CONFERENCE REPORT



The Johnson Foundation at Wingspread Racine, Wisconsin October 26–28, 2009



NICHOLAS INSTITUTE FOR ENVIRONMENTAL POLICY SOLUTIONS DUKE UNIVERSITY





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Considering the Clean Water Act

The Johnson Foundation at Wingspread Racine, Wisconsin October 26–28, 2009

Convened by The Water Environment Federation and The Nicholas Institute for Environmental Policy Solutions

> Hosted by The Johnson Foundation at Wingspread







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Executive Summary

The purpose of the workshop

Initially authorized in response to egregious pollution from wastewater treatment plants and major industrial sources, the Clean Water Act has catalyzed the cleanup of many of our nation's waters. The outlook for continuing progress under the Clean Water Act, however, has been diminished in the face of modern pollutants, aging infrastructure, the Act's limited tools to address nonpoint sources, and increasing stresses from unregulated development, population growth, and climate change. Concerns about the Clean Water Act limits prompted the Water Environment Federation and Duke University's Nicholas Institute for Environmental Policy Solutions along with The Johnson Foundation at Wingspread to convene a facilitated three-day workshop about the state of the Clean Water Act.

The workshop brought together a diverse group of water experts to discuss key issues preventing achievement of the national goal of clean, healthy waters. Approximately 30 experts reflected on whether the Clean Water Act encourages or thwarts efforts to address current water quality challenges and shared their views about Clean Water Act reform. In an effort to foster open communication, the Wingspread workshop did not attempt to reach consensus, but rather to facilitate a discussion about the progress and efficacy of the last 35 years of Clean Water Act implementation and to identify issues and tensions that influence potential reauthorization of the Clean Water Act and the approach to reauthorization. Although the richness of the dialogue cannot be recreated, this report summarizes the workshop and highlights the ideas that energized the group.

Shortcomings of the Clean Water Act

The workshop began with the collective recognition that the Clean Water Act has successfully reduced the discharge of raw sewage and other pollutants to our nation's waters. The workshop participants, however, quickly shifted to discussing the shortcomings of the law. The Clean Water Act has improved water quality, but population growth; limited jurisdiction; physical, biological, and chemical sources of impairment; and other unforeseen water stressors (such as emerging contaminants and climate change) highlight the Clean Water Act's limited scope, the ineffectiveness of prescriptive policies alone, and the law's inability to fully preserve or protect our waters. The workshop participants identified nonpoint source pollution, particularly from urban and agricultural runoff, as the leading threat to water quality. In addition to nonpoint source pollutants, new pollutants or "emerging contaminants," including residues from pharmaceuticals, personal care products, and agricultural chemicals, are discharged to the nation's waters. Finally, water quality standards adopted by the states and approved by EPA are a good first line of defense in protecting the chemical integrity of the waters, but biological and physical integrity are often overlooked and unregulated.

In addition to unregulated nonpoint sources, new pollutants, and unprotected biological and physical integrity, the Clean Water Act has limited jurisdiction, in part due to limiting judicial interpretations. It is limited to "navigable waters," which leaves interconnected groundwater and some sensitive waters outside the Act's protection. It is also precluded from directly affecting land use, which is typically the province of state and local governments. In addition, the Clean Water Act is directed at water quality and not water quantity. Water availability, however, affects land use decisions, energy production, agriculture, development, and ecosystem integrity—all of which in turn impact the quality of available water.

Not only have the suite of pollutants changed and the jurisdiction of the Act strained, but the lack of adequate funding also impedes the federal, state, and local governments' abilities to ensure the protection of water resources. For example, local governments often lack the funding to address aging and failing infrastructure. Money is often directed at prescriptive requirements with limited benefits and leaving little left to address more significant issues. Inadequate funding also impacts agency capacity for enforcement, monitoring, research, and adoption of incentives. Finally, the Clean Water Act is just one of many federal regulatory programs that impact water resources. The U.S. Department of Agriculture, the U.S. Environmental Protection Agency, the U.S. Army Corps of Engineers, and the U.S. Department of Interior, among other agencies, each administer programs that affect water resources. The spate of programs ensures that water resource management is highly fragmented and interagency cooperation limited.

Many of today's water uses also stress water resources. Energy and water are essential to modern society and are inextricably linked. Energy production, both fossil fuel-based and renewable, typically requires large amounts of water. As our nation wrestles with policy to address growing energy needs, the vulnerabilities of energy supply, and the environmental impacts of energy use, water use and water quality must be addressed concurrently. Climate change will impact water use and quality directly by altering precipitation patterns, increasing wet weather pollution in some areas and adding stress due to declining water levels in others.

Crafting potential solutions

Today's water quality problems are complex, interconnected, and challenging to address. If we are to overcome the new challenges, we must approach regulation of our water resources differently from how we have over the past 35 years. The Wingspread workshop identified critical ways in which the Clean Water Act fails to address specific and emerging water quality challenges and broadly discussed measures that may be ripe for consideration during reauthorization of the law.

Update and strengthen the governance structure.

Our water governance structure must be able to effectively and efficiently coordinate and regulate actions that cross political jurisdictions. The Wingspread participants focused on the importance of establishing a comprehensive institutional framework with defined roles and responsibilities for federal, state, and local governments and the public; on improving the coordination among agencies with overlapping jurisdictions; and ensuring that any change to the governance structure takes into account the financial limits of government.

Create incentives and encourage innovation.

Incentives were identified as fundamental in Clean Water Act reform as a cost-effective method for achieving better water quality. The workshop noted the potential for trading and ecological service payments to create incentives for better practices. Market-based solutions, including water quality trading among point and nonpoint sources that may enjoy a cost advantage in reducing pollution, were also recognized as important elements in more robust water quality regulation. Incentives and markets, however, must have safeguards to ensure that water quality is actually protected and restored. Many participants emphasized the need to accelerate technology development and encourage innovation through mechanisms such as a "safe harbor" provision or incentives to develop more pilot and demonstration projects.

Verify what works: Increase monitoring and reporting. Monitoring the health of water resources is critical for assessing whether water resource protection efforts are effective and identifying changes needed to restore water resources. Comprehensive monitoring should be used to review and evaluate progress, help set priorities, inform the public, and maintain support for water quality programs.

New approach must be flexible, adaptive, and

integrated. A new regulatory regime must be dynamic and flexible enough to address complex problems and to manage water resources to improve quality and ensure adequate quantity. The workshop participants focused on a flexible but structured, iterative process that simultaneously assesses the state of water quality and requires measures, updated as needed, sufficient to cost-effectively address adverse impacts. Finally, the group broadly acknowledged that a new regulatory paradigm should integrate water quality and quantity so that flooding, stormwater discharges and runoff, and water supply are addressed together. Adopting a holistic approach is more efficient and can achieve better results.

Key considerations in moving forward

The case for reform must align with political readiness. The success of Clean Water Act reform depends on building a strong policy foundation about the need for reform and generating the political will for reform. But the case for reform has not yet been adequately made and as a result the prospect for comprehensive reform is not seen as urgent. Reform, however, can start with near-term opportunities in legislation such as the Farm Bill or the Chesapeake Bay Bill¹.

Scope of reform. The Wingspread conversation broadly identified four reform options: 1) update the current Clean Water Act to improve existing tools; 2) update the Clean Water Act and expand it beyond the traditional applications; 3) update other relevant statutory mechanisms to better coordinate and address water quality impacts; or 4) create new legal or regulatory tools to target nonpoint sources or integrated watershed restoration and management. The scope of reform could include small steps in the short term and more comprehensive reform in the long term.

¹ Chesapeake Clean Water and Ecosystem Restoration Act of 2009.

A call to action

The Clean Water Act was enacted in response to an urgent call to action to protect our nation's waters from toxic pollutants and to restore those waters to an ecologically sustainable state. Thirty-five years later the assaults on our nation's water resources have shifted. The Clean Water Act, however, seems frozen in time by statutory limitations, inadequate funding, and narrow, bureaucratic agency focus. The Wingspread workshop is a first step in identifying the need for a new approach that will protect our waters from 21st century challenges quickly and efficiently; that will be flexible and adaptive enough to address clean water challenges not yet anticipated; and an approach that will integrate water protection and ensure the long-term sustainability of our water resources for the many purposes they serve.

1. The Clean Water Act: A History of Success and Failure

The Federal Water Pollution Control Act, popularly known as the Clean Water Act, established a col-

lective commitment to protecting and restoring the physical, chemical, and biological integrity of our nation's waters. Passed in 1972 and reauthorized in 1987, it was a response to egregious water pollution—the nearly unchecked dumping of contaminants, including untreated sewage, into these waterways. At the time, many of the country's lakes, rivers and coastal waters had become unsafe for fishing or swimming. The stated goal of the Clean Water Act is to "restore and maintain the chemical, physical, and biological integrity of our nation's waters" and it calls for zero discharge of pollutants into navigable waters by 1985, and fishable and swimmable waters by 1983 wherever attainable.

Since the Clean Water Act was enacted, our nation's waters have improved-we no longer intentionally discharge untreated sewage into rivers and streams; rivers no longer catch fire; and fisheries have returned in some areas. Despite more than 30 years of regulation, however, many of the nation's waters are still polluted and we have not achieved the Act's goal of fishable, swimmable waters. More than half of all waters assessed by the states are rated as impaired,

Excerpts from Introductory Remarks by Paul Freedman

This is the 40th anniversary of Earth Day, yet in the decades since have we made a difference? I have mixed feelings of pride in our successes, frustration addressing current problems, and optimism about the future.

Since the passage of the Clean Water Act in 1972 we have proudly eliminated the major problems of the 60s and 70s, poorly treated sewage. We spent hundreds of billions of dollars and had great success, including transformations in the Cuyahoga River and Lake Erie, poster children for the Clean Water Act.

Yet I am also frustrated because our progress is now often stalled. Over 40% of our waters still do not meet standards for recreation and biologic protection. We have growing and changing stressors from population growth, increased urban/suburbanization, intensified and changed agricultural practices, and new invasive biological stressors. I often feel like trying to make progress going up a down escalator. Further, many of our problems today are not addressed well under the Clean Water Act.

Yet in the face of these challenges I am also optimistic. Not since Earth Day has water been so high an issue in the public profile. The press is abundant with books and articles, and the global discussion about climate change is really all about its effect on water. Public outlook is changing too; cities are focusing on green practices, industries are talking about water as a key foundation of business, and economists and government are looking at the role of water in international trade and public health. So I believe we are ripe for a reexamination of our approaches to managing and protecting our waters.

The problem we have today is that the Clean Water Act is a 20th-century tool trying to address 21st-century problems. Our problems today relate to nonpoint pollution, changed agricultural practices, biologic invasives, pharmaceuticals going down toilets, air deposition, and legacy contamination, not to mention scarcity, water overuse, and flooding. We also have new technologies and approaches to address problems, but a stressed economy that can't afford to spend billions on approaches that don't provide real benefits. So as you enter this workshop, think about our success and frustrations, but more so think about the opportunity to truly examine how we as a nation address water quality issues.

contaminated by sediment, nutrients, pathogens, and heavy metals transported by runoff from construction sites, impervious surfaces, and agricultural fields. Contaminants such as pharmaceuticals and personal care products are newly recognized as be-

ing part of what is discharged from municipal wastewater treatment plants. Mercury and heavy metals, which are emitted into the air from coal-fired power plants and vehicles, are deposited onto surface waters.

The Clean Water Act has helped to clean the most obvious point sources of pollution from our waters, but we are now faced with unanticipated pollutants; with activities outside the jurisdiction of the Act that adversely impact waters; and increasing stresses on water supplies from unregulated development, population growth, and climate change. Though we have a greater understanding of the physical, chemical, and biological integrity necessary for the long-term sustainability of our waters, sustainable, resilient water resource management is still an elusive goal. Progress is being made on only select watersheds, in some places it's actually declining, and overall nationwide improvement has stalled. Though water is a vital natural resource, our current legal and institutional framework is out-of-date in that it was not crafted to address the significant impacts of runoff from urban streets or agricultural lands.

including more than 66% of the area of lakes and reservoirs and 64% of bays and estuaries.¹ Waters are

It is with these problems in mind that the Water Environment Federation and Duke University's Nicholas Institute for

assessed ocean and near coastal; 36% of assessed wetlands) (includes information from the most recent integrated reports submitted by the states).

¹ See http://www.epa.gov/waters/ir/index.html (last visited January 27, 2010) (50% of assessed rivers and streams; 38% of assessed coastal shoreline; 82% of

Environmental Policy Solutions joined with The Johnson Foundation to convene a facilitated three-day workshop about the state of the Clean Water Act. The workshop was hosted by the Johnson Foundation at its Wingspread conference center and brought together national water experts to discuss

key issues preventing achievement of the national goal of clean, healthy waters.

The purpose of the

Wingspread workshop was to convene knowledgeable and diverse voices, including environmental advocates; municipal, industrial, and agricultural practitioners; state regulators; academics; and former officials from EPA and Congress, for a wide-ranging conversation about the Clean Water Act. Approximately 30 experts, reflecting a variety of disciplines, interests, and professional experiences gathered to share their views about the Clean Water Act and to brainstorm about Clean Water Act reform. Attendance from experts with experience from the eastern U.S somewhat outweighed those with a western perspective, despite efforts on the part of the workshop organizers to achieve balanced regional diversity. Attendees participated as individuals, not as representatives of their organizations or institutions. They were asked to consider and discuss whether the current Clean Water Act, including its regulatory and enforcement history, facilitates or thwarts efforts to address specific and emerging water quality

Excerpts from Introductory Remarks by Bill Holman

Thanks to the Clean Water Act of 1972 we've made great progress as a nation cleaning up our waters. However, we've only addressed the most obvious problems, such as the discharge of untreated sewage. Rivers aren't catching fire anymore, but many waters don't meet state and national standards.

We face serious water quantity as well as water quality problems. Water quality and quantity are interrelated. The Clean Water Act of the 1970s doesn't give us the tools to solve our nation's 21st-century water problems. It's not providing clean drinking water for everyone or preventing hypoxia in the Gulf of Mexico. It's not protecting waters from air pollution. It's not ensuring supplies of clean water for business, industry, agriculture, and municipal uses, or addressing the energy use embedded in treating and pumping water or the water use embedded in energy production. It's not ensuring access to public waters and greenways or fostering the redevelopment of our cities.

We need policies that help communities address their water quality and quantity problems. We have an opportunity to approach local governments and work with them to ensure that their water resource needs are met. The same is true for agriculture. Agriculture will become more water- and energy-efficient. We can develop policies that aid this transition and that reduce conflicts between urban and agricultural water use. The value of clean water is increasing. We need policies that value the ecosystem services that private lands provide. An increasing number of businesses, food processors, energy producers, and major manufacturers are assessing the risks to assured supplies of water and wastewater services. They will invest where clean water is available to meet their needs. Together these water users and environmental organizations could build the broad coalition that will be necessary to modernize and reform the Clean Water Act and national water policies.

However, who is steering the debate? Who's inviting these interests to sit around the table? Who's identifying the common ground? In 1976 there was a national clean water commission that recommended improvements to national policy. Do we need another national commission on water? Do we need a strategy for reform?

pollution from agricultural and urban sources; and ultimately whether the Clean Water Act is the best vehicle for achieving improved water quality and if not, what more is needed. In an effort to foster open communication, the Wingspread workshop did not attempt to reach consensus, but rather to facilitate a

> discussion about the progress and efficacy of the last 35 years of Clean Water Act implementation and to identify issues and tensions that influence potential reauthorization of the Clean Water Act, as well as the approach to reauthorization.

The workshop began by exploring the Clean Water Act's successes and failures and dissecting those shortcomings to tease out a common understanding about whether Clean Water Act reform is necessary. A paradigm for Clean Water Act reform emerged from this discussion. Surprisingly, the Wingspread group converged on a common view that the greatest achievements of the Clean Water Act are past and that further progress can best be achieved by revising the Act or applying other laws to deal with specific challenges.

This report is a synthesis of the Wingspread conversation and is designed to lead the reader through the discussions, to build a foundation for understanding the workshop's ultimate conclusion: Clean Water Act reform is urgent and essential to restoring our nation's waters to ensure that clean water is available to meet many

challenges. The group was asked to think through several issues surrounding the Act's jurisdictional reach; how climate change impacts water resources and how to address those impacts; whether the watershed model is a workable paradigm for managing water resources; how to address nonpoint source economic, social, and environmental purposes to manage the nation's water resources with resiliency and sustainability in mind.

2. The Clean Water Act: Problems and Challenges

The Clean Water Act has demonstrably improved water quality. But the water quality challenges we face today are not readily addressed by existing legal or regulatory authority. Recognizing that physical, chemical, and biological integrity are essential goals in restoring and maintaining water resources, workshop participants identified many water quality problems that currently escape regulation under the Clean Water Act. Our waters are degraded by new, unanticipated pollutants, by aging and leaking infrastructure, by limited resources for enforcement at the state and federal levels, by insufficient statutory mandates that limit the application of solutions addressing entire watersheds, by unrestricted development and population growth, by unregulated agricultural runoff, by increasing urban stormwater runoff, and more. Rather than developing an

Agricultural Runoff Breakout Group

Agricultural activities such as confined animal feeding operations, grazing, plowing, irrigation, planting, and harvesting cause nonpoint source pollution, which is not subject to mandatory prescriptive regulations under the Clean Water Act. Agricultural water pollutants include sediment nutrients, pathogens, and pesticides. Increased volume of runoff can also damage habitat and stream channels. One of the Wingspread workshop's breakout groups focused on runoff from agricultural lands and identified principles that would underpin a strong statutory framework for addressing this source of pollution.

1. Focus on watersheds.

2. Establish technology-based standards for nutrient management with dates for implementation to provide clear direction and expectations.

3. Increase coordination among state and federal agencies, especially USDA programs.

4. Create incentives using state revolving funds, cost sharing, technical assistance programs, and other methods.

5. Increase monitoring of agricultural sites to provide information about compliance and the efficacy of programs to increase the amount of relevant information helpful to agricultural interests and policymakers.

6. Support research and development of new technologies and approaches to agricultural runoff, such as alternative uses and disposal of manure.

7. Examine the potential for ecosystem service markets to help improve water quality.

8. Ensure that any new regulatory effort has mechanisms for reviewing and evaluating progress.

9. Fully implement the "reasonable assurance" provisions in Total Maximum Daily Loads (TMDLs). Required by sec. 303(d) of the Clean Water Act, TMDLs describe the total amount of a pollutant that a water resource can receive without violating water quality standards.

10. Ensure that any new effort to address agricultural nonpoint source pollution is supported with research, funding, and staff sufficient to ensure full implementation.

exhaustive list of specific challenges, the Wingspread workshop identified the most significant problems. Participants then explored those challenges in depth to determine whether the existing Clean Water Act could fully address the suite of issues and to identify changes to the law that would be necessary to address remaining problems.

Nonpoint source pollution is the largest contributor to impaired waters

Nonpoint source pollution, runoff from smallerscale, decentralized sources dispersed across the landscape, is the leading threat to water quality, yet it is the least regulated by the Clean Water Act. Implementation of the Clean Water Act initially addressed egregious pollution from point sources, and point sources remain the most readily regulated pollutant discharges. Nonpoint source pollution, however, has surpassed point sources as the largest source of water quality impairments. Nonpoint source pollution occurs from stormwater flowing over land and transporting pollutants to adjacent surface waters.

Despite the significant adverse impacts from nonpoint source pollution, the current Clean Water Act fails to regulate adequately these pollution sources. The Wingspread workshop targeted two of the major nonpoint source categories for extended discussion—agriculture runoff and urban runoff. Agricultural sites and built-up urban areas are the primary nonpoint source sectors threatening water quality. Both sectors deposit sediment, nutrients, pesticides, pathogens, and other contaminants into water bodies. During and after heavy rain events, urban sewage collection systems can be overwhelmed with pollution entering directly into surface waters. Aging, leaking infrastructure exacerbates this problem. Rain runs off agricultural fields, depositing pesticides, fertilizers, sediment, and pathogens into waterways. These pollutants can cause beach closures, impair aquatic habitat, kill fish, and disrupt natural ecosystems.

At the heart of the challenge is recognition that human activities alter the natural functioning of our water resources and that comprehensive water resource restoration must incorporate efforts to restore nature's hydrology, to mimic as much as possible, the way hydrology functioned prior to development. This is one of the core principles of what has become known as "green" infrastructure. Many of the Wingspread participants focused on restoring the

Urban Runoff Breakout Group

Increased urbanization—more buildings and impervious pavement—increases water quality problems associated with stormwater runoff, combined sewer system overflows (CSO), and sanitary sewer system overflows (SSO). The Urban Runoff Breakout Group identified new policies that sought to protect waters from wet weather pollution.

Stormwater runoff does more than transport pollutants; it also scours streambanks and destroys aquatic habitat. If the physical, chemical, and biological integrity standards in the Clean Water Act were rigorously enforced, the panoply of stormwater impacts would be more fully addressed. To strengthen the Clean Water Act, wet weather water quality standards should be established. More stringent technology-based controls should be imposed for criteria pollutants and impaired waters. Old programs should be revised to allow and encourage innovation. Recognizing that brownfield redevelopment and greenfield development impact water quality, appropriate standards for stormwater controls should be incorporated into both. A revised Clean Water Act should promote natural or so-called "green" infrastructure for floodplain protection and source water protection. Land use and the stormwater infrastructure should be designed for the long run, including population increases and climate change. Finally, flow should be regulated as a pollutant.

CSOs need a new policy that promotes green infrastructure through incentives for investment in green technologies. Because CSOs are a significant contributor to water quality problems now, pilot projects should be instituted quickly. Technology research and development efforts and pilot projects could be amplified by state revolving loan fund reform, which would encourage financial stability and reuse. Though SSOs are currently prohibited, this prohibition does not prevent them as a source of pollution.

natural hydrology as a bedrock principle for Clean Water Act reform.

Lack of funding impedes water quality improvements

Lack of adequate funding undermines efforts to address aging and failing infrastructure that contributes to water quality impairments and limits the ability of agencies at all levels of government to implement Clean Water Act requirements or implement special measures to address serious problems. Water and sewage rates often do not reflect the true cost of providing services, maintaining infrastructure, or covering new areas of development.² Water is a bargain, when compared to other household services and utilities (e.g., phone and cable television, to name two).

Without adequate resources, failing sewer and stormwater infrastructure can create significant public health and water quality problems. After roads, water infrastructure is the second largest public investment—approximately \$85 billion has been spent since the federal government first launched programs to help fund water infrastructure. Despite this spending, in 2009 the American Society of Civil Engineers gave the nation's water infrastructure a "D" and noted an over \$500 billion shortfall identified by the Environmental Protection Agency for infrastructure upkeep and repairs.³ In the aftermath of heavy rainstorms, combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs) discharge large volumes of storm water polluted with pathogens, debris, and toxic pollutants to receiving waters. It will cost billions to upgrade municipal treatment and collection systems to prevent or reduce overflow events, to reduce infiltration and leakage, and to improve water system efficiency.

Inadequate funding also impacts agency capacity for enforcement, monitoring, and research. Many of the Wingspread participants noted that agency funding constraints limit enforcement, incentives, and implementation of the Clean Water Act. Moreover, limited funding is an explicit obstacle to testing and adopting innovative approaches because agency staff do not have the resources to explore and validate new approaches and instead fall back on tried and true enforcement. As the number of regulated sources has grown since the Clean Water Act's passage, federal and state agency resources are spread even more thinly. If the Clean Water Act is reformed and federal and state agencies are asked to do more, it will be essential that adequate financial resources are provided and that those resources promote the protection and restoration of natural function as part of a broader concept of clean water infrastructure.

New kinds of contaminants are entering waterways

In recent years, research has identified chemical and microbial pollutants discharged into our waters that may be adversely affecting aquatic ecosystems. These so-called emerging contaminants are commonly derived from municipal, agricultural, and industrial wastewater sources and include pollutants such as nanomaterials, pesticides, residues from personal care products, and pharmaceuticals. Emerging contaminants are present in our waters, but the effects on public health and ecosystems are uncertain. These contaminants may be impacting the health and safety of natural systems and perhaps even human health, yet research on the impacts is incomplete, technology effectiveness to remove the chemicals unproven, regulations largely nonexistent, and funding for management and controls lacking.

² $\,$ Some Wingspread participants disagree that water services pricing does not cover the true cost.

³ See 2009 American Society of Civil Engineers Report Card for America's Infrastructure.

Considerably more investment is needed to understand and address this newly identified issue.

The Clean Water Act fails to address declining physical and biological integrity

The Act requires protection of the physical, chemical, and biological integrity of our waters. Water quality standards adopted by the states and approved by EPA are a good first line of defense in protecting the chemical integrity of the waters, but biological and physical integrity are often overlooked and unregulated. Physical integrity of water systems includes stream bank and stream bottom structure, the health and stability of the riparian lands that border the waterway, and water flow. The physical integrity of surface water channels is essential to maintaining surface water standards, and essential as well to support a diverse and thriving biological community. Trees provide shade as well as detritus that serves as nutrients for wildlife and for aquatic species. They also stabilize stream channels, preventing excess sedimentation or erosion from scouring stream banks, filling in reservoirs, or blanketing benthic aquatic organisms. Our waters are suffering unanticipated assaults to the physical integrity of aquatic ecosystems from the immense volume of stormwater that erodes streambanks, from human alteration of stream channels, and from changes in riparian land use.

The biological integrity of aquatic systems is also in jeopardy. One threat is invasive species, which alter the normal biology of the waters. Excessive nutrients are causing dead zones—most prominently in the Gulf of Mexico, and also in Chesapeake Bay and off the Pacific Northwest coast. As noted, emerging contaminants are affecting fish reproduction. Habitat loss and pollutants are adversely affecting mussels and other aquatic species. Freshwater fisheries in some areas are declining. Biological diversity is also declining in some areas and ecosystems are changing in response to aquatic stresses.

The Clean Water Act has limited jurisdiction

The Clean Water Act is limited to "navigable waters." Because that term has been interpreted by the U.S. Supreme Court (see *Rapanos v. United States*, 547 U.S. 715 [2006]) to apply only to water bodies that have a significant nexus with navigable waters, the Clean Water Act's jurisdiction has been sufficiently narrowed to exclude other critical waters. The hydrologic system relies on healthy and resilient wetlands, groundwater, headwaters, intermittent and ephemeral streams, and more. For example, wetlands provide many ecosystem services and the loss of wetlands through filling or pollution affects the capacity of nearby surface waters to assimilate contaminants, address stormwater runoff, and improve biological integrity. Yet the Clean Water Act fails to protect many of these essential elements or to address these other waters with relevant programs and standards. A healthy water ecosystem should be the overriding aim of the Clean Water Act, but the Act's limited geographic jurisdiction makes this all but impossible. Clean Water Act jurisdiction has been the subject of many Clean Water Act reform discussions. The Wingspread workshop did not consider this issue in depth except to note the critical importance of establishing adequate geographic jurisdiction.

Another jurisdictional limitation is land use, which is typically the province of state and local governments. Water availability should affect land use decisions, energy production, agriculture, development, and ecosystem integrity, all of which in turn impact the quality of the available water. Activities on land adjacent to the waters have a direct impact on aquatic systems. Land use practices change the local hydrology, and if left unmanaged, will alter the chemical, physical, and biological attributes of adjacent waters. Increasing water use also impacts the quality of water supplies: water withdrawals alter mixing zones for wastewater discharges in the immediate vicinity of these discharges and limit the amount of water available for other important uses, such as energy production, agriculture, and ecosystem viability. Scarcity will be an increasingly important driver of changes in water resource policy. The Clean Water Act does not directly affect water use patterns, nor does it address the link between water quality and water quantity.

Finally, the Clean Water Act is just one of many federal regulatory programs that impact water resources. The U.S. Department of Agriculture, the U.S. Environmental Protection Agency, the U.S. Army Corps of Engineers, and the U.S Department of Interior, among other agencies, administer programs that affect water resources. The spate of programs ensures that water resource management is fragmented at best. Interagency cooperation is limited. Without a common goal and a viable means of integrating the activities of various agencies, each with separate legislative authority and resources, many programs cannot maximize environmental benefits.

The water/energy nexus

Both energy and water are essential to modern society. They are inextricably and reciprocally linked. Many current sources of energy production rely on large volumes of water, for coal-fired and nuclear power plant cooling towers and for hydropower, for example. Our water systems in turn are dependent on readily available energy. The water and wastewater treatment and distribution systems consume 3% of the nation's energy output. As growing demand puts more stress on water resources, it may be necessary to transport water greater distances, requiring even more energy.

Climate change will have profound impacts on water resources

Climate change is expected to alter precipitation patterns, alter stream morphology, increase wet weather pollution in some areas, and add stress due to declining water levels in others. Climate change will affect all uses of water, including agriculture, the urban environment, wildlife, drinking water supply, and more. Mitigating climate change may also adversely impact water resources. For example, alternative or renewable energy technologies may require facilities and transmission lines in new places, putting added pressure on already allocated water resources. Furthermore, climate impacts to water resources may be among the earliest effects experienced and may necessitate redesign of many water and wastewater facilities and impose unquantifiable stresses on water resources.

Any new water resource management tool must be dynamic enough to anticipate, adapt to, and offset climate change impacts. Because climate science has large areas of uncertainty, the impacts are difficult to anticipate, let alone plan for, especially at the local level. In order to address climate change as fully as possible, better modeling, better information, and a better understanding of baseline water conditions are needed. However, enough is known about the range of impacts facing clean water to start planning for its effects now. Addressing climate change also will require an innovative and flexible approach one that goes beyond the current prescriptive approach. An innovative and flexible approach may open the door to try new methods in water management aimed at building resiliency. Some of the Wingspread participants noted that if natural hydrology is restored, in effect to mimic nature, ecosystems would have cleaner and more abundant water and require less energy for treatment. The Wingspread discussion took note of skepticism

about climate change in some quarters and the difficulties associated with developing a strong, effective message about how a changing climate is affecting water resources.

Summary

The Clean Water Act has improved water quality, but population growth, limited jurisdiction, and unforeseen water stressors (such as emerging contaminants and climate change) highlight the Clean Water Act's limited scope, the inadequacy of prescriptive policies, and the inability to fully restore or protect our nation's waters. While the workshop acknowledged the many Clean Water Act successes, it focused chiefly on identifying current shortcomings. After the workshop dissected today's difficult problems, it shifted to analyzing potential solutions.

3. The Clean Water Act: Crafting Potential Solutions

Perspectives on a new Act

Today's water quality problems are complex, interconnected, and challenging to address. If the country is to overcome the new suite of problems, we must approach regulation of water resources differently from how we have over the past 35 years. The Wingspread workshop identified critical challenges and broadly discussed measures that would be ripe for consideration during a potential reauthorization of the law.

Participants identified reform ideas that ranged from small strategic changes to major shifts in Clean Water Act purposes and goals. In order to move beyond the water quality problems of the 1970s, primarily dealing with point sources of pollution, to address current water quality challenges, a new regulatory regime is needed. This would include, for example, a comprehensive institutional framework with clearly defined roles and jurisdiction; incentives to encourage better practices; a priority for innovation; monitoring, verification, and reporting of results; and mechanisms to adapt to unforeseen challenges. The reform ideas presented here are not comprehensive nor are they prioritized. Rather, these ideas are some of the key reform components critical to

Watershed Discussion

The watershed paradigm is intended to protect impaired waters from both point source and nonpoint source pollution within the comprehensive goal of restoring and protecting an entire watershed area. The Wingspread participants were divided on the efficacy of watershed planning and identified many problems with how watershed planning is actually implemented today. Many participants identified the importance of program implementation tailored to the conditions in that watershed to ensure that all water quality impacts are addressed in the most cost-effective manner—that is. concurrently addressing stormwater, wastewater treatment plant effluent, water supply withdrawals, instream flow requirements, aquatic habitat needs, and ecosystem needs. Many participants noted that in order to implement watershed planning, the federal government must identify and set a goal for restoration. Furthermore, a good watershed approach needs good data and sufficient monitoring. If the monitoring is coupled with a strong federal backstop, then watershed protection is more likely to succeed. Watershed planning also engages the public in protecting the waters in their communities. Some participants cautioned, however, that watershed planning has become a buzzword for business as usual or simply a term of art that fails to promote comprehensive, integrated water resource management. The workshop participants generally agreed that the current watershed approach suffers from many of the same problems as the Clean Water Act implementation, but could be improved with new legislative authority.

crafting solutions to the identified shortcomings of the Act. Each area is described more fully below.

Update and strengthen the governance structure

Water resources interact and flow without regard to political jurisdiction, crossing political boundaries from county lines to state lines. Rivers flow from one state to another. Groundwater resources are shared by communities and often multiple states. The baseflow for some streams comes from groundwater, and groundwater withdrawals impact surface waters. Any comprehensive water protection solution must recognize the shared physical nature of water resources and the interaction of groundwater, surface waters, and wetlands. Our water governance structure must be able to effectively and efficiently coordinate and regulate actions that cross political jurisdictions. The Wingspread participants focused on the importance of establishing a comprehensive institutional framework with defined roles and responsibilities for federal, state, and local governments and the public; on improving coordination between agencies with overlapping jurisdictions;

> and ensuring that any change to the governance structure recognize the limits of government action when it is not integrated into the choices and activities of Americans in their daily lives and in their commerce.

Improving water quality and protecting water resources will require that everyone work toward the common goal of clean water of sufficient quantity. A comprehensive institutional framework is needed that requires federal agencies to establish specific water quality goals; delineates roles for state and local governments; and engages the public. Continuing water quality improvement depends on a national commitment to progress. Many of the workshop participants identified a strong federal role as crucial to guarantee continued improvements and backstop the activities of state

and local agencies, which may be reluctant to tackle serious problems that affect economic activities or powerful constituencies. A federal, top-down approach, however, cannot achieve success by itself. Local governments and states must be engaged and committed to enforcement and held accountable for water resource protection. A new paradigm for water resource regulation should contain a strong federal presence establishing overarching goals that integrate all aspects of water resource protection; strong enforcement and implementation by the states with the federal government serving as a backstop; and citizen engagement. Strong citizen support can be mobilized by focusing on community waters, which will encourage grassroots and state efforts.

Any solution to protect water resources must clearly identify roles and responsibilities. Citizens must be informed so that we all understand the connections among water quality, quantity, and water resource management. Furthermore, because waters are physically connected, we must focus on restoring and protecting entire watersheds. Many of the workshop participants questioned and disagreed about the right balance of responsibilities among the federal, state, and local governments, and the public. Participants noted that establishing an institutional structure that focuses the public on waters that matter to the community and clearly assigns roles and responsibilities to federal, state, and local governments can help reduce bureaucracy, streamline and increase enforcement, and encourage innovative solutions.

Not only must Clean Water Act reform create a jurisdictional paradigm that is responsive to the true nature of water resources, it must also address overlapping agency jurisdictions. Currently, jurisdiction is divided among multiple federal agencies, which are in bureaucratic silos. The Clean Water Act divides authority for wetlands oversight between the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers, for example. The U.S. Department of Agriculture looks at water quality through the lens of the Farm Bill and other conservation programs. The disconnected and competing agency missions result in a hodgepodge of administrative efforts. As a result, administrative programs cannot focus on priorities or coordinate efforts to achieve maximum environmental benefits. Water quality suffers. Interagency cooperation must be improved and cross-boundary governance structures must be established to ensure that waters are restored and protected. River basin commissions may be of increasing importance, both as examples of cross-boundary governance structures that could be adapted to a larger federal framework and as implementing organizations. A new vision for clean and abundant water should insist on interagency cooperation; create cross-boundary governance structures, such as river basin organizations and mechanisms to resolve interjurisdictional disputes; and improve monitoring and planning.

A strong institutional framework must be supported by adequate financial resources and

implemented by regulators with appropriate expertise. The Wingspread workshop highlighted the need to develop the policy foundation for a comprehensive regulatory framework, including an analysis of what state and federal agencies can actually handle—both financially and within the limits of agency expertise.

Create incentives and encourage innovation

Incentives have the potential to play an important role as an impetus for change and are fundamental in Clean Water Act reform. Although a strong regulatory structure is essential-to set clear goals, assign roles and responsibilities, and define consequences for failure—incentives can help meet regulatory goals efficiently and effectively. Incentives offer tools by which regulated sectors can participate in and influence the regulatory system. Incentive systems can include either direct payments, cost-sharing, or market-based mechanisms. Some of the Wingspread participants emphasized incentives as integral for true reform. The Wingspread participants cited some incentive programs, such as green branding that rewards businesses that adopt sustainable practices or augmenting funding for water infrastructure in communities that pursue full-cost pricing for water services.

Market-based solutions, including water quality trading among point and nonpoint sources that may enjoy a cost advantage in reducing pollution, are an important component of more robust water quality regulation. A well-established market is a cost-effective, economically efficient method for improving water quality. Well-functioning markets need safeguards to ensure cleaner water. The market must be transparent, with quantifiable mechanisms for verification and accounting.

Some Wingspread participants focused on creating markets for ecosystem services as an important subset of general markets. Ecosystem services are natural processes that create resources essential for food production, economic activities, public health, and more. The resources include environmental benefits such as clean water, timber, habitat for commercially important species, and pollination of agricultural crops. Ecosystems produce goods and services that are critical for the long-term resilience and sustainability of water resources. Markets that put a price or value on ecosystem services are currently in development and may ultimately provide new incentives and financing for restoration of aquatic environments. Although these markets are still in their infancy, policymakers are looking to develop ecosystem services markets to help finance climate change mitigation. These efforts may also yield co-benefits for improving water resources.

Incentives may not encourage new approaches quickly enough to improve water quality. The Wingspread participants recognized that innovative technologies and strategies are also important to address today's complex water quality problems, and the conversation identified several ways to encourage innovation. Many participants strongly advocated a so-called "safe harbor" within the regulatory system to test new technologies or strategies. A safe harbor would accelerate technology development by assessing or evaluating results and reducing financial, environmental, and other risks for communities and investors. The group also encouraged more research and development and pilot projects to accelerate a new generation of technologies and strategies.

Verify what works: Increase monitoring and reporting

Water resources must be managed to ensure adequate water supplies for human consumption, energy production, manufacturing, and agriculture; for wildlife and protection of other ecological values; and for meeting public recreation demand. Monitoring the health of water resources is a critical component of Clean Water Act reform. The Wingspread participants recognized that adequate monitoring provides information to assess whether water resource measures are effective, and although federal and state agencies have monitoring and reporting systems, Wingspread participants identified the clear need for better, more widespread, and timelier information. Revisions to the Clean Water Act should include provisions for expanded testing and monitoring, including considering new sensing and monitoring technologies to better understand the state of our waters and new threats, such as emerging contaminants and invasive species. In addition, the monitoring results should be used to review and evaluate progress, help set priorities, inform the public, and maintain support for regulatory efforts.

New approach must be flexible, adaptive, and integrated

A new regulatory regime must be dynamic and flexible enough to address the complex problems that have been identified, as well as new water quality issues that may arise in the future, the scope and nature of which cannot be fully anticipated. Issues

Ideas that Energized the Group

1. Market-based solutions. Water pollution trading and other market mechanisms are important components of more robust water quality regulation.

2. A targeted watershed approach. Watersheds are an organizing principle and holistic model, but in order for complete implementation, a watershed approach needs a clearly articulated goal with improved numeric and technical standards.

3. Implement a new generation of technology-based controls. Updated technology-based controls should be applied to both point and nonpoint sources in impaired watersheds.

4. Integrated water management. The integrity of water resources is affected by stormwater, wastewater, unregulated riparian development, and more. But the regulatory system is disconnected and unable to take advantage of synergy. Integrated water management should encourage approaches that incorporate regulation of stormwater, water reuse, instream flow protections, groundwater, and water quantity to achieve comprehensive water management.

5. Encourage innovation. In order to encourage innovation, new programs should provide a "safe harbor" for the testing and monitoring of new technologies and approaches. Funding is key for demonstration projects along with research and development to create a new generation of technology to address current challenges.

6. Address physical and biological goals. The Clean Water Act should be fully implemented, including modification of resource hydrology and physical integrity to address water quality impacts, biological impacts, and habitat.

7. Monitoring, reporting, and evaluation. A robust monitoring and reporting program is needed to ensure decision makers have better and timelier information. Reporting on progress is key to obtaining and maintaining public support.

8. Integrating authorities. Because water resources are affected by regulations and policies administered by multiple agencies within federal, state, and local governments, efficient regulation should encourage cross-jurisdictional coordination, planning, and enforcement and interagency and intergovernmental cooperation.

9. Reasonable assurance for nonpoint sources. Full implementation of the Clean Water Act should include developing a statutory definition of "reasonable assurance" for nonpoint sources.

10. Funding. Adequate funding with incentives is essential for the development of new technologies, integrating green infrastructure, implementing nonpoint source controls, state programs, and more.

11. Water-energy nexus. Water and energy are inextricably linked. Any reform effort should address energy use to transport and treat water, as well as potential for energy recovery/generation.

12. Jurisdictional issues. The workshop participants noted that jurisdictional issues are a key current impediment, but did not extensively discuss.

such as climate change, for example, have inherent uncertainty, and thus a new water law must be able to adapt over time to revise restoration efforts and to prevent degradation as the scope and magnitude of these new challenges become clearer. Part of this dynamic nature can be achieved through application of adaptive learning and management tools. A new regulatory regime should incorporate a structured, iterative process that simultaneously assesses the state of water quality and requires measures, updated as needed, sufficient to address adverse impacts. Adaptive management is only effective, however, if monitoring and reporting requirements are robust enough to detect advances or shortcomings.

Many of the Wingspread participants wanted to see water resources managed in a more integrated fashion. Designing and planning watershed restoration to achieve maximum environmental benefits is best attained through integrated approaches to water resource management. Water resources must be managed to improve quality and ensure adequate quantity. A new regulatory paradigm must integrate water quality and quantity so that flooding, stormwater, and water supply are addressed together. Adopting a holistic approach is more efficient and can achieve better results. Restoring watersheds means embracing a philosophy of the so-called green infrastructure approach to managing wet weather runoff, and recreating our watersheds and urban areas to mimic natural hydrologic regimes as much as possible. If the natural system is restored, water quality and water supply will improve. For example, restoration of wetlands helps protect against flooding and may reduce the cost of stormwater management and treatment. Reducing sedimentation along reservoirs decreases treatment costs for water supply and improves aquatic habitat. Ensuring that rainfall is absorbed into the ground through permeable surfaces allows it to recharge groundwater tables; support natural baseflows in rivers, streams, and native fisheries; and ensure stable water supplies. The Wingspread participants converged on the philosophy of restoring the natural hydrology as a leading principle for water resource regulatory reform. Aquatic ecosystems with natural hydrology in evidence are better equipped to adapt to water quality challenges, including climate change.

Summary

Comprehensive Clean Water Act reform may occur in stages, addressing short-term fixes first and progressing toward long-term solutions. Regardless of the timing and sequencing of reform, the Wingspread conversation identified key components of a new regulatory system: a comprehensive institutional framework that delineates political jurisdiction; incentives and momentum for innovation; verification of what works and why; and recognition of the dynamic nature of water resources in moving toward a regulatory regime that supports the natural hydrology.

4. Key Considerations in Moving Reform Forward

The case for reform must align with political readiness

The Wingspread workshop ended with a plenary session on the scope and timing of potential Clean Water Act reforms. The group agreed that only major Clean Water Act reform could address the suite of water quality problems identified earlier. But reform will require a strong, strategic campaign and fortuitous timing. As noted by one participant, the case for reform must align with the political readiness for reform. The case for reform derives from careful analysis of the Clean Water Act's failures coupled with a public outcry for something better. Public and political awareness of the failures of current water quality regulation is increasing. For example, the recent New York Times series "Toxic Waters" investigates water quality problems from contaminated drinking water to sewage overflows. While the public is becoming more aware of the magnitude of the stresses on water resources, a recent U.S. Supreme Court decision restricted Clean Water Act jurisdiction.⁴ Those working on water quality issues recognize the tremendous pressures on water resources. But the problems have yet to result in a clarion call for reform. The Wingspread participants generally agreed that not all stakeholders were sufficiently engaged or understood the case for reform. Public call for reform precedes the political readiness for reform. In order to build this case, a strong message that resonates with decision makers and the citizenry is needed.

A campaign for Clean Water Act reform also needs carefully sequenced timing and consideration of milestones. The policy foundation must be sturdy and clearly delineated and the political landscape evaluated. The campaign must be agile enough to take advantage of opportunities for less ambitious changes to the Clean Water Act, yet marshal a compelling argument for comprehensive reform. But even if the case for reform is strong, reform cannot occur without political support. Opinions varied about what it would take to achieve political readiness for reform. Many of the participants looked to the Clean Air Act Amendments of 1990 as an example of what would be needed to move forward, that is, preparation through analysis, case studies, and modeling, looking to the day when the political winds are aligned. The panelists agreed

that the Chesapeake Clean Water and Ecosystem Restoration Act of 2009 (S. 1816, 111th Congress., sponsored by Sen. Benjamin Cardin) is a good precursor for debate on Clean Water Act reform. The legislation incorporates many of the ideas discussed at Wingspread and presents a microcosm of the political debate that would occur with any effort to reform the Clean Water Act.

Scope of reform

The Wingspread conversation broadly identified four reform options: 1) update the current Clean Water Act to improve existing tools; 2) update the Clean Water Act and expand it beyond the traditional applications; 3) update other relevant statutory mechanisms to better coordinate and address water quality impacts; or 4) create new legal or regulatory tools to target nonpoint sources or integrated watershed restoration and management. None of these options are mutually exclusive and many of the Wingspread participants recommended pursuing all as opportunities arise for both short-term and long-term fixes.

Although the group agreed that a major revision of the Clean Water Act would be necessary to address the water quality issues identified, many participants recognized that some progress is possible by fully implementing the existing Clean Water Act. The current Clean Water Act includes aspirational goals that have not been fully implemented. For example, the physical and biological goals of the Act could be addressed or the term of art "reasonable assurance" could be clearly defined and enforced.⁵ Participants also concluded that what is needed now is a better analysis of what can be done if the Clean Water Act were implemented fully, what remains beyond the scope of the current act, what holes are filled by other statutes, and the associated pros and cons. Even if the Clean Water Act were implemented and short-term solutions identified, Wingspread participants agreed that many problems exceed the capacity of the current Clean Water Act and can only be addressed by a major rethinking of water resource management. The Wingspread conversation did not explore the intermediate steps of expanding the current Clean Water Act versus enacting new water legislation, but noted that any option should include the principles identified in the discussion.

⁴ See Rapanos v. United States, 547 U.S. 715 (2006).

⁵ Reasonable assurance is a demonstration that management measures designed to implement Total Maximum Daily Loads (TMDLs) as required by sec. 303(d) of the Act 1) are specific to the pollutant and water body of concern, 2) will be expeditiously implemented, 3) are reliable and effective, and 4) have sufficient funding.

Regardless of which regulatory reform effort is pursued, the participants noted that many federal activities affect water quality. These include the Farm Bill, the Safe Drinking Water Act, the Endangered Species Act, and the pesticides law, to name a few. Comprehensive reform necessitates a hard look at the overlap of federal programs and a determination of the optimal approach.

The Wingspread workshop culminated in the conclusion that the Clean Water Act needs to be strengthened. While opinions varied about how, why, and when, the group focused on a reform effort that would integrate water management so that stormwater, instream flow, groundwater, and recycling and reuse can be addressed concurrently. The watershed approach could be used as an organizing principle so long as it fully integrates water management with the sources of water resource degradation and has sufficient enforcement authority and incentives. Ultimately, integrated water management and the watershed approach should address the physical, chemical, and biological goals fully, including updating technology-based standards for industries and municipalities; encouraging innovation and testing of new strategies and approaches, especially in furthering the application of green infrastructure and the use of natural hydrology; greater cost recovery or pricing reflecting the true cost of services in order to secure additional resources to maintain and upgrade infrastructure; and developing water quality trading and other market-based solutions. Finally, water quality improvements need accountability measures. In order for a new program to succeed, the nation's waters must be monitored, problems reported, and progress evaluated to establish measures for accountability and to provide information to the public to maintain support for continued progress.

Appendix A: Meeting Program

Considering the Clean Water Act

The Johnson Foundation at Wingspread Racine, Wisconsin October 26–28, 2009

Vision

A facilitated two-day session convened by the Water Environment Federation (WEF) and Duke University's Nicholas Institute for Environmental Policy Solutions hosted by The Johnson Foundation at Wingspread. A group of invited water quality experts will discuss key issues surrounding the Clean Water Act. WEF and the Institute will prepare a conference report following the meeting.

Proposed Objectives

- To hear from a variety of perspectives on the progress and experience over the last 35 or so years in implementing the Clean Water Act
- To consider how the current Clean Water Act, its regulatory and enforcement history and its case law, facilitates or thwarts efforts to address specific and emerging water quality challenges
- To identify the issues and measures ripe for consideration during a potential reauthorization of the Clean Water Act and the process by which reauthorization might best be approached



"Thousands have lived without love, not one without water" —W.H. Auden, *First Things First*

Unless a request is made to the contrary, presentations and discussions in the sessions may be tape recorded.

Monday, October 26, 2009

12:30–2:30 p.m.	Buffet Luncheon Guests should feel free to tour the grounds	Guest House
3:45 p.m.	<u>Welcome to Wingspread</u> Lynn E. Broaddus , Director, Environment Programs The Johnson Foundation at Wingspread	Guest House
4:00 p.m.	<u>Plenary Session</u> Conference goals, agenda review and introduction of participants Molly Mayo , Facilitator, Meridian Institute	The House
4:30 p.m.	<u>Keynote Address: "Why This Meeting Is Timely and Necessary"</u> Paul Freedman , President, Water Environment Federation Bill Holman , Nicholas Institute for Environmental Policy Solutions	
5:00 p.m.	 Facilitated Group Discussion What are the strengths that have been established over the first 35+ years of the CWA? Where are the shortcomings or elements that have not been fully implemented? What are the existing and emerging challenges? What changes are necessary to ensure continued progress improving water quality? What promising solutions are emerging? 	
5:45 p.m.	<u>Day 1 Wrap-Up</u>	
6:00 p.m.	<u>Day 1 Adjourn</u>	
6:30 p.m.	Hospitality	Wingspread
7:00 p.m.	Dinner	Wingspread
8:30 p.m.	Hospitality	Guest House
Tuesday, October 27, 2009		

Breakfast will be available from 6:30 a.m. to 8:45 a.m. in the Living Room of the Guest House. Coffee is available in the guest pantries beginning at 5:30 a.m.

8:45 a.m.	<u>Plenary</u> Summary of the highlights from Day 1 Molly Mayo , Facilitator	The House
9:00 a.m.	Panel 1: State of the Clean Water Act – Jurisdiction, Permitting, Infrastruc	<u>ture</u>
	 Presenter: Randy Benn, Nicholas Institute for Environmental Policy Solut New directions in implementing the Act: Recent legal, regulatory, and developments New challenges facing the NPDES program (e.g., endocrine-disruptin cals, pharmaceuticals, vessel permits) Urban infrastructure needs and new approaches to funding 	ions legislative g chemi-

Facilitated group discussion: Issues, concerns, and challenges with the current law

10:00 a.m.	Break
10:15 a.m.	<u>Panel 2: Climate Change and Water</u> EPA's Water Climate Strategy – Status and Next Steps
	Presenter: Tim Williams , Managing Director, Government Affairs Water Environment Federation
	Facilitated group discussion: What is needed to help address climate change challenges?
11:15 a.m.	Panel 3: The Watershed Model
	 Presenter: Charlie Logue, Director, Regulatory Affairs Department Clean Water Services Experience to date incorporating the watershed paradigm? Do TMDLs offer a better approach? What can be done to promote better implementation of TMDLs? Status of federal/state relations and interstate relations in water quality management and what is the appropriate role of the federal government?
	 Facilitated group discussion: Is the watershed model the right paradigm for CWA? If not, what is? How can existing CWA tools be maximized to better protect and restore major water bodies? What, if any, new legislative measures are needed? Where are the hurdles?
12:30 p.m.	Lunch Wingspread
12:30 p.m. 1:30 p.m.	Lunch Wingspread Breakout Groups – Nonpoint Source Pollution and Water
12:30 p.m. 1:30 p.m.	LunchWingspreadBreakout Groups - Nonpoint Source Pollution and Water1. Agriculture (Jon Scholl, Lead)• How well is nonpoint source pollution from agricultural and forest lands addressed through existing CWA tools?• How well does the Clean Water Act align with USDA conservation programs? What changes might be helpful?• Are there state, private, or voluntary programs that offer effective or promising models?• What, if any, new legislative provisions are needed in the Clean Water Act?
12:30 p.m. 1:30 p.m.	 Lunch Wingspread Breakout Groups – Nonpoint Source Pollution and Water 1. Agriculture (Jon Scholl, Lead) How well is nonpoint source pollution from agricultural and forest lands addressed through existing CWA tools? How well does the Clean Water Act align with USDA conservation programs? What changes might be helpful? Are there state, private, or voluntary programs that offer effective or promising models? What, if any, new legislative provisions are needed in the Clean Water Act? 2. Urban (Nancy Stoner, Lead) How well do current CWA provisions address stormwater and wet weather pollution in urban areas? Do current CWA provisions facilitate or present barriers to more widespread and effective use of so-called green infrastructure? Can specific wet weather water quality goals be set and met using green infrastructure? What, if any, new legislative provisions are needed in the Clean Water Act?

3:15 p.m.	Reports from Breakout Groups followed by group discussion	
4:15 p.m.	 <u>Plenary Discussion: Unmet and Emerging Needs in Water Quality</u> What is the status and effectiveness of the nation's water quality mon testing, and reporting networks? How can they be improved? How can the CWA help achieve sustainable water resource managening, e.g., water conservation, reuse and efficiency)? How can CWA and SDWA be better aligned? Should the CWA and CAA be aligned? How can better R&D help develop the next generation of water-technology? What does the Clean Water Act not include that it should? 	itoring, 1ent (includ- related
5:15 p.m.	<u>Day 2 Wrap-Up</u> Highlights of Day 2 and discussion of priority topics for Day 3	
5:30 p.m.	Leisure	
6:30 p.m.	Hospitality and Tour of Wingspread (optional)	Wingspread
7:00 p.m.	Dinner	Wingspread
8:30 p.m.	Hospitality	Guest House
Wednesday, October 28, 2009		

Breakfast will be available from 6:30 a.m. to 8:15 a.m. in the Living Room of the Guest House. Coffee will be available at 5:30 in the guest pantries.

The agenda for Day 3 will be refined based on the results of Day 2.

8:30 a.m.	Plenary SessionThe HouseIs the time right for reauthorizing the Clean Water Act?• Does the Act need "tweaking," a major overhaul, or something in between?• If reauthorization is desirable, what is needed to prepare for congressional consideration?• What are the opportunities and hurdles that could affect any reauthorization effort?• What is the appropriate balance between federal and nonfederal roles and regulatory and nonregulatory approaches?• Can a reauthorization debate be conducted that addresses remaining water quality needs while respecting private property rights interests?• What is the readiness of stakeholders from all sectors and at the national, state, local levels regarding a reauthorization debate?• What time consideration and milestones need to be considered in any next steps?
10:15 a.m.	Break
10:30 a.m.	 <u>Plenary Discussion: Opportunities and Next Steps</u> How do we move from definition to action? What are the key topics that ought to be addressed in future efforts? Who are the key people that need to be involved to make these events successful?

11:30 a.m.	<u>Wrap-Up and Final Round of Comments</u> Molly Mayo, Meridian Institute
12:00 p.m.	Work session adjourns
12:00 p.m.	Luncheon

Transportation departs from the Guest House. Box lunches will be available for those who are not able to stay for the lunch buffet.

Guest House

Appendix B: List of Participants

Robert W. Adler James I. Farr Chair and Professor S.J. Quinney College of Law The University of Utah 322 S. 1400 East Salt Lake City, UT 84112-0730 Tel: 801-581-3791 adlerr@law.utah.edu

Sandra L. Allen Director of Policy and Planning NYS Environmental Facilities Corporation 625 Broadway Albany, NY 12207-2997 Tel: 518-402-6924 allens@nysefc.org

Fredric P. Andes Partner Barnes and Thornburg LLP One N. Wacker Dr. Suite 4400 Chicago, IL 60606 Tel: 312-214-8310 fandes@btlaw.com

Katherine Baer Senior Director Clean Water Program American Rivers 1101 14th St. NW Suite 1400 Washington, DC 20005 Tel: 202-347-7550 kbaer@americanrivers.org

D. Randall Benn Senior Fellow Nicholas Institute for Environmental Policy Solutions Dewey and LeBoeuf 1005 N. Tuchahoe St. Falls Church, VA 22046 Tel: 202-346-8047 rbenn1@verizon.net

Gordon L. Binder Senior Fellow World Wildlife Fund 1250 24th St. NW Washington, DC 20037 Tel: 202-495-4392 gordon.binder@wwfus.org

Carol R. Collier Executive Director Delaware River Basin Commission 25 State Police Dr. P.O. Box 7360 West Trenton, NJ 08628 Tel: 609-883-9500, ext. 200 carol.collier@drbc.state.nj.us

Disque D. Deane, Jr. Chief Investment Officer Co-Portfolio Manager Water Asset Management, LLC 425 Park Ave. 27th Fl. New York, NY 10022 Tel: 212-754-5132 d.deane@waterinv.com

Paul L. Freedman President Water Environment Federation Limno Tech 501 Avis Dr. Ann Arbor, MI 48108 Tel: 734-332-1200 pfreedman@limno.com

Wayne T. Gilchrest (*via conference call*) Retired Member U.S. House of Representatives 13501 Turners Creek Rd. Kennedyville, MD 21645 Tel: 410-348-2018 gilchrest@dmv.com

Geoffrey H. Grubbs 5327 Dorsett Pl., NW Washington, DC 20016 Tel: 202-362-1358 ghgrubbs@msn.com

William C. Herz Vice President Scientific Programs The Fertilizer Institute Union Center Plaza 820 First St. NE Suite 430 Washington, DC 20002 Tel: 202-515-2706 wcherz@tfi.org

Bill Holman Director of State Policy Nicholas Institute for Environmental Policy Solutions Duke University Box 90335 Durham, NC 27708 Tel: 919-613-8737 bill.holman@duke.edu

Charles L. Logue Director of Technical Services ReWa Renewable Water Resources 561 Mauldin Rd. Greenville, SC 29607 Tel: 864-299-4038 charles@re-wa.org

Peter G. McCornick Director for Water Nicholas Institute for Environmental Policy Solutions Duke University Box 90328 Durham, NC 27708 Tel: 919-613-7465 p.mccornick@duke.edu

Martha L. Noble Senior Policy Associate National Sustainable Agriculture Coalition 110 Maryland Ave., NE Suite 209 Washington, DC 20002 Tel: 202-547-5754 mnoble@sustainableagriculture.net

Amy E. Pickle Senior Attorney for State Policy Nicholas Institute for Environmental Policy Solutions Duke University Box 90335 Durham, NC 27708 Tel: 919-613-8746 amy.pickle@duke.edu Jon Scholl President American Farmland Trust 1200 18th St. NW Suite 800 Washington, DC 20036 Tel: 202-378-1212 jscholl@farmland.org

Doug Siglin Federal Affairs Director Chesapeake Bay Foundation 725 8th St. SE Washington, DC 20003 Tel: 202-544-2232 dsiglin@cbf.org

Thomas W. Simpson Executive Director Water Stewardship, Inc. 222 Severn Ave. Bldg. 7, Suite 11 Annapolis, MD 21403 Tel: 410-295-6767 toms@waterstewardshipinc.org

Nancy K. Stoner Co-Director Water Program Natural Resources Defense Council 1200 New York Ave., NW Suite 400 Washington, DC 20005 Tel: 202-289-2394 nstoner@nrdc.org

Ann P. Swanson Executive Director Chesapeake Bay Commission 60 West St. Suite 406 Annapolis, MD 21104 Tel: 410-263-3420 aswanson@chesbay.us

Jumana Z. Vasi Associate Program Officer Environment Program C.S. Mott Foundation 503 S. Saginaw St. Suite 1200 Flint, MI 48502-1851 Tel: 810-238-5651 jvasi@mott.org Alan H. Vicory (*canceled*) Executive Director and Chief Engineer Ohio River Valley Water Sanitation Commission (ORSANCO) 5735 Kellogg Ave. Cincinnati, OH 45230 Tel: 513-624-3683, ext. 105 avicory@orsanco.org

LaJuana S. Wilcher Partner English, Luca, Priest & Owsley P.O. Box 770 1101 College St. Bowling Green, KY 42102 Tel: 270-781-6500 lajuanawilcher@aol.com

Timothy S. Williams Managing Director Government Affairs Water Environment Federation 601 Wythe St. Alexandria, VA 22314 Tel: 703-684-2437 twilliams@wef.org

Robert L. Zimmerman, Jr. Executive Director Charles River Watershed Association 190 Park Rd. Weston, MA 02493 Tel: 781-788-0007, ext. 230 rzimmerman@crwa.org

Facilitator Molly Mayo Senior Mediator Meridian Institute P.O. Box 773 Talkeetna, AK 99676 Tel: 970-389-3512 mmayo@merid.org www.merid.org

The Johnson Foundation at Wingspread Staff

Roger C. Dower President Tel: 262-681-3331 rdower@johnsonfdn.org

Lynn E. Broaddus Director Environment Programs Tel: 262-681-3344 lbroaddus@johnsonfdn.org

Lisa Piche Program Assistant Tel: 262-681-3336 lpiche@johnsonfdn.org

Sarah Wright Environmental Policy Fellow Tel: 262-681-3347 swright@johnsonfdn.org

The Johnson Foundation at Wingspread 33 E. Four Mile Rd. Racine, WI 53402 www.johnsonfdn.org

the Nicholas Institute

The Nicholas Institute for Environmental Policy Solutions at Duke University is a nonpartisan institute founded in 2005 to engage with decision makers in government, the private sector and the nonprofit community to develop innovative proposals that address critical environmental challenges. The Institute seeks to act as an "honest broker" in policy debates by fostering open, ongoing dialogue between stakeholders on all sides of the issues and by providing decision makers with timely and trustworthy policy-relevant analysis based on academic research. The Institute, working in conjunction with the Nicholas School of the Environment, leverages the broad expertise of Duke University as well as public and private partners nationwide.

for more information please contact:

Nicholas Institute for Environmental Policy Solutions Duke University Box 90335 Durham, NC 27708 919.613.8709 919.613.8712 fax nicholasinstitute@nicholas.duke.edu www.nicholas.duke.edu/institute

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