

Grand Lake St. Marys Watershed 2019 Update— Reconstructed Wetlands

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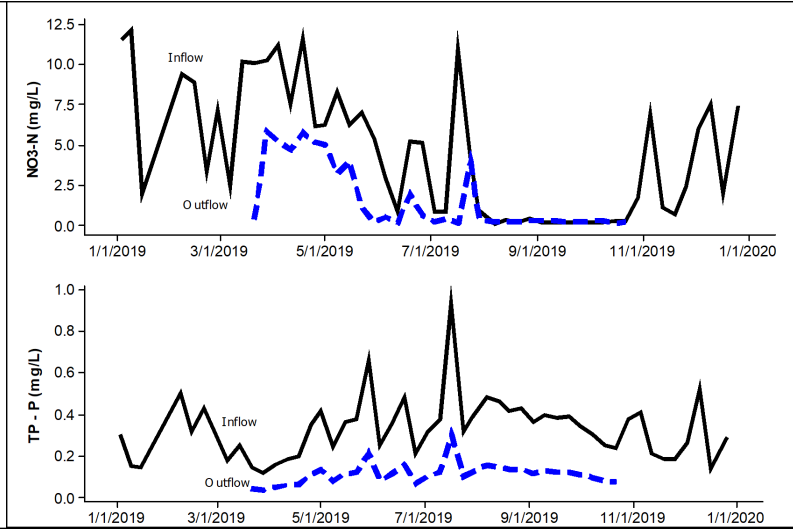
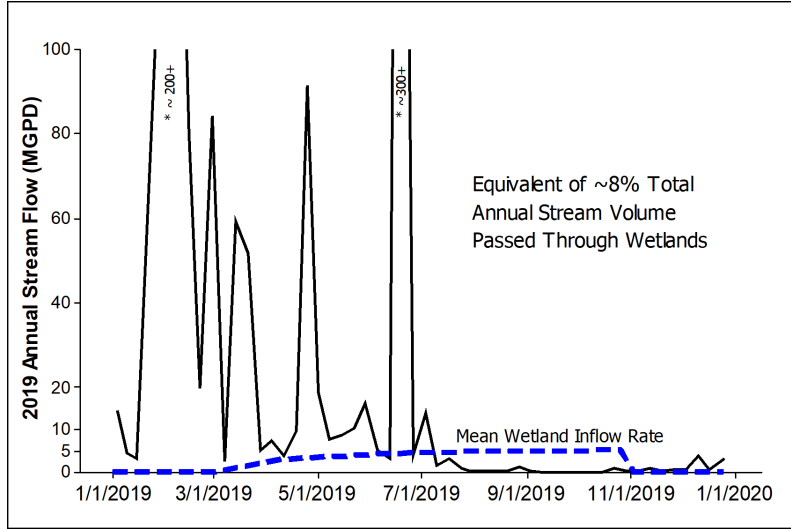
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- Wetlands are essential components of healthy watersheds because they improve water quality by sequestering nutrients and reducing runoff rates, provide habitat for wildlife by increasing habitat variability, improve groundwater conditions by providing recharge points, and enhance public resource use potential by providing increased opportunities for recreation and education.
- Historical GLSM watershed surveys dating from the late 1800s to early 1900s indicate that nearly 100% of the south shore as well as a large percentage of the eastern and northern shores were lined with expansive wetland areas. However, due to land practice changes, almost all of these wetlands have been altered or destroyed.
- Following the GLSM Distressed Watershed ruling in 2011, Prairie Creek and Coldwater Creek wetlands were constructed in an effort to restore a portion of these once expansive wetlands. Prairie Creek wetlands (restored 2012) encompass 30 acres of restored habitat (0.9% of total area) plus an additional 70 acres of forested wetlands, draining an upstream watershed of 3,500 acres. Coldwater Creek (restored 2015) wetlands encompass 32 acres of restored habitat (0.3% of total area), draining an upstream watershed of 12,400 acres.
- To assess the efficiency of these wetlands for improving water quality in the region, weekly monitoring began in 2017. Monitoring consists of measuring stream and wetland flow volumes and testing for nitrate-N (NO₃⁻), total phosphorus (TP), dissolved reactive phosphorus (DRP), and total suspended solids (TSS) during spring (March-May), summer (June-August), and fall (September-November) when water is actively pumped through the systems.

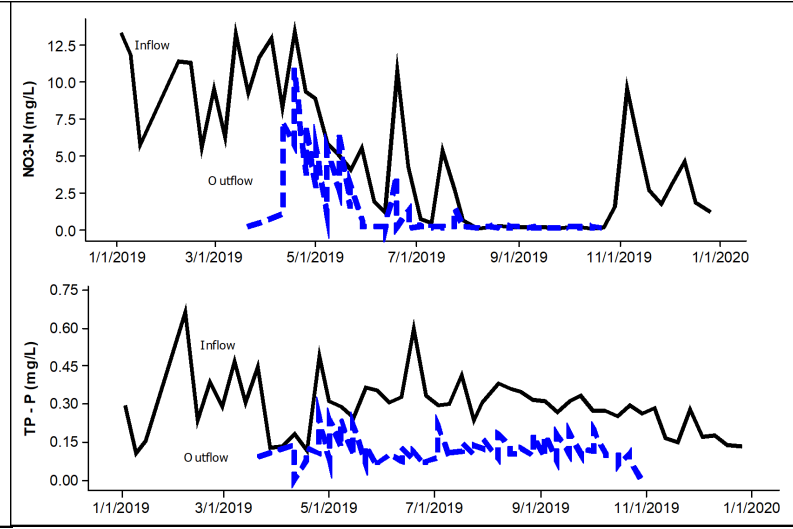
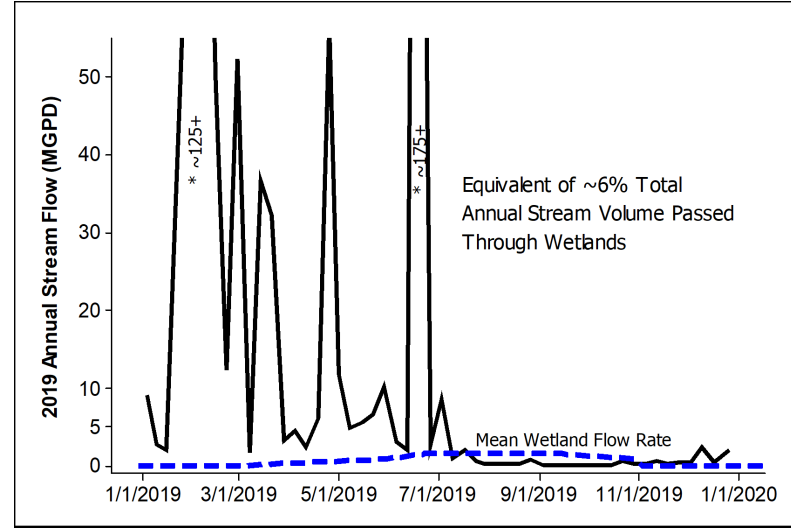
Coldwater Creek - 2019					Prairie Creek - 2019				
Variable	Season	Avg. Stream Conc. (mg/L)	Avg. Conc. Reduction	Load Reduction (lb)	Variable	Season	Avg. Stream Conc. (mg/L)	Avg. Conc. Reduction	Load Reduction (lb)
NO ₃ ⁻	Winter	7.04	0%	0	NO ₃ ⁻	Winter	7.3	0%	0
	Spring	7.92	47%	4,000		Spring	8.8	67%	1,200
	Summer	2.56	46%	4,500		Summer	2.3	43%	1,200
	Fall	1.13	0%	0		Fall	1.8	31%	0
TP	Winter	0.31	0%	0	TP	Winter	0.25	0%	0
	Spring	0.28	49%	175		Spring	0.29	86%	62
	Summer	0.42	51%	550		Summer	0.35	84%	220
	Fall	0.31	5%	60		Fall	0.27	70%	95
DRP	Winter	0.18	0%	0	DRP	Winter	0.12	0%	0
	Spring	0.13	90%	130		Spring	0.13	86%	38
	Summer	0.16	64%	300		Summer	0.13	84%	105
	Fall	0.11	63%	90		Fall	0.06	70%	22
TSS	Winter	29	0%	0	TSS	Winter	18	0%	0
	Spring	68	2%	40,000		Spring	45	1%	0
	Summer	55	54%	90,000		Summer	33	37%	12,225
	Fall	34	0%	0		Fall	30	65%	6,700



Coldwater Creek Wetlands



Prairie Creek Wetlands



Acknowledgements

The Lake Restoration Commission would like to acknowledge and thank the many individuals and organizations whose dedication and hard work in the region have served as the basis for the restoration, maintenance, operation, and monitoring of these wetland projects. In particular, the LRC thanks the Ohio Department of Natural Resources (notably, Sean Finke) for managing and maintaining the GLSM wetlands, the many local donors and partners (especially, G.A. Wintzer & Son) whose generous contributions have facilitated implementation of many water quality initiatives, local watershed groups (such as the Lake Improvement Association) who have worked to inform the public of lake status updates, news, and events, as well as past Wright State University—Lake Campus Students (N. Mazzone, N. Gnau, P. Poore, G. MacDonald) and GLSM Watershed Coordinators (A. Hayward) for their efforts in monitoring water quality as well as promoting conservation in the region. Lastly, we wish to thank the late Dr. Thomas Knapke, whose tireless work in the watershed brought people together towards a common goal of a cleaner and healthier environment for future generations.