

# Financial Capability and Affordability in Wet Weather Negotiations

*White Paper*

Prepared for NACWA by:



October 2005

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## I. EXECUTIVE SUMMARY

The National Association of Clean Water Agencies (NACWA) leads the clean water community in assessing the impact of policies, regulations, and approaches that affect public wastewater service agencies, and advocates for responsible national policies that advance clean water and a healthy environment. In this spirit, NACWA commissioned the preparation of this *Financial Capability and Affordability in Wet Weather Negotiations* White Paper to review and suggest modifications to existing policy and practice on wet weather compliance and its financial impacts, provide negotiations guidance for clean water agencies through a body of case studies, and suggest approaches to reducing the financial impacts of wet weather projects on low-income households.

The U.S. Environmental Protection Agency's (EPA or Agency) consideration of the financial impact of its regulatory requirements dates back to the 1972 writing of the Clean Water Act (CWA). The focus on financial was strong in the first and second decades of implementation but has, in practice, lessened since the early 1990s. The resultant transfer of near total financial responsibility to local utilities, when combined with ever more stringent regulations, is producing a nearly untenable fiscal situation for those utilities. NACWA has consistently advocated that the treatment of economic impacts of regulations and enforcement activities is an important consideration for the federal government, states, and local communities. The recent investments that many communities have made in significant and costly wet weather projects illustrate these economic impacts.

EPA has published several guidance documents that emphasize the importance of economic consideration in pursuit of the attainment of CWA goals; however, public agency experience with the Agency's implementation of its own guidance documents, along with its more vigorous use of enforcement, has revealed numerous limitations and shortfalls in the Agency's standard approaches to assessing financial capability and affordability at the local level. Foremost among this body of material is EPA's 1997 document, "Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development" (*FCA Guidance*). NACWA believes that a comprehensive review and expansion of this and other current EPA financial capability assessment (FCA) guidance documents could facilitate a more holistic, economically sustainable regulatory framework for many communities. The various flaws and limitations of EPA's FCA documents are enumerated in this White Paper.

One of the areas of incomplete consideration by EPA in wet weather negotiations is the impact of wet weather compliance costs on the low-income community. The federal government's use of an area-wide median household income (MHI) cannot accurately assess the impacts on this sensitive community population. Accordingly, this White Paper reviews approaches to more thoroughly assess the impacts of wet weather program decisions specifically on low-income households.

Another area of difficulty is the regulators' emphasis on achieving wet weather controls in an expeditious fashion. When short implementation schedules are coupled with a zero overflow philosophy, many public utilities find it all the more essential to make affordability and financial capability arguments. This White Paper reviews a broad sampling of clean water agency wet weather negotiations and highlights various techniques for making successful affordability arguments.

In summary, this White Paper makes the following recommendations, which should assist both EPA in any of its future efforts to update and enhance wet weather guidance and regulatory / enforcement programs, and clean water agencies as they plan and implement wet weather improvements:

1. Enforcement of wet weather requirements should be effected through consideration of the full spectrum of costs imposed by CWA regulatory requirements and options for relief through use of more holistic regulatory frameworks.
2. Evaluation of the benefits and costs of resource investments relative to other potential investments of local resources should guide enforcement of wet weather regulations.
3. Assessment of financial capabilities should consider the full spectrum of requirements for providing wastewater services, not simply those associated with one rule or requirement.
4. FCA methodologies should include the costs of needed reinvestment in critical infrastructure.
5. Insofar as other water quality-related costs are to be incurred for the same ultimate benefit as costs to eliminate CSO-related impacts, such costs should be included in an assessment of long-term capability to finance water quality improvements.
6. Implementation and enforcement policies should recognize that local decision-makers are challenged to achieve the highest overall quality of life benefits in a community given resource limitations.
7. Use of non-traditional and market-based approaches such as use attainability analyses (UAAs), watershed permitting, credit trading, phased implementation of requirements, and adaptive management will provide communities with the tools to ensure that maximum benefits can be achieved with affordable investments over time, to the net benefit of the communities served and the environment.
8. EPA's *FCA Guidance* should explicitly consider the combined effect of the spectrum of regulatory policies to mitigate wet weather effects on water quality, and in particular its policy on sanitary sewer overflows.
9. A review of historical consideration of FCAs across regions could help develop policy guidance and improve consistency of enforcement.
10. EPA should provide for consistent and substantive consideration of prospective impacts of wet weather programs on low-income populations when it reviews a permittee's FCA.
11. Legislative and policy actions may be needed to address current funding and financing power limitations. Expansion of loan and grant program funding is critical, as is relaxation of funding eligibility criteria to facilitate implementation of creative, cost-effective solutions to environmental challenges

## II. INTRODUCTION

NACWA leads the clean water community in assessing the impact of policies, regulations, and approaches that affect public wastewater service agencies. NACWA strives to be the leading advocate for responsible national policies that advance clean water and a healthy environment. In this spirit, NACWA commissioned the preparation of this *Financial Capability and Affordability in Wet Weather Negotiations* White Paper. The White Paper is intended to:

- Provide a critical review of the U.S. Environmental Protection Agency's (EPA's) established policies and guidance on financial capability assessments for wet weather programs;
- Provide practical guidance to clean water agencies for discussions with state and federal regulators on current policies and practices related to consideration of financial capability;
- Suggest modifications to EPA's assessment methods and enforcement practices – particularly the importance of expanding financial capability considerations to include the breadth of wet weather related compliance requirements facing a community;
- Through Case Studies (Appendix 2), provide a succinct overview of the experiences of clean water agencies assessing financial capability in the context of negotiating Clean Water Act (CWA) wet weather consent decrees; and
- Provide general guidance on the relationship between financial capability and low-income affordability, and suggest approaches to addressing low-income affordability concerns.<sup>1</sup>

## III. BACKGROUND

From the initial drafting of the 1972 Clean Water Act (CWA or Act, (PL-92-500)), there was recognition of the need to address economic considerations in defining requirements for, and approaches to, infrastructure improvements. The Act itself states:

*It is the policy of Congress that a project for waste treatment and management undertaken with Federal financial assistance under this Act . . . shall be that system which constitutes the most economical and cost-effective combination of devices and systems . . . at the most economical cost over the estimated life of the works . . . to meet the requirements of this Act. (PL 92-500, Title II, Sec. 218(a))*

Between 1972 and 1992, the focus of CWA compliance and enforcement efforts was on the design and construction of secondary treatment facilities, which was supported by the CWA's Title II *Grants for Construction of Treatment Works* program. While a limited number of clean water agencies –most notably the Metropolitan Water Reclamation District of Greater Chicago, Louisville Metropolitan Sewerage District, and San Francisco Public Utilities Commission – incorporated Combined Sewer Overflow (CSO) facilities into their plans for facility upgrades, as

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<sup>1</sup> A detailed discussion of low-income affordability issues is beyond the scope of this White Paper, given that it is the subject of considerable study and existing literature.

a general rule limited attention was paid to collection system overflow issues and associated costs.

In an effort to focus on wet weather management, EPA issued a CSO Control Strategy in 1989 that articulated the following objectives:

- To ensure that CSOs occur only as a result of wet weather;
- To bring all wet weather CSO discharge points into compliance with the technology-based and water quality-based requirements of the CWA; and
- To minimize water quality, aquatic biota, and human health impacts from CSOs.<sup>2</sup>

Still, EPA was silent on how to balance the time required to accomplish these objectives with local communities' financial capabilities. Not until the early 1990s, with negotiation of a national CSO Policy (*Policy*) underway, were financial considerations identified as an essential component in the regulation of CSOs to improve water quality.

The initial attempt to establish a process for planning and implementing CSO controls was undertaken in 1992. Information reviewed by the assembled stakeholders (now known as the framers) made it clear that CSO control would entail unprecedented costs. The Chicago deep tunnels and the San Francisco Master Plan provided specific examples of the potential magnitude of CSO control costs, especially when compared to costs for treatment of dry weather sanitary sewage. As a result of these discussions, cost-effectiveness, financial capability, and phasing of control were included as major tenets of the *Policy*. In particular, the stakeholders:

- Agreed on the concept of phasing CSO control requirements over a long period of time, primarily in the hope of mitigating the staggering costs of CSO controls. This provision acknowledges that longer implementation schedules are one way to improve CSO control affordability.
- Settled on the concept and name, "Long Term Control Plan (LTCP)," specifically as a way to recognize that a considerable length of time will be required to accomplish CSO controls.

The National Association of Clean Water Agencies (NACWA), as a primary representative of municipal clean water agencies and CSO communities, was asked to participate in the group of stakeholders engaged in negotiating the *Policy*. NACWA participated on behalf of its members and attended all of the negotiation and learning sessions. From the summer of 1992 until the promulgation of the *Policy* in April 1994<sup>3</sup>, NACWA representatives participated in every aspect of the negotiation.

Throughout the negotiation process, NACWA took the position that the *Policy* must be considered in its entirety. Therefore, for permits and orders to effect affordable water quality improvements, communities and regulators must evaluate the collective implications of:

- The characterization of a community's wastewater system, and in particular the capacity of wastewater collection systems to carry wet weather flows;
- The Nine Minimum Control Strategies; and

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<sup>2</sup> 1989 National Combined Sewer Overflow Control Strategy, 54 Fed. Reg. 37,371 (Sept. 18, 1989).

<sup>3</sup> 59 Fed. Reg. 18,688 (Apr. 19, 1994)

- The water quality standards used for the development of a LTCP.

It was also believed that the *Policy* should not only be comprehensive, but integrated – an approach to planning and implementing CSO control wherein all components work in conjunction. In that context, NACWA successfully advocated for three major aspects of the *Policy*:

- The site-specific nature of CSOs and their impacts require flexibility in tailoring controls to specific local circumstances;
- Cost-effectiveness should be a primary consideration in choosing controls; and
- LTCP implementation schedules should be phased based on the financial capabilities of the agencies responsible for implementation and the communities they serve.

Accordingly, economic considerations are a fundamental component of a policy intended to work in an integrated manner to effect water quality improvements. Congress embraced the concepts and approaches embodied in the *Policy*, as it demonstrated by codifying the CSO *Policy* in late 2000 (CWA § 402(q)(1)).

The significance of financial capability related to wet weather program enforcement has been heightened dramatically in recent years. The costs of utility services – including water, wastewater, and stormwater – have increased at well over the national rate of inflation, effectively claiming an ever-increasing share of ratepayers’ disposable income. This trend is expected to continue over the next decade as the industry grapples with the infrastructure funding gap, continuing system expansion requirements to facilitate economic development, and new and future environmental regulations for which funding requirements remain unknown. Accordingly, as policy makers evaluate future clean water policies and approaches, the effect of such approaches on local governments’ financial capabilities will become an increasingly compelling consideration.

It is in this regard that it becomes critical to define a local government’s “financial capability” versus what is commonly, and often confusingly, termed “affordability.” For purposes of this White Paper, the former means the ability of a community to finance required capital improvements and support utility operations; the latter refers to the ability of individuals, most notably low-income ratepayers, to pay the costs of wastewater utility services within prevailing budget constraints. This White Paper preferentially uses the term “financial capability,” which is the term most often used by EPA in its 1997 *FCA Guidance*.

#### IV. WASTEWATER INDUSTRY FINANCIAL CHALLENGES

NACWA has emphasized in recent years that the financial situation facing local wastewater agencies is growing increasingly acute, due not only to wet weather management issues but a host of other factors. The situation is well documented – perhaps most notably with the Environmental Protection Agency’s 2002 report *The Clean Water and Drinking Water Infrastructure Funding Gap Analysis*. A summary of recent assessments of infrastructure funding needs developed by the United States Government Accounting Office (GAO), as shown in Table 1 below, confirms the magnitude of the challenge.

**Table 1: Recent Estimates of the Cost of Meeting Infrastructure Needs of Wastewater Utilities**

| <u>Organization</u>                    | <u>Period Covered</u> | Capital Investment and Financing                     |
|--|-----------------------|--|
|  |                       | Estimates (Dollars in Billions)<br><u>Wastewater</u> |
| <b>Congressional Budget Office</b>     | 2000 - 2019           |  |
| -- Low                                 |                       | 260  |
| -- High                                |                       | 418  |
| <b>Environmental Protection Agency</b> | 2000 - 2019           |  |
| -- Low                                 |                       | 402  |
| -- High                                |                       | 719  |
| <b>Water Infrastructure Network</b>    | 2000 - 2019           | 460  |

**Source:** General Accounting Office, Report to the Ranking Minority Member, Committee on Environment and Public Works, U.S. Senate, "Water Infrastructure: Comprehensive Asset Management Has Potential to Help Utilities Better Identify Needs and Plan Future Investments" (GAO-04-461), March 2004.

Wet weather-related requirements represent a substantial share of these investment needs. Through 2002, more than \$6 billion has been spent for CSO-related improvements in 48 communities - a fraction of the total number of systems. Between 1988 and 2002, \$4 billion has been spent using solely State Revolving Fund loans for SSO related improvements to address infiltration/inflow and rehabilitation/replacement needs. Even so, an additional investment of \$50.6 billion is required to achieve capture of 85 percent of CSO volume, and a further investment of \$88.5 billion (excluding operation and maintenance costs) is estimated to be required for SSO control over the next 20 years.<sup>4</sup>



*Past NACWA publications highlight industry focus on cost efficiency*

Compounding this challenge, federal investment in water and wastewater is declining in real terms rather than increasing in response to the pending crisis, continuing a multi-decade shift of responsibility for infrastructure funding away from the federal government.

The scope and magnitude of claims on communities' limited financial resources impinge on their abilities to finance wet weather related improvements. This situation also imposes a need to prioritize expenditures in a way that achieves maximum benefits. Notably, the wastewater industry already has been active in this regard. In response to privatization pressures, as well as customer service and rate containment objectives, many utilities have implemented substantial improvements to increase the efficiency of operations and employed cost-saving

<sup>4</sup> Report to Congress on the Impacts and Control of Combined and Sanitary Sewer Overflows, August 2004 (EPA 833-R-04-001), (p. ES-10).

alternative project delivery methods. In addition, as noted, many utilities have increased water and wastewater rates, in some cases markedly, to ensure sustainable delivery of utility services.

As both EPA and clean water agencies face the continuing difficulty of achieving water quality improvements in the face of future financial challenges, lessons may be drawn from experiences to date.

## V. CURRENT EPA FINANCIAL CAPABILITY ASSESSMENT GUIDANCE

When considering an expanded role for FCA in implementing water resource policy, a critical review of EPA's current guidance is warranted. While several different documents are used in different contexts, most have common methodological attributes. Perhaps the most significant of these, particularly for consideration of wet weather financial capabilities, is EPA's *FCA Guidance*<sup>5</sup>. This guidance document essentially represents the culmination of EPA's development of FCA methodologies found in its "Interim Economic Guidance for Water Quality Standards" issued in 1995 and "Financial Capability Guidebook"<sup>6</sup> (particularly pp. 38-46), issued in 1984.

### A. Purpose of EPA *FCA Guidance*

From a broad policy perspective, the purpose of EPA's *FCA Guidance* is to help effect the key elements of the *CSO Policy*, which include:

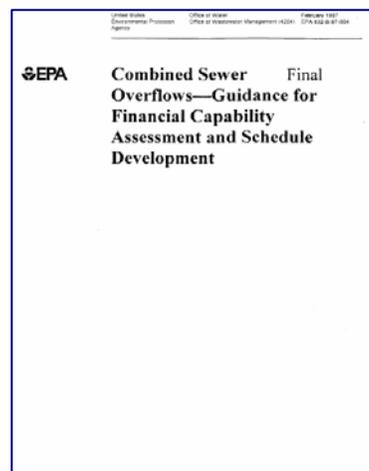
- Provide sufficient flexibility to municipalities, especially those that are financially disadvantaged, to consider the site-specific nature of CSOs and to determine the most cost-effective means of reducing pollutants and meeting CWA objectives and requirements; and
- Allow a phased approach for implementation of CSO controls considering a community's financial capability (p. 3).

The *FCA Guidance* "discusses how financial capability and other factors listed may be used to negotiate reasonable compliance schedules of CSO controls, ...stresses the need for flexibility and evaluation of site specific factors," and attempts to accomplish two goals:

- (1) Provide a planning tool for evaluating the financial resources a permittee has available to implement CSO controls, and
- (2) Assist the permittee, EPA, and state NPDES authorities in cooperatively developing CSO control implementation schedules.

Notably, the guidance document does not recommend specific schedules and recognizes that the prescribed financial indicators:

*...might not present the most complete picture of a permittee's financial capability to fund CSO controls . . . permittees are encouraged to submit any additional*



*Revision and expansion of EPA's FCA guidance could facilitate a more holistic, economically sustainable regulatory framework.*

<sup>5</sup> United States Environmental Protection Agency, "Combined Sewer Overflows — Guidance for Financial Capability Assessment and Schedule Development," EPA 832-B-97-004, February 1997.

<sup>6</sup> EPA 823-B-95-002 and EPA 832-B-84-104

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*documentation that would create a more accurate and complete picture of their financial capability.* (p. 7)

## B. EPA FCA Procedure

EPA's *FCA Guidance* delineates a two-step analysis whereby a Residential Indicator and the permittee's Financial Indicators are identified. The Residential Indicator provides for a determination of current and projected program costs as a percentage of the permittee's Median Household Income (MHI); the permittee's Financial Indicators reference a variety of measures of financial strength and performance.<sup>7</sup>

The use of MHI as an economic indicator originated with the Farm Home Loan program before the passage of the CWA in 1972. It served as a test of financial viability of potential recipients of wastewater construction grants, providing a measure of assurance that local communities could support ongoing costs to sustain the operation of a wastewater treatment facility. A level of 1.5 percent of MHI (rather than the 2.0 percent level now employed) was viewed as the point of potential "rate refusal" whereby higher burdens could result in widespread failure of customers to pay their sewer bills, shortfalls in expected revenues, and the inability of the grant recipient to pay for proper operation and maintenance of the facilities constructed with federal funds. As the federal government sought to ensure that its investments did not deteriorate due to lack of local support, the concept of MHI percentage as an indicator of a locale's ability to pay for water and wastewater improvements emerged.

In combination, the Residential and Financial Indicators offer insight into the extent of economic burden that a defined program will impose on a community. EPA also offers general boundaries for adjustments to program schedules established to reflect "normal engineering and construction practices." These boundaries are based on differing levels of economic burden and, in essence, reflect the notion of enabling schedule relief in response to "widespread social and economic impact" as articulated in EPA's "Economic Guidance for Water Quality Standards" (April 1995). The *FCA Guidance* states that communities in the "low" burden category would "generally" be expected to implement CSO controls based on a normal engineering and construction schedule. For those in the "medium" burden category, implementation schedules of "up to" 10 years may be appropriate. In the "high" burden category, schedules of up to 15 or even 20 years may be negotiated (p. 46).

The *FCA Guidance* also contains many caveats concerning the potential use of FCA results, noting that enforcement actions are subject to negotiation and that "special circumstances" will be considered. Nevertheless, because the assessment methods establish a baseline for prospective negotiations, the methodologies warrant scrutiny. Several issues arise, both from an evaluation of the specific calculations articulated in the guidance document and from recent interpretations of data requirements. These issues include, but are not limited to:

1. **Absence of Financial Planning.** The *FCA Guidance* provides for neither the development of a summary-level financial plan delineating system-wide cash flow requirements, nor a forecast of wastewater rates, focusing instead on the specific costs associated with program implementation. Calculations are based on a "snapshot" view of current and projected wastewater costs, customer base, and financial conditions. Because the magnitude of program requirements typically will

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<sup>7</sup> See Appendix 1 for a review of Financial Capability Assessment calculations and the EPA FCA Guidance for a step-by-step review of required calculations.

- involve long-term operational changes and multi-year capital investments, distillation of financial projections to single-year data is likely to invite distortions.
2. **Capital Financing.** An example of potential distortion occurs in the way the *FCA Guidance* provides for calculation of projected debt service, in effect sizing a single debt issue for the entirety of program capital requirements, though multi-year program implementation generally is required. This effectively denies consideration of alternative methods to structure capital financing.
  3. **Capital Cost Estimation.** Another potential distortion relates to estimation of capital costs incurred over multi-year program implementation. By definition, project cost estimates are based on limited information about specific design and construction requirements or prospective costs for contract labor and materials. Accordingly, standard cost estimation practices include a number of contingencies and allowances. To the extent that appropriate contingencies are excluded from FCA calculations, the prospective burden of program implementation is likely to be understated.
  4. **Permittee vs. Regional Users.** In determining the total number of residential households across which mandated costs are to be spread, consideration must be given to the institutional framework within which service is provided. Wholesale customer rates may be governed by contracts that effectively limit or preclude assignment of cost responsibilities to these customers' residential users. For example, a substantial share (33%) of the flows the City of Atlanta manages are contributed by its wholesale customers, whose service is provided under contracts that limit the extent to which costs of wet weather compliance may be "passed on."
  5. **Use of Median Household Income (MHI).** Perhaps most fundamentally, there are important limitations to the use of percentage of MHI as an indicator of financial capability. In particular, use of a median value by definition mutes consideration of important diversities across a permittee's served population. For example, median values may be entirely unrepresentative of conditions among selected sub-groups or across selected sub-geographies. In the Massachusetts Water Resource Authority's (MWRA's) service area, reference to MHI alone would suggest the affordability of expenditure levels that would impose substantial economic burden on selected communities. Likewise, the Northeast Ohio Regional Sewer District (NEORS) is seeking recognition of the adverse potential impacts on economically disadvantaged populations within the City of Cleveland in its upcoming negotiations of wet weather compliance scheduling. Because increases in wastewater costs are particularly problematic for low-income households rather than those earning the MHI, consideration of a permittee's low-income population is required to adequately assess financial capability.

Similarly, the use of MHI by definition focuses FCAs solely on the effects on residential users. From a public policy perspective, the potential impact of substantial wastewater costs on commercial and industrial users within a permittee's service area may be equally important. Use of MHI does not address the extent to which wastewater costs compromise the competitiveness of an area's prospects for economic development. This consideration may be of primary importance, particularly for communities in the economically strained northeast and mid-

western United States that, coincidentally, face the largest costs of compliance due to the predominant historical use of CSOs in these regions.

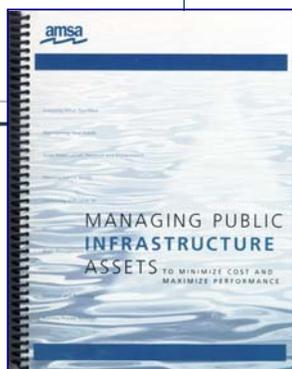
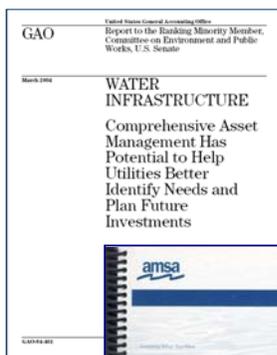
### C. FCA Scope Limitations

The specific issues with FCA methodologies noted above are symptomatic of the more fundamental limitation of EPA's assessment procedures – namely, that the scope of inquiry simply is not adequate to assess full economic impacts on communities. Four limitations are discussed below:

#### 1. Definition of Costs

The first significant limitation is the narrow definition of wastewater costs subject to assessment of financial capability. EPA's *FCA Guidance* specifically pertains to CSO programs. Yet even under circumstances where the combined requirements for CSO and SSO compliance are

subject to assessment, the FCA focus, often guided by enforcement objectives, remains too narrow to effect appropriate public policy. *Assessment of financial capabilities must consider the full spectrum of requirements to provide wastewater services, not simply those associated with one individual rule or another.*



*Recognizing the need to fund effective asset management is essential for long-term financial health, as has been highlighted in industry publications.*

In particular, the scope of FCAs should enable consideration of costs that may not be the subject of current enforcement actions but that, if *not* incurred, will lead to future violations. For example, wastewater utilities that are not able to invest in capital asset renewal and replacement (potentially due to wet weather compliance requirements) may soon find themselves subject to substantial risks of asset failures, service impairments, and regulatory violations. Utilities may need to further address historic under-investment, particularly for buried infrastructure assets, through asset management or other infrastructure management programs. *FCA methodologies should include the costs of needed reinvestment in critical infrastructure.* Wastewater utilities have recognized that capital costs are merely the tip of the iceberg and there are many other costs to assure that these investments deliver

intended service levels. FCA procedures should likewise reflect these cost factors.

Similarly, FCA methodologies should not fail to recognize costs associated with implementation of best management practices (as articulated, for example, in the various capacity, management, operations and maintenance [CMOM] programs), simply because they are not prescribed in specific enforcement actions. In the same way, because there are adverse long-term environmental consequences associated with reliance on septic systems, FCA methodologies should not exclude costs associated with centralized wastewater system expansions scheduled to serve expanding customer populations.

Future regulatory requirements also represent prospective costs that will impinge on communities' financial capabilities. For example, in addition to EPA's current zero-tolerance enforcement approach to SSOs, possible future regulatory action may require expansion of collection and/or treatment system capacities to control SSOs from collection systems. In the same vein, compliance with total maximum daily load (TMDL) regulations will require

additional collection system facilities, treatment facilities, investment in science, and in some extreme cases capture and treatment of stormwater flows. *Insofar as these costs are to be incurred for the same ultimate benefit as costs to eliminate CSO-related impacts, such costs should be included in an assessment of long-term capability to finance water quality improvements.*

## 2. Implementation Schedules

The second significant scope limitation of the *FCA Guidance* is its lack of thorough consideration of implementation schedules. Any agency contemplating moving forward with capital-intensive wet weather improvements must consider two separate but interrelated elements: time and money. Thus, more than *limited* schedule relief is needed. In simple terms, permittees must be able to distribute spending over a sufficiently lengthy time period to achieve a community’s financial capability goals.

As an example, as shown in Table 2 below, if an agency is planning to implement a \$1 billion program, a 10-year schedule extension from 20 to 30 years may reduce debt financing requirements by approximately one-third, or over \$20 million, per annum by the 20<sup>th</sup> year. In contrast, a 2-year schedule extension offers less than a 10 percent reduction in annual program financing requirements.

|  | <b>20 Year Schedule</b> | <b>22 Year Schedule</b> | <b>30 Year Schedule</b> |
|--|-------------------------|-------------------------|-------------------------|
| <b>1<sup>st</sup> Year Debt Service</b>  | \$3.25 M                | \$2.96 M                | \$1.97 M                |
| <b>10<sup>th</sup> Year Debt Service</b> | \$32.53 M               | \$29.57 M               | \$19.71 M               |
| <b>20<sup>th</sup> Year Debt Service</b> | \$ 65.05 M              | \$ 59.14 M              | \$ 43.37 M              |

*\* Assumes a level capital expenditure pattern, use of 30-year revenue bond debt issued at a fixed 5 percent interest rate, and simple equal payment debt service structure.*

*EPA implementation and enforcement policies must recognize that local decision-makers are challenged to achieve the highest overall quality of life benefits given resource limitations.*

## 3. Benefit-Cost Analyses

Another limitation in EPA’s *FCA* approach is the omission of benefit-cost analysis. In the early 1970s when the *CWA* was being debated, the basic concern that no community or region should obtain unfair economic advantage was ameliorated by the technology requirements of the Act: that every clean water agency and every city must provide secondary treatment. With the change in focus from treatment plants to collection systems and on attaining specific water quality standards in specific water bodies, there is no longer meaning to the notion that all communities can and will benefit equally from investments in *CWA* compliance. Benefit-cost analyses of investments in water quality improvements, in conjunction with *FCAs*, may help to ensure that water quality expenditures are appropriately evaluated and prioritized based on economic merit. *Use of non-traditional and market-based approaches such as UAs, watershed permitting, credit trading, phased implementation of requirements, and adaptive management will provide individual communities with the tools to ensure that maximum benefits can be achieved with affordable investments over time, to the net benefit of the communities served and the environment.*

#### 4. Low-Income Affordability and Non-Residential Impacts

A further limitation in EPA's FCA methodology is the fact that it does not address issues related to low-income affordability, nor does it address prospective non-residential impacts. Therefore, it does not provide a gauge of some of the most significant economic consequences of mandated wet weather investments. As wastewater costs continue to escalate, these segments of permittees' customer populations will be the first and most acutely affected. Wet weather enforcement policies that are blind to the potential exacerbation of problems faced by these populations are unlikely to convey net benefits to the communities served.

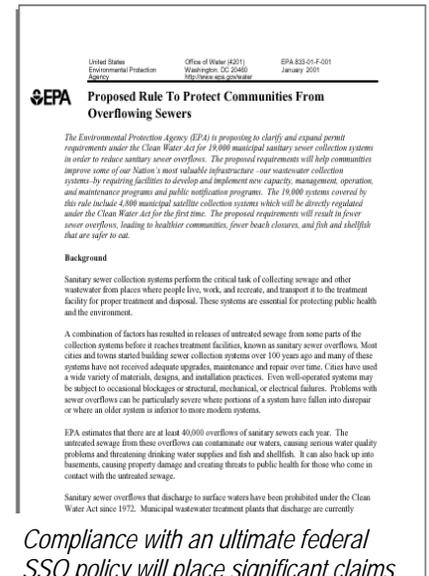
## VI. MAXIMIZING CONSIDERATION OF FINANCIAL CAPABILITY

Improving and protecting water quality in the waters of the United States is the key goal of EPA, state environmental protection agencies, and wastewater utilities with respect to wet weather programs. However, there are prevailing financial constraints and competing demands on local resources that impose real but often unacknowledged limits on the amount and timing of spending to achieve water quality improvements. EPA's *FCA Guidance* acknowledges and discusses the potential scheduling implications of this reality, yet a more expansive view is warranted. Provided below are four recommendations to agencies and regulators for maximizing the consideration of financial capability in the implementation and enforcement of wet weather programs.

### A. Expand Consideration of Regulatory Responsibilities

EPA's *FCA Guidance* focuses on implications for enforcement of discrete policies, with limited acknowledgement that the financial capability of wastewater agencies and the communities they serve are influenced by the combined effect of environmental compliance requirements. Perhaps most notably, EPA's *FCA Guidance* has been used frequently for CSO consent decree compliance, but it is not extended explicitly to compliance with SSO or stormwater regulations. This separate and independent consideration of financial capability is problematic. Financial capabilities are strained by the combined effect of various demands on limited local resources. In the same way that a borrower may be driven to bankruptcy by individual lenders' willingness to extend credit without regard to cumulative debt service requirements, communities must contain cumulative spending. At a minimum, *EPA's FCA Guidance should explicitly consider the combined effect of the spectrum of regulatory policies to mitigate wet weather effects on water quality, and in particular its policy on sanitary sewer overflows.* Further, it may be argued that EPA FCA analyses should be extended to consider the combined demand on local resources of the full spectrum of environmental protection requirements on local governments.

In this regard, it is important that social and economic impacts are considered under individual institutional arrangements. For example, in the event that one wastewater agency provides regional transmission and treatment services, while another agency provides collection services, consideration of financial capability may require evaluation of multiple permittees. As an illustration, The Northeast Ohio Regional Sewer District (NEORS) treats wastewater collected by all 60 of its member communities, including the City of Cleveland, where 33 percent of



*Compliance with an ultimate federal SSO policy will place significant claims on financial resources that should be accounted for in assessments of financial capability.*

residents have incomes below federal poverty thresholds. Accordingly, an evaluation of NEORS D’s financial capability to effect wet weather improvements will require examination of the financial impacts on and capabilities of the ratepayers in the City of Cleveland and each member community.

Similarly, it is important that regulator perspectives are not blinded by the separate regulatory structure governing wastewater collection systems, treatment plant effluent discharges, and stormwater management. CSO and SSO policies oriented toward managing wet weather flows in collection and treatment systems must be considered in conjunction with policies related to wastewater and stormwater blending in wet weather events that may have a dramatic impact on required wastewater system expenditures. Miami-Dade County has estimated that potential prohibitions on blending could impose significant additional costs for wet weather management and compliance. These costs, and those of similarly affected communities, should be considered in deliberations on the merit of possible regulatory changes. If such changes were enacted, including these costs in a FCA would be essential to accurately characterize the impact of wet weather compliance on affected community households.

Ratepayers in Miami-Dade County, and in most communities across the country, are financially supporting the combined requirements for collection, transport, treatment, and discharge of wet and dry weather wastewater flows to protect public health and meet water quality standards. Regulatory procedures that consider only a portion of that financial responsibility when determining a community’s financial capability strain credibility and effectively defeat the intent of national policies negotiated to acknowledge and be responsive to limitations on financial capabilities.

## B. Utilize Financial Capability in Enforcement Negotiations

Consideration of financial capability in enforcement negotiations requires a certain degree of clarity regarding CWA **requirements** as opposed to EPA **guidance**. As noted, the *FCA Guidance* suggests that “schedules of up to 15 or even 20 years may be negotiated” for communities facing a “high burden.” Indeed, in subsequent guidance documents, EPA has reiterated its position that the maximum length of time allowed for completion of LTCP specified construction is 20 years.<sup>8</sup> However, permit holders most know that these position statements and guidance documents are **neither the letter of the law, nor legally promulgated regulation**. Rather, they offer guidance for permit writers, litigation teams, and other regulatory personnel. In fact, included in every published guidance and position statement is a disclaimer noting that the guidance is **not law**.<sup>9</sup>

<sup>8</sup> See, for example, *Final Guidance Memorandum on Negotiation of Combined Sewer Overflow Consent Decrees*, USEPA 09-16-03; *Guidelines for Federal Enforcement of CSO/SSO Cases* (April 10, 2005).

<sup>9</sup> For example, the following disclaimer is included in the *Final Guidance Memorandum on Negotiation of Combined Sewer Overflow Consent Decrees*, USEPA 09-16-03:

*“This document provides guidance on how EPA and the Department of Justice intend to exercise their discretion in implementing provisions of the CSO Policy concerning judicial consent decrees to resolve CSO enforcement actions. Any statutory provisions and EPA regulations described in this document contain legally binding requirements. This document does not substitute for those provisions or regulations, nor is it a regulation itself. Thus, it does not impose legally binding requirements on EPA, States, or the regulated community, and may not apply to a particular situation based upon the circumstances. EPA and State decision makers retain the discretion to adopt approaches on a case-by-case basis that differ from this guidance where appropriate. Any decisions regarding a particular facility will be made based on the statute and regulations, not in reliance on this guidance. Upon application of the recommendations and interpretations in this guidance, EPA will, and States should, consider whether or not the recommendations or interpretations are appropriate in that situation. This guidance is a living document and may be revised periodically without public notice. EPA welcomes public comments on this document at any time and will consider those comments in any future revision of this guidance document.”*

Ideally, negotiation of requirements for water quality regulatory compliance will consider impacts on local financial resources. While the EPA *FCA Guidance* highlights consideration of financial capability in determining compliance schedules, it is notable that several utilities have used financial capability considerations to negotiate for other forms of relief. In particular:

- The Metropolitan Sewer District of Greater Cincinnati (MSD-GC) secured a “trip wire” on total spending over a 20-year period of \$1.5 billion that would trigger schedule extension consideration, largely based on concerns about financial capability.
- MWRA secured a modification to water quality improvement requirements, partly in response to an analysis of the potential impact of program spending on shelter costs in Boston-area communities.
- The District of Columbia Water and Sewer Authority (DC WASA) used a series of economic assumptions to form the basis of its compliance schedule and LTCP.

These cases are consistent with the *CSO Policy* in both intent and spirit. In other cases, most notably the City of Atlanta with its mandate to complete a \$2.1 billion CSO/SSO program by 2014, subsequent analyses demonstrating economic burden have not compelled schedule (or other forms of) relief.<sup>10</sup>

This differential consideration of financial capability across EPA regions and enforcement actions has been problematic. To the extent that such differences do not reflect the need for flexibility in enforcement but rather the attitudes and predisposition of individual EPA regions, some utilities and their communities may be required to bear a more onerous burden than others for compliance with wet weather regulatory requirements. The case studies suggest that not only has enforcement varied to accommodate local circumstances, it also reflects inconsistent implementation of financial policy guidance and philosophy. Accordingly, *a review of historical consideration of financial capability assessments across regions could help develop policy guidance and improve consistency of enforcement.*

### C. Cultivate Political Support for Program Financing

Irrespective of financial capability considerations in enforcement, FCAs and associated analyses of impacts on low-income populations may be a powerful instrument for garnering necessary public and political support for long-term program financing and rate adjustments. In particular, the assessment of financial capability contemplated in EPA’s *FCA Guidance* offers perspective on the extent to which required water quality investments represents a burden on permittee communities. For those communities where required investments will impose a relatively low burden, utilities and community decision-makers may cite this assessment in articulating the need to support program financing. For those communities that face a relatively higher burden, this fundamental message may highlight the importance of a paced, multi-year rate adjustment process to limit exposure to “rate shock.” The City of Los Angeles, for example, highlighted prospective benefits of reduced overflows in a public communication process that involved over 60 community meetings to secure rate increases that would support a sustained level of effort.<sup>11</sup> The City of Indianapolis showed how its rates compared favorably

<sup>10</sup> Additional techniques for considering financial capability in wet weather negotiations are highlighted in the case studies provided in Appendix 2.

<sup>11</sup> Notably, Los Angeles negotiated requirements for a defined level of effort rather than performance targets, and secured allowance of credit banking to manage variances in completion of sewer line rehabilitation work from year to year. These attributes were critical in demonstrating the need for a multi-year rate increase to City Council, community groups, and other interested stakeholders.

to other communities' to garner support for rate increases required to finance its program. Perhaps equally important from a public policy perspective, analyzing potential impacts of wet weather program financing on low-income populations may facilitate development and acceptance of rate structure changes and low-income affordability programs.

## VII. WET WEATHER PROGRAM RATE IMPACTS AND LOW-INCOME AFFORDABILITY

As evidenced by NACWA's 2004 *Service Charge Index*, wastewater utilities across the country are proactively addressing their acute financial challenges:

*"...sewer service charges paid by residential customers increased 5.2 percent nationwide, between 2003 and 2004, nearly double the level of inflation as measured by the Consumer Price Index (CPI). The 2004 Index marked the third year in a row that average sewer service charges outpaced inflation and may be the beginning of a trend seen in the late 1980s and early 1990s when sewer service charges dramatically increased when compared to inflation rates."*<sup>12</sup>

In this context, it is important to recognize that additional wet weather program costs will impose further rate increases. For example, the District of Columbia Water and Sewer Authority's CSO program is projected to require a number of substantial increases in wastewater rates in years to come. Similarly, Atlanta, Cincinnati, and a host of others have imposed and will continue to impose annual rate increases to implement the capital requirements of their wet weather programs. As these rate increases challenge local financial capabilities, it becomes incumbent on cities to assess their ability to undertake wet weather programs by analyzing the impact that these programs will have on their wastewater rates.

Low-income ratepayers often are hit hardest by rate increases – and, as discussed below, the typical focus on MHI tends to underestimate the impacts on these citizens. Thus, it is essential in wet weather negotiations to include the evaluation of the financial capabilities of individual sub-communities within a service area to incur wet weather management costs under specified implementation schedules.

A solid outreach program can help convey the net benefits to the community – including low-income citizens – of a wet weather control program. However, already stressed ratepayers may place higher priority on an investment in public safety, for example, for use of their limited dollars. In addition to effective public communication on the need for and prospective benefits of wastewater rate increases, a community embarking on a wet weather program must evaluate wastewater rate structures that may further enhance public acceptance of rate increases. For example, the diversity of wastewater customer populations may be recognized by using more rate classes to enable more equitable distribution of cost responsibilities, or the insulation of selected customer groups from system-wide rate increases. In addition, a schedule of rates and charges ("lifeline rates") can be developed under the CWA (see CWA Section 204(b)(1)) to subsidize initial volumes of usage to ensure that basic health and sanitary service remains affordable for the vast majority of wastewater customers.

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<sup>12</sup> 2004 AMSA *Service Charge Index* – summary provided to AMSA Utility Management Committee, San Antonio, Texas, February 2005.

Some of these structural options were identified in EPA’s 2002 case study report on DC WASA.<sup>13</sup> This report made it clear that rate structures to address low-income affordability were permissible within EPA requirements.<sup>14</sup> The report further suggested that impacts on low-income customers could be mitigated by a variety of rate and fee schedule adjustments in combination with targeted affordability programs.

This White Paper cannot overemphasize the importance of evaluating programmatic and rate options that address the impacts of such rates on low-income populations. Again, *FCA procedures that focus on projected effects of program costs on MHI tend to overlook impacts on the economically disadvantaged.*

The dichotomy between consideration of permittee financial capability and prospective impacts on low-income populations must be understood and appreciated to affect sound public policy. Therefore, *EPA should provide for consistent and substantive consideration of prospective impacts on low-income populations within the context of its review of a permittee’s FCA.*

*Again, for purposes of this White Paper, a local government’s “financial capability” means the ability of a community to finance required capital improvements and support utility operations; “affordability” refers to the ability of individuals, most notably low-income ratepayers, to pay the costs of wastewater utility services within prevailing budget constraints.*

Though rate adjustments that enable compliance with the CWA may not represent a “high burden” when gauged by reference to MHI, deleterious impacts on low-income populations may result without specific measures being taken to protect these customers. Fortunately, as noted in EPA’s case study for the District of Columbia, a broad array of programmatic measures may complement the rate options noted above. Utilities may provide discounts or waivers on wastewater bills using different approaches to define customer eligibility, may facilitate bill payments through alternative payment plans, and may enhance low-income customers’ abilities to limit water and wastewater bills through water conservation programs.<sup>15</sup>

These programmatic options indicate an industry trend that may be mirrored by an expanded view of financial capability: assuring that affordability of service to low-income populations is considered a central concern of wastewater agencies. While these agencies traditionally have focused on reliable service delivery rather than effecting social or planning policies, increasingly they have recognized that enforcement policies that ignore considerations of low-income affordability do little to advance public welfare generally and the communities they serve specifically.

<sup>13</sup> United States Environmental Protection Agency, Region III, *Rate Options to Address Affordability Concerns for Consideration by District of Columbia Water and Sewer Authority*, December 2002.

<sup>14</sup> “The Clean Water Act (CWA) was amended in 1987 to specifically allow municipalities to adopt user charge systems with differential rates for low-income residents. A system of user charges which imposes a lower charge for low-income residential users (as defined by the Administrator) shall be deemed to be a user charge system meeting the requirements of clause (A) of this paragraph if the Administrator determines that such system was adopted after public notice and hearing.” Public Law 100-4, Title II, section 204(b)(1). United States Environmental Protection Agency, Region III, *Rate Options to Address Affordability Concerns for Consideration by District of Columbia Water and Sewer Authority*, December 2002, page 3.

<sup>15</sup> Affordability program options and the experiences of individual utilities are documented in a number of industry publications including, for example, the AWWA Research Foundation (AwwaRF) report *Water Affordability Programs* (1998).

## VIII. IMPACT OF STATE AND FEDERAL FINANCING ON AFFORDABILITY AND PROGRAM CHOICES

The determination of whether a prescribed capital program is ultimately affordable to households and other utility system customers depends, in part, on the availability of state and federal financing. Availability of these external financing options mitigates the need for capital program financing to be borne locally and enhances the affordability of major capital investments. Accordingly, funding criteria for federal and state grant and loan programs (and the level of seed money available to these programs) significantly affects the viability of CWA compliance financing. Enabling legislation related to funding and financing powers for the local portion of wet weather programs varies considerably from state to state, as does the degree of oversight of rate and fee structures by state public service commissions. As a result, there is considerable variability among states in the ability to implement logical and equitable rate and fee programs to finance wet weather capital investments.

*Based on these concerns, legislative and policy actions may be needed to address current funding and financing power limitations. Expansion of loan and grant program funding is critical, as is relaxation of funding eligibility criteria to facilitate implementation of creative, cost-effective solutions to environmental challenges.*

State and local funding and financing powers also may need to be revisited in some cases to provide the capability to generate required revenues. For example, providing a mechanism to redress inflow and infiltration problems associated with private service laterals could significantly enhance opportunities to deliver cost-effective solutions to problems presented by wet weather flows. In some cases, state and local agencies may need to take actions that will allow creation of new fee structures more directly tied to cost causation for wet weather problems. As noted above, education of stakeholders and decision-makers regarding special funding and fee requirements related to CSO/SSO programs will be required under any viable scenario.

In this vein, NACWA has taken a leadership role in educating federal decision-makers on the challenges of wastewater infrastructure funding and has advocated for the creation of a trust fund. From a national policy perspective, the trust fund could help bridge the water infrastructure funding gap. From a local perspective, the trust fund could provide communities, particularly those whose financial capabilities are challenged, a supplemental funding source to mitigate local economic impacts.

## IX. SUMMARY OF CASE STUDIES

The case studies included in Appendix 2 are offered to convey the breadth of wastewater agencies' approaches to FCAs and EPA's responses to FCA findings. These examples suggest a number of opportunities to improve how financial capability is assessed, as well as the importance of ensuring affordable service to low-income populations, overall financial capabilities notwithstanding. Most immediately, the case studies may inform wastewater agencies faced with prospective enforcement actions of the importance of FCAs in negotiation of consent decree provisions.

The selection of this particular group of utility examples was well focused. The studies are intended to display a variety of regional experiences across the country, including CSO-only utilities, SSO-only utilities, and those with a combination of CSO and SSO issues. The time span

of settlements ranges from the early 1970s (pre-CSO *Policy*) to as recent as 2004. A January 2005 conference call with a Utility Executive Focus Group, as well as a meeting of a larger group of interested utility members during the February 2005 NACWA Winter Conference, helped the contractor and NACWA staff with the selection of case studies.

It is evident that over time, utilities have become increasingly sophisticated in their use of financial capability criteria in decision-making processes, as well as in their negotiation positions. Such emphasis is clearly reflected in the language of their decrees:

- **San Francisco's** initial work in 1974, while groundbreaking, was initiated without adequate consideration of prospective economic impacts. Their updates and revisions and discovery of new prioritizing and project implementation phasing tools brought economics back into the picture in 1980.
- **MWRA's** mid-1980s plans were further revised in the mid-1990s as the cost burden being imposed upon their ratepayers was realized. To better reflect true impacts, MWRA developed the "shelter cost" concept that considered not just the MHI percentage that their sewer rated represented, but also the cost of living in the Boston area, emphasizing the baseline decrease in "disposable income" imposed on residents. This line of reasoning allowed MWRA to apply for and obtain variances to receiving stream water quality requirements that limited further rate increases.
- **New Orleans** entered into its consent decree in 1998. As cost estimates began to mount, it became evident that the program would severely strain local sources. Using its lower-than-national MHI as a basis, New Orleans successfully sought federal funding supplements of \$40 million (\$100 million authorized). In addition, New Orleans has concentrated on computerized data processing and decision-making programs to assist in selecting the most cost-effective techniques and highest benefit projects in its cost containment prioritization system. The financial gap in New Orleans is a growing issue that has yet to be fully addressed.
- **Atlanta** entered into consent decrees on CSOs in 1998, and on SSOs in 1999; the costs of these actions were projected to triple sewer rates. In 2001, the City submitted its first financial capacity assessment documenting a "high burden" based on the EPA *FCA Guidance* calculations. Responding to EPA comments, the City submitted a second, more detailed assessment in 2002. A third submission was made in 2004, responding to EPA comments on the 2002 report. Each of the assessments indicated that Atlanta faces a "high burden," especially for low-income households that comprise one quarter of the City's population. Though declining credit ratings, sewer rate increases, and the imposition of a Municipal Option Sales Tax have resulted, a request for limited schedule relief remains pending. To address low-income impacts, the City has provided a degree of relief by restructuring its sewer rate schedule and implementing low-income and senior citizen discount programs.
- The **Metropolitan Sewer District (MSD) of Greater Cincinnati** began consideration of economic impacts early in their 5 years of concentrated consent decree negotiations. Rate impact projections drove the utility to refine its research and redouble its efforts to focus regulators' attention on ratepayer issues. Enlisting economists from the local university and the expertise of its engineering consultants, MSD crafted a message that not only fortified the resolve of utility management and local elected officials, but ultimately carried the day with EPA and the Department of Justice. The 2004 consent

decree reflects the concept of time and money as being the dual drivers of economic impact. The decree includes a top price “trip wire” designed to trigger program completion time extensions.

- **Los Angeles** reached a “win-win” settlement agreement on dry weather overflows with regulators and a number of third parties in 2004 after 6 years of litigation and negotiation initiated by wet weather overflow related complaints. To reach agreement, the City established a level of trust built on plans for capital improvements and operational performance. Another contributing factor was the resolve of local officials, fostered through demonstration of devastating rate increases, especially on economically distressed neighborhoods, that would be required to meet the intervener’s and regulator’s initial demands.
- **Columbus, Ohio** negotiated its SSO decree in 2002, followed by a second decree related to CSOs in 2004. These negotiations were conducted without a complete understanding of cost impacts. As further research has revealed, the cost of completing a more fully realized SSO/CSO program is beyond ratepayers’ capacity to fulfill within 20 years. That realization has led to pacesetting work on an entirely new set of economic indicators, dubbed an “economic barometer.” Application of projected values to the barometer has shown that while the CSO efforts may well be attainable within 20 years, the SSO work may require a total term closer to 40 years. The economic barometer will be used throughout the program to gauge economic stress, and to assist in adjusting the program schedule to avoid distress of the Columbus economy.
- **DC WASA** signed its CSO decree in 2005 covering revisions to its 200-year-old core collection system. The economic diversity of the rate base in the District is such that a large segment of the population will be heavily burdened by the rate increases necessary to support a 20-year implementation schedule. To assist in making that burden more manageable, WASA’s decree included provisions that allow petitioning for a time extension should additional, capital-intensive regulatory mandates materialize during decree implementation or if future economic indicators (e.g., bond rates, inflation) prove to have a more negative affect upon residential economics than was predicted by the regulators.
- **NEORS** is still in negotiations on CSO issues, but the utility has benefited from the experiences of others with respect to the economic impact of a multi-billion dollar wet weather program. The District’s CSO remediation costs are only a portion of the overall burden on residents when potential member community SSO issues are considered. NEORS has taken the initiative on financial capability, going public with a projected 30-year construction horizon to contain impacts. This position is in conflict with EPA’s 20-year limit policy and is among the subjects of continued negotiation.

## X. CONCLUSIONS

The financial capability of agencies to effect water quality improvements was a central consideration in the original CWA and subsequent negotiation of the national CSO Control Policy. However, actual consideration of financial capabilities, including low-income affordability, has been inconsistent at best. EPA’s procedures for assessing financial capabilities have significant limitations, most notably due to inadequate consideration of the breadth of wet

weather regulations that impose costs, and to variations in enforcement practices. CSO and SSO programs are not the only responsibilities of clean water agencies. Increasing costs will be incurred to rehabilitate and replace aging infrastructure. In addition, clean water agencies, as watershed stewards, will be required to incur substantial costs to develop new science, find technology solutions, and inform the public on a broad range of emerging water quality issues. All these responsibilities are financed from the same ratepayer population. As a result, a central tenet of national policies enacted to effect water quality improvements has been compromised and should be addressed in prospective enforcement of wet weather regulations.

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# APPENDIX 1:

## EPA Financial Capability Assessment Calculation Summary

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### Phase 1: The Residential Indicator

(Worksheets 1 & 2, p.15-17 – EPA Guidance for Financial Capability Assessment and Schedule Development)

Identifying the combined impact of wastewater and CSO control costs on individual households.

|   | Guidance Line No. |
|---|-------------------|
| Current WWT Costs (O&M and Debt Service)                | 102               |
| Projected Annual O&M expenses                           | 103               |
| Projected Debt Service for Program CIP                  | 104               |
| <u>Projected WWT &amp; Program CIP Costs</u>            | 105               |
| Total Current & Projected Costs                         | 106               |
| <br>  |                   |
| Residential Share of WWT Costs                          | 107               |
| Total Number of Households in Service Area              | 108               |
| WWT Costs Per Household                                 | 109               |
| <br>  |                   |
| Census Year Median Household Income (MHI)               | 201               |
| MHI Adjustment Factor                                   | 202               |
| Adjusted MHI  | 203               |
| <br>  |                   |
| Annual WWT and CSO Control Cost Per Household           | 204               |
| <br>  |                   |
| Residential Indicator:                                  |                   |
| Annual WWT & CSO Cost Per Household as a Percent of MHI | 205               |

## Phase 2: Permittee Financial Indicators

(Table 2, p.37 – EPA Guidance for Financial Capability Assessment and Schedule Development)

Examination of debt, socioeconomic and financial conditions of a permittee.

| Indicator   | Strong  | Mid-Range                              | Weak  |
|---|---|--|---|
| Bond Rating   | AAA-A (S&P)<br>Aaa-A (Moody's)                          | BBB (S&P)<br>Baa (Moody's)             | BB-D (S&P)<br>Ba-C (Moody's)                            |
| Overall Net Debt as a Percent of Full Market Property Value | Below 2%  | 2% - 5%                                | Above 5%  |
| Unemployment Rate   | More than 1 Percentage Point Below the National Average | ± Percentage Point of National Average | More than 1 Percentage Point Above the National Average |
| Median Household Income                                     | More than 25% Above Adjusted National MHI               | ± 25% of Adjusted National MHI         | More than 25% Below Adjusted National MHI               |
| Property Tax Revenues as a Percent of Full Property Value   | Below 2%  | 2% - 4%                                | Above 4%  |
| Property Tax Collection Rate                                | Above 98%   | 94% - 98%                              | Below 94%   |

## Financial Capability Matrix

(Table 3, p.41 – EPA Guidance for Financial Capability Assessment and Schedule Development)

|   | Residential Indicator<br>(Cost Per Household as a Percent of Median Household Income) |                               |                      |
|---|---|-------------------------------|----------------------|
|   | Low<br>(Below 1 %)  | Medium<br>(Between 1% and 2%) | High<br>(Above 2.0%) |
| Permittee's Financial Capability Indicators Score |   |                               |                      |
| Weak( Below 1.5)                                  | Medium Burden   | High Burden                   | High Burden          |
| Mid- Range<br>(Between 1.5 and 2.5)               | Low Burden  | Medium Burden                 | High Burden          |
| High (Above 2.5)                                  | Low Burden  | Low Burden                    | Medium Burden        |

## APPENDIX 2: Utility Case Studies

The Consent Decrees discussed herein are available from NACWA's Consent Decree Library at <http://www.nacwa.org/advocacy/cdlib/>

| <u>Case Study #</u> | <u>Agency</u>                           | <u>Designation</u> |
|---------------------|---|--------------------|
| 1                   | City of Atlanta                         | CSO/SSO            |
| 2                   | MSD of Greater Cincinnati               | CSO/SSO            |
| 3                   | City of Los Angeles                     | SSO                |
| 4                   | Northeast Ohio Regional Sewer District  | CSO                |
| 5                   | Water & Sewerage Board of New Orleans   | SSO                |
| 6                   | City & County of San Francisco          | CSO                |
| 7                   | DC Water and Sewer Authority            | CSO                |
| 8                   | Massachusetts Water Resources Authority | CSO                |
| 9                   | City of Columbus, OH                    | CSO/SSO            |

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National Association of Clean Water Agencies (NACWA)  
Financial Capability and Affordability in Wet Weather Negotiations White Paper  
Case Study #1

## City of Atlanta (CSO/SSO)

### *Background*

The City of Atlanta's wastewater system is subject to two related Consent Decrees the City entered into to resolve alleged violations of the Federal Clean Water Act and the Georgia Water Quality Control Act. The plaintiffs alleged that the City violated the terms of its NPDES permits, which authorize discharge of wastewater from the City's CSO control facilities and its wastewater treatment facilities.

- In 1998, the plaintiffs and the City agreed to the entry of a Consent Decree relating to improvements to the City's CSO facilities to meet water quality standards by 2007. The initial estimated capital cost of these improvements, following submittal of the long Term CSO Control Plan in 2001, was \$1.1 billion.
- In 1999, the First Amended Consent Decree relating primarily to the City's SSOs was entered, requiring the City to eliminate all sanitary sewer overflows in its separated sewer system by 2014. The estimated capital cost of these improvements in 2001 was \$1.0 billion.

The magnitude of required capital improvements will amount to over a doubling of the City's wastewater infrastructure asset value in less than 15 years, and was projected to require a tripling of wastewater rates absent external funding assistance.

### *Municipal Response to Affordability Issues*

In October 2001, the City submitted a Financial Capability Assessment to EPA with a conclusion that the impacts of the costs for the CSO Plan, First Amended Consent Decree, and other regulatory compliance components of the wastewater program result in a "High Burden."

In February 2002, the City submitted a revised Financial Capability Assessment to EPA that addressed expressed EPA concerns about cost estimates, inter-jurisdictional contributions, and alternative sources of funding. Notwithstanding associated adjustments, the City's submittal continued to indicate compliance with the consent decrees would impose a 'high burden' on City of Atlanta ratepayers.

### *Regulatory Agency Response*

In its May 6, 2002 reply, EPA indicated that the financial impact was determined to represent a "Medium Burden." This determination was based on review comments concerning the use of contingencies, allocation of costs to outside users, and evaluation of alternative funding sources and methods.

In June 2004, the City submitted a third revised Financial Capability Assessment that addressed all of EPA's review comments and provided updated information on program cost estimates, and potential availability of external funding sources. In particular, the City's analysis demonstrated that even with the availability of Municipal Option Sales Tax (MOST) revenues, prospective rate impacts will represent a high financial burden per the EPA Financial Capability

Assessment guidance. As with other submittals, the City also noted the acute financial burden imposed on low-income customers that represent almost 1/4<sup>th</sup> of the City's population.

In October 2004, EPA issued a letter indicating that retention of its 'medium financial burden' determination appears to be appropriate though it reiterated many of the questions and concerns expressed in previous communications. Detailed responses to these concerns were articulated in the City's third financial capability assessment submission, and have been reiterated in the City's response to the EPA's most recent letter on its financial capability submissions. The City has provided additional information to EPA in support of its conclusion that the program represents a high burden. The resolution of the determination is pending.

#### *Outcome of Discussions and Lessons Learned*

As reflected in the various iterations of the City's Financial Capability Assessment submittals, financing of the Clean Water Atlanta initiative has required an unprecedented increase in revenue generation to pay prospective debt service payments. In 2002, the City incurred over \$400 million in new debt to be paid from local resources. In 2004, an additional near \$800 million was raised following adoption of an unprecedented 5-year rate increase plan that would increase system rate revenues by almost 200%. Additional revenue bond debt issues are projected on a bi-annual basis throughout the remainder of the decade, increasing debt service requirements to over \$250 million per annum.

The rate increases adopted in January 2004 have been modified due to the approval of a 1% Municipal Option Sales Tax. Also in January 2004, the City adopted a wastewater rate structure that imposes lower rates per unit of volume for initial volumes of water usage, effectively benefiting low-volume users. In subsequent months, the City also expanded programmatic efforts to provide water bill discounts to qualifying senior and low-income users and expanded its bill assistance program.

Notably, the mitigating effect of the MOST revenues does not impact the EPA financial capability calculation and, as stated by EPA in its October 2004, '[t]he number of low income residents is still not a factor that EPA considers in the Financial Capability Assessment'.

## Metropolitan Sewer District Of Greater Cincinnati (CSO/SSO)

### *Background*

At the heart of seven years of negotiations on two separate, but interconnected federal consent decrees (one on SSOs, second on CSOs) was the issue of “affordability”; what could the ratepayers of Greater Cincinnati afford to pay for wastewater collection and treatment? Affordability was found to be tested by both the cost of the projects involved, and the time period over which the dollars would be expended --- time & money, became the theme.

Trying to convey that focus to the federal government was extremely difficult. Had it not been for an unwavering commitment of utility management to protect the economic well-being of the community, cost would not have been a factor. The government pressed for two points:

- 1) complete compliance with the Clean Water Act, a nebulous endpoint given the fact that there was no SSO Policy or regulation by which to judge compliance; and
- 2) a fixed end-point, beginning with a 10-year term, then a possible 15-year deadline.

Cost was not an issue for regulators involved in the consent decree negotiations but most certainly was for the utility. In 1999, MSD completed a two-level cost estimation of the work needed to response to a 10-year storm, and a 100-year storm on the sanitary system side, and comparable criteria for CSO discharges/year. The estimates were \$1.25 billion (10-year) and \$3.6 billion (100-year) for CSOs and SSOs, based on a 1996 LTCP (which was never commented on by either the Ohio or USEPA) and a thorough inventory of SSO locations within the utility’s 3,000-mile collection system. A computerized system model was being developed, but it was not available for testing certain assumptions, so fine-tuning of the estimates could not be performed at that time. MSD continually pressed the fact that without a sense of the impact that removing SSOs would have on the combined system, sizing would be impossible. In addition, without some sort of design storm, sizing on the entire system would be nothing sort of a shot in the dark.

### *Municipal Response to Affordability Issues*

As demand for studies and reports multiplied, the cost of the undertaking did nothing but grow. The utility came to realize that arguing why a million dollars would be better spent on construction rather than another report or study would not sway the regulators. At that point, the concept of time and money crystallized. The burden on the community and MSD’s ratepayers was cast in terms of simply how high their cost of collection and treatment would grow, and how quickly. This was translated into rate increases necessary to support those expenditures – time and money.

All costs – be they for substantive study, design and construction, or study and reporting – were summed and then projected as being expended over various periods of time into the future.

Inflationary costs and bond interest rates were factored into the projections, as were growth (or decline) in the number of ratepayers. An internal judgment was made as to the level of burden that could be inflicted upon the ratepayers, and that was used as a metric for the calculation of feasible project expenditure.

As the negotiations continued, the end date of 2022 arrived. With that year, and a firm internal commitment to ratepayer protection, the level of comfort on total project cost was being clarified. Time and money were coming together.

In an attempt to establish local affordability, the utility used EPA's own economic burden matrix for the combined sewer system, and it enlisted economists from the University of Cincinnati to provide financial projections. Considering local economic factors, program costs that required an estimated 1.5 percent of median household income was determined to be the maximum burden to avoid severe economic impact. While that seemed clear, the federal government could not agree with several of the utility's basic economic indicators and growth projections. An additional argument ensued over what socio-economic group should be used for median household income determination. As with all communities, Cincinnati and Hamilton County have a wide range of household incomes. Charges of 1.5 percent MHI countywide translated into a full 2 percent for the City and to nearly 3 percent for the area's most economically depressed jurisdiction. In assembling its economic picture, the utility built in costs for SSOs, CSOs, future treatment regulations, asset management, and stormwater improvements as all being water-related, and being imposed upon the same rate base.

### *Regulatory Agency Response*

The regulators finally saw the advisability of an update to the LTCP (as opposed to starting from scratch) and the completion of a sanitary sewer capacity assurance plan (SSCAP) prior to establishing fixed schedules and sizing of individual overflow point remediation projects. However, the regulators held fast to the idea of a fixed end date for all work. The differences in regulatory climate (SSO vs. CSO), total program cost, and affordability were issues in the decision to modify the negotiation to that of two separate, but interconnected decrees: an interim, partial decree on SSOs, and a global decree on CSO. As MSD pressed its economic argument, DOJ brought in its own economists to dispute the District's finding. The dispute resulted in a resolution meeting at OWEC in Washington, D.C.

### *Outcome of Discussions and Lessons Learned*

That dispute resolution meeting with the head of USEPA Compliance and Enforcement in Washington, D.C. resulted in a figure of \$1.5 billion as a maximum expenditure by the consent decree completion date of February 28, 2022. Should the cost projections (for SSOs, CSOs, water-in-basement, asset management, and additional regulator-mandated treatment limitations) exceed that sum, the deadline may be extended. As part of its 2022 rate impact calculation, the asset management component of \$17 million allowed for replacement / rehabilitation of utility infrastructure.

For a \$1.5 billion program, the projected 2022 annual bill for an MSD customer is estimated at \$1,000 (with inflation and assuming no federal or state funding). That nearly triples the 2004 rates to 1.5 percent MHI for the overall MSD service area, or 2 percent for the City of Cincinnati. While the consent decree does not mention either affordability or a fixed percent of median household income, both elements were a vital part of the negotiations and the motivation of the utility.

National Association of Clean Water Agencies (NACWA)  
Financial Capability and Affordability in Wet Weather Negotiations White Paper  
Case Study #3

## City of Los Angeles (SSO)

### *Background*

The City of Los Angeles (City) operates and maintains more than 6,500 miles of sewers, ranging in size from 6 inches to 150 inches in diameter. The City serves an area of over 550 square miles and 29 contract agencies convey and treat about 550 million gallons per day (MGD). The 2002 mean household income (MHI) across the City was \$39,616 with extreme variations across various City communities. For example, the community of Pico-Union Westlake had a 2002 MHI of \$20,117 while the community of Brentwood-Pacific Palisades had a 2002 MHI of \$141,157. Over the last 20 years, the City has invested more than \$2 billion in upgrading its wastewater treatment plants. Over the last 10 years, the City has invested more than \$1 billion in sewer system upgrade projects.

In August 2004, the City reached a landmark “win-win” settlement agreement with the United States EPA (USEPA), the State of California, the Santa Monica Baykeeper, and a number of community groups in South Los Angeles (Plaintiffs). The settlement was reached after 6 years of litigation and negotiations. The lawsuit was initiated against the City after wet weather overflows were experienced during one of Los Angeles’ wettest rainy seasons on record (1998 El Nino). In 2000, EPA, the State of California, and a number of community groups joined in the lawsuit with focus on dry weather overflows and sewer-related odors.

Reaching this “win-win” settlement agreement required rebuilding trust with the plaintiffs and giving them the confidence in the existing and planned City overflow control efforts. With the completion of many critical and major sewer projects, the implementation of an aggressive sewer maintenance program and source control efforts, and a consistent and steady decline in overflows,<sup>16</sup> trust was gained – opening the door for a settlement. The settlement was based solely on requiring that the City meet a set level of effort for sewer maintenance, rehabilitation, and upgrade with no open-ended commitments or mandated spill reduction standards. The 10-year estimated sewer system investment was estimated at \$2.3 billion, with \$2 billion already planned and budgeted.

In addition to trust, one of the major catalysts in reaching this settlement agreement was the ability to maintain the support of the City Council and Mayor. The support of the City’s policy makers was possible only through translating the plaintiffs’ demands into economic (i.e., sewer rate) terms and conducting a detailed affordability analysis for respective constituent communities.

### *Municipality Response to Affordability Issues*

As litigation preparation was proceeding and settlement negotiations were underway, the City Attorney and the lead Bureau of Sanitation staff had regular discussions with the City Council and the Mayor regarding the settlement demands. One of the policy makers’ major concerns was avoiding a settlement with open-ended commitments, in favor of a settlement with specific

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<sup>16</sup> The City’s overflows declined by ~50 over a four year period. The grease-caused overflows declined by ~75% over the same four year period.

quantifiable and manageable requirements. That goal was achieved through extensive education and outreach aimed at the policy makers, and through the translation of the various settlement demands into annual sewer rates, with comparisons to the MHI for each of the City's 56 communities/neighborhoods. Book-end and in-between alternatives for settlement were identified. Each of the book-ends and alternatives was valued, and the resultant sewer rate was calculated and compared to the MHI. When potential impacts of different alternatives on economically disadvantaged communities were shown, the City gained the political support needed to reach a reasonable, manageable settlement that can assure overflow reduction and infrastructure upgrades without exposing the City to open-ended demands. The understanding of the local community was key to resolving the litigation and reaching a manageable settlement.

### ***Regulatory Agency Response***

The City and its political leaders, in dialogue and negotiations with the Plaintiffs, tied the cost of the settlement to the impact on the communities and the need to assure that the cost of the settlement agreement was reasonable and affordable, particularly to the economically disadvantaged communities.

The Plaintiffs, publicly and in negotiations, insisted that City had the financial capability to meet their demands. Nevertheless, it was obvious through the negotiations that the affordability analysis, the link between settlement alternatives and rate increases, and the relationship of sewer rates to MHI were factors that influenced the Plaintiffs. This was instrumental because EPA and the other Plaintiffs needed the support of the Council, the Mayor, and community groups to end the litigation and reach a settlement. It was important to EPA that the Agency avoid accusations of insensitivity to the public and affected communities.

### ***Outcome and Lessons Learned***

By considering the affordability of the various settlement demands and alternatives, the City assured that EPA and other Plaintiffs kept their demands reasonable and affordable. Equally important was the affordability analysis as well as the demonstration of rate increase impacts from the various settlement options on the Council members' constituents (particularly those representing economically disadvantaged communities). The settlement agreement added "only" \$300 million to the City's already planned \$2 billion sewer improvement programs. The agreement had very specific requirements, with no open-ended demands or ballooning of unidentified costs.

Following the settlement, a 5-year, 7 percent per annum sewer rate increase to help fund the sewer improvement program<sup>17</sup> was unanimously approved by City Council and Mayor. This was possible only due to extensive discussion of needed rate increases during negotiations. Over 75 community meetings followed the settlement in an effort to communicate the need for the rate increase to the community. Demonstrating the need to renew the aging infrastructure and to reduce sewer overflows, the City gained community support for the rate increase, especially where the affordability analysis was presented showing what the alternatives and costs would have been and how the City's sewer rates compare to other large agencies. With the manageable settlement terms and the 5-year rate increase, the City has recently enhanced its bond rating to the highest possible rating.

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<sup>17</sup> The average monthly sewer rate increased from ~\$21 to ~ \$30 at the end of five year.

In conclusion, it is important to conduct an affordability analysis for the various settlement alternatives where an agency can clearly show what the demands would mean to the communities, with a focus on disadvantaged communities. This is very important for negotiations, but it is most critical to obtain the support of political representatives and communities.

**National Association of Clean Water Agencies (NACWA)**  
**Financial Capability and Affordability in Wet Weather Negotiations White Paper**  
**Case Study #4**

## NORTHEAST OHIO REGIONAL SEWER DISTRICT (NEORS D) (CSO/SSO)

***Background***

The Northeast Ohio Regional Sewer District (NEORS D) provides wastewater transmission, treatment and disposal services to 60 communities who operate local collection systems. Since its creation by court order in 1972, NEORS D has invested nearly \$2.0 billion in combined and intercommunity sewer system and treatment plant upgrades, rehabilitation, and expansion. Between 1997 and 2002, in compliance with National Pollution Discharge Elimination System (NPDES) permit requirements, the District submitted facility plans to the Ohio Environmental Protection Agency (OEPA) delineating the District’s technical approaches to compliance with Clean Water Act requirements and the Combined Sewer Overflow (CSO) Policy. These plans call for 65 separate capital projects, including 7 storage and conveyance tunnels, with the bulk of construction activity impacting the economically challenged portions of the Greater Cleveland area. CSO-related costs alone are projected to be approximately \$1.6 billion in 2002 dollars; additional capital costs to maintain and improve existing plant and collection system facilities are projected to require an additional \$1.6 billion. These costs do not include Sanitary Sewer Overflow (SSO) compliance and operational costs of the region’s 60 locally-controlled wastewater collection systems. These cost estimates are particularly daunting in the face of the region’s declining economy. In 2004, the U.S. Census Bureau identified Cleveland as the most economically disadvantaged urban center in the United States, with 31% of its households with incomes below the federal poverty threshold.

***Municipal Response to Affordability Issues***

Given the particularly difficult economic circumstances facing the communities within its service area, NEORS D has sought to mitigate the prospective financial burden of its ongoing CWA compliance program. In March 2005, the NEORS D Board adopted a 30-year implementation schedule for its CSO Long Term Control Plan. This schedule is supported by NEORS D’s financial capability assessment, which concluded that under a 30-year program implementation schedule, CWA compliance will impose a ‘High Burden’ on residential users within the NEORS D service area. The District also conducted a ‘Compression Analysis’ to evaluate the cost implications of compressing the program schedule, the results of which are presented in the table below.

| <b>Residential Household Indicators Per EPA Financial Capability Assessment Guidance Submitted by the Northeast Ohio Regional Sewer District (NEORS D)</b> |  |                             |                          |
|--|--|-----------------------------|--------------------------|
| <b>Implementation Period</b>   | <b>Net Present Value of Program Cost</b> | <b>NEORS D Service Area</b> | <b>Greater Cleveland</b> |
| 30 Years   | \$1.608 Billion                          | 2.32                        | 3.43                     |

|          |                 |      |      |
|----------|-----------------|------|------|
| 25 Years | \$1.759 Billion | 2,37 | 3.50 |
| 20 Years | \$1.890 Billion | 2.41 | 3.57 |

The analysis addressed a number of different factors that could impact the overall program costs, including:

- |                                |                          |
|--------------------------------|--------------------------|
| Surety Bonding Costs           | Environmental Justice    |
| Construction Market Saturation | Spoils Handling/Disposal |
| Program Management             | Claims/Change Orders     |

The analysis articulates the adverse social and financial consequences to the community of a compression of the program implementation schedule, and suggests that overall program cost estimates may be adjusted upward by 10 to 15 percent to reflect these factors.

***Regulatory Agency Response***

The District faces considerable uncertainty related to pending regulatory response to its planned program implementation. Over the course of the District’s development of its facility plans and Financial Capability Assessment, it has worked collaboratively with the Ohio EPA. This collaboration has resulted in Ohio EPA’s informal acknowledgement of the merits of the District’s technical approaches to CWA compliance and instructive comments on its draft Financial Capability Assessment. Recently, though the District has taken the position that Ohio EPA holds primacy, US EPA Region 5 has started asserting authority over enforcement of CWA compliance requirements with the District.

Informally, US EPA Region 5 representatives have suggested that the District’s technical approaches, as well as its 30-year implementation schedule, may be unacceptable. Nevertheless, the District has elected to be proactive. The District Board has approved the 30-year program schedule; the District has submitted both the Financial Capability Assessment and Compression Analysis to US EPA in advance of any enforcement action, and it continues to design and construct associated improvements.

Notably, while full completion of capital construction is scheduled for a 30-year time frame, NEORS D analyses indicate that 60 percent of targeted CSO reductions will occur within a 12-year period; 88% of targeted CSO reduction will occur within a 20-year period. After full implementation, the program will achieve 97 percent capture of wet-weather combined sewer system flows.

***Outcome of Discussions and Lessons Learned***

Insofar as US EPA has not, to date, filed an enforcement action related to NEORS D’s compliance with the Clean Water Act, the outcomes of discussions and associated lessons learned are largely pending. However, the District has found instructive the evaluation of financial capability during the facilities planning process, and believes that the proactive approach it has adopted will position it well for potential Consent Decree negotiations and, more importantly, best serve its customers and the northeast Ohio environment.

The District has also gained a fuller appreciation, by its own assessment of prospective economic impacts, of the magnitude of the burden faced by wastewater customers in the region. With CSO control requirements to be implemented by NEORS D and SSO control requirements to be addressed by local collection agencies, the fallacy of consideration of components of CWA compliance requirements individually has been highlighted.

National Association of Clean Water Agencies (NACWA)  
Financial Capability and Affordability in Wet Weather Negotiations White Paper  
Case Study # 5

## Sewerage & Water Board Of New Orleans (SSO)

Note to Users: This case study was submitted prior to Hurricane Katrina. NACWA's concerns are with the people of New Orleans and our member, the Sewerage and Water Board of New Orleans at this difficult time.

### ***Background***

The Sewerage & Water Board of New Orleans (S&WB) has undertaken a multi-year program, the Sewer System Evaluation and Rehabilitation Program (SSERP), to identify and address structural and mechanical deficiencies in the wastewater collection system and to ensure that the system has adequate capacity. These improvements, currently estimated at \$639.4 million, are required to comply with Section XV-Clean Water Act Remedial Measures: Comprehensive Collection System Remedial Program of the Consent Decree between the S&WB, the City of New Orleans, the State of Louisiana, plaintiff interveners, and the United States of America, entered into in June 1998.

The S&WB sewage collection system services an area of approximately 86 square miles and a population of approximately 485,000. It consists of over 1,300 miles of gravity collection and trunk sewers ranging in size from 8 inches to 84 inches in diameter and over 120 miles of force mains ranging in size from 6 inches to 72 inches in diameter. There are 86 pump stations which help convey wastewater to the City's two wastewater treatment plants, one on the East Bank and one on the West Bank (Algiers) of the Mississippi River with a combined capacity of 132 million gallons per day (mgd).

Like most of the nation's major metropolitan areas, New Orleans' underground water and sewer systems are at least 40 years old and, in many cases, up to 100 years old. Factors common to this area, such as unstable soil conditions and large numbers of tree roots, contribute to a higher-than-normal number of breaks and deterioration of the sewer pipes. The S&WB has also invested a significant amount of capital in upgrading its wastewater treatment plants.

The SSERP project is divided into ten districts. Each year, one of these districts will undergo a system evaluation survey that will result in defining an estimated \$9 to \$46 million in sewer structural rehabilitation needs. This comprehensive study includes smoke and dyed water testing, flow and rainfall monitoring, manhole inspections and surveys, and closed circuit televising (CCTV) of approximately 35 percent of the system. Sonar technology is also employed to determine the condition of sewer lines that cannot be de-watered.

### ***Municipal Response to Affordability Issues***

The median household income in New Orleans is \$27,133, compared to the national median of \$41,994. The ratepayer base supporting the SSERP project must also support much-needed upgrades to the S&WB power, drainage and water systems. Therefore the S&WB has sought out federal grants to support the SSERP program totaling approximately \$100 million over 10 years. The \$100 million has been authorized by Congress. To date the Sewerage and Water Board has received \$40 million in federal funds.

Obviously, federal funding is not adequate to cover the total cost of the program, so the S&WB has implemented a program of sewer rate increases. Between 1986 and 2000, the board did not adopt any sewer rate increases. In July 2002, the Sewerage & Water Board and the New Orleans City Council approved a five-step rate adjustment: 15 percent each year in 2002, 2003, and 2004, and 14 percent annually in 2005 and 2006. Monthly household sewer charges are scheduled to rise to approximately \$29.46 by 2006 (using 5,200 gallons of water per month, based on 85 percent of water consumption).

Technology and program management have played a role in ensuring that the S&WB is investing ratepayer and federal dollars cost-effectively. For example, SSERP engineers developed a computerized decision model to automatically determine a cost-effective rehabilitation method from encoded CCTV data. Engineers record detailed sewer data for each study area -- such as location, size and current conditions -- using a closed-circuit television recording device. That data is electronically transferred to the computer decision model, where algorithms determine efficient repair methods based on existing conditions and the S&WB's rehabilitation strategy. This process has helped reduce design time and costs so more dollars can be used for rehabilitation measures.

The future of SSERP depends on the availability of funds to complete the projects in accordance with EPA deadlines to avoid large fines of up to \$15,000 per day. At this time, the S&WB, its financial advisors and bond counsel are discussing future funding options for SSERP.

### ***Regulatory Agency Response***

The SSERP projects began in May 1999 and, according to contract guidelines, required the teams to meet interim milestones during the project timeline. Failure to complete the designated rehabilitation or reconstruction activities may have resulted in significant monetary penalties. All contracts for sewer rehabilitation performed under the SSERP have met all required milestones, resulting in no penalties for non-compliance.

### ***Outcome of Discussions & Lessons Learned***

The S&WB has made a strong case to its City Council and its Congressional delegation for a program of shared federal-local funding. As competition for federal funds increases, it is likely that New Orleans' ratepayers will pick up an increasing share of the cost for SSERP. Those same ratepayers will be asked to shoulder the burden of a series of recently-proposed rate increases that, if adopted, would push up New Orleanians' water bills by amounts ranging from 16 percent to 82 percent during the next four years.

In order to mitigate the impact on those least able to pay, the S&WB has proposed a tiered rate structure. Those hit hardest by the proposed increases would be customers who use closer to 20,000 gallons per month. A customer who uses that amount would see the water

portion of the bill increase by 82 percent by 2009 under the proposal, jumping from \$49.70 to \$90.32. The average residential customer uses 5,200 gallons per month. The new rate schedule would increase the average customer's water bill from \$15.51 today to \$22.24 in 2009, an increase of 43 percent.

Without a rate increase, the study says, the cost of operating and maintaining the Board's 1,600 miles of water pipes soon will outpace the money it collects from customers for water service. The water system is in dire need of capital repairs as well. The S&WB estimates that 40 percent of the water the city purifies is lost to leaks. There is no source of federal funds for water distribution upgrades.

National Association of Clean Water Agencies (NACWA)  
Financial Capability and Affordability in Wet Weather Negotiations White Paper  
Case Study # 6

## City and County of San Francisco, CA (CSO)

### *Background*

In 1974, the City and County of San Francisco began to work on upgrading secondary treatment and control of Combined Sewer Overflows (CSO) with the publication of their Master Plan Environmental Impact Statement (EIR). The USEPA was the lead agency for the EIR, which detailed both the upgrading of two wastewater treatment plants to secondary treatment, and the development of a system of cisterns and pump stations to control CSO, with an estimated cost of \$3 billion (1975). The main POTW was upgraded to secondary level, and the first CSO control facility along the northern bay shore of the San Francisco waterfront was under construction by 1977.

In 1978, due to cost concerns by the Mayor and other elected officials, San Francisco began to review the Master Plan in search of a less costly and more effective solution. EPA threatened a sewer connection ban if the City did not proceed. The resultant 1979 analysis relied upon specific beneficial uses of the receiving waters and a “knee of the curve” analysis. This effort led to the 1980 “Blue Book” (so called because the cover was blue) which proposed a new engineering approach to CSO control and treatment facility upgrade, phased over 20 years. The plan scheduled individual projects so that the largest and most cost effective projects were scheduled first, and ensured that as the projects came on line that they would all be immediately operational rather than idly waiting for connection to the overall system. The Blue Book proposal reduced the overall cost to \$1.5 billion.

As a “grandfathered” CSO community, in 1996 San Francisco received the first Phase II permit in the nation for the Oceanside Treatment Plant and the CSO Control system for the west side of San Francisco. The San Francisco CSO Control Plan predates the National CSO Policy by over a decade, and its lessons learned were incorporated into the National CSO Control Policy. The Policy has several areas in which the San Francisco model is quite evident, as it relates to affordability:

- The CSO policy states specifically that the LTCP should evaluate a range of cost-effective control options and strategies and provide for effective expansion of cost-effective controls, as did San Francisco with its EIR and Blue Book efforts, that followed the discovery that the 1974 plan was cost prohibitive;
- The level of control should be based on the cost as well as the protection of the beneficial uses. The level of control in San Francisco was highest where the uses involved recreational contract or shell fish beds;

- The CSO Policy calls for the development of appropriate cost/performance curves to demonstrate the relationship among a comprehensive set of reasonable control alternatives. San Francisco developed an engineering “knee of the curve” cost performance concept for its 1978-79 plan of the transport/storage system;
- The CSO Control Policy allows for the phasing of the CSO control program – as pioneered in the San Francisco Blue Book, with phasing based upon relative importance of the project as well as cost (setting the precedent for consideration of the financial capacity of the permittee).

### ***Municipal Response to Affordability Issues***

In the late 1970’s, it looked like the San Francisco Clean Water Program was going to cost approximately \$3 billion, which caused the Board of Supervisors, the governing body for the City and County of San Francisco, to stop the program cold. The response from EPA was a threat to impose a building ban. The San Francisco Clean Water Program responded with the Blue Book, a revised engineering approach aimed at being more protective, and cost effective, implemented over a 20-year phased program. The cost of the program was cut in half.

San Francisco mounted a massive public information program that included public meetings around the City and extensive involvement of a Citizen Advisory Committee. This resulted in the 1980 unanimous approval by the Board of Supervisors to place a bond issue on the ballot which was approved by the citizens of San Francisco by over 70 % of the vote. Every subsequent bond issue between 1980 and 1996, either before the Board of Supervisors or on the ballot, has been approved.

San Francisco has aggressively pursued federal funding, obtaining approximately \$800 million in grants and \$250 million in SRF loans. This “free” or “low cost” money was another response to the affordability of the Master Plan for Wastewater Management.

### ***Regulatory Agency Response***

USEPA and the State agreed that permits and Cease and Desist Orders (CDOs) would be used to ensure phased implementation of the system improvements. NPDES permits required the specific reductions of the CSO overflows (4 for the Northern Bay waterfront, 10 for the Mid Bay waterfront, 1 for the Southern Bay waterfront and 8 for the Pacific Ocean Beaches). Enforcement orders were reviewed and revised every 5 years. The CDOs contained specific completion schedules for each project and permit compliance.

### ***Outcome of Discussions and Lessons Learned***

The major lesson learned in the San Francisco case is that if the program is unaffordable, paralysis will result. In order to move the work forward, an affordable option which would meet the water quality goals and the requirements of the Clean Water Act had to be developed and agreed by all participants.

The innovations of reliance on affordability and phasing were critical to getting the San Francisco program back on track. Between 1977 and 1997, San Francisco constructed the

complete CSO Control Master Plan, constructed a new POTW (the Oceanside WPCP) and a major and costly Ocean Outfall. The cost of this program was \$1.5 billion.

The other major lesson is the critical importance of federal financial support. San Francisco was able to rely on Construction Grants and SRF loans to support the cost of this program. This clearly made this program more affordable and acceptable to the ratepayers of San Francisco, insuring its implementation.

National Association of Clean Water Agencies (NACWA)  
Financial Capability and Affordability in Wet Weather Negotiations White Paper  
Case Study # 7

## District of Columbia Water and Sewer Authority (CSO)

### *Background*

In 2002 the District of Columbia Water and Sewer Authority (WASA), an independent agency of the District of Columbia government responsible for collection and treatment of sewage and distribution of potable water in the city, as well as for providing treatment of sewage from several surrounding jurisdictions, submitted a Long Term Control Plan (LTCP) for managing DC's combined sewage. The federal government constructed the combined sewage system (CSS) in the 1800s, and it covers a third of the city (mostly the central part).

The cost of implementing the LTCP was estimated to be \$1.2 billion in FY 2001 dollars. Since CSO is generated in DC, the entire cost of this project would fall on the DC ratepayers.

### *Municipal Response to Affordability Issues*

WASA conducted an affordability study as part of the LTCP development process. It was concluded that even though the plan was 'affordable' under EPA criteria, due to the skewed income distribution in the city, approximately 25 percent of DC residents could not afford to pay for the implementation of this plan under the same criteria. WASA recommended that the federal government participate in funding this project and that a 40-year implementation plan be approved to make the plan affordable for all DC ratepayers. This position also reflected concerns that WASA faces other potential major projects requiring considerable expenditures and related financial burdens on the ratepayers, and a policy of the WASA Board of Directors to limit yearly rate increases to an affordable level.

### *Regulatory Agency Response*

The general response of the federal regulatory agency was that WASA's proposal of a 40-year implementation plan could not be approved and that it must propose a shorter implementation period. They argued that although they supported federal financial participation, they could not link approval of the schedule to such a condition.

The state regulatory agency (D.C. Department of Health) also agreed that federal government should participate financially, but they also wanted a shorter implementation period.

The regulatory agencies also argued that WASA should adopt a rate structure with a more rational and equitable basis.

*Outcome of Discussions and Lessons Learned*

WASA signed a Consent Decree with the federal government, which was approved by the D. C. Superior Court on March 26, 2005. It contains an agreement that WASA would implement the CSS LTCP over a 20-year period. However, it also includes provisions to allow petitioning the Court for changes if WASA has to undertake other major projects that would drastically impact its expenditures and would impose major burdens on the ratepayers in the form of substantial rate increase.

WASA has conduct a study to explore potential for setting a rate structure based on distributing the cost according to the quantity of combined sewage (i.e., runoff) generated by various users. Logistics and viability of adopting such a rate structure are yet to be sorted out.

National Association of Clean Water Agencies (NACWA)  
Financial Capability and Affordability in Wet Weather Negotiations White Paper  
Case Study # 8

## Massachusetts Water Resources Authority (CSO)

### *Background*

In 1985, EPA filed suit against the Massachusetts Water Resources Authority (“MWRA”) asserting violation of the Clean Water Act. As a result, MWRA entered into a court order for implementation of an aggressive program to construct massive new wastewater treatment and conveyance systems to eliminate discharges of marginally treated wastewater to Boston Harbor. Following are key milestones related to the CSO control elements of the court order:

- 1987 - MWRA began developing/implementing a long-term control plan for its CSO outfalls and those of the four CSO communities within the MWRA service area (MWRA is a wholesale provider of water/wastewater services to 61 communities).
- 1994 - Completed conceptual plan that included federal court ordered CSO milestones.
- 1997 - Filed Facilities Plan/Environmental Impact Report (LTCP), setting CSO control level for most receiving waters, with the MADEP water quality variances issued for two areas.

MWRA has invested \$4.5 billion upgrading its wastewater infrastructure and reducing CSO discharges, with expected expenditure of an additional \$500 million for CSO control over the next 10 years. CSO discharges to Boston Harbor and its tributaries have been reduced 75 percent from 3.3 billion gallons/yr in 1988, to 0.9 billion gallons in 2005, with 60 percent of these discharges being screened and disinfected. Goals are to reduce to 0.4 billion gallons, with 90 percent treated, by 2015.

### *Municipal Response to Affordability Issues*

In 1998, EPA determined that further investments, beyond those in the revised 1997 CSO control plan, would result in substantial and widespread economic and social impact, and that sewer rates would exceed the 2 percent threshold for Chelsea (MWRA’s lowest MHI community), and approach 2 percent for Boston. Thus EPA accepted the state’s revised water quality standards for all but two receiving waters. Variances were issued for these two receiving waters that remain in effect. In 2003 and 2004, MWRA submitted reassessment reports for these two receiving waters that supported previous control plans and included Use Attainability Analyses.

### *Regulatory Agency Response*

Originally, EPA supported the “heavy burden” rating for MWRA, and the water quality revisions required to permit limited CSO discharges. More recently, due to lower than predicted increases in MWRA sewer rates (resulting from rate management and favorable interest rates), and higher than predicted increases in MHI, sewer rates did not reach the 2 percent threshold. As a result, EPA and DEP indicated that MWRA’s proposed CSO control plans for the Charles River and Alewife Brook/Upper Mystic River (and potentially other

receiving waters) may not be sufficient and that further investment in CSO control may be necessary, with potentially significant increases in the cost of MWRA's CSO program, even though analysis has shown that, due to non-CSO sources, additional CSO control will not result in meaningful water quality improvements. MWRA disputed this position and undertook additional analysis to demonstrate that existing sewer rates already met the EPA's "substantial and widespread economic and social impact."

### *Outcome of Discussions and Lessons Learned*

MWRA has researched EPA economic indicators, and has developed a list of issues that need further analysis and possible adjustment by the agency:

- EPA's municipal screener does not take into account variations in the cost of living in determining the economic burden associated with a given level of sewer charges.
- EPA should be examining the impact of sewer charges in context of a broader measure of economic burden, such as "shelter cost," which consists of costs associated with housing. Sewer charges are a component of shelter cost for both renters and home owners.
- Application of EPA guidelines does not consider variations in the *disparity* of income – i.e., the gap between the MHI of a given community and that of lower income households.
- EPA's screening criteria do not adequately address the needs of the low and fixed income segments of the greater sewer service area.
- EPA has not adequately accounted for the other water-related costs on the target population. MWRA, for example, has also invested approximately \$1.5 billion upgrading its drinking water system, including construction of a new water transmission tunnel, ozonation/chloramination treatment plant and covered storage facilities. Much of this investment has been required to meet the standards of the Safe Drinking Water Act.

This analysis has not been accepted by the regulatory agencies. The supplemental analysis was submitted, for informational purposes, to the Federal District Court with the MWRA's December 15, 2004 quarterly compliance and progress report. In its response to the filing, EPA stated that the methodology used in the analysis was flawed, MWRA sewer rates were substantially lower than previously projected and that the analysis failed to demonstrate widespread economic and social impact. Additionally, EPA and the Conservation Law Foundation (another party to the Boston Harbor Case) argued that it was premature to make a determination on long-term water quality standards on the Charles River at this time, given that DEP had recently issued a three-year extension to the water quality variance.

In the subsequent federal court order, issued February 1, 2005, the court referred to the supplemental analysis and concluded "that consideration of its implications is presently premature, especially in light of DEP's determination that debate over the appropriate level of CSO control should be deferred while further data are being gathered." Discussion on the water quality designations and appropriate level of control for the Alewife Brook/Mystic River and Lower Charles River Basin are ongoing.

According to analysis prepared by the MWRA's Advisory Board (oversight organization that represents 61 cities/towns that receive water/wastewater services from MWRA) the average combined (water and sewer) charge for MWRA households has increased from \$443 in 1991 to \$889 in 2004.<sup>18</sup> This represents an average annual increase of 4.75 percent. Over the next ten years, MWRA's rate revenue requirements (revenue provided by user charges to MWRA's 61 ratepayer communities) are projected to increase from \$452.8 million in fiscal year 2005 (end June 2005) to \$739.1 million in fiscal year 2010, an average annual increase of 5 percent. Approximately 60 percent of MWRA's rate revenue requirement is for debt service on its current and projected debt.

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<sup>18</sup> Based on assumed household consumption of 90,000 gallons or 12,000 cubic feet per year. This includes MWRA charges and community assessments for retail service.

National Association of Clean Water Agencies (NACWA)  
Financial Capability and Affordability in Wet Weather Negotiations White Paper  
Case Study # 9

## Columbus, OH (CSO/SSO)

### *Background*

In 2002, Columbus signed a consent decree with the State of Ohio covering sanitary sewer overflows (SSOs). Then in 2004, the City agreed to a second State decree for the remediation of combined sewer overflows (CSOs). The first decree, covering SSOs, was signed at a time when the utility had little information about the scope of the SSO problem. There was no set completion date in the SSO decree, as opposed to the later CSO decree which had a 20-year completion requirement.

As utility management began to further analyze the impact of the decree's provisions and assembled a more precise program of expected improvements, the estimated cost of the combined effort was found to be nearly \$2.5 Billion. This was clearly beyond local ability to complete over 20 years, and drove all the USEPA burden indicators into the "heavily burdened" category.

### *Municipal Response to Affordability Issues*

Once the enormity of the program cost was realized, the Utilities Department set out to determine ratepayer "ability to pay" via thorough economic research. Working with their Sewer and Water Advisory Board (SWAB), the utility defined their goal as, "To ensure that any schedule for improvements is as expeditious as possible while maintaining affordable rates for all consumers."

To this end, the SWAB established four "measures of success": Overall Impacts, Vulnerable Population Impacts, Local Economy/Business Health, and Housing Impacts. These were further focused by enumerating the "components" of each measure of success:

- For Overall Impacts – Maximum Aggregate Bill Increases, and Percent of Customers in Steps 3 & 4 Delinquencies.
- For Vulnerable Population Impacts – Maximum Percent HHI for Vulnerable Population Segment.
- For Local Economy/Business Health – Housing Starts, and Employment.
- For Housing Impacts – Number of Households Mortgage Eligibility Impacted, and Number of Renters Driven Over Housing Cost Burden Threshold.

Each component was defined verbally and numerically via a ratio that either included the percent sewer rate increase, or was strongly influenced by such a rate increase.

These measures of success were not merely meant to demonstrate theoretically what the proposed program costs would do to the service area's economic health, but also to test varying program lengths to establish that elusive ratepayers' "ability to pay."

That was not, however, the final use of the SWAB's measures of success indicator package. Going beyond those theoretical tests, the Board determined that periodic recalculation of the components during the life of the program would show the program's actual impact upon Columbus' economy; thus, establishing a real-time economic barometer for the program.

Columbus is proposing to the State of Ohio that a 40-year program is the term necessary for sustainable expenditure, and the annual barometer tests will allow annual fine tuning of the program's progress. Should any of the seven components move away from the sustainable set point in the direction of causing a negative impact on that component, this would trigger a review by the city of the program's expenditure rate. Possible adjustments to the program could result in either extending the program's term of completion to allow the component indicators to come back into the sustainable range, or accelerating progress in acknowledgement of a decreased economic stress level due to the receipt of federal grants.

Should state or federal construction grants be received by the utility for this program, half of the grant would be used to offset planned local investment, with the remainder applied to accelerate construction. Should sewer costs drop below 1 percent MHI, all future grant money will be devoted to such program acceleration.

Not to overlook the influence on environmental protection, Columbus analyzed the impact of an extension from 30 to 40 years for implementation, and found only a 2 percent difference in discharges during the additional 10 years. That negligible difference was a determining factor in the SWAB's decision to reduce economic stress with the 40-year program.

#### ***Regulatory Agency Response***

The only reaction from the USEPA, to date, has been negative comments with respect to the CSO decree.

The City submitted its program, including the affordability analysis and the 40-year schedule, to the State of Ohio on July 1, 2005. While the overall schedule is 40 years, all of the CSO work would be completed in 20 years, as required by the CSO decree. The State has not yet responded. A formal presentation of the indicators and their justification has been held.

The USEPA remains but an "interested observer," having not been a party to the original decree. The agency's preference for shortening rather than lengthening compliance schedules is well known, and it is expected that it will not be advocating for the City of Columbus.

#### ***Outcome of Discussions and Lessons Learned***

As neither the State regulator nor USEPA has reacted to the proposal, a definitive outcome cannot be stated. From the City's standpoint, it has gone through an exhaustive process of

program cost estimation to arrive at a \$4B capital outlay total, and is quite confident of that figure. This is clearly unbearable for the local economy to consider this level of expenditure over a 20-year period.

Further analysis yielded a set of seven economic factors that could be used to project thresholds for mitigating financial impact on the community. Projections using these factors showed that a more realistically achievable schedule would be 40 years.

Given the imperfect science of forecasting future economic trends and the associated influence of rising sewer rates, those same economic indicators are proposed as a real-time barometer of fiscal impact upon the citizens.

The City has received endorsement of both its proposed 40-year schedule and the use of its economic barometer by the Columbus Water and Sewer Advisory Board. Utility management is confident of its approach, and committed to implementing the new 40-year schedule.