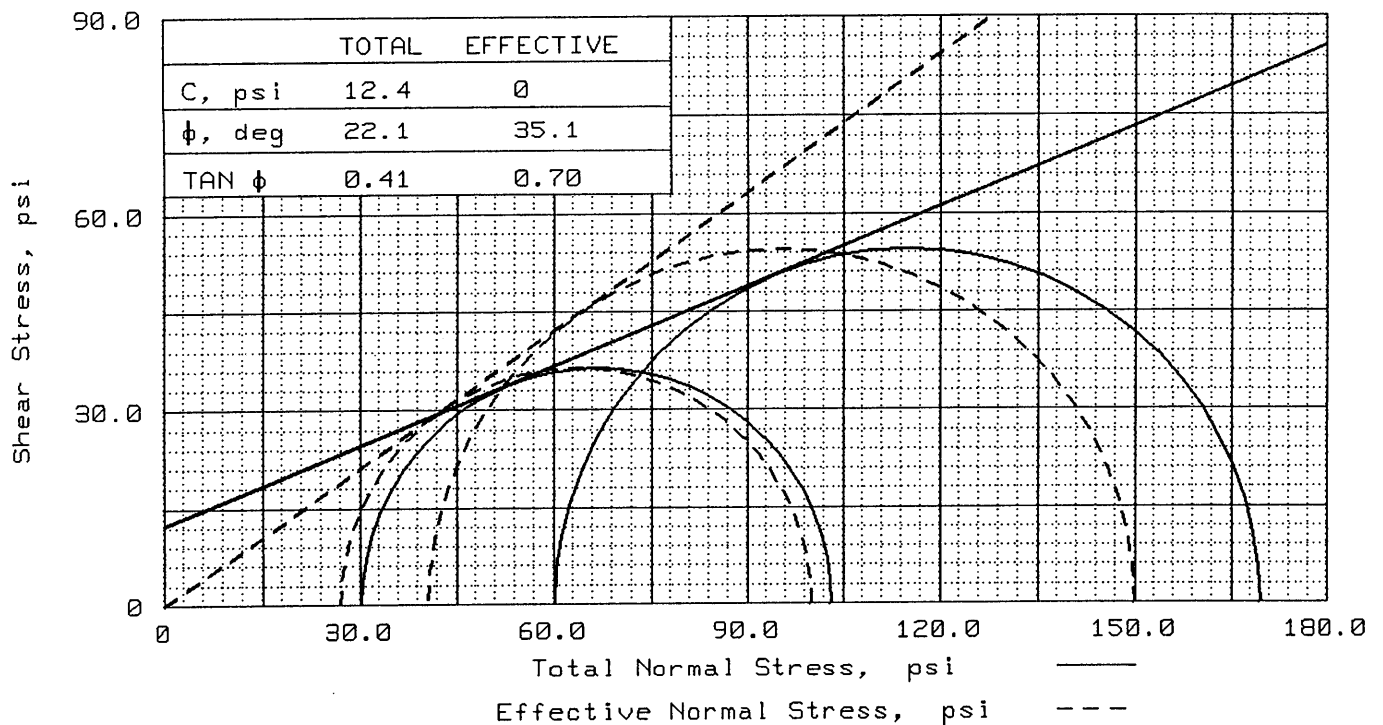
CLIENT: US DEPARTMENT OF LABOR
 PROJECT: BIG BRANCH SLURRY IMPOUNDMENT
 SAMPLE LOCATION: DHX-13
 DEPTH: 84.0' - 86.0'
 PROJ. NO.: C00553 DATE: 03/05/01

TRIAxIAL SHEAR TEST REPORT

TRIAD ENGINEERING, INC.

FIG. NO.





SAMPLE NO.		1	2
INITIAL	WATER CONTENT, %	14.4	14.8
	DRY DENSITY, pcf	121.8	120.9
	SATURATION, %	106.5	106.5
	VOID RATIO	0.358	0.368
	DIAMETER, in	2.85	2.85
	HEIGHT, in	5.79	6.01
AT TEST	WATER CONTENT, %	12.5	11.9
	DRY DENSITY, pcf	124.1	125.6
	SATURATION, %	99.7	99.6
	VOID RATIO	0.333	0.317
	DIAMETER, in	2.83	2.81
	HEIGHT, in	5.75	5.93
Strain rate, %/min		0.015	0.015
BACK PRESSURE, psi		50.0	50.0
CELL PRESSURE, psi		80.0	110.0
FAILURE STRESS, psi		73.0	109.3
PORE PRESSURE, psi		53.2	69.6
ULTIMATE STRESS, psi			
PORE PRESSURE, psi			
$\bar{\sigma}_1$ FAILURE, psi		99.8	149.7
$\bar{\sigma}_3$ FAILURE, psi		26.8	40.4

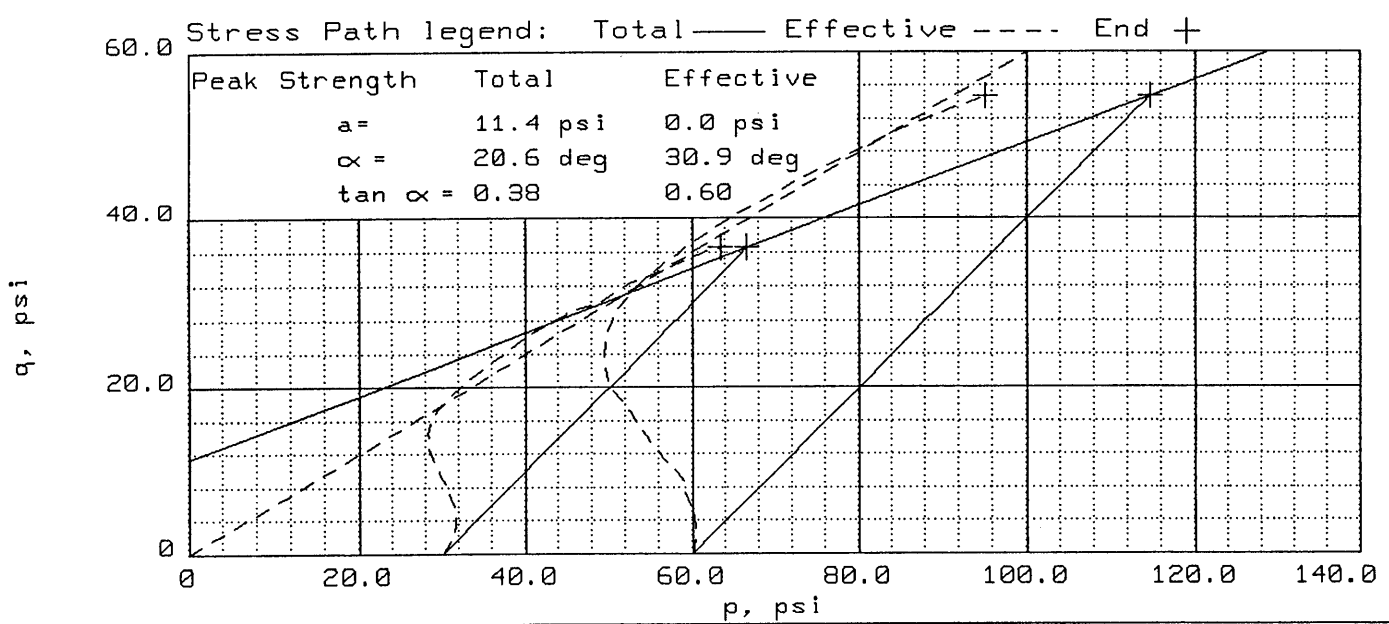
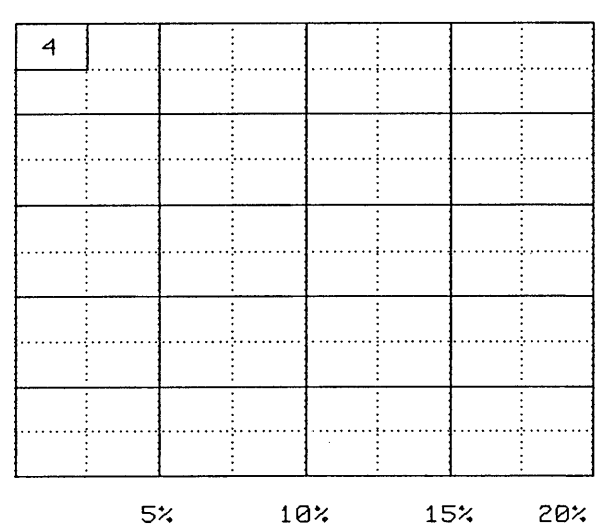
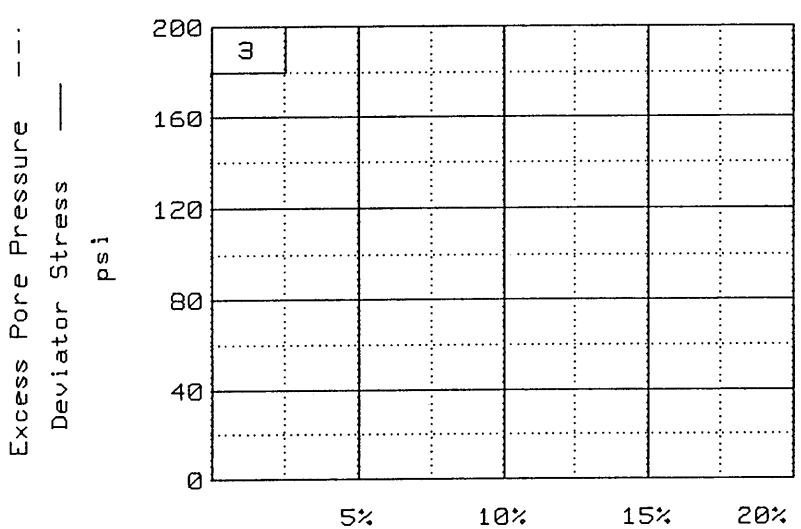
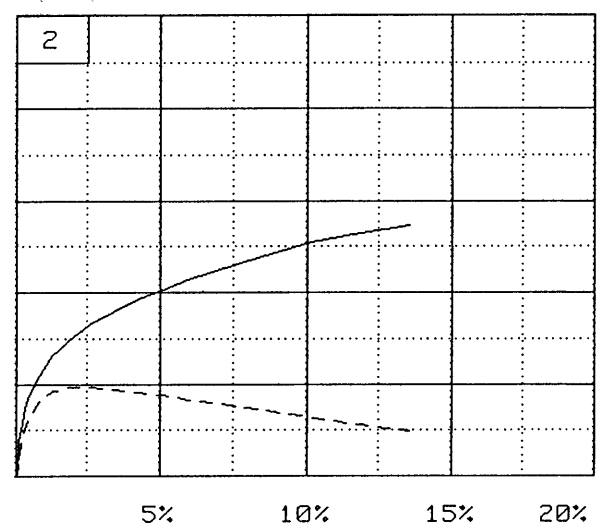
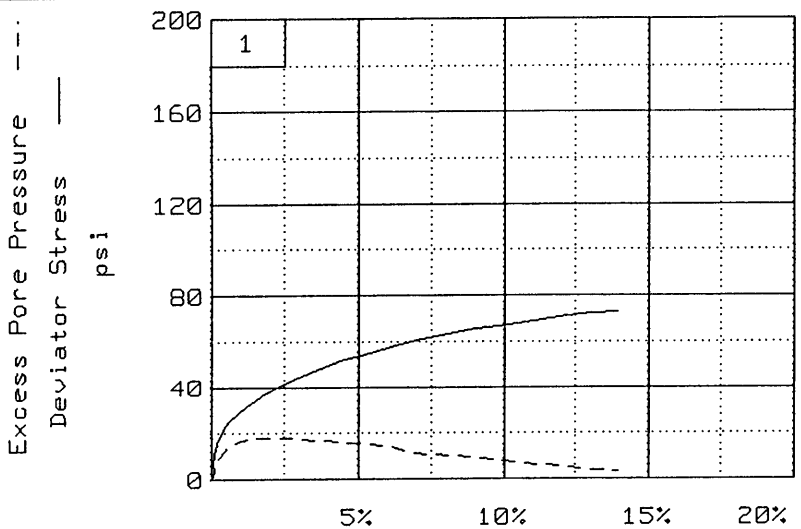
TYPE OF TEST:
 CU with pore pressures
 SAMPLE TYPE: UNDISTURBED
 DESCRIPTION: BROWN SANDY SILT
 WITH ROCK FRAGMENTS
 LL= PL= PI=
 SPECIFIC GRAVITY= 2.65
 REMARKS:

CLIENT: US DEPARTMENT OF LABOR
 PROJECT: BIG BRANCH SLURRY IMPOUNDMENT
 SAMPLE LOCATION: DHX-12 & 13
 DEPTH: 68.0' - 69.0' & 76.0' - 77.3'
 PROJ. NO.: C00553 DATE: 02/28/01

TRIAxIAL SHEAR TEST REPORT

TRIAD ENGINEERING, INC.

FIG. NO.



Client: US DEPARTMENT OF LABOR
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 Location: DHX-12 & 13 DEPTH: 68.0' - 69.0' & 76.0' - 77.3'
 File: C00553-1 Project No.: C00553 Page 2/2 Fig. No. _____

PERMEABILITY

FLEXIBLE WALL PERMEABILITY TEST

(ASTM D5084, METHOD - C)

PROJECT: Big Branch Slurry Impoundment JOB NO.: 000553 DATE: 2/9/01
 SAMPLE INFO: DH1-6 SAMPLE DESCRIPTION: Brown sandy silt with rock fragments
 PREPARED BY: MAD TESTED BY: MAD PERMEAMETER NO.: 4

STANDARD PROCTOR () TEST SPECIMEN COMPACTION EFFORT OTHER ()
 MODIFIED PROCTOR () UNDISTURBED (X)

MOISTURE CONTENT	SPECIMEN COMPACTION	PERMEABILITY
CONTAINER NO. <u>MAN</u> WET WT. <u>305.84</u> GMS DRY WT. <u>278.79</u> GMS TARE WT. <u>87.2</u> GMS WT. MOISTURE <u>27.05</u> GMS WT. DRY SOIL <u>191.59</u> GMS MOISTURE CONTENT <u>14.1</u> %	MAX. DRY DENSITY _____ PCF OPTIMUM MOISTURE _____ % WET WT. <u>1318.8</u> GMS HEIGHT <u>5.850</u> IN DIAMETER <u>2.80</u> IN VOLUME <u>0.0208</u> CU. FT. WET UNIT WT. <u>139.8</u> PCF DRY UNIT WT. <u>122.5</u> PCF PERCENT COMPACTION _____ %	$K = -(C/t) \ln(1 - D(T))$ WHERE: MANOMETER CONSTANTS M1 = <u>0.03018</u> M2 = <u>1.04095</u> C = TEST CONSTANT (M1) (L/A) / 12.56 T = TRIAL CONSTANT M2/Z Z = DIFF. IN MERCURY MENISCI AT t=0, CM t = TIME INTERVAL, SEC D = MERCURY DISPLACED OVER TIME t, CM L = SPECIMEN LENGTH, CM A = SPECIMEN AREA, CM ²

MANOMETER DATA

(K)	(Z)	(t)	(D)	(K)	(Z)	(t)	(D)
CALCULATED COEFF. OF PERMEABILITY	DATE	TIME (HRS)	VOLUME OF MERCURY (CM)	DIFFERENCE IN MERCURY MENISCI AT t=0 (CM)	TIME INTERVAL (SEC)	DIFF. IN VOLUME (CM)	
3.9×10^{-6}	2/12/01	10:38	24.5	0.8	----	----	
		10:48	3.4	23.7	600	21.1	
4.0×10^{-6}	2/12/01	1:07	28	0.5	----	----	
		1:17	3.4	27.5	600	24.6	
4.6×10^{-6}	2/13/01	1:02	28	0.5	----	----	
		1:10	3.9	27.5	480	24.1	

COEFFICIENT OF PERMEABILITY
 $K = 4.2 \times 10^{-6}$ CM/SEC
 AVG. TEMP. 21.7 °C
 VISCOSITY CORRECTION FOR TEMPERATURE:
0.9600

REMARKS: CONFINING PRESSURE 10 PSI (CELL PRESSURE 70 PSI, BACK PRESSURE 60 PSI)

$K = 4.0 \times 10^{-6}$ CM/SEC
 20

FLEXIBLE WALL PERMEABILITY TEST

(ASTM D5084, METHOD - C)

PROJECT: Big Branch Slurry Impoundment JOB NO.: C00553 DATE: 2/12/01
 SAMPLE INFO: DHX-13 76.0'-77.3' SAMPLE DESCRIPTION: Brown sandy silt with rock fragments
 PREPARED BY: MAD TESTED BY: MAD PERMEAMETER NO.: 3

TEST SPECIMEN COMPACTION EFFORT
 STANDARD PROCTOR () MODIFIED PROCTOR () UNDISTURBED (X) OTHER ()

MOISTURE CONTENT	SPECIMEN COMPACTION	PERMEABILITY
CONTAINER NO. <u>LY</u> WET WT. <u>334.12</u> GMS DRY WT. <u>302.24</u> GMS TARE WT. <u>86.7</u> GMS WT. MOISTURE <u>31.88</u> GMS WT. DRY SOIL <u>215.54</u> GMS MOISTURE CONTENT <u>14.8</u> %	MAX. DRY DENSITY _____ PCF OPTIMUM MOISTURE _____ % WET WT. <u>1390.9</u> GMS HEIGHT <u>6.005</u> IN DIAMETER <u>2.845</u> IN VOLUME <u>0.02208</u> CU. FT. WET UNIT WT. <u>138.9</u> PCF DRY UNIT WT. <u>120.9</u> PCF PERCENT COMPACTION _____ %	$K = -(C/t) \ln(1 - D(T))$ WHERE: MANOMETER CONSTANTS M1= <u>0.03018</u> M2= <u>1.04095</u> C= TEST CONSTANT (M1) (L/A)/12.56 T= TRIAL CONSTANT M2/Z Z= DIFF. IN MERCURY MENISCI AT t=0, CM t= TIME INTERVAL, SEC D= MERCURY DISPLACED OVER TIME t, CM L= SPECIMEN LENGTH, CM A= SPECIMEN AREA, CM ² COEFFICIENT OF PERMEABILITY K= <u>9.0</u> x 10 ⁻⁸ CM/SEC AVG. TEMP. <u>21.8</u> °C VISCOSITY CORRECTION FOR TEMPERATURE: <u>0.9577</u>

MANOMETER DATA

(K)	(Z)	(t)	(D)			
CALCULATED COEFF. OF PERMEABILITY	DATE	TIME (HRS)	VOLUME OF MERCURY (CM)	DIFFERENCE IN MERCURY MENISCI AT t=0 (CM)	TIME INTERVAL (SEC)	DIFF. IN VOLUME (CM)
9.2 x 10 ⁻⁸	2/15/01	1:08	29.2	0.5	----	----
		4:38	9.2	28.7	12,600	20
9.4 x 10 ⁻⁸	2/16/01	3:51	28.4	0.6	----	----
		4:39	21.4	27.8	2,880	7
8.3 x 10 ⁻⁸	2/19/01	11:44	28.9	0.6	----	----
		4:54	6.5	28.3	18,600	22.4

REMARKS: CONFINING PRESSURE 10 PSI (CELL PRESSURE 70 PSI, BACK PRESSURE 60 PSI)

K= 8.6 x 10⁻⁸ CM/SEC
20

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 WINCHESTER & HARRISONBURG, VIRGINIA
 GREENSBURG, PENNSYLVANIA

FLEXIBLE WALL PERMEABILITY TEST

(ASTM D5084, METHOD - C)

PROJECT: Big Branch Slurry Impoundment JOB NO.: 000553 DATE: 2/26/01
 SAMPLE INFO: DHX-13, Depth: 84.0'-86.0' SAMPLE DESCRIPTION: Light brown silty sand with rock fragments
 PREPARED BY: MAD TESTED BY: MAD PERMEAMETER NO.: 4

STANDARD PROCTOR () TEST SPECIMEN COMPACTION EFFORT MODIFIED PROCTOR () UNDISTURBED (X) OTHER ()

MOISTURE CONTENT	SPECIMEN COMPACTION	PERMEABILITY
CONTAINER NO. <u>T</u>	MAX. DRY DENSITY _____ PCF	$K = -(C/t) \ln(1 - D(T))$ WHERE: MANOMETER CONSTANTS M1 = <u>0.03013</u> M2 = <u>1.04095</u> C = TEST CONSTANT (ML) (L/A) / 12.56 T = TRIAL CONSTANT M2/2 D = DIFF. IN MERCURY MENISCI AT t=0, CM t = TIME INTERVAL, SEC D = MERCURY DISPLACED OVER TIME t, CM L = SPECIMEN LENGTH, CM A = SPECIMEN AREA, CM ² COEFFICIENT OF PERMEABILITY $K = 1.4 \times 10^{-7} \text{ CM/SEC}$ AVG. TEMP. <u>22.7</u> °C VISCOSITY CORRECTION FOR TEMPERATURE: <u>0.9377</u>
WET WT. <u>226.19</u> GMS	OPTIMUM MOISTURE _____ %	
DRY WT. <u>215.5</u> GMS	WET WT. <u>1372.0</u> GMS	
TARE WT. <u>130.6</u> GMS	HEIGHT <u>5.820</u> IN DIAMETER <u>2.850</u> IN	
WT. MOISTURE <u>10.69</u> GMS	VOLUME <u>0.0215</u> CU. FT.	
WT. DRY SOIL <u>84.9</u> GMS	WET UNIT WT. <u>140.7</u> PCF	
MOISTURE CONTENT <u>12.6</u> %	DRY UNIT WT. <u>124.9</u> PCF	
	PERCENT COMPACTION _____ %	

MANOMETER DATA

(K)	DATE	TIME (HRS)	VOLUME OF MERCURY (CM)	DIFFERENCE IN MERCURY MENISCI AT t=0 (CM)	TIME INTERVAL (SEC)	DIFF. IN VOLUME (CM)
1.4×10^{-7}	2/27/01	12:58	28.5	0.5	----	----
		3:34	20.6	28	2,160	7.9
1.4×10^{-7}	2/28/01	8:09	27.7	0.6	----	----
		11:18	5.8	27.1	11,340	21.9
1.3×10^{-7}	2/28/01	3:37	28.9	0.5	----	----
		4:59	14.6	28.4	4,920	14.3

REMARKS: CONFINING PRESSURE 10 PSI (CELL PRESSURE 70 PSI, BACK PRESSURE 60 PSI)

$K = 1.3 \times 10^{-7} \text{ CM/SEC}$
20

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 WINCHESTER & HARRISONBURG, VIRGINIA
 GREENSBURG, PENNSYLVANIA

UNIAXIAL COMPRESSIVE STRENGTH

TRIAD ENGINEERING, INC.
4980 TEAYS VALLEY ROAD
P.O. BOX 1435
ST. ALBANS, WV 25177
PHONE No. (304) 755-0721
FAX. No. (304) 755-1880



ST. ALBANS, LOGAN & MORGANTOWN, WEST VIRGINIA
WINCHESTER & HARRISONBURG, VIRGINIA
GREENSBURG, PENNSYLVANIA

ROCK CORE COMPRESSIVE STRENGTH WORKSHEET

PROJECT No. C00553 DATE: 2/15/01

PROJECT NAME: Big Branch Slurry Impoundment

CORE No. DH1-3 (83.9'-84.2') TYPE OF CURE _____

LENGTH (AFTER CAP) #1: 3.960 in.

#2: 3.965 in. AVERAGE: 3.963 in.

#3: 3.960 in.

DIAMETER #1: 1.980 in.

#2: 1.980 in. AVERAGE: 1.980 in.

#3: 1.980 in.

LENGTH TO DIAMETER RATIO (L/D) 2.00

AREA: 3.08 in.² CORRECTION FACTOR: 1

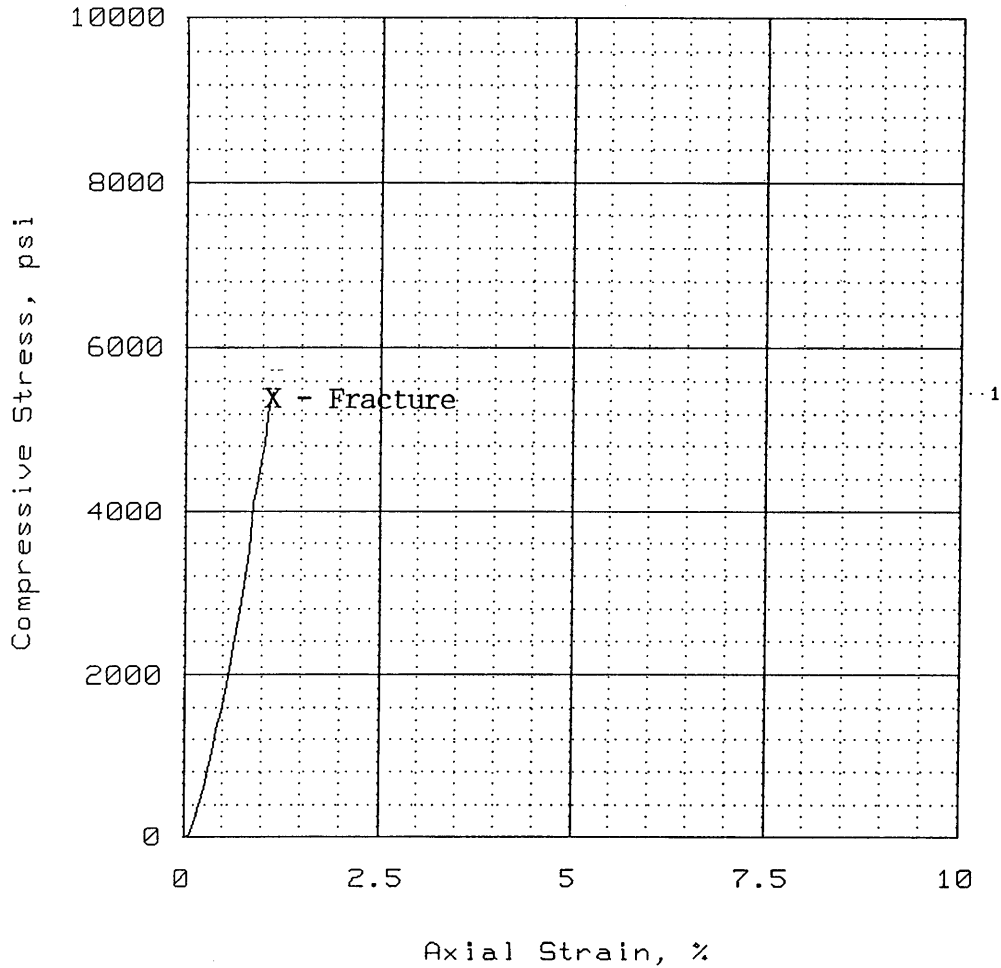
LOAD: 18,800 lbs PSI: 6,100

CORRECTED PSI: 6,100

REMARKS: _____

TESTED BY: J.M. Sayre CHECKED BY: M. Ali Dastgheib

UNCONFINED COMPRESSION TEST



Sample number:	1			
Unconfined strength, psi	5464			
Undrained shear strength, psi	2732			
Strain rate, %/min				
Water content, %	0.0			
Void ratio	535.7343			
Saturation, %	0.0			
Dry density, pcf	0.3			
Specimen diameter, in	1.99			
Specimen height, in	3.92			

Description: LT. GRAY MED. GRAINED SANDSTONE

LL =	PL =	PI =	GS = 2.7	Type: ROCK
------	------	------	----------	------------

Project No.: C00553
 Date: 03/01/01
 Remarks:

Client: US DEPARTMENT OF LABOR
 Project: BIG BRANCH SLURRY IMPOUNDMENT
 Location: DH1-3
 DEPTH: 85.0' - 85.4'

UNCONFINED COMPRESSION TEST
TRIAD ENGINEERING, INC.

Fig No.

TRIAD ENGINEERING, INC.
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P.O. BOX 1435
ST. ALBANS, WV 25177
PHONE No. (304) 755-0721
FAX. No. (304) 755-1880



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GREENSBURG, PENNSYLVANIA

ROCK CORE COMPRESSIVE STRENGTH WORKSHEET

PROJECT No. C00553 DATE: 2/15/01

PROJECT NAME: Big Branch Slurry Impoundment

CORE No. DH1-4 (78.9'-79.3') TYPE OF CURE _____

LENGTH (AFTER CAP) #1: 3.715 in.

#2: 3.720 in. AVERAGE: 3.717 in.

#3: 3.720 in.

DIAMETER #1: 1.975 in.

#2: 1.975 in. AVERAGE: 1.975 in.

#3: 1.975 in.

LENGTH TO DIAMETER RATIO (L/D) 1.88

AREA: 3.06 in.² CORRECTION FACTOR: 0.994

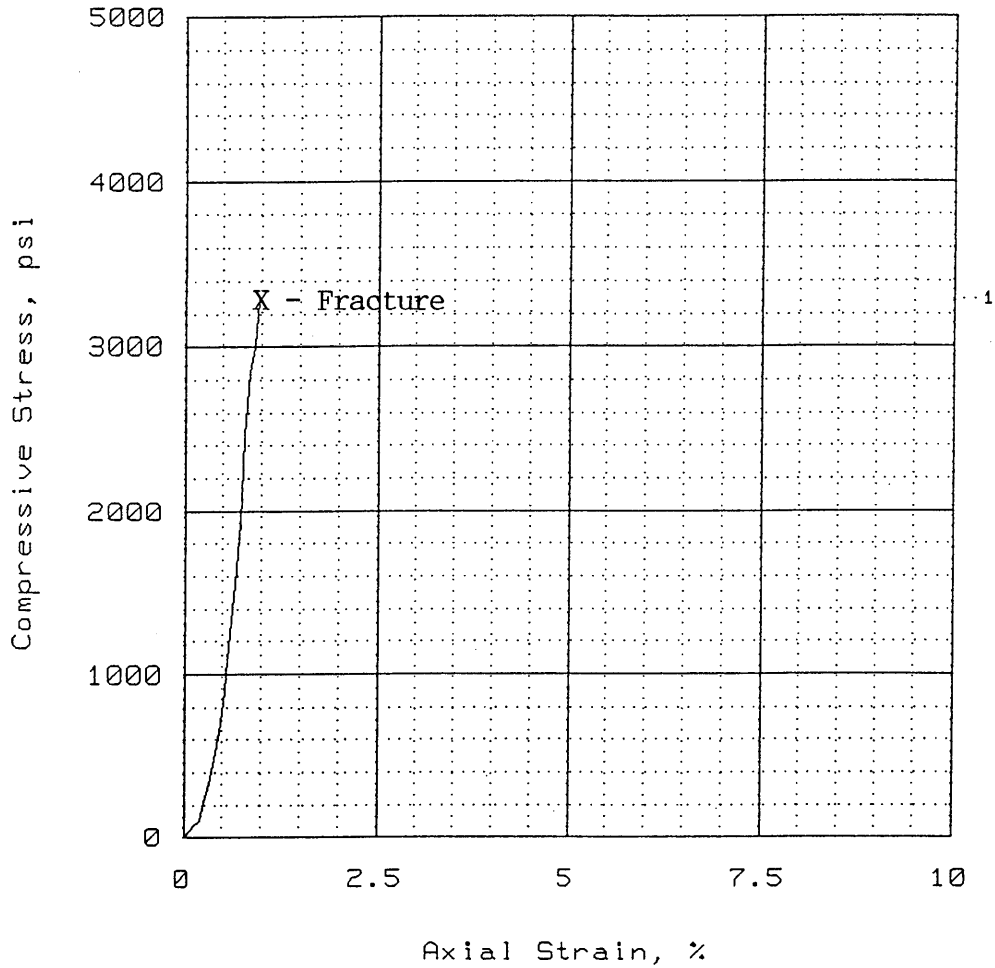
LOAD: 15,250 lbs PSI: 4,980

CORRECTED PSI: 4,950

REMARKS: _____

TESTED BY: J.M. Sayre CHECKED BY: M. Ali Dastgheib

UNCONFINED COMPRESSION TEST



Sample number:	1			
Unconfined strength, psi	3291			
Undrained shear strength, psi	1645			
Strain rate, %/min				
Water content, %	0.0			
Void ratio				
Saturation, %	0.0			
Dry density, pcf				
Specimen diameter, in	1.98			
Specimen height, in	3.88			

Description: LT. BROWN MED. GRAINED SANDSTONE

LL = PL = PI = GS = 2.7 Type: ROCK

Project No.: C00553

Date: 03/01/01

Remarks:

Client: US DEPARTMENT OF LABOR

Project: BIG BRANCH SLURRY IMPOUNDMENT

Location: DH1-4

DEPTH: 83.2' -83.8'

UNCONFINED COMPRESSION TEST

TRIAD ENGINEERING, INC.

Fig No.

TRIAD ENGINEERING, INC.
4980 TEAYS VALLEY ROAD
P.O. BOX 1435
ST. ALBANS, WV 25177
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WINCHESTER & HARRISONBURG, VIRGINIA
GREENSBURG, PENNSYLVANIA

ROCK CORE COMPRESSIVE STRENGTH WORKSHEET

PROJECT No. C00553 DATE: 2/15/01

PROJECT NAME: Big Branch Slurry Impoundment

CORE No. DH1-5 (83.2'-83.7') TYPE OF CURE _____

LENGTH (AFTER CAP) #1: 3.855 in.
#2: 3.870 in. AVERAGE: 3.862 in.

#3: 3.860 in.

DIAMETER #1: 1.970 in.

#2: 1.970 in. AVERAGE: 1.970 in.

#3: 1.970 in.

LENGTH TO DIAMETER RATIO (L/D) 1.96

AREA: 3.05 in.² CORRECTION FACTOR: 1

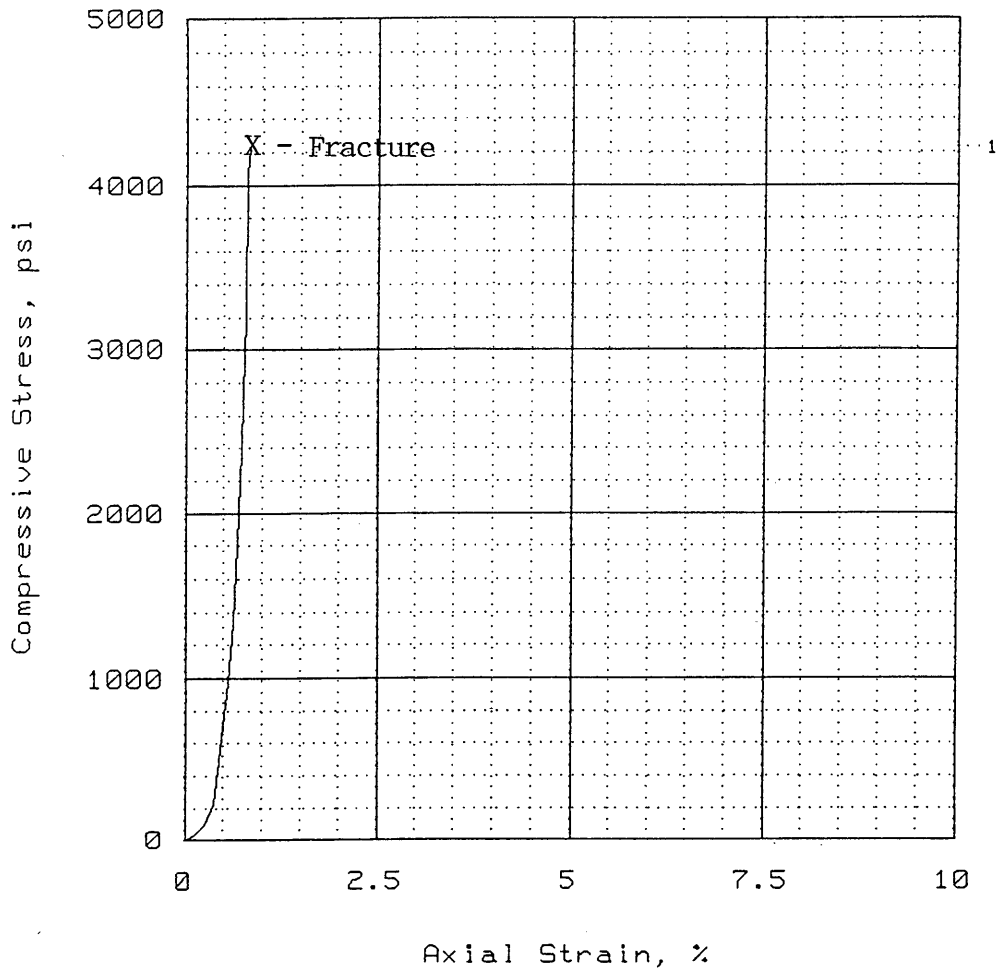
LOAD: 18,050 lbs PSI: 5,920

CORRECTED PSI: 5,920

REMARKS: _____

TESTED BY: J.M. Sayre CHECKED BY: M.Ali Dastgheib

UNCONFINED COMPRESSION TEST



Sample number:	1			
Unconfined strength, psi	4230			
Undrained shear strength, psi	2115			
Strain rate, %/min				
Water content, %	0.0			
Void ratio				
Saturation, %	0.0			
Dry density, pcf				
Specimen diameter, in	1.97			
Specimen height, in	4.07			

Description: LT. GRAY MED. GRAINED SANDSTONE

LL =	PL =	PI =	GS = 2.7	Type: ROCK
------	------	------	----------	------------

Project No.: C00553 Date: 03/01/01 Remarks:	Client: US DEPARTMENT OF LABOR Project: BIG BRANCH SLURRY IMPOUNDMENT Location: DH1-5 DEPTH: 84.6' -85.1' <div style="text-align: center;"> UNCONFINED COMPRESSION TEST TRIAD ENGINEERING, INC. </div>
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Fig No.

TRIAD ENGINEERING, INC.
4980 TEAYS VALLEY ROAD
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FAX. No. (304) 755-1880



ST. ALBANS, LOGAN & MORGANTOWN, WEST VIRGINIA
WINCHESTER & HARRISONBURG, VIRGINIA
GREENSBURG, PENNSYLVANIA

ROCK CORE COMPRESSIVE STRENGTH WORKSHEET

PROJECT No. C00553 DATE: 2/15/01

PROJECT NAME: Big Branch Slurry Impoundment

CORE No. DH1-8 (81.2'-81.7') TYPE OF CURE _____

LENGTH (AFTER CAP) #1: 3.900 in.

#2: 3.900 in. AVERAGE: 3.903 in.

#3: 3.905 in.

DIAMETER #1: 1.985 in.

#2: 1.980 in. AVERAGE: 1.983 in.

#3: 1.985 in.

LENGTH TO DIAMETER RATIO (L/D) 1.97

AREA: 3.09 in.² CORRECTION FACTOR: 1

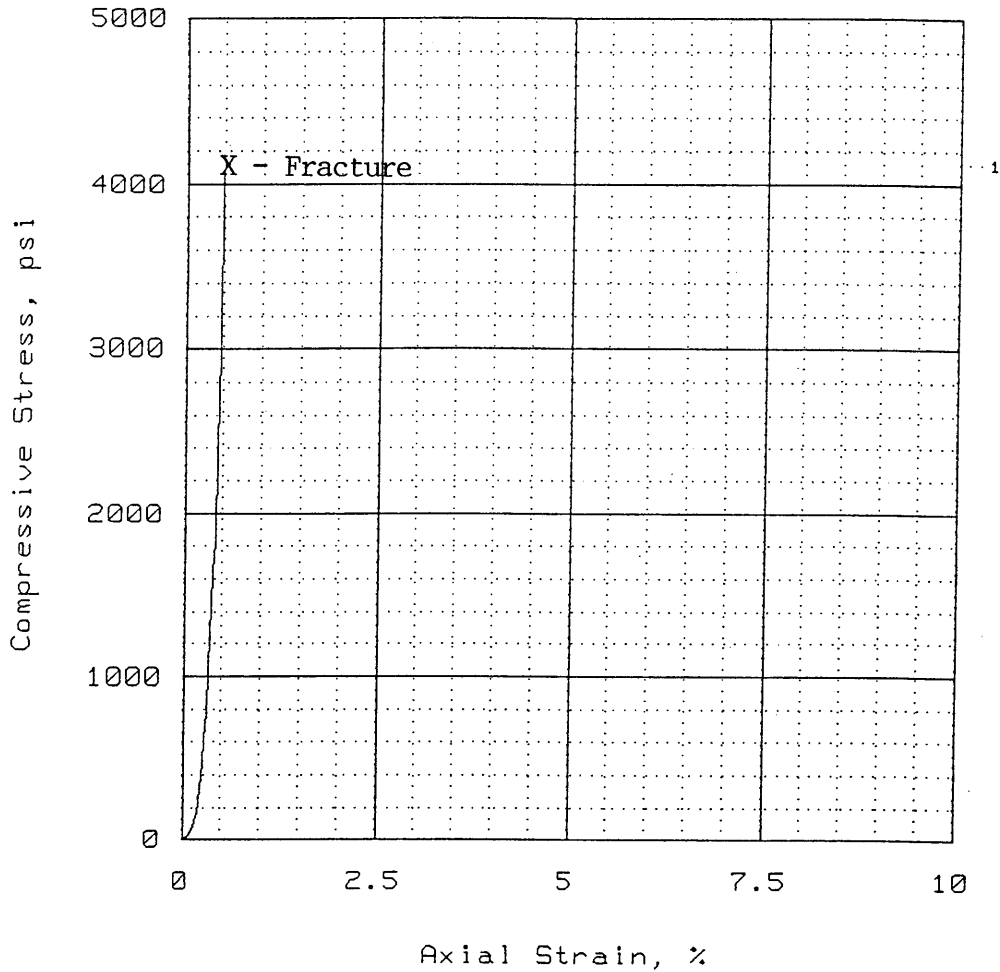
LOAD: 17,600 lbs PSI: 5,700

CORRECTED PSI: 5,700

REMARKS: _____

TESTED BY: M. Ali Dastgheib CHECKED BY: M. Ali Dastgheib

UNCONFINED COMPRESSION TEST



Sample number:	1			
Unconfined strength, psi	4125			
Undrained shear strength, psi	2063			
Strain rate, %/min				
Water content, %	0.0			
Void ratio				
Saturation, %	0.0			
Dry density, pcf				
Specimen diameter, in	1.98			
Specimen height, in	4.09			

Description: LT. GRAY MED. GRAINED SANDSTONE

LL =	PL =	PI =	GS = 2.75	Type: ROCK
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Project No.: C00553
 Date: 03/01/01
 Remarks:

Fig No.

Client: US DEPARTMENT OF LABOR

Project: BIG BRANCH SLURRY IMPOUNDMENT

Location: DH1-B
 DEPTH: 82.6' - 83.0'

UNCONFINED COMPRESSION TEST

TRIAD ENGINEERING, INC.

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ROCK CORE COMPRESSIVE STRENGTH WORKSHEET

PROJECT No. C00553 DATE: 2/16/01

PROJECT NAME: Big Branch Slurry Impoundment

CORE No. DH2-1 (91.5'-91.7') TYPE OF CURE _____

LENGTH (AFTER CAP) #1: 3.150 in.

#2: 3.155 in. AVERAGE: 3.153 in.

#3: 3.155 in.

DIAMETER #1: 1.980 in.

#2: 1.955 in. AVERAGE: 1.970 in.

#3: 1.975 in.

LENGTH TO DIAMETER RATIO (L/D) 1.60

AREA: 3.05 in.² CORRECTION FACTOR: 0.968

LOAD: 4,050 lbs PSI: 1,330

CORRECTED PSI: 1,290

REMARKS: _____

TESTED BY: M. Ali Dastgheib CHECKED BY: M. Ali Dastgheib

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ROCK CORE COMPRESSIVE STRENGTH WORKSHEET

PROJECT No. C00553 DATE: 2/16/01

PROJECT NAME: Big Branch Slurry Impoundment

CORE No. DH2-1 (95.0'-95.3') TYPE OF CURE _____

LENGTH (AFTER CAP) #1: 3.290 in.

#2: 3.295 in. AVERAGE: 3.293 in.

#3: 3.295 in.

DIAMETER #1: 1.980 in.

#2: 1.985 in. AVERAGE: 1.985 in.

#3: 1.990 in.

LENGTH TO DIAMETER RATIO (L/D) 1.65

AREA: 3.09 in.² CORRECTION FACTOR: 0.972

LOAD: 11,750 lbs PSI: 3,800

CORRECTED PSI: 3,690

REMARKS: _____

TESTED BY: M. Ali Dastgheib CHECKED BY: M. Ali Dastgheib

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ROCK CORE COMPRESSIVE STRENGTH WORKSHEET

PROJECT No. C00553 DATE: 2/16/01

PROJECT NAME: Big Branch Slurry Impoundment

CORE No. DH3-3 (93.0'-93.3') TYPE OF CURE _____

LENGTH (AFTER CAP) #1: 2.975 in.
#2: 2.985 in. AVERAGE: 2.978 in.

#3: 2.975 in.

DIAMETER #1: 1.975 in.

#2: 1.980 in. AVERAGE: 1.977 in.

#3: 1.975 in.

LENGTH TO DIAMETER RATIO (L/D) 1.51

AREA: 3.07 in.² CORRECTION FACTOR: 0.961

LOAD: 11,500 lbs PSI: 3,750

CORRECTED PSI: 3,600

REMARKS: _____

TESTED BY: M. Ali Dastgheib CHECKED BY: M. Ali Dastgheib

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ROCK CORE COMPRESSIVE STRENGTH WORKSHEET

PROJECT No. C00553 DATE: 2/16/01

PROJECT NAME: Big Branch Slurry Impoundment

CORE No. DH3-3 (95.5'-95.8') TYPE OF CURE _____

LENGTH (AFTER CAP) #1: 3.400 in.

#2: 3.400 in. AVERAGE: 3.403 in.

#3: 3.405 in.

DIAMETER #1: 1.980 in.

#2: 1.995 in. AVERAGE: 1.988 in.

#3: 1.990 in.

LENGTH TO DIAMETER RATIO (L/D) 1.71

AREA: 3.10 in.² CORRECTION FACTOR: 0.977

LOAD: 12,000 lbs PSI: 3,870

CORRECTED PSI: 3,780

REMARKS: _____

TESTED BY: M. Ali Dastgheib CHECKED BY: M. Ali Dastgheib

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ROCK CORE COMPRESSIVE STRENGTH WORKSHEET

PROJECT No. C00553 DATE: 2/16/01

PROJECT NAME: Big Branch Slurry Impoundment

CORE No. DHP-1 (91.3'-91.5') TYPE OF CURE _____

LENGTH (AFTER CAP) #1: 2.730 in.

#2: 2.735 in. AVERAGE: 2.728 in.

#3: 2.720 in.

DIAMETER #1: 1.990 in.

#2: 1.985 in. AVERAGE: 1.987 in.

#3: 1.985 in.

LENGTH TO DIAMETER RATIO (L/D) 1.37

AREA: 3.10 in.² CORRECTION FACTOR: 0.944

LOAD: 13,050 lbs PSI: 4,210

CORRECTED PSI: 3,970

REMARKS: _____

TESTED BY: M. Ali Dastgheib CHECKED BY: M. Ali Dastgheib

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ROCK CORE COMPRESSIVE STRENGTH WORKSHEET

PROJECT No. C00553 DATE: 2/16/01

PROJECT NAME: Big Branch Slurry Impoundment

CORE No. DHP-1 (96.6'-96.9') TYPE OF CURE _____

LENGTH (AFTER CAP) #1: 3.075 in.

#2: 3.082 in. AVERAGE: 3.077 in.

#3: 3.075 in.

DIAMETER #1: 2.000 in.

#2: 1.990 in. AVERAGE: 1.993 in.

#3: 1.990 in.

LENGTH TO DIAMETER RATIO (L/D) 1.54

AREA: 3.11 in.² CORRECTION FACTOR: 0.963

LOAD: 13,050 lbs PSI: 4,196

CORRECTED PSI: 4,040

REMARKS: _____

TESTED BY: M. Ali Dastgheib CHECKED BY: M. Ali Dastgheib

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ROCK CORE COMPRESSIVE STRENGTH WORKSHEET

PROJECT No. C00553 DATE: 2/16/01

PROJECT NAME: Big Branch Slurry Impoundment

CORE No. DHP-1 (97.5'-97.8') TYPE OF CURE _____

LENGTH (AFTER CAP) #1: 3.790 in.

#2: 3.800 in. AVERAGE: 3.797 in.

#3: 3.800 in.

DIAMETER #1: 2.000 in.

#2: 2.005 in. AVERAGE: 1.998 in.

#3: 1.990 in.

LENGTH TO DIAMETER RATIO (L/D) 1.900

AREA: 3.13 in.² CORRECTION FACTOR: 0.996

LOAD: 9,250 lbs PSI: 2,955

CORRECTED PSI: 2,940

REMARKS: _____

TESTED BY: M. Ali Dastgheib CHECKED BY: M. Ali Dastgheib

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ROCK CORE COMPRESSIVE STRENGTH WORKSHEET

PROJECT No. C00553 DATE: 2/16/01

PROJECT NAME: Big Branch Slurry Impoundment

CORE No. DHX-3 (89.5'-89.8') TYPE OF CURE _____

LENGTH (AFTER CAP) #1: 3.450 in.

#2: 3.455 in. AVERAGE: 3.456 in.

#3: 3.457 in.

DIAMETER #1: 1.980 in.

#2: 1.980 in. AVERAGE: 1.980 in.

#3: 1.980 in.

LENGTH TO DIAMETER RATIO (L/D) 1.74

AREA: 3.08 in.² CORRECTION FACTOR: 0.979

LOAD: 15,000 lbs PSI: 4,870

CORRECTED PSI: 4,770

REMARKS: _____

TESTED BY: M. Ali Dastgheib CHECKED BY: M. Ali Dastgheib

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ROCK CORE COMPRESSIVE STRENGTH WORKSHEET

PROJECT No. C00553 DATE: 2/16/01

PROJECT NAME: Big Branch Slurry Impoundment

CORE No. DHX-3 (91.6'-91.9') TYPE OF CURE _____

LENGTH (AFTER CAP) #1: 4.500 in.

#2: 4.510 in. AVERAGE: 4.502 in.

#3: 4.497 in.

DIAMETER #1: 1.985 in.

#2: 1.950 in. AVERAGE: 1.974 in.

#3: 1.987 in.

LENGTH TO DIAMETER RATIO (L/D) 2.28

AREA: 3.06 in.² CORRECTION FACTOR: 1

LOAD: 9,500 lbs PSI: 3,100

CORRECTED PSI: 3,100

REMARKS: _____

TESTED BY: M. Ali Dastgheib CHECKED BY: M. Ali Dastgheib

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ROCK CORE COMPRESSIVE STRENGTH WORKSHEET

PROJECT No. C00553 DATE: _____

PROJECT NAME: Big Branch Slurry Impoundment

CORE No. DHX-3 (93.5'-93.8') TYPE OF CURE _____

LENGTH (AFTER CAP) #1: 3.950 in.

#2: 3.965 in. AVERAGE: 3.957 in.

#3: 3.955 in.

DIAMETER #1: 1.975 in.

#2: 1.975 in. AVERAGE: 1.975 in.

#3: 1.995 in.

LENGTH TO DIAMETER RATIO (L/D) 2.00

AREA: 3.06 in.² CORRECTION FACTOR: 1

LOAD: 10,000 lbs PSI: 3,270

CORRECTED PSI: 3,270

REMARKS: _____

TESTED BY: M. Ali Dastgheib CHECKED BY: M. Ali Dastgheib

MODULUS OF RUPTURE