

NJ DIVISION OF FISH AND WILDLIFE
Bureau of Freshwater Fisheries

SURFACE WATER CLASSIFICATION - STREAMS

2015 Surface Water Classification Assessments

Trout are useful bioindicators of stream health as excellent water quality and habitat are necessary for their survival and successful reproduction. In 1968, the Bureau of Freshwater Fisheries initiated the process of identifying and classifying New Jersey waters according to their suitability to support trout. Five years later, a classification system for New Jersey waters was developed. The Bureau's classification system, although already in use by various programs within the Department, was formally recognized in 1981 under the state's newly adopted *Surface Water Quality Standards* (SWQS).

Today, waters of the state are classified according to their suitability to support trout. Lakes are classified on their ability to support trout year round, whereas streams are classified on the occurrence of natural reproduction and the presence or absence of trout and/or trout associated species (Hamilton and Barno 2006). Ultimately, the more suitable a waterway is to supporting trout the higher the classification and the more protection it will receive. The Department's Land Use Regulation Program, through Stream Encroachment, Freshwater Wetlands, and the more recently developed storm water rules acknowledge the fragile nature of these ecosystems and provide additional protective measures.

Although a vast amount of work has been accomplished in classifying New Jersey waters, waters continue to be classified and reclassified according to their trout supporting capabilities, when justified by additional field investigation data collected by NJDFW. These data are interpreted and recommendations for surface water classification changes are provided to DEP's Bureau of Water Monitoring and Standards, Environmental Analysis Restoration and Standards, who ultimately integrate changes to the SWQS through an established rule making process.

Stream Assessments for Surface Water Classification

During the summer months, a 150 meter section of stream is electrofished (single-pass) using one or more backpack electrofishing unit or a generator positioned on land or in a barge, with 2-3 hand-held anodes.. All fish are captured and enumerated by species (total length measurements taken on all salmonids). Physicochemical parameters measured include water temperature, dissolved oxygen, pH, alkalinity, conductivity, specific conductance, and stream width, depth, and substrate type. The EPA Rapid Bioassessment habitat assessment protocol is used to assess in-stream habitat and riparian conditions (Barbour et al. 1999) with regional modifications.



Double backpack electrofishing crew.

In 2015 three electrofishing surveys were conducted specifically for classification purposes by the Bureau under Grant F-48-R, Project I, all of which were on the Pohatcong Creek. Data from 80 additional stream electrofishing surveys, also conducted in 2015 under a variety of other jobs and/or funding sources are valuable in confirming existing classification as well as identifying potential upgrades.

Collectively, 13 stream surveys conducted in 2015 support potential surface water classification changes (Table 2). Recommended upgrades and/or acknowledgements include:

Beaver Brook (Clinton) (Hunterdon) – The extension of the *Trout Production* section of Beaver Brook (Clinton) downstream to the confluence with the South Branch of the Raritan River. This is based on data collected in 2015 as well as 2001 (Table 2).

Beden Brook (Somerset) - The data from a survey conducted on an unnamed tributary to Beden Brook (not previously sampled) verified it's existing default classification of *Non-Trout*. It is proposed that this tributary be identified and specifically listed by the Department as Beden Brook (Trib.) (Rocky Hill).

Lamington (Black) River (Morris/Somerset) - Significant changes are recommended to the Lamington (Black) River based on data from 13 surveys (2 in 2015, 6 in 2014, and 5 from 2003 through 2013) conducted by NJDFW (Table 2). The specific stream sections on the Lamington River recommended for upgrade are described in Table 3.

Merrill Creek Reservoir (Warren) – A fisheries survey conducted on Merrill Creek Reservoir supports a previously recommended upgrade from *Trout Maintenance* to *Trout Production* (Table 2). During the period 1988 – 2012 the NJDFW annually stocked hatchery-reared Lake Trout (lakers) in Merrill Creek Reservoir. With the exception of the initial stocking in 1988, all lakers subsequently stocked were marked by removing a fin (referred to as a fin clip). During this 25 year period over 90,000 lakers, averaging 6.6 – 9.1 inches, were stocked in the reservoir. Unlike Brown and Rainbow Trout, Lake Trout are a long-lived trout species that is capable of spawning in a lake environment if suitable habitat is present. The reservoir's laker population has been surveyed annually since 1989 by the owner's consultant to obtain data needed to manage the recreational trout fishery. During these surveys each Lake Trout captured is examined for the presence/absence of a fin clip. Fish survey data from recent years shows an increasing prevalence of small lakers that do not have an identifying fin clip. These fish are too small to be attributed to the first year class of fish stocked in 1988 (that were not fin-clipped) indicating they are the product of natural reproduction, therefore warranting its upgrade from *Trout Maintenance* (FW2-TM) to *Trout Production* (FW2-TP(C1)) (Table 2). NJDFW discontinued stocking Lake Trout in the reservoir in 2013, because natural reproduction is considered sufficient to sustain the Lake Trout fishery without supplemental stockings.

Pohatcong Creek (Warren) - The extension of the *Trout Production* section of the Pohatcong Creek downstream from the Valley Road (a.k.a. Karrsville Road) bridge to the Route 31 bridge. This is based on surveys conducted on Pohatcong Creek since 2010 that document wild Brown Trout reproduction upstream of the Rt. 31 bridge. These data (and data from surveys previously conducted on *Trout Production* streams statewide) will be used to determine if the *Wild Trout Stream* regulation should be modified and/or if new regulations for wild trout are warranted.

Raritan River South Branch (Morris/Hunterdon) - Additional surveys on the South Branch of the Raritan River and multiple tributaries were conducted that support previously recommended upgrades, that were proposed following the last rule adoptions in 2011.

In addition to recommending changes to existing surface water classifications, since 2006 NJDFW has reported surveys in which data confirm existing surface water classifications. The 2015 data confirmed the classifications of fifty-two stream segments, therefore no action is required (Table 4). At times, electrofishing surveys yield data that neither confirm an existing use (classification), nor warrant a change to the existing use (classification), as classifications are not downgraded unless proven the existing use cannot be re-established. This was true for surveys at eighteen locations in 2015, therefore no action is required (Table 5).

TABLE 2.— Summary of **recommended surface water classification changes** supported by 13 surveys conducted in 2015 by NJDFW, plus data on Merrill Creek Reservoir. Reproducing trout species determined by the presence of young-of-the-year trout. A current surface water classification enclosed by brackets indicates a default surface water classification (i.e. the waterbody is not specifically listed in NJ's Surface Water Quality Standards, N.J.A.C. 7:9B). I.O. = Incidence of Occurrence; NA = Not Applicable (due to presence of trout reproduction)

Waterbody	Waterbody section	Current surface water classification	Recommended surface water classification	I.O. value	Reproducing trout species	Survey date
Merrill Creek Reservoir (Harmony)	Entire Waterbody	FW2-TM	FW2-TP(C1) ^e	NA	Lake	NA
Pohatcong Creek (Pohatcong)	Karrsville bridge to Rt. 519 bridge, except tributaries listed separately	FW2-TM(C1)	FW2-TP(C1)	NA	Brown	7/9/15
Pohatcong Creek (Pohatcong)	Karrsville bridge to Rt. 519 bridge, except tributaries listed separately	FW2-TM(C1)	FW2-TP(C1)	NA	Brown	7/9/15
Beaver Brook (Clinton)	Lower most I-78 bridge downstream to, the South Branch of the Raritan River	FW2-TM	FW2-TP(C1)	NA	Brown	8/28/15
*Beden Brook (Trib.) (Rocky Hill)	Entire length	[FW2-NT]	FW2-NT	16.4	none	9/2/15
Lamington River (Black River) (Milltown)	Rt. 206 bridge to confluence with Rinehart Brook	FW2-TM(C1)	FW2-TP(C1)	NA	Brook ^c Brown & Rainbow ^d	8/5/15
Raritan River S/Br (Mt. Olive)	Dam to confluence with Turkey Brook ^b	FW2-TM	FW2-TP(C1)	NA	Brown	8/14/15
Raritan River S/Br (Califon)	Rt. 512 bridge to downstream end of Packers Island, except segment described separately, below ^b	FW2-TM	FW2-TP(C1)	NA	Brook ^c & Brown	7/8/15
Raritan River S/Br (Ken Lockwood Gorge)	River and tributaries within Ken Lockwood Gorge WMA ^b	FW2-TM(C1)	FW2-TP(C1)	NA	Brook ^c Brown & Rainbow ^c	7/20/15
Raritan River S/Br (Ken Lockwood Gorge)	River and tributaries within Ken Lockwood Gorge WMA ^b	FW2-TM(C1)	FW2-TP(C1)	NA	Brown	7/20/15

Raritan River S/Br (Trib.) (Drakestown)	Entire length	[FW2-NT]	FW2-TP(C1) ^a	NA	Brook	7/14/15
Raritan River S/Br (Trib.) (SW of Budd Lake)	Entire length	[FW2-NT]	FW2-TP(C1) ^a	NA	Brook	7/9/15
Raritan River S/Br (Trib.) (Warmwater)	Entire length	[FW2-NT]	FW2-TM	21.7	none	8/14/15

TABLE 3.— **Summary of recommended surface water classification changes to the Lamington River** (Black River) supported by 13 surveys (2 in 2015, 6 in 2014, and 5 from 2003 through 2013) conducted by New Jersey Division of Fish and Wildlife.

Current segment description	Current SWQS classification	Recommended segment description	Recommended SWQS classification
(Succasunna) - Source to Rt. 206 bridge	FW2-NT(C1)	(Mine Hill Township) - Source to but not including Mine Hill Lake, including all tributaries	FW2-TP(C1)
		(Succasunna) –Mine Hill Lake to Rt. 206 bridge	FW2-NT(C1)
(Milltown) - Rt. 206 bridge to confluence with Rinehart Brook	FW2-TM(C1)	(Milltown) - Rt. 206 bridge to confluence with Trout Brook	
(Pottersville) - Confluence with Rinehart Brook to Camp Brady bridge, Bedminister	FW2-TP(C1)	(Pottersville) - Confluence with Trout Brook to River Road West, including all tributaries	FW2-TP(C1)
(Vlietown) - Camp Brady bridge to confluence with Cold Brook	FW2-TM		
(Oldwick) – Confluence with Cold Brook to the Route 523 bridge, including all tributaries	FW2-TM(C1)		
(Burnt Mills) –Route 523 bridge to North Branch, Raritan River, including all tributaries	FW2-NT(C1)	(Branchburg) River Road West to North Branch, Raritan River, including all tributaries	FW2-NT(C1)

TABLE 4.— Electrofishing surveys conducted in 2015 by NJ Division of Fish & Wildlife that *confirm existing surface water classifications* as indicated in New Jersey’s Surface Water Quality Standards, N.J.A.C. 7:9B. No action is required. Reproducing trout species is determined by the presence of young-of-the-year trout. Data are found in report titled “2015 Investigation & Management of NJ’s Freshwater Fisheries Resources.”

Waterbody	Waterbody section	Current surface water classification confirmed	I.O. value	Reproducing Trout Species	Date
<i>Southern Region (Lower Delaware River and Lower Atlantic Coastal)</i>					
Masons Run (Pine Hill)	Source to Little Mill Road	FW2-TP(C1)	NA	Brook	8/18/15
<i>Upper Delaware Region (Upper Delaware & Walkkill)</i>					
Bear Creek (Frelinghuysen)	Erie-Lackawanna Railroad trestle to confluence with Trout Brook, including all unnamed and unlisted tributaries	FW2-TM(C1)	26.2	Brook ^a	8/13/15
Beatty’s Brook (Penwell)	Entire length	FW2-TP(C1)	NA	Brook & Brown ^a	7/31/15
Beerskill Creek (Shawytown)	Boundary of High Point State Park to confluence with Little Flat Brook	FW2-TP(C1)	NA	Brook	7/28/15
Bowers Brook (Hackettstown)	Source downstream to Rt. 517	FW2-TP(C1)	NA	Brook	7/29/15
Brass Castle Creek (Brass Castle)	Entire length	FW2-TP(C1)	NA	Brook	7/30/15
Brass Castle Creek (Brass Castle)	Entire length	FW2-TP(C1)	NA	Brown	8/12/15
Criss Brook (Stokes State Forest)	Entire Length within the boundaries of Stokes State Forest	FW2-TP(C1)	NA	Brook	8/12/15
Flat Brook (Walpack)	Flatbook-Roy Wildlife Management Area boundary to the Delaware River, except segments described below	FW2-TM(C1)	34.6	Brook ^a	7/16/15
Forked Brook (Stokes State Forest)	Entire length	FW2-TP(C1)	NA	Brook	7/28/15
Hakihokake Creek (Trib) (Wydner)	Source to confluence with Hakihokake Creek west of York Road	FW2-TP(C1)	NA	Brown	8/10/15
Lopatcong Creek(Phillipsburg)	Source to a point 560 feet (straight line distance) upstream of the Penn Central railroad track, including all tributaries	FW2-TP(C1)	NA	Brown	8/12/15
Lopatcong Creek (Phillipsburg)	Source to a point 560 feet (straight line distance) upstream of the Penn Central railroad track, including all tributaries	FW2-TP(C1)	NA	Brown	7/22/15

Lopatcong Creek(Phillipsburg)	Source to a point 560 feet (straight line distance) upstream of the Penn Central railroad track, including all tributaries	FW2-TP(C1)	NA	Brown	7/22/15
Mine Brook (Mt. Olive)	Lower Mine Brook Reservoir outlet downstream to Drakestown Road bridge	FW2-TP(C1)	NA	Brook	8/20/15
Musconetcong River (Hackettstown)	Saxton Lake to the Delaware River, including all unnamed and unlisted tributaries	FW2-TM	27.7	Brook ^a & Brown ^a	7/23/15
Papakating Creek(Wantage)	Route 629 bridge to Lehigh & New England RR crossing in Wantage Twp, including all tribs, except trib east of Roys, Lake Windsor trib, & the trib that drains into Papakating Creek immediately upstream of the Lehigh & New England RR crossing in Wantage Twp.	FW2-NT(C1)	9.4	none	8/20/15
Shabakunk Creek (Ewing)	Entire length	FW2-NT	10.4	none	9/3/15
Spring Mills Brook (Milford)	Entire length	FW2-TP(C1)	NA	Brown	8/10/15
Stephensburg Brook(Stephensburg)	Entire length	FW2-TP(C1)	NA	Brook & Brown	7/13/15
Stony Brook (Stokes State Forest)	Outlet of Stony Lake to the confluence with Big Flat Brook	FW2-TP(C1)	NA	Brook	8/12/15
Van Campens Brook (Millbrook)	Entire length	FW2-TP(C1)	NA	Brook & Rainbow	7/24/15
Van Campens Brook (Millbrook)	Entire length	FW2-TP(C1)	NA	Brook & Rainbow ^a	8/18/15
Van Campens Brook (Millbrook)	Entire length	FW2-TP(C1)	NA	Brown	8/18/15
Van Campens Brook (Millbrook)	Entire length	FW2-TP(C1)	NA	Brook ^a & Brown	7/24/15
West Portal Creek (West Portal)	Entire length	FW2-TP(C1)	NA	Brown	8/27/15
<i>Passaic Region (Passaic, Hackensack, & Hudson) and Upper Atlantic</i>					
Bear Swamp Brook (Mahwah)	Entire length	FW2-TP(C1)	NA	Brook	8/17/15
Black Brook (Great Swamp)	Segment and tributaries within the Great Swamp National Wildlife Refuge	FW2-NT(C1)	5.3	none	8/14/15
Hibernia Brook (trib)(Lake Ames)	Source to, but not including, Lake Ames	FW2-TP(C1)	NA	Brook	7/21/15

Indian Grove Brook (Bernardsville)	Entire length	FW2-TP(C1)	NA	Rainbow	8/3/15
Mill Brook (Randolph)	Source to Route 10 bridge, including all tributaries	FW2-TP(C1)	NA	Brown	8/3/15
Passaic River (Mendham)	Source downstream to, but not including, Osborn Pond or tributaries described separately below	FW2-TP(C1)	NA	Brown & Rainbow	8/14/15
Pequannock River (trib)(Copperas Mtn)	Entire length	FW2-TP(C1)	NA	Brook & Brown	8/17/15
Primrose Brook (Harding)	Source to Lees Hill Road bridge	FW2-TP(C1)	NA	Brook	7/22/15
<i>Raritan Region (Raritan, Arthur Kill, Raritan Bay, Shrewsbury, & Navesink)</i>					
Beden Brook (Montgomery)	Entire length	FW2-NT	10.1	none	9/3/15
Beden Brook (Montgomery)	Entire length	FW2-NT	10.3	none	9/2/15
Black Brook (Polktown)	Entire length	FW2-TP(C1)	NA	Brown	7/7/15
Hickory Run (Califon)	Entire length	FW2-TP(C1)	NA	Brook	7/9/15
India Brook (North Branch, Raritan River) (Randolph)	Entire length	FW2-TP(C1)	NA	Brown	8/26/15
Mulhockaway Creek (Pattenburg)	Entire length	FW2-TP(C1)	NA	Brook ^a & Brown	8/12/15
Neshanic River (Reaville)	Entire length	FW2-NT	7.0	none	8/6/15
Raritan River N/Br (Pleasant Valley)	Source to, but not including, Ravine Lake	FW2-TP(C1)	NA	Brown	8/26/15
Raritan River N/Br (Pleasant Valley)	Source to, but not including, Ravine Lake	FW2-TP(C1)	NA	Brown	9/4/15
Raritan River S/Br (Middle Valley)	Confluence with Turkey Brook to Rt. 512 bridge	FW2-TP(C1)	NA	Brook & Brown	7/27/15
Raritan River S/Br (Middle Valley)	Confluence with Turkey Brook to Rt. 512 bridge	FW2-TP(C1)	NA	Brook Brown & Rainbow	7/20/15
Raritan River S/Br (Middle Valley)	Confluence with Turkey Brook to Rt. 512 bridge	FW2-TP(C1)	NA	Brook Brown & Rainbow	7/8/15
Rinehart Brook (Hacklebarney)	Entire length	FW2-TP(C1)	NA	Brown	7/6/15
Rocky Run (Lebanon)	Entire length	FW2-TP(C1)	NA	Brook	7/9/15
Stony Brook (Washington)	Entire length	FW2-TP(C1)	NA	Brook Brown & Rainbow	7/13/15
Trout Brook (Hacklebarney)	Entire length	FW2-TP(C1)	NA	Brook	7/6/15

Turkey Brook (Mt. Olive)	Entire length	FW2-TP(C1)	NA	Brook & Brown	7/2/15
Willhoughby Brook (Buffalo Hollow)	Entire length	FW2-TP(C1)	NA	Brook ^a & Brown	7/7/15

^a Young-of-the-year trout not present, however trout from older year classes present.

TABLE 5.— Electrofishing surveys conducted in 2015 by NJ Division of Fish & Wildlife that *neither confirm an existing use (classification), nor warrant a change to the existing use*, as classifications are not downgraded unless proven the existing use can not be re-established. Reproducing trout species is determined by the presence of young-of-the-year trout. Data are found in report titled “2015 Investigation & Management of NJ’s Freshwater Fisheries Resources.”

Waterbody	Waterbody section	Current surface water classification	I.O. value	Reproducing Trout Species	Date
<i>Southern Region (Lower Delaware River and Lower Atlantic Coastal)</i>					
Masons Run (Pine Hill)	Source to Little Mill Road	FW2-TP(C1)	NA	Brook ^a	8/18/15
<i>Upper Delaware Region (Upper Delaware & Wallkill)</i>					
Big Flat Brook (Sandyston)	Confluence with Parker Brook, through the Blewitt Tract, to the confluence with Flat Brook, except tributaries described under the listing for Flat Brook, below	FW2-TP(C1)	37.2	Brook ^a	7/14/15
Big Flat Brook (Sandyston)	Confluence with Parker Brook, through the Blewitt Tract, to the confluence with Flat Brook, except tributaries described under the listing for Flat Brook, below	FW2-TP(C1)	27.3	none	7/16/15
Big Flat Brook (Sandyston)	Confluence with Parker Brook, through the Blewitt Tract, to the confluence with Flat Brook, except tributaries described under the listing for Flat Brook, below	FW2-TP(C1)	28.6	Brook ^a	7/14/15
Clove (Mill) Brook (Montague)	Lake Marcia outlet to State line, except tributaries described below	FW2-TP(C1)	25.9	Brown ^a	8/13/15
Clove (Mill) Brook (Montague)	Lake Marcia outlet to State line, except tributaries described below	FW2-TP(C1)	29.6	Brook ^a	8/13/15
Franklin Pond Creek (Hardyston)	Source to, but not including, Franklin Pond	FW2-TP(C1)	26.6	none	7/21/15
Hances Brook (Rockport)	Entire length	FW2-TP(C1)	25.0	Brook ^a	7/29/15
Knowlton Brook (Knowlton)	Entire length	FW2-TP(C1)	44.2	Brown ^a	8/18/15
Mine Brook (Mt. Olive)	Source to, but not including, Upper Mine Brook Reservoir, downstream to Lower Mine Brook Reservoir outlet	FW2-TM	15.5	none	8/21/15
Musconetcong River (Hackettstown)	Saxton Lake to the Delaware River, including all unnamed and unlisted tributaries	FW2-TM	13.1	none	7/23/15
Parker Brook (Montague)	Entire length	FW2-TP(C1)	21.3	Brook ^a	7/6/15
Pohatcong Creek (Pohatcong)	Karrsville bridge to Rt. 519 bridge,	FW2-TM(C1)	NA	Brown	7/7/15

	except tributaries listed separately				
Sparta Glen Brook (Sparta)	Entire length	FW2-TP(C1)	50.1	Brook ^a	7/21/15
Stony Brook (Stokes State Forest)	Outlet of Stony Lake to the confluence with Big Flat Brook	FW2-TP(C1)	17.6	none	7/6/15
<i>Passaic Region (Passaic, Hackensack, & Hudson) and Upper Atlantic</i>					
Rockaway River (trib)(W of Longwood Lake)	Entire length, including all tributaries	Proposed ^b FW2-TP(C1)	NA	none	7/21/15
<i>Raritan Region (Raritan, Arthur Kill, Raritan Bay, Shrewsbury, & Navesink)</i>					
Lamington River (Black River) (Milltown)	Rt. 206 bridge to confluence with Rinehart Brook	FW2-TM(C1)	17.0	none	8/5/15
Sun Valley Brook (Mt. Olive)	Entire length	FW2-TP(C1)	23.0	none	7/2/15

^a Young-of-the-year trout not present, however trout from older year classes present.

^b Current classification is FW2-NT(C1), however data from 2009 was used to recommend FW2-TP(C1) in 2011.