

JUNIATA FORWARD: BUILDING ON 25 YEARS OF CONSERVATION EXECUTIVE SUMMARY

An Update to the Juniata Watershed Management Plan (2000)



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Our Mission

The **WESTERN PENNSYLVANIA CONSERVANCY** protects and restores exceptional places to provide our region with **CLEAN WATERS** and healthy forests, wildlife and **NATURAL AREAS** for the benefit of present and future generations. The Conservancy creates **GREEN SPACES AND GARDENS**, contributing to the vitality of our cities and towns, and preserves **FALLINGWATER**, a symbol of people living in **HARMONY WITH NATURE**.

Acknowledgements

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EXECUTIVE SUMMARY

The Juniata Forward: Building on 25 Years of Conservation is a comprehensive study that compiles broad-based data about recreational, historical, socio-economic, and natural resources throughout the region. The plan involves a strong community participation element through the identification of local needs and concerns.

This document is non-regulatory, and serves as a reference and educational tool promoting the conservation of natural resources, monitoring and improvement of water quality, and advocating sound community-planning practices. Recommendations identified in this plan are not enforceable by any agency. Implementation of this plan is the responsibility of the entire watershed community, and depends upon cooperation and collaboration among many different organizations.

The Pennsylvania Rivers Conservation Program aids groups in accomplishing local initiatives through planning, implementation, acquisition, and development activities. As part of the program, Pennsylvania Department of Conservation and Natural Resources (DCNR) established the Pennsylvania Rivers Registry to validate the completion of approved watershed conservation plans. The registry serves to promote public awareness of completed plans, while fostering support for future projects that will enhance the overall quality of the watershed. The Juniata Forward: Building on 25 Years of Conservation Plan was conducted to document current conditions that identify initiatives to improve the livability and attractiveness of the region. Through public perception of current conditions and future expectations, the plan engages community involvement to develop a future vision for the watershed and create a prioritized list of recommendations to achieve this vision. With the completion of this plan, The updated Juniata Forward: Building on 25 Years of Conservation will be placed on the Pennsylvania Rivers Registry, which is available at <https://www.dcnr.pa.gov/Conservation/Water/RiversConservation/RiversRegistry/>.

Project Background

In 2021, WPC submitted a grant application to the Pennsylvania Department of Natural Resources (PA DCNR) to complete an update to the Juniata Watershed Management Plan (2000). The original plan, completed by the Juniata Clean Water Partnership (JCWP), outlined a vision for the community in the Juniata River watershed. The update to this plan will build upon what has been accomplished in the past 25 years. Funding for Juniata Forward: Building on 25 Years of Conservation was awarded in 2022.

In May 2023, the watershed conservation plan process was initiated at a set of three public meetings held at various locations throughout the watershed. Local citizens were invited to come together to voice their opinions about local conservation issues and the need to protect and improve the watershed. Additionally, a public survey was developed via Survey Monkey to gather additional input.

Municipal and county officials were encouraged to participate in the planning process. A survey was sent to all municipalities in the watershed to garner their input for the plan. Additionally, county planning commission meeting and intermunicipal stormwater committee meetings were attended.

Purpose

The purpose of this study is to document current conditions and identify additional initiatives aimed at improving the livability and attractiveness of the region. This study considered all previous research compiled in the original 2000 plan, identified gaps and new and emerging issues and solutions, and recommended specific projects to provide those missing data sources and improve recreational

amenities and natural resources of the communities of the watershed. A need also existed to catalog the accomplishments that had been made by implementing action steps of the original plan. The community was involved in developing a vision for the future of the watershed through public meetings, surveys, and interviews. Stakeholders identified important issues and resources needing restoration, protection, conservation, and/or preservation. The goal of this plan is to develop a strategy to make the vision for the watershed a reality. Practical solutions and action steps were suggested, and resources were identified to support implementation. This plan can be used to assist groups and citizens working and/or living within the watershed with obtaining funding and other resources to fulfill the vision set forth for the area.

Building on 25 Year of Conservation

Through public meetings and public surveys, people of the watershed emphasized the natural beauty and scenic vistas of the area. Since the previous plan was developed 25 years ago, many organizations have been working to preserve this natural beauty.

The summary below highlights the collaborative efforts of various organizations and institutions to improve and protect the Juniata River watershed through conservation, education, and restoration projects.

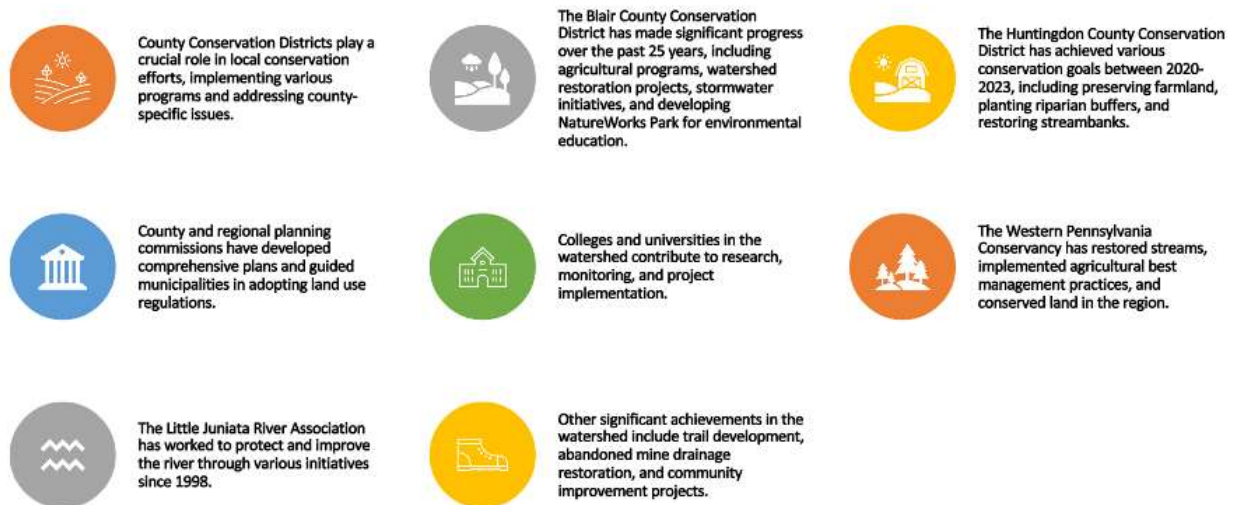


Figure ES 1: Sample of Projects in the Juniata River Watershed over the Past 25 Years.

Chapter Summaries

Project Area Characteristics

- The Juniata River watershed encompasses 3,400 square miles across 12 counties in southcentral Pennsylvania. The stream flows in a mainly easterly direction until it empties into the Susquehanna River. Major tributaries include Frankstown branch, Little Juniata River, and the Raystown Branch.
- There has been an increase in municipalities that have land use control regulations, including a 33% increase in zoning ordinances, a 54% increase in comprehensive plan adoption, and a 10% increase in subdivision ordinances.

- The population of the area is shrinking. The estimated population in 2020 was 324,917. This is approximately a 2.5% decrease from 2010. The average per capita income in the watershed is lower than Pennsylvania average.
- Major road ways in the area include Interstates 70, 76, and 99; and U.S. routes 22, 30 and 322.
- There are eight environmental justice areas identified in the watershed.
- The watershed is mainly located in the Appalachian Ridge and Valley province, with the headwaters located along the Allegheny Front.
- Land use in the watershed is mainly forested (67%), with significant portions of prime farmland (22%). Approximately 8% of the watershed is developed.

Issues and concerns

Multiple venues were used to gather input, including public meetings, community events, governmental meetings, and online surveys.

Public meetings and events were held in various locations, with presentations and visioning sessions to gather community input.

Two governmental meetings were held with county planning commissions and stormwater committees.

Online surveys were conducted for both the general public (76 responses) and municipalities (37 responses).

Key Issues and Concerns:

- Climate Change: Long-term shifts in temperature and weather patterns affecting the watershed area. Pennsylvania has experienced a warming trend and increased precipitation over the past 110 years.
- Concerns about increased flooding events that can damage infrastructure and disrupt ecosystems. Climate change may increase the frequency and intensity of floods.
- Concerns about urban sprawl, development near sensitive areas, and loss of farmland to housing and solar farms.
- Concerns about water quality, including temperature, runoff from various sources, and drinking well water quality.
- Issues with aging infrastructure, lack of internet/broadband coverage, traffic, and wastewater operations needing upgrades.
- Need for improved access to fishing, boating, and trails, as well as concerns about trail maintenance and connectivity.

Land Resources

- Geology and Topography:
 - Mostly in the Ridge and Valley Physiographic Province
 - Characterized by parallel northeast-southwest running ridges and valleys
 - Bedrock from Cambrian, Ordovician, Silurian, and Devonian periods

- Soil Characteristics:
 - Derived from sandstone, shale, and limestone bedrock
 - 12 major soil series described, including Berks, Hagerstown, and Weikert
 - Prime agricultural soils and farmland of statewide importance identified
- Land Ownership and Use:
 - Over 70% privately owned
 - 28.6% publicly owned (state forests, game lands, etc.)
 - Forestland dominates (67%), followed by agriculture (22%) and developed areas (8%)
- Critical Areas:
 - Steep slopes (25% or greater) limit development
 - One permitted landfill in the watershed
- Hazardous Areas:
 - Several CERCLA/Superfund sites listed
 - Land Recycling Program encourages voluntary cleanup of contaminated sites
 - RCRA and Toxics Release Inventory sites present
 - Abandoned mine lands in specific areas, with some AMD treatment projects completed
 - Sinkholes common, posing risks for groundwater pollution
 - Illegal dumpsites in remote areas
- Environmental Programs:
 - Land Recycling Program for voluntary cleanup of contaminated sites
 - AMD Set-Aside Program for addressing acid mine drainage
 - Keep Pennsylvania Beautiful initiative for addressing illegal dumping

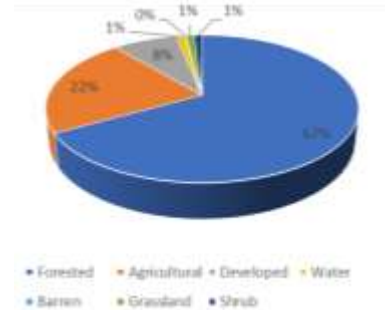


Figure ES 2. Land Use in the Watershed

Water Resources

- Major Tributaries:
 - The Juniata River is formed by three major tributaries: Raystown Branch, Frankstown Branch, and Little Juniata River.
 - Other major tributaries include Standing Stone Creek, Aughwick Creek, Kishacoquillas Creek, and Tuscarora Creek.
- Lakes and Reservoirs:
 - Most sizable lakes and reservoirs in the watershed are human-made.
 - They serve various purposes including drinking water supply, flood control, and recreation.
 - Raystown Lake is the largest lake at 8,300 acres.
- Wetlands:
 - Wetlands play important roles in groundwater recharge, flood protection, and biodiversity.

- The National Wetland Inventory provides data on wetland areas, though it has some limitations.
- Floodplains:
 - Floodplains help dissipate energy from high flows and absorb floodwaters.
 - The National Flood Insurance Program provides insurance for flood-prone areas.
- Water Quality:
 - The Clean Water Act establishes water quality standards and regulates pollution discharges.
 - Pennsylvania uses a designation system for waterways based on uses like aquatic life, water supply, and recreation.
 - Some streams are classified as High Quality or Exceptional Value waters.
 - Impaired waterways are listed and may require Total Maximum Daily Loads (TMDL).
- Major Water Quality Issues:
 - Agriculture is the largest contributor of nutrients in the watershed.
 - Stormwater runoff can cause pollution and flooding issues.
 - Point source discharges are regulated through NPDES permits.
- Monitoring:
 - Various agencies conduct water quality monitoring, including PA DEP, USGS, and the Susquehanna River Basin Commission.
 - Monitoring includes continuous instream monitoring, the Water Quality Network, and USGS stream gauges.
- Water Supply:
 - Water is used for various purposes including drinking water, irrigation, and industry.
 - The Susquehanna River Basin Commission regulates water use in the basin.
 - Drinking water comes from both public water supplies and private wells.
- Water Management:
 - Pennsylvania updated its State Water Plan in 2022 to address water resource management.
 - There are programs to protect public water sources and educate private well owners.

Biological Resources

This chapter emphasizes the rich biodiversity of the region while highlighting various conservation efforts and challenges facing different species and habitats.

- Wildlife:
 - The watershed has diverse habitats supporting many species, including white-tailed deer, wild turkey, black bear, and various small mammals.
 - There are about 50 mammal species, over 240 breeding bird species, and 82 fish species.
 - Bats are threatened by white-nose syndrome.
 - Bird populations have declined significantly since 1970.

- Fish and Aquatic Life:
 - Important game fish include brook and brown trout, bass, muskellunge, walleye, and pike.
 - Historically had large populations of migratory fish like American shad and eels, now mostly excluded by dams.
 - Invasive fish species are present and spreading.
- Vegetation:
 - About 67% of the watershed is forested, mostly oak forests.
 - Forest cover has increased compared to a century ago, when much was cleared for farming and timber.
- Invasive Species:
 - Pose significant threats to native plants and animals.
 - Management involves prevention, early detection, and control methods.
- Species of Concern:
 - 362 species of concern identified, including 227 plants, 90 invertebrates, and various animals.
 - 15 natural community types listed as important habitats.
- Conservation:
 - 363 Natural Heritage Areas identified in the watershed.
 - Various programs and initiatives aim to protect biodiversity and habitats.
- Challenges:
 - Chronic wasting disease in deer populations
 - Aquatic organism passage issues at road crossings
 - Climate change impacts on bird populations
 - Spread of invasive species

Cultural Resources

This chapter highlights the diverse recreational opportunities, natural resources, educational initiatives, and historical significance of the Juniata River watershed region.

- The watershed contains more than 620,000 acres of public lands for recreation, including local parks, state parks, state forests, and state game lands.
- There are 11 state parks in the watershed, offering activities like hiking, camping, picnicking, swimming, boating, and fishing.
- Portions of six state forests are located within the watershed, providing opportunities for hiking, hunting, fishing, horseback riding, and mountain biking.
- The watershed contains 36 state game lands totaling 242,593 acres, primarily for wildlife habitat management and hunting/trapping.

- Raystown Lake, the largest lake entirely in Pennsylvania, offers 8,300 acres of water and 21,000 acres of surrounding land for various recreational activities.
- The area has numerous trails and greenways, including water trails for activities like kayaking and canoeing.
- Fishing is plentiful in the watershed, with organizations working to increase public access to streams.
- Boating is popular, with over 300 public access areas managed by the Pennsylvania Fish and Boat Commission.
- Environmental education is emphasized in the region, with programs run by schools, conservation districts, and facilities like the Raystown Field Station and Shaver's Creek Environmental Center.
- The watershed area has a rich history, with counties established in the 18th and 19th centuries. There are 126 sites listed on the National Register of Historic Places within the watershed.
- Two Heritage Areas, Allegheny Ridge Corporation and Lincoln Highway Heritage Corridor, are located within the watershed, contributing to tourism and economic development.

Management Recommendations

Management recommendations are non-regulatory suggestions to maintain or improve the conditions that affect many aspects of life within the region. These recommendations are best used as a guide to conserving, restoring, or improving important watershed characteristics. They were compiled from municipal and public surveys, public meeting workshops, and key individual interview comments. No limitation to the number or types of issues, actions, approaches, partners or funding opportunities should be assumed, due to ever changing circumstances. Creativity in implementing the identified recommendations or developing additional suggestions is highly encouraged.

Table ES 1. Goals for Juniata Forward: Building on 25 Years of Conservation

Project Area Characteristic Goals

Goal 1-1: Proactively plan for future development.

Goal 1-2: Carefully plan development to ensure economic enhancement while preserving community character without adversely affecting quality of life.

Goal 1-3: Enhance transportation infrastructure.

Goal 1-4: Enhance support and services for emergency responders.

Goal 1-5: Increase communications and cooperation among municipalities and counties within the region to promote sharing of services and improve conditions collectively affecting watersheds.

Goal 1-6: Improve infrastructure for the community to be better able to access services.

Goal 1-7: Educate stakeholders about benefits of watershed protection and the use of best management practices.

Land Resource Goals

Goal 2-1: Reduce impacts caused by dirt and gravel roadways.

Goal 2-2: Preserve agricultural lands and culture for future generations.

Goal 2-3: Establish or enhance incentives for land protection and conservation practice implementation.

Goal 2-4: Identify, inventory, cleanup illegal dumpsites, and prosecute violators using illegal dumpsites.

Goal 2-5: Work with agricultural landowners to install best management practices on their farms to reduce impacts on livestock and area waterways.

Goal 2-6: Reclaim abandoned wells, mines, and quarries.

Goal 2-7: Protect ecologically significant lands.

Water Resource Goals

Goal 3-1: Implement current sub-watershed plans and initiatives.

Goal 3-2: Minimize impacts from stormwater.

Goal 3-3: Protect area waterways by promoting and planting riparian buffers.

Goal 3-4: Reduce the amount of erosion and sedimentation entering waterways.

Goal 3-5: Protect wetland habitats.

Goal 3-6: Minimize potential flooding damages by taking a proactive approach to managing floodplains.

Goal 3-7: Establish, maintain, or upgrade sewage treatment facilities

Goal 3-8: Promote conservation practices to reduce water consumption.

Goal 3-9: Protect waterways and wetlands that are designated as High Quality or Exceptional Value.

Goal 3-10: Maintain existing AMD treatment systems and investigate remediating untreated discharges.

Goal 3-11: Provide educational programs educating residents about impacts and pollution sources.

Goal 3-12: Establish, maintain, or upgrade water treatment facilities.

Biological Resource Goals

Goal 4-1 Reduce impacts caused by invasive species.

Goal 4-2: Identify and protect natural heritage areas.

Goal 4-3: Protect rare, threatened, and endangered species and their habitats.

Goal 4-4: Enhance aquatic habitats.

Goal 4-5: Develop, adopt, and implement management plans to protect forest and wildlife resources.

Goal 4-6: Implement best management practices to protect forest resources.

Goal 4-7: Identify and protect important habitats for plant and animal species.

Goal 4-8: Implement wildlife management practices to protect biodiversity.

Goal 4-9: Increase the use of native plants in landscaping and remediation projects.

Cultural Resource Goals

Goal 5-1: Establish, expand, and improve area trails.

Goal 5-2: Improve recreational facilities and ensure availability and access.

Goal 5-3: Enhance recreational opportunities for sportspeople and outdoor enthusiast.

Goal 5-4: Highlight and preserve local history within the region.

Goal 5-5: Encourage environmentally sound practices when operating recreational vehicles, and enforce existing laws to minimize intrusion on private lands.

Goal 5-6: Promote community involvement in conservation and educational initiatives.