

Hat and Black Creek Community Engagement Meeting

Nelson Memorial Library, Lovingson VA

September 9, 2024

Where We Left Off in February

At our last meeting in February, we reviewed and prioritized agricultural best management practices (BMPs) that could be used to achieve sediment and phosphorus reduction goals for Hat and Black Creek. At our next meeting, we were planning to review draft agricultural and urban BMP implementation scenarios along with projected costs and a timeline for implementation.

Shifting Back to a TMDL

Total Maximum Daily Loads (TMDLs) and Advance Restoration Plans (ARPs) share the primary objective of restoring impaired uses of our waterways. Both processes included identification of pollutant sources in a watershed, establishment of pollutant reduction targets and development of allocation scenarios.

Unlike a TMDL, an ARP also includes descriptions of actions to be taken to accomplish reduction goals along with a schedule and milestones. In the TMDL process, TMDL Implementation Plans are developed following completion of a TMDL study. These plans include implementation actions, milestones and other components also found in an ARP. ARPs are near-term plans that are based on a timeline of implementation that is more immediately beneficial or practicable to restoring impaired streams. If implementation of an ARP does not occur, or if it occurs at a rate that is significantly slower than planned, a stream may be re-prioritized for TMDL development.

We began with the traditional route of TMDL development for the Hat and Black Creek watersheds, then shifted to an ARP after determining the level of phosphorus reductions needed from the Nelson County Regional STP (Facility). Representatives from the Nelson County Service Authority expressed a willingness to explore different treatment options making an ARP a viable and expedient option. This collaborative approach would not require modification of the Facility's VPDES permit and could result in a significant near term reduction in phosphorus concentrations in Black Creek. Since sediment reductions needed in both Hat and Black Creek were relatively low, this approach appeared acceptable to address both of the pollutants in the near term.

Additional Phosphorus Monitoring: Nelson County Regional STP

In an effort to refine estimates of the phosphorus load from the Facility, follow up monitoring was conducted for several weeks in January 2023, in addition to spring and fall of 2023 and winter of 2024. Results of this monitoring are shown in **Figure 1**, along with monitoring completed at the Facility in 2016 and 2017.

DEQ staff visited the Facility this spring to provide feedback on treatment operations and discuss treatment options to accomplish phosphorus reductions. Nelson County Service Authority staff expressed concerns about costs associated with phosphorus removal upgrades at the Facility, particularly in light of significant upgrades that have occurred or are occurring at their other water and wastewater treatment facilities. DEQ staff explored a few options to help fund upgrades at the Facility including the DEQ Revolving Loan Fund.

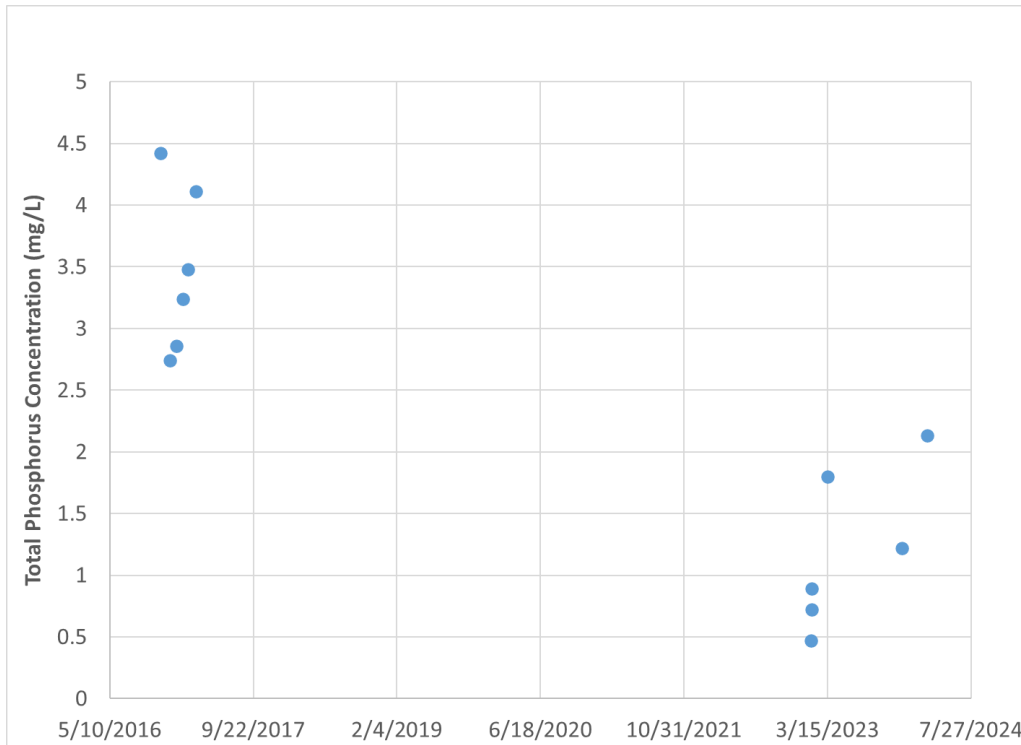


Figure 1 Total phosphorus monitoring at the Nelson County Regional STP (November 2016-February 2024)

Feedback from EPA

DEQ TMDL program staff meet with EPA TMDL program staff regularly to provide updates on projects across the state. Nesha McRae provided an update on the Hat and Black ARP during a recent call with EPA in May 2024. During the call, EPA staff expressed concerns about the likelihood of implementation of the ARP in the absence of any regulatory controls over discharge from the Facility. EPA reiterated that an ARP is intended to serve as a near term plan, and that if it was not successfully implemented following completion, a TMDL would still be required which would include a phosphorus wasteload allocation for the Facility.

Adding it all up...

After consideration of feedback from EPA regarding their expectations of the timeline for implementation of an ARP, and after multiple discussions with the Nelson County Service Authority regarding their ability to make upgrades to the facility on Black Creek in the near term, it was determined that an ARP was not a reasonable option for the watersheds. DEQ felt that reasonable assurance of near-term implementation could not be provided to the extent needed, and that a TMDL would ultimately be required. Consequently, DEQ has decided to pivot back to TMDL development for both watersheds (Hat and Black Creek) and for both pollutants (sediment and phosphorus).

The path forward

Step 1: Finish TMDL study and share draft report with stakeholders

Step 2: Draft separate TMDL implementation plan that includes BMP implementation scenarios previously discussed with the group (*this was where we left off at the last meeting*)

Step 3: Hold final public meeting to present the TMDL study and the associated Implementation Plan

Updated Pollutant Reduction Scenarios

An error in pasture sediment load calculations was discovered in both Hat and Black Creek. Correcting this error resulted in a higher pasture sediment load, meaning that greater reductions are needed from both watersheds. An updated reduction scenario is shown in **Table 1**. Additionally, the final phosphorus reduction scenario for Black Creek is shown in **Table 2**. The original phosphorus reduction scenario for Black Creek included 50% reductions from all sources in the watershed. However, in evaluating BMP implementation scenarios and costs, it was determined that it was far more cost effective and practicable to increase the reduction needed from the greatest sources by 3%, allowing 50% reductions from other sources to drop to 8%.

Table 1 Sediment reduction scenarios selected to Hat and Black Creek to meet water quality improvement goals. *Note: TSS = Total suspended solids, a measure of sediment in the streams.*

Source	Existing TSS Load (lb/yr)		Sediment Reduction Scenario			
	Black Creek	Hat Creek	Black Creek		Hat Creek	
			Reduction (%)	TSS (lb/yr)	Reduction (%)	TSS (lb/yr)
Cropland	-	12,919	-	-	10.0	11,627
Hay	59,587	102,648	20.2	47,550	10.0	92,383
Pasture	253,951	1,173,980	34.0	167,608	10.0	1,056,582
Vineyard	-	15,794	-	-	10.0	14,215
Forest	87,308	364,328	-	87,308	-	364,328
Trees	32,305	57,301	-	32,305	-	57,301
Shrub	2,666	5,220	-	2,666	-	5,220
Harvested	14,012	17,614	-	14,012	-	17,614
Wetland	453	176	-	453	-	176
Gravel	908	3,028	10.0	818	5.0	2,877
Turfgrass	15,476	28,358	10.0	13,928	5.0	26,940
Developed Pervious	1,789	2,191	10.0	1,610	5.0	2,081
Developed Impervious	67,858	87,040	10.0	61,072	5.0	82,688
Streambank Erosion	21,197	275,435	20.0	16,936	5.0	261,663
VPDES Individual Permit (Nelson Co. Regional STP)	20,118	-	-	20,118	-	-
Domestic Sewage General Permit	-	91	-	-	-	91
MOS (10%)	52,962	226,544	-	52,962	-	226,544
Future Growth (2%)	10,590	45,309	-	10,592	-	45,309
TOTAL	641,185	2,417,974		529,963		2,267,638

Black Creek phosphorus reduction scenarios

Table 2 Total phosphorus reduction scenarios for Black Creek to meet water quality improvement goal. *Note: The existing load for the Facility is based on the facility’s design flow (0.22 MGD) and a total phosphorus concentration of 2.5 mg/L. The Facility currently discharges at a rate well below their permitted discharge rate (average = 0.12 MGD), but calculations must account for potential increases in phosphorous from the facility based on current permit limits.*

Source	Existing	Phosphorus Reduction Scenario	
		Reduction	Allocation
	TP (lb/yr)	%	TP (lb/yr)
Hay	189	53	89
Pasture	81	53	38
Forest	18	0	18
Trees	9	0	9
Shrub	0.4	0	0.4
Harvested	3	0	3
Wetland	0.1	0	0.1
Gravel	0.4	8	0.4
Turfgrass	28	8	26
Developed pervious	1	8	1
Developed impervious	149	53	70
Groundwater	168	0	168
Streambank erosion	7	8	7
Permitted load for Nelson Co.	1,676	54	776
Margin of safety (10%)	137	NA	137
Future growth (2%)	27	NA	27
Total (lb/yr)	2,494	1,368	

Next Steps

An additional community engagement meeting is needed to review BMP implementation scenarios, costs and a timeline. This meeting will be held this fall (October/November). A draft TMDL report will be completed within this same time frame and shared with the group. Following the meeting this fall, a draft TMDL implementation plan will also be completed. Both draft documents will be shared with the public and made available for public comment at a final public meeting to be held in December/January.

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