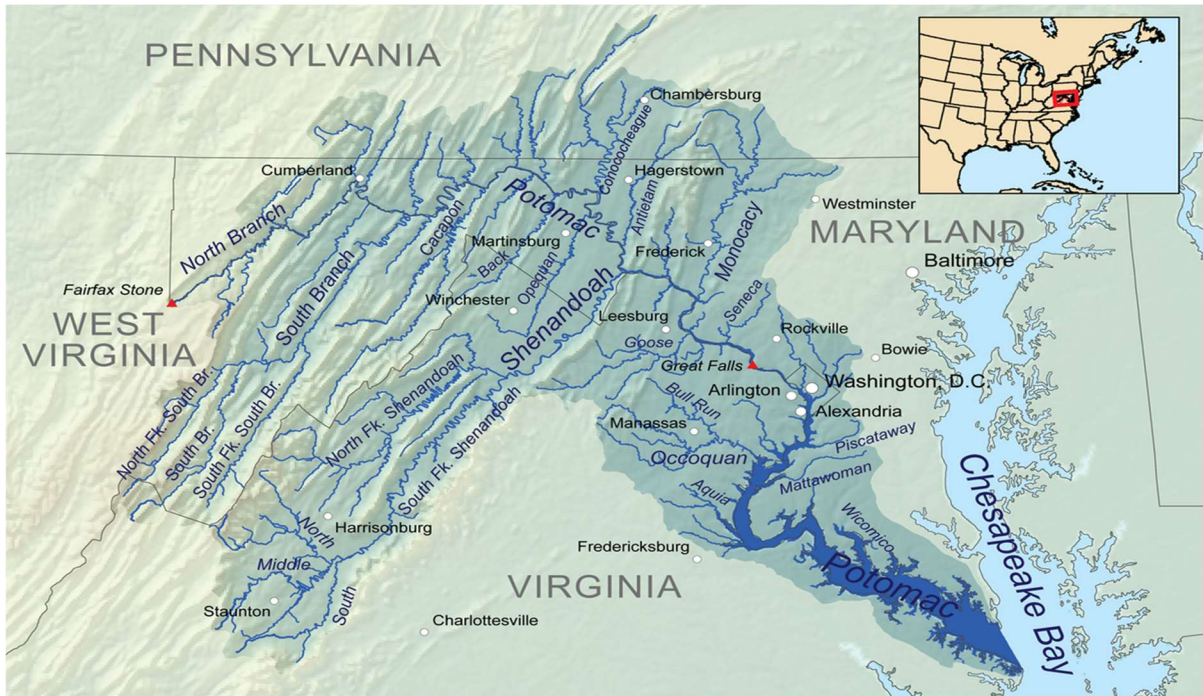


Protecting Our Territory, Optimizing Management,
Advancing Conservation
(POTOMAC)

Development of the Potomac River Watershed Plan



UAPP411 – Regional Watershed Management

Professor Kauffman

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Background on Watershed Management & Planning

Watershed planning has its roots in the recognition of the interconnectedness of land, water, and human activities. Historically, the degradation of water resources due to pollution, habitat loss, and unsustainable land use practices highlighted the need for coordinated management at the watershed scale. In the mid-20th century, events such as the Cuyahoga River fire in 1969 and the passage of the Clean Water Act in the United States underscored the need for comprehensive approaches to water resource management. The Clean Water Act laid the groundwork for watershed-based strategies by emphasizing the importance of controlling pollution at its source and restoring impaired watersheds. The primary purposes of these plans are to provide stakeholders with a comprehensive understanding of watershed planning principles and practices as well as how to use this information to highlight the importance of watershed planning and management to achieve sustainable water resource management.

POTOMAC

As the “*Protecting Our Territory, Optimizing Management, Advancing Conservation*” foundation or POTOMAC for short, we are dedicated to safeguarding, restoring, and improving the Potomac River watershed. As one of the nation’s most iconic and vital waterways, the Potomac River Watershed is not exempt from its profound health and resilience issues. As such, our goal is to chart a course towards a future where the Potomac River watershed thrives as a model of ecological integrity, resilience, and shared prosperity.

Mission Statement

POTOMAC’s focus is to safeguard the health and resilience of the Potomac River Watershed and surrounding areas, specifically the Washington D.C. region, through analyzing results of climate change and other environmental issues, such as pollution, flooding and droughts, as well as the diminishing habitat of the region, and provide recommendations and inspire change and influence governmental policy by 2040.

Overview of The Potomac River Watershed

Background and History

Flowing through the Mid-Atlantic region of the United States, the Potomac River watershed is a storied landscape rich in natural beauty and historical significance. Spanning over 14,000 square miles across parts of Maryland, Virginia, West Virginia, Pennsylvania, and the District of Columbia, the Potomac serves as a lifeline for millions of residents, wildlife species, and ecosystems.

The history of the Potomac River watershed is deeply intertwined with the story of America itself. Native American tribes, including the Piscataway, Powhatan, and Susquehannock, were among the first inhabitants of the region, relying on the river for sustenance, transportation, and cultural significance. With the arrival of European settlers in the 17th century, the Potomac River watershed became a focal point of exploration, trade, and colonization, shaping the course of American history. In the 18th century, the Potomac River played a pivotal role in the burgeoning tobacco trade, serving as a vital artery for commerce and transportation. The construction of the Chesapeake and Ohio Canal and the Potomac Canal further facilitated economic development along the river, ushering in an era of industrialization and urban growth. Throughout the 19th and 20th

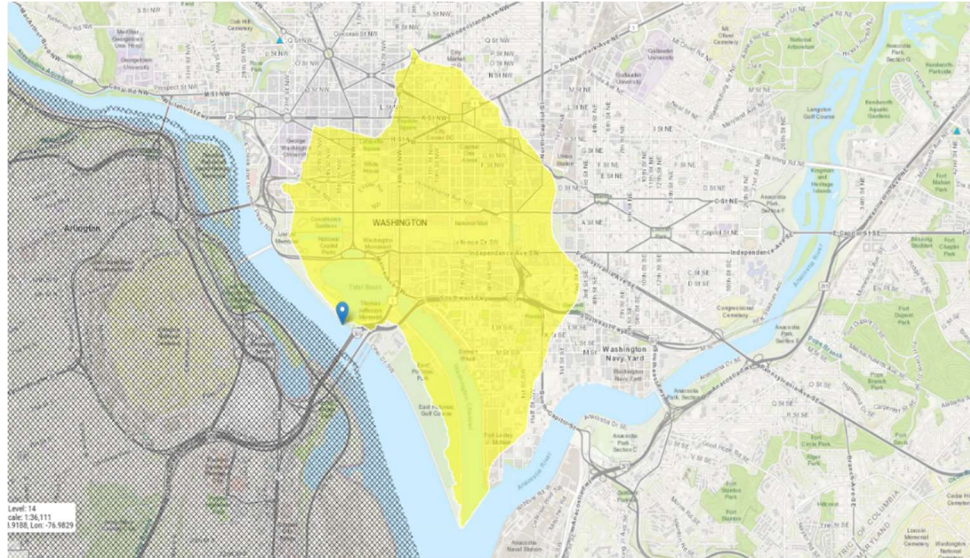
centuries, the Potomac River watershed witnessed rapid population growth, urbanization, and industrial expansion, accompanied by environmental degradation and pollution. The legacy of industrial activities, sewage discharges, and agricultural runoff left indelible marks on the river's waters, compromising water quality, degrading habitats, and threatening public health.



Current Conditions

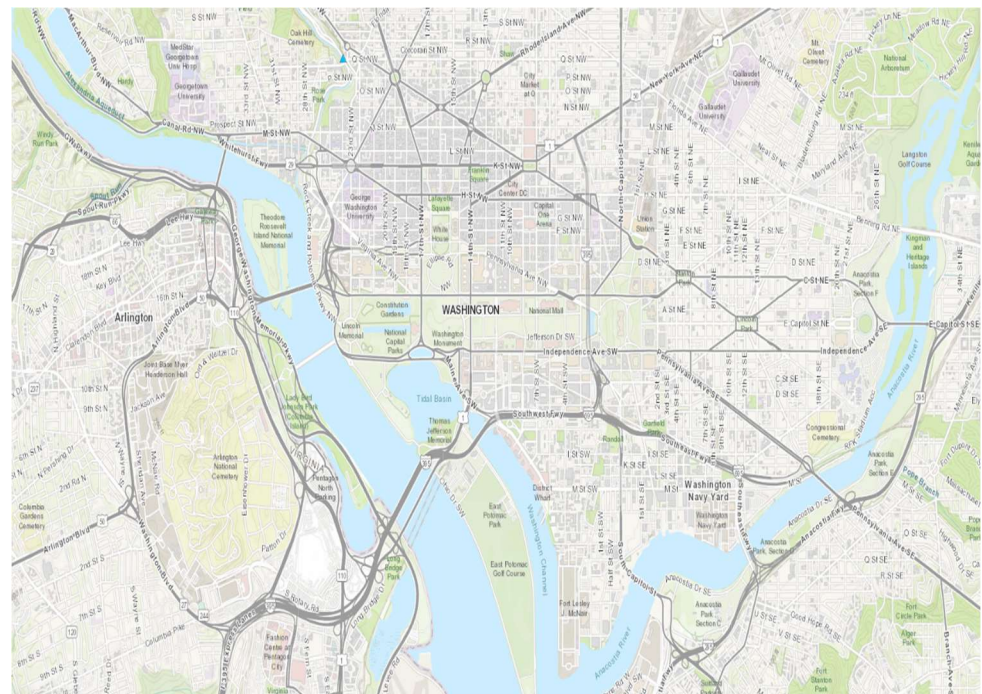
Physical Characteristics

Watershed Delineation

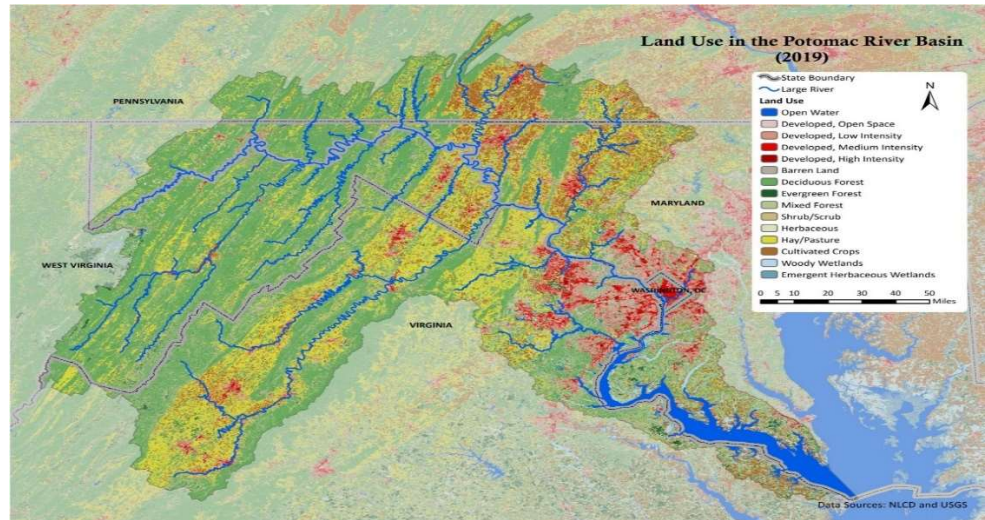


Potomac River Watershed Total Drainage Area: 14,679 sq. miles
Potomac River Watershed Total Length: 383 miles from Fairfax Stone, West Virginia to Point Lookout, Maryland
Washington D.C. Region Drainage Area: 10 sq. miles
Washington D.C Region Length: 6 miles

Topography



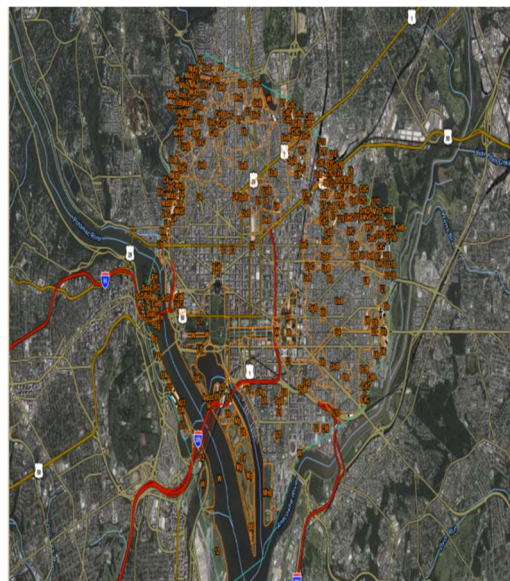
Land Use



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	4.74	square miles
FOREST	Percentage of area covered by forest	0.14	percent
FOREST_MD	Percent forest from Maryland 2010 land-use data	0	percent
IMPERV	Percentage of impervious area	60.1	percent
LIME	Percentage of area of limestone geology	0	percent
PRECIP	Mean Annual Precipitation	42.4	inches
SOILCorD	Percentage of area of Hydrologic Soil Type C or D from SSURGO	84.1	percent
SSURGOA	Percentage of area of Hydrologic Soil Type A from SSURGO	0	percent
STATSGOA	Percentage of area of Hydrologic Soil Type A from STATSGO	0	percent
STATSGOD	Percentage of area of Hydrologic Soil Type D from STATSGO	5.77	percent

Soil Types



Arlington County, Virginia (VA013) District of Columbia (DC001)			
Arlington County, Virginia (VA013)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
12	Urban land-Udorthents complex, 2 to 15 percent slopes	232.5	2.1%
W	Water	28.2	0.3%
Subtotals for Soil Survey Area		260.7	2.4%

Economic Conditions

The Potomac River watershed, stretching across multiple states, stands as a critical economic engine for the District of Columbia, encompassing a vast network of natural resources, industries, and communities.

One of the primary economic drivers within the Potomac River watershed is agriculture. The fertile soils along the riverbanks support a diverse range of crops, including corn, soybeans, wheat, and vegetables. Additionally, the watershed is home to numerous farms and ranches that produce dairy, poultry, and livestock products. The agricultural sector not only provides essential food and fiber but also contributes to rural employment, income generation, and economic stability for communities within the watershed.

Additionally, the scenic beauty and natural attractions of the Potomac River watershed draw millions of tourists and outdoor enthusiasts each year. From hiking and camping in the Appalachian Mountains to boating and fishing along the river, the watershed offers abundant opportunities for recreation and adventure. Historic sites, such as Harpers Ferry and Great Falls Park, further enhance the region's appeal, attracting visitors interested in exploring the area's rich cultural heritage and natural landscapes. Tourism-related businesses, including hotels, restaurants, and outdoor outfitters, thrive on the influx of visitors, contributing to the local economy and job creation.

The Potomac River also serves as a vital waterway for commercial shipping and transportation, facilitating the movement of goods and commodities between the Chesapeake Bay and inland ports. Industries such as shipping, logistics, and maritime trade rely on the river for transportation of raw materials, agricultural products, and manufactured goods. Additionally, the watershed supports a thriving commercial fishing industry, with the river and its tributaries providing habitat for various fish species, including shad, bass, and catfish. Commercial fishing operations contribute to regional economies and provide livelihoods for fishermen and seafood processors.

Washington D.C., as the nation's capital, serves as a hub for government, commerce, tourism, and a thriving culture that significantly contributes to the economic strength of the region. As the nation's capital, this region is a concentration of government institutions, which thrives on the proximity of policymakers and decision-makers, it provides stable employment opportunity and economic growth to the region. Additionally, the proximity of iconic national landmarks, including the Lincoln Memorial, Jefferson Memorial, the White House, National Mall, world-class museums, and plenty more historical attractions charm millions of visitors to Washington D.C. each year, making it a premier tourist destination. Not only that, but events such as cherry blossom season and Independence Day celebrations draw crowds and stimulate spending, further bolstering the tourism industry and revenue for local businesses.

Washington D.C.'s real estate market is also a huge economic driver in the region, and is characterized by robust demand for residential, commercial, and mixed-use properties. The waterfront areas along the Potomac River, including Georgetown and The Wharf, have undergone extensive redevelopment, transforming former industrial sites into vibrant mixed-use districts with waterfront dining, retail, entertainment, and recreational amenities. Waterfront living and access to the riverfront promenades contribute to the appeal of these neighborhoods, driving property values and attracting residents and businesses alike. Additionally, the District's strategic location within the Potomac River watershed offers opportunities for waterfront development and revitalization projects that enhance public access to the river while stimulating economic activity.

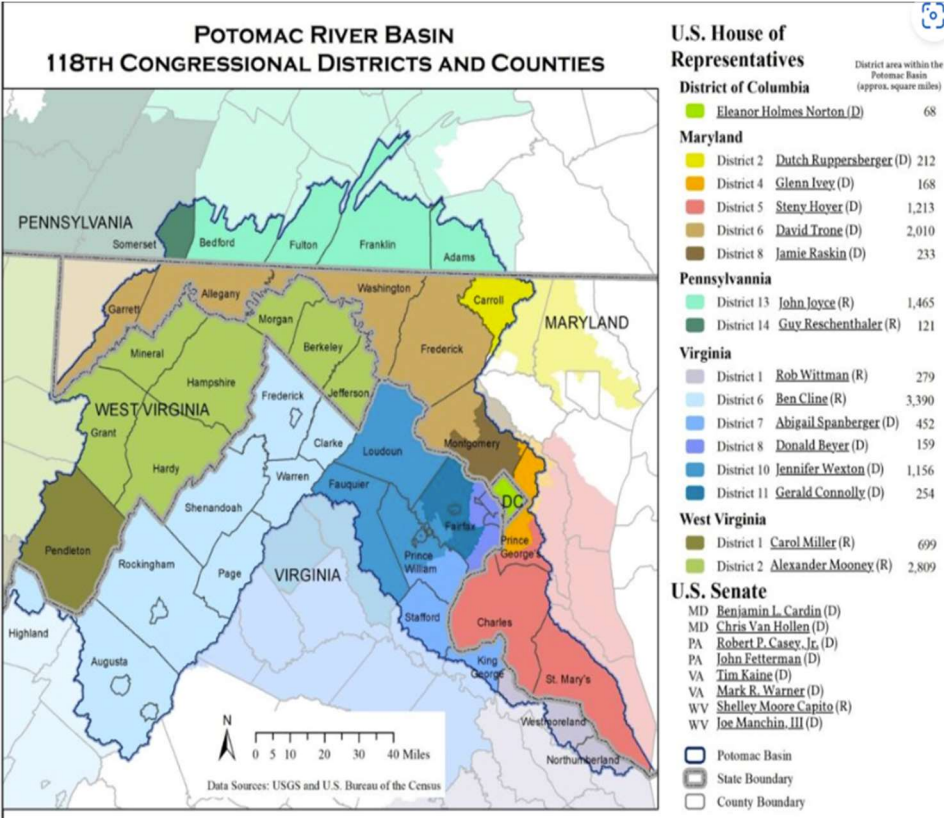
The District of Columbia recognizes the importance of environmental conservation and sustainability. Investments in green infrastructure, stormwater management, and riverfront restoration projects aim to enhance water quality, mitigate flooding, and promote ecological resilience. These initiatives not only contribute to the health of the Potomac River ecosystem but also create jobs, stimulate economic growth, and enhance the quality of life for residents. Furthermore, the District's commitment to sustainability, demonstrated through

initiatives such as renewable energy procurement and carbon reduction goals, positions Washington, D.C., as a leader in environmental stewardship and sustainable development.

However, Washington D.C. also faces economic challenges in the forms of environmental degradation (e.g., pollution, habitat loss, and water quality issues), needs for updated and more infrastructure (e.g., aging infrastructure, stormwater management systems, transportation networks), impacts from climate change (increased flooding, extreme weather events, and water scarcity), and economic disparities and inequities (e.g., access to clean water, green space, and recreational opportunities).

Governmental Influence

Representation



*As of January 25, 2023

Representative: Eleanor Holmes Norton, Democrat

Senator: Not a state, therefore no senator

Governmental Regulations and Policies

- Clean Water Act (CWA)
 - Federal water quality standard that regulates pollution in waterways. Protects biological, chemical, and physical stability of flowing water.
- Clean Water SRF (CWSRF)
 - A federal-state partnership that provides low-cost financing to communities for water quality infrastructure projects.
- Drinking Water SRF (DWSRF)
 - Helps achieve Drinking Water Act goals.
- National Environmental Policy Act (NEPA)
 - Federal agencies assess environmental impact.
- Chesapeake Bay Program
 - Regional partnership committed to restoring and protecting The Chesapeake Bay and its tributaries.
- Climate Solutions Act Now
 - Addressing climate change in Maryland, calls for 60% reduction in climate-warming carbon emissions by 2031.
- Total Maximum Daily Load (TMDL) for Chesapeake Bay
 - EPA set limits on the amount of nitrogen, phosphorus, and sediment that can be discharged into the bay and its tributaries.
- Land Use and Zoning Regulations
 - Local governments have implemented planning and zoning regulations to restrict development and protect wetlands and other critical habitats.
- Stormwater Management Regulations
 - Local jurisdictions have implemented regulations that reduce the impacts of urban and suburban runoff on water quality using BMPs.

Environmental Problems

Current Issues

Problem	Description	Causes	Impacts
Pollution in Source Water	Chemical, trash, nutrients, and sediments entering source water throughout the river	Direct discharge and stormwater runoff carrying pollution.	Contamination of water sources and aquatic ecosystems, loss of biodiversity, threat to public health
Habitat Degradation	Overall balance and healthy growth of aquatic life, vegetation, and chemical components	Invasive species in the area, nutrient pollution, human land use, and climate change	Loss of biodiversity and connectivity of ecosystems, degradation of water quality
Flooding and Droughts	Rise in sea level causing watershed to flood, and shallow areas evaporating	Climate change - Increased rainfall in area due to rising temperatures worldwide	Property damage, loss of life, disruption of transportation networks, negative economic impacts

Pollution in Source Water

The Potomac River currently experiences a variety of pollutants entering the watershed caused by a combination of urban runoff (e.g., sediment, nutrients, pesticides, and heavy metals), runoff from agricultural activities (fertilizers, pesticides, and animal waste), wastewater discharges (e.g., bacteria, chemicals, and pharmaceuticals), industrial pollution, and atmospheric deposition (e.g., nitrogen oxides, sulfur dioxide, and mercury). Research suggests that 525 million gallons of polluted runoff is produced from a 1.2-inch rainstorm in Washington D.C. (Kliefoth). This is the direct result of improper stormwater management planning. The Washington D.C. region is also characterized by 60% impervious cover, making it difficult for water to be naturally absorbed through the ground and back into the watershed.

Pollution in the source water has several adverse impacts on aquatic ecosystems, public health, and the economy. These issues include degradation of water quality, which makes the water unsafe to drink, as polluted water can lead to

waterborne illnesses posing threats to vulnerable populations, fishing, and other recreational activities. The contamination of aquatic habitats harms fish, wildlife, and plant communities, and excessive nutrient runoff can lead to algal blooms, hypoxia, and dead zones; overall reducing biodiversity and impairing ecosystem function. In addition to pollutants entering the watershed, the excessive runoff has led to erosion in many of the surrounding tributaries. The tributaries are lacking native plants to strengthen the riverbanks and are therefore extremely susceptible to erosion as water pours in and water levels rise from storms. This leads to large displacements of silt and sediment, reducing the overall quality of the rivers.

Habitat Degradation

The overall habitat of the Potomac River watershed is experiencing degradation due to factors such as invasive species being in the area, nutrient pollution, human land use, and climate change. The Potomac River is home to invasive plants and fish that all pose a threat to the ecosystem. These include algal blooms in this farthest upstream region of the Potomac River, *Didymo*, *Pistia Stratiotes* (water lettuce), snakeheads, and blue catfish.

Land use around the river is also not great, with only 38% being forest. The other 62% of land surrounding the basin is urban, agriculture, or impervious surface which is not great for reducing pollution, erosion, and other severe effects of climate change. Urban and agricultural runoff is one of the biggest threats to the river, as human land use and deforestation are on the rise. Deforestation weakens the river's defenses to runoff and destroys the natural habitat around the basin. Due to nutrient pollution, water clarity in the river is poor. In the lower Potomac basin almost 75% of bottom animal habitat is damaged, especially in the lower river channel. Additionally, dissolved oxygen levels in the lower portion of the river are almost always below 3 mg/l, severely impacting aquatic life. The climate change crisis is also straining the local ecosystem from intensifying storms, lengthening droughts, rising river levels, and warming stream temperatures.

Flooding and Droughts

The Potomac River watershed faces the dual challenges of both flooding and droughts as a result exacerbated by the impacts of climate change. With sea levels rising globally, coastal areas within the watershed, particularly those near the Chesapeake Bay face increased risk of inundation during storm events. Higher sea levels intensify storm surges, intensifying flooding along the Potomac River and its tributaries. According to the National Oceanic and Atmospheric Administration (NOAA), “sea levels along the East Coast, including the Chesapeake Bay, have risen by over a foot since the early 20th century”, amplifying the vulnerability of low-lying communities to flooding. In addition, and conversely, climate change also contributes to drought conditions within the Potomac watershed. As temperatures rise, evaporation rates increase, leading to decreased water levels in streams, reservoirs, and shallow areas. The combination of reduced precipitation and increased evaporation exacerbates drought severity and duration. According to the United States Geological Survey (USGS), the Potomac River Basin has experienced periods of drought in recent decades, impacting water availability for agriculture, industry, and municipal use. These challenges highlight the urgent need for proactive measures to mitigate the impacts of climate change, such as improved water management practices and infrastructure upgrades within the Potomac watershed. Climate change amplifies the problems of urbanization, deforestation, and agricultural practices, which alter the natural hydrology and drainage patterns of the watershed, increasing runoff, reducing infiltration, increasing the likelihood of water withdrawals in reservoir operations causing drought conditions.

Flooding has wide-ranging impacts on communities, ecosystems, and economies, including infrastructure damage and property loss (e.g., roads, buildings, and utilities), which comes at economic costs, as well as ecological degradation. Droughts cause pollutant concentrations, reduced water quality, and socio-disruption (e.g., health risks, water shortages, food insecurity, and social unrest).

Goals Towards Best Management Practice

Pollution in the Source Water

To achieve a significant reduction in pollutant levels in source water in the Washington D.C. region by 2040, collaborative efforts will ensure a commitment to safeguarding source water quality, protecting public health, and preserving the ecological integrity of our water resources for the benefit of all. This goal will be accomplished through pollution prevention, stormwater management, green infrastructure implementation, and enhanced monitoring and enforcement measures. By 2040, the region aims to achieve measurable improvements in water quality indicators, such as reduced nutrient and sediment levels, increased dissolved oxygen concentrations, and decreased pollutant loads entering source water bodies.

Habitat Degradation

To restore and enhance the ecological health and resilience of natural habitats and ecosystems in the Washington, D.C. region by 2040, aiming to reverse habitat degradation, promote biodiversity, and create thriving ecosystems, collaborative efforts among government agencies, conservation organizations, landowners, and the community, will be put into action, including reforestation, restoration of wetlands and habitats for local species, as well as invasive species management. By 2040, this region aims to achieve significant measurable improvements in habitat quality indicators, such as increased habitat connectivity and improved ecosystem functions.

Flooding and Droughts

To enhance resilience and adaptability to climate change in the Washington, D.C. region, aiming to minimize the risks of flooding, droughts, protect critical infrastructure and natural resources, and safeguard well-being of residents and communities, collaborative efforts among government agencies, stakeholders, and the community, will be accomplished through proactive climate adaption and mitigation strategies, including green infrastructure development, floodplain management, and sustainable land use planning. By 2040, the region aims to achieve measurable reductions in flood vulnerability, water scarcity, and climate-related risks, while fostering a resilient and natural environment.

Recommendations to Achieve Goals

To reduce pollution in source water by 2040, POTOMAC recommends:

- Promote sustainable land use practices:
 - To minimize land disturbance, preserve natural habitats, and protect water quality.
- Enhance monitoring & enforcement:
 - Increase investment in water quality monitoring programs to assess pollutant levels, identify sources of contamination, and track progress towards water quality goals. Strengthen enforcement mechanisms to hold polluters accountable and ensure compliance with environmental regulations.
- Enhance agriculture best management practices:
 - Work with farmers to promote the adoption of conservation practices, such as cover cropping, crop rotation, and nutrient management planning, to reduce agricultural runoff and nutrient pollution from farmland.
- Enhance stormwater management practices:
 - Invest in green infrastructure projects, such as rain gardens, permeable pavement, and green roofs, to reduce stormwater runoff and mitigate pollution from urban areas.
- Upgrade wastewater treatment facilities:
 - Upgrade and modernize wastewater treatment facilities to ensure compliance with water quality standards and improve the removal of pollutants, such as nutrients and pathogens, from wastewater effluent.
- Educate and engage the community:
 - Raise awareness about the importance of source water protection and pollution prevention through educational outreach programs, public campaigns, and community involvement initiatives.
- Foster collaboration and partnerships:
 - To coordinate efforts, leverage resources, and implement coordinated strategies for source water protection and pollution reduction.

To restore natural territories and combat habitat degradation by 2040, POTOMAC recommends:

- Conduct habitat assessments:
 - To identify degraded areas, prioritize restoration sites, and assess habitat quality and connectivity.
- Implement reforestation projects:
 - To restore degraded forests, enhance tree canopy cover, and improve habitat quality for wildlife. Plant native tree species and establish diverse forest communities to promote biodiversity and ecosystem resilience.
- Restore wetland and riparian areas:
 - To improve water quality, reduce erosion, and provide habitat for aquatic and terrestrial species. Implement wetland creation, stream restoration, and shoreline stabilization projects to enhance ecosystem functions and support biodiversity.
- Manage invasive species:
 - To control and eradicate non-native invasive plants and animals that threaten native habitats and species. Use integrated pest management strategies to minimize the impact of invasive species on natural ecosystems.
- Protect and expand green spaces:
 - To protect existing green spaces and natural areas from development pressure and land conversion. Identify opportunities to expand protected areas, establish conservation easements, and acquire land for habitat preservation and restoration.
- Enhance habitat connectivity:
 - To facilitate the movement of wildlife and promote genetic diversity.
- Promote sustainable land management practices:
 - Encourage landowners and stakeholders to adopt sustainable land management practices, such as conservation easements, land stewardship agreements, and habitat-friendly landscaping, to protect and enhance natural habitats on private lands.
- Engage and educate the community.

To reduce the effects of climate change by 2040, POTOMAC recommends:

- Implement green infrastructure projects:
 - Green infrastructure helps to mimic natural hydrological processes, mitigating the impacts of heavy rainfall events and reducing the risk of urban flooding.
- Enhance floodplain management:
 - Implement floodplain management strategies, including floodplain mapping, zoning regulations, and land use planning, to reduce exposure to flood hazards and protect vulnerable communities, infrastructure, and natural habitats from flood damage. Encourage resilient building design and elevate critical infrastructure to minimize flood risk and increase community resilience to flooding.
- Implement sustainable land use planning:
 - Integrate climate considerations into land use planning and development decisions to minimize environmental impacts, reduce vulnerability to climate hazards, and promote sustainable growth and development. Encourage compact, mixed-use development, transit-oriented development, and smart growth principles to reduce greenhouse gas emissions, decrease urban heat island effects, and enhance community resilience.
- Strengthen coastal and riverine resilience:
 - Enhance coastal and riverine resilience through shoreline stabilization, natural shoreline protection measures, and ecosystem-based adaptation strategies. Restore and protect natural buffers, such as wetlands, dunes, and mangroves, to provide natural defense against storm surges, sea-level rise, and erosion, while enhancing biodiversity and habitat quality.
- Increase climate resilience of infrastructure:
 - Retrofit existing infrastructure and design new infrastructure to withstand climate impacts, such as increased precipitation, extreme temperatures, and sea-level rise. Incorporate climate resilience measures into infrastructure planning, design, construction, and maintenance practices, including green building standards, sustainable drainage systems, and resilient transportation networks.

Current Watershed Conservation Efforts

The Potomac River watershed has many groups and foundations already working towards the same goal we are. Foundations, such as the Interstate Commission on the Potomac River Basin (ICPRB) established in 1940, serves as a collective and comprehensive group to support the Potomac and provide solutions to its ongoing and dynamic problems, such as water quality, as well as provide communications and education for basin residents and others to learn about and support their cause. Others such as the Alice Ferguson Foundation, hosts annual cleanups where a large group collects trash from the area. While we are a little late in the game, help is help, no matter what. Foundations already established and in need of support is another reason why watershed management plans are necessary to continue to build on and grow for everyone to see the collective problems. Thus, new initiatives and programs, as well as any help the government can supply and put into action is critical to the cause.

Stormwater runoff has been addressed successfully in some smaller areas already. DC Water led the “Potomac River Green Infrastructure Project A” in northwest Washington, DC. Project A is part of a bigger green infrastructure plan to reduce the pollution in the Potomac River that is produced as a result of combined sewer overflows (CSOs). CSOs currently serve as a way to mitigate the impact of excessive stormwater on communities. Reducing the inflow of stormwater to CSOs would help to reduce the pollution levels in the Potomac River. So, Project A is the first of several steps to address this problem. The Project has successfully implemented several forms of green infrastructure to help mitigate excessive runoff by letting storm water be naturally absorbed into the land. Across two neighborhoods, they built permeable parking lanes and alleys, along with bioretention planter strips between roads and along sidewalks. The first stage was completed in 2019. Project B was completed in 2023 and included the construction of 48 permeable alleys and 28 rain gardens. Future projects will include the construction of more green infrastructure, also including disconnect downspouts with rain barrels to further mitigate runoff. The next phase, Project C, is seeking to manage 1.2” of stormwater runoff from 25 impervious acres of land.

To address the current habitat degradation issue, efforts have already been made to protect and restore the water quality and surrounding area in the watershed. Maryland has been focused on implementing agricultural runoff and wastewater contamination mitigation. These measures include the widespread planting of cover crops across more than 80,750 acres during non-growing seasons, installation of fencing on over 16,000 acres of farmland to prevent livestock access to streams, and construction of over 1,450 containment structures to manage animal waste effectively. Additionally, approximately 23,600 acres of stream buffers have been established to maintain natural vegetation alongside waterways. Upgrades to major wastewater treatment plants in Maryland have significantly reduced nitrogen and phosphorus loadings. Stormwater retrofits in urban and suburban areas have further decreased nitrogen pollution, while septic upgrades have been completed to minimize contamination. Maryland's conservation programs, such as Program Open Space, Rural Legacy Program, Maryland Environmental Trust, and Agricultural Land Preservation Program, have collectively conserved thousands of acres of land to mitigate the impacts of continued development and preserve critical habitats and cultural sites. The Drinking Water Source Protection Program (DWSP) will also limit and preserve the land use surrounding the watershed. These ongoing efforts should be scaled up along the whole Potomac River watershed, especially in areas with increased land use and urbanization.

The National Mall and Southeast DC have been identified as two areas that are at great risk of flooding from the Potomac River. One key point in this flood risk is 17th street. As the Potomac begins to flood, water flows inland, where 17th street acts as a gateway for the river to downtown DC. The Capital called upon Tetra Tech to engineer a protective system for the area from large floods. The company implemented a floodwall and post and panel system that does not impede traffic and can be set up within 24 hours of flood prediction. The levee provides protection against a river discharge of 700,000 cubic feet per second. This is a great solution to provide the area with protection, however, global solutions will need to be implemented to decrease the sea level in order to reduce the number of floods that D.C. experiences.

Financing the POTOMAC Organization

To fund the POTOMAC initiative, there are several different types of financing options available to support the cause. There are government grant opportunities at the federal, state, and local levels, capacity building grants, which provide support to strengthen the capabilities of watershed management focused non-profit organizations, matching funds and cost-sharing programs, such as private donations and sponsorships, and influence government policy to supply a greater investment for watershed management and protection.

Some of these government grants come from the United States Environmental Protection Agency (EPA), which currently has several programs that can help finance decentralized wastewater system projects by providing low-cost financing for wastewater infrastructure and water quality projects. Just one of these programs being the Clean Water State Revolving Fund (CWSRF), which functions as an environmental infrastructure bank, offering different types of below-market rate loans to eligible borrowers. Community leaders, state programs, and other supporting groups, such as POTOMAC, can utilize the CWSRF for financing their plans, which helps to achieve the collaborative goals among stakeholders.

As of right now, through comparing budgets of other small-sized water management organizations, POTOMAC would require an annual budget of \$500,000 to \$2 million. This funding would cover a range of expenses, including salaries for staff members, office space and equipment, equipment and supplies, professional services (e.g. legal, accounting), communication and marketing efforts, fundraising, programmatic expenses (e.g., water quality monitoring, habitat restoration projects), and operational overhead costs (e.g., insurance, taxes). This funding could vary from year to year as fluctuations in staffing levels, expansion, and external funding sources contribute to meeting the organization's financial needs.

Ultimately, within the next 16 years, the POTOMAC organization will need a range from \$10 million to \$30 million to effectively support its mission, programs, and operations while stewarding resources to protect and preservice the Potomac River Watershed in the Washington D.C. region.

Conclusion

The POTOMAC watershed management plan will play a pivotal role in safeguarding the Potomac River watershed and ensuring its continued vitality for future generations. By focusing on combating pollution, restoring habitats, and reducing the effects of climate change, this plan seeks to promote resilience, biodiversity, and sustainability throughout the watershed. By prioritizing community engagement and stakeholder collaboration, this plan ensures inclusivity and fosters a sense of shared responsibility for the protection and stewardship of the Potomac River watershed. Ultimately, the success of this watershed plan relies on collective action, innovation, and a commitment to safeguarding the health and integrity of this vital natural resource for current and future generations.

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