

CHAPTER 72-4, WATER MANAGEMENT

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72-4.1 Purpose

This chapter establishes guidelines for Water Management Plans for Indian Health Service (IHS) facilities to meet requirements of Executive Order (EO) 13423; *Strengthening Federal Environmental, Energy, and Transportation Management*; the Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (MOU); The Presidential Memorandum on Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds; The Energy Independence and Security Act of 2007; The Energy Policy Act of 2005 (EPAct 2005); and The Energy Policy Act of 1992 (EPAct 1992). These regulations, laws, and directives require Federal agencies to implement life-cycle cost-effective sustainability measures, including water conservation.

Many IHS facilities do not pay for water. However, prudent management of resources is everyone's responsibility and is a good management practice.

72-4.2 Scope

This chapter specifies goals and sets forth procedures required to effectively manage IHS water consumption. The guidelines in this Chapter apply only to facilities that are both owned and operated by the IHS, including quarters.

72-4.3 Introduction

Water management is the efficient and effective use of water and is one component of the IHS commitment to environmental sustainability in healthcare facilities design, construction, and operation. The goal of a water management plan is to reduce potable water consumption and associated energy use through life-cycle cost-effective measures. This chapter integrates regulatory requirements with the values of the

IHS and the American Indian/Alaska Native community as they relate to conservation of resources and the delivery of comprehensive healthcare services.

This chapter covers both indoor and outdoor water use. For the purposes of this chapter, indoor water is defined as water used for potable water purposes and for processes occurring within a building (e.g., laboratory processes, sinks, toilets, etc.). Indoor water uses also include losses associated with hydronic or steam systems that heat and cool a building. Outdoor water is defined as water intended for systems occurring outside of, or separate from, a building and include irrigation systems. The four primary uses of water in facilities are boilers, cooling towers, process equipment, and what is normally considered domestic use (showers, faucets, toilets, etc.).

72-4.4 Law and Policy

Both EO 13423 and EPAct 1992 require that Federal agencies implement all cost-effective energy and water conservation measures in their facilities.

- Section 2(c) of EO 13423 requires that IHS, "beginning in FY 2008, reduce water consumption intensity, relative to the baseline of the agency's water consumption in FY 2007, through life-cycle cost-effective measures by 2 percent annually through the end of FY 2015 or 16 percent by the end of FY 2015."
- EPAct 1992 requires that federal agencies implement life-cycle cost-effective water conservation measures with payback periods of 10 years or less. This means that IHS must implement water conservation measures or products that take no more than 10 years to recover costs through savings on water bills.

Guiding Principle #3 from the Federal Leadership in High Performance and Sustainable Buildings MOU requires the following for new buildings and major renovations of existing buildings:

- Indoor Water - After ensuring that the fixture performance requirements in the Energy Policy Act of 1992 are met, managers will employ strategies that, in aggregate, use a minimum of 20 percent less potable water than the indoor water use baseline calculated for the building.
- Outdoor Water - Use water efficient landscape and irrigation strategies, including water reuse and recycling, to reduce outdoor potable water consumption by a minimum of 50 percent over that consumed by conventional means (plant species and plant densities). Employ design and construction strategies that reduce storm water runoff and polluted site water runoff. **Note: This is also mandated by the Presidential Memorandum on Environmentally and Economically**

Beneficial Practices on Federal Landscaped Grounds which, together with implementing guidance, is available on the DFO Web site.

The Energy Independence and Security Act of 2007 requires that a comprehensive energy and water audit be performed on approximately 25 percent of applicable facilities annually in a manner that ensures that an evaluation of each such facility is completed at least once every 4 years.

In accordance with Department of Energy requirements, 80 percent of applicable (see Standards below) existing IHS facilities must have implemented water management plans by 2010.

IHS is required to report water consumption and related information to the Department annually. The Department in turn reports the information to the Department of Energy.

72-4.5 Guidelines

Below is specific guidance for complying with EO and EPAct requirements:

- A baseline (FY-2007) shall be established to compare water use.
- All Installations/sites must have at least a site-level water meter. However, metering each building is preferred.
- All new buildings of 2,300 GSM or greater must have their own building-level water meter if they are served with water, even if the building is part of a campus with site-level metering.
- All other buildings should have building-level water meters where it is economically beneficial (meaning useful for overall management, consumption reduction, etc.).
- Installations with a total building area of 8400 square meters or above will develop and implement water management plans that are integrated into existing operations and preventive maintenance and replacement schedules.

IHS facilities designed and constructed after the issuance date of this chapter will incorporate water management principles and practices from project inception through operation.

Where applicable, purchase only WaterSense¹ labeled products (toilets, bathroom sink faucets, showerheads, weather- or sensor-based

¹ EPA's WaterSense program is a voluntary public-private partnership that identifies and promotes high-performance products and programs that help preserve the nation's water supply. More information can be found at <http://www.epa.gov/watersense/>.

irrigation control technologies, etc.) and choose irrigation contractors who are certified through a WaterSense labeled program.

All Installations should use indigenous and low-maintenance plants that are tolerant of the site's existing soils and climate without supplemental irrigation or fertilization once established. American Indian/Alaska Native and cultural aspects should be taken into account when designing an indigenous and native vegetation landscape. Grounds and landscape watering shall not be provided from potable domestic water (temporary use is allowed until established). Where an irrigation or sprinkler system is provided, it must use reclaimed water, wastewater, grey water, runoff, etc.

Area Offices will annually report their progress toward implementing the Installation water management plans. See 72-2.6 (C), "Reporting." This information will be used in the IHS annual report to DHHS on water consumption.

Installations should focus resources on opportunities with the greatest payback and should employ water-related Best Management Practices (BMP's) whether or not a water management plan is required.

72-4.6 Procedures

A. Establishing Baseline Water Use

To measure the impact of future water efficiency improvements, baseline water use data must be established. Each Installation should establish, and as needed adjust, their baseline water use in accordance with the Department of Energy Federal Energy Management Program (FEMP) publication, *Establishing Baseline and Meeting Water Conservation Goals of EO 13423 (Jan 2008 Final)* which is available on the DFO Web page:
<http://www.dfo.ihs.gov/index.cfm?page=waterdoc>.

B. Installation Water Management Plans

All Installations with a total building area of 8400 square meters or above shall develop, in accordance with Appendix 1, a Water Management Plan to reduce potable water use by implementing life-cycle cost-effective water efficiency programs. Installation Water Management Plans should follow FEMP Guidance given in *BMP #1 - Water Management Planning* found in the FEMP document titled *Water-Related Best Management Practices* available on the DFO Web page: <http://www.dfo.ihs.gov/index.cfm?page=waterdoc>.

Water Management Plans shall incorporate at least four of the Best Management Practices as described in the FEMP Guideline and will be considered fully implemented when:

1. Water Management Plans have been developed/ revised and incorporated into existing facility planning processes and operating plans; and
2. Applicable Best Management Practices and O&M options have been put into practice, and Retrofit/Replacement Options (as defined/identified in the Installation's plan) have been reviewed within the last two years and those appropriate for implementation have been identified; and
3. Applicable life-cycle cost-effective Retrofit/Replacement Options (as defined in the Installation's plan) have been implemented.

The written plan shall be submitted to the respective Area Office and must be implemented (as defined above) by September 30, 2010.

C. Reporting

Installations will, on an annual basis:

- Review their Water Management Plan, and revise as necessary;
- Update water-related fields in the HFDS Energy tab.

Area Offices will annually report their progress toward implementing the Installation water management plans by updating the HFDS. The information will be provided in the Annual Energy Report data. The progress reports shall incorporate the following information:

- Utilization of alternative financing mechanisms including Energy Savings Performance Contracts (ESPC) and Utility Energy Services Contracts (UESC);
- Use of EnergySTAR® and other energy efficient water-related products, e.g., dishwashers, water heaters, water coolers, air conditioners, etc.;
- New building design or existing building modifications that specifically address water management;
- Water efficiency improvements in facility operation.

NOTE: No separate report, beyond updating the HFDS, needs to be prepared for this section. Headquarters will modify the data system to incorporate data needs and all required information will be gathered in HFDS as part of the annual reporting process.

Headquarters will consolidate and report applicable data to the Department as part of the IHS Annual Energy Report.

D. Audits

Audits will help determine how well the Installation has complied with development and implementation requirements of their specific Water Management Plan.

On an annual basis, each Area Office shall perform comprehensive audits of approximately 25 percent of facilities in a manner that ensures that an evaluation of each facility is completed at least once every 4 years. The goal of the audit is to ensure Installations are on track to meet their water conservation goals.

A summary of water use surveys and distribution system audits will also be included in the IHS Annual Energy Report submitted to the Department.

E. Responsibilities

1. Installation

Each Installation is responsible for completing the following as applicable:

- Establishing a Water Use Baseline for their Installation. It is desirable to establish a baseline for each building;
- Completing a water use survey and distribution system audit for each building;
- For Installations with a total building area of 8400 square meters or above, developing and documenting an Installation Water Management Plan using Appendix A;
- Implementing the Installation Water Management Plan; and
- Install appropriate meters where required.

2. Area Office

Each Area Office is responsible for:

- Assisting Installations in their responsibilities;
- Establishing a schedule for performing a comprehensive energy and water audits on all IHS owned and operated Installations;
- Performing audits on 25 percent of all IHS owned and operated Installations each year beginning in FY-2009;
- Reporting the results of water management audits to IHS HQ;
- Ensuring completion and submission to Headquarters of baseline data; and
- Updating the HFDS.

3. IHS Headquarters Division of Facilities Operations
DFO is responsible for:
- Modifying the data system to incorporate data needs;
 - Reporting water consumption baselines; and
 - Including a summary of water management audits in the IHS Annual Energy Report.

F. Information and Training

Information to assist in establishing baseline usage information and developing Water Management Plans are posted on the DFO Web page, <http://www.dfo.ihs.gov/index.cfm?page=waterdoc>.

Appendix 1 Installation Water Management Plan

A successful water management program starts with development of a comprehensive water management plan. The plan should provide clear information about how a facility uses its water, from the time it is piped into the facility through its ultimate disposal. A sample Water Management Plan is available on the DFO Web page, <http://www.dfo.ihs.gov/index.cfm?page=waterdoc>.

Following are steps to be taken to develop the Plan:

1. Establish Water Use Baseline - FY-2007 data
 - a. Obtain water use data - actual meter data if available. If actual data are not available, the Installation should follow guidelines established by the Department of Energy and available on the DFO Web page, <http://www.dfo.ihs.gov/index.cfm?page=waterdoc>. This information, including baseline data, should be submitted to the appropriate Area Office with sufficient time to allow for review and consolidation of the data.
 - b. Facilities with no metering system for measuring water use must also provide a plan and cost estimate for meter installation. This plan and cost estimate is to be provided with the water use estimate. Metering must be in accordance with the most recent IHS Metering Implementation Plan.
 - c. When facilities are added or deleted the baseline should be adjusted as appropriate and reported in the appropriate field(s) in HFDS.
2. Perform water use surveys and distribution system audits.
 - a. An audit should be performed at each Installation.
 - b. Identify where and how water is used throughout the Installation.
 - c. A physical walkthrough of the facilities must be performed to identify all sources of water use, consumption, and loss.
 - d. Monitor trends in monthly water use and investigate and resolve changes that are not understood or expected.
3. Develop an Installation-specific Water Management Plan.

Each applicable Installation should develop a water management plan based upon results of the water use survey. The Plan shall be in writing and address, at a minimum, the following requirements:

a. Operation and Maintenance Recommendations.

These recommendations should address findings of the water use surveys and distribution system audits and should incorporate as many of the following FEMP Best Management Practices (BMP's) as practicable but must incorporate not less than four:

- BMP #1 - Water Management Planning
- BMP #2 - Information and Education Programs
- BMP #3 - Distribution System Audits, Leak Detection and Repair
- BMP #4 - Water-Efficient Landscaping
- BMP #5 - Water-Efficient Irrigation
- BMP #6 - Toilets and Urinals
- BMP #7 - Faucets and Showerheads
- BMP #8 - Boiler/Steam Systems
- BMP #9 - Single-Pass Cooling Equipment
- BMP #10 - Cooling Tower Management
- BMP #11 - Commercial Kitchen Equipment
- BMP #12 - Laboratory/Medical Equipment
- BMP #13 - Other Water Use
- BMP #14 - Alternate Water Sources

Complete documentation of the FEMP Best Management Practices is available on the DFO Web page,
<http://www.dfo.ihs.gov/index.cfm?page=waterdoc>.

b. Utility Information.

At a minimum, appropriate utility information should include the following:

- Contact information for all water and wastewater utilities;
- Current rate schedules and alternative schedules appropriate for your usage and/or facility type to assure the best rate is being paid;
- Copies of water/sewer bills for the past two years to help identify inaccuracies and determine that the appropriate rate structure is being paid;
- Information regarding technical assistance available from the water supplier to help with water planning and implementation of water efficiency programs;

- Contact information for the office that pays the water/sewer bills; and
- Production information, if the facility produces its water and/or treats its own wastewater.

c. Installation information.

Identify, at a minimum, the following:

- All major water using processes;
- Location and accuracy of water measurement devices;
- Main shut off-valves; and
- Verify operating schedules and occupancy of buildings.

The Water Management Plan should include a description of actions necessary to improve the accuracy of water usage data. This can include a metering (or other measurement) plan for the Installation. Metering must be in accordance with all Federal laws and regulations related to water and wastewater use.

d. Emergency response information.

The Water Management Plan should include water emergency and/or drought contingency plans that describe how the facility will meet minimum water needs in an emergency or reduce water consumption during a drought or other water shortage. Such plans should be developed in conjunction with the local water supplier.

e. Comprehensive Planning.

The Water Management Plan should demonstrate that the Installation has informed staff, contractors, and the public of the priority the Installation places on water and energy efficiency. Ensure that the Installation takes water supply, wastewater, storm water issues, and water efficiency best management practices into account at the earliest stages of planning and design for renovation and new construction. These factors should also be considered prior to the purchase and installation of any equipment that will measurably change water consumption.