

Draft Elements for the Ohio River Basin Strategy 2020 – 2025

PRELIMINARY DRAFT - DO NOT CITE

STRATEGIC PRIORITIES TO ACHIEVE THE GOALS

1. River Transportation

Challenges and Opportunities:

Commercial navigation in the Ohio River, part of the nation's Inland Waterway System, provides an economical method of transporting commodities and bulk goods. More than 65 million tons of grain, steel, chemicals, petroleum, and coal are transported on Basin rivers annually. A typical 15 barge tow obviates the need for about 1,000 tractor trailers on Basin roads. Electricity production from scores of power plants along the river, and the businesses and communities that utilize the electricity, rely on the efficient barge transport of coal. With potential importance recognized by George Washington, the Ohio River navigation has been a significant economic engine for the Basin states. Much of the lock and dam infrastructure is beyond its design life, and substantial maintenance, repair and replacement is needed to ensure reliable river navigation. The Inland Waterways Users Board recently completed its annual Report to Congress that provides a comprehensive strategy for maintaining the nation's waterways infrastructure, including the infrastructure of the Ohio River Basin navigation system. While this goal focuses on transportation, maintaining pool levels sufficient for river navigation also provides other benefits by providing water for drinking, industrial use, and ecological flows.

Goal: Nation's Most Valuable River Transportation Corridor: provide for safe, efficient and dependable commercial navigation within the Ohio River Basin to ensure a competitive advantage for our goods in global markets.

Strategic Actions:

- In collaboration with Waterways Council, Inc. and other stakeholders, advocate for priorities that apply to the Ohio River Basin identified in the most current Inland Waterways Users Board Report to Congress.
- Convene or participate in regional collaborations, forums, and initiatives related to maintaining, improving, or expanding the Ohio River Basin maritime and multimodal transportation systems.
- Create and maintain accessible, comprehensive data for locks and dams.

2. Economic Development and Waterfront Community Revitalization

Challenges and Opportunities:

The historic development of the watershed was directly attributable to the rivers and natural resources of the Ohio River Basin. Today's continuing economic prosperity owes much to the ecosystems and natural resources of the Basin. The region is considered "water rich", meaning industries requiring consumptive or non-consumptive water use can locate and grow here. Our

river navigation system and ports have substantial available capacity to accommodate industries that would benefit from efficient river transport. The streams and rivers, mountains, and forests attract outdoor recreation and potential for growth of related tourist attractions and hospitality industries, as seen in Gatlinburg and Pigeon Forge, TN. With the changing characteristics of the region's economic drivers, regional approaches to development will be critical for providing jobs and raising incomes throughout the Basin.

Goal: Vibrant Economy: Sustain a water use system to efficiently and effectively support agricultural, industrial, and energy productivity.

Strategic Actions:

- Encourage research, disseminate information, and collaborate with regional leaders to quantify the economic value of the Ohio River Basin water resources, the return on investments in environmental restoration and water-related infrastructure, and the ecosystem benefits and services generated by the waters of the Ohio River Basin.
- Facilitate and endorse regional collaboration by governments, industry, and NGOs to improve regional economic performance and competitiveness by creating an attractive land portfolio that addresses stream-side brownfields; strengthening water-related infrastructure; and facilitating a cooperative approach to attract industries that would use water resources and barge transportation.
- Advocate with Congress and federal agencies for an Ohio River Basin Restoration Initiative and other regional programs and policies to assist the states and local communities in strategically leveraging water resources to strengthen local economies and benefit residents and visitors
- Collaborate with water-related commissions in the U.S. and abroad to share information, exchange strategies, and advance common goals directed at solving problems affecting water resources and leveraging them as vital regional assets.
- Facilitate a basin-wide study of hydropower.

3. Healthy, Productive Ecosystems

Challenges and Opportunities:

The Ohio River Basin drains an area of about 200,000 square miles with 7,000 miles of waterfront along the Ohio River and its major tributaries. The Ohio River Basin is nationally and internationally renowned for its array of ecoregions with a diversity of flora and fauna species that distinguishes it from other Basins within the nation. Portions of at least 16 separate and distinct Level III ecoregions can be identified within the Basin landscape. A vast array of aquatic species inhabit the waters of the Basin making it one of the most diverse and productive ecoregions in the nation. The Tennessee River and Cumberland River sub-Basins are two of the richest ecological regions in the nation and are reportedly two of the richest in terms of species diversity in the world. However, extensive human activity has led to the loss of habitat for mussels, fish and wildlife and negatively impacts key ecosystem functions and values. Historically, 80 species of mussels once lived in the Ohio River. Currently only 50 species occur and 5 of those are in danger of extinction. There are at least 625 species within the 15 Basin states that fall under the protection of the Threatened and Endangered Species Act.

Goal: Healthy, productive ecosystems: Conserve, enhance and restore ecosystems within the Ohio River Basin to support natural habitats and the fish and wildlife resources that depend upon them.

Strategic Actions:

- Encourage and advocate for regional programs that restore, protect and manage valuable habitat and water resources through implementation of the Ohio River Basin Fish Habitat Partnership strategy, and in coordination with U.S. EPA, states, and local organizations.
- Facilitate collaborate among the Ohio River Basin Fish Habitat Partnership, the Southeast Aquatic Resources Partnership, The Nature Conservancy, National Wildlife Federation, and watershed groups in the further cooperative development of strategic aquatic restoration opportunities.
- Elevate awareness of riverine conservation issues among decision-makers, managers, researchers and the public by convening meetings, coordinating action and developing communication products such as websites, webinars, and publications.
- Explore and develop data and information-sharing opportunities to support ongoing wetland restoration prioritization, contribute to decision-making, and to measure progress on conservation and habitat restoration across the Basin.
- Advocate for legislation and funding to support effective implementation of federal programs, policies and laws, such as the Farm Bill, National Invasive Species Act, Lacey Act, and Asian Carp Action Plan; and an Ohio River Basin Restoration Initiative Geographic Program.
- Facilitate collaboration among Federal and state natural resources agencies in the development of a Basin-wide, cost-shared, comprehensive “invasive species” assessment, prevention, and control strategies plan to reduce the potential for invasive species impact at the Basin-level and within priority systems.
- Encourage collaboration and advocate for funding and implementation of the Ohio River Basin-wide strategies for monitoring invasive carp in the Mississippi Interstate Cooperative Resource Association 2018 Monitoring and Response Plan for Asian Carp in the Mississippi River Basin.
- Encourage ORBCRE to facilitate regional forums and collaboratives working to develop effective invasive species prevention and control.
- Incorporate consideration of non-linear threats in all restoration and preservation projects.

4. Abundant Clean WaterChallenges and Opportunities:

The Ohio River Basin’s abundant supply of clean, fresh water is vital to the regional economy and the health of its communities. Recognizing this, federal and state laws have been designed to ensure that water quality is sufficient to allow for a safe and sustainable public water supply, water-dependent economic activities, agriculture, healthy fish and wildlife populations, and water-related tourism and recreation. Additionally, water quality is increasingly linked to water quantity, in particular as governments address the threat of water shortages.

Goal: Ensure the quality and quantity of water in the Ohio River Basin is adequate to support the economic, social and environmental functions that are dependent on it.

Strategic Actions:

- Advocate for ORSANCO, in collaboration with the States of the Ohio River Basin, to lead in the development and dissemination of flow and water quality data and information necessary for implementing drinking, storm and wastewater management programs that identify critical needs, protect source water, and advance solutions to the benefit of public health and safety, water infrastructure and delivery, ecosystem health and water quality.
- Advocate for the State’s and US EPA’s efforts to implement the provisions of the Clean Water Act.

- Encourage ORSANCO to identify and advance solutions to water management and infrastructure challenges by facilitating forums initiatives and partnerships including all Basin States utilizing ORSANCO's committee structure.
- Raise awareness of the fundamental value of water and the need for infrastructure improvements by advocating for federal legislation and funding to support and accelerate drinking, storm and wastewater infrastructure improvements through the Clean Water and Drinking Water State Revolving Fund programs and other water management programs.
- In support of the December 2016 Federal Hypoxia Task Force Strategy, advocate for federal funding for the development of Basin-scale models for the Ohio River Basin supported by the USACE, USGS, and other federal partners, to provide a scientific basis for decision making and nutrient reduction tracking; support efforts to facilitate a collaborative approach for monitoring nutrients and sediments in the streams and rivers of the Basin; and provide access through public online portals to the federal databases and tools that states, farmers, and others can use in making prioritizing and implementing nutrient reduction opportunities.
- Stabilize USGS super gauges in regards to the installation and maintenance for Ohio River Basin Rivers and critical watersheds.
- Develop Ohio River Basin GIS platform mapping system that incorporates current water quality monitoring status.

5. World Class Nature-based Recreation

Challenges and Opportunities:

The Ohio River Basin, with its diverse ecosystems and natural amenities, offers a broad range of outdoor recreation opportunities, many world class. These range from hiking the peaks of the Mount Mitchell to paddling Class V rapids of the Upper Gauley, biking along the Little Miami Scenic River, hunting elk in Kentucky, cruising on the Ohio River, or fishing for trout in the headwaters in Pennsylvania, Kentucky, Tennessee, West Virginia, and Ohio. These outdoor recreation opportunities are often on public lands - federal and state forests, USACE and TVA reservoirs, and federal, state and local parks. These outdoor activities, that are dependent on healthy ecosystems, also generate economic benefits. In the five states that are primarily in the Basin - Indiana, Kentucky, Ohio, Tennessee, and West Virginia, outdoor recreation and tourism generates \$74.4 billion in annual consumer spending, 670,000 direct jobs, \$21.4 billion in wages, and more than \$4.7 billion in state and local tax revenue. Because of the fragmented nature of the recreation industry, it is often overlooked as an important potential engine of economic growth and public support for the investment required for ecosystem restoration.

Goal: World-class Recreation Opportunities: Enrich the quality of life for people and recreation-based economies by maintaining and enhancing riverine, lake and wetland-associated recreation within the basin.

Strategic Actions:

- Facilitate collaboration and advocate for funding to establish and maintain multipurpose terrestrial and water trails along the Ohio River interconnecting with tributary trails to promote nature-based recreation and corresponding economic growth.
- Advocate for policies and funding supportive of fishing, hunting, and paddlesport education to expand nature-based recreation and economic growth, and to encourage the stewardship of natural resources that make such recreation possible.
- Facilitate collaboration among relevant river cities, tourism recreation and park agencies, businesses, associations, and NGOs on approaches and plans to promote outdoor recreation with particular emphasis understanding and documenting the economic impact of

recreation and on reaching new participants, including providing easy opportunities “try out” activities such as boating, camping, or nature observation.

- Advocate for funding to locate and remove low head dams throughout the basin to restore ecological flows and to reduce danger to boaters.
- Identify existing operating, abandoned, or vacant federal and state lock houses and grounds that could be used for expanded for river access, camping, and day use educational activities.
- Continued outreach to public to share information on, safety, recreation research, education classes, and best management practices as well as the promotion of existing trails, events and points of historical, cultural and ecological interest.

6. Flood Risk Management and Control

Challenges and Opportunities:

Efforts to reduce flood risk in the Ohio River Basin began with land owners in the 1800’s. Federal interest began with the River and Harbor Act of 1917. The 2009 USACE Ohio River Basin reconnaissance report stated:

The current Ohio River Basin system consists of 83 reservoirs (including 5 single-purpose reservoirs), 95-plus major local protection projects, and numerous small flood control projects. Although these projects were justified economically and analyzed for effectiveness in reducing flood damages, they were not regarded as components of a system during their individual formulation. (...) Recent flood events in January 2005 and May 2008 have highlighted some of the deficiencies in the existing infrastructure. There is an extensive Basin streamgage network operated by USGS, USACE, NWS, and other Federal and state agencies.

The National Weather Service’s Integrated Flood Observing and Warning System is a collaborative initiative that receives data from more than 1,000 stream gages to provide flood warning and forecasting information.

Almost 200 of the Basin’s reservoirs and local flood protection projects are about 80 years old. Coupled with this concern, precipitation and flooding patterns may be changing. With more than ten billion dollars in infrastructure and half a million lives protected by this infrastructure, it is important to ensure on-going effectiveness.

Goal: Vibrant Economy: Sustain a water use system to efficiently and effectively support agricultural, industrial, and energy productivity.

Strategic Actions:

- Advocate for USACE to prepare a Basin-wide reinvestment plan that addresses the existing Corps-designed and constructed flood risk management structures including both single-purpose dams and multi-purpose reservoirs and local protection projects operated by third parties.
- Facilitate Basin-wide Silver Jacket Team collaboration among Federal, state agencies, and municipal and county jurisdictions through to identify and implement Basin-wide strategies to reduce flood damages.
- Advocate for operation and maintenance financial support for USACE and USGS to update and expand components of the current flood warning systems.
- Facilitate multi-state approach to flood risk management that accounts for downstream impacts of rain events.

- Explore and promote projects that consider flood risk management opportunities such as wetland restoration and removal of impervious surfaces.

7. Adaptive Management and Resilience

Challenges and Opportunities:

Rittel and Weber (1973) introduced the concept of “wicked problems”:

The search for scientific bases for confronting problems of social policy is bound to fail, because of the nature of these problems. They are "wicked" problems, whereas science has developed to deal with "tame" problems. Policy problems cannot be definitively described. Moreover, in a pluralistic society there is nothing like the undisputable public good; there is no objective definition of equity; policies that respond to social problems cannot be meaningfully correct or false; and it makes no sense to talk about "optimal solutions" to social problems unless severe qualifications are imposed first. Even worse, there are no "solutions" in the sense of definitive and objective answers.

A wicked problem is difficult or impossible to solve because we lack sufficient knowledge, objectives are contradictory, and solutions may have unknown or unintended consequences. Wicked problems include climate change, earthquakes, pandemics, catastrophic power grid failure, and technological disruptions. Many of the wicked problems also have non-linear characteristics. Non-linear problems are those that don't appear to be a significant problem, until a tipping point is reached and it becomes unacceptable - and perhaps a disaster. To prevent catastrophic impact and ensure rapid recovery, it is important anticipate and prepare for potential wicked and non-linear problems. Given the breadth of possible problems and the complexities involved, planning for adaptive management approaches is needed to address natural hazards and many of the wicked/non-linear challenges that the Basin could face.

Goal: Timely Change Adaptation (Resilience): Build resilience by ensuring that knowledge and communication of regional system changes enable timely adaptation of Basin-wide strategies related to ecosystem protection and restoration; development; infrastructure; and water resources management.

Strategic Actions:

- Convene a Basin-wide forum of state, federal, academic, and private sector experts to identify and, where appropriate, explore potential mitigation, resilience, and adaptation to address rare or slowly developing threats of significant to the economic, ecological, social, and political wellbeing of the Ohio River Basin.
- Develop collaboration among federal agencies and river cities to consider adaption strategies for changing temperature and precipitation patterns.
- Include consideration of resilience in discussions at annual Summits.
- Update modeling and mapping to account for the effects of changing precipitation patterns.

8. Knowledge and Education to Inform Decisions

Challenges and Opportunities:

Technical problems are those for which optimal solutions can be pursued. Selection of efficient and effective solutions depend on the quality and availability of knowledge at the time the decision is made. Performing and reporting on research related to priorities of the Basin and providing effective formal and informal education for the public and for decision-makers will provide timely, state-of-the-art knowledge to inform decisions.

Goal: Knowledge-informed Decisions: Ensure that research and education adequately informs Ohio River Basin-wide economic, social, and environmental decisions; enhance the profile of education organizations in the basin, and synergize efforts to garner effective public involvement in the stewardship and management of the Basin's resources.

Strategic Actions:

- In collaboration with the Ohio River Basin Consortium for Research and Education, convene an Ohio River Basin Science Priorities Forum to encourage universities to be more engaged with Ohio River research; and to establish an Ohio River Basin Science Priorities Committee that will improve information coordination and flow between entities and agencies with respect to priority knowledge needs.
- Identify education organizations within the Basin, accounting for various aspects of their program areas, including: audiences served, geographic communities served and waterways (tributaries or Ohio River main stem) served.
- Facilitate collaboration among the breadth of educators and outreach organizations in the Ohio River Basin - public sector, private sector, and NGOa - to identify and prioritize Ohio River-related issues that need to be addressed through education; pursue opportunities for groups to collaborate on program development on educational priorities for the public and decision-makers in order to capitalize on existing educational resources.
- Identify and develop collaborative approaches to deliver Ohio River Watershed education opportunities to underserved geographical areas within the watershed.
- Convene a delegation to meet at least annually with the Ohio River Basin Caucus and other federal legislators representing the Basin to provide an update on the progress and needs with respect to the priorities of the Basin.
- Engage with appropriate fora, such as the USACE Ohio River Basin Inspection Tour, the Ohio River Basin Congressional Caucus, the Ohio River Valley Water Sanitation Commission Technical Committees, Ohio River Basin Consortium for Research and Education, Tennessee River Valley Association/Tennessee-Cumberland Waterways Council, etc., to share information and gain insight on progress and needs with respect to the priorities of the Basin.
- Advocate for funding to determine the economic value of the various ecosystem services of the Ohio River Basin, such knowledge being necessary to better inform investment, infrastructure, and land use planning decisions in the Basin.
- Advocate for funding for ORSANCO and States to determine the potential impact of Contaminants of Emerging Concern.
- Facilitate collaboration and pursue funding to establish a comprehensive Long Term Ecological Research (LTER) program at basin scale, with broad participation of both research and comprehensive colleges and universities.
- Promote engagement in citizen science to engage and facilitate collaboration among states and watershed groups to nurture appropriately rigorous data collection.
- Create a basin-wide awareness campaign to educate the public on the ecological and economic importance of our waterways, benefits to public health and threats to the health of our rivers, lakes and streams.