

1.0 INTRODUCTION

The Clean Water Act (CWA), Section 303(d), requires States to list and prioritize waters for which effluent limitations are not stringent enough to achieve applicable water quality standards. Commonly referred to as the “impaired waters list” or “303(d) list”, the most recent Ohio edition was prepared by Ohio EPA in 1998. Table 1 shows the seven stream segments that were identified as impaired, as well as unlisted segments in other areas of the Sugar Creek basin.

The 1998 303(d) list was based on data available through about 1994. A comprehensive biological/water quality survey was conducted in the Sugar Creek basin during 1998 and 1999. Due to the limited scope of previous assessments, the segments included in the 1998 303(d) list comprise a small fraction of the total drainage area of the basin. This report includes information beyond the requirements of that list, covering essentially the whole basin. More details about the segments that were not included in the 1998 list are available (Ohio EPA, 2000).

The Clean Water Act and USEPA regulations require that Total Maximum Daily Loads (TMDLs) be developed for all segments on the section 303(d) lists. The requirements of a TMDL are described in Title 40 Code of Federal Regulations (CFR) sections 130.2 and 130.7 and section 303(d) of the Clean Water Act, as well as in various guidance documents (e.g., USEPA, 1991; USEPA, 1997). A TMDL is defined as "the sum of the individual wasteload allocations for point sources and load allocations for nonpoint sources and natural background" such that the capacity of the waterbody to assimilate pollutant loadings is not exceeded. A TMDL is also required to be developed with seasonal variations and must include a margin of safety that addresses the uncertainty in the analysis. A TMDL is expressed using the following equation:

$$\text{TMDL} = \text{WLA} + \text{LA} + (\text{MOS})$$

where WLA = wasteload allocation, LA = load allocation, and MOS = margin of safety. The MOS is in parenthesis because it can be incorporated into the TMDL either explicitly or implicitly. The MOS is incorporated explicitly when it is expressed directly in the TMDL loadings. The MOS is incorporated implicitly when it is expressed through conservative assumptions used in the analysis.

Sugar Creek Watershed TMDL

Table 1. Summary of Sugar Creek watershed areas included in this TMDL report

Waterbody Segment Description/[HUC Code *]	Major Causes ^A	1998 303(d) list	1998 survey ^B	TMDL Done	Comments
Upper Sugar Creek					
Sugar Creek (Headwaters to Middle Fork) [05040001-100] RM 45.0 to 19.4	Organic Enrichment/DO (H)	✓		☺	No TMDL needed for D.O. based on 1998 assessment
	Habitat alteration (H)		✓	Yes	
	Siltation (H)		✓	Yes	
	Nutrients (M)		✓	Yes	
	Wetlands (H)		✓	No	Impairment due to natural conditions
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended
Little Sugar Creek [05040001-100] RM 10.6 to 0.0	Organic Enrichment/DO(H)	✓		☺	No TMDL needed for D.O. based on 1998 assessment
	Habitat alteration (H)		✓	Yes	
	Siltation (H)		✓	Yes	
	Nutrients (M)		✓	Yes	
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended
North Fork					

Sugar Creek Watershed TMDL

Waterbody Segment Description/[HUC Code *]	Major Causes ^A	1998 303(d) list	1998 survey	TMDL Done	Comments
North Fork Sugar Ck [05040001-100] RM 6.8 to 0.0	Nutrients (H)	✓	✓	Yes	
	Organic Enrichment/DO (H)	✓		☺	No TMDL needed for D.O. based on 1998 assessment
	Habitat Alteration (H)	✓	✓	Yes	
	Pathogens (H)	✓	✓	No	Insufficient data to quantify; BMPs recommended
	Siltation (H)		✓	Yes	
	Unionized ammonia (M)	✓		☺	No TMDL needed for NH3-N based on 1998 assessment
Middle Fork					
Middle Fork Sugar Ck. [05040001-120] RM 15.0 to 0.0	Wetlands (H)		✓	No	Impairment due to natural conditions
	Siltation (M)		✓	Yes	
	Nutrients (H)		✓	Yes	
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended
Lower Sugar Creek					
Elm Run [05040001-120] RM 3.0 to 0.0	Habitat alteration (H)		✓	Yes	
	Siltation (H)		✓	No	Urban influence not fully assessed
	Flow alteration (M)		✓	No	Due to ubiquitous use of drainage tiles
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended
Sugar Creek (M Fork to South Fork) [05040001-120] RM 19.4 to 12.3	Wetlands (H)		✓	No	Impairment due to natural conditions
	Siltation (H)		✓	Yes	
	Nutrients (M)		✓	Yes	

Sugar Creek Watershed TMDL

Waterbody Segment Description/[HUC Code *]	Major Causes ^A	1998 303(d) list	1998 survey ^B	TMDL Done	Comments
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended
Sugar Ck: S Fork to Tuscarawas R. [05040001-120] RM 12.3 to 0.0	Wetlands (H)		✓	No	Impairment due to natural conditions
	Siltation (M)	✓	✓	Yes	
Broad Run [05040001-120] RM 6.0 to 0.0	Habitat alteration (H)		✓	Yes	
	Siltation (H)		✓	Yes	
	Nutrients (M)		✓	Yes	
	Flow alteration (M)		✓	No	Due to ubiquitous use of drainage tiles
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended
Turkeyfoot Run [05040001-120] RM 3.3 to 0.0	pH (H)		✓	No	Additional data required
Cherry Run [05040001-120] RM 3.74 to 0.0	pH (H)		✓	No	Additional data required
Goettge Run [05040001-120] RM 5.14 to 0.0	pH (H)	✓		☺	No TMDL needed for pH based on 1998 assessment
	Siltation (H)		✓	No	No excessive sediments observed
	Metals (H)		✓	No	No criteria available for elevated metals (manganese/iron)
Brandywine Ck [05040001-120] RM 3.50 to 0.0	Siltation (H)	✓		Yes	
	Metals (H)		✓	No	No criteria available for elevated metals
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended

Sugar Creek Watershed TMDL

Waterbody Segment Description/[HUC Code *]	Major Causes ^A	1998 303(d) list	1998 survey ^B	TMDL Done	Comments
South Fork Sugar Creek					
South Fork Sugar Creek [05040001-110] RM 22.7 to 6.6	Habitat alteration (H)		✓	Yes	
	Siltation (H)		✓	Yes	
	Nutrients (M)		✓	Yes	
	Flow alteration (M)		✓	No	Due to ubiquitous use of drainage tiles
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended
South Fork Sugar Creek [05040001-110] RM 6.6 to 0.0	Wetlands (H)		✓	No	Impairment due to natural conditions
	Siltation (H)		✓	Yes	
	Nutrients (M)		✓	Yes	
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended
Brush Run [05040001-110] RM 3.0 to 0.0	Habitat alteration (H)		✓	Yes	
	Siltation (H)		✓	Yes	
	Nutrients (M)		✓	Yes	
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended
Troyer Valley Creek [05040001-110] RM 3.20 to 0.0	Ammonia (H)		✓	Yes	
	Metals (H)		✓	No	No criteria available for manganese and iron
	Nutrients (H)		✓	Yes	
	Habitat alteration (H)		✓	Yes	
	Siltation (H)		✓	Yes	

Sugar Creek Watershed TMDL

Waterbody Segment Description/[HUC Code *]	Major Causes ^A	1998 303(d) list	1998 survey ^B	TMDL Done	Comments	
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended	
Trib. to S. Fork Sugar Ck (RM 14.15) [05040001-110] RM 4.7 to 0.0	Habitat alteration (H)	✓	✓	Yes		
	Siltation (H)	✓		Yes		
	Organic Enrichment/D.O.	✓		☺	No TMDL needed for D.O. based on 1998 assessment	
	Unionized ammonia	✓		No	Insufficient data to quantify; BMPs & limits recommended	
	Nutrients (H)	✓		Yes		
	Thermal Modifications	✓		No	Insufficient data to quantify; BMPs recommended	
	Flow alteration (M)			✓	No	Due to ubiquitous use of drainage tiles
	Pathogens (H)			✓	No	Insufficient data to quantify; BMPs recommended
East Branch Sugar Creek						
East Branch [05040001-110] RM 9.70 to 0.0	Habitat alteration (H)		✓	Yes		
	Siltation (H)		✓	Yes		
	Nutrients (H)		✓	Yes		
	Flow alteration (H)		✓	No	Due to ubiquitous use of drainage tiles	
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended	
Pleasant Valley Creek [05040001-110] RM 4.9 to 0.0	Habitat alteration (H)		✓	Yes		
	Siltation (H)		✓	Yes		
	Organic Enrichment (H)		✓	Yes		

Sugar Creek Watershed TMDL

Waterbody Segment Description/[HUC Code *]	Major Causes ^A	1998 303(d) list	1998 _B survey	TMDL Done	Comments
	Flow alteration (M)		✓	No	Due to ubiquitous use of drainage tiles
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended
Walnut and Indian Trail Creeks					
Walnut Creek [05040001-110] RM 11.1 to 0.0	Habitat alteration (H)		✓	Yes	
	Siltation (H)		✓	Yes	
	Nutrients (M)		✓	Yes	
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended
Goose Creek [05040001-110] RM 4.7 to 0.0	Habitat alteration (H)		✓	Yes	
	Siltation (H)		✓	Yes	
	Nutrients (M)		✓	Yes	
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended
Indian Trail Creek [05040001-110] RM 8.10 to 0.0	Habitat alteration (H)		✓	Yes	
	Siltation (H)		✓	Yes	
	Nutrients (H)		✓	Yes	
	Pathogens (H)		✓	No	Insufficient data to quantify; BMPs recommended

^A H: high; M: moderate

^B Observed during 1998 biological and chemical assessment; indicates that waterbody and cause could be included in 2002 303(d) list.

* The HUC (Hydrologic Unit Code) identifies larger portions of the Sugar Creek watershed, and are shown in Figure 1. The Water Body ID Code is given to each segment of a stream or river. First two characters (OH) indicate 'Ohio', next two digits indicate one of 93 subbasins (e.g., 13 = Sugar Creek), remainder identifies the specific segment. The upper and lower river miles are the boundaries of the WBID segment. Rivers are "miled" from their mouth in an upstream direction.