Non-tidal Passaic River Basin Water Quality Trading Project

Summary of Existing Requirements under Approved Fecal Coliform TMDLs in the non-tidal Passaic River Basin

This report summarizes existing requirements under approved fecal coliform TMDLs in the non-tidal Passaic River Basin. There are two relevant documents to consider:

- TMDLs for Fecal Coliform to Address 32 Streams in the Northeast Water Region (NJDEP, 2003)
- 2. Whippany River TMDL for Fecal Coliform (NJDEP, 1999)

These documents are reviewed sequentially.

TMDLs for Fecal Coliform for 32 Streams in NE Water Region

All TMDLs are applicable only to nonpoint and stormwater sources. Publicly Owned Treatment Works (POTWs) contribute an insignificant portion of the total load and are not affected by the TMDLs.

Of the 32 TMDLs in the document, 21 apply to streams in the non-tidal Passaic River basin. As listed on Table 7 of the document, the TMDLs inside the non-tidal Passaic River basin are TMDLs 1-3, 10-16, and 22-32. Watershed Management Area (WMA) 3 contains 3 TMDLs, the non-tidal portion of WMA 4 contains 7 TMDLs, and WMA 6 contains 11 TMDLs.

Of the 21 TMDLs in the non-tidal Passaic River basin, 16 have Wasteload Allocation (WLA) reductions greater than 90%, 4 have WLA reductions between 75-89%, and 1 has a WLA reduction of 37%. Therefore, significant efforts are needed to

reduce fecal coliform loading and achieve the targets set by 20 of the 21 TMDLs. One source of funding to achieve these reductions is state 319(h) grants. *Another source of funding could be water quality trading with wastewater treatment plants.*

Table 1 shows the stream segments listed for fecal coliform TMDLs, the status of these segments with respect to phosphorus on the 2004 New Jersey Integrated Report for Waterbodies, and listing of proximate wastewater treatment plants (WWTPs). *Many of the measures which would implement the fecal coliform TMDLs would also reduce phosphorus loading*. For example, a BMP to reduce fecal coliform loads from Canada Geese would also reduce phosphorus loads. As a result of the upcoming phosphorus TMDL for the Passaic River basin, some affected WWTPs may wish to purchase credits to meet anticipated phosphorus wasteload allocations. A potential source for credits would be the funding of measures which would reduce both fecal coliform *and* phosphorus loads in the proximity of the WWTP. In this way, phosphorus trading between WWTPs and nonpoint / MS4 sources would achieve ancillary benefits to the fecal coliform problem.

Example of how a WWTP could use Table 1 – See TMDL no. 25. In addition to impairment for fecal coliform, the stream segment (Passaic River near Chatham) is also impaired for total phosphorus. The Madison-Chatham STP discharges directly to the same segment, with an average TP effluent concentration of 3.28 mg/L. Potential sources of fecal coliform to the impaired segment are detention basins, failing septic systems, Canada geese, and a landfill. The Madison-Chatham STP might consider funding best management practices (BMPs) which reduce phosphorus *and* fecal coliform entering the segment 'Passaic River near Chatham'. After accounting for any MS4 permit

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requirements, Madison-Chatham STP would receive TP credits corresponding to the amount of TP removed by the BMP.

Table 1: Stream segment comparison with respect to fecal coliform TMDL, phosphorus status, and proximate WWTPs												
Fecal	W	Station name /	Fecal	WLA as %	Sources	Phosphorus	Nearby WWTP WWTP WWTP			WWTP location		
coliform	М	waterbody	Coliform	reduction	of fecal	status of FC		permitted	avg. TP	with respect to		
TMDL no.	А		Impaired		coliform	impaired	paired		effluent	Fecal coliform		
(per Table			segment			segment		(MGD)	(mg/L)	Impaired segment		
7 of						(2004						
NJDEP,						Integrated						
2003)						Report)						
1	3	Macopin River at Macopin Reservoir	01382450	37%	DB, FS	Full Attain	Two Bridges SA STP	10	2.14	Downstream of 01382450		
2	3	Wanaque River at Highland Ave	01387010	85%	CG, SDB, FS	Full Attain	Wanaque Valley RSA STP	1.25	0.16	Discharges to same segment		
3	3	Ramapo River near Mahwah	01387500	91%	FS, SO, CG, HF	Impaired	Pompton Lakes STP	1.2	0.32	Downstream of 01387500		
10	4	Passaic R. below Pompton R. at Two Bridges	01389005	93%	SO, FS, M, CG	Impaired	Two Bridges SA STP	10	2.14	Upstream of 1389005		
11	4	Passaic River at	01389500	93%	SO	Impaired	Two Bridges SA STP	10	2.14	Upstream of 01389500		
		Little Falls					Wayne Twp STP	13.5	2.27	Upstream of 01389500		
12	4	Preakness Brook near Little Falls	01389080	93%	AA, CG	Insufficient Data	Wayne Twp STP	13.5	2.27	Discharges to same segment		
13	4	Peckman River at West Paterson	01389600	93%	CG, SO	Insufficient Data	Verona STP	5	3.07	Discharges to same segment		
							Cedar Grove STP	2.5	2.25	Discharges to same segment		
14	4	Deepavaal Brook at Fairfield	01389138	93%	CG	Insufficient Data	None	NA	NA	NA		
15	4	Diamond Brook at Fair Lawn	01389860	98%	CG	Insufficient Data	None	NA	NA	NA		
16	4	Goffle Brook at Hawthorne	01389850	98%	CG, FS	Full Attain	None	NA	NA	NA		
22	6	Black Brook at Madison	01378855	96%	CG, LF	Impaired	Chatham Twp – Main STP	1	0.35	Different reaches, upstream of same confluence		

23	6	Passaic River near Millington	01379000	96%	CG, DB, HF	Impaired	Chatham Twp – Main STP	1	0.35	Upstream of 01379000
24	6	Dead River near Millington	01379200	96%	CG	Impaired	Bernards Twp STP	2.5	3.13	Discharges to same segment
							Warren Twp SA Stage IV STP	0.8	1.91	Discharges to same segment
25	6	Passaic River near Chatham	01379500	96%	CG, DB, FS, LF	Impaired	Berkeley Heights STP	3.1	0.6	Discharges to same segment
							Madison-Chatham STP	3.5	3.28	Discharges to same segment
							Warren Stage I-II STP	0.47	1.67	Discharges to same segment
							Warren Stage V STP	0.38	1.85	Discharges to same segment
							Long Hill Twp STP	0.9	2.63	Discharges to same segment
							Florham Park SA STP	1.4	1.48	Discharges to same segment
							Chatham Twp/ Chatham Glen STP	0.15	1.53	Discharges to same segment
26	6	Canoe Brook near Summit	01379530	96%	CG	Insufficient data	Madison-Chatham STP	3.5	3.28	Different reaches, upstream of same confluence
							Florham Park SA STP	1.4	1.48	Different reaches, upstream of same confluence
27	6	Rockaway River at Longwood Valley	01379680	92%	FS	Full Attain	Rockaway Valley SA STP	12	1.46	Downstream of 01379680
28	6	Rockaway River at Blackwell Street	01379853	92%	CG, LF	Insufficient data	Rockaway Valley SA STP	12	1.46	Downstream of 01379853
29	6	Beaver Brook at Rockaway	01380100	89%	FS, CG	Full Attain	Rockaway Valley SA STP	12	1.46	Downstream of 01380100
30	6	Stony Brook at Boonton	01380320	78%	CG, LS	Full Attain	Rockaway Valley SA STP	12	1.46	Downstream of 01380320
31	6	Rockaway River at	01381200	91%	CG, LF	Impaired	Rockaway Valley SA	12	1.46	Discharges to same

		Pine Brook					STP			segment	
32	6	Passaic River at Two Bridges	01382000	83%	FS	Impaired	Parsippany-Troy Hills STP	16	2.98	Upstream of 01382000	
						Caldwell STP		4.5	1.62	Discharges to same	
										segment	
							Livingston Twp STP	4.6	2.63	Discharges to same	
										segment	

AA – Animal agriculture	
CG – Canada Geese	
DB – detention basin	
HF – Horse farm	
FS – Septic system	
LF – Landfill	
LS - Livestock	
M – open manure storage	
SO – stormwater outfall	
SDB – stormwater detention basin	

Note that Table 7 TMDLs outside the non-tidal Passaic River basin are TMDLs 4-9 and 17-21

Implementation measures

Section 10 discusses TMDL implementation measures to reduce fecal coliform loading from nonpoint and stormwater sources (NJDEP, 2003).

Note that all the primary sources of fecal coliform listed in Section 10 are also sources of total phosphorus. Specifically, listed sources are: Canada geese, pet waste, stormwater basins, direct stormwater discharges, farms, zoos, livestock, malfunctioning or older improperly sized septic systems, failing sewage conveyance systems, and improper garbage storage and disposal.

Only *structural* management measures to reduce fecal coliform are discussed since these could provide potential credits for a phosphorus trading program. Ordinances are not discussed since these are non-structural measures and cannot feasibly generate credits for a phosphorus trading program.

Short term management measures include: stream bank restoration projects and catchbasin cleanouts.

Long term management measures to address sources of fecal coliform Source: Canada Geese

Management measures: Canada Goose Damage Management Plans, habitat modification

Source: Stormwater Detention Basins and Impoundments

Management measures: Development of stormwater management plan, establishment of riparian buffers, retrofit of detention / retention basins, conduct regularly scheduled stormwater basin cleanout and maintenance, storm sewer inlet cleanouts and street sweeping programs.

Source: Agricultural

Management measures: Implementation of conservation management plans and BMPs (e.g. erosion control, vegetative filter strips / riparian buffers, animal waste management, integrated crop management, restoration of previously farmed wetlands, purchase of easements).

Source: Stormwater Management

Management measures: Implementation of MS4 permits Source: malfunctioning and oilder improperly sized septic systems; illicit connections of domestic sewage

Management measures: implementation of the NJPDES Municipal Stormwater Regulation Program, sanitary surveys, and septic system management programs.

Whippany River TMDL for Fecal Coliform

The 'Whippany River TMDL for Fecal Coliform' outlined management measures to achieve water quality standards. These measures are discussed in a separate review, submitted along with this report. As with 'TMDLs for Fecal Coliform to Address 32 Streams in the Northeast Water Region', a potential source of credits for WWTPs in the Whippany River Watershed would be the funding of measures which would reduce both fecal coliform *and* phosphorus loads in the proximity of the WWTP. In this way, phosphorus trading between WWTPs and nonpoint / MS4 sources would achieve ancillary benefits to the fecal coliform problem. See Table 2.

Tab	Table 2: Stream segment comparison with respect to fecal coliform TMDL, phosphorus status, and proximate WWTPs										
W	Waterbody	Fecal	WLA as %	Sources	Phosphorus	Nearby WWTP	WWTP	WWTP			
Μ		Coliform	reduction	of fecal	status of FC		permitted	avg. TP			
Α		Impaired		coliform	impaired		flow	effluent			
		Reach #			segment		(MGD)	(mg/L)			
					(2004						
					Integrated						
					Report)						
6	Whippany River	02030103- 024-020	58.5%	CG, FS, SDB	Impaired	Hanover SA STP	4.6	2.83			
						Morris Twp – Butterworth STP	3.3	0.84			
						Parsippany-Troy Hills STP	16	2.98			
						Morristown STP	6.3	0.56			

Acronyms -

CG – Canada Geese FS – Septic system

SDB - stormwater detention basin

All WWTPs listed in this table are located in the Whippany River Watershed.

Example of how a WWTP could use Table 2: the Hanover SA STP with an

average TP effluent concentration of 2.83 mg/L might consider funding BMPs which

would address Canada geese, failing septic systems, or stormwater detention basins.

After accounting for any MS4 permit requirements, Hanover SA STP would receive TP

credits corresponding to the amount of TP removed by the BMP.

REFERENCES

New Jersey Department of Environmental Protection (NJDEP) (1999). "Report on the Establishment of a Total Maximum Daily Load for Fecal Coliform and an Interim Total Phosphorus Reduction Plan for the Whippany River Watershed."

NJDEP (2003). "Amendment to the Northeast Water Quality Management Plan - Total Maximum Daily Loads for Fecal Coliform to Address 32 Streams in the Northeast Water Region".

NJDEP, New Jersey 2004 Integrated Water Quality Monitoring and Assessment Report (305(b) and 303(d).