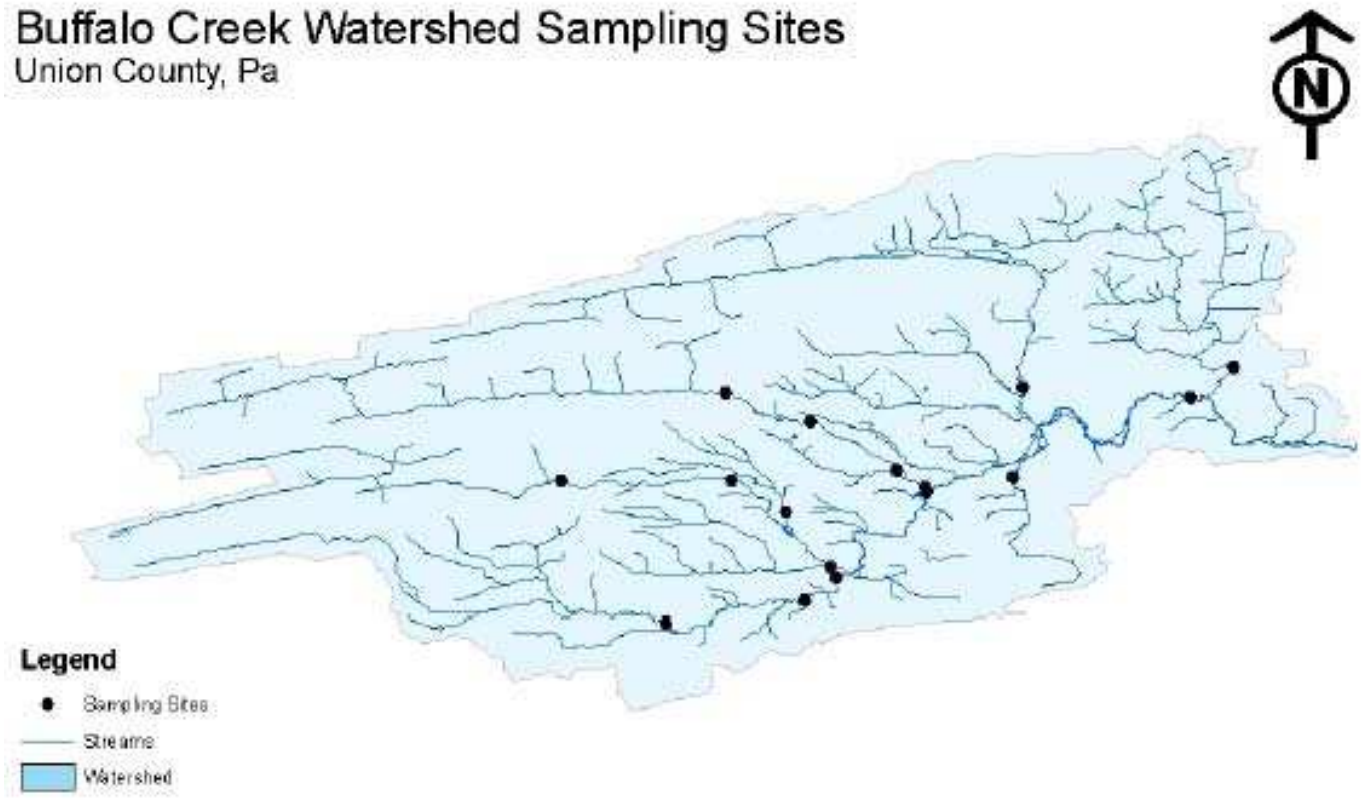
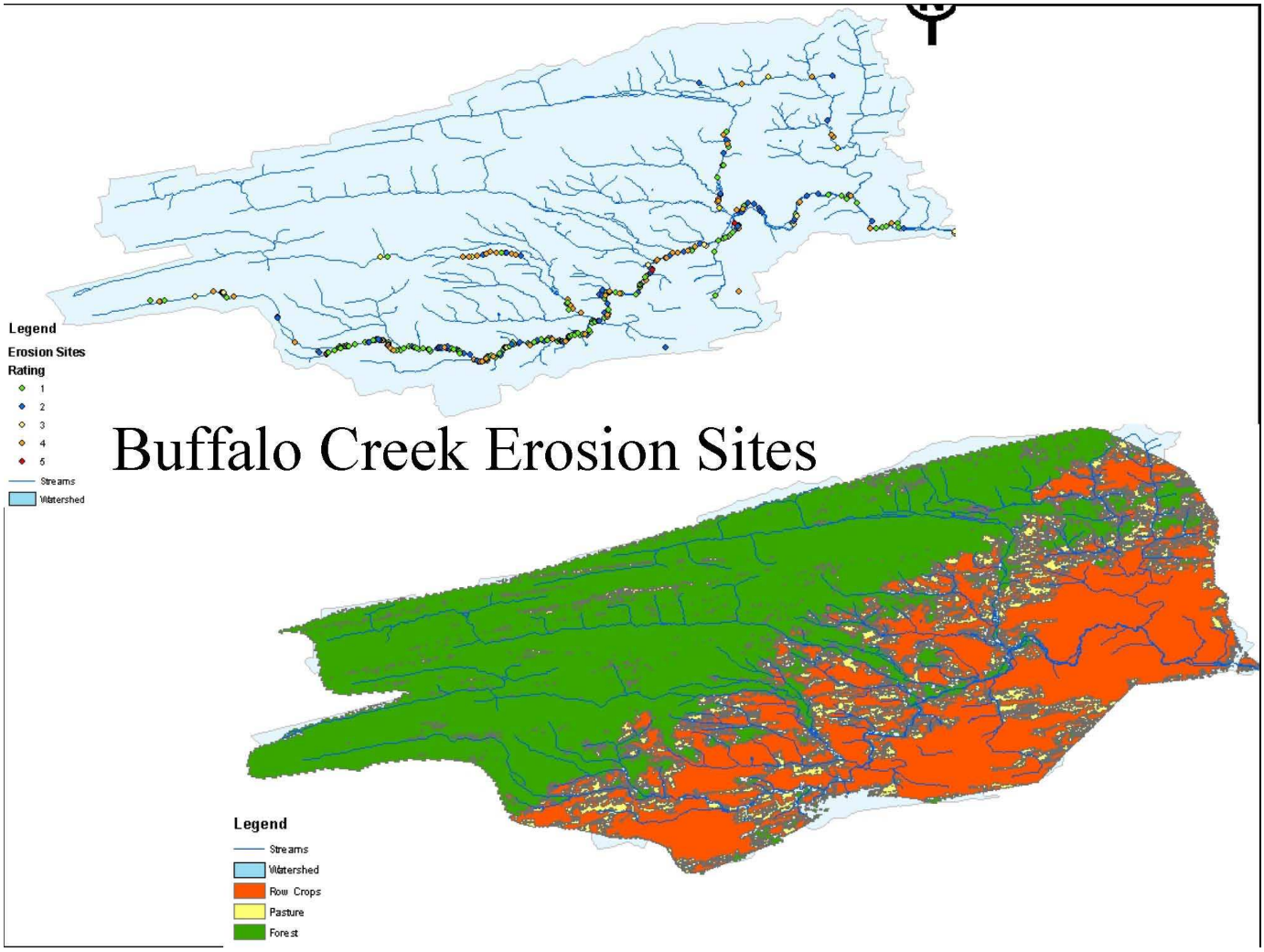




Buffalo Creek Watershed

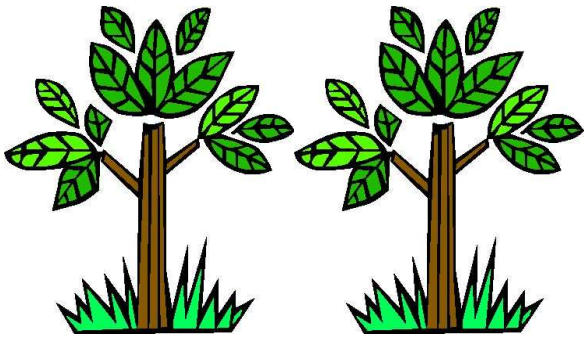
Soil Loss (tons/acre/year)

Forest 0.000167

Pasture 0.012498

Rowcrops 8.33187

This data is based on a model that incorporates the erosion potential, the average monthly stream flow (taken at 12 guage stations), and the land cover type.



Spruce Run Disturbances

Structure	Amount	Percentages
Mid-Channel Bars	4	10.53%
Point Sources	2	5.26%
Rip rap	6	15.79%
Debris Deposit	0	0.00%
Tributaries	3	7.89%
Bridges	4	10.53%
Dams	1	2.63%
Foot Bridges	1	2.63%
Left Bank Erosion Sites	5	13.16%
Right Bank Erosion Sites	12	31.58%
Channelization	0	0.00%
Total	**38**	**100.00%**
Total Erosion Sites	17	

North Branch Disturbances

Structure	Amount	Percentages
Mid-Channel Bars	5	7.46%
Point Sources	8	11.94%
Rip rap	5	7.46%
Debris Deposit	6	8.96%
Tributaries	2	2.99%
Bridges	7	10.45%
Dams	8	11.94%
Foot Bridges	2	2.99%
Left Bank Erosion Sites	11	16.42%
Right Bank Erosion Sites	13	19.40%
Channelization	0	0.00%
Total	**67**	**100.00%**
Total Erosion Sites	24	

Little Buffalo Disturbances

Structure	Amount	Percentages
Mid-Channel Bars	2	6.06%
Point Sources	2	6.06%
Rip rap	1	3.03%
Debris Deposit	2	6.06%
Tributaries	1	3.03%
Bridges	7	21.21%
Dams	2	6.06%
Foot Bridges	1	3.03%
Left Bank Erosion Sites	5	15.15%
Right Bank Erosion Sites	7	21.21%
Channelization	3	9.09%
Total	**33**	**100.00%**
Total Erosion Sites	12	

Beaver Run Disturbances

Structure	Amount	Percentages
Mid-Channel Bars	0	0.00%
Point Sources	0	0.00%
Rip rap	0	0.00%
Debris Deposit	0	0.00%
Tributaries	0	0.00%
Bridges	5	62.50%
Dams	0	0.00%
Foot Bridges	0	0.00%
Left Bank Erosion Sites	2	25.00%
Right Bank Erosion Sites	1	12.50%
Channelization	0	0.00%
Total	**8**	**100.00%**
Total Erosion Sites	3	

Rapid Run Disturbances

Structure	Amount	Percentages
Mid-Channel Bars	11	7.28%
Point Sources	13	8.61%
Rip rap	12	7.95%
Debris Deposit	5	3.31%
Tributaries	8	5.30%
Bridges	17	11.26%
Dams	10	6.62%
Foot Bridges	1	0.66%
Left Bank Erosion Sites	14	9.27%
Right Bank Erosion Sites	20	13.25%
Channelization	4	2.65%
Total	**115**	**100.00%**
Total Erosion Sites	34	

Erosion Potential Based on Bank Angle

Sites	L	M	H		TOTAL
Rapid Run	7	20	9		**36**
Little Buffalo	3	7	2		**12**
Beaver Run	3	0	0		**3**
North Branch	5	10	11		**26**
Spruce Run	6	6	6		**18**
TOTAL	**24**	**43**	**28**	**95**	
PERCENT	**25.26%**	**45.26%**	**29.47%**		

Water Chemistry Data of Buffalo Creek's Tributaries

June 2005

Parameters	Little Buffalo #1	Little Buffalo #2	North #1	North #2	Beaver #1	Beaver #2	Rapid #1	Rapid #2	Spruce #1	Spruce #2
pH	7.04	7.48	6.045	7.215	7.465	7.865	6.16	6.76	5.97	7.69
Conductivity	77.8	12.5	11.83	40.465	316	293	11.22	28.95	9.61	83.8
Alkalinity	53.5	94.5	4	23.5	296	248	4.5	15	3	63
Orthophos.	0.1525	0.095	0.09	0.1775	0.3925	0.4525	0.2425	0.1925	0.29	0.305
Phosphorus	0.29	0.1075	0.2175	0.1525	0.2525	0.205	0.13	0.1925	0.3225	0.23
Nitrate	1.5	3.9	1.53	2.13	9.125	8.025	1.5	0.8	0.65	2.4
Nitrite	0.00335	0.01143	0.004	0.0049	0.0145	0.0674	0.0072	0.0091	0.0103	0.0145
DO	6.79	7.22	8.49	7.35	8.05	9.58	6.73	8.42	9.5	8.14
Temp	19.4	22.1	17.2	21.3	13.7	16.4	16.5	19.7	13.5	21.6
TDS	38.45	62.3	5.92	20.05	169	147	5.605	14.6	4.805	41.85
Depth(cm)	5	26	24	40	12	13	25	21	15	20
Velocity	0.42	0.05	0.61	0.07	0.26	0.18	0.07	0.47	0.15	0.2
16-Jun-05										

Water Chemistry Data of Buffalo Creek's Tributaries

July 2005

Parameters	Rapid Run #1	Rapid Run #2	Little Buffalo #1	Little Buffalo #2	Beaver Run #1	Beaver Run #2	North Branch #1	North Branch #2	Spruce Run #1	Spruce Run #2
pH	5.45	6.73	7.32	8.18	7.74	7.97	6.44	7.43	6.10	7.88
Conductivity	13.86	26.90	75.00	126.20	301.00	282.00	17.09	30.55	9.71	79.20
Alkalinity	1.50	11.00	52.50	85.50	295.50	245.00	10.00	23.50	3.50	56.50
Orthophos.	0.25	0.24	0.09	0.15	0.23	0.21	0.16	0.21	0.19	0.04
Phosphorus	0.06	0.22	0.23	0.13	0.16	0.10	0.07	0.19	0.06	0.06
Nitrate	0.80	0.60	0.01	0.01	0.02	0.18	0.01	0.01	0.50	2.00
Nitrite	0.01	0.01	0.73	2.43	9.07	6.83	1.17	0.93	0.01	0.01
DO	8.86	6.62	6.14	5.5	7.54	9.11	6.15	8.44	9.62	6.9
Temp	13.8	18.9	23.4	26.2	17.3	19.1	17.7	22	12.9	21.8
TDS	6.93	13.50	37.35	63.25	151.00	141.00	8.52	38.50	4.85	39.55
Depth	29 15	24 29	12	20	13	13 11	26 14	21 31	10	11 24
Velocity	.30 .25	.43 .70	0.16	0.02	0.25	.22 .11	.53 .75	17 .32	0.5	.18 .18

Buffalo Creek Water Chemistry

Spring 2005 (03/21/05)

Buffalo Creek Water Chemistry Spring 2005 3/21/05

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6
pH	n/a	6.98	8.01	7.58	7.75	7.56
Conductivity	n/a	51.7	181.05	203	192.65	147.45
Alkalinity (ppm)	n/a	1.75	5.5	6.65	6.85	7.05
Orthophosphate (ppm)	n/a	0.395	0.92	5.50(over)	0.395	0.51
Phosphorus (ppm)	n/a	0.22	0.95	0.535	0.155	0.15
Nitrate (ppm)	n/a	1.95	3.4	3.75	3.25	3.85
Nitrite (ppm)	n/a	0.0068	0.01355	0.013	0.0126	0.0105
DO (ppm)	n/a	11.6	11.77	12.5	10.03	9.44
Temp ©	n/a	4.2	5.4	5.7	5.4	5.5
Width (m)	n/a	7	10.5	28	30	40
Velocity (m/s)	n/a	0.71	0.233	0.27	0.237	n/a
Depth (m)	n/a	0.1016	0.4191	0.25	0.584	n/a
Volume (m3/s)	n/a	0.504	1.05	1.89	4.15	n/a

Buffalo Creek Water Chemistry

May 2005

Parameters	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6
pH	4.09	6.19	8.005	8.9	8.565	7.915
Conductivity						
Alkalinity	0	11	90	68	72	85.5
Orthophosphate	0.1325	0.11	0.1325	0.16	0.14	0.13
Phosphorus	0.12	0.1425	0.345	0.2725	0.3375	0.2425
Nitrate	1.525	1.825	3.4	2.7	2.825	3.075
Nitrite	0.009	0.0091	0.0152	0.0113	0.0117	0.0136
DO	11.3	10.04	6.98	7.25	5.98	5.39
Temp	12	13.3	15.9	16.7	16.9	18
TDS						
5/18/2005	Buffalo Creek					

Buffalo Creek Water Chemistry

June 2005

pH	3.870	6.345	7.530	7.890	7.760	7.735
Conductivity	27.35	57.55	263.00	192.00	217.50	230.00
Alkalinity (ppm)	0	11	98	62	74	75.5
Orthophosphate (ppm	0.9570	0.2030	0.2700	0.2575	0.3075	0.4775
Phosphorus (ppm)	0.0675	0.0725	0.6175	1.3050	1.1925	1.3175
Nitrate (ppm)	0.875	1.525	3.860	2.630	2.400	2.867
Nitrite (ppm)	0.0519	0.0313	0.0141	0.0358	0.0440	0.0524
DO (ppm)	8.08	8.99	7.83	5.11	8.08	7.15
Temp ©	15.2	17.3	19.3	21.5	21.6	23.0
TDS	14.15	25.05	132.00	96.00	108.50	115.00
Date	6-Jun					

Possible Restoration Projects:

Engineered J-Hook

Possible Restoration Projects:

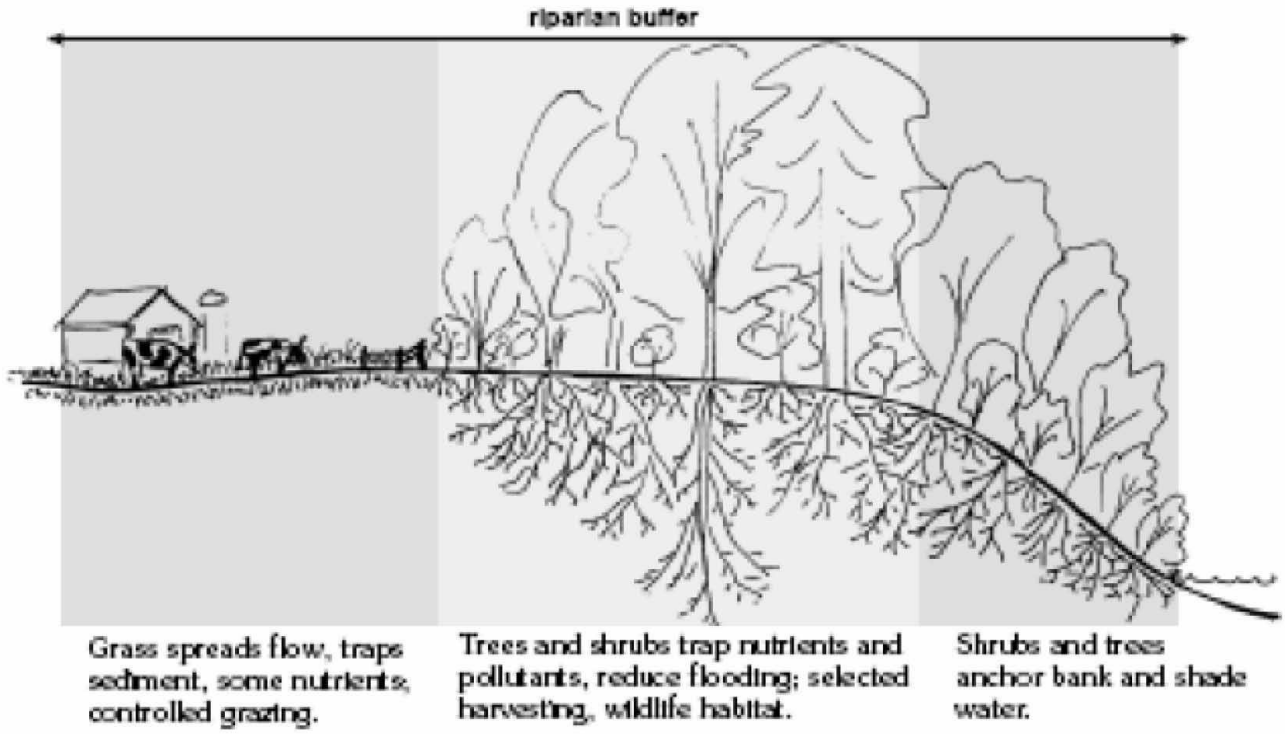
Planting Riparian Buffers…

Could Turn This…

Into This!

http://www.oh.nrcs.usda.gov/programs/Lake_Erie_Buffer/riparian.html

Why are Buffers So Important?



http://www.crjc.org/buffers/Buffers%20for%20Agriculture.pdf

Acknowledgements

- Buffalo Creek Watershed Association
- Residents of the PA Watershed
- Dr. Zimmerman
- Our Fellow CWI Interns
- The Biology Department at Lycoming
- Mrs. Musser for Feeding Us Lunch