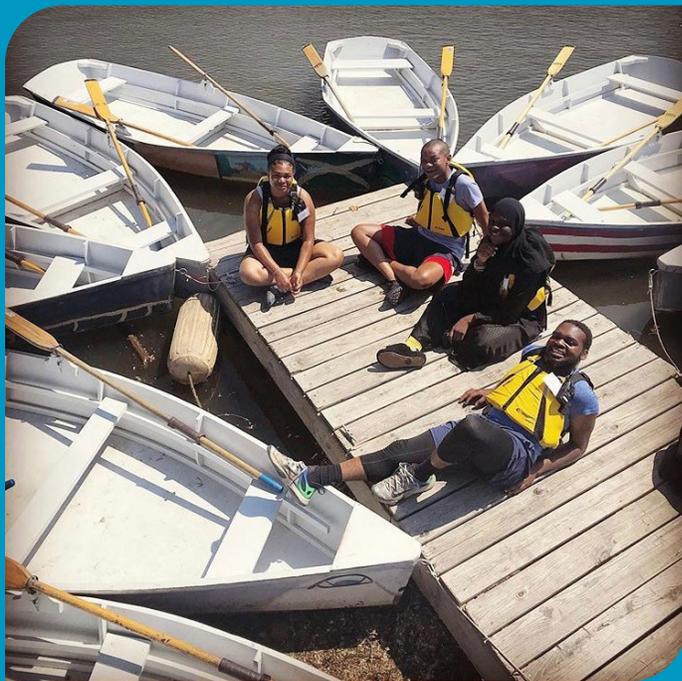


RECREATIONAL USES IN THE DELAWARE RIVER

Laying the Foundation





River Network empowers and unites people and communities to protect and restore rivers and other waters that sustain all life. We envision a future with clean and ample water for people and nature, where local caretakers are well-equipped, effective and courageous champions for our rivers. We believe that everyone should have access to affordable, clean water and healthy rivers.

WRITTEN BY GAYLE KILLAM AND ELLEN KOHLER

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TABLE OF CONTENTS

1. EXECUTIVE SUMMARY
2. CLEAN WATER ACT FRAMEWORK AND RELEVANCE
 - A. Overview
 - i. Water quality standards
 - ii. Assessment of water quality
 - iii. Pollution controls
 - B. “Swimmable” in the Delaware Basin
 - i. Water quality criteria to protect swimming
 - ii. Impaired swimming/primary contact uses
 - C. “Fishable” in the Delaware Basin
 - i. Cold water aquatic life uses
 - ii. Warm water aquatic life uses
 - iii. Impaired aquatic life uses
 - D. High quality waters in the Delaware Basin
 - i. Designations
 - ii. Impaired protected waters
3. APPLICATION OF STANDARDS TO RIPARIAN PROTECTIONS
 - A. New York – 50 feet
 - B. Pennsylvania – 150 feet
 - C. New Jersey – 50 feet
 - D. Delaware – no regulatory buffer requirements
 - E. Delaware Estuary
4. NATIONAL WILD AND SCENIC RIVERS PROGRAM IN DELAWARE BASIN
 - A. Protections
 - B. Impairments to Recreation
 - C. Impact on Permitting and TMDLs
 - D. Intersection between Antidegradation and Wild and Scenic Rivers

1 EXECUTIVE SUMMARY

Our day-to-day lives and the focus of our work is affected by the regulatory environment in which we live. A relatively small proportion of the general population is aware of such terms as “designated uses,” “antidegradation,” and “impaired waters,” yet the framework of the Clean Water Act that was designed in the early 1970s and has been refined and implemented at the state and local levels ever since, has great bearing on our ability to safely recreate in our local waters, the health of aquatic life depending on local waters and the activities that occur on the landscape surrounding our local waters.

With that in mind, River Network compiled the following summary of the Clean Water Act foundation on which each Delaware River Basin state’s water quality program has been built. This summary is focused on the priorities of the William Penn Foundation’s Watershed Protection Program, and it aims to provide sufficient information to clarify the value of ongoing activities and offer perspectives for prioritizing future activities.

In this summary, we cover basic information about the structure of water quality standards, and how designated uses, water quality criteria and the antidegradation programs in each Basin state and under the authority of the Delaware River Basin Commission play out specifically in regard to the proverbial “swimmable and fishable” goals of the Clean Water Act.¹

The document also highlights the connections in three of the four basin states between water quality standards (in particular, higher water quality designations and the antidegradation policies) and riparian protections.

The Federal Wild and Scenic Rivers Program plays into how the six federally designated Delaware River Basin waters are managed. We have summarized some Clean Water Act-related characteristics of these waters, acknowledging the need to examine more thoroughly exactly how the overlap of these programs play out on the ground.

Despite being adopted almost 50 years ago, the Clean Water Act continues to provide a strong foundation for the protection of water quality. Realizing the goals of the act requires our collective action to use its tools to benefit every water way in the Basin.

¹ 33 U.S.C. 1251 (a)(2)

“The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters. In order to achieve this objective it is hereby declared that, consistent with the provisions of his Act—(2) it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983” [https://www.waterboards.ca.gov/public_notices/petitions/water_quality/docs/a2239/overview/References/AR-Refs%20\(50\).pdf](https://www.waterboards.ca.gov/public_notices/petitions/water_quality/docs/a2239/overview/References/AR-Refs%20(50).pdf)

2 CWA FRAMEWORK AND RELEVANCE

A. OVERVIEW I. WATER QUALITY STANDARDS

The Clean Water Act requires states to designate uses for each waterbody. Designated uses are human uses and ecological conditions that states recognize officially in their water quality standards. States must designate one or more uses for each water body. A water body's designated uses must fully represent existing, historical (to an extent) and potential uses. Not every existing use of a water must be individually designated, but the designated uses must be broad enough and require strong enough protections for all existing uses.

The Clean Water Act requires every state's designated uses to specifically include recreation and aquatic life (40 CFR 131.10(a)), however, each state can choose to establish more specific designations such as swimming and cold-water fishery. In this paper, we will use the term "recreational use" synonymously with swimming because, unless called out as boating or secondary contact, the term refers to recreation that may result in immersion in or ingestion of water.

States may also designate other human uses such as fish consumption, shellfish harvesting and drinking water supply. A "triennial review" of state water quality standards is required, yet it rarely occurs every three years. States and tribes are generally collecting topics and information continuously and then packaging them into a formal process. During this review, if any waters are not designated for recreation or aquatic life as required by the Clean Water Act, it must explain the reasoning for their decision.²

HOW DOES THIS PLAY OUT IN THE DELAWARE BASIN?

New York, Pennsylvania, New Jersey, Delaware and the Delaware River Basin Commission have assigned uses to all of their waters in the Delaware River Basin and associated protective levels of pollutants to each use or category of uses. In the cases of New Jersey and New York, they have also grouped uses into "classifications." **TABLE 1** lists the designated uses and classifications for each jurisdiction.

EXISTING AND DESIGNATED USES

The Clean Water Act makes an important distinction between "existing" and "designated" uses.

Existing uses are 1) those that have occurred at any time since 1975, when the CWA regulations regarding use designation were established, regardless of whether they have been designated (40 CFR 131.3(e)), and 2) uses for which the necessary quality has been attained, whether or not the use is being made (EPA WQS Handbook, 4.4). For example, if a river's water quality is good enough for swimming, it is an existing use even if people don't engage in it.

Designated uses are those uses that have been officially recognized by the state in water quality standards, whether or not they are being attained (40 CFR 131.3(f)). Not every existing use needs to be listed as a designated use, but all existing uses must be protected by the designated uses. For example, if people swim and boat in a water body, designating that waterbody for swimming may be sufficient to protect the water quality for both existing uses. If water bodies are being used for purposes that require better water quality than the current designated uses require then "the state shall revise its standards to reflect the uses actually being attained" (40 CFR 131.10(i)).

² 40 CFR 131.10, Use Attainability Analysis.

TABLE 1: STATE AND DRBC USES

	DESIGNATED USES AND CLASSIFICATIONS
	<p>Public Water Supply Industrial Water Supply Primary Contact Recreation (Swimming) Secondary Contact Recreation (Wading) Fish Aquatic Life and Wildlife Cold Water Fish Agricultural Water Supply ERES Waters (Waters of Exceptional Recreational or Ecological Significance) Harvestable Shellfish Waters</p>
	<p>Freshwater 1 (FW1) – natural preservation, primary contact recreation, aquatic life (maintenance, migration and propagation) Pinelands Waters (PL) – cranberry bog/ag, aquatic life (maintenance, migration and propagation), public water supply, primary contact recreation Freshwater 2 (FW2) – aquatic life (maintenance, migration and propagation), primary contact recreation, industrial/ag water supply, public water supply Saline Estuary 1 (SE1) – shellfish harvesting, aquatic life (maintenance, migration and propagation), primary contact Saline Estuary 2 (SE2) – aquatic life (maintenance, migration and propagation), wildlife, secondary contact recreation Saline Estuary 3 (SE3) – secondary contact recreation, aquatic life (maintenance and migration), wildlife Coastal Saline (SC) – shellfish harvesting, primary contact recreation, aquatic life (maintenance, migration and propagation)</p>
	<p>Aquatic Life – Cold Water Fishes (CWF), Warm Water Fishes (WWF), Migratory Fishes (MF), Trout Stocking (TSF) Water Supply – Potable (PWS), Industrial (IWS), Livestock (LWS), Wildlife (AWS), Irrigation (IRS) Recreation and Fish Consumption – Boating (B), Fishing (F), Water Contact Sports (WC), Esthetics (E) Special Protection – High Quality Waters (HQ), Exceptional Value Waters (EV) Other – Navigation (N)</p>
	<p>Fresh Surface Waters Natural Waters – natural preservation, drinking/culinary, bathing, fishing, fish propagation, and recreation, shellfish and wildlife propagation and survival and fish survival. AA-Special waters – drinking/culinary/food processing; primary and secondary contact recreation; fishing; suitable for fish, shellfish and wildlife propagation and survival A-Special waters – drinking/culinary/food processing; primary and secondary contact recreation; fishing; suitable for fish, shellfish and wildlife propagation and survival. AA waters – drinking/culinary/food processing; primary and secondary contact recreation; fishing; suitable for fish, shellfish and wildlife propagation and survival. A waters – drinking/culinary/food processing; primary and secondary contact recreation; fishing; suitable for fish, shellfish and wildlife propagation and survival. B waters – primary and secondary contact recreation and fishing; suitable for fish, shellfish and wildlife propagation and survival. C waters – fishing; suitable for fish, shellfish and wildlife propagation and survival; suitable for primary and secondary contact recreation (other factors may limit the use for these purposes) D waters – fishing; suitable for fish, shellfish and wildlife survival; suitable for primary and secondary contact recreation (other factors may limit the use for these purposes) T (Trout) or TS (Trout Spawning) are added to classifications</p>
	<p>Water Supply – agricultural, industrial, public, provided natural salinity allows Wildlife, fish and other aquatic life Recreation Navigation Controlled and regulated waste assimilation to the extent that such use is compatible with other uses</p>

The following sections depict the recreation and aquatic life uses in each state, associated water quality criteria and whether waters are meeting those criteria.

The designation of uses is only the starting point for the protection of uses in a waterbody. The assignment of water quality criteria follows designation in order to establish the levels of each pollutant of concern that are associated with the absolute minimum protection. USEPA sets many of these levels and, in turn, each state and tribe with recognized standards has the authority to set more stringent and/or more involved criteria. In any given stream segment, the most sensitive use dictates how stringent the water quality criteria must be.³ The maps and tables in Sections B, C and D below illustrate how differently the five entities in the Delaware River Basin can interpret uses and protective levels of pollutants.

Antidegradation is the third component of water quality standards, and it addresses half of the fundamental objective of the Clean Water Act—protecting the existing quality of water.

“To restore and MAINTAIN the chemical, physical and biological integrity of the Nation’s waters.”⁴

Antidegradation will be explained and addressed in **Section 2.D.** below.

II. ASSESSMENT OF WATER QUALITY

The other half of that fundamental objective—RESTORE—is addressed through the requirements for assessing and reporting the status of all waters. In order to determine whether uses and classifications are supported, instream water quality criteria must be monitored and assessed on a regular basis, and pollution discharges must be sufficiently controlled through permit effluent limits to meet the assigned instream criteria and prevent any “cause of or contribution to” impairment.⁵ All waters that do not meet criteria must be included on the Impaired Waters List, compiled in each state’s biennial Integrated Report to USEPA, together with the data on whether uses are full or partially supported.⁶ States develop their own protocol for determining what “fully”, “partially” and “not supported” (or “impaired”) means, following USEPA guidance. These protocols can be found at the links in **TABLE 4.** States perform their assessments at different frequencies, often in a geographic rotation, but rarely are particular waters assessed every year. DRBC submits a similar report biennially on the mainstem Delaware River, but it does not include an impaired waters list.

TABLE 2: STATE AND DRBC SAMPLING PROTOCOL

	LINK
 DELAWARE	http://www.dnrec.delaware.gov/swc/wa/Pages/WatershedAssessment305band303dReports.aspx
 NEW JERSEY	https://www.nj.gov/dep/wms/bears/generalinfo.htm
 PENNSYLVANIA	https://www.dep.pa.gov/Business/Water/CleanWater/WaterQuality/Pages/Assessment-Methodology.aspx
 NEW YORK	https://www.dec.ny.gov/chemical/31290.html
 DRBC	https://www.nj.gov/drbc/quality/reports/wq-assessment-rpts.html

³ 40 CFR 131.11(a)(1)

⁴ 33 U.S.C. 1251(a)

⁵ <https://www.govinfo.gov/content/pkg/CFR-2013-title40-vol23/pdf/CFR-2013-title40-vol23-sec130-7.pdf>

⁶ <https://www.epa.gov/waterdata/national-water-quality-inventory-report-congress>

The Act and its implementing regulations require the development of a specific plan to identify and address threats and problems in each impaired water body. This plan is called a Total Maximum Daily Load and is known by its acronym, TMDL.⁷ Several years ago, USEPA decided to combine the required biennial submissions into the “Integrated Report.” At the same time, they added additional categories to the assessment process, such as “impaired but not requiring a TMDL” for various reasons.⁸ The Integrated Report often also includes a priority list and timeline for developing the TMDLs. Those elements are not required by the Act, but they were often required in the settlement of lawsuits in the 1990s that pushed for states to develop an impaired waters list and/or to move forward on TMDLs. Every state in the Delaware Basin has been subject to consent decrees from past litigation on impaired waters lists or TMDLs.⁹

III. POLLUTION CONTROLS

Another way the Clean Water Act puts the water quality standards to work is through various required permits and certifications. National Pollutant Discharge Elimination System (NPDES) permits are required to identify and control all pollutant discharges on five-year cycles. The controls placed on discharges are based on 1) the designated uses and criteria in each waterbody that is “receiving” the polluted discharges or 2) proven and available technology for the particular activity, process or sector. The permits are required

to be renewed every five years, but that often doesn’t happen. They are allowed to be administratively continued indefinitely as long as they have submitted their application. Each state has developed programs to address different types of discharges with more or less specificity through individual or general permits, respectively. By design, and as one might assume, individual permits are more likely to have controls that are closely tied to the required receiving-stream criteria. General permits are designed to cover many similar activities under one set of requirements. They are usually more about best management practices and less likely to assign specific control levels. General permits are also developed for a five-year cycle, and they grant permission for activities to occur with varying levels of review or oversight from a permitting agency and no public review or comment during that time. Therefore, the success of general permits must be tied to regular and adequate assessment by the state, and thorough public review and feedback on the five-year cycle when they are open for comments. DRBC develops pollution limits for discharges into the mainstem in instruments called “dockets” on a five-year period as well. For more information on each state and DRBC’s discharge permitting programs, see the links in [Table 5](#).

New Jersey and New York have been working closely with DRBC over the last several years to coordinate discharge permitting in the Basin. For more information on the OneProcess/OnePermit Program, visit <https://www.state.nj.us/drbc/programs/project/opop-status-page.html>.

TABLE 3: STATE/DRBC DISCHARGE PERMITS	
	DISCHARGE PERMITS
 DELAWARE	https://dnrec.alpha.delaware.gov/water/surface-water/npdes/
 NEW JERSEY	https://www.nj.gov/dep/dwq/njpdес.htm
 PENNSYLVANIA	https://www.dep.pa.gov/Business/Water/CleanWater/WastewaterMgmt/Pages/NPDESWQM.aspx
 NEW YORK	https://www.dec.ny.gov/permits/6054.html
 DRBC	https://www.state.nj.us/drbc/programs/project/

⁷ <https://www.govinfo.gov/content/pkg/CFR-2013-title40-vol23/pdf/CFR-2013-title40-vol23-sec130-7.pdf>

⁸ <https://www.epa.gov/tmdl/integrated-reporting-guidance-under-cwa-sections-303d-305b-and-314>

⁹ Bell, N., TMDLs at a Crossroads: Driven by Litigation, Derailed by Controversy? 22 Pub. Land & Resources L. Rev. 61 (2001), <https://scholarship.law.umt.edu/cgi/viewcontent.cgi?article=1158&context=plrlr>

Alteration of land, often in the form of dredging or filling in wetland or riparian areas, that results in a discharge into a waterbody requires a different type of permit that varies greatly among the states in the Basin. All states have their own permit process, and the U.S. Army Corps of Engineers is involved in each state in different ways with a coordinated, joint or additional permit. New Jersey is one of only two states in the nation (the other being Michigan) that have taken over most of the dredging and filling permit program.¹⁰ The Corps permit triggers another Clean Water Act provision that provides states the right of review to ensure their water quality standards (designated uses, water quality criteria and antidegradation policy) are not violated by the terms of that Corp permit. That process is called State Water Quality Certification or “401 certification,” again because of the section of the Act that allows it.¹¹

B. WHAT IS “SWIMMABLE” IN THE DELAWARE RIVER BASIN?

All waters in the Delaware River Basin (including tributaries) are designated by each individual state for swimming or the equivalent “primary contact recreation use,” except a stretch of the mainstem and the tidal tributaries within the greater metropolitan Philadelphia area. This stretch extends downstream from River Mile 108.4 to River Mile 88. Because the exceptions are so few, we did not create a map showing the designations for swimming across all the Delaware Basin states, but the mainstem map below shows the gap in primary contact, or swimming, use designation.

DELAWARE RIVER MAINSTEM INTERSTATE ZONES



MAP 1: Delaware River Basin Commission zones and approximate area not designated for swimming in the mainstem and tidal tributaries.

¹⁰ For more information on the state dredge and fill permit programs, see River Network’s “Delaware Basin Water Policy Review,” February 2017, p33.

¹¹ <https://www.epa.gov/cwa-401>

I. WATER QUALITY CRITERIA TO PROTECT SWIMMING

States, tribes and territories are required to develop water quality criteria that will, when implemented, ensure that designated uses are attained. In the case of recreational uses—swimming in particular—the focus is entirely on bacteria. There are several additional pollutants that warrant attention in order to fully support swimming and boating such as nitrogen and phosphorus loads that promote nuisance or toxic algae outbreaks and numerous toxic contaminants that are present in the Delaware River Basin due to industrial activities and agricultural practices. However, those pollutants are not taken into account when the states and DRBC assess the support of recreational uses.

U.S. EPA reviewed its guidelines for those water quality criteria in 2017. The agency decided to keep its 2012 guidelines in place that had recommended states to move from fecal coliform to E. coli or Enterococcus criteria for fresh water. Epidemiological studies have shown that E. coli is a good predictor of gastrointestinal (GI) illnesses in fresh waters, enterococci are good predictors of GI illnesses in fresh and marine recreational waters, and fecal coliforms were poor predictors of GI illness.¹² The EPA also required use of both a geometric mean and a statistical threshold value which provide for protection against chronic and acute exposures to bacteria, respectively. In the 2012 guidelines, the

EPA also recommended “Beach Action Values” that were intended to be used by public health programs in decisions about beach closures.¹³ These values were not officially part of the updated Clean Water Act criteria. See later Section on State Swimming and Boating Rules for related public health-driven criteria.

Each state in the DRB defines the “recreation use” and required protection for this use slightly differently. See [Table 1](#) for specifics. None of the states have fully adopted the 2012 guidelines. New Jersey is the closest with a more stringent single sample acute criterion that remains from 1986 guidelines. Pennsylvania is close to final adoption of the EPA’s 2012 E. coli criteria but only for the designated “swimming season” from May 1–September 30. Pennsylvania’s limited protection during that short window is inadequate to support swimming and boating uses that do happen outside those months. DRBC has in place criteria that are consistent with the chronic component of the 2012 criteria for the most downstream estuary zones (3–6), but it doesn’t include the required acute component. [Table 1](#) details the state and DRBC approach to recreational uses and water quality criteria.

¹²Cabelli et al., 1982; Cabelli, 1983; Dufour, 1984

¹³75th percentile of the E.coli and Enterococcus levels, page 6, 2017 review.

TABLE 4: STATE AND DRBC RECREATIONAL USES AND CRITERIA

	DESIGNATED USE/ CLASSIFICATION	PRIMARY CONTACT – WATER QUALITY CRITERIA (COLONIES/100ML)
 DELAWARE	Primary Contact Recreation	Enterococcus Single sample 185 Geometric mean 100 ¹⁴
 NEW JERSEY	Freswaters1, Freshwaters2, Pinelands, Estuary – shellfish harvest, Saline coastal waters (might not be relevant)	E. Coli levels shall not exceed a geometric mean of 126 or a single sample maximum of 235. ¹⁵
 PENNSYLVANIA	Water Contact Sports	Fecal coliform: During the swimming season (May 1–Sept 30), the maximum level shall be a geometric mean of 200 based on a minimum of five consecutive samples each sample collected on different days during a 30-day period. No more than 10% of the total samples taken during a 30-day period may exceed 400. ¹⁶ Proposed criteria change for May 1–Sept 30 (awaiting approval): geometric mean = 126 and statistical threshold value (STV) = 410) ¹⁷ For the remainder of the year , the maximum level shall be a geometric mean of 2,000 based on a minimum of 5 consecutive samples collected on different days during a 30-day period. ¹⁸
 NEW YORK	Natural, AA-Special, A-Special, AA, A, B, C, D	Fecal coliform: The monthly geometric mean, from a minimum of five examinations, shall not exceed 200. Total coliform: The monthly median value and more than 20 percent of the samples, from a minimum of five examinations, shall not exceed 2,400 and 5,000, respectively. ¹⁹
 DRBC – ALL ZONES EXCEPT 3 AND ZONE 4 (ABOVE RM 81.8)	Recreation	Fecal coliform: geometric mean of 200. ²⁰
 DRBC – ZONES 3 & 4 (BELOW RM 81.8)	Recreation	Enterococci: geometric mean of 33. ²¹
 DRBC – ZONES 5 & 6	Recreation	Enterococci: geometric mean of 35. ²²

¹⁴DE regs 7401 Section 4.5.7.1

¹⁵N.J.A.C. 7:9B-1.14(d)

¹⁶PA DEP proposed during the 2017 Triennial Review that this criterion for their defined swimming season be changed to E.coli. This change is not yet finalized.

¹⁷<http://www.pacodeandbulletin.gov/Display/pabull?file=/secure/pabulletin/data/vol47/47-42/1766.html>

¹⁸PA code § 93.7

¹⁹6 CRR-NY 703.4, Current through May 20, 2018

²⁰DRBC regs, for all zones except 3 and 4 above RM 81.8

²¹DRBC regs, for zones 2 and 4 below RM81.8

²²DRBC regs, for zones 5 and 6

One of the challenges of the bacteria criteria is the 5-sample geometric mean. It is unlikely that five samples are taken every 30-day period in every waterbody as required by the standard. This makes it complicated to assess the chronic levels of bacteria adequately.

When looking basin-wide at these criteria, the obvious question is whether the different levels of protection across the Delaware River or across the state borders are able to consistently protect the swimming and boating uses of the river. Given the chance for immersion or ingestion while kayaking or paddle boarding and the questions about health concerns related to splashing, inadvertent

ingestion, aspiration, and contact between hand and mouth while fishing, there is also reason for eliminating the weaker secondary contact criteria altogether.

Public beaches are regulated by each state and tested for bacteria according to the state's sanitary code. When the waters are found to be contaminated, the beaches are closed. Two beaches in Lewes, Delaware were closed for a day in June 2018 because of bacteria contamination.²³ The table below includes the state public beach standards for bacteria as compared to the state and DRBC water quality standards. These standards do not apply to waters used only for fishing and/or boating.

TABLE 5: BACTERIA CRITERIA COMPARISON

	PUBLIC BEACH (COL/100ML)	WQS (COL/100ML)
 DELAWARE	Enterococcus Fresh: 100 mean/ 185 instantaneous Salt: 35 mean/104 instantaneous ²⁴	Enterococcus (fresh water) Single sample: 185 Geometric mean: 100 ²⁵
 NEW JERSEY	Enterococcus May not exceed 104 (appears to be only a salt water standard) ²⁶	E. Coli: Shall not exceed a geometric mean of 126 or a single sample maximum of 235. ²⁷
 NEW YORK	Freshwater: E.coli. Exceedance of the state standard => 235 Ocean (saltwater): enterococcus. Exceedance of the state standard => 104 ²⁸	Fecal coliform: Monthly geometric mean, from a minimum of five examinations, shall not exceed 200. Total coliform: Monthly median value and more than 20 percent of the samples, from a minimum of five examinations, shall not exceed 2,400 and 5,000, respectively. ²⁹
 PENNSYLVANIA	The E. coli density of a water sample taken from the bathing beach exceeds 235. The E. coli density in all water samples taken from the bathing beach, in any 30-day period during the bathing beach's operating season, exceeds a geometric mean of 126. ³⁰	Fecal coliform: During the swimming season (May 1–Sept 30), the maximum level shall be a geometric mean of 200, based on a minimum of five consecutive samples each sample collected on different days during a 30-day period. No more than 10% of the total samples taken during a 30-day period may exceed 400. For the remainder of the year, the maximum level shall be a geometric mean of 2,000 based on a minimum of five consecutive samples collected on different days during a 30-day period. ³¹
 DRBC – ZONES 1, W AND C	NA	Fecal coliform: geometric mean of 200; ³²
 DRBC – ZONES 2 AND 4 BELOW RM 81.8	NA	Fecal coliform: geometric mean of 200 Enterococci: geometric mean of 33
 DRBC – ZONES 5 & 6	NA	Fecal coliform: geometric mean of 200 Enterococci: geometric mean of 35

²³<https://www.delmarvanow.com/story/news/2018/06/08/day-beach-sun-waves-bacteria-heres-what-you-should-know/681687002/>

²⁴<http://apps.dnrec.state.de.us/recwater/MoreInfo.aspx>

²⁵Delaware WQS 7401 – 4.5.7.1

²⁶https://www.njbeaches.org/closings_advisories/

²⁷N.J.A.C. 7:9B-1.14(d)

²⁸<https://parks.ny.gov/recreation/swimming/beach-results/>

²⁹6 CRR-NY 703.4, Current through May 20, 2018

³⁰<https://www.pacode.com/secure/data/028/chapter18/s18.28.html>

³¹PA code § 93.7

³²DRBC Water Quality Regulations Section 3.20

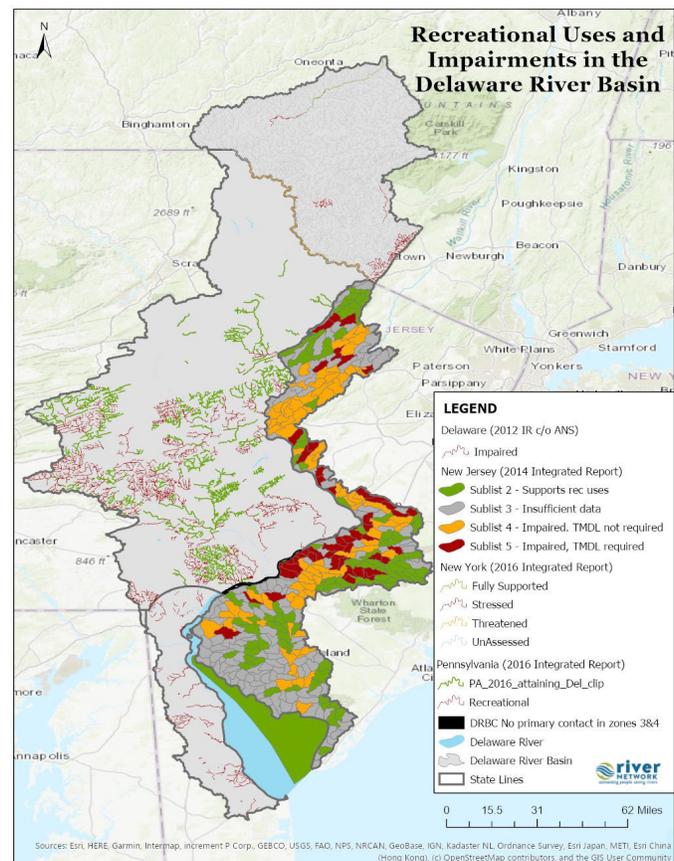
II. IMPAIRMENTS TO SWIMMING/ PRIMARY CONTACT USES

MAP 2 represents where water quality does not support swimming in the Delaware River Basin. The determination of use support is entirely driven by bacteria monitoring as outlined in [TABLE 1](#). This assessment does not take into consideration other pollutants or dangerous conditions that might warrant caution against swimming or other in-water recreation (see [Section 4](#) on State Swimming and Boating Rules). In fact, we are seeing more lakes and rivers closed to human and pet contact due to harmful algal bloom (HABs), yet state and DRBC criteria make no mention of cyanobacteria levels themselves nor the nitrogen, phosphorus and temperature levels that create these conditions that dramatically affect human uses. In addition, there is no recognition of pesticides or other chemical contaminants that might be impairing conditions for swimming or boating.

This map illustrates where work is needed in the implementation of the recreational use designations that are intended to protect swimming and boating and associated water quality criteria. Such implementation includes discharge permits (NPDES), state certification of federal permits and licenses (CWA section 401), better assessment of uses (Integrated Report) and development of TMDLs and restoration plans where needed.

As indicated on MAP 2, a majority of waters are unassessed in each state. Some states report waters as unassessed, while others simply do not assign a label. The goal of swimmable waters has been universally established throughout the Basin (except for the above-mentioned segment on the mainstem and tidal tributaries) however, the challenge is to fully assess those uses and establish plans for restoring them when they are impaired.

MAP 2: Swimming Use Impairments in the Delaware River Basin



STATE-SPECIFIC ITEMS TO NOTE:

- New York has a handful of impaired recreational waters, but the majority of waters in the Basin are unassessed.
- Pennsylvania does list both attaining and non-attaining recreational use, but it similarly has more waters unassessed than assessed. In addition, there are some upstream impairments that are surprising, such as in the Lehigh Valley and would be worth examination.
- New Jersey lists impairments by watershed, not stream segment. Therefore, they show up as areas not lines. It is likely that not all the waters in the colored areas are in the same condition—attaining or impaired. There are many watersheds that are impaired, but for which no TMDL is required. EPA has created a hierarchy that allows for this category of waters when the impairment is not due to a specific pollutant (e.g., habitat alteration, streamflow modification) or if the state believes a plan is in place to take care of the impairment in a timely fashion.³³ Legal questions linger in each of these situations.

This map, and all the following maps, can be found in River Network’s [Delaware Basin and the Clean Water Act: Designated Uses and Use-Support](#) interactive story map. See the “Recreational Use Support” tab.

³³ https://www.epa.gov/sites/production/files/2018-09/documents/attains_calculations_of_epa_ir_categories_2018-08-31.pdf 30 <https://www.pacode.com/secure/data/028/chapter18/s18.28.html>

C. WHAT IS “FISHABLE” ACROSS THE DELAWARE RIVER BASIN?

I. COLD WATER AQUATIC LIFE DESIGNATIONS

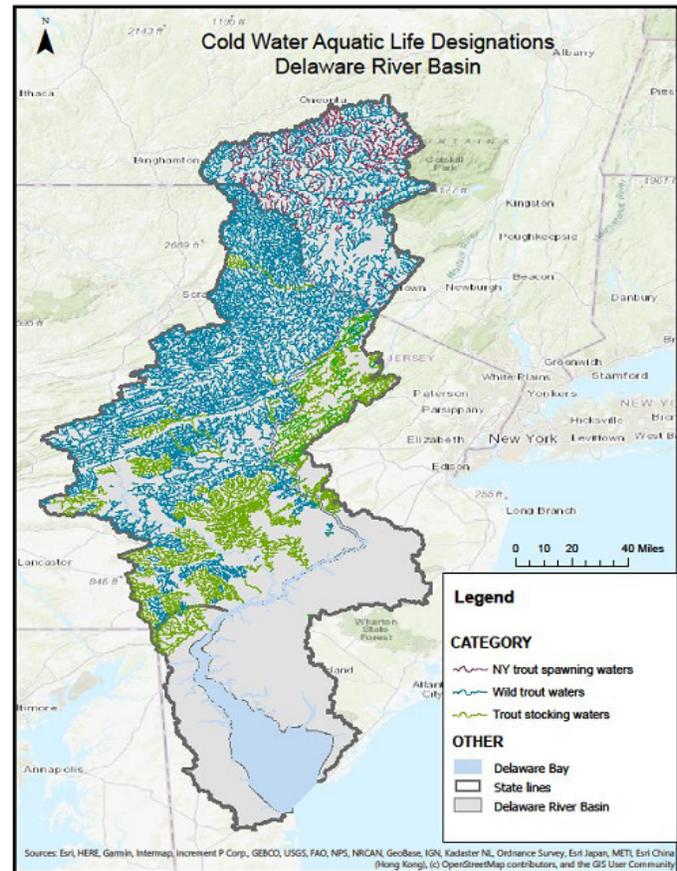
The term “fishable” is used to represent one of the fundamental goals of the Clean Water Act.

“... it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983;”

This goal was translated into the requirement that all states must protect aquatic life and wildlife uses of the waters. Most states break aquatic life uses up into differently-named subcategories to represent the areas suitable for more sensitive species (e.g., requiring colder water) and less sensitive species (e.g., able to survive in warmer water). However, adequate water quality conditions to support aquatic life uses go far beyond water temperature. In **TABLE 2**, dissolved oxygen criteria are included to help make this point, but a comprehensive list of criteria would also include many other conditions including pH, toxic contaminants, bacteria, habitat conditions and biological criteria.

Map 3 depicts the waters across the basin that have been designated to support cold water aquatic life species. The cold-water designations are among the most sensitive uses and they necessarily dictate higher protections for the Basin’s waters.

MAP 3: Cold Water Aquatic Life Designations of the Delaware Basin



STATE-SPECIFIC ITEMS TO NOTE:

In all four states, the cold water designation is focused on trout. As such, the cold water fish protections are concentrated in the upstream tributaries of the Basin as expected. Yet, there are numerous cold water designations in the downstream tributaries in Pennsylvania and in the northernmost part of Delaware, even in the urban areas. Because of development pressures and the sources of thermal pollution in more populated areas, these cold-water designated waters are good candidates for temperature monitoring. **See Section C.iii.** for more discussion on this topic related to impaired waters.

TABLE 6 summarizes some water quality criteria that have been set in each state to protect cold water aquatic life. The criteria illustrate the conditions deemed necessary for cold water species to at least survive, and hopefully to thrive and spawn. In some cases, they are used to determine impairments, and in many cases, they are used to develop pollution limits in permits.

³⁴CWA 101(a)(2) or 33 U.S.C. §§1251(a)(2)

TABLE 6: COLD WATER AQUATIC LIFE USES AND CRITERIA

	COLD WATER AQUATIC LIFE DESIGNATIONS	WATER QUALITY CRITERIA
 DELAWARE ³⁵	Cold Water Fish	Temp: Maximum increase above natural conditions ³⁶ shall be 5 degree F. No human-induced increase of the true daily mean temperature above 75 degF shall be allowed. In all waters of the state, the Department may mandate additional limitations on a site-specific or seasonal basis in order to provide incremental protection for early life stages of fish. Dissolved Oxygen: Daily avg shall not be less than 6.5 mg/L during the applicable period. Instantaneous Min shall not be less than 5.0 mg/L during the applicable period.
	Fresh Waters	Temp: Maximum increase above natural conditions shall be 5 degF. No human-induced increase of the true daily mean temperature above 82 degF shall be allowed. No human-induced increase of the daily maximum temperature above 86 degF shall be allowed. Dissolved Oxygen: Daily average shall not be less than 5.5 mg/L. Instantaneous minimum shall not be less than 4.0 mg/L.
 NEW JERSEY ³⁷	Aquatic Life – Trout Production FW2-TP	Temp: Temperatures shall not exceed a daily maximum of 22 degC (71.6 degF) or rolling seven-day average of the daily maximum of 19 degC (66.2 degF) unless due to natural conditions. Dissolved Oxygen: Not less than 7.0mg/l at any time.
	Aquatic Life – Trout Management (FW2-TM)	Temp: Shall not exceed a daily maximum of 25 degC (77 degF) or rolling seven-day avg of daily max of 23 degC (73.4 degF), unless due to natural conditions. Dissolved Oxygen: 24 hr avg not less than 6.0mg/L; not less than 5.0mg/L at any time.
 PENNSYLVANIA ³⁸	Cold Water Fishes	Temp: By month, not to exceed 66 degF July 1–Aug 31 Dissolved Oxygen: For flowing waters, 7-day avg 6.0mg/L minimum 5.0 mg/L. For naturally reproducing salmonid early life stages, applied in accordance with subsection (b), 7-day average 9.0 mg/L; minimum 8.0 mg/L.
	Trout Stocked Fishery	Temp: By month, critical condition not to exceed 87 degF Aug 16–31 Dissolved Oxygen: For the period February 15 to July 31 of any year, 7-day average 6.0 mg/L; minimum 5.0 mg/L. For the remainder of the year, 7-day average 5.5 mg/L; minimum 5.0 mg/L.
 NEW YORK ³⁹	AA, A, B, C, AA-Special; Trout waters (T) and Trout spawning waters (TS) (added as suffix)	Temp: (i) No discharge at a temp over 70 degF shall be permitted at any time to streams classified for trout. (ii) From June–Sept no discharge shall be permitted that will raise the temp of the stream more than 2 degF over that which existed before the addition of heat of artificial origin. (iii) From Oct–May no discharge shall be permitted that will raise the temp of the stream more than 5 degF over that which existed before the addition of heat of artificial origin or to a max of 50 degF whichever is less. (iv) From June–September no discharge shall be permitted that will lower the temperature of the stream more than 2 degF from that which existed immediately prior to such lowering. Dissolved Oxygen: For trout waters (T) — min daily avg shall not be less than 6.0 mg/L, and at no time less than 5.0 mg/L. For trout spawning waters (TS) — shall not be less than 7.0 mg/L from other than natural conditions.
	A-Special	In rivers and upper waters of lakes, not less than 6.0 mg/L at any time. In hypolimnetic waters, it should not be less than necessary for the support of fishlife, particularly cold water species.
 DRBC	Wildlife, fish and other aquatic life	Differs by zone.

³⁵Delaware WQS 7401 - 4.5.1, 4.5.2

³⁶The focus on “natural conditions” in Delaware and New Jersey can be problematic in this time of climate change and extreme temperature variability.

³⁷N.J.A.C. 7:9B – 1.14(d)

³⁸25 Pa. Code § 93.7

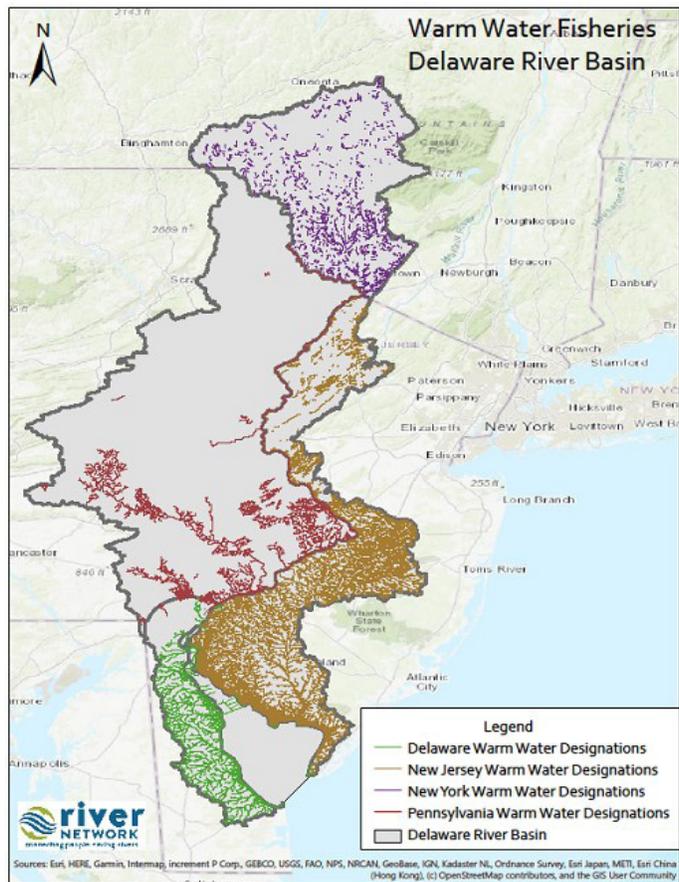
³⁹6 CRR-NY 703.3, 6 CRR-NY 704.2

II. WARM WATER AQUATIC LIFE DESIGNATIONS

MAP 4 captures the waters in the basin that are not designated for cold water species. The warm water designations still afford some protections for aquatic life species that are more pollution- and warm water-tolerant.

This designation fulfills the basic requirement of the Clean Water Act that states must support aquatic life, sometimes recognizing the reality of what larger river systems in populated areas can support, and other times allowing historic higher levels of pollution discharge or stream alteration to continue. Assuring that all waters are designated for their highest “attainable” use means that they may not currently be attaining that use, but that controls are available to make it possible.

MAP 4: Warm Water Aquatic Life Designations of the Delaware Basin



STATE-SPECIFIC ITEMS TO NOTE:

- There are more Warm Water only designations in the upper Basin than we would have expected, especially in New York.
- The highest concentration of warm water designations is in New Jersey around and downstream of Trenton.
- Pennsylvania and Delaware also have designated warm water streams around urban areas.

Table 7 describes temperature and dissolved oxygen criteria for the warm water designations in each state and the DRBC. The less stringent criteria as compared to the cold water criteria illustrate the different conditions that are legally allowed to persist in these waters.

TABLE 7: STATE AND DRBC WARM WATER AQUATIC LIFE USES AND CRITERIA

	WARM WATER AQUATIC LIFE DESIGNATIONS	WATER QUALITY CRITERIA
 DELAWARE ⁴⁰	Fresh Waters	Temp: Maximum increase above natural conditions shall be 5 degF. No human-induced increase of the true daily mean temperature above 82 degF shall be allowed. No human-induced increase of the daily maximum temperature above 86 degF shall be allowed. Dissolved Oxygen: Daily average shall not be less than 5.5 mg/L. Instantaneous minimum shall not be less than 4.0 mg/L.
	Fresh Waters	Temp: Maximum increase above natural conditions shall be 5 degF. No human-induced increase of the true daily mean temperature above 82 degF shall be allowed. No human-induced increase of the daily maximum temperature above 86 degF shall be allowed. Dissolved Oxygen: Daily average shall not be less than 5.5 mg/L. Instantaneous minimum shall not be less than 4.0 mg/L.
 NEW JERSEY ⁴¹	FW2-NT	Temp: Shall not exceed a daily max of 31 degC (87.8 degF) or rolling seven-day avg of the daily max of 28 degC (82.4 degF), unless due to natural conditions. Dissolved Oxygen: 24 hr avg not less than 5.0 mg/L, but not less than 4.0 mg/L at any time.
 PENNSYLVANIA ⁴²	Warm Water Fishes	Temp: By month, not to exceed 87 degF July 1–Aug 31. Dissolved Oxygen: 7-day average 5.5 mg/l; minimum 5.0 mg/l.
 NEW YORK ⁴³	Non trout waters (NT)	Temp: (i) The water temp at the surface of a stream shall not be raised to more than 90 degF at any point. (ii) At least 50 % of the cross sectional area and/or volume of flow of the stream including a min of 1/3 of the surface as measured from shore to shore shall not be raised to more than 5 degF over the temp that existed before the addition of heat of artificial origin or to a max of 86 degF whichever is less. (iii) At least 50 % of the cross sectional area and/or volume of flow of the stream including a min of 1/3 of the surface as measured from shore to shore shall not be lowered more than 5 degF from the temp that existed immediately prior to such lowering. Dissolved Oxygen: The min daily avg shall not be less than 5.0 mg/L, and at no time less than 4.0 mg/ L.
 DRBC	Wildlife, fish and other aquatic life	Differs by zone.

There are many other pollutants and stream conditions that contribute to a healthy or impaired environment for aquatic life species. For example, excessive nutrients, sediment and toxic contaminants, all are present in the Delaware River Basin mainstem and tributaries, and the Basin states and DRBC have set criteria for them as part of the establishment of necessary conditions to support healthy aquatic life. The states and DRBC assess these pollutants and conditions in different ways, either very specifically by pollutant (NJ and DRBC) or generally by examining the health of macroinvertebrates (PA), the foundational underpinnings of the ecosystem and food chain. See **TABLES 8 and 9** for examples of the additional water quality criteria that have been established by each regulatory entity to define what is needed to protect aquatic life and other designated uses. It is notable, that many of these criteria are narrative, and some of those are general to all waterbodies and all uses.

⁴⁰Delaware WQS 7401 – 4.5.1, 4.5.2

⁴¹N.J.A.C. 7:9B – 1.14(d)

⁴²25 Pa. Code § 93.7

⁴³6 CRR-NY 703.3, 6 CRR-NY 704.2

TABLE 8: SEDIMENT CRITERIA – NARRATIVE AND NUMERIC

	CRITERIA
 DELAWARE	<p>Settleable solids, sediments, sludge deposits, or suspended particles that may coat or cover submerged surfaces and create a nuisance condition, or that may in any way interfere with attainment and maintenance of designated uses of the water. (All uses)</p> <p>Turbidity Measured as Nephelometric or Formazin Turbidity Units, in all waters of the State shall not exceed natural levels by more than 10 units. (All uses)</p>
 NEW JERSEY	<p>Floating, colloidal, color and settleable solids; petroleum hydrocarbons and other oils and grease: None noticeable in the water or deposited along the shore or on the aquatic substrata in quantities detrimental to the natural biota. None which would render the waters unsuitable for the designated uses. (All uses)</p> <p>Solids, Suspended (mg/L) (Non-filterable residue): 25 mg/l (FW2-TP; FW2-TM), 40 mg/l (FW2-NT) None of which would render the water unsuitable for the designated uses. (All SE/SC)</p> <p>Solids, Total Dissolved (mg/L) (Filterable Residue): No increase in background which may adversely affect the survival, growth or propagation of the aquatic biota. Compliance with water quality-based WET limitations or LC50 50 percent, whichever is more stringent, shall be deemed to meet this requirement. (FW2) No increase in background which would interfere with the designated or existing uses, or 500 mg/L, whichever is more stringent. (FW2)</p> <p>None which would render the water unsuitable for the designated uses. (All SE)</p> <p>Turbidity (Nephelometric Turbidity Unit-NTU) Maximum 30-day average of 15 NTU, a maximum of 50 NTU at any time. (FW2, SE3) Maximum 30-day average of 10 NTU, a maximum of 30 NTU at any time. (SE1, SE2) Levels shall not exceed 10.0 NTU. (SC)</p>
 PENNSYLVANIA	<p>Total Dissolved Solids TDS: 500 mg/l as a monthly average value; maximum 750 mg/l. (PWS)</p> <p>In addition to other substances listed within or addressed by this chapter, specific substances to be controlled include, but are not limited to, floating materials, oil, grease, scum and substances that produce color, tastes, odors, turbidity or settle to form deposits.</p>
 NEW YORK	<p>Suspended, colloidal and settleable solids: None from sewage, industrial wastes or other wastes that will cause deposition or impair the waters for their best usages.</p> <p>Turbidity: No increase that will cause a substantial visible contrast to natural conditions.</p>
 DRBC (ZONE 2)	<p>Total Dissolved Solids: Not to exceed a. 133 percent of background, or 500 mg/l, whichever is less.</p> <p>Turbidity: Unless exceeded due to natural conditions, maximum 30-day average 40 units; maximum 150 units; except above R.M. 117.81 during the period May 30 to September 15 when the turbidity shall not exceed 30 units</p>

TABLE 9: NUTRIENT CRITERIA – NARRATIVE AND NUMERIC

	CRITERIA
 DELAWARE	<p>Nutrient overenrichment is recognized as a significant problem in some surface waters of the State. It shall be the policy of this Department to minimize nutrient input to surface waters from point and human induced non-point sources.</p> <p>The types of, and need for, nutrient controls shall be established on a site-specific basis. Nutrient controls may include, but shall not be limited to, discharge limitations or institution of best management practices.</p>
 NEW JERSEY	<p>Except as due to natural conditions, nutrients shall not be allowed in concentrations that render the waters unsuitable for the existing or designated uses due to objectionable algal densities, nuisance aquatic vegetation, diurnal fluctuations in dissolved oxygen or pH indicative of excessive photosynthetic activity, detrimental changes to the composition of aquatic ecosystems, or other indicators of use impairment caused by nutrients.</p> <p>Nitrate-Nitrogen a level of 2 mg/L shall be maintained in the surface waters unless it is shown that a lower level must be maintained to protect the existing surface water quality.</p> <p>Phosphorus Non Tidal Streams: Concentrations of total P shall not exceed 0.1 in any stream, unless watershed specific translators are established pursuant to N.J.A.C. 7:9B-1.5(g)2 or if the Department determines that concentrations do not render the waters unsuitable... (FW2)</p>
 PENNSYLVANIA	<p>The list of specific water quality criteria does not include all possible substances that could cause pollution. For substances not listed, the general criterion that these substances may not be inimical or injurious to the existing or designated water uses applies. The Department will develop a criterion for any substance not listed that is determined to be inimical or injurious to existing or designated water uses using the best available scientific information, as determined by the Department.</p>
 NEW YORK	<p>None in amounts that will result in growths of algae, weeds and slimes that will impair the waters for their best usages.</p>
 DRBC (ZONE 2)	<p>General condition: The waters of the Basin shall not contain substances attributable to municipal, industrial, or other discharges in concentrations or amounts sufficient to preclude the specified water uses to be protected.</p> <p>Within this requirement: a. the waters shall be substantially free from unsightly or malodorous nuisances due to floating solids, sludge deposits, debris, oil, scum, substances in concentrations or combinations which are toxic or harmful to human, animal, plant, or aquatic life, or that produce color, taste, odor of the water, or taint fish or shellfish flesh;</p>
EPA	<p>Reference conditions in Ecoregion XIV – Coastal Plain⁴⁴ (Trenton and downstream): Total Nitrogen 0.71 mg/l Total Phosphorus 31.25 ug/l</p> <p>Reference conditions in Ecoregion XI – Central and Eastern Forested Uplands⁴⁵ (Trenton and downstream): Total Nitrogen.31 mg/l Total Phosphorus 10.00 ug/l</p>

⁴⁴<https://www.epa.gov/sites/production/files/documents/rivers14.pdf>

⁴⁵<https://www.epa.gov/sites/production/files/documents/rivers11.pdf>

III. IMPAIRED AQUATIC LIFE USES

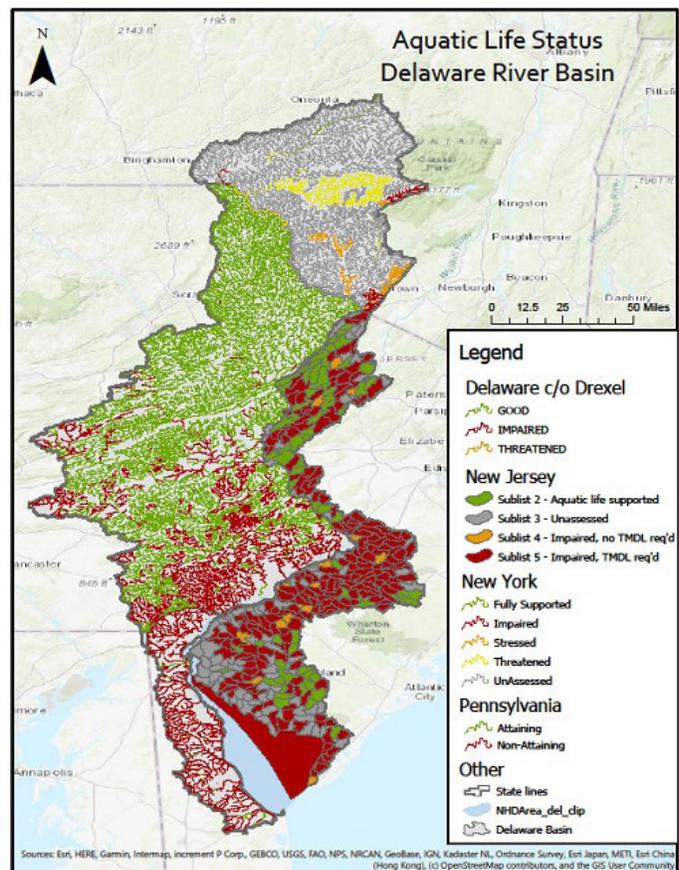
As discussed above, all four states must report the use status and impairments of waters in an Integrated Report to USEPA every two years. DRBC reports use status, but not impairments.

The regular assessments focus on conditions of the waters that support all forms of aquatic life, not just fish, though each state uses macroinvertebrate monitoring in different ways. The Integrated Reports capture the status of all uses—fully, partially or not supported—and places waters in different categories if they are not supporting their designated uses. These categories dictate whether the state is planning to address the problems through a Total Maximum Daily Load or not. New Jersey reflects that reality in Map 5.

In Map 5, aquatic life impaired streams or watersheds appear red while streams supporting aquatic communities are green and unassessed waters are grey. As in Map 1, the unassessed waters tell a story as well—that there is much we don’t know about the waters in the Basin. While the states are supposed to list threatened waters, only Delaware and New York have done so. These waters are identified as not “fully” supporting their uses, but are not defined as impaired according to the state protocol. New York also lists a “stressed” category.

During this analysis, we discovered that states do not distinguish between aquatic life impairments for cold water or warm water fish designations. This means that even if waters are designated for more sensitive species, states are not reporting whether those sensitive uses are being supported (e.g., lower temperatures, higher dissolved oxygen). Instead, as you will see below, states report only on a general aquatic life category that represents the lowest bar for survival of the most tolerant aquatic life species. States need to more accurately assess and report on whether the most sensitive aquatic life uses (e.g., trout, mayflies, stoneflies and caddisflies) are supported and able to thrive.

MAP 5: Aquatic Life Status in the Delaware River Basin



STATE-SPECIFIC ITEMS TO NOTE:

- States in the Basin represent impairments to aquatic life differently. Each state uses its own suite of sampling protocols, biological assessments, and varied scoring criteria to determine the relative health status of aquatic communities. (See Table 4) Pennsylvania and Delaware report either attaining or non-attaining statuses, while New York and New Jersey organize their assessments into sublists.
- In Pennsylvania, the assessment is based entirely on macroinvertebrate sampling. Even though the designations and the associated criteria distinguish between cold and warm water fishes, the state does not monitor for temperature and dissolved oxygen (as listed in the water quality standards) to determine impairments.
- In New Jersey, there seem to be a lot more impaired watersheds than in Pennsylvania, and there are a few areas where no TMDL is required as discussed above.
- In New York, the impairments appear to be in the areas behind the reservoirs.
- In Delaware, no assessed waters are supporting aquatic life uses.

D. HIGH QUALITY WATERS IN DELAWARE BASIN

High quality designations mean something different in each state and with the DRBC. The designations are assigned based on different criteria, and the protections that are afforded the different designations vary widely from state to state and the Commission.

Map 6 illustrates the numerous categories of high quality in the basin states. In all cases, the states have developed these categories to meet the requirements of the Clean Water Act's antidegradation policy and implementing regulations.⁴⁶ These requirements are based on one of the foundational concepts of the Clean Water Act to maintain the quality of all waters, especially where it is currently above the minimum standards set to protect designated uses.⁴⁷

The Clean Water Act and its implementing regulations set up the Antidegradation Policy to be implemented in three ways:

- To protect all existing uses (Tier 1),
- To protect existing water quality that is higher than water quality standards (Tier 2), and
- To protect waters of ecological or recreational significance deemed as such by each state (Tier 3).

The Delaware River Basin states vary in their levels of protection once waters are designated as high quality, exceptional or outstanding. These protections are technically supposed to be triggered when a new or expanded activity is proposed that has the potential to degrade designated or qualifying waters. Practically, if it happens, antidegradation or Special Protection Waters (SPW)⁴⁸ is triggered when a permit or docket is sought for a new or increased discharge. The Clean Water Act calls for an assessment of

necessity of the activity in the proposed location, in the form of an alternatives analysis, as well as an evaluation of the social and economic importance of the activity in all state and DRBC procedures.⁴⁹

IMPLEMENTATION OF ANTIDegradation

River Network found that the antidegradation process has not been consistently implemented across the states, leaving the Delaware River vulnerable to degradation. Indeed, it does not appear to be implemented in New York at all and in Delaware more than a few times in almost three decades.⁵⁰ In New Jersey and Pennsylvania implementation varies depending on activities, and it is mostly focused on wastewater discharge.

In New Jersey, their Outstanding National Resources Water (ONRW) waters, called nondegradation waters, shall not be subject to any manmade wastewater discharges, and the NJ Department of Environmental Protection shall not approve any activity that might cause a lowering of existing surface water quality.⁵¹ New Jersey has recently proposed 749 river miles as Category 1 (C1) waters after many years without new C1 designations. The process for finalizing those proposals is ongoing.⁵² New Jersey implements its antidegradation policy most closely to the Clean Water Act and regulatory intent by triggering a review (alternatives analysis and socio-economic review) when new or increased discharges of pollutants are proposed in waters for which those pollutant levels are currently less than the water quality standards.⁵³

Pennsylvania's antidegradation policy has three levels of protection: exceptional value, high quality and existing uses. The classification of exceptional value (EV) and high quality (HQ) waters is predominantly based on chemical or biological criteria. For a high quality petition, submitted water quality data must show exceedance of twelve

⁴⁶CWA antideg; 40CFR131.12

⁴⁷"SEC. 101. (a) The objective of this Act is to restore and main-tain the chemical, physical, and biological integrity of the Nation's waters." 33U.S.C.1251(a)

⁴⁸Special Protection Waters Program is DRBC's antidegradation program. <https://www.nj.gov/drbc/programs/quality/spw.html>

⁴⁹40 CFR § 131.12

⁵⁰Phone interview, John Defriesce, Delaware Department of Natural Resources and Environmental Control, February 25, 2016.

⁵¹N.J.A.C. 7:9B-1.5(d)(2)(i)

⁵²NJ Water Quality Standards: <https://www.state.nj.us/dep/wms/bears/swqs-overview.htm>; NJ Antidegradation Fact Sheet: <https://www.state.nj.us/dep/wms/bears/docs/2019%20Antideg%20Cat%201%20Fact%20Sheet02.pdf>

⁵³N.J.A.C. 7:9B-1.5(d)

chemical standards 99 percent of the time. This demonstration is a high bar to meet, and it requires 24 samples over one year, timed so as to show flow patterns as well as diurnal patterns. Qualifying for high quality or exceptional waters through biological assessment requires either (a) designation as Class A wild trout (for HQ) or wilderness trout (for EV) stream by the Fish and Boat Commission or (b) comparison of benthic macroinvertebrate index to a reference stream—achieving 83 percent (for HQ) or 92 percent (for EV) of the integrated score in the reference stream.⁵⁴ Pennsylvania focuses most of its aquatic life assessment on benthic macroinvertebrate monitoring as mentioned in Section C.iii. above, and there are academic institutions (e.g., Academy of Natural Sciences, Temple University) and NGOs (e.g., Stroud Water Resources Center, Green Valleys Watershed Association) also collecting biological data that have been valuable in the process of identifying and designating these waters for protection.

Pennsylvania's Exceptional Value (EV) waters are similar to “outstanding national resource waters,” in other states. To be an Exceptional Value (EV) water, the segment must either be a “surface water of exceptional ecological significance,”⁵⁵ or first be HQ and then special additional designations, including National wildlife refuge, state game propagation and protection area, State park or forest natural area, “Federal or State wild river,” Federal wilderness area, national recreational area, or have exceptional recreational significance.⁵⁶ A search for a list of “exceptional recreational significance waters” yielded no results so it does not appear that there are any.⁵⁷

All proposed new or expanding discharges into designated Exceptional Value (EV) waters, as well as High Quality (HQ) waters, must perform the alternatives analysis and choose the non-discharge alternative if one exists, or demonstrate that the discharge will maintain and protect the existing quality of the waterbody. In the HQ waters, but not the EV waters, a socioeconomic test can justify a water quality degrading discharge.⁵⁸ This protection should have implications for both NPDES and 404 wetland permitting processes. PADEP's Antidegradation Guidance shows activities that have occurred in EV waters. Land application of sewage, for example, is considered a non-discharge alternative.⁵⁹

Delaware's antidegradation policy outlines four tiers of protection. The highest level is for Outstanding National Resource Waters. There are currently no waters in this category in Delaware. The state's policy does not require that nominated waters for this category have outstanding water quality; it can be nationally significant for recreation or scenic reasons. “Tier 2.5” recognizes waters of exceptional recreational and environmental significance (ERES). Delaware does have ERES waters in the Delaware River basin, including White Clay Creek, a federal wild and scenic river. Delaware calls for restoration of these waters, to the maximum extent practicable, to their natural conditions through the “systematic control, reduction or removal of existing pollution sources and the diversion of new pollution sources.”⁶⁰

⁵⁴25 Pa. Code § 93.4b. Qualifying as High Quality or Exceptional Value Waters.

⁵⁵25 Pa. Code § 93.1. Waters that are “...important, unique or sensitive ecologically, but whose water quality, as measured by traditional parameters (for example, chemical, physical or biological) may not be particularly high, or whose character cannot be adequately described by these parameters...” These waters are often not typical streams or lakes but rather waters such as thermal springs and EV wetlands. Such aquatic systems may be considered “important” if they occupy a position or perform a function critical to an ecosystem, “unique” if they represent the only example or one of a very few examples of a particular type of aquatic system in the state, and “sensitive” because they may be intolerant of chemical, physical, or hydraulic changes imposed by man.

⁵⁶Id. at (b)(1).

⁵⁷PADEP Antidegradation Guidance, p. 37-42.

“A surface water of Exceptional Recreational Significance (Item #4) is defined in §93.1 as “A surface water which provides a water-based, water quality-dependent recreational opportunity (such as fishing for species with limited distribution) because there are only a limited number of naturally occurring areas and waterbodies across the State where the activity is available or feasible.” DEP interprets “limited number” to be generally less than ten, thus making the recreational opportunity offered not readily available. Species with limited distribution, such as Coho salmon and Steelhead trout, include those whose range has been restricted by natural or man-made barriers or management programs.” Id. at 37.

⁵⁸25 Pa. Code §93.4c

⁵⁹PADEP Antidegradation Guidance, p. 42.

⁶⁰Delaware Water Quality Standards, see pages 10-11, 20, Section 5.0; <https://www.epa.gov/sites/production/files/2014-12/documents/dewqs.pdf>

DELAWARE RIVER BASIN COMMISSION SPECIAL PROTECTION WATERS

“Special Protection Waters” are waters classified as either Outstanding Basin Waters or Significant Resource Waters by DRBC:

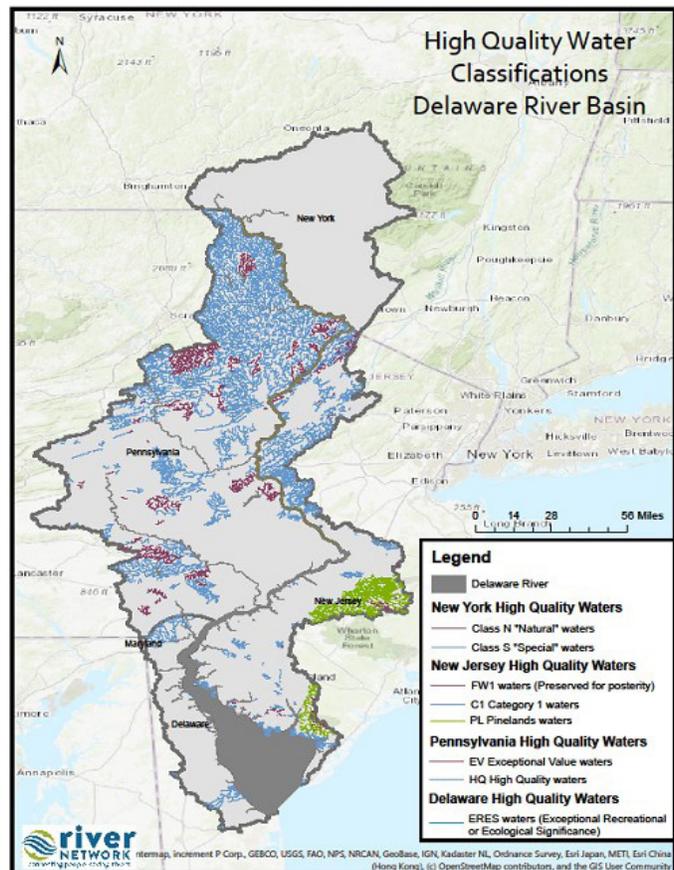
“Outstanding Basin Waters” are interstate and contiguous intrastate waters that are contained within the established boundaries of national parks; national wild, scenic and recreational rivers systems; and/or national wildlife refuges that are . . . exceptionally high scenic, recreational, and ecological values that require special protection.

“Significant Resource Waters” are interstate waters classified by the Commission under Subsection 2.g.2) hereof as having exceptionally high scenic, recreational, ecological, and/or water supply uses that require special protection.⁶¹

The three segments of the mainstem that have been designated as special protection waters have a combined drainage area of at least half of the entire basin’s land area. Implementation of DRBC’s policy requires that permits for discharges of 10,000 gallons per day (instead of 50,000 gallons per day) or more within the drainage must be reviewed by DRBC. New discharges or substantial additional discharges, including wastewater treatment plants, are discouraged. Projects in the drainage that require DRBC review also must have a non-point source pollution control plan. DRBC’s Special Protection Waters policy has the potential to bring DRBC oversight into many proposed discharges in the upper portion of the basin.

With DRBC, no measurable change is allowed in the SPW-designated area, with some caveats including allowed mixing zones. New and increased discharges are, however, discouraged by requiring evaluation of nondischarge, load reduction and natural treatment alternatives and demonstration of infeasibility.⁶³

MAP 6: High Quality Water Designations of the Delaware River Basin



⁶¹DRBC Water Quality Regulations, Article 3, section 3.10.3.

⁶²See <https://www.nj.gov/drbc/programs/quality/spw.html#4>.

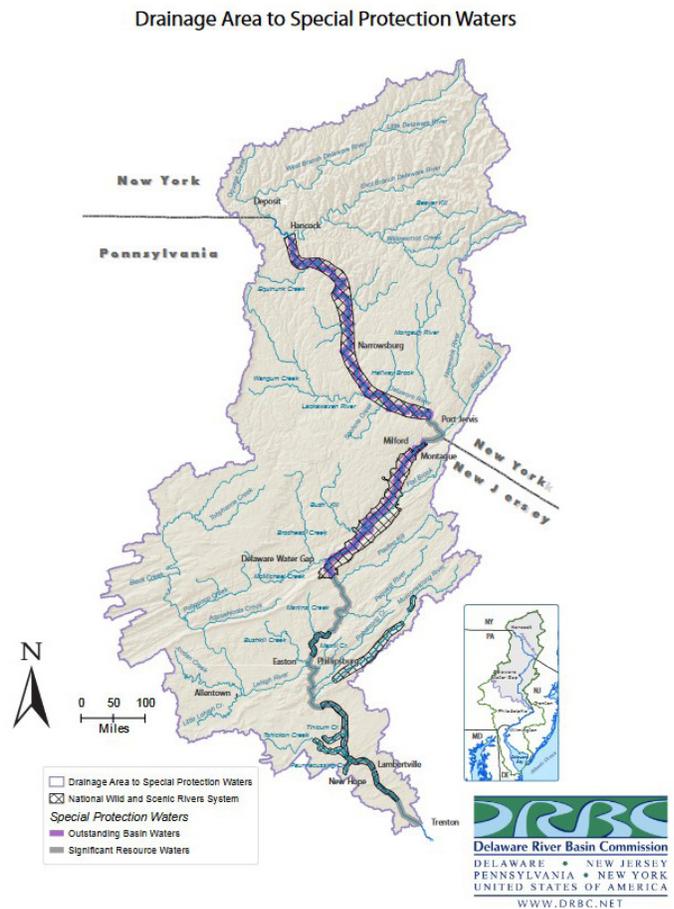
⁶³18CFR410, <http://www.nj.gov/drbc/programs/quality/spw.html#2>

STATE-SPECIFIC ITEMS TO NOTE:

- Even though there is exceptional water quality and waters of ecological significance to be protected in the upper basin, none of the Upper Delaware tributaries in New York are designated as Class N, AA-Special or A-Special, the most protective classifications.
- The highest concentration of High Quality and Exceptional Value (HQ/EV) waters are clearly in the upper basin and the upper tributaries in the lower basin. However, there are some waters in more populated counties such as Lehigh, Chester and Delaware that have met the high bars that the state sets for these designations.
- Delaware has designated very few ERES waters in the Basin, yet many of them are in and around the most developed parts of the state in Wilmington and Newark and are also designated as cold-water fisheries, at least seasonally.

The DRBC Special Protection Waters program separates the mainstem into Outstanding Basin Waters around and upstream of the Delaware Water Gap except Port Jervis, and Significant Resource Waters around Port Jervis and downstream of the Water Gap to Trenton. See Map 7 for those precise designations. The DRBC places restrictions on new and increased discharges into the SPW drainage area.⁶⁴

MAP 7: Special Protection Waters of the Delaware River Basin



I. DESIGNATIONS

For each state agency in the basin, as for the DRBC, the higher quality designations are intended to ensure the new activities and/or new or increased discharges allowed into the waters are controlled or sufficiently limited to prevent degradation of current water quality. **Table 10** describes the designations and protections.

⁶⁴<https://www.nj.gov/drbc/programs/quality/spw.html>

TABLE 10: HIGH QUALITY DESIGNATIONS

	DESIGNATIONS	DESCRIPTIONS
 DELAWARE ⁶⁵	Outstanding National Resource Waters	Waterbody that has been identified as possessing outstanding ecological or recreational attributes and has been designated as an ONRW in the State water quality standards.
	Waters of Exceptional Recreational or Ecological Significance (ERES)	Waters which are important, unique, or sensitive from a recreational and/or ecological perspective, but which may or may not have excellent water quality. Such waters shall normally have regional significance with respect to recreational use (fishing, swimming and boating), or have significant or widespread riverine, riparian, or wetland natural areas.
 NEW JERSEY ⁶⁶	Outstanding Natural Resource Waters	High quality waters that constitute an outstanding national resource (for example, waters of National/State Parks and Wildlife Refuges and waters of exceptional recreational or ecological significance). Waters classified as FW1 waters and Pinelands waters are Outstanding National Resource Waters.
	Category 1	Protection from measurable changes in water quality based on exceptional ecological significance, exceptional recreational significance, exceptional water supply significance or exceptional fisheries resource(s) to protect their aesthetic value (color, clarity, scenic setting) and ecological integrity (habitat, water quality and biological functions).
 PENNSYLVANIA ⁶⁷	Exceptional Value	Same requirement as High Quality plus <ol style="list-style-type: none"> 1. National wildlife refuge or State game propagation and protection area. 2. Designated State park natural area or State forest natural area, National natural landmark, Federal or State wild river, Federal wilderness area or National recreational area. 3. Outstanding National, State, regional or local resource water. 4. Exceptional recreational significance. 5. High quality aquatic community. 6. Designated “Wilderness trout stream”. OR Exceptional ecological significance.
	High Quality	A surface water that meets one or more of the following conditions: Chemistry – long-term water quality, exceeds levels necessary to support the propagation of fish, shellfish and wildlife and recreation (12 parameters) 99%. OR Biology – supports a high quality aquatic community or designated a Class A wild trout stream.
 NEW YORK	Natural waters	Enjoyment of water in its natural condition. No discharge of sewage, industrial wastes, or other wastes, waste effluents or any sewage effluents not having had filtration resulting from at least 200 feet of lateral travel through unconsolidated earth. A greater distance may be required if inspection shows that, due to peculiar geologic conditions, this distance is inadequate to protect the water from pollution. No deleterious substances, hydrocarbons or substances that would contribute to eutrophication, nor shall they receive surface runoff containing any such substance. No alteration to flow that will impair the waters for their best usages.

⁶⁵DE DNREC, Antidegradation Implementation Procedures for Surface Waters of the State, 1999.; Delaware WQS 7401 – 5.0.

⁶⁶N.J.A.C. 7:9B – 1.4

⁶⁷25 Pa. Code § 93.4b

TABLE 10: HIGH QUALITY DESIGNATIONS (CONTINUED)

	DESIGNATIONS	DESCRIPTIONS
	AA-Special waters	No floating solids, settleable solids, oil, sludge deposits, toxic wastes, deleterious substances, colored or other wastes or heated liquids attributable to sewage, industrial wastes or other wastes. No discharge or disposal of sewage, industrial wastes or other wastes into these waters. No phosphorus and nitrogen in amounts that will result in growths of algae, weeds and slimes that will impair the waters for their best usages. No alteration to flow that will impair the waters for their best usages. No increase in turbidity that will cause a substantial visible contrast to natural conditions.
	Outstanding Basin Waters	Interstate and contiguous intrastate waters that are contained within the established boundaries of national parks; national wild, scenic and recreational rivers systems; and/or national wildlife refuges that are classified by the Commission as having exceptionally high scenic, recreational, and ecological values that require special protection.
	Significant Resource Waters	Interstate waters classified by the Commission as having exceptionally high scenic, recreational, ecological, and/or water supply uses that require special protection.

In Pennsylvania, New Jersey and New York, these higher quality designations take on an additional significance as they trigger additional riparian protections and restrictions. These riparian protections and restrictions are discussed on [page 25](#).

II. IMPAIRMENTS OF HIGH-QUALITY WATERS

None of the states report on the status of high quality designations in their Integrated Report⁶⁹ as they do the status of recreational uses (swimming) or aquatic life uses. Part of the reason for this is that not all the states treat the high quality designation as another use category. For New Jersey and Delaware, the designation is an additional layer over the uses. Pennsylvania treats the designations as a use, sometimes combined with another such as High Quality–Cold Water Fishes.

There are, in fact, impaired high quality and outstanding waters in each state. Many different pollutants and conditions cause the impairments. The waters may be impaired due to high temperature, sediment or bacteria levels, for example. Only Pennsylvania has a specific temperature criterion associated with its HQ and EV waters, yet sensitive aquatic life uses in any basin state’s high quality water could be impaired by high temperatures. As mentioned above, in spite of having a temperature criterion in Pennsylvania, the state does not assess temperature conditions throughout the state. The lack of reported temperature impairments in Pennsylvania, therefore, reflect a lack of assessment rather than widespread attainment.

⁶⁸DRBC – 3.10.3A.2.a(1)

⁶⁹The Integrated Report combines the biennial reports to Congress required by the Clean Water Act in sections 305(b) and 303(d). Section 305(b) requires states to report on the extent of uses supported throughout the state, and Section 303(d) is known as the Impaired Waters List, capturing the waters that are not meeting specific water quality criteria or supporting designated uses. For more information: <https://www.epa.gov/tmdl/integrated-reporting-guidance-under-cwa-sections-303d-305b-and-314>

3 APPLICATION OF STANDARDS TO RIPARIAN PROTECTIONS

Riparian buffer requirements triggered by high quality designations in the Delaware River Basin are often touted as providing significant protections. We have found that where these requirements exist, they vary considerably across the states and the DRBC. Unfortunately, no current regulations provide permanent protections. Instead, they allow grandfathering of existing holdings and exemption from buffer requirements within minimum thresholds that are far from de minimis.

In order to better understand the riparian forest protections associated with the high quality designations in New York, Pennsylvania, New Jersey and in the DRBC jurisdictions around the mainstem, we compiled information about relevant regulations and programs. We also explored some other mechanisms for riparian forest buffer protections that could be connected to water quality designations in the future.

A. NEW YORK



I. PROTECTION OF WATERS PROGRAM

In New York, the “Protection of Waters Program” regulates five different activities in or around waters, including “Disturbance of The Bed or Banks of a Protected Stream or Other Watercourse.” In this case protected streams refer to waters designated to protect drinking water, primary and secondary contact recreation (swimming and boating) and trout uses of waters through state classifications AA, A or B, or classification C with trout or trout spawning. These are all higher quality classifications.

The regulated disturbance may be either temporary or permanent in nature.⁷⁰ In the definition of “banks”, New York has explicitly limited the application of this protection to no more than 50 feet horizontally from the mean high water line.

“Banks” means that land area immediately adjacent to and which slopes toward the bed of a watercourse and which is necessary to maintain the integrity of the watercourse. A bank will not be considered to extend more than 50 feet horizontally from the mean high water line; with the following exception: Where a generally uniform slope of 45 degrees (100%) or greater adjoins the bed of a watercourse, the bank is extended to the crest of the slope or the first definable break in slope, either a natural or constructed (road, or railroad grade) feature lying generally parallel to the watercourse.

Depending on whether the proposed activity falls into a minor or major category, the permitting requirements and public notice procedures differ.

II. CONSERVED LAND AND PERMANENT EASEMENTS

Another way to think about forest buffer protection, especially in the New York state part of the Delaware River Basin, is to assess the amount of forested lands held in some form of permanent conservation easement. Though these easements do not require any connection to use designations, sensitive/high value uses and higher quality water definitely play into priority setting for permanent conservation and easements.

On May 15, 1885, Governor David B. Hill created the Catskill Forest Preserve by signing a law that required:

“The lands of the state, now owned or hereafter acquired, constituting the forest preserve as now fixed by law, shall be forever kept as wild forest lands. They shall not be leased, sold or exchanged, or be taken by any corporation, public or private, nor shall the timber thereon be sold, removed or destroyed.”⁷¹

⁷⁰<https://www.dec.ny.gov/permits/6554.html>

⁷¹Comprehensive Wildlife Conservation Strategy for New York, 2005, p149-150. https://www.dec.ny.gov/docs/wildlife_pdf/delawaretxt.pdf

Approximately 117,730 acres of public land within the Catskill Forest Preserve fall within the Delaware Basin in New York State's Greene, Sullivan, Delaware and Ulster Counties. The watershed includes approximately 19,760 acres of land in five state forests. State-held conservation easements in the watershed are approximately 4,660 acres, and other Department of Environmental Conservation-administered lands in the watershed are approximately 650 acres. In addition, New York City's Department of Environmental Protection owns over 38 thousand acres of buffer land around the reservoirs in the upper Delaware.⁷²

Increasing general understanding of the value of connecting land conservation strategies to the waters that serve more sensitive designated uses such as drinking water, swimming, other contact recreation, trout uses and the most protective classifications (N, AA-special, A-special, AA, A, T, TS) will leverage the regulatory, NGO, private landowner and public sector strategies for the benefit of the Delaware River. Understanding the river mile and riparian lands totals around these protected lands will help to quantify the value of these conservation strategies.

B. PENNSYLVANIA



In Pennsylvania, regulations controlling soil erosion and sedimentation include a provision that addresses the management of parcels with forested riparian buffers along streams that are designated as high quality or exceptional value (HQ/EV, [see MAP 6](#)).⁷³

The regulation does not protect forested riparian buffers on all high quality or exceptional value (EV/HQ) streams, however. Instead, the protections resulting from the regulation of existing forested riparian buffers and/or the restoration and establishment of forested riparian buffers is limited to those parcels (a) on the **approximately 700 miles of HQ/EV streams that are not attaining** water quality requirements of their basic designations, (b) on which construction projects are proposed that **disturb a land area of more than one acre,**

and (c) that do not meet any of the other **outlined exceptions or waiver provisions** in the regulation.

The protections provided by the regulations are not self-executing, and they do not extend to all riparian forested buffers along all EV/HQ streams. There are three important aspects to these regulations:

1. They treat attaining and non-attaining (i.e., impaired) streams differently;
2. They apply as a setback only when construction activities **require** a permit and then the protections of the regulations serve as a post-construction stormwater BMP; and
3. They include significant exceptions even for activities that require a permit as well as opportunities for waivers from the regulation's provisions.⁷⁴

Attaining and non-attaining streams are treated differently. For attaining streams, only the existing buffer, if there is one, is required to be protected. There is no requirement to restore or establish a forested riparian buffer. The explanatory notes for the regulations specifically state that protection of forested riparian buffers is not required on attaining streams.⁷⁵

[F]or the vast majority of projects—because they will not be located adjacent to impaired special protection waters—riparian forest buffers will not be mandatory, but rather will be an optional BMP that the applicant may choose to use to manage their post construction stormwater.⁷⁶

At the time that the regulation was adopted, only 714 miles of streams in the whole state were **non-attaining** EV/HQ stream (not known how many in Delaware River Basin). As mentioned on page 23, PADEP does not assess whether streams meet the HQ/EV requirements once they are designated, so this list was calculated based on impairments of any other designations.

⁷²Comprehensive Wildlife Conservation Strategy for New York, 2005, p151.

⁷³Title 25, Chapter 102 of the Pennsylvania Code

⁷⁴Section 102.14(d) – project site more than 150 feet from water, less than 1 acre disturbed, no permit needed, road maintenance, pipelines, oil/gas/mining/timber harvesting, single family home, activities for which a permit with a setback is required and the setback is complied with (no matter the amount of that setback). Applicants can apply to the conservation district for a waiver and do off-site mitigation.

⁷⁵Repeat and specific section

⁷⁶Pennsylvania Bulletin, Vol 40, No. 34, August 21, 2010 at p. 4872

In essence, this means that the provisions of subsection (b)—#2 above, outlining the nature of the required or voluntary buffer, do not apply to project sites on attaining streams. While it may seem counterintuitive, the rationale is likely that if the stream is attaining HQ/EV status with the current buffer condition, there is no need for regulatory requirements. Yet, any proposed changes to the riparian buffer without oversight may threaten the high quality of the stream. For EV/HQ streams that are not attaining, the regulation allows the permit applicant to choose to either protect the existing forested buffer, convert the existing buffer to a forested buffer, or establish a new forested buffer. Subsection (b) requires characterization of the forested riparian buffer and protection of it as a post-construction stormwater BMP.⁷⁷

The regulation is designed as a setback for construction activities requiring a permit. Thus, **construction should not occur within 150 feet of EV/HQ water bodies.** This approach is a common tool in land use regulation. Because the regulation's requirements are only triggered by construction activities that require a construction stormwater permit, smaller development activities (those disturbing less than one acre) on a riparian parcel are not subject to it. For this reason, the regulation does not apply to a riparian landowner who is engaged in activities that do not require a permit because the land disturbance is less than one acre—such as cutting down trees, mowing vegetation or other small projects within the buffer area—even if the stream is designated EV/HQ. Furthermore, the continued protection and status of the riparian buffer when it is required depends on post-permit inspection and enforcement over time.

The regulation does enable voluntary protection of forested riparian buffers that can be used for a post-construction stormwater BMP in an offset and/or trading scenario where appropriate. The regulation is a good first step to protecting riparian buffers on HQ/EV streams. However, permanent protection of riparian buffers on HQ/EV streams through conservation acquisitions

and permanent easements and requirements on waters attaining, as well as those not attaining, HQ/EV thresholds should be primary goals of conservation organizations working to protect the water quality of these rivers and streams. In particular, requirements should be extended to protect or establish forested riparian buffers along the streams with trout production or maintenance or threatened and endangered species or habitat, whether or not they are designated as HQ/EV.

C. NEW JERSEY



New Jersey's Flood Hazard Area Control Act rules⁷⁸ require a **300 foot riparian zone** on all "Category One" waters **and their upstream tributaries**. The state antidegradation policy establishes three categories: Outstanding National Resource Waters, Category One waters (C1) and Category Two waters (C2). All waters are assigned one of those three designations.⁷⁹

Category One waters are designated based on their exceptional ecological significance, exceptional recreational significance, exceptional water supply significance or exceptional fisheries resource(s) to protect their aesthetic value (color, clarity, scenic setting) and ecological integrity (habitat, water quality and biological functions).⁸⁰ These waters must be protected from any **measurable** changes to existing water quality, and where existing quality is worse than that required to protect designated uses, it shall be improved to provide for them.⁸¹

Within the Flood Hazard Area Control Act rules, the riparian zone is defined as "the land and vegetation within and adjacent to a regulated water."⁸² The determination of the width in the regulations depends on the designations of the waterbodies for particular uses (bold added).

⁷⁷Repeat and specific section

⁷⁸N.J.A.C. 7:13

⁷⁹(N.J.A.C. 7:9B-1.5(d))

⁸⁰N.J.A.C. 7:9B-1.4

⁸¹N.J.A.C. 7:9B-1.5(d)(2)(iii)

⁸²N.J.A.C. 7:13-4.1(a)

1. The width of the riparian zone along any regulated water designated as a **Category One** water, and all upstream tributaries situated within the same HUC-14 watershed, is **300 feet**;
2. Except for the regulated waters listed at (c)1 above, the width of the riparian zone along the following regulated waters is 150 feet:
 - i. Any **trout production** water and all upstream waters (including tributaries);
 - ii. Any **trout maintenance** water and all upstream waters (including tributaries) located within one mile of a trout maintenance water (measured along the length of the regulated water); and
 - iii. Any segment of a water flowing through an area that contains a **threatened or endangered species**, and/or present or documented habitat for those species, which is critically dependent on the regulated water for survival, and all upstream waters (including tributaries) located within one mile of such habitat (measured along the length of the regulated water). A list of critically dependent species is available from the Department at the website set forth at N.J.A.C. 7:13-1.3; and
3. For **all other regulated waters** not identified in (c)1 or 2 above, the width of the riparian zone is 50 feet.⁸³

The protection of upstream tributaries is significant and different from protections in any other Delaware Basin state or DRBC. The minimum riparian zone protections apply to waters that are not C1. Those protections are greater than any in the state of

Delaware and equal to New York for all waters, and equal to that required in the PA regulations for Exceptional Value waters for those waters with trout production or maintenance or containing threatened and endangered species and/or their habitat.

If a proposed activity is not one of the activities listed in the rules, however, even if it is in the riparian zone, it is not subject to the restrictions in the rules. The specific set of activities that are subject to the restriction in the riparian area include, but are not limited to, alteration of topography; clearing, cutting and/or removal of vegetation in a riparian zone; creation of impervious surface; storage of unsecured material; construction or reconstruction of a structure; and conversion of a building into a single-family home or duplex.⁸⁴ The restrictions on the activities are described from lesser to greater restrictions⁸⁵ as “permits-by-rule,” “general permits-by-certification,” and general permits. Within those rules, the restrictions are frequently caveated “where feasible,” “where possible,” “where disturbance is necessary,” or “unless unavoidable,” making clear that exceptions are made.

If the activity cannot be covered in the permits above, NJDEP may issue an individual permit that imposes considerably more restrictions on any particular activity.⁸⁶ There are also many ways that the permittee can still remove trees within the riparian zone. In the event mitigation for removal of vegetation is required, there is a mitigation hierarchy of: onsite unless infeasible, then upstream, then same watershed and finally “as close as possible.”⁸⁷

⁸³N.J.A.C 7:13-4.1(a)

⁸⁴N.J.A.C 7:13-2.4.

⁸⁵N.J.A.C 7:13-7 through 9.

⁸⁶N.J.A.C.7:13-10 through 12.

⁸⁷N.J.A.C.7:13-13.2

D. DELAWARE



Delaware does not have a similar regulatory mechanism that focuses on protection of forested riparian buffers in the high quality waters or anywhere along the Delaware and its tributaries.⁸⁸ As part of the state's efforts to meet its commitments in the Chesapeake Bay, however, Delaware has made commitments to protect and establish riparian forested buffers as part of its **Watershed Improvement Plan** required by the Chesapeake Bay Total Maximum Daily Load. These commitments have a spillover effect on the Delaware Basin. The key program for riparian forested buffer protection is USDA's Conservation Reserve Program and the state has included the Delaware Basin in the priority areas for incentive funding. **The Delaware Chesapeake Riparian Forest Buffer Initiative—Final Report** (2017)⁸⁹ outlines Delaware's commitments in the Chesapeake including a goal of “enrolling 5,571 acres of forested riparian buffers (RFBs) on private lands and restoring and protecting 1,449 acres of RFBs on public lands by 2025.”⁹⁰ Efforts to advocate for similar goals in the Delaware River Basin, in particular with an eye to the state's designated “exceptional recreational or ecological significance” waters or waters designated for trout management, would be a defensible and likely publicly-supported strategy.

E. DELAWARE ESTUARY

It is important to note relevant information collected and strategies developed as part of the revision to the Delaware Estuary Comprehensive Conservation and Management Plan (CCMP) over the last three years. The strategies in the CCMP's **Healthy Habitats Goal 2: Stem Forest Loss**⁹¹ represent groundwork that has been laid by the Partnership for the Delaware Estuary with many agency, municipal, community and private sector entities involved in the scoping, development and adoption of the plan. This strategy includes placing “an additional 50,000 acres of forests under permanent protection by 2025 with examples that preserve or enhance forest connectivity in each state.”⁹² Framing a strategy of inventory, stewardship, incentives and protection of high value and threatened forests, the CCMP sets the stage for connections to the three lower states' high quality watersheds, and may provide an advocacy opportunity.

⁸⁸The state attempted to require buffers through stormwater regulations. DNREC was sued and lost at the state Supreme Court.

⁸⁹http://chesapeakeforestbuffers.net/wp-content/uploads/2017/01/Delaware_Final_Report.pdf

⁹⁰The Delaware Chesapeake Riparian Forest Buffer Initiative, Final Report (2017), p.1.

⁹¹A Comprehensive Conservation & Management Plan for the Delaware Estuary, 2019, p117.

⁹²Ibid. p127.t

4 FEDERAL WILD AND SCENIC RIVERS PROGRAM IN THE DELAWARE RIVER BASIN

Wild and Scenic Rivers Program was established through federal legislation in 1968. The purpose of the legislation is to protect selected free-flowing rivers and their immediate environments for the public now and in the future. Rivers are classified as wild, scenic or recreational. The characteristics that the legislation seeks to protect include “outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values.”⁹³ While the program is overseen by National Park Service, it is not implemented solely through this federal agency; the program envisions collaboration with state and local governments, as well as non-governmental organizations and private citizens. As a result, the protections provided through the program can vary across the rivers that have been designated. The program brings a focus on recreation and habitat in addition to the water quality goals of the Clean Water Act.

There are six federal wild and scenic rivers in the Delaware River basin. Two of these river segments are managed directly by the National Park Service—the Upper Delaware Scenic and Recreational River and the Delaware Water Gap National Recreation Area. The other four rivers are managed through partnership agreements: the Lower Delaware Wild & Scenic River is managed in partnership with the Lower Delaware Wild & Scenic River Organization; the White Clay Creek Wild & Scenic River is managed in partnership with the White Clay Creek Watershed Association, the Musconetcong Wild & Scenic River managed in partnership with the Musconetcong Watershed Association, and the Maurice National Scenic and Recreational River is managed in partnership with the Citizens United to Protect the Maurice River.⁹⁴

A. PROTECTIONS

The Wild and Scenic Program focuses on protecting and enhancing the values that caused the river to be designated, yet it does not restrict development or other existing activities, nor give government control over private property.

Rivers are classified as wild, scenic, or recreational:

Wild River Areas – Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Scenic River Areas – Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Recreational River Areas – Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.⁹⁵

In each Congressional designation, the characteristics are laid out and management plans are subsequently developed at the local and regional levels to determine the meaning of the designation. The plans are voluntary, and protections are limited to existing federal, tribal, state or local programs or regulations in place.

Therefore, understanding the overlap with the Clean Water Act designations, protections and assessment status in these waters is useful in the development and implementation of management plans. In many cases, however, advocacy is needed to be sure that agencies take into account the W&S status when reviewing designations, and the existing CWA designations are fully implemented through permits. **Table 11** on the following page shows the interactions among the W&S segments and CWA protections and assessment status.

⁹³<https://www.rivers.gov/wsr-act.php>

⁹⁴<https://www.state.nj.us/drbc/basin/wild.html>

⁹⁵<https://www.rivers.gov/wsr-act.php>

TABLE 11: WILD AND SCENIC WATERS AND STATE DESIGNATIONS AND IMPAIRMENTS

RIVER	CWA USE DESIGNATIONS	ANTIDegradation PROTECTION	IMPAIRMENTS
UPPER DELAWARE SCENIC AND RECREATIONAL RIVER	DRBC – agriculture, industry, public water supply, wildlife, fish, other aquatic life, recreation, navigation, controlled & regulated waste assimilation	DRBC – Outstanding Basin Water	NJ – aquatic life, fish consumption PA – fish consumption
DELAWARE WATER GAP NATIONAL RECREATIONAL AREA	DRBC – agriculture, industry, public water supply, wildlife, fish, other aquatic life, recreation, navigation, controlled & regulated waste assimilation	DRBC – Outstanding Basin Water	NJ – aquatic life, fish consumption PA – aquatic life, fish consumption
LOWER DELAWARE WILD AND SCENIC RIVER	DRBC – agriculture, industry, public water supply, wildlife, fish, other aquatic life, recreation, navigation, controlled & regulated waste assimilation	DRBC – Special Resource Waters	NJ – aquatic life, fish consumption, water supply PA – fish consumption
WHITE CLAY CREEK WILD AND SCENIC RIVER	PA – one segment is designated exceptional value and migratory fish; other segments are designated migratory fish, cold water fish, trout stocking fish DE – Public water supply, industrial water supply, agricultural water supply, fish, aquatic life, wildlife, cold water fish (seasonal), Primary contact, secondary contact, ERES	PA – Exceptional Value for one segment DE – entire watershed ERES (Tier 2.5)	PA – DO, nutrients, habitat alterations, pathogens, siltation, suspended solids, pesticides DE – Tidal to Rte 4 - Dieldrin, Chlordane, DDD, DDE, DDT; Mill Creek – biological integrity, habitat assessment
MUSCONETCONG WILD AND SCENIC RIVER (NJ)	FW2-TPC1 TP = trout production FW2 uses include natural aquatic environment, maintenance, migration, propagation of aquatic biota, primary contact, industrial and agricultural water supply, public potable water	Category 1	Bacteria, arsenic, DO, pH, temperature, mercury and PCBs in fish
MAURICE NATIONAL SCENIC AND RECREATIONAL RIVER (NJ)	FW2-NT (non-trout), FW2-NT(C1), and SE1 NT = non-trout SE = shellfish harvesting	Some parts are Category 1	DO, arsenic, mercury and PCBs in fish

B. IMPAIRMENTS TO RECREATIONAL USES RECOGNIZED IN THE WILD AND SCENIC DESIGNATION

Though the federal wild and scenic designation emphasizes recreational values, all the wild and scenic waters in the Basin are recognized for recreational values, and all of them fall into more protective categories under the states' antidegradation policies, none of the states in the basin has implemented a method to assess impacts on recreation in these waters in a manner other than how it is assessed in other non-W&S waters.⁹⁶

C. INTERSECTION BETWEEN WILD AND SCENIC DESIGNATION AND ANTIDEGRADATION

The antidegradation policy of the Clean Water Act provides an opportunity for more stringent protection of outstanding waters, usually the most protective tier in a state's antidegradation policy. The National Park Service identified 14 states that have designated their National Wild and Scenic Rivers as Outstanding Natural Resource Waters.⁹⁷

It would seem that federal wild and scenic designation would automatically move a river into this category in each state but that is not the case for White Clay Creek, Musconetcong River, or Maurice River in the Delaware River basin (the three partnership rivers). The three wild & scenic segments on the mainstem are recognized as special protection waters by the Delaware River Basin Commission. However,

White Clay Creek has its headwaters in Pennsylvania and flows downstream to Delaware, where it is a drinking water supply for Newark, Delaware. This creek does not receive the same protections in both states, however. Strangely, it qualifies for a higher level of protection in Delaware than in Pennsylvania, despite the fact that its headwaters are in Pennsylvania and that the entire watershed (not just the river itself) is a federal wild and scenic river (one of the conditions for EV status in PA). While some parts of the White Clay Creek have been designated as EV, the majority of the river is not. That means that Pennsylvania can allow more pollution to enter the river through permits than Delaware would allow, thwarting the water quality protection that Delaware seeks to provide for the river. None of the other wild and scenic rivers in the Basin face this challenge because they are within one state (Maurice or Musconetcong) or they are managed by federal entities with DRBC involvement.

Pennsylvania also has a state scenic river program. Four rivers in the Delaware River basin are state scenic rivers—the Schuylkill River, the Lehigh River, French Creek and the lower part of Brandywine Creek. The program is designed to protect the aesthetic and recreational values of these rivers through a partnership between the Pennsylvania Department of Conservation and Natural Resources and the river's managing organization. The partners provide more rigorous review of permitting and construction activities that might impact the river.⁹⁸

⁹⁶New Jersey has implemented 74% of the TMDLs needed for pathogens, which the state agency relates directly to recreation.

See <https://www.state.nj.us/dep/wms/bears/tmdl-completed.html>.

⁹⁷Musconetcong River Management Council comments to NJDEP RE: DEP Docket Number: 01-19-01, Proposal Number: PRN 2019-028, June 3, 2019; National Park Service. Outstanding National Resource Waters: A Natural Resource Management Tool. 1989. <http://npshistory.com/publications/water/onrw.pdf>.

⁹⁸<https://www.dcnr.pa.gov/Conservation/Water/RiversConservation/ScenicRivers/Pages/default.aspx>

The Musconetcong River and most of the Maurice River and tributaries are now designated category 1, and the designation appears to have been related to their wild and scenic status.⁹⁹ Despite the fact that FW1 are not that rare and there are only two wild and scenic rivers in New Jersey, neither of them has been designated as FW1.

New York also has a state Wild, Scenic and Recreational Rivers Program¹⁰⁰ that designates waters with outstanding scenic, ecological, recreational, historic, and scientific values. This program works to preserve waters' free-flowing condition from "improvident development and use" for present and future generations.

DRBC has designated three of the six wild and scenic rivers as special protection waters (see attached map). The DRBC definition appears to hinge on the interstate nature of any waters to fit the definition of special protection waters. However, White Clay Creek is an interstate water and appears to fit the definition of "outstanding basin waters" but it has not been so designated.

W&S designation may not result in any different approach to NPDES permits, however. While antidegradation policies in Pennsylvania and New Jersey spell out how HQ, EV or C1 designations are supposed to impact permits, there is not similar impact for W&S designation specifically, unless W&S waters are also granted an antidegradation protection by the state or DRBC. For example, there is no language in the current MS4 permit in Pennsylvania that requires any different consideration of wild and scenic rivers in the pollution reduction plans or the TMDL plans. The joint MS4 permit for DelDOT and New Castle County in Delaware does not require anything different for White Clay Creek than it does for other watersheds that are covered by the permit.

D. IMPACT OF WILD AND SCENIC DESIGNATION ON PERMITTING OR TMDLS

Section 7(a) of the National Wild and Scenic Rivers Act includes some protections against activities upstream and downstream of designated rivers that might "invade" or "diminish the scenic, recreational, fish and wildlife values present on the designated sections."¹⁰¹

⁹⁹New Jersey Integrated Report 2012 at 11–13 <https://www.nj.gov/dep/wms/bears/docs/c1-final-integrated-paper201211.pdf>.

¹⁰⁰<https://www.dec.ny.gov/permits/6033.html>

¹⁰¹16 U.S.C. 1728§7(a)