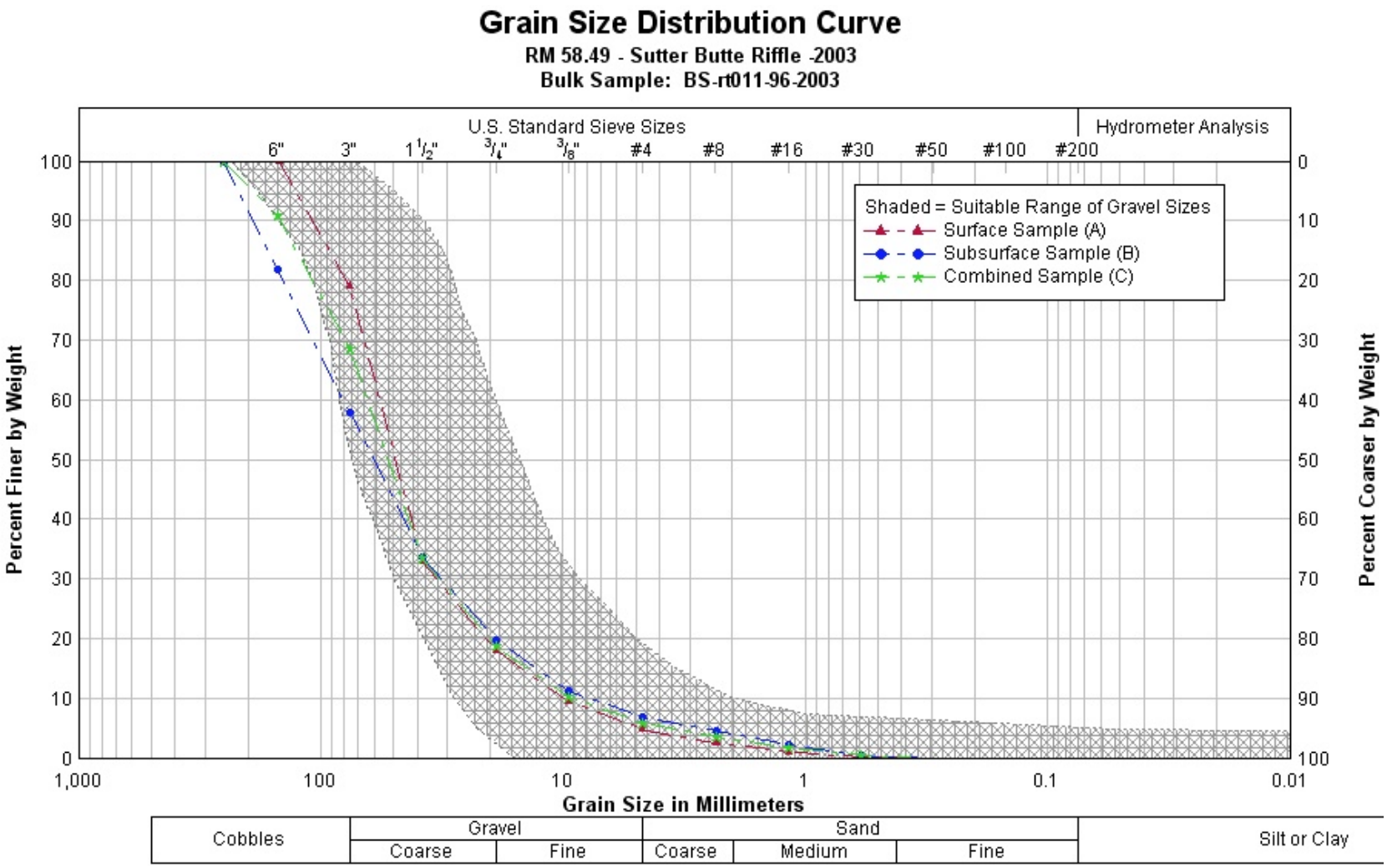
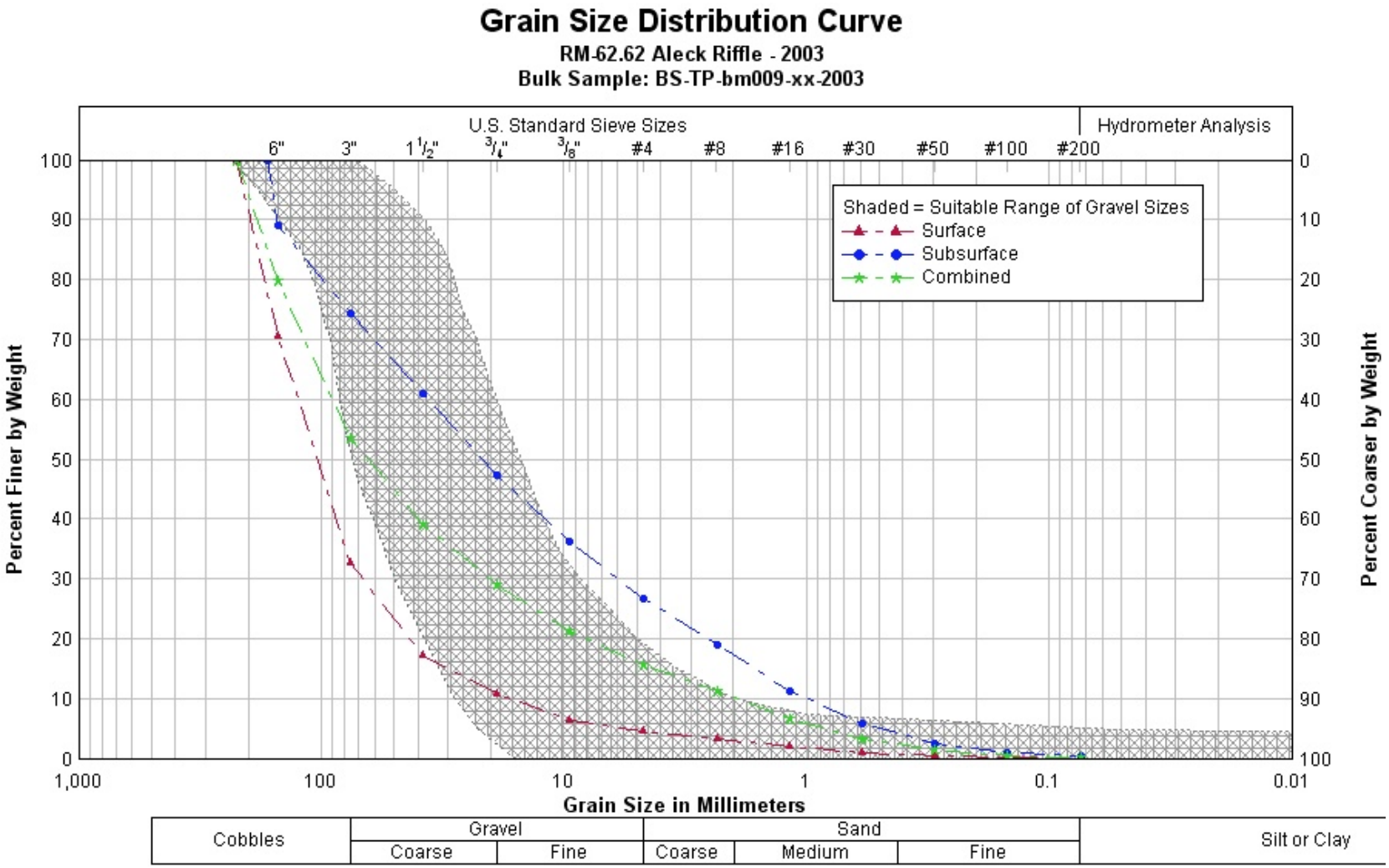
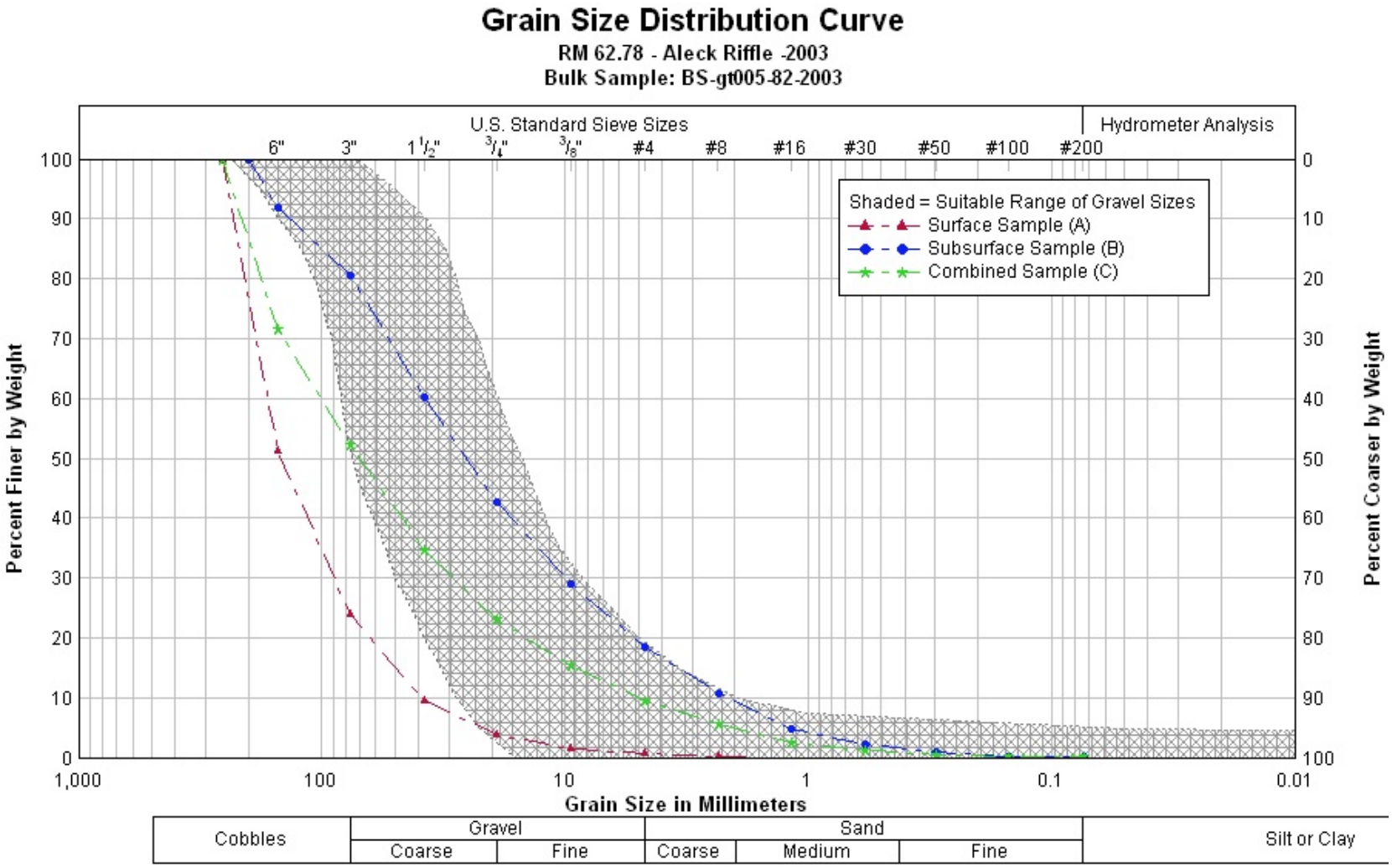
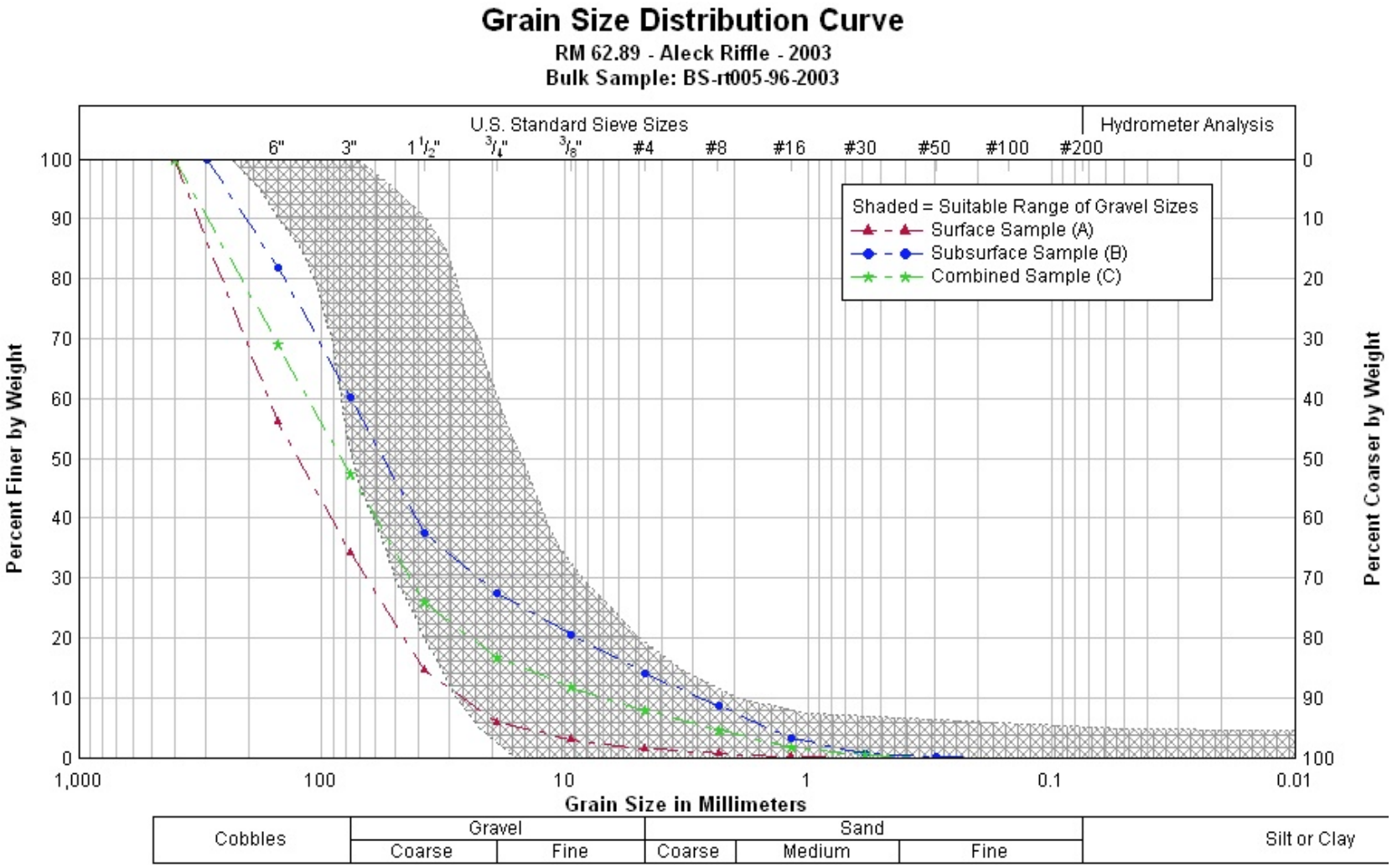
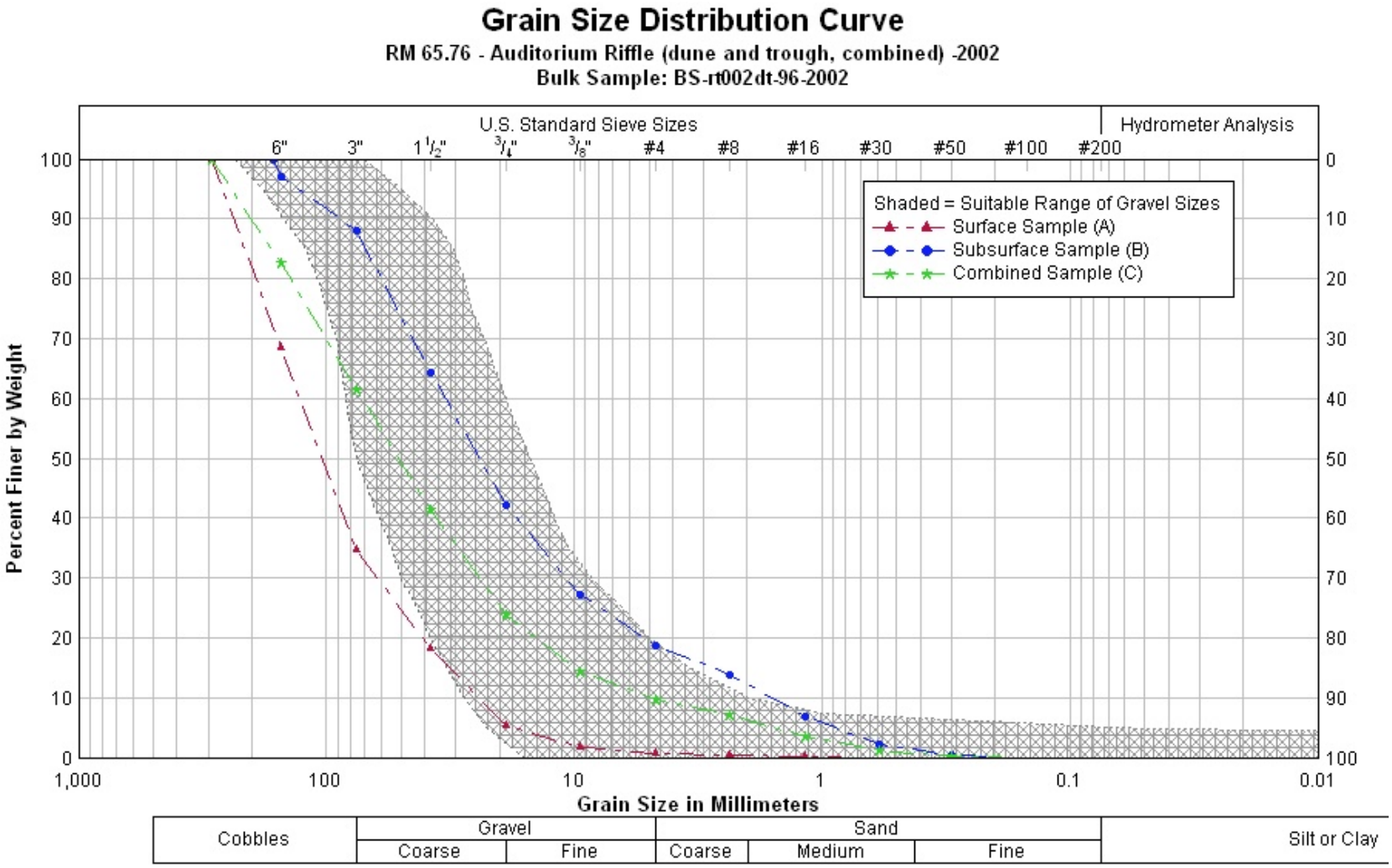
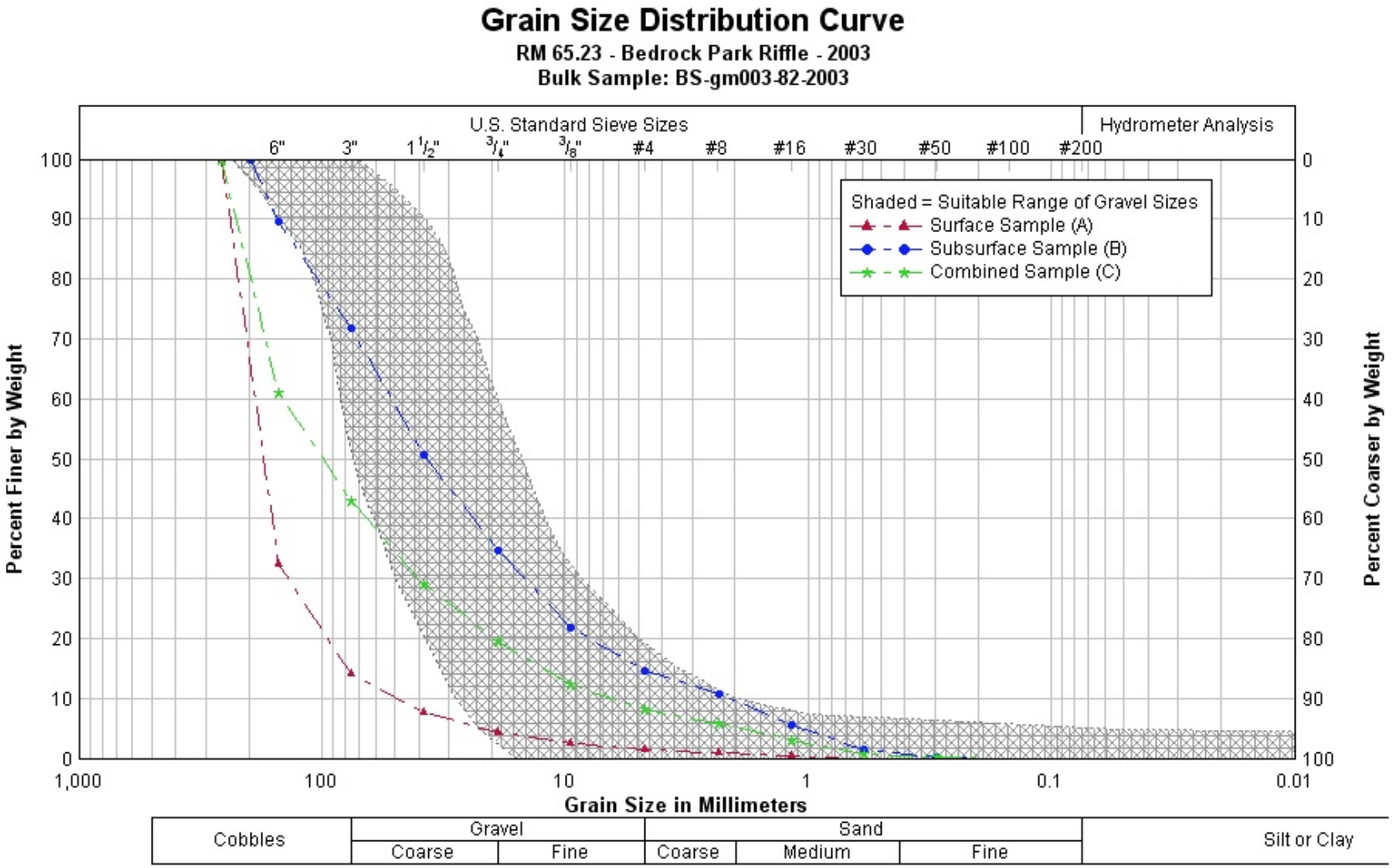

Grain Size Distribution Curve
RM 58.49 - Sutter Butte Riffle -2003
Bulk Sample: BS-rt011-96-2003
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay

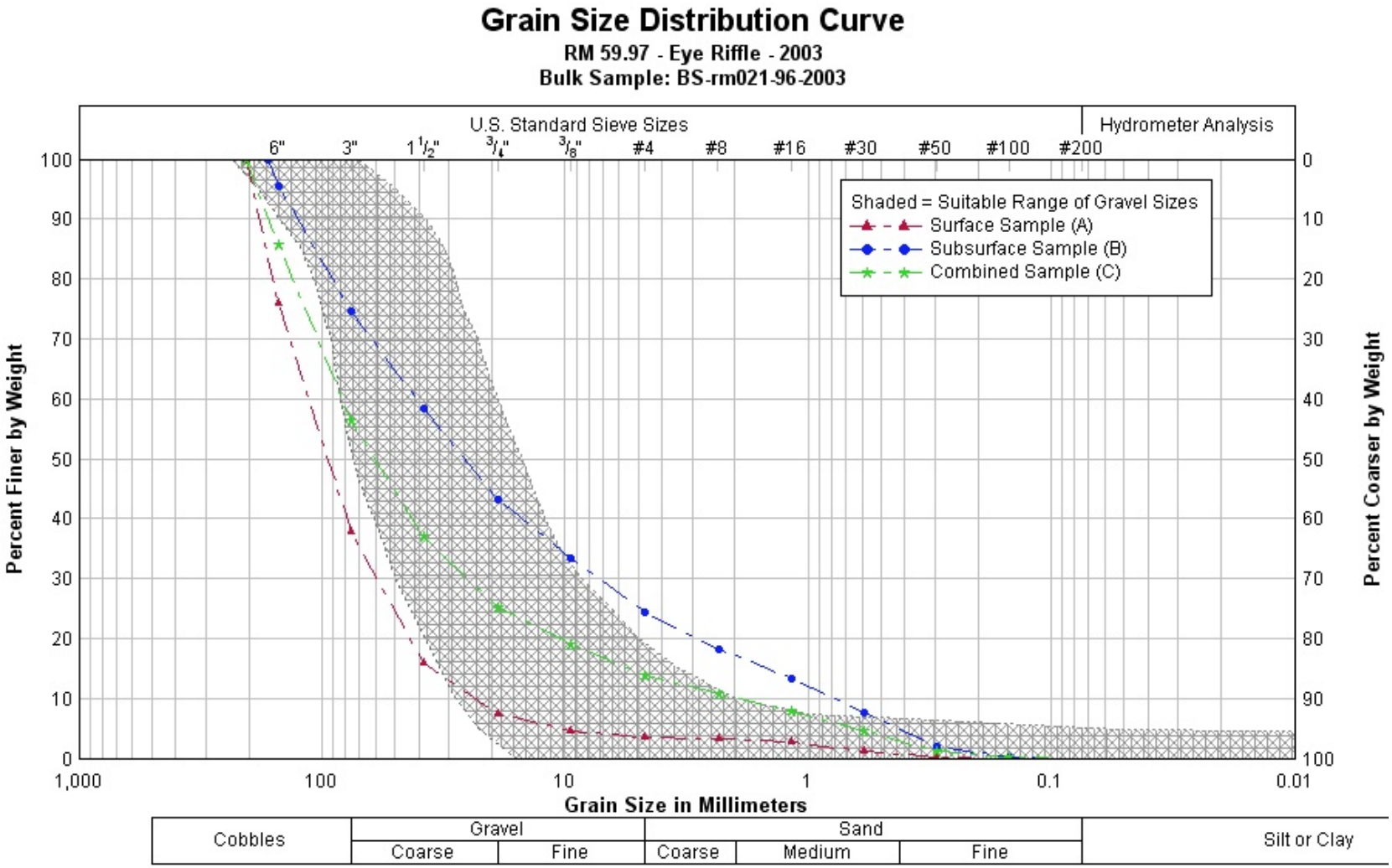

Grain Size Distribution Curve
RM-62.62 Aleck Riffle - 2003
Bulk Sample: BS-TP-bm009-xx-2003
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface
Subsurface
Combined
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay

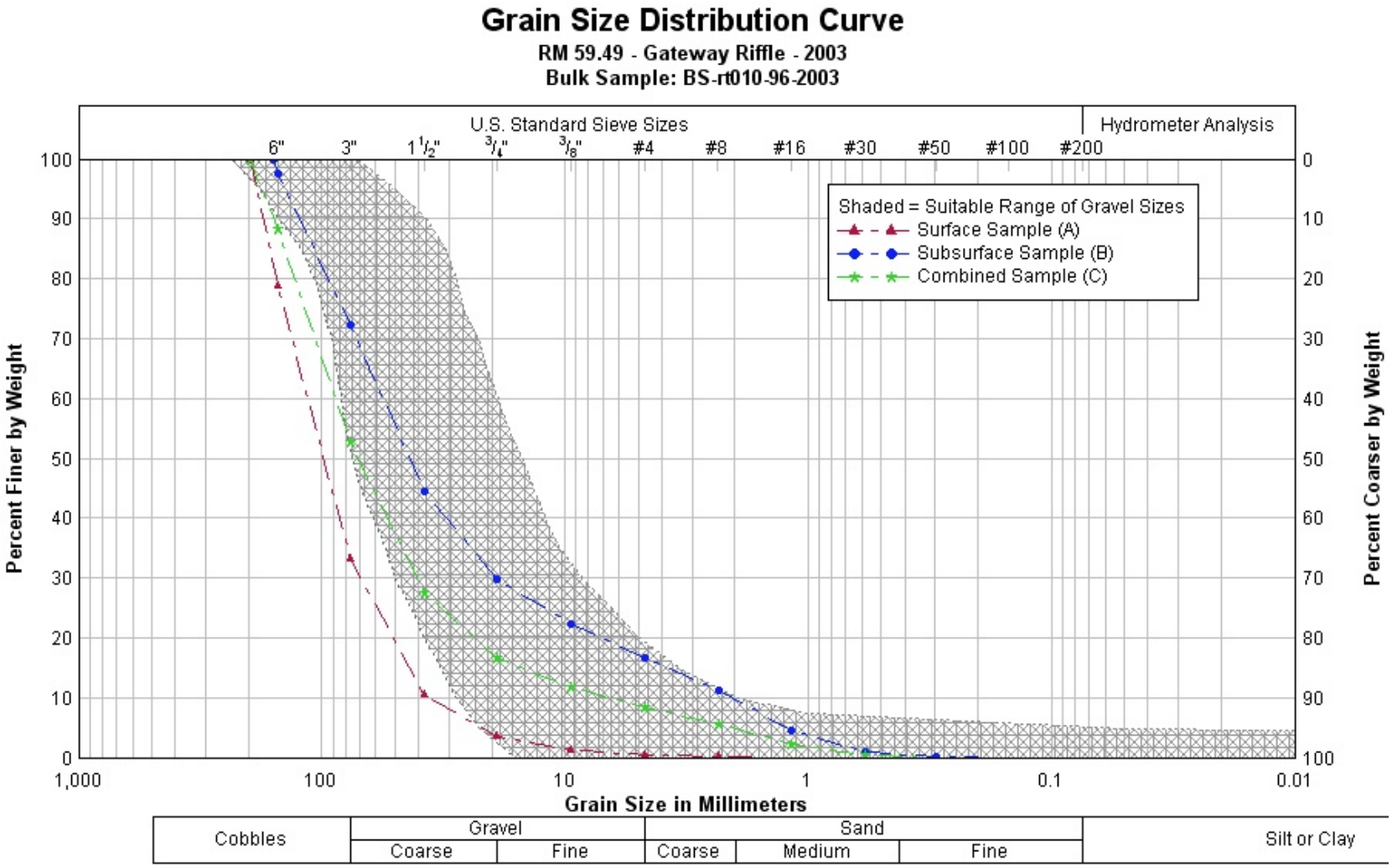

Grain Size Distribution Curve
RM 62.78 - Aleck Riffle -2003
Bulk Sample: BS-gt005-82-2003
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay

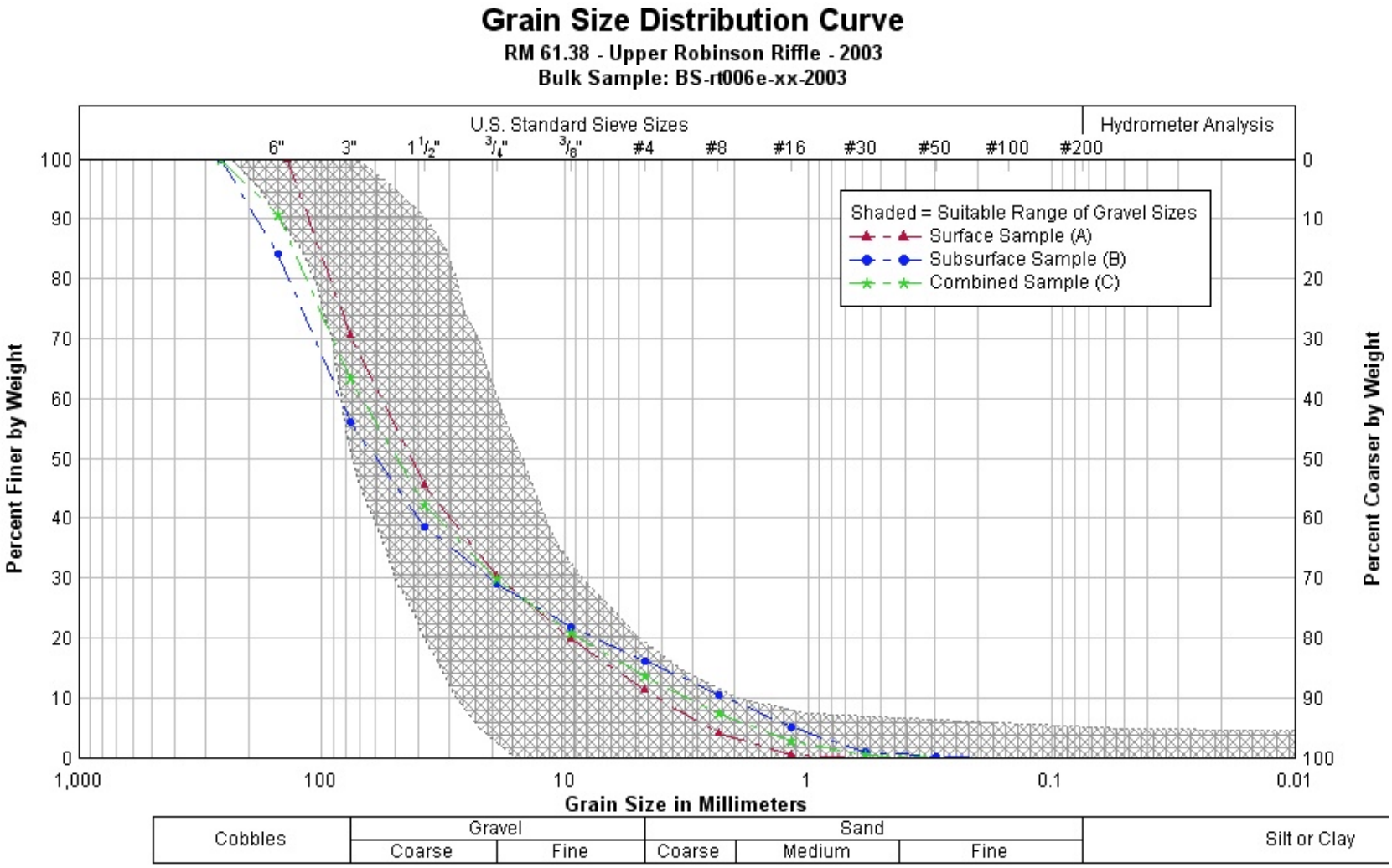

Grain Size Distribution Curve
RM 62.89 - Aleck Riffle - 2003
Bulk Sample: BS-rt005-96-2003
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay

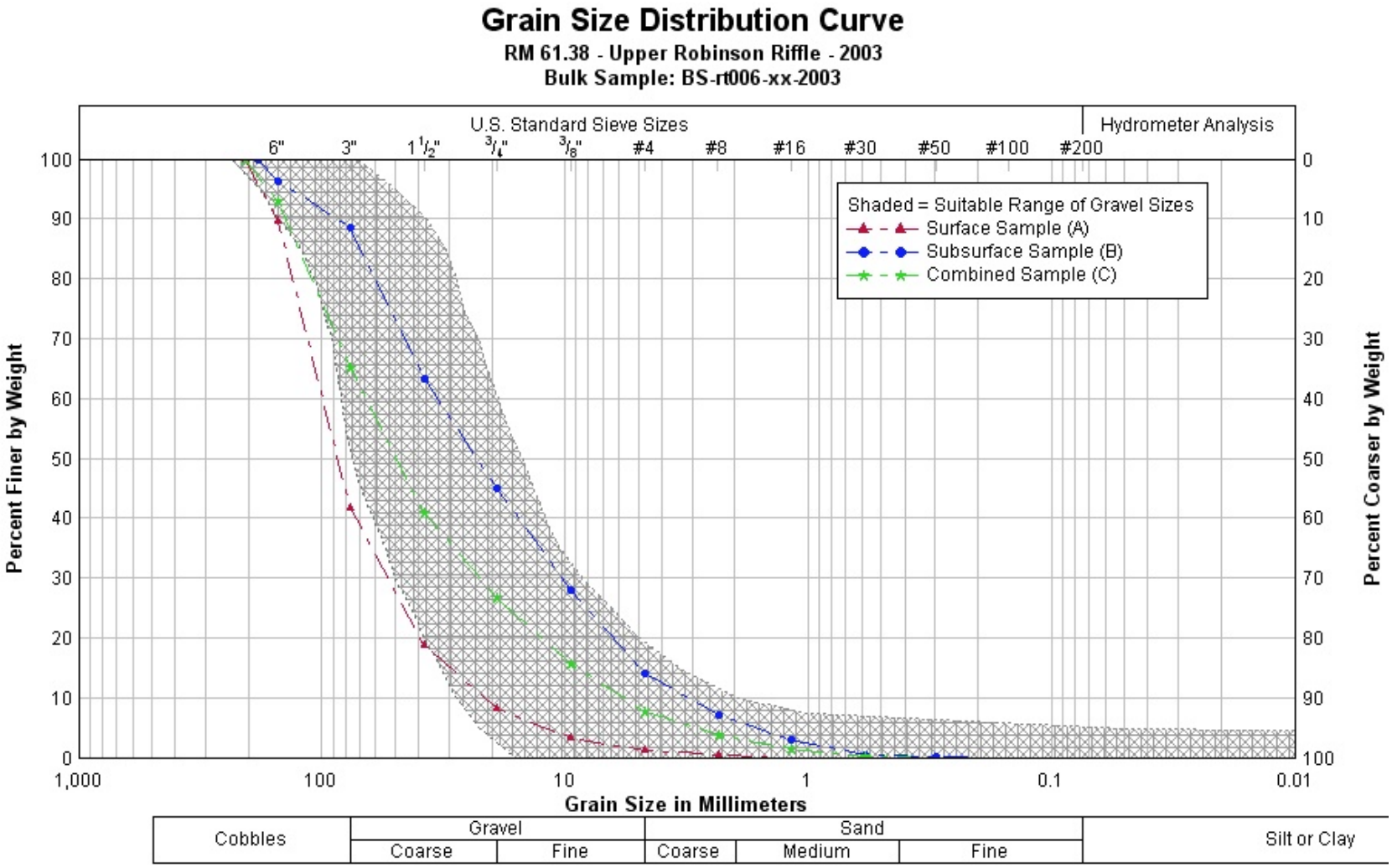

Grain Size Distribution Curve
RM 65.76 - Auditorium Riffle (dune and trough, combined) -2002
Bulk Sample: BS-rt002dt-96-2002
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay

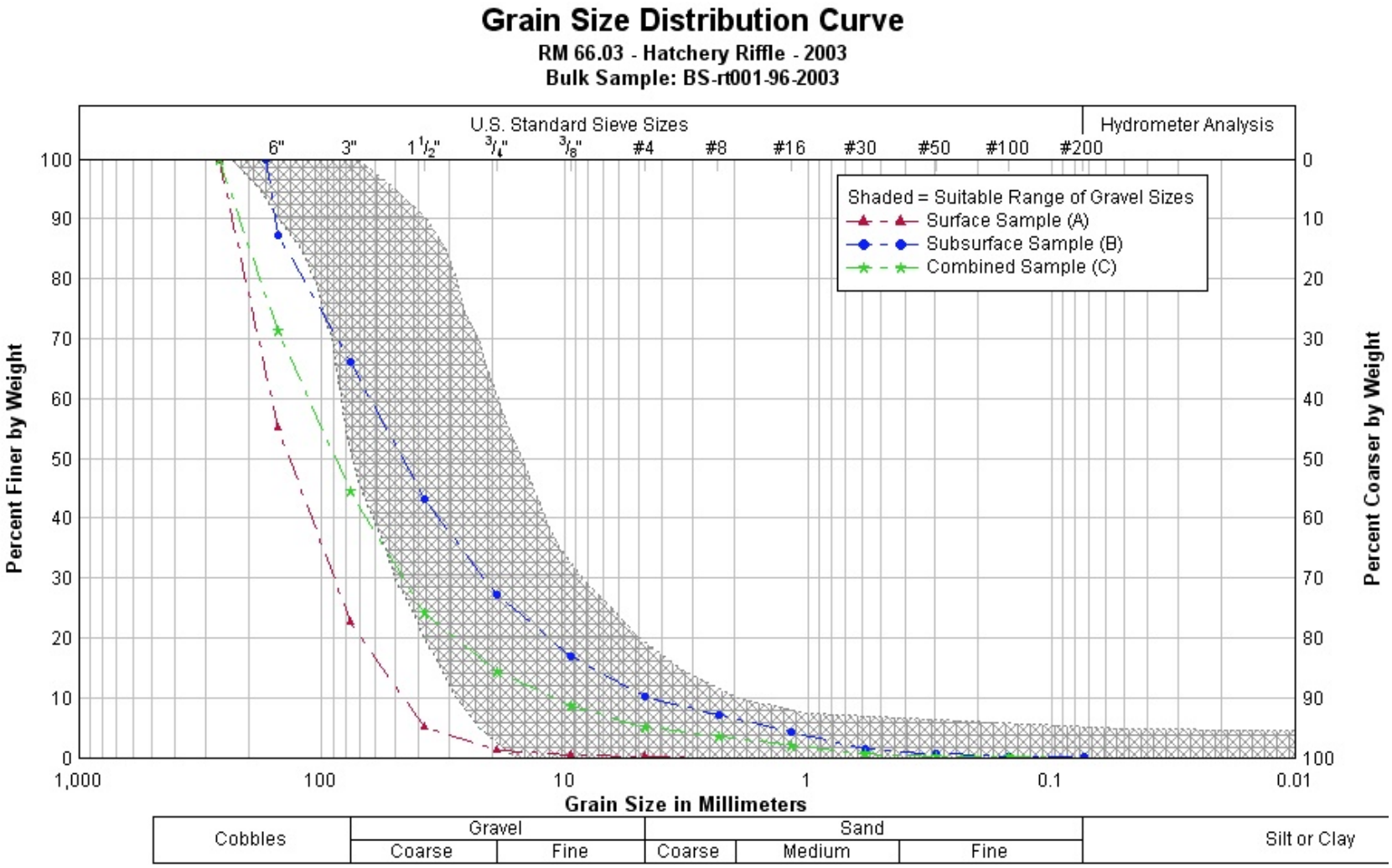

Grain Size Distribution Curve
RM 65.23 - Bedrock Park Riffle - 2003
Bulk Sample: BS-gm003-82-2003
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay

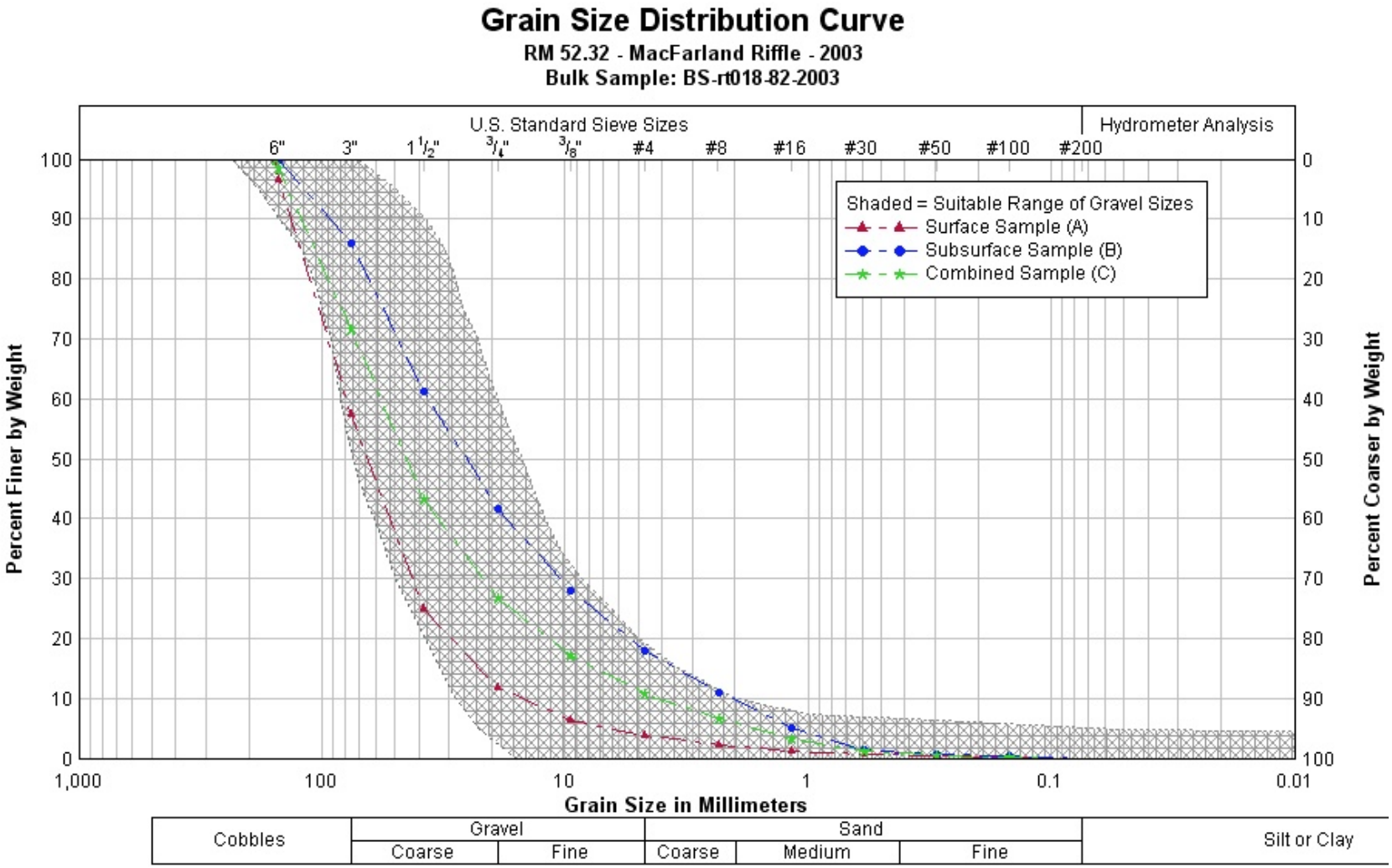

Grain Size Distribution Curve
RM 59.97 - Eye Riffle - 2003
Bulk Sample: BS-rm021-96-2003
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay

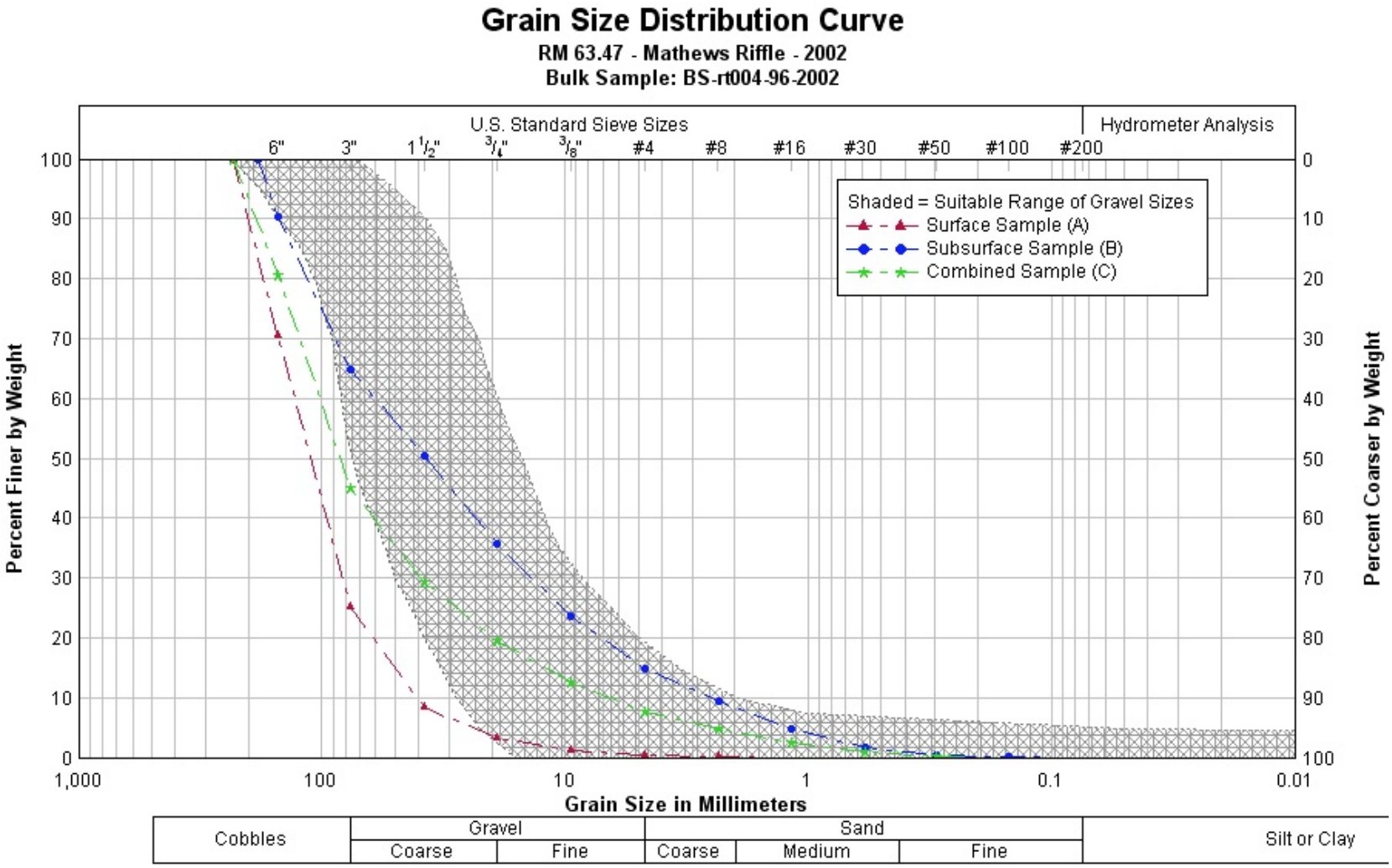

Grain Size Distribution Curve
RM 59.49 - Gateway Riffle - 2003
Bulk Sample: BS-rt010-96-2003
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay

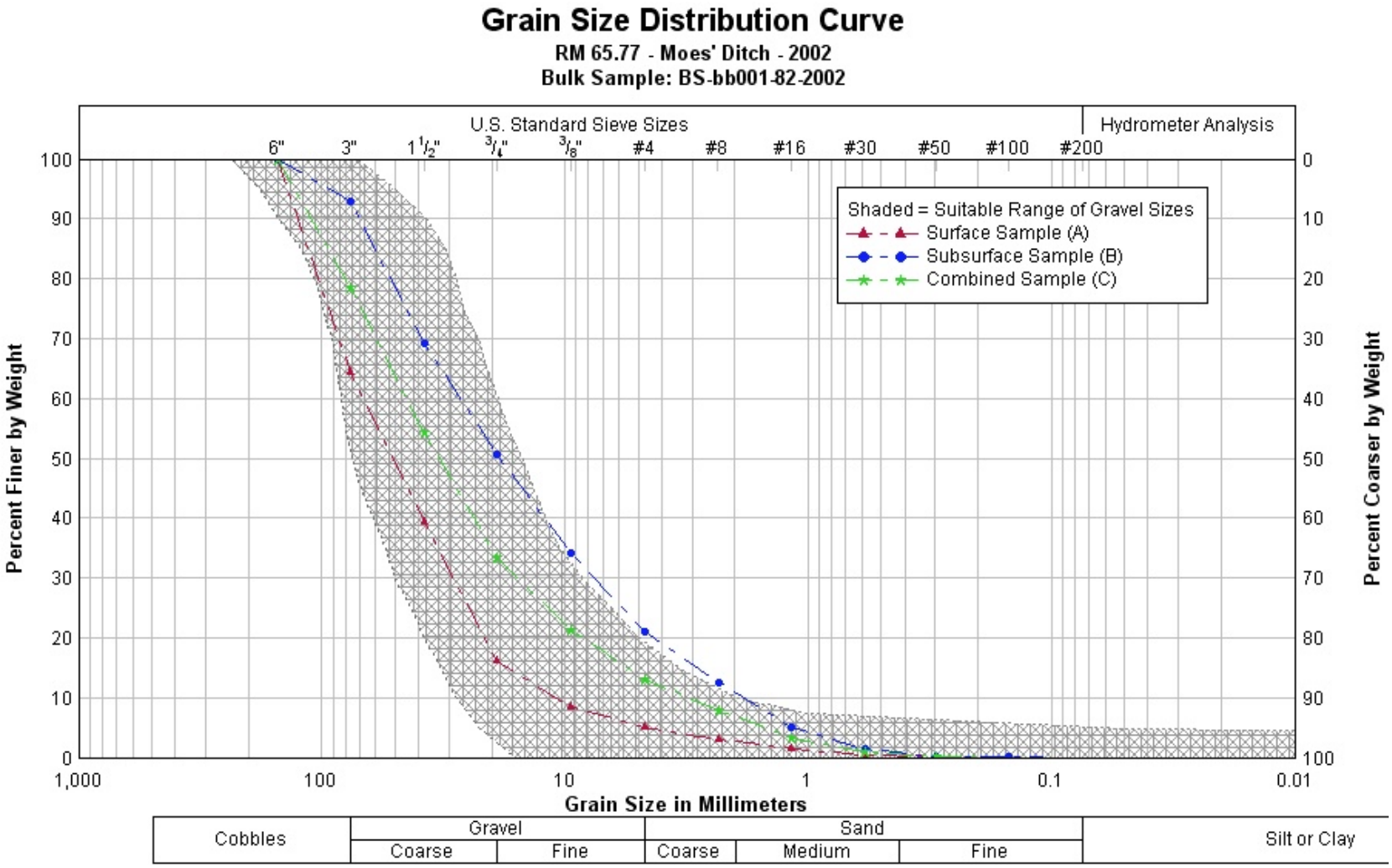

Grain Size Distribution Curve
RM 61.38 - Upper Robinson Riffle - 2003
Bulk Sample: BS-rt006e-xx-2003
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay

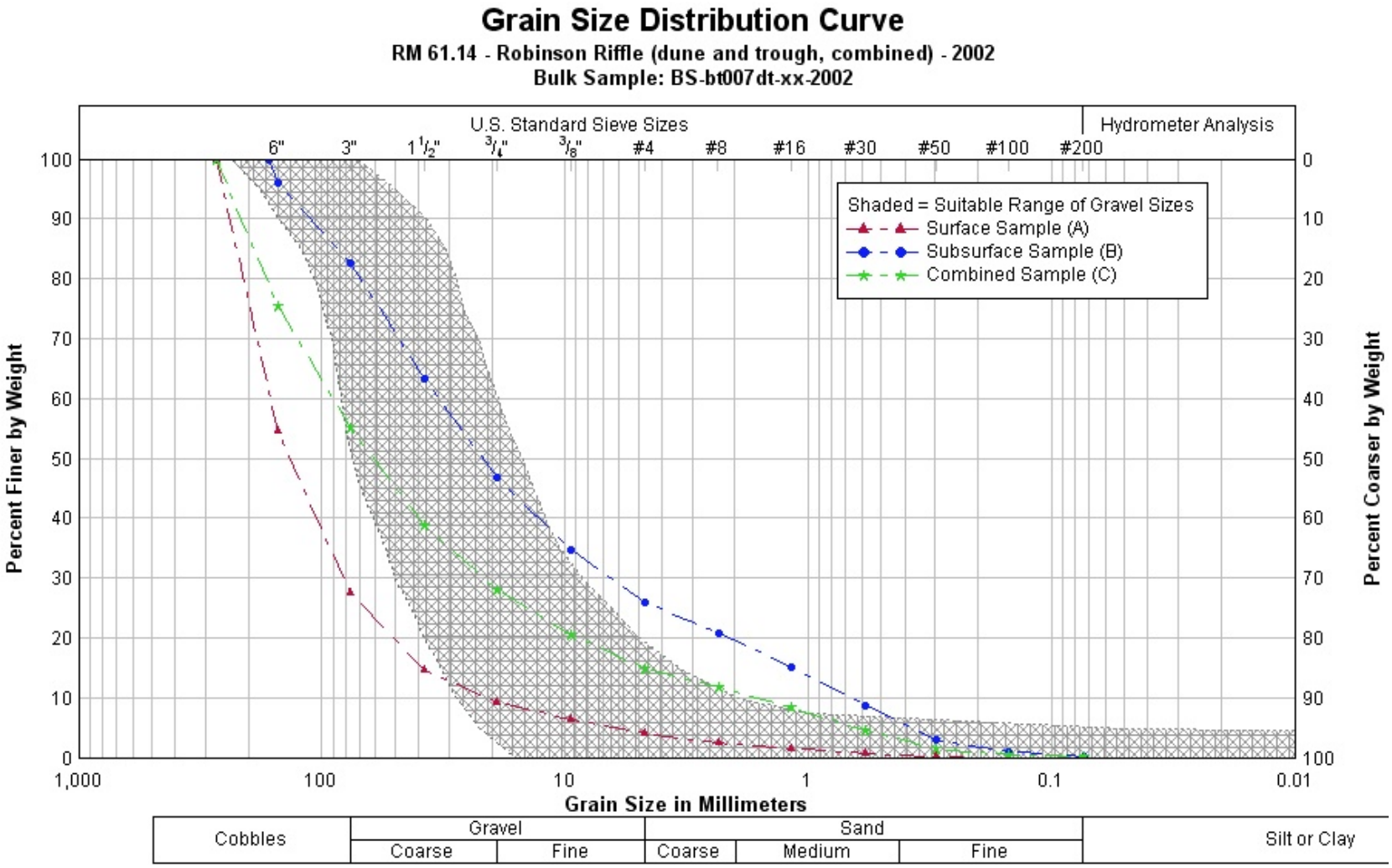

Grain Size Distribution Curve
RM 61.38 - Upper Robinson Riffle - 2003
Bulk Sample: BS-rt006-xx-2003
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay

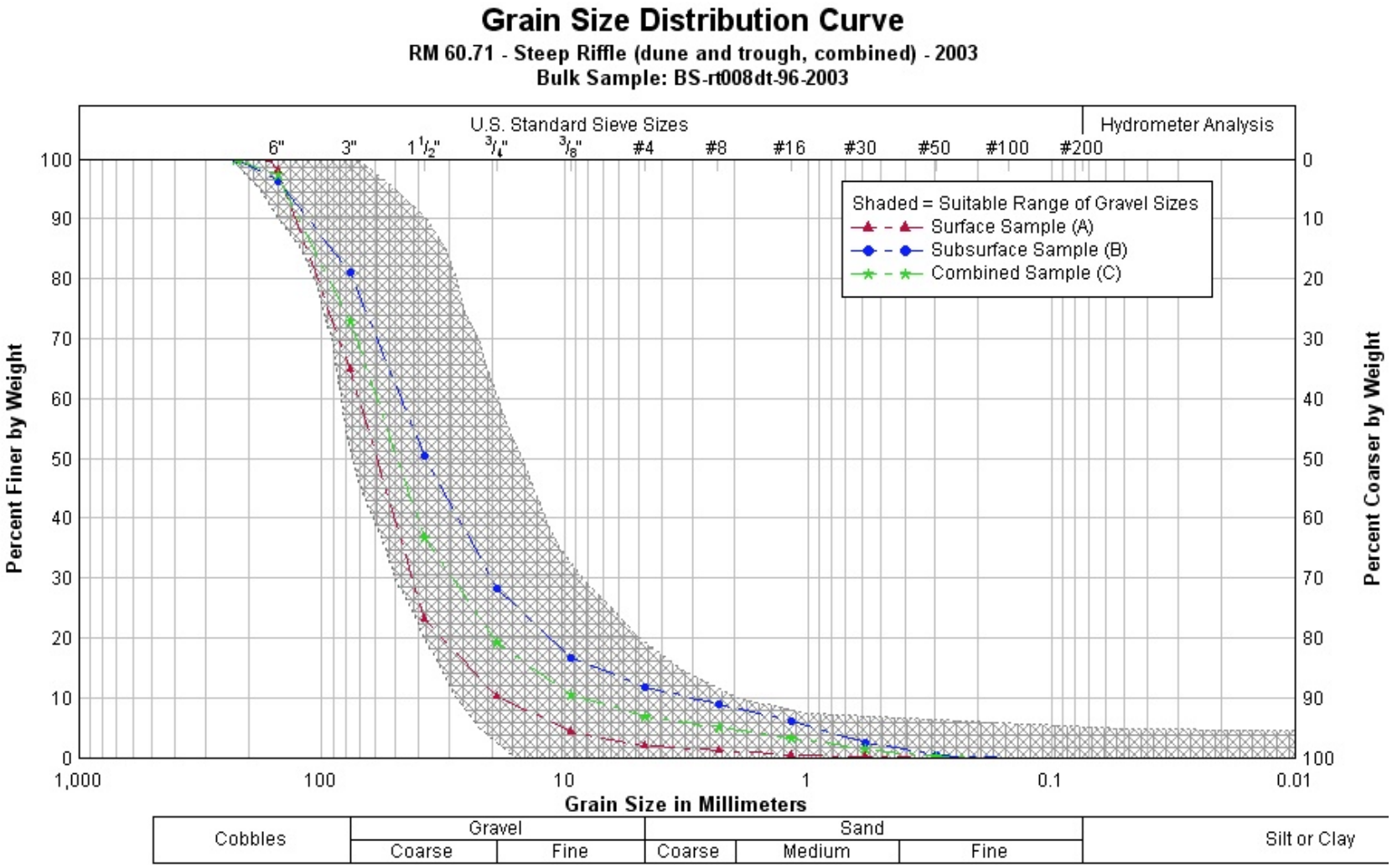

Grain Size Distribution Curve
RM 66.03 - Hatchery Riffle - 2003
Bulk Sample: BS-rt001-96-2003
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay

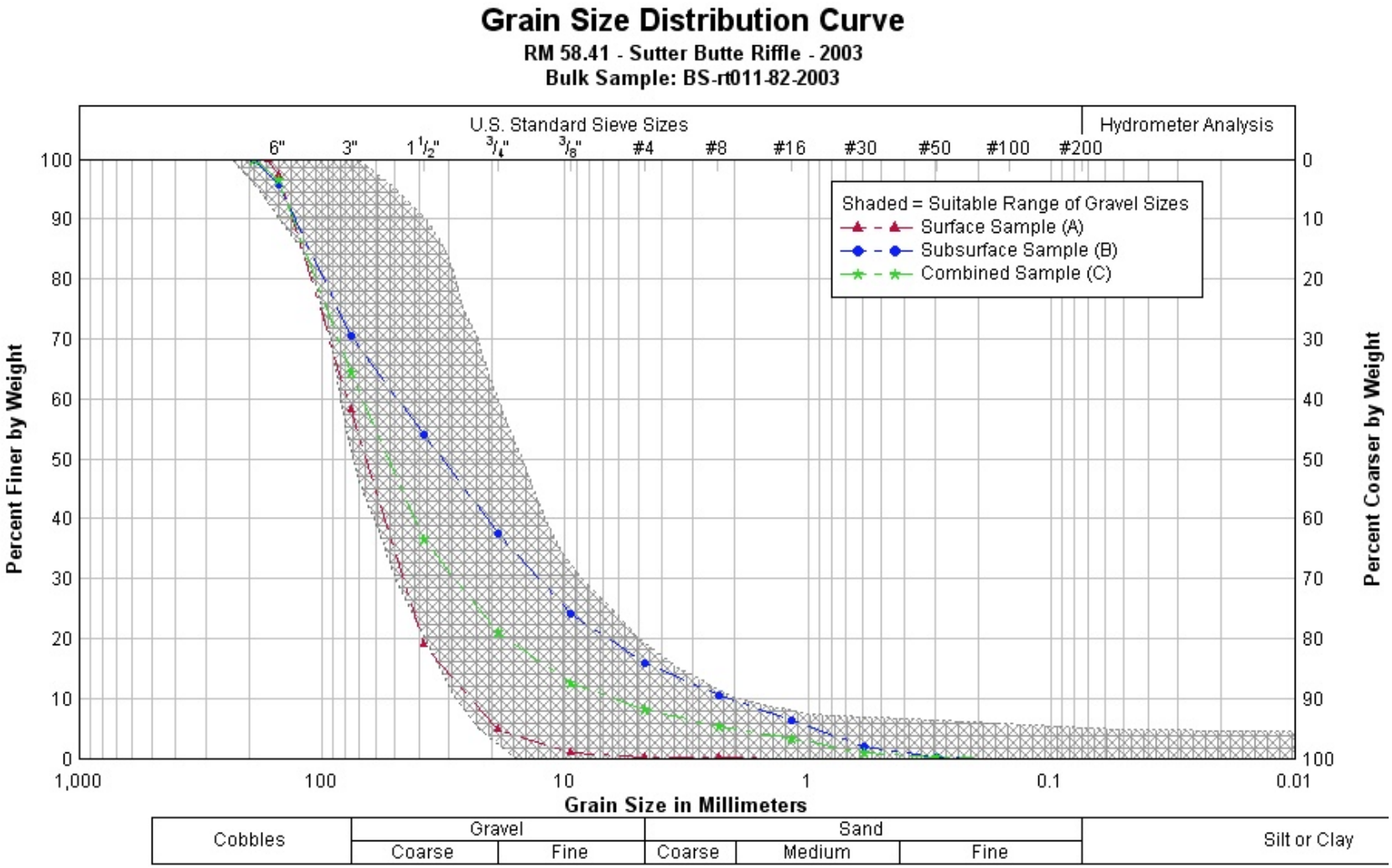

Grain Size Distribution Curve
RM 52.32 - MacFarland Riffle - 2003
Bulk Sample: BS-rt018-82-2003
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay

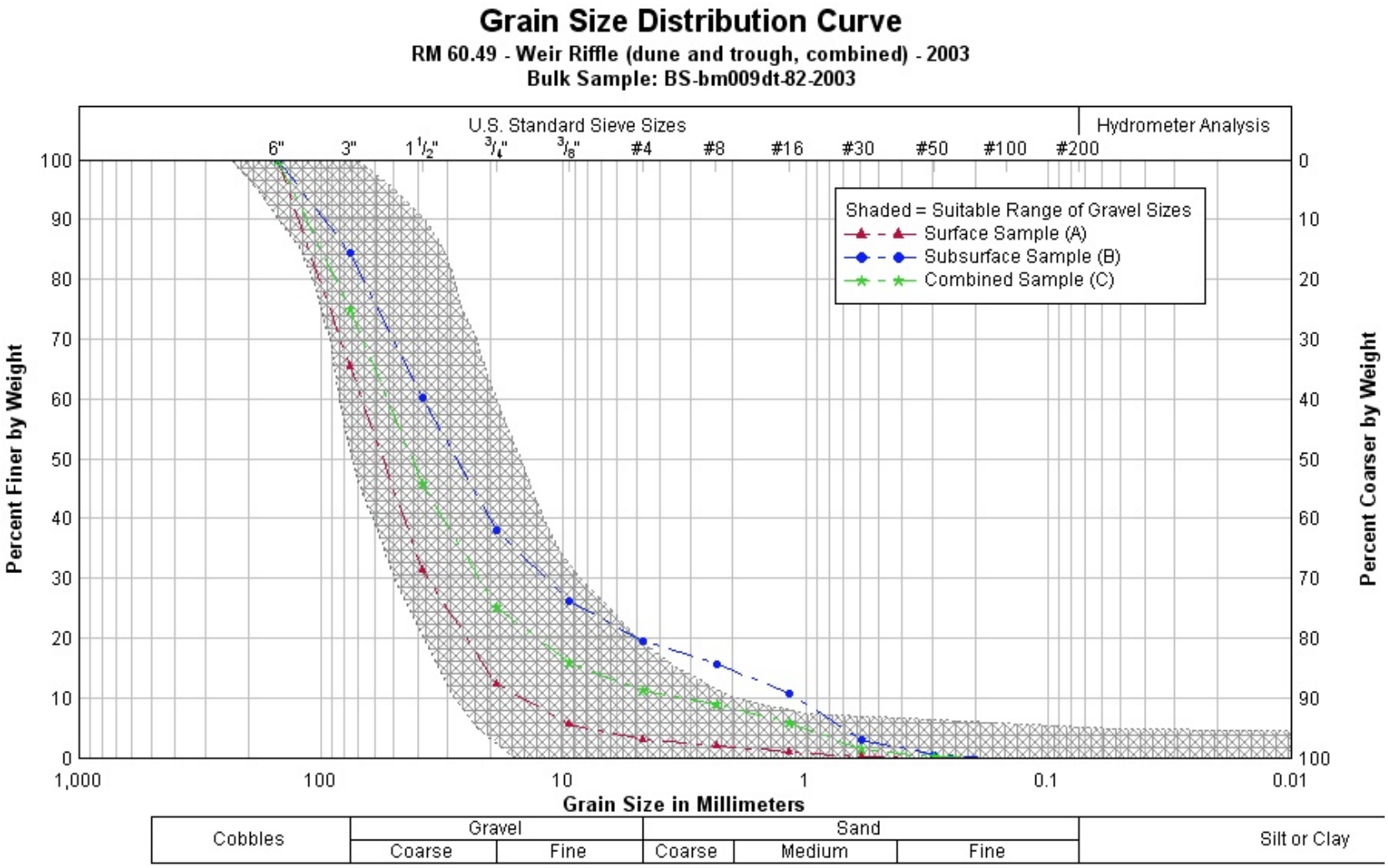

Grain Size Distribution Curve
RM 63.47 - Mathews Riffle - 2002
Bulk Sample: BS-rt004-96-2002
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay


Grain Size Distribution Curve
RM 65.77 - Moes' Ditch - 2002
Bulk Sample: BS-bb001-82-2002
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay


Grain Size Distribution Curve
RM 61.14 - Robinson Riffle (dune and trough, combined) - 2002
Bulk Sample: BS-bt007dt-xx-2002
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay


Grain Size Distribution Curve
RM 60.71 - Steep Riffle (dune and trough, combined) - 2003
Bulk Sample: BS-rt008dt-96-2003
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay


Grain Size Distribution Curve
RM 58.41 - Sutter Butte Riffle - 2003
Bulk Sample: BS-rt011-82-2003
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay


Grain Size Distribution Curve
RM 60.49 - Weir Riffle (dune and trough, combined) - 2003
Bulk Sample: BS-bm009dt-82-2003
U.S. Standard Sieve Sizes
Hydrometer Analysis
6" 3" 1 1/2" 3/4" 3/8" #4 #8 #16 #30 #50 #100 #200
Shaded = Suitable Range of Gravel Sizes
Surface Sample (A)
Subsurface Sample (B)
Combined Sample (C)
Percent Finer by Weight
Percent Coarser by Weight
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
1,000 100 10 1 0.1 0.01
Grain Size in Millimeters
Cobbles
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay

APPENDIX A-.2: DISSOLVED OXYGEN AND TEMPERATURE RESULTS

DO and Temperature Results at Hatchery Riffle (Oct /Nov 2003).

Riffle	Location on Riffle	Temperature °C				Dissolved Oxygen (mg/l)			
		River	6"	12"	18"	River	6"	12"	18"
Hatchery	Top	10.7	10.7	10.7	10.7	11.2	10.7	10.1	9.0
	Middle	11.9	11.9	11.9	11.8	10.7	10.6	10.7	10.2
	Bottom	12.0	12.0	12.0	11.9	11.0	10.9	8.9	7.7

DO and Temperature Results at Auditorium Riffle (Oct /Nov 2003).

Riffle	Location on Riffle	Temperature °C				Dissolved Oxygen (mg/l)			
		River	6"	12"	18"	River	6"	12"	18"
Auditorium	Top	11.5	11.5	11.6	11.6	12.0	11.4	11.9	11.6
	Top	11.8	11.9	11.8	11.7	10.4	10.1	10.3	11.7
	Middle	11.8	11.8	11.8	11.9	11.9	12.1	11.7	11.3
	Bottom	12.0	12.0	11.9	11.6	10.7	11.2	9.6	7.0

DO and Temperature Results at Bedrock Park Riffle (Oct /Nov 2003).

Riffle	Location on Riffle	Temperature °C				Dissolved Oxygen (mg/l)			
		River	6"	12"	18"	River	6"	12"	18"
Bed Rock Park	Top	11.2	11.0	11.1	11.2	10.3	10.3	10.4	9.6
	Middle	11.9	11.6	11.9	11.7	10.9	10.6	9.5	10.1
	Bottom	12.1	12.1	11.9	11.8	10.5	11.3	4.2	0.9

DO and Temperature Results at Mathews Riffle (Oct /Nov 2003).

Riffle	Location on Riffle	Temperature °C				Dissolved Oxygen (mg/l)			
		River	6"	12"	18"	River	6"	12"	18"
Mathews	Top	10.8	10.8	10.8	10.8	9.9	10.1	10.0	9.7
	Middle	12.3	12.0	12.2	12.3	9.7	9.5	9.9	9.4
	Bottom	12.7	12.6	12.7	12.7	10.6	10.4	6.7	5.6

DO and Temperature Results at Aleck Riffle (Oct /Nov 2003).

Riffle	Location on Riffle	Temperature °C				Dissolved Oxygen (mg/l)			
		River	6"	12"	18"	River	6"	12"	18"
Aleck	Top	12.1	11.9	12.0	12.1	11.2	11.3	11.7	11.8
	Middle	12.3	12.2	12.3	12.3	12.2	11.6	12.0	9.2

DO and Temperature Results at Robinson Riffle (Oct /Nov 2003).

Riffle	Location on Riffle	Temperature °C				Dissolved Oxygen (mg/l)			
		River	6"	12"	18"	River	6"	12"	18"
Robinson	Top	11.3	11.2	11.3	11.3	9.7	9.7	9.4	9.7
	Middle	10.7	10.7	10.8	10.8	12.3	10.8	10.5	10.8
	Bottom	11.6	11.5	11.6	11.6	11.4	11.0	10.9	10.7

DO and Temperature Results at Steep Riffle (Oct /Nov 2003).

Riffle	Location on Riffle	Temperature °C				Dissolved Oxygen (mg/l)			
		River	6"	12"	18"	River	6"	12"	18"
Steep	Top	11.2	11.2	11.2	11.2	11.0	10.4	10.8	11.0
	Middle	11.4	11.4	11.3	11.3	10.5	10.7	10.0	9.7

DO and Temperature Results at Weir Riffle (Oct /Nov 2003).

Riffle	Location on Riffle	Temperature °C				Dissolved Oxygen (mg/l)			
		River	6"	12"	18"	River	6"	12"	18"
Weir	Top	11.0	11.1	11.2	11.2	10.1	9.5	8.2	5.1
	Middle	11.0	11.0	11.1	11.2	10.3	10.1	10.4	9.4

DO and Temperature Results at Eye Riffle (Oct /Nov 2003).

Riffle	Location on Riffle	Temperature °C				Dissolved Oxygen (mg/l)			
		River	6"	12"	18"	River	6"	12"	18"
Eye	Top	12.3	12.3	12.3	12.3	11.0	10.9	10.8	10.7
	Middle	12.5	12.5	12.4	12.4	11.3	11.2	10.8	10.4
	Bottom	12.6	12.6	12.6	12.6	11.6	11.6	11.4	11.1

DO and Temperature Results at Gateway Riffle (Oct /Nov 2003).

Riffle	Location on Riffle	Temperature °C				Dissolved Oxygen (mg/l)			
		River	6"	12"	18"	River	6"	12"	18"
Gateway	Top	11.6	11.6	11.6	11.6	9.8	9.6	9.6	9.7
	Bottom	11.9	11.8	11.9	12.0	10.1	9.4	10.5	8.8