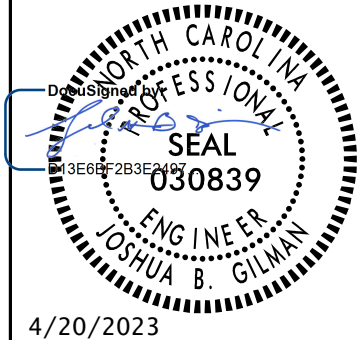


R-2707D CHANNEL RELOCATION CLEVELAND COUNTY



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PROJECT REFERENCE NO. <i>R-2707D</i>	SHEET NO. <i>NS-2E</i>
DESIGN ENGINEER	
	
4/20/2023	

VARIABLES	Reference Reach	Reference Reach	Reference Reach	Existing Reach 1A	Design Reach 1A	Design Reach 1A Tributary	Existing Reach 1B	Design Reach 1B Upper	Design Reach 1B Lower	Design Reach 1B Tributary
STATION										
1. Stream Type (Rosgen)	C4	B 4/1c	B 4	B 4c	B4/1	B/Bc	B 4c	Bc	Bc	B
2. Drainage Area (mi ²)	0.21	0.19	0.81	0.42	0.42	0.09	0.46	0.53	0.53	0.05
Riffle Dimensions										
3. Bankfull Width (Wbkf) [ft]	Mean: 7.55 Range: 7.03 8.06	Mean: 7.37 Range: 6.58 8.16	Mean: 13.14 Range: 12.12 14.16	Mean: 12.31 Range: 10.57 14.04	Mean: 17.98 Range: 1.20	Mean: 10.20 Range: 0.78	Mean: 15.67 Range: 15.4 15.94	Mean: 18.00 Range: 1.20	Mean: 17.73 Range: 1.27	Mean: 9.13 Range: 0.61
4. Mean Riffle Depth (dbkf) [ft]	Mean: 0.90 Range: 0.82 0.97	Mean: 1.04 Range: 0.94 1.13	Mean: 0.86 Range: 0.82 0.89	Mean: 1.31 Range: 1.09 1.53	Mean: 1.20 Range: 1.09 1.53	Mean: 0.78 Range: 0.78	Mean: 1.49 Range: 1.15 1.82	Mean: 1.20 Range: 1.20	Mean: 1.27 Range: 1.27	Mean: 0.61 Range: 0.61
5. Maximum Riffle Depth (dmax) [ft]	Mean: 1.29 Range: 1.19 1.39	Mean: 1.53 Range: 1.38 1.67	Mean: 1.22 Range: 1.16 1.27	Mean: 1.7 Range: 1.44 1.96	Mean: 1.80 Range: 1.44 1.96	Mean: 1.20 Range: 1.20	Mean: 2.20 Range: 1.77 2.62	Mean: 2.10 Range: 2.10	Mean: 1.90 Range: 1.90	Mean: 0.91 Range: 0.91
6. Width of Flood-Prone Area (Wfpa) [ft]	Mean: 31 Range: 27 34	Mean: 20 Range: 19 22	Mean: 21 Range: 18 25	Mean: 17 Range: 14 20	Mean: 17 Range: 14 20	Mean: 17 Range: 14 20	Mean: 23 Range: 22 24	Mean: 23 Range: 22 24	Mean: 23 Range: 22 24	Mean: 23 Range: 22 24
7. Riffle Inner Berm Width (Wib) [ft]	Mean: - Range: - -	Mean: - Range: - -	Mean: - Range: - -	Mean: - Range: - -	Mean: 9.60 Range: 9.60	Mean: - Range: - -	Mean: - Range: - -	Mean: 8.8 Range: 8.8	Mean: 9.0 Range: 9.0	Mean: - Range: - -
8. Riffle Inner Berm Depth (dib) [ft]	Mean: - Range: - -	Mean: - Range: - -	Mean: - Range: - -	Mean: - Range: - -	Mean: 0.90 Range: 0.90	Mean: - Range: - -	Mean: - Range: - -	Mean: 1.0 Range: 1.0	Mean: 1.0 Range: 1.0	Mean: - Range: - -
9. Riffle Inner Berm Area (Aib) [ft ²]	Mean: - Range: - -	Mean: - Range: - -	Mean: - Range: - -	Mean: - Range: - -	Mean: 6.14 Range: 6.14	Mean: - Range: - -	Mean: - Range: - -	Mean: 6.7 Range: 6.7	Mean: 6.2 Range: 6.2	Mean: - Range: - -
10. Riffle Cross-Sectional Area (Abkf) [ft ²]	Mean: 6.78 Range: 5.76 7.80	Mean: 7.55 Range: 7.42 7.68	Mean: 11.25 Range: 10.85 11.65	Mean: 15.77 Range: 15.37 16.16	Mean: 21.56 Range: 15.37 16.16	Mean: 8.00 Range: 8.00	Mean: 23.33 Range: 17.66 28.99	Mean: 24.96 Range: 24.96	Mean: 22.47 Range: 22.47	Mean: 5.56 Range: 5.56
11. Riffle Width/Depth Ratio (Wbkf/dbkf)	Mean: 8.44 Range: 8.31 8.57	Mean: 7.25 Range: 5.82 8.68	Mean: 15.44 Range: 13.62 17.27	Mean: 9.90 Range: 6.91 12.88	Mean: 15.00 Range: 1.50	Mean: 15.00 Range: 1.50	Mean: 11.08 Range: 8.76 13.39	Mean: 13.00 Range: 1.50	Mean: 14.00 Range: 1.50	Mean: 15.00 Range: 1.50
12. Max Riffle Depth to Mean Riffle Depth (dmax/dbkf)	Mean: 1.44 Range: 1.43 1.45	Mean: 1.47 Range: 1.47 1.48	Mean: 1.43 Range: 1.30 1.55	Mean: 1.30 Range: 1.28 1.32	Mean: 1.50 Range: 1.50	Mean: 1.50 Range: 1.50	Mean: 1.49 Range: 1.44 1.54	Mean: 1.50 Range: 1.50	Mean: 1.50 Range: 1.50	Mean: 1.50 Range: 1.50
13. Entrenchment Ratio (Wfpa/Wbkf)	Mean: 4.03 Range: 3.85 4.21	Mean: 2.83 Range: 2.29 3.36	Mean: 1.62 Range: 1.47 1.77	Mean: 1.62 Range: 1.37 1.40	Mean: 1.60 Range: 1.60	Mean: 1.60 Range: 1.60	Mean: 1.47 Range: 1.42 1.51	Mean: 2.50 Range: 2.50	Mean: 1.90 Range: 1.90	Mean: 1.60 Range: 1.60
14. Bankfull Mean Velocity (Vbkf) [ft/s]	Mean: - Range: - -	Mean: - Range: - -	Mean: - Range: - -	Mean: 4.4 Range: 4.4	Mean: 4.9 Range: 4.7 5.1	Mean: 4.0 Range: 3.8 4.2	Mean: 4.9 Range: 4.6 5.2	Mean: 4.8 Range: 4.6 4.9	Mean: 4.9 Range: 4.7 5.1	Mean: 3.5 Range: 3.3 3.7
15. Bankfull discharge (Qbkf) [ft ³ /s]	Mean: - Range: - -	Mean: - Range: - -	Mean: - Range: - -	Mean: 67.1 Range: 67.1	Mean: 97.0 Range: 92.0 102.0	Mean: 29.2 Range: 27.7 30.6	Mean: 125.7 Range: 118.6 132.7	Mean: 105.8 Range: 102.2 109.3	Mean: 98.2 Range: 93.8 102.5	Mean: 17.4 Range: 16.5 18.3
Pool Dimensions										
16. Pool Width (Wbkfp) [ft]	Mean: 9.72 Range: 8.87 10.57	Mean: 10.6 Range: 10.55 10.65	Mean: 10.37 Range: 9.27 11.46	Mean: 18.36 Range: 18.14 18.57	Mean: 18.88 Range: 1.71	Mean: 11.22 Range: 1.18	Mean: 27.75 Range: 2.64	Mean: 19.82 Range: 2.08	Mean: 19.82 Range: 2.08	Mean: 9.59 Range: 0.85
17. Mean Pool Depth (dbkfp)	Mean: 1.25 Range: 0.84 1.65	Mean: 1.43 Range: 1.4 1.45	Mean: 1.22 Range: 0.85 1.58	Mean: 1.71 Range: 1.45 1.96	Mean: 1.68 Range: 1.45 1.96	Mean: 1.18 Range: 1.18	Mean: 2.64 Range: 73.33	Mean: 2.08 Range: 49.93	Mean: 2.08 Range: 49.93	Mean: 0.85 Range: 8.90
18. Pool Cross-Sectional Area (Abkfp) [ft ²]	Mean: 11.75 Range: 8.9 14.6	Mean: 15.07 Range: 14.73 15.41	Mean: 13.02 Range: 7.87 18.16	Mean: 31.26 Range: 26.92 35.59	Mean: 34.50 Range: 3.3	Mean: 34.50 Range: 2.00	Mean: 73.33 Range: 4.54	Mean: 49.93 Range: 3.46	Mean: 49.93 Range: 3.17	Mean: 8.90 Range: 1.83
19. Maximum Pool Depth (dmaxp)	Mean: 1.93 Range: 1.59 2.26	Mean: 2.17 Range: 1.99 2.35	Mean: 1.68 Range: 1.33 2.02	Mean: 3.3 Range: 3.17 3.43	Mean: 3.00 Range: 1.05	Mean: 2.00 Range: 1.05	Mean: 4.54 Range: 1.77	Mean: 3.46 Range: 1.10	Mean: 3.17 Range: 1.10	Mean: 1.83 Range: 1.05
20. Pool Width to Riffle Width (Wbkfp/Wbkf)	Mean: 1.17 Range: 1.17 1.40	Mean: 1.43 Range: 1.43 1.45	Mean: 0.87 Range: 0.71 0.87	Mean: 1.51 Range: 1.47 1.51	Mean: 1.05 Range: 1.05	Mean: 1.05 Range: 1.05	Mean: 1.77 Range: 1.77	Mean: 1.10 Range: 1.10	Mean: 1.10 Range: 1.10	Mean: 1.05 Range: 1.05
21. Mean Pool Depth to Mean Riffle Depth (dbkfp/dbkf)	Mean: 1.39 Range: 0.93 1.83	Mean: 1.38 Range: 1.35 1.39	Mean: 1.42 Range: 0.99 1.84	Mean: 1.31 Range: 1.11 1.50	Mean: 1.40 Range: 1.40	Mean: 1.40 Range: 1.40	Mean: 1.77 Range: 1.77	Mean: 1.50 Range: 1.50	Mean: 1.50 Range: 1.50	Mean: 1.40 Range: 1.40
22. Pool Area to Riffle Area (Abkfp/Abkf)	Mean: 1.73 Range: 1.31 2.15	Mean: 2.00 Range: 1.95 2.04	Mean: 1.16 Range: 0.70 1.61	Mean: 1.98 Range: 1.71 2.26	Mean: 1.60 Range: 1.60	Mean: 1.60 Range: 1.60	Mean: 3.14 Range: 3.05	Mean: 2.00 Range: 2.00	Mean: 2.00 Range: 2.00	Mean: 1.60 Range: 1.60
23. Max Pool Depth to Mean Riffle Depth (dbkfp/dbkf)	Mean: 2.14 Range: 1.77 2.51	Mean: 2.09 Range: 1.91 2.26	Mean: 1.95 Range: 1.55 2.35	Mean: 2.52 Range: 2.42 2.62	Mean: 2.50 Range: 2.50	Mean: 2.50 Range: 2.50	Mean: 3.05 Range: 3.05	Mean: 2.50 Range: 2.50	Mean: 2.50 Range: 2.50	Mean: 3.00 Range: 3.00
Channel Pattern										
24. Stream Meander Length (Lm)	Mean: 87.0 Range: 57.0 117.0	Mean: 87.0 Range: 57.0 117.0	Mean: 136.3 Range: 69.2 197.7	Mean: 147.3 Range: 140.4 156.0	Mean: 89.3 Range: 88.0 90.5	Mean: 197.9 Range: 196.9 199.0	Mean: 166.4 Range: 161.1 171.7	Mean: 42.7 Range: 41.1 44.4	Mean: 42.7 Range: 41.1 44.4	Mean: 42.7 Range: 41.1 44.4
25. Stream Meander Length Ratio (Lm/Wbkf)	Mean: 11.5 Range: 7.5 15.5	Mean: 11.8 Range: 7.7 15.9	Mean: 10.4 Range: 5.3 15.0	Mean: 8.2 Range: 7.8 8.7	Mean: 8.8 Range: 8.6 8.9	Mean: 8.8 Range: 8.6 8.9	Mean: 19.4 Range: 19.3 19.5	Mean: 9.4 Range: 9.1 9.7	Mean: 9.4 Range: 9.1 9.7	Mean: 4.7 Range: 4.5 4.9
26. Radius of Curvature (Rc)	Mean: 12.9 Range: 7.6 17.3	Mean: 61.7 Range: 45.0 80.0	Mean: 85.0 Range: 41.0 132.0	Mean: 87.2 Range: 35.0 215.0	Mean: 53.5 Range: 40.0 72.0	Mean: 53.5 Range: 40.0 72.0	Mean: 95.3 Range: 76.0 110.0	Mean: 80.3 Range: 55.0 123.0	Mean: 80.3 Range: 55.0 123.0	Mean: 27.3 Range: 18.0 57.0
27. Radius of Curvature to Riffle Width (Rc/Wbkf)	Mean: 1.7 Range: 1.0 2.3	Mean: 8.4 Range: 6.1 10.9	Mean: 6.5 Range: 3.1 10.0	Mean: 4.8 Range: 1.9 119.5	Mean: 5.2 Range: 3.9 7.1	Mean: 5.2 Range: 3.9 7.1	Mean: 9.3 Range: 7.5 10.8	Mean: 4.5 Range: 3.1 6.9	Mean: 4.5 Range: 3.1 6.9	Mean: 3.0 Range: 2.0 6.2
28. Belt Width (Wblt)	Mean: 40.7 Range: 31.8 49.6	Mean: - Range: - -	Mean: 22.3 Range: 19.8 28.7	Mean: 31.4 Range: 25.1 37.5	Mean: 21.2 Range: 19.8 22.7	Mean: 21.2 Range: 19.8 22.7	Mean: 36.4 Range: 37.0 41.3	Mean: 38.4 Range: 37.0 41.3	Mean: 38.4 Range: 37.0 41.3	Mean: 15.9 Range: 13.9 17.2
29. Meander Width Ratio (Wblt/Wbkf)	Mean: 5.4 Range: 4.2 6.6	Mean: - Range: - -	Mean: 1.7 Range: 1.5 2.2	Mean: 1.7 Range: 1.4 3.9	Mean: 2.1 Range: 1.9 2.2	Mean: 2.1 Range: 1.9 2.2	Mean: 3.6 Range: 3.6 4.0	Mean: 2.2 Range: 2.1 2.3	Mean: 2.2 Range: 2.1 2.3	Mean: 1.7 Range: 1.5 1.9
30. Riffle Length (Lr)	Mean: 12.1 Range: 7.0 17.2	Mean: 13.0 Range: 9.1 17.0	Mean: 10.8 Range: 9.0 12.9	Mean: 43.5 Range: 39.3 46.4	Mean: 24.4 Range: 21.6 26.5	Mean: 24.4 Range: 21.6 26.5	Mean: 47.3 Range: 41.7 50.8	Mean: 40.9 Range: 39.3 44.1	Mean: 40.9 Range: 39.3 44.1	Mean: 11.1 Range: 10.1 12.4
31. Riffle Length to Riffle Width (Lr/Wbkf)	Mean: 1.6 Range: 0.9 2.3	Mean: 1.6 Range: 0.9 2.3	Mean: 0.8 Range: 0.7 1.0	Mean: 2.4 Range: 2.2 2.6	Mean: 2.4 Range: 2.1 2.6	Mean: 2.4 Range: 2.1 2.6	Mean: 4.6 Range: 4.1 5.0	Mean: 2.3 Range: 2.2 2.5	Mean: 2.3 Range: 2.2 2.5	Mean: 1.2 Range: 1.1 1.4
32. Individual Pool Length (Lp)	Mean: 19.6 Range: 10.1 33.1	Mean: 18.6 Range: 6.8 32.4	Mean: 13.6 Range: 6.9 29.3	Mean: 30.4 Range: 23.8 40.5	Mean: 19.2 Range: 17.6 20.4	Mean: 19.2 Range: 17.6 20.4	Mean: 47.2 Range: 29.9 56.3	Mean: 48.2 Range: 39.9 56.3	Mean: 48.2 Range: 39.9 56.3	Mean: 11.0 Range: 10.0 13.8
33. Individual Pool Length to Riffle Width (Lp/Wbkf)	Mean: 2.6 Range: 1.3 4.4	Mean: 2.5 Range: 0.9 4.4	Mean: 1.0 Range: 0.5 2.2	Mean: 1.7 Range: 1.3 2.7	Mean: 1.9 Range: 1.7 2.0	Mean: 1.9 Range: 1.7 2.0	Mean: 4.6 Range: 2.9 5.5	Mean: 2.7 Range: 2.2 3.2	Mean: 2.7 Range: 2.2 3.2	Mean: 1.2 Range: 1.1 1.5
34. Pool to Pool Spacing (Ps)	Mean: 51.6 Range: 30.5 69.3	Mean: 31.1 Range: 25.2 36.4	Mean: 26.8 Range: 20.7 34.4	Mean: 73.6 Range: 69.3 79.0	Mean: 44.7 Range: 43.6 46.1	Mean: 44.7 Range: 43.6 46.1	Mean: 99.5 Range: 93.9 105.2	Mean: 84.3 Range: 80.0 91.7	Mean: 84.3 Range: 80.0 91.7	Mean: 21.6 Range: 20.1 22.6
35. Pool to Pool Spacing to Riffle Width (Ps/Wbkf)	Mean: 6.8 Range: 4.0 9.2	Mean: 4.2 Range: 3.4 4.9	Mean: 2.0 Range: 1.6 2.6	Mean: 4.1 Range: 3.9 4.9	Mean: 4.4 Range: 4.3 4.5	Mean: 4.4 Range: 4.3 4.5	Mean: 9.8 Range: 9.2 10.3	Mean: 4.8 Range: 4.5 5.2	Mean: 4.8 Range: 4.5 5.2	Mean: 2.4 Range: 2.2 2.5
Channel Profile										
36. Valley Slope (Svalley) [ft/ft]	Mean: 0.022 Range: 0.022	Mean: 0.020 Range: 0.020	Mean: 0.04 Range: 0.04	Mean: 0.0234 Range: 0.0234	Mean: 0.027 Range: 0.027	Mean: 0.027 Range: 0.027	Mean: 0.014 Range: 0.014	Mean: 0.011 Range: 0.011	Mean: 0.023 Range: 0.023	Mean: 0.032 Range: 0.032
37. Average Water Surface Slope (S)	Mean: 0.016 Range: 0.016	Mean: 0.018 Range: 0.018	Mean: 0.022 Range: 0.022	Mean: 0.0126 Range: 0.0126	Mean: 0.026 Range: 0.026	Mean: 0.026 Range: 0.026	Mean: 0.011 Range: 0.011	Mean: 0.011 Range: 0.011	Mean: 0.022 Range: 0.022	Mean: 0.031 Range: 0.031
38. Sinuosity (k) (Svalley/S)	Mean: 1.36 Range: 1.36	Mean: 1.10 Range: 1.10	Mean: 1.12 Range: 1.12	Mean: 1.86 Range: 1.86	Mean: 1.04 Range: 1.04	Mean: 1.02 Range: 1.02	Mean: 1.26 Range: 1.26	Mean: 1.03 Range: 1.03	Mean: 1.03 Range: 1.03	Mean: 1.03 Range: 1.03