

**Current Vegetation Plot Conditions (MY6 - Fall 2016)
Lewis Creek Stream Restoration Project #733**

Scientific Name	Common Name	Species Type	Plot 1			Plot 2			Plot 3			Plot 4			Plot 5		
			Planted Stems	Volunteer Stems	Total	Planted Stems	Volunteer Stems	Total	Planted Stems	Volunteer Stems	Total	Planted Stems	Volunteer Stems	Total	Planted Stems	Volunteer Stems	Total
Acer rubrum	red maple	Tree				1	4	5					14	14		2	2
Acer saccharinum	silver maple	Tree															
Alnus serrulata	hazel alder	Shrub		3	3		6	6		3	3		2	2	1	4	5
Asimina triloba	pawpaw	Tree															
Baccharis spp.	eastern baccharis	Shrub															
Betula nigra	river birch	Tree	1	16	17	5	135	140		8	8	1	16	17	5	6	11
Carpinus caroliniana	American hornbeam	Tree															
Cornus amomum	silky dogwood	Shrub	1	4	5				2	8	10	4	1	5			
Diospyros virginiana	common persimmon	Tree															
Ilex opaca	American holly	Tree															
Liriodendron tulipifera	tuliptree	Tree										1		1			
Platanus occidentalis	American sycamore	Tree										1		1			
Quercus falcata	southern red oak	Tree															
Rhus glabra	smooth sumac	Shrub										1		1		1	1
Robinia pseudoacacia	black locust	Tree		3	3												
Salix cinerea	gray willow	Tree		15	15		3	3		2	2		2	2			
Salix nigra	black willow	Tree		5	5		3	3		5	5		3	3		3	3
	Stem count		2	46	48	6	151	157	2	26	28	8	38	46	6	16	22
	size (ares)		1			1			1			1			1		
	size (ACRES)		0.02			0.02			0.02			0.02			0.02		
	Species count		2	6	6	2	5	5	1	5	5	5	6	9	2	5	5
	Stems per ACRE		81	1862	1942	243	6111	6354	81	1052	1133	324	324	1862	243	647	890

Exceeds requirements by 10%
Exceeds requirements, but by less than 10%
Fails to meet requirements, by less than 10%
Fails to meet requirements by more than 10%

**Annual Means for Vegetation Plots 2010-2016
Lewis Creek Stream Restoration Project #733**

Scientific Name	Common Name	Species Type	MY6 (2016)			MY5 (2015)			MY4 (2014)			MY3 (2013)			MY1 (2011)			MY0 (2010)		
			Planted Stems	Volunteer Stems	Total Stems	Planted Stems	Volunteer Stems	Total Stems	Planted Stems	Volunteer Stems	Total Stems	Planted Stems	Volunteer Stems	Total Stems	Planted Stems	Volunteer Stems	Total Stems	Planted Stems	Volunteer Stems	Total Stems
Acer rubrum	red maple	Tree	1	20	21	2	22	24	2	25	27	2	21	23	2		2	2		2
Acer saccharinum	silver maple	Tree					1	1		1	1									
Alnus serrulata	hazel alder	Shrub	1	18	19	1	23	24		11	11									
Asimina triloba	pawpaw	Tree										8	25	33	12		12	12		12
Baccharis spp.	eastern baccharis	Shrub								1	1									
Betula nigra	river birch	Tree	12	181	193	12	220	232	12	211	223	14	210	224	15		15	15		15
Carpinus caroliniana	American hornbeam	Tree										1		1	2		2	3		3
Cornus amomum	silky dogwood	Shrub	7	13	20	7	21	28	7	16	23	9	15	24	9		9	9		9
Diospyros virginiana	common persimmon	Tree											1	1						
Ilex opaca	American holly	Tree													5		5	5		5
Liriodendron tulipifera	tuliptree	Tree	1		1	1	1	2	1		1	1		1	4		4	4		4
Platanus occidentalis	American sycamore	Tree	1		1	1		1	1		1	1	2	3	1		1	2		2
Quercus falcata	southern red oak	Tree				1		1	3		3	3		3	5		5	5		5
Rhus glabra	smooth sumac	Shrub	1	1	2	1		1	1	2	3	1	1	2	1		1	1		1
Robinia pseudoacacia	black locust	Tree		3	3		5	5		5	5		4	4						
Salix cinerea	gray willow	Tree		22	22		33	33		42	42									
Salix nigra	black willow	Tree		19	19		25	25		27	27		37	37						
	Stem count		24	277	301	26	351	377	27	341	368	40	316	356	56	0	56	58	0	58
	size (ares)		5			5			5			5			5			5		
	size (ACRES)		0.12			0.12			0.12			0.12			0.12			0.12		
	Species count		7	8	10	8	9	12	7	10	13	9	9	12	10	0	10	10	0	10
	Stems per ACRE		194	2242	2436	210	2841	3051	219	2760	2978	324	2558	2881	453	0	453	469	0	469

Exceeds requirements by 10%
Exceeds requirements, but by less than 10%
Fails to meet requirements, by less than 10%
Fails to meet requirements by more than 10%

Individual Planted Stem Data (MY6 - Fall 2016)
Lewis Creek Stream Restoration Project #733

Plot 1					
Species	X	Y	Height (cm)	dbh (cm)	Vigor
Betula nigra	5.8	0.2	240	1.9	4
Cornus amomum	0.8	4.3	180	0.8	4

Plot 2					
Species	X	Y	Height (cm)	dbh (cm)	Vigor
Betula nigra	0.9	1.5	167	2.5	4
Acer rubrum	0.9	3.7	missing		
Betula nigra	0.8	6.6	300	3.0	4
Betula nigra	5.5	7.5	275	2.5	4
Betula nigra	3.7	2.1	275	2.5	4
Betula nigra	6.4	2.1	110	NA	4
Acer rubrum	8.8	4.9	150	1.9	3

Plot 3					
Species	X	Y	Height (cm)	dbh (cm)	Vigor
Cornus amomum	0.4	0.2	155	1.4	4
Cornus amomum	4.9	2.1	182	1.4	4

Plot 4					
Species	X	Y	Height (cm)	dbh (cm)	Vigor
Betula nigra	0.6	0.8	198	2.2	4
Cornus amomum	3.4	0.9	107	1.5	3
Cornus amomum	6.6	0.9	120	1.0	2
Cornus amomum	6.6	3.4	135	1.0	3
Platanus occidentalis	9.4	0.9	84	NA	4
Quercus falcata	9.4	3	missing		
Cornus amomum	6.6	5.8	148	2.0	4
Liriodendron tulipifera	4.1	5.8	158	1.0	4
Rhus glabra	4.1	8.1	198	2.0	4

Plot 5					
Species	X	Y	Height (cm)	dbh (cm)	Vigor
Betula nigra	0.9	3.2	40	3	4
Alnus serrulata	4	4.6	300	3.4	4
Betula nigra	9.1	2.7	300	5.5	4
Betula nigra	7.3	4.6	375	5.5	4
Betula nigra	6.7	5.8	325	4	4
Betula nigra	5.8	7.9	350	4	4



Veg Plot 3, MY6, Sept2016



Veg Plot 4, MY6, Sept2016

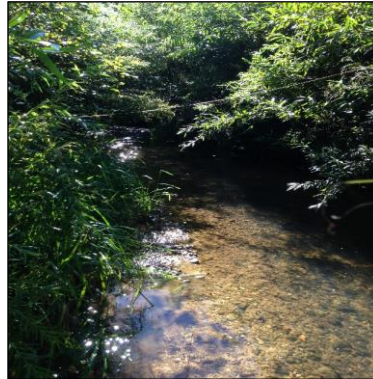


Veg Plot 5, MY6, Sept2016



Stream Survey Data
Cross-section with Annual Overlays
Lewis Creek Stream Restoration/DMS Project No. 733
Monitoring Year 6

Project Name	Lewis Creek
DMS Project Number	733
Cross-Section ID	XS-1, Riffle, +292.52
Survey Date	9/2016
SUMMARY DATA	
Bankfull Elevation (ft)	2152.17
Bankfull Cross-Sectional Area (ft ²)	44.40
Bankfull Width (ft)	22.50
Flood Prone Area Elevation (ft)	2155.56
Flood Prone Width (ft)	120.00
Bankfull Mean Depth (ft)	1.97
Bankfull Max Depth (ft)	3.20
W/D Ratio	11.40
Entrenchment Ratio	5.33
Bank Height Ratio	0.94

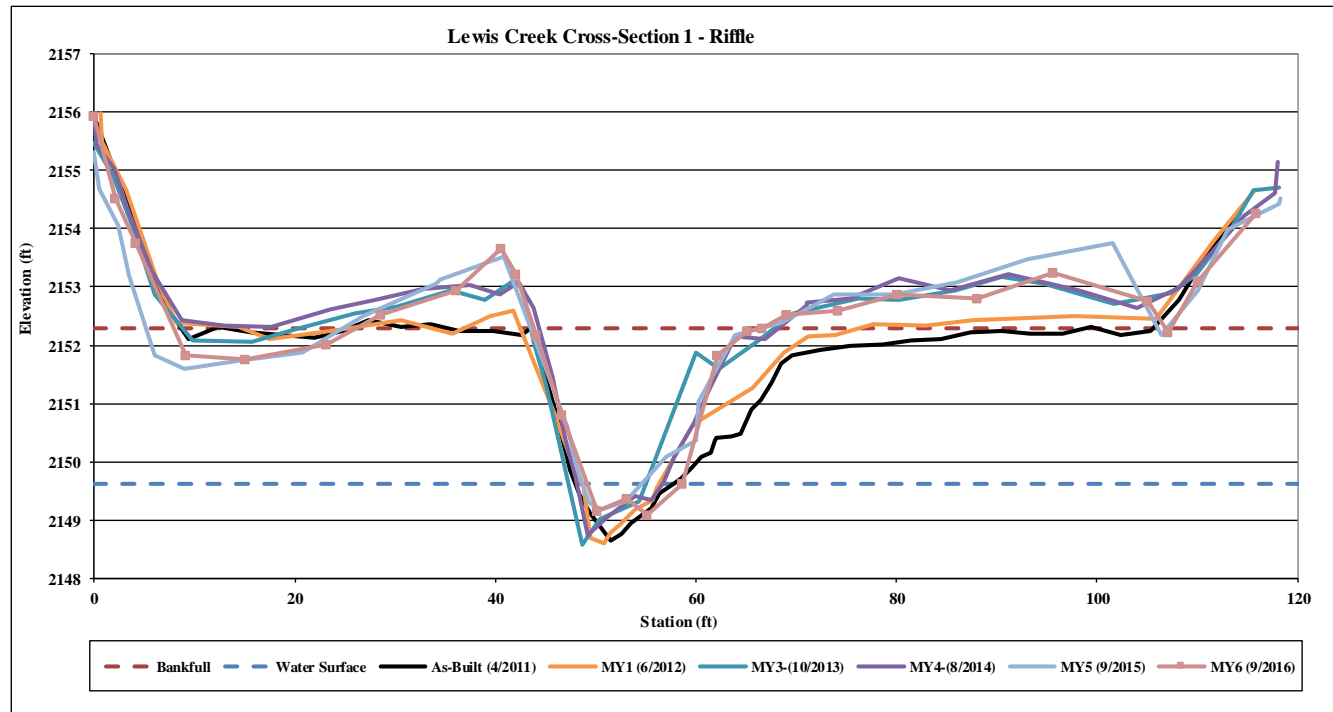


XS-1: Upstream



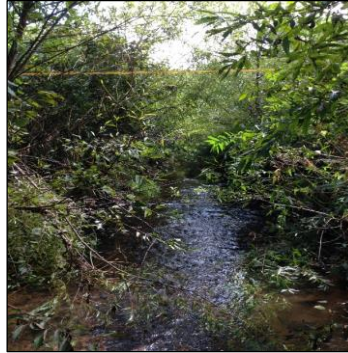
XS-1: Downstream

Station	Elevation	Notes
0.00	2155.30	LPIN
2.10	2154.52	xs1
4.10	2153.76	xs1
9.10	2151.82	xs1
15.10	2151.75	xs1
23.20	2152.01	xs1
28.60	2152.53	xs1
36.10	2152.95	xs1
40.50	2153.65	xs1
42.10	2153.21	xs1
44.10	2152.17	LTB
46.60	2150.80	xs1
50.10	2149.16	TWG
53.10	2149.36	xs1
55.10	2149.08	xs1
58.70	2149.63	REW
62.10	2151.82	xs1
65.10	2152.25	xs1
66.60	2152.28	RTB
69.10	2152.52	xs1
74.10	2152.59	xs1
80.10	2152.88	xs1
88.10	2152.79	xs1
95.60	2153.25	xs1
105.10	2152.75	xs1
107.10	2152.23	xs1
110.10	2153.10	xs1
117.90	2154.56	RPIN



Stream Survey Data
Cross-section with Annual Overlays
Lewis Creek Stream Restoration/DMS Project No. 733
Monitoring Year 6

Project Name	Lewis Creek
DMS Project Number	733
Cross-Section ID	XS-2, Pool +511.9
Survey Date	9/2016
SUMMARY DATA	
Bankfull Elevation (ft)	2151.54
Bankfull Cross-Sectional Area (ft ²)	36.10
Bankfull Width (ft)	23.50
Flood Prone Area Elevation (ft)	2154.91
Flood Prone Width (ft)	120.00
Bankfull Mean Depth (ft)	1.54
Bankfull Max Depth (ft)	3.10
W/D Ratio	15.30
Entrenchment Ratio	5.11
Bank Height Ratio	0.91

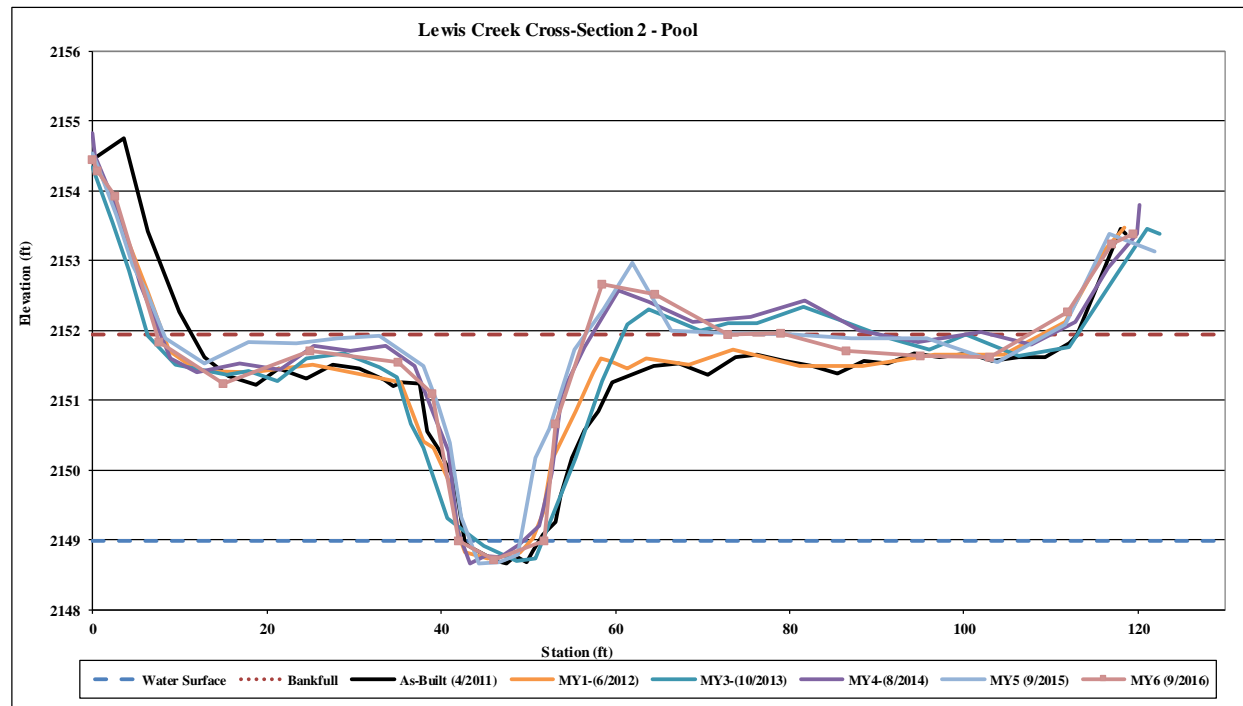


XS-2: Upstream



XS-2: Downstream

Station	Elevation	Notes
0.00	2154.54	LPIN
0.50	2154.28	xs2
2.50	2153.92	xs2
7.60	2151.83	xs2
15.00	2151.24	xs2
25.00	2151.71	xs2
35.00	2151.54	LTB
39.00	2151.09	xs2
42.00	2148.99	LEW
46.00	2148.71	TWG
51.80	2148.99	REW
53.10	2150.66	xs2
58.50	2152.67	TRB
64.50	2152.51	xs2
73.00	2151.94	xs2
79.00	2151.96	xs2
86.50	2151.71	xs2
95.00	2151.63	xs2
103.00	2151.61	xs2
112.00	2152.27	xs2
117.00	2153.24	xs2
121.40	2153.14	RPIN



Stream Survey Data
Cross-section with Annual Overlays
Lewis Creek Stream Restoration/DMS Project No. 733
Monitoring Year 6

Project Name	Lewis Creek
DMS Project Number	733
Cross-Section ID	XS-3, Pool, +641.70
Survey Date	9/2016
SUMMARY DATA	
Bankfull Elevation (ft)	2151.08
Bankfull Cross-Sectional Area (ft²)	42.20
Bankfull Width (ft)	23.20
Flood Prone Area Elevation (ft)	2153.40
Flood Prone Width (ft)	120.00
Bankfull Mean Depth (ft)	1.82
Bankfull Max Depth (ft)	2.60
W/D Ratio	12.75
Entrenchment Ratio	5.17
Bank Height Ratio	1.11

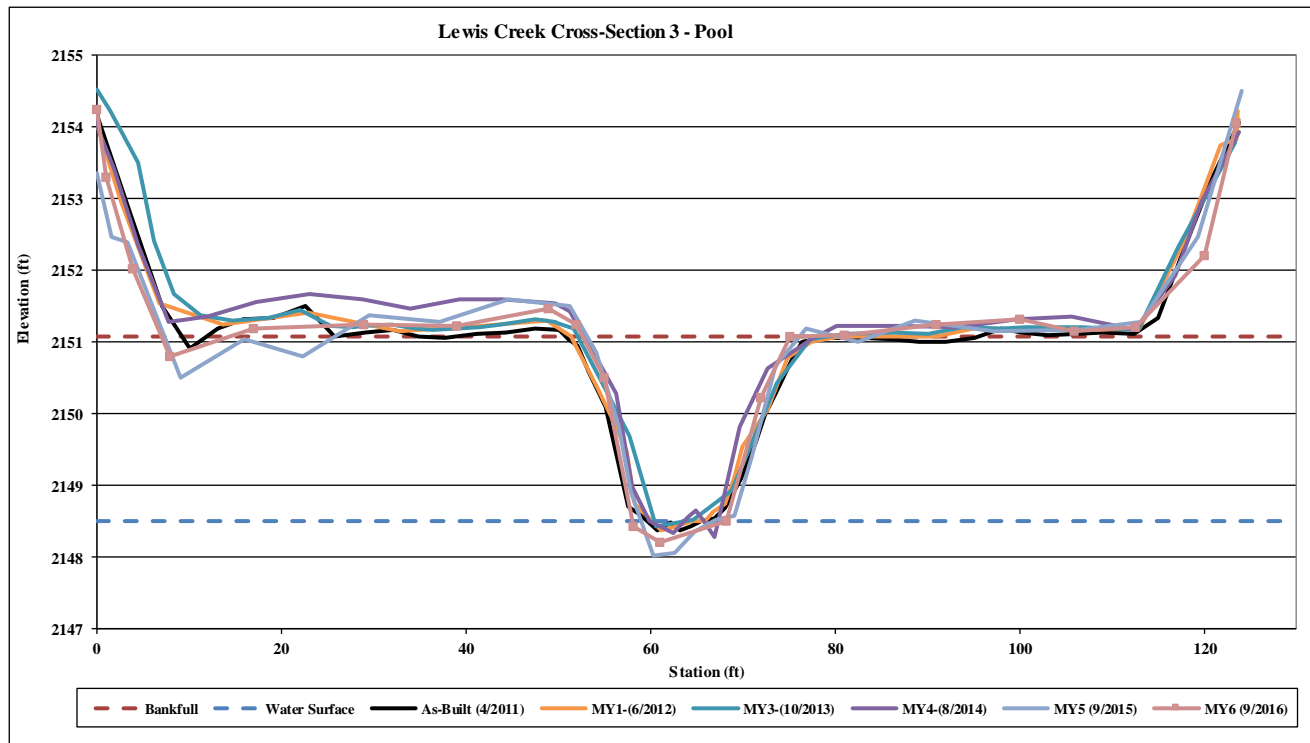


XS-3: Upstream



XS-3: Downstream

Station	Elevation	Notes
0.00	2153.50	LPIN
1.00	2153.29	xs 3
4.00	2152.02	xs 3
8.00	2150.80	xs 3
17.00	2151.19	xs 3
29.00	2151.24	xs 3
39.00	2151.22	xs 3
49.00	2151.46	xs 3
52.00	2151.24	TLB
55.00	2150.50	xs 3
58.20	2148.42	xs 3
61.00	2148.20	TWG
68.20	2148.51	REW
72.00	2150.22	xs 3
75.20	2151.08	TRB
81.00	2151.10	xs 3
91.00	2151.25	xs 3
100.00	2151.32	xs 3
106.00	2151.15	xs 3
112.50	2151.20	xs 3
120.00	2152.20	xs 3
123.50	2154.2	RPIN



Stream Survey Data
Cross-section with Annual Overlays
Lewis Creek Stream Restoration/DMS Project No. 733
Monitoring Year 6

Project Name	Lewis Creek
DMS Project Number	733
Cross-Section ID	XS-5, Riffle, 1+564.9
Survey Date	9/2016
SUMMARY DATA	
Bankfull Elevation (ft)	2148.82
Bankfull Cross-Sectional Area (ft²)	41.10
Bankfull Width (ft)	22.10
Flood Prone Area Elevation (ft)	2152.32
Flood Prone Width (ft)	75.00
Bankfull Mean Depth (ft)	1.86
Bankfull Max Depth (ft)	3.30
W/D Ratio	11.88
Entrenchment Ratio	3.39
Bank Height Ratio	0.94

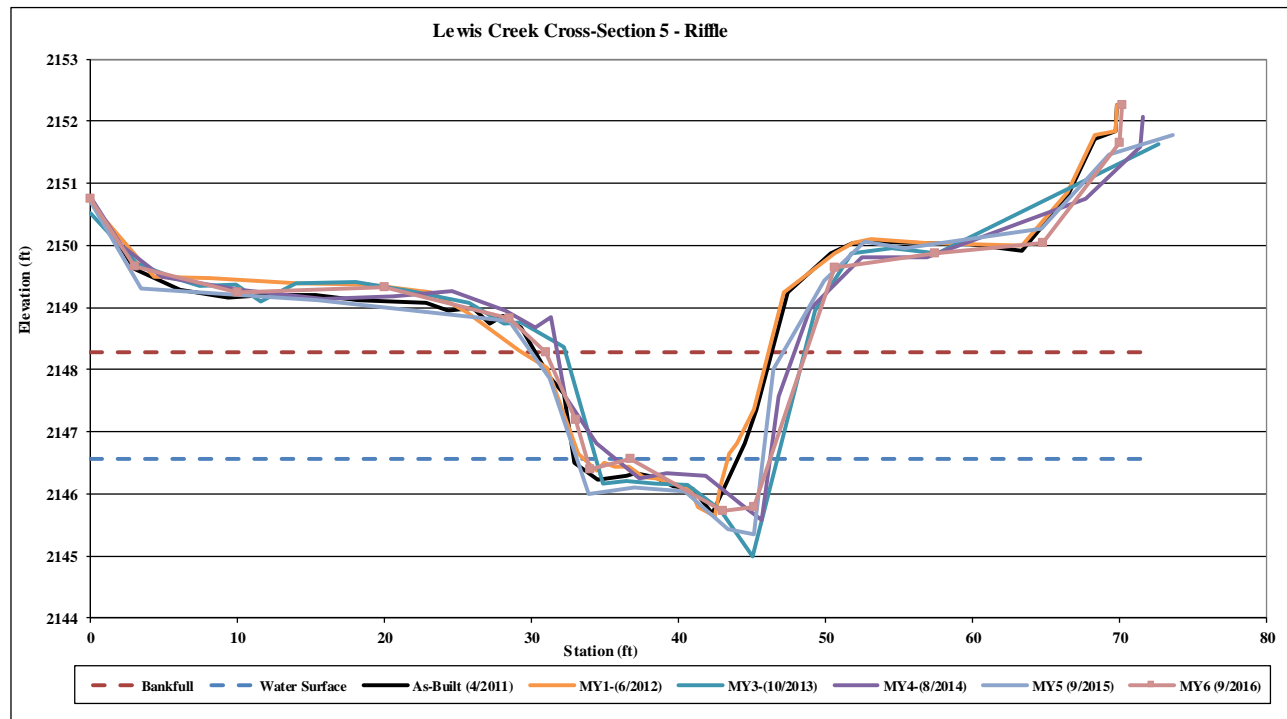


XS-5: Upstream



XS-5: Downstream

Station	Elevation	Notes
0.00	2150.75	LPIN
3.00	2149.67	xs5
10.00	2149.25	xs5
20.00	2149.32	xs5
28.50	2148.82	TLB
31.00	2148.27	xs2
33.00	2147.18	xs5
34.00	2146.40	xs5
36.70	2146.56	LEW
43.00	2145.72	TWG
45.10	2145.79	xs5
50.60	2149.64	TRB
57.40	2149.88	xs5
64.80	2150.03	xs5
70.00	2151.65	xs5
70.20	2152.25	RPIN



Cross Sectional Dimensional Morphology Summary (2010-2016)

Lewis Creek Stream Restoration Project #733

PARAMETER	Cross-Section 1 (Riffle)							Cross-Section 2 (Pool)						
DIMENSION	Baseline	MY1-2011	MY2-2012	MY3-2013	MY4-2014	MY5-2015	MY6-2016	Baseline	MY1-2011	MY2-2012	MY3-2013	MY4-2014	MY5-2015	MY6-2016
Bankfull Width (ft)	23.4	25.3	N/A	22.2	22.8	23.1	22.5	22.7	23.2	N/A	23.3	23.4	22.5	23.5
Floodprone Width (ft)	114.9	114.0	N/A	117.2	117.8	120.0	120.0	114.2	116.1	N/A	120.0	119.0	120.0	120.0
Bankfull Mean Depth	1.9	1.6	N/A	1.6	1.7	1.9	2.0	1.6	1.5	N/A	1.6	1.4	1.5	1.5
Bankfull Max Depth (ft)	3.2	3.3	N/A	3.2	3.2	3.2	3.2	3.1	2.6	N/A	3.1	3.1	3.1	3.1
Bankfull Cross-sectional Area (ft ²)	44.3	40.6	N/A	34.8	38.9	43.3	44.4	36.3	34.5	N/A	40.9	33.3	33.9	36.1
Bankfull Width/Depth Ratio	12.4	15.8	N/A	14.1	13.3	12.3	11.4	14.2	15.5	N/A	15.9	16.5	15.0	15.3
Bankfull Entrenchment Ratio	4.9	4.5	N/A	5.3	5.2	5.2	5.3	5.0	5.0	N/A	4.7	5.1	5.3	5.1
Bankfull Bankheight Ratio	1.0	1.3	N/A	1.1	1.1	0.9	0.9	1.0	1.0	N/A	0.8	0.9	1.0	0.9
Cross Sectional Area between end pins (ft ²)	246.8	246.8	N/A	254.8	247.4	244.9	253.4	347.1	347.1	N/A	334.9	332.8	329.7	340.9
d50 (mm)	0.2	2.0	N/A	N/A	N/A	N/A	N/A	105.4	5.0	N/A	7.0	11.0	21.0	N/A

PARAMETER	Cross-Section 3 (Pool)							Cross-Section 4 (Riffle)						
DIMENSION	Baseline	MY1-2011	MY2-2012	MY3-2013	MY4-2014	MY5-2015	MY6-2016	Baseline	MY1-2011	MY2-2012	MY3-2013	MY4-2014	MY5-2015	MY6-2016
Bankfull Width (ft)	24.7	25.8	N/A	25.0	24.4	23.7	23.2	23.8	23.4	N/A	26.8	26.1	26.4	24.5
Floodprone Width (ft)	122.3	120.3	N/A	120.0	119.1	120.0	120.0	148.9	147.8	N/A	150.0	148.5	150.0	150.0
Bankfull Mean Depth	1.7	1.5	N/A	1.5	1.4	1.6	1.8	2.0	1.8	N/A	1.5	1.6	1.7	2.1
Bankfull Max Depth (ft)	2.6	2.6	N/A	2.6	2.6	2.6	2.6	3.0	2.9	N/A	3.0	3.0	3.0	3.0
Bankfull Cross-sectional Area (ft ²)	41.7	38.3	N/A	36.9	34.7	38.7	42.2	47.6	40.9	N/A	41.2	42.3	45.7	50.5
Bankfull Width/Depth Ratio	14.6	17.4	N/A	16.6	17.2	14.5	12.8	11.9	13.4	N/A	17.5	16.1	15.3	11.9
Bankfull Entrenchment Ratio	5.0	4.7	N/A	4.8	4.9	5.1	5.2	6.3	6.3	N/A	5.6	5.7	5.7	6.1
Bankfull Bankheight Ratio	1.0	1.0	N/A	1.0	1.0	1.1	1.1	1.0	1.0	N/A	1.0	1.1	1.0	1.2
Cross Sectional Area between end pins (ft ²)	335.7	335.7	N/A	353.6	356.3	342.6	339.9	335.7	335.7	N/A	303.8	309.4	307.7	304.2
d50 (mm)	32.0	14.7	N/A	10.0	12.0	16.0	N/A	19.3	7.3	N/A	8.9	16.0	10.0	N/A

PARAMETER	Cross-Section 5 (Riffle)						
DIMENSION	Baseline	MY1-2011	MY2-2012	MY3-2013	MY4-2014	MY5-2015	MY6-2016
Bankfull Width (ft)	23.3	24.0	N/A	22.6	24.3	24.2	22.1
Floodprone Width (ft)	69.8	68.8	N/A	72.7	71.6	75.0	75.0
Bankfull Mean Depth	1.7	1.9	N/A	2.0	1.7	1.8	1.9
Bankfull Max Depth (ft)	3.3	3.6	N/A	3.3	3.3	3.3	3.3
Bankfull Cross-sectional Area (ft ²)	40.0	45.1	N/A	44.7	40.2	42.4	41.1
Bankfull Width/Depth Ratio	13.5	12.8	N/A	11.4	14.7	13.8	11.9
Bankfull Entrenchment Ratio	3.0	2.9	N/A	3.2	2.9	3.1	3.4
Bankfull Bankheight Ratio	1.0	1.0	N/A	1.2	1.0	1.0	0.9
Cross Sectional Area between end pins (ft ²)	217.2	217.2	N/A	192.7	218.1	210.9	203.2
d50 (mm)	0.4	0.8	N/A	N/A	N/A	N/A	N/A