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# EVOLUTION OF THE SAFE DRINKING WATER ACT: A SEARCH FOR EFFECTIVE QUALITY ASSURANCE STRATEGIES AND WORKABLE CONCEPTS OF FEDERALISM

WILLIAM E. COX\*

## INTRODUCTION

Enactment of the 1996 Amendments<sup>1</sup> to the Safe Drinking Water Act<sup>2</sup> ("SDWA" or "Act") is the most recent expression of concern over the safety of drinking water provided to customers of public water systems ("PWSs") across the United States. The potential of water supply to play a major role in the spread of disease, sometimes in catastrophic proportions, was realized early in the history of human settlement and the associated centralization of water supply. Periods of complacency have been interspersed with periods of heightened concern, but drinking water safety has been a long-time part of the public policy agenda of the United States. This continuing concern has resulted in the creation of major laws and governmental programs intended to ensure safe water.

The resulting programs have taken different forms. One approach has been the development of environmental programs to protect the quality of water within natural hydrologic systems. Protection of human health is not the sole focus but is an important objective of environmental programs for the control of waste disposal and other human alterations of natural environmental conditions. Even the more philosophical environmental protection arguments, such as those concerning preservation of endangered species and biodiversity, have a basis in the knowledge that human health is fundamentally related to environmental quality, including linkages not understood or even recognized. Environmental protection in general, and

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<sup>1</sup> Safe Drinking Water Act Amendments of 1996, Pub. L. No. 104-182, 110 Stat. 1613 (codified at 42 U.S.C.A. §§ 300f to 300j-25 (West Supp. 1996)).

<sup>2</sup> 42 U.S.C. §§ 300f to 300j-25 (1994).

protection of water quality in natural waterbodies in particular, is especially important to self-supplied water users who often drink water from natural sources such as ground water without treatment. A second focus of the governmental effort to assure safe water supply has been direct regulation of the quality of water supplied to customers of centrally-operated water supply systems. This approach traditionally has been similar to that used to ensure uncontaminated food and to protect consumers in many other areas of concern. The SDWA defines the current federal program for protection of consumers of water supplied by central systems.

The SDWA as originally adopted in 1974<sup>3</sup> created the first federal program generally applicable to PWSs across the nation. Previous federal measures had been limited to water supplied to and on interstate carriers and therefore were of much more restricted scope.<sup>4</sup> The regulatory provisions of the original SDWA program applied to "public water systems," defined to exclude the smallest systems (supplying fewer than fifteen connections or twenty-five individuals) and individual water supplies not made available to the public.<sup>5</sup>

The original SDWA adopted the concept of enforceable standards defining acceptable water quality as the primary mechanism for achieving its goal of safe water supplies.<sup>6</sup> These standards, designated "maximum contaminant levels" ("MCLs"), were to be developed by the U.S. Environmental Protection Agency ("EPA" or "Agency") for substances in drinking water that may have an adverse effect on human health or welfare.<sup>7</sup> Implementation of the program was to involve significant roles for federal and state governments and the water supplier, which in many cases is a unit of local government.<sup>8</sup> The primary federal responsibility was development of MCLs and other guidelines to serve as minimum standards to be met by public water systems.<sup>9</sup> Actual administration of the requirements, including more stringent standards that a given state desired to establish, was to be the responsibility of state governments under a delegation of "primacy" from the

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<sup>3</sup> Safe Drinking Water Act of 1974, 42 U.S.C. §§ 300f to 300j-9 (Supp. IV 1974).

<sup>4</sup> See, e.g., 42 C.F.R. § 72 (1957).

<sup>5</sup> See 42 U.S.C. § 300f(4) (Supp. IV 1974). The Act in its current form retains this scope. See 42 U.S.C.A. § 300f(4)(A) (West Supp. 1996).

<sup>6</sup> See 42 U.S.C. § 300g-1 (Supp. IV 1974).

<sup>7</sup> See *id.* § 300g-1(b).

<sup>8</sup> See, e.g., §§ 300g-1(e), 300g-2, 300g-3(c).

<sup>9</sup> See *id.* §§ 300g-1(b)(1) to (3), 300g-3(c).

EPA.<sup>10</sup> In the absence of primacy in a given state, administration would be an EPA responsibility.<sup>11</sup> Water suppliers had responsibility for making program requirements operational without substantial assistance from the other parties.<sup>12</sup>

But the expectations associated with the 1974 Act have been difficult to meet, and the SDWA has undergone significant changes since its original creation. Although small changes have been more frequent, the Act has seen major revision on two occasions. The legislation first underwent substantial revision in 1986.<sup>13</sup> The basic structure of the program was retained, but significant shifts in program direction were instituted. The second major overhaul, the 1996 Amendments, reinforced some of the 1986 changes and introduced other modifications to the original program.

The many changes in program details occurring in 1986 and 1996 may be interpreted in a variety of ways, but they appear to reflect at least two discernible trends. The first is a shift in emphasis with respect to management strategies for achieving the goal of safe drinking water. Provisions in the original 1974 legislation for alternative strategies to the "water quality standards" approach were relatively minor, with performance standards clearly the primary mechanism for ensuring safe water supply. One alternative allowed EPA to impose treatment techniques rather than performance standards where measurement technology limitations prevented use of standards.<sup>14</sup> A second involved measures to protect underground sources of drinking water, but these provisions were of limited scope.<sup>15</sup> Subsequent changes have substantially expanded both these alternatives to the standards approach, especially the source protection option.<sup>16</sup>

The second trend involves changing relationships among the parties responsible for SDWA implementation. Arrangements for implementing certain of the program elements added by amendments give state governments more decisionmaking flexibility and less opportunity for federal dictation of outcomes than is typical of other programs involving

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<sup>10</sup> See *id.* § 300g-2(a).

<sup>11</sup> See *id.* § 300g-5(f).

<sup>12</sup> See *id.* § 300g-3(c).

<sup>13</sup> Safe Drinking Water Act Amendments of 1986, Pub. L. No. 93-523, 88 Stat. 1660 (codified at 42 U.S.C. §§ 300f to 300j-11 (Supp. IV 1986)).

<sup>14</sup> See 42 U.S.C. § 300g-1(b)(3) (Supp. IV 1974).

<sup>15</sup> See *id.* § 300h.

<sup>16</sup> See, e.g., 42 U.S.C. § 300h(a)-(b) (1994).

environmental federalism. But the most significant change in relationships is the expanded attention to the role of the water supplier. The 1986 amendments increased assistance to water suppliers in recognition of resource and management limitations, and the 1996 amendments made major expansions in assistance and expanded the decisionmaking role of the water supplier.<sup>17</sup>

This article examines these efforts to improve the program's functioning and the implications of the attempt to date. Organizationally, the article first reviews the developmental history of the program through the 1996 amendments. Then it describes the major provisions of the current program. After the current framework is described, the balance among management strategies is examined from an evolutionary perspective to identify the causative factors responsible for the substantial change in strategies since the SDWA was enacted. The analysis next focuses on the changing views of federalism reflected in shifts in intergovernmental relations during the program's history. The article concludes with an attempt to identify the key issues likely to affect implementation of the recently modified Act and its ultimate effectiveness in achieving the objective of safe drinking water.

## I. HISTORY OF THE SDWA PROGRAM

The formal program created by the SDWA is now entering its third decade since enactment of the original legislation in 1974. But some of the program's elements can be traced to an earlier date when more limited measures were in effect. For purposes of analysis, development of the program lends itself to division into four periods: (1) the period prior to the SDWA's original enactment in 1974; (2) the period of 1974-1986 when implementation of the original Act was underway; (3) the 1986-1996 period after the 1986 amendments were adopted; and (4) the post-1996 period beginning with the passage of the 1996 amendments.

### A. *Pre-1974: Drinking Water Protection Before the SDWA*

Prior to 1974, the safety of water supply was viewed primarily as a

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<sup>17</sup> See 42 U.S.C. § 300g-3(c) (Supp. IV 1986); 42 U.S.C.A. § 300g-3(c) (West Supp. 1996).

state responsibility.<sup>18</sup> The history of public water supply in the United States can be traced to the late 1700s and early 1800s.<sup>19</sup> The entire City of Philadelphia was supplied by a water distribution system by 1822.<sup>20</sup> By 1860, over 400 water systems served major cities and towns, and the number had grown to over 3,000 by 1900.<sup>21</sup> But many of these systems did not supply safe water and often were the source of major disease outbreaks resulting from biological contamination of the water. The ability to collect and deliver water had outpaced understanding of the health implications of water supply and the knowledge to remedy the problem.<sup>22</sup>

The problem of biological contamination of drinking water was addressed by the individual states as knowledge and technology developed. Many state boards of health were established in the second half of the nineteenth century, beginning with Massachusetts in 1869.<sup>23</sup> Understanding of the cause of diseases such as cholera and typhoid led to improved wastewater disposal practices in relation to drinking water. Developments in water treatment technology such as filtration and disinfection led to dramatic decreases in water-related disease outbreaks.<sup>24</sup> But these developments and their applications were slow and uneven among the states, and substantial problems continued well into the twentieth century.

The initial efforts of the federal government directed toward the health aspects of water supply grew out of concern for the spread of communicable diseases among the states. Following 1879 legislation intended to prevent the introduction of infectious or contagious diseases into the United States, an act was passed in 1890 to prevent the spread of contagious diseases from one state to another.<sup>25</sup> As this program developed, attention eventually came to focus on water supply, first with respect to

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<sup>18</sup> See AMERICAN WATER WORKS ASS'N, NEW DIMENSIONS IN SAFE DRINKING WATER 1 (1988).

<sup>19</sup> See *Safe Drinking Water Act: Hearings on H.R. 5368, H.R. 1059, H.R. 5348, and H.R. 5995 Before the Subcomm. on Pub. Health and Env't of the House Comm. on Interstate and Foreign Commerce*, 93d Cong. 56, 60-66 (1973) [hereinafter *Hearings*] (statement by Leonard B. Dworsky, Director, Cornell University Water Resources and Marine Sciences Center).

<sup>20</sup> See *id.* at 60.

<sup>21</sup> See *id.*

<sup>22</sup> See *id.*

<sup>23</sup> See *id.*

<sup>24</sup> See *id.*

<sup>25</sup> See Act of Mar. 27, 1890, ch. 51, 26 Stat. 31 (1890).

vessels used in waterborne commerce and finally with respect to all interstate carriers.

A milestone in the history of drinking water protection was the adoption in 1914 of drinking water standards for common carriers engaged in interstate commerce.<sup>26</sup> These standards were adopted by the Secretary of the Treasury after study by a special commission.<sup>27</sup> The standards, which were to be administered by the Public Health Service ("PHS") and came to be known as the PHS standards, were limited to specification of limits for bacteriological impurity and did not address physical properties or chemical impurities.<sup>28</sup>

Although legally applicable only to water supplies serving interstate carriers, these standards came to be widely applied to public supplies in general.<sup>29</sup> The methods of laboratory analysis and other practices of state health officials relying on these standards were not uniform but instead demonstrated wide divergence.<sup>30</sup> Partly as a result of variations in application, the standards were revised and expanded in 1925.<sup>31</sup> Expansions included the addition of limitations for specified chemical contaminants and specifications for methods of analysis.<sup>32</sup> The standards were again revised in 1946 and 1962.<sup>33</sup> The 1946 changes included addition of language to facilitate application of the standards to all public water supplies, but application beyond the original coverage remained voluntary.<sup>34</sup> These revisions continued the general trend of expanding the list of contaminants for which limits were provided.<sup>35</sup>

Drinking water quality over the first half of the twentieth century had undergone substantial improvement. Many once-common diseases had been virtually eliminated, leading to general confidence in the safety of public

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<sup>26</sup> See *Hearings*, *supra* note 19, at 64.

<sup>27</sup> See *id.*

<sup>28</sup> See *id.*

<sup>29</sup> See *id.* at 65.

<sup>30</sup> See *id.*

<sup>31</sup> See *id.*

<sup>32</sup> See *id.*

<sup>33</sup> See *id.* at 65-66.

<sup>34</sup> See *id.* at 65.

<sup>35</sup> See Charles D. Larson, *Historical Development of the National Primary Drinking Water Regulations*, in *SAFE DRINKING WATER ACT: AMENDMENTS, REGULATIONS AND STANDARDS* 3, 10 (Edward J. Calabrese et al. eds., 1989) (listing, in Table 2, the standards in effect on these different dates).

water supply systems. But this confidence began to erode early in the second half of the century. Concern about pesticides and a wide range of chemicals with unknown long-range effects, together with lingering episodes of waterborne disease, caused doubt concerning the adequacy of drinking water management programs. The final evidence of the deficiencies of the water supply industry came from a 1970 PHS study reporting the results of an investigation of 969 public water supply systems.<sup>36</sup> Thirty-six percent of tap water samples collected exceeded one or more of the PHS standards for bacteriological or chemical contaminants.<sup>37</sup> Physical facilities were often inadequate, with fifty-six percent reported to have deficiencies;<sup>38</sup> in a substantial percentage of cases, water treatment plant operators were inadequately trained.<sup>39</sup> State programs were found commonly to be deficient in inspections and sampling for bacteriological analysis.<sup>40</sup>

The existence of widespread deficiencies emphasized the inherent limitations of the existing PHS standards. Their only mandated application was to prohibit use of noncomplying water sources on interstate carriers; they could not be enforced against providers of water to local populations and had no regulatory status with respect to water suppliers not serving carriers.<sup>41</sup> Although some voluntary application in state programs had occurred, only fourteen states had officially adopted the standards by 1971.<sup>42</sup> The range of contaminants covered was also limited. The substances covered had expanded since initial creation as a bacteriological standard only, but the legitimacy of the expansion to include chemicals had been called into question since prevention of infectious diseases was the basis for creation.<sup>43</sup> Even if given recognition in their then-current form, many potential contaminants remained beyond control.

Recognition of these deficiencies of PWSs and the state of programs for protecting the public from unsafe drinking water contributed support to efforts in Congress to pass federal legislation generally applicable to PWSs.

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<sup>36</sup> See BUREAU OF WATER HYGIENE, U.S. PUB. HEALTH SERV., COMMUNITY WATER SUPPLY STUDY: ANALYSIS OF NATIONAL SURVEY FINDINGS i (1970).

<sup>37</sup> *Id.* at ii.

<sup>38</sup> *Id.* at iv.

<sup>39</sup> *Id.* at viii.

<sup>40</sup> See H.R. REP. NO. 93-1185, at 7 (1974), *reprinted in* 1974 U.S.C.C.A.N. 6454, 6460.

<sup>41</sup> See *id.* at 6, *reprinted in* 1974 U.S.C.C.A.N. at 6459.

<sup>42</sup> See *id.* at 6-7, *reprinted in* 1974 U.S.C.C.A.N. at 6459-60.

<sup>43</sup> See *id.* at 3, *reprinted in* 1974 U.S.C.C.A.N. at 6456.



The time period in which the SDWA was proposed was one of substantial federal activism in the area of environmental protection.<sup>44</sup> Constitutional authority for both the SDWA and environmental legislation such as the Clean Water Act ("CWA") is the Commerce Clause.<sup>45</sup> Widespread application for environmental purposes was likely a stimulus for further reliance in the case of the SDWA, which, while containing consumer product-safety provisions, itself contained environmental protection measures.

The relationship of the SDWA to the Commerce Clause is shown in the following quotation:

Moreover, the national economy may be expected to be harmed by unhealthy drinking water and the illnesses which may result therefrom. This is the case for several reasons. First, outbreaks of waterborne disease are likely to inhibit interstate travel and tourism in or through the areas in which the water is unsafe. Second, the economic productivity of those engaged in interstate commerce or activities affecting commerce is likely to be diminished to the extent that unsafe drinking water causes illness and absence from the place of employment. Third, agricultural employees who migrate across State lines may properly be reluctant to work in areas with only contaminated water supplies. Those who have contracted communicable disease may be barred from entering other States. Fourth, diseases caused by contaminated drinking water may be communicable beyond State lines. Fifth, contaminants which endanger the public health when present in drinking water are frequently generated by business engaged in or enterprises affecting interstate commerce. Sixth, the unavailability of a reliably safe drinking water supply may well be a primary limiting factor in the economic growth of a town or region and ultimately in the growth of the Nation's economy.<sup>46</sup>

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<sup>44</sup> The SDWA followed passage of the National Environmental Policy Act of 1969, Pub. L. No. 91-190, 83 Stat. 852 (codified as amended at 42 U.S.C. §§ 4321-4347 (1994)), by four years and passage of the Clean Water Act in 1972, Pub. L. No. 92-240, 86 Stat. 47 (codified as amended at 33 U.S.C. §§ 1251-1387 (1994)), by two years.

<sup>45</sup> U.S. CONST. art. I, § 8.

<sup>46</sup> H.R. REP. NO. 93-1185, at 8, *reprinted in* 1974 U.S.C.C.A.N. at 6461.

On the basis of this linkage to interstate commerce and the widespread concern that had developed over the safety of drinking water, the SDWA was enacted by Congress and signed into law in 1974.<sup>47</sup>

B. 1974-1986: *The Original SDWA*

The program created by the SDWA in 1974 differed substantially from the previous federal drinking water program due to its application to all PWSs above a specified size,<sup>48</sup> but it continued to employ the primary strategy for ensuring safe drinking water on which the previous program had been based: enforcement of performance standards specifying legal limits on contaminants. The new standards were to be incorporated into national primary drinking water regulations (“NPDWRs”),<sup>49</sup> which were to cover substances with potential adverse human health impacts, and national secondary drinking water regulations (“NSDWRs”),<sup>50</sup> which were to cover substances adversely affecting human welfare (such as those causing appearance or odor problems). NSDWRs were to take the form of performance standards but were not to be enforceable by the federal government.<sup>51</sup> They received little attention in the SDWA in comparison to that given NPDWRs.

NPDWRs were to be issued in two forms—interim and revised.<sup>52</sup> Interim NPDWRs were to be issued quickly while the revised NPDWRs were to be developed over a longer period of time through a more comprehensive approach.<sup>53</sup> The interim regulations were to be based largely on updated PHS standards, but the EPA Administrator was given a mandate to develop regulations for any contaminant that may have an adverse human health effect.<sup>54</sup>

Performance standards were the intended form for NPDWRs in cases where the level of a contaminant in PWSs could be determined within

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<sup>47</sup> Safe Drinking Water Act of 1974, Pub. L. No. 93-523, 88 Stat. 1660 (1974).

<sup>48</sup> See 42 U.S.C. § 300g (Supp. IV 1974).

<sup>49</sup> See *id.* § 300g-1.

<sup>50</sup> See *id.* § 300f(2).

<sup>51</sup> See *id.* § 300g-1(c).

<sup>52</sup> See *id.* § 300g-1(a), (b)(3).

<sup>53</sup> See *id.*

<sup>54</sup> See *id.* § 300g-1(a)(1).

economic and technological constraints.<sup>55</sup> Performance standards were to be established at two levels. The first, known as “recommended maximum contaminant levels” (“RMCLs”), were to be set at levels that prevented the occurrence of known or anticipated adverse effects on human health, with an adequate margin of safety to be provided.<sup>56</sup> RMCLs were to establish health-based goals without regard to questions of technological or economic feasibility, but they were not to be legally enforceable.<sup>57</sup> The second level of standards, called “maximum contaminant levels” (“MCLs”), were to incorporate considerations of technological and economic feasibility.<sup>58</sup> MCLs were to be legally enforceable after final promulgation as regulations.<sup>59</sup> NPDWRs were also authorized to be developed in a second form in cases where measurement of contaminant levels was not technologically or economically feasible: the specification of a treatment technique known to reduce the level of the contaminant consistent with the SDWA.<sup>60</sup>

Recognizing that compliance with NPDWRs would not be feasible or necessary in all cases, the initial SDWA contained provisions for variances<sup>61</sup> and exemptions.<sup>62</sup> Variances allowed exceptions to compliance with MCLs where source water characteristics made compliance through use of available technology impossible: they also authorized exceptions from NPDWRs that imposed treatment requirements in cases where source water quality made such treatment unnecessary for health protection.<sup>63</sup> While variances focused on special cases arising from source water characteristics, exemptions under the 1974 SDWA allowed an exception to an NPDWR for either an MCL or a treatment requirement for PWSs existing on its effective date where compliance was not impossible due to “compelling factors,” including the associated economic burden.<sup>64</sup> An exemption was to be conditioned on implementation of prescribed control measures and accompanied by a

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<sup>55</sup> See *id.* § 300g-1(b)(1)(B).

<sup>56</sup> See *id.*

<sup>57</sup> See *id.* § 300g-1(e).

<sup>58</sup> See *id.* § 300g-1(c)(i).

<sup>59</sup> See *id.* § 300g-1(b).

<sup>60</sup> See *id.* § 300g-1(b)(1)(B).

<sup>61</sup> See *id.* § 300g-4.

<sup>62</sup> See *id.* § 300g-5.

<sup>63</sup> See *id.* § 300g-4(a)(1)(A), (B).

<sup>64</sup> See *id.* § 300g-5(a)(1).

compliance schedule for meeting the NPDWR in question.<sup>65</sup> Variances and exemptions could not be issued if an unreasonable risk to health would result.<sup>66</sup> These two mechanisms for exceptions were seen as necessary measures for small systems with special problems of complying with the SDWA: they represented one of the few concessions made to such systems in the original form of the legislation.

The 1974 SDWA, in addition to providing for NPDWRs to control waterworks operations, also incorporated other strategies for assuring the safety of drinking water. The principal example was the addition of measures to protect underground sources of drinking water from certain waste disposal practices—the underground injection control (“UIC”) program.<sup>67</sup> Inclusion of the UIC program in the SDWA was a response to the lack of federal controls over ground water pollution. The existence of increasingly stringent controls over waste disposal involving discharge of effluent into the atmosphere or surface waters was seen as creating an incentive for underground disposal where federal controls were largely missing.<sup>68</sup> By focusing on injection well operation, however, the program excluded many potential sources of ground water contamination.

A second source-protection measure of the 1974 Act was the sole-source aquifer protection program.<sup>69</sup> The mechanism of protection was a procedure to ensure that federally-funded activities did not cause harm to certain aquifers. This restriction only applied to aquifers that received a special designation because of their important relationship to the public health.<sup>70</sup>

Administration of the SDWA was designed to be a joint enterprise between federal and state government, following the general approach already employed in such legislation as the Clean Air Act<sup>71</sup> and Clean Water Act.<sup>72</sup> The SDWA allowed a state to assume primary enforcement authority (“primacy”) through application to EPA.<sup>73</sup> An EPA delegation of primacy

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<sup>65</sup> See *id.* § 300g-5(b).

<sup>66</sup> See *id.* §§ 300g-4(a)(1)(A), 300g-5(a)(3).

<sup>67</sup> See *id.* §§ 300h to 300h-3.

<sup>68</sup> See H.R. REP. NO. 93-1185, at 6 (1974), *reprinted in* 1974 U.S.C.C.A.N. 6454, 6459.

<sup>69</sup> See 42 U.S.C. § 300h-3(e).

<sup>70</sup> See *id.*

<sup>71</sup> 42 U.S.C. §§ 7401-7671q (1994).

<sup>72</sup> 33 U.S.C. §§ 1251-1387 (1994).

<sup>73</sup> See 42 U.S.C. § 300h-1 (Supp. IV 1974).

had to be based on a positive determination that the state had adopted drinking water regulations at least as stringent as federal regulations and was in compliance with other requirements.<sup>74</sup> The UIC program was also intended to be administered by the states through separate delegations in accord with EPA developed regulations.<sup>75</sup> A UIC program was to be administered by EPA if a state failed to request approval or have a submitted program disapproved.<sup>76</sup>

The passage of the SDWA in 1974 was accompanied by the expectation that drinking water standards (or requirements for treatment techniques) could be adopted quickly. The next decade, however, saw slow progress in creating new regulations. The following quotation from the legislative history of the 1986 SDWA Amendments, which were enacted in response to dissatisfaction with the rate of progress, summarizes the perceptions of legislators regarding EPA's implementation of the original legislation:

The amendments were developed to rectify major deficiencies in the implementation of programs established under the Act. While there has been improved compliance with existing drinking water standards, the Environmental Protection Agency has established standards for only a small fraction of the contaminants that are found in public water systems and that may have an adverse effect on human health. In order to address this fundamental deficiency, the bill establishes schedules and deadlines for standard-setting, requires simultaneous promulgation of drinking water standards and goals, and requires that standards be set as close to health level goals as feasible with the use of best available technology.<sup>77</sup>

### C. 1986-1996: SDWA Amendments of 1986

The 1986 SDWA Amendments imposed substantial changes on the

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<sup>74</sup> See *id.* § 300g-2(a)(1).

<sup>75</sup> See *id.* § 300h-1.

<sup>76</sup> See *id.* § 300h-1(c).

<sup>77</sup> S. REP. NO. 99-56, at 2 (1985), reprinted in 1986 U.S.C.C.A.N. 1566, 1567.

SDWA program. In the area of NPDWR development, congressional reaction to what was perceived as EPA's failure to make adequate progress was an attempt to micro-manage the process of regulation promulgation. The 1986 Amendments also added significant new program elements that expanded the scope of quality assurance strategies available and reflected greater concern for the problems of certain water suppliers in complying with the SDWA.

With respect to establishment of performance standards, the 1986 Amendments changed the basic terminology of the process. The approach involving "interim" and "revised" standards was dropped, and the existing interim NPDWRs were designated simply as "NPDWRs." Another terminology change was the renaming of RMCLs as MCLGs—maximum contaminant level goals.<sup>78</sup>

An aggressive schedule for establishing new MCLGs and NPDWRs was established for eighty-five contaminants previously listed by EPA as part of the rulemaking process.<sup>79</sup> NPDWRs were required for at least nine of the listed contaminants within twelve months of enactment of the 1986 Amendments, for at least forty additional contaminants within twenty-four months, and for the remainder of the list within thirty-six months.<sup>80</sup> In addition, EPA was instructed to list additional contaminants with potential adverse health effects on January 1, 1988, and at three year intervals thereafter.<sup>81</sup> Within thirty-six months of listing, MCLGs and NPDWRs were to be published for at least twenty-five of the listed contaminants.<sup>82</sup>

The 1986 Amendments continued authority for EPA to prescribe treatment techniques in NPDWRs in lieu of MCLs in certain situations, and they mandated the development of certain treatment techniques.<sup>83</sup> EPA was required to develop criteria under which filtration would be a required treatment technique for PWSs supplied by surface water sources.<sup>84</sup> Regulations requiring disinfection as a treatment technique for all PWSs were also mandated, but a rule specifying criteria for granting variances from the

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<sup>78</sup> See 42 U.S.C. § 300g-1(a)(2) (Supp. IV 1986).

<sup>79</sup> See *id.* § 300g-1(b)(1).

<sup>80</sup> See *id.*

<sup>81</sup> See *id.* § 300g-1(b)(3)(A).

<sup>82</sup> See *id.* § 300g-1(b)(2), (3).

<sup>83</sup> See *id.* § 300g-1(b)(7)(A).

<sup>84</sup> See *id.* § 300g-1(b)(7)(C).

disinfection requirement was required.<sup>85</sup>

Another provision of the 1986 legislation resulted in a mandated treatment. The treatment technique was a requirement for the use of lead-free materials during installation or repair of PWSs or plumbing systems providing water for human consumption.<sup>86</sup> PWSs were required to identify and provide notice to persons potentially affected by lead contamination of drinking water as a result of (1) lead within the public water distribution system or (2) the corrosivity of the water sufficient to cause leaching of lead.<sup>87</sup> EPA published a final rule for lead and copper in 1991.<sup>88</sup> The rule imposed a treatment technique consisting of lead service line removal, corrosion control, and public education for community and non-transient, noncommunity systems.<sup>89</sup>

In a related development subsequent to enactment of the 1986 Amendments, Congress added provisions to the SDWA requiring removal of lead-lined drinking water coolers from schools and banned the sale in interstate commerce of drinking water coolers that were not lead free.<sup>90</sup> Other actions to remedy the problem of lead contamination of drinking water in schools were also taken, including the establishment of special federal grants.<sup>91</sup>

Another operational requirement imposed by the 1986 Amendments concerned monitoring for unregulated contaminants.<sup>92</sup> Prior to the 1986 Amendments, PWSs were required to monitor for regulated contaminants only;<sup>93</sup> thus, information about the presence of other contaminants with potentially adverse health effects was not collected. EPA was directed by the Amendments to promulgate regulations within eighteen months requiring monitoring for unregulated contaminants listed by EPA.<sup>94</sup> Frequency of monitoring could vary depending on the number of people served by the

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<sup>85</sup> *See id.* § 300g-1(b)(8).

<sup>86</sup> *See id.* § 300g-6(a)(1).

<sup>87</sup> *See id.* § 300g-6(a)(2)(A).

<sup>88</sup> *See* 56 Fed. Reg. 26,460 (1991) (with later revisions at 56 Fed. Reg. 26,460 (1991); 56 Fed. Reg. 32,112 (1991); 57 Fed. Reg. 28,785 (1992); 59 Fed. Reg. 33,860 (1994)) (for minor changes currently under consideration, see 61 Fed. Reg. 16,348 (1996)).

<sup>89</sup> *See id.*

<sup>90</sup> *See* 42 U.S.C. §§ 300j-22 to -25 (1988).

<sup>91</sup> *See id.* § 300j-25.

<sup>92</sup> *See* 42 U.S.C. § 300j-4(a)(2) (Supp. IV 1986).

<sup>93</sup> *See* 42 U.S.C. § 300j-4 (Supp. IV 1974).

<sup>94</sup> *See* 42 U.S.C. § 300j-4(a)(2) (Supp. IV 1986).

system.<sup>95</sup> Provision was made for small systems with fewer than 150 service connections to satisfy the requirement by submitting samples or providing the opportunity for sampling.<sup>96</sup>

The 1986 legislation expanded source-protection measures. The most significant change was the addition of provisions for wellhead protection programs.<sup>97</sup> This new section of the SDWA required states to submit programs to EPA within three years for protection of wells from human sources of contamination.<sup>98</sup> However, the only penalty for failure to develop an approved program was the loss of special federal funding provided for such programs.<sup>99</sup> An existing source-protection measure, the sole source aquifer protection program, was enhanced by the addition of a demonstration program, which created new funding possibilities for developing and implementing aquifer protection.<sup>100</sup> Another existing source-protection program, the UIC program, was modified but retained its basic form.<sup>101</sup>

Finally, the 1986 Amendments made special provisions to assist small PWSs in complying with the SDWA. A sum of ten million dollars was authorized for provision of technical assistance to small systems in achieving and maintaining compliance.<sup>102</sup> In addition, special considerations for small systems were incorporated into various provisions. An example is provided by the above-noted provision for the special treatment of systems with fewer than 150 service connections under the new requirement for monitoring unregulated contaminants.<sup>103</sup> Another significant example took the form of modified provisions for variances. Criteria for determining eligibility for variances were modified to take water-system size into account,<sup>104</sup> thereby increasing the opportunity for small systems to obtain variances.

To comply with the statutory deadlines, EPA developed a six-phased

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<sup>95</sup> *See id.*

<sup>96</sup> *See id.* § 300j-4(a)(7).

<sup>97</sup> *See id.* § 300h-7.

<sup>98</sup> *See id.* § 300h-7(a).

<sup>99</sup> *See id.* § 300h-7(d).

<sup>100</sup> *See id.* § 300h-6.

<sup>101</sup> *See id.* § 300h-5.

<sup>102</sup> *See id.* § 300j-1(g).

<sup>103</sup> *See supra* text accompanying note 96.

<sup>104</sup> *See* 42 U.S.C. § 300g-4(a)(1)(A).



schedule for regulation promulgation.<sup>105</sup> Phase I regulations were to include volatile organic chemicals. Phase II included synthetic organic chemicals and inorganic chemicals, microbial contaminants and the requirement for filtration, and lead and copper. Phase III focused on regulation of radionuclides. Phase IV addressed the disinfection requirement and the problem of disinfection by-products. Phase V contained other inorganic chemicals, synthetic organic chemicals, and pesticides. Phase VI included an additional twenty-five chemicals.

As a result of this schedule for implementing the new mandates, EPA's regulation-development activities were intense in the period after enactment of the 1986 Amendments. The directive to regulate nine substances within twelve months was satisfied by promulgation of an MCL for fluoride in April of 1986<sup>106</sup> and eight volatile synthetic organic chemicals in July of 1987.<sup>107</sup> These substances were among the most commonly occurring volatile organic chemicals, which as a group had become a major source of concern because of their widespread occurrence and potential health effects. Since five of the regulated chemicals were known or probable human carcinogens,<sup>108</sup> the MCLGs were set at zero while the MCLs for this subset ranged from 0.002 to 0.005 mg/l.<sup>109</sup>

A major issue that tied together several regulatory actions during this period was the inherent conflict between requirements for drinking water disinfection and the effort to control disinfection by-products. The requirement of the 1986 SDWA Amendments for specification of disinfection as a treatment requirement was partially met by means of EPA's Surface Water Treatment Rule ("SWTR").<sup>110</sup> The SWTR, promulgated June 29, 1989, was applicable to systems using surface water sources and ground water sources "under the direct influence of surface water."<sup>111</sup> The focus of

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<sup>105</sup> See Joseph A. Cotruvo & Marlene Regelski, *Overview of the Current National Primary Drinking Water Regulations and Regulation Development Process*, in *SAFE DRINKING WATER ACT: AMENDMENTS, REGULATIONS AND STANDARDS* 17, 18, tbl. 2 (Edward J. Calabrese et al. eds., 1989).

<sup>106</sup> See 51 Fed. Reg. 11,396 (1986).

<sup>107</sup> See 52 Fed. Reg. 25,690 (1987).

<sup>108</sup> The five regulated chemicals include benzene, vinyl chloride, carbon tetrachloride, 1,2-Dichloromethane, and Trichloromethane. See *id.* at 25,693-94.

<sup>109</sup> See *id.* at 25,691.

<sup>110</sup> 54 Fed. Reg. 27,486 (1989).

<sup>111</sup> *Id.* Disinfection of ground water in general was the focus of separate rulemaking.

the SWTR was to control pathogenic organisms associated with waterborne disease. The SWTR combined several regulations into one measure intended to provide a comprehensive approach when considered together with the Total Coliform Rule ("TCR"),<sup>112</sup> which was promulgated as a separate regulation that established an MCL for coliforms, traditionally used as an indicator for the presence of microbial contaminants. The SWTR included MCLGs for *Giardia lamblia*, viruses, and *Legionella*, and NPDWRs that established disinfection requirements and specified criteria for use of filtration.<sup>113</sup> The disinfection and filtration requirements were treatment techniques for *Giardia lamblia*, viruses, *Legionella*, heterotrophic bacteria, and other pathogenic organisms.<sup>114</sup> Limits on turbidity were incorporated as criteria for determining whether filtration should be required.<sup>115</sup>

While the TCR and SWTR had as their objective control of pathogenic microorganisms that produce waterborne disease, EPA had also identified disinfection residuals and disinfection by-products ("DBPs") as contaminants to be regulated through a disinfectant/disinfection by-products rule ("D/DBPR").<sup>116</sup> Some disinfectant by-products are known to be toxic to humans and considered probable human carcinogens. Thus, EPA confronted the task of developing a rule that ensured safe levels of disinfectants and their by-products in drinking water while continuing to require disinfection to ensure microbiological safety.

To further compound this dilemma, a microbiological hazard not addressed in the SWTR was raising new concerns—*Cryptosporidium*, a protozoan. Consideration had been given to addressing *Cryptosporidium* during development of the SWTR, but no action was taken because "EPA lacked sufficient health, occurrence, and water treatment control data regarding this organism at that time."<sup>117</sup> The protozoan subsequently had been implicated in significant waterborne disease outbreaks. During the winter and spring of 1992, as many as 15,000 people (ten percent of the population) displayed cryptosporidiosis-like symptoms in Jackson County, Oregon.<sup>118</sup> The most publicized case was the 1993 outbreak in Milwaukee,

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<sup>112</sup> See *id.* at 27,544.

<sup>113</sup> See *id.* at 27,486.

<sup>114</sup> See *id.*

<sup>115</sup> See *id.*

<sup>116</sup> See 59 Fed. Reg. 38,668 (1994).

<sup>117</sup> *Id.* at 38,832, 38,833.

<sup>118</sup> See *id.* at 38,838.

where 400,000 cases occurred.<sup>119</sup>

The adequacy of the SWTR to control *Cryptosporidium* had been called into question because laboratory studies had indicated that the organism was much more resistant to common disinfection practices than is *Giardia*.<sup>120</sup> In addition, new data indicated that concentrations of *Giardia* cysts and in some source waters were likely to be too great for adequate control with the specified level of treatment.<sup>121</sup> Recent studies had shown the presence of both *Giardia* and *Cryptosporidium* cysts in filtered drinking water served by highly contaminated sources.<sup>122</sup> Detection of viruses in treated waters had also cast doubt on the effectiveness of the existing rule. Such findings indicated the potential need for strengthening the SWTR.<sup>123</sup>

With these existing doubts about pathogen control, the potential for the D/DBPR to decrease disinfection effectiveness was a major concern. Because of the complexity of the problem and the limitations of knowledge surrounding the relationships of certain pathogens, as well as disinfection by-products, to human health, EPA took the unusual step of releasing a "strawman" draft of the D/DBPR, prior to release of a proposed rule, which itself is preliminary in nature.<sup>124</sup> The strawman rule proposed use of both MCLs and treatment techniques for various disinfection by-products.<sup>125</sup> In a subsequent status report prepared after receiving public comment on the strawman rule, EPA identified several issues needing consideration during D/DBPR development, including coordination with the SWTR since tradeoffs between microbial risks and DBP risks would be necessary.<sup>126</sup> The status report suggested two possible courses of action. First, MCLs could be defined based on the most effective removal technology for disinfection by-product precursors, an option seen as involving substantial cost.<sup>127</sup> Second, a two-stage approach could be adopted that required implementation of low-cost measures concurrently with efforts to improve information on additional

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<sup>119</sup> See *id.*

<sup>120</sup> See *id.* at 38,834.

<sup>121</sup> See *id.*

<sup>122</sup> See *id.* at 38,835.

<sup>123</sup> See *id.* at 38,834-35.

<sup>124</sup> See *id.* at 38,674.

<sup>125</sup> See *id.*

<sup>126</sup> See *id.* at 38,675.

<sup>127</sup> See *id.*

alternatives to be developed in a second stage.<sup>128</sup>

But these options left important issues unaddressed, and EPA saw no clear direction; at this point, the concept of a negotiated rulemaking process for developing a D/DBPR arose. The Agency decided to use the framework of the Negotiated Rulemaking Act of 1990,<sup>129</sup> and announced this intent and issued an invitation for interested parties to comment and to attend a scheduled public meeting.<sup>130</sup> EPA stated the purpose and the challenge of the negotiation as follows:

This rule is intended to limit the concentrations of disinfectants and their byproducts in United States drinking water systems. These limits conflict with other regulations, such as the Surface Water Treatment Rule, which establish minimum levels of disinfection needed to ensure that human exposure to microbiological contaminants is also limited.<sup>131</sup>

If disinfection is decreased to reduce by-product formation, pathogen risk could increase; but the relationship between the two, particularly with regard to various treatment technologies, is not well understood. The Agency is developing a major research initiative to develop the information needed to make an effective regulatory balance between pathogenic and disinfectant by-product risk.<sup>132</sup> The risk-risk relationship needs to be better understood and appropriate regulatory constraints set to prevent increases in microbial risk, possibly decreasing such risk, and to avoid a net effect of increasing overall human health risk by substituting one type of risk for another. A principal goal will be to determine whether disinfection by-product risk can be reduced while protection against microbial risk is maintained or reduced.

The first meeting of the D/DBP negotiating group was held on November 23, 1992. The group and the process have been described as follows:

This past summer, the US [sic] Environmental Protection

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<sup>128</sup> See *id.* at 38,668, 38,674-75.

<sup>129</sup> 5 U.S.C. § 561 (Supp. IV 1992).

<sup>130</sup> See 57 Fed. Reg. 42,533 (1992).

<sup>131</sup> *Id.* at 42,534.

<sup>132</sup> See *id.* at 42,534-35.

Agency (USEPA) decided to turn to regulatory negotiation ("reg neg") to aid in the formulation of a Disinfectant-Disinfection By-products (D-DBP) Rule that would balance the health risks from microbes against those from disinfectants and their by-products. Faced with the difficulty of assigning cold numbers to these relative risks and stymied by a paucity of hard scientific evidence, USEPA opted for the prudent approach of obtaining the consensus of the drinking water community before proposing a rule. Participants in the negotiation process—to be managed by a neutral facilitator—will represent all groups with a stake in providing safe drinking water, as well as consumer and environmental interests.<sup>133</sup>

In less than a year, the "reg-neg" process achieved agreement leading to development of three new rules: (1) the Information Collection Rule ("ICR"),<sup>134</sup> (2) the Enhanced Surface Water Treatment Rule ("ESWTR"),<sup>135</sup> and (3) the D/DBPR.<sup>136</sup> These rules have been developed and presented in a sequence that allows progress toward control of contaminants while providing a process for developing additional information for further regulatory action.

ICR was developed to generate data in support of the other two rules. The final rule, published in May of 1996, imposes intensive monitoring requirements on certain categories of PWSs that focus primarily on microbial contaminants and disinfection by-products.<sup>137</sup> In addition, certain water systems are required to generate data through testing alternative controls for disinfection by-products and their precursors.<sup>138</sup> The primary burden for monitoring and testing under ICR falls on large water systems—those serving at least 100,000 people from surface water sources and those serving at least 50,000 people from ground water sources.<sup>139</sup> EPA has undertaken

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<sup>133</sup> James M. Montgomery, *Trade-offs Key to D-DBP Rule*, J. AM. WATER WORKS ASS'N, Nov. 1992, at 41.

<sup>134</sup> 40 C.F.R. § 141.140 (1996).

<sup>135</sup> 59 Fed. Reg. 38,832 (1994).

<sup>136</sup> *Id.* at 38,668 (1994).

<sup>137</sup> 61 Fed. Reg. 24,354 (1996) (to be codified at 40 C.F.R. pt. 141).

<sup>138</sup> *See id.*

<sup>139</sup> *See id.*

supplementary surveys and research to further enhance available information.<sup>140</sup>

The ESWTR was published in proposed form in July of 1994.<sup>141</sup> The proposed rule constitutes the interim ESWTR, the first of two planned stages. The long term ESWTR is intended for development as more information becomes available on occurrence and treatment for microbial pathogens. This staged approach was developed through the reg-neg process initiated in 1992.

Like the proposed ESWTR, a proposed D/DBPR was published on July 29, 1994.<sup>142</sup> The rule proposes MCLGs for several disinfection by-products and maximum residual disinfectant level goals for certain disinfectants.<sup>143</sup> Associated NPDWRs include MCLs, treatment techniques, and maximum residual disinfectant levels.<sup>144</sup> The NPDWRs also include monitoring, reporting, and public notification requirements.<sup>145</sup> The ultimate form of the D/DBPR, as well as that of the ESWTR, is yet to be determined. These two rules, together with ICR, have been described as “the most complicated water quality regulations that have been developed to date.”<sup>146</sup>

The concurrent effort to develop a disinfection rule for ground water has not yet produced a proposed regulation. Many PWSs using ground water as a source traditionally have not employed disinfection. This situation in part is a result of the generally held view that ground water is less vulnerable to microbial contamination than surface water.<sup>147</sup> But the lack of disinfection is also related to the limited financial resources of many of the small community and non-community PWSs that rely on ground water. A significant health problem is believed to exist as a result of microbial contamination of ground water, but data to define the dimensions of the suspected problem are lacking.<sup>148</sup>

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<sup>140</sup> *See id.*

<sup>141</sup> 59 Fed. Reg. 38,832 (1994).

<sup>142</sup> *Id.* at 38,668.

<sup>143</sup> *See id.*

<sup>144</sup> *See id.* at 38,743.

<sup>145</sup> *See id.* at 38,752.

<sup>146</sup> Frederick W. Pontius, *Reg-Neg Process Draws to a Close*, J. AM. WATER WORKS ASS'N, Sept. 1993, at 18, 18-19.

<sup>147</sup> Ground water under the direct influence of surface water is subject to the SWTR.

<sup>148</sup> *See* Bruce A. Macler, *Developing the Ground Water Disinfection Rule*, J. AM. WATER WORKS ASS'N, Mar. 1996, at 47, 48-50.

EPA began in this environment to develop the Ground Water Disinfection Rule ("GWDR") in 1987, and discussion documents have been released to stimulate comment but not proposed as formal regulations.<sup>149</sup> A regulatory workgroup including representation from all fifty state drinking water programs, as well as EPA personnel from related agency units, was formed in 1995 and continues to seek the appropriate approach.

Simultaneous with the effort to address the problems of microbial contamination and the associated issue of disinfection by-products, EPA was developing regulations, primarily in the form of MCLs, for additional chemical contaminants.<sup>150</sup> Final NPDWRs for thirty-three contaminants were published in January of 1991<sup>151</sup> and for another five in July of 1991,<sup>152</sup> including synthetic organic contaminants and inorganic contaminants.

Even as this range of complex regulation-development activities was progressing, efforts to again modify the SDWA were underway. As a result of the congressionally mandated schedule, the rate of development of MCLGs and NPDWRs had been much higher in the post-1986 period. But this higher rate created problems of compliance for state governments and PWSs. EPA estimated that the gap between state program needs and resources was \$162 million in 1993.<sup>153</sup> Annual compliance costs for PWSs were estimated at \$1.48 billion, with a possible tripling of costs if rules pending at that time were to be adopted.<sup>154</sup> The rate of regulation development was also causing concern that the process of selecting contaminants for regulation did not ensure priority status for those posing the greatest health risk. Out of these concerns grew the 1996 SDWA Amendments.

#### D. *The 1996 SDWA Amendments*

The 1996 Amendments continued and expanded certain trends evident

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<sup>149</sup> See *id.* at 51.

<sup>150</sup> See, e.g., 52 Fed. Reg. 25,690 (1987) (proposing MCLs for certain volatile synthetic organic chemicals); 54 Fed. Reg. 22,062 (1989) (proposing MCLs for certain inorganic chemicals and synthetic organic chemicals); 55 Fed. Reg. 30,370 (1990) (proposing MCLs for certain inorganic chemicals and synthetic organic chemicals).

<sup>151</sup> See 56 Fed. Reg. 3526 (1991).

<sup>152</sup> See *id.* at 30,266.

<sup>153</sup> See H.R. REP. NO. 104-632, at 9 (1996), *reprinted in* 1996 U.S.C.C.A.N. 1366, 1372.

<sup>154</sup> See *id.*

in the 1986 Amendments while reversing others. The primary reversal was to end, or at least substantially slow, the regulatory treadmill created in 1986 for establishment of MCLGs and NPDWRs. An ongoing process of listing unregulated contaminants as candidates for regulation and selecting some of the listed contaminants for regulation was maintained, but the pace of regulation promulgation was substantially slowed, with EPA given greater discretion in the development of regulations.<sup>155</sup> The changes did not just slow the process of regulation development; they also established a more rational decisionmaking process, with greater reliance on science and prioritization of risks to human health. Several provisions were added expanding the scope of deliberations and modifying decision rules to reflect a more comprehensive view of drinking water safety.<sup>156</sup>

A trend evident in the 1986 Amendments that was expanded in 1996 was an addition of more “source water protection” measures, including reopening the grant period for the previously created critical aquifer protection area program.<sup>157</sup> Among new measures were a source water assessment program<sup>158</sup> and a source water quality protection program.<sup>159</sup> States with primacy were required to conduct assessments within water supply source areas to determine the origins of contaminants.<sup>160</sup> For protection of source waters, states were authorized to create programs under which local governments or owners of community water systems could petition for state assistance in creating voluntary agreements for source water protection.<sup>161</sup> Another source-protection measure consisted of provision for EPA-administered financial aid to states for development and implementation of comprehensive ground water protection programs.<sup>162</sup> Grants were also authorized for source water quality protection activities consistent with nonpoint source pollution management programs under the CWA. This funding provision encompasses both water supply infrastructure improvement and source water protection.<sup>163</sup> A measure of more limited

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<sup>155</sup> See 42 U.S.C.A. § 300g-1(b) (West Supp. 1996).

<sup>156</sup> See *id.* § 300g-1(b)(3).

<sup>157</sup> See *id.* § 300h-6.

<sup>158</sup> See *id.* § 300j-13.

<sup>159</sup> See *id.* § 300j-14.

<sup>160</sup> See *id.* § 300j-14(a)(4)(B).

<sup>161</sup> See *id.* § 300j-14(a)(1)(A).

<sup>162</sup> See *id.* § 300h-8.

<sup>163</sup> See *id.* § 300j-3c(a).



scope provided funding for demonstration projects as part of protecting watersheds of New York City's water sources.<sup>164</sup>

Perhaps the most significant change in the SDWA effected by the 1996 Amendments consisted of introduction of a variety of measures intended to facilitate PWS compliance with the Act. These measures addressed the special compliance problems of small systems and included differing forms of assistance and special provisions that modified many of the SDWA's provisions as they apply to small systems. The most notable of the assistance measures was a program to provide capitalization grants for state revolving loan funds ("SRLFs").<sup>165</sup> Such funds were established primarily to assist public water supply systems in complying with NPDWRs, with authorized uses including a substantial range of state and PWS activities.

Federal SRLF contributions were conditioned by provisions to encourage state compliance with other non-mandatory provisions of the SDWA, most of which focused on facilitation of the operations of small PWSs. One such condition was development of technical, managerial, and financial capacity of public systems.<sup>166</sup> In order for a state to receive the full measure of federal contributions to its SRLF, it was required to ensure that new systems had adequate capacity and to create programs for identifying and remedying capacity deficiencies.<sup>167</sup> Full SRLF contributions were also made contingent on state implementation of programs for certification of operators of community and nontransient, noncommunity PWSs.<sup>168</sup>

In addition to assistance measures for small PWSs in general, several more focused measures were added. The EPA Administrator was authorized to use 1.5% of funds appropriated for SRLFs for special grants to Indian tribes and Alaska native villages.<sup>169</sup> Also given special consideration for funding were colonias, generally unincorporated communities located along the U.S.-Mexico border.<sup>170</sup>

The Amendments addressed the compliance problems of small PWSs

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<sup>164</sup> See *id.* § 300j-2(d).

<sup>165</sup> See *id.* § 300j-12.

<sup>166</sup> See *id.* § 300j-12(a)(3)(A)(i).

<sup>167</sup> See *id.* §§ 300g-9(a), 300j-12(a)(1)(G)(i).

<sup>168</sup> See *id.* §§ 300g-8, 300j-12(a)(1)(G)(ii).

<sup>169</sup> See *id.*

<sup>170</sup> See *id.* § 300j-16.

by expanding variance<sup>171</sup> and exemption<sup>172</sup> procedures. Provision was added for designation of “variance technologies” that represent the maximum degree of treatment affordable for small systems. Although such affordable technologies were not required to comply with MCLs or treatment techniques applicable to a given contaminant, procedures and conditions were established to allow small systems under specified circumstances to obtain a variance allowing use of such treatment in lieu of compliance with the applicable NPDWR.<sup>173</sup> Exemption provisions were also modified for systems serving a population up to 3300 to allow time extensions for achieving compliance with an NPDWR.<sup>174</sup>

Another concession to small systems was provision for modification of monitoring requirements contained in NPDWRs under specified conditions (microbial contaminants and their indicators, disinfectants and their by-products, and corrosion by-products are not covered).<sup>175</sup> Authority was given for alternative monitoring for all PWSs under prescribed conditions,<sup>176</sup> but provisions for earlier interim relief were limited to systems serving 10,000 or fewer persons.<sup>177</sup>

In addition to programs of direct assistance to small PWSs, new institutions for providing assistance were authorized by the 1996 Amendments. EPA was authorized to make grants to institutions of higher learning for establishing and operating small PWS technology assistance centers.<sup>178</sup> In addition, EPA was directed to fund one or more university-based environmental finance centers to provide technical assistance to state and local governments for developing PWS capacity.<sup>179</sup> EPA was also directed to establish a capacity-development clearinghouse to receive and disseminate information related to financial and managerial capacity of PWSs.<sup>180</sup>

The 1996 Amendments substantially rewrote provisions defining

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<sup>171</sup> See *id.* § 300g-4.

<sup>172</sup> See *id.* § 300g-5.

<sup>173</sup> See *id.* § 300g-4(e).

<sup>174</sup> See *id.* § 300g-5(b)(2)(C).

<sup>175</sup> See *id.* § 300g-7(a)(1).

<sup>176</sup> See *id.* § 300g-7(b).

<sup>177</sup> See *id.* § 300g-7(a)(1).

<sup>178</sup> See *id.* § 300g-9(f)(1).

<sup>179</sup> See *id.* § 300g-9(g)(1).

<sup>180</sup> See *id.* § 300g-9.

responsibilities of federal agencies under the SDWA. Federal agencies operating PWSs and other facilities that may be subject to SDWA provisions (such as wellhead protection programs and the UIC program) were directed to comply both substantially and procedurally.<sup>181</sup> The President was given the power to grant exemptions.<sup>182</sup>

## II. SUMMARY OF CURRENT SDWA PROVISIONS

The SDWA program enters its third decade as a combination of established elements with a substantial base of experience and significant new elements not yet fully operational. These diverse elements interact in pursuit of the goal that PWSs provide safe drinking water to consumers. The fundamental definition of a "public water system," which has remained relatively unchanged over the history of the SDWA, 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 fifteen service connections or regularly serves at least twenty-five individuals."<sup>183</sup> The primary focus is the water supplier, both public and private, who distributes water to multiple residential establishments, but coverage also includes water supply facilities that provide water to twenty-five or more people such as motels and industries that supply water to customers or employees. The SDWA does not apply to individual water supplies of the typical homeowner. The SDWA also does not apply directly to bottled water, but an NPDWR becomes applicable by default unless specified actions are taken by the Secretary of Health and Human Services.<sup>184</sup>

The definition of "PWS" covers waterworks delivering water by "pipes or other constructed conveyances," but the definition excludes certain "non-pipe" conveyances.<sup>185</sup> Excluded are situations where (1) delivered water is used exclusively for purposes other than residential use (drinking, bathing, and cooking); (2) alternative water is provided for residential uses from another source (e.g., bottled water); or (3) delivered water is treated prior to use, either centrally or at the point of entry to each place of use, to a

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<sup>181</sup> *See id.* § 300j-6(a).

<sup>182</sup> *See id.*

<sup>183</sup> *Id.* § 300f(4)(A).

<sup>184</sup> *See* 21 U.S.C.A. § 349 (West Supp. 1996).

<sup>185</sup> *See* 42 U.S.C.A. § 300f(4).

level that provides health protection equivalent to that provided by the applicable NPDWR.<sup>186</sup> Also excluded are irrigation districts in existence on May 18, 1994, supplying primarily agricultural water through a piped system with incidental residential use, provided that public health protection equivalent to that provided by the applicable NPDWR is achieved by (1) making alternative supplies available for residential use, or (2) treating the water either centrally or at the point of entry to each place of use.<sup>187</sup> These exclusions involve certain compromises in generally applicable SDWA requirements but are provided to ensure that certain populations in rural areas are able to obtain the best water available at an affordable cost.<sup>188</sup> The U.S. General Accounting Office is directed to undertake a study of various aspects of systems encompassed by these exclusions to be reported to Congress by August 6, 1999.<sup>189</sup>

The Act now contains a distinction between community and non-community systems once only present in EPA regulations. Community systems are PWSs that serve year-round residents, with other systems placed in the noncommunity category.<sup>190</sup> SDWA provisions also make use of other PWS classifications not defined in the Act. For example, certain provisions for use of federal funding are limited to community and "nonprofit noncommunity water systems."<sup>191</sup> Another provision refers to "nontransient noncommunity public water systems."<sup>192</sup> The distinction is between transient and nontransient systems, which has been used in EPA regulations<sup>193</sup> where provisions of the lead and copper rule are restricted to community and nontransient, noncommunity PWSs based on the mobility of the population served. A nontransient, noncommunity system is one that, while not serving year-round residents, regularly serves at least twenty-five of the same persons more than six months per year.<sup>194</sup> Thus, an industry providing water supplies

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<sup>186</sup> See *id.* § 300f(4)(B)(i)(I)–(III).

<sup>187</sup> See *id.* § 300f(4)(B)(ii).

<sup>188</sup> See H.R. REP. NO. 104-632, at 53-55 (1996), *reprinted in* 1996 U.S.C.C.A.N. 1366, 1416-18.

<sup>189</sup> See Safe Drinking Water Act Amendments of 1996, Pub. L. No. 104-182, § 101(b)(2), 110 Stat. 1613, 1617 (1996).

<sup>190</sup> See 42 U.S.C.A. § 300f(15), (16) (West Supp. 1996).

<sup>191</sup> *Id.* § 300j-12(a)(2).

<sup>192</sup> *Id.* § 300g-8(b).

<sup>193</sup> See, e.g., 40 C.F.R. § 141.80(a) (1996).

<sup>194</sup> See *id.* § 141.2.

to more than twenty-five employees could be included in this class.

Diversity among PWSs is an important consideration in the implementation of the SDWA. As an indication of the range of systems involved, consider Table 1, which provides a snapshot of the water-supply industry in Virginia.<sup>195</sup> These data illustrate that ownership is diverse, with private water companies making up a significant percentage of total PWSs.<sup>196</sup> Another notable characteristic is the large number of small systems in existence.<sup>197</sup> Virginia Health Department data show that, of the 1587 active community waterworks in 1990, sixty percent served a population between 25 and 200 people.<sup>198</sup> On the other hand, large systems equaling only one percent of the community waterworks provided water for over sixty percent of Virginia's public water customers.<sup>199</sup> The existence of large numbers of small waterworks is a major factor in the implementation of the SDWA.

All of the SDWA's provisions in some way are directed toward ensuring that the water provided by PWSs is safe. But the Act on first impression is a complex set of seemingly divergent provisions, with many activities involving a variety of parties. One means of providing a sense of coherency to the Act's many provisions is to consider it in relation to two basic issues: (1) the strategies or approaches adopted to accomplish the goal of safe water supply, and (2) the responsibilities and interactions among the parties involved in implementation. The remainder of this summary will be structured around these two issues.

#### A. *SDWA Strategies for Assuring Safe Drinking Water*

The SDWA employs a rather complete range of motivational techniques to achieve its goal of safe drinking water, including heavy reliance on legal coercion in several forms. It also incorporates economic incentive, the force of public opinion, and information enhancement. These techniques for modifying behavior of water suppliers (and others associated with water supply) are combined into a relatively small number of strategies, each of

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<sup>195</sup> See, e.g., OFFICE OF WATER PROGRAMS, VA. DEP'T OF HEALTH, THE IMPACT OF THE SAFE DRINKING WATER ACT AMENDMENTS OF 1986 ON THE COMMONWEALTH OF VIRGINIA, H. DOC. NO. 30, 1989 Gen. Assembly, at 27 (Va. 1990).

<sup>196</sup> See *id.*

<sup>197</sup> See *id.*

<sup>198</sup> See *id.* at 29.

<sup>199</sup> See *id.*

which involves multiple forms of influence. For example, regulatory measures are often supplemented by financial and technical assistance. Classified by their primary method of achieving the goal of safe water, three strategies are prominent: (1) application of legally binding performance standards with respect to water quality prior to its delivery to consumers; (2) specification of mandatory treatment requirements and operations; and (3) protection of natural sources of supply.

### 1. *Application of Performance Standards*

A central feature of the SDWA is the performance standard, which takes the form of limitations on the concentrations of contaminants allowed to be present in water provided by a PWS. In an approach based solely on performance standards, limitations on the presence of contaminants are the only enforceable requirement—each PWS is free to obtain the required results in any way possible. The SDWA provides detailed procedures for initial establishment of performance standards for contaminants in general, makes special provisions for development of standards (or treatment techniques) for certain contaminants, makes provision for exceptions to standards in the form of variances and exemptions, and provides for review and revision over time.

#### a. *General Provisions for Establishing Performance Standards*

In SDWA terminology, performance standards are called “MCLs”—maximum contaminant levels. Establishment of a performance standard by the EPA Administrator requires a two stage process of setting a nonenforceable maximum contaminant level goal (“MCLG”) and an enforceable national primary drinking water regulation (“NPDWR”), which can specify an MCL.<sup>200</sup> The following conditions apply to establishment of MCLGs and NPDWRs:

The Administrator shall, in accordance with the procedures

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<sup>200</sup> Where limitations of measurement technology make the standards-approach infeasible,<sup>7</sup> the SDWA makes provision for the NPDWR to specify a treatment technique. This is discussed later in the paper as a second strategy of assuring acceptable water quality. See *infra* Part II.A.2.

established by this subsection, publish a maximum contaminant level goal and promulgate a national primary drinking water regulation for a contaminant (other than a contaminant referred to in paragraph (2) for which a national primary drinking water regulation has been promulgated as of August 6, 1996) if the Administrator determines that—

- (i) the contaminant may have an adverse effect on the health of persons;
- (ii) the contaminant is known to occur or there is a substantial likelihood that the contaminant will occur in public water systems with a frequency and at levels of public health concern; and
- (iii) in the sole judgment of the Administrator, regulation of such contaminant presents a meaningful opportunity for health risk reduction for persons served by public water systems.<sup>201</sup>

The authority for EPA to establish MCLGs and MCLs ultimately applies to all contaminants in drinking water that pose a threat to human health. Restrictions are imposed because of prior action under the SDWA, and a formal listing process is provided to guide the selection of contaminants to regulate.<sup>202</sup> Through compliance with specified procedures, EPA systematically adds unregulated contaminants to a list from which, for each five-year period, at least five contaminants must be selected for determination of whether or not to regulate.<sup>203</sup> Contaminants selected for consideration are to be those “that present the greatest public health concern.”<sup>204</sup> Special provisions apply in cases of urgent threats to public health.<sup>205</sup> A decision to regulate a given contaminant requires that an MCLG and an NPDWR be proposed within twenty-four months of the decision to regulate, with a final MCLG and NPDWR to follow within eighteen months of the proposal.<sup>206</sup> An NPDWR generally becomes effective three years after

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<sup>201</sup> 42 U.S.C.A. § 300g-1(b)(1)(A) (West Supp. 1996).

<sup>202</sup> *See id.*

<sup>203</sup> *See id.* § 300g-1(b)(1)(B).

<sup>204</sup> *Id.* § 300g-1(b)(1)(C).

<sup>205</sup> *See id.* § 300g-1(b)(1)(D).

<sup>206</sup> *See id.* § 300g-1(b)(1)(E).

promulgation.<sup>207</sup>

In setting MCLGs and promulgating NPDWRs, EPA is directed to use “the best available, peer-reviewed science and supporting studies conducted in accordance with sound and objective scientific practices,”<sup>208</sup> including use of accepted data collection methods. Consistent with the directive for proper scientific methods, the SDWA also directs EPA to present information on public effects in a “comprehensive, informative, and understandable” manner.<sup>209</sup> Documents made available in support of regulations are to specify, to the extent practicable, the associated risk with respect to different population groups.<sup>210</sup> Such documents also must identify significant sources of uncertainty with respect to health effects and identify related peer-reviewed studies.<sup>211</sup>

Establishment of an MCLG is based solely on consideration of health effects. The SDWA requires an MCLG to be set at the level “at which no known or anticipated adverse effects on the health of persons occur and which allows an adequate margin of safety.”<sup>212</sup> For application of this guideline, EPA first places a target contaminant in one of three categories.<sup>213</sup> Category I includes contaminants for which strong evidence of carcinogenicity exists. The MCLG for a category I contaminant is generally set at zero based on the assumption that no threshold exists below which exposure is safe. At the other end of the range, category III contaminants have inadequate or no evidence of carcinogenicity. Here, MCLGs are set through standard procedures for determining a daily exposure level without an appreciable risk of deleterious health effects during a lifetime. These procedures involve application of a one- to ten-fold factor at several points where extrapolations are necessary, such as extrapolation of data from animal test subjects to humans. For category II contaminants, which include substances having limited evidence of carcinogenicity, an MCLG is set by applying an additional safety factor of one to ten to the no-effect value

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<sup>207</sup> See *id.* § 300g-1(b)(10).

<sup>208</sup> *Id.* § 300g-1(b)(3)(A)(i).

<sup>209</sup> *Id.* § 300g-1(b)(3)(B).

<sup>210</sup> This includes a central estimate as well as an upper and lower bound estimate. See *id.* § 300g-1(b)(2)(B)(iii).

<sup>211</sup> See *id.*

<sup>212</sup> *Id.* § 300g-1(b)(4)(A).

<sup>213</sup> See 59 Fed. Reg. 38,668, 38,677-78 (1994).



determined for noncarcinogenic toxicity.<sup>214</sup>

An MCL must be set to “specify a maximum contaminant level for such contaminant which is as close to the maximum contaminant level goal as is feasible.”<sup>215</sup> A determination of feasibility requires consideration of technological and economic constraints as indicated in the following:

For the purposes of this subsection, the term “feasible” means feasible with the use of the best technology, treatment techniques and other means which the Administrator finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available (taking cost into consideration). For the purpose of this paragraph, granular activated carbon is feasible for the control of synthetic organic chemicals, and any technology, treatment technique, or other means found to be the best available for the control of synthetic organic chemicals must be at least as effective in controlling synthetic organic chemicals as granular activated carbon.<sup>216</sup>

Establishment of an MCL at a level different from the feasible level is allowed under certain conditions.<sup>217</sup> One such situation is where the means employed to achieve the feasible level would increase health risks by increasing the concentration of other contaminants in drinking water or by interfering with treatment processes for complying with other NPDWRs.<sup>218</sup> In such cases, the MCL (or treatment technique) chosen must “minimize the overall risk of adverse health effects”<sup>219</sup> subject to the limitation that the combination of means required cannot be more stringent than is feasible.

Another situation where an MCL may deviate from the feasible level is where benefits from an MCL set at the feasible level would not justify compliance costs.<sup>220</sup> Information for such determinations is developed through a required analysis of benefits and costs during the NPDWR

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<sup>214</sup> See *id.* at 38,678.

<sup>215</sup> 42 U.S.C.A. § 300g-1(b)(4)(B).

<sup>216</sup> *Id.* § 300g-1(b)(4)(D).

<sup>217</sup> See, e.g., *id.* § 300g-1(b)(5).

<sup>218</sup> See *id.*

<sup>219</sup> *Id.* § 300g-1(b)(5)(B)(i).

<sup>220</sup> See *id.* § 300g-1(b)(6).

promulgation process.<sup>221</sup> The analysis must include quantifiable and nonquantifiable health risk reduction benefits for the target contaminant and for likely reductions in co-occurring contaminants.<sup>222</sup> Consideration also must be given to quantifiable and nonquantifiable costs resulting from compliance, including increased health risks that may occur as a result of compliance.<sup>223</sup> In cases where benefits of an MCL set at the feasible level would not justify associated costs of compliance, EPA may “promulgate a maximum contaminant level for the contaminant that maximizes health risk reduction benefits at a cost that is justified by the benefits.”<sup>224</sup>

The ability to use cost considerations to set MCLs below the feasible level is subject to limitations. First, the costs to be considered must be limited to those likely to be incurred; they must, therefore, exclude costs hypothetically attributable to water systems but likely to be avoided due to receipt of a small system variance.<sup>225</sup> Second, EPA cannot use this approach to establish an MCL for “contaminants that are disinfectants or disinfection byproducts, or to establish a maximum contaminant level or treatment technique requirement for the control of *cryptosporidium*.”<sup>226</sup> This prohibition does not apply to establishment of regulations for use of disinfection by systems relying on ground water sources of supply. The prohibition against use of this approach for regulation of disinfectants and disinfection by-products for surface water systems is in deference to the agreements reached in the previously discussed reg-neg process.

Review of recent EPA regulation promulgation indicates substantial emphasis on benefit-cost comparisons. For example, consider the analysis undertaken as part of the development process for the interim ESWTR. The benefits associated with the ESWTR’s predicted elimination of *Giardia* infections were determined by using an estimated cost savings for each case avoided multiplied by the total number of cases now estimated to occur each year. The cost per case avoided was taken as an estimate developed in a study of an outbreak in Scranton, Pennsylvania in 1983.<sup>227</sup> The sum of the

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<sup>221</sup> See *id.*

<sup>222</sup> See *id.* § 300g-1(b)(3)(C).

<sup>223</sup> See *id.* Increased health risks may stem from such sources as increased concentrations of co-occurring contaminants.

<sup>224</sup> *Id.* § 300g-1(b)(6)(A).

<sup>225</sup> See *id.* § 300g-1(b)(6)(B).

<sup>226</sup> *Id.* § 300g-1(b)(6)(C).

<sup>227</sup> See 59 Fed. Reg. 38,832, 38,851(1994).

medical cost and cost from lost work time was estimated at \$1245 to \$1878 per case in 1984 dollars.<sup>228</sup> The lower estimate assumed that the value of lost time was zero for homemakers, retired persons, and the unemployed while the higher value considered the value of lost time at the average wage rate for all victims.<sup>229</sup> The \$1245-\$1878 estimate does not account for fatalities. The mortality rate for giardiasis is low, but ignoring any value associated with savings of life underestimates the total benefit associated with eliminating giardiasis. After adjustments to account for inflation, EPA determined a willingness to pay \$3000 per case avoided.<sup>230</sup> Applying this value of the 400,000-500,000 *Giardia* infections estimated to occur per year resulted in a total annual benefit of \$1.2 to \$1.5 billion per year.<sup>231</sup>

Comparison of this benefit value to the associated cost requires the exercise of judgment as to what cost to consider. In one approach, EPA compared benefits to the cost of providing additional disinfectant contact time, estimated at \$391 million per year for the nation as a whole. This comparison results in a benefit-cost ratio in the three to four range. But EPA acknowledged the difficulties of making benefit-cost comparisons:

There are at least three approaches for examining the tradeoff between costs and benefits. One approach is to determine the cost of the ESWTR alone. In a second approach, EPA could use the combined cost of the SWTR and ESWTR, since customers of many water systems are already paying, or will soon be paying, an extra premium for microbial protection as a result of the original SWTR. If this second approach is used (the most expensive estimate of ESWTR cost), and if the cost of the original SWTR is adjusted for inflation and factored into the above analysis, the overall ratio of benefits to costs would still be about a break-even proposition. Household costs would be significantly higher for previously unfiltered systems and modestly higher for previously filtered systems. In the third approach, EPA could assume that a large share of the cost of an ESWTR should be borne by the DBP rule, since

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<sup>228</sup> See *id.*

<sup>229</sup> See *id.*

<sup>230</sup> See *id.*

<sup>231</sup> See *id.*

the treatment changes needed to meet more stringent DBP regulations may increase the pathogen risk that the ESWTR must address.<sup>232</sup>

Establishment of an MCL leaves the choice of treatment technique to achieve the standard to the PWS; however, upon establishment of an MCL, EPA must list the “technology, treatment techniques, and other means which the Administrator finds to be feasible for purposes of meeting such maximum contaminant level.”<sup>233</sup> The list of feasible options for compliance with an MCL must contain those that are affordable by small PWSs within size classes of 25-500, 501-3300, and 3301-10,000 persons served, considering the quality of the source water to be treated.<sup>234</sup> EPA is required to list “variance technologies” within these categories that are protective of public health and represent the maximum reduction or inactivation of contaminants that is affordable considering the size of the system and the quality of the source water, but these technologies do not have to achieve compliance with the MCL.<sup>235</sup> A variance technology cannot be listed, however, unless the EPA Administrator determines that it is protective of public health.<sup>236</sup> These alternative treatment options are integrated into SDWA provisions for granting variances from MCL requirements.

EPA development of NPDWRs to date has relied substantially on the performance standard approach. MCLs were established for many of the volatile organic chemicals, synthetic organic chemicals, and inorganic chemicals regulated in the 1986-1991 period. Another major application of MCLs is the Total Coliform Rule (“TCR”), which was promulgated on June 29, 1989,<sup>237</sup> which represents a major break with traditional practice for use of coliforms as indicators of potential contamination by human wastes. Whereas previous standards imposed limits on coliform density, the TCR establishes an MCLG for total coliforms of zero and an MCL that sets limits on the number of samples that can be positive. For a system analyzing at least forty samples per month, no more than five percent can be positive.<sup>238</sup>

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<sup>232</sup> *Id.* at 38,851-52.

<sup>233</sup> 42 U.S.C.A. § 300g-1(b)(4)(E)(i).

<sup>234</sup> *See id.* § 300g-1(b)(15)(A).

<sup>235</sup> *See id.*

<sup>236</sup> *See id.* § 300g-1(b)(15)(B).

<sup>237</sup> 54 Fed. Reg. 27,544 (1989).

<sup>238</sup> *See id.* at 27,548.

Positive samples can be invalidated by repeat sampling procedures activated whenever a sample has positive test results.<sup>239</sup>

MCLs are also used in the SWTR for *Giardia lamblia*, viruses, and *Legionella* and in the D/DBPR for certain disinfection by-products. These rules, and the proposed interim ESWTR, also make substantial reliance on specification of treatment techniques and are discussed in the next section, which focuses on that approach.

b. *Special Provisions for Performance Standard Establishment*

The SDWA makes special provisions for several contaminants that modify normal procedures and schedules for establishing performance standards. For example, the provision in the 1986 SDWA Amendments that mandated MCLGs and NPDWRs for a special list of contaminants continues in effect.<sup>240</sup> Most of the listed contaminants have been regulated, and provision is made for limited substitution of other contaminants for those listed;<sup>241</sup> continuance of this provision should, therefore, have little impact. A second example of a special procedure and schedule consists of the rules under development pursuant to the reg-neg process—the ESWTR and the D/DBPR. Provision is made for maintaining to the extent possible the schedule developed in the reg-neg process as published in the ICR.<sup>242</sup> Special provisions are also made for three other contaminants—arsenic, sulfate, and radon.<sup>243</sup>

EPA is required to propose an NPDWR for arsenic by January 1, 2000, and a final regulation by January 1, 2001.<sup>244</sup> During the interim time period, studies are to be conducted on the health risks associated with exposure to low levels of arsenic.<sup>245</sup> A comprehensive plan for such study must be developed within 180 days of enactment of the 1996 SDWA Amendments (August 6, 1996).<sup>246</sup>

Development of an NPDWR for sulfate is also to be preceded by

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<sup>239</sup> See *id.* at 27,552.

<sup>240</sup> See 42 U.S.C.A. § 300g-1(b)(2)(A) (West Supp. 1996).

<sup>241</sup> See *id.* § 300g-1(b)(2)(B).

<sup>242</sup> See *id.* § 300g-1(b)(2)(C).

<sup>243</sup> See *id.* § 300g-1(b)(12), (13).

<sup>244</sup> See *id.* § 300g-1(b)(12)(A)(iv), (v).

<sup>245</sup> See *id.* § 300g-1(b)(12)(A)(ii).

<sup>246</sup> See *id.* § 300g-1(b)(12)(A).

studies.<sup>247</sup> The purpose of the mandated study is to establish reliable dose-response relationships for human health effects. The study is to be completed within thirty months of enactment of the 1996 SDWA Amendments, with determination whether to regulate to be made within five years of the same date.<sup>248</sup>

The SDWA requires withdrawal of any NPDWR for radon proposed previously and prescribes a process and schedule for NPDWR establishment.<sup>249</sup> An MCLG and NPDWR are to be proposed not later than thirty-six months after August 6, 1996, with the final MCLG and NPDWR due within an additional twelve months.<sup>250</sup> Prior to proposing an NPDWR, EPA is directed to arrange for a risk assessment for radon in drinking water and for an assessment of the health reduction benefits of various mitigation measures.<sup>251</sup> EPA must publish within thirty months of August 6, 1996, a cost analysis for potential MCLs being considered.<sup>252</sup>

EPA is directed to promulgate an alternative MCL for radon if the MCL developed through the regular process would reduce drinking water's contribution to radon in indoor air to a concentration that is below the national average concentration of radon in outdoor air.<sup>253</sup> This alternative MCL, which is to use the national average concentration of radon in outdoor air as the target concentration for drinking water's contribution to radon in indoor air, can be employed by a state as part of a multimedia radon mitigation program if approved by EPA.<sup>254</sup> A multimedia program can rely on a variety of mitigation measures such as public education and regulatory and nonregulatory program elements.<sup>255</sup>

### *c. Variances from Performance Standards*

Variances are a mechanism for excepting an individual PWS from the requirements of NPDWRs where it cannot comply with an MCL due to

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<sup>247</sup> See *id.* § 300g-1(b)(12)(B).

<sup>248</sup> See *id.*

<sup>249</sup> See *id.* § 300g-1(b)(13).

<sup>250</sup> See *id.*

<sup>251</sup> See *id.*

<sup>252</sup> See *id.*

<sup>253</sup> See *id.* § 300g-1(b)(13)(F).

<sup>254</sup> See *id.* § 300g-1(b)(13)(G).

<sup>255</sup> See *id.* § 300g-1(b)(13)(G)(ii).

"characteristics of the raw water sources which are reasonably available . . . ."<sup>256</sup> Before a variance can be granted, the PWS must install the best technology or other means for complying with the MCL as listed by EPA at the time of MCL promulgation.<sup>257</sup> In addition, alternative sources of water must not be available, and the variance must not create an unreasonable risk to public health.<sup>258</sup> Issuance of a variance requires establishment of a schedule for compliance with the MCL.<sup>259</sup>

Special variance provisions apply to PWSs serving a population of 3300 or fewer.<sup>260</sup> Such systems can receive a variance that allows implementation of "variance technology" instead of compliance with an MCL if they cannot afford to comply with the MCL applicable to the size and source water conditions of the particular PWS through water treatment, use of alternative sources of supply, or water system restructuring or consolidation.<sup>261</sup> Such variances are to be reviewed at least once each five years after PWS compliance for determination of continuing eligibility.<sup>262</sup>

d. *Exemptions from Performance Standards*

Exemptions provide a second method of creating exceptions from SDWA performance standards.<sup>263</sup> To obtain an exemption from a given MCL, the PWS must have been in existence on the effective date of the MCL and must be unable to comply with the requirement because of "compelling factors," which can include economic factors.<sup>264</sup> The PWS must be unable to comply with the requirement or improve drinking water quality by management or restructuring changes, and it must be unable to develop an alternative source of supply.<sup>265</sup> Granting of an exemption cannot create an unreasonable risk to health, and an exemption cannot be issued if a variance

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<sup>256</sup> *Id.* § 300g-4(a)(1)(A).

<sup>257</sup> *See id.*

<sup>258</sup> *See id.*

<sup>259</sup> *See id.*

<sup>260</sup> *See id.* § 300g-4(e)(9). EPA can extend this special provision to systems serving a population of up to 10,000. *See id.*

<sup>261</sup> *See id.* § 300g-4(e)(3).

<sup>262</sup> *See id.* § 300g-4(e)(5).

<sup>263</sup> *See id.* § 300g-5.

<sup>264</sup> *See id.* § 300g-5(a)(1).

<sup>265</sup> *See id.*

under the SDWA has been granted.<sup>266</sup> A PWS in need of financial assistance must have entered into agreements for obtaining the needed assistance or must have agreed to become a part of a regional water system.<sup>267</sup>

Exemptions provide temporary relief from MCLs rather than a permanent excuse for noncompliance. At the time of issuance, a compliance schedule must be established that generally cannot involve a time period greater than three years beyond the effective date of the requirement.<sup>268</sup> PWSs serving a population of no more than 3300 in need of financial assistance can receive time extensions not to exceed a total of six years.<sup>269</sup>

*e. Review and Revision of Performance Standards*

The EPA Administrator is directed to “not less often than every 6 years, review and revise, as appropriate, each national primary drinking water regulation promulgated.”<sup>270</sup> This requirement applies to MCLs and prescribed treatment techniques alike. The only restriction on the action to be taken upon review is that “each revision shall maintain, or provide for greater, protection of the health of persons.”<sup>271</sup>

*2. Specification of Treatment Techniques and Operations*

A more direct approach to control of PWS operation than enforcement of performance standards is regulation that specifies treatment techniques and operational procedures. The SDWA authorizes EPA to promulgate an NPDWR that, instead of establishing an MCL, requires the use of a treatment technique where determination of the level of a given contaminant is not economically or technologically feasible.<sup>272</sup> EPA also may impose reasonable operational requirements (such as specific monitoring requirements) necessary for effective implementation of NPDWRs.<sup>273</sup>

Variances and exemptions generally apply to specified treatment

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<sup>266</sup> See *id.* § 300g-5(a)(3), (b)(2)(D).

<sup>267</sup> See *id.* § 300g-5(b)(2)(B)(ii), (iii).

<sup>268</sup> See *id.* § 300g-5(b)(2)(A).

<sup>269</sup> See *id.* § 300g-5(b)(2)(C).

<sup>270</sup> *Id.* § 300g-1(b)(9).

<sup>271</sup> *Id.*

<sup>272</sup> See *id.* § 300g-1(b)(7)(A).

<sup>273</sup> See *id.* § 300j-4(a).



techniques in the same manner as they apply to MCLs. However, one special variance provision is unique to the situation where the applicable NPDWR is in the form of a specified treatment technique: implementation of the technique can be avoided by demonstration that the nature of the source water makes such treatment unnecessary.<sup>274</sup>

In addition to granting general authority to EPA for adopting the treatment-technique approach, the SDWA directs EPA to specify treatment techniques in certain situations. An example is a provision that requires EPA, within specified time limits, to “promulgate national primary drinking water regulations requiring disinfection as a treatment technique for all public water systems, including surface water systems and, as necessary, ground water systems.”<sup>275</sup> EPA is directed to develop criteria for use in determining whether disinfection will be required by systems served by ground water.<sup>276</sup> A similar approach is taken with respect to filtration as a treatment technique. EPA is required to promulgate NPDWRs “specifying criteria under which filtration . . . is required as a treatment technique for public water systems supplied by surface water sources.”<sup>277</sup> Under specified conditions, treatment requirements in lieu of filtration can be imposed.<sup>278</sup>

The current regulations for disinfection and filtration are contained in EPA’s SWTR, and the GWDR is under development for PWSs using ground water sources. In addition, the TCR<sup>279</sup> is an essential component of regulations for controlling microbial contaminants. But the situation is in a state of flux since EPA has published a proposed interim ESWTR. In addition, development of regulations is underway in several related areas. The unsettled nature of this regulatory area is due primarily to two factors: concern about the adequacy of existing regulations to control *Cryptosporidium* and recognition of the conflicting need to control disinfection by-products. This complex regulatory environment is addressed in the following sections where individual attention is given to the relevant components of the regulatory framework, including the SWTR, interim ESWTR, and long-term ESWTR; GWDR; D/DBPR; and ICR. Following discussion of these related regulations, this section concludes with

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<sup>274</sup> See *id.* § 300g-4(a)(1)(B).

<sup>275</sup> *Id.* § 300g-1(b)(8).

<sup>276</sup> See *id.*

<sup>277</sup> *Id.* § 300g-1(b)(7)(C)(i).

<sup>278</sup> See *id.* § 300g-1(b)(7)(C)(ii).

<sup>279</sup> See discussion *supra* Part II.A.1.a. (describing performance standards).

consideration of the Lead and Copper Rule and regulations for general monitoring of regulated and unregulated contaminants.

a. *Surface Water Treatment Rule, Interim Enhanced Surface Water Treatment Rule, and Long-term Enhanced Surface Water Treatment Rule*

Disinfection and filtration requirements are currently established by the SWTR for PWSs with surface water sources and ground water sources under the direct influence of surface water. The definition of “ground water under the direct influence of surface water” is intended to be a site specific determination based on consideration of (1) the significant occurrence of biological indicators such as insects or other microorganisms, algae, or pathogens such as *Giardia lamblia*, or (2) significant and rapid shifts in water characteristics that closely correlate with climatological or surface water conditions.<sup>280</sup> The SWTR will be replaced by the interim ESWTR, proposed on July 29, 1994,<sup>281</sup> and ultimately by the long-term ESWTR.

Since disinfection and filtration complement one another in controlling microbial contamination, regulations for each depend to some extent on the status of the other. All systems subject to the SWTR must employ treatment that achieves at least 99.9% removal and/or inactivation of *Giardia lamblia* cysts and at least 99.99% removal and/or inactivation of viruses.<sup>282</sup> If a system meets the criteria for avoiding filtration, disinfection alone must provide the required limits and meet other specified conditions such as a minimum disinfectant concentration in water entering the distribution system.<sup>283</sup>

Conditions for avoidance of filtration include adequate source water quality conditions as indicated by coliform densities and turbidity, adequate disinfection system design and performance during the past year. Other conditions include the existence of an adequate watershed control program, performance of an annual on-site inspection to assess the watershed control program and disinfection treatment process, acceptable history of the water system with respect to waterborne disease outbreaks, a satisfactory record of compliance with the MCL for total coliforms, and compliance with specified

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<sup>280</sup> See 40 C.F.R. § 141.2 (1996).

<sup>281</sup> 59 Fed. Reg. 38,832 (1994).

<sup>282</sup> See *id.* at 38,833.

<sup>283</sup> See 40 C.F.R. § 141.72.

requirements for trihalomethanes.<sup>284</sup>

In addition to compliance with these regulatory conditions as a means to avoid filtration, the SDWA also provides another option for avoiding filtration in the case of water systems "having uninhabited, undeveloped watersheds in consolidated ownership, and having control over access to, and activities in, those watersheds . . . ."<sup>285</sup> In this situation, treatment requirements as an alternative to filtration may be established if

the quality of the source water and the alternative treatment requirements established ensure greater removal or inactivation efficiencies of pathogenic organisms for which national primary drinking water regulations have been promulgated or that are of public health concern that would be achieved by the combination of filtration and chlorine disinfection . . . .<sup>286</sup>

The proposed interim ESWTR, which primarily applies only to PWSs serving at least 10,000 people, modifies several provisions of ESWTR to provide more effective control over *Giardia*, viruses, and *Cryptosporidium*, which was not addressed by the SWTR. The ESWTR proposes an MCLG of zero for *Cryptosporidium* and several treatment alternatives for augmenting control of microbial pathogens in general.<sup>287</sup> Provision of alternative approaches reflects inadequacies in relevant information. The proposed rule continues to apply only to systems served by surface sources or ground water under the direct influence of surface water since GWDR is under separate development. But the definition of "ground water under the direct influence" is modified to include the presence of *Cryptosporidium* as one of the determinants.<sup>288</sup>

#### b. *Ground Water Disinfection Rule*

No proposed GWDR has been published to date although

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<sup>284</sup> See *id.* § 141.71.

<sup>285</sup> 42 U.S.C.A. § 300g-1(b)(7)(C)(v) (West Supp. 1996).

<sup>286</sup> *Id.*

<sup>287</sup> See 59 Fed. Reg. 38,832, 38,839-42.

<sup>288</sup> *Id.* at 38,839.

developmental activity has been underway for several years. The effort has confronted special obstacles in the form of inadequate information about the magnitude of the problem of microbial ground water contamination and the small size and limited resources of many PWSs that will be affected by the rule. One observer of the process has made the following predictions about the likely form of the GWDR:

As with the SWTR and the ESWTR, a “treatment technique”-type regulation must be developed for the GWDR that specifies operational requirements rather than setting maximum contaminant levels (MCLs) for specific microorganisms. This is because practical methods to detect pathogens in real time before they reach the consumer are not available. Specific regulatory elements for the GWDR have not been developed, pending the results from the research activities that are under way. However, the general approach is likely to begin with requirements for a sanitary survey and correction of problems. Disinfection requirements may apply to systems that have uncorrectable microbial contamination or that are unable to meet avoidance criteria. A requirement for a distribution system disinfectant residual for at least all community systems has been widely supported.<sup>289</sup>

Monitoring for viruses or viral indicators in addition to current coliform monitoring will likely be required, especially for those systems able to avoid disinfection.

*c. Disinfectant/Disinfection By-products Rule*

The D/DBPR was published in proposed form in July of 1994.<sup>290</sup> The proposed rule contains MCLGs and MCLs for certain disinfection by-products, treatment techniques for organic substances that may react with disinfectants to form disinfectant by-products, and limits on disinfectant residual levels for specified disinfectants.<sup>291</sup> The limits on disinfectant

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<sup>289</sup> Macler, *supra* note 148, at 52-53.

<sup>290</sup> 59 Fed. Reg. at 38,668.

<sup>291</sup> These include chlorine, chloramines, and chlorine dioxide. *See id.*

residuals are stated as "maximum residual disinfectant level goals" ("MRDLGs") and "maximum residual disinfectant levels" ("MRDLs"), which are analogous to MCLGs and MCLs, respectively. EPA developed the new terms rather than apply the MCLG and MCL terminology in recognition of the fact that disinfectants are added to water intentionally to gain the benefits of disinfection.<sup>292</sup> The proposed D/DBPR applies to all community water systems and nontransient, noncommunity water systems that add a disinfectant to water delivered to consumers.<sup>293</sup> In addition, certain provisions apply to transient, noncommunity water systems.<sup>294</sup> The proposed D/DBPR is a product of the previously discussed reg-neg process initiated in 1992. It is based on information recognized to be inadequate, with further development contemplated as additional knowledge is gained.

d. *Information Collection Rule*

The ICR<sup>295</sup> is another product of the reg-neg process; it is intended to address the information deficiencies hindering development of the final D/DBPR and the NPDWRs focusing on microbial contaminants.<sup>296</sup> Published in final form in May of 1996,<sup>297</sup> the ICR establishes a special monitoring, testing, and reporting program for large PWSs.

For purposes of defining specific monitoring and testing requirements, the ICR divides large water systems into three groups. Systems serving at least 100,000 people from surface water sources (including ground water under the direct influence of surface water) have the broadest set of requirements, consisting of: (1) eighteen months of monitoring related to disinfection by-products; (2) eighteen months of monitoring related to microbial contaminants; and (3) testing of treatment processes.<sup>298</sup> Systems serving at least 100,000 people from ground water are not required to conduct microbial testing but otherwise are subject to the same requirements as the previous group.<sup>299</sup> Systems serving at least 50,000

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<sup>292</sup> See *id.* at 38,668-72.

<sup>293</sup> See *id.* at 38,670.

<sup>294</sup> See *id.*

<sup>295</sup> 40 C.F.R. § 141.140 (1996).

<sup>296</sup> The ESWTR and GWDR are the regulations that deal with microbial contaminants.

<sup>297</sup> 61 Fed. Reg. 24,354 (1996) (to be codified at 40 C.F.R. pt. 141).

<sup>298</sup> See *id.* at 24,358.

<sup>299</sup> See *id.*

but fewer than 100,000 people from ground water sources are subject only to the testing requirement.<sup>300</sup>

EPA has attempted to provide notice to PWSs within the three categories, but failure to receive notice does not excuse a PWS meeting the applicability criteria from compliance.<sup>301</sup> EPA mailed a notice of applicability to 520 PWSs in June 1996.<sup>302</sup> Sampling plans were to be submitted and approved in the latter portion of 1996, with monitoring for microbial contaminants and disinfection by-products scheduled to begin early in 1997.<sup>303</sup> The ICR is scheduled to terminate on December 31, 2000.<sup>304</sup>

*e. Lead and Copper Rule*

Lead and copper are somewhat unique contaminants because a main source is water distribution systems where they traditionally have seen substantial use. Since passage of the 1986 Amendments, the SDWA has prohibited the use of lead in installation or repair of PWSs or plumbing in residential or nonresidential facilities providing water for human consumption.<sup>305</sup> This prohibition applies to "any pipe, any pipe or plumbing fitting or fixture, any solder, or any flux . . . that is not lead free,"<sup>306</sup> defined as solders and flux containing not more than 0.2% lead and pipes and pipe fittings containing not more than 8.0% lead.<sup>307</sup>

The SDWA also prohibits the sale in interstate commerce of any drinking water cooler that is not lead free, which is defined as containing more than 0.2% lead for the storage tank interior and solder or flux that may come into contact with drinking water.<sup>308</sup> Drinking water coolers with lead-lined tanks as listed by EPA are declared to be imminently hazardous consumer products to be repaired, replaced, or recalled with refund to the

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<sup>300</sup> See *id.* at 24,356.

<sup>301</sup> See *id.* at 24,358.

<sup>302</sup> See Frederick W. Pontius, *Legislation/Regulation—Inside the Information Collection Rule*, J. AM. WATER WORKS ASS'N, Aug. 1996, at 16, 18.

<sup>303</sup> See *id.* at 20.

<sup>304</sup> See 61 Fed. Reg. 24,354.

<sup>305</sup> See 42 U.S.C.A. § 300g-6(a) (West Supp. 1996).

<sup>306</sup> *Id.* at § 300g-6(a)(1)(A).

<sup>307</sup> See *id.* § 300g-6(d).

<sup>308</sup> See *id.* §§ 300j-21(2), 300j-23(b).

consumer.<sup>309</sup>

Although earlier NPDWRs contained MCLs for lead and copper, the current NPDWR that addresses both lead and copper, published on June 7, 1991 in final form,<sup>310</sup> consists of a treatment technique requirement that includes corrosion control measures by PWSs, source water treatment, lead water service line replacement, and public education. The requirement to implement control measures is related to occurrence of action levels of lead and copper determined through monitoring. The lead and copper rule generally applies to community and nontransient, noncommunity PWSs. Transient, noncommunity PWSs are excluded because the adverse health effects of lead and copper result from long-term exposure.<sup>311</sup>

The lead and copper rule is currently undergoing revision, partly as a result of legal challenges by the American Water Works Association and the Natural Resources Defense Council.<sup>312</sup> Principal issues are the provisions of the rule concerning replacement of lead water service lines, which are often in private rather than PWS ownership, and the exclusion of transient noncommunity PWSs from coverage by the rule. EPA has issued a notice of proposed rulemaking for modification of the existing rule.<sup>313</sup>

#### *f. General Monitoring and Reporting Regulations*

Note has previously been taken of the ICR, which is a short term data collection exercise in support of development of the ESWTR and the D/DBPR; but monitoring and reporting is an integral and ongoing part of the enforcement and development of NPDWRs aside from these special information needs. PWSs are required to "establish and maintain such records, make such reports, conduct such monitoring, and provide such information as the Administrator may reasonably require by regulation . . . ."<sup>314</sup>

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<sup>309</sup> See *id.* § 300j-22.

<sup>310</sup> 56 Fed. Reg. 26,460 (1991) (with later revisions at 56 Fed. Reg. 26,460 (1991); 56 Fed. Reg. 32,112 (1991); 57 Fed. Reg. 28,785 (1992); 59 Fed. Reg. 33,860 (1994)) (for minor changes currently under consideration, see 61 Fed. Reg. 16,348 (1996)).

<sup>311</sup> See 61 Fed. Reg. 16,348, 16,349.

<sup>312</sup> See *American Waterworks Ass'n v. EPA*, 40 F.3d 1266 (D.C. Cir. 1994) (remanded to EPA for clarification of transient, noncommunity water systems policy).

<sup>313</sup> See 61 Fed. Reg. 16,348.

<sup>314</sup> 42 U.S.C.A. § 300j-4(a)(1).

While monitoring was once limited to contaminants for which regulations had been established, monitoring for unregulated contaminants listed by EPA is now required.<sup>315</sup> Provision is made for variation in monitoring requirements for unregulated contaminants on the basis of factors such as number of persons served, source of supply, and contaminants likely to be found.<sup>316</sup>

In addition to reporting to EPA, a water supplier must also report a variety of circumstances and events to those served by the system, including (among other things) failure to comply with an MCL or treatment technique requirement, failure to perform required monitoring, and existence of a variance or exemption from SDWA requirements.<sup>317</sup> Under recently enacted provisions, EPA is to adopt regulations providing previously lacking flexibility in the form and timing of such notice.<sup>318</sup> Variations in the regulations are to take into account such factors as frequency of violations and seriousness of potentially adverse health effects.<sup>319</sup> Depending on these factors, notice may be required within twenty-four hours of an event<sup>320</sup> or, under other conditions, may be given in customers' bills or in an annual report.<sup>321</sup>

### 3. *Protection of Natural Sources of Water Supply*

Source protection is based on the simple premise that preventing the entry of contaminants into a natural source of water supply eliminates the problems of removing those contaminants to make the water suitable for drinking or other use. The emphasis placed on source protection is inversely related to the confidence given to treatment technology. As confidence in human ability to remove a growing spectrum of contaminants at an acceptable cost has waned, interest in source protection has increased. SDWA provisions have expanded substantially to now include, in addition to the UIC program and sole source aquifer protection program created in the

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<sup>315</sup> See *id.* § 300g-1(b).

<sup>316</sup> See *id.* § 300j-4(a)(2)(A).

<sup>317</sup> See *id.* § 300g-3(c).

<sup>318</sup> See *id.* § 300g-3(c)(2).

<sup>319</sup> See *id.* § 300g-4(a).

<sup>320</sup> See *id.* § 300g-3(c)(2)(C). For example, where short-term exposure to contaminants has potential for serious adverse effects on human health. See *id.*

<sup>321</sup> See *id.* § 300g-3(c)(2)(D).



initial legislation, programs for wellhead protection, critical aquifer protection area demonstration projects, comprehensive state ground water protection, source assessment, partnership petition programs for source protection, source water protection consistent with nonpoint source pollution management programs under the CWA, watershed management in lieu of filtration, and New York City watershed demonstration projects.

a. *Underground Injection Control*

The purpose of UIC programs is to prevent underground injection that endangers underground drinking water sources. The Act makes underground injection unlawful unless authorized by permit or rule, and such approval can only be given for injection that does not endanger drinking water.<sup>322</sup> The scope of this provision is dependent on definitions of three terms: "underground injection," "underground sources of drinking water," and "endanger."

Underground injection means the "subsurface emplacement of fluids by well injection,"<sup>323</sup> where "well injection" is defined by EPA as "the subsurface emplacement of 'fluids' through a bored, drilled, or driven 'well;' or through a dug well, where the depth of the dug well is greater than the largest surface dimension."<sup>324</sup> But the jurisdictional boundaries of the UIC regulations are not determined solely by the nature of the "well"; they also depend on the use of the facility. For example, cesspools or septic systems for single family residential waste disposal are not covered while such facilities serving a multiple dwelling or community are covered.<sup>325</sup>

"Underground source of drinking water" is defined as an aquifer or portion of an aquifer:

- (a)(1) Which supplies any public water system; or
- (2) Which contains a sufficient quantity of ground water to supply a public water system; and
  - (i) Currently supplies drinking water for human consumption; or

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<sup>322</sup> See *id.* § 300h(b)(1)(A), (B).

<sup>323</sup> *Id.* § 300h(d)(1).

<sup>324</sup> 40 C.F.R. § 144.3 (1996).

<sup>325</sup> See *id.* § 144.1(g)(1), (2).

- (ii) Contains fewer than 10,000 mg/1 total dissolved solids; and
- (b) Which is not an exempted aquifer.<sup>326</sup>

The term “exempted aquifer” as used in the above quotation applies where a specific designation has been made. Aquifers can be designated as exempt from the underground source category on the basis of lack of current use for water supply purposes and lack of potential for future use because of problems such as high mineral content, contamination, depth, and location.<sup>327</sup> Underground injection “endangers” drinking water sources

if such injection may result in the presence in underground water which supplies or can reasonably be expected to supply any public water system of any contaminant, and if the presence of such contaminant may result in such system’s not complying with any national primary drinking water regulation or may otherwise adversely affect the health of persons.<sup>328</sup>

Injection wells subject to the UIC regulations are subdivided into five classes for regulatory purposes.<sup>329</sup> Class I wells are hazardous waste disposal wells or other industrial and municipal disposal wells that inject beneath the lowermost formation containing, within one-quarter mile of the well bore, and underground source of drinking water. Class II wells inject fluids in association with oil or natural gas operations and may involve disposal, production, or storage activities. Class III wells inject for certain mineral extraction purposes such as solution mining of salts or potash. Class IV wells inject hazardous or radioactive waste into or above a formation which contains an underground source of drinking water within one-quarter mile of the well. Class V includes all injection wells not falling within the other classes. Examples include air conditioning and cooling water return flows, community septic systems, and stormwater drainage wells.

The separate classes are subject to varying requirements

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<sup>326</sup> *Id.* § 144.1.

<sup>327</sup> *See id.* §§ 144.7, 146.4.

<sup>328</sup> 42 U.S.C.A. § 300h(d)(2) (West Supp. 1996).

<sup>329</sup> *See* 40 C.F.R. § 146.5.

commensurate with the perceived risk associated with each activity. Class IV wells are subject to the strictest provisions, with new construction prohibited and closure of existing wells required. Non-prohibited wells must operate according to requirements specified in individual permits or in an authorizing rule. These requirements include data collection involving the potentially affected area, construction and operation requirements, and monitoring. Monitoring includes measures for demonstrating performance and integrity of injection facilities as well as ambient monitoring to determine water quality or other changes caused by injection operations.<sup>330</sup>

Injection is a basic operation in the petroleum industry, both for resource recovery and disposal purposes, and the SDWA contains the following provision to limit its impact on such operations:

Regulations of the Administrator under this section for State underground injection control programs may not prescribe requirements which interfere with or impede—

(A) the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production or natural gas storage operations, or

(B) any underground injection for the secondary or tertiary recovery of oil or natural gas,

unless such requirements are essential to assure that underground sources of drinking water will not be endangered by such injection.<sup>331</sup>

b. *Sole Source Aquifer Designation/Critical Aquifer Protection Area Demonstration Programs*

The sole source aquifer designation program provides for listing of certain aquifers to qualify them for protective considerations in certain federal decision processes. To be listed, EPA must determine that “an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public

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<sup>330</sup> See *id.* § 146.

<sup>331</sup> 42 U.S.C.A. § 300h(b)(2).

health . . . .”<sup>332</sup> After such determination and publication of notice, “no commitment for Federal financial assistance (through a grant, contract, loan guarantee, or otherwise) may be entered into for any project which the Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health . . . .”<sup>333</sup>

The sole source aquifer designation program is a limited source-protection measure because of the restricted nature of protective actions associated with designation, but it can be enhanced through provisions for critical aquifer protection area demonstration programs.<sup>334</sup> The demonstration program provides federal funding to successful applicants for fifty percent of the costs of developing and implementing a comprehensive management plan for maintaining ground water quality in such areas.<sup>335</sup>

To qualify as a critical area, either of two sets of conditions must be satisfied:

- (1) All or part of an area located within an area for which a application or designation as a sole or principal source aquifer pursuant to section 300h-3(e) of this title, has been submitted and approved by the Administrator and which satisfies the criteria established by the Administrator under subsection (d) of this section.
- (2) All or part of an area which is within an aquifer designated as a sole source aquifer as of June 19, 1986, and for which an areawide ground water quality protection plan has been approved under section 208 of the Clean Water Act [33 U.S.C.A. § 1288] prior to June 19, 1986.<sup>336</sup>

The criteria mentioned in part (1) of the quotation require, among other things, that ground water in the area in question is reasonably likely to become contaminated without protective measures and that such contamination would result in significant cost.<sup>337</sup>

Establishment of a demonstration program for a critical protection

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<sup>332</sup> 42 U.S.C. § 300h-3(e) (1994).

<sup>333</sup> *Id.*

<sup>334</sup> *See* 42 U.S.C.A. § 300h-6.

<sup>335</sup> *See id.* § 300h-6(j).

<sup>336</sup> *Id.* § 300h-6(b).

<sup>337</sup> *See* 40 C.F.R. § 149.3(b)(2), (3) (1996).

area requires an application to EPA from "[a]ny State, municipal or local government or political subdivision thereof or any planning entity . . . that identifies a critical aquifer protection area over which it has authority or jurisdiction."<sup>338</sup> The application must comply with statutory requirements that call for inclusion of a hydrogeological assessment of the area, identification of a planning entity, and a comprehensive management plan.<sup>339</sup> The plan must contain a variety of elements, including identification of existing and potential sources of ground water contamination, actions to be taken to prevent adverse ground water impacts, identification of implementation authority, cost estimates, and sources of state matching funds.<sup>340</sup> A plan approved before June 19, 1986, under section 208 of the CWA,<sup>341</sup> to protect a designated sole source aquifer is an acceptable management plan for purposes of the application.<sup>342</sup> Approval by EPA is based on a determination of whether criteria are satisfied and whether the proposed demonstration program would provide ground water protection consistent with the objective of maintaining "the quality of the ground water in the critical protection area in a manner reasonably expected to protect human health, the environment and ground water resources."<sup>343</sup>

c. *Wellhead Protection*

The SDWA requires each state, by June 19, 1989, to adopt and submit to EPA for approval a program for protection of wellhead areas from contaminants.<sup>344</sup> Wellhead areas are defined as "the surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfield."<sup>345</sup> A state program is required to contain several elements. It must identify the wellhead area to be protected, based on hydrogeological information; the implementation duties of relevant state and local entities; and all potential human sources of contaminants that may have

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<sup>338</sup> 42 U.S.C.A. § 300h-6(c) (West Supp. 1996).

<sup>339</sup> *See id.* § 300h-6(e).

<sup>340</sup> *See id.* § 300h-6(f)(1).

<sup>341</sup> 33 U.S.C. § 1288 (1994).

<sup>342</sup> *See* 42 U.S.C.A. § 300h-6(g).

<sup>343</sup> *Id.* § 300h-6(f)(1).

<sup>344</sup> *See id.* § 300h-7(a).

<sup>345</sup> *Id.* § 300h-7(e).

adverse health effects.<sup>346</sup> The program must contain, “as appropriate, technical assistance, financial assistance, implementation of control measures, education, training, and demonstration projects to protect the water supply within wellhead protection areas from such contaminants.”<sup>347</sup> It also must contain a contingency plan to apply in the event of wellfield contamination.<sup>348</sup>

A state having greater than a prescribed number of “annular injection” wells has the additional burden of certifying that an adequate state program exists to address this potential source of contamination.<sup>349</sup> These wells inject brines associated with oil and gas production through the space between the production and surface casings of a conventional oil or gas producing well.<sup>350</sup>

EPA approval of a state program is to be based on a determination of whether it is adequate to protect PWSs from contaminants that may have adverse human health effects.<sup>351</sup> Plan approval qualifies a state for federal grants to cover fifty to ninety percent of the costs of program development and implementation.<sup>352</sup> Federal funding for a wellhead protection program cannot be used to bring individual sources of contamination into compliance with, or for the purposes of, other designated environmental statutes.<sup>353</sup>

All federal facilities within a wellhead protection area are subject to program requirements “both substantive and procedural, in the same manner, and to the same extent, as any other person.”<sup>354</sup> Exemption of a particular facility can be granted by the President if “in the paramount interest of the United States.”<sup>355</sup> However, exemption cannot be based on lack of appropriations unless a specific appropriation was requested and not approved by Congress.<sup>356</sup>

The wellhead protection program is “required” by the SDWA, but the only consequence of failure of a state to act is loss of program funding.<sup>357</sup>

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<sup>346</sup> See *id.* § 300h-7(a).

<sup>347</sup> *Id.* § 300h-7(a)(4).

<sup>348</sup> See *id.* § 300h-7(a)(5).

<sup>349</sup> See *id.* § 300h-7(i).

<sup>350</sup> See *id.* § 300h-7(i)(2).

<sup>351</sup> See *id.* § 300h-7(c)(1).

<sup>352</sup> See *id.* § 300h-7(k).

<sup>353</sup> See *id.* § 300h-7(f).

<sup>354</sup> *Id.* § 300h-7(h).

<sup>355</sup> *Id.*

<sup>356</sup> See *id.*

<sup>357</sup> See *id.* § 300h-7.

Other funding is not affected, and no provision is made for EPA implementation of such programs.

d. *Comprehensive Ground Water Protection*

This program authorizes federal funding to individual states "for the development and implementation of a State program to ensure the coordinated and comprehensive protection of ground water resources within the State."<sup>358</sup> Grants cannot exceed fifty percent of program costs, with the state required to cover at least fifty percent of program costs from state funds.<sup>359</sup> Receipt of a grant requires EPA approval of an application, with the amount of a grant determined by EPA on the basis of the extent of ground water resources in the state and the likelihood that the grant will result in their sustained and reliable protection.<sup>360</sup> For each fiscal year, each state submitting an approved application must receive at least one percent of funds made available for this program.<sup>361</sup>

e. *Source Water Assessment*

The SDWA mandates that states exercising primary SDWA enforcement responsibilities for PWSs carry out a source water assessment program. This assessment is to delineate the boundaries of PWS source waters within the state and identify origins of contaminants within delineated areas for which monitoring is required under the SDWA (and others as selected by the state).<sup>362</sup> The timetable for state action begins with the publication of EPA guidance, required by August 6, 1997.<sup>363</sup> State water assessment programs must be submitted to EPA within eighteen months from EPA issuance of guidance.<sup>364</sup> EPA approval includes a timetable of not more than two years for completion of the program,<sup>365</sup> with a possible eighteen-

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<sup>358</sup> *Id.* § 300h-8(a).

<sup>359</sup> *See id.* § 300h-8(d).

<sup>360</sup> *See id.* § 300h-8(c)(1).

<sup>361</sup> *See id.* § 300h-8(c)(3).

<sup>362</sup> *See id.* § 300j-13(a)(2).

<sup>363</sup> *See id.* § 300j-13(a)(1).

<sup>364</sup> *See id.*

<sup>365</sup> *See id.* § 300j-13(a)(3).

month extension.<sup>366</sup>

Recognizing the overlap of this program with assessments conducted for other purposes, the SDWA authorizes the use of information developed for a variety of purposes. Several SDWA activities are identified, including vulnerability assessments, sanitary surveys, and monitoring programs; assessments under a wellhead protection program; and watershed surveys under the SWTR.<sup>367</sup> Delineations and assessments conducted under other legislation such as the Clean Water Act are also included.<sup>368</sup>

Two primary incentives are provided for state implementation of this program. First, funding is available from federal contributions to SRLFs.<sup>369</sup> Second, authority for states to modify federal monitoring requirements<sup>370</sup> is conditioned on the existence of an approved source water assessment program.<sup>371</sup>

*f. Partnership Petition Programs for Source Water Protection*

The SDWA authorizes each state to establish a program for protecting sources of drinking water as described in the following quotation:

A State may establish a program under which an owner or operator of a community water system in the State, or a municipal or local government or political subdivision of a State, may submit a source water quality protection partnership petition to the State requesting that the State assist in the local development of a voluntary, incentive-based partnership, among the owner, operator, or government and other persons likely to be affected by the recommendations of the partnership . . . .<sup>372</sup>

The objective of such programs is to prevent contamination of drinking water supplies through development and implementation of

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<sup>366</sup> See *id.* § 300j-13(a)(4).

<sup>367</sup> See *id.* § 300j-13(a)(6).

<sup>368</sup> See *id.*

<sup>369</sup> See *id.* § 300j-12(a)(2); see *supra* Part I.D.

<sup>370</sup> See 42 U.S.C.A. § 300g-7(a).

<sup>371</sup> See *id.* § 300g-7(b)(1).

<sup>372</sup> *Id.* § 300j-14(a)(1)(A).



voluntary and incentive-based strategies among water suppliers and other parties in source water areas. The immediate purposes of the petition are to obtain state financial and technical assistance to facilitate establishment of a partnership arrangement and state assistance in identifying resources available for implementing protective measures.<sup>373</sup>

A state petition program, upon approval of the EPA Administrator pursuant to mandated EPA guidance,<sup>374</sup> is eligible for a federal grant to cover up to fifty percent of program administrative costs.<sup>375</sup> To be approved, a state program must meet prescribed standards, including adequate procedures for reviewing and approving or disapproving petitions submitted to the state.<sup>376</sup> Funds to implement a state-approved local partnership program may be provided from a state SRLF,<sup>377</sup> but also may be available from other sources. One of the basic functions of a state program is to identify and facilitate acquisition of funding by the implementing party wherever available.

*g. Source Water Protection Consistent with Nonpoint Source Pollution Management*

Source water protection is an eligible activity for federal grants under the following SDWA provision:

The Administrator of the Environmental Protection Agency may provide technical and financial assistance in the form of grants to States (1) for the construction, rehabilitation, and improvement of water supply systems, and (2) consistent with nonpoint source management programs established under section 1329 of Title 33, for source water quality protection programs to address pollutants in navigable waters for the purpose of making such waters usable by water supply systems.<sup>378</sup>

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<sup>373</sup> See *id.* § 300j-14(a).

<sup>374</sup> See *id.* § 300j-14(d).

<sup>375</sup> See *id.* § 300j-14(c)(1).

<sup>376</sup> See *id.* § 300j-14(b).

<sup>377</sup> See *id.* § 300j-14(a)(1)(B).

<sup>378</sup> *Id.* § 300j-3c(a).

Federal grants are limited to fifty percent of the costs of activities covered.<sup>379</sup> Not more than thirty percent of federal appropriations for this program can be used for source water protection under item two in the above quotation.<sup>380</sup>

h. *New York City Watershed Protection*

The State of New York receives special attention in the SDWA provisions for state PWS supervision programs in the form of authorized federal expenditures for protecting New York City's source waters. EPA is authorized "to provide financial assistance to the State of New York for demonstration projects implemented as part of the watershed program for the protection and enhancement of the quality of source waters of the New York City water supply system."<sup>381</sup> Federal assistance is authorized at \$15 million for each of fiscal years 1997 through 2003,<sup>382</sup> with federal funding not to exceed "50 percent of the total cost of the protection program being carried out for any particular watershed or ground water recharge area."<sup>383</sup>

B. *Implementation Responsibilities*

The SDWA creates a federal program whose implementation involves several participants. The federal program seeks to influence the behavior of all parties involved in provision of water supply. At the broadest level, the Act seeks to involve the general public by increasing available information on drinking water and providing opportunity for public input at many decision points. A major target of the attempt to influence behavior within the water supply industry is the state agency traditionally involved in a regulatory/supportive role with the water supplier. Although a federal program potentially could have bypassed state government, the approach of a federal/state partnership was adopted because of long-standing state involvement in water supply safety as well as the closer proximity of state government to the water supplier and its resulting ability to be more responsive to local circumstances and special conditions. But the water

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<sup>379</sup> See *id.* § 300j-3c(f).

<sup>380</sup> See *id.* § 300j-3c(b).

<sup>381</sup> *Id.* § 300j-2(d)(1).

<sup>382</sup> See *id.* § 300j-2(d)(4).

<sup>383</sup> *Id.* § 300j-2(d)(3).

supply provider—the PWS in all its diversity of form, size, and managerial capabilities—is the ultimate party whose operational behavior is at issue, and direct linkages between the federal government and the PWS are maintained.

Many SDWA responsibilities are subject to alternative implementation arrangements, but some rest exclusively with one of the three major parties. The federal government (EPA) has exclusive responsibility for establishing minimum drinking water standards and regulations for many program aspects.<sup>384</sup> State government has the exclusive ability to perform certain functions,<sup>385</sup> but most implementation responsibilities that can be assumed within state discretion will be performed by EPA in the absence of state assumption of authority. This provision of authority for alternate implementation arrangements adds significantly to the complexity of SDWA language. PWS operators (at least certain types) are authorized under certain conditions to perform a program responsibility as an alternative to state action.<sup>386</sup> The primary role of the PWS, of course, is to implement and operate facilities in compliance with SDWA requirements. The PWS operator, however, often faces significant opportunities for assistance and, in some cases, provisions for special accommodations in meeting applicable requirements.

Thus, the SDWA recognizes a significant role for federal, state, and PWS operators in the program's implementation. All the responsibilities under the Act are directed toward implementation of the SDWA's protective strategies considered in the previous section: the application of performance standards, the specification of treatment techniques and operations, and the protection of water supply sources. Certain responsibilities are less direct support functions that have not been explicitly introduced in the previous discussion. For example, financial assistance to PWSs has not been considered as a major protective strategy but serves to support all the principal strategies considered. Both federal and state governments have significant roles in administration of various forms of PWS assistance. The following sections include consideration of a variety of support functions carried out during program implementation as well as the responsibilities of the parties directly related to accomplishment of the major protective

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<sup>384</sup> See *id.* § 300g-1.

<sup>385</sup> For example, the state must establish a wellhead protection program. See *id.* § 300h-7.

<sup>386</sup> For example, a PWS operator may make application for a critical aquifer protection area demonstration program. See *id.* § 300h-6(c).

strategies.

### 1. *Federal Government*

The most fundamental federal role in SDWA administration is the establishment of minimum standards and regulations to control behavior of parties subject to the Act's provisions and to establish procedures for program implementation.<sup>387</sup> This authority includes establishment of NPDWRs, NSDWRs, and minimum requirements for UIC programs. In addition, it includes specification of requirements for monitoring, reporting, and other actions essential to ensure compliance by parties covered by these measures. The federal regulatory role also includes establishment of requirements for operation of state programs authorized by the SDWA.<sup>388</sup>

A second federal role is program administration, including enforcement of NPDWRs and UIC program requirements. EPA has total responsibility for program implementation and enforcement where a state does not have primacy<sup>389</sup> and/or an approved state UIC program.<sup>390</sup> EPA also retains certain enforcement powers where approved state programs are in operation.<sup>391</sup>

A third federal role is administration of assistance programs for other parties involved in SDWA administration.<sup>392</sup> Assistance under the Act focuses both on states and PWSs, which often are operated by local governments. Assistance takes the form of financial aid, technical assistance, and development and dissemination of information.

#### a. *Establishment of NPDWRs, NSDWRs, and Other Requirements*

The SDWA uses the approach employed in several federal programs where the federal role includes the setting of standards or other program objectives. The process of developing standards is open and is intended to encourage broad input. EPA is instructed to consult the scientific

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<sup>387</sup> See *id.* § 300g-1.

<sup>388</sup> See *id.* § 300g-2.

<sup>389</sup> See *id.* § 300g-3(a)(2).

<sup>390</sup> See 42 U.S.C. § 300h-2(a)(2) (1994).

<sup>391</sup> See *id.* § 300h-2(a)(1); 42 U.S.C.A. §§ 300g-3(a)(1) (West Supp. 1996).

<sup>392</sup> See 42 U.S.C.A. § 300j-1.

community<sup>393</sup> in the process of selecting and regulating contaminants, and the SDWA provides for creation of the National Drinking Water Advisory Council<sup>394</sup> for consultation with EPA on matters of Agency policy and activities. The Council is an EPA-appointed fifteen-member group comprised primarily of individuals knowledgeable about the water supply industry, including members from state and local water agencies.<sup>395</sup> The process of developing NPDWRs provides opportunity for input from anyone interested in the safety of drinking water, but the final decision concerning NPDWRs is made by EPA. The EPA is also responsible for establishment of NSDWRs to apply to contaminants that affect welfare, such as by adding odor or altering the appearance of water.<sup>396</sup>

Recognizing the importance of adequate information to the regulatory process, the SDWA creates broad authority for EPA to collect data through imposition of monitoring and reporting requirements. This authority requires that "[e]very person who is subject to any requirement of this subchapter or who is a grantee, shall establish and maintain such records, make such reports, conduct such monitoring, and provide such information as the Administrator may reasonably require by regulation . . . ."<sup>397</sup>

EPA's monitoring requirements cover all regulated contaminants and designated unregulated contaminants. The SDWA creates a process for systematic addition of unregulated contaminants to be monitored by PWSs.<sup>398</sup> The results of monitoring for both regulated and unregulated contaminants are to be incorporated into a national drinking water contaminant "occurrence data base" by August 6, 1999.<sup>399</sup>

EPA regulations are not limited to NPDWRs and associated activities but also include many aspects of SDWA implementation. Major regulations are needed in areas such as state primacy establishment and approval of state UIC programs, with regulations of lesser scope needed in other situations. These control measures are described as "regulations," "rules," and "requirements." Table 2 provides a listing of such control measures. Excluded from this list are other forms of federal influence such as

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<sup>393</sup> See *id.* § 300g-1(b)(1)(B).

<sup>394</sup> See *id.* § 300j-5.

<sup>395</sup> See *id.* § 300j-5(a).

<sup>396</sup> See *id.* § 300g-1(c).

<sup>397</sup> *Id.* § 300j-4(a)(1)(A).

<sup>398</sup> See *id.* § 300j-4(a)(2)(B).

<sup>399</sup> See *id.* § 300j-4(g)(1).

“procedures” and “guidance.” These additional measures are included in Table 4, which focuses on forms of technical assistance and information enhancement.

b. *Federal Administration and Enforcement*

Federal responsibilities for SDWA administration and related enforcement of requirements depend on whether a given state has assumed primacy and/or has an approved UIC program. In the absence of a state program in either area, EPA exercises the same authority as would a state agency under a state program.<sup>400</sup> EPA does not have authority to enforce NSDWRs.

In a non-primacy state, EPA may seek, after notifying an appropriate elected official<sup>401</sup> to remedy non-compliance with a requirement by issuance of an administrative order<sup>402</sup> or by initiating a civil action in the appropriate U.S. district court.<sup>403</sup> The penalty for violation may not exceed \$25,000 per day of violation.<sup>404</sup>

A PWS may shield itself temporarily from federal enforcement by utilizing a provision designed to encourage consolidation of systems. Upon approval of a PWS prepared plan for physical or managerial consolidation or transfer of ownership reasonably expected to improve drinking water quality, EPA cannot take enforcement action against a violation identified in the plan prior to the date on which consolidation is completed according to the plan or the date two years after plan approval, whichever occurs first.<sup>405</sup> This provision also applies to enforcement by a primacy state.<sup>406</sup>

In a state without an approved UIC program, EPA is authorized to issue administrative orders or initiate civil or criminal actions where requirements are violated.<sup>407</sup> Civil penalties are similar to those for violation of NPDWRs.<sup>408</sup> Criminal sanctions for willful violations can include

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<sup>400</sup> See *id.* § 300g-1(b)(7)(C)(iv).

<sup>401</sup> See *id.* § 300g-3(g)(2).

<sup>402</sup> See *id.* § 300g-3(a)(2).

<sup>403</sup> See *id.*

<sup>404</sup> See *id.*

<sup>405</sup> See *id.* § 300g-3(h).

<sup>406</sup> See *id.*

<sup>407</sup> See 42 U.S.C. § 300h-2(a)(2) (1994).

<sup>408</sup> See *id.* § 300h-2(b)(1).

imprisonment for not more than three years.<sup>409</sup>

EPA's enforcement authority also applies where state programs are in effect, but this authority is subject to restrictions. In a state with primacy, the EPA Administrator is directed, prior to initiation of enforcement action, to first notify the state and PWS involved whenever a PWS is not complying with any requirement.<sup>410</sup> In addition, the Administrator is to provide "such advice and technical assistance to such State and public water system as may be appropriate to bring the system into compliance with the requirement by the earliest feasible time."<sup>411</sup> If the state has not commenced "appropriate enforcement action" within thirty days of such notice, the Administrator is authorized to issue an administrative order or commence a civil action in U.S. district court to compel compliance and seek a civil penalty for the violation.<sup>412</sup> An administrative order issued in a primacy state is not to take effect until the state has been given an opportunity to confer with the Administrator regarding the order.<sup>413</sup>

Another area of a primacy program operation subject to EPA oversight is the granting of variances and exemptions. In the case of issuance of a variance, a state must promptly notify the EPA Administrator, including the reason and documentation of the need for the variance.<sup>414</sup> EPA is required, once in each three-year period, to conduct a review of state-issued variances and required schedules for compliance with the regulation in question.<sup>415</sup> If such review leads to a finding that a state has abused its discretion regarding variances, EPA is required to give notice to the state proposing revocations or modifications of specific variances.<sup>416</sup> Such proposed revocations or modifications become effective only after satisfaction of public hearing and other requirements.<sup>417</sup>

EPA oversight authority is greater where "small system" variances are proposed. Where a state proposes to issue such a variance to a PWS serving a population of more than 3300 but fewer than 10,000 persons, the proposed

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<sup>409</sup> See *id.* § 300h-2(b)(2).

<sup>410</sup> See 42 U.S.C.A. § 300g-3(a)(1)(A) (West Supp. 1996).

<sup>411</sup> *Id.*

<sup>412</sup> See *id.* § 300g-3(a)(1)(B).

<sup>413</sup> See *id.* § 300g-3(g)(2).

<sup>414</sup> See *id.* § 300g-4(a)(1)(C).

<sup>415</sup> See *id.* § 300g-4(a)(1)(F).

<sup>416</sup> See *id.* § 300g-4(a)(1)(G).

<sup>417</sup> See *id.*

variance must be submitted to EPA for approval prior to issuance.<sup>418</sup> Disapproval by EPA requires notification of the reasons for disapproval, and resubmittal with modifications addressing objections is permitted.<sup>419</sup> The EPA Administrator is authorized to object to any small system variance and, in the case where a state issues such variances without resolving the concerns expressed in the objection, may overturn the state decision.<sup>420</sup>

EPA has oversight powers with respect to state grants of exemptions similar to those applicable in the case of variances. Each state must promptly report each exemption granted, including the reasons and documentation of the need for the exemption.<sup>421</sup> EPA must review state-granted exemptions and, in the case of a finding of abuse of discretion, may propose revocations or modifications to become final through satisfaction of required procedures.<sup>422</sup>

Continuance of primacy over time requires continuing state satisfaction of applicable conditions and state adoption of new and revised federal regulations within time limits provided. Should the EPA Administrator determine that conditions are no longer being met, notice and an opportunity for public hearing on the determination must be provided before primacy can be terminated.<sup>423</sup>

The relationship between a state and the federal government while an approved UIC program is in effect is analogous to that existing while a state has primacy to enforce NPDWRs. EPA continues to have authority to issue administrative orders and commence civil actions with respect to violators of program requirements if the state has not commenced appropriate enforcement action within thirty days of EPA notice of the violation.<sup>424</sup> As in the case of primacy, EPA can withdraw approval of the state UIC program upon a finding that the program no longer meets applicable requirements and compliance with proper procedures.<sup>425</sup>

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<sup>418</sup> See *id.* § 300g-4(e)(1).

<sup>419</sup> See *id.* § 300g-4(e)(10)(A).

<sup>420</sup> See *id.* § 300g-4(e)(9).

<sup>421</sup> See *id.* § 300g-5(c).

<sup>422</sup> See *id.* § 300g-5(d)(2).

<sup>423</sup> See *id.* § 300g-2(b).

<sup>424</sup> See 42 U.S.C. § 300h-2(a) (1994).

<sup>425</sup> See *id.* § 300h-1(b)(3).



c. *Provision of Assistance to States and PWSs*

The SDWA contains a large number of provisions for federal assistance to states and PWSs in meeting the program's objectives. Assistance is provided in several forms, including financial aid, technical assistance, and informational assistance. Some forms of assistance are related directly to compliance with a specific requirement while others are less focused and attempt to increase general management capabilities. A major role for EPA in SDWA implementation is administration of these programs of support for the states and PWSs.

Financial support is the most visible form of federal assistance. The major form of federal financial assistance occurs through capitalization grants to SRLFs.<sup>426</sup> Use of the SRLFs will be directed by EPA guidance, but generally is intended to facilitate compliance with NPDWRs or otherwise further the health protection objectives of the SDWA. Receipt of a federal grant is conditioned on a state contribution to the fund of at least twenty percent of the federal grant.<sup>427</sup> The allotment formula used to distribute federal funds among the states through fiscal year 1997 is the same as that used in federal funding of state supervision of PWSs, which considers such factors as populations, geographic area, and number of water systems.<sup>428</sup> Beginning with the 1998 fiscal year, the formula will be based on needs surveys.<sup>429</sup>

Potential restrictions on federal grants to SRLFs are used as an incentive to encourage desired state action under other SDWA provisions. Provision is made for withholding a portion of the federal grant for states that do not have authority to ensure that new community and nontransient, noncommunity PWSs demonstrate technical, managerial, and financial capacity with respect to NPDWR compliance.<sup>430</sup> A percentage of funds is also to be withheld for failure of a state to implement a specified program for certification of operators of community and nontransient, noncommunity PWSs.<sup>431</sup> Funds withheld under these provisions are to be reallocated among

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<sup>426</sup> See 42 U.S.C.A. § 300j-12.

<sup>427</sup> See *id.* § 300j-12(e).

<sup>428</sup> See *id.* §§ 300j-2, 300j-12(a)(1)(D)(i).

<sup>429</sup> See *id.* § 300j-12(a)(1)(D)(ii).

<sup>430</sup> See *id.* § 300g-9(a).

<sup>431</sup> See *id.* § 300g-8(b).

the other complying states in the same manner as the initial allotment.<sup>432</sup>

The federal government exercises substantial control over use of federal funds, even those contributed to an SRLF. In addition to defining appropriate state uses, the SDWA requires the EPA Administrator to reserve funds from federal appropriations for SRLF capitalization for designated purposes. These mandatory “set-asides” include \$10 million per year for health effects studies on drinking water contaminants<sup>433</sup> and \$2 million per year for providing assistance to small PWSs for monitoring unregulated contaminants.<sup>434</sup> In addition, the Administrator may reserve up to two percent of appropriations (up to \$15 million) for each of the fiscal years 1997 through 2003 to provide technical assistance to small PWSs in complying with NPDWRs.<sup>435</sup> Controls also continue to be exerted through individual grant provisions that cover such activities as state PWS supervision under primacy, state UIC programs, comprehensive ground water protection programs, and a variety of more specialized measures. Table 3 provides a list of SDWA funding provisions and their intended purposes.

Technical assistance is often provided in association with financial assistance. One application is assisting small PWSs with NPDWR compliance. Such assistance may include “circuit-rider and multi-State regional technical assistance programs, training, and preliminary engineering evaluations.”<sup>436</sup> As noted above, this program is supported by an authorization of a \$15 million appropriation for each of the fiscal years 1997 through 2003. An additional provision for technical assistance (and provision of grants) to states or publicly owned water systems applies in emergency situations affecting water systems that involve substantial endangerment of public health.<sup>437</sup>

The technical assistance effort will be facilitated by an EPA mandate to establish at institutions of higher learning “small public water systems technology assistance centers.”<sup>438</sup> The purpose of such centers is “the conduct of training and technical assistance relating to the information, performance, and technical needs of small public water systems or public

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<sup>432</sup> See *id.* § 300j-12(a)(1)(G)(ii).

<sup>433</sup> See *id.* § 300j-12(n).

<sup>434</sup> See *id.* § 300j-12(o).

<sup>435</sup> See *id.* § 300j-12(q).

<sup>436</sup> *Id.* § 300j-1(e).

<sup>437</sup> See *id.* § 300j-1(b).

<sup>438</sup> *Id.* § 300g-9(f).

water systems that serve Indian Tribes.”<sup>439</sup>

Informational assistance is often provided in association with or as part of regulatory actions. For example, provision of information on variance technologies is an integral part of applying NPDWRs to small PWSs.<sup>440</sup> Other informational assistance is less directly related to NPDWR compliance. An illustration of this type of assistance is the required EPA publication of information on PWS capacity development and operator certification.<sup>441</sup> Capacity development is also the focus of authorizations for (1) initial funding of one or more university-based environmental finance centers for assisting state and local officials in PWS capacity development,<sup>442</sup> and (2) establishment of a national PWS capacity development clearinghouse to receive and disseminate information.<sup>443</sup>

Informational assistance is also provided in the form of training for personnel of state agencies with SDWA primary enforcement responsibility and personnel who manage or operate PWSs.<sup>444</sup> This training program is intended to ensure an adequate supply of qualified personnel for occupations involving the public health aspects of drinking water and to expand state and local governmental capabilities.<sup>445</sup>

At the broadest level, the EPA assists SDWA program implementation by conducting research and studies that expand available information in areas of deficiencies. These activities supplement regular data collection activities such as regular monitoring and the special data collection mandated by the ICR. Table 4 displays some of the SDWA provisions that mandate information development and dissemination activities, together with technical assistance activities.

## 2. State Government

The SDWA makes provision for a substantial state implementation role in recognition of the need for geographical flexibility and the long-term involvement of the states with respect to drinking water protection. For most

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<sup>439</sup> *Id.* § 300g-9(f)(2).

<sup>440</sup> *See id.* § 300g-1(b)(15).

<sup>441</sup> *See id.* §§ 300g-8, 300g-9(c).

<sup>442</sup> *See id.* § 300g-9(g)(1).

<sup>443</sup> *See id.* § 300g-9(g)(2).

<sup>444</sup> *See id.* § 300j-1(c).

<sup>445</sup> *See id.* § 300j-1(c)(3).

SDWA purposes, the term “state” includes, in addition to the fifty states, the District of Columbia, Guam, Puerto Rico, the Northern Mariana Islands, the Virgin Islands, American Samoa, and the Trust Territory of the Pacific Islands.<sup>446</sup> In addition, Indian tribes having a federally recognized governing body are treated as states for certain purposes under the SDWA (such as primacy and underground injection control).<sup>447</sup> EPA is charged with the duty of developing regulations to determine when treatment of Indian tribes as states is appropriate.<sup>448</sup>

A major state role is the assumption of primacy for enforcement of drinking water regulations at least as stringent as federal NPDWRs and other federal regulations. Although the federal government retains substantial powers of oversight where states exercise primacy, assumption of this responsibility prevents the operation of parallel state and federal regulatory programs by creation of a single state-run program through which federal requirements are implemented. Another regulatory function of the states is enforcement of NSDWRs since the SDWA does not provide for federal enforcement. Related to the enforcement of regulations for PWS operation is the provision of support services to PWSs. A major activity in this area is administration of a state SRLF for provision of financial aid potentially applicable to several state and local program components.

Still another regulatory program a state may agree to implement is the UIC program, which is independent of the administration of NPDWRs. A state must make separate decisions regarding assumption of administrative responsibilities for each. The intent that the UIC program be state administered is seen in the fact that EPA’s primary responsibility is to develop regulations for state programs; provision is made, however, for EPA to establish and operate a program for any state not adopting its own UIC program.

The role of state government under the SDWA also includes special programs and activities that can exist in addition to or, in some cases, independently of primacy or a state UIC program. These responsibilities tend to focus on source protection. They in general are discretionary with the individual state but are encouraged by federal financial incentives. Special funding may be available to support the activity and, in some cases, a state

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<sup>446</sup> *See id.* § 300f(13)(A).

<sup>447</sup> *See id.* § 300j-11(a).

<sup>448</sup> *See id.* § 300j-11(b).

can lose a portion of its federal contribution to its SRLF if it fails to act.<sup>449</sup>

A final area of state responsibility is preparation of reports and provision of notice to the public or designated parties when specified events occur. These requirements supplement similar directives for PWS operators and indicate commitment to the public's "right to know." These requirements also appear to be designed to enlist public opinion as an influence to encourage appropriate performance by state and local officials.

a. *Primacy: State Enforcement of NPDWRs*

A state desiring primacy must make application to EPA, who must determine that the state:

- (1) has adopted drinking water regulations that are no less stringent than the national primary drinking water regulations promulgated by the Administrator . . . ;
- (2) has adopted and is implementing adequate procedures for the enforcement of such State regulations, including conducting such monitoring and making such inspections as the Administrator may require by regulation;
- (3) will keep such records and make such reports with respect to its activities under paragraphs (1) and (2) as the Administrator may require by regulation;
- (4) if it permits variances or exemptions, . . . permits such variances and exemptions under conditions and in a manner which is not less stringent than [that permitted under federal law];
- (5) has adopted and can implement an adequate plan for the provision of safe drinking water under emergency circumstances including earthquakes, floods, hurricanes, and other natural disasters, as appropriate; and
- (6) has adopted authority for administrative penalties . . . .<sup>450</sup>

The form and content of an application for primacy is specified in

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<sup>449</sup> See *supra* Part I.D.

<sup>450</sup> See 42 U.S.C.A. § 300g-2(a).

EPA regulations.<sup>451</sup> Upon receipt of a state's application, the EPA Administrator must "(A) make the determination applied for, or (B) deny the application and notify the applicant in writing of the reasons for his denial."<sup>452</sup>

The conditions necessary for state assumption of primacy ensure that a state has authority under state law to enforce NPDWRs or PWSs equivalent to EPA's authority under the SDWA. A state is free to develop its own regulations that are stricter than federal requirements, but NPDWRs provide minimum requirements that generally cannot be relaxed. Primacy states, however, are granted limited powers to relax federal requirements in designated program areas under specified conditions. For instance, the following provision authorizes relaxation of federal monitoring requirements:

Each State exercising primary enforcement responsibility for public water systems under this subchapter and having an approved source water assessment program may adopt, in accordance with guidance published by the Administrator, tailored alternative monitoring requirements for public water systems in such State (as an alternative to the monitoring requirements for contaminants set forth in the applicable national primary drinking water regulations) where the State concludes that (based on data available at the time of adoption concerning susceptibility, use, occurrence, or wellhead protection, or from the State's drinking water source water assessment program) such alternative monitoring would provide assurance that it complies with the Administrator's guidelines. The State program must be adequate to assure compliance with, and enforcement of, applicable national primary drinking water regulations. Alternative monitoring shall not apply to regulated microbiological contaminants (or indicators thereof), disinfectants and disinfection byproducts, or corrosion byproducts.<sup>453</sup>

During the period while alternative monitoring for PWSs in general

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<sup>451</sup> See 40 C.F.R. § 142.10 (1996).

<sup>452</sup> 42 U.S.C.A. § 300g-2(b).

<sup>453</sup> *Id.* § 300g-7(b)(1).

is being developed (but not after August 6, 1999), a primacy state may modify monitoring requirements on an interim basis, subject to similar restrictions as the permanent modifications, for PWSs serving no more than 10,000 people.<sup>454</sup> These provisions for interim and permanent alteration of monitoring requirements demonstrate that grants of authority to states to relax federal requirements are likely to be closely circumscribed by conditions and limitations.

Assumption of primacy by a state creates eligibility for a federal grant to cover part of the costs of supervising PWSs. Such grants can equal seventy-five percent of program costs<sup>455</sup> but generally have averaged less. The legislative history of the 1996 Amendments notes that for fiscal year 1990, the federal share of state program costs "averaged 45 percent and accounted for less than 25 percent in nine States."<sup>456</sup>

In spite of program costs, however, assumption of primacy has been widespread. The basic attractiveness of primacy from the state perspective can be seen in the following statement:

Virginia has long held that decisions affecting Virginians should be made by Virginians. These decisions are based on a balance of local needs and demands and state needs and demands. Allowing the EPA to make Virginia's drinking water decisions would remove local and state input into those decisions . . . . Presently the engineering staff within the Division of Water Supply Engineering offers a service that is difficult and costly to find elsewhere, particularly in the case of small waterworks. This important service is technical assistance to waterworks owners and operators. The staff engineers now spend a great deal of their time working with waterworks operators in correcting problems, explaining water treatment principles, inspecting waterworks facilities and addressing complaints from consumers. These technical service contacts help operators comply with regulations and improve their operations, and often provide an informal approach to resolving violations of state and federal

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<sup>454</sup> See *id.* § 300g-7(a).

<sup>455</sup> See *id.* § 300j-2(a)(3).

<sup>456</sup> H.R. REP. NO. 104-632, at 9 (1996), *reprinted in* 1996 U.S.C.C.A.N. 1366, 1372.

waterworks regulations . . . . Contrasted to the state approach of protecting public health by preventing violations before they take place, the EPA's stated emphasis is on enforcement against those who violate the regulations . . . . In a report of fiscal 1988 enforcement activity, EPA Administrator William K. Reilly pointed to the 51% increase in civil penalties over the previous year, stating that "this shows that the EPA and the federal government generally are getting tougher on enforcement, which is the cornerstone of EPA's environmental programs."<sup>457</sup>

Primacy is a mechanism for recognition of a major state role in the administration of the SDWA's requirements for PWSs, but federal powers remain significant after primacy is established. EPA exercises oversight during state administration in several areas, including the authority to terminate primacy, as discussed in the above section describing the federal role.

*b. Enforcement of NSDWRs*

The SDWA provides for the EPA to establish NSDWRs but gives little attention to them. Their lesser standing relative to NPDWRs is a result of their focus on water aesthetics rather than health. The primary provision regarding enforcement is the following statement:

Whenever . . . the Administrator finds that . . . one or more public water systems in a State do not comply with such secondary regulations, and that such noncompliance appears to result from a failure of such State to take reasonable action to assure that public water systems throughout such State meet such secondary regulations, he shall so notify the State.<sup>458</sup>

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<sup>457</sup> OFFICE OF WATER PROGRAMS, VA. DEP'T OF HEALTH, THE IMPACT OF THE SAFE DRINKING WATER ACT AMENDMENTS OF 1986 ON THE COMMONWEALTH OF VIRGINIA, H. DOC. NO. 30, 1989 Gen. Assembly, at 11-12 (Va. 1990).

<sup>458</sup> 42 U.S.C.A. § 300g-3(d) (West Supp. 1996).



c. *Support Services for PWS Operations*

Authorization of state SRLFs has created a central mechanism for channeling federal and state financial assistance to PWSs. The SDWA provides detailed guidance for management and use of such funds.<sup>459</sup> After establishing a fund, a state may enter into an agreement with EPA for provision of federal capitalization grants.<sup>460</sup> Federal appropriations, which are authorized at the \$1 billion level for fiscal years 1995 through 2003,<sup>461</sup> are to be allocated among the states by means of an allotment formula ultimately to be based on an EPA assessment of water system capital improvement needs.<sup>462</sup> To receive federal funds, a state generally must have established primacy<sup>463</sup> and must contribute an amount to the fund equal to twenty percent of the federal grant.<sup>464</sup>

An SRLF may be used for state programs and for loans to certain PWSs.<sup>465</sup> State uses include annual expenditures of up to four percent of federal allotments for related administrative costs and providing technical assistance to PWSs.<sup>466</sup> An additional two percent may be used to provide technical assistance to PWSs serving no more than 10,000 persons.<sup>467</sup> Subject to a requirement for an equal match from state funds (half of which must be in addition to 1993 fiscal year expenditures for PWS supervision), an additional ten percent of federal allotments may be used:

- (A) for public water system supervision programs under section 300j-2(a) of this title;
- (B) to administer or provide technical assistance through source water protection programs;
- (C) to develop and implement a capacity development strategy under section 300g-9(c) of this title; and

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<sup>459</sup> See *id.* § 300j-12.

<sup>460</sup> See *id.* § 300j-12(a)(1)(A).

<sup>461</sup> See *id.* § 300j-12(m).

<sup>462</sup> See *id.* § 300j-12(a)(1)(D). As discussed above, the allotment is subject to specified set-asides and withholdings. See *supra* Part II.B.1.c.

<sup>463</sup> See 42 U.S.C.A. § 300j-12(a)(1)(F).

<sup>464</sup> See *id.* § 300j-12(e).

<sup>465</sup> See *id.* § 300j-12(a)(2).

<sup>466</sup> See *id.* § 300j-12(g)(2).

<sup>467</sup> See *id.*

(D) for an operator certification program for purposes of meeting the requirements of section 300g-8 of this title.<sup>468</sup>

The second category of SRLF use is assistance of PWSs in their efforts to comply with the SDWA. This use is described in the following quotation:

Except as otherwise authorized by this subchapter, amounts deposited in a State loan fund, including loan repayments and interest earned on such amounts, shall be used only for providing loans or loan guarantees, or as a source of reserve and security for leveraged loans, the proceeds of which are deposited in a State loan fund established under paragraph (1), or other financial assistance authorized under this section to community water systems and nonprofit noncommunity water systems, other than systems owned by Federal agencies. Financial assistance under this section may be used by a public water system only for expenditures (not including monitoring, operation, and maintenance expenditures) of a type or category which the Administrator has determined, through guidance, will facilitate compliance with national primary drinking water regulations applicable to the system . . . .<sup>469</sup>

Several restrictions and exceptions apply to loans authorized by this provision. Only community and nonprofit, noncommunity PWSs are eligible, and PWSs in significant noncompliance with a program requirement or lacking technical, managerial, and financial capability cannot receive assistance without determinations that the particular deficiency will be resolved.<sup>470</sup> A minimum of fifteen percent of federal contributions to an SRLF in any year must be made available to provide loans to PWSs serving fewer than 10,000 persons.<sup>471</sup> An exception to the type of assistance authorized is made for “disadvantaged communities,” defined by application

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<sup>468</sup> *Id.* § 300j-12(g)(2)(A) to (D).

<sup>469</sup> *Id.* § 300j-12(a)(2).

<sup>470</sup> *See id.* § 300j-12(a)(3).

<sup>471</sup> *See id.* § 300j-12(a)(2).

of affordability criteria to be developed by the State in which the PWS is located.<sup>472</sup> For a PWS that qualifies, a state may use its SRLF to “provide additional subsidization (including forgiveness of principal),” subject to the limitation that loan subsidies cannot exceed thirty percent of the State’s capitalization grant during any fiscal year.<sup>473</sup>

The foregoing lists of state and PWS activities subject to SRLF assistance are extensive; however, the SDWA provides a further list of eligible activities containing both state and PWS activities. In any one fiscal year, no one of the activities on the following list may receive assistance in an amount exceeding ten percent of the state’s capitalization grant for that year, and the total assistance provided for all the items cannot exceed fifteen percent of the grant:<sup>474</sup> (1) loans to community and nonprofit noncommunity PWSs to acquire land or conservation easements for source protection; (2) loans to community PWSs to implement local, voluntary source water protection measures; (3) technical and financial assistance to PWSs as part of a capacity development strategy; (4) expenditures to delineate and assess source water protection areas; and (5) expenditures to establish and implement wellhead protection programs.<sup>475</sup>

Although several types of expenditures are authorized in addition to loans, an SRLF is intended to be available in perpetuity.<sup>476</sup> A fund is to receive repayments and interest as loans are reimbursed.<sup>477</sup> All funds are subject to periodic audits by EPA.<sup>478</sup> A state may combine administration of an SRLF with other revolving funds, providing that SRLF grants, repayments, and interest are subject to separate accounting.<sup>479</sup> After an SRLF has been established for a year but prior to fiscal year 2002, a governor may transfer up to thirty-three percent of an SRLF capitalization grant to funds provided to the state under section 601 of the CWA; an identical transfer can

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<sup>472</sup> See *id.* § 300j-12(d).

<sup>473</sup> *Id.*

<sup>474</sup> See *id.* § 300j-12(k)(2).

<sup>475</sup> See *id.* § 300j-12(k)(2)(A) to (E).

<sup>476</sup> See *id.* § 300j-12(c).

<sup>477</sup> See *id.*

<sup>478</sup> See *id.* § 300j-12(g)(4).

<sup>479</sup> See *id.* § 300j-12(g)(1).

also be conducted from section 601 CWA grants to an SRLF.<sup>480</sup>

A state with an SRLF must prepare a plan annually that lists all projects to be assisted in the next fiscal year.<sup>481</sup> Criteria for selection indicate that priority should be given to projects that address the most serious risks to human health, are necessary to ensure compliance with the Act, and assist PWSs with the greatest need according to state affordability criteria.<sup>482</sup> This plan must describe the goals of the fund and its financial status.<sup>483</sup>

d. *Underground Injection Controls*

A state desiring to operate its own UIC program must make application to EPA for a determination that its program is consistent with EPA regulations under which a state program:

(A) shall prohibit . . . any underground injection in such State which is not authorized by a permit issued by the State (except that the regulations may permit a State to authorize underground injection by rule);

(B) shall require (i) in the case of a program which provides for authorization of underground injection by permit, that the applicant for the permit to inject must satisfy the State that the underground injection will not endanger drinking water sources, and (ii) in the case of a program which provides for such an authorization by rule, that no rule may be promulgated which authorizes any underground injection which endangers drinking water sources;

(C) shall include inspection, monitoring, recordkeeping, and reporting requirements; and

(D) shall apply (i) as prescribed by section 300j-6(b) of this title, to underground injections by Federal agencies, and (ii) to underground injections by any other person whether or not

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<sup>480</sup> See Safe Drinking Water Act Amendments of 1996, Pub. L. No. 104-182, § 302(a)(1)-(2), 110 Stat. 1613, 1683 (1996); see also 33 U.S.C. § 1381 (1994) (codification of CWA § 601).

<sup>481</sup> See 42 U.S.C.A. § 300j-12(b)(1) (West Supp. 1996).

<sup>482</sup> See *id.* § 300j-12(b)(3).

<sup>483</sup> See *id.* § 300j-12(b).

occurring on property owned or leased by the United States.<sup>484</sup>

While a state UIC program is in effect, EPA exercises continuing oversight in a manner similar to that employed where a state assumes primacy for enforcement of drinking water regulations.<sup>485</sup> EPA retains the power to take enforcement actions to address violations of the program after compliance with specified procedures,<sup>486</sup> and approval of a state program can be withdrawn under specified conditions.<sup>487</sup>

*e. Development of Special Programs*

Beyond provisions for state assumption of major regulatory roles under primacy and UIC programs, the SDWA provides discretionary authority for state governments to develop several other programs of lesser scope. Most of these programs are source-protection measures or support programs for PWS operations. Most are options exclusively for state consideration while a few can be implemented by local governments under certain conditions—for example, critical aquifer protection area demonstrations. Table 5 contains a listing of programs available for state implementation.

*f. Preparation of Reports and Notices*

The SDWA objective of increasing public awareness of drinking water problems and issues has resulted in new communications responsibilities for all parties involved in SDWA implementation. In the case of state government, parties to receive reports and notices include EPA, the state governor, and the public.<sup>488</sup> A listing of reporting and notification requirements is presented in Table 6.

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<sup>484</sup> *Id.* § 300h(b)(1).

<sup>485</sup> *See* 42 U.S.C. § 300h-2(a) (1994).

<sup>486</sup> *See id.*

<sup>487</sup> *See id.* § 300h-1(b)(3).

<sup>488</sup> *See id.* § 300g-9(c)(3).

### 3. *The Role of the PWS*

Located at the bottom of the hierarchical organizational structure for implementation of the SDWA, the PWS is the party who must install and operate facilities for compliance with the Act. The PWS viewpoint has been considered fundamental to the development and implementation of the SDWA program. For example, membership of the National Drinking Water Advisory Council includes representation of the waterworks industry. As critical as this function is, however, the role of the PWS has traditionally been seen as performance of a ministerial duty to comply with requirements, and the managerial role of the PWS in SDWA implementation has been limited. The role has expanded, however, and now includes two responsibilities in addition to facilities management: the development of source protection programs and consumer information programs.

#### a. *Development of Source Protection*

Although source protection is not a new concept to many PWSs, primarily because land use control is a traditional function of local governments under state law, it is now encompassed by the SDWA to an unprecedented extent. Certain source protection measures are primarily within the jurisdiction of state government,<sup>489</sup> but two measures provide a potentially significant role for certain types of PWSs: petition programs for source water protection partnerships<sup>490</sup> and critical aquifer protection area demonstration programs.<sup>491</sup>

Where a state establishes a petition program, an owner or operator of a community water system, or a local government, may submit a petition for approval of a partnership among affected parties for voluntary agreements for source protection.<sup>492</sup> Approval of a petition qualifies the applicant for assistance under an SRLF and state coordination and facilitation of other forms of assistance.<sup>493</sup>

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<sup>489</sup> See, e.g., 42 U.S.C.A. § 300h (setting forth UIC programs); § 300h-7 (setting forth wellhead protection programs); § 300h-8 (setting forth comprehensive ground water protection programs).

<sup>490</sup> See *id.* § 300j-13.

<sup>491</sup> See *id.* § 300h-6.

<sup>492</sup> See *id.* § 300j-14.

<sup>493</sup> See *id.* § 300j-14(b)(2).

A local government is also eligible, through a joint application with a governor, to apply for federal approval and funding of a critical aquifer protection area demonstration project within a designated sole source aquifer area.<sup>494</sup> Available funding applies to preparation and implementation of a comprehensive plan for ground water protection.<sup>495</sup>

b. *Consumer Information Programs*

The PWS plays a key role in satisfaction of the SDWA objective of creating well-informed consumers. The Act mandates several forms of communication between a PWS and its customers, with emphasis on notification of system failures that lead to noncompliance with applicable regulations.<sup>496</sup> Notice to consumers when violations of SDWA requirements occur are governed by EPA or state regulations with respect to details, but the SDWA requires notice of any failure by the PWS to comply with provisions of an NPDWR or other monitoring requirement.<sup>497</sup> A PWS subject to certain variances and exemptions must notify persons served of the existence of the variance or exemption and any failure of the system to comply with associated requirements.<sup>498</sup> EPA may also require notice of concentration levels of unregulated contaminants for which monitoring is required.<sup>499</sup> Where lead contamination of drinking water results from lead materials used in the PWS distribution system or from corrosivity of the water supply, a PWS must notify persons who may be affected.<sup>500</sup>

Frequency of notice is specified in EPA regulations, which must provide for different frequencies based on variation in nature of the violation and variation in seriousness of potentially adverse health effects.<sup>501</sup> Where a violation has the potential for serious adverse impacts on human health as a result of short term exposure, notice must be distributed "as soon as practicable," but at worst within twenty-four hours of the violation.<sup>502</sup> In

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<sup>494</sup> See *id.* § 300h-6(c).

<sup>495</sup> See *id.* § 300h-6(j).

<sup>496</sup> See, e.g., *id.* § 300g-3(c).

<sup>497</sup> See *id.* § 300g-3(c)(1)(A)(i).

<sup>498</sup> See *id.* § 300g-3(c)(1)(B).

<sup>499</sup> See *id.* § 300g-3(c)(1)(C).

<sup>500</sup> See *id.* § 300g-6(a)(2).

<sup>501</sup> See *id.* § 300g-3(c)(2)(A), (B).

<sup>502</sup> *Id.* § 300g-3(c)(2)(C)(ii)(I).

other cases, notice may be included in the first customer bill after the violation or in an annual report provided within a year of the violation.<sup>503</sup>

An annual report to customers, known as the consumer confidence report, is now a requirement for PWSs.<sup>504</sup> This report, to be prepared according to EPA regulations, must contain information about containment levels in system water and compliance with NPDWRs.<sup>505</sup> The report must also define key terms such as MCLGs and MCLs.<sup>506</sup> The annual consumer confidence report is intended to be mailed to each customer, but alternative arrangements for notice and availability may be adopted by a state governor for community water systems serving a population no greater than 10,000.<sup>507</sup>

### III. TRENDS REFLECTED IN SDWA EVOLUTION

The previous section provides an overview of the major strategies employed by the SDWA at present to ensure that PWSs provide safe drinking water; it also presents an analysis of the roles and relationships of the various parties involved in program implementation. Both the strategies employed and the relationships among the implementing parties have undergone significant change since original creation of the program. The following sections examine the trends evident in the various changes and attempt to identify both the causative factors for these trends and the future directions for the SDWA program.

#### *A. Trends Affecting the Relative Standing of SDWA's Protective Strategies*

The SDWA as enacted in 1974 adopted a combination of protective strategies, including performance standards, specification of treatment technology, and protection of sources of drinking water.<sup>508</sup> But these strategies were not equally represented in the Act's various requirements. As it developed, major emphasis was placed on performance standards in the form of MCLs, with specification of treatment technology reserved for cases

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<sup>503</sup> See *id.* § 300g-3(c)(2)(D).

<sup>504</sup> See *id.* § 300g-3(c)(4).

<sup>505</sup> See *id.* § 300g-3(c)(4)(B).

<sup>506</sup> See *id.* § 300g-3(c)(4)(B)(ii).

<sup>507</sup> See *id.* § 300g-3(c)(4)(C), (D).

<sup>508</sup> See 42 U.S.C. §§ 300f to 300j-9 (Supp. IV 1974).



where measurement of contaminant levels was not feasible.<sup>509</sup> Source protection was primarily limited to protection of ground water sources of drinking water through the UIC program<sup>510</sup> and the sole source aquifer designation program.<sup>511</sup>

As discussed below, subsequent changes in the program have substantially altered the relative standing of these measures. One major change has been the increased use of source protection as a means to ensure water quality, which has the potential to reduce the need for treatment by preventing the entry of contaminants into water. However, a second shift in emphasis that somewhat counters the shift away from treatment toward source protection is an increase in use of specified treatment techniques, which mandate application of certain treatment processes by all PWSs. Increased use of specified treatment reduces the prominence of performance standards as a control mechanism, but standards are still a basic control employed to verify performance of both specified treatment techniques and source protection measures.

### 1. *Increasing Reliance on Source Protection*

The initial steps to expand source protection followed and continued the ground water focus of the original measures. Authorization of demonstration projects for critical aquifer protection areas<sup>512</sup> strengthened the limited sole source aquifer program, while creation of the wellhead protection program<sup>513</sup> broadened the geographical scope of protective activities. The added measures were fundamentally different from the UIC program, however, in that they involved no direct regulatory role for the federal government.<sup>514</sup> These measures focused on stimulation of state and local action, with the federal role limited to funding and associated oversight of program content.<sup>515</sup> This approach results from the new programs' reliance on land use controls and other police power measures for which the federal government has no precedent for involvement or clearly delineated

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<sup>509</sup> See 42 U.S.C. § 300g-1(b)(7)(A) (1994).

<sup>510</sup> See *id.* § 300h.

<sup>511</sup> See 42 U.S.C. § 300h-3(e) (1994).

<sup>512</sup> See 42 U.S.C.A. § 300h-6.

<sup>513</sup> See *id.* § 300h-7.

<sup>514</sup> See *id.* §§ 300h-6(b), 300h-7(a).

<sup>515</sup> See *id.*

constitutional authority.

In addition, the federal effort to facilitate protection of ground water sources of drinking water was greatly expanded in scope with the addition of a provision to the SDWA for assisting state programs for comprehensive ground water protection.<sup>516</sup> This provision makes the SDWA the primary mechanism for implementing EPA's "Ground Water Protection Strategy," which was published in 1984.<sup>517</sup> This strategy establishes policy to guide EPA in its administration of programs related to ground water protection, but the basic premise of the strategy is that the states should exercise primary control over ground water quality.<sup>518</sup> Accordingly, strengthening state managerial capability has been a central objective, and the SDWA now provides legislative support for this objective.

Source protection measures, which continued to focus on ground water until the 1996 SDWA Amendments, have now encompassed surface water sources of supply.<sup>519</sup> The SDWA measures for protecting surface sources continue the approach adopted for ground water source protection, with the federal role remaining indirect and consisting primarily of supporting state and local protection efforts.<sup>520</sup> This pattern can be seen in such measures as the source water assessment program<sup>521</sup> and federal financial assistance for source water protection consistent with water quality protection programs under the Clean Water Act.<sup>522</sup>

As the last provision mentioned above indicates, the SDWA's expansion into protection of surface water sources brings it into significant overlap with water quality protection programs of the CWA. Protection of surface water sources involves watershed management, which has developed into a major theme of continuing CWA implementation.<sup>523</sup> Watershed management has become a generally accepted framework for addressing

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<sup>516</sup> See *id.* § 300h-8.

<sup>517</sup> U.S. ENVTL. PROTECTION AGENCY, A GROUND-WATER PROTECTION STRATEGY FOR THE ENVIRONMENTAL PROTECTION AGENCY (1984).

<sup>518</sup> See *id.* at 35.

<sup>519</sup> See, e.g., 42 U.S.C.A. § 300j-13 (West Supp. 1996).

<sup>520</sup> See, e.g., *id.* § 300j-13(a).

<sup>521</sup> See *id.* § 300j-13.

<sup>522</sup> See *id.* § 300j-3c.

<sup>523</sup> See U.S. ENVTL. PROTECTION AGENCY, WATERSHED APPROACH FRAMEWORK, Pub. No. EPA-840-S-96-001, (June 1996) (report does not currently have regulatory status) (copy on file with author).

nonpoint source pollution, which, like ground water pollution, was not encompassed by the direct regulatory measures of the CWA applicable to point-source wastewater discharges. The CWA, as originally enacted in 1972, contained provisions to encourage state planning and management efforts to address the nonpoint problem—the section 208 area-wide waste treatment management planning program.<sup>524</sup> This program involved state and regional planning, with special emphasis on areas with recognized water quality problems.<sup>525</sup> Although such planning addressed all sources of water quality degradation within a given area,<sup>526</sup> nonpoint sources of pollution were intended to be a major focus of attention because of the lack of direct controls in the CWA. Federal funding for section 208 planning applied to development and operation of area-wide planning processes.<sup>527</sup> The CWA also authorized, for states with an approved 208 plan, a federal cost-sharing program for implementation of best management practices to control nonpoint source pollution from rural lands.<sup>528</sup>

But the nonpoint source pollution problem has been difficult to control. The persistence of the problem beyond the 208 planning program is reflected in a 1987 addition to the CWA, section 319,<sup>529</sup> which established a requirement for state development of nonpoint pollution control programs for waters where water quality standards or other CWA requirements or goals could not be met without additional action to control nonpoint sources.<sup>530</sup> Such programs are required to identify regulatory and/or nonregulatory measures for the implementation of needed best management practices and measures for nonpoint source control. Upon approval of a state's management plan by EPA, a state may apply for a federal grant to cover up to sixty percent of the costs of plan implementation.<sup>531</sup>

Section 319 indicates a preference for development of nonpoint source control programs on a "watershed-by-watershed basis,"<sup>532</sup> an approach that has become the preferred framework for CWA administration in general.

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<sup>524</sup> 33 U.S.C. § 1288 (Supp. II 1972).

<sup>525</sup> See *id.* § 1288(a).

<sup>526</sup> See *id.* § 1288(b)(2).

<sup>527</sup> See *id.* § 1288(f).

<sup>528</sup> See *id.* § 1288(j).

<sup>529</sup> See *id.* § 1329 (1988).

<sup>530</sup> *Id.* § 1329(a)(1)(A).

<sup>531</sup> *Id.* § 1329(h)(3).

<sup>532</sup> *Id.* § 1329(b)(4).

Although the watershed is a natural unit that has seen substantial use during the history of the United States for water planning<sup>533</sup> and management,<sup>534</sup> the CWA did not initially mandate a watershed approach for implementation of its programs. The absence of a watershed approach can likely be attributed to the Act's primary reliance on technology-based effluent standards applied uniformly within categories of wastewater dischargers on a nationwide basis without regard to the condition of receiving waters.<sup>535</sup> But one provision of the CWA forces water quality to be viewed from a watershed perspective—the requirement for determining “total maximum daily loads” (“TMDLs”) of contaminants for certain water bodies.<sup>536</sup> TMDLs specify the permissible pollutant loadings that would allow water quality standards to be met and must be determined for waters where enforcement of technology-based effluent standards alone would not achieve compliance with water-quality standards. Since TMDLs specify total pollutant loadings from all pollution sources, their use requires coordination of point source and nonpoint source management on a watershed basis.

EPA is actively encouraging use of the watershed approach by state and local governments in their environmental management programs. EPA has described the benefits of the watershed approach as follows:

Operating and coordinating programs on a watershed basis makes good sense for environmental, financial, social, and administrative reasons. For example, by jointly reviewing the results of assessment efforts for drinking water protection, pollution control, fish and wildlife habitat protection and other aquatic resource protection programs, managers from all levels of government can better understand the cumulative impacts of various human activities and determine the most critical problems within each watershed. Using this information to set priorities for action allows public and private managers from all levels to allocate limited financial

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<sup>533</sup> See, e.g., 42 U.S.C.A. §§ 1962 to 1962d-20 (West 1994 & Supp. 1996) (providing authority for river basin commissions for water planning).

<sup>534</sup> See, e.g., 16 U.S.C.A. §§ 1001-1009 (West 1985 & Supp. 1996) (creating the small watershed development program within the U.S. Department of Agriculture).

<sup>535</sup> See 33 U.S.C. §§ 1311, 1342 (1994).

<sup>536</sup> *Id.* § 1313(d).

and human resources to address the most critical needs.<sup>537</sup>

EPA's commitment to the watershed approach is seen in its substantial efforts to facilitate adoption of the concept. Facilitation includes incentives in environmental program administration, such as reduced reporting requirements where the watershed approach is implemented,<sup>538</sup> and also includes direct training and assistance as indicated in the following quotation:

Watershed approach facilitation is generally provided to states and tribes that intend to reorient their water resources management programs along watershed lines. Facilitation involves several onsite working meetings with water program managers and decision makers to help them develop a transition plan, schedule, and comprehensive organizational framework based on major river basins and their component watersheds . . . .<sup>539</sup>

In addition to training and facilitation, the Office of Water offers assistance in watershed program scoping and technical analysis to states and tribes. Scoping projects are preliminary to full-scale reorientation and involve one or two meetings with managers to determine what form a watershed approach might take, the effort involved, and the next steps needed. Technical analysis projects focus on scientific, economic or programmatic analysis as related to specific watershed management issues.

This commitment to the watershed approach will likely have a significant impact on future implementation of the SDWA as a result of the trend toward greater reliance on source protection. The movement toward source protection creates a previously unacknowledged commonality of purpose for the SDWA and CWA, and perhaps with other environmental programs. In fact, certain SDWA source protection measures currently recognize these shared objectives to some extent. For example, the requirement for comprehensive plan development in the critical aquifer protection area demonstration program can be satisfied under specified

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<sup>537</sup> WATERSHED APPROACH FRAMEWORK, *supra* note 523, at 4.

<sup>538</sup> *See id.* at 13.

<sup>539</sup> *Id.* at 14.

circumstances by a CWA section 208 plan.<sup>540</sup>

The movement of the SDWA toward source protection and therefore toward watershed management is likely the result of a combination of forces. The source protection approach is based on a more holistic view than one limited to treatment of contaminated water and therefore can be seen as a natural progression. Another likely factor is a decline in confidence in the ability to remove, or even to detect, all the potentially harmful substances that may enter drinking water from human activities in source water areas. The source-protection approach is more conservative in that it has potential to exclude a wide range of contaminants without reliance on sophisticated technology. A final factor likely encouraging source protection is the cost of treatment. The cost effectiveness of source protection becomes more likely as the cost of treatment continues to rise.

## *2. Increased Reliance on Specified Treatment Technology*

At the same time that source protection has been gaining prominence as a drinking water management strategy, the specification of treatment technology for use by PWSs has also increased. The SDWA originally established the option for EPA to develop NPDWRs that imposed treatment requirements, but subsequent changes have increased application of this approach. Legislative mandates for disinfection and filtration to be imposed as treatment techniques are one source of increased reliance.<sup>541</sup> This action is likely the result of renewed concern over the dangers of biological contaminants and recognition of the limitations of detection of microbial contaminants.

Increased reliance on specified technology has also arisen as a by-product of the effort to lessen the economic burdens of the SDWA on small PWSs. The primary mechanism causing a shift from the performance-standards approach is the variance-technology provision.<sup>542</sup> The ability for small PWSs under certain conditions to adopt designated technology in lieu of compliance with applicable MCLs substantially alters the relative standing of the two approaches because of the large number of PWSs potentially eligible to avoid compliance with MCLs by means of this approach.

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<sup>540</sup> See 42 U.S.C.A. § 300h-6(g) (West Supp. 1996).

<sup>541</sup> See *id.* § 300g-1(b)(7), (8).

<sup>542</sup> See *id.* § 300g-4(e).

The obvious factor responsible for this special variance provision is the disproportionate burden that uniform drinking water standards impose on PWSs. The inability to achieve economies of scale and other limitations frequently produce much higher per-customer costs for small systems than for large systems.<sup>543</sup>

### *B. Trends in Relationships Among the Implementing Parties*

The initial structure created for SDWA implementation assigned interactive roles to the federal government, state governments, and PWS operators (who often are units of local government but take a variety of forms). The relationship between federal and state governments provides an example of "environmental federalism," which has been described as follows:

The process typically involves four stages:

1. A national policy is determined by congressional statute and by administrative regulation pursuant to congressional authorization.
2. The state establishes a state implementation plan (SIP) which must be reviewed and approved by an agency of the national government.
3. The state and local governments are expected to enforce the national policy in their jurisdictions pursuant to the state implementation plan.
4. If the state fails to effectively enforce the national standards, there are often statutory authorizations for an agency of the national government to compel compliance with the national policy through administrative or judicial action directly against the state agency or against the offending source of the pollution.<sup>544</sup>

The relationships between the federal/state program administrator and the PWS operator under the original SDWA was basically one of regulator-regulatee, although limited provisions for assistance were included. For

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<sup>543</sup> This issue is considered further in the next section.

<sup>544</sup> Robert E. Manley, *Federalism and Management of the Environment*, 19 URB. LAW. 661, 665 (1987).

example, provision was made for federal guarantee of loans for small systems under certain conditions.<sup>545</sup> The PWS operator was expected to install and operate whatever treatment techniques were specified or that were necessary to comply with applicable water quality standards, including compliance with associated monitoring and reporting requirements. PWSs were given only limited discretion regarding program implementation, primarily related to choice of treatment processes for complying with applicable MCLs.

Unlike the funding arrangements for publicly owned treatment works under the water quality program of the CWA,<sup>546</sup> the SDWA program contained no major funding mechanism to assist with necessary capital investment. The PWS operator was given the responsibility for financing needed improvements through traditional means, with system user fees the ultimate source of funds to be employed for payment of associated indebtedness. Perhaps a philosophical reason for the distinction between the CWA and SDWA programs regarding financing was the fact that the benefits of wastewater treatment are more diffuse than those associated with drinking water treatment. Another likely relevant factor was the existence of many privately owned PWSs, a complicating factor in the provision of public funds. Still another likely factor is the existence of independent assistance programs. For example, the Farmers Home Administration administers a program of loans and grants for water supply and other services in rural areas.<sup>547</sup>

Nevertheless, the economic hardship associated with SDWA compliance, especially for the small PWS, has become a major theme regarding the SDWA program. EPA cost estimates for compliance with regulations developed to implement the Act commonly indicate a wide range of costs among PWSs of different sizes. The cost estimates developed for implementation of NPDWRs for volatile organic chemicals provide an example.<sup>548</sup> Costs associated with use of granular activated carbon ("GAC"), one of the "best technologies" identified by EPA for treatment, are stated, in 1983 dollars, as \$0.10 to \$0.85 per 1000 gallons of treated water for large and medium systems, while use of GAC for similar purposes by a small system

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<sup>545</sup> See 42 U.S.C. § 300j-3 (Supp. IV 1974).

<sup>546</sup> See 33 U.S.C. § 1281(g) (Supp. II 1972).

<sup>547</sup> See 7 U.S.C. § 1926(a) (1994).

<sup>548</sup> See 52 Fed. Reg. 25,690 (1987).



is estimated to cost \$1.50 per 1000 gallons.<sup>549</sup> Another useful example is provided by cost estimates prepared in connection with the promulgation of the SWTR in 1989.<sup>550</sup> For PWSs needing to upgrade disinfection practices to meet the SWTR's requirements, cost estimates range from \$0.61 per 1000 gallons of treated water for systems serving populations of 25 to 100, to \$0.06 or less per 1000 gallons for all systems serving populations greater than 1000.<sup>551</sup> Cost estimates for another of the SWTR's requirements provide a different perspective by presenting expected costs on an annual basis per household. For systems forced to install filtration, cost estimates range from almost \$500 to over \$1000 per household for systems serving populations in the 25 to 100 range, to less than \$100 per household for the largest PWSs.<sup>552</sup>

### 1. *Enhanced Status of the PWS in SDWA Implementation*

A major theme reflected in the SDWA's evolution has been increased attention to the compliance problems of PWSs and their overall role in SDWA implementation. Significant steps have been taken to provide relief from associated economic hardship and the lack of flexibility to accommodate differing circumstances. Relief has primarily focused on systems serving small populations and has been in the form of increased measures for financial assistance and addition of a greater range of alternative approaches for implementing SDWA requirements. In addition to provisions for relief, modifications to the SDWA have also to some extent elevated the role of the PWS by increasing opportunities for participation in managerial decisionmaking.

Provision of financial assistance to reduce economic hardship imposed on PWSs by the SDWA has been an evident objective of recent SDWA evolution. The major development has been establishment of SRLFs for provision of low-interest loans to community PWSs and nonprofit, noncommunity PWSs, including forgiveness of principal for disadvantaged communities (which in effect is a grant). In addition, other forms of assistance have been provided, including such examples as EPA's technical

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<sup>549</sup> See *id.* at 25,698.

<sup>550</sup> See 54 Fed. Reg. 27,486, 27,520-21 (1989).

<sup>551</sup> See *id.* at 27,521.

<sup>552</sup> See *id.* at 27,520.

assistance program for small PWS compliance with NPDWRs,<sup>553</sup> training of PWS personnel,<sup>554</sup> emergency assistance,<sup>555</sup> and federal payment of the testing and analysis costs of small system monitoring for unregulated contaminants.<sup>556</sup>

Accompanying the expansion in financial and technical assistance is increased flexibility in meeting NPDWRs. The most significant source of increased flexibility is the authorization of variance technologies for small PWSs,<sup>557</sup> which in effect provide for relaxation of NPDWR requirements under specified conditions. Several other provisions relax requirements or increase flexibility for small systems. Examples include special monitoring relief,<sup>558</sup> special listing of technologies for complying with NPDWRs<sup>559</sup> and special consumer reporting requirements.<sup>560</sup>

Increased flexibility is also provided for PWSs in general. One relevant measure consists of expanded provisions for avoiding filtration, as required in the SWTR, when specified watershed conditions exist.<sup>561</sup> Another example consists of provisions allowing reduced monitoring under certain conditions.<sup>562</sup> As a result of such provisions, the PWS has more options to meet SDWA requirements and in general faces a somewhat kinder and gentler regulatory environment.

The expanded range of options available to the PWS also provides increased opportunity for participation in types of decisionmaking regarding SDWA implementation previously reserved in substantial measure for upper levels of government. Such opportunities are primarily provided by new SDWA provisions for source protection.<sup>563</sup> Where appropriate state programs are established, for example, the owner or operator of a community PWS may petition the state for approval of voluntary partnership arrangements among affected parties for prevention of contamination of drinking water sources.

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<sup>553</sup> See 42 U.S.C.A. § 300j-1(e) (West Supp. 1996).

<sup>554</sup> See *id.* § 300j-1(c).

<sup>555</sup> See *id.* § 300j-1(b).

<sup>556</sup> See *id.* § 300j-4(a)(2)(C)(ii).

<sup>557</sup> See *id.* § 300g-4(e).

<sup>558</sup> See *id.* §§ 300g-7(a), 300j-4(a)(2)(C)(i).

<sup>559</sup> See *id.* § 300g-1(b)(4)(E).

<sup>560</sup> See *id.* § 300g-3(4)(C).

<sup>561</sup> See *id.* § 300g-1(b)(7)(C)(v).

<sup>562</sup> See *id.* § 300g-7.

<sup>563</sup> See *id.* § 300j-14.

A second source protection measure with opportunity for significant PWS involvement where the PWS is a public system is the demonstration program for critical aquifer protection areas.<sup>564</sup> A political subdivision may submit an application jointly with the governor of a state for funding to cover development and implementation of a comprehensive management plan for such an area.

## *2. Expansion of State Managerial Autonomy*

The attempt under the SDWA to recognize state administrative responsibilities while maintaining EPA oversight involves subtle balancing of authority. As in most other federal environmental laws where administrative duties are shared with the states, the original SDWA provided for continuance of significant federal authority in all key program areas, such as enforcement of NPDWRs and UIC requirements and review of state issuance of variances. As new programs have been added, however, a trend toward increased state discretionary authority has been evident while the scope of program responsibilities has been expanding. This development represents growth in state autonomy and modifies the view of federalism reflected in the original Act.

The most direct illustrations of this trend are provisions allowing states to modify minimum federal requirements. A primary example is authority for a primacy state to modify monitoring requirements for regulated or unregulated contaminants, subject to satisfaction of conditions and limitations.<sup>565</sup> But most of the basic requirements of the Act cannot be relaxed by a state; increased state autonomy more commonly involves opportunities for exercise of discretionary decisionmaking within the general framework of minimum federal requirements.

An increase in state discretionary authority is reflected in SDWA programs and activities that are provided as state options, perhaps with federal funding offered as an incentive. An example is the wellhead protection program, which authorizes states to establish such programs and apply for federal financial assistance. But a state can elect not to act, with loss of the special program funding as the only consequence. No provision is made for alternative action by another party or for imposition of penalties

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<sup>564</sup> See *id.* § 300h-6.

<sup>565</sup> See *id.* § 300g-7.

such as withholding of SRLF contributions.

The legislative history of recent SDWA amendments shows an intent to restrict EPA authority in favor of state discretion in several program areas. An example is the provision for state strategies for development of PWS managerial capacity. Although the legislation contains requirements for strategy content,<sup>566</sup> the following statement indicates an intent to preserve state discretion and the resulting program diversity among states:

The Committee does not expect that every State will adopt the same capacity development strategy and does not expect States to include elements in section 1419(c) that the State determines are not appropriate. It is not expected that every State will give the same consideration to each of the elements listed in section 1419(c). Rather, the Committee expects that, as suggested by existing State capacity development programs, State capacity development strategies developed under this section will vary according to the unique needs of the State. The Committee encourages this diversity and indicates that EPA should give deference to a State's determination as to content and manner of implementation of a State plan, so long as the State has solicited and considered public comment on the listed elements and has adopted a strategy that incorporates appropriate provisions.<sup>567</sup>

The SDWA provides that state decisions regarding capacity development by an individual PWS are within the sole discretion of the state and cannot serve as the basis for withholding funds from the state's SRLF<sup>568</sup> although withholding of funds is mandated where a state has not developed a capacity development strategy.<sup>569</sup>

Restrictions on federal actions are also imposed to protect diversity in state programs for certification of PWS operators pursuant to EPA guidance. The SDWA provides for an existing state operator certification program to be accepted in lieu of new program created in response to federal

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<sup>566</sup> See *id.* § 300g-9(c)(2).

<sup>567</sup> H.R. REP. NO. 104-632, at 41 (1996), reprinted in 1996 U.S.C.C.A.N. 1366, 1404.

<sup>568</sup> See 42 U.S.C.A. § 300g-9(c)(4).

<sup>569</sup> See *id.* § 300j-12(a)(1)(G)(i).

guidance unless the EPA Administrator determines it not to be substantially equivalent to the program specified by EPA guidelines. The Act states that "an existing State program shall be presumed to be substantially equivalent to the guidelines, notwithstanding program differences, . . . providing the State program meets the overall public health objectives of the guidelines."<sup>570</sup> The legislative history emphasizes the intent to allow diversity among state programs, stating that "EPA should not require every State program to meet the same requirements with respect to such items as operator training, the qualification of operators, continuing education, and operator certification."<sup>571</sup>

State managerial flexibility has been enhanced by creation of SRLFs. Subject to stated conditions and limitations, a state is authorized to use federal contributions to its SRLF for a variety of state program elements such as PWS supervision, provision of technical assistance through source water protection activities, development and implementation of a strategy for enhancing PWS managerial capacity, and for a PWS operator certification program. Some of these activities are subject to separate grant programs, but authority to apply federal SRLF contributions increases flexibility and facilitates a more comprehensive state management perspective.

A major step toward further flexibility in state use of federal environmental funding has been taken with EPA's recent announcement of its Performance Partnership Grant program.<sup>572</sup> This program allows two or more grants from a list of sixteen categorical grants now available to states, territories, and Indian tribes to be included in one or more combined grants.<sup>573</sup> Such combinations are intended to provide grant recipients with greater flexibility to address highest priority environmental issues.<sup>574</sup> Included on the list of sixteen grant programs are the SDWA primacy and UIC grants.<sup>575</sup> The list also includes related grant programs such as CWA nonpoint source pollution management,<sup>576</sup> creating potential for increased coordination across program boundaries.

Beyond increased flexibility in the use of federal funding, a further indication of increasing state autonomy consists of SDWA provisions

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<sup>570</sup> *Id.* § 300g-8(c).

<sup>571</sup> H.R. REP. NO. 104-632, at 45 (1996), *reprinted in* 1996 U.S.C.C.A.N. 1366, 1408.

<sup>572</sup> 61 Fed. Reg. 42,887 (1996).

<sup>573</sup> *See id.* at 42,887-88.

<sup>574</sup> *See id.* at 42,888.

<sup>575</sup> *See id.* at 42,892.

<sup>576</sup> *See id.*

requiring assessments of program elements to be reported to the public rather than submitted for EPA approval. For example, a state that adopts a strategy for development of PWS managerial capacity is required on a three year cycle to submit a report on the effectiveness of the strategy to the governor and public of the state.<sup>577</sup> This approach seeks to employ the influence of public opinion as a means of ensuring responsible state action as an alternative to direct federal supervision. Incorporation of this approach in the SDWA indicates recognition of state potential for greater autonomy in program administration.

#### IV. THE FUTURE OF SDWA: PROBLEMS AND PROSPECTS

The SDWA program, despite its more than twenty-year history, must be viewed as a young program in terms of its degree of implementation. The legislation has undergone substantial change recently, and NPDWRs and other requirements remain incomplete. Thus, the program is still in an active evolutionary phase.

A significant factor in further development and implementation of the program is the enormity of the problems that still must be resolved. The waterborne disease problem, which for a period of time prior to recent publicized outbreaks had receded to a low level of concern in the general population, remains substantial.<sup>578</sup> Chemical substances make up the other general class of contaminants that continue to be a source of concern. The great diversity of such substances is one important attribute to the problem, which is compounded by the potential of certain chemicals to cause adverse health effects in very small amounts, perhaps after the passage of long time periods. In an especially ironic development, exposure to harmful chemical substances can be increased by drinking water disinfection practices intended to eliminate the hazard posed by biological contaminants. Choosing a management approach to balance the beneficial and adverse effects of disinfection is one of the significant issues still to be addressed within the SDWA program.

Recognition of remaining problems should be balanced by acknowledgment of the significant progress being made toward

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<sup>577</sup> See 42 U.S.C.A. § 300g-9(c)(3) (West Supp. 1996).

<sup>578</sup> See generally Michael H. Kramer et al., *Waterborne Disease: 1993 and 1994*, J. AM. WATER WORKS ASS'N, Mar. 1996, at 66.

understanding and resolving drinking water safety issues. The existing program is designed to develop new information in areas where understanding is limited and provides a sound framework for translation of that information into program elements. The current framework employs risk assessment to determine program priorities and provides guidance toward the most socially desirable course of action. This approach should facilitate allocation of program resources to areas with the greatest potential benefits to public health protection.

With its shift in focus toward drinking water source protection as a management strategy, the SDWA is moving away from its origin as primarily a consumer protection program and toward an environmental protection orientation. This shift in focus creates a more holistic management perspective than existed in the previous approach focusing on water treatment and enforcement of performance standards. Performance standards will continue to serve as a check on the effectiveness of source protection, as they have been used as a check on treatment processes. Source protection will co-exist for the foreseeable future with both treatment processes and performance standards, with duplication among the strategies serving to mitigate potential weaknesses and uncertainties associated with the individual measures. Source protection may, however, be acceptable as a substitute for certain treatment processes under appropriate conditions as illustrated by the current SDWA provisions allowing watershed-management alternatives to the filtration requirement.<sup>579</sup>

The more comprehensive perspective reflected in the SDWA's transition from a product safety focus to an environmental protection focus emphasizes the interrelatedness of issues such as wastewater management, land use control, and provision of safe drinking water. Adoption of this broader view and greater program scope will, however, necessitate greater coordination among the various programs that typically have focused on different components of the environment in relative isolation. While this need may at first be perceived as a problem, it can be viewed as an opportunity for development of more rational implementation strategies in which previously independent programs are consolidated for administrative purposes. Watershed management programs initiated under the CWA appear to be an obvious mechanism for integration with the source-protection programs of the SDWA. The goals of the two programs are generally

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<sup>579</sup> See 42 U.S.C.A. § 300g-1(b)(7)(C)(v).

compatible, and the opportunity to share institutional arrangements and program resources in a single program provides significant incentive for this approach.

Within the SDWA program itself, the trend toward decentralization of authority will likely continue, with the states and PWS operators (at least operators of larger, public sector systems) exercising increased autonomy and discretionary decisionmaking. The greater role for local government is dictated by increased emphasis on source protection, which involves land use controls traditionally administered at the local level.

The local role, as significant as it is to certain program elements, is ultimately limited by several factors. One significant limitation is the small geographical jurisdiction of the typical locality and the associated limitations on managerial perspective. Small geographical scale means that hydrologic units will often exceed local political boundaries, creating an abundance of “externalities”—benefits or costs not adequately taken into account because they occur beyond the scope of concerns of the individual decisionmaker. A second limitation on local managerial potential in the environmental field is the limited ability to coordinate all essential program elements, many of which have traditionally been outside the scope of local authority—for example, environmental permitting.

Decentralization of authority to the states confronts fewer obstacles and offers substantial promise. The average state is relatively large in geographical area and has a substantial range of environmental management powers, both under state constitutions and laws and through delegations of administrative responsibilities under federal programs. The SDWA and other federal environmental programs have increasingly recognized the managerial potential of the states and their ability to respond to the diversity of local conditions.<sup>580</sup> The trend toward greater utilization of the unique management position of the states will likely continue and further expand state autonomy in SDWA implementation.

But a federal role in the SDWA program is needed and will continue. Hydrologic units cross state boundaries as well as local governmental boundaries, and a need for a broader view exists. In addition, the concept of uniform minimum standards that are relatively immune from the needs of economic development and other variable local forces has become entrenched

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<sup>580</sup> See, e.g., *id.* §§ 300g-8, 300g-9 (dealing with PWS operator certification and PWS capacity development).



within U.S. government practice. But the federal role most likely will be less intrusive than it has in experience to date.

These trends toward a more holistic SDWA program implemented through less centralized administrative arrangements will continue to operate gradually. The more comprehensive view already reflected in source protection measures will lead to coordination and perhaps some degree of consolidation with other environmental laws such as the CWA. No statute is likely to be displaced by, or consolidated with, another, but provisions for joint administration of certain program elements and coordination measures will be adopted. Achieving a more decentralized distribution of implementation responsibility will require further shifts in authority, but none of the existing parties will be displaced from a significant role. These incremental changes are an appropriate course of action since the program does not appear to need radical revision. Revolutionary actions are unnecessary when the evolutionary trends point in the right direction.

TABLE 1<sup>1</sup>  
PUBLIC WATERWORKS IN VIRGINIA

Owner category	Number of Waterworks by Size <sup>2</sup>			Total
	Small	Medium	Large	
<u>Community Waterworks</u>				
Local Government				
Authority	175	9	16	200
City	18	10	28	56
Town	112	34	9	154
County	88	7	8	104
<i>Total Local Government</i>	<i>393</i>	<i>60</i>	<i>61</i>	<i>514</i>
State Government	29	1	0	30
Federal Government	20	7	5	32
Investor	937	2	3	942
Other	69	0	0	69
<b>Total Community Waterworks</b>	<b>1,448</b>	<b>70</b>	<b>69</b>	<b>1,587</b>
 <u>Nontransient Noncommunity Waterworks</u>				
Local Government				
Authority	2	0	0	2
City	7	0	0	7
Town	0	0	0	0
County	373	0	0	373
<i>Total Local Government</i>	<i>382</i>	<i>0</i>	<i>0</i>	<i>382</i>
State Government	21	1	0	22
Federal Government	8	2	1	11
Investor	305	2	0	307
Other	24	0	0	24
<b>Total Nontransient Noncommunity Waterworks</b>	<b>740</b>	<b>5</b>	<b>1</b>	<b>746</b>
<b>TOTAL ALL WATERWORKS</b>	<b>2,188</b>	<b>75</b>	<b>70</b>	<b>2,333</b>

<sup>1</sup> The information in this chart is taken from OFFICE OF WATER PROGRAMS, VA. DEP'T OF HEALTH, THE IMPACT OF THE SAFE DRINKING WATER ACT AMENDMENTS OF 1986 ON THE COMMONWEALTH OF VIRGINIA, H. DOC. NO. 30, 1989 Gen. Assembly, at 31 (Va. 1990).

<sup>2</sup> Small: serves a population of no more than 3,300; Medium: serves a population from 3,301 to 10,000; Large: serves a population greater than 10,000. *Id.* at 29.

TABLE 2  
SDWA AUTHORITY FOR FEDERAL REGULATIONS, RULES, AND  
REQUIREMENTS

Control Measure	SDWA Section
NPDWRs ( in general)	300g - 1(b)(1)(E)
Interim ESWTR, Final ESWTR, Stage I D/DBPR, Stage II D/DBPR	300g - 1(b)(2)(C)
Regulations specifying criteria for filtration as a treatment technique	300g - 1(b)(7)(C)(i)
NPDWR for disinfection as a treatment technique	300g - 1(b)(8)
NPDWR for arsenic	300g - 1(b)(12)(A)(i)
NPDWR for sulfate	300g - 1(b)(12)(B)
NPDWR for radon	300g - 1(b)(13)(D,E)
Alternate NPDWR for radon	300g - 1(b)(13)(F)
Regulations for recycling filter backwash	300g - 1(b)(14)
Regulations (or guidance) for small PWS variance technologies	300g - 1(b)(15)
NSDWRs	300g - 1(c)
Regulations for state monitoring and inspection	300g - 2(a)(3)
Regulations for state primacy application	300g - 2(b)(1)
Regulations for PWS notice to customers of failure to comply with requirements	300g - 3(c)(2)(A)
Regulations for PWS annual report	300g - 3(c)(4)(A,B)
Regulations for issuance of small systems variances	300g - 4(e)(7)(A)
Regulations for leaching of lead from new plumbing	300g - 6(e)(2)
Regulations for grant applications for PWS technology assistance centers	300g - 9(f)(3)
Regulations for state UIC programs	300h - (a)(1)
Regulations for UIC reports and records	300h - 1(b)(1)(A)(ii)
Requirements for state submissions showing compliance with new or revised federal requirements	300h - 1(b)(13)

Regulations prescribing UIC program for states without a state program	300h - 1(c)
Regulations for injection well monitoring	300h - 5
Rules establishing criteria for critical aquifer protection area identification	300h - 6(d)
Requirements for application for certificate of need for water treatment chemicals	300j(b)(1)
Requirements for applications for state PWS supervision program grants	300j - 2(a)(2)
Requirements for applications for state underground water source protection program grants	300j - 2(b)(2)
Regulations for monitoring and reporting	300j - 4(a)(1)(A)
Regulations establishing criteria for monitoring unregulated contaminants	300j - 4(a)(2)(A)
Regulations for treating Indian tribes as states	300j - 11(b)(1)
Regulations (and guidance) for use of federal SRLF grants	300j - 12(g)(3)
Requirements for defining lead-free drinking water coolers	300j - 21

TABLE 3  
SDWA PROVISIONS FOR FEDERAL FINANCIAL ASSISTANCE

Funding Purpose	SDWA Section
Operator certification	300g - 8(d)(1)
Small PWS Technology assistance center establishment	300g - 9(f)(1)
Environmental finance center establishment	300g - 9(g)(1)
Critical aquifer protection demonstration programs	300h - 5(j)
State wellhead protection programs	300h - 7(k)
State comprehensive ground water protection programs	300h - 8(a)
Drinking water emergency response	300j - 1(b)
Training for state and local drinking water personnel	300j - 1(c)
Small PWS technical assistance	300j - 1(e)
State PWS supervision	300j - 2(a)
State UIC program operation	300j - 2(b)
NY watershed protection demonstrations	300j - 2(d)(1)
Water infrastructure and source water protection	300j - 3c(a)
Small PWS monitoring	300j - 4(a)(2)(C)(ii)
SRLF Capitalization	300j - 12
• SRLF set-aside for small PWSs	300j - 12(a)(2)
• SRLF set-aside for state SRLF administration, PWS technical assistance, PWS supervision, source water protection, PWS capacity development strategy, and operator certification	300j - 12(g)(2)
• SRLF set-aside for Indian tribes and Alaska Native Villages	300j - 12(i)
• SRLF set-aside for designated U. S. Territories	300j - 12(j)
• SRLF set-aside for health effects studies	300j - 12(n)
• SRLF set-aside for small PWS monitoring	300j - 12(o)
• SRLF set-aside for small PWS technical assistance	300j - 12(q)
State source water protection petition program	300j - 14(c)
Compliance with NPDWRs by colonias	300j - 16(b)
Testing and remedial action for lead contamination of drinking water in schools	300j - 25

TABLE 4  
SDWA PROVISIONS FOR FEDERAL TECHNICAL ASSISTANCE AND  
INFORMATION ENHANCEMENT

Provision	SDWA Section
Health advisories	300g - 1(b)(1)(F)
Information on health effects of drinking water contaminants	300g - 1(b)(3)(B)
Information on health risk reduction benefits and costs of NPDWRs	300g - 1(b)(3)(C)
Listing of means for meeting MCLs	300g - 1(b)(4)(E)
Procedures for state application of filtration criteria	300g - 1(b)(7)(C)(ii)
Study of health risks of arsenic in drinking water	300g - 1(b)(12)(A)(ii)
Study of health risks of sulfate in drinking water	300g - 1(b)(12)(B)(i)
Assessment of risk of radon in drinking water	300g - 1(b)(13)(B)(i)
Assessment of benefits of radon mitigation measures	300g - 1(b)(13)(B)(ii)
Information of health risk reduction benefits and costs of radon mitigation	300g - 1(b)(13)(C)
Guidelines for state adoption of alternative NPDWR for radon	300g - 1(b)(13)(F)
Report on PWS compliance on Indian reservations	300g - 3(c)(3)(B)
Report on review of state granted variances	300g - 4(a)(1)(F)
Information to assist states in developing affordability criteria	300g - 4(e)(7)(B)
Notice to state and public if state variances not in compliance with affordability criteria	300g - 4(e)(8)(B)
Report on review of state granted exemptions	300g - 5(d)
Technical information on standards and testing of leaching of lead from new plumbing	300g - 6(e)(1)
Guidelines for alternative monitoring requirements for chemical contaminants	300g - 7(b)(2)
Guidelines for PWS operator certification	300g - 8(a)
Report on PWS capacity development	300g - 9(d)(2)(A)(i)
Report on PWS operator certification	300g - 9(d)(2)(B)

Analysis of impact of NPDWRs on PWS managerial capacity	300g - 9(d)(3)
Guidelines for ensuring managerial capacity for new community and nontransient, noncommunity PWSs	300g - 9(d)(4)
Criteria for identifying critical aquifer protection areas	300h - 5(d)
Guidance for state determination of wellhead protection areas	300h - 7
Technical guidance of identifying wellhead protection areas	300h - 7(e)
Guidance for applications for ground water protection program assistance	300h - 8
Guidance for applying for state ground water protection program assistance	300h - 8(b)
Report to Congress on status of ground water quality and state protection effectiveness	300h - 8(e)
Research, studies, and demonstrations relating to human diseases and impairments resulting from water contaminants	300j - 1(a)
Technical assistance to alleviate drinking water emergencies	300j - 1(b)
Training programs for drinking water personnel	300j - 1(c)
Technical assistance to small PWSs for NPDWR compliance	300j - 1(e)
Technical assistance to states for water infrastructure and source-water protection	300j - 3c(a)
Database for water contaminant occurrence	300j - 4(g)
Report to assist states in establishing affordability criteria	300j - 12(d)(3)
Report to congress on PWS capital improvement needs	300j - 12(h)
Assessment of needs of PWSs serving Indian tribes	300j - 12(i)(4)
Report to Congress on effectiveness of SRLFs	300j - 12(j)
Demonstration project for assessing and protecting source water	300j - 12(a)(5)

Guidance for state source water assessment programs	300j - 13
Guidance for state source water quality protection partnership programs	300j - 14
Guidelines for water conservation plans	300j - 15
Screening program for estrogenic substances	300j - 17
Drinking water studies, including identification of subpopulations at greater risk; biomedical studies; support of ESWTR, D/DBPR, and GWDR development; and waterborne disease occurrence	300j - 18
Report to states on drinking water coolers not lead free	300j - 24(a)
Guidance and testing protocol for determining and remedying lead contamination in school drinking water supplies	300j - 24(b)



TABLE 5

## SDWA PROVISIONS FOR STATE DEVELOPMENT OF SPECIAL PROGRAMS

Program	SDWA Section
Multimedia radon mitigation in indoor air	300g - 1(b)(13)(G)
Primacy for NPDWR enforcement	300g - 2
PWS operator certification	300g - 8(b)
PWS managerial capacity development	300g - 9(c)
UIC program	300h
Critical aquifer protection area demonstration	300h - 6(c)
Wellhead protection	300h - 2(a)
SRLF administration	300j - 12
Source water assessment	300j - 13
Source water protection petition program	300j - 14
Program to assist schools in testing and remediating lead contamination of drinking water	300j - 24(d)

TABLE 6  
SDWA REQUIREMENTS FOR STATE REPORTS AND NOTICES

Requirements	SDWA Section
Reports on drinking water regulations	300g - 2(a)(3)
Annual report on PWS violations of NPDWRs to EPA and public	300g - 3(c)(3)(A)
Notice to EPA and public hearing on all variances to be issued	300g - 4(a)(1)(C)
Notice of granting of exemptions to EPA	300g - 5(c)
Report on PWSs with history of significant noncompliance to EPA	300g - 9(b)(1)
Report on state enforcement success and capacity development efforts to EPA	300g - 9(b)(2)
Report on managerial capacity development to Governor and public every 3 years	300g - 9(c)(3)
Public hearing on UIC program development	300h - 1(b)(1)(A)(i)
Public hearing on development of comprehensive plan for critical aquifer protection area	300h - 6(h)
Report by Governor of NY on results of watershed demonstration projects to EPA	300j - 2(d)(2)
Report on projects eligible for SRLF assistance to public	300j - 12(b)(3)(B)
Notice on affordability criteria for use in SRLF program to public	300j - 12(d)(3)
Report on state SRLF activities every 2 years to EPA	300j - (12)(g)(4)
Report of results of source water assessments to public	300j - 13(a)(7)
Report of results of testing for lead contamination in drinking water in schools to local educational agency and public	300j - 24(d)(2)