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TESTIMONY OF
THE AMERICAN SOCIETY OF CIVIL ENGINEERS*
BEFORE THE
SUBCOMMITTEE ON INTERIOR, ENVIRONMENT, AND RELATED AGENCIES
OF THE
COMMITTEE ON APPROPRIATIONS
U.S. HOUSE OF REPRESENTATIVES
FEBRUARY 27, 2007

* *ASCE was founded in 1852 and is the country's oldest national civil engineering organization. It represents more than 140,000 civil engineers individually in private practice, government, industry, and academia who are dedicated to the advancement of the science and profession of civil engineering. ASCE is a non-profit educational and professional society organized under Part 1.501(c) (3) of the Internal Revenue Code.*

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Mr. Chairman, Mr. Tiahrt, and Members of the Subcommittee:

Good morning. I am Jeanette Brown. I am the executive director of the Stamford, Connecticut, Water Pollution Control Authority (WPCA). The WPCA operates a wastewater treatment system for the cities of Stamford and Darien, with a service population of 100,000 people. We operate an advanced wastewater treatment facility with biological nitrogen removal capable of processing 24 million gallons a day. The system includes 22 sanitary pumping stations, three stormwater pumping stations, and 300 miles of sanitary sewers. The WPCA recently has completed a \$105-million upgrade and expansion of our wastewater treatment plant. We are currently building a solids-drying facility, which is Phase I of our biomass-to-energy project. I am a registered Professional Engineer in the state of Connecticut and a board-certified environmental engineer by the American Academy of Environmental Engineers.

I am pleased to appear before the Subcommittee today to testify on behalf of the American Society of Civil Engineers (ASCE) to discuss the remaining challenges facing the nation's wastewater treatment industry 35 years after the enactment of the Clean Water Act.

I. Pollution Control under the Clean Water Act

The Clean Water Act promised the nation in 1972 that it would ensure the “[r]estoration and maintenance of chemical, physical and biological integrity of [the] Nation's waters.” The Act’s stated purpose was to stop the release of all pollutants into the nation’s waterways by 1985.

Although we have not met that deadline, the Act by and large has done much to restore and preserve the nation’s waters. The 1972 law was written to deal with sewage and industrial wastes from distinct sources, and the National Pollutant Discharge Elimination System (NPDES) has worked remarkably well in reducing pollution from industrial sources in our waterways.

Problems remain, however. Based on an incomplete survey of water-quality standards provided by the states in 2000, the EPA reported that about 40 percent of the nation’s streams, 45 percent of its lakes, and 50 percent of estuaries that were assessed were not clean enough to support uses such as fishing and swimming.¹ We do not believe the picture has improved markedly since then.

In particular, the Act has fared less well in the control of nonpoint-sources of pollutants under section 319: that program, enacted in 1987, was designed to reduce the discharge of pollutants from nonpoint sources through state-developed “management programs” and was funded by EPA grants to carry out the state programs.

Section 319 provides for states to prepare reports and propose management plans for the control of nonpoint-source pollution for approval by EPA, and encourages the development of plans on a watershed-by-watershed basis. States with approved

¹ The agency no longer reports aggregate data on national water quality because of the supposedly different methods each state uses in measuring water quality.

management programs are eligible, on a cost-sharing basis, for federal grants to assist in the implementation of the program. Grants are also available to states with approved plans to assist the states in carrying out ground water quality protection activities which will advance the state toward the implementation of a comprehensive nonpoint source pollution control program.

But the EPA reports that, among the nation's 3.3 million water bodies (which include all river "reaches" located between two tributaries, lakes, and reservoirs), only 26 impaired water bodies or water-body segments have been "partially or fully restored" as a result of efforts under section 319. "Nonpoint source pollution is the leading remaining cause of water quality problems. The effects of nonpoint source pollutants on specific waters vary and may not always be fully assessed," the EPA explains.

The agency's "Clean Watersheds Needs Survey" (2000) reported that 38 states and the District of Columbia needed \$13.8 billion in financial assistance under section 319 to deal with their nonpoint-source pollution problems.

II. Wastewater Infrastructure Today

The federal government has directly invested more than \$80 billion in the construction of publicly owned sewage treatment works (POTWs) and their related facilities since passage of the Clean Water Act in 1972. Nevertheless, the physical condition of many of the nation's 16,000 wastewater treatment systems is poor, due to a lack of investment in plant, equipment, and other capital improvements over the years. The typical lifespan of wastewater equipment is 20 years, even when well maintained. Many wastewater-treatment systems have reached the end of their useful design lives. Older systems are plagued by equipment malfunctions and by chronic overflows during

major rain storms and heavy snowmelt that, intentionally or not, result in the discharge of raw sewage into U.S. surface waters.

Nearly five years ago, the U.S. Environmental Protection Agency (EPA) released a detailed gap analysis, which assessed the difference between current spending for wastewater infrastructure and total funding needs. The EPA Gap Analysis estimated that, over the next two decades, the United States must spend nearly \$390 billion to replace antiquated wastewater infrastructure and to build new treatment plants (the total includes money for some projects not currently eligible for federal funds, which are not reflected in the EPA State Needs Survey).

In August 2004, the EPA estimated that the volume of combined sewer overflows (CSOs) discharged nationwide is 850 billion gallons per year. Sanitary sewer overflows (SSOs), caused by blocked or broken pipes, result in the release of as much as 10 billion gallons of raw sewage yearly, the agency reported.

In its “Clean Watersheds Needs Survey” (2000), the EPA said that the nation needs to invest an estimated \$181 billion (in 2000 dollars) to upgrade its aging wastewater treatment plants. That estimate was submitted to Congress in August 2003. We believe that the need is even greater today; unfortunately the agency will not issue its next comprehensive needs report until 2009, based on data to be collected in 2008.

Meanwhile, federal funding under the Clean Water Act State Revolving Loan Fund (SRF) program has remained flat or declined sharply every year since 1995. Despite the impressive funding support provided in the 1970s and 1980s, federal assistance simply has not kept pace with the needs. Nevertheless, virtually every authority agrees that funding needs remain very high: the United States must invest the

additional \$181 billion for all types of wastewater treatment projects eligible for funding under the Act, according to the 2000 needs survey.

III. Operational Challenges for the Future

One of the greatest challenges for the future of wastewater treatment lies in the industry's ability to manage the increased demand for sewage treatment caused by population growth.

As of the middle of February, the U.S. Census Bureau estimated that there were 301 million people living in the United States. That number is expected to reach 400 million within the next 50 years. Although American families today are smaller, many are moving further from urban areas into remoter suburbs and rural areas. In 2004, the EPA reported that one-third of new housing developments will manage their sewage through septic systems (known as "on-site treatment") due to the increasing decentralization of the U.S. population. Paradoxically, increasing urbanization, as well as the continued presence of agricultural runoff, will provide additional sources of pollution not controlled by centralized wastewater treatment, according to the agency.

Both trends argue for a greater reliance on the use of regional wastewater treatment systems to ensure that discharges are treated and released from a single point-source under the successful NPDES program. This means that it is quite likely that the demand for federal financial assistance for new wastewater treatment systems will continue to grow as well.

Population growth not only adds to the volume of wastewater that must be treated but also increases the volume of nutrients (nitrogen and phosphorous) that is discharged to surface water. Nitrogen that is discharged from treatment plants causes excessive

growth of microscopic Phytoplankton in salt water systems. The growth and ultimate decomposition of these organisms result in decreased concentrations of dissolved oxygen available for fish and shellfish, resulting in fish kills, a decrease in the abundance of fish, and a decline within and among species. Many treatment plants in the U.S. are also required to remove nitrogen and phosphorous within the treatment process. The added capital cost of nutrient removal at treatment plants is significant. For example, the City of Stamford is required to remove nitrogen to protect the water quality in Long Island Sound. It is estimated that more than \$200 million will be required by Connecticut treatment plants just to improve the treatment process to remove nitrogen. Moreover, scientists are now evaluating the impact of pharmaceuticals, hormones, and other trace chemicals that might go unchanged through a treatment plant. Many of these are classified as endocrine disruptors, and their effects are well documented. No one knows what the financial impact will be if we have to remove trace chemical compounds.

Parts of the United States are experiencing water shortages already. Population growth will significantly increase the demand for water and cause further shortages. We now have to look at treating wastewater to a level sufficient to allow for its direct reuse. The cost of this will be staggering, not only in new capital investment but in operating and maintenance costs as well. But this investment must be made to ensure reliable sources of safe drinking-water.

Global climate change, resulting in higher temperatures and rising water elevations, also may produce new costs and challenges. Rising water levels will bring about the need for dikes, levees, and other protective measures. In addition, higher water

levels may require the building or rebuilding of plants now located in coastal areas to levels above the existing floodplain elevations.

IV. Financial Challenges

Another challenge will be fiscal. Treatment plant costs have risen sharply in recent years: the average per capita cost for wastewater treatment among 132 public agencies in 2004 was \$171, an increase of approximately 20 percent from the \$143 per capita cost in 1995, according to a recent survey by the National Association of Clean Water Agencies (NACWA).

At the same time, federal and state grants and loans declined from 10.6 percent to 5.9 percent of total publicly owned treatment plant revenues between 1992 and 2004, said NACWA. Thus more of the cost of providing wastewater treatment is falling upon local ratepayers, who already are paying nearly three-quarters of the cost through user fees and local bond issues. Two-thirds of all capital improvements to local treatment plants were financed by debt in 2004, said NACWA, while only 1.2 percent of all capital costs was provided by federal or state grants.

It appears that these trends will not be significantly reversed in the near future. Under current tax and spending projections, Congress faces years of real budget deficits. Combined with the recent reinstatement of the PAYGO rule in the House, these developments mean there will be difficult choices for this Subcommittee over the next decade at least.²

² In January, the House adopted two amendments to Rule 21 of the House that will affect this Committee's work in the coming months and beyond. The first change prohibits the House from considering budget resolutions or amendments to budget resolutions that contain reconciliation instructions increasing the budget deficit. The second rule modification disallows the consideration of any legislation proposing direct spending or revenue changes that would increase the budget deficit within a five-year or a 10-year period—the "pay-as-you-go" point of order.

Of particular concern to the wastewater treatment industry is a change that restricts the discretion of the Appropriations Committee, whose bills (unlike those of the House Committee on Transportation and Infrastructure, which authorizes Clean Water Act programs) affect direct federal spending on clean water infrastructure. The Transportation and Infrastructure Committee has reported a bill, the Water Quality Financing Act of 2007 (H.R. 720), that would authorize EPA to spend up to \$20 billion over five years to recapitalize the State Revolving Loan Fund (SRF) program. We strongly support its enactment; we cannot predict now how the bill's proposed spending levels will come out in future budget debates.

Finally, we cannot create new water; we must continue to use and reuse water. We cannot take clean water for granted. Because of this, we need to have the federal government fund research and development. Federal R&D will provide a significant return on investment as the better treatment methods that result from this investment will help to significantly leverage all of the local investment already occurring. I would estimate a return on the order of 10 to 1. This may well be the best use of limited federal dollars.

Federal investment in R&D is also necessary to retain our educational system that is producing educated professionals. Without research dollars there are no faculty working on wastewater studies, and without faculty there are no students. A number of major universities already have eliminated their traditional water and wastewater engineering programs, including Purdue and Oregon State, with others to follow because faculty cannot get research dollars.

R&D investments will also pay back by helping to build export industries, which this country needs. This is a proven model; it already is being implemented in places like France and Japan and currently being implemented in Singapore and China.

That concludes my statement, Mr. Chairman. I would be happy to answer any questions the Subcommittee might have.

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