
FUTURE PLANS

In its efforts to identify emerging water resource problems and issues, the WSTB occasionally devotes the majority of one of its meetings to discussion of contemporary and emerging water issues that are candidates as a WSTB study. This section describes the current suite of emerging WSTB initiatives, some of which are self-generated and some of which are being developed in response to agency and other sponsor requests.

U.S. Army Corps of Engineers Water Resources Science, Engineering, and Planning

The WSTB has a long record of providing independent, expert advice to the Corps of Engineers, including reviews of planning studies for specific river and aquatic systems and reviews of Corps of Engineers analytical methods, its processes of peer review, and its approach to adaptive management.

This history of WSTB studies for the Corps of Engineers, combined with increasing congressional interest in peer review, has led the WSTB and the Corps to begin discussions of a formal committee to convene periodic meetings with Corps of Engineers staff to discuss pressing scientific, engineering, and water resources planning to the agency. The committee should be especially valuable in helping the Corps to better anticipate and prepare for emerging water resources planning challenges.

This new committee will issue periodic reports and it will determine specific topics of inquiry through dialogue with the Corps. Meetings between this committee and the Corps will allow Corps staff to identify and discuss water resources planning and policy issues of high priority to the agency and for which they are seeking external advice. In addition to speaking with the Corps of Engineers, the committee often will hear from invited speakers from other federal agencies, U.S. congressional staff, state governments, the private sector, and non-governmental organizations. The committee will serve as a forum for occasional workshops on thematic issues, such as flood risk management, sustainable river system planning, hydroecosystem restoration, or implications of climate change and variability to water management.

Improving Water Management in the Southeastern United States

Rapid population growth in many parts of the U.S. has heightened the sensitivity of water supplies to drought. The challenges associated with increasing water demand and reduced water supplies are well illustrated today in both the U.S. southwest/Colorado River region and in the southeastern U.S. Both areas are experiencing high

rates of population growth and also have been affected by climate variability and drought. These regions each exhibit a tightening water supply picture as multiple and new users vie for changes to more traditional water allocation rules and water reuse schedules. Lasting solutions to these challenges of water supply and demand balances, as well as water quality, will require creative, science-based, and economically feasible strategies.

The WSTB has a longstanding interest in opportunities to improve management of river systems in the southeastern U.S. The two primary interstate water supply systems for much of Alabama, Florida, and Georgia are the Apalachicola-Chattahooche-Flint (ACF) and Alabama-Coosa-Tallapoosa (ACT). These interstate river systems have been the subject of disputes over water allocations for water supply, power, instream ecology, flood control, and other purposes and the challenges have been heightened by a region-wide drought in recent years.

As this biennial report went to press, it appeared that the U.S. Congress, state officials, and the U.S. Army Corps of Engineers have agreed upon the value of supporting a WSTB assessment of opportunities to improve water management for multiple purposes in the ACF system. A study is being planned that will (1) assess the hydrological conditions and future water supply options and challenges in the basin, (2) evaluate models to be used as the basis for management of reservoirs in the river system, and (3) identify possible approaches for equitably meeting basinwide water management needs and challenges.

Results of the contemplated studies should usefully serve the federal government and these southeastern states in planning for future regional water management challenges and at the same time address issues associated with a basin “master manual” currently in preparation.

Options for Provision of Drinking Water: Bottled, Filtered, or Tap?

In the United States, growing use of bottled water and household water treatment devices suggests growing public concern about drinking water quality. There has been a dramatic increase in the proportion of the population that drinks bottled water or uses some type of water treatment device in their homes. For example, in 1999 the Natural Resources Defense Council reported that more than half of all Americans drink bottled water and about one third of the population regularly drink bottled water. The use of home water treatment devices has also risen steadily



over the past ten years. These trends have serious implications for the water industry, drinking water regulators, and consumers. Producing billions of plastic bottles each week has associated environmental consequences for energy use, pollution, and waste disposal. Meanwhile, as bottled water and in-home water-treatment devices become more popular, many wonder whether these alternative drinking water options are safer than tap water.

Review of Florida's Strategy to Develop Numeric Nutrient Criteria

Florida, like many states, has developed narrative water quality criteria for nutrients, and state officials are in the process of determining numeric criteria, which will be much more usable than their narrative counterparts. The Environmental Protection Agency (EPA) has established a method for devising numeric nutrient criteria, which is based on the use of nutrient concentration data gathered from pristine or minimally impacted reference sites. EPA's method involves creating a frequency distribution of the measured concentration values, and then placing the numeric criteria at a level somewhere between the 75th and 95th percentile value. The Florida Department of Environmental Protection has requested the WSTB to convene a committee to offer an opinion on the reference site approach in general, and about the choosing of a particular percentage as the numeric criterion. Furthermore, they would like a committee to consider to which Clean Water Act programs the numeric criteria should be applied, from the listing of impaired waters to adoption of the criteria for wastewater treatment plant and stormwater discharges.

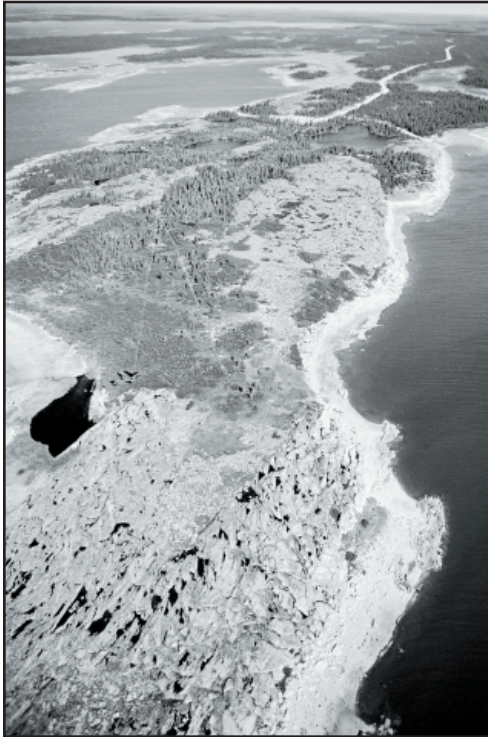
Review of the Florida Stormwater Rule

The Florida Department of Environmental Protection and the five water management districts of Florida are developing a new Stormwater Rule based on a performance standard of not allowing post-development nutrient loads to exceed pre-development nutrient loads. This rule applies to stormwater emanating from all new development and redevelopment, and it would replace an existing rule based on reducing total suspended sediment loads. This new project would focus on the methods used to calculate pre- and post-development loadings, on the required level of nutrient load reduction, and on the design criteria for various stormwater control measures and their expected level of nutrient reduction.

Scientific Basis for Assessing the Relationship of Navigable Water, their Tributaries, and Adjacent Wetlands

The WSTB has an extensive history of collaborative work with the NRC Board on Environmental Studies and Toxicology (BEST) on wetlands studies. For example, the 1995 NRC report, *Wetlands: Characteristics and Boundaries*, helped establish the scientific basis for the characterization of wetlands, and a 2001 NRC report, *Compensating for Wetland Losses under the Clean Water Act*, addressed mitigation, wetlands replacement, and other regulatory issues. Since 1999, the two boards have jointly overseen committees providing scientific reviews of the restoration of Florida's Everglades.

The WSTB and BEST currently are in discussion with the EPA and the Corps of Engineers concerning a new study that would help address a current issue related to regulatory jurisdiction. The regulation of waters of the United States under the Clean Water Act, including wetlands, has a long history of jurisdictional disputes over what is included in the term "waters of the United States." One significant issue concerns the hydroecological connectedness of wetlands with navigable water: in essence, if a wetland has a significant nexus with a navigable water, then the wetland is a water of the United States and is subject to the regulatory jurisdiction of EPA and the Corps of Engineers under the Clean Water Act. The term "significant nexus" was coined by the courts with little scientific guidance, however, and dealing with the issue has been a challenge for the government. As a result, the EPA and Corps have turned to BEST and WSTB for a new study that will help establish a scientific basis for defining this phrase fairly, consistently, and with scientific credibility.



Sustaining the Nation's Water Services

Over the next 30 years, the water and wastewater infrastructure in many U.S. communities will be reaching the end of its usable lifespan, increasing the likelihood of infrastructure failure and associated water service disruption and public health incidents. Meanwhile, population growth and increases in water demand will further stress these systems, and climate uncertainty may also stress water infrastructure by bringing additional droughts and extreme weather events. The nation's water and wastewater sectors are entering an era where substantial investments in repair and replacement are required: current levels of spending will be insufficient to ensure reliable delivery of water services in the decades ahead.

This proposed WSTB study would consider the challenges associated with aging water infrastructure and examine potential technological and non-technologi-

cal solutions to providing needed water services in the future. This proposed study takes a broad view of water services, considering factors affecting investments in water, wastewater, and stormwater infrastructure. The study would aim to: (1) review technological solutions (including conventional approaches, new technologies, distributed systems, and green infrastructure) to address water infrastructure needs, (2) examine management and financial strategies, (3) explore potential policy and legislative approaches, (4) examine ways to overcome social challenges and barriers, and (5) identify research needs. The study also proposes to identify the most effective roles for utilities; federal; state; and local governments; and non-governmental organizations in the implementation of these solutions.