APPENDIX A— METHODS: SAMPLING AND COST MODELING

The sampling methods for the 1999 Needs Survey were developed by a workgroup consisting of State, American Indian, Alaska Native Village, Indian Health Service (IHS), and U.S. Environmental Protection Agency (EPA) representatives. In addition to designing the methods, the State, American Indian, and Alaska Native Village representatives played critical roles in implementing the survey. The workgroup met four times to develop the survey methods.

The workgroup based the approach for the 1999 survey on the methods used in 1995, with refinements from the lessons learned in conducting the 1995 survey, findings of a follow-up study that EPA performed in 1997, and options made available by technological advances in database management and the Internet. Different data collection methods were used to account for the strengths and resource constraints of the different sized systems in the survey. Systems were organized into three size categories: Large (serving more than 50,000 people), medium (serving 3,301 - 50,000 people), and small (serving 3,300 and fewer people). Exhibit A-1 shows the data collection method used, sample size, target precision levels, and response rate for each size category.

Methods for Estimating State Needs

Inventory Verification. To ensure that the survey accounted for all community and not-for-profit noncommunity water systems in the States, the universe of water systems (from which the samples were drawn) was obtained from the Safe Drinking Water Information System (SDWIS). SDWIS is EPA's centralized database for information on public water systems. It is an ideal choice for determining the inventory, because it is designed to identify all public water systems. States verified information on population served, water sources, and other important variables for their systems. In some

Exhibit A-1: Community Water Systems Sampling for the 1999 Needs Survey

	Small Systems	Medium Systems		Large Systems
Population Served	3,300 or fewer	3,301 - 50,000		more than 50,000
Data Collection Method	Site Visits	Questionnaire		Questionnaire
Sample Size	599	2,556 ≤ 40,000	225 > 40,000[1]	886[1]
Response Rates	98 Percent	96 Percent	100 Percent	100 Percent
Precision Target	95%±10% Precision Nationally	95%±10% Precision by State		

[1] Systems sampled with certainty (census).

cases, EPA reviewed State files to verify the number of systems in a State.

Stratification. The sample design for the survey was based on the concept of stratified random sampling. Stratification made the design more efficient by enabling it to meet precision targets with a smaller sample size than if the sample were not stratified. These efficiencies are achieved if the design accounts for the fact that some water systems, as a group, will have different needs than other water systems. For example, large water systems generally require much greater investments than do small systems.

Water systems were stratified using two source (surface and ground) and several population groups. Results from the 1995 survey indicated that systems purchasing treated water have needs more similar to ground water systems than systems using and treating surface water sources. Therefore, systems that solely purchase water were included in the ground water strata. Also, in assigning a system to a size category, the survey included the population served by other utilities which purchase water from the system. Systems that sell water must design their infrastructure, particularly treatment facilities, to serve the purchasing system populations.

Estimating Needs for Large and Medium Community Water Systems. The 1999 survey included all of the nation's 1,111 systems serving more than 40,000 people. The needs associated with these systems contributed directly to each State's total need. A random sample of medium-sized systems serving between 3,300 and 40,000 people was selected in each State. The survey sampled 2,556 community water systems out of the national inventory of 7,759 medium-sized community water systems. This sample allowed for a high level of precision in estimating the needs of medium-sized systems for each State. Because these medium-sized systems were included in a sample, and not a census, their needs were extrapolated to the remainder of the systems (i.e., those not sampled) in each State.

The 3,667 medium and large systems in the survey received a mailed questionnaire package. Systems were asked to identify capital projects needed to protect the public health for current customers and for households without access to safe drinking water. The questionnaire prompted systems to provide:

- A description of the infrastructure need.
- Documentation explaining why the project is needed.
- An indication whether the project is a current or future need.
- An indication whether the project involves installing new or rehabilitating existing infrastructure.
- An indication whether the project is triggered by a SDWA regulation.
- A cost estimate, if available.
- Documentation of cost, if available.
- Design capacities of projects with or without costs for cost modeling.

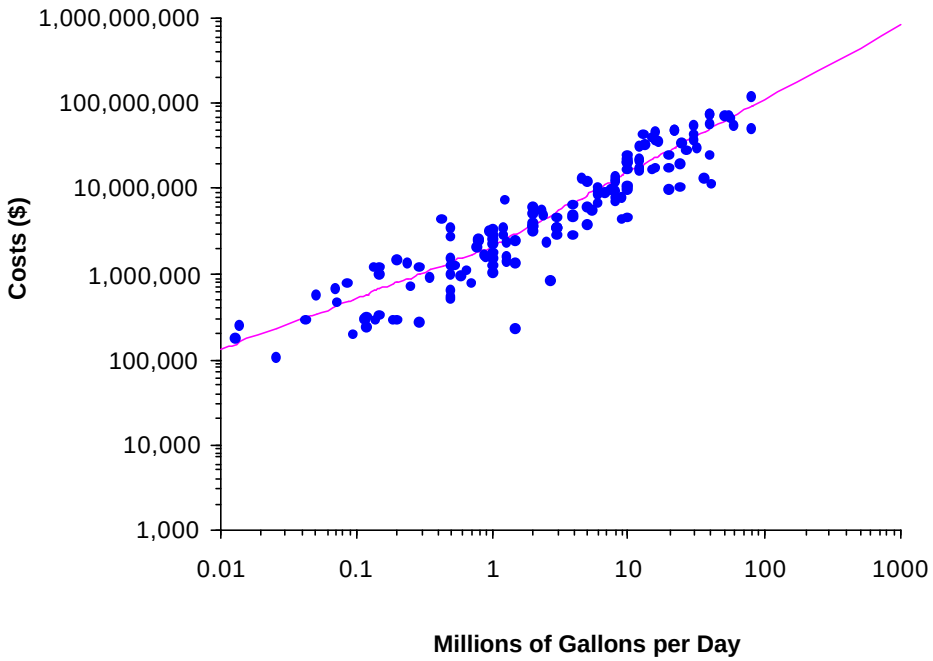
Systems returned the completed questionnaires to the States for review, along with the supporting need and cost documentation. The States reviewed each questionnaire to ensure that systems thoroughly identified their needs and that all projects were documented and described correctly. The States had the option of providing supplemental informa-

tion, if documentation of need or cost was inadequate. In many instances the States contacted the systems to obtain additional information. The States then forwarded the questionnaires to EPA for final review. Once EPA's review was completed the questionnaires were entered into a database. This database was made available on the Internet to provide States with a final opportunity to review their systems' data.

This review process differed from the procedures used in 1995. Although some States were involved in data collection for the 1995 survey, EPA assumed primary responsibility for reviewing needs and, whenever necessary, contacting systems to obtain further documentation. The greater involvement of the States–with their familiarity with the systems–accounts in part for the larger number of projects received for the 1999 survey.

Some of the medium and large drinking water systems provided capital improvement plans or engineering reports to document the costs of their infrastructure projects. However, approximately 42,920 of the 65,430 projects lacked cost estimates. EPA used models to assign costs to these projects. Cost models were developed from documented cost estimates provided by the systems in the survey. For a limited number of infrastructure needs, the cost data collected were insufficient to develop a cost model. For these projects additional project cost information was obtained from the States, Indian Health Service, manufacturers, EPA Economic Analyses, and engineering firms. All costs were converted to January 1999 dollars.

Exhibit A-2: Cost Curve for New Conventional Filtration Plant



For example, a cost model would have been used if a system lacked cost documentation for rehabilitating a conventional filtration treatment plant that no longer met performance standards. If the system provided the design capacity of the plant on the questionnaire, EPA would have applied the specific cost model for rehabilitating this type of plant. Exhibit A-2 provides an example of a cost curve used to apply costs to a new conventional treatment plant project.

Estimating Needs for Small Community Water Systems. The Needs Survey workgroup agreed that small systems generally lack the planning documents and available personnel to complete a mailed questionnaire. Therefore, needs data were collected through site visits. Site visits were conducted by water system specialists who had extensive experience working with small systems and who received training in the project eligibility and documentation criteria

established for the survey. In most cases, State personnel also attended the site visits. Based on the results of the site visit, EPA completed the survey questionnaire and developed documentation for each project. The questionnaires were reviewed by EPA and entered into a database. The database was made available for the States to review on the Internet. Most small systems lacked documented cost estimates. Therefore, the models were used to assign costs to the majority of their needs.

Unlike the medium and large systems, the design for small systems is driven by a budgetary constraint— there were not sufficient funds to complete the approximately 22,000 site visits necessary to accurately estimate the needs of small systems on a State-by-State level. Also the large investment required to generate State-level estimates of need would not be justified, given that medium and large systems generally comprise most of the States' needs. Therefore, the survey used a national sample for systems serving 3,300 and fewer people. The needs of small systems in the national sample were extrapolated to calculate the total national small system need. This need then was apportioned among the States based on the number of small systems in each stratum in each State.

Estimating Needs for Not-for-profit Noncommunity Water Systems. There are approximately 21,400 not-for-profit noncommunity water systems (NPNCWSs) nationwide. For the 1999 survey, EPA conducted site visits to a sample of approximately 100 NPNCWSs. This sample was not stratified into size and source categories, because EPA lacked the empirical data necessary to develop strata. Also, stratification would increase the sample size. The added costs of visiting more systems were not justified, because the needs of NPNCWSs were expected to represent a small proportion of the total national need. Data collection and cost modeling were completed using the same methods applied to small community water systems.

Precision Targets. The survey was designed to provide a high level of precision for each State's estimate of need. Because medium and large systems usually represent the majority of a State's need, the survey established a precision target of 95 percent ± 10 percent for the combined needs of these systems. This means that, for each State, there is a 95 percent likelihood that the true need lies within 10 percent of the survey's estimated need for medium and large systems. For example, if the survey estimates that a State's total medium and large system need is $2.0 billion, then the actual need for these systems is probably between $1.8 and $2.2 billion (that is, 10 percent of the estimated need).

The survey design provided a national level estimate of small community water system needs with a precision target of 95 percent ± 10 percent. A precision target of 95 percent ± 30 percent was established for the NPNCWSs.

Estimating the Needs of American Indian and Alaska Native Village Water Systems

American Indian Water Systems. The 1999 survey estimated the infrastructure needs of medium-sized American Indian water systems using a census. Each of the 19 community water systems serving more than 3,300 people completed a questionnaire. EPA offered technical

Exhibit A-3: American Indian and Alaska Native Village System Sampling for the 1999 Needs Survey

	American Indian Small Systems	American Indian Medium Systems	Alaska Native Systems
Population Served	3,300 or fewer	3,301 - 50,000	All populations
Data Collection Method	Site Visits	Questionnaire	Questionnaire
Sample Size	78	19	174
Response Rates	100 Percent	100 Percent	100 Percent
Precision Target	95%±10% Precision Nationally	Systems Sampled With Certainty (Census)	

assistance to help these systems identify eligible needs and prepare documentation. In addition, drinking water projects from IHS's Sanitation Deficiency System (SDS) were pre-printed on each questionnaire. The SDS was not designed to capture the full extent of the needs allowable for the survey, so these data served as a baseline to which systems added projects. For example, SDS contains only current needs, while the survey asks for current and future needs. The systems returned the completed questionnaire and documentation to EPA for final review.

A sample of 78 small American Indian systems was randomly selected. Site visits were conducted by drinking water system specialists who had extensive experience working with small systems, had received special Needs Survey training, and had previous experience with American Indian water systems. In some cases, IHS and Tribal officials attended the site visits. EPA was responsible for completing the questionnaire and documenting needs and costs.

Alaska Native Village Water Systems. Current and future needs of Alaska Native Village water systems were identified through a census of water systems that serve predominantly Alaska Natives. The inventory consisted of 2 medium systems and 172 small systems. A list of projects needed for each small system was developed by EPA in consultation with Village representatives, Village Safe Water, IHS, and State officials. Site visits to 5 Alaska Native Village water systems were performed to confirm the need assessments.

Needs for the two medium Alaska Native Village water systems were obtained through phone interviews with the systems. Based on the responses from the water systems, EPA prepared the questionnaires and documentation.

Using cost models developed with data from systems in the State and American Indian portions of the survey would not reflect the unique construction challenges that face Alaska Native Villages. For example, in some areas, water tanks and treatment plants need to be elevated on pilings to prevent the heated facilities from subsiding into the permafrost. Therefore,

a roundtable meeting of IHS and EPA engineers was held to provide guidelines for determining project costs. In assigning costs to projects, water systems were grouped into three geographic areas roughly corresponding to the northern, central, and southern parts of the State. These areas coincided roughly with the different factors that influence project costs, such as the means used to transport equipment. This process omitted water systems located on the North Slope, because they had prepared master plans and capital improvement plans that documented the costs of all of their needs. IHS provided cost documentation for projects constructed in Alaska Native Villages throughout the State. These costs were used to estimate the average costs of projects in each geographic area. Costs for some projects were derived from the cost models developed for the State and American Indian systems. The models were used to assign costs to small-scale projects (e.g., flushing hydrants) for which IHS costs were unavailable.

U.S. EPA

Precision Targets. Because all of the Alaska Native Village and medium-sized American Indian water systems were included in the survey, the needs of these systems were calculated with certainty. The estimates of need for small American Indian water systems have a national precision level of 95 percent ± 10 percent.

Estimating Costs for Proposed and Recently Promulgated Regulations

A portion of the needs collected in the survey are attributable directly to SDWA regulations. Systems were able to identify projects needed for compliance with existing regulations. However, most systems had not yet identified the infrastructure needed to comply with proposed and recently promulgated regulations. Consequently, the costs of these regulations were based on the Economic Analysis (EAs) that EPA published when proposing or finalizing each regulation. The survey did not cover the costs of regulations that were proposed after July 1, 2000.

The costs associated with future and recently promulgated regulations are included only in the total national need, not in each State's need. In general, an EA assigns the cost of complying with a new regulation on the basis of a system's size and water source. The use of EAs to allocate these costs to each State is problematic, given that the cost of a regulation is not necessarily a direct function of the number of systems in each size and source category. For example, the cost of complying with a new regulation will vary significantly from State-to-State if the contaminant occurs mostly in specific regions of the country. Allocating costs based solely on the inventory of systems would fail to capture this variation.

Dan Fraser

Filtration plants consist of a series of treatment stages, each of which is critical to the production of safe water. Shown is a filter bed that is clogged with mud and treatment chemicals. The clarifier that should have removed these particulates in the preceding stage is in poor condition and needs to be replaced.

APPENDIX B—SUMMARY OF FINDINGS

Needs for Water Systems in the States
(community water systems and not-for-profit noncommunity water systems)

Exhibit B-1—Total Need by Category

Exhibit B-2—Current Need by Category

Exhibit B-3—Total Need by System Size

Exhibit B-4—Current Regulatory Need

Exhibit B-5—Total Regulatory Need

Needs for American Indian and Alaska Native Village Water Systems

Exhibit B-6—Total Need for American Indian and Alaska Native Village Systems by EPA Region

Exhibit B-7—Total Need by Category for American Indian and Alaska Native Village Water Systems

Exhibit B-8—Total Regulatory Need for American Indian and Alaska Native Village Water Systems

Needs Attributable to Future Drinking Water Regulations

Exhibit B-9—Total Proposed or Recently Promulgated Regulatory Need

Exhibits B-1- B-8 do not include the costs associated with proposed or recently promulgated SDWA regulations.

Exhibit B-1: Total Need by Category (20-year need in millions of January 1999 dollars)

State	Transmission and Distribution	Treatment	Storage	Source	Other	Total
Alabama	622.1	186.1	175.7	91.7	5.3	**1,080.9**
Alaska	345.4	105.0	101.6	31.5	1.7	**585.2**
Arizona	781.9	434.8	244.7	130.6	30.4	**1,622.4**
Arkansas	834.1	287.6	238.9	141.6	31.8	**1,534.0**
California	10,709.3	2,354.1	2,393.8	1,565.7	466.2	**17,489.1**
Colorado	1,285.8	642.8	304.2	246.0	51.6	**2,530.4**
Connecticut	569.1	234.4	128.6	59.0	15.7	**1,006.7**
Delaware	130.4	107.2	33.5	31.8	1.1	**304.0**
District of Columbia	388.4	0.0	25.6	0.0	0.0	**414.1**
Florida	1,766.2	1,043.9	366.3	500.5	47.4	**3,724.3**
Georgia	1,438.7	463.4	308.3	165.9	30.2	**2,406.4**
Hawaii	89.3	17.7	23.0	14.6	2.0	**146.7**
Idaho	261.0	90.4	107.1	53.3	4.1	**515.9**
Illinois	3,392.2	1,459.7	850.6	358.6	88.4	**6,149.5**
Indiana	890.8	379.7	295.1	114.3	13.7	**1,693.5**
Iowa	1,990.3	407.1	282.5	148.9	17.8	**2,846.6**
Kansas	782.0	487.7	226.8	122.2	27.2	**1,645.9**
Kentucky	1,185.1	319.7	182.5	70.5	11.5	**1,769.3**
Louisiana	690.2	231.4	224.0	106.9	20.4	**1,272.8**
Maine	283.2	82.5	96.4	30.9	5.5	**498.6**
Maryland	986.2	357.5	195.5	101.7	30.2	**1,671.0**
Massachusetts	3,907.2	1,323.4	463.1	168.6	14.1	**5,876.4**
Michigan	4,545.6	1,330.3	601.8	268.6	42.1	**6,788.4**
Minnesota	1,346.9	994.4	453.1	247.0	58.1	**3,099.4**
Mississippi	697.0	317.3	228.4	108.1	10.0	**1,360.7**
Missouri	1,342.6	362.0	308.2	154.2	12.8	**2,179.8**
Montana	483.0	186.0	130.1	69.2	3.6	**871.9**
Nebraska	448.1	219.8	96.9	62.0	5.3	**832.0**
Nevada	351.2	42.0	135.5	30.0	43.8	**602.4**
New Hampshire	233.3	105.5	108.0	49.4	3.3	**499.4**
New Jersey	2,593.7	425.6	425.6	183.0	31.0	**3,658.9**
New Mexico	526.9	246.8	114.0	128.9	25.3	**1,042.0**
New York	8,590.8	2,852.7	994.3	674.4	43.1	**13,155.3**
North Carolina	1,402.9	551.3	504.2	218.4	30.3	**2,707.1**
North Dakota	274.2	90.5	71.2	49.3	4.6	**489.9**
Ohio	2,585.7	1,022.9	798.8	401.0	150.5	**4,959.0**
Oklahoma	1,480.3	486.6	262.4	101.1	10.4	**2,340.8**
Oregon	1,442.4	575.7	470.5	183.5	36.9	**2,709.1**
Pennsylvania	3,148.3	939.9	800.2	313.5	56.2	**5,258.2**
Puerto Rico	1,040.5	612.5	229.0	52.8	37.0	**1,971.8**
Rhode Island	396.1	110.8	43.1	22.3	4.8	**577.1**
South Carolina	376.1	258.6	132.2	47.0	6.7	**820.5**
South Dakota	216.5	111.3	67.6	39.5	4.9	**439.7**
Tennessee	686.7	414.3	252.2	49.0	8.0	**1,410.1**
Texas	7,935.5	2,625.6	1,524.3	811.9	170.0	**13,067.3**
Utah	256.5	123.1	88.6	43.2	2.4	**513.9**
Vermont	175.1	48.5	59.8	20.7	2.9	**306.9**
Virginia	1,023.9	518.9	282.1	189.9	40.6	**2,055.4**
Washington	2,368.4	504.7	684.6	341.2	48.4	**3,947.4**
West Virginia	572.5	222.9	158.6	59.8	6.2	**1,020.0**
Wisconsin	1,634.7	723.9	496.6	224.2	18.6	**3,098.0**
Wyoming	233.3	127.1	48.7	30.7	2.4	**442.2**
Subtotal	**81,737.8**	**28,167.2**	**17,838.6**	**9,428.6**	**1,836.3**	**139,008.5**
American Samoa	18.5	7.4	7.0	2.7	0.7	**36.4**
Guam	75.6	1.7	9.9	22.9	4.7	**114.7**
North Mariana Is.	25.7	21.0	14.8	10.9	2.5	**74.8**
Virgin Islands	68.3	32.5	48.4	11.3	1.1	**161.7**
Subtotal	**188.1**	**62.6**	**80.2**	**47.8**	**8.9**	**387.5**
Total	**81,925.8**	**28,229.9**	**17,918.8**	**9,476.4**	**1,845.1**	**139,396.1**

Exhibit B-2: Current Need by Category (20-year need in millions of January 1999 dollars)

State	Transmission and Distribution	Treatment	Storage	Source	Other	Total
Alabama	434.4	108.4	101.3	28.2	4.9	**677.2**
Alaska	169.2	36.3	46.4	19.1	1.5	**272.5**
Arizona	591.7	321.7	112.1	68.9	28.9	**1,123.3**
Arkansas	593.0	164.2	130.2	97.3	29.5	**1,014.2**
California	9,207.7	1,773.1	1,517.2	1,144.1	430.1	**14,072.3**
Colorado	882.0	449.6	141.6	168.1	50.9	**1,692.1**
Connecticut	493.0	161.2	52.7	23.8	4.4	**735.1**
Delaware	73.5	95.1	17.2	23.6	0.9	**210.4**
District of Columbia	388.4	0.0	25.6	0.0	0.0	**414.1**
Florida	1,454.6	756.7	178.4	310.1	37.1	**2,736.9**
Georgia	1,041.3	270.8	143.1	105.5	22.4	**1,583.1**
Hawaii	80.2	9.8	13.3	10.5	2.0	**115.8**
Idaho	186.8	42.9	45.8	32.7	3.4	**311.5**
Illinois	2,582.6	1,076.4	440.9	218.7	73.5	**4,392.1**
Indiana	716.7	214.9	135.9	61.9	11.5	**1,140.8**
Iowa	1,843.4	265.1	149.6	86.8	11.3	**2,356.2**
Kansas	638.7	367.3	130.8	86.3	26.4	**1,249.4**
Kentucky	919.3	275.1	117.8	54.4	9.6	**1,376.2**
Louisiana	546.6	130.2	114.9	58.0	7.3	**857.0**
Maine	237.6	37.1	41.1	15.7	4.8	**336.2**
Maryland	877.2	286.1	100.9	71.5	29.2	**1,365.0**
Massachusetts	3,615.0	1,062.3	377.0	88.1	10.4	**5,152.8**
Michigan	2,367.8	802.5	327.5	143.7	33.4	**3,674.9**
Minnesota	875.3	468.4	208.2	133.7	32.4	**1,718.1**
Mississippi	605.3	200.2	109.6	58.4	8.2	**981.8**
Missouri	1,107.6	194.7	156.5	102.4	10.8	**1,572.1**
Montana	369.3	84.1	66.4	32.0	3.1	**554.8**
Nebraska	343.4	144.9	45.9	33.9	4.2	**572.2**
Nevada	281.6	18.6	70.7	17.4	43.3	**431.6**
New Hampshire	194.6	40.4	44.8	23.9	2.7	**306.5**
New Jersey	1,781.0	317.1	158.2	88.5	23.2	**2,368.0**
New Mexico	455.6	71.5	43.1	52.8	24.9	**648.0**
New York	6,925.3	2,481.8	665.8	412.1	33.3	**10,518.2**
North Carolina	1,040.4	336.2	220.5	129.6	23.9	**1,750.5**
North Dakota	162.6	37.1	31.6	32.4	3.0	**266.6**
Ohio	2,235.9	704.3	443.3	259.4	73.6	**3,716.4**
Oklahoma	1,162.7	268.5	118.5	49.8	7.7	**1,607.3**
Oregon	1,347.4	470.0	369.2	130.1	35.0	**2,351.6**
Pennsylvania	2,347.4	550.0	360.1	188.2	36.4	**3,482.1**
Puerto Rico	1,013.5	585.6	206.0	45.8	36.8	**1,887.6**
Rhode Island	263.4	100.0	18.1	15.9	4.1	**401.4**
South Carolina	298.0	146.0	54.4	30.2	4.4	**532.9**
South Dakota	163.6	70.0	36.6	18.8	4.1	**293.1**
Tennessee	503.6	211.2	157.0	29.5	7.0	**908.2**
Texas	6,029.6	1,469.8	766.2	442.7	152.1	**8,860.5**
Utah	192.3	66.5	53.0	27.1	1.9	**341.0**
Vermont	156.5	28.1	36.4	11.2	2.6	**234.8**
Virginia	609.8	362.5	137.5	59.5	32.7	**1,202.1**
Washington	2,105.8	272.8	356.4	170.5	45.1	**2,950.5**
West Virginia	500.8	134.4	95.2	35.4	5.3	**771.0**
Wisconsin	1,047.5	359.5	190.2	117.2	10.4	**1,724.8**
Wyoming	207.0	64.8	28.9	17.5	2.3	**320.5**
Subtotal	**64,267.5**	**18,965.9**	**9,709.4**	**5,682.7**	**1,507.6**	**100,133.2**
American Samoa	17.9	6.7	6.9	2.6	0.6	**34.7**
Guam	72.2	1.4	7.9	21.0	1.3	**103.7**
North Mariana Is.	24.0	10.8	14.7	10.8	1.4	**61.7**
Virgin Islands	63.8	21.7	30.8	10.5	1.1	**127.8**
Subtotal	**177.8**	**40.5**	**60.3**	**44.9**	**4.3**	**327.9**
Total	**64,445.4**	**19,006.4**	**9,769.7**	**5,727.6**	**1,511.9**	**100,461.0**

Exhibit B-3: Total Need by System Size (20-year need in millions of January 1999 dollars)

State	Large CWSs	Medium CWSs	Small CWSs	NPNCWSs	Total
Alabama	120.9	549.7	407.3	2.9	**1,080.9**
Alaska	31.9	317.6	189.2	46.5	**585.2**
Arizona	712.2	471.8	424.3	14.1	**1,622.4**
Arkansas	391.3	638.6	498.5	5.6	**1,534.0**
California	12,310.8	2,896.7	2,204.4	77.2	**17,489.1**
Colorado	1,109.2	917.5	502.8	1.0	**2,530.4**
Connecticut	547.0	215.0	223.8	20.9	**1,006.7**
Delaware	158.4	25.2	117.9	2.5	**304.0**
District of Columbia	414.1	0.0	0.0	0.0	**414.1**
Florida	2,163.1	553.7	910.2	97.2	**3,724.3**
Georgia	984.9	654.7	756.4	10.5	**2,406.4**
Hawaii	18.1	28.2	99.6	0.8	**146.7**
Idaho	37.9	88.2	361.0	28.7	**515.9**
Illinois	2,020.8	2,738.6	1,306.2	83.9	**6,149.5**
Indiana	237.7	722.6	599.0	134.3	**1,693.5**
Iowa	336.2	1,800.3	696.2	14.0	**2,846.6**
Kansas	507.3	513.6	622.4	2.6	**1,645.9**
Kentucky	312.3	1,100.5	355.7	0.8	**1,769.3**
Louisiana	234.2	291.5	735.8	11.4	**1,272.8**
Maine	28.4	194.1	249.8	26.2	**498.6**
Maryland	1,116.6	226.5	253.2	74.8	**1,671.0**
Massachusetts	2,628.4	2,998.8	224.1	25.1	**5,876.4**
Michigan	3,647.1	1,919.3	862.4	359.6	**6,788.4**
Minnesota	730.7	1,498.5	665.9	204.3	**3,099.4**
Mississippi	157.3	337.5	858.6	7.3	**1,360.7**
Missouri	623.5	645.1	881.4	29.8	**2,179.8**
Montana	125.1	340.3	368.0	38.6	**871.9**
Nebraska	226.7	261.7	331.5	12.2	**832.0**
Nevada	377.2	57.6	156.8	10.8	**602.4**
New Hampshire	44.9	90.3	317.1	47.1	**499.4**
New Jersey	1,721.7	1,464.0	318.2	155.0	**3,658.9**
New Mexico	433.2	270.8	326.2	11.7	**1,042.0**
New York	9,305.0	2,015.4	1,739.0	96.1	**13,155.3**
North Carolina	600.2	916.9	908.5	281.5	**2,707.1**
North Dakota	120.1	164.0	201.7	4.1	**489.9**
Ohio	1,689.9	2,096.7	957.5	214.9	**4,959.0**
Oklahoma	810.7	792.2	721.0	17.0	**2,340.8**
Oregon	907.5	1,198.2	561.1	42.3	**2,709.1**
Pennsylvania	1,722.1	1,946.5	1,375.0	214.5	**5,258.2**
Puerto Rico	1,110.6	479.9	380.4	0.9	**1,971.8**
Rhode Island	352.9	180.5	31.5	12.3	**577.1**
South Carolina	297.9	197.3	313.0	12.3	**820.5**
South Dakota	55.4	136.2	244.2	3.9	**439.7**
Tennessee	106.8	939.2	342.2	21.9	**1,410.1**
Texas	6,684.2	3,691.7	2,655.1	36.3	**13,067.3**
Utah	196.0	45.4	262.7	9.9	**513.9**
Vermont	0.0	82.7	224.1	0.1	**306.9**
Virginia	846.0	508.8	630.8	69.8	**2,055.4**
Washington	1,401.1	1,201.3	1,256.5	88.4	**3,947.4**
West Virginia	96.0	337.5	549.7	36.7	**1,020.0**
Wisconsin	878.4	1,159.5	692.0	368.1	**3,098.0**
Wyoming	80.7	234.7	117.6	9.3	**442.2**
Subtotal	**61,770.7**	**43,153.1**	**30,987.2**	**3,097.6**	**139,008.5**
American Samoa	0.0	19.3	17.1	0.0	**36.4**
Guam	57.2	50.9	6.5	0.0	**114.7**
North Mariana Is.	18.2	33.7	22.9	0.0	**74.8**
Virgin Islands	0.0	40.7	121.0	0.0	**161.7**
Subtotal	**75.4**	**144.6**	**167.5**	**0.0**	**387.5**
Total	**61,846.1**	**43,297.7**	**31,154.7**	**3,097.6**	**139,396.1**

Exhibit B-4: Current Regulatory Need (20-year need in millions of January 1999 dollars)

State	SWTR	TCR	Nitrate/ Nitrite	Lead and Copper Rule	TTHMs	Other*	Total
Alabama	62.2	9.2	0.0	2.4	0.0	1.9	**75.8**
Alaska	32.6	0.5	0.1	0.5	0.0	0.2	**33.9**
Arizona	270.6	0.1	5.3	1.4	0.0	0.8	**278.3**
Arkansas	104.5	0.3	0.1	3.1	0.0	1.7	**109.6**
California	1,320.2	4.5	32.5	12.0	0.0	33.5	**1,402.8**
Colorado	428.1	0.0	4.9	8.5	0.0	0.8	**442.3**
Connecticut	148.5	0.2	0.2	0.7	0.0	0.3	**149.8**
Delaware	70.7	0.0	0.1	0.3	0.0	0.2	**71.3**
District of Columbia	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Florida	181.0	1.2	0.4	2.9	30.2	4.2	**219.9**
Georgia	180.0	1.5	0.4	6.5	0.0	1.3	**189.7**
Hawaii	3.0	0.0	0.0	0.6	0.0	0.4	**3.9**
Idaho	26.7	0.3	0.2	1.2	0.0	0.4	**28.9**
Illinois	664.7	41.8	61.3	35.2	0.0	27.2	**830.3**
Indiana	59.3	1.4	0.2	21.0	0.0	4.9	**86.7**
Iowa	114.5	228.6	67.5	3.2	0.8	70.1	**484.7**
Kansas	262.7	0.0	4.4	4.5	0.0	3.5	**275.1**
Kentucky	229.0	3.5	0.0	16.7	0.9	1.1	**251.2**
Louisiana	64.7	0.1	0.2	3.5	0.0	5.5	**74.1**
Maine	24.6	0.3	0.1	1.7	0.0	0.4	**27.1**
Maryland	250.3	0.8	0.1	1.0	0.0	0.5	**252.7**
Massachusetts	1,057.0	0.3	0.1	18.0	0.0	0.6	**1,076.0**
Michigan	549.5	5.5	2.5	213.5	2.8	10.5	**784.3**
Minnesota	60.3	2.2	0.2	47.8	0.0	55.9	**166.5**
Mississippi	71.2	1.0	0.1	3.6	2.0	3.5	**81.5**
Missouri	131.2	0.3	0.3	4.0	0.0	2.3	**138.2**
Montana	54.5	0.4	0.3	1.7	0.0	0.4	**57.3**
Nebraska	114.2	0.1	2.9	10.7	0.0	6.9	**134.9**
Nevada	5.4	0.1	0.1	0.6	0.0	0.4	**6.6**
New Hampshire	23.7	0.5	0.2	1.3	0.0	0.4	**26.1**
New Jersey	237.2	5.9	0.1	92.0	0.0	25.7	**360.9**
New Mexico	32.8	0.1	0.2	1.2	0.0	1.7	**36.1**
New York	2,491.1	3.9	0.8	177.4	0.0	11.1	**2,684.3**
North Carolina	221.3	2.9	0.6	3.2	0.0	1.5	**229.4**
North Dakota	38.8	0.0	0.1	1.9	0.0	0.5	**41.3**
Ohio	453.6	2.2	0.3	26.7	0.0	2.9	**485.7**
Oklahoma	231.2	0.2	2.5	15.8	0.0	1.7	**251.3**
Oregon	425.1	0.4	0.3	4.4	0.0	0.8	**430.9**
Pennsylvania	495.6	2.2	0.6	65.3	0.0	2.9	**566.6**
Puerto Rico	601.4	0.0	0.0	3.2	0.0	0.4	**605.1**
Rhode Island	92.2	0.7	0.0	6.5	0.0	0.1	**99.4**
South Carolina	126.1	1.0	0.1	1.5	0.0	0.8	**129.5**
South Dakota	11.0	0.0	0.1	0.9	0.0	0.5	**12.6**
Tennessee	179.1	0.2	0.0	3.0	0.0	1.1	**183.4**
Texas	1,184.3	9.5	0.9	13.1	0.7	15.8	**1,224.2**
Utah	52.1	0.1	0.1	1.2	0.0	0.7	**54.2**
Vermont	20.2	0.0	0.1	1.3	0.0	0.2	**21.9**
Virginia	315.7	1.3	0.4	7.3	0.0	0.8	**325.4**
Washington	195.0	15.8	0.9	5.5	0.0	2.4	**219.6**
West Virginia	102.7	0.4	0.1	5.1	0.0	1.2	**109.5**
Wisconsin	157.4	4.1	3.7	171.1	1.7	118.0	**456.1**
Wyoming	58.5	0.1	0.1	3.7	0.0	0.2	**62.6**
Subtotal	**14,287.4**	**356.1**	**197.1**	**1,039.1**	**39.1**	**430.8**	**16,349.7**
American Samoa	3.9	0.9	0.0	0.0	0.0	0.0	**4.9**
Guam	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
North Mariana Is.	3.0	0.1	0.0	0.0	0.0	0.0	**3.1**
Virgin Islands	38.8	0.0	0.0	0.4	0.0	0.0	**39.2**
Subtotal	**45.8**	**1.0**	**0.0**	**0.4**	**0.0**	**0.0**	**47.3**
Total	**14,333.3**	**357.1**	**197.1**	**1,039.5**	**39.1**	**430.8**	**16,396.9**

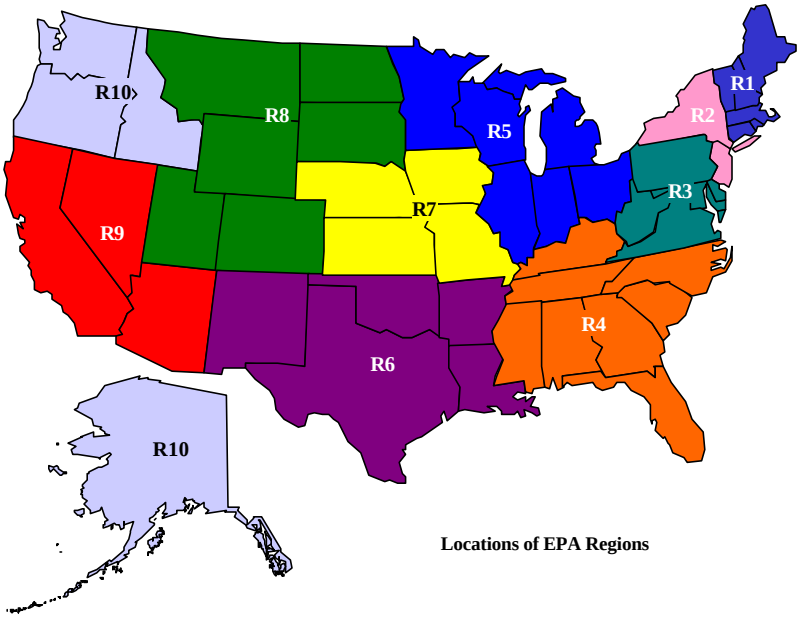
Exhibit B-5: Total Regulatory Need (20-year need in millions of January 1999 dollars)

State	SWTR	TCR	Nitrate/ Nitrite	Lead and Copper Rule	TTHMs	Other*	Total
Alabama	110.4	9.3	0.0	2.4	0.0	1.9	**124.1**
Alaska	164.0	0.9	0.1	0.5	59.0	0.2	**224.7**
Arizona	328.7	0.8	5.4	1.4	0.0	0.8	**337.1**
Arkansas	143.0	5.2	0.1	3.1	0.0	1.7	**153.1**
California	1,672.1	8.1	35.6	12.2	0.9	35.7	**1,764.5**
Colorado	615.0	0.6	6.8	9.1	0.0	2.7	**634.3**
Connecticut	196.3	1.8	0.2	0.7	0.0	0.3	**199.2**
Delaware	70.7	0.3	0.1	0.3	0.0	0.2	**71.6**
District of Columbia	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Florida	262.8	2.5	0.4	3.0	30.2	4.2	**303.1**
Georgia	314.3	2.8	0.4	6.5	0.0	1.3	**325.3**
Hawaii	3.8	0.1	0.0	0.6	0.0	0.4	**4.8**
Idaho	40.7	1.0	0.2	1.3	0.0	0.4	**43.6**
Illinois	833.9	53.5	61.3	38.3	0.0	28.3	**1,015.4**
Indiana	109.5	1.9	0.2	21.0	0.0	4.9	**137.4**
Iowa	174.9	229.4	67.5	3.3	0.8	70.2	**546.0**
Kansas	308.7	0.6	4.4	4.5	0.0	6.2	**324.5**
Kentucky	260.9	3.6	0.0	17.0	0.9	1.1	**283.5**
Louisiana	96.4	0.8	0.2	3.6	0.6	5.5	**107.2**
Maine	49.2	0.6	0.1	1.7	0.0	0.4	**52.1**
Maryland	285.3	1.2	0.1	1.0	0.0	0.5	**288.2**
Massachusetts	1,208.5	49.0	0.1	18.0	0.0	2.3	**1,277.8**
Michigan	813.5	6.6	2.5	256.6	2.8	10.5	**1,092.4**
Minnesota	325.0	4.9	0.2	136.4	0.0	108.8	**575.3**
Mississippi	71.7	1.9	0.1	3.7	2.0	3.5	**82.9**
Missouri	164.9	1.6	0.3	4.1	0.0	2.3	**173.2**
Montana	119.2	1.2	0.3	1.7	0.0	0.4	**122.7**
Nebraska	114.8	0.6	2.9	32.0	0.0	6.9	**157.2**
Nevada	14.7	0.3	0.1	0.6	0.0	0.4	**16.1**
New Hampshire	40.4	1.2	0.2	1.3	0.0	1.2	**44.4**
New Jersey	255.3	6.3	0.1	92.0	0.0	25.7	**379.4**
New Mexico	176.7	0.7	0.2	1.3	0.0	1.7	**180.6**
New York	2,571.2	6.4	8.2	180.9	0.0	28.3	**2,794.9**
North Carolina	306.1	4.7	0.6	3.2	0.0	1.5	**316.1**
North Dakota	65.8	0.3	0.1	1.9	0.0	0.5	**68.6**
Ohio	653.5	3.2	19.2	26.8	0.0	2.9	**705.6**
Oklahoma	361.3	0.8	2.5	15.8	0.0	1.7	**382.2**
Oregon	473.4	1.3	0.3	4.4	0.0	0.8	**480.1**
Pennsylvania	741.4	4.1	0.6	81.3	0.0	3.0	**830.5**
Puerto Rico	618.1	0.2	0.0	3.2	0.0	0.4	**621.9**
Rhode Island	98.5	0.8	0.0	6.5	0.0	0.1	**105.8**
South Carolina	209.6	1.4	0.1	1.5	0.0	0.8	**213.4**
South Dakota	31.3	0.4	0.1	0.9	0.0	0.5	**33.2**
Tennessee	285.4	0.4	0.0	3.0	0.0	1.1	**289.9**
Texas	2,047.3	12.1	0.9	13.2	0.7	15.8	**2,089.9**
Utah	87.3	0.4	0.1	1.2	0.0	0.7	**89.8**
Vermont	24.8	0.4	0.1	1.3	0.0	0.2	**26.8**
Virginia	396.4	2.4	0.4	10.6	0.0	0.8	**410.5**
Washington	250.8	19.7	0.9	5.6	0.0	2.4	**279.3**
West Virginia	157.1	0.8	0.1	5.1	0.0	1.2	**164.4**
Wisconsin	309.2	9.9	4.3	176.8	1.7	122.4	**624.4**
Wyoming	111.1	0.3	0.1	3.7	0.0	0.2	**115.4**
Subtotal	**19,145.1**	**468.9**	**229.0**	**1,225.6**	**99.7**	**516.2**	**21,684.5**
American Samoa	4.0	0.9	0.0	0.0	0.0	0.0	**5.0**
Guam	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
North Mariana Is.	3.0	0.1	0.0	0.0	0.0	0.0	**3.1**
Virgin Islands	49.7	0.0	0.0	0.4	0.0	0.0	**50.1**
Subtotal	**56.8**	**1.0**	**0.0**	**0.4**	**0.0**	**0.0**	**58.2**
Total	**19,201.9**	**469.9**	**229.0**	**1,226.0**	**99.7**	**516.2**	**21,742.7**

Exhibit B-6: Total Need for American Indian and Alaska Native Village Systems by EPA Region (20-year need in millions of January 1999 dollars)

Category of Need	Total Need
Region 1	3.9
Region 2	6.0
Region 3 [1]	0.0
Region 4	17.8
Region 5	157.3
Region 6	151.9
Region 7	14.3
Region 8	133.4
Region 9 [2]	548.9
Region 10 [3]	118.3
Alaska Native Systems	1,067.2
Total	**2,219.0**

[1] There are no American Indian water systems in EPA Region 3.
[2] Navajo water systems are located in EPA Regions 6, 8, and 9, but for purposes of this report, all Navajo needs are shown in EPA Region 9.
[3] Needs for Alaska Native Village water systems are not included in the EPA Region 10 total.



Locations of EPA Regions

Exhibit B-7: Need by Category for American Indian and Alaska Native Village Water Systems (20-year need in millions of January 1999 dollars)

Category of Need	Current Needs	Future Needs	Total Need
Transmission and Distribution	1,173.4	55.0	**1,228.4**
Treatment	369.2	38.9	**408.1**
Storage	398.8	48.2	**447.0**
Source	99.5	23.7	**123.2**
Other	12.4	0.0	**12.4**
Total	**2,053.2**	**165.8**	**2,219.0**

Exhibit B-8: Total Regulatory Need for American Indian and Alaska Native Village Water Systems (20-year need in millions of January 1999 dollars)

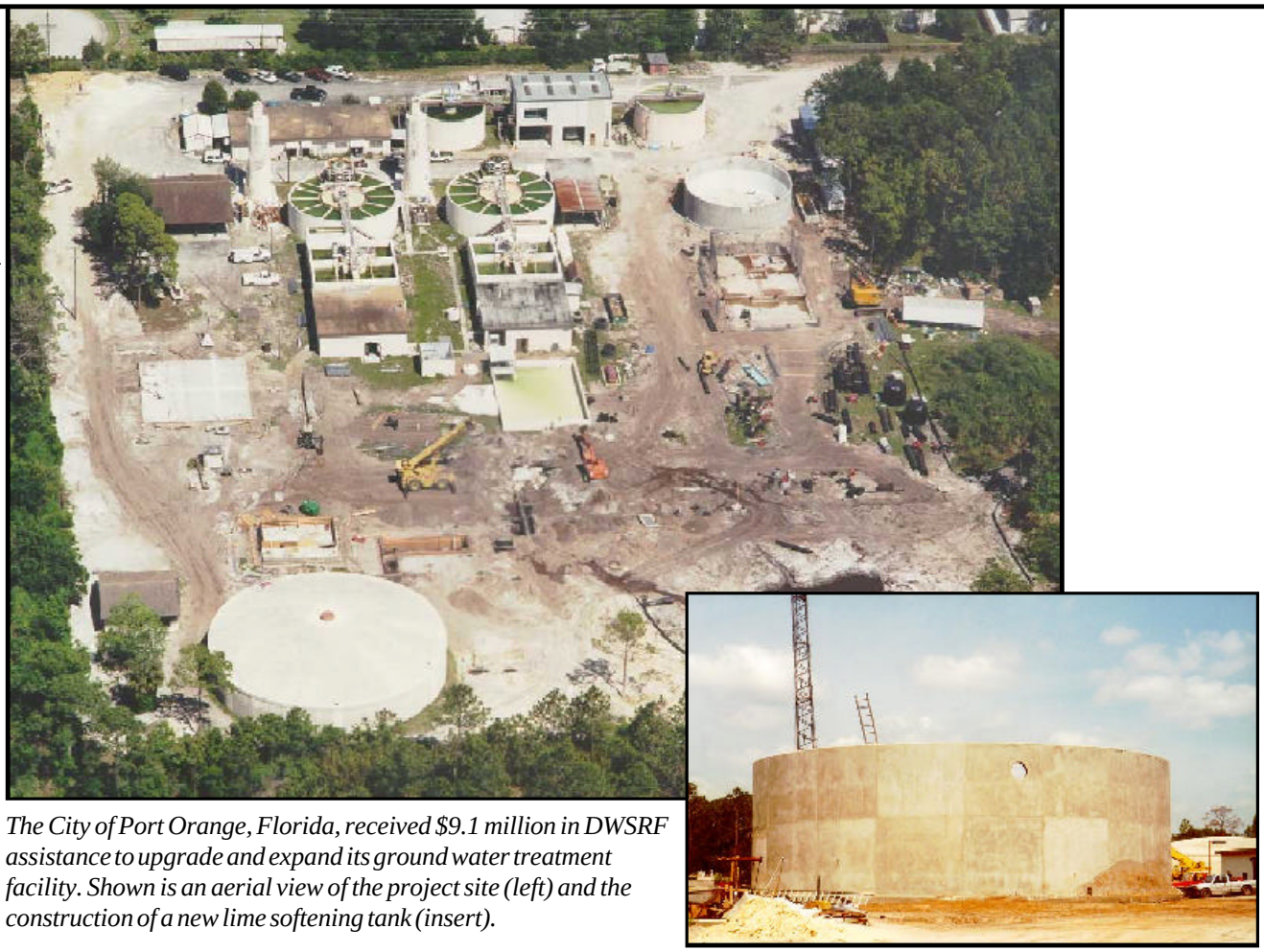
Category of Need	Current Needs	Future Needs	Total Need
Regulations for Contaminants with Acute Health Effects	159.8	4.7	**164.5**
Regulations for Contaminants with Chronic Health Effects	0.1	0.0	**0.1**
Total	**160.0**	**4.7**	**164.6**

Exhibit B-9: Total Proposed and Recently Promulgated Regulatory Need (20-year need in millions of January 1999 dollars)

Category of Need	Range of Costs		Estimate Included in the 1999 Needs Survey
	Low Estimate	High Estimate	
Stage 1 Disinfection/Disinfectants Byproduct Rule			2,354.7
Interim Enhanced Surface Water Treatment Rule			1,248.6
Long-Term 1 Enhanced Surface Water Treatment Rule			176.1
Filter Backwash Recycling Rule			143.9
Ground Water Rule	854.1	1,048.7	1,048.7
Arsenic Rule			877.1
Radon Rule	132.0	5,282.6	2,537.1
Radionuclides Rule	81.9	938.2	938.2
Total			**9,324.3**

In calculating the $9.3 billion need associated with proposed or recently promulgated regulations, the survey used EPA's lead option, unless one was not available in which case the survey used the more conservative estimate. These estimates include only the capital costs (i.e., exclude operation and maintenance costs).

Florida Department of Environmental Protection



The City of Port Orange, Florida, received $9.1 million in DWSRF assistance to upgrade and expand its ground water treatment facility. Shown is an aerial view of the project site (left) and the construction of a new lime softening tank (insert).

APPENDIX C—SUMMARY OF FINDINGS FOR SYSTEMS SERVING 10,000 AND FEWER PEOPLE

Needs for Water Systems in the States
(community water systems)

Exhibit C-1—Total Current and Future Need for Systems Serving 10,000 and Fewer People

Exhibits C-1 does not include the costs associated with proposed or recently promulgated SDWA regulations.

Exhibit C-1: Need for Systems Serving 10,000 and Fewer People (20-year need in millions of January 1999 dollars)

State	CWSs Serving 10,000 and Fewer People			CWS Need (All Sizes)	Percent of Need for CWSs Serving 10,000 and Fewer People
	Current Need	Future Need	Total Need	Total Need	
Alabama	448.7	225.5	**674.2**	1,078.0	**62.5%**
Alaska	198.7	258.0	**456.7**	538.7	**84.8%**
Arizona	386.1	199.4	**585.6**	1,608.3	**36.4%**
Arkansas	567.2	287.6	**854.8**	1,528.5	**55.9%**
California	2,183.2	839.3	**3,022.5**	17,411.9	**17.4%**
Colorado	550.5	258.8	**809.3**	2,529.4	**32.0%**
Connecticut	165.1	96.3	**261.4**	985.8	**26.5%**
Delaware	80.7	38.3	**119.0**	301.6	**39.5%**
District of Columbia	0.0	0.0	**0.0**	414.1	**0.0%**
Florida	867.8	291.3	**1,159.1**	3,627.1	**32.0%**
Georgia	702.1	334.2	**1,036.3**	2,395.9	**43.3%**
Hawaii	94.0	29.7	**123.7**	145.9	**84.8%**
Idaho	276.1	134.9	**411.0**	487.2	**84.4%**
Illinois	1,699.0	764.8	**2,463.8**	6,065.7	**40.6%**
Indiana	784.7	300.7	**1,085.4**	1,559.3	**69.6%**
Iowa	743.2	341.0	**1,084.2**	2,832.6	**38.3%**
Kansas	575.5	226.1	**801.7**	1,643.2	**48.8%**
Kentucky	582.0	233.3	**815.2**	1,768.5	**46.1%**
Louisiana	640.2	251.3	**891.5**	1,261.5	**70.7%**
Maine	212.9	82.7	**295.6**	472.3	**62.6%**
Maryland	218.9	104.5	**323.4**	1,596.2	**20.3%**
Massachusetts	670.1	126.5	**796.7**	5,851.3	**13.6%**
Michigan	1,180.6	536.7	**1,717.3**	6,428.8	**26.7%**
Minnesota	783.4	398.6	**1,182.0**	2,895.1	**40.8%**
Mississippi	738.9	312.7	**1,051.6**	1,353.4	**77.7%**
Missouri	827.1	401.2	**1,228.2**	2,150.0	**57.1%**
Montana	337.5	150.8	**488.2**	833.3	**58.6%**
Nebraska	299.5	154.3	**453.8**	819.9	**55.3%**
Nevada	124.9	55.6	**180.4**	591.6	**30.5%**
New Hampshire	234.0	114.7	**348.7**	452.3	**77.1%**
New Jersey	500.2	358.9	**859.2**	3,503.9	**24.5%**
New Mexico	430.5	131.7	**562.3**	1,030.3	**54.6%**
New York	1,655.7	746.9	**2,402.6**	13,059.3	**18.4%**
North Carolina	997.9	406.5	**1,404.4**	2,425.6	**57.9%**
North Dakota	160.0	132.7	**292.7**	485.8	**60.2%**
Ohio	1,280.7	382.4	**1,663.2**	4,744.1	**35.1%**
Oklahoma	955.1	310.7	**1,265.8**	2,323.8	**54.5%**
Oregon	698.2	230.9	**929.0**	2,666.8	**34.8%**
Pennsylvania	1,619.3	673.9	**2,293.2**	5,043.6	**45.5%**
Puerto Rico	367.6	82.9	**450.5**	1,970.9	**22.9%**
Rhode Island	38.7	24.7	**63.3**	564.8	**11.2%**
South Carolina	245.8	139.1	**384.8**	808.2	**47.6%**
South Dakota	186.4	90.7	**277.1**	435.8	**63.6%**
Tennessee	583.2	245.0	**828.2**	1,388.2	**59.7%**
Texas	2,911.4	1,406.3	**4,317.7**	13,031.0	**33.1%**
Utah	198.8	87.8	**286.6**	504.0	**56.9%**
Vermont	221.0	72.0	**293.1**	306.8	**95.5%**
Virginia	542.3	253.2	**795.5**	1,985.6	**40.1%**
Washington	971.8	530.1	**1,501.9**	3,859.0	**38.9%**
West Virginia	606.2	172.7	**778.9**	983.3	**79.2%**
Wisconsin	788.6	424.2	**1,212.8**	2,729.9	**44.4%**
Wyoming	171.9	104.9	**276.8**	432.9	**63.9%**
Subtotal	**33,303.9**	**14,557.3**	**47,861.2**	**135,910.9**	**35.2%**
American Samoa	15.3	1.7	**17.1**	36.4	**46.9%**
Guam	26.7	2.3	**29.0**	114.7	**25.2%**
North Mariana Is.	25.3	12.6	**37.9**	74.8	**50.7%**
Virgin Islands	105.1	16.7	**121.8**	161.7	**75.3%**
Subtotal	**172.4**	**33.3**	**205.7**	**387.5**	**53.1%**
Total	**33,476.2**	**14,590.6**	**48,066.8**	**136,298.5**	**35.3%**

U.S. EPA

This 1,000-gallon storage tank is mounted on top of a stone structure to provide a pressure gradient.

APPENDIX D—SEPARATE STATE ESTIMATES

In response to the Needs Survey workgroup's request, EPA gave States the opportunity to prepare separate estimates of needs which were not included in the survey because they are ineligible for DWSRF funding. EPA also invited the submission of needs that the States felt were underestimated by the survey. Four States responded:

- Arizona stated that between $565 million and $987 million in infrastructure improvements would be needed for compliance with the new Arsenic Rule.

- Kentucky submitted costs, totaling $74 million, for projects to create two new regional water systems. These systems would provide new sources of water, and new treatment and distribution systems for areas facing chronic water shortages and deteriorated infrastructure. The State provided this estimate after the close of the data collection period. Therefore, these projects may include needs already addressed by other systems in the State's sample. To avoid the possibility of double-counting this estimate is presented separately.

- Nevada estimated that a capital cost of $400 million would be required to bring the State's water systems into compliance with the new Arsenic Rule.

- Washington estimated that Seattle's water system would require approximately $51 million in DWSRF-ineligible investments to comply with the Endangered Species Act, such as constructing fish ladders at dams.

Saint Joseph's College, Standish, Maine

Sebago Lake, in Maine, provides water to Portland and surrounding communities.

APPENDIX E—GLOSSARY

Acute health effects: health effects resulting from exposure to a contaminant that causes severe symptoms to occur quickly—often within a matter of hours or days. Examples include gastrointestinal illness and "blue baby syndrome."

Capital improvement plan (CIP): a document produced by a local government, utility, or water system that thoroughly outlines, for a specified period of time, all needed capital projects, the reason for each project, and their costs.

Chronic health effects: health effects resulting from long-term exposure to low concentrations of certain contaminants. Cancer is one such health effect.

Coliform bacteria: a group of bacteria whose presence in a water sample indicates the water may contain disease-causing organisms.

Community water system: a public water system that serves at least 15 connections used by year-round residents or that regularly serves at least 25 residents year-round. Examples include cities, towns, and communities such as retirement homes.

Current infrastructure needs: new facilities or deficiencies in existing facilities identified by the State or system for which water systems would begin construction as soon as possible to avoid a threat to public health.

Engineer's report: a document produced by a professional engineer that outlines the need and cost for a specific infrastructure project.

Existing regulations: drinking water regulations promulgated under the authority of the Safe Drinking Water Act by EPA; existing regulations can be found in the Code of Federal Regulations (CFR) at 40 CFR 141.

Finished water: water that is considered safe and suitable for delivery to customers.

Future infrastructure needs: infrastructure deficiencies that a system expects to address in the next 20 years due to predictable deterioration of facilities. Future infrastructure needs do not include current infrastructure needs. Examples are storage facility and treatment plant replacement where the facility currently performs adequately, but will reach the end of its useful life in the next 20 years. Needs solely to accommodate future growth are not included in the Needs Survey.

Ground water: any water obtained from a source beneath the surface of the ground which has not been classified as ground water under the direct influence of surface water.

Growth: needs planned solely to accommodate projected future growth are not included in the survey. Eligible projects, however, can be designed for growth expected during the design-life of the project. For example, the survey would allow a treatment plant needed now and expected to treat water for 20 years. Such a plant could be designed for the population anticipated to be served at the end of the 20-year period.

Infrastructure needs: the capital costs associated with ensuring the continued protection of public health through rehabilitating or building facilities needed for continued provision of safe drinking water. Categories of need include source development and rehabilitation, treatment, storage, and transmission and distribution. Operation and maintenance needs are not considered infrastructure needs and are not included in this document.

Large water system: in this document, this phrase refers to a community water system serving more than 50,000 people.

Medium water system: in this document, this phrase refers to a community water system serving from 3,301 to 50,000 people.

Microbiological contamination: the occurrence in a water supply of protozoan, bacteriological, or viral contaminants.

Noncommunity water system: a public water system that is not a community water system and that serves a nonresidential population of at least 25 individuals or 15 service connections daily for at least 60 days of the year. Examples of not-for-profit noncommunity water systems include schools and churches.

Public water system: a system for the provision to the public of water for human consumption through pipes or, after August 5, 1998, other constructed conveyances, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

Regulatory need: a capital expenditure required for compliance with regulations.

Safe Drinking Water Act (SDWA): a law passed by Congress in 1974 and amended in 1986 and 1996 to ensure that public water systems provide safe drinking water to consumers. (42 U.S.C.A. §300f to 300j-26)

Small water system: in this document, this phrase refers to a community water system serving 3,300 people or fewer.

Source rehabilitation and development: a category of need that includes the costs involved in developing or improving sources of water for public water systems.

State: in this document, this term refers to all 50 States of the United States, Puerto Rico, the District of Columbia, American Samoa, Guam, the Northern Mariana Islands, and the Virgin Islands.

Storage: a category of need that addresses finished water storage needs faced by public water systems.

Supervisory Control and Data Acquisition (SCADA): an advanced control system that collects all system information for an operator and allows him/her, through user-friendly interfaces, to view all aspects of the system from one place.

Surface water: all water which is open to the atmosphere and subject to surface run-off including streams, rivers, and lakes.

Transmission and distribution: a category of need that includes replacement or rehabilitation of transmission or distribution lines which carry drinking water from the source to the treatment plant or from the treatment plant to the consumer.

Treatment: a category of need that includes conditioning water or removing microbiological and chemical contaminants. Filtration of surface water sources, pH adjustment, softening, and disinfection are examples of treatment.

Watering point: a central source from which people without piped water can draw drinking water for transport to their homes.