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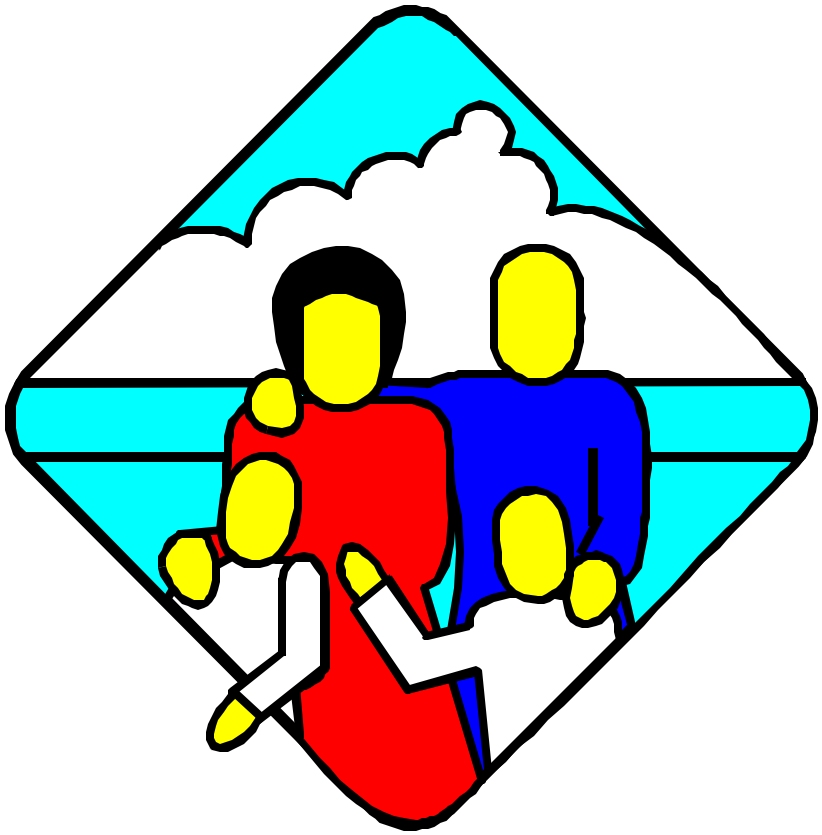
Handbook for Capacity Development:

Developing Water System Capacity Under the Safe Drinking Water Act as Amended in 1996



Capacity Development:

Tapping Into the Future. Protecting Public Health.

Contents

Exhibits

Acronyms

Acronym	Meaning
AMWA	Association of Metropolitan Water Agencies
AWWA	American Water Works Association
BMP	Best Management Practice
CCE	Comprehensive Compliance Evaluation
CCN	Certificates of Convenience and Necessity
CPE	Comprehensive Performance Evaluations
CWA	Clean Water Act
CWS	Community Water System
CWSP	Coordinated Water System Plan
CWSRF	Clean Water State Revolving Fund
DEM	Department of Environmental Management
DEP	Department of Environmental Protection
DHS	Department of Health Services
DOH	Department of Health
DPUC	Department of Public Utility Control
DWSRF	Drinking Water State Revolving Fund
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentive Program
FVT	Financial Viability Test
FY	Fiscal Year
GLP	Great Lakes Program
HGP	Hardship Grants Program
IUP	Intended Use Plan
MCL	Maximum Contaminant Level
MDE	Maryland Department of the Environment
MES	Maryland Environmental Service

Acronym	Meaning
MHI	Median Household Income
MOU	Memorandum of Understanding
NDWAC	National Drinking Water Advisory Committee
NPDWR	National Primary Drinking Water Regulations
NPS	Nonpoint Source
NRCS	Natural Resources Conservation Service
NRWA	National Rural Water Association
NTNCWS	Nontransient, Noncommunity Water System (also NTNC)
OWM	Office of Waste Water Management
PPGP	Pollution Prevention Grant Program
PUC	Public Utility Commission
PWS	Public Water System
PWSCA	Public Water Supply Coordination Act
RCAP	Rural Community Assistance Programs
RUS	Rural Utility Service
SDWA	Safe Drinking Water Act
SDWPC	State Drinking Water Program Coordination
SMA	Satellite Management Agency
SWPP	Source Water Protection Program
TNCWS	Transient Noncommunity Water Systems
UIC	Underground Injection Control
UTC	Utilities and Transportation Commission
WSP	Water System Plan
WUCC	Water Utility Coordination Committee

Part 1

SDWA: The Big Picture

Section 1

The Safe Drinking Water Act Amendments of 1996: Strengthening Protection for America's Drinking Water

President Clinton signed the Safe Drinking Water Act (SDWA) Amendments of 1996 on August 6, 1996. The Amendments establish stronger prevention programs, increase State flexibility, give better information to consumers, and strengthen EPA's regulatory development process.

> Capacity Development is part of SDWA's new and stronger approach to preventing drinking water contamination. SDWA's changes also include initiatives to improve communication with the public, employ better science for risk assessment, and provide funding for systems through the DWSRF.

Four themes characterize the areas of greatest change. Together, they comprise a balanced, integrated framework of reform, and represent a major national commitment to:

1. Better information for consumers, including the "right to know" (through consumer confidence reports and other provisions);

2. Regulatory improvements, including better science, prioritization of effort, and risk assessment;

3. New funding for States and communities through the Drinking Water State Revolving Fund (DWSRF); and

4. New and stronger approaches to prevent contamination of drinking water (including source water protection, capacity development, and operator certification).

1. Better Consumer Information: The "Right-to-Know"

In addition to the much-discussed new requirement for systems to prepare consumer confidence reports, the Amendments frequently specify that the public be provided with or given access to other data collected, analyses done, or implementation strategies developed under new SDWA programs. These consumer information provisions herald a new era of public involvement in safe drinking water, founded on the idea that the understanding and support of the public is vital to address and prevent the growing threats to drinking water quality in the years ahead.

Consumer Confidence Reports

On August 19, 1998, EPA promulgated a final rule requiring community water systems to prepare and provide to their customers annual consumer confidence reports on the quality of the water delivered by the systems. These reports will provide valuable information to customers of community water systems and allow them to make personal health-based decisions regarding their drinking water consumption. The first round of reports are due by October 1999.

The regulations require, at a minimum, each CWS to mail each customer of the system at least once annually a report on the level of contaminants in the drinking water purveyed by that system. In addition, the CCR must contain brief statements in plain language regarding the health concerns that resulted in the regulation of contaminants for which a Maximum Contaminant Level (MCL), treatment technique, or action level was violated, and a brief and plainly worded explanation regarding contaminants that may reasonably be expected to be present in drinking water, including bottled water. Finally, the regulations provide for an EPA toll-free hotline that consumers can call for more information.

The Governor of a State may determine not to apply the mailing requirement to a CWS serving fewer than 10,000 persons. Such a system would then be required to inform its customers, through a newspaper notice, that the system will not be mailing the report, and to publish the report in a local newspaper. The system would then also be obliged to make the report available on request to the public. The Governor of a State also may determine that systems serving fewer than 500 persons need only to post notices announcing the availability of the report.

Other Provisions for Improved Consumer Information

The 1996 Amendments ask water systems, States, and EPA to share responsibility for improving communication with the public.

<u>Water System Responsibilities</u>

- Persons served by a PWS must be given notice of any violation of a national drinking water standard "that has the potential to have serious adverse effects on human health as a result of short-term exposure." Notice must be given within 24 hours of the violation through at least one effective avenue of communication.

- Written notice of any other violation of a national standard or monitoring requirement must be given within one year of the violation.

States share of the communication responsibility include these duties:

- Making "readily available to the public" the annual report to the Administrator on violations of NPDWRs by PWSs within the State. [§1414(c)(1-3)][1]

- Submitting a triennial report to the Governor on the effectiveness of its capacity development strategy and must also make its report available to the public. Public involvement is required in the development of the capacity development strategy. [§1420(c)(3)]

- The public must be provided with notice and an opportunity to comment on the annual priority list of projects eligible for DWSRF assistance that States will publish as a part of their DWSRF intended use plans (IUPs). [§1452(b)(3)(B)]

- States "shall make the results of the source water assessments ... available to the public." [§1453(a)(7)]

Even EPA shoulders a portion of the responsibility by:

- Making the information from the national drinking water contaminant occurrence database "available to the public in readily accessible form." [§1445(g)(5)]

- Publishing and making all regulations, and most guidance and information documents, available for public notice and comment.

2. Regulatory Improvements

A decade of experience under the 1986 SDWA revealed several areas where responsible, flexible science-based policies and a better prioritization of efforts could improve protection of public health.

Risk-based Contaminant Selection

The 1986 SDWA requirement that EPA regulate an additional 25 contaminants every 3 years has been eliminated under the 1996 SDWA Amendments. EPA now has the flexibility to decide whether or not to regulate a contaminant after completing a required review of at least five contaminants every five years. In order to regulate a contaminant, EPA must determine that:

1. The contaminant adversely affects human health;

[1] All [xxxx] reference sections in the 1996 SDWA Amendments.

2. The contaminant is known or substantially likely to occur in PWSs with a frequency and at levels of public health concern; and

3. Regulation of the contaminant presents a meaningful opportunity for health risk reduction. [§1412(b)(1)]

This provision departs dramatically from the approach of the previous law. The "25 every 3 years" mandate allowed little risk prioritization by EPA, and the mandate to regulate 83 specified contaminants allowed essentially none. The new provision makes risk prioritization a dominant criteria in selecting contaminants to regulate. EPA will work in partnership with the States, water systems, environmental and public health groups, the scientific community, and the public to identify and closely scrutinize unregulated contaminants that are most prevalent in drinking water, present the most serious threat to health, and can be most productively and effectively controlled. Sizeable contaminant clusters (similar to the disinfection byproducts/microbial cluster, with 13 contaminants proposed) can be reviewed and other contaminants added for analysis — with only those that meet the three criteria receiving a determination to regulate.

Furthermore, the 1996 SDWA amendments require EPA to publish a list of prioritized contaminants which, at the time of publication, are not subject to any proposed or promulgated national primary drinking water regulation (NPDWR), that are known or anticipated to occur in public water systems, and which may require regulations under the SDWA [§1412(b)(1)]. EPA published the first list of contaminants (Drinking Water Contaminant Candidate List, or CCL) on March 2, 1998. The CCL prioritizes contaminants which are identified by need for drinking water research, those which need additional occurrence data, and contaminants which are priorities for consideration for the development of future drinking water regulations and guidance. The CCL includes 50 chemical and 10 microbiological contaminants/contaminant groups.

Collection and Organization of Occurrence Information—Database Creation

The collection, organization, and ready availability of contaminant occurrence data takes on unprecedented importance under the new law's risk-based regulatory framework. Accordingly, the statute includes several responsive provisions. EPA must issue regulations when establishing criteria for the monitoring of unregulated contaminants, and, within 3 years after enactment (August 1, 1999), and every 5 years thereafter, must issue a list of no more than 30 such contaminants for which monitoring is required. Significant changes from previous law include a provision that the States may (and if they decline, EPA shall) develop a plan for monitoring by a representative sample of systems serving fewer than 10,000 people (to ensure an understanding of contaminant occurrence in different size systems), and a provision requiring that persons served by the chosen systems be notified of the availability of monitoring results. [§1445(a)(2)]

For the first time, a national occurrence database covering regulated and unregulated contaminants will be established, primarily using compliance monitoring detection data and information from the unregulated contaminant monitoring program. The principal use of the database will be for EPA to make occurrence determinations on whether or not to regulate a certain contaminant, but it may

also be useful for such purposes as State tailoring of system monitoring and source water protection. The occurrence database will also improve public understanding and participation in drinking water protection because the data must "be available to the public in readily accessible form." [§1445(g)] In addition, prior to issuing regulations, EPA can require systems to submit information for compliance purposes and to provide a basis for promulgating new regulations.

Cost-benefit Analysis and Research for New Standards

Under the SDWA Amendments, EPA is to conduct a thorough cost-benefit analysis of all future drinking water standards and provide comprehensive and understandable information to the public. EPA is also required to use the "best available, peer-reviewed science and supporting studies" in setting new drinking water standards. [§1412(b)(3)]

A number of statutory provisions will help to ensure that adequate scientific information is developed to support these new requirements:

- Health effects research [§1452(n)];
- Disinfection byproducts/microbial pathogens ($87.5 million over 7 years) [§1458(c)];
- Waterborne disease occurrence ($15 million over 5 years) [§1458(d)];
- Subpopulations at greater risk [§1458(a)]; and
- Biological mechanisms by which contaminants affect human health [§1458(b)].

Standard setting has new flexibility compared to the 1986 law. After first defining a maximum contaminant level (MCL) or treatment technique standard based on feasibility [§1412(b)(4)], EPA must determine whether the costs of that standard would be justified by the benefits. If not, then EPA may adjust an MCL to a level that "maximizes health risk reduction benefits at a cost that is justified by the benefits." The authority to adjust the MCL cannot be used if the costs to large systems are justified by the benefits, and other systems are likely to receive variances. The rationale is that affordability problems for smaller systems should not change a national standard if those systems would receive a variance from that national standard anyway, based on affordability grounds. Flexibility to "minimize the overall risk of adverse health effects" is also authorized where certain means of controlling one contaminant may increase the risk from another contaminant ("risk-risk" balancing situations). [§1412(b)(4-6)]

The cost-benefit provision was included primarily to address the concern that the health protection benefits of certain future standards might not be "worth" their costs, even if large systems could afford to meet such standards through their economies of scale. The new standard-setting retains the previous law's approach to defining an affordable technology standard, but subjects that standard in every case to the "justified" test. EPA can proceed with a standard based on the affordable technology approach, or may adjust an affordable technology-based MCL to a level that is "justified." In the latter

case, the new law further requires that the MCL must also maximize health benefits, ensuring that health protection remains the paramount consideration in standard setting.

Small System Technologies, Variances, and Exemptions

A fundamental problem with the 1986 law was that, in setting standards based on technology that large systems could afford, it did not recognize the often-different economics of small systems. The new law contains multiple remedies. First, as part of a new drinking water standard, EPA is to identify technologies that comply with the standard and are specifically affordable for each of three groups of smaller systems: 25-100; 501-1,000; and 1001-3500 persons served. [§1412(b)(4)(E)] Second, where such technologies do not exist for a certain group of smaller systems or quality of source water, a "variance" technology must be identified that need not meet the standard but must provide the maximum health protection affordable for such groups of smaller systems. [§1412(b)(15)]

EPA issued new regulations on August 14, 1998, which revise existing variances and exemptions regulations [63 FR 157]. The revisions codify provisions of the 1996 SDWA Amendments dealing with "general" variances available to PWSs of all sizes, and implement new small system variances for water suppliers that serve fewer than 10,000 people. The revised regulations create a new affordability-based small systems variance which may be granted by a State to a PWS serving fewer than 3,300 persons, or, with the approval of EPA's Administrator, to a system serving 3,301-10,000 persons. The revised regulations also implement changes related to exemptions.

States with primacy will make decisions on affordability variances for specific systems serving up to 3,300 persons, while EPA must approve variances for systems between 3,300 and 10,000. The State variance decision must include consideration of whether the system could comply with the standard through water treatment, alternative water supplies, restructuring, or consolidation. In February 1998, EPA also published a document titled *Information for States on Developing Affordability Criteria of Drinking* Water, providing guidance that States can use to make affordability determinations. Consumers may petition EPA to object to a variance proposed by a State, and EPA must respond to petitions within 60 days. If EPA objects to a variance, it cannot be granted until the State makes the requested changes or responds in writing to each objection. [§1415(e)]

The statute also authorizes traditional "source water" variances on condition that the systems install affordable compliance technology. This gives the certainty of a variance to any size system able to install treatment, bu`t whose unavoidably poor source water quality may prevent it from meeting the standard even with treatment. [§1415(a)(1)(A)]

These new provisions create a logical and workable hierarchy of options for small systems. Most small systems whose source water quality does not meet a national standard will be able to comply if they are allowed to use treatment that is affordable for systems of their size. For those systems that cannot afford such treatment, the State (with EPA review if applicable) will assess whether other changes — e.g., source water protection, restructuring, or connection to another system — could enable them to meet the standard. Only if such changes are not practicable can a system be authorized to provide drinking water that does not fully meet a national standard. That authorization will only be

for the best technology the system can afford, which will give much more protection than was actually provided under the all-or-nothing regime of the previous law.

Moreover, a system serving 3,300 persons or fewer may receive an exemption from a standard for up to nine years if the system serves an economically disadvantaged community, is reasonably likely to get financial assistance to comply during the exemption term, and cannot comply by developing an alternative water source or by restructuring changes. Exemptions are meant to help systems avoid continuing violation repercussions if they cannot comply now but will in the near future. [§1416]

Compliance Time Frames

The Amendments extend to three years the previous 18-month deadline for systems to comply with new regulations to 3 years; EPA can shorten the 3 year deadline if an earlier date is "practicable." EPA or States (for individual systems) may extend the deadline to comply by an additional two years if necessary for capital improvements. [§1412(b)(10)]

Monitoring Reforms

States may grant "interim monitoring relief" to systems serving less than 10,000 persons (exempting them from additional quarterly monitoring) if monitoring done at the time of "greatest vulnerability to the contaminant" fails to detect it, and the State finds that further monitoring is unlikely to detect the contaminant. This relief cannot cover any microbiological contaminants (or their indicators), disinfectants, or disinfection or corrosion byproducts. [§1418(a)]

States with an approved program for source water assessments may implement tailored, alternative monitoring requirements for any contaminant for which interim relief may be granted (except unregulated microbiological contaminants or indicators). This provision strikes a balance encompassing two key aims of the new law: greater flexibility for States in crafting a drinking water program that responds to local conditions and needs, and the assurance that both regulation and deregulation under that program will be solidly based on good science. The new law also explicitly protects "existing authorities" available to States to alter monitoring requirements through waivers or other EPA initiatives, such as the chemical monitoring reform process now underway. [§1418(b-d)]

Enforcement

The Amendments streamline processes for administrative compliance orders and penalties up to $5,000, raise the administrative and emergency penalty caps, make enforceable many SDWA provisions and requirements implemented by EPA or primacy States, and give up to a 2 year enforcement moratorium for violations being remedied by a specific plan to consolidate with another system. States with primacy must also adopt administrative penalty authority. These measures will facilitate more effective enforcement, encouraging compliance while keeping safeguards for systems. [§1414]

3. Drinking Water State Revolving Fund

The creation of a DWSRF to assist communities in installing and upgrading drinking water system infrastructure is among the most important changes in the nation's drinking water program since passage of the original SDWA in 1974. President Clinton proposed this DWSRF in 1993 to advance the same kind of national commitment to safe drinking water as America has made to wastewater treatment and clean water through the Clean Water State Revolving Fund (CWSRF).

Authorized Funding

The DWSRF is authorized at $599 million for Fiscal Year (FY) 1994, and $1 billion annually thereafter through FY 2003. The full span of this authorization is meaningful because the law permits appropriation in future years of any funds authorized but not appropriated in prior years. Funds are allotted to all primacy States (Wyoming is grandfathered) through FY 1997 based on the current formula for PWS Supervision grants, and thereafter based on the results of the most recent needs survey.

A minimum allotment of 1 percent will be available for all States, and the required State match is 20 percent. One and one-half percent of the total DWSRF can be used for grants to Indian Tribes and Alaska Native villages. CWSs and non-profit non-community water systems (NCWSs) are eligible for DWSRF loans, but federal systems are not. Projects, including associated land "integral to a project," are eligible if they "will facilitate compliance with" applicable national drinking water regulations or will "significantly further the health protection objectives" of SDWA.

States will annually prepare Intended Use Plans (IUPs) identifying eligible projects and their priority, giving top priority to those that:

- Address the most serious risk to human health;
- Are necessary to ensure compliance with the requirements of this title (including requirements for filtration); and
- Assist systems most in need on a per household basis according to State affordability criteria.

States may provide additional loan subsidies and loan forgiveness to disadvantaged communities for up to 30 percent of the annual DWSRF capitalization grant [§1452(a-b), (d)].

Before FY 2002, State Governors may shift up to 33 percent of the SDWA capitalization grant into the CWSRF, or up to an equivalent dollar amount from the CWSRF into the DWSRF
Set Asides for Prevention Programs and Projects.

One of the most notable features of the new law is the flexibility given to states to set aside funds from their DWSRF allotment for a number of priority activities. Up to 10 percent of a State's

capitalization grant may be used for implementation of source water protection, capacity development, and operator certification programs, as well as for the State's overall drinking water program [§1452(g)]. As much as 15 percent (no more than 10 percent for any one purpose) can be used for prevention projects in water systems, including source water protection loans, technical and financial assistance to systems as part of a State capacity development strategy, source water assessments, and wellhead protection [§1452(k)].

These set aside provisions reflect the high priority and importance Congress placed on prevention activities — some of which are discretionary for States and systems. The success of these activities will determine whether the new law's potential as a preventive, environmental statute is realized, and how far we as a nation can advance under it towards the sustainable use of water. Appropriately, wide discretion is provided to States in both the design and implementation of these activities. This will enable States to further their individual priorities, and to coordinate with other State and local activities that may help meet the objectives of the new prevention programs.

The remainder of this handbook addresses the capacity development provisions of SDWA, including the responsibilities of States, tools that States can use to help systems develop their capacity, and the links between capacity development and other SDWA initiatives.

4. Stronger Emphasis on Prevention

The SDWA Amendments establish a strong new emphasis on preventing contamination problems through source water protection and enhanced water system management. That emphasis transforms the previous law, which had an after-the-fact, regulatory focus, into a environmental statute that can better provide for the sustainable use of water by our nation's PWSs and their customers. The States' role will be central in designing programs to prevent problems by helping water systems improve operations and avoid contamination.

Capacity Development

The 1996 Amendments create a program that builds nationally on the demonstrated success of several States in strengthening the technical, managerial, and financial capacity of water systems to reliably deliver safe drinking water. In order to receive the full allotment of funds to which they are entitled under the DWSRF, States must develop:

1. A program to ensure that all new community and new nontransient, noncommunity water systems commencing operation after October 1, 1999, demonstrate sufficient technical, managerial, and financial capacity to comply with national primary drinking water regulations (NPDWRs); and

2. A strategy to assist existing PWSs in acquiring and maintaining technical, managerial, and financial capacity to comply with SDWA requirements.

States may use DWSRF set aside funds for their capacity development and implementation efforts. States that do not meet the provision's requirements are subject to a 20 percent withholding from their DWSRF allotment.

The capacity development provisions offer an unprecedented opportunity for States to creatively and comprehensively address the long standing challenges and difficulties associated with small water systems. Capacity development strategy preparation affords States a chance to identify and prioritize systems most in need of assistance in enhancing their technical, managerial, and financial capacity. Having identified and prioritized systems most in need, States can then effectively target technical and financial assistance. Capacity development strategy preparation also offers States the chance to consider how the resources and authorities of the SDWA, as well as other resources and authorities, can be used to:

- Assist PWSs in complying with national primary drinking water regulations;
- Encourage the development of partnerships between PWSs to enhance the technical, managerial, and financial capacity of the systems; and
- Assist PWSs in the training and certification of operators.

Capacity development strategies will likely lead to a greater emphasis by small systems on self assessment and long-term planning. Strategies may also prove to be a useful framework within which State's explore integrated resource planning and its potential to help resolve conflicts over drinking water quality and management issues. For each new drinking water regulation, EPA must analyze the likely effect of the regulation on the viability of PWSs. [§§1452(a)(1)(G)(I), (g)(2)(C), (k)(1)(B)]

Operator Certification

Ensuring the knowledge and skills of PWS operators is widely considered one of the most important, cost-effective means to strengthen drinking water safety. To that end, the Amendments require all States to carry out an operator certification program. Each State must either:

1. Implement a program that meets the guidelines established by EPA; or
2. Enforce an existing State program, provided it is substantially equivalent to or meets the overall public health objectives of EPA's guidelines.

States are allowed to use a set-aside from the DWSRF to carry out their operator certification program. EPA is required to withhold 20 percent of DWSRF funds that States would otherwise be eligible to receive if they fail to meet the requirements of this provision of the SDWA.

This program does not require that every water system operator be certified. Rather, the objective of the program is to ensure every water system has (directly, under contract, or in conjunction with other systems) an operator to perform certain key compliance functions, and who is trained and

certified to the level that each State determines is appropriate for the functions, facilities and operations of that system.

Source Water Protection

In August of 1997, EPA published the *State Source Water Assessment and Protection Programs Guidance* (EPA 816-R-97-009). Within 18 months thereafter, States were required to submit programs for delineating source water areas of PWSs, and for assessing the susceptibility of these source waters to contamination. States could set aside up to 10 percent of their FY 1997 DWSRF allotment for use in delineating and assessing source water protection areas (funds set aside in FY 1997 can be used through FY 2000). Assessment programs may also use data from other, related watershed-type survey activities, which will encourage the efficient use of funds and coordination among the varied programs designed to gather and analyze water resource-oriented data. Results of completed source water assessments must be made available to the public. These assessments can provide a sound scientific science base for State monitoring programs. [§1452(k)(1)(C)]

The source water assessment results will also provide the information necessary for water systems to seek help from States in protecting source water or initiating local government efforts. States may use set-asides to protect source water if they choose to adopt source water "petition" programs, under which they may use non-SDWA federal funds according to current eligibilities. These funds may be used to fund the following particular elements of a source water protection program (SWPP):

1. To voluntarily reduce existing contamination;

2. To develop or continue other types of SWPP, which can focus on preventing contamination; or

3. For loans for certain source water protection activities.

EPA must write guidance on State source water partnership programs, including a description of available technical and financial aid, not later than one year after the enactment of the section on August 6, 1997. [§§1452(g)(2)(B), 1452(k)(1)(A), 1454(d)(1)(A)]

Part 2

Capacity Development Overview

Section 2

Capacity Development and SDWA

1. New Approach to Implementation

As outlined in the previous section, the SDWA Amendments of 1996 created many new initiatives that are tightly interlinked. These include the DWSRF, operator certification, source water protection, variances and exemptions, and capacity development programs. The Amendments were purposefully designed to be flexible so that States and local governments could develop appropriate solutions to their unique problems. Complementing this flexibility is a strong emphasis on public awareness and involvement.

> SDWA offers states flexibility and the opportunity to develop creative, state-specific solutions to achieve technical, managerial, and financial capacity.

2. New Implementation Ethic

Capacity development provides flexibility to States while ensuring accountability to the provisions of the SDWA. The process of establishing State capacity development programs should be open and transparent. EPA's contribution to capacity development programs consists of guidance and information documents, rather than regulation. EPA expects and encourages diversity in State programs. There are many acceptable approaches to meeting the minimal requirements outlined in the SDWA.

3. Legislative History of Small System Protection

Since crafting the SDWA in the early 1970's, Congress has recognized the unique challenges that face small drinking water systems. The original Act, and the major Amendments in 1986, focused on developing and implementing a strong regulatory program based on monitoring and treatment. The general sentiment was that, in the face of a strong regulatory program, systems would make the changes necessary to comply. The Act authorized training and technical assistance to help systems, and provided exemptions for systems that faced compelling economic circumstances. These exemptions could be extended for very small systems.

By the late 1980's and early 1990's it was clear that small systems were having great difficulty keeping up with the rapidly expanding SDWA-mandated regulations. A few States were implementing "viability" initiatives, which sought to promote small system compliance by ensuring that systems had the necessary underlying technical, managerial, and financial wherewithal. These programs showed great promise, and the concept of "small system viability" emerged as a major consideration in the early discussion about SDWA reauthorization.

As the debate on SDWA reauthorization progressed, however, it became clear that the term "viability" had at least two significant shortcomings. First, it promoted an unproductive focus on classifying systems as "viable" or "nonviable." Second, it implied a static endpoint. The debate was really about finding a way to create a process through which systems could enhance their technical, managerial, and financial capacity to ensure consistent compliance with the SDWA. Thus the concept became known as "Capacity Development." Capacity development implies a process, not a static endpoint, and does not promote a focus on rigidly classifying systems as "having it" or "not having it."

Exhibit 2-1 presents a brief outline of the historical development of drinking water protection resulting in the passage of the capacity development provisions in the 1996 SDWA Amendments.

Exhibit 2-1: The History of Drinking Water Protection and Capacity Development

Early 1900s: Concern over typhoid and other disease outbreaks leads to growing concern about drinking water-related health threats. Results in the creation of State public health programs to protect public water supplies, with efforts focused on identifying and limiting sources of surface water contamination.

Early to Mid-1900s: Throughout the early 20th Century, the United States Public Health Service (PHS) establishes bacterial standards for drinking water, which PHS revises mid-century to include a variety of chemical constituents and bacteriological indicators. Thus, water quality concerns began to extend beyond waterborne disease by addressing potential toxicological and carcinogenic effects attributed to long-term ingestion. The concept of a "multiple barriers" approach is introduced.

Mid 1900s: Ever advancing science, technology, and industrialization lead to concerns about water contamination resulting from pesticides, fertilizers, VOCs, and SOCs.

1940s: The PHS begins to focus on ground water protection and chemical pollution prevention. The Indian Health Service is created.

1948: The Water Pollution Control Act funds research support for States.

1956: The Federal Water Pollution Control Act initiates the Construction Grants Program to finance construction of POTWs.

1965: The Water Quality Act requires States to review, establish, and revise water quality standards. These early federal programs (including the Water Pollution Control Act and the Federal Water Pollution Control Act) have no federal enforcement authority and limited effectiveness.

Late 1960s-Early 1970s: Several water quality surveys are conducted, revealing widespread contamination of drinking water on a national scale (particularly with SOCs). Contamination is revealed to be especially alarming in large cities.

1970: The Environmental Protection Agency (EPA) is created, assuming control of drinking water regulation from the PHS and water pollution control from the Federal Water Pollution Control Agency.

1974: Congress passes the SDWA as a result of water quality and public health concerns. The purpose of SDWA is to establish national enforceable standards for drinking water quality and to guarantee that water suppliers monitor water to ensure compliance with standards. The SDWA mandates that EPA identify substances in drinking water that negatively affect public health. The SDWA restructures drinking water programs by:

1) Moving primary responsibility from established State programs to a newly formed federal program called the Public Water System Supervision Program (PWSS).

2) Shifting focus from water system planning and prevention to standards, monitoring, and enforcement.

The SDWA also establishes the Underground Injection Control Program (UIC), outlines the requirements for State programs to obtain "primacy," and sets standards for POTWs and industrial facilities discharging into surface waters.

1977: The national interim primary drinking water regulations are established.

1979: The national interim primary drinking water regulations are supplemented with regulations pertaining to chlorination byproducts called trihalomethanes (THM). In the next few years, further research leads to the augmentation of the toxicological and carcinogenic database.

1986: SDWA amended. The 1986 Amendments mandate the regulation of microbiological constituents, inorganic and organic compounds, and radioactivity. The idea of system viability also emerges as one of the objectives of federal policy, prompting many States to begin implementing programs that promote this goal. At the beginning of the SDWA reauthorization process, EPA continues to emphasize the importance of system viability for all water systems. Pressure increases on State programs, many of which are already under-funded and under-staffed.

EPA initiates the Ground Water Protection Program (GWPP) to develop initiatives for protecting ground water resources. EPA's GWPP includes the Wellhead Protection Program and the Sole-Source Aquifer Protection Program.

1996: SDWA amended. The 1996 Amendments address funding needs for PWSS infrastructure and State program management with the creation of the Drinking Water State Revolving Fund (DWSRF). Improvements are made to limit burdensome regulatory requirements and emphasis is placed on new and stronger prevention approaches and improved public information and involvement. The 1996 Amendments require the development of Operator Certification programs, the Source Water Protection Program, and the creation of the Contaminant Candidate List (CCL) and the Unregulated Contaminant Monitoring Regulation (UCMR).

The system viability effort is brought to the forefront and evolves into the current capacity development initiative due to the 1996 Amendments' emphasis on water system management. Section 1420 requires EPA to withhold 20% of the State DWSRF capitalization grant for those States that do not develop the means to prevent the formation of new water systems without adequate capacity and those that do not develop a strategy to address existing drinking water systems. Please see Section 3, Exhibit 3-2, for an illustration of the interdependence of the three capacity development components.

4. The Objectives and Flexibility of Capacity Development

Congress established the goals of the capacity development program in 1996 with the following statutory requirements:

- "[States must] ensure that all new CWSs and NTNCWSs demonstrate technical, managerial, and financial capacity for each NPDWR"; [§1420(a)]

- "[States must] develop and implement a strategy to assist PWSs in acquiring and maintaining technical, managerial, and financial capacity"; [§1420(c)]

- "No assistance shall be provided to a PWS that does not have the technical, managerial, and financial capability to ensure compliance with requirements of this title [SDWA]"; and [§1452(a)(3)(A)(i)]

- "No assistance shall be provided to a PWS that is in significant noncompliance with the requirements of this title [SDWA]." [§1452(a)(3)(A)(ii)]

Flexibility

Congress provided States with the flexibility to devise their own means to meet the 1996 requirements. States have tremendous discretion on how to achieve the required outcomes. The statutory language describing a State's implementation effort are as follows:

- "[The State must have the] legal authority or other means to ensure that [new] systems demonstrate technical, managerial, and financial capacity"; [§1420(a)]

- "[The State must be] developing and implementing a strategy to assist public water systems in acquiring and maintaining technical, managerial, and financial capacity";

- "In preparing the capacity development strategy, the State shall consider, solicit public comment on, and include as appropriate [five potential programmatic elements]"; [§1420(c)(2)]

- "The States shall develop a program to evaluate each system to be funded to ensure it has adequate capacity";

- "... each State shall prepare, periodically update, and submit to the Administrator a list of community water systems and nontransient, noncommunity water systems that have a history of significant noncompliance with this title [SDWA] ..."; [§1420(b)(1)]

- "... each State shall report to the Administrator on the success of enforcement mechanisms and initial capacity development efforts in assisting the public water systems listed [as systems with a history of significant noncompliance by August 6, 2001]"; [§1420(b)(2)]

- "... the head of the State agency that has primary responsibility to carry out this title [SDWA] in the State shall submit to the Governor a report that shall be available to the public on the efficacy of the [capacity development] strategy and progress made toward improving the technical, financial, and managerial capacity of public water systems in the State [by August 6, 1998]" [§1420(c)(3)]; and

- "In promulgating a national primary drinking water regulation, the Administrator shall include an analysis of the likely effect of compliance with the regulation on the technical, financial, and managerial capacity of public water systems." [§1420(d)(3)]

5. EPA Accountability

Despite the flexibility States enjoy in developing and implementing their capacity development program, they must ensure that the basic requirements are met and that public health is protected. If States fail to meet their capacity development responsibilities, then:

- "Beginning in fiscal year 1999, the Administrator shall withhold 20 percent of each capitalization grant ... unless the State has met the requirements of section 1420(a) ..." [§1452(a)(1)(G)(i)] Section 1420(a) requires States to obtain "the legal authority or other means to ensure that all new community water systems and new nontransient, noncommunity water systems ... demonstrate technical, managerial, and financial capacity."

- The Administrator "shall withhold 10 percent for fiscal year 2001, 15 percent for fiscal year 2002, and 20 percent for fiscal year 2003 if the State has not complied with the provisions of §1420(c)." [§1452(a)(1)(G)(i)] Section 1420(c) requires each State to develop and implement a capacity development program for existing systems, to solicit public comment during the development of its program, and to ensure that five potential programmatic elements are considered for inclusion within its capacity development program.

- "In promulgating a national primary drinking water regulation, the Administrator shall include an analysis of the likely effect of compliance with the regulation on the technical, financial, and managerial capacity of public water systems." [§1420(d)(3)]

6. The Importance of Partnerships

Partnerships between federal, State, and local organizations allow diverse perspectives and concerns to be heard in pursuit of the most effective and efficient capacity development programs nationwide. A primary partnership that significantly contributes to EPA's capacity development work is the National Drinking Water Advisory Council (NDWAC). NDWAC was established by the original SDWA as a widely-reaching group of stakeholders to advise the Agency on drinking water issues. To better serve its purpose, NDWAC established a Small Systems Working Group (SSWG), which met on four occasions between February and July, 1997, with the purpose of developing recommendations on how EPA should implement the capacity development provisions of the SDWA Amendments of 1996. The Small Systems Working Group consisted of 22 members representing small public water systems, environmental and public health advocacy groups, State drinking water programs, public utility commissions, and other interest groups. The SSWG recommended to NDWAC, which in turn recommended to EPA, that the Agency publish a combination of guidance and information to facilitate the implementation of the capacity development provisions of the 1996 SDWA Amendments.

Partnerships can serve as valuable tools for States in crafting programs that appropriately address the unique concerns, circumstances, and obstacles found in each. To take full advantage of the opportunity to design capacity development programs that meet the responsibilities and characteristics of each State, capacity development coordinators should develop partnerships in cooperation with some of the following actors:

- Federal agencies
  - *EPA*
  - *USDA*

- State agencies
  - *Health*
  - *Community Development*
  - *Financial Assistance*
  - *Natural Resources*
  - *Public Utilities Commission*
  - *Environment*

- Local governments

- Water suppliers
  - *Privately owned*
  - *Publicly owned*

- Technical assistance organizations
  - *American Water Works Association (AWWA)*

  - *RCAC*
  - *RCAP*
  - *NRWA*
  - *Association of Metropolitan Water Agencies (AMWA)*

- Environmental and public health organizations

- The public — especially water system customers

7. National Drinking Water Advisory Committee Guidances

To aid States in the development of their capacity development programs, EPA published a document developed by the National Drinking Water Advisory Committee (NDWAC), *Guidance on Implementing the Capacity Development Provisions of the Safe Drinking Water Act Amendments of 1996*, that includes three guidances on specific capacity development issues:

- *Guidance on DWSRF Withholding Determinations Related to State Programs for Ensuring that New CWSs and NTNCWSs Demonstrate Technical, Managerial, and Financial Capacity*

- *Guidance on DWSRF Withholding Determinations Related to State Capacity Development Strategies*

- *Guidance on Assessment of Capacity for Purposes of Awarding DWSRF Assistance*

8. National Drinking Water Advisory Committee Information Documents

EPA also approved another document developed by NDWAC, *Information for States on Implementing the Capacity Development Provisions of the Safe Drinking Water Act, as amended in 1996*, that includes three information pieces on specific capacity development issues:

- *Ensuring that All New Community Water Systems and Nontransient, Noncommunity Water Systems Demonstrate Technical, Managerial, and Financial Capacity*

- *Preparing Capacity Development Strategy*

- *Assessing Capacity*

In addition, EPA published several other information pieces separately, including:

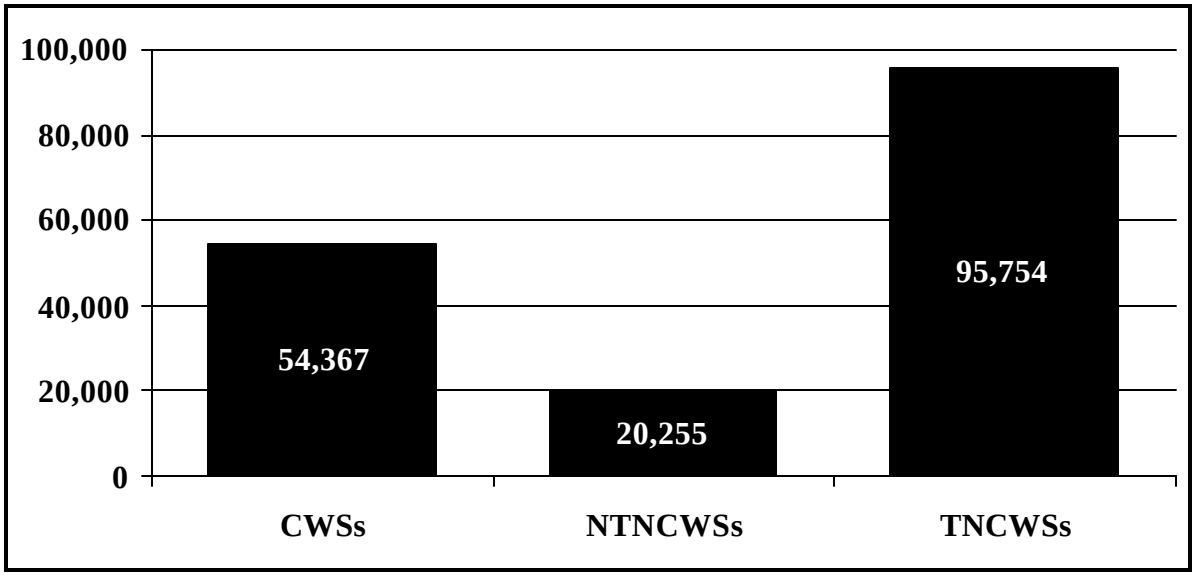
- *Information for States on Developing Affordability Criteria*
- *Information for the Public on Participating with States in the Preparation of Capacity Development Strategies*

Section 3

Public Water System Universe: Small Systems in the United States

According to FY98 data obtained from the Safe Drinking Water Information System (SDWIS) database, there are 170,376 public water systems (PWSs) in operation in the United States. **A PWS is a "system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. A public water system is either a community water system or a noncommunity water system." (40 CFR §141.2)**

Exhibit 3-1: Number of Systems by System Type



Source: SDWIS FY98Q4 Frozen Inventory Table

A community water system (CWS) is "a public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents." (40 CFR §141.2) There are 54,367 CWSs (Exhibit 3-1) serving about 253 million people (Exhibit 3-2). CWSs can be privately owned or publicly owned. A substantial number of privately owned systems are 'ancillary' systems that provide water as an ancillary function of their principal business. Mobile home parks are common examples of ancillary systems.

A noncommunity water system (NCWS) is a PWS that is not a CWS. Noncommunity water systems are divided into nontransient (NTNCWSs) and transient (TNCWSs) systems. **A NTNCWS is a PWS that "regularly serves at least 25 of the same persons over 6 months per year." (40 CFR §141.2)** Examples of NTNCWSs are schools, factories, office and industrial parks, and major shopping centers. The 20,255 NTNCWSs (Exhibit 3-1) across the nation serve about 6 million people (Exhibit 3-2). Many of these systems are privately owned.

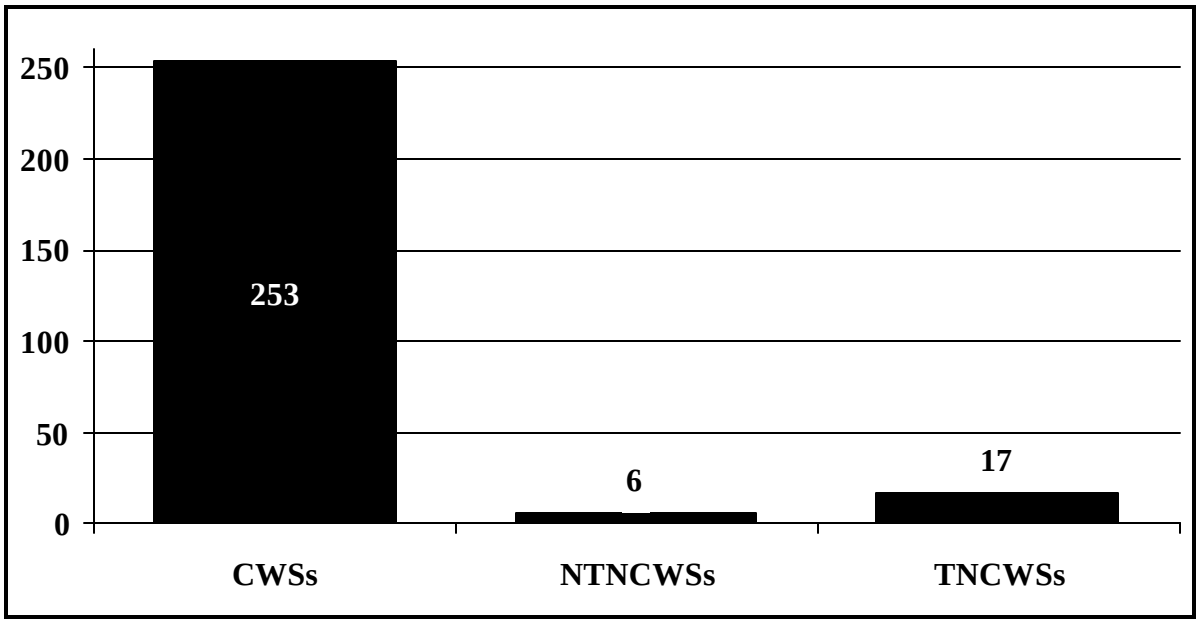


Exhibit 3-2: Number of People Served by System Type (in millions)
Source: SDWIS FY98Q4 Frozen Inventory Table

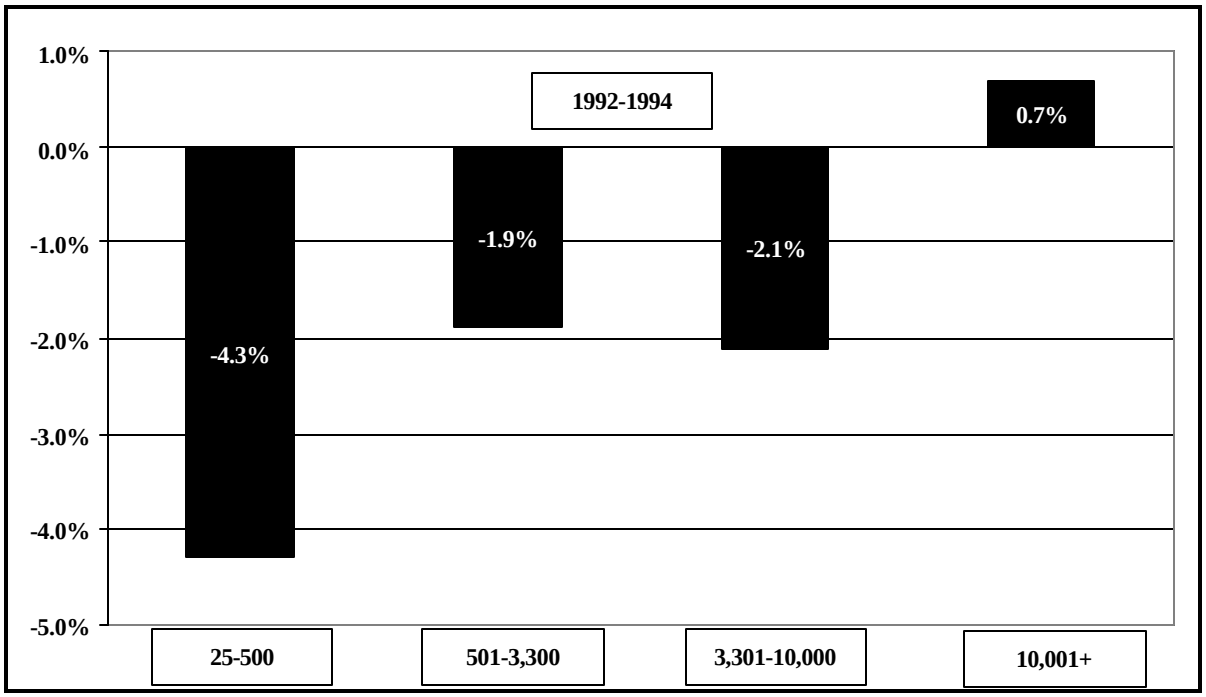
A TNCWS is a PWS that "does not regularly serve at least 25 of the same persons over 6 months per year." (40 CFR §141.2) Examples of TNCWSs are highway rest stops, small restaurants, and recreation areas. The 95,754 TNCWSs (Exhibit 3-1) serve approximately 17 million people (Exhibit 3-2).

Exhibit 3-3 illustrates the net change in the number of systems from 1992-1994. EPA data from the 1994 National Compliance Report (NCR) show that the largest decrease in the number of CWSs by size category is found in systems serving fewer than 500 persons, a decrease of 4.3 percent. Three factors contributed to the overall decline in the number of small systems: interconnection of systems; systems terminating operation; and corrections in the inventory of systems. In contrast to small systems, there was modest growth in larger CWSs, with a 0.7 percent increase in the number of systems serving over 10,000 people between 1992 and 1994. There has been a 3.3 percent overall decline in the number of CWSs nationwide.

This report addresses the characteristics of PWSs in general and CWSs in particular. Approximately 93 percent of CWSs serve fewer than 10,000 persons. Although these systems comprise a significant majority of CWSs, they serve only 20 percent of the total population served by

CWSs. For the purposes of this report, small systems will be defined as those systems serving fewer than 10,000 people. These small systems differ from their larger counterparts in many important aspects. This report highlights the differences between small and large systems in ownership, operating characteristics, financial characteristics, infrastructure needs, and compliance with National Primary Drinking Water Regulations (NPDWRs). Noncommunity systems, which are not included in many of the national surveys that furnish data on water systems, are dealt with separately at the end of this report.

Exhibit 3-3: Percent Change in the Number of CWSs by System Size
Source: 1994 National Compliance Report



Most of the data for this report were drawn from the three sources outlined below:

Community Water System Survey

EPA conducted the *1995 Community Water System Survey* to provide data necessary for the development and evaluation of drinking water regulations. The survey was completed in two phases. Phase one involved a preliminary survey and instrument sampling plan, which was followed by a pretest of nine water systems. Computer-assisted telephone interviews were then conducted to determine system eligibility and appropriate respondents for the pilot test and mail questionnaire. The second phase of the survey was a mailing of 3,700 questionnaires. Water systems were asked to respond to questions concerning operating and financial characteristics, including questions regarding source, treatment, distribution, operator certification, revenues, and expenses. Approximately 54 percent of eligible participants completed the questionnaire.

Drinking Water Infrastructure Needs Survey

EPA's Drinking Water Infrastructure Needs Survey was conducted in 1995 to document the infrastructure needs of the nation's CWSs for the 20-year period from January 1995 through December 2014. Infrastructure needs were grouped into four categories: source, treatment, storage, and transmission and distribution.

Systems were divided into three size classifications: large (serving more than 50,000 people), medium (serving 3,301-50,000 people), and small (serving fewer than 3,300). All large CWSs received mailed questionnaires. Infrastructure needs for medium and small CWSs were estimated using statistical surveys. To identify needs of medium systems, a portion of the medium sized systems were surveyed by mailed questionnaire. To determine the needs of the small drinking water systems, EPA staff and contractors conducted site visits. Needs of the sampled systems were extrapolated to estimate total need for medium and small systems. The most common documentation of CWS needs was found in captial improvement plans and engineering reports.

Safe Drinking Water Information System (FY98 data)

The Safe Drinking Water Information System (SDWIS), maintained by EPA, is a database containing information on public water systems throughout the United States. It contains a variety of historical and current data on compliance, enforcement, and water system inventory—required and non-required information. Each State uploads information individually. Data can be accessed by the public through the World Wide Web.

Most of the SDWIS data in this report was drawn in November 1998. Limited data came from the 1994 *National Compliance Report* and FRDS, the precursor to the SDWIS database.

For more information on the characteristics of small systems, please refer to *Small Water System Characteristics* (EPA 816-D-99-002). The paper is available on EPA's website at www.epa.gov.

General Conclusions

The report addresses questions raised by the National Drinking Water Advisory Council's Small Systems Working Group concerning the characteristics of small drinking water systems in the United States. The data in the report were drawn primarily from three sources: the 1995 *Community Water System Survey*, the 1995 *Drinking Water Infrastructure Needs Survey*, and FY98 data from the *Safe Drinking Water Information System* (SDWIS).

Findings

Principle conclusions are summarized below:

Inventory

- There are 54,367 community water systems (CWSs), serving about 253 million people. Approximately 93 percent of CWSs are small systems serving fewer than 10,000 persons. Although these small systems comprise the significant majority of CWSs, they serve just 20 percent of the population served by CWSs.

- There are 20,255 nontransient, noncommunity water systems (NTNCWSs), serving about 6 million people.

- There are 95,754 transient, noncommunity water systems (TNCWSs), serving approximately 17 million people.

Ownership Characteristics

- Ownership type and system size are related. Most systems serving 500 or fewer people are ancillary or privately owned systems, while most larger systems are publicly owned.

Operating Characteristics

- The smallest systems (systems serving under 501 persons) appear to have experienced little growth in service population between 1990 and 1994. The only evident growth was found in the number of systems serving 101 to 500 persons, which increased by only 2.5 percent in median connections for this period.

- The largest growth in service population among small systems was found in those serving 3,301-10,000 persons. Between 1990 and 1994, systems in this size category experienced a 10 percent increase in the number of connections and an 11.1 percent increase in customers.

- A system's water source is a key factor in determining operating characteristics, and source corresponds closely to system size. Larger systems are more likely to use surface water or purchased water as their primary source, whereas most small systems use ground water.

- Production per connection increases steadily as system size increases. This increase in production per connection is likely indicative of the differences between the customer bases of larger and smaller systems. Large systems tend to have a higher percentage of industrial, commercial, and agricultural customers, whereas small systems serve primarily residential customers, who, as a group, generally use less water.

- Publicly owned systems serving less than 500 persons generally receive more technical assistance than privately owned or ancillary systems of the same size.

- Through source water protection and wellhead protection programs, water systems can improve the quality of their water, decrease the likelihood of waterborne disease outbreaks, and reduce the need for future capital expenditures for treatment facilities and equipment. The importance of source water protection is highlighted by the finding that 93 percent of groundwater systems serving 1,001-3,300 persons and 83 percent of those serving less than 1,001 persons have a potential source of contamination within 2 miles of their well(s).

Financial Characteristics

- More than 50 percent of systems serving 25 to 100 persons do not keep separate income and expense statements. This may be attributed to the large number of systems in this size category that are ancillary systems and, therefore, do not provide water as their primary business. Ancillary systems typically do not record water-related expenses separately.

- Water systems' total water revenues are generated from water sales, fees, fines, and general fund revenues. Systems can also generate revenues from other non-consumption based charges such as interest earnings. Ancillary systems usually do not generate water sales or water-related revenue. Rather, revenue is generated by the principal business of the system of which the provision of water is merely an ancillary function. Water rates are the primary mechanism through which customers are charged for service and the main vehicle through which non-ancillary systems generate revenue.

- Median total water revenue per connection for the smallest CWSs (serving 25-100 persons) is $0, indicating that at least half of the smallest systems do not charge for water through rates or fees.

- Revenues per connection across all revenue categories are higher for surface water systems, perhaps reflecting the greater technical complexity generally associated with surface water sources.

- Unmetered systems tend to be very small systems; only 37 percent percent of all connections served by systems serving 25-100 persons are metered.

- For systems serving fewer than 10,001 persons, median expenditures per connection increase as system size increases for all ownership types.

Infrastructure

- Small systems have more than 3 times the per-household need of large systems. The small systems need is $3,300 per household until the year 2015. Transmission and distribution is the largest category of need cited by small systems.

- Over 60 percent of small systems also report need in source development, often because their sources are threatened by contamination or supply problems.

Compliance and Violations

- Systems serving 25-500 persons have many more violations per 1,000 people than do any other size category of systems. This is true for CWSs, NTNCWSs, and TNCWSs. Of particular note are MCL violations which, like other types of violations, decrease in frequency with system size. For every one million customers of CWSs serving 500 or fewer people, there are approximately 800 MCL violations and 7,164 total violations. In contrast, for systems serving over 10,000 persons, there is approximately 2 MCL violations and 10 total violations per one million customers.

Noncommunity Water Systems

- NOTE: The Community Water System Survey (CWSS) provided a unique opportunity to review data for a variety of system sizes and ownership types. No similar survey exists for noncommunity water systems (NCWS). Therefore, because SDWIS is the primary source of information on these systems, analysis is limited to information contained in that database, which is largely inventory and compliance data available from SDWIS.

- Over 97 percent of NTNCWSs serve fewer than 3,301 people and most NTNCWSs have large service populations per connection.

- TNCWSs serving 3,300 or fewer persons account for over 99 percent of violations committed by TNCWSs. Of these violations, almost 97 percent were committed by systems serving fewer than 501 persons. Most of these violations were monitoring and reporting.

Part 3

Implementing a State Program

Section 4

Worksheet #1: Program for Ensuring that All New Community Water Systems and Nontransient, Noncommunity Water Systems Have Technical, Managerial, and Financial Capacity

State Reviewed: _____

Date Completed: _____

Reviewer: _____

General Comments: _____

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Regions

- Use this sheet to guide your review of proposed state programs for new system capacity.

- The questions contained within this packet focus on program functionality.

In order to avoid a 20 percent State Revolving Fund (DWSRF) withholding, States must ensure that all new community water systems (CWSs) and all new nontransient, noncommunity water systems (NTNCWSs) commencing operation after October 1, 1999, demonstrate technical, managerial, and financial capacity.

States

- Use this sheet to help guide your description of your capacity development program for new systems.

- This sheet may help you in developing your capacity development program for new systems.

- The questions contained within this packet focus on program functionality and ensure that the requirements of the statute and guidance are met.

In order to avoid a 20 percent State Revolving Fund (DWSRF) withholding, States must ensure that all new community water systems (CWSs) and all new nontransient, noncommunity water systems (NTNCWSs) commencing operation after October 1, 1999, demonstrate technical, managerial, and financial capacity.

Fully Functional Program

The Big Picture

1. How does the State's proposed program ensure that new systems commencing operations after October 1, 1999 demonstrate technical, managerial, and financial capacity?

The Details

2. How are various authorities and control points coordinated within a State agency, between agencies, or between various levels of government to ensure that all three aspects of capacity are reviewed and verified before a new CWS or new NTNCWS is approved to commence operations?

Basis of Authority

1. Describe the State's regulations, policies, or other implementing authorities.

2. Identify the State or sub-State agencies responsible for implementing the regulations, policies, or other authorities.

3. What is the statutory basis for these regulations, policies, or other implementing authorities?

4. Describe the collaborative arrangements (if any) among the various agencies responsible for implementing these regulations, policies, or other authorities. Identify the means (such as memoranda of understanding) used to document the collaborative arrangements among agencies.

Control Points

1. Describe each control point outlined in the State program and identify the agency responsible for implementing that control point. Make special note of the control point(s) that permit the State to directly exercise its authority to ensure the demonstration of capacity in new CWSs and NTNCWSs.

2. Describe the aspect(s) of capacity (technical, managerial, or financial) evaluated at each of the control points listed above. Ensure that all aspects of capacity are evaluated.

3. At each of the control points listed above, what specific action will the State or sub-State agency take to ensure demonstration of technical, managerial, and financial capacity?

Plan for Implementation and Periodic Review

1. How does the State's implementation plan ensure that systems commencing operations after October 1, 1999 demonstrate technical, managerial, and financial capacity?

2. How will the State evaluate the implementation and on-going effectiveness of its new system capacity development program.

Section 5

Worksheet #2: Assessing Proposed State Capacity Development Strategies for Existing Public Water Systems

State Reviewed: _____

Date Completed: _____

Reviewer: _____

General Comments: _____

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Suggestions for Regions

- Use this sheet to guide your review of proposed State strategies for ensuring capacity in public water systems (PWSs).

- The questions are designed to assist you in evaluating proposed State strategies for the purpose of making Drinking Water State Revolving Fund (DWSRF) withholding decisions.

- This is not a checklist. However, using the following questions, you should be able to assess State compliance with the Capacity Development provisions of §1420 of the Safe Drinking Water Act (SDWA), as amended in 1996.

In order to avoid a 10 percent DWSRF withholding in 2001, a 15 percent withholding in 2002, and a 20 percent withholding in subsequent FYs, States must develop and implement a strategy to assist PWSs in the acquisition and maintenance of technical, managerial, and financial capacity**.**

Suggestions for States

- Use this sheet to help guide your description of your capacity development strategy for existing public water systems (PWSs).

- This sheet may help you in developing your capacity development strategy for existing PWSs.

- The questions contained within this worksheet will help you to ensure that the requirements detailed in both §1420 of the Safe Drinking Water Act (SDWA), as amended in 1996, and the associated guidance are met.

- This is not a checklist. However, using the following questions, you should be able to identify the major strengths and/or weaknesses of your proposed capacity development strategy.

In order to avoid a 10 percent DWSRF withholding in 2001, a 15 percent withholding in 2002, and a 20 percent withholding in subsequent FYs, States must develop and implement a strategy to assist PWSs in the acquisition and maintenance of technical, managerial, and financial capacity.

Solicitation and Consideration of Public Comments

1. Describe how the State, in preparing its capacity development strategy, solicited public comment on the program elements listed in §1420(c)(2)(A-E) of the SDWA, as amended in 1996.

2. Describe how the State considered public comment on the program elements.

Program Elements

1. Describe how the State considered the appropriateness of each program element listed in §1420(c)(2)(A-E) in deciding whether or not to include the element in its capacity development strategy.

Strategy

1. Describe the basis on which the State believes that the program elements it has chosen, when taken as a whole, constitute a strategy that is likely to assist PWSs in the acquisition and maintenance of technical, managerial, and financial capacity.

Implementation

1. Describe the State's current implementation efforts for its capacity development strategy.

2. Describe the State's future plans for strategy implementation.

Future Considerations

1. Listing of systems in significant noncompliance (§1420(b)(1)).
   — States must prepare, update, and submit to the EPA Administrator a list of CWSs and NTNCWSs that have a history of significant noncompliance. States must also, to the extent practicable, provide reasons for the noncompliance of these systems.

   Note: A system is considered to be in significant noncompliance if it has violated one or more National Primary Drinking Water Regulations (NPDWRs) in any three quarters within the last three years.

2. Report to the EPA Administrator (§1420(b)(2)).
   — States must submit a report to the EPA Administrator by August 6, 2001, that details the success of enforcement mechanisms and initial capacity development efforts in helping those PWSs listed as having a history of significant noncompliance to improve their technical, managerial, and financial capacity.

3. Report to the State Governor (§1420(c)(3)).
   — No later than two years after a State develops a capacity development strategy, and every three years thereafter, each State's primacy agency must submit a report to the State's Governor and to the public that details the efficacy of the State's capacity development strategy and that outlines the progress made towards improving the technical, managerial, and financial capacity of PWSs in the State.

Note: EPA encourages States to include the methodology they plan to use to assess the efficacy of their capacity development strategy as part of their strategy. The inclusion of assessment methodology is not mandatory and will not be a basis for withholding DWSRF funding in FY 2001. However, failure to provide the required reports in subsequent years will serve as a basis for withholding.

Section 6

Ensuring New System Capacity

The previous section described the large, diverse universe of water systems in the United States. The 1996 SDWA Amendments made ensuring the capacity of all new water systems a priority so that as the universe of water systems grows, the number of water systems without the capacity to provide safe drinking water will not. This section provides an overview of State authorities and reviews special issues that may arise when dealing with proposed NTNCWSs.

> Ensuring new system capacity—a crucial component of capacity development—requires a well-structured legal framework and the cooperation of many governmental entities. Several proactive steps can be taken to streamline this process and enhance the authority held by states over new system creation.

At the time of publication, EPA has approved seven State programs to ensure that all new CWSs and new NTNCWSs demonstrate capacity prior to the commencement of operation. These programs provide useful examples of how States are successfully implementing the SDWA new system program requirement. Most States are well on their way to completing and submitting their programs for final approval. The following summaries may provide ideas or offer insight and direction to those putting the final touches on their programs.

1. Statutory and Regulatory Authority

In accordance with Section 1420(a) of the 1996 Amendments to the SDWA, States will receive only 80 percent of their Drinking Water State Revolving Fund allotment unless they obtain the legal authority or other means to ensure that all new CWSs and new NTNCWSs commencing operation after October 1, 1999, demonstrate the technical, managerial, and financial (TMF) capacity to comply with each national primary drinking water regulation in effect or likely to be in effect. Congress provided States with significant flexibility in meeting this requirement. Some States have enacted broad statutory authority (e.g., "Department of Environmental Quality is empowered to create or repeal any rules necessary to implement the SDWA") and then relied on the implementing agency to develop a mechanism of rules and policies by which new system capacity is ensured. Some States have enacted explicit statutory language that describes in more detail the new water system capacity development program and then developed implementing regulations based on the specific statutory language. EPA's *Guidance on Implementing the Capacity Development Provisions of the Safe Drinking Water Act Amendments of 1996* (*Guidance*) encourages diverse paths to implementation, as long as a State implements a program that ensures that all new CWSs and NTNCWSs demonstrate capacity prior to commencing operation.

States must document the actual implementing authority and underlying statutory authority to ensure the demonstration of new system capacity. This authority could include State laws, regulations, policies, or other effective and demonstrable means. The following are some examples of the statutory and regulatory authorities enacted in States with approved new system capacity program.

Connecticut's General Statutes give the Department of Public Health (DPH) jurisdiction over source water adequacy, delegate to DPH the authority to develop guidelines for technical and cost criteria of water supply plans (CGS §25-32), and the authority to approve plans and specifications of any construction, expansion, or addition of new water sources (CGS §25-33b). New CWSs and NTNCWSs are required to apply to both DPH and the Department of Public Utility Control (DPUC) for a Certificate of Convenience and Necessity (CCN) (CGS §16-262m). New systems are also required to submit proposals for new development to DPUC (CGS §8-25a). State regulations define the provisions for new water system approval (Public Health Code 19-13-B102(d)) and new system requirements for obtaining a CCN State Agencies Regulation 16-262m).

Connecticut's legal authority is relatively simple in that regulatory power is given to two agencies focused on implementing one control point (i.e the CCN), with application requirements outlined in regulation. New York, on the other hand, has a more complicated underlying statutory authority involving four different agencies regulating a new system capacity program. New York's Department of Health (DOH) has the authority to ensure TMF capacity for new CWSs through a review of plans and specifications and an engineering report depending on system size (Public Health Law §225). The Public Service Commission (PSC) has the authority to ensure TMF for PWSs through oversight of rates, service, record keeping, and water quality (Public Service Law §§89-e(2), 89-b(1). Town Law §§54, 194(6), 209-f(1), 209-q(13) and County Law §§258, 274 give the Office of the State Comptroller (OSC) authority to ensure financial capacity of PWSs through the (dis)approval of the establishment or extension of town and county water districts and systems. Finally, the Department of Environmental Conservation (DEC) is given the authority (in Environmental Conservation Law (§§15-1501, 1503)) to ensure TM capacity (excluding mobile home parks) through a water supply permit review.

New York Codes Rules and Regulations (NYCRR) outline operator certification and the plans and specifications review processes (10 NYCRR §5-1.22 and subpart 5-4). 6 NYCRR Part 601 outlines the technical and managerial criteria a system will have to meet to receive a water supply permit from DEC. 16 NYCRR Part 542-545 requires private systems to undergo rate reviews with the PSC and 2 NYCRR Part 85 requires the OSC to determine, under certain financial circumstances, whether the cost of the new system will be an undue burden on the properties that will bear the cost.

Control Points

The authorities described in the previous section, and the authorities of other State programs, will be exerted at certain control points. A control point is a point in a new system's development at which time the State can exercise its authority to ensure that a new system has adequate TMF capacity. By using these control points, the appropriate regulatory authority has the ability to ensure that creating a new water system is the most appropriate alternative for providing water service and that a system commencing operation after October 1, 1999, will have adequate TMF capacity both at start-up and for the future. EPA requires States to identify at least one control point to meet the requirements of SDWA. The following are some examples of control points implemented by States during their review of a new water system.

Washington State has twelve different actions that can be taken to ensure TFM capacity, providing comprehensive control to new systems during a variety of development phases. (See box at the end of this Section). To prevent the creation of small, potentially unviable systems, all new systems must be owned or managed and operated by an approved Satellite Management Agency (SMA). If an SMA is not available, the system's approval is conditioned upon the periodic review of the system's operational history. The review is used to determine the system's ability to meet the Department of Health's (DOH) capacity requirements. Other DOH control points include such actions as obtaining an operating permit, approval of water system plans, and operator certification. In addition, Washington has control points specifically designed to halt illegal construction. The DOH can issue a departmental order to stop work if it determines that a system is being created without necessary approvals (i.e. of project reports and construction documents prior to construction).

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South Dakota's implementation, on the other hand, focuses on one primary control point—the Certificate of Approval (CA). The process of obtaining a CA spans the entire development of the system, ending with a notice of completion, which certifies that the system was constructed according to the approved plans and specifications. Through this one vehicle, the Department of Environment and Natural Resources (DENR) is able to collect a variety of system information including documentation necessary for permits and assurances. To obtain a CA, systems must submit several documents to the DENR for a full capacity review. These documents include a New Water System Application (which should contain documentation of water right permits), business plans, plans and specifications, O&M manuals (must be completed by licensed

South Dakota passed capacity assurance legislation in February 1998. The statute gives the secretary of the DENR the authority to establish procedures where a supplier of water must demonstrate that a new system intended to be a PWS has the TMF capacity to achieve and maintain compliance with all relevant local, State, and federal requirements. The statute also gives the secretary the authority to promulgate rules establishing procedures for DENR to issue certificates of approval to new water suppliers once a TMF capacity review is completed. The rules specify that a new system intended to be a PWS, after October 1, 1999, may not operate until it has been issued a certificate of approval (CA).

Professional Engineers), a construction schedule, and finally, a notice of completion signed by the engineer who designed the system. In addition, banks assessing the financial capacity of State Revolving Fund applicants will not make loans to new water systems unless a CA has been issued.

3. Plan for Implementation and Periodic Review

States must demonstrate that they will have a fully functional program in place by October 1, 1999. EPA will annually assess each program to ensure ongoing implementation. States must document that they are requiring each new CWS and new NTNCWS to demonstrate TMF capacity. States can include this documentation in a given year's capitalization grant application or in separate submission to EPA. The following are some examples State Implementation Plans.

Louisiana's implementation plan primarily consists of a schedule for review. The State plans to conduct annual sanitary surveys and reviews of compliance data and business plans. In addition, three year reviews (including a capacity review and a sanitary survey) will be conducted on all CWSs and NTNCWSs. All reviews will be tracked through a database in order to monitor trends in compliance.

Pennsylvania's implementation plan focuses more on guidance materials and computerized monitoring. The State has developed two main documents that will aid in the implementation of its new system capacity program. The business plan evaluation manual will aid DEP in capacity review and assist systems in writing business plans. The document "Development of Benchmark Measures for Viability Assessment" will also serve as an evaluation and monitoring guide. In addition to these evaluation tools, the DEP will use two computerized systems to track compliance and monitor new systems. The Pennsylvania Drinking Water Information System (PADWIS) database will primarily be used to track compliance. Permit applications and business plans for new systems will be monitored with the FIX (Foundation for Information Exchange) tracking system.

South Dakota also uses databases to track compliance rates. The Department of Environment and Natural Resources (DENR) currently maintains a database of PWS information including operator certification, violation data, and other system information. This database will be linked to a new database that will contain capacity review findings, construction inspection findings, source water assessment information, etc. The database will also be designed to ensure that new systems have submitted all required information for issuance of a CA. Queries of the database will allow for the comparison of new system compliance rates with the compliance rates of existing systems. This information will be used to evaluate the success of the program.

Washington State's Authority/Control Points

Washington State's Capacity Development Program lists 12 sources of authority and related control points used to ensure that all new CWSs will have adequate capacity when they commence operations:

1) All new systems must develop and receive approval for Water System Plans before they can commence operations.

2) To prevent the creation of small, potentially unviable systems, all new systems must be owned or managed and operated by an approved Satellite Management Agency (SMA). If an SMA is not available, the system's approval is conditioned upon the periodic review of the system's operational history to determine its ability to meet the Department of Health's (DOH) financial viability and other operating requirements.

3) All systems must obtain an operating permit before that system may be operated.

4) Several Washington statutes require local governments to make written findings regarding provisions for potable water supplies or adequacy of water supply when considering short plan subdivisions or individual building permit applications.

5) All new systems must have certified operators in accordance with federal regulations.

6) New PWSs may not be created inside critical water supply service areas, recognized in an approved Coordinated Water System Plans, unless authorized by DOH.

7) New systems must have approved Water System Plans before project reports and construction documents will be reviewed by DOH.

8) A party seeking to use a new source as a public water supply must first get department approval for that source.

9) Purveyors must receive approval for project reports before they can begin construction. Illegal construction can be stopped (see #11)

10) Purveyors must receive approval for construction documents before construction can begin. Illegal construction can be stopped (see #11).

11) DOH can issue a departmental order to stop work if it determines that a system is being created without the necessary approvals.

12) In accordance with a MOU with the Department of Ecology (the agency responsible for the State's water resource program), a new system applicant must have a water right to withdraw water. Parties requesting water rights for new systems are required to have a current approved WSP.

Section 7

Preparing Capacity Development Strategies

The capacity development provisions of the 1996 SDWA Amendments provide the flexibility and opportunity to address the unique needs and circumstances facing PWSs in different States. While the problems facing small systems may appear daunting, capacity development represents a historic opportunity for States to create a blueprint for the future. In the following discussion we assess available resources and programs with an eye towards creating comprehensive strategies that will enable small systems to achieve and maintain compliance with drinking water regulations.

> Creating effective strategies to assess and enhance existing system capacity offers States a historic opportunity to develop a regulatory blueprint for the future. In this section, we discuss the tools and resources States can use to address the five elements of §1420(c)(2)(A-E). A strong emphasis is placed on creativity, innovation, and the expansion of temporal and spatial frames of reference.

But where should States begin as they start crafting workable, feasible strategies for small systems? The easy answer, of course, is to take it one step (or regulatory element) at a time. The Guidance delineates five elements of a capacity development strategy which the State must consider, solicit public comment on, and include as appropriate. These elements are:

- The methods or criteria used to prioritize systems;
- The factors that encourage or impair capacity development;
- The way the State will use authority and resources of the SDWA;
- The way the State will establish the baseline and measure improvements; and
- The procedures used to identify interested persons.

These elements will be discussed at length in a moment. However, it is important to get into the proper (read: creative) mindset as we approach this process and begin brainstorming solutions that will ideally ensure safe drinking water for all Americans. You have probably heard the expression "thinking outside the box," a phrase describing the process of pushing past the boundaries of conventional thinking with the goal of developing innovative, non-traditional solutions. To create the most effective capacity development strategies, thinking outside of the box may be exactly what States need to do.

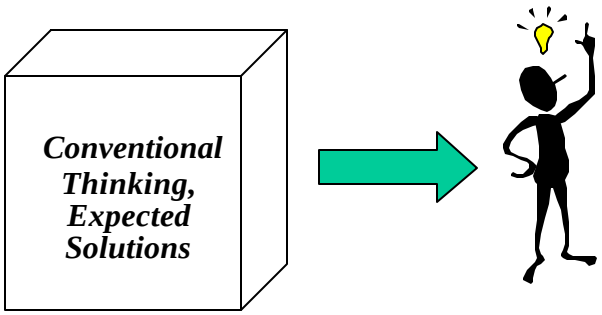
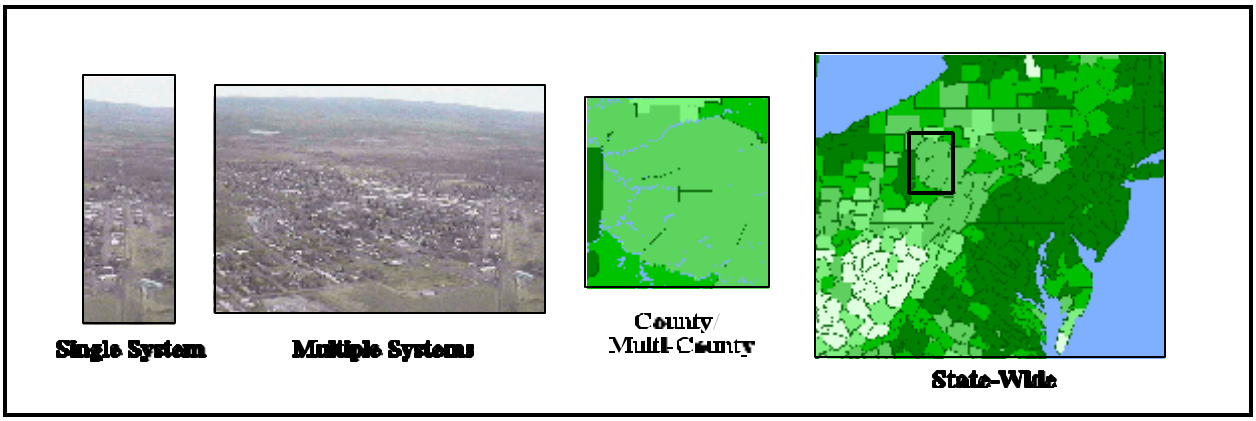


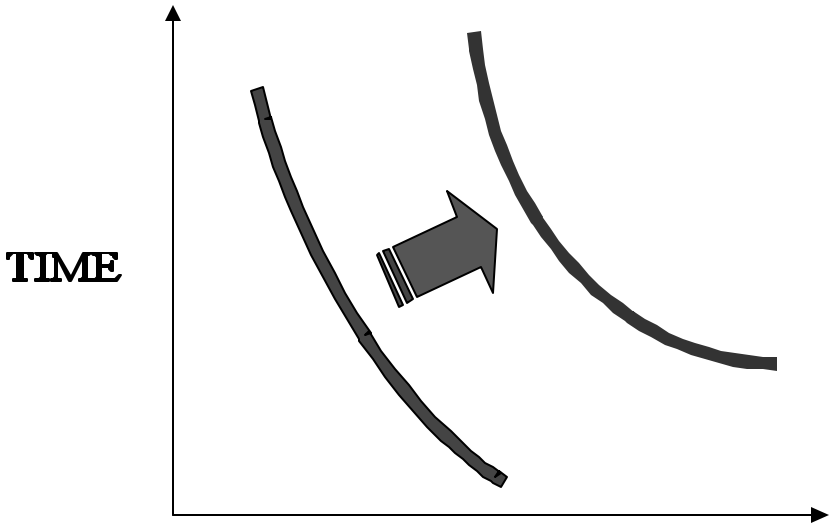
Exhibit 7-1: Solving Small System Problems: Alternative Spatial Boundaries



Two of the most relevant boundaries to capacity development efforts are space and time. Exhibit 7-1 offers a visual depiction of different spatial boundaries that may be considered in pursuit of successful capacity development strategies. While considering the unique characteristics of a single system may lead to the development of a viable, *system-specific* program for achieving capacity, expanding the frame of reference will also increase the number of possible options available to the system. For example, in a multi-system region, a system may be able to consolidate with a neighboring system either physically or managerially. At the county level, regionalized efforts to accomplish water-related goals, such as source protection or operator training, will enhance the system's ability to comply with capacity development requirements. Finally, an economic analysis at the State level may reveal that the system is in a disadvantaged area, making it eligible to receive additional financial support. As the lens widens, so too does the list of possible solutions available to the system.

In addition to space, States may also begin to consider wider expanses of time, looking beyond months and years to the consideration of decades. In doing so, States will be able to tackle short-term problems while simultaneously creating a sound foundation for future capacity development efforts. Exhibit 7-2 depicts what happens graphically when States and systems begin to think "outside the box," extending their thinking beyond traditional boundaries. If the area below the curve represents all possible solutions, one can see that by

Exhibit 7-2: Solution Possibilities Frontier



simply considering greater ranges of space and time when brainstorming, the number of potential solutions increases dramatically.

Thinking "outside the box" has already contributed to policy innovation in capacity development efforts. For example, the capacity development provisions give States the flexibility to create a strategy that assesses system capacity not only at the system level but at the watershed level. By extending beyond the traditional spatial boundary (the individual system) to a larger area of consideration (the watershed), new solutions have become apparent (i.e., creating mentor programs, pooling system resources to achieve economies of scale, creating monitoring partnerships, etc.).

Helping existing systems develop capacity requires States to come up with separate strategies that may use different tools and resources than those required to ensure capacity in new systems. The remainder of this section identifies useful tools and resources that States could use to address the five programmatic elements listed below [§1420(c)(2)(A-E)] and discusses some of the ways in which they can contribute to the success of other parts of a State's drinking water program. When appropriate, this chapter also provides suggestions as to how the tools might be assembled to form a functioning capacity development strategy.

Due to the unique characteristics and circumstances of each State, the tools and strategies employed by States will vary. Therefore, each of the five programmatic elements is discussed individually.

1. Building a Strategy

As noted in the Guidance and in the section entitled "State and Federal Responsibilities," each State must consider, solicit public comment on, and include as appropriate five elements in their capacity development strategies:

B. **Methods or criteria to prioritize systems.** [§1420(c)(2)(A)] These include methods or criteria that could be used to identify and prioritize PWSs most in need of improving technical, managerial, and financial capacity.

C. **Factors that encourage or impair capacity development.** [§1420(c)(2)(B)] These include the "institutional, regulatory, financial, tax, or legal factors" that exist at the Federal, State, or Local level that encourage or impair capacity development.

D. **How the State will use the authority and resources of the SDWA.** [§1420(c)(2)(C)] States should describe how they will use the authority and resources of the SDWA or other means to:

1. Assist PWSs in complying with NPDWRs.

2. Enhance technical, managerial, and financial capacity by encouraging the development of partnerships between PWSs.

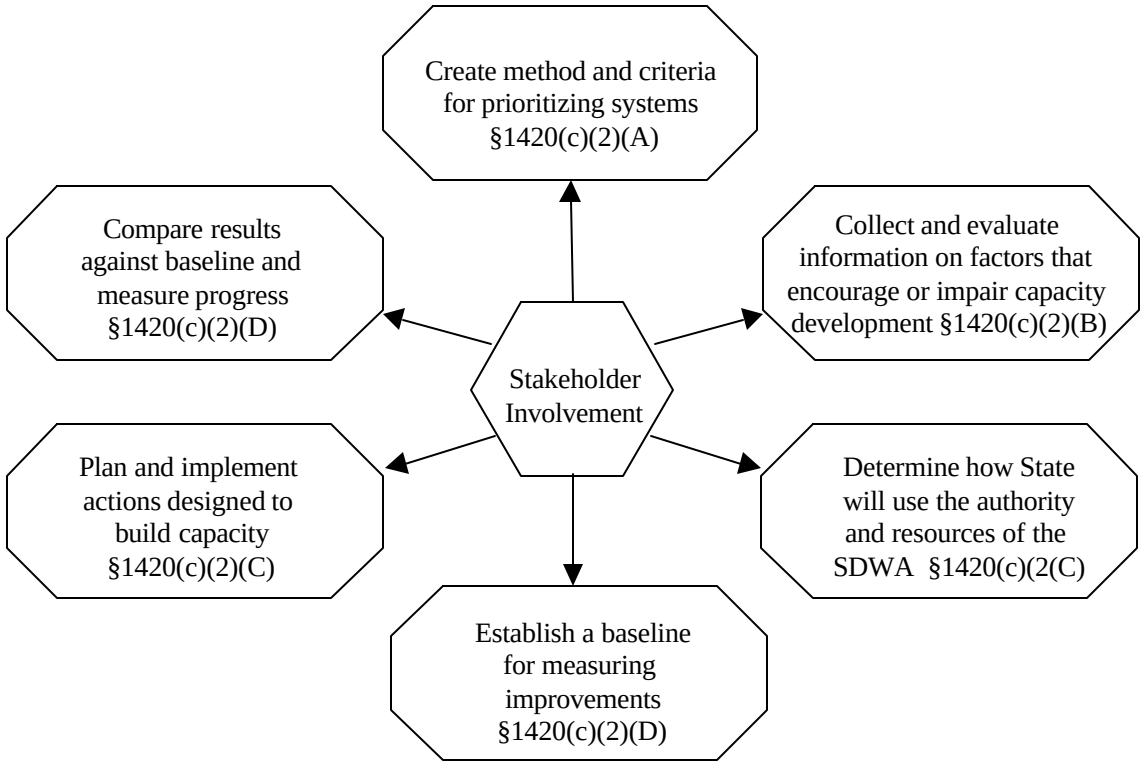
3. Assist PWSs in the training and certification of their operators.

E. **How the State will establish the baseline and measure improvements.** [§1420(c)(2)(D)] States should describe how they will establish a baseline and measure improvements in the capacity of PWSs under their jurisdiction. This potential programmatic element provides the tools that State primacy agencies must have to produce and submit a report to their Governors on the efficacy of their capacity development strategy and progress made toward improving the technical, managerial, and financial capacity of PWSs in their State.

E. **Procedures to identify interested persons.** [§1420(c)(2)(E)] States should identify and involve stakeholders in the creation and implementation of their capacity development strategy.

Exhibit 7-3 illustrates one way that these elements may be integrated to form a comprehensive capacity development strategy.

Exhibit 7-3: Building a Capacity Development Strategy



The order of activities included in the process of building a capacity development strategy can vary from that shown above. The emphasis is not on order, but on whether all five elements have been addressed. Note that the identification and involvement of stakeholders is crucial to each step in the process, from strategy creation to implementation and evaluation.

These strategy elements allow States great flexibility as they seek to build successful capacity development strategies. **Encourage creativity and innovative thinking!**

2. Relationship Between the Elements of a Capacity Development Strategy and the Tools Used to Enable Their Implementation

Although the SDWA requires that a State consider each of the five programmatic elements for inclusion in its capacity development strategy, it does not require the State to use specific tools to implement the selected elements. Each State is unique and must make policy decisions based upon its unique characteristics and circumstances. The SDWA provides States with the flexibility to tailor their strategies to these particulars, which will maximize the opportunity each State has to meet the public health protection goals of the Act. Several tools designed to help States develop capacity development programs and strategies are provided in Exhibits 7-4 through 7-6. For complete descriptions of these tools and several others, please see *Information for States on Implementing the Capacity Development Provisions of the Safe Drinking Water Act, as Amended in 1996.*

Some States will have access to many of the tools described, while others have access to only a few. Further, States may need to apply specific tools differently to make maximum progress toward capacity development goals. Tools will also need to be applied differently according to the *type* of system being considered; a tool that is useful for developing capacity for privately-owned, ancillary systems may not be useful for developing capacity in municipal systems. Each of the five elements that must be considered as part of a State's capacity development strategy are described in more detail below.

Element A: Methods or Criteria to Prioritize Systems

Prioritizing systems will help State's get the most "bang for their buck" as they attempt to determine how funds will be spent to aid existing systems. A variety of methods and criteria can be used to identify and prioritize systems that need to improve their technical, managerial, and financial capacity. In many cases, a combination of tools is most effective in collecting the information needed to prioritize systems. States may consider the following in developing their methods and criteria:

- Do the State's methods or criteria for prioritizing systems permit the consideration of all systems in the State?

- Do the methods or criteria for prioritizing systems provide the State with a ranking scheme?

- Are the methods or criteria for prioritizing systems easy to implement?

- What are the data requirements of the prioritization procedure? Does the State have an existing database, can an existing database be modified, or can a new data system be developed, given available resources?

Washington State has developed systems to identify and prioritize those systems most in need of capacity development. Washington tracks the performance of all systems in terms of their compliance histories, their water system plans, and the financial viability component of their water system plans. Systems are classified according to their compliance and capacity. Systems classified as "green" have adequate capacity and compliance histories; systems coded as "red" have inadequate capacity and/or compliance histories.

Exhibit 7-4 lists tools that States might use in developing their methods or criteria for prioritizing systems. This exhibit is meant to serve only as a starting point—depending upon their unique circumstances, States may be able to take advantage of additional tools to help prioritize systems.

Exhibit 7-4: Tools to Develop Methods or Criteria to Prioritize Systems

Tools	
Annual Financial Reports	Permitting Requirements
Capital Improvement Plans	Sanitary Surveys
Compliance Data	Self-Assessments
Comprehensive Performance Evaluations (CPEs)	Source Water Assessment Programs
Consumer Confidence Reports	State/Federal Surveys of Infrastructure Needs
DWSRF Loan Applications	Statewide Water Quality/Quantity Studies
Operator Certification Programs	WSPs or Business Plans

Element B: Factors That Encourage or Impair Capacity Development

Under §1420(c)(2)(B) of the SDWA, States must consider developing a description of the "institutional, regulatory, financial, tax, or legal factors at the Federal, State, or local level that encourage or impair capacity development." The broad spectrum of factors that might be included in this description may make it quite comprehensive for each State. Factors that impair capacity development efforts within a State might include:

- A State's lack of legal (or regulatory) authority to develop and implement a capacity development strategy.

- Institutional barriers to developing a capacity development strategy.
- Legal and financial issues associated with water rights.
- Insufficient State or local funding to implement a capacity development strategy.
- A lack of reciprocity for operator certification.
- Barriers that preclude systems from obtaining variances or exemptions reasonably.
- State statutes or regulations that hinder consolidation, regionalization, or interconnection.

The 1996 SDWA Amendments streamline the process of applying for variances and exemptions, and provide access to DWSRF resources to help States overcome some of the barriers outlined above.

Factors that encourage capacity development within a State might include:

- Statewide growth-management legislation—encourages capacity development by checking the unrestricted growth of poorly-planned water systems (other Statewide planning statutes have similar beneficial effects).
- Statutes dealing with privatization or procurement—allows systems to contract for operations and maintenance or other services more easily.
- Statutes dealing with mergers and acquisitions—encourages consolidation by allowing rate base adjustments.
- Statutes that require renewable operating permits for water systems, CCNs, or periodic sanitary surveys—encourages capacity development by enabling the State to periodically assess capacity.
- Technical assistance programs that provide help to small systems.

States' reports to their legislatures on the subject of capacity development may prove useful in the creation and implementation of capacity development strategies. Many of these reports include discussions of the factors that encourage or impair capacity development. Examples of useful reports are those submitted in Washington, Connecticut, California, and Pennsylvania. While each State's report has unique aspects, the process that was followed — including the issues that were discussed — should be helpful to other States that are considering these issues.

Reports derived from the deliberations of stakeholder workgroups, such as those published in North Carolina and South Carolina, may also prove helpful in the preparation of capacity development strategies for other States.

Exhibit 7-5 lists several tools that address the factors that impair capacity development. This exhibit is meant only as a starting point. As States build their capacity development strategies, they are likely to find other tools to address factors that impair capacity efforts.

Exhibit 7-5: Tools to Address Factors that Impair Capacity Development Efforts

Tools	
Capital Improvement Plans	Rate Reviews and Approvals
CPEs	Regional Plans
Permitting Requirements	Restructuring Programs
Cooperation with Nongovernental Organizations (NGOs)	Sanitary Surveys
Coordination with Other Agencies	Satellite Management Programs
Water Conservation Plans	Source Water Assessment Programs
Operator Certification Programs	Training and Technical Assistance Programs
WSPs or Business Plans	

Element C: Description of How the State Will use the Authority and Resources of the SDWA

Under SDWA §1420(c)(2)(C), States must describe how they will use the authority and resources of the SDWA to improve capacity in PWSs. Specifically, the States are asked to describe how they will accomplish three goals central to a sound capacity development strategy:

1. Assist PWSs in complying with NPDWRs.

2. Encourage the development of partnerships between PWSs to enhance their technical, managerial, and financial capacity.
3. Assist PWSs in the training and certification of operators.

Under this element, the State describes how it will use the new financial and programmatic resources of the 1996 SDWA Amendments, and any other statutory or programmatic means, to help water systems reliably deliver safe drinking water. This element encompasses a wide variety of activities meant to provide assistance to individual water systems and to build partnerships among systems.

The activities set forth in Element C are at the heart of the linkages between the capacity development program and other sections of the SDWA. The authority and resources that can be used to enhance a State's capacity development program are provided throughout the SDWA and must be carefully coordinated with each other and with State authority and resources to create the most effective capacity development program. This coordination of State and federal programs is vital to developing capacity, just as the development of greater system capacity through compliance is essential for the efficient functioning of other important sections of the SDWA.

Exhibit 7-6 lists several tools that may permit States to exercise the authority and resources of the SDWA. This exhibit is meant only as a starting point as States build their capacity development strategies.

Exhibit 7-6: Tools that May Permit the State to Exercise the Authority and Resources of the SDWA

Tools	
Enforcement Records	Public Education Programs
Capital Improvement Plans	Rate Reviews and Approvals
Certificates of Convenience and Necessity	Regional Plans
Compliance Data	Restructuring Programs
Comprehensive Performance Evaluations	Bond Issue Review
Cooperation with NGOs	Reviews of Audit Reports
Cooperation with Industry Groups	Sanitary Surveys
Coordination with Other Agencies	Satellite Management Programs
DWSRF Loan Applications	Self-Assessments
Emergency Response Plans	Statewide Water Quality/Quantity Studies
Big Brother and "Buddy System" Programs	Training and Technical Assistance Programs
Operator Certification Programs	WSPs or Business Plans
Permitting Requirements	Water Conservation Plans

Element D: Establishing a Baseline and Measuring Improvements

Establishing a baseline with the aim of measuring improvements is crucial to fulfilling State responsibilities under §§1420(b)(2) and 1420(c)(3), which require States to report to the EPA Administrator and the Governor. States must evaluate the success of their capacity development efforts as part of both reports. The most meaningful way to measure the success of State efforts is to measure actual improvements in water system capacity. However, because capacity building is an incremental process, it may take years before improvements are measurable. Therefore, even highly effective capacity development programs may not show immediate improvements in the actual capacity of water systems.

There are several approaches to measuring capacity. In most cases, these methods would need to be combined to measure a State program fully. Approaches include:

- **Volume of activity.** A State could assess its program on the basis of its effectiveness in reaching water systems. This could include a count of sanitary surveys or CPEs conducted, the amount of technical assistance provided, or the number of water system plans or self-assessments completed. To make this a valid measure, States need to ensure that these activities are helping systems achieve and maintain capacity.

- **Operator certification**. States could base their assessment on the prevalence of certified operators who have the training necessary to improve the capacity of the systems they operate.

- **Planning mechanisms.** States could use the results of water system self-assessments, WSPs, annual financial reports, or simplified budgeting worksheets to measure improvements in capacity. This process would require a baseline measure of all systems at the time when the capacity development efforts began and a method to update system assessments regularly.

- **Compliance data**. Since the statute explicitly mentions capacity with respect to NPDWRs, analyzing compliance trends could be a useful way to measure improvements in capacity. Variables such as the number of systems in significant noncompliance, number of exceedances, number of M/R violations, and time required to achieve compliance could be used as indicators of capacity (using compliance data from the calendar quarter when the capacity development efforts began as a baseline). Measuring improvements solely on the basis of compliance might yield an analytical framework that is too limited, since factors such as new regulations or new enforcement tools could influence compliance rates. In addition, trends in compliance data may not yield sufficient data over the short term because capacity development is an incremental, long-term process.

Element E: Identifying Interested Persons

The purpose of this element is to identify stakeholders—people that have an interest in and are involved in the development and implementation of the capacity development strategy. The overall purpose of identifying and involving stakeholders is to inform the parties that interact with water systems in an attempt to facilitate better communication about and contributions to capacity assurance efforts.

One approach to identifying stakeholders is to use resources available through related outreach programs. Potentially interested parties include:

- **Advisory panels for new system development**. Foremost among the methods for involving and informing key stakeholders is utilizing any stakeholder advisory panels convened during the development of the new systems program. The key groups involved in providing input into the development of a program for ensuring capacity in new systems will not represent all of the interested stakeholders, but their communication networks will reach a large proportion of the target audience.

- **Operator certification advisory boards**. Operator certification advisory boards can be key resources in disseminating capacity information. States might work with operator certification boards to develop a certification curriculum that would help ensure capacity.

Tools to identify additional stakeholders include:

- **Regional plans**. Regional planning can promote communication and information sharing between water systems in the planning area. In Washington State, the regional planning document explicitly specifies the types of support that large systems will provide to smaller systems within the plan's jurisdiction. This support system is a formal agreement under which a large or central utility in a county performs direct, contract, or support services for smaller utilities.

- **MOUs with PUCs**. Some State PUCs are involved in regulating public water districts or authorities and, on occasion, municipal water systems. PUC approval may also be required to extend service from an existing investor-owned system to a new development outside the original franchise area, or from a municipal water system to a new development outside the municipal boundaries. The statutory authority for the PUCs' actions are defined in the statutes that authorize them to promote the general public interest (e.g., safe and reliable service at reasonable cost) by regulating the manner in which monopoly services are provided.

  These statutory authorities make PUCs logical partners in capacity development. Several State commissions have adopted more expanded roles in small water system capacity by opening formal proceedings on the matter and requesting public comment (New York); developing and issuing a new policy statement adopted by the commissioners (California, Connecticut); and drafting MOUs that state the broad objectives of small system capacity development and itemize specific commission responsibilities (Connecticut, Pennsylvania, North Carolina).

- **Permitting requirements**. The permitting process alerts permittees to capacity development and helps the State identify stakeholders.

- **Cooperation of industry groups, lenders, and NGOs**. Developing relationships with these important groups helps ensure their participation in the capacity development process.

- **Public education**. Public education plays an essential role in identifying interested persons by informing the public of the issue and the opportunity to participate. In addition, public education allows the general public to participate as an informed party in the preparation of the capacity development strategy.

- **Coordination with other agencies**. Coordinating with all involved agencies helps ensure that the capacity development process runs smoothly. This is particularly important in States where the primacy agency is not the only agency participating in the DWSRF process.

3. Noncommunity Water Systems

Though similar, NCWSs and ancillary CWSs must be approached somewhat differently than most CWSs in terms of capacity development. In this section, the five elements are reviewed with a focus on the places where the approach to NCWSs needs to be developed differently.

Element A: Methods or criteria to prioritize systems

Many of the tools discussed for CWSs could also be used for NCWSs. For example, States are likely to have information to prioritize NCWSs from permit applications, compliance data, or sanitary surveys (since these types of data collection activities generally apply to both NCWSs and CWSs). NCWSs are less likely, however, to employ tools such as water supply plans and capital improvement plans. NCWSs may resist disclosing financial data since many are ancillary to larger, privately owned entities.

Element B: Factors that encourage or impair capacity development

Many of the factors that impair or encourage capacity development in CWSs are likely to apply to NCWSs. Dedicating resources to training and technical assistance will encourage capacity in NCWSs.

Element C: How the State will use the authority and resources of the SDWA

States can use the programmatic and funding resources of the SDWA to help NCWSs achieve compliance, build partnerships, and gain access to trained operators if applicable. In some cases, States will want to work with individual NCWSs. In other cases, partnerships between CWSs and NCWSs may be appropriate.

States should recognize the limitations of the SDWA with regards to NCWSs. For example, consumer confidence reports are required only of CWSs, and the operator certification requirements apply only to CWSs and NTNCWSs, not transient, noncommunity water systems (TNCWSs). However, the Act's source water protection provisions apply to NCWSs and CWSs.

Element D: How the State will establish a baseline and measure improvements

Assuming that the States rely on traditional data sources to establish their baselines and measure improvements, States are likely to have data on CWSs and NCWSs. Data sources such as compliance reports, sanitary surveys, and permit applications are likely to have information on all PWSs. There is one difference between data collected on CWSs and those collected on NCWSs: States collect information on NCWSs less frequently than CWSs, making it more difficult to measure improvements in NCWSs.

Another characteristic of NCWSs is that ownership may change frequently, particularly for small businesses. This may make it more difficult for States to measure improvement in these systems.

Element E: Procedures to identify persons that have an interest in and are involved in the development and implementation of the strategy

The State should identify representatives of NCWSs and those served by NCWSs to participate in the preparation of the State capacity development strategy. These stakeholders can be identified using the tools previously discussed under Element E for CWSs.

States have been trying to reach out to NCWSs for many years, and some States have perfected methods for doing so. One important step is to identify the largest categories of NCWSs (e.g., public schools, day care centers, offices, factories). Interest groups representing these entities can help conduct outreach and identify interested persons.

Some States find it difficult to reach the public affected by TNCWSs, yet many organizations represent these groups. For example the American Automobile Association has an interest in water quality at highway rest stops. Similarly, tourism organizations have a keen interest in avoiding outbreaks of acute waterborne illnesses. In States that rely on tourism (e.g., Colorado, Florida, and California) the tourism industry has focused public attention on water quality in highway rest stops.

The statute recognizes not only persons with an interest in the strategy, but also those who will be involved in its implementation. This is useful because some drinking water regulators may need to coordinate with other regulatory or governmental agencies, particularly regarding NCWSs. For example, drinking water regulators may need to work closely with the State agencies that license TNCWSs such as restaurants and lodging establishments. An MOU with the licensing authority may substantially increase the effectiveness of the implementation of the capacity development strategy.

The final component of a State's capacity development program is ensuring that DWSRF money only goes to systems with adequate technical, managerial, and financial capacity. This responsibility, and the exception to it, are discussed in the next section.

Section 8

Assessing System Capacity of DWSRF Applicants

The previous section described how a State may formulate its strategy to assist existing systems in achieving and maintaining capacity. One incentive for States to develop an existing system strategy is that States cannot provide loans to systems lacking adequate capacity. SDWA §1452(a)(3) prohibits States from providing DWSRF assistance to a PWS that "does not have the technical, managerial, and financial capability to ensure compliance with the requirements of this title" or is in significant noncompliance with a NPDWR or variance. The Act does, however, allow a system lacking adequate capacity or in significant noncompliance to receive DWSRF assistance if one of two conditions is met:

Careful system evaluation is important because (unless improvements will bring a system into compliance) only systems with technical, managerial, and financial capacity are eligible to receive DWSRF monies. This section outlines tools and resources to aid in system assessment with attention to differences between CWSs and NCWSs and provides examples of State

- The use of the assistance ensures the compliance of a system in significant noncompliance.

- The owner or operator of a system that lacks capacity agrees to undertake "feasible and appropriate" changes in operations (including ownership, management, accounting, rules, maintenance, consolidation, alternative water supply, or other procedures) that the State determines would ensure the system's technical, managerial, and financial capacity.

The remainder of this section focuses on the first step of the capacity assessment process, which is to have States answer the following question: *Which systems lack technical, managerial, and financial capability, thereby rendering them ineligible for DWSRF assistance (under §1452(a)(3))?* The tools and resources that States can use to answer this question are discussed below. Many States have not yet finalized their strategies for assisting existing systems in achieving and maintaining capacity. Once a baseline is established (i.e the State defines through rule or policy the definition of adequate capacity), States will be better able to make capacity determinations at the outset. Systems with sufficient capacity are eligible to receive funding. For systems lacking adequate capacity, States must determine if these systems meet either of the conditions described above.

Capacity Assessment Tools

The DWSRF is a lending operation. Therefore, assessments of capacity for DWSRF purposes should focus, in part, on criteria used to make lending decisions. The borrower must not only have the financial capacity to repay the loan and to retain financial solvency over the life of the loan, but must also be able to maintain the technical and managerial capacity to maintain the system over the life of the loan. DWSRF assessment of capacity must be comprehensive, with an emphasis on financial capacity. Exhibit 8-1 lists many tools for assessing a system's technical, managerial, and financial capacity.

Exhibit 8-1: Tools that May be Used by States to Assess System Capacity for DWSRF Eligibility

Tools	
Compliance data	Budgeting worksheets
Sanitary surveys	Annual financial reports
WSPs or business plans	Source water assessment programs
Self-assessment/peer reviews	Water conservation plans
Regional plans	Emergency response plans/ Policy procedures
Criteria used by other lenders	Certificate of Convenience and Necessity
Facility Plans	Review of audit report
Operator certification	Bond issue reviews
Educational opportunities for personnel	Rate reviews and approvals
Permit application data	Credit rating services
Capital improvement plans	Financial assurance mechanisms
Comprehensive Performance Evaluation (CPE)	Consumer confidence reports
O&M Manual	Engineering Reports
Consumer complaint records	Interviews with personnel familiar with the system
State-wide studies of water quality or quantity	DWSRF loan application

It is difficult to determine which tool is most appropriate for evaluating each element of capacity. Each system is unique. A tool that is useful for assessing the capacity of a very small system may not be useful for assessing the capacity of a large system. In addition, there are differences between nontransient noncommunity water systems (NTNCWSs) and community water systems (CWSs) that may warrant alternative approaches to capacity assessment. Because many NTNCWSs are ancillary systems and may therefore seek funding elsewhere, States may not review a large number of NTNCWS loan applications. Most of the tools described above apply to both CWSs and NTNCWSs.

Methods of Assessing Capacity

Just as capacity assessment tools apply to each system in unique ways, each State uses unique combinations of tools to fit the individual characteristics and program needs of the State. An evaluation of selected State capacity assessment procedures for the purposes of awarding DWSRF loans indicates that these States use a majority of the tools discussed above. Of the States reviewed (AK, AZ, FL, IN, SD, and VT), none have developed separate procedures based on the type of system.

Diversity among the State programs is found in the ways in which the capacity information is obtained and in how the States use that information during the capacity evaluation of the system. Some States have amended their regulations to specifically require the submission of technical, managerial, and financial information. Other States have developed DWSRF policies explaining the documentation requirements. In both situations, States are gathering information through a combination of loan applications, loan worksheets, or State database information.

In addition to documentation requirement differences, the States that were reviewed use this information to evaluate capacity through a variety of different procedures. Some States dedicate specific evaluation teams or coordinate between offices to ensure that all areas of capacity are evaluated by those with skills specific to the individual elements of

VERMONT

Administration:

The Water Supply Division (WSD) of the Department of Environmental Conservation (DEC), the Vermont Municipal Bond Bank, and the Vermont Economic Development Authority (VEDA) each play a role in assessing the capacity of Vermont's DWSRF loan applicants. While WSD is ultimately responsible for determining if a system demonstrates capacity, the Bond Bank and VEDA assist WSD by performing a financial assessment of applicants.

Evaluation Process:

WSD has developed a form for staff to complete as they review loan applications to determine if there is a need for capacity-based loan conditions in the loan agreement. The form, similar to a "crosswalk" for a regulation, walks the reviewer through a series of considerations where he or she is required to make a determination of capacity and document a basis for each response. Some examples of the items on which staff might base a determination include the Preliminary Engineering Report, sanitary surveys, WSD water quality records, or a loan application.

Vermont has developed 17 standard loan conditions which correspond to the 17 considerations on the form. Loan conditions are applied to the loan agreement for those considerations where the reviewer's response was "no." WSD is working with New England Rural Water (NERW) to track loan conditions and to develop templates and other tools to help systems come into compliance.

capacity. Arizona's Water Infrastructure Finance Authority (WIFA) reviews each loan applicant's capacity in teams consisting of a project manager, the executive director, the finance director, and the technical coordinator. Within Florida's Department of Environmental Protection (DEP), the Public Water System Supervision Program is primarily responsible for technical and managerial capacity assessment, while the Bureau of Water Facilities Funding evaluates the applicant's financial capacity. In South Dakota on the other hand, the Department of Environment and Natural Resources evaluates all three components of capacity.

Due to the direct relationship of financial capacity to a lending program and the potential repercussions of a lack in financial capacity for the lender (in this case the State), in most States the financial assessment is a more comprehensive process and is therefore conducted separately. For example, Indiana and Vermont use the assistance of the Indiana Budget Agency, and the Vermont Municipal Bond Bank and Vermont Economic Development Authority, respectively, to complete the financial aspects of the assessment.

Some States have begun to develop specific worksheets and more formalized procedures for

SOUTH DAKOTA

Administration: South Dakota Department of Environment and Natural Resources (DENR) administers the DWSRF program for the State through the Board of Water and Natural Resources, which ultimately approves all loans.

Evaluation Process:
Both the System and DENR provide information necessary for capacity evaluation. Technical, managerial, and financial capacity information is gathered primarily from the required application form and Capacity Assessment Worksheets.

Capacity Assessment Worksheets are completed in a joint effort of the State and the loan applicant. Applicants provide information concerning rates, financial planning, operator certification, source adequacy, etc. This information is supplemented by the State with information contained in State databases such as compliance data, facility information, and laboratory certification information. DENR also reviews past sanitary survey results.

Finally, DENR staff review all information and documentation, complete an evaluation form, and either recommends funding, funding with requirements, or denies funding. Requirements ensure that systems will achieve compliance and capacity and are conditions of the loan.

capacity assessment. South Dakota has developed Capacity Assessment Worksheets and evaluation

forms specifically for the DWSRF program. Vermont, like South Dakota, has formalized its review process through the development of worksheets to ensure a thorough and comprehensive review of each applicant.

States are not currently denying loans to systems based strictly on deficiencies in technical, financial, or managerial capacity. Such deficiencies are being handled through loan conditions which detail the required "feasible and appropriate changes" the system must complete. For example, Alaska's Department of Environmental Conservation requires loan applicants in significant non-compliance to sign to the *Safe Drinking Water Act Compliance Agreement*, which outlines a list of actions the system must take in order to achieve compliance and sets a schedule for completion of those actions. In addition, some States have rule provisions or policies intended to ensure that systems receiving conditional loans will complete projects as planned and agreed upon.

INDIANA

Administration: Indiana's DWSRF program is managed jointly by the Indiana Department of Environmental Management (IDEM) and the State Budget Agency. Currently, only existing political subdivisions of the State (e.g. cites, towns, conservancy districts, etc) are eligible to apply for a loan.

Evaluation Process:
Indiana requires systems to submit a loan application, a due diligence form, and a preliminary engineering report. The loan application contains two yes/no questions that specifically address capacity. If either of the answers is "no," the system must submit a plan which describes the steps they will take to ensure adequate capacity.

The due diligence form provides the State Budget Agency with information about the financial capacity of the system. It advises the State on economic matters of the political subdivision and their ability to repay the loan, and provides financial disclosures. Financial capacity is demonstrated by a showing of a dedicated source of repayment and the ability of the system to repay each loan according to its terms and conditions.

Indiana has developed policies and procedures in the event of a default. The State may, without prior notice, declare the entire outstanding principal amount of the loan together with any interest, immediately due and owing.

Section 9

Capacity Development and Other Programs

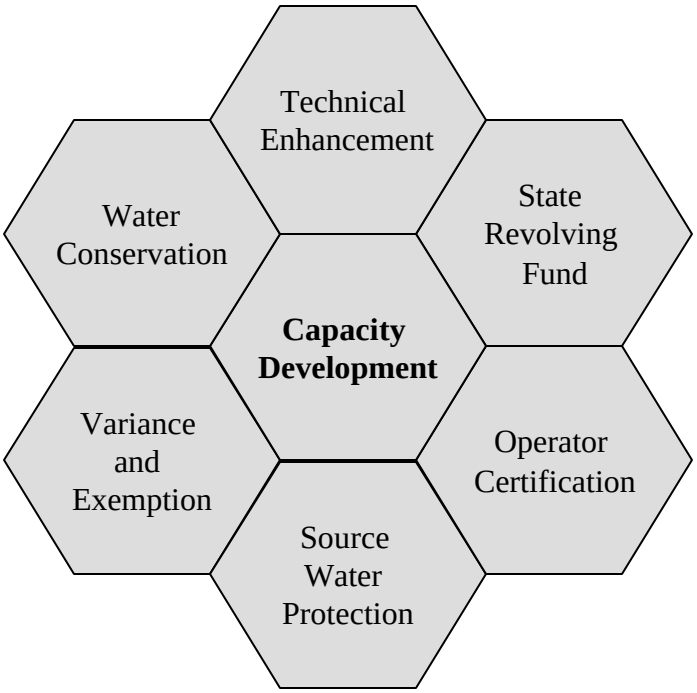


Exhibit 9-1: The '96 SDWA Tapestry

This section discusses the tapestry of the SDWA and how each of its initiatives influence one another and the development of water system capacity. SDWA initiatives discussed include, among others: regulatory enhancements, the State Revolving Fund, operator certification, source water protection, and variances and exemptions.

The capacity development provisions outlined in §1420 of the SDWA are a vital element of any successful State drinking water program. A State's ability to comply with §1420 can be enhanced through other water-related programs included in the SDWA. Several initiatives outlined in the SDWA influence the ability of water systems to develop and maintain capacity in ways that may not be immediately obvious. When State water programs are considered together as an integrated whole, States will be able to create more comprehensive and efficient capacity development strategies, maximizing the impact of their dollars and resources. In formulating capacity development strategies, States should carefully consider how they will allocate resources to the programs included in the SDWA, paying particular attention to

those programs that will have significant impacts on system capacity.

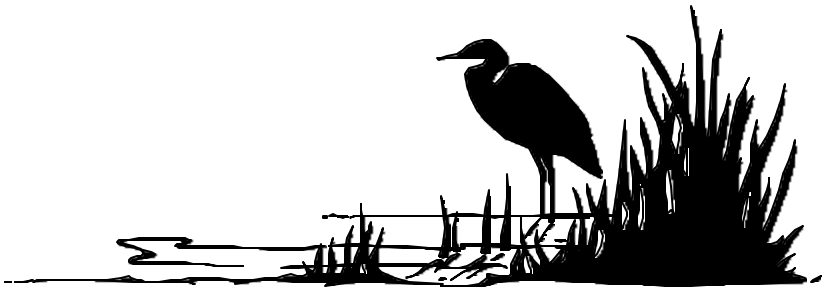
The following text highlights four general issues influencing capacity that are addressed in sections other than §1420, including water quality, water quantity, technical enhancement, and resource allocation. Specific programs within each area are also briefly described.

Exhibit 9-2 summarizes the ways in which the program areas described can benefit systems in terms of each component of capacity. This list is by no means complete, but will hopefully offer examples of how to begin thinking "outside the box," prompting policy makers to take a more creative look at viable approaches to capacity development.

Exhibit 9-2: Capacity Development Benefits of SDWA Programs

	Capacity Component		
Programs	**Technical**	**Managerial**	**Financial**
Water Quality • Source Water Protection • Underground Injection Control • Wellhead Protection • Ground Water Protection Grants	• Cleaner raw water reduces the need for additional treatment equipment and infrastructure	• Linkages and partnerships between stakeholders encouraged, translating into shared knowledge and improved managerial practices	• Less costly treatment processes and equipment needed
Water Quantity • Conservation	• Lower water demand reduces need to expand technical infrastructure • Life of infrastructure prolonged due to lower volume of water processed		• Avoid high cost of expanding infrastructure due to lower water demand
Technical Enhancements • Research and Technical Assistance • Operator Certification	• Improved treatment techniques and infrastructure • Improved operating knowledge and technical skill	• Enhanced managerial and operational skill • Ongoing training	• Grant money available for infrastructure needs • Cheaper technologies place less strain on budgets
Resource Allocation • Variances • Exemptions • Assurance of Supply Availability • Drinking Water State Revolving Fund	• Adequate treatment equipment affordable • Chemicals and supplies available • Creation of capacity development strategy encouraged	• Consolidation or regionalization encouraged, enhancing systems' managerial abilities • Creation of capacity development strategy encouraged	• Affordable treatment and technology • Affordable supplies and chemicals • Creation of capacity development strategy encouraged • Low or no cost financing encouraged

Water Quality



Measures taken to protect or improve the quality of drinking water at any point from source to tap will have positive impacts on capacity development. Improved raw water quality will improve a system's technical and financial capacity by reducing the need for complex and costly treatment procedures, subsequently allowing the system to implement more affordable treatment options. Underground injection control (UIC), wellhead protection, and groundwater protection programs have similar positive impacts on water system capacity.

Source Water Protection

As per §1454, a State may work with owners, operators, and others through incentive-based partnerships for the following purposes:

- To reduce the presence of contaminants in drinking water;
- To obtain financial or technical assistance to implement source water protection strategies; and
- To develop recommendations regarding voluntary and incentive-based strategies for long-term protection of the source water of CWSs.

These efforts will maintain and improve the quality of the raw water available to water systems within the State by encouraging water system planning.

Underground Injection Control

The EPA Administrator has promulgated regulations for State UIC programs under §1421 of the SDWA. State UIC programs must prevent underground injection (i.e., the subsurface emplacement of fluids by well injection—not including the injection of natural gas for storage) that endangers drinking water sources. Therefore, the implementation of an effective State UIC program will enhance (or at least help maintain) the quality of a groundwater system's raw water supply.

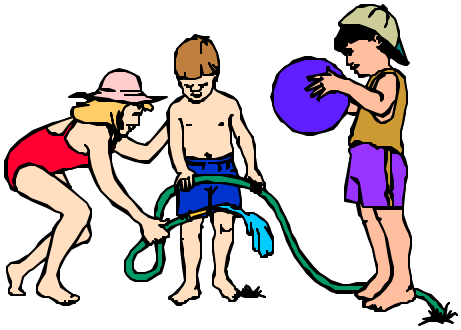
Wellhead Protection

Under §1428, Governors of all States must adopt a State program designed to protect wellhead areas within their jurisdiction from contaminants which may have an adverse impact on public health. A wellhead protection area is the surface and subsurface area surrounding a water well or

wellfield supplying a PWS through which contaminants may migrate towards the well or wellfield. Thus, a successful wellhead protection program will enhance (or at least help to maintain) the quality of a groundwater system's raw water supply.

Ground Water Protection Grants

EPA provides funding to States under §1429 exclusively for activities that provide additional protection for groundwater resources; $15,000,000 has been authorized to carry out this section for each fiscal year from 1997 to 2003. These monies enhance the technical capacity of a water system by improving (or maintaining) the quality of a groundwater system's raw water supply. In addition, ground water protection grants may reduce the financial burden on water systems since the State, rather than systems within the State, will provide funding for ground water protection activities.



Water Quantity

Programs encouraging water conservation can also help systems and States achieve capacity development goals. Section 1455 of the SDWA stipulates that EPA must develop and publish guidelines for water conservation plans for systems of differing sizes based upon water availability and climate. The Water Conservation Plan Guidelines were published by EPA on August 6, 1998. Although the SDWA does not *require* States to establish a water conservation plan, States like Kansas are finding that systems making small investments into water conservation are saving a considerable amount of money through reduced expansion and treatment costs.

Capacity can be enhanced in several ways by systems that implement and encourage water conservation measures. Reducing the quantity of water that must be withdrawn, treated, and distributed to the service population will help systems prolong the life of their infrastructure. By circumventing the need for increasing technical capacity to treat and distribute water for inefficient use, systems can also improve their financial capacity by avoiding the potentially high costs of infrastructure expansion. Furthermore, in areas of the country where water quantity is an important issue, water conservation can reduce the demand on source water, improving financial capacity by helping systems avoid the need to purchase water or pay for expensive new water rights.

Technical Enhancement

A system's technical capacity can be improved or enhanced through several avenues, which in turn can lead to greater financial and managerial capacity. For example, funding available for infrastructure replacements and upgrades will allow systems to improve facility condition and function with far less financial strain. Education and assistance programs provided to system operators, culminating with the operator certification program, will lead to improved operation and maintenance of system facilities. Furthermore, support for research may lead to the development of more effective, and potentially cheaper, treatment technologies. All of these steps, although not necessarily mentioned in §1420, will lead to improved capacity.

Research and Technical Assistance

Section 1442(a) of the SDWA authorizes EPA to conduct research, studies, and demonstrations relating to the causes, diagnosis, treatment, control, and prevention of physical and mental diseases and other impairments that result from contaminants found in water. The SDWA also authorizes EPA to provide the necessary research facilities to appropriate public authorities, institutions, and individuals, and encourages EPA to make findings available to the public.

EPA is authorized to provide technical assistance and grants to States or publicly-owned water systems to alleviate emergency situations affecting PWSs (§1442(b)), to provide training for State enforcement personnel and owners/operators of PWSs (§1442(c)), and to assist small PWSs in achieving and maintaining compliance with applicable NPDWRs (§1442(e)). The financial and informational assistance provided to States and water systems under this section will help to improve their technical, managerial, and financial capacity.

Operator Certification

Section 1419 of the SDWA sets forth the guidelines for State operator certification programs. The operator certification program is designed to ensure that the operators of all CWSs and NTNCWSs meet specific, minimum requirements relating to the proper operation and maintenance of their water systems and the components that make up these water systems.

Operators who understand proper maintenance techniques and schedules will more effectively maintain collection, treatment, and distribution equipment than those who do not. Thus, operator certification will enhance the technical capacity of water systems. In addition, well crafted operator certification programs may permit States to disseminate information regarding management techniques or actuarial measures to operators. For example, a module covering basic accounting procedures would permit system operators to plan for current, ongoing, and future expenditures and to ensure an adequate revenue stream to offset these costs.

Resource Allocation

Many programs and practices will allow systems to channel resources more effectively towards areas of greatest need. At first glance, a system with limited funds may not be able to afford all of the costs associated with capacity-related activities, such as meeting expensive technical requirements. However, mechanisms that allow systems to temporarily forgo costly compliance measures, as well as policies designed to fund (or defray the costs of) certain system components will allow systems' dollars to stretch further. As a result, systems will have more options and opportunities to strategically budget to meet long-term compliance goals. The options listed below are just a few of the mechanisms that could help a system save both time and money.

Variances and Exemptions

The use of variances and exemptions may permit systems with limited financial and technical resources to provide safe drinking water to their customers at a lower cost. The SDWA allows States with primacy (and EPA for States that do not have primacy) to relieve a PWS from a MCL requirement, treatment technique, or both by granting a variance (§1415) or exemption (§1416). Certain conditions relating to affordability, public health, and the alternative treatment technology used by the system must exist for a variance or exemption to be allowed.

Variances and exemptions were designed with the long-term health of communities in mind. Both provide more time and "breathing room" to find sustainable means of compliance rather than forcing systems to opt for "quick fixes." Although the variant technologies may not achieve the required MCLs, the water provided by the systems will still be of a higher quality as a result of the implementation of the variances and exemptions. In this way, systems can move incrementally towards compliance with NPDWRs.

Clearly, a reduction in operating costs will enhance a water system's financial capacity—improving its ability to meet other financial obligations on an ongoing basis (including the maintenance and replacement of its infrastructure). A successful capacity development program will permit States to offer additional compliance options to small water systems (e.g., regionalization, big brother programs) and decrease State and water system reliance upon variances and exemptions.

Assurance of Supply Availability

If the operator of a water system determines that s/he cannot reasonably obtain sufficient quantities of required treatment chemicals, and this conclusion is verified by EPA, §1441 requires the Administrator to issue the system a certification of need. This certification requires manufacturers or distributors to supply the necessary quality and quantity of treatment chemicals to the water system. Failure to provide the water system with those supplies deemed necessary will result in stiff fines for the

manufacturer or distributor. Thus, this provision may enhance a system's technical (and financial) capacity by ensuring the availability (and affordability) of the treatment chemicals a system requires to provide safe drinking water to its customers.

The development of managerial capacity will diminish the necessity of this emergency program. Section 1420(c)(2)(C)(ii) of the SDWA requires States to consider the inclusion of a description of how the State will use the resources and authority of the SDWA to encourage the development of partnerships between PWSs. Systems with adequate managerial capacity will be able to enter into regional partnerships with other PWSs. Regional partnerships permit bulk purchase of supplies and allow small PWSs to take advantages of some of the large economies of scale that exist within the water industry. Further, long-term planning, essential to system stability, will improve with the development of financial capacity—reducing the occurrence of emergency shortages and the need for federal bail-out.

Drinking Water State Revolving Fund

The DWSRF set aside fund provisions, like those specified in §1452(g) and §1452(k), serve as the primary source of federal funding to ensure adequate technical, managerial, and financial capacity for new and existing CWSs and NTNCWSs. In addition to other purposes, a State is allowed to set aside substantial amounts of its capitalization allotment under §1452 of the SDWA to establish and fund its capacity development program. For a more in-depth discussion about the DWSRF set asides, please see Section 10.

After subtracting its set aside funds, States must grant the remaining DWSRF money to systems that meet particular criteria (as discussed in Section 8) and that will use their award to enhance their capability to provide reliable and safe water service to their customers. To this end, States are penalized for the failure to develop and implement a capacity development strategy (or an operator certification program) by having up to 20 percent of their DWSRF allotment withheld. Therefore, the DWSRF provides States with financial support to establish capacity development programs, but can reduce the size of those allotments (both temporarily and permanently) if State programs do not meet federal requirements.

Section 10

Building System Capacity

Small systems face a variety of challenges in their quest to provide high-quality water at an affordable cost. However, there are many SDWA programs and tools that can be used to address the obstacles encountered by small systems, even those that are significantly out of compliance. These tools include, among others, State capacity development strategies (§1420), restructuring, variances and exemptions (§§1415 and 1416), affordability mechanisms, consolidation incentives (§1414(h)), and DWSRF monies (§1452), especially the disadvantaged community program (§1452(d)) and the 2 percent technical assistance set-asides (§1452(g)(2)). Additional programs from SDWA that could be used to help seriously non-compliant systems are the source water protection and operator certification programs.

> Helping struggling systems achieve capacity can be very difficult. This section discusses several options presented in the SDWA that States may consider when assisting systems in significant noncompliance. Two real-world success stories of capacity building efforts are also provided.

It is helpful to begin by identifying the most prevalent barriers faced by small systems as they attempt to comply with capacity requirements. These barriers include:

- Lack of technical knowledge about State and federal requirements (and how to meet them);
- Lack of access to capital;
- Lack of economies of scale, leading to a high per-customer cost of operations;
- Lack of financial capacity; and
- Lack of affordable technologies to comply with existing and new technologies.

Following is a discussion of the tools and options that you can provide or suggest to systems trying to overcome serious obstacles to achieving capacity. The technical and financial assistance you can offer as described in SDWA is presented first, followed by a discussion of other tools systems should consider as they seek to comply. The stories of two communities who have successfully used the tools presented below to overcome the obstacles and come into compliance have also been included.

1. Capacity Development Strategies

Capacity development strategies are intended to help States evaluate the technical, managerial, and financial capacity of water systems within their jurisdictions and provide assistance to the systems lacking capacity. SDWA §1420(c)(2)(A-E) requires that in creating this strategy, a State must "consider, solicit public comment on, and include as appropriate" five elements, one of which is a description of the methods or criteria the State will use to prioritize systems [§1420(c)(2)(E)]. In completing this activity, States will create tools to help them identify the systems most in need of help. Furthermore, States may be able to determine which systems will benefit the most from State assistance, thus achieving the greatest "bang for the buck."

Successful capacity development strategies also depend on a State's ability to establish and use a solid, reliable base of information. Capacity development strategies provide a framework for gathering information which, when analyzed, may reveal the most pressing needs of small systems. In turn, States can evaluate these findings to determine which available tools will most effectively assist struggling systems.

2. Financial and Technical Assistance Mandated by the Safe Drinking Water Act

Several sections in the SDWA specify that DWSRF monies can, and sometimes must, be used to financially and technically support small water systems. These are important tools and resources that States have at their disposal to aid small systems that are struggling to meet compliance requirements. Relevant SDWA sections include:

Section 1452(a)(2): Fifteen Percent DWSRF Set-Aside

> *Of the amount credited to any State loan fund established under this section in any fiscal year, 15 percent shall be available solely for providing loan assistance to public water systems which regularly serve fewer than 10,000 persons to the extent such funds can be obligated for eligible projects of public water systems.*

Though the language of this section is self-explanatory, it is important to note that a significant percentage of a State's DWSRF allotment must be used to provide financial support to small systems. Because most of the barriers facing small, non-compliant systems are financial in nature, this section creates a strong foundation for States in their attempts to help all small PWSs achieve capacity.

Section 1452(d)(1): Assistance for Disadvantaged Communities

PWSs serving disadvantaged communities can face tremendous financial limitations. The SDWA recognizes this restriction and allows States to provide additional subsidization to systems serving economically depressed areas.

> *[I]n any case in which the State makes a loan pursuant to subsection (a)(2) to a disadvantaged community or to a community that the State expects to become a*

> *disadvantaged community as the result of a proposed project, the State may provide additional subsidization (including forgiveness of principal).*

Determination of "disadvantaged" status must be based on the State's affordability criteria. A State must define "disadvantaged community" in its DWSRF Intended Use Plan, define the amount of the capital grant it intends to devote to subsidies for disadvantaged communities, identify the systems that have been chosen to receive additional subsidies, and describe the State's affordability criteria. The total amount of loan subsidies made by a State may not exceed 30 percent of the capitalization grant received for the year.

Section 1452(g)(2): DWSRF Technical Assistance Set-Aside

> *An additional 2 percent of the funds annually allotted to each State under this section may be used by the State to provide technical assistance to public water systems serving 10,000 or fewer persons in the State.*

In other words, 2 percent of a State's DWSRF money may be set-aside to provide technical aid to small systems. For example, the State may offer technical assistance to PWSs that are consolidating or implementing variance or exemption technology. Because knowledge and manpower may be resources that are as crucial as funds for many small PWSs, this section may be particularly helpful in building capacity among struggling systems.

3. Restructuring

Restructuring is defined as changing the operational, managerial, or institutional structure of a water system in order to meet the increasing costs and responsibilities of the SDWA while still providing water at an affordable price. Restructuring solutions range in complexity and vary with the creativity and resources of local systems and their communities. Solutions can involve physical connections, changes in managerial operations, or a combination of the two. Restructuring may or may not involve a transfer of ownership. Restructuring offers a convenient bridge between the support for compliance-building found in the SDWA and the initiative that States and systems must take when attempting to achieve compliance. Exhibit 10-1 illustrates the full spectrum of restructuring options, described in greater detail in EPA's *Restructuring Small Drinking Water Systems: Options and Case Studies* (September 1995).

Consolidation Incentives

The SDWA provides incentives for capable systems to consolidate with systems in significant non-compliance. Consolidation with neighboring systems is an effective means to improve capacity and encourage the resolution of compliance problems, thus improving water quality and safety. Section 1414(h) provides States with the opportunity to target systems for which consolidation may help build technical, managerial, or financial capacity with the promise of additional time to remedy compliance problems before enforcement action is taken.

Exhibit 10-1: The Restructuring Spectrum

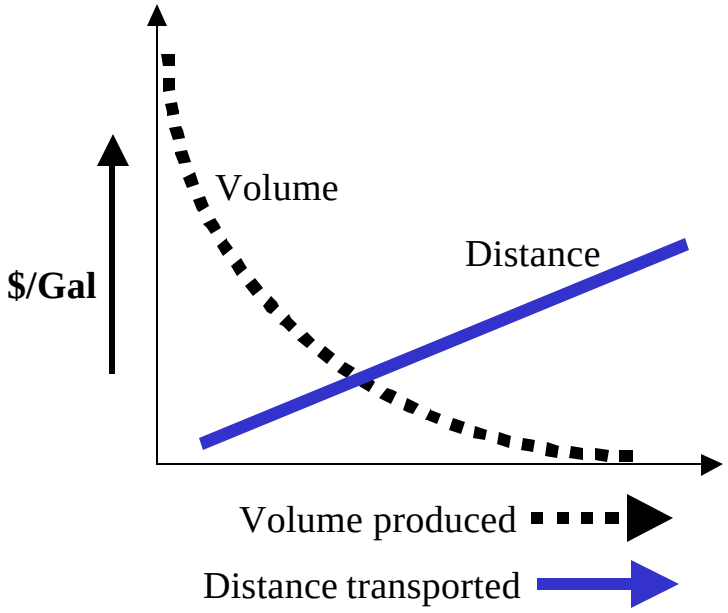
Internal Changes	Informal Cooperation	Contractual Assistance	Joint Powers Agencies	Ownership Transfer
·Completely self contained ·Requires no cooperation or interaction with other systems ·**Examples:** ·Installing meters ·Raising rates ·Drilling a well ·Soliciting technical assistance	·Work with other systems, but without contractual obligations ·**Examples:** ·Bulk purchase of supplies ·Mutual aid arrangements	·Requires a contract, but contract is under the system's control ·System negotiates the terms and duration of the contract ·Contract renewal at the option of the system ·**Examples:** ·Engineering ·Legal ·O&M ·Purchasing water ·Supplies ·Laboratory services	·Creation of a new entity designed to serve the systems that form it ·Creating systems continue to exist as independent entities ·Requires cooperation of, and possible negotiation with, member systems in areas covered by joint powers agency ·**Examples:** ·System management ·Source water	·Take over by existing entity ·Take over by newly created entity ·**Examples:** ·Acquisition and physical interconnection ·Acquisition and satellite operation ·Transfer of privately owned system to new or existing public entity

Increasing Transfer of Responsibility

To meet the requirements of this section, PWSs must submit a plan to the State for physical and/or managerial consolidation with one or more neighboring systems, or a system may request a transfer of ownership. The State or EPA will not take enforcement action with respect to a specific violation identified in the plan until the consolidation is complete or 2 years after the plan is approved, whichever occurs first. During the 2 years, PWSs will not face penalties for specified violations which the consolidation attempts to remedy.

Please note that physical interconnection may not always be a sound economic solution for systems attempting to achieve capacity. Exhibit 10-2 shows that, as the distance between systems lengthens, infrastructure and related system costs needed to transport water will eventually surpass the costs associated with other capacity building solutions. The feasibility of physical interconnection must therefore be analyzed carefully and compared with the economic savings that less drastic options, such as cooperatives and common management, may achieve.

Exhibit 10-2: Economics of Physical Interconnection



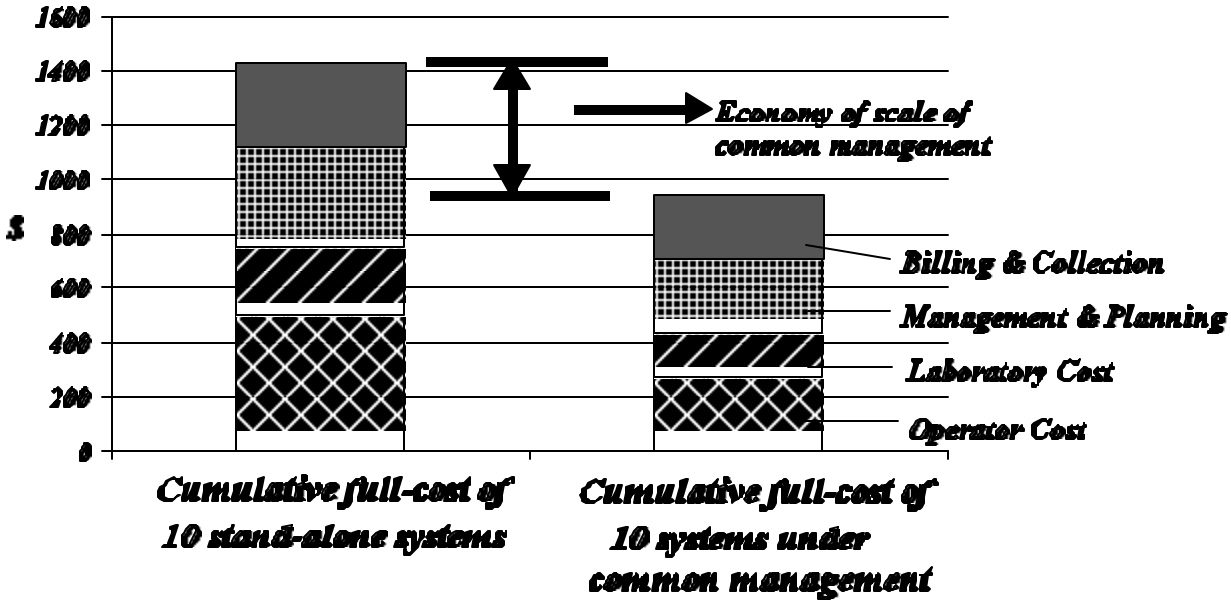
Cooperatives

Small water systems may also join together to buy or share goods and services. If they create a new, independent entity to perform this function, this entity is called a "cooperative." If no new entity is created, the arrangement is considered an agreement to "cooperatively purchase" goods and services.

By joining together, in either form, small systems can achieve greater economies of scale and reduce the unit prices of their purchases. Examples of goods and services that may be purchased more cheaply include: operation and maintenance services, lab services, chemicals, and equipment. For example, if State regulations permit, a group of small systems could save money by hiring one certified operator to serve the entire group. Cooperatives may also be able to share equipment, such as construction machinery that is not in continual use. In addition to the cost savings that might be achieved, an additional feature of cooperatives is the forum they create for sharing knowledge about regulations, pricing, and solutions to common problems.

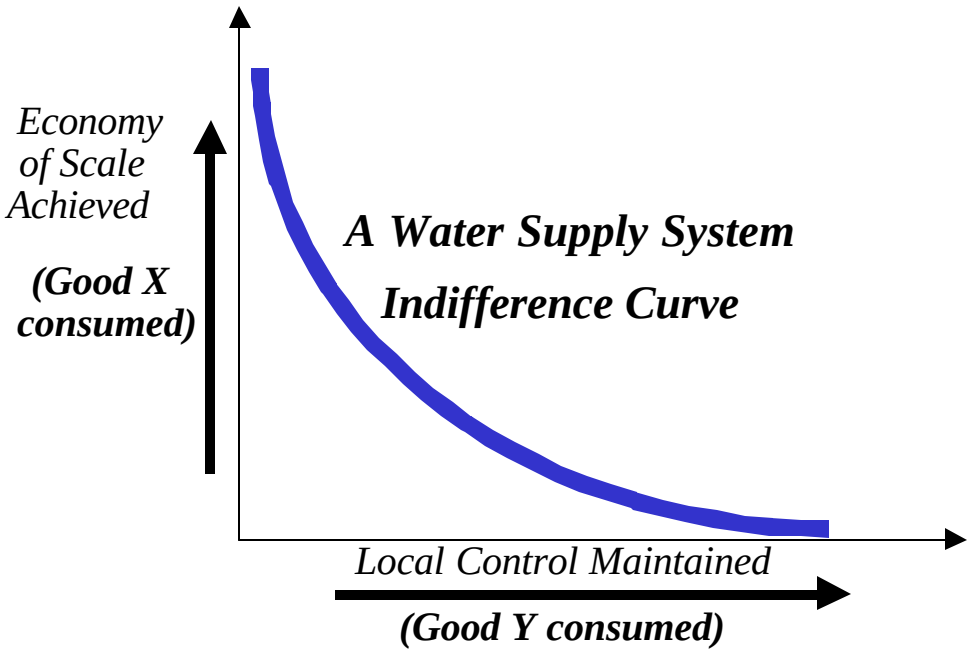
Systems may also opt to join together under common management, wherein all managerial functions (e.g., billing, collection, operations, etc.) Are performed by the same people. As Exhibit 10-3 demonstrates, this kind of agreement may result in significant cost-savings for systems that may find it impractical to physically consolidate.

Exhibit 10-3: Economics of Common Management



Just as physical consolidation may not be economically beneficial for some systems, common management may be politically unacceptable for others. As Exhibit 10-4 demonstrates, choosing to join with other systems under common management is inversely related to the amount of control that can be exerted by original system owners, managers, and local community members. In other words, some of the autonomy enjoyed by an independent system may be lost through managerial consolidation.

Exhibit 10-4: The Economies of Scale vs. Local Control Tradeoff



Success Story #1: Tremonton, Utah
Regional Provider of Equipment and Supplies

As the largest water system for 30 miles, Tremonton helps smaller systems buy supplies at a discount, borrow equipment when they need it, and stay current with industry developments.

The custom of neighbor helping neighbor is firmly rooted in the pioneer spirit of the West. In northern Utah that spirit is evident in the informal cooperation between the Tremonton water system (service population 3,500) and its 30 smaller neighbors.

For years, Tremonton has shared equipment parts with its neighboring systems, with the understanding that the borrowing systems will replace what they use. Since chlorine distributors will not deliver to many of the small systems, principally because of logistics problems, the Tremonton City Council agreed to act as a "chlorine clearing house." Tremonton buys the chemical disinfectant, and systems within a 30-mile radius pick up what they need when they need it. The systems pay Tremonton the same price for the chlorine that Tremonton paid the distributor.

In 1993, Tremonton was also instrumental in establishing an organization that provides training to water system operators. Although the Utah section of the National Rural Water Association and the Rural Community Assistance Program (RCAP) provided assistance, the operators' group is not affiliated with any national organization. The monthly meetings cover the latest topics of interest to drinking water system operators (e.g., the lead and copper rule, recent regulatory changes, etc.). The meetings also provide opportunities for systems to pick up chlorine and replace the parts they borrowed.

Tremonton's transformation into an informal regional supplier of equipment parts and supplies grew out of long-standing practice. The operators' organization it helped found grew out of need. Such informal cooperation has helped more than 30 small systems in Utah improve their quality of service.

4. Variances and Exemptions

Variance and exemption provisions offer systems added time and flexibility in meeting drinking water requirements. State level affordability determinations help guide the analysis of systems' compliance options. Consideration is given to the system's ability to afford nationally listed compliance treatment technology, to afford the development of an alternative source of water, or to restructure or consolidate with another system.

A variance allows a noncompliant PWS to deviate from the MCL of a drinking water standard if: (1) the variance is protective of public health, and (2) the compliance options are either not affordable or not practicable. States then must enforce the terms and conditions of the variance rather than the drinking water standard.

An exemption allows a noncompliant PWS to be exempt from meeting the MCL of a drinking water standard for a limited time if (1) there will not be an unreasonable risk to human health and (2) compliance options either are not affordable or not practicable. Exemptions allow systems extra time to seek other compliance options or financial assistance.

Why Issue a Variance or an Exemption?

When treatment, development of an alternative source, restructuring, and consolidation are unaffordable or unpractical for a system, variances and exemptions ensure that systems are protecting public health as much as possible. Variances and exemptions give PWSs an opportunity to enhance their capacity to comply with SDWA (or at least create net gains in the quality of finished water). For a discussion of the evolution of variances and exemptions, see Exhibit 10-5 below.

Exhibit 10-5: Variances and Exemptions: A Before and After Picture

	Pre 1996 SDWA	Post 1996 SDWA
Variances	After PWS installed BAT	• On the condition that the PWS install BAT
Small System Variances	Not Applicable	• Affordability-based • Treatment, alternative source, and/or restructuring not possible/affordable • No microbials or pre-'86 MCLs
Exemptions	PWS unable to comply due to compelling factors, mainly economic	• Compelling factors can include disadvantaged community status under DWSRF provisions • Treatment, alternative source, or restructuring/management changes unaffordable • Three additional 2-year renewals for small PWSs

Success Story #2: Trailer Village Mobile Home Park; Centralia, Washington:

Annexation Ensures Safe Water For Low-Income Housing[2]

A contamination problem that may have begun 30 years earlier led a neighboring community to annex this mobile home park and to assume ownership of the park's drinking water system.

When Phase I (Volatile Organic Chemical) sampling found high concentrations of tetrachloroethylene (PCE) in its drinking water wells in 1991, the Trailer Village Mobile Home Park outside Centralia, Washington had few options. Its two wells, which showed PCE concentrations of 25 ppb and 103 ppb (the maximum contaminant level is 5 ppb), were taken off line and bottled water was provided to its 85 households. The park's water distribution system was connected to the irrigation well of a nearby cemetery to provide washing and other domestic purposes in the short term.

A preliminary site assessment implicated a dry-cleaning business that had operated on the mobile home park site from 1960 to 1978 as the likely source of the contamination. The PCE contamination threatened hundreds of area wells that pumped water from the aquifer. Working with Portland, OR-based Backflow Management, Inc., the mobile home park owners investigated several long-term options, including:

- Installing an air stripper to control PCE in water pumped by the park's two wells.
- Drilling a new well.
- Connecting to the city of Centralia's water system about five miles away.

They chose to connect to the Centralia water system. Before that could happen, however, the State health department had to approve the design and construction of a new distribution system for the park (the park was not allowed to simply hook up to and purchase water from the Centralia system). As was consistent with the health department's policy of promoting the annexation of small systems by larger ones whenever possible, the health department required that Centralia own and maintain the new system. Furthermore, local ordinance prevented Centralia from extending water service beyond the city's boundaries, so Centralia had to annex the mobile home park. The park could not hook up with city water without also hooking up to the city sewer, so new sewer lines were laid to serve the park, which previously had been served by a septic system.

Construction was completed in September 1994. Total costs exceeded $640,000. A portion of the costs will be covered by a loan to Centralia from the State-funded Public Trust Fund. Because 81 percent of the park households have low-to-moderate incomes, a State Community Development Block Grant also provided loan funds. The park's owners will repay the loan.

As a result of this consolidation, the mobile home park's residents kept their homes and will have an adequate supply of safe drinking water. Their bills will be about $35 per month for both water and sewer; previously water service had been included in their rental fee. Centralia has increased its tax base and gained a low-income housing community served by new water and sewage systems and a new city well.

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3. Example from *Restructuring Small Drinking Water System: Options in Case Studies*, EPA 810-R-95-002, September 1995.

Other Capacity-Building Tools

There are many other capacity-building tools available to States and systems that are not specifically mentioned in the SDWA. A variety of loan programs offer financial assistance for use by water systems, particularly those serving disadvantaged communities. States might also consider developing trainings that focus on aspects of capacity building (e.g., system operation, new and applicable regulations, etc.) or programs designed to provide technical assistance.

Role of Affordability

When addressing the problems of noncompliant systems, a primary question should be whether a system can even afford to comply with the 1996 SDWA Amendments. At the national level, federal affordability criteria are used for technology designation (e.g. compliance technologies, small systems variance technologies). At the State level, State affordability criteria are used to analyze compliance options (e.g. treatment, alternative source development, restructuring) and to determine "disadvantaged" status under the DWSRF provisions. Information for States on affordability criteria is now available. The next section discusses the assessment of affordability and the SDWA.

Section 11

Affordability

Whether a system can afford to comply with the SDWA is an essential question in capacity development. If a system cannot afford to comply with the SDWA, then capacity development efforts may not be enough to bring a system into compliance. Affordability may be defined in three simple ways:

- "Having a sufficiency of means";
- "To be able to bear the expense of"; or
- "Spare without much loss."

This section addresses the financial strain that small systems in particular face as they struggle to come into compliance with more rigorous SDWA standards. It discusses the development of affordability criteria and the importance of it in the context of federal assistance. Several other options and resources to improve affordability are also addressed.

Affordability is the ability of a system and it's community to bear the increasing costs of compliance associated with the 1996 Amendments to the SDWA. In the 1997 *Drinking Water Infrastructure Needs Survey*, EPA estimated that systems will spend approximately $138.4 billion on infrastructure improvements over the next 20 years to comply with the new requirements of the Act. Based on the 1995 Needs Survey, a total of $37.2 billion of infrastructure need is projected for small systems alone. The majority of need will be for installation and rehabilitation of transmission and distribution systems. Meeting these challenges will involve a critical analysis of system finances. It will mean looking at available resources and options creatively to seek out innovative and sustainable solutions.

Assessing affordability allows a system to identify and choose the least cost paths to compliance. This may be as simple as raising rates or as complex as the formation of a regional water authority. Solutions may also take advantage of the many SDWA provisions (geared for small systems in particular) that ease the transition into compliance. These include variances, exemptions, and loan subsidies for communities experiencing serious economic difficulties. The solution may lie in combining several options. The flexibility of the SDWA encourages and requires a creative and critical assessment of affordability.

The assessment of affordability and the development of affordability criteria are an essential part of State capacity development programs. In order to take full advantage of available federal funds, States are required to develop Intended Use Plans (IUPs). These plans, based on State affordability criteria, prioritize systems (including identified "disadvantaged communities") for assistance. The granting of variances and exemptions is also based on State affordability criteria. These variances and exemptions

can be used by States to assist systems most in need. Therefore, the evaluation of affordability is a necessary step in the fair allocation and distribution of funds for several important SDWA programs.

1. Federal Role

Under the 1996 SDWA Amendments, EPA must use affordability criteria to:

- Assess the feasibility of new MCLs; and
- Assess the affordability of compliance options for three categories of systems: Those serving 25 to 500, 501 to 3,300, and 3301 to 10,000 persons.

2. State Role

States must establish affordability criteria for the following three functions:

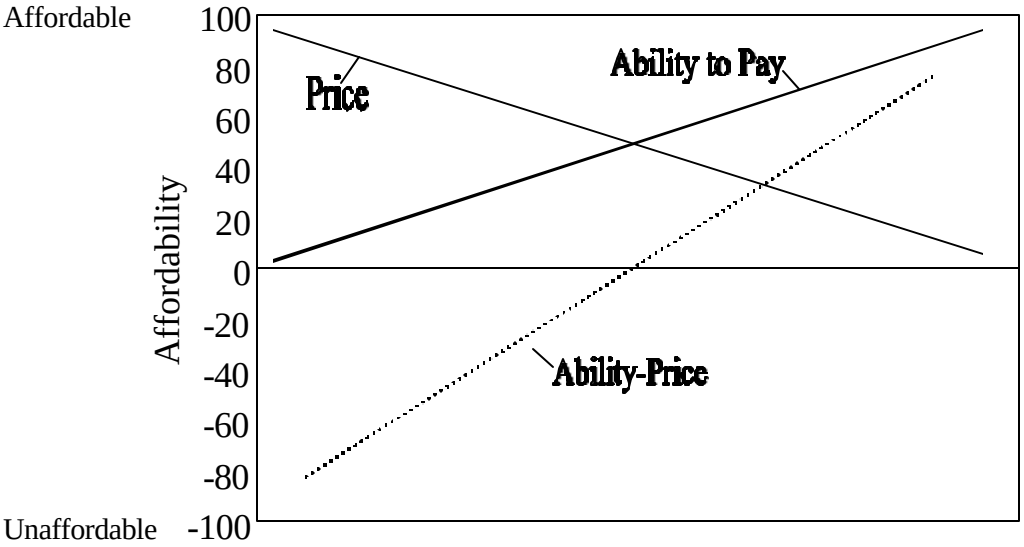
- Prioritizing systems for DWSRF assistance;
- Determining disadvantaged community status for communities; and
- Granting variances and exemptions.

3. Factors Affecting Affordability

Affordability is a function both of the price of water and the ability of customers to pay, as demonstrated in Exhibit 11-1. Ability to pay can be determined at the household level. It is primarily a function of income, as shown in Exhibit 11-2. The standard measurement for household ability to pay is the annual user charge as a percentage of median household income (MHI). A community's ability to pay, therefore, can be seen as the aggregate of household ability to pay for any given service area.

Increasing affordability is a matter of either increasing the ability to pay or lowering the price of water. There are several factors that influence a community's ability to pay. Socioeconomic conditions and the health of the local economy are indicative of a system's ability to cope with future debt. A community with high employment rates and higher incomes has a greater ability to pay for the increasing cost of quality water. Transfer payments and progressive rate structures are ways to improve a community's ability to pay for higher-quality water.

Exhibit 11-1: The Affordability Function Graph

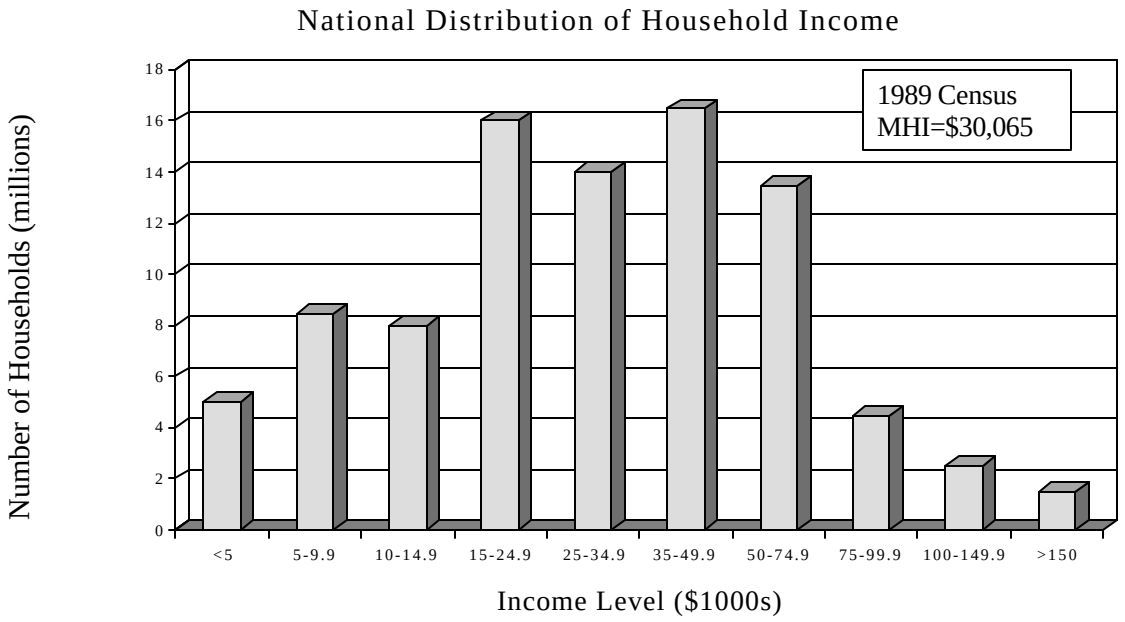


Affordability Threshold:
Price=Ability

Conversely, a community with high unemployment, regressive rate structures, lower income, and income consumed by nondiscretionary obligations, has a low ability to pay for quality water. These communities may qualify as disadvantaged communities. According to the SDWA, a "disadvantaged community" is the service area of a PWS that qualifies as such under State affordability criteria. For example, this may be gauged by the percentage of income per household devoted to water utility expenses (where any commitment above a given percentage qualifies the community as disadvantaged). Disadvantaged communities are eligible for loan subsidies of up to 30 percent of the amount of the total capitalization grant for the State.

Ability to pay can be increased in several ways. Policy makers within an economically viable community can increase the ability to pay by implementing progressive rate structures or transfer payments. In communities with more dire economic problems, taking advantage of loan subsidies may make improvements in water quality more affordable. Finally, increasing the efficiency of water system operations (e.g. eliminating unaccounted-for water use), will decrease costs and therefore increase ability to pay.

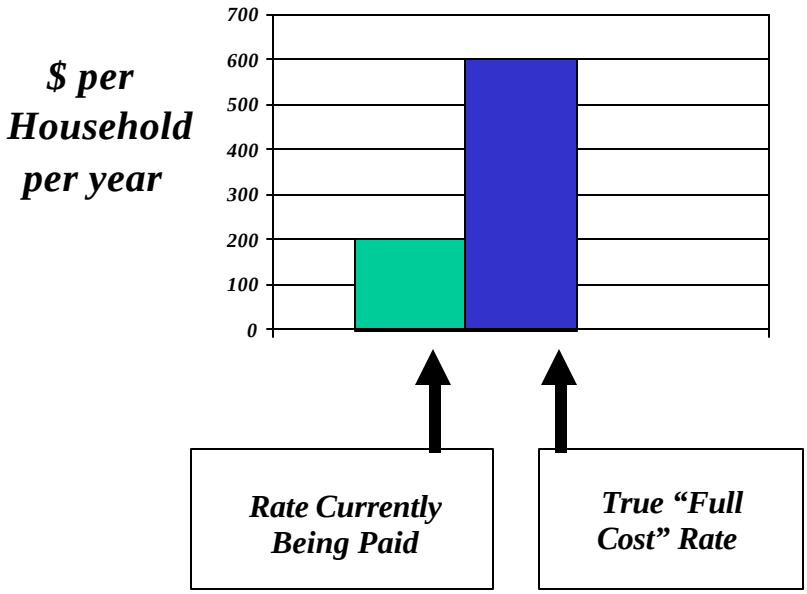
Exhibit 11-2: Ability to Pay is a Function of Income



Decreasing costs (and thereby lowering prices) is an important aspect of increasing ability to pay for financially strapped communities. There are many factors influencing price. Infrastructure repair and replacement costs, compliance costs, and demand growth costs can all increase the price of water. Smaller systems, in particular, are also affected by diseconomies of scale. Because they lack the power to purchase in bulk, small systems often pay higher prices for supplies or services, and large capital costs are distributed across a smaller customer base. This translates into higher rates for consumers.

For a community that can afford to absorb rate increases, decreasing costs (associated with infrastructure/technology improvements or demand growth) are harmful to a true assessment of affordability. Historically, people have paid very little for water (please see Exhibit 11-3). Upward pressure on prices is created by both meeting higher standards for the provision of a safe and adequate supply of drinking water and increases in demand due to economic development or population growth. When faced with the increased costs of compliance and demand growth, systems that have been historically underpricing their water may feel that changes are unaffordable. However, as has been the case with the provision of other utilities, drinking water rate increases are necessary to ensure the quality of service. Keeping the price of this utility artificially low sends a flawed message about the true cost of providing water.

Exhibit 11-3: Underpricing of Water



Affordability assessment allows a system to evaluate compliance options by considering not only the price of infrastructure repair, but also the costs resulting from diseconomies of scale. Abolishing diseconomies of scale (both in management and production) through restructuring lowers costs by providing the system with greater purchasing power and less expensive service costs. In addition, low cost technologies and subsidies (if the system qualifies according to established criteria) can exert deflationary pressure on water prices.

Exhibit 11-4: Factors Influencing Affordability Assessment

Infrastructure repair and replacement costs	Economies of scale
Compliance costs	Lower cost technologies
Demand growth costs	Increased efficiency
Unemployment rates	Subsidies
Incomes	Rate structures
Nondiscretionary expenditures as a percentage of income	Unaccounted-for water levels
	Transfer payments

In summary, the key factors in improving affordability for a community are addressing the rate structure, taking advantage of economies of scale, providing subsidies to the neediest of communities, and allowing for regulatory flexibility.

Several examples of existing affordability assessment methodologies are available for reference:

- Office of Policy, Planning, and Evaluation Panel Critique.

- U.S. EPA. September 1993. *Combined Sewer Overflows: Guidance for Financial Capability Assessment and Schedule Development*. Washington, DC: Office of Drinking Water, U.S. EPA.

- U.S. EPA Region V, Water Division: *Small Community Municipal Financial Capability Analysis, Self Evaluation Guidebook*.

- Washington State Financial Viability Program in Methods for Assessing Small Water System Capability.

- PAWATER: A Financial Planning Model for New, Small CWSs.

For more information please refer to the EPA's *Information for States on Developing Affordability Criteria for Drinking Water*. The next section provides information on potential sources of funding States that may be used for funding the creation and implementation of their capacity development programs.

Section 12

Funding Sources for Capacity Development Programs

A State's capacity development program can involve substantial State commitment, including developing programs to ensure new system capacity, assisting systems in developing capacity, assessing capacity of DWSRF applicants, and assessing the affordability of systems. To develop such an array of capabilities, States may need to find sources of outside revenue. Capacity development programs, and programs that contribute to the success of capacity development programs (see section entitled "SDWA Tapestry"), may procure funding for various activities through several avenues under the amended SDWA.

Capacity development programs, and programs that contribute to the success of capacity development programs, may procure funding for various activities through several avenues under the amended SDWA.

1. Drinking Water State Revolving Fund: SDWA §1452

The DWSRF is the largest new source of funding available to States under the amended SDWA. Section 1452(a)(1)(A) of the SDWA requires the EPA Administrator to provide capitalization grants to eligible States to "further the health protection objectives of this title (SDWA), promote the efficient use of fund resources, and for other purposes as specified in this title (SDWA)."

State Eligibility

To ensure eligibility for a DWSRF capitalization grant, a State must establish a drinking water treatment revolving loan fund. To avoid withholding of part of the DWSRF allotment they would otherwise receive, States must:

- Develop a program to ensure that all new CWSs and new NTNCWSs beginning operation after October 1, 1999 have, and will be able to maintain, adequate technical, managerial, and financial capacity [§1452(a)(1)(G)(i)];

- Solicit public comment on, and consider the inclusion of, the elements outlined in §1420(c)(2)(A-E) in their capacity development strategy for existing water systems [§1452(a)(1)(G)(i)]; and

- Adopt and implement an operator certification program for operators of CWSs and NTNCWSs [§1452(a)(1)(G)(ii)].

As per §1452(b)(1-2), States that participate in the DWSRF program must submit an Intended Use Plan (IUP) on an annual basis. The IUP must include a list and description of all projects that will be provided with DWSRF monies in the upcoming FY. The project description should include the expected terms of financial assistance and the size of the community that will benefit from DWSRF assistance. The IUP must also include the criteria and methods used by the State to distribute DWSRF monies, a description of the financial status of the State's DWSRF, and the short-term and long-term goals of the State's DWSRF loan program.

Allocation and Fund Availability

Section 1452 funds will be allocated to States according to a formula that allocates to each State the proportional share of the State needs identified in the most recent needs survey. Primacy States will be guaranteed at least 1 percent of available funds, while Wyoming and the District of Columbia will continue to be guaranteed a minimum proportionate share.

Authorized funds are available to States for obligation during the FY for which the funds are authorized and during the following FY. Grants made available from funds provided prior to FY 1997 are available for obligation during FY 1997 and FY 1998. Funds that have not been obligated by the last day of the period for which they are available will be reallocated according to the same formula used to determine initial fund allocation. Moreover, up to 10 percent of unobligated funds may be allocated to Indian Tribes, and no funds will be reallocated to States that have not obligated all of their grant monies. Further, funds that have been withheld under §1452(a)(1)(G)(i) and §1452(a)(1)(G)(ii) may not be reallocated to States that have not fulfilled the requirements of §1420 (capacity development) and §1419 (operator certification), respectively.

Eligible Programs, Minimum and Maximum Funding Levels

Under §1452(a)(3)(C), States must determine whether a PWS is in significant noncompliance with any NPDWR or variance (i.e., the system has been out of compliance for any three quarters over the preceding three year period) and must determine whether a PWS has adequate technical, managerial, and financial capacity. States may not use DWSRF funds to provide assistance to PWSs that are in significant noncompliance with any NPDWR or variance [§1452(a)(3)(A)]. Nor may States

provide assistance to PWSs that do not have the technical, managerial, and financial capacity to ensure compliance with the SDWA. However, a State may provide assistance to a PWS that would otherwise be ineligible for assistance if DWSRF assistance will ensure system compliance or if the system owner agrees to make operational changes that the State determines will ensure that the system will have adequate technical, managerial, and financial capacity to comply with the SDWA over the long term [§1452(3)(B)].

DWSRF Set Aside Funds that can be used for Capacity Development

Assistance for Disadvantaged Communities [§1452(d)] allows a State to use up to 30 percent of its total capitalization grant to assist disadvantaged communities.

Cost of Administering the Fund [§1452(g)(2)] allows a State to use up to 4 percent of its allotment to cover the cost of programs under this section, and to provide technical assistance to PWSs within the State. These programs encourage technical capacity (through operator certification and source water protection), managerial capacity (through operator certification), and provide general support for capacity development strategies.

For FY 1995 and each FY thereafter, each State may use up to an additional 10 percent of the funds allotted under this section if the State matches the expenditures with at least an equal amount of State funds. At least half of the match must be additional to the amount expended by the State for public water supervision in FY 1993. These set aside funds can be used to fund:

- PWS supervision programs under §1443(a);
- Technical assistance through SWPPs;
- The development and implementation of a capacity development strategy; and
- Operator certification.

An additional 2 percent of the funds annually allotted to each State under this section may be used by the State to provide technical assistance to PWSs serving 10,000 or fewer persons.

Other Authorized Activities [§1452(k)] allow a State to expend up to 15 percent of the capitalization grant each fiscal year for any of the following activities, which also increase technical capacity through source water and wellhead protection and provide general support for capacity development strategies. The expenditure may not exceed 10 percent for any single activity. These activities include:

- To acquire land or conservation easements for the protection of source water or to ensure compliance with NPDWRs;

- To provide funding to implement voluntary, incentive-based source water quality protection measures;

- To provide assistance through a capacity development strategy including technical and financial assistance;

- To make expenditures to delineate or assess source water protection areas (drawing from the capitalization grant from FYs 1996 and 1997 in accordance with §1453), except that funds set aside for such expenditure shall be obligated within 4 FYs; and

- To make expenditures to establish and implement wellhead protection programs in accordance with §1428.

The following program provides funding for efforts that further capacity development, but may not be directly related.

2. The Environmental Quality Incentives Program

NPS pollution degrades the quality of both surface and ground water in the United States. This degradation adversely impacts the ability of water systems to provide reliable, safe drinking water to their customers since contaminated raw water must undergo more thorough (and more expensive) treatment before it may be distributed to consumers. This additional treatment directly affects both the technical and financial capacity of a water system. While many programs have been developed and successfully implemented to reduce the levels of point-source pollution, non-point sources (NPSs) of pollution remain both largely unregulated and unameliorated.

The Environmental Quality Incentives Program (EQIP) was established by the Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture (USDA) under the 1996 Farm Bill to provide a single, voluntary conservation program for farmers and ranchers to address significant natural resource needs and objectives and to eliminate overlapping efforts. EQIP replaced four programs: the Agricultural Conservation Program, the Water Quality Incentives Program, the Great Plains Conservation Program, and the Colorado Basin Salinity Control Program. Nationally, it provides technical, financial, and educational assistance, half of it targeted to livestock-related natural resource concerns [e.g., confined animal feeding operations] and the other half to more general conservation priorities. EQIP is available primarily in priority areas where there are significant natural

resource concerns and objectives. By providing funding to conservation activities on farms and ranches, EQIP offers State Drinking Water Program Coordinators (SDWPCs) a way to address NPS pollution problems that impact vital watersheds.

All non-Federal landowners (including Native American Tribes) engaging in livestock operations or agricultural production are eligible to receive funding under this program. Cropland, rangeland, pasture, forest land, and other farm and ranch lands are eligible for remediation programs. Thus EQIP funding can be used in virtually any area where agricultural activity occurs.

EQIP provides funding for up to 75 percent of the cost of implementing specified conservation practices. Additionally, certain landowners may qualify for incentive payments that will pay for up to 100 percent of the cost of implementing conservation practices for up to 3 years. The maximum award under this program is $10,000 per person per year and $50,000 over the length of the EQIP contract. It is estimated that this program will be funded at $200 million per year from FY 98 to FY 02.

For more information on this program, contact your local or State NRCS office or the Headquarters of the USDA NRCS at P.O. Box 2890, Washington, D.C. 20013 or (202) 720-1873.

3. Watershed Protection and Flood Prevention Program

Authorized by the Watershed Protection and Flood Prevention Act, P.L. 83-566, as amended and P.L. 78-534, this program works through local government sponsors and is designed to help participants solve natural resource and related economic problems on a watershed basis. Eligible projects include watershed protection, flood prevention, erosion and sediment control, water supply, water quality, fish and wildlife habitat enhancement, wetlands creation and restoration, and public recreation in watersheds of 250,000 or fewer acres. Technical and financial support is available for installation of works of improvement designed to protect, develop, and utilize the land and water resources in small watersheds.

Eligible entities for funding under this program include: local or State agency, county, municipality, town or township, soil and water conservation district, flood prevention or flood control district, Indian Tribe or Tribal organization, or nonprofit agency with the authority to carry out, maintain, and operate watershed improvement works

The Watershed Protection and Flood Prevention Program (WPFPP) provides funding to cover up to 100 percent of flood prevention construction costs; and 50 percent of construction costs related to agricultural water management, recreation, and fish and wildlife. Funding is not provided under this program for other municipal or industrial water management activities or facilities. WPFPP monies

may also be used to provide technical assistance and counseling regarding watershed conservation issues to eligible entities. Thus, much like EQIP, this program may improve source water quality, reducing the need for treatment and decreasing the financial burden of water systems.

The FY 98 budget for this program is estimated at $40 million; technical assistance activities are proposed to be funded under a different program in 1998 and beyond. For more information on this program, contact your local or State NRCS office or the Headquarters of the USDA NRCS at P.O. Box 2890, Washington, D.C. 20013 or (202) 720-1873.

4. Surface Transportation Program

Surface Transportation Program (STP) funds may be used by State and local governments for any roads (including the National Highway System) that are not functionally classified as local or rural minor collectors. The STP was authorized by the Intermodal Transportation Efficiency Act of 1991 and the National Economic Crossroads Transportation Efficiency Act of 1997 and is administered by the U.S. Department of Transportation (DOT). Each State must set aside 10 percent of STP funds for transportation enhancements, which can include water-related projects, such as wetland mitigation and implementation of control technologies to prevent polluted highway runoff (NPS pollution) from reaching surface water bodies. Other transportation enhancements include landscaping and other scenic beautification, pedestrian and bicycle trails, archaeological planning and research, preservation of abandoned railway corridors, and historic preservation.

Public, private, for-profit, and non-profit entities and individuals, local government agencies, universities, colleges, technical schools, and institutes are all eligible to receive funding under STP. Since up to 10 percent of STP funds may be used for water-related projects, SDWPCs may be able to tap into this funding source to enhance watershed protection and improve watershed quality by reducing the impact of NPS pollution resulting from highway run-off.

Assistance under STP is provided in the form of project grants (cooperative agreements). Note that matching funds may be required of eligible entities. Although FY 98 funding is contingent upon reauthorization, funding levels should approach those of FY 97 (i.e., $596 million — nearly $60 million of which would be available for water-related programs)

For additional information, contact the DOT at Federal Highway Administration, ISTEA 400 7th Street, SW, Washington, D.C. 20590 or (202) 366-5004.

5. Capitalization Grants for Clean Water State Revolving Funds

EPA awards grants to States to capitalize their Clean Water State Revolving Funds (CWSRFs). The States, through the CWSRF, make loans for high priority water quality activities. As loan recipients make payments back into the fund, money is available for new loans to be issued to other recipients. While traditionally used to build wastewater treatment facilities, loans are used increasingly for other water quality management activities, including:

- Agricultural, aquacultural, rural, and urban runoff control;
- Estuary improvement projects;
- Wet weather flow control, including stormwater and sewer overflows;
- Alternative wastewater treatment technologies; and
- Nontraditional projects such as landfills and riparian buffers.

Capitalization grant funds under the CWSRF are available to States, Puerto Rico, Territories, and D.C. Indian Tribes can receive project grants from either EPA or the Indian Health Service. Funds are lent to municipalities, communities, citizens' groups, nonprofit organizations, and private citizens to implement NPS and estuary management activities (provided for in State plans developed under the Clean Water Act (CWA) § 319 and § 320.)

A 20 percent State match is required for CWSRF participation. States may then provide loans to eligible entities more or less at their discretion. Although this program falls under the purview of the CWA rather than the SDWA, the water quality improvement programs eligible for funding under this program can greatly reduce the financial burden on water systems by improving the quality of the source water upon which they rely. It is estimated that $1.075 billion will be available under the CWSRF in FY 98. SDWPCs should actively lobby for the funding of water quality programs in their States — the CWSRF represents an enormous potential source of funding that may enhance capacity development programs.

For more information contact the EPA's Office of Wastewater Management (OWM) — DWSRF Branch at Municipal Support Division (4204), 401 M Street, SW, Washington, D.C. 20460, by phone at (202) 260-2268, or by email at DWSRFinfo@epamail.epa.gov.

6. Great Lakes Program

EPA's Great Lakes Program (GLP) issues awards to monitor Great Lakes ecosystem indicators; provides public access to Great Lakes data; helps communities address contaminated sediments in their harbors; supports local protection and restoration of important habitats; promotes pollution prevention through activities and projects such as the Canada-U.S. Binational Toxics Strategy; and provides assistance to implement community-based Remedial Action Plans for Areas of Concern and for development of Lakewide Management Plans and the reduction of critical pollutants pursuant to those Plans.

Authorized under §104 and §188 of the CWA, GLP assistance is available to State water pollution control agencies, interstate agencies, other public or nonprofit private agencies, institutions, organizations, and individuals. Clearly, the programs authorized under the GLP will greatly enhance the water quality of the Great Lakes, reducing the treatment burden of local water systems.

Assistance is provided under the GLP in the form of project grants (cooperative agreements), use of property and equipment (vessels for open lake monitoring or harbor sediment sampling), provision of specialized services, and dissemination of technical information. The principal means of awarding assistance is through an annual competitive solicitation distributed by mail and noticed in the Federal Register. SDWPCs should send their name and address to the contact identified below to be put on the mailing list.

For further information, please contact EPA's Great Lakes National Program Office (G-17J) at 77 West Jackson Boulevard, Chicago, Illinois 60604-3590, by phone at (312) 886-4013, or by email at russ.michael@epamail.epa.gov.

7. Hardship Grants Program for Rural Communities

In conjunction with the CWSRF, the Hardship Grants Program (HGP) provides funds to rural communities for wastewater projects. The 1996 Congressional Appropriation Act reserved funds from the CWSRF appropriation to fund the HGP. The HGP is designed to assist disadvantaged rural communities through a combination of grants and technical assistance. Funding is distributed among States based on a formula that considers the rural per capita income in each State and the number of rural communities that lack access to centralized wastewater treatment. Communities must initially apply for CWSRF funding; if they meet the eligibility requirements, they could receive a combination of a CWSRF loan, a Hardship Grant, and technical assistance. Clearly, funding provided under this program could enhance the technical capacity of rural PWSs by improving the quality of local surface and ground water sources.

Under this program, States receive funds and distribute them to rural communities that have:

- Fewer than 3,000 people;
- No access to centralized wastewater treatment or collection system, or rely upon on-site systems (i.e., septic tanks) that need improvement;
- A per capita income rate that is less than 80 percent of the national average;
- An unemployment rate that exceeds the national average by one percentage point or more; and
- A proposed project that will improve public health or reduce environmental risk.

Although it is unknown if additional monies will be made available in FY 98, States have until March 1999 to collect their share of the $50 million appropriated in FY 96. For more information, contact the EPA's OWM — DWSRF Branch at Municipal Support Division (4204)
401 M Street, SW, Washington, D.C., 20460, by phone at (202) 260-2268, or by email at DWSRFinfo@epamail.epa.gov.

8. Nonpoint Source Implementation Grants: Section 319 of the CWA

The §319 program provides formula grants to the States to implement Nonpoint Source (NPS) projects and programs in accordance with §319(h) of the CWA. Examples of previously-funded projects include best management practices (BMPs) installation for animal waste; design and implementation of BMP systems for stream, lake, and estuary watersheds; basin-wide landowner education programs; and lake projects previously funded under the CWA §314 Clean Lakes Program. Both States and Indian Tribes are eligible to receive §319 funds. Formula grants are awarded to a lead agency in each State. States and Tribes then may distribute these funds at their discretion to State and local government agencies and nonprofit organizations, although recipients are required to provide 40 percent of total project or program cost.

It is estimated that $100 million is available for this program for FY 1998. For further information, please contact EPA's Office of Wetlands, Oceans and Watersheds
Assessment and Watershed Protection Division, NPS Control Branch at (4503F)
401 M Street, SW, Washington, D.C., 20460, by phone at (202) 260-7100, or by email at ow-general@epamail.epa.gov.

9. Pollution Prevention Grants Program

The Pollution Prevention Grant Program (PPGP), authorized by §6605 of the Pollution Prevention Act, provides project grants to States to implement pollution prevention projects. The grant program is focused on institutionalizing multimedia pollution (air, water, land) prevention as an environmental management priority, establishing prevention goals, providing direct technical assistance to businesses, conducting outreach, and collecting and analyzing data. A reduction in pollution will lead to an improvement in source water quality and should reduce the technical and financial burden of water systems.

State and local governments, Indian Tribes, and nonprofit organizations are eligible for assistance under this program (local governments and nonprofit agencies, while not eligible to submit applications directly, are encouraged to work with State agencies to implement pollution prevention programs). Individual grants are awarded based on requests, however, States are required to provide at least 50 percent of total project costs. It is estimated that up to $6 million will be available under the PPGP in FY 98.

For further information, please contact EPA's Office of Pollution Prevention and Toxics Pollution Prevention Division, at (7409) 401 M Street, SW, Washington, D.C., 20460, by phone at (202) 260-3480, or by email at kent.christopher@epamail.epa.gov.

10. Water Quality Cooperative Agreements

Grants are provided under §104(b)(3) of the CWA to support the creation of unique and new approaches to meeting stormwater, combined sewer outflows, sludge, and pretreatment requirements as well as enhancing State capabilities. These grants may permit SDWPCs to implement watershed protection programs that will result in improved water quality — reducing the technical and financial burden on water systems. Eligible projects usually include research, investigations, experiments, training, environmental technology demonstrations, surveys, and studies related to the causes, effects, extent, and prevention of pollution. State water pollution control agencies, interstate agencies, local public agencies, Indian Tribes, nonprofit institutions, organizations, and individuals are eligible to receive this assistance. While matching is encouraged, it is not required. It is estimated that $20 million will be available under §104 of the CWA for FY 98.

For further information please contact the EPA's OWM at 401 M Street, SW, Washington, D.C. 20460, by phone at (202) 260-9545, or by email at ow-general@epamail.epa.gov.

Finding sources of additional funds will not be a State's only challenge. States should also find ways to engage the public, both through education efforts and channels of participation and input. The need to include the public is discussed in the next section.

Section 13

Public Education and Participation

Even with adequate funding, States will not be able to develop their capacity development programs in a vacuum. Ensuring safe drinking water is a collaborative process, requiring the participation and shared responsibility of diverse groups and individuals. For this reason, public education and opportunities for participation are crucial elements of successful implementation of capacity development programs and strategies.

> Public education is a crucial aspect of successful capacity development that is frequently overlooked. Informing interested parties of recent developments in clean water legislation and the measures necessary to meet new requirements will help pave a smoother path towards SDWA compliance.

The 1996 Amendments recognize the importance of public understanding and involvement in capacity development. §1420(c)(2) states that:

> *In preparing the capacity development strategy, the State shall consider, solicit public comment on, and include as appropriate —*
>
> *(E) An identification of the persons that have an interest in and are involved in the development and implementation of the capacity development strategy (including all appropriate agencies of Federal, State, and local governments, private and nonprofit public water systems, and public water system customers).*

In other words, States must consider developing a process to inform decision-makers, PWS owners and operators, and consumers of the steps being taken to ensure water systems have adequate capacity. Many states may give these stakeholders avenues through which they can meaningfully participate in the planning process. Failure to consider this aspect may result in a partial loss of DWSRF funds. By providing interested parties with an avenue for input, States not only ensure that all relevant voices are being heard, but including stakeholders in the policy process paves a smoother, more direct path towards effective capacity development and compliance implementation.

States may face resistance from a variety of factions as the new amendments take effect. The most common factors that motivate such resistance include:

- Political or ideological opposition;
- Concern from system owners and operators about loss of control or cost;
- Concern from consumers regarding possible rate increases; and
- Apathy

However, these fears can (and should) be allayed by a well-structured, comprehensive strategy that attempts to educate the public about the reasons behind capacity development, and provides opportunities for citizens to voice their questions and concerns. Because improving financial capacity could potentially lead to an increase in water rates for average water customers, consumer education will play an increasingly important role.

Following is a brief explanation of the most important factors that will lead to greater understanding and acceptance of changes in accordance with the SDWA Amendments, as well as a list of tools that will help facilitate effective educational and participatory opportunities.

1. The Bottom Line

The primary message that a public education program must convey to system owners, operators, and customers is that problems may exist with current drinking water capacity. In order to maintain an adequate level of safety in the drinking water supply—a luxury that most consumers expect, demand, and support—changes in current programs must be made, including possible system restructuring and rate increases.

Complying with the new standards set forth in the amendments, including requirements of adequate capacity, will yield several noticeable benefits. Most obviously, attaining technical, managerial, and financial capacity will result in safer drinking water supplies and more reliable water service. In addition, consumers may benefit from rate decreases. Restructuring is often the most cost-effective way of meeting new requirements, which—although expensive in the short-term—will likely translate into lower long-term costs to consumers and communities.

2. Tools of the Trade

Many tools are available to the State and/or local entities attempting to facilitate public education and participation. Cooperation and coordination among groups, the creation of events that bring stake-holders together, and the dissemination of information through a variety of media avenues are common themes that emerge from these lists, and should be incorporated in public education programs.

One must first identify a list of interested groups that should be targeted by education and participation programs. The following groups represent a sampling of those that might have an interest in capacity development:

- Water system operators;
- Water system owners;
- Customers;
- PUCs;
- Environmental groups;
- Developers;
- Professional societies/consultants; and
- Chambers of Commerce/Economic development groups.

A public education program does not need to be expensive or overly time consuming to reach its targeted audience. There are several methods through which information can be communicated to the public, including:

- Regular briefings of key officials or groups;
- Public meetings;
- Feature stories in newspapers;
- Mailing of planning documentation to civic leaders;

- Newsletters;
- Paid advertisements;
- Public service announcements; and
- Hotline telephone information numbers.

Similarly, many options exist that could provide citizens and stake-holders with the opportunity to participate in the planning process:

- Advisory groups/task forces comprised of interested parties;
- Focus groups to discuss compliance options and impacts;
- Interviews with key officials and interested citizens;
- Open planning meetings or workshops to involve all interested parties;
- Public hearings to provide formal input into the decision making process; and
- Surveys or polls to determine public preferences.

Please see the Information document in Appendix A for these additional tools that apply to public education and participation efforts:

- CCN;
- Cooperation with non-government organizations;
- Cooperation of industry groups and lenders;
- Coordination with other agencies;
- Operator certification;
- Permit application data; and
- Regional plans.

These are just a sampling of the many tools available to the policy maker for reaching interesting stakeholders.

As state officials begin the process of implementing their capacity development programs, it is important that the public's voice be heard. If public education and opportunities for participation are adequately provided, this seemingly minor step could reap positive results.

For additional information on public education and participation, please refer to:

- AWWA Blue Thumb Project, "Give Drinking Water A Hand." http://www.awwa.org/bluethum.htm

- Plank, R. David, Roddy Rogers, Frank L. Shorney, David J Novak and Robert R. Zion. "Public Involvement Helps Supply Project Succeed." *Journal of American Water Works Association*. (May 1997): 40-54.

- Powell, John R., David J. Allee and Charles McClintock. "Groundwater Protection Benefits and Local Community Planning: Impact of Contingent Valuation Information." *American Journal of Agricultural Economics*. 76 (Dec. 1994): 1068-1075.

- Public Involvement Strategies: A Manager's Handbook. AWWARF. Denver: 1996.

- USEPA Office of Water. (WH595), EPA 430/09-89-006. July 1989. "Building Support for Increasing User Fees."

- —. EPA 832/B-95-007. August 1995. "Combined Sewer Overflows: Guidelines for Funding Options."

- —. EPA 570/9-91-095. December 1991. "Restructuring Manual."

Part 4

Appendices

Appendix A

Additional Resources

1. Publications

Note: Where possible, publications are grouped by the publishing organizations. Contact information for those organizations is provided.

Association of State Drinking Water Administrators
(Call 202-293-7655, www.asdwa.org)

- *Enhancing Drinking Water System Viability: Options for States*, December 1995
- *Final Position Statement – Operator Certification*, #96-03, October 1996

American Water Works Association
(Call 800-926-7337, Fax 303-347-0804, www.awwa.org)

- *AWWA Evaluation of State Water Conservation Guidelines*, August 1997
- *Cost Allocation and Rate Design for Water Utilities* by Beecher and Mann, 1991
- *Meeting Future Financial Needs of Water Utilities*
- *Water Rates and Related Charges, AWWA Manual M26, 1986*
- "Incremental and Average Cost Methods in Rate Design." *AWWA Journal*: v88 n634, June 1996
- "Integrated Resource Planning Fundamentals." *AWWA Journal*: v87 n634, June 1995
- "Small Systems." *AWWA Journal*: May 1992, June 1993, October 1994, January 1997
- "Water Affordability and Alternatives to Service Disconnection." *AWWA Journal*: v86 n1061, October 1994

California Public Utilities Commission

- *Staff Report on Issues Related to Small Water Utilities*, Proc. #1.90-11-033, June 1991

Community Resources Group, Inc./Southern RCAP
(Call 703-771-8636, Fax 703-771-8753, www.rcap.org, www.rcap.org/html.publicat.html)

- *Board Guide to Small System Policies, 1993*
- *Local Decision-Maker's Guide to Groundwater and Wellhead Protection*
- *Self-Evaluation Guide for Decision-Makers of Small Community Water Systems*
- *Small System Guide to Board Responsibilities for Operation and Maintenance*
- *Small System Guide to Developing & Setting Water Rates*
- *Small System Guide to Factors that Affect Capital Financing*
- *Small System Guide to Financial Management*, 1993
- *Small System Guide to Group and Conflict Management*
- *Small System Guide to Hiring and Evaluating Employees*
- *Small System Guide to Rate Setting*
- *Small System Guide to Risk Management and Safety*
- *Small System Guide to the Safe Drinking Water Act (Second Edition)*, August 1993
- *Small System Guide to the Safe Drinking Water Act Amendments of 1996*
- *Small System Guide to Viability*, August 1994

Council for Infrastructure Financing Authorities

- *Financial Alternatives for Small Water & Wastewater Utility Systems*, February 1997

Elim Water Company, Inc.

- *Basic Accounting Systems for Water Utilities*, June 1994

EPA Center for Environmental Research and Investigation
(Call 513-569-7562 or 800-490-9198)

- *Summary Report: Optimizing Water Treatment Plan Performance with the Composite Correction Program*, EPA 625-8-90-017, March 1990

EPA CWA Water Resource Center
(Call 202-260-7786, Fax 202-260-0386)

- *Building Support for Increasing User Fees*, Office of Water (WH-595), EPA 430-09 89-006, July 1989

- *Combined Sewer Overflows: Guidance for Financial Capability Assessment and Schedule Development*, Office of Water, EPA 832-B-97-004, March 1997

- *Combined Sewer Overflows: Guidance for Funding Options*, Office of Water, EPA 832-B-95-007 or WB12 PB 95-274601, August 1995

- *Evaluating Municipal Environmental Burdens*, Office of Policy, Planning, and Evaluation, September 1994

- *Guidelines for Implementing the Hardship Grants Program for Rural Communities*, EPA 832-Z-97-001, March 1997

- *Hardships Grants Program for Rural Communities*, Office of Water, EPA 832-F-97-001, February 1997

- *The Road to Financing: Assessing and Improving Your Community's Creditworthiness*, Office of Water (WH-547), EPA 832-B-92-004, September 1992

- A Utility Manager's Guide to Water and Wastewater Budgeting, Office of Water (4204), EPA 832-B-94-010, September 1994

- *A Water and Wastewater Manager's Guide for Staying Financially Healthy*, Office of Water (WH-546), EPA 430-09-89-004, July 1989

EPA Educational Resource Information Center
(Call 800-276-0462)

- *Analysis of Operation & Maintenance Costs for Municipal Wastewater Treatment Systems*, EPA 430-9-77-015; W561; PB 283471, May 1979*

- *Applications of Sludges and Wastewaters on Agricultural Land: A Planning and Educational Guide*, EPA 832-B-78-100; T240; PB 284824, March 1978*

- *Financial Capability Guidebook*, Office of Water Programs Operations (WH-547), EPA 83-/B-84-104; NTIS PB 84-218098; ERIC U071, March 1994*

- *Financial Management Evaluation: Handbook for Wastewater Utility*, EPA 832-K-89-100 NTIS PB 91-206177; ERIC N487, August 1989*

- *Obtaining Drinking Water Funding: A Review of Eight State Capacity Efforts*, EPA 812/R-92-002; G346, January 1992

- *1978 Needs Survey: Cost Methodology for Control of Combined Sewer Overflow and Stormwater Discharge*, EPA 43-9-79-003; W002PB; 296604, February 1979*

* Can also be found by contacting the National Technical Information Service

EPA National Center for Environmental Publications and Information
(Call 800-490-9198, www.epa.gov/ncepihom/)

- *Financial Capability Summary Foldout: A Simplified Approach*, EPA 832-R-84-103

- *Guidance Document for Providing Alternate Water Supplies*, EPA 540-G-87-006

- *Restructuring Manual*, Office of Water (WH-550), EPA 570-9-91-035, December 1991

- *State Source Water Assessment and Protection Programs Guidance*, EPA 816-R-97-009, April 1997

- Water Quality Standards Handbook (Second Edition), EPA 823-B-94-005

- *Wellhead Protection: Guide for Small Communities*, EPA 625-R-93-002

- *Wellhead Protection Workbook*, EPA 903-B-93-002

EPA National Technical Information Service
(Call 800-553-NTIS)

- *Alternative Financing Mechanisms for Environmental Programs: State Capacity Task Force…*, Office of Administration and Resources Management, W 985 PB 95-207221, August 1992

- *Diagnostic Operational Modeling Programs for Municipal Wastewater Treatment Plants: Users Manual*, EPA 910-9-82-096; UO63; PB 83-214809, October 1992

- *Ensuring the Viability of New, Small Drinking Water Systems: A Study of State Programs*, Office of Water (WH-550), EPA 570-9-89-004; NTIS PB 89-187413, April 1989

- *Establishing Programs to Resolve Small Drinking Water System Viability*, Office of Water (WH-550), EPA 570-9-91-002; NTIS PB 91-179028, February 1991

- *Financial Management System for Publicly Owned Treatment Works (Accounting Options)*, EPA 430-9-84-005; U070; PB 85-1212234, June 1984

- *Improving the Viability of Existing Small Drinking Water Systems*, Office of Water (WH-550), EPA 570-9-90-004; NTIS PB 91-179010, June 1990

- *Methodology and Assumptions Used to Determine Acceptable Staging Periods for Treatment Plant Capacity*, PB 95-15741, November 1976

- *Regionalization Options for Small Water Systems*, Office of Water (WH-550), EPA 570-9-83-008; NTIS PB 84-194836, June 1983

- *Report on the Regional State Capacity Building Initiatives*, W919 PB 95-158390, September 1993

- *Report to Congress: Industrial Cost Recovery-Volume One*, EPA 832-R-78-101a: W920 PB 292171, December 1978

- *Reports to Congress: Industrial Cost Recovery-Volume Five Transcripts of Public Hearings*, EPA 832-R-78-101-e; W974 PB 292175, December 1979

- *Self-Assessment for Small Privately Owned Water Systems*, Office of Water (WH-550), EPA 570-9-89-012; NTIS PB 91-129791, September 1989/1991

- *Self-Assessment for Small Publicly Owned Water Systems*, Office of Water, EPA 570-9-89-014; NTIS PB 91-129783, September 1990

- *Technical and Economic Capacity of States and Public Water Systems to Implement Drinking Water Regulations*, EPA 810-R-93-001, September 1993

- *Technologies and Costs for Control of Disinfection By-products (Appendix A)*, PB 94-184827, July 1994

- *Water System Self-Assessment for Homeowners Associations*, Office of Water (WH-550), EPA 570-9-89-013; NTIS PB 91-129775, September 1991/1992

- *Water System Self-Assessment for Mobile Home Parks*, Office of Water (WH-550), EPA 570-9-89-11; NTIS PB 91-129809, September 1989/1992

<u>EPA SDWA Publications</u>
(Call the SWDA Hotline at 800-426-4791, Fax 703-285-1101)

- *An Overview of Existing State Alternative Financing Programs: Financing Drinking Water System Capital Needs in the 1990s*, Office of Water (WH-550), EPA 812-R-92-001, May 1992

- *EPA/State Joint Guidance on Sanitary Surveys*, Office of Ground Water and Drinking Water, December 1995

- *Innovative Options for Financing Nongovernmental Public Water Supplies' Needs*, Office of Ground Water and Drinking Water, EPA 812-R-93-004, November 1993

- *Institutional Solutions to Drinking Water Problems: Maine Case Studies*, Office of Water (WH-550), EPA 812-R-93-002, March 1993

- *Methods for Assessing Small Water System Capability: A Review of Current Techniques and Approaches*, Office of Water (4601), EPA 810-R-96-001, March 1996

- *Public/Private Partnerships for Environmental Facilities: A Self-help Guide for Local Governments, Administration and Resource Management*, (H3304), 20M-2003, July 1991

- *Resource Guide for Small Drinking Water Systems*, Office of Water (WH-550), EPA 570-9-89-015, September 1989

- *Restructuring Small Drinking Water Systems: Options and Case Studies*, Office of Water, EPA 810-R-95-002, September 1995

EPA, General Publications on the Internet
(www.epa.gov)

- *ABC Operator Certification Program Standards*, January 1997

- *ABC Survey of Water Treatment Certification Requirements: Preliminary Results*, December 1996

- *Drinking Water State Revolving Fund Program Guidelines*, EPA 816-R-97-005, February 1997

- *Economic Guidance for Water Quality Standards: Workbook*, Office of Water, November 1993 (www.epa.gov/ost/econ)

- *Environmental Finance Program: A Guidebook of Financial Tools*, June 1997 (www.epa.gov/efinpag/guidebk/guindex.htm)

- *Guidance for States on Implementing the Capacity Development Provisions of the Safe Drinking Water Act*, December 1997

- *Information for States on Implementing the Capacity Development Provisions of the Safe Drinking Water Act*, EPA 816-D-97-002, 1997

- *Information for the Public on Participating with States in Preparing Capacity Development Strategies*, 1997

EPA Office of Ground Water and Drinking Water Publications
(www.epa.gov/ogwdw)

- *Drinking Water Glossary: A Dictionary of Technical and Legal Terms Related to Drinking Water*, Office of Water, EPA 810-B-94-006, June 1994

- *Drinking Water Infrastructure Needs Survey: First Report to Congress*, EPA 812-R-97-001, January 1997

- *Getting Involved in Protecting Your Community's Source of Drinking Water*, EPA 816-F-97-009, October 1997

- *Initial Summary of Current State Capacity Development Activities*, Office of Water, EPA 816-S-97-001

- *New Federal Funding for Land Acquisition and Conservation Easements*, EPA 816-F-97-010, October 1997

- *Small System Compliance Technology List for the Surface Water Treatment Rule*, Office of Water, EPA 815-R-97-002, August 1997

- *Water on Tap: A Consumer's Guide to the Nation's Drinking Water*, Office of Water, EPA 815-K-97-002

EPA, Other Publications (No order information)

- *Announcement of the Drinking Water Contaminant Candidate List*, EPA 815-Z-98-001, March 2, 1998

- *ABEL User's Manual*, Office of Enforcement, October 1991

- *Affordability of the 1986 SDWA Amendments to Community Water Systems*, Drinking Water Standards Division, September 1993

- *Cost Estimates for Select Combined Sewer Overflow Control Technologies: Storage Basins…*, EPA Contract #68-08-0023, September 1993

- *Discussion Paper on Implementing the Water Conservation Guidelines*, 1997

- *Drinking Water DWSRF Program – Questions and Answers*, December 1997

- *EPA Small Community Financial Capability Self-Evaluation Guidebook*, Region 5 Water Division, January 1998

- *Evaluating Municipal Environmental Burdens and Municipality's Ability to Pay (MABEL): Volume 1 – User's Manual*, Office of Policy, Planning, and Evaluation, June 1990

- *Guidance for Calculating Municipal and Not-for-Profit Organizations' Ability to Pay Civil Penalties…*, Toxics Enforcement Policy Branch, March 1993

- *How to Conduct a Sanitary Survey of Small Water Systems – A Training Course Learner's Guide*, 1998

- *Implementing the Conservation Guidelines Provision of the 1996 SDWA*, Office of Waste Water, September 1997

- *Information for States on Developing Affordability Criteria for Drinking Water*, Office of Water, EPA 816-R-98-002, February 1998

- *Information for States on Recommended Operator Certification Requirements*, Office of Water, EPA 816-R-98-001, February 1998

- *Methods for Assessing the Viability of Small Water Systems: A Review of Current Techniques and Approaches*, Office of Water, EPA 810-R-95-003, August 1995

- *Model State Programs for Ensuring that All New PWSs and NTNCWSs Demonstrate Technical, Managerial, and Financial Capacity*, Cadmus, 1998

- *Proceedings of the Blue Ribbon Panel on Safe Drinking Water Act Costing*, Office of Drinking Water, October 1996

- *Proposed Reissuance of NPDES General Permits for Storm Water Discharges from Construction Activities*, June 1997

- *Public Review of Draft Guidelines for the Certification and Recertification of the Operators of Community and Nontransient Noncommunity Public Water Systems*, FRL-5988-3, March 27, 1998

- *Region V Training Meeting Summary*, The Cadmus Group, Inc., 1998

- *Revision of Existing Variance and Exemption Regulations to Comply with Requirements of the Safe Drinking Water Act*, FRL-5999-5, April 20, 1998

- *Water Conservation Plan Guidelines*, Office of Waste Water, August 1998

Gale Research Co.

- *Public Utilities: Information Sources; an Annotated Guide to Literature and Bodies Concerned with Rates…*, Hunt, 1966

Georgia Rural Water Association and AWWA

- Georgia's Small System Peer Review Program

General Accounting Office
(www.gao.gov)

- *Drinking Water: Stronger Efforts Essential for Small Communities to Comply with Standards*, RCED-94-4

- *Housing Allowances: An Assessment of Program Participation and Effects*, 1984.07

- *Housing and Community Development Products, 1992-94*, RCED-95-61W

- *Housing Finance: Improving the Federal Home Loan Bank System's Affordable Housing Program*, RCED-95-82

- *Rural Development: Availability of Capital for Agriculture, Business, and Infrastructure*, RCED-97-109

- *Rural Development: Financial Condition of the Rural Utilities Service's Loan Portfolio*, RCED-97-82

- *Rural Development: Patchwork of Federal Water and Sewer Programs is Difficult to Use…*, RCED-97-82

- *Rural Development: USDA's Approach to Funding Water and Sewer Projects*, RCED-95-258

Healthcare Financial Management

- *Using an Affordability Analysis to Budget Capital Expenditures*, Singhvi, v50 n668, 1996

Housing and Urban Development
(www.hud.gov)

- *1996 Native American Housing Assistance and Self-Determination Act*, 1996

- *Community Planning and Development Program Guide*, San Francisco Office, 1974

- *Small Cities Community Development Block Grant Program for Fiscal Year 1996; Section 108 Loan Guarantee…*, FR-40040-No1, December 28, 1995

Iowa Department of Natural Resources
(Call 515-281-9361, www.state.ia.us/government/dnr/index.html)

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Water Resource Center
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Center for Environmental Research and
Investigation publication
(513) 569-7562 or
(800) 490-9198

Educational Resource Information Center
(800) 276-0462

National Technical Information Service
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PWS
(800) 926-7337
fx: (303) 347-0804

RCAP
(703) 771-8636
fx: (703) 771-8753

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(800) 490-9198

3. Websites

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www.city.davis.ca.us/city/pworks/wqrept95.htm
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www.awwa.org/utility.htm

Credit Rating Services
www.dnb.com
www.moodys.com
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Partnership for Safe Water
www.awwa.org/partner2.htm

Organization Sites

American Water Works Association
www.awwa.org

American Water Works Association Research Foundation
www.awwarf.com

Association of Metropolitan Water Agencies
www.amwa-water.org/water

Association of State Drinking Water Administrators
www.asdwa.org

EPA (General)
www.epa.gov

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www.epa.gov/ncepihom

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www.epa.gov/ogwdw

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www.gao.gov

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Appendix B

Glossary

affordability. The ability of a water system and its customers to support the cost of complying with the SDWA.

appropriations. The right to withdraw water from its source.

best management practice. A measure or activity that is beneficial, empirically proven, cost-effective, and widely accepted in the professional community.

block. A quantity of water for which a price per unit of water (or billing rate) is established.

budget (water-use). An accounting of total water use or projected water use for a given location or activity.

capital costs. Costs (usually long-term debt) of financing construction equipment. Capital costs are usually fixed, one-time expenses which are independent of the amount of water produced.

capital improvements. Fixed outlays needed for the initial design and construction of water system infrastructure and equipment, such as pumps, pipes, treatment facilities, etc.

community water system. According to the SDWA, a drinking water conveyance system serving at least 15 service connections used by year-round residents of the area served by the system or regularly serving at least 25 year-round residents.

control point. A crux in a new system's development at which a State (or other unit of government) can exercise its authority to ensure the new system's capacity.

conservation pricing. Water rate structures that help achieve beneficial reductions in water usage.

consolidation. The physical interconnection of systems without a transfer of ownership.

contaminant. Any physical, chemical, biological, or radiological substance or matter that has an adverse effect on air, water, or soil.

contamination. The introduction into water of microorganisms, chemicals, toxic substances, wastes, or wastewater in a concentration that makes the water unfit for its next intended use.

cost/benefit analysis. A quantitative evaluation of the costs which would be incurred versus the overall benefits to society of a proposed action, such as the establishment of an acceptable dose of a toxic chemical.

cost-effectiveness. A comparison of costs required for achieving the same benefit by different means. Costs are usually expressed in dollars, but benefits can be expressed in another unit (such as a quantity of water).

distribution facilities. Pipes, treatment, storage and other facilities used to distribute drinking water to end users.

exemption. A state with primacy may relieve a public water system from a requirement respecting an MCL, treatment technique, or both, by granting an exemption if certain conditions exist. These are: 1) the system cannot comply with a MCL or treatment technique due to compelling factors which may include economic factors; 2) the system was in operation on the effective date of the MCL or treatment technique requirement; and 3) the exemption will not result in an unreasonable public health risk.

holdback. Reversible decrease in SRF allotment that can occur only in fiscal year 1999. Holdback funds will be awarded to the State if the State implements a new system capacity program by September 31, 1999.

integrated resource planning. An open and participatory planning process emphasizing least-cost principles and a balanced consideration of supply and demand management options for meeting water needs.

losses (water). Metered source water less revenue-producing water and authorized unmetered water uses.

maximum contaminant level (MCL). The maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system, except in the case of turbidity where the maximum permissible level is measured at the point of entry to the distribution system. Contaminants added to the water under circumstances controlled by the user are excluded from this definition, except those contaminants resulting from the corrosion of piping and plumbing caused by water quality.

meter. An instrument for measuring and recording water volume.

monitoring. Measuring concentrations of substances in environmental media or in human or other biological tissues.

pollutant. Generally, any substance introduced into the environment that adversely affects the usefulness of a resource.

primacy. The responsibility for ensuring that a law is implemented, and the authority to enforce a law and related regulations. A primacy agency has primary responsibility for administrating and enforcing regulations.

public water system (PWS). A system for the provision to the public of piped water for human consumption, if such system has at least fifteen service connections that regularly serves at least 60 days out of the year.

raw water. Untreated water.

restructuring. Changing the operational, managerial, or institutional structure of

water systems in order to meet the increasing costs and responsibilities of the SDWA and still provide water at an affordable price.

Safe Drinking Water Act (SDWA). Federal drinking water quality legislation administered by the U.S. Environmental Protection Agency (EPA) through state primacy agencies; amended in 1996.

satellite management. An arrangement whereby a large community water system agrees to become responsible for specified management tasks of nearby smaller systems.

service territory. The geographic area served by a water utility.

State Revolving Fund (SRF). State loan funds for water utilities established under the Safe Drinking Water Act.

system (water). A series of interconnected conveyance facilities owned and operated by a drinking water supplier; some utilities operate multiple water systems.

transfers (water). Exchange of water among willing buyers and sellers.

transmission facilities. Pipes used to transport raw or treated water from the source to distribution facilities.

treated water. Water treated to meet drinking water standards.

user fees. The price a customer must pay for water, including fixed and variable charges, that goes toward supporting the efficient function of the water utility.

variance. A State with primacy may relieve a public water system from a requirement respecting an MCL by granting a variance if certain conditions exist. These are: 1) the system cannot meet the MCL in spite of the application of best available treatment technology, treatment techniques or other means (taking costs into consideration), due to the characteristics of the raw water sources which are reasonably available to the system, and 2) the variance will not result in an unreasonable public health risk. A system may also be granted a variance from a specified treatment technique if it can show that, due to the nature of the system's raw water source, such treatment is not necessary to public health.

withholding. Irreversible and permanent decrease in SRF funding that will occur by failing to implement a variety of programs (strategies for existing systems, new system strategies, operator certification, etc.).