

CHAPTER 8

SAFE DRINKING WATER ACT COMPLIANCE ASHORE

- 8-1 Scope**
- R) **8-1.1** This chapter identifies requirements, establishes policy, and assigns responsibilities for the protection and conservation of drinking water supplies at shore installations in the United States, Commonwealth of Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Marianas Islands. Chapter 18 provides Navy policy with respect to foreign countries.
- D) **8-1.2 References.**
- a. 40 CFR 141, National Primary Drinking Water Regulations;
 - b. 40 CFR 142, National Primary Drinking Water Regulations Implementation;
 - c. 40 CFR 143, National Secondary Drinking Water Regulations;
 - d. 40 CFR 144, Underground Injection Control (UIC) Program;
 - e. 40 CFR 146, UIC Program: Criteria and Standards;
 - f. Executive Order (E.O.) 12902, "Energy Efficiency and Water Conservation at Federal Facilities", March 8, 1994;
 - g. Naval Facilities Engineering Service Center: Naval Water Conservation Guide for Shore Activities, User's Guide UG-2017-E&U, (July 1996);
 - A) h. MIL-HDBK-1165, Water Conservation, (7 Apr 1997);
 - i. American Water Works Association Manual of Standard Practices, Emergency Planning for Water Utility Management, AWWA M19 Second Edition 1984;
 - j. U.S. Environmental Protection Agency: Pocket Sampling Guide for Operators of Small Water Systems: Phase I, EPA/814-B-92-001 (April 1992);
 - k. U.S. Environmental Protection Agency: Pocket Sampling Guide for Operators of Small Water Systems: Phase II and V, EPA/814-B-94-001 (July 1994);
 - l. Naval Facilities Engineering Service Center: Cross-Connection Control and Backflow Prevention Program Implementation at Navy Shore Facilities, User's Guide UG-2029-ENV (May 1998);
 - m. U.S. Environmental Protection Agency, Office of Drinking Water: Guidance Manual for Compliance with the Filtration and Disinfection Requirements for PWSs Using Surface Water Sources, EPA570/9-89-018 (October 1989);
 - n. NAVMED P-5010-5, Manual of Naval Preventive Medicine, chapter 5, Water Supply Ashore (Rev 1990) and NAVMED P-5010-5 CH1 (1992);
 - o. BUMEDINST 6240.10, Standard for Potable Water;
 - p. Naval Facilities Engineering Service Center: Consecutive Water System Guidance Document for Navy Shore Installations, Users' Guide UG-2034-ENV (January 1999);

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- A) q. U.S. Environmental Protection Agency: Lead in Drinking Water in Schools and Non-Residential Buildings, EPA/812-B-94-002 (April 1994);
- A) r. Naval Facilities Engineering Command: Guidance for Sampling Water Coolers (May 1998);
- A) s. MIL-HDBK-1005/7, Water Supply Systems (30 November 1988);
- A) t. U.S. Environmental Protection Agency: State Source Water Assessment and Protection Programs Guidance, EPA/816-R-97-009 (August 1997);
- A) u. U.S. Environmental Protection Agency Region III: Public Information Bulletin, UIC Class V Injection Wells, EPA/813-F-94-005 (July 1994);
- A) v. OPNAVINST 11000.16A, Command Responsibility for Shore Activity Land and Facilities;
- A) w. American Water Works Association Standards A100-90 through F102-91;
- A) x. MIL-HDBK-1164, Maintenance and Operation of Water Supply Systems (3 Mar 1998);
- A) y. U.S. EPA/State Joint Guidance on Sanitary Surveys (December 1995).

8-2 Legislation

- R) **8-2.1 Safe Drinking Water Act (SDWA).** An amendment to the Public Health Service Act, the Safe Drinking Water Act (SDWA or "the Act") Federalized the regulation of drinking water systems. Among other things, the Act requires the U.S. Environmental Protection Agency (EPA) to set national standards for levels of contaminants in drinking water and created a program for

the regulation of underground injection wells. The SDWA applies to "PWSs" (see definition at section 8-3.15) and requires EPA to identify contaminants in drinking water that may have an adverse effect on human health. There are set standards for the following groups of contaminants:

- a. Inorganics.
- b. Organics.
- c. Turbidity.
- d. Total coliforms.
- e. Radionuclides.

For each contaminant so identified, EPA establishes either a "maximum contaminant level" (MCL) or a treatment technique. Where feasible, this MCL or treatment technique has been used to establish the National Primary Drinking Water Standards (NPDWS) for the contaminant. Once issued, NPDWS are mandatory for all PWSs. The Act also requires EPA to identify "maximum contaminant level goals" (MCLGs), which are non-enforceable goals for contaminants that may have an adverse effect on human health and are known or anticipated to occur in PWSs. An MCLG may be more protective of human health than a health-based maximum contaminant level (MCL) because the MCLG is established without consideration to the feasibility of meeting it. The goal of the Safe Drinking Water Act is to move towards implementing these MCLGs when possible. Finally, for contaminants that may cause the drinking water to become aesthetically unpleasing, thus creating a situation where consumers may seek alternative sources of water that may not be safe, the Act requires EPA to specify the maximum contaminant level requisite to protect the public welfare. These contaminants are regulated under the National Secondary Drinking Water Standard (NSDWS). Even though they are not Federally enforceable, the NSDWS may apply to any contaminant that adversely affects the odor (R

or appearance of drinking water or may otherwise adversely affect the public welfare.

- R) The SDWA provides for State implementation. Upon application to EPA, if a State has drinking water standards "no less stringent" than the Federal standards, "adequate" enforcement procedures, and variance and exemption conditions "no less stringent" than the Federal conditions, then the Federal Government grants the State primary enforcement authority. Today most of the States have such authority. This is significant because, under the SDWA, Federal facilities are subject to applicable State and local laws and regulations.
- A) As a general principle, installations that purchase water from private or municipal utilities and do not treat or resell the water are not subject to the requirements of reference (a). However, an installation that purchases water and either provides supplemental treatment, such as rechlorination, fluoridation, or softening (corrosion control), or resells the water, may be subject to the Act and implementing regulations. See section 8-5.13 for the Navy's definition of reselling water.
- A) The SDWA requires each State to have an Underground Injection Control Program (UICP) to ensure that underground injection does not endanger underground sources of drinking water. All groundwater injection systems must be permitted or authorized by rule.
- A) References (a) through (e) describe EPA regulations for implementing the SDWA.
- A) **8-2.2 Executive Order (E.O.) 12902.** E.O. 12902 (reference (f)) of 8 March 1994 directs Federal facilities to assess and implement measures to improve the efficiency of Federal energy and water use. While no specific targets are set for reductions in water use, water conservation measures are required where they are cost-effective.

References (g) and (h) provide valuable information with regard to the development of a water conservation program. They recommend metering as an effective means of accounting for facilities water uses, an essential task to developing a water conservation plan and one that renders water conservation planning more credible.

8-3 Terms and Definitions

- 8-3.1 Action Level.** The concentration of lead or copper in water that, in some cases, determines the treatment requirements for a given water system. Under the Lead and Copper Rule, action levels have replaced lead and copper maximum contaminant levels. (R)
- 8-3.2 Community Water System (CWS).** A PWS that serves at least 15 service connections used by year-round residents, or regularly serves at least 25 year-round residents. (A)
- 8-3.3 Consecutive Water System.** A PWS which has no water production or source facility of its own and which obtains all of its water from another water system. (A)
- 8-3.4 Consumer.** Any person served by a PWS. Human consumption includes drinking, bathing, showering, cooking, dishwashing, and maintaining oral hygiene. (A)
- 8-3.5 Customer.** Any single-family residence, or other residential or nonresidential population, supplied water by a PWS and billed separately for the water supply. (A)
- 8-3.6 Disinfectant.** Any oxidant including, but not limited to, chlorine, chlorine dioxide, chloramines, and ozone added to any part of the treatment or distribution process for the purpose of killing or inactivating pathogenic microorganisms. (R)
- 8-3.7 Injection Well.** A "well" into which fluids are being injected. (D)
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8-3.8 Lead Service Line. A service line made of lead that connects the water main to the building inlet and any lead pigtail, gooseneck, or other fitting that is connected to such lead line.

8-3.9 Maximum Contaminant Level (MCL). The maximum permissible level of a contaminant in water that is delivered to any user of a PWS.

8-3.10 Maximum Contaminant Level Goal (MCLG). The maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur and that allows an adequate margin of safety. Maximum contaminant level goals are non-enforceable health goals.

A) **8-3.11 Non-Transient, Non-Community Water System (NTNCWS).** A PWS that is not a community water system and that regularly serves at least 25 of the same persons over 6 months per year.

A) **8-3.12 Permitted PWS.** A water system that meets the definition of section 8-3.15 and has been issued a permit or other formal authorization to operate a PWS from the regulatory authority with SDWA primacy for its State.

8-3.13 Point-Of-Entry (POE) Treatment Device. A treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building.

8-3.14 Point-Of-Use Treatment Device. A treatment device applied to a single tap for the purpose of reducing contaminants in drinking water at that one tap.

8-3.15 Public Water System (PWS). A system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least 15 serv-

ice connections or regularly serves at least 25 individuals. Such term includes:

a. any collection, treatment, storage and distribution facilities under control of the operator of such system and used primarily in connection with such system, and

b. any collection or pretreatment storage facilities not under such control, used primarily in connection with such system.

The definition of a PWS is based on the population served by the system, not by the type of ownership. Navy-operated systems providing water to 25 or more personnel, or serving greater than 15 service connections as described above, are classified as a PWS.

A PWS is either a "community water system" or a "non-community water system." There are two kinds of non-community water system: transient and non-transient.

8-3.16 Sanitary Survey. An on-site review of the water sources, facilities, equipment, operation and maintenance of a PWS for the purpose of evaluating the adequacy of such sources, facilities, equipment, operation and maintenance for producing and distributing safe drinking water.

8-3.17 Service Connection. The opening, including all fittings and appurtenances, at the water main through which water is supplied to the user. (A)

8-3.18 Source Water Assessment Program. Under the SDWA Amendments of 1996, States were required to develop, by Feb. 6, 1999, comprehensive Source Water Assessment Programs (SWAP) that delineate source water protection areas, inventory significant contaminants in these areas, and determine the susceptibility of each public water supply to contamination. (A)

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- A) **8-3.19 Source Water Protection Program.** State efforts to manage identified sources of contamination in a manner that will protect drinking water supplies, based on the SWAP.
- 8-3.20 Supplier of Water.** Any person who owns or operates a PWS.
- A) **8-3.21 Transient, Non-Community Water System (TWS).** A non-community water system that does not regularly serve at least 25 of the same persons over 6 months per year.
- D) **8-3.22 Turbidity.** The measurement of the amount of light scattered by colloidal, suspended matter in liquid. Elevated turbidity in drinking water may be indicative of water quality problems.
- 8-3.23 Underground Injection.** Well injection, meaning 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 (see reference (e)).
- R) **8-3.24 Vulnerability Assessment.** There are two types of Vulnerability Assessments that apply to drinking water: one pertaining to water quality and the other to the drinking water distribution system's susceptibility to damage or contamination during emergency situations.
- A) **8-3.24.1 Vulnerability Assessment For Water Quality.** An evaluation that determines:
- Whether contaminants of concern have been used in a watershed area.
 - The susceptibility of the system's source water to contamination. Susceptibility is based on prior occurrence, environmental persistence, transport of the contaminants, and any wellhead protection program test results.
- 8-3.24.2 Vulnerability Assessment For Emergency Contingency Situations.** An evaluation that:
- Identifies and describes the components of a water system.
 - Assigns characteristics of the disasters of concern.
 - Estimates the effects of these disasters of concern.
 - Estimates the water demand requirement during disasters.
 - Evaluates the ability to meet the required water demand.
 - Identifies critical components in the water supply and distribution system.
 - Evaluates the effects of the disasters of concern on water quality.
 - Evaluates the effects of the disasters of concern on the water supply.
- Further guidance for conducting vulnerability assessments for emergency contingency situations is available in reference (i).
- 8-3.25 Well.** A bored, drilled or driven shaft, or a dug hole, whose depth is greater than the largest surface dimension.
- 8-3.26 Wellhead Protection Program.** A program to protect groundwater that supplies wells and wellfields that contribute drinking water to public water supply systems. Under the SDWA (42 U.S.C. 300h-7), each State was required to prepare and submit to EPA a Wellhead Protection Program by June 19, 1989. Wellhead Protection Programs have six major components: (1) designation of roles and duties of State and local agencies, (2) delineation of wellhead protection areas,

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(3) identification of contaminant sources, (4) development of management approaches for the wellhead area, (5) preparation of contingency plans for replacement water supplies, and (6) planning and siting of new wells.

8-4 Requirements

R) **8-4.1 General.** Installation PWSs shall comply with all applicable Federal, State, and local contaminant limitations and monitoring and enforcement procedures. In the absence of permit or rule requirements, shore installations operating PWSs shall comply with Navy policy.

Federal regulations define a PWS as a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals (see section 8-3.15 for the complete definition). Based on this definition most Navy facilities operate PWSs. The National Primary and Secondary Drinking Water Regulations provide the requirements for PWSs to follow in order to ensure safe and aesthetically pleasing drinking water.

The Navy also operates water systems that are not within the scope of SDWA regulations, including systems that do not meet the Safe Drinking Water regulatory definition of a PWS (e.g., systems having less than 15 service connections and serving less than an average of at least 25 people daily at least 60 days out of each year). SDWA regulations also do not apply to PWSs that:

a. consist only of distribution and storage facilities and do not have any collection and treatment facilities,

b. obtain all their water from but are not owned or operated by PWSs to which the regulations apply,

c. do not sell water to any persons, and

d. are not carriers that convey passengers in interstate commerce.

These non-qualifying drinking water systems must comply with Navy policy as contained in section 8-5 of this chapter.

8-4.2 Sampling and Analysis. As required, PWSs at Navy installations shall conduct initial sampling (and any required subsequent sampling) to characterize each specified contaminant within required timeframes and at the frequencies specified by reference (a) subpart C. There are different monitoring requirements for each contaminant group depending on whether the system uses surface water or ground water and on the number of people served. To determine what type of system you are operating (PWS, CWS, NTNCWS, or TWS), refer to figure 8-1. Installations shall use laboratories certified by EPA or the cognizant State to perform all sample analyses. Except for required entry point samples (i.e., turbidity and fluoride), installations must collect water samples at points that represent the quality of water in the distribution system. Chapter 25 provides Navy policy regarding sampling and testing protocols.

8-4.2.1 Total Trihalomethane (TTHM). A community water system, serving more than 10,000 people, that adds a disinfectant to the drinking water during any part of the treatment process is required to sample and analyze for TTHM. The MCL for TTHM is 0.10 mg/L (see Subpart B of reference (a)).

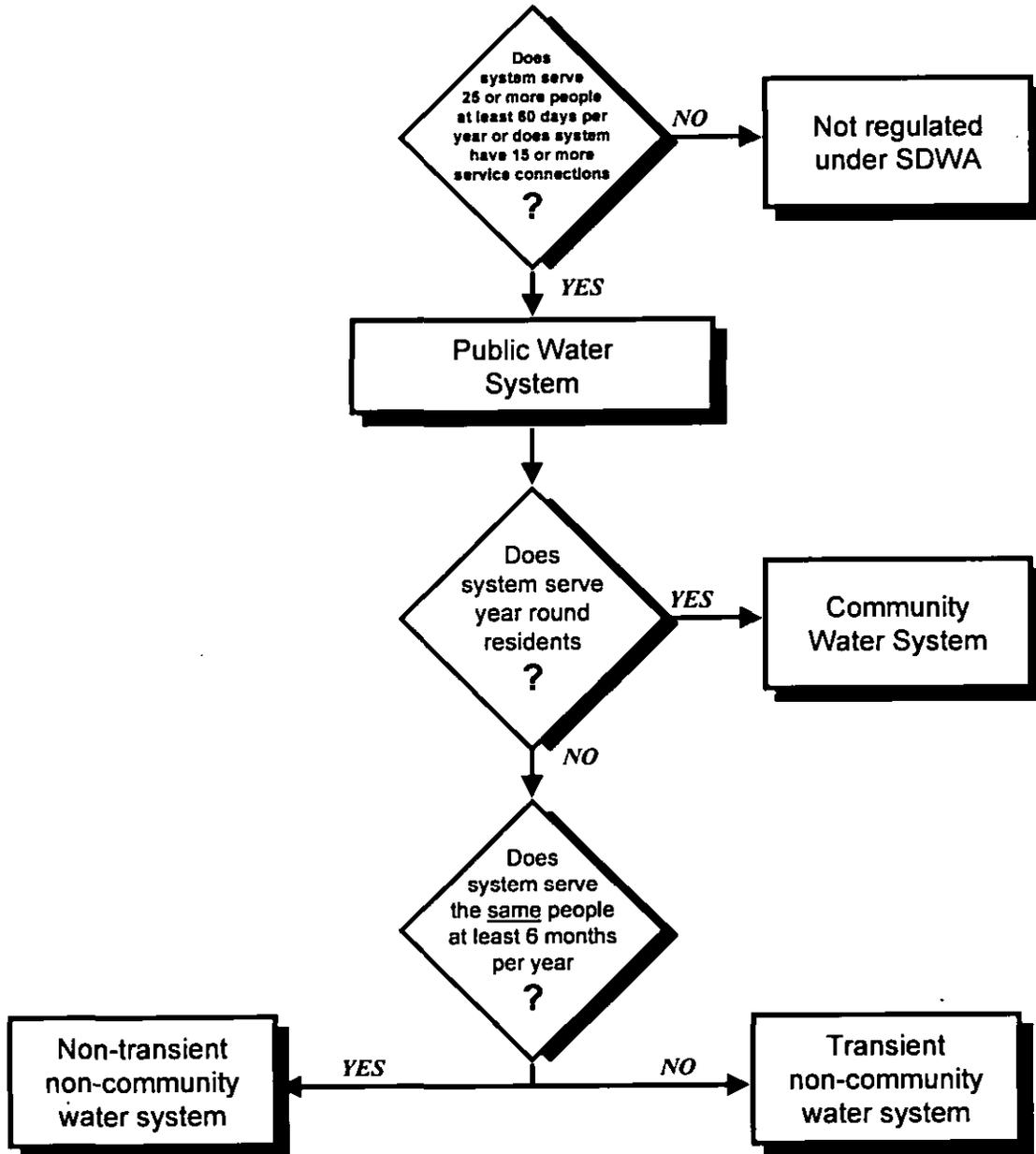
8-4.2.2 Phase I, II, and V Organic Chemicals. A list of MCLs for organic and synthetic organic contaminants can be found in Subpart G of reference (a). These MCLs apply to CWS and NTNCWS. Sampling of Phase I, II, and V organic chemicals depends on the source of the drinking water (ground or surface), type of water

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Water System Classification Flowchart 1,2



- (1) In accordance with Federal laws, State & local laws may be more stringent.
(2) Does not address issue of consecutive water systems which is determined independently by each state.

Figure 8-1

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system (i.e., CWS or NTNCWS), persons served by the water system, and vulnerability of the water system to contamination (see Subpart C of reference (a) and references (j) and (k)). As required by the SDWA Amendments of 1996, EPA will determine every 5 years whether or not to regulate at least five of the contaminants listed as "potential contaminants for regulation." Water systems should be aware of the most current list of contaminants being regulated.

- A) **8-4.2.3 Fluoride and Arsenic.** The MCL established for arsenic, 0.05 mg/L, applies only to community water systems.

The primary MCL, 4.0 mg/L, and secondary MCL, 2.0 mg/L, established for fluoride apply only to community water systems. Special public notices are to be distributed if either the primary MCL or the secondary MCL for fluoride is exceeded (see reference (a) Subpart D and reference (c)).

- A) **8-4.2.4 Secondary Maximum Contaminants.** The National Secondary Drinking Water Standards have been established to control contaminants in drinking water that "primarily affect the aesthetic qualities relating to public acceptance of drinking water." These contaminants include pH, color, and odor. The recommended limits can be found in reference (c). Though these limits are not Federally enforceable, exceeding these standards may create a situation where consumers will seek alternative sources of drinking water.

- R) **8-4.3 Control of Lead and Copper in Drinking Water.** PWSs at Navy installations shall comply with all applicable requirements for the control of lead and copper, as stated in the Federal Lead and Copper Rule (LCR) (see Subpart I of reference (a)). This is to ensure that the levels of the subject metals remain below the levels associated with health risks in treated (finished) water and at the consumer's free flowing tap. Per reference (a) and if approved by the State Regulatory Agency or EPA (whichever has pri-

macy), shore installations may combine their consecutive PWSs monitoring plan as part of the supplier's plan, instead of treating each as a separate system.

The lead action level is exceeded if the concentration of lead in more than 10 percent of tap water samples collected during any monitoring period conducted per reference (a) is greater than 0.015 mg/L (i.e., if the 90th percentile lead level is greater than 0.015 mg/L). The copper action level is exceeded if concentrations of copper in more than 10 percent of tap water samples collected during any monitoring period conducted per reference (a) is greater than 1.3 mg/L (i.e., if the 90th percentile copper level is greater than 1.3 mg/L).

As specified in reference (a), if an action level is exceeded, installation PWSs must collect additional water quality parameter samples. Optimal corrosion control treatment may also be required. Should prescribed treatment options fail to bring lead levels below the action level, lead service lines may have to be replaced.

Water systems that meet the lead and copper action levels during specified monitoring periods may reduce the number and frequency of sampling in accordance with reference (a).

8-4.3.1 Prohibition on Use of Lead Pipe, Solder, and Flux. The use of lead pipe, solder, or flux in the installation or repair of any system for the provision of piped water for human consumption is prohibited. Solders and flux are considered lead free if they contain less than 0.2 percent lead; pipes and fittings are considered lead free if the lead content is less than 8.0 percent (see Subpart E of reference (a)).

8-4.4 Cross-Connection and Backflow Prevention. Cross-connection control programs apply to building interior domestic plumbing systems, fire protection plumbing systems, and exterior water distribution systems. These programs,

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overseen by States with SDWA primacy, help ensure compliance with primary and secondary drinking water standards by establishing policy, procedures, and instructions for installing, repairing, maintaining, inspecting, and testing backflow preventers. Reference (l) provides guidance to Navy installations for complying with this requirement.

8-4.5 Public Notification. The owner or operator of a PWS that fails to comply with an applicable MCL, treatment technique, or that fails to comply with the requirements of any schedule prescribed under a variance or exemption, shall notify persons served by the system. The notices include specific language about the health effects of each contaminant (see Subpart D of reference (a) or contact the regulatory agency for this language). The PWS shall publish notices by newspaper, mail delivery, hand delivery, radio, and television announcements depending upon the type of violation or risk involved.

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8-4.6 Consumer Confidence Reporting. Community Water Systems shall prepare and provide to their consumers annual reports on the quality of the water delivered by the system. The first Federally mandated report to customers is due during or before October 1999 and the second and subsequent reports are due by 1 July. The first report must contain data collected during, or prior to, calendar year 1998. Each report thereafter must contain data collected during, or prior to, the previous calendar year. If a community water system sells water to another community water system, data for the first report had to provided to the purchaser as of 19 April 1999. Annually thereafter, data must be provided by 1 April (or on a date mutually agreed upon by the seller and the purchaser, and specifically included in a contract between the parties.) Each water system shall deliver one copy of the consumer confidence report (CCR) to each of its customers. States may waive the mailing requirement for community water systems serving fewer than 10,000 persons. In such cases, systems would be

required to inform their customers that the report will not be mailed, make the report available on request to the public, and publish the report annually in one or more local newspapers serving the areas in which the systems' customers are located. Alternative delivery methods should be used to make a "good faith" effort to reach consumers who do not receive water bills. A good faith effort would include a mix of methods appropriate to the particular system. In states with primary enforcement authority, utilities must mail a copy of the completed CCR to the State, followed, within 3 months, by a certification that the report has been distributed to customers and that the information in the CCR is correct. CCRs must contain, at minimum, the following:

- a. Information on the source(s) of the water purveyed.
- b. A brief and plainly worded definition of all technical terms as provided in regulations.
- c. If any regulated contaminant is detected in the water purveyed by the community water system, a statement setting forth: (1) the maximum contaminant level goal, (2) the maximum contaminant level, (3) the level of such contaminant in the water system, and (4) for any regulated contaminant for which there has been a violation of the maximum contaminant level during the year covered by the report, a brief statement in plain language regarding the health concerns that resulted in regulation of that contaminant, as provided in the regulations.
- d. Information on compliance with national primary drinking water regulations, as required.
- e. Notice if the system is operating under a variance or exemption and the basis on which the variance or exemption was granted.
- f. Information on the levels of unregulated contaminants for which monitoring is required

under the SDWA (Title 40 CFR, Part 141.40), including levels of Cryptosporidium and radon where States determine they may be found.

g. A statement that the presence of contaminants in drinking water does not necessarily indicate that the drinking water poses a health risk and that more information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water hotline.

h. Notice of opportunities for public participation.

i. Additional information required by the EPA Administrator.

j. Required language regarding vulnerable populations.

k. Additional information required by the primacy States.

8-4.7 Surface Water Treatment Rule (SWTR). The SWTR consists of treatment technique requirements that apply to all PWSs using surface water and those using ground water under the direct influence (UDI) of surface water (see reference (a) Subpart H and reference (m)). The rule requires that these systems properly filter the water, unless they meet certain, strict criteria. The rule also requires that these systems disinfect the water. There are no exceptions from the disinfection requirement.

PWSs using a surface water source or ground water source that is UDI must be operated by qualified personnel who meet the requirements specified by the State. Such requirements may include training, certification, and licensing.

8-4.8 Source Water Assessment and Source Water Protection Programs. The SDWA Amendments of 1996 required all States to establish Source Water Assessment Programs (SWAP) and submit plans to the Environmental Protection

Agency (EPA) by February 6, 1999 detailing how they would delineate source water protection areas, inventory significant contaminants in these areas, and determine the susceptibility of each public water supply to contamination. The States have up to 2 years after EPA program approval, or with an approved time extension, up to 3½ years, to complete the source water assessments.

8-5 Navy Policy

8-5.1 General. Navy installations operating PWSs shall:

a. Comply with all applicable Federal, State, and local safe drinking water regulations, including monitoring and sampling, training and certification of workers, and public notification requirements.

b. Control and eliminate the danger of lead exposure from drinking water supplies at shore facilities.

c. Maximize the use of municipal or regional drinking water supplies, including privatization of Navy systems wherever practicable.

d. Comply with all applicable Federal, State, and local source water/watershed protection programs.

e. Promote water conservation.

f. Update water distribution system maps at least every 5 years.

g. Develop and implement Underground Injection Control Programs and Wellhead Protection Programs.

h. Maintain records showing monthly operating reports for at least 5 years, and records of bacteriological results for not less than 5 years, and chemical results for not less than 10 years.

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Note: Lead and copper monitoring results must be kept for at least 12 years.

- A) i. Develop and implement a cross-connection control program. Retain cross connection inspection and maintenance records for not less than 5 years.
- A) j. Apply, in writing, for exemption from permitting requirements, as appropriate.
- R) **8-5.2 Water System Monitoring**

8-5.2.1 Permitted PWS Monitoring. Every shore installation that owns and/or operates a permitted PWS shall develop and implement a Drinking Water System Monitoring Program that complies with the requirements of its permit. However, many installations present a unique set of challenges for maintaining water quality control. Due to physical changes at the installations, changes in mission, and in occupants, as well as the needs of the various users, often there is too much storage, storage that is locked out of the system, oversized transmission lines, valves that are closed, etc. This is true of both permitted and non-permitted systems. These factors must be taken into account when developing water quality monitoring programs.

- A) There are different monitoring requirements for each contaminant group depending on whether the system uses surface water or ground water and on the number of people served. Reference (a) Subpart C provides the complete Federal requirements for monitoring, with references (j) and (k) providing easy to read guidance for Small Water Systems. Navy guidance can also be found in reference (n) and BUMED recommendations in reference (o).

A) **8-5.2.2 Non-Permitted PWS Monitoring**

a. All Shore installations that own and/or operate a non-permitted PWS, whether primary or

consecutive, shall perform bacteriological monitoring as specified in the New Coliform Rule (reference (a) subpart C). Sampling and testing shall comply with chapter 25 requirements.

b. Shore Installations that own and/or operate a non-permitted consecutive PWS that purchases treated water from a primary water purveyor shall review the monitoring reports of analyses required by the primary water purveyor's permit at least once each year. For each NPDWS parameter within the monitoring report that exceeds 50 percent of its respective MCL, the affected shore installation shall monitor from a representative point in the installation's system for those parameters that can be changed or influenced by the distribution system, such as lead, copper, asbestos, coliform, and disinfection by-products (trihalomethanes and haloacetic acids), at a frequency equal to that of the primary water purveyor. This requirement is to ensure that the water quality has not degraded to above the MCL for that parameter within the distribution system.

Despite the minimum monitoring requirements for non-permitted systems, it should be recognized that, for any given installation that falls into this category, the distribution system may well contain any number of elements that can accelerate water quality degradation within the installation.

For more extensive guidance regarding monitoring requirements of consecutive water systems, see reference (p).

8-5.2.3 Non-PWS Monitoring. Some shore installations own and/or operate water systems that do not fall under the definition of a PWS (see definition in section 8-3.15). If these systems purchase treated water from a primary water purveyor, these systems shall follow the monitoring requirements of section 8-5.2.2. Non-PWSs that collect, treat, store and distribute their own water source shall develop a Drinking Water System Monitoring Program that addresses at a minimum

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total coliforms and disinfectant residuals. Installations shall arrange record keeping, reporting, and monitoring scheduling in consultation with the system's major claimant and the appropriate COMNAVFACENGCOM EFD/EFA.

- A) **8-5.2.4 Alternative / Innovative Monitoring Approaches To Meeting SDWA Monitoring Requirements.** This section is applicable to non-permitted PWSs and non-PWSs at small facilities that purchase treated water from a PWS that is in full compliance with the SDWA. This includes large bases where the main distribution system is owned/operated by a non-Federal entity but the building or functional area distribution system(s) is owned and operated by the Navy.

These facilities may request, from CNO (N45), via the major claimant, alternative monitoring requirements. The minimum requirements for approval are as follows:

a. The facility will be covered by a written monitoring plan.

b. The plan shall be reviewed and approved by the facility's Engineering Field Division or Activity, BUMED, and their major claimant prior to submission to CNO (N45) for approval.

c. The plan shall be based on a Sanitary Engineering Survey of the facilities it covers and shall specifically address attainment and maintenance of any public health and/or water quality issues outlined in the survey report.

d. The plan and its implementation shall be regularly reviewed under the Environmental Quality Assessment (EQA) process as detailed in the Monitoring Plan.

e. The plan shall be updated when recommended by the EQA process.

f. The plan shall document compliance with sections 8-5.3.1 (Lead in Priority Areas and Water Coolers), 8-5.3.2 (Lead and Copper in Consecutive Water Systems), and 8-5.4 (Cross-Connection).

g. The plan shall require and document annual review of the primary (and any secondary) water purveyor monitoring for drinking water standard parameters. Should this review indicate that the primary and/or secondary purveyor is not in full compliance with the SDWA, including NPDWS parameters, the plan shall require and document:

(1) implementation of section 8-5.2.2 monitoring requirements, and

(2) notification of their major claimant and CNO (N45) that the waiver is no longer applicable.

h. The plan shall ensure adequate record keeping.

8-5.3 Lead and Copper in Drinking Water

8-5.3.1 Lead in Priority Areas and Water Coolers. The following procedures are not to be confused with the sampling and monitoring requirements of the Lead and Copper Rule (40 CFR 141.80). The following must be accomplished in addition to the EPA required Lead and Copper Rule monitoring. (R)

a. Navy installations shall sample, test, and maintain resultant records for all drinking water outlets in the following priority areas to determine the presence of lead: primary and secondary schools, day care centers, hospital pediatric wards, maternity wards, and food preparation areas located on medical facilities. They shall screen all drinking water outlets in these locations using reference (q) and (r) protocols. If initial screening results exceed 20 ppb in 250-mL samples, installations shall use full protocol sampling

on affected outlets. If full protocol sampling exceeds 20 ppb, they shall secure the affected water outlets from service and institute permanent corrective measures.

b. If it has not been done previously, installations shall sample, test, and maintain resultant records for water from drinking water coolers. Newly installed drinking water coolers shall be sampled and tested to ensure lead levels are below 20 ppb. Installations shall sample and test per references (q) and (r).

c. A copy of all test results shall be made available for all schools, day care centers, and medical facilities where testing has been conducted. A notice of availability of the testing results shall be sent to the parents of children attending the affected school. Furthermore, Navy installations shall maintain testing results for water coolers at all other types of facilities.

R) **8-5.3.2 Lead and Copper in Water Systems**

a. Installations shall determine the susceptibility of their drinking water to lead and copper contamination above the action levels as contained in the Lead and Copper Rule. This requirement applies to both primary and consecutive Navy systems. Installations shall sample Navy consecutive systems that were not included in the primary system sampling pool (at the time the primary system performed Lead and Copper Rule monitoring) for lead and copper. All installations shall ensure the number and location of samples are sufficient to be representative of the system and in conformance with the Lead and Copper Rule.

NOTE:

More than 10 percent of the samples must exceed the limit to reach the action level. If 10 percent or less of the samples exceed the limits, the activity is still in

compliance and no corrective action is required.

b. Installations shall retain test results for a minimum of 12 years. They shall make public notification, under reference (a), coordinated via the appropriate activity authorities (Occupational Safety and Health, Public Affairs, and Medical), to all consumers whose water tests above the current action level.

c. Navy installations shall coordinate mitigation measures to reduce or eliminate the source of high lead levels with the water supplier, as appropriate. Navy installations with wells or water systems that treat their own water shall implement mitigation procedures on their own.

d. Navy installations operating consecutive water systems may seek waivers from CNO (N45) for this monitoring requirement if they can document that their water purveyor passed its Lead and Copper Rule monitoring and that the water being supplied to them is non-corrosive.

8-5.4 Cross-Connection Control and Backflow Prevention Program Implementation. Every shore installation that owns or operates a PWS shall develop and implement a Cross-Connection Control and Backflow Prevention Program. At a minimum, the cross-connection control and backflow prevention program shall include procedures and mechanisms to:

(R)

a. Find and eliminate existing cross-connections and prevent new cross-connections.

b. When cross-connections cannot be eliminated, install, inspect, and test backflow preventers.

c. Keep an inventory of all existing backflow preventers.

d. Certify all backflow preventers as required by the regulatory agency. If there is no

regulatory requirement, then all backflow preventers should be certified at least once every 6 months for high hazards and once every 12 months for low hazards by a certified inspector.

e. Promptly repair or replace defective backflow preventers. Retain cross connection and backflow preventer inspection and maintenance records for at least 5 years.

Reference (l) provides guidance to Navy installations for complying with this requirement.

R) **8-5.5 Noncompliance Monitoring and Reporting.** Installations operating PWSs must report any failure to comply with reference (a), including a failure to comply with monitoring requirements, variances, or exemptions, to the State or EPA regional office (as applicable). In addition, commands shall notify all persons served by the system using the method required by reference (a).

A) **8-5.6 Consumer Confidence Reporting.** Operators of Navy Community Water Systems shall comply with all the requirements of the CCR. See section 8-4.6 for more details on CCR requirements.

R) **8-5.7 Surface Water Treatment.** Installations operating PWSs that receive water from surface water or groundwater under the direct influence of surface water shall comply with all Federal, State, and local regulatory requirements regarding surface water treatment (see reference (a) Subpart H and reference (m)). Further information can be found in references (n) and (s).

A) **8-5.8 Source Water Assessment and Source Water Protection Program.** Navy Regional Environmental Coordinators shall coordinate with States, when necessary, to provide information on existing sources of contamination associated with Navy activities within delineated source water protection areas. Navy installations shall coordinate with States to conduct source water assess-

ments and implement source water protection programs, as appropriate. Reference (t) provides guidance to installations for complying with this requirement.

8-5.9 Protection of Underground Sources of Drinking Water. Navy shore installations shall protect underground sources of drinking water from contamination. (A)

8-5.9.1 Underground Injection Control (UIC) Programs. EPA requires States to implement UIC Programs. When States fail to implement such programs, EPA permit-by-rule requirements apply. Under these requirements, installations must implement a program that includes: (R)

a. Establishing and maintaining an underground injection well inventory.

b. Procedures for proper well closure.

There are five classes of UIC wells. The broadest category is Class V, which includes things such as French drains and some septic systems. For more information see references (d), (e) and (u).

8-5.9.2 Wellhead Protection. Installations that receive drinking water from wells must take measures to minimize contamination. These installations shall establish a wellhead protection program that meets applicable State or local wellhead protection requirements or, in the absence of such requirements, include the following as a minimum: (A)

a. Identification of any contaminants of concern.

b. Regular monitoring (including sampling and testing for contaminants of concern).

c. Procedures to mitigate contamination should it occur.

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R) **8-5.10 Operation and Maintenance.** Installations that own and/or operate water systems (public and non-public, permitted and non-permitted) shall develop and implement an operation and maintenance program applicable to the system. Minimum requirements of the program are to meet the requirements of reference (a), in particular 40 CFR 141 paragraph 141.63(d)(3), and include the proper implementation and documentation of:

- a. Emergency and preventive maintenance.
- b. System disinfection after maintenance work is performed.
- c. Scheduled flushing of the system.
- d. Reduction of water quality problems (as needed).
- e. Implementation and documentation of a valve exercise and maintenance program.
- f. Proper operation and maintenance of storage tanks.
- g. Maintenance of current water distribution maps.
- h. Documentation of location and dates of water line breakage.
- i. Implementation of Utility System Assessments (USAs). Ensure that USAs are accomplished at least once every 6 years by NAVFACENGCOCOM EFDs as required by chapter 2 in paragraph 220 (d)(2)(d) of enclosure (1) to reference (v).

References (w), (x), and (s) provide additional guidance on the operation and maintenance of water systems.

A) **8.5.11 Construction Material Surveys.** Community Water Systems at Navy installations

shall comply with the requirements of reference (a) [40 CFR 141.42(d)] to perform a piping distribution system construction materials survey to identify construction materials having the potential to contribute contaminants to the drinking water, including lead, copper and asbestos. Community water systems at Navy installations shall comply with the requirements of reference (a) [40 CFR 141.23(b)] to monitor for asbestos for those systems determined from the Construction Material Survey to be vulnerable to corrosion of asbestos cement pipe.

8-5.12 Sanitary Surveys. In many instances, a State may require treatment plants or PWSs that are experiencing compliance problems, particularly with microbial pathogens, to perform a sanitary survey. These surveys will usually be performed by the State regulatory agency. In the absence of this requirement, a sanitary survey shall be performed by the Navy installation every 3 years. (A

8-5.12.1 Survey Requirements. For treatment plants, the survey should include the following:

- a. Verification and reevaluation of vulnerability assessments, watershed protection programs, and wellhead protection programs, as applicable.
- b. Examination of the source water physical components and condition.
- c. Schematic diagrams of the treatment process and examination and evaluation of the adequacy and appropriateness of all elements of the current treatment process, including an assessment of operational flows versus treatment process rated capacity and, where appropriate, CT assessment (disinfection contact time).
- d. Examination and evaluation of the operation and maintenance of the treatment facility including the condition and reliability of equipment, operator qualifications, use of approved

chemicals, record keeping, process control, and safety programs.

e. Evaluation of the ability of the treatment plant to respond to changes in raw water fluctuations.

f. Evaluation of the treatment plant's emergency power supply and security measures.

8-5.12.2 Distribution System Sanitary Survey Review. Concerning the distribution system, the sanitary survey should include a review of the operations and maintenance program to ensure attention to the following areas of concern:

a. Elimination of unneeded or excess storage.

b. Adequate turnover of storage tanks.

c. Storage tank cleaning and maintenance.

d. Adequate disinfection practices during all main repairs and replacement.

e. If applicable, an effective corrosion control program.

f. A comprehensive cross connection control program.

g. An aggressive valve and hydrant exercise program.

h. An adequate water quality monitoring program that achieves compliance with the appropriate regulations and provides for effective water quality control.

i. An adequate flushing program, preferably a Unidirectional Flushing (UDF) program that is implemented on a yearly basis.

For more information on sanitary surveys, see reference (y).

8-5.13 Reselling of Water. Installations shall follow their State's definition of reselling water. If the State does not have a definition, a Navy installation resells water if it bills a non-Navy customer separately for water the customer uses (as opposed to calculating an estimated water usage and setting rents to reflect water usage as one, among many, costs).

8-5.14 Record Keeping. In the absence of more stringent Federal, State, or local record keeping requirements, shore installations shall maintain records as follows:

a. Bacteriological Results - 5 years.

b. Chemical Results - 10 years.

c. Lead/Copper testing results - 12 years.

d. Actions Taken to Correct Violations- 3 years after acting on the particular violation involved.

e. Sanitary Survey Reports - 10 years.

f. Variance or Exemption Records - 5 years following the expiration of such variance or exemption.

g. Water Treatment plant and/or Distribution System Operating Records - 3 years.

h. Cross Connection Inspection Records - 5 years.

i. Consumer Confidence Reports - 5 years.

8-5.15 Water Conservation. Water is a limited but recyclable resource. Navy installations shall, when economically practicable, implement water conservation programs to include:

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(A)

(R)

a. Installation of water efficient industrial equipment and recycling of industrial process water.

b. Low flow showers, toilets, faucets and other devices where applicable.

c. Timely repairs of water service line leaks and main breaks.

d. Routine leak detection surveys.

See references (g) and (h) for additional guidance.

A) **8-5.16 Exemption from Permitting.** Navy installations that, per reference (a) criteria, require permits, but believe they qualify for exemption from PWS permitting shall apply, in writing, to the regulatory agency with SDWA primacy for an exemption.

R) **8-5.17 Training**

8-5.17.1 General

a. Activity commanders shall ensure that personnel involved in operations that affect drinking water quality receive general environmental awareness training as specified in chapter 24 of this instruction and receive, as appropriate, training in potable water systems requirements.

b. NAVFACENGCOCOM, Regional Environmental Coordinator environmental personnel, and shore activity technical, legal, and environmental staff shall receive general environmental awareness training specified in chapter 24 of this instruction and more extensive training in SDWA compliance to include applicable regulations and drinking water systems requirements.

R) **8-5.17.2 Water Treatment and Distribution System Operators.** Installations shall ensure their water treatment and distribution system operators are trained and certified per applicable

Federal, State, and local regulations. Where training is not specified by the applicable regulations, installations shall include the following subject areas in the training plan(s) of the individual(s) concerned:

a. Basic water plant and/or distribution system design.

b. Basic water plant and/or distribution system operation.

c. Basic maintenance and calibration of plant controls and equipment.

d. Water plant and/or distribution systems treatment principles, including chemical storage and handling.

e. Water sampling and analysis.

f. Water plant and/or distribution system documentation and reporting requirements.

g. Cross-connection control and backflow prevention.

8-5.18 Fines and Penalties. The 1996 amendments to the SDWA waive sovereign immunity for the payment of fines and penalties imposed by State or local agencies for violations. In addition, EPA may assess administrative penalties of up to \$25,000 per day per violation. Citizens may also sue for judicial review of EPA administrative penalties or if a Federal agency has not paid an administrative penalty within 18 months of the date it was assessed through a final order.

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8-6 Responsibilities

8-6.1 CNO (N45) shall:

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a. Grant, as appropriate and if requested, alternative monitoring requirements.

b. Grant, as appropriate and if requested, waivers from Lead and Copper Rule monitoring for consecutive water systems.

R) **8-6.2 COMNAVFACENGCOM shall**

a. Assist CNO (N45) in providing Navy-wide guidance regarding matters relating to safe drinking water and water conservation.

b. Provide technical, engineering, contracting, and legal assistance, upon request, to major claimants and installations in carrying out their responsibilities under this chapter.

c. Maintain a list of Navy PWSs and a record of violations of SDWA requirements.

A) d. Conduct Utility System Assessment (USA) of the Drinking Water Systems at least once every 6 years in accordance with chapter 2, paragraph 220 (d)(2)(d) of enclosure (1) to reference (v).

R) **8-6.3 Chief, Bureau of Medicine (CHBUMED) shall**

a. Establish and publish appropriate standards of water quality and monitoring requirements for Navy PWSs afloat and overseas.

b. Provide health-related advice to Navy commands in carrying out their responsibilities for drinking water quality and distribution.

c. Coordinate with COMNAVFACENGCOM to address health and safety for all lead mitigation measures considered by COMNAVFACENGCOM, including chemical additions used to reduce lead in drinking water.

A) **8-6.4 Regional Environmental Coordinators shall:**

a. Provide coordination and assistance to installations within the applicable region regarding implementation of this chapter.

b. Assist claimants with resolution of issues and communication with CNO (N45) and Federal, State, and local regulators.

c. Assist States conducting source water assessments, when necessary, by providing information on existing sources of contamination associated with Navy activities within delineated source water protection areas.

8-6.5 Major claimants shall (R)

a. Implement the SDWA program requirements at their shore installations.

b. Plan, program, budget, and provide funding for current and future requirements under the SDWA and Navy policy.

8-6.6 Commanding Officers (COs) Or Officers in Charge (OICs) of shore installations shall (R)

a. Budget sufficient resources for operation, maintenance, and repair of PWSs in compliance with applicable standards, including sampling and monitoring, reporting, record keeping, and other substantive and administrative requirements, including Navy requirements.

b. Ensure applications for applicable Federal, State, and/or local permits are filed and that installations comply with EPA, State, and local drinking water requirements. This provision applies only to COs/OICs that own and/or operate PWSs.

c. Ensure contracts between the Navy and water purveyors require the purveyor to supply the results of all permit required NPDWS monitoring that was performed on raw and treated water that serves the applicable Navy installation

and/or activity at least once a year. This provision applies only to COs/OICs that own and/or operate PWSs.

d. Review the various uses of water at their activities to ensure that all economically practicable water conservation measures are taken.

e. Ensure proper training of all personnel who collect samples. Ensure that only certified and/or accredited laboratories perform analyses in compliance with chapter 25.

f. Provide resources (tuition, travel, and per diem) for training operators of PWSs and ensure compliance with applicable State certification requirements.

g. Identify and submit compliance projects per chapter 1, for environmental requirements.

h. Ensure the appropriate monitoring plan is in place and followed. This includes, as appropriate, *developing and implementing a plan for working with the water purveyor to include the installation in the purveyor's sampling pool for required monitoring and to develop subsequent mitigation plans as necessary.*

i. Based on monitoring results, as needed, develop and implement appropriate mitigation programs.

j. Use lead free materials for any plumbing repairs made to activity drinking water systems.

k. Establish and implement an operation and maintenance program at each activity. This applies to both primary and consecutive water supplies. At a minimum, the program must ensure

proper emergency and preventive maintenance, proper system disinfection (after maintenance work is performed), *scheduled flushing of the distribution system, and a valve exercise and maintenance program.*

l. Establish and implement Cross-connection and Backflow Prevention Programs at each activity.

m. Apply, in writing, for exemption from SDWA permitting requirements when required.

n. Report noncompliance with any National Primary Drinking Water Regulation (including failure to comply with monitoring requirements, variances, or exemptions) in accordance with chapter 1, section 1-2.9.

o. Ensure water systems that do not meet the definition of a PWS have an appropriate program in place to ensure adequate water quality.

p. *Develop and distribute consumer confidence reports, if required.*

q. Coordinate with the State, when necessary, to conduct source water assessments and implement source water protection programs.

r. Protect underground sources of drinking water from contamination. Establish and implement an underground injection control program and wellhead protection program, if necessary.

s. Conduct sanitary surveys every 3 years in the absence of State sanitary surveys.

t. Develop and distribute consumer confidence reports as required by section 8-5.6.