

WEST VIRGINIA WETLAND PROGRAM PLAN 2016-2020



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Division of Water and Wastewater Management
West Virginia Department of
Environmental Protection



Wildlife Resources Section
West Virginia Division of
Natural Resources

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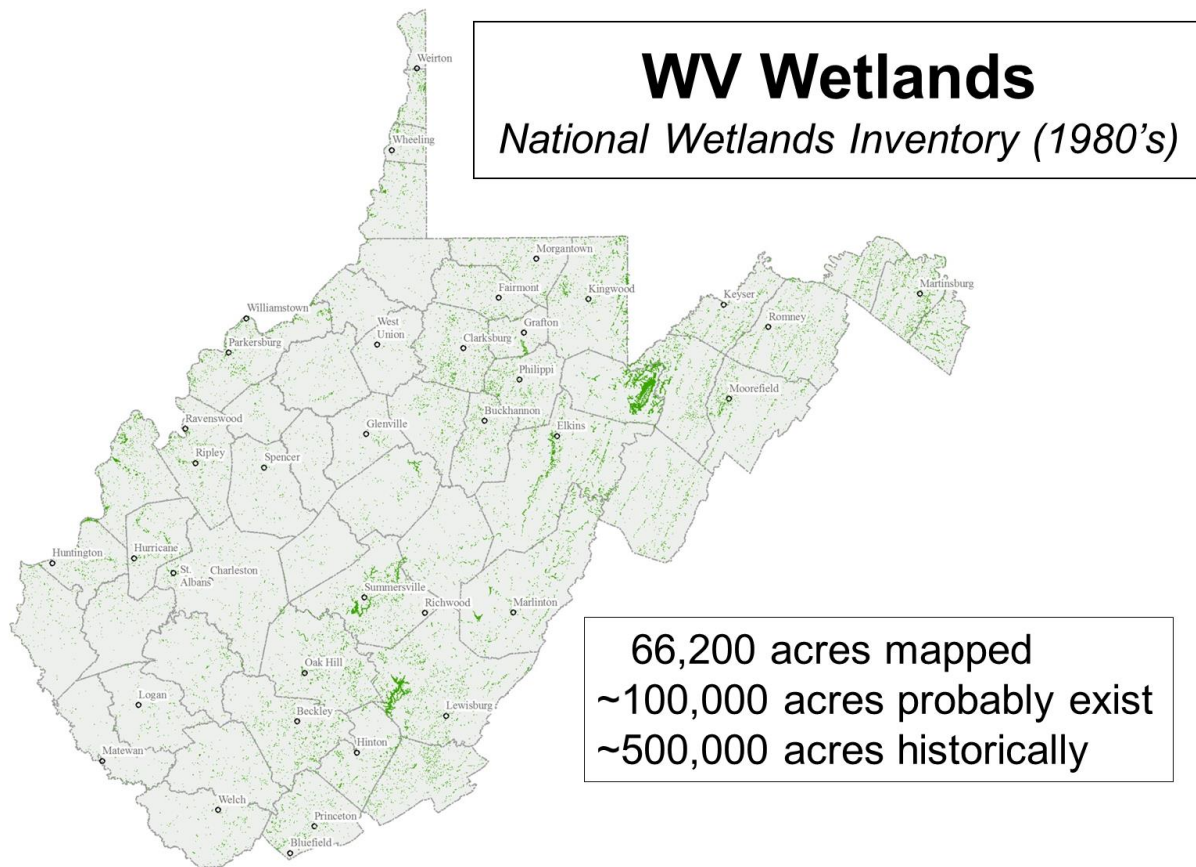
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Introduction

West Virginia has approximately 66,200 mapped acres of wetlands, not including lakes and streams. The best available mapping is the National Wetlands Inventory, which was developed in the early 1980's. This dataset includes most of the wetlands on the wetter end of the gradient, but because of the technology limitations of the time, many of the temporarily flooded wetlands were not included. The total acreage of wetlands in West Virginia today is probably closer to 100,000 acres. This represents less than one percent of the state's land surface, but provides extraordinary benefits to the state in terms of wetland function. The most dramatic example of this is illustrated by the relationship between wetlands and biodiversity. Wetlands provide essential habitat for a remarkable 23% of West Virginia's plant species, and for an even higher 44% of its rare plants. Naturally-occurring bacteria in wetlands convert polluting nitrates into harmless nitrogen gas, filtering and purifying water for areas downstream. Large headwater wetlands in the Allegheny Mountains and Meadow River provide important flood protection services to the state. Boardwalks at Cranberry Glades and other wetland sites provide unique educational opportunities. Birders and hunters treasure wetland complexes in the National Wildlife Refuges or their own backyards. Nature tourism, on the rise nationwide, is closely linked to the rich flora and fauna and scenic landscapes of our state's wetlands.

Major West Virginia wetland complexes include high elevation Allegheny wetlands, Meadow River wetlands, Ohio River wetlands, rare marl wetlands of the eastern panhandle, extremely rare summit sinkhole wetlands in the east, alluvial wetlands associated with streams and rivers throughout the state, and vernal pools.



The single most important threat to wetlands in West Virginia is land conversion from natural to developed land uses as part of general economic development. Construction, extractive industries, and floodplain development all contribute to wetland loss in the state. Pollution, artificial drainage, and invasive species degrade existing wetlands. Climate change, which is bringing an increased frequency of both drought and extreme storm events, threatens wetlands while at the same time underscoring their importance in helping to stabilize the hydrologic cycle.

Respective Roles of WVDEP and WVDNR

Much of the state-level responsibility for regulation, management, and assessment of wetlands falls under two agencies in West Virginia, the Department of Environmental Protection and the Division of Natural Resources. Within the Department of Environmental Protection, the Division of Water and Waste Management contains three groups that have responsibility for various aspects of wetlands. These are the Watershed Assessment Branch (assessment and monitoring), the Watershed Improvement Branch (In-lieu Fee program and Chesapeake Bay

program), and the Water Quality Standards Program. Within the Division of Natural Resources, the Wildlife Resources Section has two units with responsibility for aspects of wetland conservation. These are the Coordination Unit (Clean Water Act review) and the Wildlife Diversity Unit (inventory, monitoring, and assessment of species and natural communities). The West Virginia Inter-Agency Review Team, which consists of federal and state agencies, will be requested to review and endorse any new regulatory protocols resulting from this plan.

Summary of Progress 2011-2015

During the previous five-year period, progress was made toward better conserving and regulating wetland activities in West Virginia for each of five core elements: Monitoring and Assessment, Restoration and Protection, Water quality Elements, Regulation, and Outreach/education/Information. A strategy for rolling up the available data and organizing the many projects undertaken in the past, in order to develop a functional assessment protocol for state wetlands, was developed in 2014. This strategy was presented to state and federal agencies and funded by the EPA Wetland Program Development Grant for 2015-2018.

The Inter-Agency Review Team (WVDEP, WVDNR, EPA, USACE, NRCS, USFWS) and In-Lieu Fee Program provided regulatory and mitigation services related to wetlands from 2011-2015. Field work for the on-going Wetland Rapid Assessment project was completed, with data collected and entered into spreadsheets for 605 sites. The Natural Heritage Plots database was maintained and enhanced, resulting in a total of 1667 field-sampled wetland plots at the end of 2015. Continued monitoring of rare or threatened animal and plant species in wetlands was carried out by the WVDNR Wildlife Diversity Unit. The classification of natural wetland communities to the FGDC standard of the National Vegetation Classification was completed, including State and Global Conservation Priority Ranks following NatureServe standards. A geodatabase of 150 Exemplary Wetlands based on NatureServe Site Biodiversity Ranks was compiled. Intensive (Level 3) studies were conducted by WVU in the eastern panhandle, resulting in 18 sites with comprehensive soils, vegetation, and hydrology data. WVDEP and WVDNR participated in the National Wetland Condition Assessment in 2011, resulting in field data for 12 sites, including two reference sites. WVU developed preliminary guidelines for calculating 87 GIS variables related to functional assessment of wetlands.

Plan Overview

The West Virginia Wetland Program Plan provides a framework and direction to WV Department of Environmental Protection, WV Division of Natural Resources, and their partners, in order to build, strengthen, and improve the ability of the state to protect and conserve its wetlands. The plan includes current wetland initiatives and identifies actions that the state plans to implement between 2016 and 2020 to improve its wetland program.

Important outcomes of the actions in this plan are expected to include (a) West Virginia gains the ability to use wetland function as a basis for regulatory decision making, (b) West Virginia gains the ability to assess success of mitigation projects using wetland functional values as criteria, (c) West Virginia increases understanding of wetland functions and promotes sound stewardship among land managers through sharing information about wetland sites within different jurisdictions, and (d) West Virginia Department of Environmental Protection builds its wetland expertise and capacity.

Tangible products expected to be produced 2016-2020 include (a) revised and validated rapid assessment protocol with training manual and field forms, (b) calibration series of wetland sites including reference sites for high-, medium-, and low-functioning wetlands, (c) enhanced NWI mapping for the calibration series, (d) four sets of equations and resulting indices that assess the functional values (levels 1,2) contributed by wetlands statewide for flood attenuation, water quality (sediment retention, nutrient processing, pollution removal), ecological integrity and wildlife habitat, and education/recreation/aesthetics, (e) protocol for calculating debits and credits for wetland impacts and mitigation sites, (f) restoration site suitability tool, (g) monitoring protocol for long-term statewide wetland assessment, (h) reports to county, state, federal, and conservation land managers showing mapped wetlands and functional values and exemplary status, if appropriate, (i) enhanced and expanded list of exemplary wetlands prioritized into at least two categories.

Funding Sources

Funding for the work detailed in the plan comes from a variety of sources, as indicated in the table below.

Funding Sources for the West Virginia Wetland Program	
Activity	Source
Inter-Agency Review Team activities	Each agency funds its own participation (WVDEP, WVDNR, EPA, USACE, NRCS, USFWS)
In-Lieu Fee program	CWA Section 404 compensatory mitigation fees
Clean Water Act review	USFWS (Dingell-Johnson Act, Wallop-Breaux Act)
Wetland creation, restoration and enhancement	NRCS Wetland Reserve Program, EPA's Chesapeake Bay Implementation Grant administered through WVDEP, National Fish and Wildlife Foundation's

	Chesapeake Bay Stewardship Fund, CWA Section 319 Nonpoint Source Program, WV Stream Partners Program
Landscape-level functional assessment	EPA WPDG
Rapid field-level functional assessment	EPA WPDG
National Wetlands Inventory updates	To be determined (a small percentage of this work will be done to update calibration sites for wetland functional assessment under EPA's Wetland Program Development Grant (WPDG))
State wetland database development (excluding Natural Heritage & Threatened Species)	EPA WPDG
Natural Heritage & Threatened Species monitoring and databases	USFWS (State Wildlife Grant, Endangered Species Act), Vehicle License Plates, Wildlife Calendars, WV Division of Highways
Mitigation credit-debit protocol development	EPA WPDG
Revise mitigation performance standards	EPA WPDG
Restoration site prioritization tool development	EPA WPDG
Water quality standards for wetlands	EPA WPDG
National Wetland Condition Assessment	EPA's National Wetland Condition Assessment
State wetland monitoring protocol development	EPA WPDG

Core Elements

Four core elements are identified by the U.S. Environmental Protection Agency as part of their Enhancing State and Tribal Wetlands Program. These elements have been adopted as an organizing framework for the West Virginia plan. The core elements and their 2016-2020 goals for West Virginia are:

1. Monitoring and Assessment
2. Regulation
3. Restoration and Protection
4. Water Quality Standards for Wetlands

Tables listing the goals, objectives, actions, and activities under each core element are below.

Core Element: Monitoring and Assessment

Goal: Improve the State’s knowledge of and ability to sustainably manage and conserve its wetlands, including wetland function and condition, such that important ecosystem services, including flood attenuation, water quality protection, provision of wildlife habitat, protection of biodiversity, and educational/recreational opportunities are preserved and maintained to benefit the citizens of West Virginia.

Objective: Develop and maintain a program to assess the functions of wetlands, monitor the status of wetlands, and update the inventory of wetlands at the watershed, landscape, and site level scales consistent with EPA’s three-tiered approach, in order to provide decision-makers and the public with the best possible information on the extent, type, and health of West Virginia’s wetlands and the ecosystem services they provide.

Action (a) Participate in the National Wetland Condition Assessment (NWCA)					
Activity	2016	2017	2018	2019	2020
Coordinate and participate in inter-agency implementation of the NWCA	X				
Provide follow-up as needed to clarify field results	X	X			
Integrate results from EPA into state wetland databases (wetland plots database, Enhanced NWI, monitoring database)			X	X	

Action (b) Improve wetland mapping in West Virginia					
Activity	2016	2017	2018	2019	2020
Document techniques for Enhanced National Wetlands Inventory (NWI) updating in West Virginia according to the NWI Mapping Standard	X				
As time permits, update Enhanced NWI based on remote sensing data for wetlands that are key to functional assessment, regulation, or conservation activities.	X	X	X	X	X
As time permits, update Enhanced NWI based on field-collected data from permit information, project reviews, site visits, and submittal of information from outside or public sources	X	X	X	X	X
Seek funding to support updating of the Enhanced NWI in West Virginia (only 1881 out of 60315 polygons have been updated as of 2015)	X	X	X	X	X

Action (c) Conduct landscape-level functional assessment					
Activity	2016	2017	2018	2019	2020
Develop functional formulas for flood attenuation, water quality, wildlife habitat/ecological integrity, and education/recreation	X	X			
Characterize Wetland Units based on Tiner functional attributes and state system	X				
Calculate and test remote sensing and GIS variables used in the functional formulas	X	X	X		
Automate calculation of variables in Python code to allow for iterative analysis during the development phase and site-specific analysis of newly mapped wetlands during the implementation phase	X	X	X		
Test, calibrate, and revise functional formulas	X	X	X		
Lump Wetland Units into functional groups		X	X		

Action (d) Conduct rapid field assessment of wetlands					
Activity	2016	2017	2018	2019	2020
Revise West Virginia Wetlands Rapid Assessment Protocol (WVWRAP) to align with new functional assessment formulas	X	X			
Field-test revised WVWRAP	X	X			
Revise Quality Assurance Project Plan as needed		X			
Identify gaps in field data set for functional assessment and conduct field sampling to fill these gaps	X	X			
Disseminate WVWRAP and provide training to consultants and other users			X	X	X

Action (e) Build and maintain state wetland databases					
Activity	2016	2017	2018	2019	2020
Build and maintain catalog of reference/calibration sites, including high and low-functioning wetlands within each of the state wetland systems	X	X	X	X	X
Maintain and improve catalog of exemplary wetland sites in West Virginia	X	X	X	X	X
Build and maintain database of Wetland Unit functions, linked to the Enhanced NWI		X	X	X	X

Maintain and update geodatabases of Level III (intensive assessment) sites, NWCA sites, WVWRAP sites, wetland plots, and wetland observations	X	X	X	X	X
Maintain and update library of site visit notes and other narrative wetland site information	X	X	X	X	X
Maintain and update library of key wetland reference documents, forms, and protocols	X	X	X	X	X
Maintain and update Natural Heritage database of rare species and natural communities (including those in wetlands)	X	X	X	X	X

Action (f) Develop and test a statewide monitoring strategy					
Activity	2016	2017	2018	2019	2020
Design a field monitoring protocol for statewide wetland status and condition, based on the National Wetland Condition Assessment and other existing protocols		X	X		
Select a stratified random sample of wetlands to monitor, including some reference wetlands and with year-to-year overlap of a portion of the sites		X	X		
Integrate wetland monitoring into the WVDEP Watershed Assessment Branch monitoring program			X		
Conduct field sampling at selected sites			X	X	X
Pursue funding sources to support statewide or project-based monitoring of wetlands	X	X	X	X	X

Action (g) Monitor key wildlife resources in wetlands					
Activity	2016	2017	2018	2019	2020
Finalize and implement State Wildlife Action Plan, which includes monitoring, adaptive management, research, and planning strategies to conserve species and habitats in wetlands and other environments of the state	X	X	X	X	X
Monitor federally listed wetland species and WVDNR Priority 1 wetland species as resources permit; species are likely to include spotted turtle, spadefoot toad, cricket frog, chorus frog, Virginia spiraea, harperella, and northeastern bulrush	X	X	X	X	X

Complete breeding bird atlas and butterfly/moth atlas, including status updates on wetland species		X	X		
Increase field survey efforts to detect secretive wetland birds, <i>e.g.</i> , rails	X	X	X	X	X
Complete state classification of wetland associations to the standard of the National Vegetation Classification and publish (print and/or web) a guide to WV associations.			X	X	

Core Element: Regulation

Goal: Protect West Virginia’s highest quality wetlands and achieve no net loss of wetland functions and values.

Objective: Avoid and minimize wetland losses, preserve wetland functions, and replace unavoidable or unauthorized losses with an adequate level of sustainable wetlands. Provide additional levels of protection to Exemplary Wetlands and other wetlands with exceptionally high functionality.

Action (a) Build capacity of Inter-Agency Review Team (IRT) and In-lieu Fee program					
Activity	2016	2017	2018	2019	2020
Hold regular face-to-face meetings that bring the IRT members (WVDEP, WVDNR, EPA, USACE, NRCS, USFWS) together to discuss regulatory issues	X	X	X	X	X
Invite presenters from public and private sectors to share lessons learned and best practices regarding wetland restoration & regulation, mitigation banks, and other relevant topics	X	X	X	X	X

Action (b) Develop new mitigation credit-debit protocol based on wetland function					
Activity	2016	2017	2018	2019	2020
Roll up functional formulas into credit-debit protocol based on acre-points of wetland function		X	X		
Add scaling factors for temporal loss, site selection criteria, and construction techniques		X	X		
Write user-ready protocol guidelines, data forms, and scoring sheets to revise the wetland component of the WV Stream and Wetland Valuation Metric (SWVM) to include the new functional assessment protocol		X	X		

Action (c) Secure state regulatory authority for new mitigation standards					
Activity	2016	2017	2018	2019	2020
Work with the Inter-Agency Review Team (IRT) to facilitate adoption of the new standards			X		
Provide public notice of the new regulatory tool component for wetlands			X		

Maintain good coordination among IRT partners	X	X	X	X	X
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Action (d) Disseminate information about new mitigation standards					
Activity	2016	2017	2018	2019	2020
Provide ongoing guidance for consultants and the regulated community on application and review procedures to conform to the new rules			X	X	X
Hold training workshops for consultants and the regulated community as needed			X	X	X
Develop educational materials for the public explaining the new wetland mitigation rules and highlighting the values and functions of wetlands			X	X	X

Action (e) Improve mitigation performance standards for wetlands					
Activity	2016	2017	2018	2019	2020
Revise and improve existing mitigation performance standards and disseminate to the regulated community and general public		X	X		

Action (f) Improve enforcement of existing laws protecting wetlands					
Activity	2016	2017	2018	2019	2020
Provide training and information about identifying and reporting violations to the public and to agency staff not involved in regulatory activities			X		X

Core Element: Restoration and Protection

Goal: Increase wetland acreage through effective restoration action and promote sound wetland stewardship by agencies, land managers and citizens of West Virginia.

Objective: Protect wetlands from degradation or destruction; restore wetland acres, condition, and functions; provide tools to assist with more effective wetland restoration; increase understanding of the values, functions, and geography of West Virginia wetlands.

Action (a) Develop site suitability prioritization tool for wetland restoration					
Activity	2016	2017	2018	2019	2020
Develop site viability GIS model with input from other agencies and partners	X				
Add potential functions to viability criteria to produce a site suitability prioritization tool			X	X	
Disseminate site suitability prioritization tool to partners, consultants and the public				X	X

Action (b) Promote additional tools to aid in wetland restoration					
Activity	2016	2017	2018	2019	2020
Disseminate Restoration Planting Community Prediction Tool	X	X	X	X	X
Provide training in use of Restoration Planting Community Prediction Tool		X		X	

Action (c) Increase level of coordination and cooperation among agencies					
Activity	2016	2017	2018	2019	2020
Promote better cooperation among agencies involved in land stewardship, invasive species control, and land management activities that impact wetlands	X	X	X	X	X
Restore or create >200 additional acres of wetlands in the Potomac Basin of WV, with emphasis on water quality (nutrient reduction), habitat provision and other wetland functions; this goal will be revised post-2017 in the Phase III Watershed Implementation Plan for the Chesapeake Bay TMDL		X			
Encourage wetland restoration and enhancement on public and private lands	X	X	X	X	X

Present status updates on functional assessment and wetland conservation to in-state and regional partners, and solicit their feedback and advice	X	X	X	X	X
Submit annual count of restored acres by county to the Chesapeake Bay Program and perform verification procedures as outlined in WV Best Management Practices Verification Protocol	X	X	X	X	X
Encourage joint wetland site visits with partners to exchange lessons learned	X	X	X	X	X
Pursue funding opportunities that promote wetland restoration and conservation, especially in partnership with other agencies/organizations	X	X	X	X	X

Action (d) Inform land managers of wetland locations and functions within their jurisdictions					
Activity	2016	2017	2018	2019	2020
Provide information to county commissions			X		
Provide information to mayors' offices and municipalities			X		
Provide information to managers of National Parks, National Forests, National Wildlife Refuges, and Department of Defense landholdings			X		
Provide information to managers of State Parks, State Forests, and Wildlife Management Areas			X		
Provide information to The Nature Conservancy and to the Coalition of WV Land Trusts			X		

Action (e) Make selected wetland data available to the public					
Activity	2016	2017	2018	2019	2020
Put non-sensitive wetland data on a public website, either at WVDEP or WV GIS tech Center			X		
Create and disseminate public information materials on wetland values and functions			X		
Create and disseminate information materials listing specific wetlands with visitor infrastructure such as boardwalks, trails, or interpretive signs			X	X	

Core Element: Water Quality Standards for Wetlands

Goal: Restore, maintain and enhance the water quality of West Virginia’s wetlands.

Objective: Integrate measures of water quality into wetland functional assessment and monitoring strategies; develop water quality standards for West Virginia wetlands.

Action (a) Assess water quality functions of West Virginia wetlands					
Activity	2016	2017	2018	2019	2020
Validate and revise Level 1 protocol for assessing sediment retention, nutrient processing, and pollutant removal	X	X			
Develop and test Level 2 field protocol for assessing sediment retention, nutrient processing, and pollutant removal	X	X			

Action (b) Adopt water quality standards for West Virginia wetlands					
Activity	2016	2017	2018	2019	2020
Review national and state standards	X	X			
Recommend WV standards		X	X		
Work with state agencies to adopt new standards			X	X	

Action (c) Characterize water quality conditions for specific wetland types					
Activity	2016	2017	2018	2019	2020
Characterize the range of water quality conditions among exemplary wetlands		X	X		
Identify wetlands with high water quality functions		X	X		
Identify wetlands with high potential for restoring water quality			X	X	X

Acronyms

EPA	United States Environmental Protection Agency
CWA	Clean Water Act
FGDC	Federal Geographic Data Committee
GIS	Geographic Information System
IRT	Inter-Agency Review Team
NRCS	Natural Resources Conservation Service
NWCA	National Wetland Condition Assessment
NWI	National Wetlands Inventory
SWVM	Stream and Wetland Valuation Metric
TMDL	Total Maximum Daily Load
US	United States
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WPDG	Wetland Program Development Grant
WV	West Virginia
WVDEP	West Virginia Department of Environmental Protection
WVDNR	West Virginia Division of Natural Resources
WVWRAP	West Virginia Wetland Rapid Assessment Protocol

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