



Draft 2022 Integrated Water Quality Report

Clean Water Act Section 303(d) List and 305(b) Report

INTRODUCTION

This report is the fifteenth in a series of reports prepared for the Federal Clean Water Act (CWA) Section 303(d) listing of impaired waters requiring total maximum daily loads (TMDLs), and Section 305(b) reporting of the overall condition of Pennsylvania's aquatic resources. It is compiled and submitted to the United States Environmental Protection Agency (EPA) once every two years. Unlike the 305(b) report, EPA must approve or disapprove the 303(d) list.

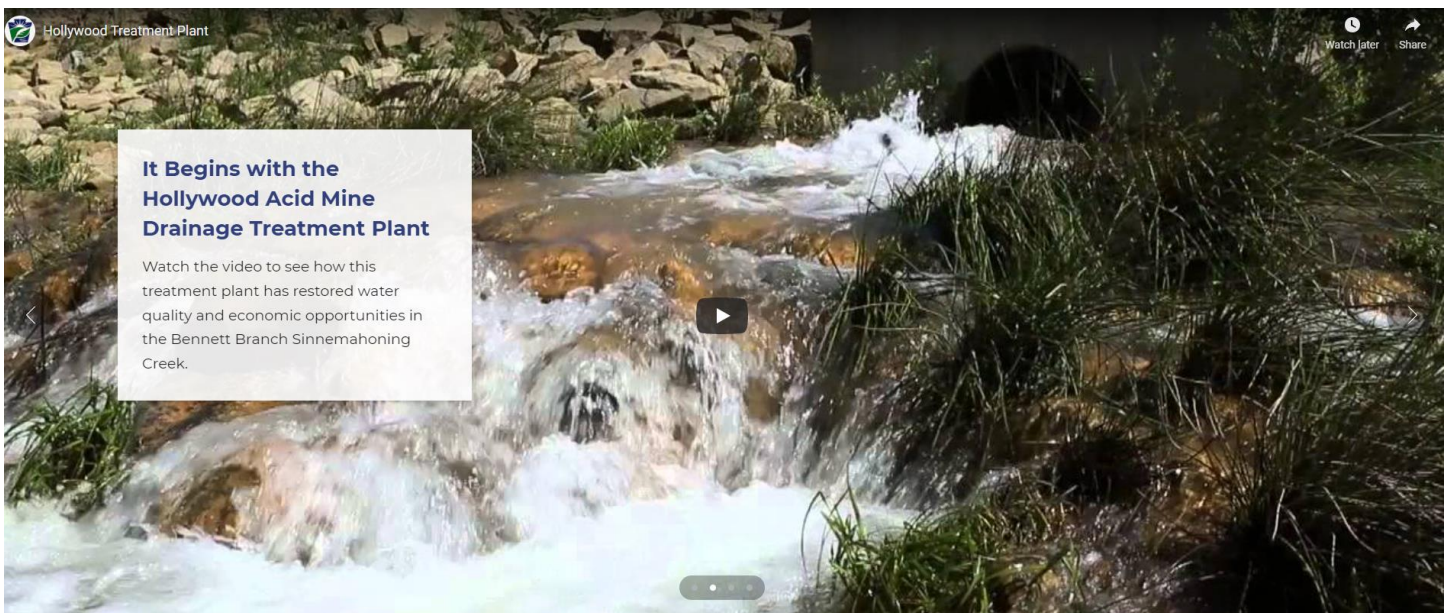
The narrative that follows contains the data used to satisfy the requirements of Sections 303(d) and 305(b). This report covers the current status of Pennsylvania's waters and summarizes various programs in place to protect and improve water quality.

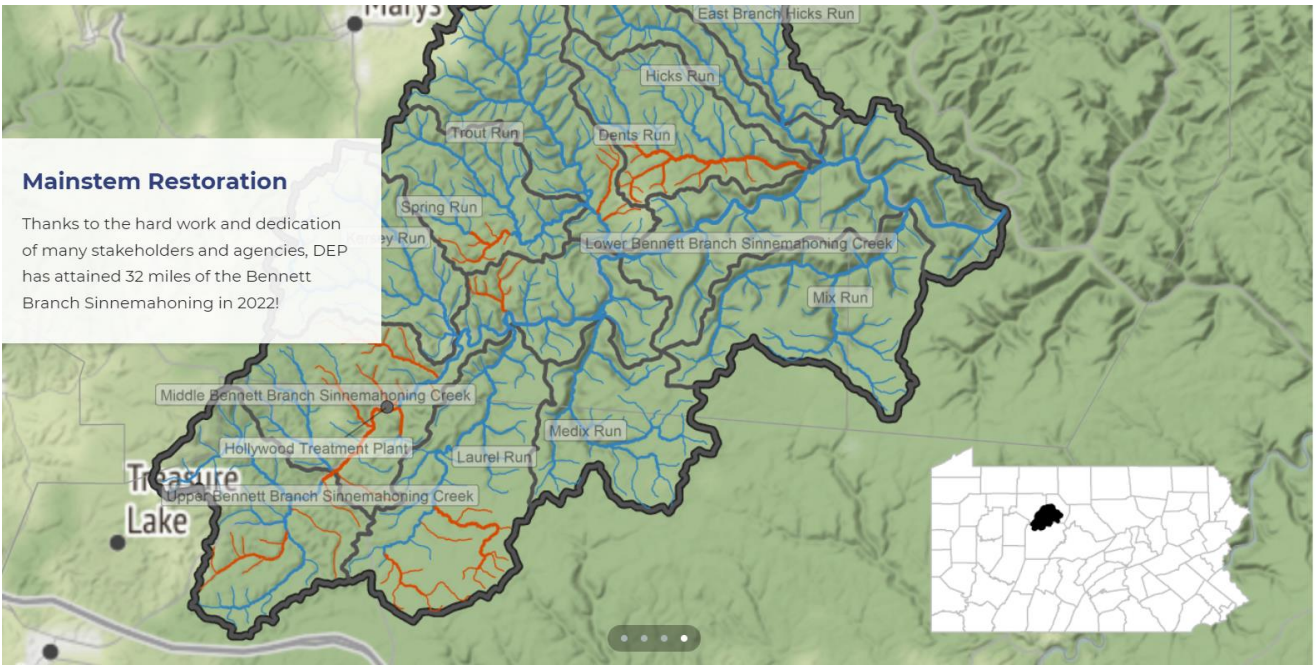
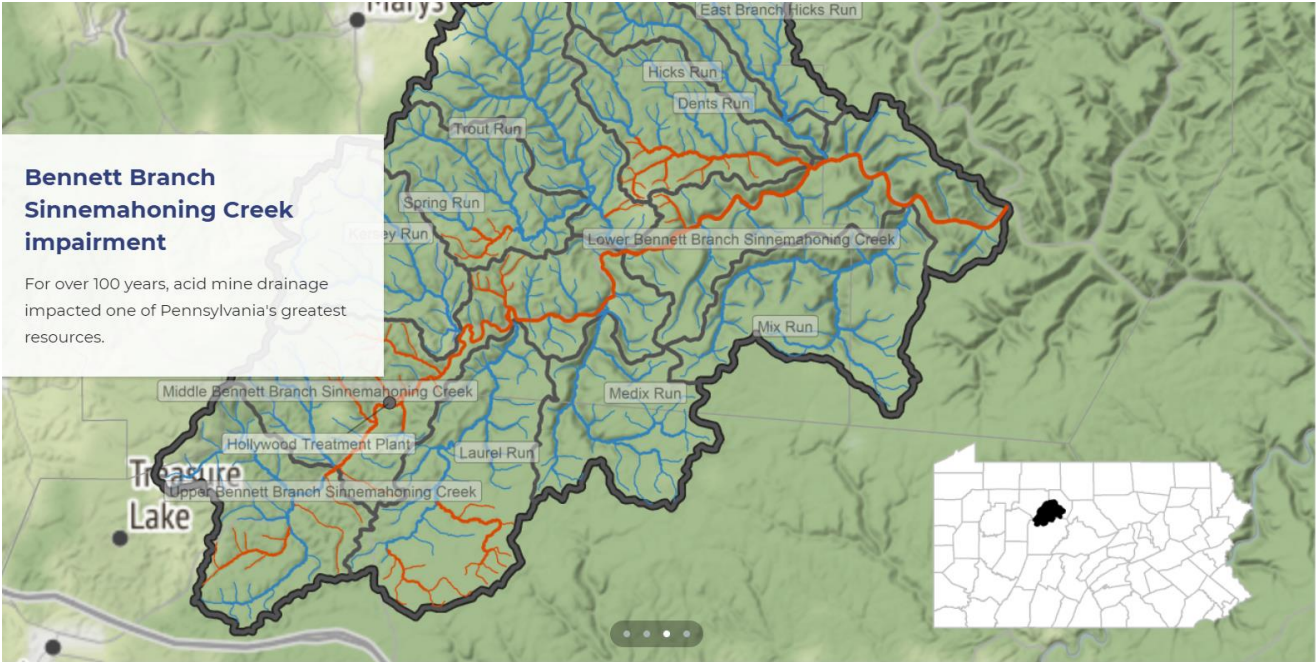
This report format is interactive and offers the ability to convey tremendous amounts of information in a way that is much easier to understand. Please scroll down to view the Integrated Report or use the top menu to jump to a topic. If problems are encountered while viewing content, please try opening the website using another web browser. Changing the browser zoom level may also provide a better user experience. DEP hopes this digital format will greatly increase the transparency and public understanding of the programs in place to protect Pennsylvania's waters.

Public participation for this Integrated Report will be from **December 4th, 2021 to January 17th, 2022**. DEP encourages the public to provide constructive comments during this period. To submit comments, and see comments from other individuals, please visit the eComment tool. The links to view and comment on the Integrated Report will be made available in the "Open Comment Periods" section at the top of the eComment website during the public comment period. Written comments can

also be mailed to Department of Environmental Protection, Policy Office, Rachel Carson State Office Building, P.O. Box 2063, Harrisburg, PA 17105. DEP suggests that comments be organized using the main headings above (e.g., INTRODUCTION, SECTION 303(d), etc.), or by scrolling down and viewing the subheadings on each slide (e.g., PENNSYLVANIA WATER RESOURCES, LISTING DATA, TRENDS, etc.). Persons in need of accommodations as provided for in the Americans With Disabilities Act of 1990 should contact DEP's Water Quality Division at 717-787-9637 or through the Pennsylvania Hamilton Relay Service at 800-654-5984 (TTD) to discuss how DEP may accommodate their needs.

Disclaimer: The information contained in this report is based on the data contained in DEP information systems and report at the time of publication. Most information pertains to the biennial reporting period (October 1st, 2019 to September 30th, 2021); however, some information may cover longer periods of record. Some datasets may be incomplete due to DEP's jurisdictional restrictions.





PENNSYLVANIA WATER RESOURCES

Pennsylvania is a water rich state with approximately 85,500 miles of rivers and streams connecting over 2,000,000 acres of lakes, bays, and wetlands. Protection of these waters and the groundwater below is a challenging but vital mission. Scroll through the statistics to the right or download them in tabular format.

Pennsylvania Rivers and Streams

National Hydrography Dataset (NHD) Flowlines



<https://padep-1.maps.arcgis.com/apps/View/index.html?appid=f4e7dc62dbc84bc08a0ec5b5c03b60f5>

Pennsylvania Lakes and Bays

National Hydrography Dataset (NHD)
Waterbodies



<https://padep-1.maps.arcgis.com/apps/View/index.html?appid=1cc4d51854554b4f8d70ea4c7a037a1b>

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Atlas of Surface Waters in Pennsylvania

Total Miles of Rivers and Streams
85,568

Click on the arrows at the top to scroll through each statistic. The data can also be downloaded as a table by clicking on the arrow at the bottom-right.



PROTECTED USES AND CATEGORIES

As part of the obligation to protect Pennsylvania's waters, DEP conducts protected use (e.g., Potable Water Supply, Fishing, etc.) assessments. For more information on Pennsylvania's protected uses see 25 Pa. Code § 93.3.

Assessment determinations fall into three general statuses (i.e., attaining, impaired, or unassessed). For example, a body of water is considered "impaired" if it fails to meet one or more water quality standards. The categories below follow these general statuses but add more qualifiers. Category 5 and 5alt are the "list" of impaired waters (i.e., 303(d) list) that require development of a Total Maximum Daily Load (TMDL). In the process of developing this list, a full status of all waters is created to satisfy Sections 305(b) reporting requirements. It is the integration of these requirements that creates the structure and function of DEP's Integrated Report. A fully interactive mapping application with advanced search capabilities is also available with DEP's 2022 Integrated Report Viewer.

Category 1: Waters attaining all uses.

Category 2: Waters where some, but not all uses are met. Assessment status of the remaining uses may be unknown because data are insufficient to assess the water or it may be impaired.

Category 3: Waters for which there are insufficient or no data to determine if any uses are met.

Category 4a: Waters impaired for one or more uses, not needing a TMDL, because a TMDL has been completed.

Category 4b: Waters impaired for one or more uses, not needing a TMDL, because uses are expected to be attained within a reasonable timeframe.

Category 4c: Waters impaired for one or more uses, not needing a TMDL, because the impairment is not caused by a pollutant.

Category 5: Waters impaired for one or more uses by a pollutant that requires the development of a TMDL.

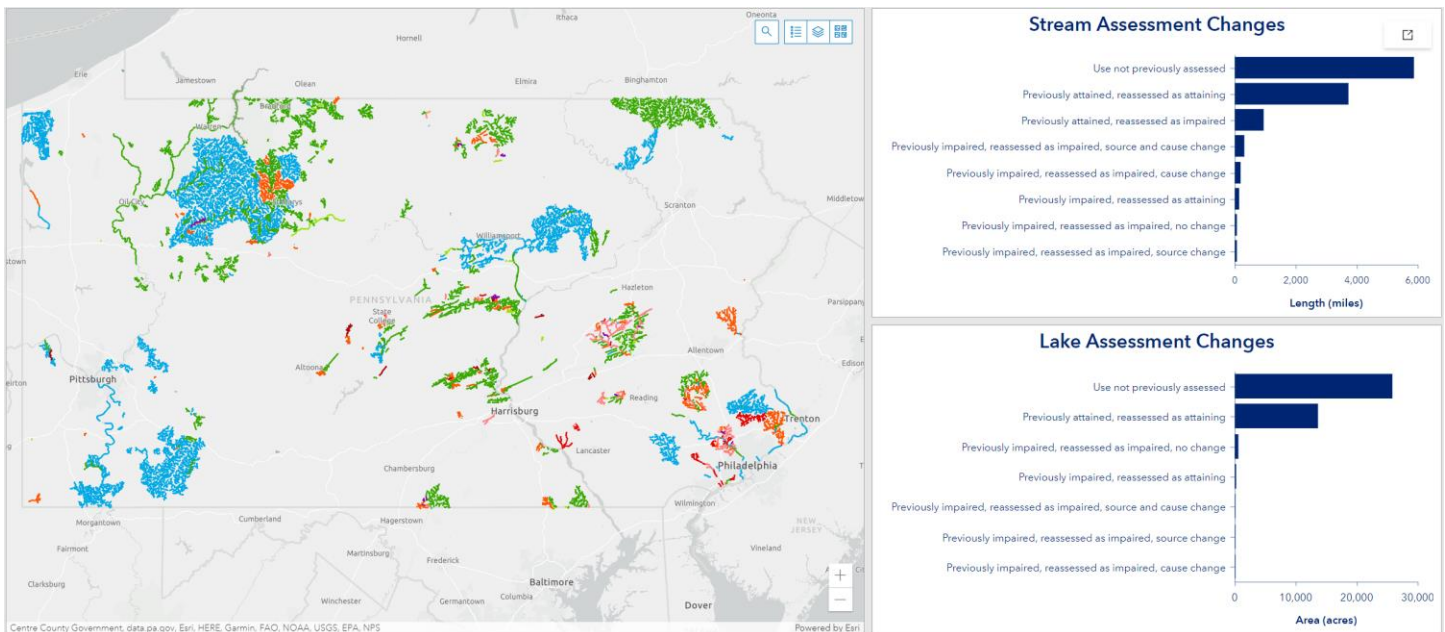
Category 5alt: Waters impaired for one or more uses by a pollutant that are selected for alternative restoration implementation. A TMDL is still required if the alternative is not successful.

2020 TO 2022 CHANGES

The data that makes up the Integrated Report consists of over 300,000 assessment records; however, much of this information has been reviewed and approved by EPA during previous Integrated Reports. To make review of new information easier, DEP produces lists of changes that were made from the previous Integrated Report (2020). Click the buttons below to view changes in tabular format or click on the map to explore them visually.

[STREAM 2020 TO 2022 CHANGES TABLE](#)

[LAKE 2020 TO 2022 CHANGES TABLE](#)



2022 DELISTINGS

DEP provides additional information for assessment changes called "delistings", because these changes require the review and approval of EPA. A "delisting" is any removal of a cause of impairment from Category 5 (the list); however, the term has been used interchangeably for several other situations such as, removal of one or more causes from other impaired categories (4a, 4b, and 4c), full restoration of water quality standards, or even corrections in previous assessment determinations or delineations. DEP exceeds EPA's delisting reporting requirements by providing a report on all the removals of causes discussed here. Click below to see DEP's delistings report for 2022.

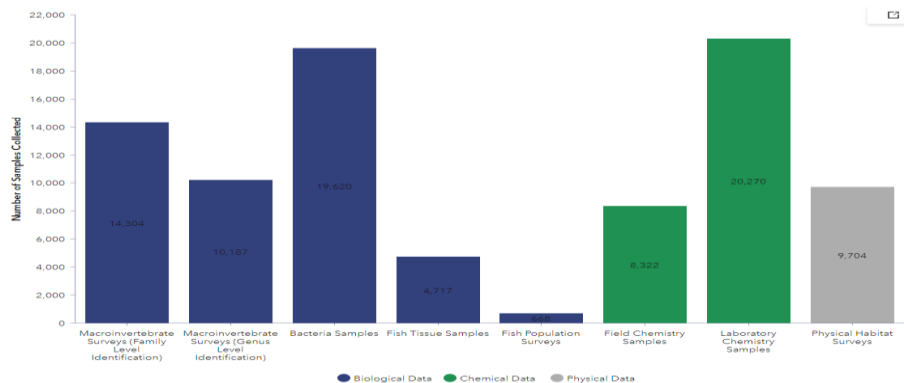
[2022 DELISTINGS REPORT](#)

SECTION 303(d)



LISTING DATA

Just like Pennsylvania's waters, the datasets used to create this report are extensive. Explore the chart to see what types of data DEP uses for assessments. Most data used to build this report originate from DEP's data collection protocols and assessment methods. Combined with a comprehensive assessment plan, these protocols and methods allow DEP to make sound decisions regarding water quality. Click below to see DEP's comprehensive assessment plan.



[COMPREHENSIVE ASSESSMENT PLAN](#)

DEP also readily accepts all outside datasets and information through the Existing and Readily Available Data webpage. By using a set of acceptance tiers, DEP ensures that all data are used according to their purpose and level of quality assurance. Click below to see DEP's data acceptance policy and the 2022 data solicitation report.

[DATA ACCEPTANCE POLICY](#)

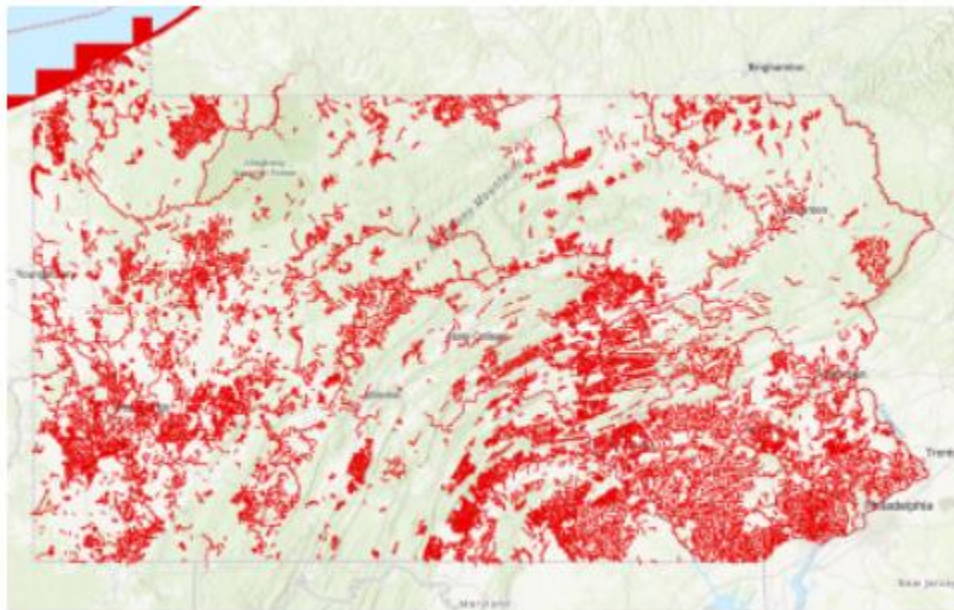
[DATA SOLICITATION REPORT](#)

THE LIST - CATEGORIES 5 AND 5alt

Section 303(d) is the list of impaired waters that require development of a TMDL (Categories 5 and 5alt). Once a TMDL is approved by EPA, the related causes will be placed in Category 4a until water quality standards are restored.

Category 5alt - known as restoration alternatives - is a list of waters where implementation of restoration activities will begin immediately without the development of a TMDL. DEP first incorporated 5alt in the 2016 Integrated Report. Waters are selected to be in the 5alt category because they have implementation plans and active public engagement. This goal of 5alt is to restore water quality standards before TMDLs are written, which brings possible advantages to the regulated community. Category 5alt still requires that a TMDL be completed unless water quality standards are achieved within a reasonable time.

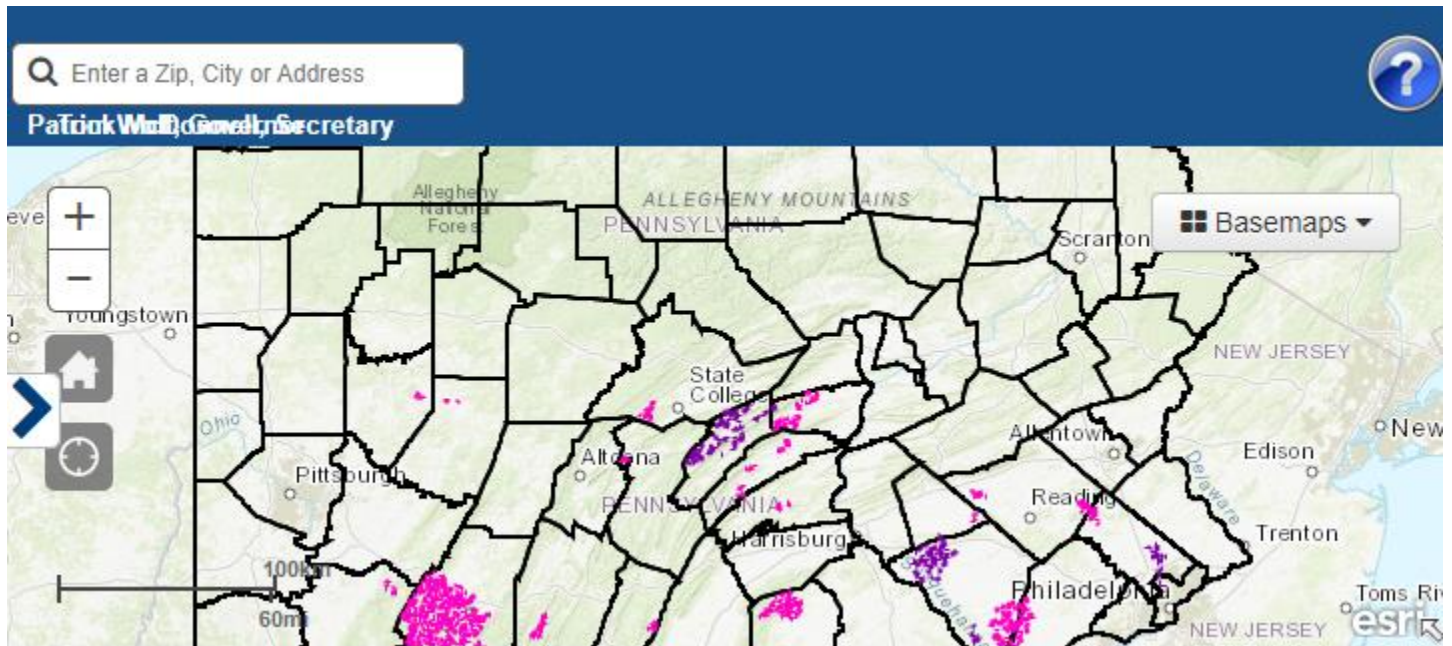
Use the Integrated Report Viewer to view the status of waters in Category 5 and Category 5alt. DEP has also created a demonstration video that details several ways to search, including by category. It is important to note that Categories 5 and 5alt make up a large portion of Pennsylvania's impaired waters, but these categories do not include all impairments. Impaired waters also include Categories 4a, 4b, and 4c. The picture below represents all of Pennsylvania's impaired waters.



RESTORATION PRIORITIES

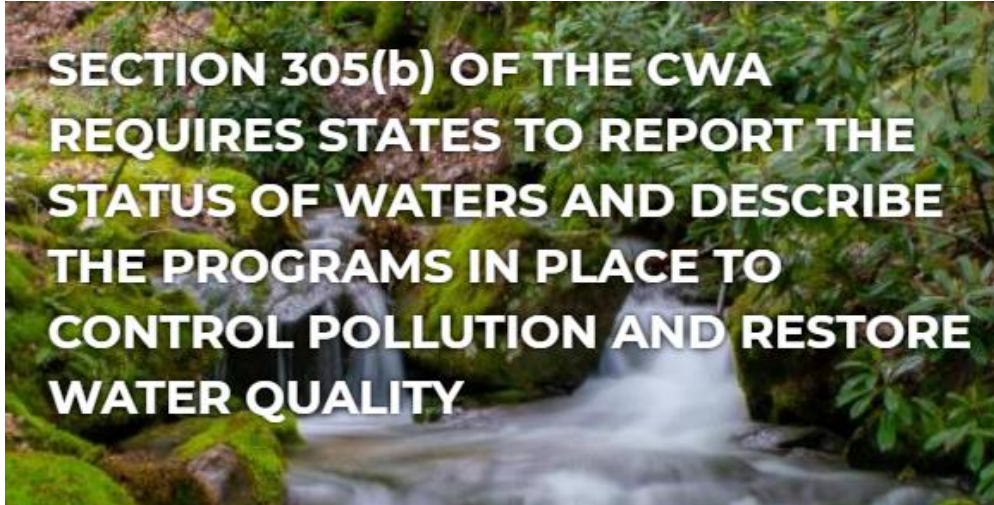
As part of Section 303(d), states are required to set prioritization ranking for impaired waters. DEP conforms with this requirement by creating a list of watersheds that are identified as restoration priorities. For more information on how waters are selected as restoration priorities, DEP has created a restoration prioritization strategy.

Click on the map to view the current set of restoration priority watersheds. These priority watersheds, along with cause(s) of impairment, may also be viewed in tabular format below.



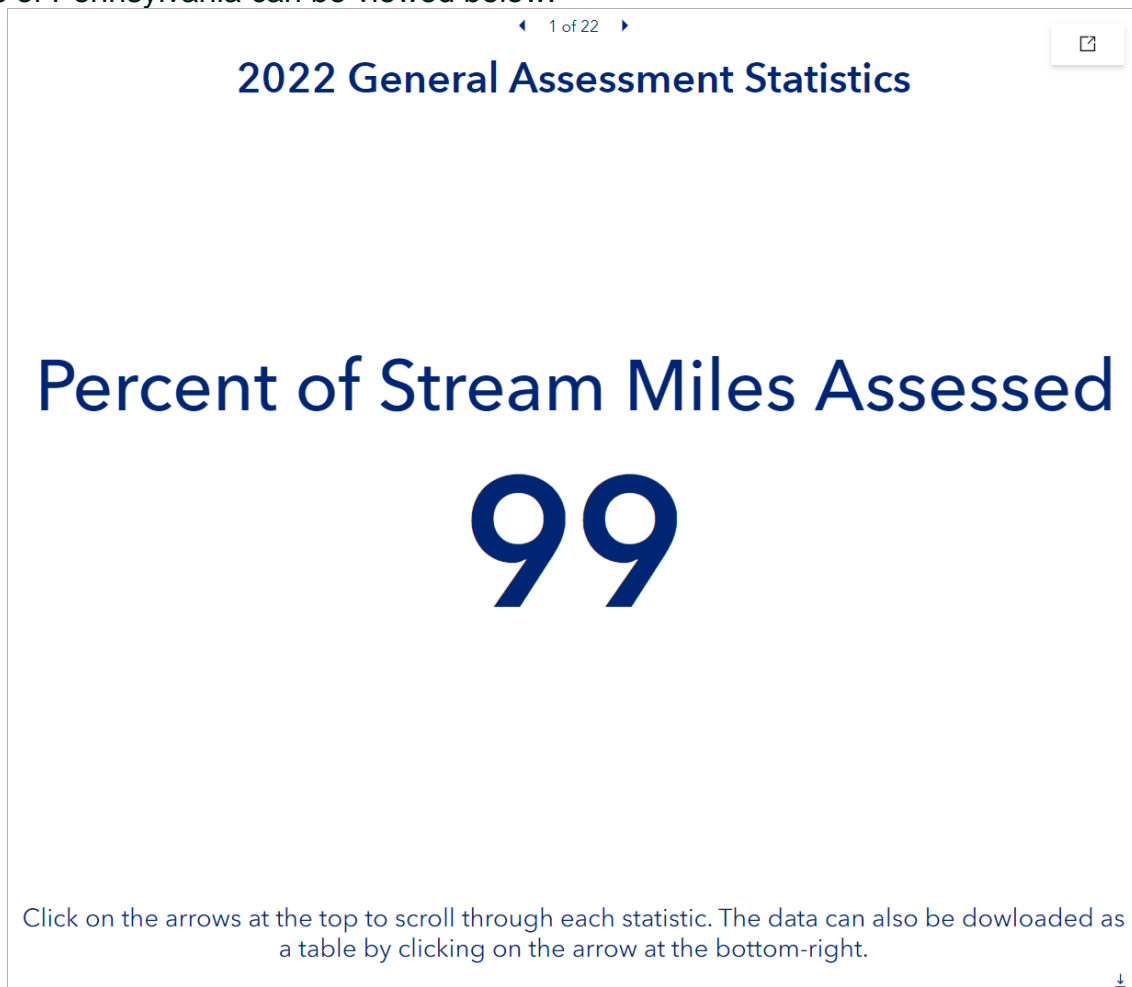
RESTORATION PRIORITY WATERSHEDS

SECTION 305(b)



GENERAL OVERVIEW

DEP has created a general overview of popular assessment statistics across Pennsylvania. Scroll through these statistics to the right or download them in tabular format. Additional summaries related to sections of Pennsylvania can be viewed below.



STREAM STATUS BY COUNTY

STREAM STATUS BY WATERSHED

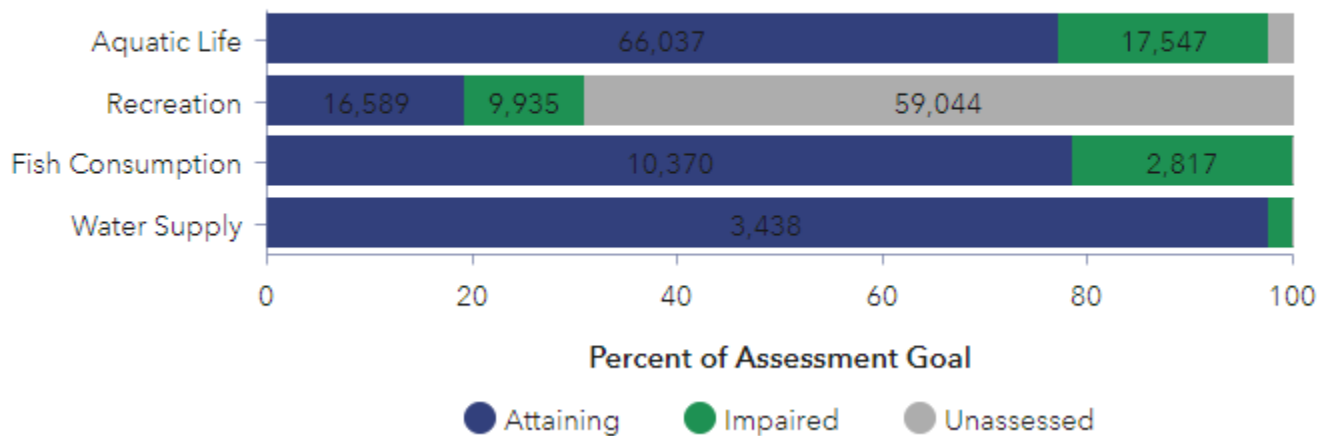
LAKE STATUS BY COUNTY

LAKE STATUS BY WATERSHED

STREAM ASSESSMENT STATUS

The number of stream miles assessed, and the attainment/impairment status of each stream, varies by protected use. All wadeable streams in Pennsylvania have been assessed at least once for the Aquatic Life use category. DEP is currently conducting the second round of Aquatic Life assessments on wadeable streams. DEP continues to work towards the goal of 100% assessment for all waterbodies in the state, for all protected uses. The chart contains the 2022 stream assessment status.

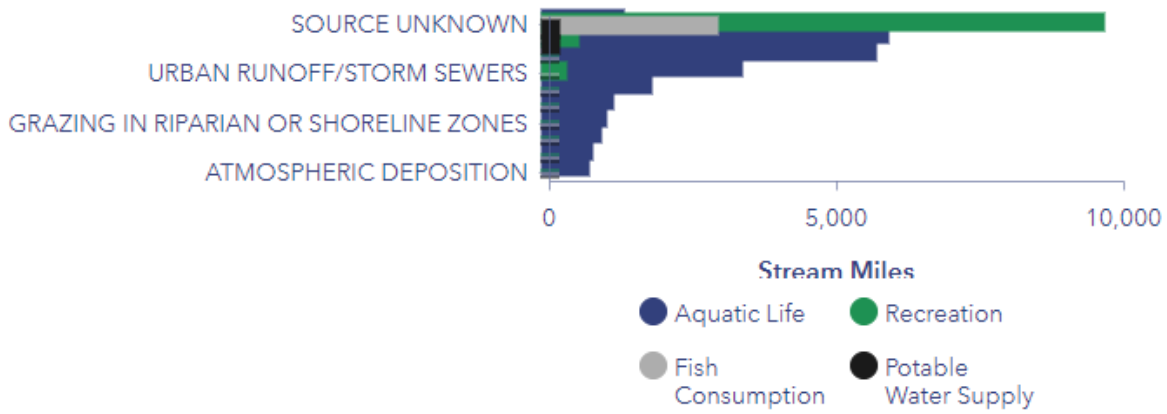
Stream Assessment Status



SOURCES OF STREAM IMPAIRMENT

Explore the chart to see the leading sources and click the button below to view a tabular summary of all sources of impairment for rivers and streams.

Leading Sources of Stream Impairment

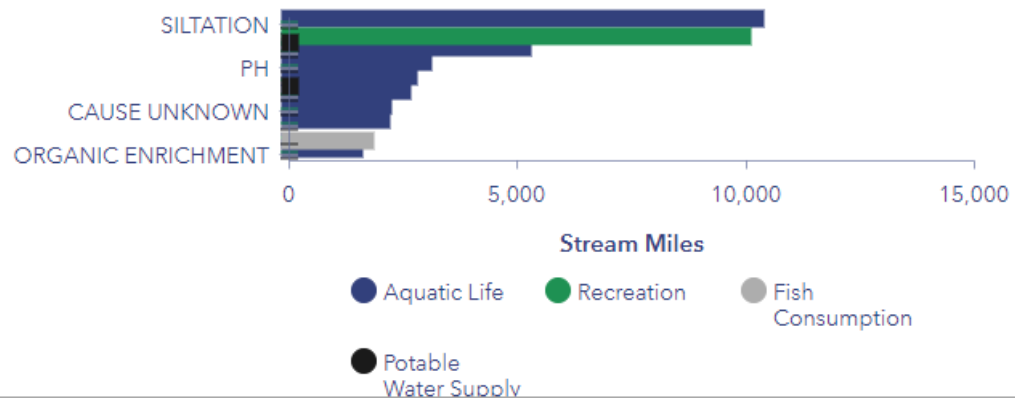


[ALL STREAM IMPAIRMENT SOURCES](#)

CAUSES OF STREAM IMPAIRMENT

Explore the chart to see the leading sources and click the button below to view a tabular summary of all causes of impairment for rivers and streams.

Leading Causes of Stream Impairment



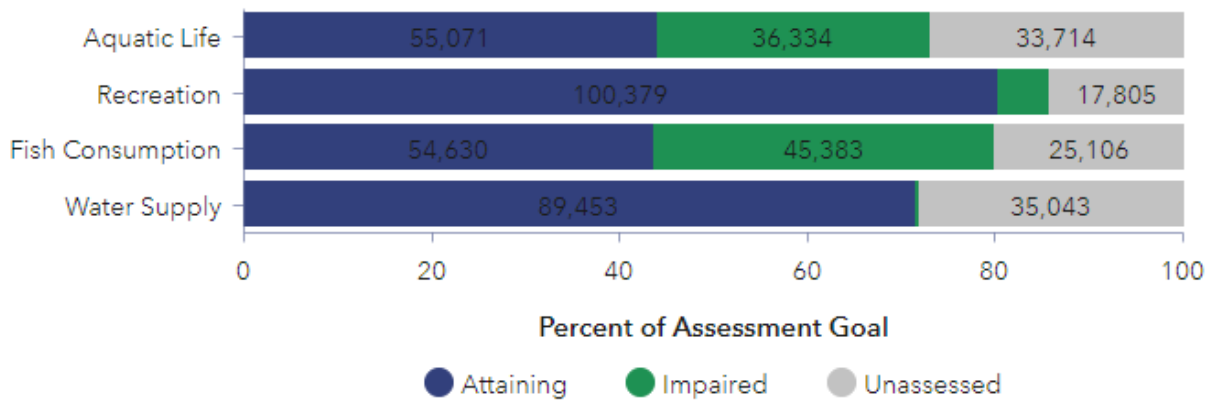
ALL STREAM IMPAIRMENT CAUSES

LAKE ASSESSMENT STATUS

As part of Section 305(b) reporting, Section 314 of the CWA requires states to report on the status of publicly owned lakes. DEP's definition of a publicly owned lake is a waterbody with public access. To meet the assessment goals, DEP employs several lake assessment methods and uses those methods to create assessment determinations. Explore the chart to see the 2022 assessment status of lakes.

DEP, along with its partners, assesses other lakes that are not considered publicly owned. Please visit the [Integrated Report Viewer](#) to explore the assessment status of all lakes currently assessed.

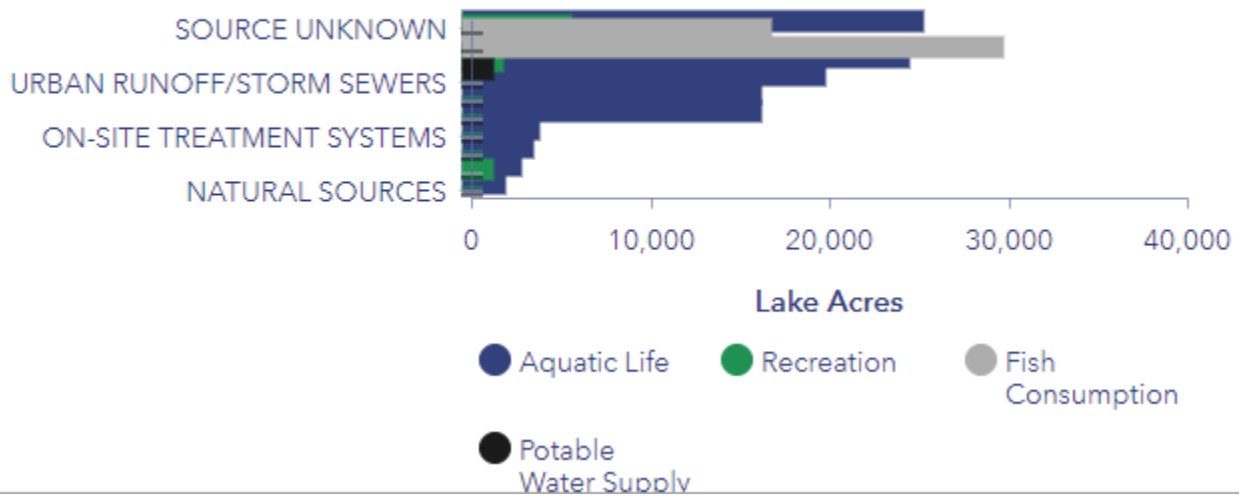
Lake Assessment Status



SOURCES OF LAKE IMPAIRMENT

Explore the chart to see the leading sources and click the button below to view a tabular summary of all sources of impairment in public lakes.

Leading Sources of Lake Impairment

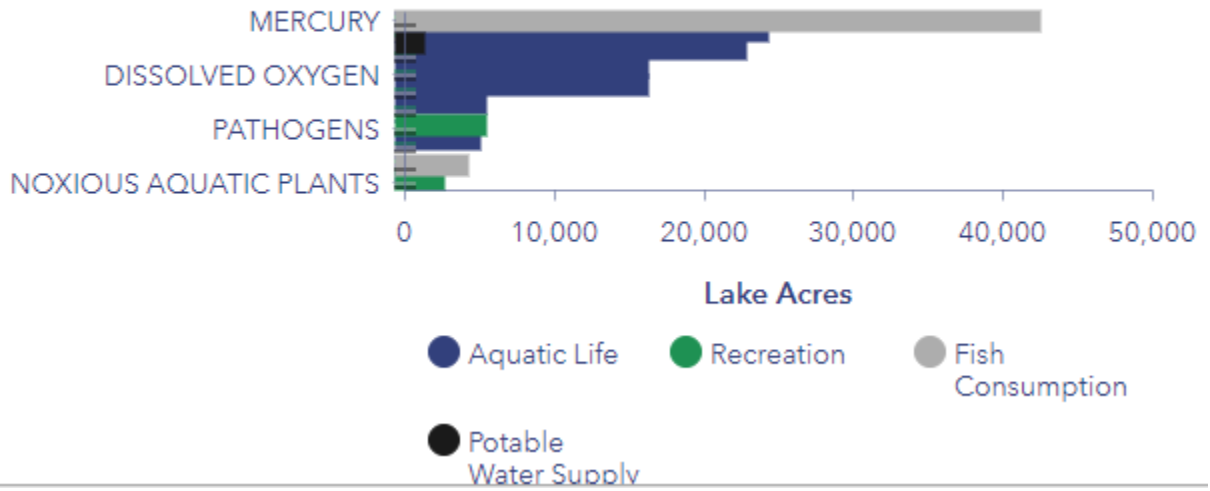


ALL LAKE IMPAIRMENT SOURCES

CAUSES OF LAKE IMPAIRMENT

Explore the chart to see leading causes and click the button below to view a tabular summary of all causes of impairment in public lakes.

Leading Causes of Lake Impairment

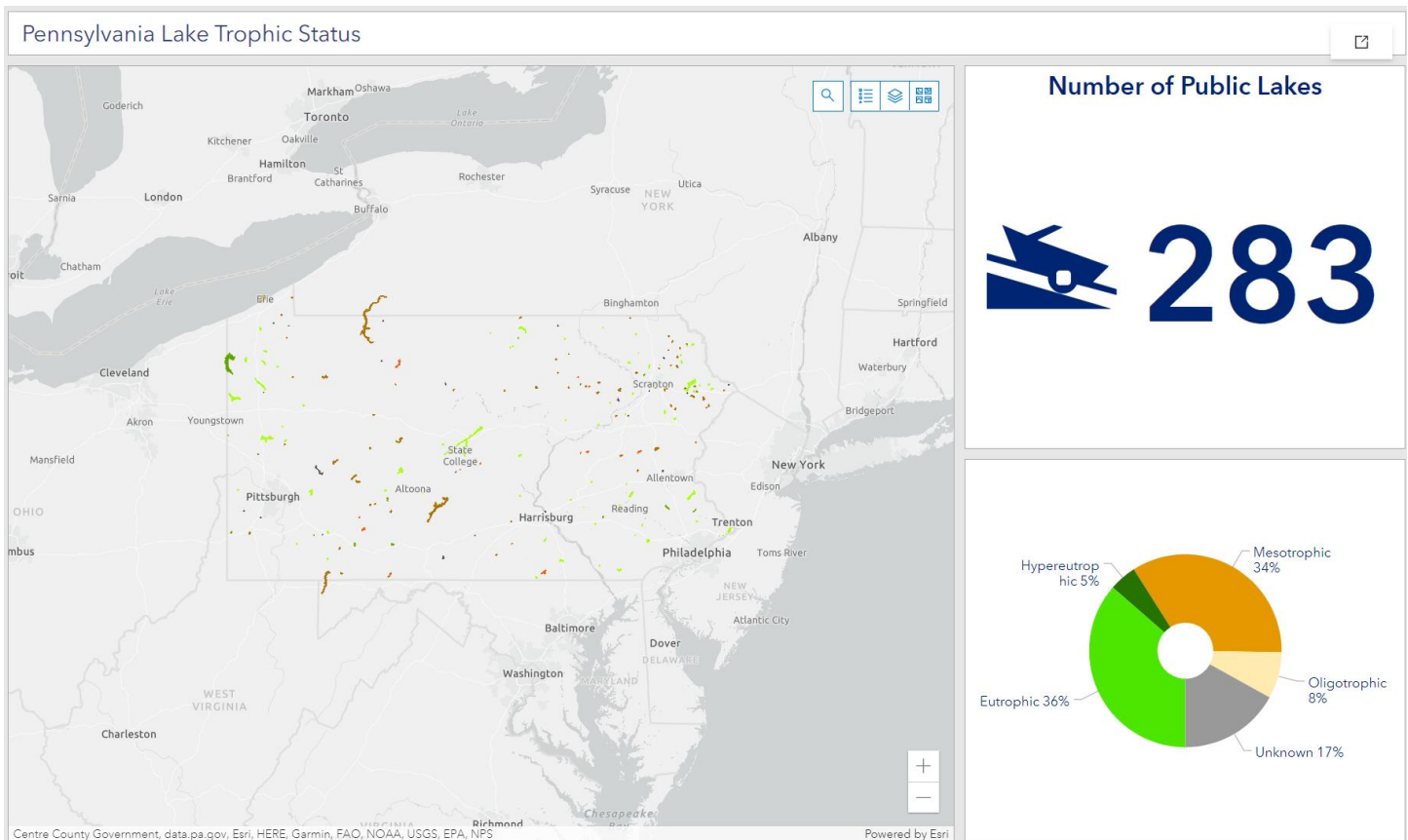


[ALL LAKE IMPAIRMENT CAUSES](#)

LAKE TROPHIC STATUS

As part of Section 305(b) reporting, Section 314 requires states to report the trophic status of publicly owned lakes. DEP calculates overall lake trophic status on average seasonal values of phosphorus, Secchi depth, and chlorophyll-a. These values are used to calculate the Carlson's Trophic State Index (TSI) for each parameter. TSI scores of 40 and below indicate oligotrophic (not productive) conditions, scores between 40 and 50 indicate mesotrophic (moderately productive) conditions, scores between 50 and 65 indicate eutrophic (productive) conditions, and scores greater than 65 indicate hypereutrophic (excessively productive) conditions.

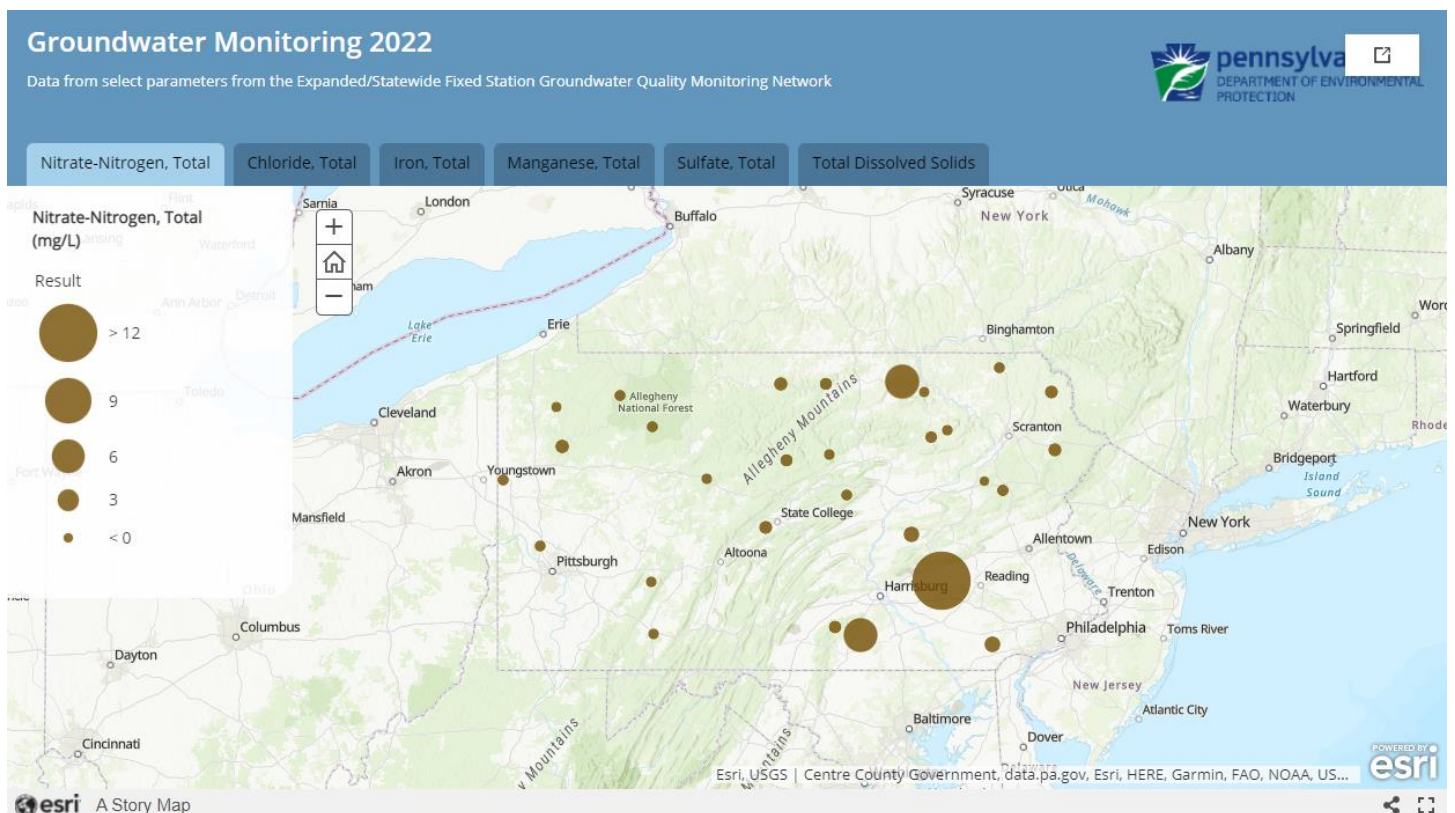
Click on the map to see the trophic status of each publicly owned lake.



GROUNDWATER STATUS

Groundwater monitoring efforts in Pennsylvania are displayed in the Status of Statewide and Legacy Groundwater Quality Monitoring Programs. The Legacy Ambient and Fixed Station Network Groundwater Quality Monitoring Program began in 1985 to characterize general background and assess changes in groundwater quality within 478 groundwater basins identified in the state. Because of resource constraints, monitoring efforts have been limited since the late 1990s and only ~12% of the state has been monitored. Under a joint funding agreement with DEP in 2005, the United States Geological Survey (USGS) compiled electronically available groundwater quality data to help point out data gaps and guide future monitoring efforts. Over 24,000 wells from 14 different agencies/programs were included in the project. For more information and access the full report, please visit the USGS reports webpage.

A project was initiated in 2014 to sample select stations throughout the state on a regular basis. This effort is referred to as the “Expanded” (or “Statewide”) Fixed Station Groundwater Quality Monitoring Network to distinguish it from the original “Legacy” effort. From this information, DEP has begun to better understand the status of groundwater quality in Pennsylvania. A report by USGS titled “Characterization of Ambient Groundwater Quality with a Statewide Fixed Station Monitoring Network in PA, 2015-2019” is currently under review and will be released in late 2021. Use the map to see the status of select water quality parameters in Pennsylvania’s groundwater from the new, expanded/statewide network.



DEP previously identified and prioritized sources of groundwater contamination based upon regional office input for earlier versions of the report. The information was reviewed and updated in the Sources of Groundwater Contamination and Prioritization Document.

CONTROL PROGRAMS

DEP has a series of programs in place to control sources of water quality impacts. Click on each program name to see an expanded overview of how the programs protect water quality, how much the programs invest, and to visit important links related to that program.

AGRICULTURE - DEP's Agriculture Program, located within the Chesapeake Bay Office, is responsible for developing regulations, policies, guidance, outreach, and inspection strategies for compliance assessment, compliance assistance, and enforcement of statewide regulatory programs relating to agriculture. This section conducts activities relating to the compliance with regulatory requirements for agriculture-related erosion and sediment control; manure and nutrient management; and National Pollutant Discharge Elimination System (NPDES) permitted Concentrated Animal Feeding Operations (CAFOs).

CLEAN WATER PERMITTING - DEP's Clean Water Permitting Program operates the federally delegated NPDES program, which manages and regulates the discharge of pollutants to surface waters and groundwater in Pennsylvania, with the objective of protecting water uses, including human health and aquatic life. The program is administered by DEP's Bureau of Clean Water (BCW) and is implemented by DEP's six regional offices. BCW establishes regulations, guidance and policy that are used by DEP regional offices to carry out program objectives.

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES - The Pennsylvania Department of Conservation & Natural Resources (DCNR) conducts several conservation and partnership programs including River Conservation and Riparian Buffer Grants, managing the Invasive Species Program, and creating Aquatic Resource Management Plans.



Note: See the program description attachments to review the content on this slide.

RESTORATION PROGRAMS

DEP also has a series of programs in place to restore water quality. Primary funding sources come from the federal grant issued under Section 319 of the CWA (typically about \$1,000,000 annually) and Pennsylvania's Growing Greener funds (typically about \$3,000,000 annually). Click on each program to see an overview of how the program restores water quality and to visit that program's website.

ABANDONED MINE LANDS - DEP's Bureau of Abandoned Mine Reclamation (BAMR) administers and oversees the Abandoned Mine Reclamation Program in Pennsylvania. BAMR is responsible for resolving abandoned mine land (AML) problems such as mine fires, mine subsidence, dangerous highwalls, open shafts and portals, mining impacted water supplies and other hazards which have resulted from past coal mining (pre-1977) practices in accordance with requirements established by the federal Office of Surface Mining under authority of the Surface Mining Control and Reclamation Act (SMCRA).

CHESAPEAKE BAY - DEP's Chesapeake Bay Office is tasked with coordinating activities to implement the Chesapeake Bay Total Maximum Daily Load (TMDL) to restore water quality in local waterways and the Chesapeake Bay. The Chesapeake Bay Office also coordinates efforts surrounding the implementation of the 2014 Chesapeake Bay Watershed Agreement, which consists of five themes with 10 goals that will advance the restoration and protection of the Chesapeake Bay watershed.

GREAT LAKES - DEP's Office of the Great Lakes is responsible for the coordination and implementation of the Commonwealth's Great Lakes Program of water quality and watershed-related initiatives, including commitments under the Great Lakes Water Quality Agreement (GLWQA) and the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Compact and Agreement. This multi-disciplinary, multi-jurisdictional program



Note: See the program description attachments to review the content on this slide.

RIISING TO THE CHALLENGE

CLIMATE CHANGE

Pennsylvania's latest Climate Impacts Assessment presents updated climate projections based on the latest climate model data. These projections show that Pennsylvania is expected to get warmer and wetter, which will have serious impacts on surface waters through the rest of this century. Some of these impacts include higher frequencies of e-coli and algal blooms, increased erosion, higher water temperatures, and more contamination due to flooding.

To tackle this challenge, Pennsylvania has created a Climate Change Action Plan. This plan identifies two adaptation-focused goals, which can be achieved by actions from citizens, businesses, and leaders in the commonwealth. It also sets mitigation targets of 26 percent reduction of net greenhouse gas emissions by 2025, and 80 percent reduction of net greenhouse gas emissions by 2050.

Click on the "Climate Change in PA" StoryMap to explore it while staying in the Integrated Report. Clicking on the box at the top-right of the StoryMap will open the StoryMap in another tab.



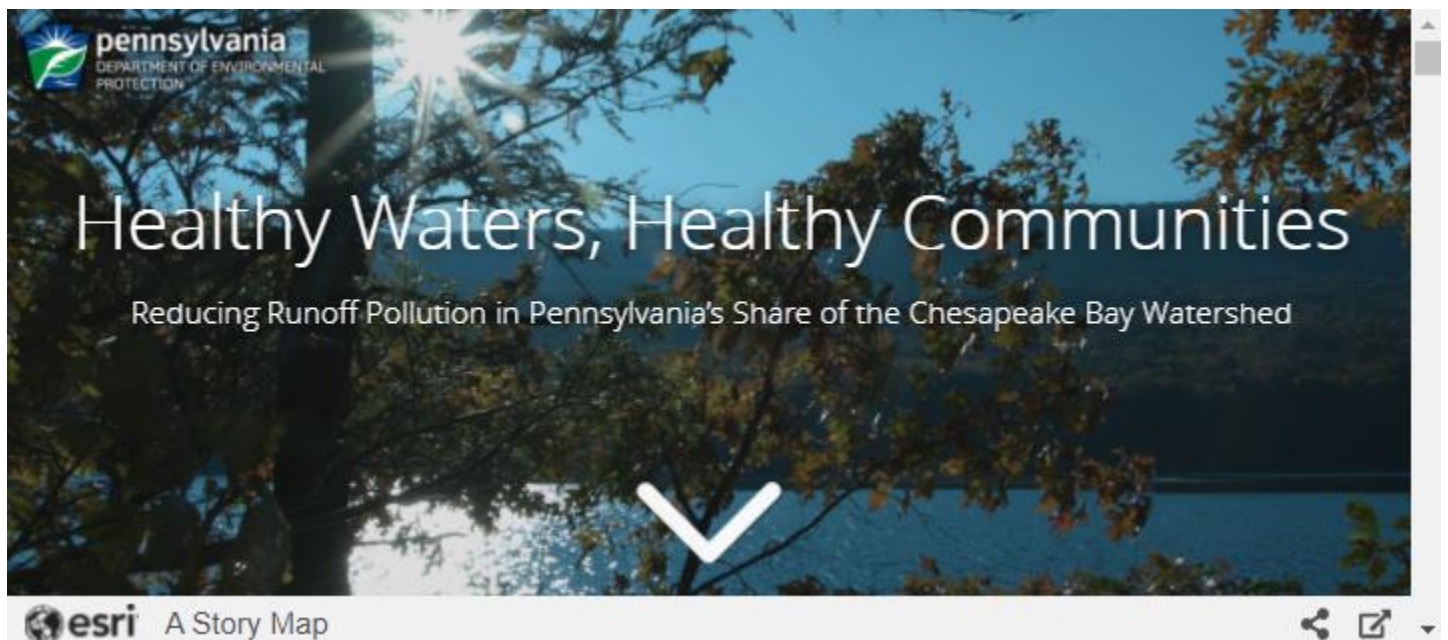
CHESAPEAKE BAY REDUCTIONS

Pennsylvania's progress in meeting the TMDL goals is tracked through the development of two-year milestones (currently 2020-2021), which estimate the expected level of implementation of Best Management Practices (BMPs) and expected programmatic improvements to occur over the milestone period. A TMDL mid-point Assessment found that Pennsylvania did not achieve its statewide 2017 targets for nitrogen, phosphorus, or sediment.

To meet this challenge, the Pennsylvania Chesapeake Bay Phase 3 Watershed Implementation Plan takes a county-by-county approach to reduce nutrient and sediment pollution and bring the benefits of healthier waters to communities. There's never been a stronger partnership of Pennsylvanians working together to reduce point and non-point source pollution in the watershed. Eight counties in the watershed have developed their Countywide Action Plans and have begun putting projects on the ground. Twenty-six other counties are now developing their plans.

To better characterize nitrogen, phosphorus and sediment, enhanced data collection at new and existing stations is under development. These enhancements will be used to develop models that could display nitrogen, phosphorus, and sediment information in a real-time format.

Click on the "Healthy Waters, Healthy Communities" StoryMap to explore it while staying in the Integrated Report. Clicking on the box at the top-right of the StoryMap will open the StoryMap in another tab.



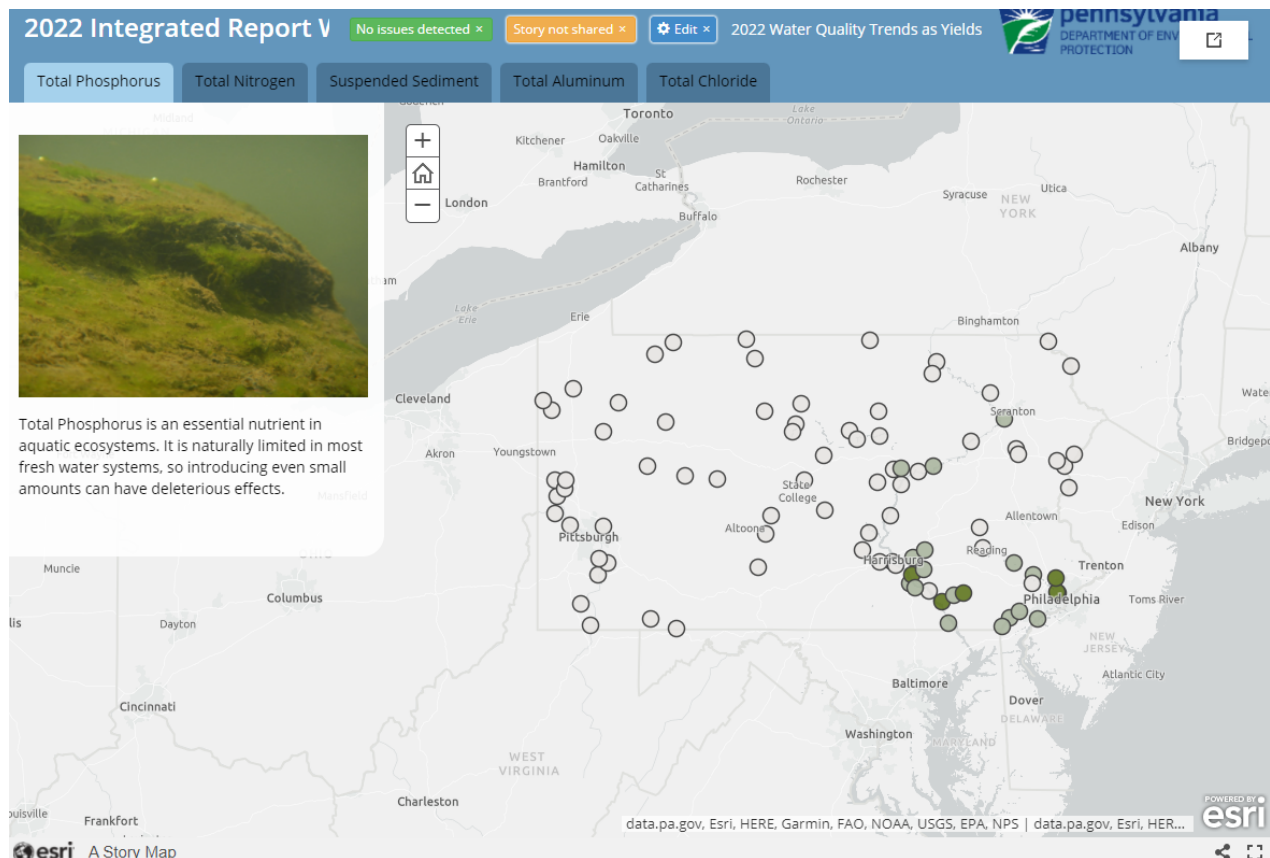
MEASURING PROGRESS



TRENDS

DEP has sentinel monitoring stations throughout Pennsylvania that are specifically designed to record trend data. This monitoring program is called the Water Quality Network (WQN). More information on these stations can be found on DEP's WQN mapping application. From the data collected at these stations, trend reports are developed like the one the Susquehanna River Basin Commission (SRBC) creates for the Chesapeake Bay.

As technology and data analyses advance, more resources are being developed to view DEP's trend data. For example, USGS has created a national dataset of trends that can be viewed and downloaded. This allows DEP to show data in new and meaningful ways, such as yields (pounds per acre). Displaying data as pounds per acre allows sites to be compared to each other, regardless of watershed size. Click on each site to view a chart of yields through time. The entire 2022 yield dataset is also available in tabular format.

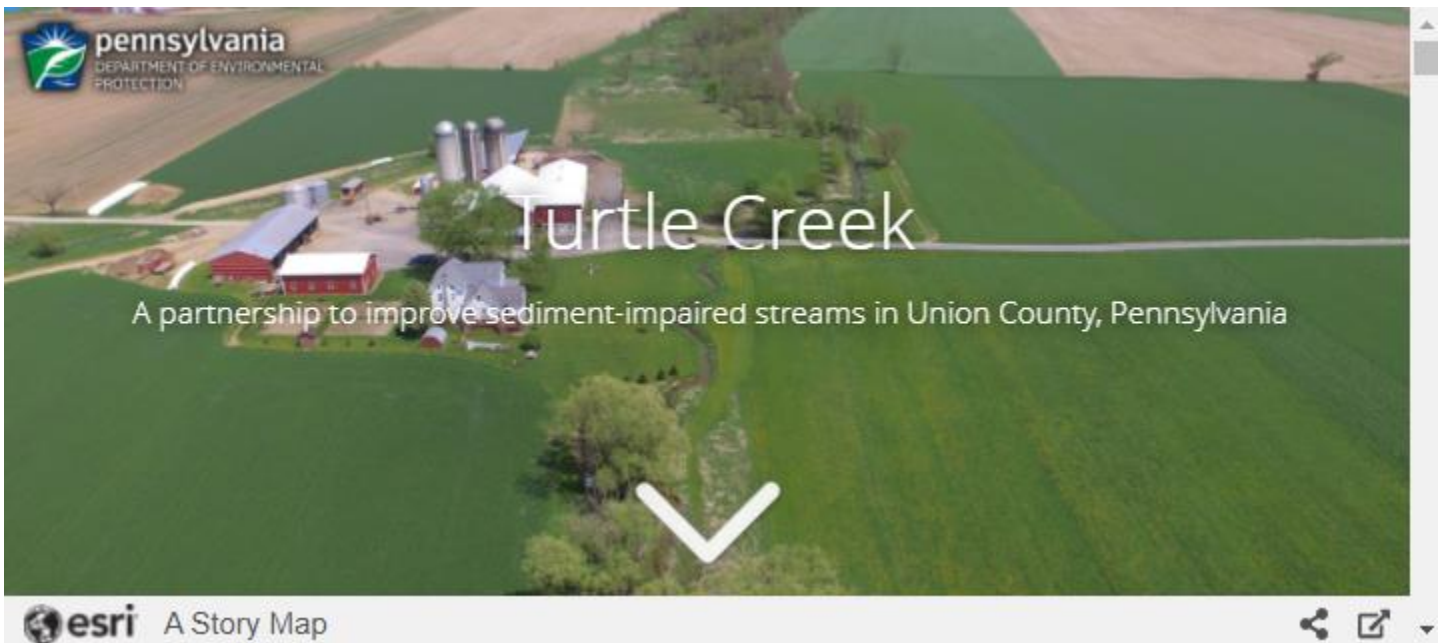


RESTORATION EFFORTS

DEP supports and tracks aquatic resource restoration efforts throughout Pennsylvania. Strong partnership among landowners, stakeholders, and state and federal agencies are proving to be the best way forward in restoring Pennsylvania's waters. The stories highlighted here are just a few examples of hard work leading to successful restoration.

Click on the "Turtle Creek" StoryMap to explore it while staying in the Integrated Report. Clicking on the box at the top-right of the StoryMap will open the StoryMap in another tab.

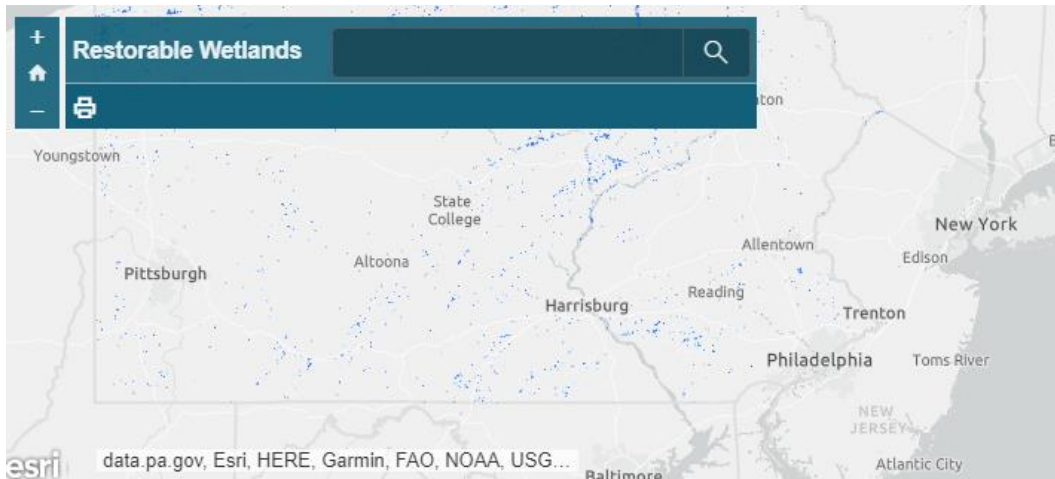
In addition, DEP, along with many partners, has a goal to restore 30 streams in Pennsylvania by 2030. These streams, designated as "agriculturally-impaired" on Pennsylvania's list of impaired waters will be restored using a new and innovative strategy called "rapid stream delisting." Rapid stream delisting couples mapping data analysis with an extensive partnership effort to delist streams on an accelerated timeframe.



LAKE RESTORATION EFFORTS

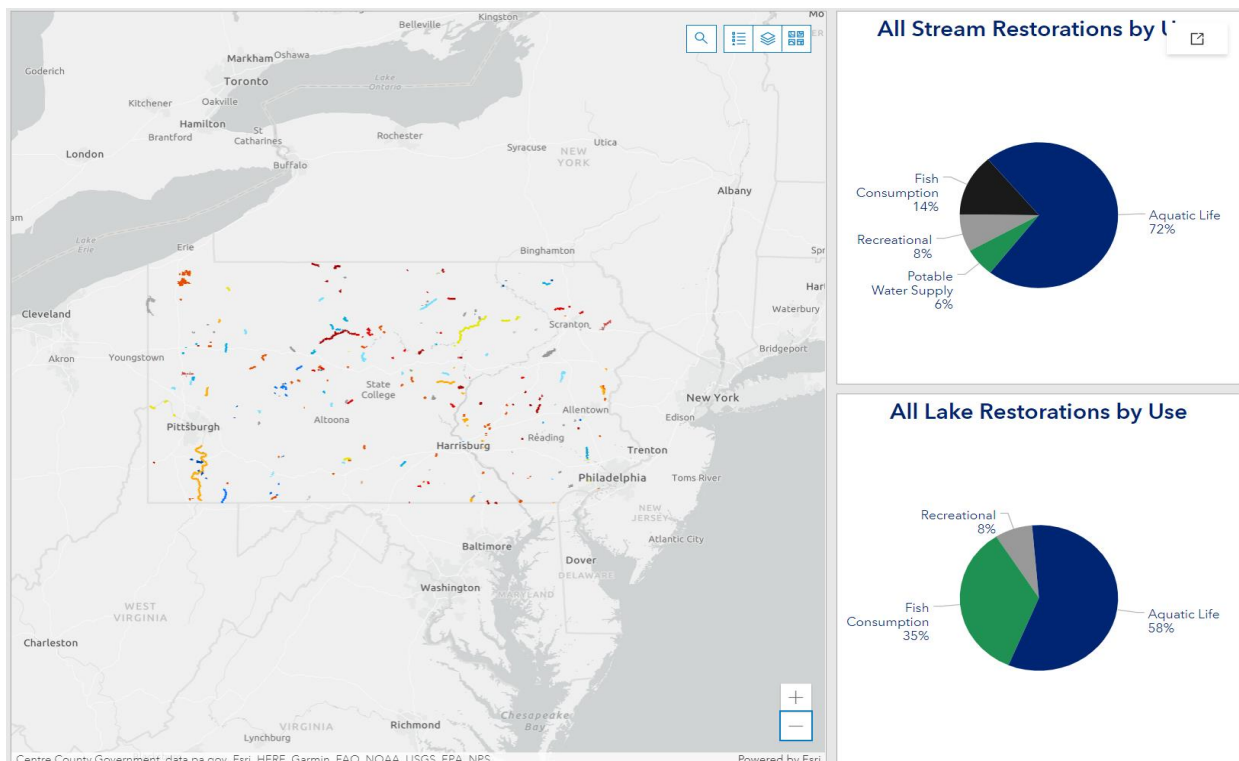
RESTORABLE WETLANDS

Wetlands play an important role in reducing the impacts of floods and increasing overall water quality. Consequently, restoring wetlands creates an opportunity to make significant environmental improvements. Click the map to view wetlands in Pennsylvania with restoration potential.



RESTORED WATERS ACROSS PENNSYLVANIA

Restoring waters to the point they can be removed from any of the impaired categories (4a, 4b, 4c, 5, and 5alt) requires a tremendous amount of resources, dedication, and strong partnerships. Some of DEP's greatest successes have come from treating abandoned mine drainage, which makes up the majority of restored waters to date. Click on the map to see all waters where at least one protected use has been fully restored.



PARTICIPATE AND STAY INFORMED

eCOMMENT

Public participation for this Integrated Report will be from **December 4th, 2021 to January 17th, 2022**. DEP encourages the public to provide constructive comments during this period. To submit comments, and see comments from other individuals, please visit the eComment tool. The links to view and comment on the Integrated Report will be made available in the “Open Comment Periods” section at the top of the eComment website during the public comment period. Written comments can also be mailed to Department of Environmental Protection, Policy Office, Rachel Carson State Office Building, P.O. Box 2063, Harrisburg, PA 17105. DEP suggests that comments be organized using the main headings above (e.g., INTRODUCTION, SECTION 303(d), etc.), or by scrolling down and viewing the subheadings on each slide (e.g., PENNSYLVANIA WATER RESOURCES, LISTING DATA, TRENDS, etc.). Persons in need of accommodations as provided for in the Americans With Disabilities Act of 1990 should contact DEP’s Water Quality Division at 717-787-9637 or through the Pennsylvania Hamilton Relay Service at 800-654-5984 (TTD) to discuss how DEP may accommodate their needs.

COMMENT AND RESPONSE DOCUMENT

After the public comment period, DEP compiles and responds to the comments provided. The comment and response document will be available shortly after the comment period (**December 4th, 2021 to January 17th, 2022**) ends. When the comment and response document become available, a link will be created below.

HOW'S MY WATERWAY?

How's My Waterway is EPA's newest data tool for everything related to water quality. It was designed to provide the public with water quality information that state, federal, tribal, and local agencies provided to EPA. Water quality information is displayed based on 3 scales (community, state, and national) to improve the user's experience and understanding. Explore the How's My Waterway factsheet and demonstration video for more information before diving in.



How's My Waterway

eNOTICE

DEP developed an electronic notification system for the public to use to stay up-to-date with many types of environmental topics. This tool is called eNotice and the public may register to receive free notification of important actions DEP takes.

DEP NEWSLETTER

DEP publishes a newsletter that features information about hot topics, recent actions, regulatory updates, webinars, and upcoming events.

CONTACT US

For questions or assistance please contact the Water Quality Division at 717-787-9637 or send an email to RA-epwater@pa.gov.

