

Appendix D
Smoke Bend Canal Sizing and
Dredging Volumes

TABLE D-1

Smoke Bend Canal Sizing Sheet A (without freeboard)

Procedure: Set the canal bottom width for five different scenarios and iterate on depth to find velocity < 2 fps

| Flow (cfs) | | Bottom Width | | | | | | |
|------------|---------------------------|--------------|----------|----------|----------|----------|----------|----------|
| | | 5 | 10 | 15 | 20 | 30 | 40 | 50 |
| 400 | Top Width (feet) | 45 | 46 | 47.5 | 49 | 54 | | |
| | Depth (feet) ^a | 8 | 7.2 | 6.5 | 5.8 | 4.8 | | |
| | Velocity (fps) | 2 | 1.98 | 1.97 | 2 | 1.98 | | |
| | Slope (ft/ft) | 0.000244 | 0.000242 | 0.000244 | 0.000265 | 0.00029 | | |
| 800 | Top Width (feet) | 63.5 | 64 | 65 | 66.5 | 70 | | |
| | Depth (feet) ^a | 11.7 | 10.8 | 10 | 9.3 | 8 | | |
| | Velocity (fps) | 2 | 2 | 2 | 1.99 | 2 | | |
| | Slope (ft/ft) | 0.000153 | 0.000155 | 0.000156 | 0.000157 | 0.000169 | | |
| 1,200 | Top Width (feet) | 78 | 78.5 | 79 | 80 | 83 | | |
| | Depth (feet) ^a | 14.6 | 13.7 | 12.8 | 12 | 10.6 | | |
| | Velocity (fps) | 1.98 | 1.98 | 1.99 | 2 | 2 | | |
| | Slope (ft/ft) | 0.000114 | 0.000114 | 0.000117 | 0.00012 | 0.000125 | | |
| 1,600 | Top Width (feet) | 89.5 | 90 | 91 | 96 | 94.5 | | |
| | Depth (feet) ^a | 16.9 | 16 | 15.2 | 14.4 | 12.9 | | |
| | Velocity (fps) | 2 | 2 | 1.99 | 1.98 | 1.99 | | |
| | Slope (ft/ft) | 0.000097 | 0.000097 | 0.000095 | 0.000096 | 0.0001 | | |
| 2,000 | Top Width (feet) | 100.5 | 100.5 | 101 | 102 | 104.5 | | |
| | Depth (feet) ^a | 19.1 | 18.1 | 17.2 | 16.4 | 14.9 | | |
| | Velocity (fps) | 1.99 | 2 | 2 | 2 | 2 | | |
| | Slope (ft/ft) | 0.000082 | 0.000083 | 0.000084 | 0.000084 | 0.000086 | | |
| 2,400 | Top Width (feet) | 110 | 110 | 110.5 | 111.5 | 113.5 | | |
| | Depth (feet) ^a | 21 | 20 | 19.1 | 18.3 | 16.7 | | |
| | Velocity (fps) | 1.99 | 2 | 2 | 1.99 | 2 | | |
| | Slope (ft/ft) | 0.000073 | 0.000074 | 0.000074 | 0.000074 | 0.000076 | | |
| 2,800 | Top Width (feet) | NA | NA | NA | 120 | 122 | 125 | 128.5 |
| | Depth (feet) ^a | | | | 20 | 18.4 | 17 | 15.7 |
| | Velocity (fps) | | | | 2 | 2 | 2 | 2 |
| | Slope (ft/ft) | | | | 0.000067 | 0.000068 | 0.000069 | 0.000072 |
| 3,200 | Top Width (feet) | NA | NA | NA | NA | 130 | 133 | 136 |
| | Depth (feet) ^a | | | | | 20 | 18.6 | 17.2 |
| | Velocity (fps) | | | | | 2 | 1.99 | 2 |
| | Slope (ft/ft) | | | | | 0.000062 | 0.000062 | 0.000065 |

^aWater depth only.

Notes:

cfs = cubic feet per second

fps = feet per second

ft/ft = feet per foot

TABLE D-2

Smoke Bend Canal Sizing Sheet B (with freeboard) – Shallow Cut

Procedure: Set the canal bottom width for five different scenarios and iterate on depth to find velocity < 2 fps

| Flow (cfs) | Freeboard (feet) = 1.5 | Bottom Width | | | | | | |
|------------|---------------------------|--------------|---------|---------|---------|---------|---------|---------|
| | | 5 | 10 | 15 | 20 | 30 | 40 | 50 |
| 400 | Top Width (feet) | 53 | 54 | 55 | 57 | 62 | | |
| | Depth (feet) ^a | 10 | 9 | 8 | 7 | 6 | | |
| | Excavation (cy) | 136,563 | 138,113 | 140,000 | 139,613 | 144,113 | | |
| 800 | Top Width (feet) | 71 | 72 | 73 | 74 | 78 | | |
| | Depth (feet) ^a | 13 | 12 | 12 | 11 | 10 | | |
| | Excavation (cy) | 250,800 | 250,613 | 251,563 | 253,800 | 255,313 | | |
| 1,200 | Top Width (feet) | 86 | 86 | 87 | 88 | 91 | | |
| | Depth (feet) ^a | 16 | 15 | 14 | 14 | 12 | | |
| | Excavation (cy) | 364,263 | 364,800 | 362,863 | 362,813 | 364,513 | | |
| 1,600 | Top Width (feet) | 97 | 98 | 99 | 104 | 102 | | |
| | Depth (feet) ^a | 18 | 18 | 17 | 16 | 14 | | |
| | Excavation (cy) | 469,200 | 470,313 | 473,863 | 490,913 | 475,200 | | |
| 2,000 | Top Width (feet) | 108 | 108 | 109 | 110 | 112 | | |
| | Depth (feet) ^a | 21 | 20 | 19 | 18 | 16 | | |
| | Excavation (cy) | 581,950 | 578,200 | 577,363 | 579,513 | 582,200 | | |
| 2,400 | Top Width (feet) | 118 | 118 | 118 | 119 | 121 | | |
| | Depth (feet) ^a | 23 | 22 | 21 | 20 | 18 | | |
| | Excavation (cy) | 689,063 | 685,313 | 684,950 | 688,050 | 687,050 | | |
| 2,800 | Top Width (feet) | | | | 128 | 130 | 133 | 136 |
| | Depth (feet) ^a | | | | 22 | 20 | 19 | 17 |
| | Excavation (cy) | | | | 792,813 | 793,513 | 797,813 | 799,800 |
| 3,200 | Top Width (feet) | | | | | 138 | 141 | 144 |
| | Depth (feet) ^a | | | | | 22 | 20 | 19 |
| | Excavation (cy) | | | | | 900,313 | 907,013 | 904,613 |

^aWater depth plus freeboard, rounded up.

Notes:

cfs = cubic feet per second

cy = cubic yard

fps = feet per second

TABLE D-3

Smoke Bend Canal Sizing Sheet – Deep Cut

Procedure: Set the canal bottom width for different scenarios and iterate on depth to find velocity ≤ 2 fps

| Flow (cfs) | | Bottom Width | | | | | | |
|---------------|------------------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | 5 | 10 | 15 | 20 | 30 | 40 | 50 |
| 400 | Top Width (feet) | 45 | 46 | 47 | 49 | 54 | 60 | 67 |
| | Depth (feet) ^a | 8 | 7 | 6 | 6 | 5 | 4 | 3 |
| | Excavation (cy) ^b | 365,375 | 366,177 | 369,138 | 369,072 | 368,163 | 363,847 | 354,637 |
| 800 | Top Width (feet) | 63 | 64 | 65 | 66 | 70 | 75 | 81 |
| | Depth (feet) ^a | 12 | 11 | 10 | 9 | 8 | 7 | 6 |
| | Excavation (cy) ^b | 682,294 | 682,818 | 687,548 | 692,430 | 703,384 | 716,922 | 730,203 |
| 1,200 | Top Width (feet) | 78 | 78 | 79 | 80 | 83 | 87 | 92 |
| | Depth (feet) ^a | 15 | 14 | 13 | 12 | 11 | 9 | 8 |
| | Excavation (cy) ^b | 803,740 | 808,482 | 809,455 | 814,632 | 824,386 | 840,826 | 856,401 |
| 1,600 | Top Width (feet) | 90 | 90 | 91 | 92 | 94 | 98 | 103 |
| | Depth (feet) ^a | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| | Excavation (cy) ^b | 981,587 | 984,860 | 989,190 | 992,963 | 1,000,675 | 1,017,606 | 1,034,117 |
| 2,000 | Top Width (feet) | 100 | 101 | 101 | 102 | 105 | 108 | 112 |
| | Depth (feet) ^a | 19 | 18 | 17 | 16 | 15 | 14 | 12 |
| | Excavation (cy) ^b | 1,151,633 | 1,151,682 | 1,152,020 | 1,160,109 | 1,170,163 | 1,183,136 | 1,198,117 |
| 2,400 | Top Width (feet) | 110 | 110 | 111 | 111 | 114 | 117 | 121 |
| | Depth (feet) ^a | 21 | 20 | 19 | 18 | 17 | 15 | 14 |
| | Excavation (cy) ^b | 1,106,157 | 1,105,125 | 1,106,337 | 1,107,814 | 1,115,831 | 1,124,895 | 1,140,641 |
| 2,800 | Top Width (feet) | 119 | 119 | 119 | 120 | 122 | 125 | 129 |
| | Depth (feet) ^a | 23 | 22 | 21 | 20 | 18 | 17 | 16 |
| | Excavation (cy) ^b | 1,247,661 | 1,246,797 | 1,248,471 | 1,251,654 | 1,257,659 | 1,270,423 | 1,280,158 |
| 3,200 | Top Width (feet) | 127 | 127 | 128 | 128 | 130 | 133 | 136 |
| | Depth (feet) ^a | 24 | 23 | 23 | 22 | 20 | 19 | 17 |
| | Excavation (cy) ^b | 1,376,260 | 1,376,662 | 1,382,908 | 1,382,519 | 1,390,072 | 1,396,277 | 1,409,971 |

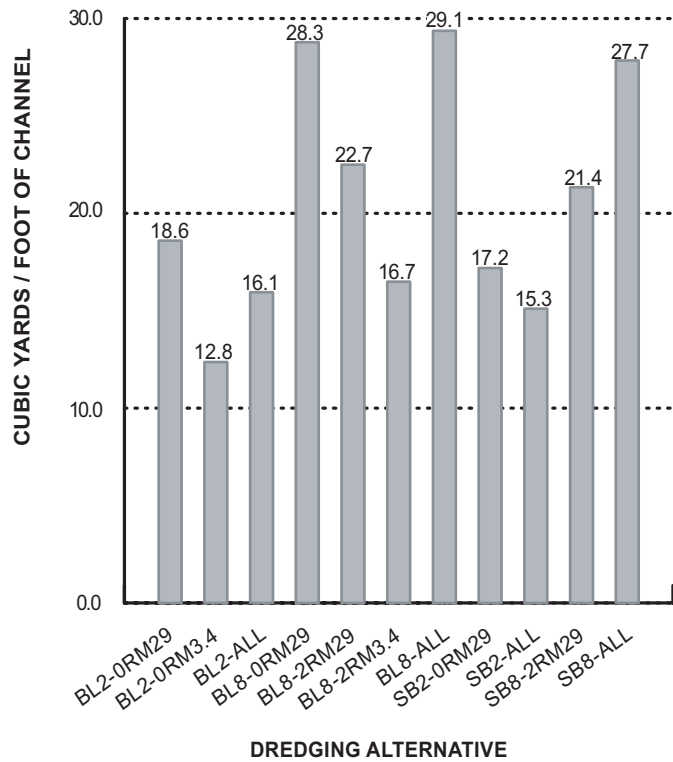
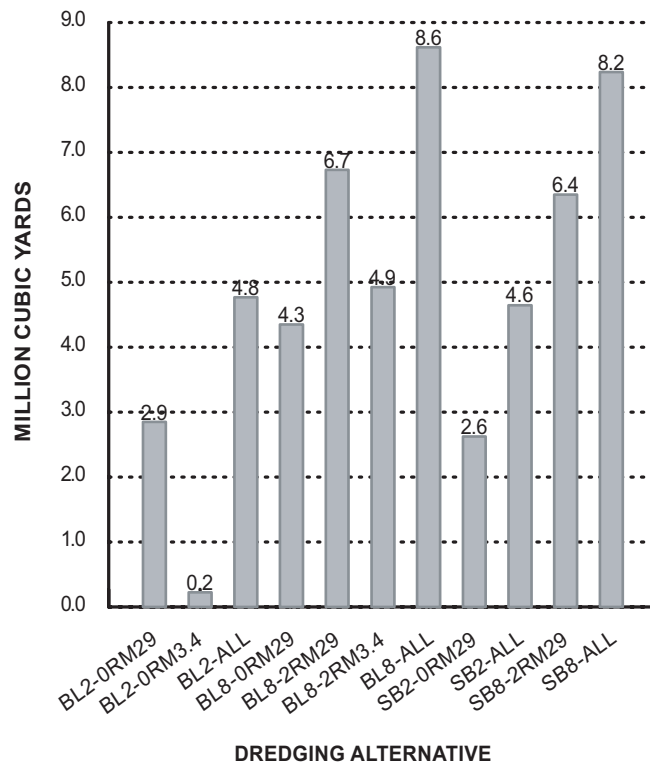
^aWater depth only.^bTotal excavation for deep-cut options.

Notes:

Excavation quantities are for the target water level (mean low water)

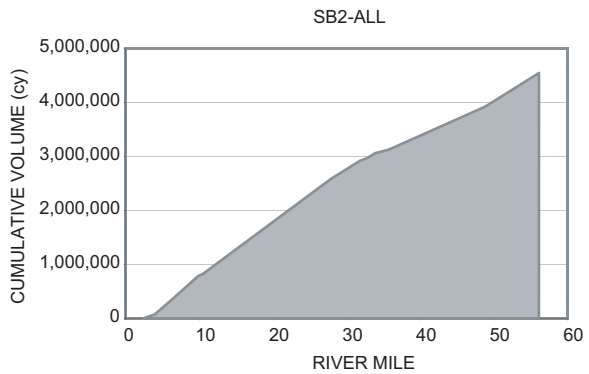
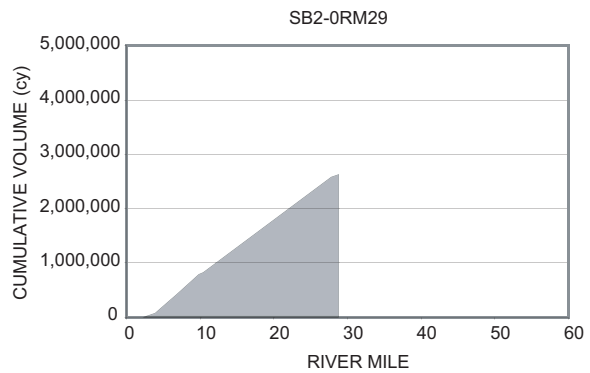
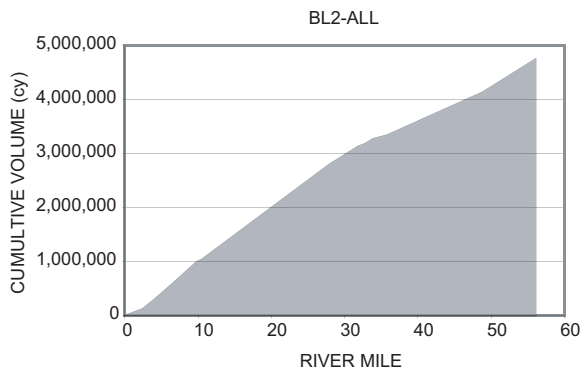
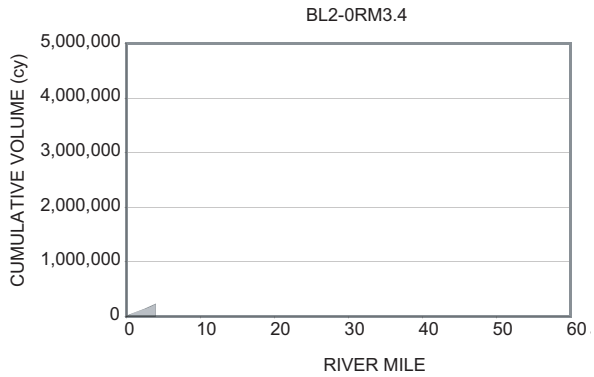
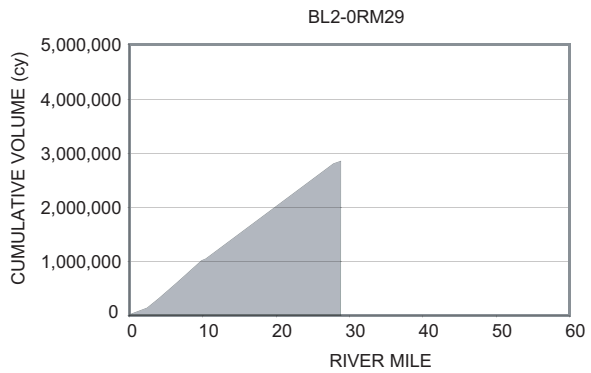
cfs = cubic feet per second

cy = cubic yards



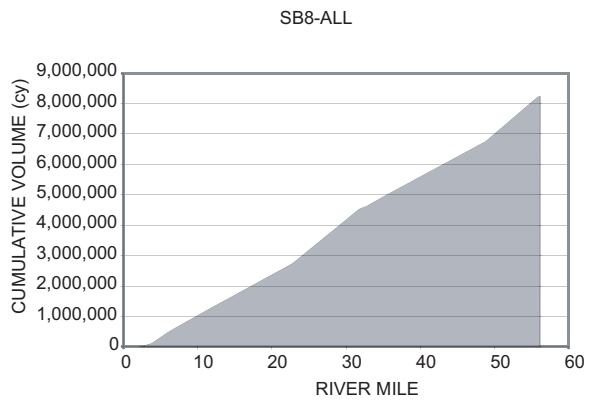
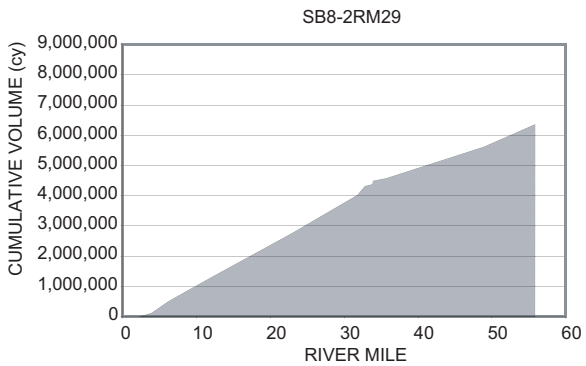
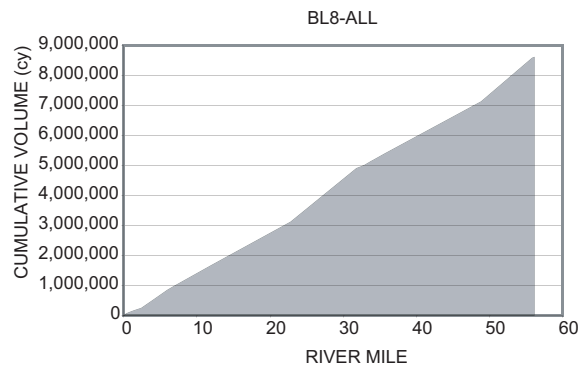
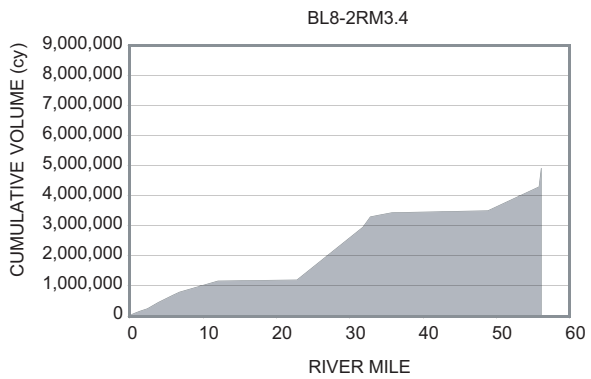
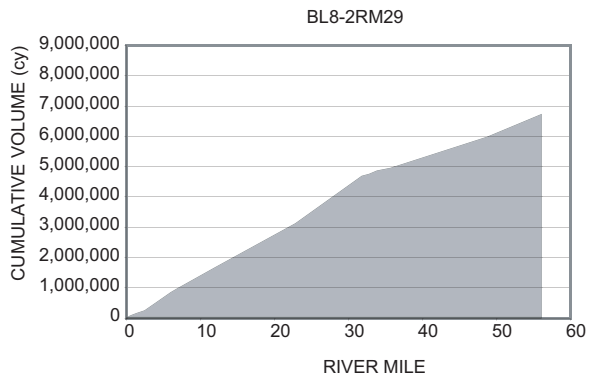
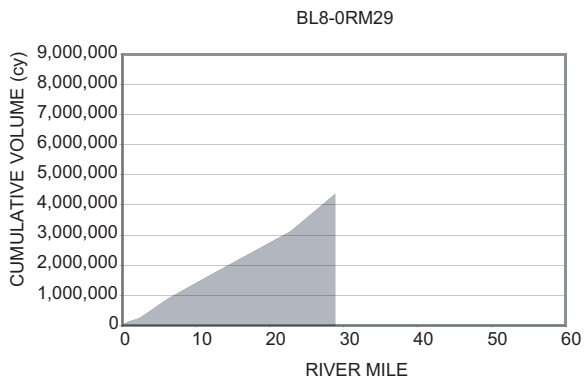
NOTES:
 BL = BAYOU LAFOURCHE ALIGNMENT
 SB = SMOKE BEND ALIGNMENT

FIGURE D-1
DREDGING VOLUMES FOR ALTERNATIVES
 MISSISSIPPI RIVER REINTRODUCTION INTO BAYOU LAFOURCHE
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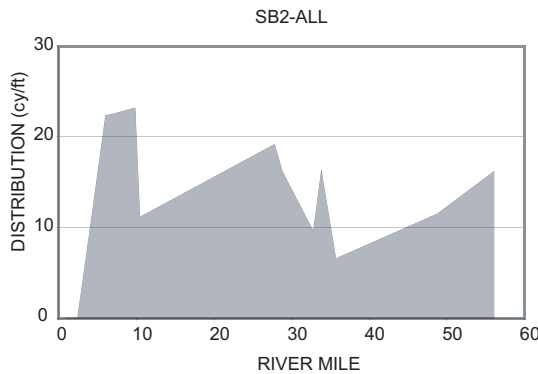
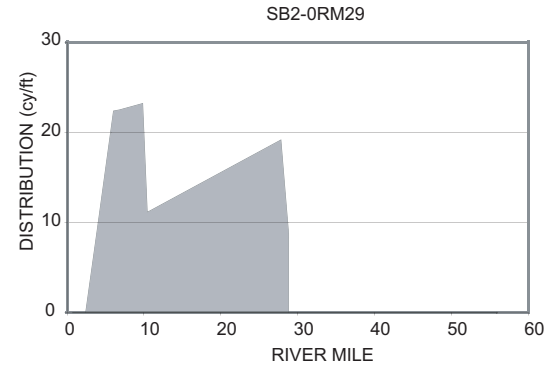
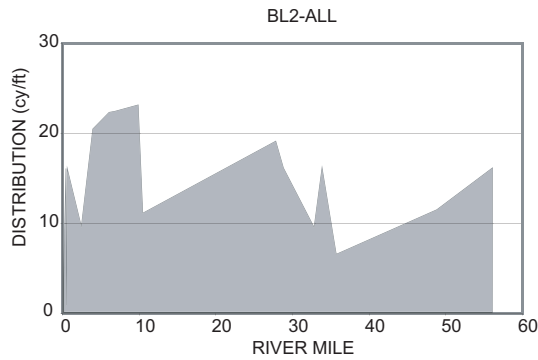
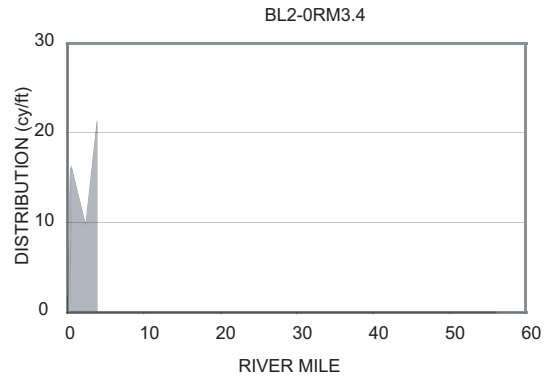
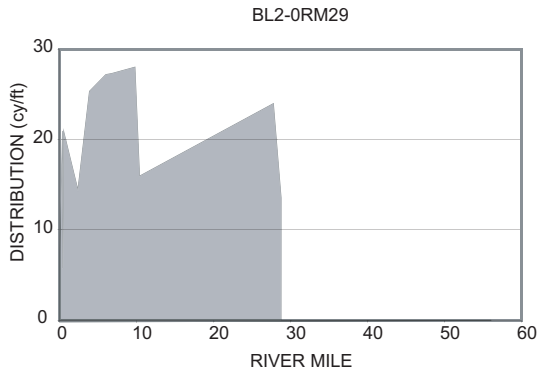
NOTES:
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FIGURE D-2
CUMULATIVE DREDGING FOR
2-FOOT DREDGING ALTERNATIVES
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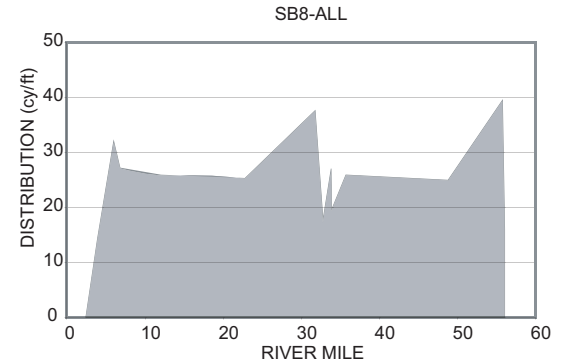
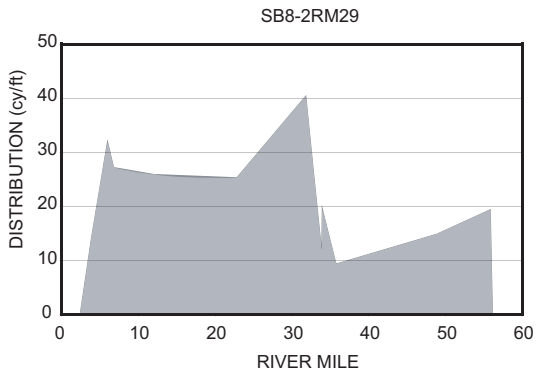
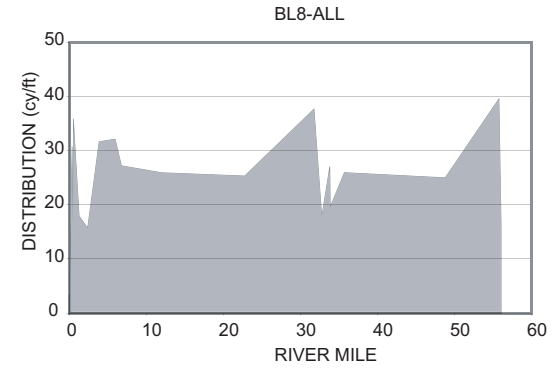
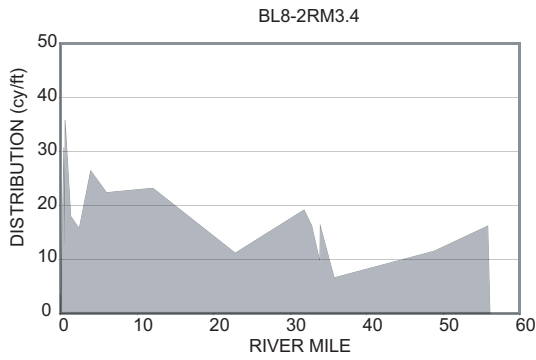
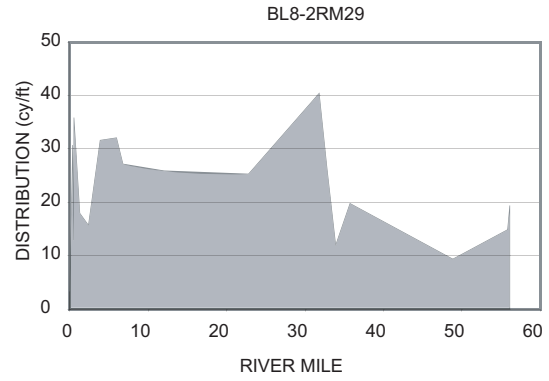
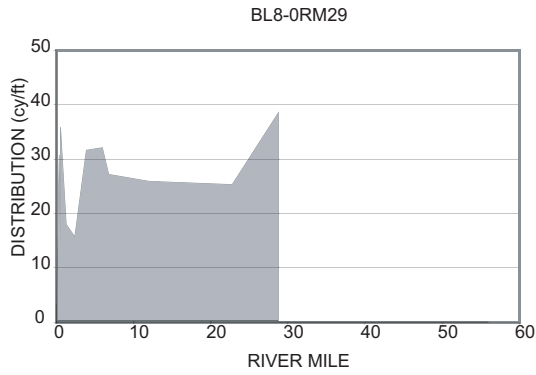
NOTES:
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FIGURE D-3
CUMULATIVE DREDGING FOR
8-FOOT DREDGING ALTERNATIVES
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NOTES:
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FIGURE D-4
DREDGING PER LINEAR FOOT FOR
2-FOOT DREDGING ALTERNATIVES
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NOTES:
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FIGURE D-5
DREDGING PER LINEAR FOOT FOR
8-FOOT DREDGING ALTERNATIVES
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