2012 NEW JERSEY INTEGRATED WATER QUALITY ASSESSMENT
JUSTIFICATION FOR DELISTED WATERS
July 2012

Justifications are provided below for assessment unit/parameter combinations identified as Delisted Waters for one of the following reasons:

I. Applicable Water Quality Standards (WQS) Attained; Due To Restoration Activities;
II. Applicable WQS Attained; According To New Method;
III. Applicable WQS Attained; Reason For Recovery Unspecified;
IV. Total Maximum Daily Load (TMDL) Approved Or Established By USEPA (4A);
V. WQS Attained; Original Basis For Listing Was Incorrect;
VI. Data And/Or Information Lacking To Determine Water Quality Status; Original Basis For Listing Was Incorrect (Category 3).

Appendix C of the 2012 Integrated Water Quality Monitoring and Assessment Report) will include the ADB-generated Delisted Waters Report along with references to the corresponding sections of this justification. Biological data sheets supporting delistings of "Cause Unknown" are provided in Attachment 1. Water quality data supporting delistings of pollutants for good cause are available upon request.

I. Applicable Water Quality Standards (WQS) Attained; Due To Restoration Activities

A. The following AUs were delisted because applicable WQS were attained due to restoration activities.

1) NJ02030103050060-01 Pequannock R (Macopin gage to Charl'brg) and NJ02030103050080-01 Pequannock R (below Macopin gage): New data at Stations 01382500 and PRTMDL-PE2, respectively, meet the applicable WQS for **Dissolved Oxygen (DO)**. Restoration in both AUs is attributed to 319(h) grant project RP04-003: Pequannock River thermal mitigation and watershed restoration plan.

2) NJ02030105110040-01 Beden Brook (above Province Line Rd): **Cause Unknown** was delisted because AMNET results at Station AN0398 show biology is good (HGMI). Restoration is attributed to 319(h) grant projects RP98-086: Beden Brook stream bank stabilization in two locations and RP04-084: "Sourland Mountain RSMP" watershed restoration plan.

3) NJ02040105090060-01 Pequest R (below Furnace Brook): New data at Station 01446400 meet applicable WQS for **Total Phosphorus (TP), and Total Suspended Solids (TSS)**. No current data for either parameter at Stations 01445500, 1-PEQ-2, 1-PEQ-2, BA40, BA40A, DRBCNJ0033, Pequest 6 or Pequest 7. Restoration is attributed to 319(h) grant projects RP01-062: riparian buffers (Mountain Brook and Pequest) and RP03-047: filters and stormwater management system.

4) NJ02040105140020-01 Pohatcong Ck (Brass Castle Ck to Rt 31): New data at Station 01455200 meet the applicable WQS for **Dissolved Oxygen (DO).** Restoration is attributed to 319(h) grant projects RP00-10 and RP01-062, which installed riparian buffers. pH was also delisted based on new assessment methods (see II.C).

5) NJ02040202110040-01 Cooper River (Wallworth gage to Evesham Rd): New data at Station 01467150 meet the applicable WQS for **Total Dissolved Solids (TDS)**. Restoration is attributable to 319(h) grant project RP07-050: Basin Retrofit project implementing Cooper River Watershed Plan.

6) NJ02040202110050-01 Cooper River (Rt 130 to Wallworth gage): New data at Stations Cooper River at Cuthbert Blvd, and Cooper River near mouth meet the applicable WQS for **TDS and Turbidity**. (New data at Station 01467150 also meets TDS but no new data for Turbidity at this location.) Station 01467190 has no TDS or Turbidity data. Restoration is attributed to 319(h) grant project RP01-087: Bio-filter wetland at Browing Rd and Park Dr. in Collingswood, which implements the Cooper River Watershed Plan.

7) NJ02040105160070-01 Musconetcong R (below Warren Glen): New data at Station 01457400 meet the applicable WQS for **TSS**. Restoration is attributed to 319(h) grant projects RP00-101: riparian buffer, RP01-062: riparian buffer, and RP06-073: watershed plan.

B. The following AUs were previously delisted under Fecal Coliform TMDLs and new data show that WQS are attained due to restoration activities (see geomean table below):

1) NJ02040105030020-01 Swartswood Lake and tribs: New data at Station 01443466 show the geomean is below the FW2 criterion for **E. coli.** Restoration is attributed to activities conducted under Section 319(h) grants: RP04-001 stormwater management, RP00-015 vegetated basins, and RP01-062 riparian buffer.

2) NJ02040301080060-01 Toms R Lwr (Rt 166 to Oak Ridge Pkwy): New data at Station 01408500 show the geomean is below the FW2 criterion for **E. coli.** Restoration is attributed to activities conducted under 319(h) grant RP03-036 for a stormwater basin and storm drain project.

3) NJ02030103030040-01 Rockaway R (Stephens Bk to Longwood Lk): New data at Station 01379660 shows the geomean is below the FW2 criterion for **E. coli**. Restoration is attributed to activities implemented to treat stormwater runoff under 319(h) grant RP04-113: Morris County stormwater treatment using wetlands.

AU Number	AU Name	Station	Geomean (ml) <126

			2009	2010
NJ02040105030020-01	Swartswood Lake and tribs (meets E. coli)	01443466	10	42.5
NJ02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	01408500	108.5	n/a
NJ02030103030040-01	Rockaway R (Stephens Bk to Longwood Lk)	01379660	32.8	n/a

II. Applicable WQS Attained; According To New Method

A. Metals Delisted Based on NY/NJ Harbor Toxics Modeling:

Metals were delisted in the ten AUs based on a new assessment method that was developed under the NY/NJ Harbor Estuary TMDL. The USEPA Region 2 Toxics TMDL model (USEPA Contract EP-C-08-003, January 2008) projected that concentrations of various metals in these AUs would not exceed the water quality criteria and that a TMDL would not be necessary. The modeling report is available on the Department's Web site at http://www.state.nj.us/dep/wms/bwqsa/support_docs.htm.

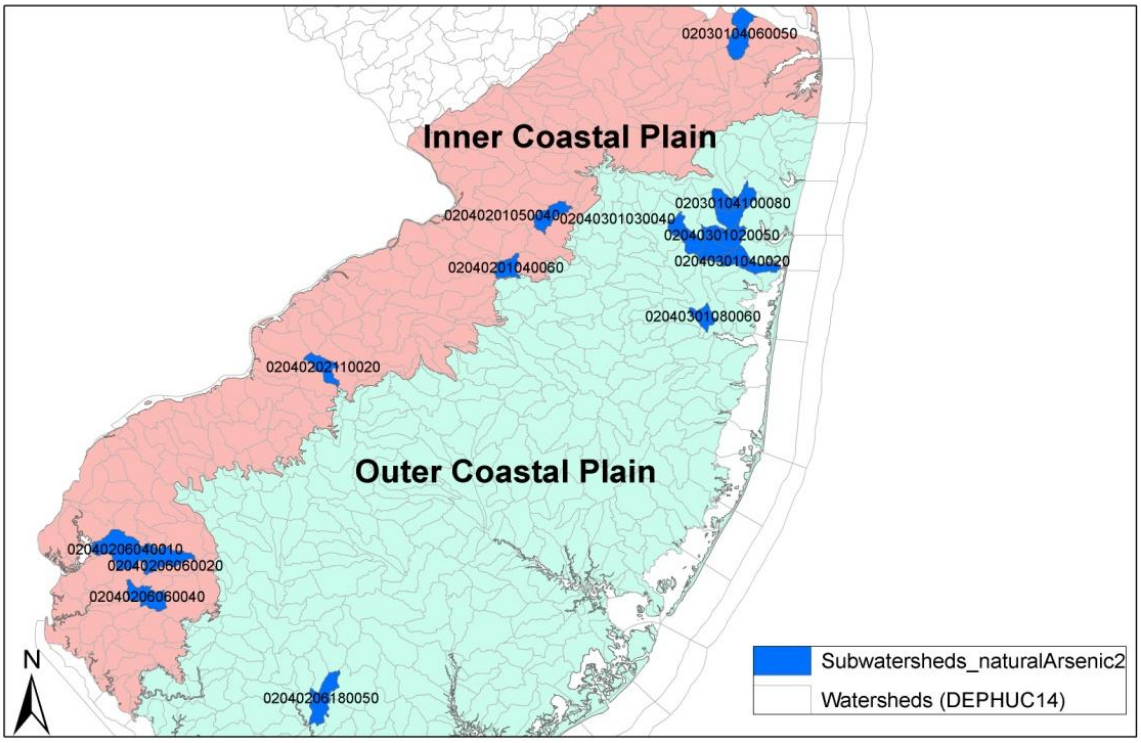
Assessment Unit	AU Name	Cause
NJ02030103180030-01	Hackensack R (Ft Lee Rd to Oradell gage)	Copper
NJ02030103180060-01	Berrys Creek (above Paterson Ave)	Cadmium
		Copper
		Lead
NJ02030103180070-01	Berrys Creek (below Paterson Ave)	Cadmium
		Chromium, hexavalent
		Copper
		Lead
NJ02030103180080-01	Hackensack R (Rt 3 to Bellmans Ck)	Cadmium
NJ02030103180090-01	Hackensack R (Amtrak bridge to Rt 3)	Cadmium
NJ02030103180100-01	Hackensack R (below Amtrak bridge)	Cadmium
NJ02030104020020-01	Elizabeth R (Elizabeth CORP BDY to I-78)	Copper
		Lead
NJ02030104020030-01	Elizabeth R (below Elizabeth CORP BDY)	Copper
		Lead
NJ02030105120170-01	Raritan R Lwr (Lawrence Bk to Mile Run)	Cadmium
		Zinc
NJ02030105160100-01	Raritan R Lwr (below Lawrence Bk)	Cadmium

B. Natural Conditions - Arsenic

Arsenic in New Jersey streams was investigated by USGS through a series of studies involving streams in the Coastal Plain Physiographic Provinces of New Jersey. The studies concluded that the concentration of naturally-occurring arsenic ranges from 0.24-0.61 ug/l in the Outer Coastal Plain and 0.36-0.70 ug/l for the Inner Coastal Plain (see 2012 Final Methods Document, Section 4.1, "Metals"). Reassessment of existing data shows that 15 AUs are within the naturally-occurring range of arsenic concentrations in the Inner or Outer Coastal Plain (see map below). Arsenic was delisted in these AUs based on a new method for evaluating natural vs. anthropogenic sources of Arsenic based on the USGS study.

Assessment Unit	AU Name
NJ02030104060050-01	Waackaack Creek
NJ02030104100080-01	Manasquan R (74d07m30s to Squankum gage)
NJ02040201040060-01	North Run (above Wrightstown bypass)
NJ02040201050040-01	Crosswicks Ck(Walnford to Lahaway Ck)
NJ02040202110020-01	Cooper River NB(below Springdale Road)
NJ02040206040010-01	Mannington Creek
NJ02040206060020-01	Alloway Ck (above Alloway-Woodstown Rd)
NJ02040206060040-01	Deep Run (Alloway)
NJ02040206180050-01	Menantico Creek (below Rt 552)
NJ02040301020040-01	Muddy Ford Brook
NJ02040301020050-01	Metedeconk R NB (confluence to Rt 9)
NJ02040301030040-01	Metedeconk R SB (Rt 9 to Bennetts Pond)
NJ02040301030050-01	Metedeconk R SB (confluence to Rt 9)
NJ02040301040020-01	Metedeconk R (Beaverdam Ck to confl)
NJ02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)

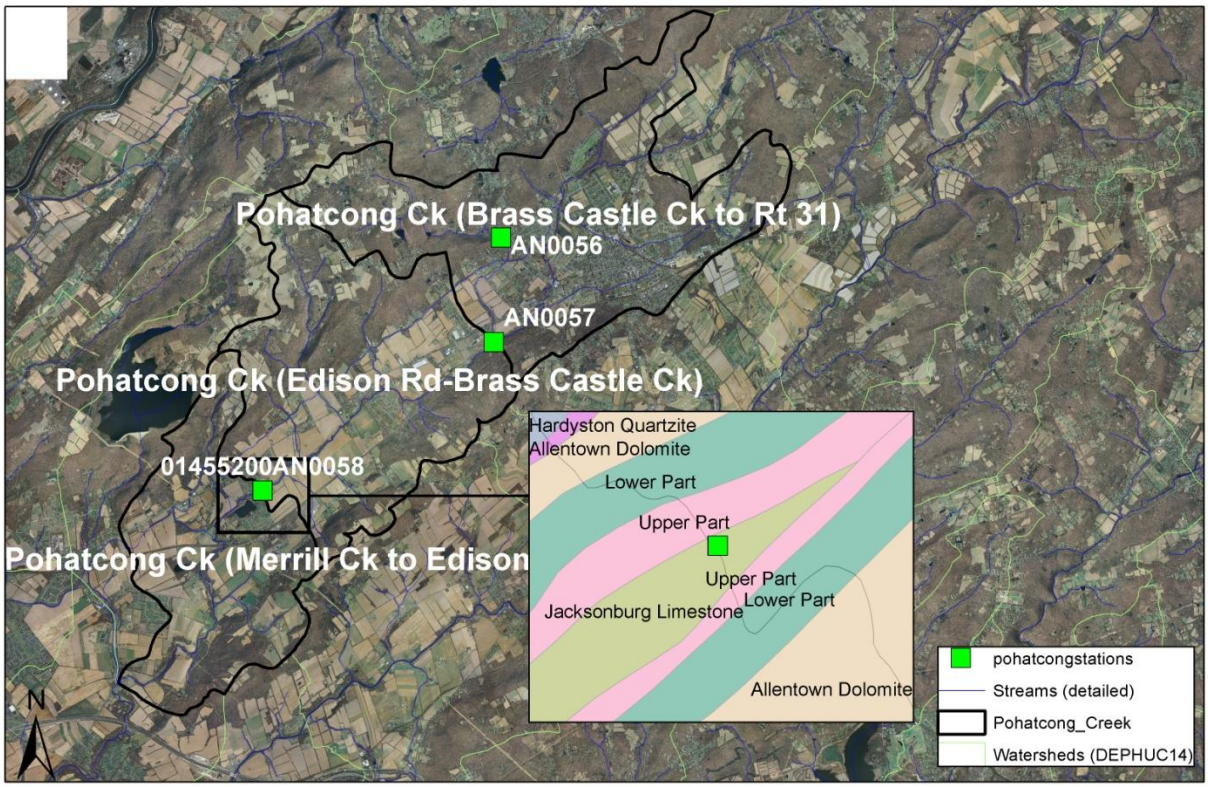
Subwatersheds With Naturally Occuring Arsenic



C. Natural Conditions - pH: The following AUs were delisted based on a determination that the pH levels reflect natural conditions:

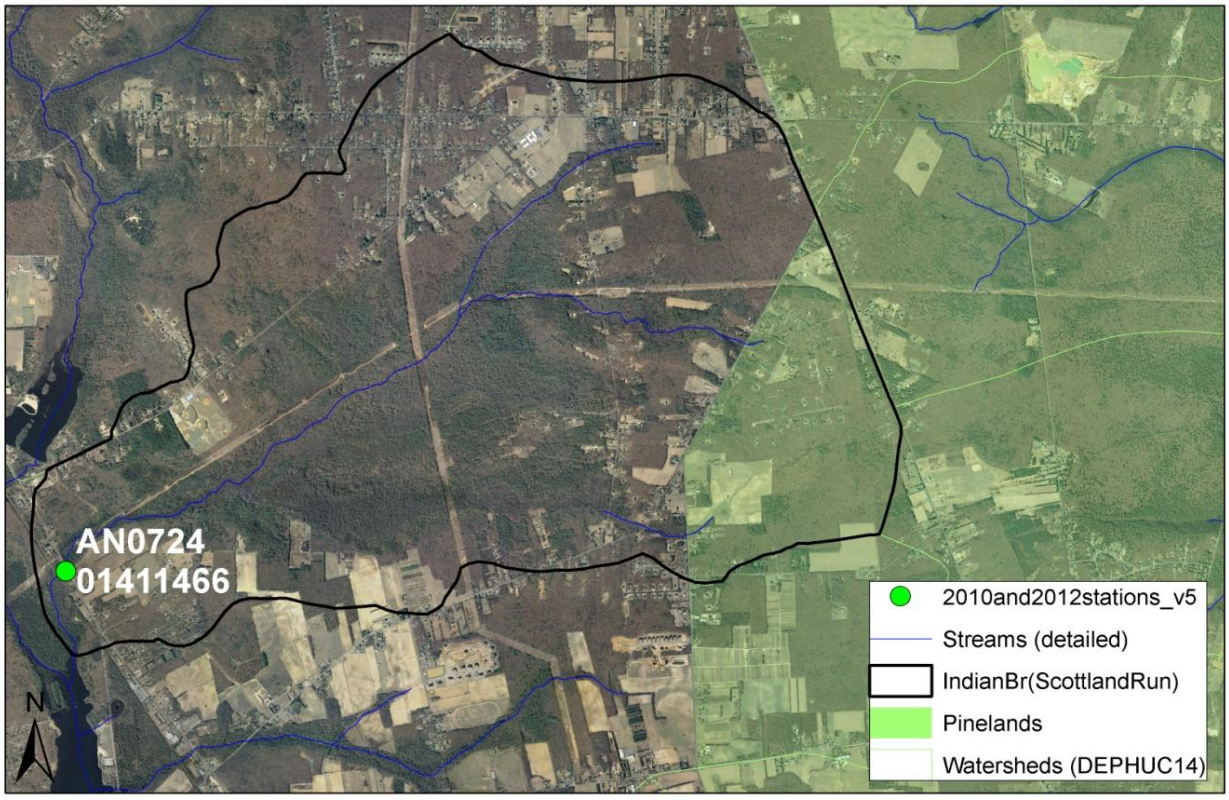
1) NJ02040105140020-01 Pohatcong Ck (Brass Castle Ck to Rt 31), NJ02040105140030-01 Pohatcong Ck (Edison Rd-Brass Castle Ck), and NJ02040105140050-01 Pohatcong Ck (Merrill Ck to Edison Rd), were all listed based on Station 01455200; which exhibited pH levels above the range for FW2 waters. However, these pH levels reflect natural conditions due to the influence of the underlying limestone geology (see map below). Temperature, TP, and TSS are still listed as causes of Aquatic Life (General and Trout) Use non-support in this AU.

Pohatcong Creek



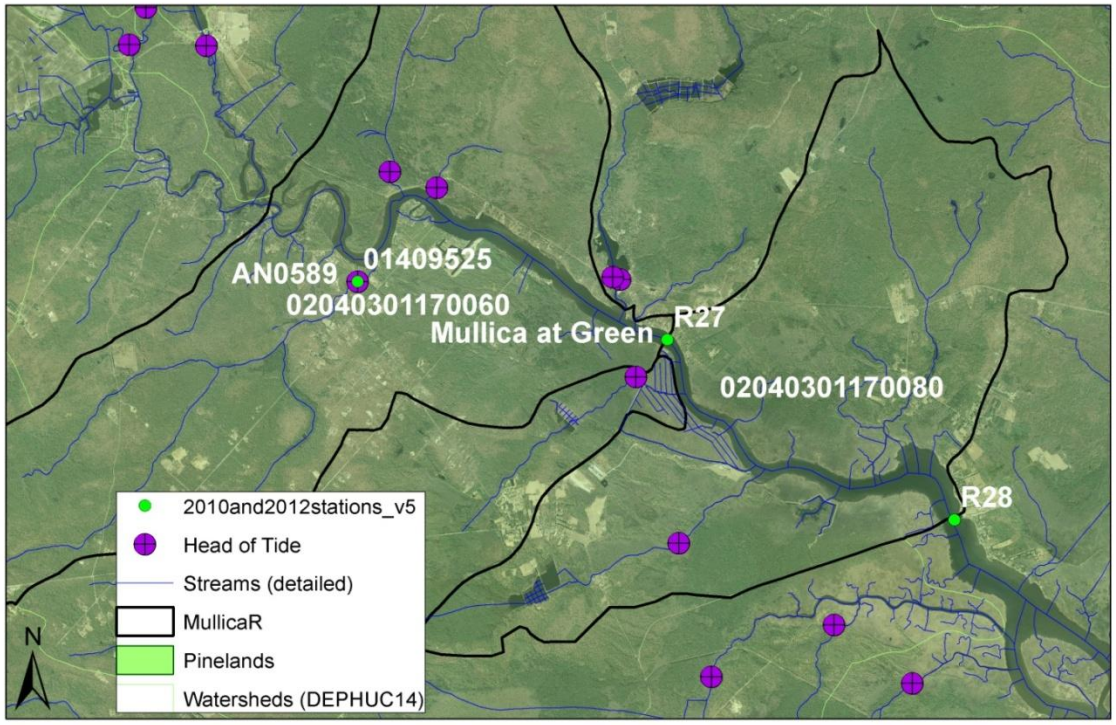
2) NJ02040206130030-01 Indian Branch (Scotland Run) was originally listed for pH in 2004 (as Indian Branch near Malaga) based on Station 01411466. The stream classification at this site is FW2-NT and it was assessed based on the South Jersey pH criterion of 4.5 to 7.5. This AU was listed because pH was less than 4. However, this AU is partially located within the Pinelands National Wildlife Reserve and the biological community at AN0724 reflects Pinelands conditions (i.e., highly acidic). Therefore, low pH reflects the desired natural condition. DO remains listed as the cause of Aquatic Life Use non-support.

Indian Branch (Scotland Run)



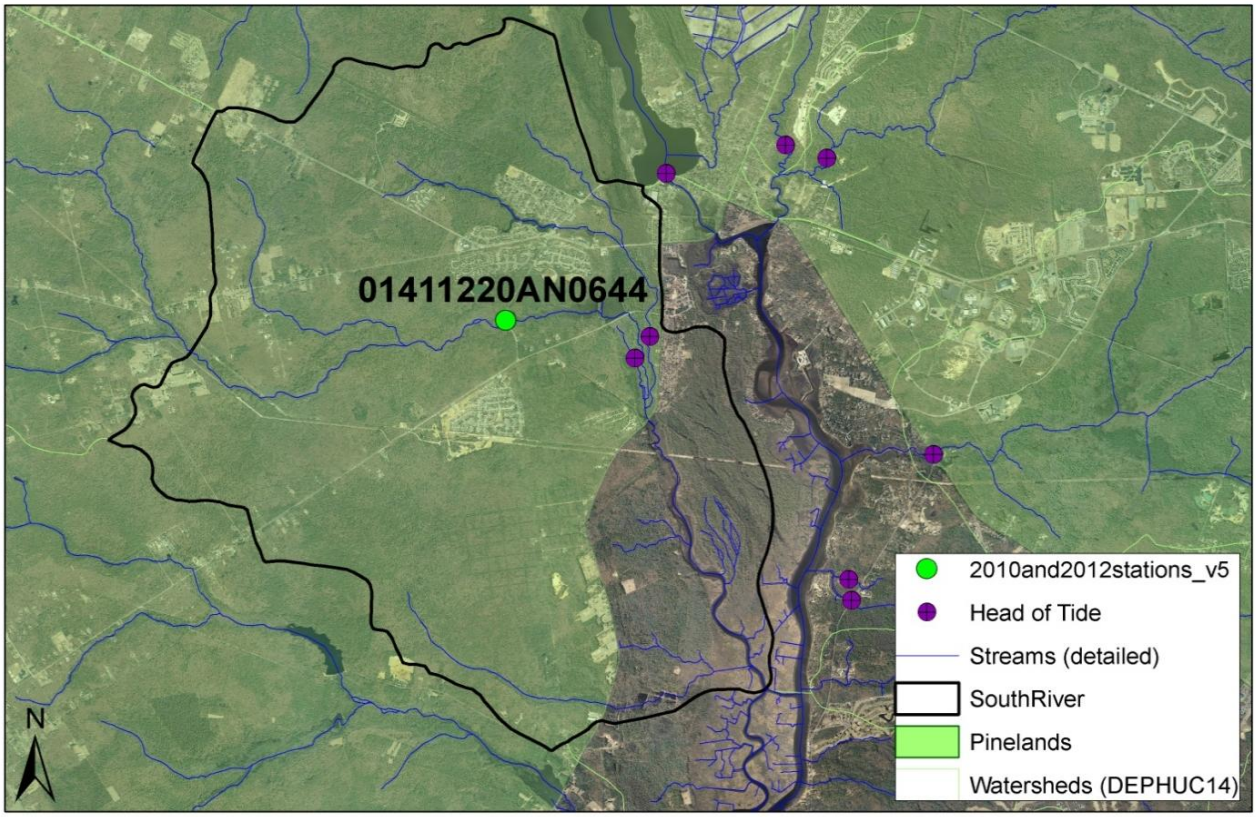
3) NJ02040301170060-01 Mullica River (Rt 563 to Batsto River) and NJ02040301170080-01 Mullica River (Lower Bank Rd to Rt 563) were originally listed for **pH** in 1998 based on USGS data at Mullica River at Green Bank. Historic and new pH data meet the South Jersey pH criterion but not the PL criterion. Data at Station AN0589, which is just above the head of tide, show biology is excellent; therefore, the pH levels represent the natural condition. The Aquatic Life Use was changed to Fully Supporting for the upstream AU. There is no biological data for the downstream AU, so the Aquatic Life Use was changed to Insufficient Information.

Mullica River



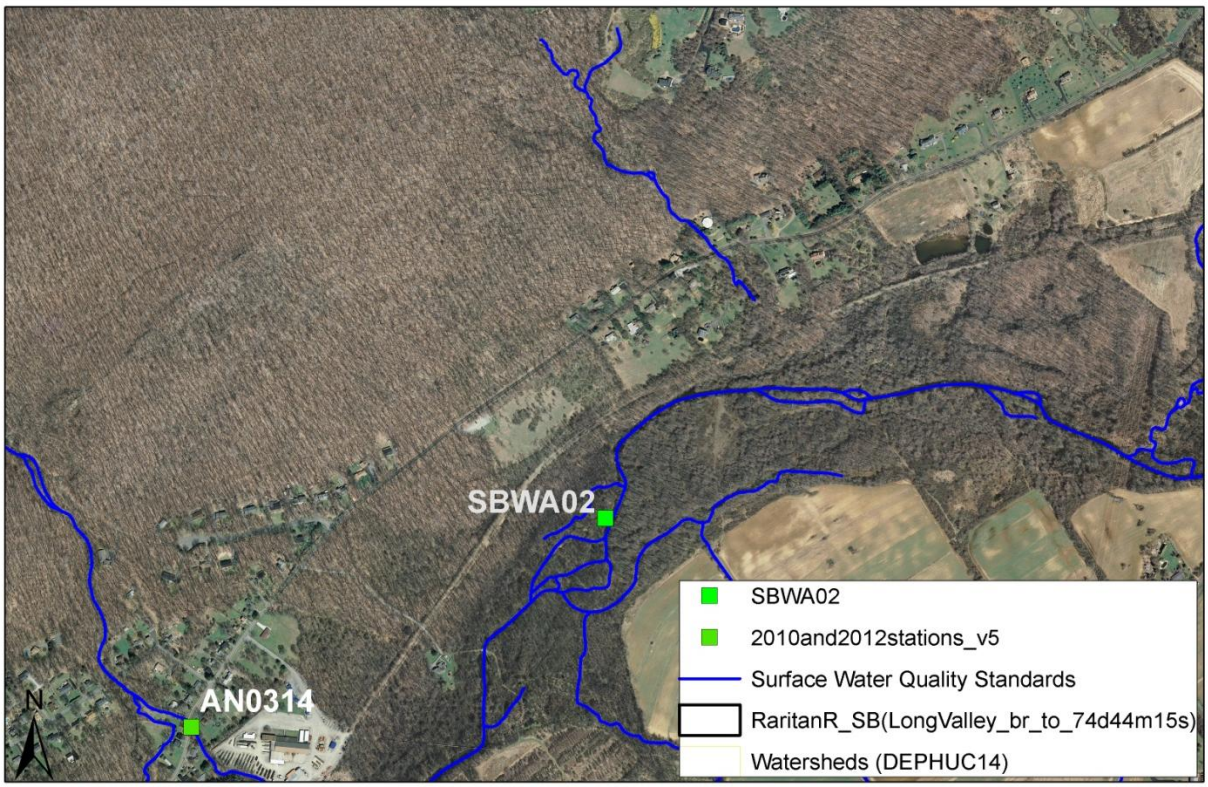
4) NJ02040302050040-01 South River (below 39d26m15s) is located within the National Pinelands Reserve (see map below). This AU was listed because pH levels at Station 01411220 exceeded the PL criterion for pH. These pH levels are consistent with the South Jersey pH criterion; however, biological data at co-located AMNET Station AN0644 show biology is excellent based on the Pinelands Macroinvertebrate Index. Both stations are located in a relatively undeveloped, highly forested location in the middle of the AU and the stream. Photographs and field observations from the AMNET station show no indication of land uses that could impact water quality.

South River (below 39d26m15s)



D. Natural Conditions - Temperature: NJ02030105010050-01 Raritan R SB (LongValley br to 74d44m15s) was originally listed in 2006 for Temperature; however, available data do not support this listing. Data at Stations 01396121 and 01396190 meet the FW2-TP criterion for Temperature. There were some very minor exceedances of the temperature criteria at SBRR2 between 2004 and 2005; however, these temperatures are naturally-occurring since they did not cause any biological impairment. Biological data was collected in 2009 (AMNET) and 2010 (South Branch) and assessed as excellent at Stations AN0313 and AN0314 and good at Stations AN0315, SBWA12, and SBWA13 (see map below). Biology was fair at Station SBWA02, in a braided section of South Branch Raritan River. It's possible that the samples were collected from a small tributary. For this reason, the station was deemed not representative of the AU. **Cause Unknown** was also delisted (see III.A) and the Aquatic Life Use was changed to Fully Supporting.

Raritan River SB (LongValley Br to 74d44m15s)



III. WQS Attained; Reason for Recovery Unspecified

A. Cause Unknown: The table below identifies delistings for Cause Unknown where new biological data shows that biology is no longer impaired and chemical data is unavailable or shows no exceedances of the applicable WQS. Supporting data are provided in Attachment 1.

Assessment Unit	AU Name	Station(s)
NJ02030104070080-01	Pine Brook / Hockhockson Brook	AN0475, AN0476
NJ02030104100090-01	Manasquan R (Rt 70 br to 74d07m30s)	AN0498
NJ02030105010020-01	Drakes Brook (below Eyland Ave)	AN0312
NJ02030105010050-01	Raritan R SB (LongValley br to 74d44m15s)	AN0313, AN0314, AN0315, SBWA12, SBWA13
NJ02030105050040-01	Lamington R(Pottersville gage-FurnaceRd)	AN0358
NJ02040105210030-01	Swan Creek (Moore Ck to Alexauken Ck)	AN0099
NJ02040301190030-01	Wading River WB (Rt 563 to Rt 532)	AN0596
NJ02040301190040-01	Shoal Branch (below Pope Branch)	AN0597, AN0597A
NJ02040301190060-01	Tulpehocken Creek	AN0600

B. Pollutants: The table below identifies delistings for pollutants where new data meet applicable WQS but the reason for recovery is unknown. Supporting data are available upon request.

Assessment Unit	AU Name	Cause	Station(s)
NJ02020007030030-01	Wallkill River(Owens gage to 41d13m30s)	pH	01455200
NJ02030103010020-01	Primrose Brook	E. coli	01378780
NJ02030103010020-01	Primrose Brook	TSS	01378780
NJ02030103010100-01	Dead River (below Harrisons Brook)	TSS	01379200
NJ02030103010130-01	Passaic R Upr (40d 45m to Snyder Ave):	DO	01379500
NJ02030103030110-01	Beaver Brook (Morris County)	pH	01379200
NJ02030103030120-01	Den Brook	pH	01380125

Assessment Unit	AU Name	Cause	Station(s)
NJ02030103050050-01	Pequannock R (Charlotteburg to OakRidge)	pH	01382310
NJ02030103110020-01	Pompton River	Total Chromium	01388500, 01388600
NJ02030103140030-01	Hohokus Bk(below Pennington Ave)	DO	01391100, 01391000, 01390946, 01391050, HB001 (including continuous)
NJ02030103140060-01	Saddle River (Lodi gage to Rt 4)	Nitrates	01391500, 01391540, NJHDG-6
NJ02030103140060-01	Saddle River (Lodi gage to Rt 4)	TSS	01391500, NJHDG-6
NJ02030103140070-01	Saddle River (below Lodi gage)	Nitrates	01391500, 01391540, NJHDG-6
NJ02030103140070-01	Saddle River (below Lodi gage)	TSS	01391500, NJHDG-6
NJ02030103140080-01	Saddle River (Hohokus to Ridgewood gage)	DO	SR001, 01390518, 01390510 (including continuous)
NJ02030103140080-01	Saddle River (Hohokus to Ridgewood gage)	TSS	01390518, 01390510
NJ02030103170040-01	Tenakill Brook	pH	01378350, 01378352, 01378387, CB1, DB1
NJ02030104020020-01	Elizabeth R (Elizabeth CORP BDY to I-78):	DO	01393450
NJ02030104020030-01	Elizabeth R (below Elizabeth CORP BDY)	DO	NJHDG-20
NJ02030104050060-01	Rahway R(Robinsons Br to KenilworthBlvd)	TSS	01349500
NJ02030104060060-01	Pews Creek to Shrewsbury River	DO	R66, R67
NJ02030104070100-01	Poricy Bk/Swimming R(below SwimmingR Rd)	DO	1000E, R01, R02,R03
NJ02030104070110-01	Navesink R (below Rt 35)/LowerShrewsbury	DO	1014, 10068, 88, 37, 1012B

Assessment Unit	AU Name	Cause	Station(s)
NJ02030104080020-01	Parkers Creek / Oceanport Creek	DO	40, R59, R04, R58
NJ02030104080040-01	Shrewsbury River (above Navesink River)	DO	44, 1132,1127A, 1100A, 1104B
NJ02030104080040-01	Shrewsbury River (above Navesink River)	pH	39, 44
NJ02030104100030-01	Manasquan R (West Farms Rd to Rt 9)	TSS	01408000, 15, 73
NJ02030104100050-01	Manasquan R (gage to West Farms Rd)	TSS	01408000
NJ02030105020080-01	Raritan R SB(Prescott Bk to River Rd)	TSS	01397000 (co-located with SBRR8)
NJ02030105040040-01	Raritan R SB(NB to Pleasant Run)	TSS	01398102
NJ02030105050070-01	Lamington R(HallsBrRd-HerzogBrk)	pH	01399780, 01399545
NJ02030105050070-01	Lamington R(HallsBrRd-HerzogBrk)	TSS	01399780, 01399545
NJ02030105070030-01	Raritan R NB (below Rt 28)	TSS	0140000
NJ02030105080030-01	Raritan R Lwr (Millstone to Rt 206)	TSS	01400500, DSR16R, R1
NJ02030105110010-01	Heathcote Brook	pH	01401400
NJ02030105110010-01	Heathcote Brook	TSS	01401400
NJ02030105160100-01	Raritan R Lwr (below Lawrence Bk)	DO	Passaic-24, NJHDG-27
NJ02040104140040-01	Big Flat Brook (Confluence to Kittle Rd)	pH	0143980
NJ02040105150050-01	Lubbers Run (below Dallis Pond)	pH	01455780
NJ02040105170020-01	Hakihokake Creek	TP	01458100
NJ02040105170050-01	Nishisakawick Creek (below 40d 33m)	pH	01458570
NJ02040105200030-01	Lockatong Ck (below Milltown) incl UDRV	Turbidity	01460900
NJ02040105200030-01	Lockatong Ck (below Milltown) incl UDRV	pH	01460900
NJ02040105240030-01	Miry Run (Assunpink Cr)	DO	01463850
NJ02040201050070-01	Crosswicks Ck(Doctors Ck-Ellisdale trib)	TSS	01464504
NJ02040201070020-01	Crosswicks Ck(below Doctors Creek)	Turbidity	0146452360

Assessment Unit	AU Name	Cause	Station(s)
NJ02040202080030-01	Mill Creek (Willingboro)	TSS	01467021
NJ02040202110050-01	Cooper River (Rt 130 to Wallworth gage)	Turbidity	01467150, Cooper River at Cuthbert, Cooper River near mouth
NJ02040202110040-01	Cooper R (Wallworth gage to Evesham Rd)	Turbidity	01467150, Cooper River at Cuthbert, Cooper River near mouth
NJ02040202110040-01	Cooper R (Wallworth gage to Evesham Rd)	Sulfates	01467150
NJ02040202110050-01	Cooper River (Rt 130 to Wallworth gage)	Sulfates	01467150
NJ02040202120090-01	Newton Creek (LDRV-Kaighn Ave to LT Ck)	Copper	01467312
NJ02040202130050-01	Edwards Run	TSS, Turbidity	01475090
NJ02040206030010-01	Salem River (above Woodstown gage)	DO	01482455, S1, S2, S4
NJ02040206040010-01	Mannington Creek	pH	01482645
NJ02040206060020-01	Alloway Ck (above Alloway-Woodstown Rd)	TP	01482880
NJ02040301020010-01	Metedeconk R NB(above I-195)	DO	NK
NJ02040301020020-01	Metedeconk R NB(Rt 9 to I-195)	DO	01408100, NF, NI, NG, and NK
NJ02040301030010-01	Metedeconk R SB (above I-195 exit 21 rd)	DO	01408100 and NF, NI, NG, and NK
NJ02040301040030-01	Metedeconk R (below Beaverdam Creek)	DO	1601B
NJ02040301050050-01	Barnegat Bay North (above Rt 37 bridge)	DO	1609B, 1629B, 1627, 1617E, 1605A, 1618A, BB01, BB02, BB03
NJ02040301060020-01	Toms River (74-22-30 rd to FrancisMills)	pH	01408260
NJ02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	Cadmium	13-Tom-1
NJ02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	Copper	13-Tom-1
NJ02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	Total Chromium	13-Tom-1
NJ02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	Lead	13-Tom-1

Assessment Unit	AU Name	Cause	Station(s)
NJ02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	Nickel	13-Tom-1
NJ02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	Zinc	13-Tom-1
NJ02040301080070-01	Jakes Branch (Lower Toms River)	DO	BT05
NJ02040301160030-01	Mullica River (Rt 206 to Jackson Road)	DO	01409385
NJ02040301170010-01	Hammonton Creek (above 74d43m)	Copper	01409414
NJ02040301170010-01	Hammonton Creek (above 74d43m)	Zinc	01409414
NJ02040301170020-01	Hammonton Creek (Columbia Rd to 74d43m)	Copper	01409418
NJ02040301170020-01	Hammonton Creek (Columbia Rd to 74d43m)	Zinc	01409414
NJ02040301170100-01	Landing Creek (above Rt 563)	DO	01409571
NJ02040301170130-01	Mullica River(Turtle Ck to Lower BankRd)	TSS	R28
NJ02040301200120-01	Nacote Creek (below/incl Mill Pond)	DO	R30, R31
NJ02040301210010-01	Mullica River (below GSP bridge)	DO	2002A, 2009A, R29
NJ02040302030040-01	GEHR (Broad Lane road to AC Expressway)	Copper	01409418
NJ02040302030040-01	GEHR (Broad Lane road to AC Expressway)	Zinc	01409414
NJ02040302030060-01	GEHR (Piney Hollow Rd to Broad Lane rd)	Copper	01410820
NJ02040302050130-01	Great Egg Harbor R (GEH Bay to Miry Run)	DO	2821B
NJ02040302060030-01	Patcong Creek (Somers Ave to Zion Rd)	DO	R34, 2863B

C. Metals Listings Carried Over from 1998 for Great Egg Harbor River and Toms River Estuaries

1) **Great Egg Harbor River:** In the 1998 Identification and Setting of Priorities for Section 303(d) Water Quality Limited Waters in New Jersey, the Department identified Great Egg Harbor River on Sublist II: Candidate TMDL Waters Sublist, B. Suspected Water Quality Impairment (page A73). Waters listed in Sublist II- B lacked extensive data or the available information was not a strong indicator of water quality impairment but sufficient data or indictors exist that indicate further analysis was warranted. Reach 020403-011 was located in the freshwater section. Data was available at Sicklerville and

Folsom located in Reach 02040302-011 and at Weymouth for Reach 02030301-010. No stations were identified on the 1998 list; only the reach numbers.

Waterbody	Reach	Metals
Great Egg Harbor	02040302-011	Arsenic, Cadmium, Chromium, Lead, Mercury
Great Egg Harbor	02030301-010	Arsenic, Beryllium, Cadmium, Chromium, Lead, Mercury, Nickel, Zinc

In 2006, Great Egg Harbor River at Sicklerville and Great Egg Harbor River at Folsom were combined and assigned to NJ020403020300100-01. Another confounding factor was the change made to the assessment units to align with the HUC 12s. Great Egg Harbor R (GEH Bay to Miry Run) 02040302050130 was split. A new HUC14 was created and labeled Great Egg Harbor River (GEH Bay to Gibson Crk) 02040302050140. All of the 303(d) listed pollutants assigned to Great Egg Harbor R (GEH Bay to Miry Run) 02040302050130 were also assigned to the new AU (see table below).

Station Name/ Waterbody	2004 site id numbers	2006 Assessment Unit
Great Egg Harbor River at Sicklerville	01410784, 15-GEH-1	02040302030010-01
Great Egg Harbor River at Folsom	01411000, 15-GEH-2	02040302030010-01
Great Egg Harbor River at Weymouth	01411110, 15-GEH-3	02040302040080-01 02040302050130-01 02040302040090-01
Great Egg Harbor River Estuary	Great Egg Harbor River Estuary	02040302050130-01

In 2008, it appears that because this AU was estuarine, the original 1998 metals assessment associated with Reach - 02030301-010 was also assigned to NJ02040302050060-01 GEHR (Miry Run to Lake Lenape).

At this time, the Department has concluded that data from Stations 01410784, 01411000, 15-GEH-1, and 15-GEH-2 should be used to reevaluate the listings for NJ02040302030010-01. This portion of the Great Egg Harbor River is freshwater and, therefore, should be assessed against freshwater criteria. The table below shows the highest value measured, date sampled, and the acute and chronic aquatic life criterion at a hardness of 15 ppm. The flows were listed as "elevated" during the 7/18/2005 sampling event and cannot be used to assess compliance with the chronic criteria. Based on the remaining data, the acute criterion was attained.

Metal	Highest Value	Date sampled	FW – Acute Aquatic Life at 15 ppm hardness	FW –Chronic Aquatic Life at 15 ppm hardness
Cadmium	0.08*	7/18/2005	0.20	.04
Chromium	1.9	7/18/2005	105	5.04
Lead	2.94	7/18/2005	38	5.4

Data from Stations 01411110 and 15-GEH-3 were used to reevaluate the status of listed metals associated with the estuarine portions of the Great Egg Harbor River and now assigned to five subwatersheds: NJ02040302050060-01, NJ02040302040080-01, NJ02040302040090-01, NJ02040302050130-01, and NJ02040302050140-01. There were no exceedances, as shown in the table below.

Metal	Highest Value	Date sampled	SE – Acute Aquatic Life	SE – Chronic Aquatic Life
Cadmium	0.05	7/18/2005	40	8.8
Chromium	1.2	7/18/2005	1,100	50
Lead	2.3	6/7/2002	210	24
Mercury	0.05	4/26/2001	0.051*	n/a
Nickel	2.4	4/26/2001	64	22
Zinc	24.9	6/7/2002	90	81

*human health criterion in SE water for mercury in water column.

2) Toms River: In reviewing 304(L) documentation, Toms River was identified in 1986 as potentially impacted by VOCs and Metals due to point source discharge from Ciba Gigy. In 1993, the follow reaches were listed based on a review of available water quality data:

Waterbody	Reach	1998 Metals Listings
Toms River	02040301-018	Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Mercury, Zinc
Toms River	02030301-017	Zinc, Iron
Toms River	02040301-014	Arsenic, Copper, Lead, Nickel

These assessments have been carried over to subsequent lists and assigned to Station/Waterbody Name – Toms River Estuary, which was ultimately associated with Tom River Lwr (below Rt 166) NJ02040301080090-01. We have concluded that this assessment unit can be assessed with the water quality data from stations 13-Tom-1 and 01408500. The highest value measured at 01408500 and 13-Tom-1 was compared to the freshwater and saline acute and chronic criteria. The criteria for these waters were based on a hardness of 20 ppm. Results support a conclusion that these waters do not exceed criteria for Cadmium, Chromium, Copper, Lead, Nickel, and Zinc (see table below).

Metal	Highest Value	Date sampled	FW – Acute Aquatic Life at 20 ppm hardness	FW – Chronic Aquatic Life at 20ppm hardness	SE – Acute Aquatic Life	SE – Chronic Aquatic Life
Cadmium	0.05	7/14/2005	0.27	.053	40	8.8
Chromium	All ND		133	6.3	1,100	50
Copper	1.8	4/26/2001	2.79	2.14	4.8	3.1
Lead	1.62	7/14/2005	38	5.4	210	24
Nickel	2.2	4/25/2001	101.71	11.3	64	22
Zinc	13	5/28/1997	29.10	29.10	90	81

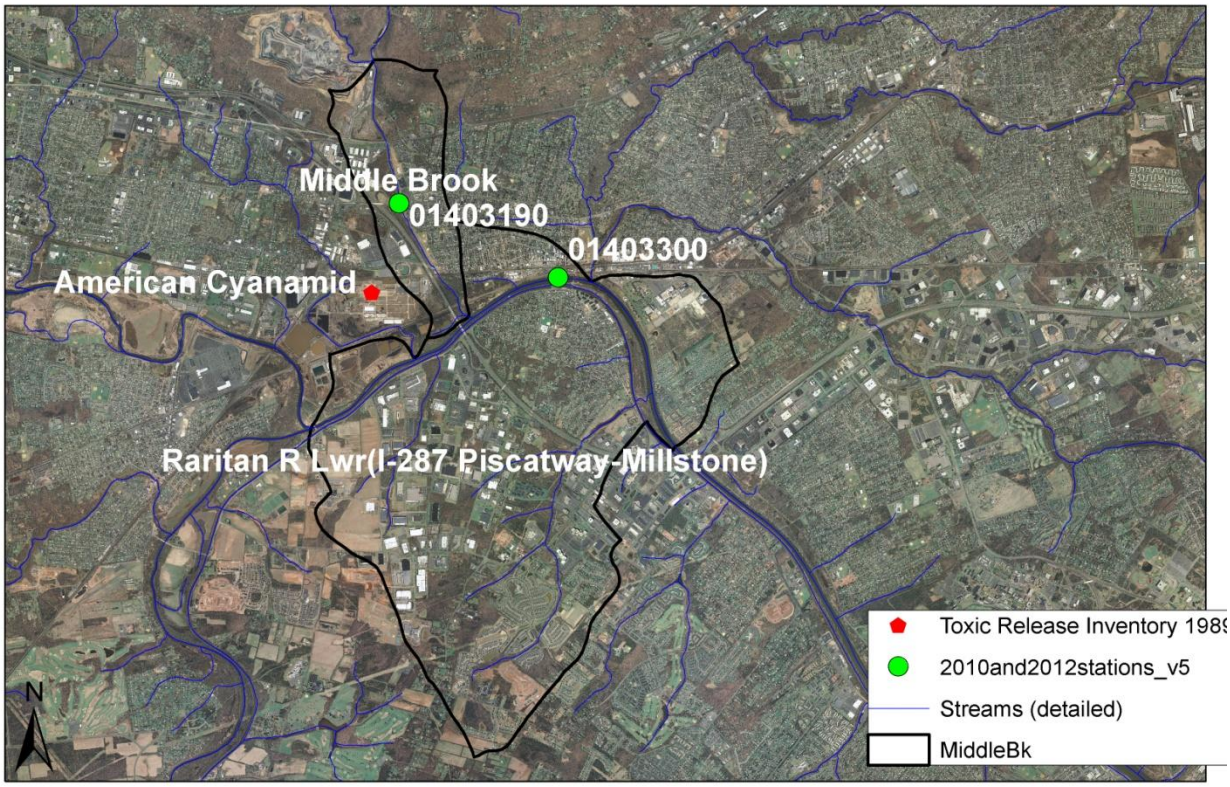
IV. WQS Attained - Original Listing Incorrect

A. Ammonia (un-ionized): Twelve AUs were incorrectly listed for ammonia in 2010 due to a computer programming error in the formulas used to calculate the ammonia criteria. The error was corrected and these AUs were reassessed and found to meet the applicable WQS:

Assessment Unit	AU Name	Station(s)
NJ02030103120070-01	Passaic R Lwr (Fair Lawn Ave to Goffle)	NJHDG-3
NJ02030103120080-01	Passaic R Lwr (Dundee Dam to F.L. Ave)	Passaic-9
NJ02030103120090-01	Passaic R Lwr (Saddle R to Dundee Dam)	Passaic-8
NJ02030103120110-01	Passaic R Lwr (Goeffle Bk to Pump stn)	Passaic 10, 11, 12
NJ02030103140060-01	Saddle River (Lodi gage to Rt 4)	01391500
NJ02030103140070-01	Saddle River (below Lodi gage)	01391500, 0139140, NJHDG-6
NJ02030103150020-01	Second River	Passaic -5
NJ02030103150040-01	Passaic R Lwr (4th St br to Second R)	NJHDG-11, NJHDG-10
NJ02030103150050-01	Passaic R Lwr (Nwk Bay to 4th St brdg)	13 Kearny
NJ02030103180040-01	Overpeck Creek	12-OPC
NJ02030103180090-01	Hackensack R (Amtrak bridge to Rt 3)	NJHDG-4
NJ02030103180100-01	Hackensack R (below Amtrak bridge)	NJHDG-11, NJHDG-10

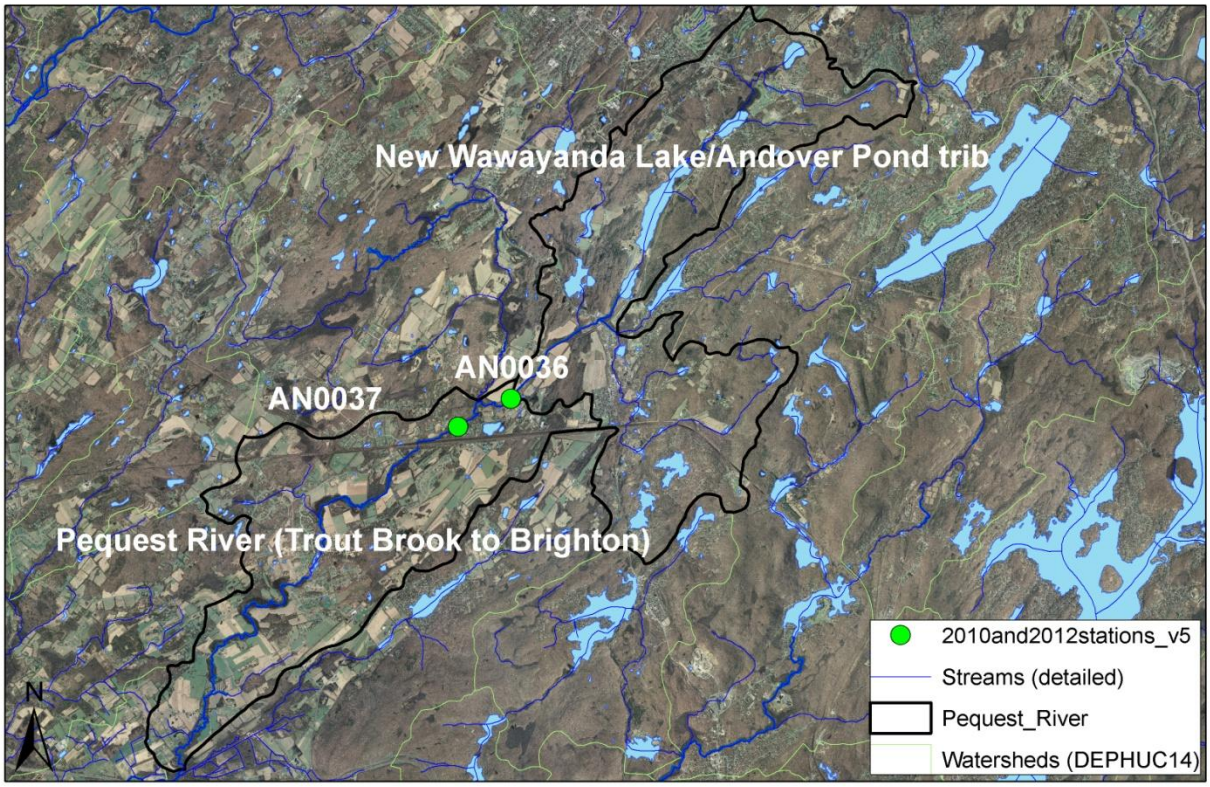
B. Benzene: NJ02030105120180-01 Middle Brook was originally listed for **Benzene** based on Station 01403300, which is located in an adjacent AU: NJ02030105120140-01 Raritan R Lwr (I-287 Piscataway-Millstone). When the HUC boundaries were revised in 2009, this AU was split and the benzene impairment was incorrectly assigned to both AUs in 2010. American Cyanamid is the likely source of this pollutant and should be attributed as the source of benzene impairment at Station 01403300 in the adjacent AU, NJ02030105120140-01 Raritan R Lwr(I-287 Piscataway-Millstone). This AU remains listed for Benzene as a cause of Public Water Supply Use non-support.

Middle Brook



C. Cause Unknown: NJ02040105070040-01 Pequest River (Trout Brook to Brighton), was incorrectly listed based on AMNET Station AN0036, which is associated with NJ02040105070020-01 New Wawayanda Lake/Andover Pond trib and is located along the downstream border of the AU (see map below). The Aquatic Life Use was changed to Not Supporting and Cause Unknown was added to the 2012 303(d) List because data at AN0036 show biology is fair. Pequest River (Trout Brook to Brighton) was re-assessed for Aquatic Life Use based on AMNET Station AN0037, which is more representative of this AU than AN0036. Data at AN0036 show biology is "good" (i.e., not impaired). Aquatic Life Use is now Fully Supporting. There are significant differences in the land use patterns surrounding the two AMNET stations (which were sampled the same day), which supports their different assessment outcomes, as well as their association with different AUs.

Pequest River (Trout Brook to Bighton)

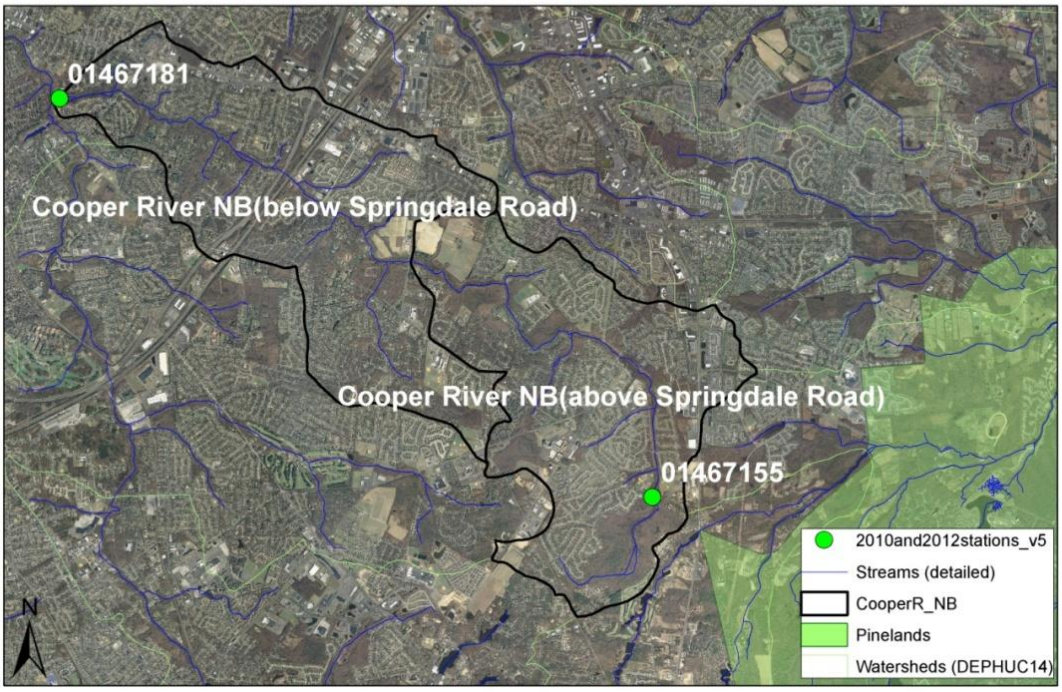


D. Dissolved Oxygen (DO):

1) NJ02030105060040-01 is a relatively undeveloped AU possessing overall good water quality. Significant portions of the AU are classified Trout Production with the remainder in the lower portion being Trout Maintenance. Only Ravine Lake is classified as Non-Trout. In its upper portion, a fish IBI site (FIBI093) on the mainstem NB Raritan River scored 46 ("Excellent") in 2009 and rated a habitat score of 178 "Optimal." Several young-of-the-year brown trout were collected, which verifies the Trout Production classification of the stream.

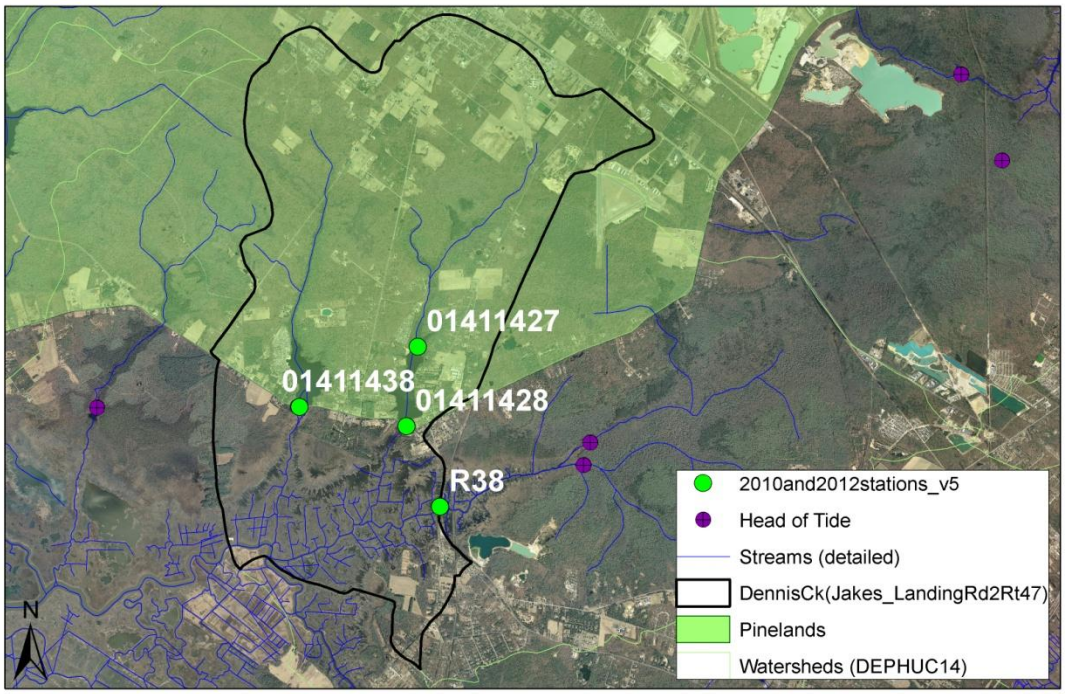
2) NJ02040202110020-01 Cooper River NB (below Springdale Road) was incorrectly listed based on Station 01467155. This station is located in the upper portion of the upstream AU, NJ02040202110010-01 Cooper River NB (above Springdale Road), and is not representative of overall water quality. Old and new data at Station 01467181, which is located at the pore point of the AU, meets the applicable WQS for DO. Cooper River NB (above Springdale Road) remains listed for DO based on Station 01467155.

Cooper River



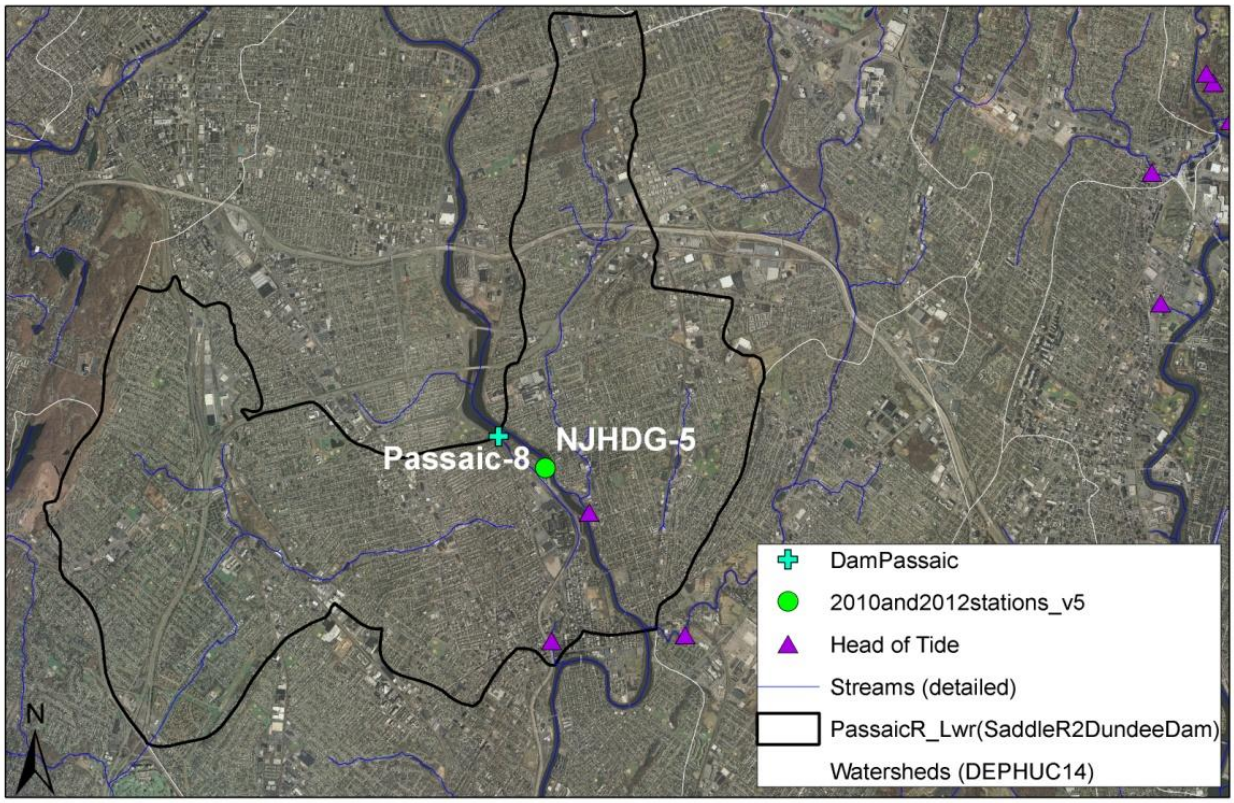
3) NJ02040206220030-01 Dennis Creek (Jakes Landing Rd to Rt 47) was incorrectly listed for **DO and pH** based on Station R38. There are no pH data for this site and DO records in this tidal marsh not representative of the AU. New data at Station 01411438 meet applicable WQS for DO and pH. Data at Station 01411427 also meets WQS for both parameters. No samples have been collected at Station 01411428 since 2004.

Dennis Creek (Jakes Landing Rd. to Rt 47)



4) NJ02030103120090-01 Passaic R Lwr (Saddle R to Dundee Dam) was originally listed for **DO** based on co-located Stations NJHDG-5 and Passaic-8. In 2010, DO was incorrectly delisted under the Passaic Nutrient TMDL. These stations are located in tidal (fresh) waters, which are not covered by the Passaic TMDL. Data at both stations meet the FW2-NT criterion for DO.

Passaic River (Saddle River to Dundee Dam)



5) NJ02040302070110-01 Tuckahoe River (below Rt 49) was incorrectly listed for **DO** in 2008. There is no data to support this listing. Data going back to 2006 at Stations 01411300 and R37 meet the applicable criterion for DO.

E. DO, Temperature, and TSS in Raritan River NB: NJ02030105060040-01 Raritan R NB(Peapack Bk to McVickers Bk) was incorrectly listed for DO, Temperature, and TSS in 2010. There are no TSS data to support this listing. 2008 data from Ravine Lake Stations NJW135 1 and NJW135 2 (classified FW2-NT) meet the DO and Temperature criteria for General Aquatic Life Uses. DO was incorrectly listed for Trout Use based on two samples above the criterion that were taken on the same day. A diurnal site, NBRR3, located just downstream of the Ravine Lake outlet, recorded temperatures above the Trout Maintenance criterion in 2004 and 2005; however, these values represent water warmed by the lake in August and thus are representative of natural conditions. A benthic macroinvertebrate site (AN0351) downstream in a neighboring AU shows biota reflecting "good" conditions. Therefore, both General and Trout Aquatic Life Uses were changed to Fully Supporting.

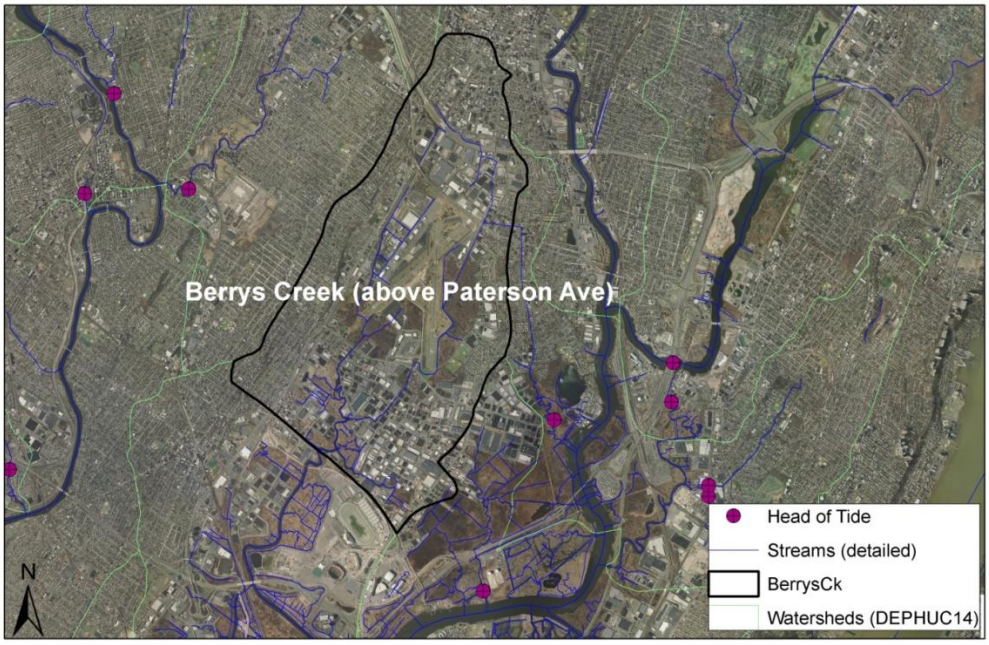
F. Metals

1) NJ02030103110020-01 Pompton River was incorrectly listed for **Hexavalent Chromium** when total chromium was added to the 303(d) List. There was never any hexavalent chromium data for this AU. In addition, total chromium attains WQS (see III.D).

2) NJ02030103120100-01 Passaic R Lwr (Goffle Bk to Pompton R) and NJ02030103120110-01 Passaic R Lwr (Goeffle Bk to Pump stn) were both originally listed for **Thallium** and **Total Chromium** in 1998 based on 304(l) and were incorrectly carried over to the 2002 303(d) List even though data at Stations 4-PAS-4, 4-Site-4 and 4-PAS-3, 4-Site-6 attained the applicable WQS. More recent data at these stations also meet applicable WQS.

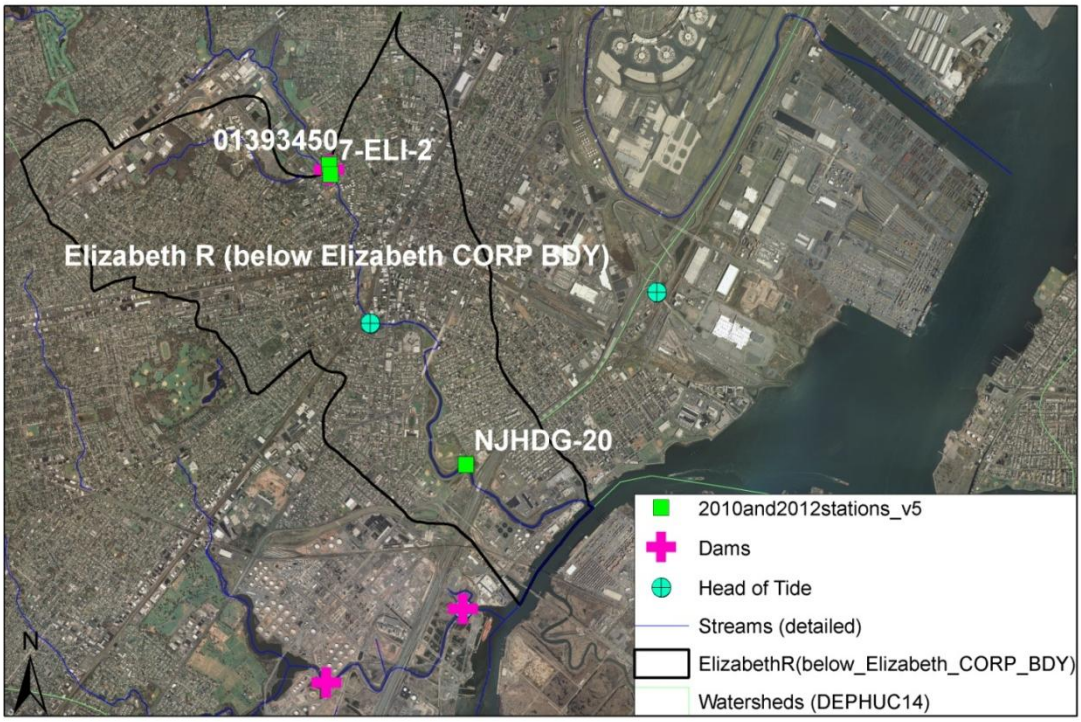
3) NJ02030103180060-01 Berrys Creek (above Paterson Ave): **Arsenic and Benzo(a)pyrene** were incorrectly listed as causes of Fish Consumption and Public Water Supply Use non-support. These parameters are used to assess the Public Water Supply Use, which does not apply to this AU since it does not contain any freshwater waterbodies (see map below). Other pollutants remain listed as causes of Fish Consumption Use non-support.

Berrys Creek (Above Paterson Ave.)



4) NJ02030104020030-01 Elizabeth R (below Elizabeth CORP BDY): Arsenic and Benzo(a)pyrene were incorrectly listed as causes of Fish Consumption Use non-support. These parameters are used to assess the Public Water Supply Use, which does not apply to this AU since it does not contain any freshwater waterbodies (see map below). Other pollutants remain listed as causes of Fish Consumption Use non-support. **TP and TDS** were also delisted because the numeric criteria for these parameters do not apply to saline waters.

Elizabeth River (below Elizabeth CORP BDY)



5) NJ02030105020100-01 Raritan R SB(Three Bridges-Prescott Bk) was incorrectly listed for **Arsenic** based on samples taken at Stations 01397400 and 8-sb-4 between 1996 and 1999; however, all the data was below the detection limit (i.e., censored data). No Arsenic data has been collected in this AU since 1999. The Public Water Supply Use was changed to Fully Supporting.

6) NJ02040202040010-01 Rancocas Ck NB (Pemberton br to NL dam) and NJ02040202040030-01 Rancocas Ck NB (Rt 206 to Pemberton br) were incorrectly listed for **Copper and Lead** based exceedances recorded during a three-day sampling event at Station 19-RA-3N in 1998. The listing for **Copper** was invalid because the dissolved fraction exceeded the total recoverable fraction for one of the samples. Copper data at Station 01467000, which is representative of both AUs, measured only Total Recoverable Copper, which cannot be assessed against the Dissolved Criterion. However, data from downstream Station 19-RAN-4N, which is also representative of both AUs, meet the acute and chronic Aquatic Life criteria for Copper. Lead data at Station 01467000 meet the applicable WQS for Lead.

7) NJ02040202100060-01 Pennsauken Ck (below NB/SB) was originally listed for **Cadmium, Copper, and Total Chromium** based on data collected at Station 01467082 prior to clean techniques for metals monitoring. All samples meet the acute aquatic life criteria; however, this location remained listed for all three parameters pending collection of high flow data to determine if the chronic criteria were met. More recent data at Station 01467082 meet applicable WQS for all three parameters.

8) NJ02040202150040-01 Raccoon Ck (Russell Mill Rd to Rt 45) was incorrectly listed for **Silver** based on a miscalculation. Application of the correct mathematical formula for calculating the acute dissolved criterion and appropriate hardness value showed that the applicable WQS for Silver was met at Stations 01477110 and 01477120.

9) NJ02040302050060-01 GEHR (Miry Run to Lake Lenape): **Arsenic and Mercury in Water Column** were incorrectly listed as causes of Aquatic Life Use non-support (see III.C.1); however, these parameters are used to assess the Public Water Supply Use, which does not apply to this AU since it does not contain any freshwater waterbodies. Mercury in Water Column data met the human health criterion for SE waters; however, Mercury in fish tissue data was unavailable to assess the Fish Consumption Use.

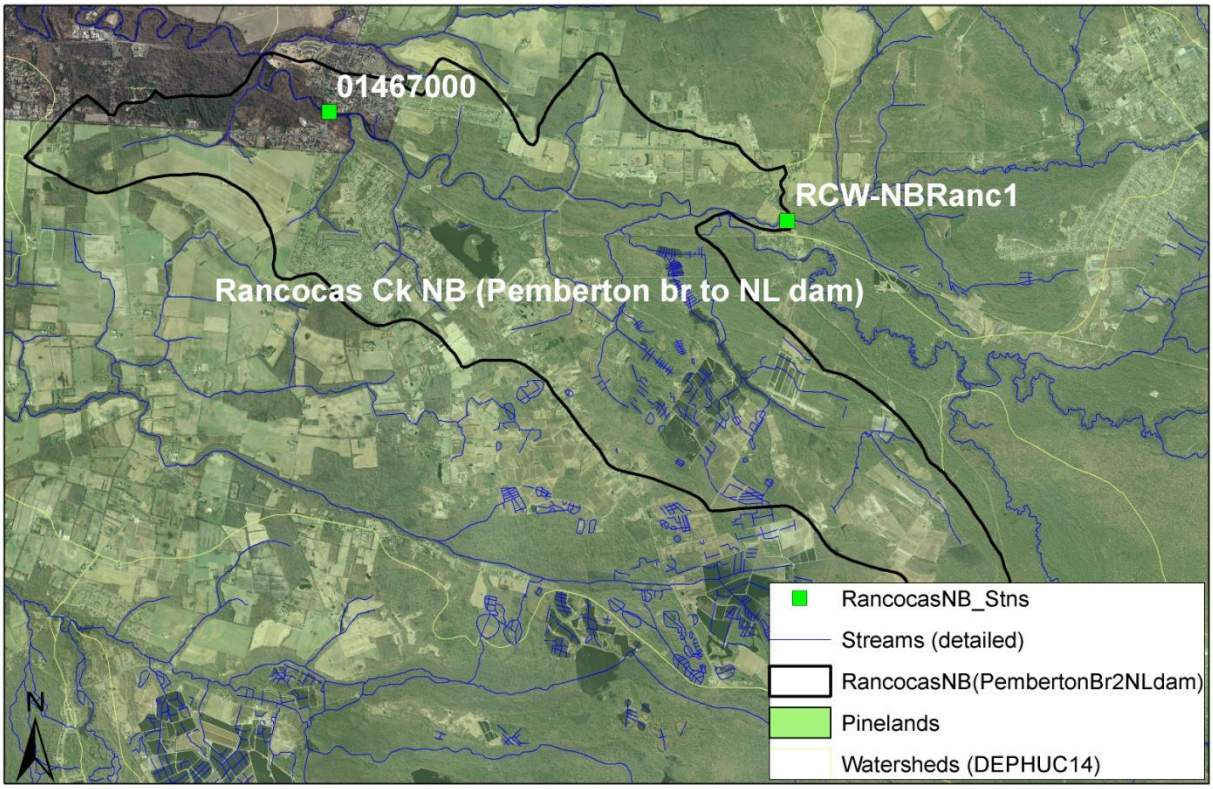
G. pH

1) NJ02030105130060-01, Lawrence Bk (Milltown to Church Lane) was originally listed in 2010 but there is no data to support this listing. New data at Station 01405003 and prior data at all other stations in this HUC meet the applicable WQS for pH.

2) NJ02040202040010-01 Rancocas Ck NB (Pemberton br to NL dam) was incorrectly listed based on Station RCW-NBRanc-1, which is located at the upstream border and is not representative of this AU (see map below). New data at Station 01467000, which is

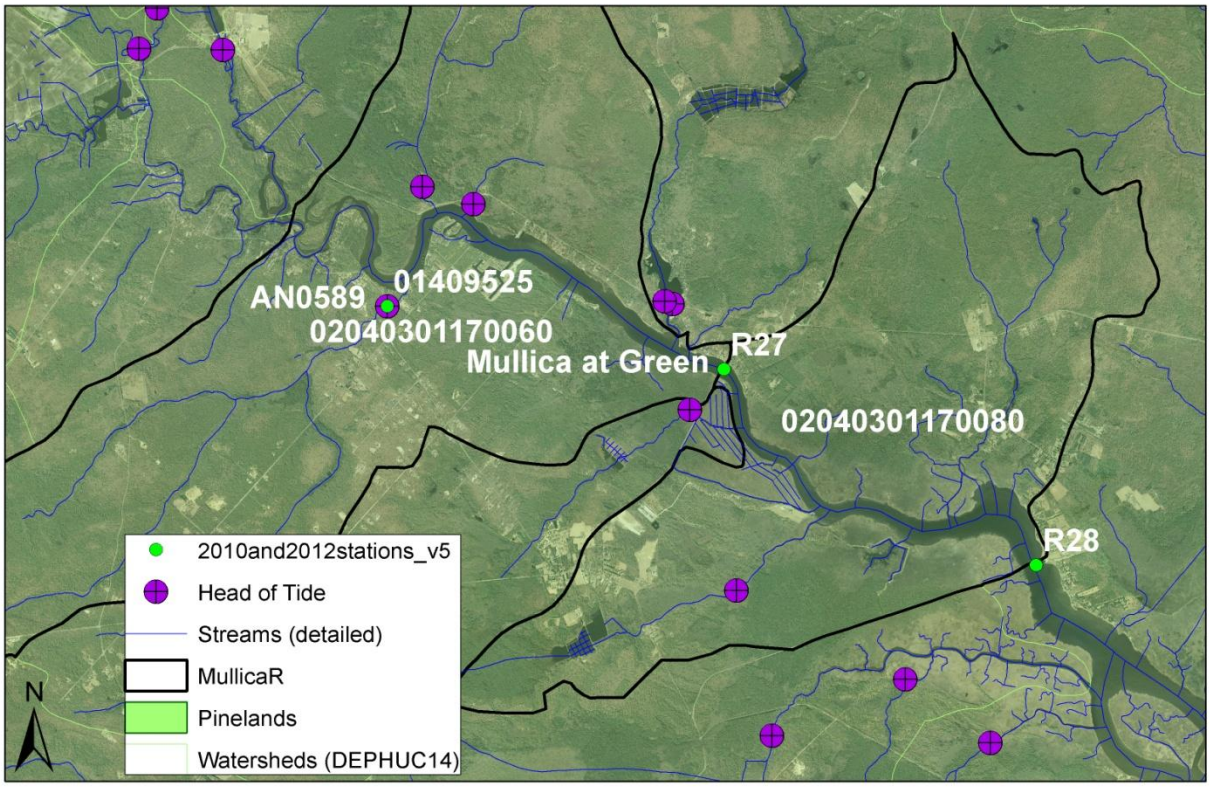
located further downstream and is more representative of overall water quality, meets PL criterion for pH.

Rancocas Creek NB (Pemberton Br to NL Dam)



H. Temperature and Total Phosphorus (TP) in Mullica River: NJ02040301170060-01 Mullica River (Rt 563 to Batsto River) was incorrectly listed for **Temperature and TP** based on co-located Stations R27 and Mullica at Green Bank (see map below). NJ02040301170080-01 Mullica River (Lower Bank Rd to Rt 563) was also incorrectly listed for **Temperature and TP** based on Stations R27 and R28. Stations 27 and 28 are part of the Department's Marine Water Monitoring Network. These stations are all located below the head of tide (see map below). The numeric TP criterion does not apply to tidal waters. No other TP data is available in either AU. There is no data available to support the temperature listings. All available temperature data (dating back to 2004) at Stations R27, R28, 01409525 and AN0589 meet the applicable WQS.

Mullica River



J. Total Dissolved Solids (TDS): NJ02020007010070-01 Wallkill R (Martins Rd to Hamburg SW Bdy) was incorrectly listed for TDS based on Station 01367735; however, data from this station never exceeded TDS criteria. New data at Station 01367770 and older data from Stations 01367715 and 01367729 meet applicable WQS for TDS. Arsenic remains listed as a cause of Public Water Supply Use non-support. Agricultural Water Supply use was changed to Fully Supporting.

K. Turbidity: NJ02030105150010-01 Weamaconk Creek was incorrectly listed for turbidity in 2010. Data from that reporting period show only one exceedance of the "at any time" criterion and no exceedances of the 30-day maximum; therefore, turbidity should not have been listed. New data at Station 01405185 meet the applicable WQS for Turbidity.

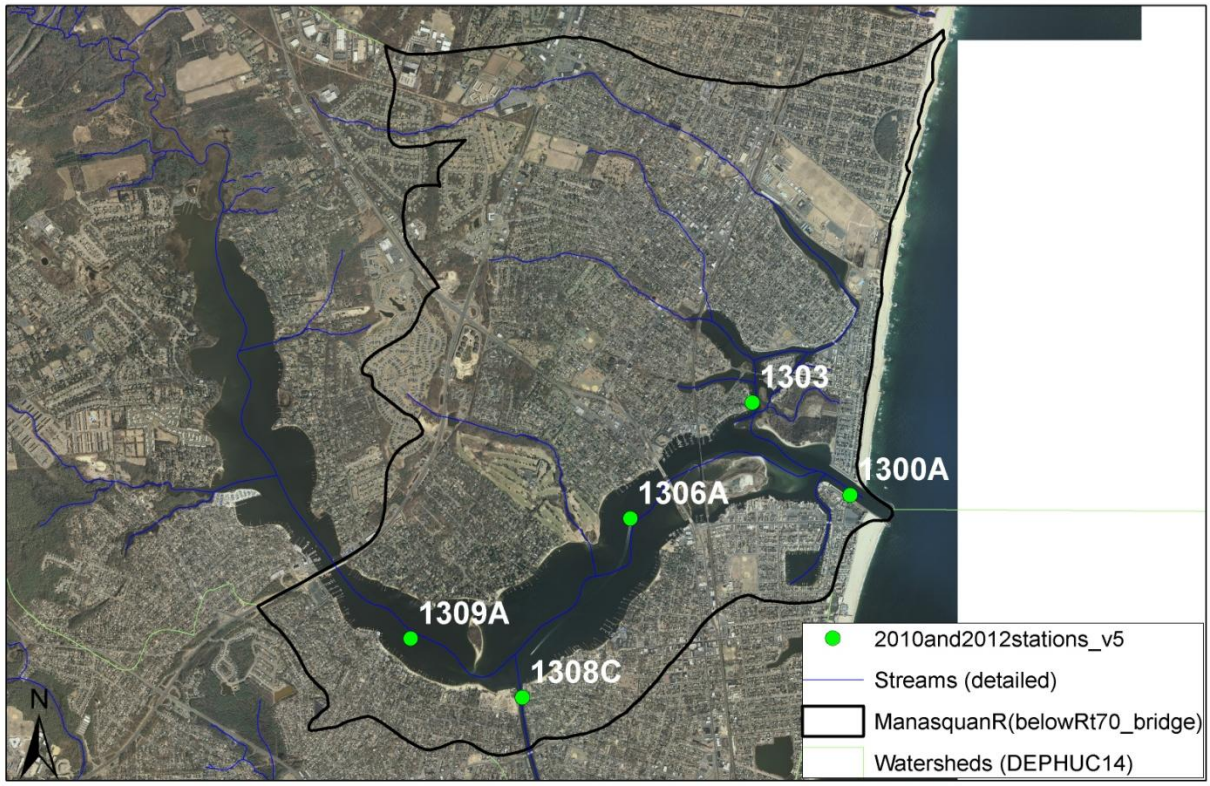
L. De Minimus Impairment:

1) NJ02030103170040-01 Tenakill Brook was listed for **Dissolved Oxygen (DO)** in 2010 based on Station TB2. New data at Stations 01378387 and DB1 meet FW2-NT criterion for DO. Data from Stations CB1, TB1, TB3, TB4, TB6, 01378387 also meet applicable WQS for DO. Station TB2 had two exceedances in 2007; however, this station is located on a small tributary and is considered to be a *de minimus* portion of the AU (see map below).

Tenakill Brook

2) NJ02030104100100-01 Manasquan River (below Rt 70 bridge) was originally listed for **DO** based on Station 1308C; however, the Department reassessed this AU and determined that Station 1308C is located in the Bayhead-Manasquan Canal, which is a *de minimus* portion of AU (see map below). Data at Stations 1306A, 1303, 1300A, and 1309A meet the SE1 criterion for DO.

Manasquan River (below Rt 70 Bridge)



M. Frequency of Exceedance: NJDELAWARE RIVER 15 (Delaware River Zone 2) was incorrectly listed in 2010 for **DO and Turbidity**. Based on DRBC's current assessment (see DRBC Draft 2012 305(b) Report): 98% of observations meet daily mean for DO; seasonal DO criterion is met 100% of the time. 97.8% of observations meet maximum criterion for turbidity; 97.9% of data meet 30-day average turbidity criterion. These records are based on continuous hourly recordings made by USGS. Frequency of exceedance does not support listing for either parameter.

N. Transient Events: Episodic excursions of criteria can occur during storm events that are short term and not expected to impair the designated uses of the waterbody (and are not conducive to a TMDL), such as emergency road salting in preparation of winter storms. In the assessment process, when excursions were observed and considered atypical within the data set under review, the Department investigated weather data from the Office of the New Jersey State Climatologist Web site at http://climate.rutgers.edu/stateclim/?section=menu&%20target=wint0708snowtotals to see if

the sampling dates coincided with local storm events. Elevated **Chloride and TDS** records that coincided with residual effects of winter road treatments are shown in the table below.

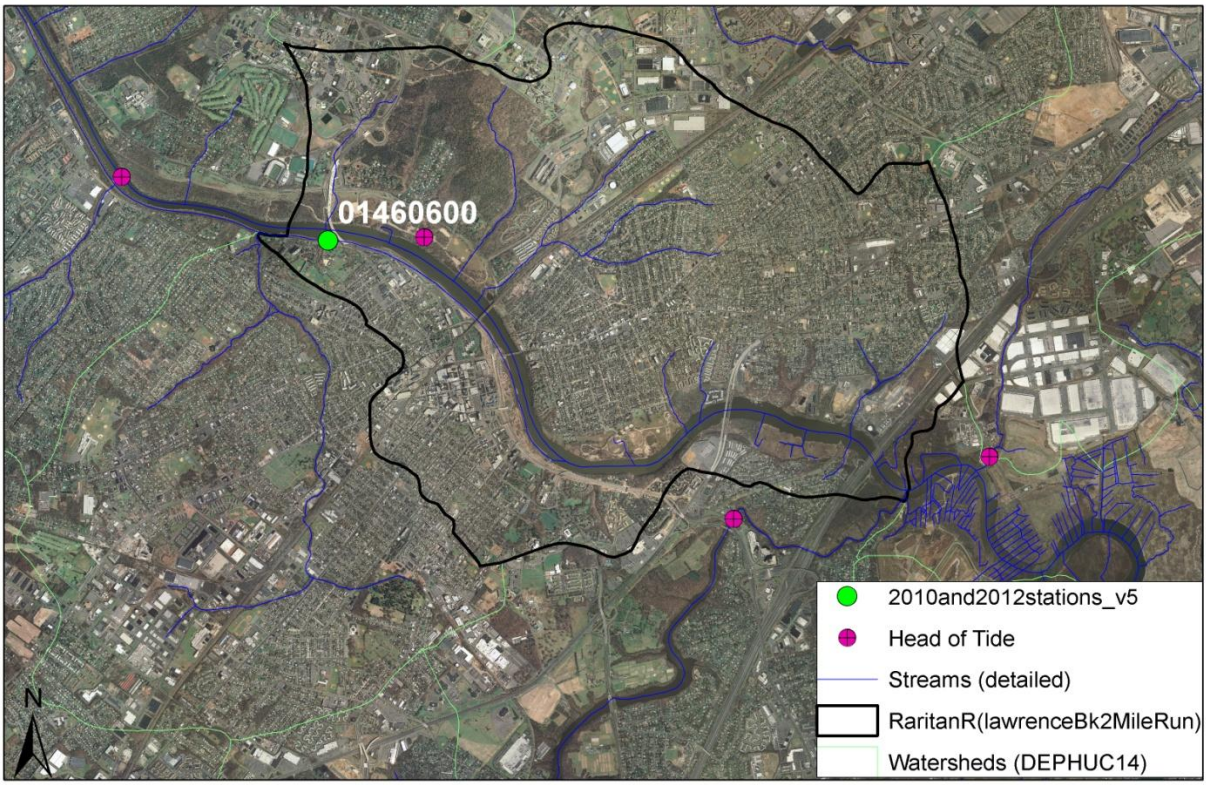
Assessment Unit Number	AU Name	Parameter	Station(s)	Sample date	Storm Date
NJ02030105120020-01	Green Bk (N Plainfield gage to Blue Bk)	Chloride	01403465	02/05/07	01/25/07
		Chloride	01403465	02/14/06	02/11-12/06
NJ02030105120050-01	Middle Brook EB	Chloride	01403465	02/05/07	01/25/07
		Chloride	01403465	02/14/06	02/11-12/06
NJ02030104050040-01	Rahway R (Kenilworth Blvd to EB / WB)	Chloride	01394500	02/23/10	02/09-10/10
		Chloride	01394500	02/19/09	02/03-04/09
		Chloride	01394500	02/27/08	02/22/08
		TDS	01394500	02/23/10	02/09-10/10
		TDS	01394500	02/19/09	02/03-04/09

V: Insufficient Information to Assess Use (Incorrect Listing)

1) NJ02030104100090-01 Manasquan R (Rt 70 br to 74d07m30s) was originally listed for **Cause Unknown** in 2008 based on AMNET Station AN0498; however, that station has been discontinued because it was located in tidal waters and the Department has determined that our existing biological assessment metrics are not valid in tidal waters. There are no other biological monitoring stations in this AU; therefore, insufficient data is available to assess Aquatic Life Use (General) support in this AU.

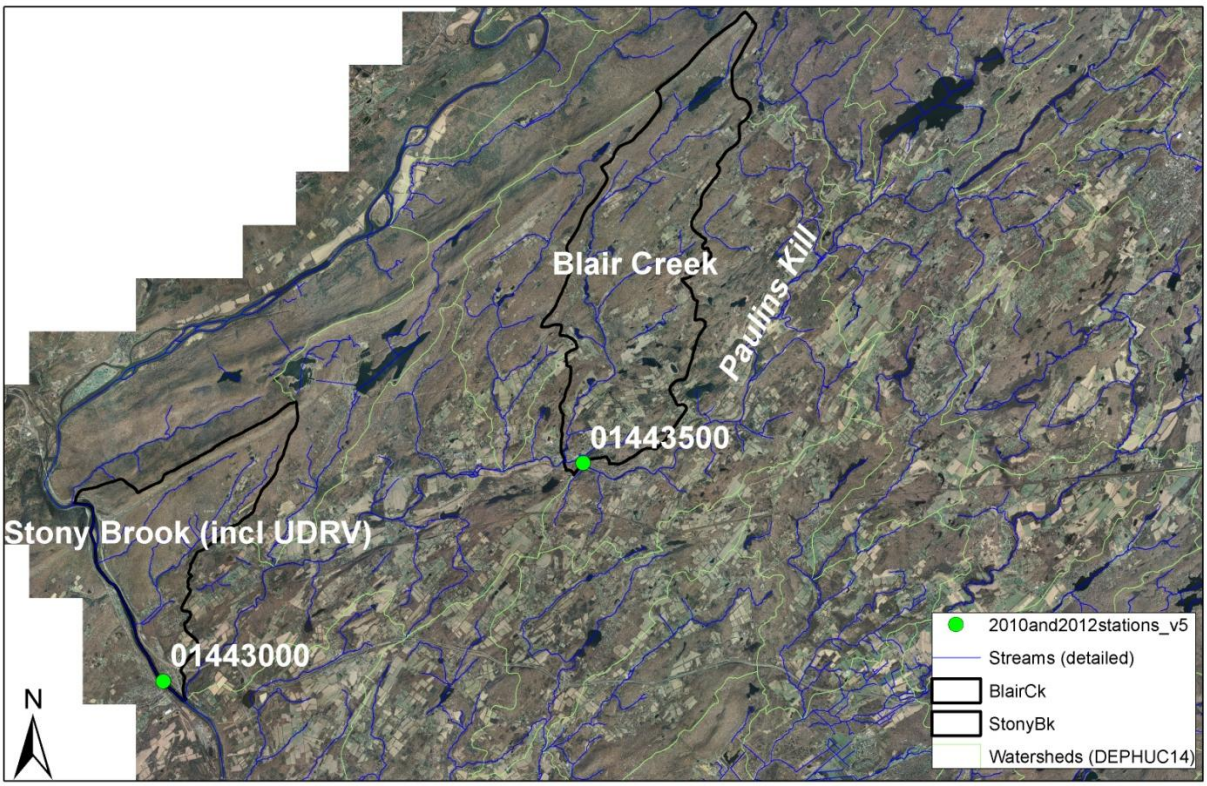
2) NJ02030105120170-01 Raritan R Lwr (Lawrence Bk to Mile Run) was incorrectly listed for **TP** based on exceedances of the freshwater criterion at Station 01460600. This station is located below head of tide (see map below) and the numeric TP criterion does not apply. There are no biological monitoring stations in this AU; therefore, insufficient data is available to assess Aquatic Life Use support in this AU.

Raritan River (Lawrence Brook to Mile Run)

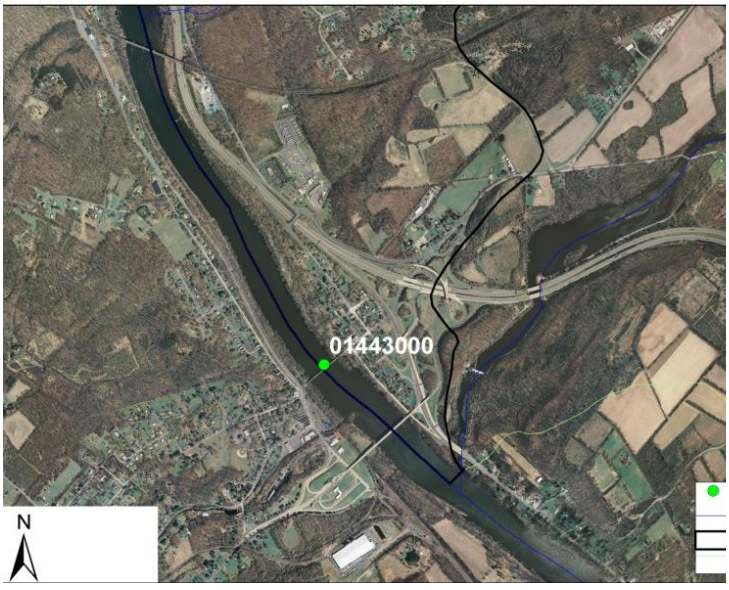


3) NJ02040105050020-01 Blair Creek and NJ02040105060010-01 Stony Brook (incl UDRV) were incorrectly listed for **Fecal Coliform**. Blair Creek was originally listed based on Station 01443500, which is located on Paulins Kill and should not have been used to assess Blair Creek. Stony Brook (incl UDRV) was originally listed based on Station 01443000, which is located on the Delaware River (see maps below). There are no pathogen monitoring stations in either AU; therefore, insufficient data is available to assess Recreation Use support in either AU.

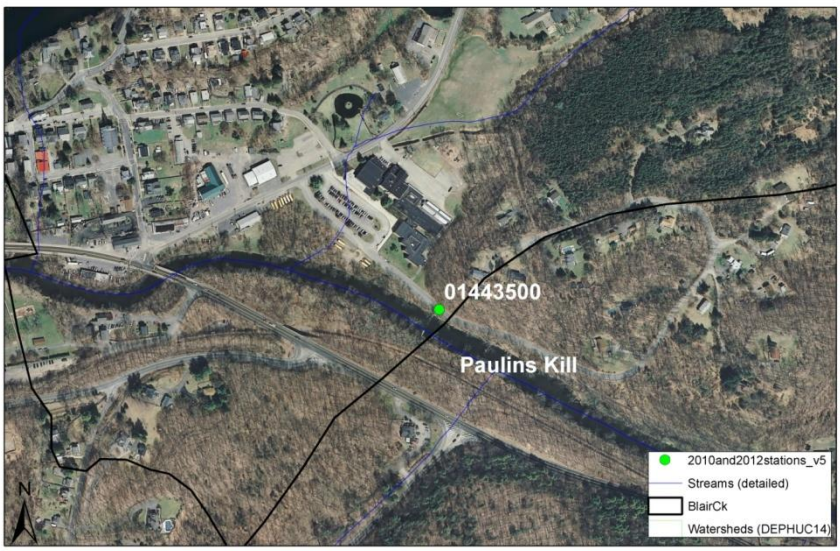
Blair Creek & Stony Brook



Stony Brook

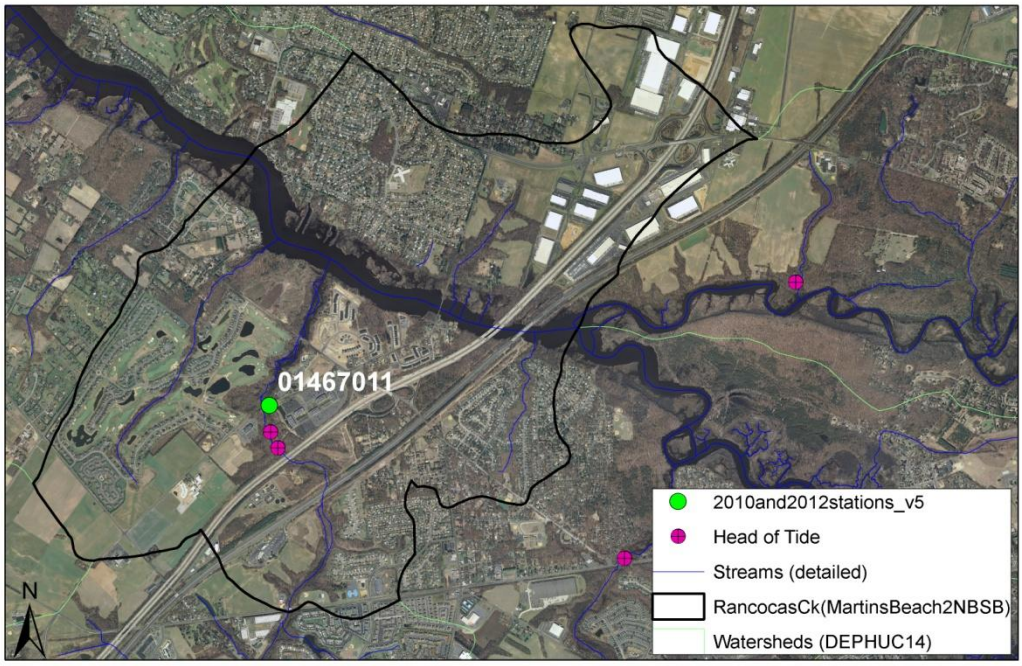


Blair Creek



4) NJ02040202080020-01 Rancocas Creek (Martins Beach to NB/SB) was incorrectly listed for **TP** based on exceedances of the freshwater criterion at Station 01467011. This station is located below head of tide (see map below) and the numeric TP criterion does not apply. AMNET Station AN0174 was discontinued because it was located in tidal waters. The Department has determined that our existing biological assessment metrics are not valid in tidal waters. There are no other biological monitoring stations in this AU; therefore, insufficient data is available to assess Aquatic Life Use support in this AU.

Rancocas Creek (Martins Beach to NB/SB)



5) NJ02040202120090-01 Newton Creek (LDRV-Kaighn Ave to LT Ck) was incorrectly listed for **TP** based on Station 01467312, which is located in tidal waters. The numeric TP criterion does not apply to tidal waters. Copper was also delisted (see III.B). AMNET Stations AN0653 and AN0654 were discontinued because they were located in tidal waters. The Department has determined that our existing biological assessment metrics are not valid in tidal waters. There are no other biological monitoring stations in this AU; however, pH remains listed as a cause of Aquatic Life Use non-support in this AU.

6) NJ02040301050020-01 Kettle Creek (below Lake Riviera outlet) was originally listed for **Cause Unknown** based on AMNET Station AN0516; however, this station is located in tidal waters. The Department has determined that our existing biological assessment metrics are not valid in tidal waters. There are no other biological monitoring stations in this AU; therefore, insufficient data is available to assess Aquatic Life Use support in this AU.

VI. Delisted Under TMDLs (Still Impaired)

A. Mercury: Mercury was delisted in 12 AUs because they are covered by the USEPA-approved Statewide Mercury TMDL.

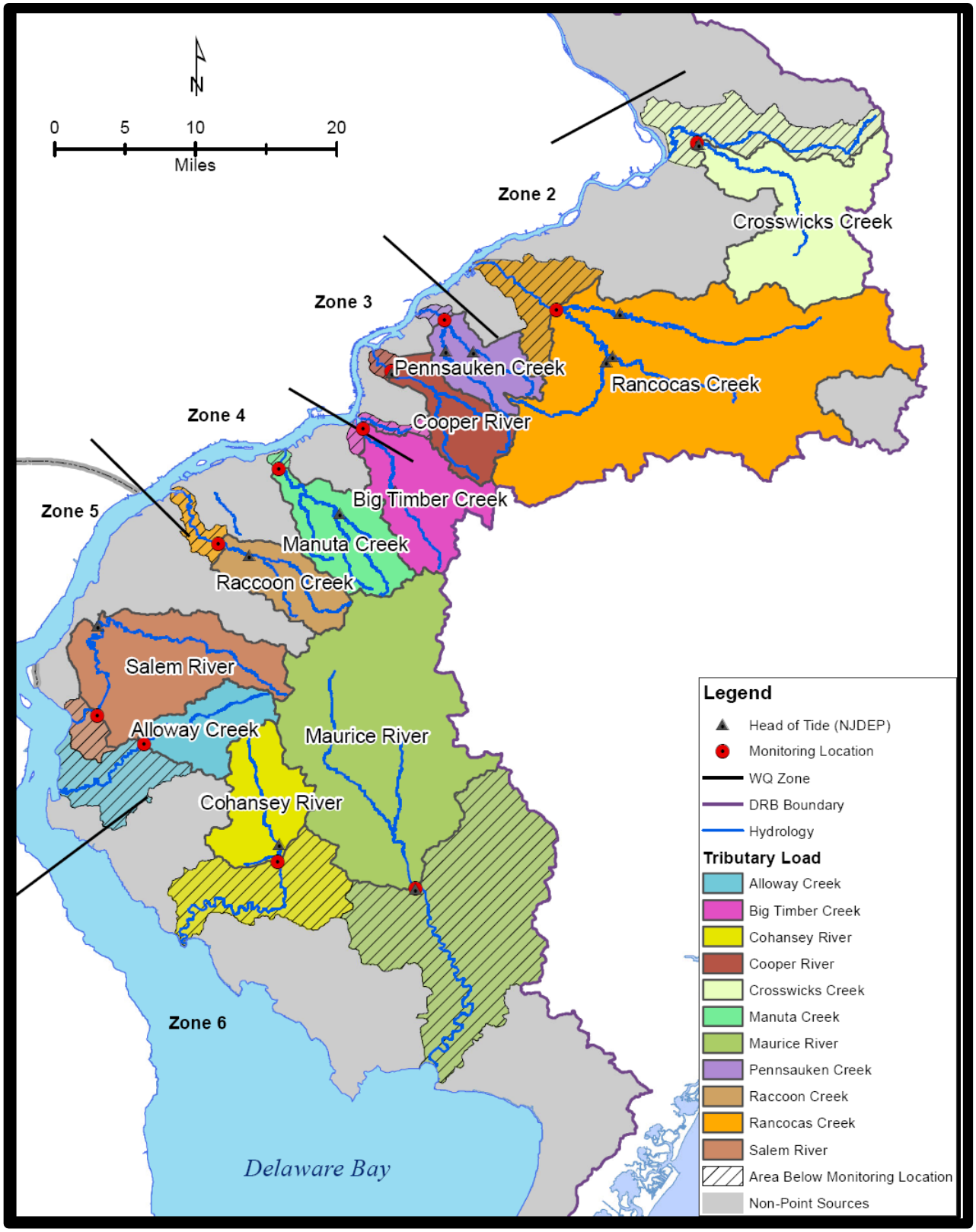
Assessment Unit	AU Name	Cause
NJ02030103100060-01	Crystal Lake/Pond Brook	Mercury in Fish Tissue
NJ02030104090040-01	Shark River (above Remsen Mill gage)	Mercury in Fish Tissue
NJ02040105230020-01	Assunpink Ck (NewSharonBr to/incl	Mercury in Fish Tissue
NJ02040105230030-01	New Sharon Branch (Assunpink Creek)	Mercury in Fish Tissue
NJ02040105230040-01	Assunpink Ck (TrentonRd to	Mercury in Fish Tissue
NJ02040201040070-01	Crosswicks Ck(NewEgypt to/incl	Mercury in Fish Tissue
NJ02040201050030-01	Crosswicks Ck(Lahaway Ck to New	Mercury in Fish Tissue
NJ02040201050040-01	Crosswicks Ck(Walnford to Lahaway	Mercury in Fish Tissue
NJ02040201050060-01	Ellisdale trib (Crosswicks Creek)	Mercury in Fish Tissue
NJ02040202160020-01	Oldmans Creek (Rt45 to Commissioners	Mercury in Fish Tissue
NJ02040206180030-01	Menantico Creek (above Rt 552)	Mercury in Fish Tissue
NJ02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge	Mercury in Fish Tissue

B. Polychlorinated Biphenyls (PCBs): PCB in fish tissue was delisted in 34 AUs because they were covered by the USEPA-approved PCB TMDL for the Delaware River Basin.

Assessment Unit	AU Name
NJ02040201070020-01	Crosswicks Ck(below Doctors Creek)
NJ02040202040050-01	Rancocas Creek NB (below Smithville)
NJ02040202070010-01	Bobbys Run
NJ02040202080020-01	Rancocas Creek (Martins Beach to NB/SB)
NJ02040202080030-01	Mill Creek (Willingboro)
NJ02040202080040-01	Rancocas Creek (Rt 130 to Martins Beach)
NJ02040202080050-01	Rancocas Creek (below Rt 130)
NJ02040202100060-01	Pennsauken Ck (below NB / SB)
NJ02040202110060-01	Cooper River (below Rt 130)
NJ02040202120070-01	Little Timber Creek (Gloucester City)
NJ02040202120080-01	Big Timber Creek (below NB/SB confl)
NJ02040202130040-01	Mantua Ck (Edwards Run to rd to Sewell)
NJ02040202130060-01	Mantua Creek (below Edwards Run)
NJ02040206040030-01	Salem R (Fenwick Ck to 39d40m14s dam)
NJ02040206040040-01	Salem R (below Fenwick Creek)
NJ02040206060050-01	Alloway Ck (Quinton to Alloway-WdstwnRd)
NJ02040206060060-01	Alloway Creek (New Bridge to Quinton)
NJ02040206060070-01	Harmony trib (Alloway Creek)
NJ02040206060080-01	Alloway Ck (HancocksBridge to NewBridge)
NJ02040206060090-01	Alloway Ck (below HancocksBr) to Salem R
NJ02040206060100-01	Hope Creek / Artificial Island
NJ02040206070080-01	Stow Creek (below Canton Rd)

Assessment Unit	AU Name
NJ02040206090030-01	Cohansey R (Rocaps Run to Cornwell Run)
NJ02040206090060-01	Cohansey R (75d15m to/incl Rocaps Run)
NJ02040206090070-01	Cohansey R (75d17m50s to 75d15m)
NJ02040206090080-01	Cohansey R (Greenwich to 75d17m50s)
NJ02040206090100-01	Cohansey R (below Greenwich)
NJ02040206170030-01	Maurice River(Menantico Ck to UnionLake)
NJ02040206170050-01	Buckshutem Creek (below Rt 555)
NJ02040206190030-01	Manumuskin River (below Rt 49)
NJ02040206200020-01	Muskee Creek
NJ02040206200030-01	Maurice River (Rt 548 to Menantico Ck)
NJ02040206200040-01	Maurice River (Leesburg to Rt 548)
NJ02040206200050-01	Maurice River (below Leesburg) to EastPt

Delaware River Zones/New Jersey AUs Covered by PCB TMDL for the Delaware River Basin



A. Pathogens: Data is now available to assess recreational use in fifteen AUs listed in 2010 as "insufficient information". The data indicates that the use is not supported. However, these AUs were delisted because they were covered by an EPA-approved pathogen TMDL.

Assessment Unit	AU Name	Cause
NJ02030104060050-01	Waackaack Creek	Enterococcus
NJ02030104070060-01	Yellow Brook (below Bucks Mill)	Escherichia coli
NJ02030104070100-01	Poricy Bk/Swimming R(below SwimmingR Rd)	Enterococcus
NJ02030104100090-01	Manasquan R (Rt 70 br to 74d07m30s)	Escherichia coli
NJ02040201080020-01	Blacks Creek (Bacons Run to 40d06m10s)	Escherichia coli
NJ02040202110060-01	Cooper River (below Rt 130)	Escherichia coli
NJ02040206170030-01	Maurice River(Menantico Ck to UnionLake)	Escherichia coli
NJ02040206170030-01	Maurice River(Menantico Ck to UnionLake)	Total Coliform
NJ02040301060020-01	Toms River (74-22-30 rd to FrancisMills)	Escherichia coli
NJ02040301070090-01	Union Branch (below Blacks Br 74d22m05s)	Escherichia coli
NJ02040302040110-01	GEHR (Mare Run to Rt 322)	Escherichia coli
NJ02040302050020-01	Babcock Creek (GEHR)	Escherichia coli
NJ02040302050020-01	Babcock Creek (GEHR)	Total Coliform
NJ02040302050040-01	South River (below 39d26m15s)	Escherichia coli
NJ02040302050040-01	South River (below 39d26m15s)	Total Coliform

V. Cause Removed But Not Delisted

Mercury in Water Column Replaced with Mercury in Fish Tissue: New or existing data meet the WQS for the Public Water Supply Use in the following AUs. The same data indicate that the water column target established through the Statewide Mercury TMDL was exceeded, thus causing non-support of the Fish Consumption Use. Since these AUs are not covered under the Statewide Mercury TMDL, they were not delisted for Mercury in Water Column but that parameter was replaced with Mercury in Fish Tissue.

AU	AU Name	Station(s)
NJ02040201050050-01	Crosswicks Ck(Ellisdale trib -	20-CRO-1
NJ02040201050070-01	Crosswicks Ck (Doctors Ck-Ellisdale trib)	20-CRO-2
NJ02040202020030-01	Rancocas Ck NB (incl Mirror Lk-GauntsBk)	01467000, 01465950
NJ02040202020040-01	Rancocas Ck NB (NL dam to Mirror Lk)	01465950, 19-RA-1N (upstream), 01467000, 19-RA-3N (downstream)
NJ02040202100060-01	Pennsauken Ck (below NB/ SB)	01467082
NJ02040301170010-01	Hammonton Creek (above 74d43m)	01409414

AMNET Data Sheets

AMNET Site # **AN0036** ***Stream Name*** **UNT to Pequest River**
Location: **Rt 603 (Brighton Rd); Green Twp; Sussex County**
Collection Date: ***8/14/2007*** ***USGS Topo Map:*** **Tranquility**

	Genus	Tolerance Value	Amount
	Amnicola	4.8	61
	Gammarus	6	17
	Cladotanytarsus	7	4
	Polypedilum	6	2
*	Tricorythodes	4	2
	Caecidotea	8	1
*	Caenis	7	1
	Dubiraphia	6	1
	Dugesia	4	1
*	Goera	0	1
*	Helicopsyche	3	1
	Limnodrilus	10	1
*	Mystacides	4	1
*	Neophylax	3	1
	Orconectes	6	1
	Physella	9.1	1
	Pisidium	6.8	1
	Stenelmis	5	1
	Tanytarsus	6	1

** (EPT organism)* *Taxa Richness:* 19 *Population* 100

Hilsenhoff Biotic Index (HBI):	5.21	*# Scrapers:*	7
% Sensitive EPT:	7.0%	*Attribute 2 genera:*	1
% Non-Insect Taxa:	42.1%	*Attribute 3 genera:*	3
HGMI Rating:	**38.40**	**Fair**	
Habitat Analysis:	138	Suboptimal	USEPA Protocol

Observations: Water temp: 22.15 C; Cond: 458 umhos; DO: 7.85 mg/L; pH: 7.89 SU
Clarity: clear; Flow Rate: moderate; Width/Depth: 30' / 1'; Substrate: gravel, sand
Canopy: open; Bank Stability: good; Bank Vegetation: trees, shrubs, grasses, weeds
Stream Gradient: High Gradient Stream; Land Uses: forested, agriculture-cropland (corn)

Other: fish, crayfish, mussels, macrophytes

AMNET Site # **AN0037** ***Stream Name*** **Pequest River**
Location: **Pequest Rd; Green Twp; Sussex County**
Collection Date: ***8/14/2007*** ***USGS Topo Map:*** **Tranquility**

	Genus	Tolerance Value	Amount
	Cladotanytarsus	7	9
	Gammarus	6	9
	Simulium	6	9
*	Hydropsyche	4	8
*	Caenis	7	7
	Ischnura	9	6
	Cricotopus	7	5
	Stenelmis	5	5
	Amnicola	4.8	4
*	Plauditus	4	4
*	Hydroptila	6	3
*	Maccaffertium	3	3
	Microtendipes	7	3
	Tanytarsus	6	3
	Prostoma	7	2
	Rheotanytarsus	6	2
*	Acentrella	4	1
	Antocha	3	1
	Argia	6	1
*	Brachycentrus	1	1
	Calopteryx	6	1
*	Cheumatopsyche	5	1
	Dicrotendipes	8	1
	Dubiraphia	6	1
	Eukiefferiella	8	1
*	Helicopsyche	3	1
	Hemerodromia	6	1
	Hydrobiidae	8	1
	Pisidium	6.8	1
	Polypedilum	6	1
	Tanytarsini	6	1
	Thienemanniella	6	1
*	Triaenodes	6	1
	Tvetenia	5	1

** (EPT organism)*	*Taxa Richness:*	34	*Population*	100
Hilsenhoff Biotic Index (HBI):		5.93	*# Scrapers:*	8
% Sensitive EPT:		21.0%	*Attribute 2 genera:*	2
% Non-Insect Taxa:		14.7%	*Attribute 3 genera:*	2
HGMI Rating:	**54.80**	**Good**		
Habitat Analysis:	142	Suboptimal	USEPA Protocol	

Observations: Water temp: 21.09 C; Cond: 465 umhos; DO: 7.99 mg/L; pH: 7.94 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 46' / 1-2'; Substrate: gravel, sand, silt, root mats

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs, weeds, lawn

Stream Gradient: High Gradient Stream; Land Uses: rural, forested

Pipes / Ditches: storm sewers

Other: fish, crayfish, mussels, macrophytes; weir; USGS gage: 2.75

AMNET Site # **AN0099** ***Stream Name:*** **Swan Ck**

Location: **South Union St nr Canal Overflow; Lambertville; Hunterdon County**

Collection Date: ***4/10/2008*** ***USGS Topo Map:*** **Lambertville**

	Genus	*Tolerance Value*	*Amount*
	Hydrobaenus	8	30
*	Amphinemura	3	24
	Stenelmis	5	10
	Psephenus	4	8
*	Ameletus	0	4
*	Isoperla	2	4
	Eclipidrilus	8	2
*	Neophylax	3	2
*	Ostrocerca	2	2
	Cricotopus	7	1
	Diamesa	5	1
*	Diplectrona	0	1
	Enchytraeidae	10	1
*	Epeorus	0	1
*	Eurylophella	4	1
	Gammarus	6	1
	Lumbriculus	8	1
	Menetus	6	1
	Mooreobdella	7.8	1
	Nais	8	1
*	Paraleptophlebia	1	1
	Prosimulium	2	1
*	Stenacron	4	1

** (EPT organism)* *Taxa Richness:* 23 *Population:* 100

Hilsenhoff Biotic Index (HBI):		4.97	*# Scrapers:*	7
% Sensitive EPT:		41.0%	*Attribute 2 genera:*	7
% Non-Insect Taxa:		30.4%	*Attribute 3 genera:*	4
HGMI Rating:	**62.51**	**Good**		
Habitat Analysis:	102	Marginal	USEPA Protocol	

Observations: Water temp: 12.19 C; Cond: 351 umhos; DO: 13.52 mg/L; pH: 9.36 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 14' / <1.0'; Substrate: cobble, gravel, sand

Canopy: open; Bank Stability: poor; Bank Vegetation: trees, shrubs, weeds

Stream Gradient: High Gradient Stream; Land Uses: urban

Pipes / Ditches: storm sewers (PVC pipes)

Other: periphytes, waterfowl (ducks); Rip Rap wall on right bank; left bank eroded

AMNET Site # **AN0143** *Stream Name:* **North Br Rancocas Ck**
Location: **Military Rd; Pemberton Twp; Burlington County**
Collection Date: ***8/3/2011*** *USGS Topo Map:* **Browns Mills**

	Genus	*Tolerance Value*	*Amount*
	Tvetenia	5	21
	Polypedilum	6	17
*	Hydropsyche	4	15
	Nais	8	11
	Stylaria	8	8
*	Macrostemum	3	7
	Stenelmis	5	6
*	Oecetis	8	4
*	Neureclipsis	7	3
	Ablabesmyia	8	2
*	Brachycentrus	1	1
*	Chimarra	4	1
*	Hydroptila	6	1
	Pristina	8	1
	Tanytarsus	6	1
	Thienemannimyia	6	1

** (EPT organism)* *Taxa Richness:* 16 *Population:* 100

Becks Biotic Index (BBI):	5.00	*%Plecoptera +Trichoptera:*	32.00%
Insect Taxa:	13	*%Mollusca + Amphipoda:*	0.00%
Non-Insect Taxa:	3	*%Diptera - Tanytarsini:*	41.00%
		%Filterers:	28.00%

PMI Rating: 60.09 **Good**
Habitat Analysis: 160 Optimal USEPA Protocol

Observations: Water temp: 28.20 C; Cond: 26 umhos; DO: 6.44 mg/L; pH: 4.61 SU
Clarity: clear, cedar; Flow Rate: moderate; Width/Depth: 20' / < 1'; Substrate: gravel, sand, silt
Canopy: open; Bank Stability: good; Bank Vegetation: shrubs, grasses
Stream Gradient: Low Gradient Stream; Land Uses: rural, forested
Downstream of Impoundment: Hanover lake
Other: fish, frogs, macrophytes, periphytes, filamentous algae, metal sheen, foam

AMNET Site # **AN0312** ***Stream Name:*** **Drakes Bk**

Location: **Bartley Rd; Washington Twp; Morris County**

Collection Date: ***4/22/2009*** ***USGS Topo Map:*** **Chester**

	Genus	*Tolerance Value*	*Amount*
	Nais	8	36
	Cricotopus	7	9
*	Micrasema	2	8
*	Hydropsyche	4	7
	Prosimulium	2	5
*	Neophylax	3	4
	Stenelmis	5	4
*	Cheumatopsyche	5	3
	Clinocera	6	3
	Polypedilum	6	3
	Rheotanytarsus	6	3
	Simulium	6	3
*	Ceratopsyche	4	2
*	Chimarra	4	2
*	Protoptila	1	2
	Tanytarsus	6	2
	Artocha	3	1
	Dugesia	4	1
	Macronychus	2	1
	Psephenus	4	1

** (EPT organism)* *Taxa Richness:* 20 *Population:* 100

Hilsenhoff Biotic Index (HBI):	5.67	*# Scrapers:*	5
% Sensitive EPT:	16.0%	*Attribute 2 genera:*	1
% Non-Insect Taxa:	10.0%	*Attribute 3 genera:*	3
HGMI Rating: **45.04**	**Good**		
Habitat Analysis: 157	Suboptimal	USEPA Protocol	

Observations: Water temp: 10.95 C; Cond: 408 umhos; DO: 12.47 mg/L; pH: 8.76 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 33' / 1'; Substrate: cobble, gravel, sand

Canopy: partly open; Bank Stability: good; Bank Vegetation: trees, shrubs, grasses, weeds

Stream Gradient: High Gradient Stream; Land Uses: rural, forested

Other: fish, periphytes, filamentous algae; school on left bank

AMNET Site # **AN0313** *Stream Name:* **Stony Bk**

Location: **Fairview Ave; Washington Twp; Morris County**

Collection Date: *4/22/2009* *USGS Topo Map:* **Hackettstown**

	Genus	Tolerance Value	Amount
	Clinocera	6	14
*	Epeorus	0	13
	Micropsectra	7	7
	Prosimulium	2	7
	Polypedilum	6	6
*	Lepidostoma	1	5
	Microtendipes	7	4
*	Acroneuria	0	3
	Diamesa	5	3
	Hexatoma	2	3
	Stylogomphus	1	3
*	Taeniopteryx	2	3
*	Haploperla	1	2
	Lumbriculus	8	2
	Orthocladius	6	2
	Stenelmis	5	2
	Thienemannimyia	6	2
	Antocha	3	1
*	Baetis	6	1
*	Ceratopsyche	4	1
*	Cheumatopsyche	5	1
*	Diplectrona	0	1
*	Dolophilodes	0	1
	Eukiefferiella	8	1
*	Eurylophella	4	1
	Optioservus	4	1
	Oulimnius	4	1
	Pisidium	6.8	1
	Promoresia	2	1
	Rheocricotopus	6	1
	Rheotanytarsus	6	1
*	Rhyacophila	1	1
	Simulium	6	1
	Stempellinella	6	1
	Sublettea	6	1
*	Sweltsa	0	1

** (EPT organism)* *Taxa Richness:* 36 *Population:* 100

Hilsenhoff Biotic Index (HBI): 3.76 *# Scrapers:* 5

% Sensitive EPT: 32.0% *Attribute 2 genera:* 7

% Non-Insect Taxa: 5.6% *Attribute 3 genera:* 9

HGMI Rating: **79.13** **Excellent**

Habitat Analysis: 159 Suboptimal USEPA Protocol

Observations: Water temp: 9.67 C; Cond: 150 umhos; DO: 10.96 mg/L; pH: 7.82 SU
Clarity: clear; Flow Rate: moderate; Width/Depth: 19' / 1'; Substrate: cobble, gravel, sand
Canopy: partly open; Bank Stability: good; Bank Vegetation: trees, shrubs
Stream Gradient: High Gradient Stream; Land Uses: rural

Other: crayfish, periphytes

AMNET Site # **AN0314** ***Stream Name:*** **Electric Bk**

Location: **Fairview Ave; Washington Twp; Morris County**

Collection Date: ***5/13/2009*** ***USGS Topo Map:*** **Hackettstown**

	Genus	Tolerance Value	Amount
*	Dolophilodes	0	24
	Micropsectra	7	18
	Brillia	5	7
	Nais	8	6
*	Diplectrona	0	5
	Tvetenia	5	5
*	Baetis	6	4
*	Amphinemura	3	3
*	Eurylophella	4	3
*	Acentrella	4	2
	Gammarus	6	2
	Lumbriculus	8	2
*	Pycnopsyche	4	2
	Simulium	6	2
	Chelifera	6	1
	Enchytraeidae	10	1
	Hydrobaenus	8	1
*	Hydropsyche	4	1
*	Leuctra	0	1
*	Maccaffertium	3	1
	Microvelia	6	1
*	Neophylax	3	1
	Orthocladiinae	5	1
	Parametriocnemus	5	1
	Physella	9.1	1
	Polypedilum	6	1
*	Rhyacophila	1	1
	Stenelmis	5	1
	Stylogomphus	1	1

** (EPT organism)* *Taxa Richness:* 29 *Population:* 100

Hilsenhoff Biotic Index (HBI):	4.07	*# Scrapers:*	6
% Sensitive EPT:	47.0%	*Attribute 2 genera:*	5
% Non-Insect Taxa:	17.2%	*Attribute 3 genera:*	8
HGMI Rating:	**74.95**	**Excellent**	
Habitat Analysis:	153	Suboptimal	USEPA Protocol

Observations: Water temp: 12.42 C; Cond: 296 umhos; DO: 10.23 mg/L; pH: 7.70 SU
Clarity: clear; Flow Rate: moderate; Width/Depth: 12' / < 1'; Substrate: cobble, gravel, sand
Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs
Stream Gradient: High Gradient Stream; Land Uses: suburban
Pipes / Ditches: storm sewers

Other: fish, periphytes; new home construction upstream and downstream of site

AMNET Site # **AN0315** ***Stream Name:*** **S Br Raritan River**

Location: **Rt 517; Washington Twp; Morris County**

Collection Date: ***5/13/2009*** ***USGS Topo Map:*** **Hackettstown**

	Genus	Tolerance Value	Amount
*	Ephemerella	1	20
	Gammarus	6	16
	Cricotopus	7	12
	Lumbriculus	8	12
	Micropsectra	7	8
*	Eurylophella	4	6
	Antocha	3	4
	Dugesia	4	4
	Nais	8	3
	Polypedilum	6	3
	Thienemannimyia	6	2
*	Acentrella	4	1
*	Acroneuria	0	1
	Brillia	5	1
*	Hydropsyche	4	1
*	Lepidostoma	1	1
*	Micrasema	2	1
*	Neophylax	3	1
	Optioservus	4	1
	Stenelmis	5	1
	Tvetenia	5	1

** (EPT organism)* *Taxa Richness:* 21 *Population:* 100

Hilsenhoff Biotic Index (HBI): 4.91 *# Scrapers:* 3

% Sensitive EPT: 31.0% *Attribute 2 genera:* 2

% Non-Insect Taxa: 19.0% *Attribute 3 genera:* 5

HGMI Rating: **52.02** **Good**

Habitat Analysis: 135 Suboptimal USEPA Protocol

Observations: Water temp: 11.46 C; Cond: 358 umhos; DO: 11.26 mg/L; pH: 7.82 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 40' / < 1'; Substrate: cobble, gravel, sand

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs, grasses

Stream Gradient: High Gradient Stream; Land Uses: suburban

Pipes / Ditches: storm sewers

Other: fish, crayfish, periphytes; parking lots adj to both stream banks

AMNET Site # **AN0358** ***Stream Name:*** **Lamington River**
Location: **Rt 24 (Cooper Mill Park); Chester Twp; Morris County**
Collection Date: ***5/28/2009*** ***USGS Topo Map:*** **Chester**

	Genus	*Tolerance Value*	*Amount*
	Rheotanytarsus	6	14
*	Baetis	6	13
	Gammarus	6	13
*	Micrasema	2	8
	Polypedilum	6	8
	Eukiefferiella	8	6
	Cardiocladius	5	5
	Simulium	6	5
*	Heterocloeon	2	4
	Microtendipes	7	4
	Prosimulium	2	4
	Cricotopus	7	3
*	Brachycentrus	1	2
	Caecidotea	8	2
	Tanytarsus	6	2
*	Apatania	3	1
	Cura	4	1
*	Hydropsyche	4	1
	Pisidium	6.8	1
	Planariidae	4	1
	Stenelmis	5	1
	Stylodrilus	10	1

** (EPT organism)* *Taxa Richness:* 22 *Population:* 100

Hilsenhoff Biotic Index (HBI):	5.39	*# Scrapers:*	3
% Sensitive EPT:	28.0%	*Attribute 2 genera:*	2
% Non-Insect Taxa:	27.3%	*Attribute 3 genera:*	4
HGMI Rating: **46.02**	**Good**		
Habitat Analysis: 180	Optimal	USEPA Protocol	

Observations: Water temp: 16.11 C; Cond: 405 umhos; DO: 7.45 mg/L; pH: 7.21 SU
Clarity: clear; Flow Rate: fast; Width/Depth: 15' / 1'; Substrate: boulder, cobble, gravel, sand
Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, weeds
Stream Gradient: High Gradient Stream; Land Uses: suburban, forested

Other: water snake, periphytes, brown foam; "trout stocked waters"

AMNET Site # **AN0398** ***Stream Name:*** **Bedens Bk**

Location: **Aunt Molly Rd; Hopewell Twp; Mercer County**

Collection Date: ***10/19/2009*** ***USGS Topo Map:*** **Rocky Hill**

	Genus	Tolerance Value	Amount
*	Cheumatopsyche	5	12
	Rheotanytarsus	6	12
	Microtendipes	7	10
	Cricotopus	7	8
*	Hydropsyche	4	7
	Micropsectra	7	7
*	Stenacron	4	7
	Simulium	6	6
*	Baetis	6	3
	Nais	8	3
	Parametriocnemus	5	3
	Polypedilum	6	3
	Bezzia	6	2
	Branchiura	10	2
*	Chimarra	4	2
	Psephenus	4	2
	Tvetenia	5	2
*	Caenis	7	1
*	Ceratopsyche	4	1
	Dicrotendipes	8	1
	Eclipidrilus	8	1
*	Eurylophella	4	1
*	Maccaffertium	3	1
	Planariidae	4	1
	Stictochironomus	9	1
	Tanytarsus	6	1

** (EPT organism)* *Taxa Richness:* 26 *Population:* 100

Hilsenhoff Biotic Index (HBI):	5.85	*# Scrapers:*	4
% Sensitive EPT:	15.0%	*Attribute 2 genera:*	0
% Non-Insect Taxa:	15.4%	*Attribute 3 genera:*	4
HGMI Rating:	**43.73**	**Good**	
Habitat Analysis:	147	Suboptimal	USEPA Protocol

Observations: Water temp: 7.41 C; Cond: 258 umhos; DO: 10.48 mg/L; pH: 7.48 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 22' / < 1'; Substrate: cobble, gravel, sand

Canopy: open; Bank Stability: fair; Bank Vegetation: trees, shrubs, grasses, weeds

Stream Gradient: High Gradient Stream; Land Uses: rural, forested

Other: fish, crayfish, macrophytes, periphytes, filamentous algae; near STP

AMNET Site # **AN0475** ***Stream Name:*** **Hockhockson Bk**

Location: **Hockhockson Rd; Colts Neck Twp; Monmouth County**

Collection Date: ***5/13/2010*** ***USGS Topo Map:*** **Long Branch**

	Genus	Tolerance Value	Amount
	Tubifex	10	17
	Simulium	6	14
	Dubiraphia	6	7
*	Perlesta	4	6
*	Brachycentrus	1	5
	Chironomus	10	5
	Pisidium	6.8	5
	Rheotanytarsus	6	4
	Ancyronyx	2	3
	Caecidotea	8	3
*	Eurylophella	4	3
*	Oecetis	8	3
	Brillia	5	2
*	Caenis	7	2
*	Maccaffertium	3	2
	Procladius	9	2
	Rheopelopia	4	2
	Bezzia	6	1
	Boyeria	2	1
	Cricotopus	7	1
	Dineutus	4	1
	Eukiefferiella	8	1
	Heterotrissocladius	0	1
	Macronychus	2	1
	Nais	8	1
*	Nyctiophylax	5	1
*	Polycentropus	6	1
	Prodiamesa	3	1
	Prosimulium	2	1
	Prostoma	7	1
	Slavina	7	1
	Thienemannimyia	6	1

** (EPT organism)* *Taxa Richness:* 32 *Population:* 100

%Dominance / Dominant Taxon(s): 17.0% Tubifex

Hilsenhoff Biotic Index (HBI): 6.28 *%Clingers:* 52.00%

** E+P+T:* 8 (3) Ephemeroptera, (1) Plecoptera, (4) Trichoptera *%Ephemeroptera:* 7.00%

CPMI Rating: **18 Good**

Habitat Analysis: 147 Suboptimal USEPA Protocol

Observations: Water temp: 11.98 C; Cond: 154 umhos; DO: 9.04 mg/L; pH: 6.28 SU

Clarity: clear, cedar brown; Flow Rate: slow; Width/Depth: 17' / < 1'; Substrate: mud, root mats

Canopy: partly open; Bank Stability: fair; Bank Vegetation: trees, weeds

Stream Gradient: Low Gradient Stream; Land Uses: forested, wetlands, agriculture-livestock (horse farm)

Other: macrophytes, "trout stocked stream" sign

AMNET Site # **AN0476** ***Stream Name:*** **Pine Bk**

Location: **Rt 537 (Tinton Ave); Shrewsbury Twp; Monmouth County**

Collection Date: *4/27/2010* ***USGS Topo Map:*** **Long Branch**

	Genus	Tolerance Value	Amount
	Cricotopus	7	55
	Nais	8	14
	Antocha	3	3
	Brillia	5	3
	Eukiefferiella	8	3
	Rheocricotopus	6	3
	Thienemannimyia	6	3
*	Hydropsyche	4	2
*	Pseudocloeon	4	2
	Stenelmis	5	2
	Tvetenia	5	2
	Caecidotea	8	1
*	Cheumatopsyche	5	1
	Lumbriculidae	8	1
	Orthocladiinae	5	1
	Oulimnius	4	1
	Planariidae	4	1
	Simulium	6	1
	Thienemanniella	6	1

** (EPT organism)* *Taxa Richness:* 19 *Population:* 100

%Dominance / Dominant Taxon(s): 55.0% Cricotopus

Hilsenhoff Biotic Index (HBI): 6.63 *%Clingers:* 65.(

** E+P+T:* 3 (1) Ephemeroptera, ( ) Plecoptera, (2) Trichoptera *%Ephemeroptera:* 2.(

CPMI Rating: **12 Good**

Habitat Analysis: 131 Suboptimal USEPA Protocol

Observations: Water temp: 11.27 C; Cond: 135 umhos; DO: 9.98 mg/L; pH: 6.34 SU

Clarity: turbid, cedar brown; Flow Rate: fast; Width/Depth: 31' / 2'; Substrate: sand, clay

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: trees, shrubs, weeds

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Other: filamentous algae, macrophytes, "Trout Stocked" stream, plastic bank stabilization along LB

AMNET Site # **AN0498** ***Stream Name:*** **Manasquan River**

Location: **Hospital Rd; Wall Twp; Monmouth County**

Collection Date: ***6/2/2010*** ***USGS Topo Map:*** **Asbury Park**

	Genus	*Tolerance Value*	*Amount*
	Gammarus	6	7
	Rhagovelia	9	7
	Calopteryx	6	4
*	Eurylophella	4	3
	Stenelmis	5	3
	Amnicola	4.8	2
*	Baetidae	4	2
	Limnodrilus	10	2
*	Plauditus	4	2
	Stylodrilus	10	2
	Ancyronyx	2	1
	Boyeria	2	1
*	Brachycentrus	1	1
	Didymops	4	1
	Dubiraphia	6	1
	Musculium	5	1
	Simulium	6	1
	Tanytarsus	6	1

** (EPT organism)* *Taxa Richness:* 18 *Population:* 42

%Dominance / Dominant Taxon(s): 16.7% Gammarus & Rhagovelia

Hilsenhoff Biotic Index (HBI): 6.04 *%Clingers:* 23.81%

* *E+P+T:* 4 (3) Ephemeroptera, ( ) Plecoptera, (1) Trichoptera *%Ephemeroptera:* 16.67%

CPMI Rating: **14 Good**

Habitat Analysis: 140 Suboptimal USEPA Protocol

Observations: Water temp: 19.03 C; Cond: 170 umhos; DO: 7.57 mg/L; pH: 6.61 SU

Clarity: turbid, brown; Flow Rate: moderate; Width/Depth: 35' / 2 - 3'; Substrate: gravel, sand, silt, snags, root mats

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: forested

Pipes / Ditches: storm sewers

Other: frogs; "trout stocked stream" sign

AMNET Site # **AN0596** ***Stream Name:*** **West Br Wading River**

Location: **Rt 563; Washington Twp; Burlington County**

Collection Date: ***9/23/2010*** ***USGS Topo Map:*** **Chatsworth**

	Genus	Tolerance Value	Amount
	Caecidotea	8	22
	Tribelos	5	16
	Enallagma	9	13
	Conchapelopia	6	6
	Nematoda	6	5
	Rheopelopia	4	5
*	Limnephilus	3	4
	Psectrocladius	8	4
*	Ptilostomis	5	4
*	Hydropsyche	4	3
*	Oecetis	8	2
	Orthocladius	6	2
	Pedicia	6	2
	Polypedilum	6	2
	Rheocricotopus	6	2
	Rheotanytarsus	6	2
	Ancyronyx	2	1
*	Cheumatopsyche	5	1
	Chironomus	10	1
	Cordulegaster	3	1
	Gloiobdella	6	1
	Tanytarsus	6	1

** (EPT organism)* *Taxa Richness:* 22 *Population:* 100

Becks Biotic Index (BBI):	5.00	*%Plecoptera +Trichoptera:*	14.00%
Insect Taxa:	19	*%Mollusca + Amphipoda:*	0.00%
Non-Insect Taxa:	3	*%Diptera - Tanytarsini:*	40.00%
		%Filterers:	7.00%

PMI Rating: **61.09** **Good**

Habitat Analysis: 165 Optimal USEPA Protocol

Observations: Water temp: 19.40 C; Cond: 39 umhos; DO: 2.84 mg/L; pH: 4.20 SU

Clarity: clear, cedar; Flow Rate: slow; Width/Depth: 34' / > 3'; Substrate: gravel, sand, mud

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs, grasses

Stream Gradient: Low Gradient Stream; Land Uses: forested, wetlands

Other: frogs, waterfowl, macrophytes, beaver dam downstream of bridge flooding upstream side

AMNET Site # **AN0597** ***Stream Name:*** **Shoal Br**
Location: **Jones Mill Rd; Woodland Twp; Burlington County**
Collection Date: ***9/23/2010*** ***USGS Topo Map:*** **Chatsworth**

	Genus	Tolerance Value	Amount
*	Chimarra	4	36
*	Leuctra	0	9
*	Hydropsyche	4	7
	Sialis	4	6
	Simulium	6	6
	Thienemannimyia	6	6
	Tribelos	5	6
*	Oecetis	8	5
	Nigronia	2	4
	Macropelopia	10	3
*	Polycentropus	6	2
	Stenochironomus	5	2
	Cryptochironomus	8	1
	Hemerodromia	6	1
*	Molanna	6	1
	Polypedilum	6	1
	Rheocricotopus	6	1
	Stenelmis	5	1
	Synurella	4	1
*	Triaenodes	6	1

** (EPT organism)* *Taxa Richness:* 20 *Population:* 100

Becks Biotic Index (BBI):	7.00	*%Plecoptera +Trichoptera:*	61.00%
Insect Taxa:	19	*%Mollusca + Amphipoda:*	1.00%
Non-Insect Taxa:	1	*%Diptera - Tanytarsini:*	27.00%
		%Filterers:	51.00%

PMI Rating: **65.46** **Excellent**
Habitat Analysis: 180 Optimal USEPA Protocol

Observations: Water temp: 19.18 C; Cond: 38 umhos; DO: 5.49 mg/L; pH: 3.94 SU
Clarity: clear, cedar; Flow Rate: moderate; Width/Depth: 17' / 2'; Substrate: gravel, sand, snags, root mats
Canopy: closed; Bank Stability: good; Bank Vegetation: trees, shrubs
Stream Gradient: Low Gradient Stream; Land Uses: forested

Other: macrophytes

AMNET Site # **AN0597A** ***Stream Name:*** **Shoal Br**

Location: **off Rt 532; Woodland Twp; Burlington County**

Collection Date: ***11/8/2010*** ***USGS Topo Map:*** **Woodmansie**

	Genus	Tolerance Value	Amount
*	Leuctra	0	16
*	Paraleptophlebia	1	15
	Calopteryx	6	10
*	Polycentropus	6	7
*	Molanna	6	6
*	Pycnopsyche	4	6
*	Cheumatopsyche	5	5
	Tribelos	5	5
	Argia	6	3
	Caecidotea	8	3
*	Chimarra	4	3
*	Platycentropus	4	3
	Thienemannimyia	6	3
	Cordulegaster	3	2
	Nigronia	2	2
	Sialis	4	2
	Boyeria	2	1
	Cryptochironomus	8	1
*	Diplectrona	0	1
*	Hydropsyche	4	1
	Macropelopia	10	1
	Procladius	9	1
*	Ptilostomis	5	1
	Rheocricotopus	6	1
	Unniella	6	1

** (EPT organism)* *Taxa Richness:* 25 *Population:* 100

Becks Biotic Index (BBI):	14.00	*%Plecoptera +Trichoptera:*	49.00%
Insect Taxa:	24	*%Mollusca + Amphipoda:*	0.00%
Non-Insect Taxa:	1	*%Diptera - Tanytarsini:*	13.00%
		%Filterers:	17.00%

PMI Rating: **71.55** **Excellent**

Habitat Analysis: 162 Optimal USEPA Protocol

Observations: Water temp: 8.17 C; Cond: 56 umhos; DO: 7.16 mg/L; pH: 3.87 SU

Clarity: clear, cedar; Flow Rate: slow; Width/Depth: 9' / 2 - 3'; Substrate: silt, snags, root mats

Canopy: closed; Bank Stability: good; Bank Vegetation: trees, shrubs, vines

Stream Gradient: Low Gradient Stream; Land Uses: forested

AMNET Site # **AN0600** ***Stream Name:*** **Tulpehocken Ck**
Location: **Maxwell-Friendship Rd; Washington Twp; Burlington County**
Collection Date: ***7/19/2011*** ***USGS Topo Map:*** **Jenkins**

	Genus	Tolerance Value	Amount
	Ablabesmyia	8	19
	Apsectrotanypus	5	12
	Tribelos	5	6
	Clinotanypus	8	5
	Procladius	9	5
	Thienemannimyia	6	5
	Sialis	4	4
	Bezzia	6	2
	Pyralidae	5	2
	Calopteryx	6	1
	Ceratopogonidae	6	1
	Chrysops	6	1
	Coenagrionidae	9	1
	Corixidae	9	1
	Ephydridae	6	1
*	Leptoceridae	4	1
	Limnodrilus	10	1
	Limnophila	3	1
	Limnophyes	8	1
	Mesovelia	9	1
	Notonecta	5	1
*	Phryganeidae	4	1

** (EPT organism)* *Taxa Richness:* 22 *Population:* 73

Becks Biotic Index (BBI):	4.00	*%Plecoptera +Trichoptera:*	2.74%
Insect Taxa:	21	*%Mollusca + Amphipoda:*	0.00%
Non-Insect Taxa:	1	*%Diptera - Tanytarsini:*	80.82%
		%Filterers:	0.00%

PMI Rating: **68.11** **Excellent**
Habitat Analysis: 150 Suboptimal USEPA Protocol

Observations: Water temp: 24.34 C; Cond: 32 umhos; DO: 4.78 mg/L; pH: 4.29 SU
Clarity: clear, cedar; Flow Rate: moderate; Width/Depth: 41' / 1 - 3'; Substrate: gravel, sand, silt, snags, undercut banks
Canopy: mostly open; Bank Stability: fair; Bank Vegetation: trees, shrubs
Stream Gradient: Low Gradient Stream; Land Uses: forested

Other: frogs, macrophytes; boat launch area for kayaks

AMNET Site # **AN0644** ***Stream Name:*** **South River**
Location: **Forty Wire Rd; Weymouth Twp; Atlantic County**
Collection Date: ***4/12/2011*** ***USGS Topo Map:*** **Dorothy**

	Genus	Tolerance Value	Amount
	Tribelos	5	40
*	Heteroplectron	3	6
*	Lepidostoma	1	5
	Polypedilum	6	5
	Aulodrilus	8	4
*	Triaenodes	6	4
*	Agarodes	3	3
*	Maccaffertium	3	3
*	Psilotreta	0	3
	Sialis	4	3
	Microtendipes	7	2
*	Phylocentropus	5	2
	Ablabesmyia	8	1
*	Baetisca	4	1
	Boyeria	2	1
	Brillia	5	1
	Caecidotea	8	1
	Calopteryx	6	1
	Cnephia	4	1
	Coenagrionidae	9	1
	Corixidae	9	1
*	Eurylophella	4	1
*	Habrophlebia	2	1
	Helobdella	8	1
*	Molanna	6	1
	Naididae	7	1
	Pisidium	6.8	1
*	Polycentropus	6	1
	Procladius	9	1
*	Pycnopsyche	4	1
	Stempellinella	6	1
	Thienemannimyia	6	1

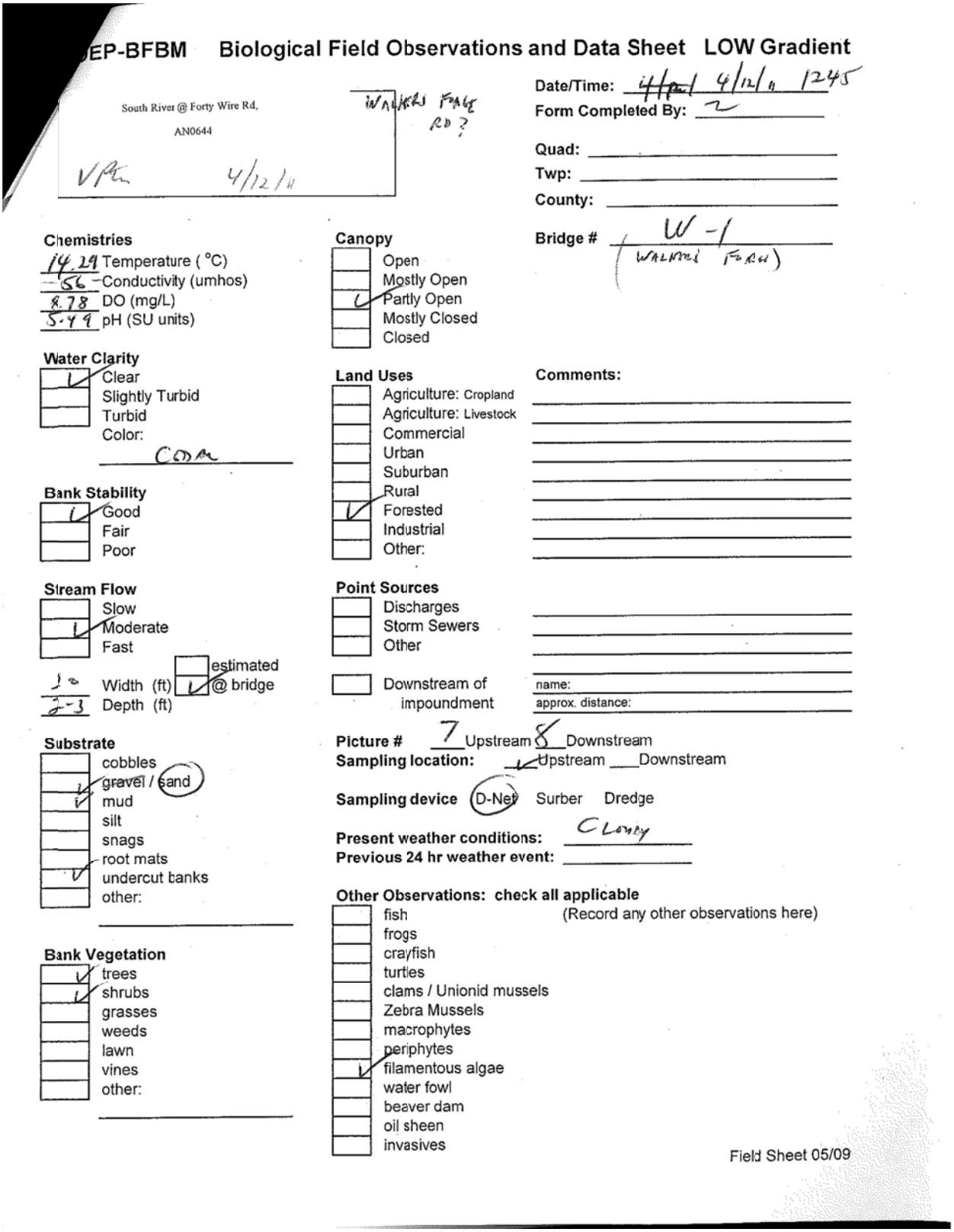
** (EPT organism)* *Taxa Richness:* 32 *Population:* 100

Becks Biotic Index (BBI):	14.00	*%Plecoptera +Trichoptera:*	26.00%
Insect Taxa:	27	*%Mollusca + Amphipoda:*	1.00%
Non-Insect Taxa:	5	*%Diptera - Tanytarsini:*	52.00%
		%Filterers:	7.00%

PMI Rating: **72.36** **Excellent**
Habitat Analysis: 162 Optimal USEPA Protocol

Observations: Water temp: 14.29 C; Cond: 56 umhos; DO: 8.78 mg/L; pH: 5.49 SU
Clarity: clear, cedar; Flow Rate: moderate; Width/Depth: 20' / 2 - 3'; Substrate: sand, mud, undercut banks
Canopy: partly open; Bank Stability: good; Bank Vegetation: trees, shrubs
Stream Gradient: Low Gradient Stream; Land Uses: forested

Other: filamentous algae



EP-BFBM Biological Field Observations and Data Sheet LOW Gradient

South River @ Forty Wire Rd,
AN0644
VPA 4/12/11

Walkers Forge Rd ?

Date/Time: 4/12/11 1245
Form Completed By: 2
Quad:
Twp:
County:
Bridge # W-1 (Walkers Forge)

Chemistries
14.29 Temperature (°C)
.56 Conductivity (umhos)
8.78 DO (mg/L)
5.49 pH (SU units)

Water Clarity
✓ Clear
Slightly Turbid
Turbid
Color: Coffee

Bank Stability
✓ Good
Fair
Poor

Stream Flow
Slow
✓ Moderate
Fast

10 Width (ft) ☐ estimated ✓ @ bridge
2-3 Depth (ft)

Substrate
cobbles
gravel / sand
✓ mud
silt
snags
root mats
✓ undercut banks
other:

Bank Vegetation
✓ trees
✓ shrubs
grasses
weeds
lawn
vines
other:

Canopy
Open
Mostly Open
✓ Partly Open
Mostly Closed
Closed

Land Uses
Agriculture: Cropland
Agriculture: Livestock
Commercial
Urban
Suburban
Rural
✓ Forested
Industrial
Other:

Point Sources
Discharges
Storm Sewers
Other

Downstream of impoundment
name:
approx. distance:

Comments:

Picture # 7 Upstream 8 Downstream
Sampling location: ✓ Upstream ___ Downstream

Sampling device (D-Net) Surber Dredge

Present weather conditions: Cloudy
Previous 24 hr weather event:

Other Observations: check all applicable
(Record any other observations here)
fish
frogs
crayfish
turtles
clams / Unionid mussels
Zebra Mussels
macrophytes
periphytes
✓ filamentous algae
water fowl
beaver dam
oil sheen
invasives

Field Sheet 05/09

HABITAT ASSESSMENT OF *LOW* GRADIENT STREAMS

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonizationpotential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-grafient streams) of the bottomaffected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affested; slight deposition in pools.	Moderate deposition of pools gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidenceof erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Bank Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

HABITAT SCORE
162

HABITAT SCORES	VALUE
OPTIMAL	160 - 200
SUB-OPTIMAL	110 - 159
MARGINAL	60 - 109
POOR	< 60

AMNET Site # **AN0724** ***Stream Name:*** **Indian Br**

Location: **Rt 47; Franklin Twp; Gloucester County**

Collection Date: *5/1/2007* ***USGS Topo Map:*** **Newfield**

	Genus	Tolerance Value	Amount
*	Eurylophella	4	39
	Crangonyx	8	16
	Cricotopus	7	10
	Tribelos	5	9
	Microtendipes	7	8
	Tanytarsus	6	4
*	Hydropsyche	4	3
	Thienemannimyia	6	2
	Apsectrotanypus	5	1
	Calopteryx	6	1
	Clinotanypus	8	1
	Cryptochironomus	8	1
	Ischnura	9	1
*	Phylocentropus	5	1
	Procladius	9	1
	Psectrocladius	8	1
	Rheotanytarsus	6	1

** (EPT organism)* *Taxa Richness:* 17 *Population:* 100

Becks Biotic Index (BBI):	2.00	*%Plecoptera +Trichoptera:*	4.00%
Insect Taxa:	16	*%Mollusca + Amphipoda:*	16.00%
Non-Insect Taxa:	1	*%Diptera - Tanytarsini:*	34.00%
		%Filterers:	17.00%

PMI Rating: **52.25** **Fair**

Habitat Analysis: 155 Suboptimal USEPA Protocol

Observations: Water temp: 13.05 C; Cond: 60 umhos; DO: 5.40 mg/L; pH: 3.98 SU

Clarity: clear-cedar; Flow Rate: moderate; Width/Depth: 16' / 3'; Substrate: gravel, sand, mud, snags, root mats

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs, turf

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Pipes / Ditches: storm sewers- 6" corrogated metal

Other: filamentous algae, macrophytes, USGS gage 2.80', trash, tire

2012 Volunteer Data Changes					
Station	**Name**	**Date**	**2010**	**Assessment**	**Impairment Status**
SBWA11	Clinton Sewage Treatment Plant	6/30/2010	5	Full Attain	Good
SBWA12	Drakes Brook	7/1/2010	5	Full Attain	Good
SBWA13	Route 517 Bridge	7/8/2010	5	Full Attain	Good
SBWA17	Holland Brook	7/2/2010	1	Non Attain	Fair
SBWA02	Claremont Stretch	7/1/2010	1	Non Attain	Fair
SBWA04	Hamden Road	7/4/2010	5	Full Attain	Good

SUMMARY OF RESULTS – FIBI093

1. Stream Name:	North Branch Raritan River
2. Sampling Date:	7/23/2009
3. Sampling Location:	Mosle Road
4. Municipality	Mendham
5. County:	Morris
6. Watershed Management Area:	8
7. Contributing Drainage Area (Sq. Mi.):	21.1
8. Electrofishing Gear:	3 Backpack
9. FIBI Score and Rating*:	Round 1 – 48 (Excellent), Round 2 – 46 (Excellent)
10. Habitat Score and Rating:	Round 1 – 165 (Optimal), Round 2 – 178 (Optimal)
11. Fishable Species Present:	Yes
12. Relevant AMNET[1] Station Data:	
Proximity of FIBI station to AMNET station:	2 mi. DS AN0346
AMNET Rating:	Round 2 – Excellent, Round 3 - Good
13. Stream Chemistries:	
Dissolved Oxygen (mg/l)	9.13
Temperature ^{0}C.	19.05
pH	7.30
Conductivity (µmhos/cm)	327
14. Length of Stream Sampled:	150m
15. Water Clarity:	Clear
16. Average Open Forest Canopy:	32.8%
17. Discharge:	24.3 cfs
18. Substrate:	35% Gravel/Sand, 55% Cobble, 10% Boulder
19. Habitat:	45% Riffle, 35% Run, 20% Pool
20. Snags:	Yes
21. Periphyton:	Moderate
22. Submerged Aquatic Vegetation:	No
23. Outfalls:	None
24. Number of Fish Species Identified:	12
25. Total Number of Fish Collected:	326
26. Number of Fish With Anomalies:	1

[1] AMNET is the acronym for the DEP's ambient benthic macroinvertebrate monitoring network – a series of 820 monitoring stations located throughout the state's waterways that collects data on the health of bottom dwelling stream fauna which in turn is used to assess general water quality

* Round 1 data was scored prior to the FIBI metric recalibration.

FIBI093-NB Raritan River @ Mosle Rd **Excellent** Good Fair Poor
Date Sampled - 7/23/2009

	Score
# of Fish Species	3
# of Benthic Insectivorous Species (BI) (excluding White Suckers and Bullheads)	3
# of Trout and Centrarchid Species (excluding Green Sunfish and Bluegill)	5
# of Intolerant Species (IS)	5
Proportion of Tolerant Individuals	5
Proportion of Individuals as Generalists	5
Proportion of Individuals as Insectivorous Cyprinids	5
Proportion of Individuals as Trout *whichever gives better score OR Proportion of Individuals as Piscivores (excluding American Eel)*	5
# of Individuals in Sample (excluding Tolerant Species)	5
Proportion of Individuals w/disease/anomalies (excluding blackspot)	5
Total	46

Stream Rating	
45-50	Excellent
37-44	Good
29-36	Fair
10-28	Poor

HABITAT ASSESSMENT FOR *HIGH* GRADIENT STREAMS NB Raritan River (FIBI093) - 7/23/2009

	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate /Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 19	20 **19** 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE 19	20 **19** 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regimes	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity / depth regime (usually slow-deep).
SCORE 20	**20** 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 16	20 19 18 17 **16**	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 16	20 19 18 17 **16**	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE 16	20 19 18 17 **16**	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE 20	**20** 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE 10 (LB)	Left **10** 9	8 7 6	5 4 3	2 1 0
SCORE 10 (RB)	Right **10** 9	8 7 6	5 4 3	2 1 0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE 9 (LB)	Left 10 **9**	8 7 6	5 4 3	2 1 0
SCORE 9 (RB)	Right 10 **9**	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE 6 (LB)	Left 10 9	8 7 **6**	5 4 3	2 1 0
SCORE 8 (RB)	Right 10 9	**8** 7 6	5 4 3	2 1 0

HABITAT SCORE
178

HABITAT SCORES	VALUE
OPTIMAL	160 - 200
SUB-OPTIMAL	110 - 159
MARGINAL	60 - 109
POOR	< 60