

RAMBO RUN

YORK COUNTY

**STREAM REDESIGNATION EVALUATION REPORT
WATER QUALITY STANDARDS REVIEW**

**SEGMENT: BASIN
DRAINAGE LIST: O
STREAM CODE: 07374**

**WATER QUALITY MONITORING AND ASSESSMENT SECTION (ADK/RMR)
DIVISION OF WATER QUALITY ASSESSMENT AND STANDARDS
BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**OCTOBER 1999
REVISED MAY 2000
REVISED AUGUST 2001**

RAMBO RUN YORK COUNTY DRAINAGE LIST 0

GENERAL WATERSHED DESCRIPTION

Rambo Run is a tributary to Muddy Creek in the Susquehanna River watershed. In response to a request from the Pennsylvania Fish and Boat Commission (PFBC), an unnamed tributary to Rambo Run was initially evaluated for possible redesignation as High Quality - Cold Water Fishes (HQ-CWF). After consultation with the Department of Environmental Protection Southcentral Office, the entire Rambo Run watershed was evaluated for possible redesignation to High Quality (HQ) or Exceptional Value (EV).

Rambo Run has a drainage area of 11.216 square miles and contains 17.3 stream miles (Figure 1). The Q_{7-10} of Rambo Run is estimated to be 2.5 cubic feet/second. This watershed is located in East Hopewell Township, Hopewell Township, and Cross Roads Boro, York County and is currently designated Cold Water Fishes (CWF). This evaluation is based on field surveys conducted in October, November and December 1998 by the Department, yearly water quality network sampling by the Southcentral Regional staff, and field studies by the PFBC in July and August of 1996.

The existing land use in this watershed is single-family residential, forested and open fields. There are no major population centers in this basin. Land use is a mixture of residential (15%), old/open fields (50%), forest (30%), and commercial (5%).

Approximately 1 square mile of the most downstream section of the watershed is privately owned by The Rambo Run Club and is managed as trout-stocked fishery. The Hopewell Fish and Game Association has stocked trout upstream of Bacon Mill (RR6).

WATER QUALITY AND USES

Surface Water

Grab water samples were collected at eight stations (Figure 2 & Table 1) in the Rambo Run basin. Results of analysis are presented in Table 2. No long-term water quality data were available to allow a direct comparison to water quality criteria. Results from these samples indicate that in-stream quality is generally better than applicable standards. Alkalinity at all stations was less than 20 mg/l

indicating a potential problem with limited in-stream buffering capacity. This lower level of alkalinity probably results from natural geological conditions.

The York County Solid Waste and Refuse Authority is the only National Pollutant Discharge Elimination System permitted discharge in the watershed (Table 3). Homes in the headwaters of the basin are served by on-lot sewage systems and some seepage may occur from these systems.

Aquatic Biota

Benthic macroinvertebrate samples were collected at 10 stations during the October 21, 22, 28 and November 12, 1998 survey with results presented in Table 5. Benthic macroinvertebrates were collected using sampling techniques adapted from the EPA Rapid Bioassessment Protocols. Taxonomic diversity was good with a mean of 30.2 total taxa per station. The Modified Ephemeroptera/Plecoptera/Trichoptera (EPT) Index and Modified Hilsenhoff Index scores were excellent (Table 9), indicating a diverse, sensitive community of benthic macroinvertebrates.

A total of 8 species of fish were collected at five stations (Table 6). Wild brown trout were collected at all five stations. Brown trout were abundant at stations RR3 and RR9 and common at RR6, RR7, RR8. No brook trout were collected during the Department's survey, but the PFBC found populations at RR7, RR8, and RR9 (Table 7). The PFBC has classified a section of the watershed, including Station 9, as a Class A mixed wild brown and brook trout population.

Overall habitat scores for aquatic biota of all stations except RR10 were within the optimal range (Table 4). Most candidate stations' habitat scores were equal to or better than the reference stations' habitat scores.

ANTIDEGREDATION QUALIFICATIONS

The antidegradation qualifying criterion applied to Rambo Run was the Biological Assessment Qualifier described at § 93.4b(a)(2)(i)(A). The following metrics were selected as being indicative of community health: taxa richness; modified EPT index; modified Hilsenhoff Biotic Index; percent dominant taxon; and percent modified mayflies.

The benthic macroinvertebrate community metrics were compared to reference stations with comparable drainage areas (Table 9). Station RR1 was compared to Broad Run at BR1, while all other stations were compared to Broad Run at BR2. Broad Run, Chester County is currently designated Exceptional Value (EV) in Chapter 93.

Based on these five metrics, all stations in the candidate watershed had Biological Condition Scores (BCS) equal to or greater than 93% of the reference stations (Table 9). These scores qualify the entire basin for designation as EV under the Department's regulations.

PUBLIC RESPONSE AND PARTICIPATION SUMMARY

The Department provided public notice of this redesignation evaluation and requested any technical data from the general public through publication in the Pennsylvania Bulletin on March 11, 2000 (30 Pa.B 1420). A similar notice was published in the York Dispatch on March 13, 2000. In addition, East Hopewell Township was notified of the evaluation in a letter dated February 29, 2000. The York County Planning Commission was also notified at the same time.

The Rambo Run Fishing Club submitted data on water temperature and benthic macroinvertebrates present (1990-1999) in the area of the watershed owned by the club. While this data shows the presence of sensitive organisms, it was not collected using methods that would allow the development of metrics. Concerns about possible land use restrictions were expressed by property owners in the watershed.

Once the Department's evaluation of Rambo Run was completed, a draft stream report was sent to East Hopewell Township and the York County Planning Commission for their review and comment. This action was done on May 17, 2001. No comments were received by the Department.

RECOMMENDATION

Based on applicable regulatory criteria, the Department recommends that the Rambo Run basin be redesignated to Exceptional Value Waters (EV)(Figure 3). This recommendation is based on all stations scoring more than 92% in comparison to EV reference stations. This recommendation affects 17.3 stream miles.

FIGURE 1: RAMBO RUN LOCATION WITH PFBC SAMPLING SITES

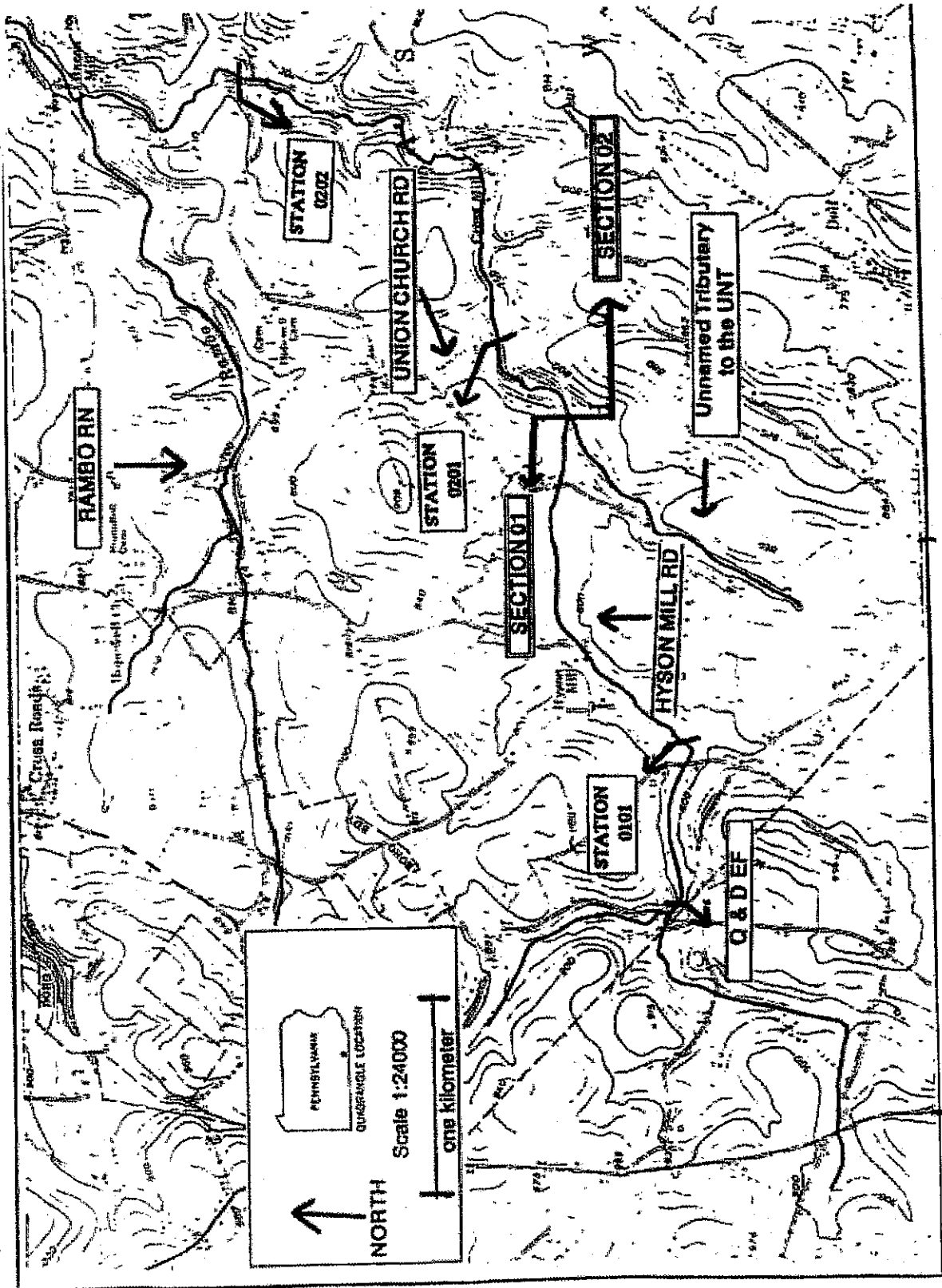


Figure 2 Station Locations

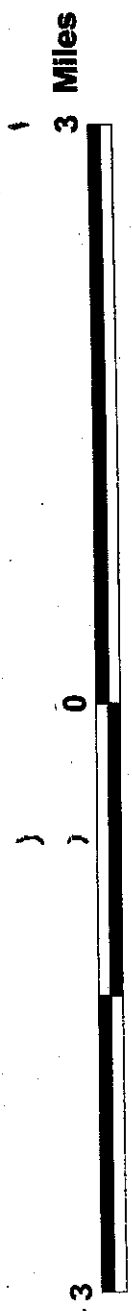
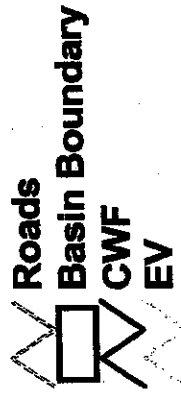
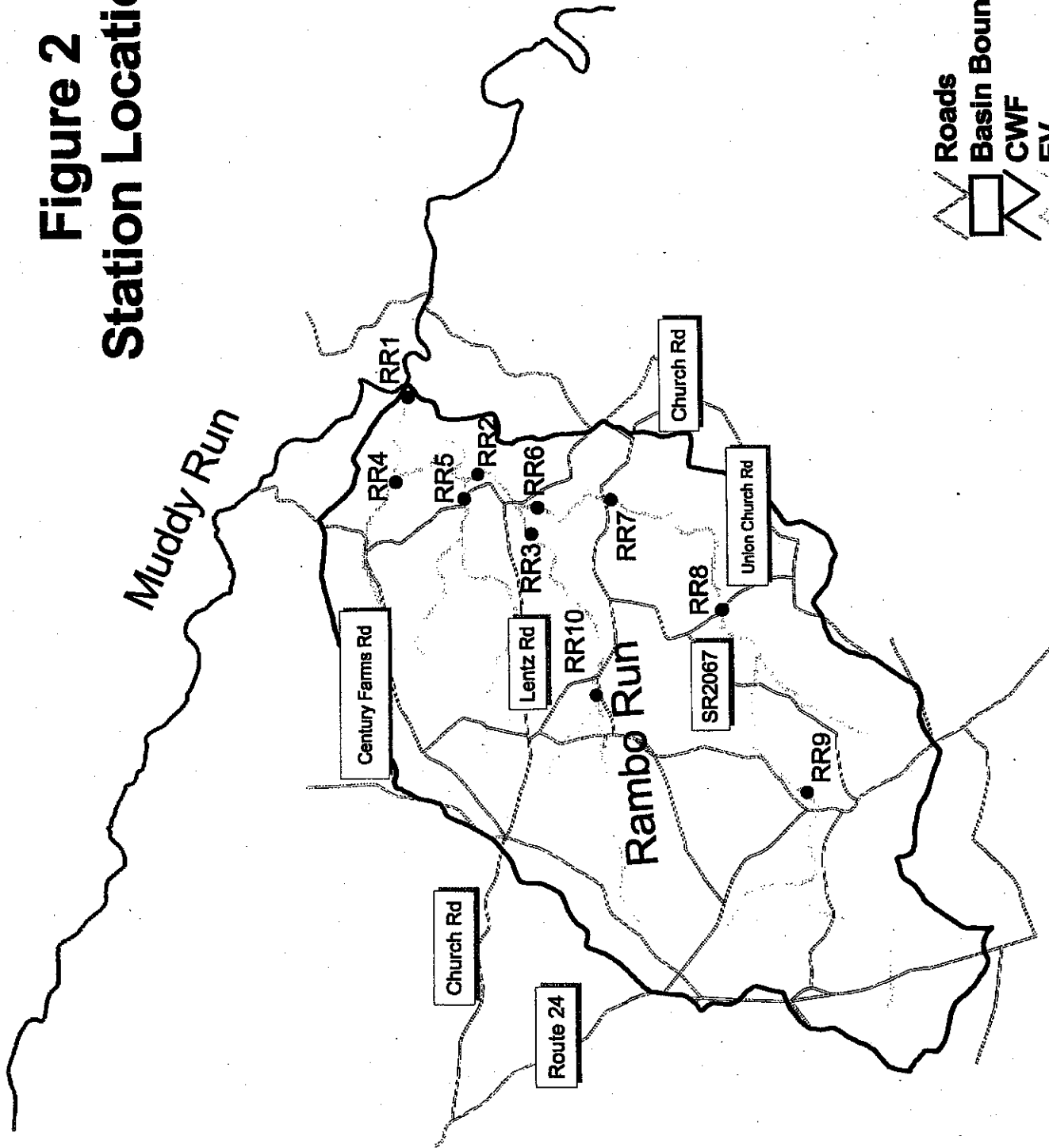
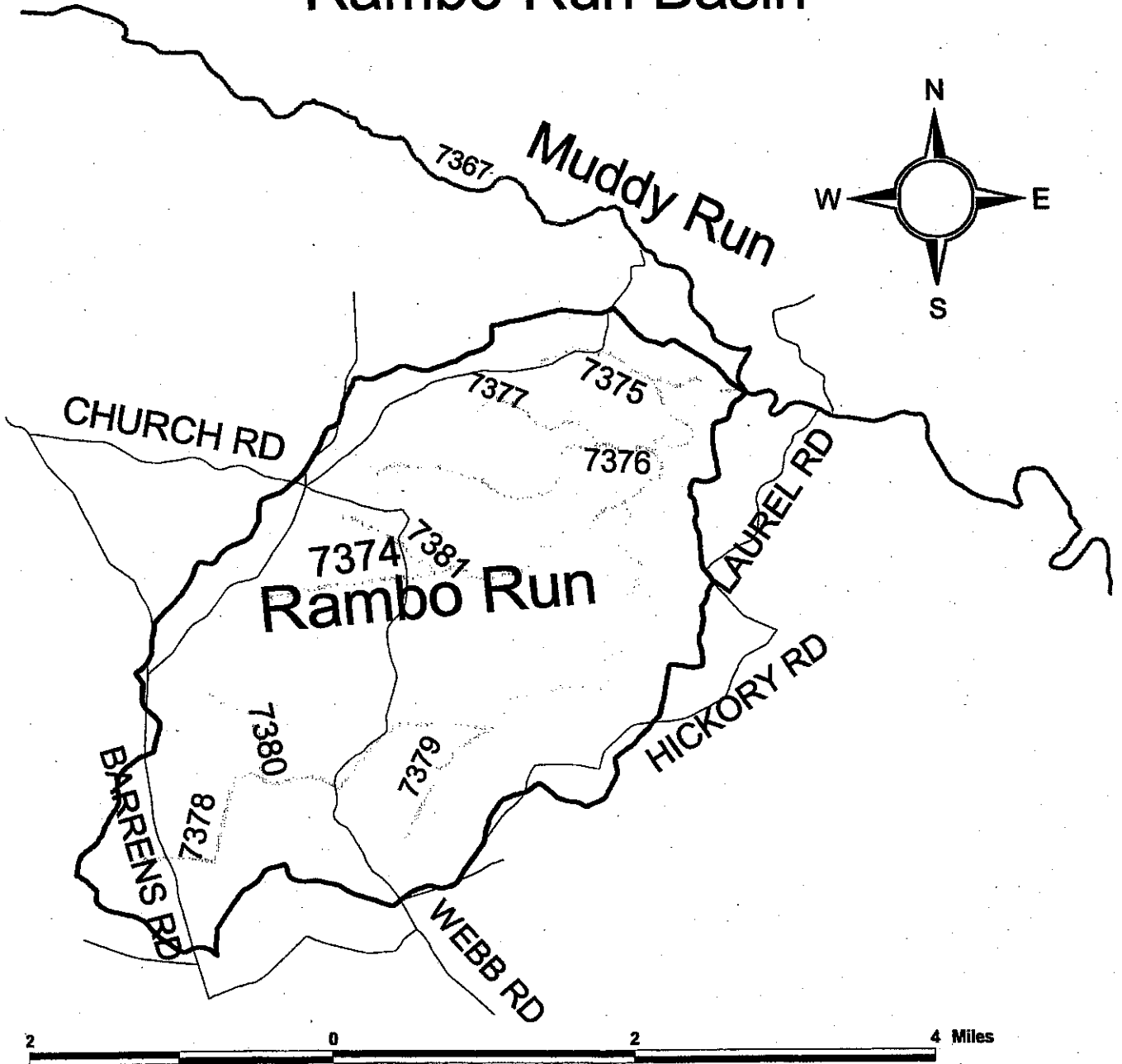


Figure 3

Rambo Run Basin




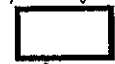


-  Roads
-  Basin Boundary
-  CWF
-  EV

TABLE 1
STATION LOCATIONS
RAMBO RUN AND UNNAMED TRIBUTARIES- YORK COUNTY

Benthic macroninvertebrate and/or fish collection stations on candidate and reference streams evaluated on October 21, 22, 28 and November 12, 1998.

STATION	LOCATION
<u>RR1</u>	Rambo Run (07374); Approximately 100 meters upstream of Rambo Run confluence with Muddy Creek; East Hopewell Township, York County. Latitude: 39 49 40 Longitude: 76 31 22
<u>RR2</u>	Rambo Run (07374); Just upstream of unnamed tributary (07376) to Rambo Run; East Hopewell Township, York County. Latitude: 39 49 19 Longitude: 76 31 58
<u>RR3</u>	Rambo Run (07374); Just upstream of unnamed tributary (07378) to Rambo Run near Bacon Mill; East Hopewell Township, York County. Latitude: 39 49 00 Longitude: 76 32 13
<u>RR4</u>	Unnamed tributary (07375); Just upstream of confluence with Rambo Run; East Hopewell Township, York County. Latitude: 39 49 46 Longitude: 76 32 01
<u>RR5</u>	Unnamed tributary (073776); Just upstream of Rambo Run near Rambo Road; East Hopewell Township, York County. Latitude: 39 49 21 Longitude: 76 32 03
<u>RR6</u>	Unnamed tributary (07378); Just upstream of confluence with Rambo Run (07374) near Bacon Mill; East Hopewell Township, York County. Latitude: 39 49 00 Longitude: 76 32 13
<u>RR7</u>	Unnamed tributary (07378); Downstream of Church Road/unnamed tributary intersection; East Hopewell Township, York County. Latitude: 39 48 34 Longitude: 76 32 10
<u>RR8</u>	Unnamed tributary (07378); Upstream of Union Church Road/unnamed tributary intersection; East Hopewell Township, York County. Latitude: 39 47 57 Longitude: 76 33 02
<u>RR9</u>	Unnamed tributary (07378); Approximately 100 meters downstream of SR2067/unnamed tributary intersection; East Hopewell Township, York County. Latitude: 39 47 25 Longitude: 76 34 26
<u>RR10</u>	Unnamed tributary (07381); Just upstream of confluence with Rambo Run (07374) Latitude: 39 48 40 Longitude: 76 33 43
<u>BR1</u>	Broad Run (00089); Approximately 1 kilometer upstream of confluence with the West Branch Brandywine Creek; West Bradford Township, Chester County. Latitude: 39 55 56 Longitude: 75 41 27
<u>BR2</u>	Broad Run (00089); Approximately .5 kilometer downstream of Chestnut Lane/Broad Run intersection along Broad Run Road; West Bradford Township, Chester County. Latitude: 39 57 48 Longitude: 75 44 32

TABLE 2
WATER CHEMISTRY¹
RAMBO RUN AND UNNAMED TRIBUTARIES-YORK COUNTY
OCTOBER 21 AND DECEMBER 16, 1998

STATION	RR1	RR2	RR3	RR5	RR6	RR7	RR8	RR9
Field Parameters								
Temp (°C)	11.3	10.9	10.7	11.9	10.3	7.1	7.6	8.8
Cond (µmhos)	120.1	118.7	105.9	120	98.7	119.1	125.1	112
Laboratory Parameters								
pH	6.6	6.5	6.5	6.6	6.5	6.5	6.5	6.5
Alkalinity	18	16	14	18.4	17	14	13.6	14.6
Acidity	0	0	0	0	0	0	0	0
Hardness	39.7	38.66	34.12	39.42	44.18	42.75	41.82	37.35
T Diss. Sol.	86	96	82	96		116	120	86
Susp. Sol.	<2	<2	<2	<2		4	<2	<2
NH ₃ -N	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
NO ₂ -N	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
NO ₃ -N	5.35	5.62	5.22	5.88	6	6.14	6.11	4.92
Total P	0.02	<0.02	0.02	0.02		<0.02	<0.02	<0.02
Ca	8.1	7.75	6.53	8.12	9.17	8.4	8.19	7.77
Mg	4.72	4.68	4.32	4.64	5.16	5.28	5.18	4.35
Cl	10	10	9	10	10	10	10	10
SO ₄	<20	<20	<20	<20	<20	<20	<20	<20
As*	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
As Diss	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Cd*	<.20	<.20	<.20	<.2	0.48	<0.2	<0.2	<0.2
Cd Diss	<0.2	<0.2	<0.2	<.20	<0.2	<.20	<.20	<.20
hex Cr*	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Cr*	<50	<50	<50	<50	<50	<50	<50	<50
Cu*	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	6.2
Cu Diss	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Fe*	135	110	125	114	194	76	75	118
Pb*	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pb Diss	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Mn*	<10.0	<10.0	15	<10.0	16	<10.0	<10.0	10
Ni*	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Ni Diss	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Zn*	<5.0	<5.0	<5.0	<5.0	7.3	<5.0	<5.0	<5.0
Zn Diss	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Al*	49.8	60.7	44.4	72.4	260	66	66.6	126
Fecal Coliform	150	140	60	40	290	160	360	130

¹ - Except for pH & conductance and indicated otherwise,
all values are total concentrations in mg/l

* - Total concentrations in µg/l

- Blank values are a result of problems in laboratory analysis

TABLE 3
NPDES PERMITTED DISCHARGES
UNNAMED TRIBUTARY OF RAMBO RUN- YORK COUNTY

STREAM	MUNICIPALITY	ESTABLISHMENT	NPDES NUMBER
UNT RAMBO RUN (07374)	HOPEWELL TOWNSHIP	YORK COUNTY SOLID WASTE AND REFUSE AUTHORITY	PA0081744