

Florida State University

Utilities Department

Best Management Practices Guidelines

Water System

Revised 09/14/09

Introduction

A Best Management Practices (BMP) guide is not a policy manual. A policy manual deals with more rigid instructions that are generally *required* within an operation. The Best Management Practices guide serves as a tool to identify the *preferred* methods employed by an organization for problem resolution or planning.

A policy may be based on requirements by the National Electric Code, Homeland Security, or FSU policy. A Best Management Practice guide identifies the best known practices. Since it focuses more on the ideal solution to a problem, the recommendations are subject to greater scrutiny regarding a cost benefit analysis.

For example, a facility best management practice may state that we should use a certain type of lighting for certain applications to reduce kwh usage. After a site specific cost analysis, the area may not be cost effective to modify. Past upgrades may have reduced energy consumption to a level where it is not state of the art, but the cost would outweigh the financial benefits.

A Best Management Practices (BMP) guide is a living document. It is designed to be updated as technology changes. The primary purpose is to summarize organization findings and document the results.

Water System Management Best Practices

BMP01

Revision: 09/13/09

The Water System Best Management Practices guidelines identify items that should be taken into consideration when modifying existing systems or installing new systems. Since the sewage system costs are so closely related to water usage, it will be included in this guideline.

Water Source Selection

BMP01.001

When either a modification to an existing system or a new installation is needed, it is important to identify the required water source. Florida State University has three primary water sources that are used for general water needs. They are irrigation, domestic, and process water.

Irrigation water is provided by the City of Tallahassee. It does not have a sewer cost associated with its use. It does, however, have a much higher usage fee when the monthly usage allowance is exceeded. Irrigation water should only be selected when the use of the water is strictly for irrigation. If a new meter is being installed, the City of Tallahassee will need to be notified that it is an irrigation meter being installed.

Domestic water (potable) is provided by the City of Tallahassee. It has a sewer cost associated with its usage that is approximately 3.5 times the cost of the water. Selection of domestic water should only be selected when the water usage requires potable water.

Process water is provided from wells on the Florida State Campus operated by the Central Utilities Plant (CUP). Process water is used primarily for cooling for equipment such as chillers and compressors. Since these types of equipment can consume large quantities of water, connection to the domestic water system would result in large sewage charges. When adding a piece of equipment that will need external cooling water, please contact the Central Utilities Plant before connecting to determine if a process water connection is more

appropriate. Even relatively small heat exchangers can result in water and sewage costs of over \$50,000 if connected to the wrong source.

Water Meter Size Selection

BMP01.002

Both domestic and irrigation water meter sizes determine the monthly usage allowance specified by the City of Tallahassee. The City of Tallahassee uses a tiered rate structure that penalizes the user for water usage in excess of the monthly allowance. For domestic water, it is approximately a 17% up charge. For irrigation water, it is approximately a 70% up charge. In addition, a larger meter size has a larger base monthly cost.

When sizing meters for water provided by the City of Tallahassee, an accurate estimate of monthly usage is needed. The goal is to choose a meter size that has a monthly usage allowance slightly larger than the actual monthly usage. The proper selection of meter size allows the system to pay the lowest monthly rate possible for the amount of water consumed.

Water usage is reviewed by the Central Utilities Plant (CUP). In cases where the water usage is considered to be permanently much less than the current meter size, the meter will be reviewed for downsizing. The criteria for downsizing a meter are listed below:

1. Is the reduced usage permanent?
2. Does the cost to down size the meter justify the expense?
3. Will there be any adverse consequences for downsize. For example, a system with a high peak demand for a short period of time may require a larger meter than a system that has a steady load.

Water Meter Elimination

BMP01.003

If a water meter is permanently no longer in use, it should be scheduled for removal. The removal of the meter will eliminate the monthly minimum service charge. A 4" meter, for example, has a monthly minimum cost of \$215.42. It applies even if the water use is zero gallons.

Usage Monitoring

BMP01.004

The preferred method of monitoring plant systems is via the Siemens Apogee system. At this time, the majority of City of Tallahassee water meters are not able to send data directly to the Apogee system.

Current monitoring practice for water usage is as follows:

1. The City of Tallahassee collects water meter readings and sends an electronic copy to Utility Accounting. The electronic copy is manipulated by a software program to format and upload the data into the FMAX system.
2. The Utility Accounting department prepares a usage report.
3. The usage report is reviewed by the Central Utilities department and variances are analyzed.
4. Variances out of line with historical data generally prompt an investigation of equipment within the affected zone.

Addition data collection via the Apogee system will run concurrent with the implementation of smart meters planned by the City of Tallahassee.

Maintenance of Control Devices

BMP01.005

The site uses a variety of control devices to provide additional reliability of the water supply system.

Domestic Water Back Up, Pressure Systems

In order to provide adequate water supply in the event of a process water system failure, certain buildings are equipped with a domestic water supply automatic switching system. If process water pressure falls below required line pressure, the process water will close and the domestic water supply will open.

It is recommended that each zone periodically check this type of equipment to verify that the system is running on the appropriate water source.

Domestic Water Back Up, Solenoid Valves

Some systems, such as the autoclave discharge quench system, are equipped with solenoid valves that can be either automatically or manually operated. When a normally closed solenoid valve on the domestic water supply fails, it can simply allow domestic water to be used. While many of these valves service ½" and ¾" lines, over a period of a few weeks, the cost can be very significant.

It is recommended that each zone periodically check this type of equipment to verify that the solenoids are operating properly.