

**Michigan Department of Environmental Quality  
Water Bureau  
August 2006**

**Total Maximum Daily Load for *E. coli* for  
Deer Creek  
Macomb County**

## **INTRODUCTION**

Section 303(d) of the federal Clean Water Act and the United States Environmental Protection Agency's (USEPA's) Water Quality Planning and Management Regulations (Title 40 of the Code of Federal Regulations (CFR), Part 130) require states to develop Total Maximum Daily Loads (TMDLs) for water bodies that are not meeting water quality standards (WQS). The TMDL process establishes the allowable loadings of pollutants for a water body based on the relationship between pollution sources and in-stream water quality conditions. TMDLs provide states a basis for determining the pollutant reductions necessary from both point and nonpoint sources to restore and maintain the quality of their water resources. The purpose of this TMDL is to identify the allowable levels of *E. coli* that will result in the attainment of the applicable WQS in Deer Creek, a tributary of the North Branch Clinton River, located in Macomb County, Michigan.

## **PROBLEM STATEMENT**

This water body was placed on the Section 303(d) list in 1998. This TMDL listing addresses approximately seven miles of stream west of New Haven. The TMDL reach is on the 2006 Section 303(d) list as:

### **DEER CREEK**

County: Macomb

Location: N. Br. Clinton River confluence u/s.

HUC: 4090003

Problem: Pathogens (Rule 100).

TMDL YEAR(s): 2006

WBID#: 061408D

Size: 7 M

NHD RCH\_Code: 4090003000009

Deer Creek (Figure 1) was placed on the Section 303(d) list due to impairment of recreational uses as indicated by the presence of elevated levels of *E. coli* (Edly and Wuycheck, 2006, in draft). Monitoring data collected by the Michigan Department of Environmental Quality (MDEQ) in 2004, documented exceedances of the WQS for *E. coli* at all five sampling locations during the total body contact recreational season of May 1 through October 31 (Table 1).

## **NUMERIC TARGET**

The impaired designated use addressed by this TMDL is total body contact recreation. Rule 100 (R 323.1100) of the Part 4 rules, WQS, promulgated under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, requires that this water body be protected for total body contact recreation from May 1 through October 31. The target levels for this designated use are the ambient *E. coli* standards established in Rule 62 of the WQS as follows:

R 323.1062 Microorganisms.

Rule 62. (1) All waters of the state protected for total body contact recreation shall not contain more than 130 *E. coli* per 100 milliliters (ml), as a 30-day

geometric mean. Compliance shall be based on the geometric mean of all individual samples taken during five or more sampling events representatively spread over a 30-day period. Each sampling event shall consist of three or more samples taken at representative locations within a defined sampling area. At no time shall the waters of the state protected for total body contact recreation contain more than a maximum of 300 *E. coli* per 100 ml. Compliance shall be based on the geometric mean of three or more samples taken during the same sampling event at representative locations within a defined sampling area.

For this TMDL, the WQS of 130 *E. coli* per 100 ml as a 30-day geometric mean and 300 *E. coli* per 100 ml as a daily maximum are the target levels for the TMDL reach from May 1 to October 31. As previously stated, the 2004 monitoring data indicated exceedances of WQS at all locations sampled.

## **DATA DISCUSSION**

Deer Creek was sampled at five stations (Figure 1). Thirty-day geometric mean *E. coli* concentrations ranged from 20 *E. coli* per 100 ml in September at Fairchild Road (Station 2) to 624 *E. coli* per 100 ml in July at New Haven Road [(Station 1); Figure 2; Table 1]. The thirty-day geometric mean WQS was exceeded five times at New Haven Road (Station 1), ten times at 27-Mile Road (Station 2), two times at Hagen Road (Station 3), zero times at Fairchild Road (Station 4), and one time at North Road (Station 5). Daily geometric mean concentrations ranged from 20 *E. coli* per 100 ml at several sampling stations to 3474 *E. coli* per 100 ml in July at New Haven Road (Figure 3; Table 1). Daily geometric mean concentrations exceeded the 300 *E. coli* per 100 ml WQS, eight times at New Haven Road, five times at 27-Mile Road, two times at Hagen Road, and two times at Fairchild Road.

The Macomb County Health Department (MCHD) conducts weekly monitoring at one station on Deer Creek at North Road. MCHD data at this station in 2005, indicates that *E. coli* levels are similar to our 2004 data in that the levels exceed WQS. The Macomb County Public Works (MCPW) collected single grab samples at six county drain outfalls within the Deer Creek watershed TMDL area in 2004. *E. coli* levels from these single samples indicated exceedances of the WQS.

## **SOURCE ASSESSMENT**

The official listed reach for Deer Creek is 7 miles, beginning at the confluence with the North Branch Clinton River upstream to the headwaters. The municipalities in the TMDL reach for Deer Creek are all within Macomb County and include Ray, Richmond, Lenox, Chesterfield, and Macomb Townships (Figure 1). Table 2 shows the distribution of land for each municipality.

The primary pathogen sources for this water body are typical of mixed suburban and agricultural land uses. Agricultural runoff, failing septic systems, and pet and/or wildlife wastes are possible sources of *E. coli* to Deer Creek. Agriculture accounts for approximately 58 percent of the land use in the TMDL watershed (Choi and Engel, 2005). *E. coli* has been shown to enter water bodies via field drainage systems, such as tiles. Field tiles have shown significant transport of enteric bacteria through tile drainage systems under all manure application protocols and environmental conditions (Jamieson et al., 2002). We expect these conditions to occur primarily during or soon after wet weather events.

A large portion of Macomb County utilizes on-site septic systems for waste treatment. In 2003, over 150 septic systems suspected of failing were investigated in Macomb County (Macomb County, 2003). In 2004 and 2005, 524 sewage disposal evaluations were conducted and 68 (13 percent) failed inspection (Macomb County, 2005). Septic system failures can occur during

both wet and dry weather events. In a study by Francy et al., (2000), the presence of septic systems near a sampling site was found to be related to the detection of coliforms. Illicit connections from septic systems and other sanitary sources can also be sources of *E. coli* during both wet and dry weather events.

Of the stations sampled, Stations 1 and 2 at New Haven Road and 27-Mile Road, respectively, had the greatest number of exceedances of the daily geometric mean and the 30-day geometric mean WQS. These stations are the most upstream stations. Samples were not taken upstream of these stations because the more upstream sections of stream were dry at the time the stations were selected. Both stations exceeded WQS during both wet and dry weather events (Table 1).

There are currently seven National Pollutant Discharge Elimination System (NPDES) permitted discharges to Deer Creek (Table 3). Three are Notices of Coverage (NOCs) under one permit-by-rule for earthwork and are not suspected of being sources of *E. coli*. Four are certificates of coverage under one general permit. These include the Chesterfield Township, Macomb Township, and Macomb County Municipal Separate Storm Sewer System (MS4) permits, and the Michigan Department of Transportation (MDOT) statewide MS4 permit. The MS4 permittees are prohibited from discharging storm water that may cause or contribute to a violation of WQS. The MDOT statewide permit requires the permittee to reduce the discharge of pollutants to the maximum extent practicable and employ best management practices to comply with TMDL requirements.

## **LINKAGE ANALYSIS**

Determining the link between the *E. coli* concentrations in Deer Creek and the potential sources is necessary to develop the TMDL. This link provides the basis for estimating the total assimilative capacity of the river and any needed load reductions. Using the data we collected for this TMDL at each monitoring station and precipitation data for the area (Figure 2 and Table 1), it appears that the major loadings of pathogens enter Deer Creek at the most upstream stations during all weather conditions (e.g., wet and dry). Potential sources of *E. coli* include agricultural runoff, failing septic systems, illicit connections, and pet and/or wildlife wastes. Agriculture runoff could include livestock storage facilities and feedlots, grazed pastures, direct surface runoff of agriculture fields, or underground runoff from subsurface drainage tiles (Jamieson et al., 2004). These sources are expected primarily during wet weather events. Pet or wildlife wastes also would most likely enter surface waters during wet weather events. Failing septic systems and illicit connections could be expected to contribute to *E. coli* numbers during both wet and dry weather events.

The guiding water quality management principle used to develop the TMDL was that compliance with the numeric pathogen target in the Deer Creek depends on the control of *E. coli* from wet and dry weather sources. If the *E. coli* inputs can be controlled to meet the numeric standards, then total body contact recreation in Deer Creek will be restored and protected.

## **TMDL DEVELOPMENT**

The TMDL represents the maximum loading that can be assimilated by the water body while still achieving WQS. As indicated in the Numeric Target section, the targets for this pathogen TMDL are the 30-day geometric mean WQS of 130 *E. coli* per 100 ml and daily geometric mean of 300 *E. coli* per 100 ml. Concurrent with the selection of a numeric concentration endpoint, TMDL development also defines the environmental conditions that will be used when defining allowable levels. Many TMDLs are designed around the concept of a “critical condition.” The “critical condition” is defined as the set of environmental conditions that, if controls are designed

to protect, will ensure attainment of objectives for all other conditions. For example, the critical conditions for the control of point sources in Michigan are given in R 323.1082 and R 323.1090. In general, the lowest monthly 95 percent exceedance flow for streams is used as a design condition for point source discharges. However, sources of pathogens to the Deer Creek seem to arise from nonpoint sources during wet and dry weather conditions. For these sources, there are a number of different allowable loads that will ensure compliance, as long as they are distributed properly throughout the watershed.

For most pollutants, TMDLs are expressed on a mass loading basis (e.g., pounds per day). For *E. coli*, however, mass is not an appropriate measure, and the USEPA allows pathogen TMDLs to be expressed in terms of organism counts (or resulting concentration) (USEPA, 2001). Therefore, this pathogen TMDL is concentration-based consistent with R 323.1062, and the TMDL is equal to the target concentration of 130 *E. coli* per 100 ml as a 30-day geometric mean and daily geometric mean of 300 *E. coli* per 100 ml in all portions of the TMDL reach for each month of the recreational season (May through October). Expressing the TMDL as a concentration equal to the WQS ensures that the WQS will be met under all flow and loading conditions; therefore, a critical condition is not applicable for this TMDL.

## **ALLOCATIONS**

TMDLs are comprised of the sum of individual waste load allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include a margin of safety (MOS), either implicitly within the WLA or LA, or explicitly, that accounts for uncertainty in the relation between pollutant loads and the quality of the receiving water body. Conceptually, this definition is denoted by the equation:

$$\text{TMDL} = \sum \text{WLAs} + \sum \text{LAs} + \text{MOS}$$

The term TMDL represents the maximum loading that can be assimilated by the receiving water while still achieving WQS. This pathogen TMDL will not be expressed on a mass loading basis and is concentration based consistent with USEPA regulations in 40 CFR, Section 130.2(i). Because this TMDL is concentration-based, the loading capacity for this TMDL is equal to the WQS of 130 *E. coli* per 100 ml as a monthly average and 300 *E. coli* per 100 ml as a daily maximum during the recreation season.

### WLAs

Because this TMDL is concentration-based, the WLA is equal to 130 *E. coli* per 100 ml as a monthly average and 300 *E. coli* per 100 ml as a daily maximum for all point source discharges. There are a total of seven permitted point source discharges to Deer Creek; three are NOC permits for earth work and four are MS4 permits. The NOC permits involve earthwork in the watershed and, due to the nature of the permits, are not considered significant sources of *E. coli* to Deer Creek. The MS4 permittees are prohibited from discharging storm water that may cause or contribute to a violation of WQS. Potential conditions in the MS4s to be implemented are: an Illicit Discharge Elimination Plan (IDEP), a Public Education Plan, a Storm Water Pollution Prevention Initiative, a Public Participation Process, a Watershed Management Plan, and a revised Storm Water Pollution Prevention Initiative and Implementation Schedule based on the development of the Watershed Management Plan. Only the IDEP from the Chesterfield Township and Macomb County MS4 permits, and the requirements of the Michigan Department of Transportation (MDOT) MS4 permit are required in the Deer Creek Watershed. All other activities are voluntary.

## LAs

Because this TMDL is concentration based, the LA is also equal to 130 *E. coli* per 100 ml as a monthly average and 300 *E. coli* per 100 ml as a daily maximum. This is based on the assumption that all nonpoint sources, regardless of land use, will be required to meet the WQS. Therefore, the relative responsibility for achieving the necessary reductions of bacteria and maintaining acceptable conditions will be determined by the amount of land under the jurisdiction of the local unit of government in the watershed. This TMDL reach is located in Macomb County in the townships of Ray, Richmond, Lenox, Chesterfield, and Macomb.

## MOS

This section addresses the incorporation of an MOS in the TMDL analysis. The MOS accounts for any uncertainty or lack of knowledge concerning the relationship between pollutant loading and water quality, including the pollutant decay rate if applicable. The MOS can be either implicit (i.e., incorporated into the WLA or LA through conservative assumptions) or explicit (i.e., expressed in the TMDL as a portion of the loadings). This TMDL uses an implicit MOS because no rate of decay was used. Pathogen organisms have a limited capability of surviving outside of their hosts and a rate of decay could be developed. However, applying a rate of decay could result in an allocation that would be greater than the WQS, thus no rate of decay is applied in order to provide for a greater protection of water quality. The MDEQ has determined that the use of the WQS of 130 *E. coli* per 100 ml as a monthly average and 300 *E. coli* per 100 ml as a daily maximum for the WLA and LA is a more conservative approach than developing an explicit MOS and accounts for the uncertainty in the relationship between pollutant loading and water quality based on available data and the assumption to not use a rate of decay. Applying the WQS to be met under all flow conditions also adds to the assurance that an explicit MOS is unnecessary.

## **SEASONALITY**

Seasonality in the TMDL is addressed by expressing the TMDL in terms of a total body contact recreation season that is defined as May 1 through October 31 by R 323.1100 of the WQS. There is no total body contact during the remainder of the year primarily due to cold weather. There is a separate WQS of 1000 *E. Colii*/ 100 ml for the partial body recreation season. Because this is a concentration-based TMDL, WQS will be met regardless of flow conditions in the applicable season. Implementation of the TMDL to achieve the WQS during the total body contact recreation season is expected to result in WQS attainment throughout the year.

## **MONITORING**

Pathogens were monitored weekly at a total of five stations from May through September 2004. Future monitoring will take place as resources allow, as part of the five-year rotating basin monitoring. When these results indicate that the water body may be meeting WQS, sampling will be conducted at the appropriate frequency to determine if the 30-day geometric mean value of 130 *E. coli* per 100 ml and 300 *E. coli* per 100 ml as a daily maximum are being met.

## **REASONABLE ASSURANCE ACTIVITIES**

Macomb County and Chesterfield and Macomb Townships are under NPDES Phase 2 storm water permits (MS4). However, Deer Creek is part of the North Branch Clinton River subwatershed (NBCRW), which was granted deferment from most of the requirements of the MS4 permits because only a small portion of the watershed is urbanized (Macomb County, 2005). Due to this deferment most watershed management activities described in the MS4 are voluntary.

Macomb County is in the fourth year of required MS4 permit activities. A partnership between Macomb County and several townships has resulted in countywide efforts to identify all outfalls within county boundaries that discharge to waters of the state. Part of the identification process includes taking one time samples for *E. coli* to identify illicit connections. Each municipality will assure that there are no illicit connections to the municipal storm water system from township- and city-owned and operated properties and facilities. Each municipality within the county is responsible for submitting IDEPs to the MDEQ. Chesterfield, Lenox, and Macomb Townships have each developed IDEPs that have been submitted and recently approved by the MDEQ (Chesterfield Township, 2004; Lenox Township, 2005; and Macomb Township, 2005). These plans were immediately implemented.

The MCHD conducts weekly *E. coli* monitoring at 64 locations in the county, one of which is at the North Road (Station 5) crossing of Deer Creek. This data is entered into a database and is available to the public at the following link:

<http://macombcountymi.gov/publichealth/surfacesamples.asp>. The MDEQ works with the MCHD to identify *E. coli* sampling locations and share data.

The Macomb County Public Works Office is required to sample legally established county drain outfalls to locate illicit discharges. Ten stations within the Deer Creek watershed were sampled in 2005. Four of these stations had dry or stagnant conditions and were not sampled. Six others were sampled with single grab samples, which indicated exceedances of the WQS. These six stations were at Dixon Drain north of 30-Mile Road, Bates Road north of 28-Mile, upstream of the crossing at 28-Mile Road, upstream of New Haven Road, at Fairchild Road, and at North Road just upstream of the confluence with the North Branch Clinton River. Follow-up investigations of the greatest exceedances throughout the county will continue in 2006 (Macomb County, 2005).

A point of sale regulation will continue to be enforced throughout Macomb County (Macomb County, 2005). This regulation requires that on-site sewage disposal and/or on-site water supply systems be evaluated prior to property transfer. In 2004 and 2005, 726 septic repair permits were issued (Macomb County, 2005). These types of identification and repair activities may lead to reduced *E. coli* concentrations in Deer Creek.

The NBCRW has a subwatershed advisory group that consists of representatives from all communities, departments, schools, and organizations that are located in the watershed. Voluntary efforts made by this advisory group for the period of October 1, 2004 to September 30, 2005, included a presentation that was sponsored by the Farmer's Forum in Ray Township to inform attendees on what a watershed is and how human actions affect it. In September 2005, members of the advisory group began conducting stream crossing surveys on approximately 30 percent of the crossings located within the NBCRW. Results from the stream crossing surveys should be available in the Macomb County MS4, 2006 annual report.

The MDOT statewide permit requires many of the same programs to be implemented that the other MS4 permits require (e.g., IDEP, public education program) and also requires the permittee to reduce the discharge of pollutants from storm water to the maximum extent practicable and employ best management practices to comply with TMDL requirements.

A stakeholder meeting was held on April 11, 2006, at the Lenox Township Hall in Lenox, Michigan to describe the draft TMDL and to take public comments. Fifteen people attended the meeting. Stakeholders were determined by identifying municipalities (i.e., counties, townships, and cities) and watershed groups (i.e., NBCRW group and soil conservation district) within the TMDL watershed. Copies of the draft TMDL were available upon request during the public

comment period of April 3 to May 3, 2006, at the stakeholder meeting, and on the MDEQ Web site.

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Water Bureau  
Michigan Department of Environmental Quality  
August 2006

## REFERENCES

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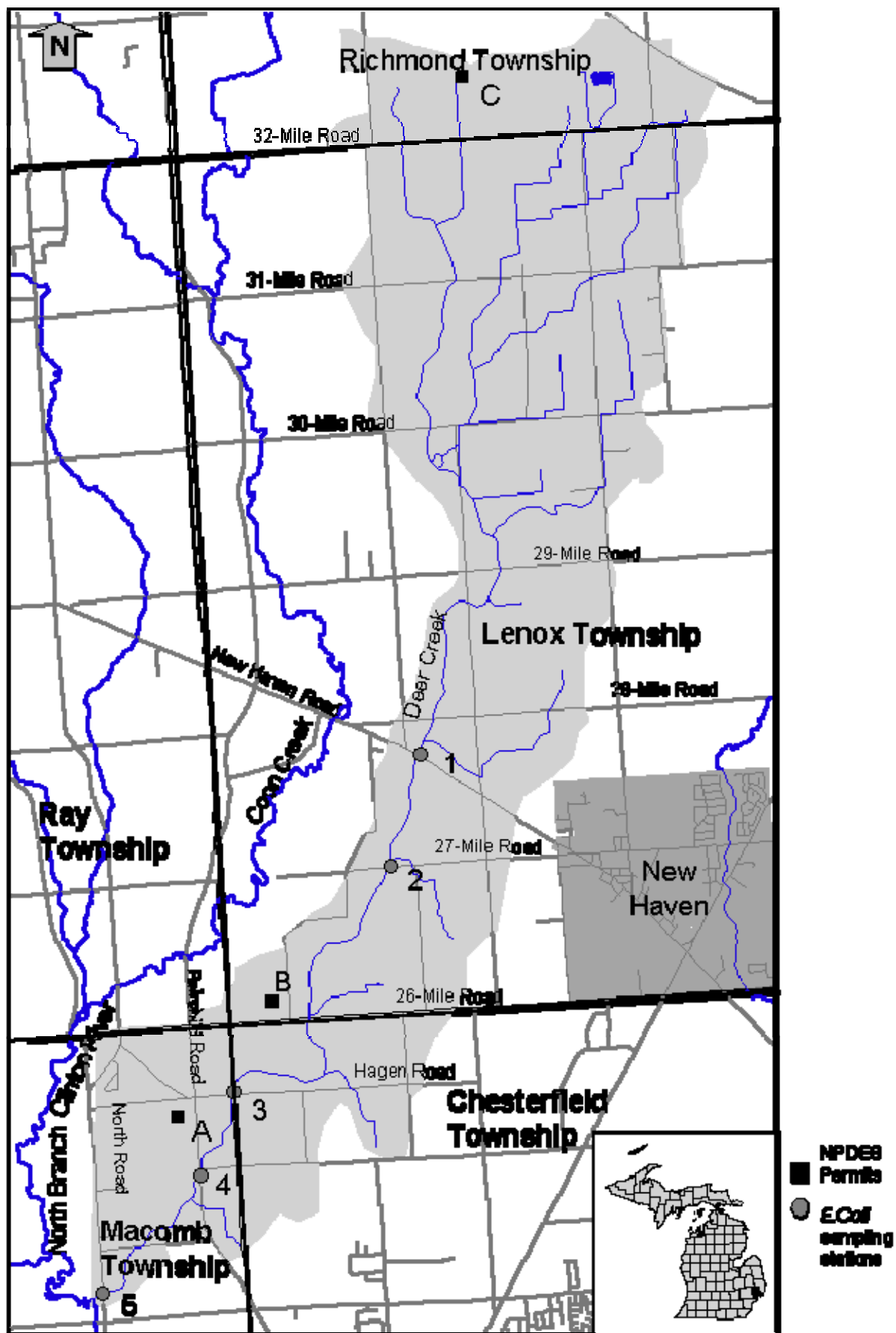


Figure 1. Deer River E. coli sampling locations, Macomb County, MI. Shaded areas represent the TMDL watershed.

Figure 2. Thirty-day geometric mean for *E. coli* in Deer Creek, Macomb County, Michigan 2004.

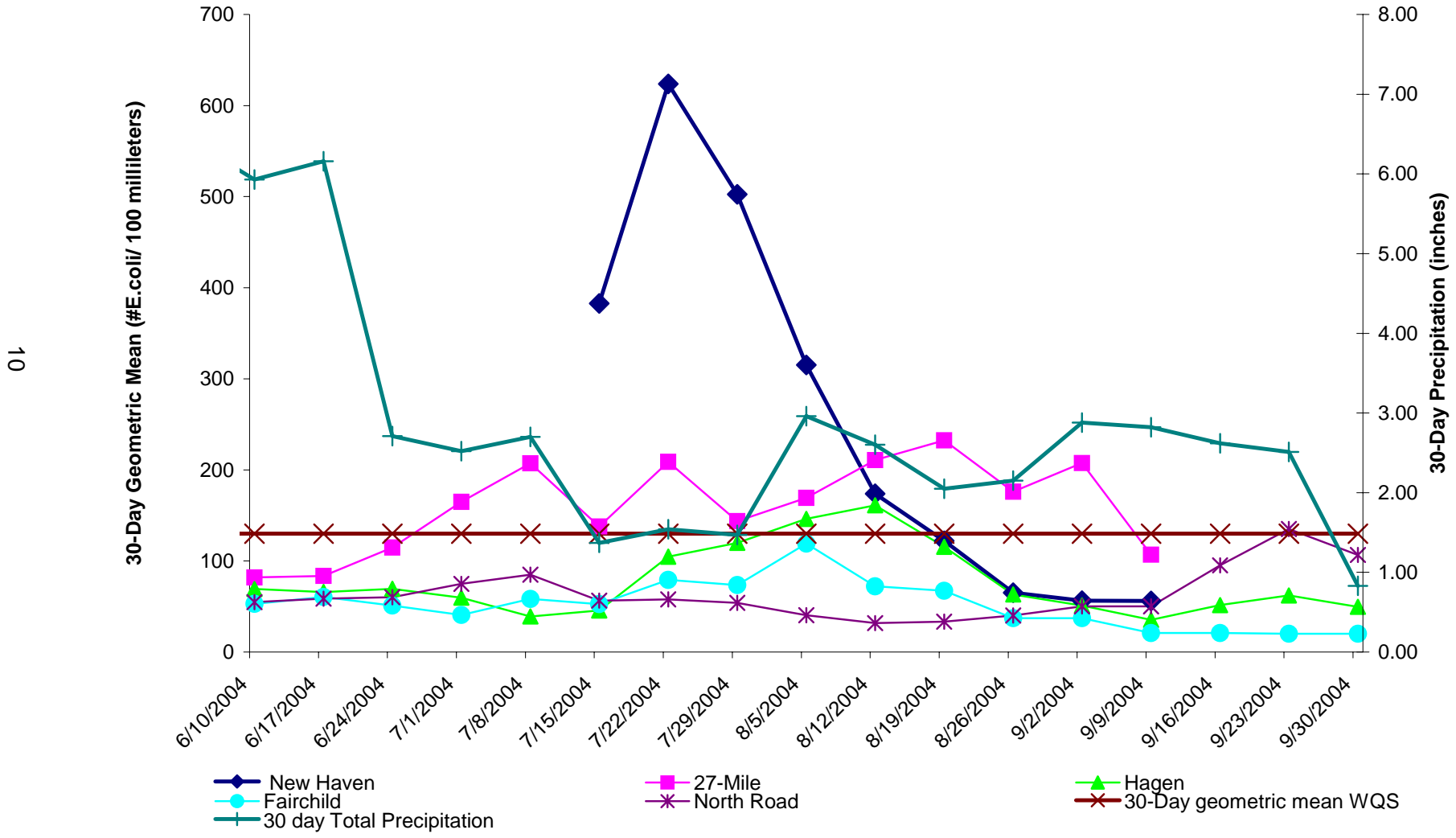


Figure 3. Daily geometric mean for *E. coli* in Deer Creek, Macomb County, Michigan 2004.

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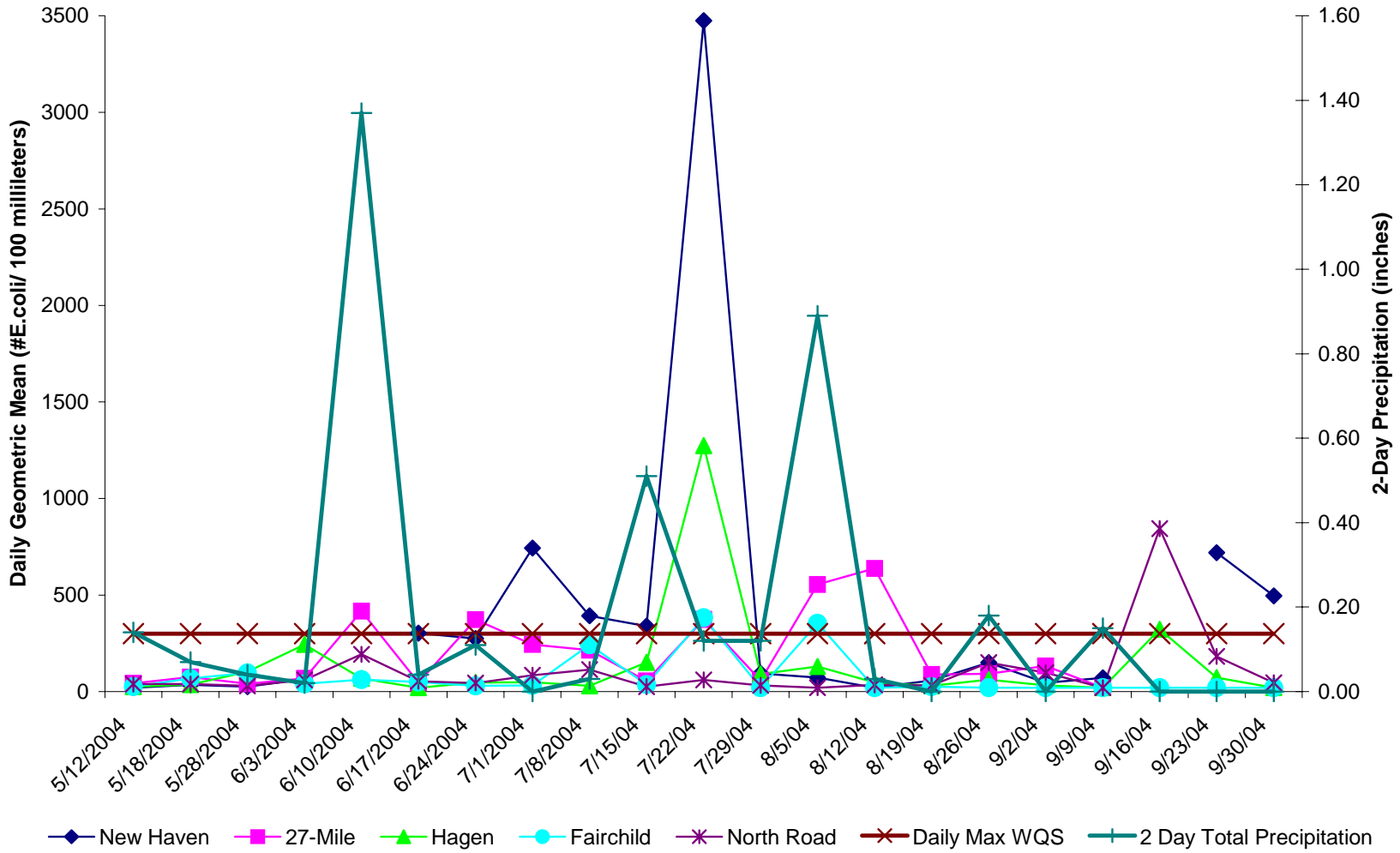


Table 1. MDEQ 2003 *E. coli* monitoring data for the Deer Creek (*E. coli*/100 ml) west of New Haven, Macomb County. Shaded areas indicate exceedances of the WQS. Data are presented upstream to downstream.

DATE	(Site 1) Deer Creek @ New Haven Road			(Site 2) Deer Creek @ 27-Mile Road			(Site 3) Deer Creek @ Hagen Road			(Site 4) Deer Creek @ Fairchild			(Site 5) Deer Creek @ North Road			Precipitation in inches for sample day and previous day
	SAMPLE RESULTS	DAILY G. MEAN	30-day G. MEAN	SAMPLE RESULTS	DAILY G. MEAN	30-day G. MEAN	SAMPLE RESULTS	DAILY G. MEAN	30-day G. MEAN	SAMPLE RESULTS	DAILY G. MEAN	30-day G. MEAN	SAMPLE RESULTS	DAILY G. MEAN	30-day G. MEAN	
5/12/2004	20	20	---	40	43	---	20	25	---	40	25	---	20	38	---	0.14"
	20			20			20			20			140			
	20			100			40			20			20			
5/18/2004	20	34	---	180	76	---	20	36	---	20	68	---	20	38	---	0.07"
	100			20			20			80			20			
	20			120			120			200			140			
5/28/2004	40	25	---	20	40	---	180	103	---	20	96	---	20	29	---	0.04"
	20			20			60			140			60			
	20			160			100			320			20			
6/3/2004	20	64	---	20	68	---	280	244	---	20	40	---	20	60	---	.02"
	660			80			260			20			180			
	20			200			200			160			60			
6/10/2004	***	---	---	2000	416	82	800	68	69	20	62	53	20	193	55	1.37 "
	20			1800			20			60			600			
	80			20			20			200			600			
6/17/2004	320	302	---	260	47	83	20	20	66	300	49	60	20	53	58	0.04"
	240			20			20			20			20			
	360			20			20			20			380			
6/24/2004	260	275	---	440	373	115	20	47	69	20	29	51	20	44	60	0.11"
	200			280			20			20			20			
	400			420			260			60			220			
7/1/2004	500	743	---	240	244	165	140	48	60	20	32	41	40	85	75	0.0"
	1080			380			40			20			40			
	760			160			20			80			380			
7/8/2004	1100	393	---	700	214	207	20	29	39	80	243	58	20	114	85	0.03"
	120			700			20			320			160			
	460			20			60			560			460			
7/15/2004	620	338	383	400	54	138	380	152	46	20	36	52	20	25	57	0.51"
	240			20			20			120			40			
	260			20			460			20			20			
7/22/2004	2400	3474	624	20	374	209	1520	1274	105	540	383	79	20	60	58	0.12"
	15600			1580			1000			100			60			
	1120			1660			1360			1040			180			

Table 1. Continued

DATE	(Site 1) Deer Creek @ New Haven Road			(Site 2) Deer Creek @ 27-Mile Road			(Site 3) Deer Creek @ Hagen Road			(Site 4) Deer Creek @ Fairchild			(Site 5) Deer Creek @ North Road			Precipitation in inches for sample day and previous day
	SAMPLE RESULTS	DAILY G. MEAN	30-day G. MEAN	SAMPLE RESULTS	DAILY G. MEAN	30-day G. MEAN	SAMPLE RESULTS	DAILY G. MEAN	30-day G. MEAN	SAMPLE RESULTS	DAILY G. MEAN	30-day G. MEAN	SAMPLE RESULTS	DAILY G. MEAN	30-day G. MEAN	
7/29/2004	1020 20 40	93	503	160 20 60	58	144	240 160 20	92	120	20 20 20	20	74	40 20 40	32	54	0.12"
8/5/2004	940 20 20	72	315	1540 460 240	554	169	20 1380 80	130	146	20 1840 1200	353	119	20 20 20	20	41	0.89"
8/12/2004	20 20 20	20	174	340 1060 720	638	211	20 260 20	47	161	20 20 20	20	72	20 20 100	34	32	0.03"
8/19/2004	20 480 20	58	122	20 160 220	89	232	20 60 20	29	116	20 40 20	25	67	80 20 20	32	33	0.0"
8/26/2004	120 100 280	150	65	500 80 20	93	176	20 600 20	62	63	20 20 20	20	37	40 300 280	150	40	0.18"
9/2/2004	20 240 20	46	56	320 60 120	132	208	20 80 20	32	51	20 20 20	20	37	260 180 20	98	50	0.0"
9/9/2004	60 300 20	71	56	20 20 20	20	107	20 20 20	20	35	20 20 20	20	21	20 20 20	20	50	0.15"
9/16/2004	low flow conditions	---	---	low flow conditions	---	---	120 820 340	322	52	20 20 20	20	21	1020 980 600	843	95	0.0"
9/23/2004	700 720 740	720	---	low flow conditions	---	---	160 40 60	73	62	20 20 20	20	20	380 200 80	183	135	0.0"
9/30/2004	380 500 640	495	---	180 160 120	151	---	20 20 20	20	50	20 20 20	20	20	20 240 20	46	107	0.0"

Table 2. Distribution of land for each municipality in Deer Creek.

<b>Municipality</b>	<b>Estimated Population May 2006</b>	<b>Square Miles</b>	<b>Percent</b>
Richmond Township	3969	1.61	11
Lenox Township	6028	10.13	68
Chesterfield Township	44874	1.50	10
Macomb Township	72513	1.69	11
Ray Township	3884	0.05	<1
<b>TOTAL</b>		<b>14.98</b>	<b>100</b>

Table 3. Permitted outfalls to the Deer Creek watershed.

Source: MDEQ, Water Bureau's NPDES Permit Management System.

<b>Station Letter (Figure 1)</b>	<b>Facility</b>	<b>Permit Number</b>	<b>Receiving Water</b>	<b>Latitude</b>	<b>Longitude</b>
A	Intl Trans-Lenox Sta Electric	MIR109116	Deer Creek Drain	42.72018	-82.85288
B	Bozek Lot Fill	MIR109116	Deer Creek	42.70867	-82.86675
C	Mitigation Solutions- 33/30	MIR107300	Deer Creek	42.81328	-82.82205
	Chesterfield Twp MS4	MIG610310	Deer Creek		
	Macomb Twp MS4	MIG610312	Deer Creek		
	Macomb County MS4	MIG610052	Countywide		
	MDOT MS4	MI0057364	Statewide		