City of Battle Ground

WATER USE EFFICIENCY PROGRAM

March 2011
TABLE OF CONTENTS

Objective ............................................................................................................................................. 3
Introduction ......................................................................................................................................... 3

Municipal Water Law Requirements

SECTIONS:

1. Water Use Efficiency Program .................................................................................................. 4
2. Distribution Leak Standard ........................................................................................................ 4
3. Goal Setting and Performance Reporting .................................................................................. 4

2011-2017 Water Use Efficiency Program

SECTIONS:

4. General Description of the City’s Water System ....................................................................... 5
5. Water Conservation Goals ......................................................................................................... 7
6. Water Conservation Measures ................................................................................................ 8

Distribution System Leakage Evaluation ..................................................................................... 12
Water Loss Action Plan ................................................................................................................ 12
Projected Water Savings ............................................................................................................... 13
Water Use Efficiency Program Evaluation .................................................................................. 13
Annual WUE Reporting ................................................................................................................ 13

APPENDICES

A. City of Battle Ground’s Water Service Area Map
B. Water Conservation Brochure “Every Drop Counts”
C. Public Information Announcement
D. City of Battle Ground’s 2007 WUE Report
E. City of Battle Ground’s 2008 WUE Report
F. City of Battle Ground’s 2009 WUE Report
OBJECTIVE

The objectives of this document are to identify the conservation and water use efficiency requirements pertaining to the City of Battle Ground, evaluate past conservation efforts, and describe the City’s Water Use Efficiency program.

INTRODUCTION

In 2003, the Washington State Legislature passed Engrossed Second Substitute House Bill 1338, also known as the Municipal Water Law (MWL), to address the increasing demand on the State’s water resources. The law calls for all municipal water suppliers to use water more efficiently in exchange for water right certainty in meeting future demand for the resource. The legislature directed the Washington Department of Health (WDOH) to adopt an enforceable Water Use Efficiency (WUE) program. This WDOH program and its rules, which became effective on January 22, 2007, are designed to ensure the long term supply of drinking water, promote good stewardship of the water resources and ensure efficient operation and management of water systems.

The WUE rule affects all municipal water suppliers, including all Group A community water systems like the City of Battle Ground. As required by Washington Administrative Code (WAC) 246-290, the City must provide for data collection and analysis intended to track water consumption and water loss from leaks in the system. Our WUE program must evaluate alternative rate structures and determine the feasibility of adopting a structure that will encourage water conservation. The following report describes the City of Battle Ground’s Water Use Efficiency program.
MUNICIPAL WATER LAW REQUIREMENTS

SECTION 1: WATER USE EFFICIENCY PROGRAM

As part of the Planning Requirements of the WUE, municipal water suppliers are required to collect data, forecast demand, evaluate WUE measures, calculate distribution leakage and implement a WUE program to meet their goals. As of January 1, 2007, water suppliers have been obligated to collect production and consumption data on a regular basis to include in planning documents and annual performance reporting. As part of this data collection, demand forecasting is also an essential component for determining future use and potential savings through a water use efficiency program. A description of the water supplier's water source and supply characteristics must also be provided.

SECTION 2: DISTRIBUTION LEAK STANDARDS

Prior to adoption of the MWL, the Department of Health did not have a set distribution leakage standard, but encouraged a figure of 20% or less. Municipal water suppliers must now meet a 10% or less distribution system leakage rate to comply with the new state standard. Leakage must be presented both as a percentage and as leakage volume, and based on a rolling three-year average. Compliance with the distribution leakage standard must be met by July 1, 2010; if unable to meet this standard, the supplier must develop and implement a Water Loss Control Action Plan that outlines the steps and timelines to achieve the desired leakage rate. Additionally, a meter installation schedule is also required for all service connections currently not metered.

SECTION 3: GOAL SETTING AND PERFORMANCE REPORTING

The WUE requires municipal water suppliers to establish water use efficiency goals. Establishing goals demonstrates commitment and support from the utility and its water customers to use water efficiently. Goals must be established through a public process and reported on annually to customers and DOH by July 1 of each year. The WUE goals established through a public process are for a six-year period, and should be re-evaluated each cycle. Goals must be measurable, address water supply and demand forecasting, and include an implementation schedule for each goal. Performance reports are required to be made available to the public: this requirement may be fulfilled by including the performance report information in the annual Consumer Confidence Report. Annual water system production total, distribution system leakage information, and a description of the WUE goals and progress of achieving them must also be included in this publication.
SECTION 4: GENERAL DESCRIPTION OF THE CITY’S WATER SYSTEM

The City of Battle Ground is a municipal corporation, formed by a vote of the people in 1951. Our water utility provides water within the City’s Urban Growth Area, which currently covers about six square miles and serves about 17,310 people. The City’s water system has 5,923 connections (as reported in the 2010 Water Facilities Inventory), which service approximately 6,596 Equivalent Residential Units (ERU’s). An ERU is a term used in water system planning to represent the water use of average residential home.

Single and multi-family residential customers total over 90% of our utilities accounts. The average residential customer consumes about 235 gallons of water per day, or about 91 gallons per person per day. This is a 26% decrease from 316 gallons/ERU as reported in our 1998 Water System Plan.

The City’s water supply is produced by wells located in our regional aquifers. These wells produce an average daily flow totaling about 2.25 million gallons per day. The water is disinfected with sodium hypochlorite at each source well, and then treated with fluoride. Additional treatment measures are taken for iron removal at wells 7, 8 and 9. Our wells meet the water demand of the City, with the exception of emergency water needs. During peak usage periods, usually caused by high summer temperatures, we purchase water supplied by Clark Public Utilities (CPU). This water is supplied and metered through an existing intertie that is only opened on an emergency basis. Battle Ground’s recent production history is summarized in the following chart, showing average monthly production rates and peak daily consumption for each month.

Additional information on our sources and water rights, along with future demand projections, can be found in the current City of Battle Ground Water System Plan; approved by the Washington State Department of Health.
TABLE 1:

Battle Ground Monthly Average/Peak Day Water Consumption (GPD) 2008-2010

Graph showing monthly average and peak day water consumption for Battle Ground from 2008 to 2010.
SECTION 5: WATER CONSERVATION GOALS

The City of Battle Ground works to foster a conservation ethic among our consumers. One principal in achieving this goal is the reduction of the water demand in residential customers. Our staff has evaluated the effects of past activities aimed at water conservation and has established the following goals, to be adopted with this plan.

Supply - Conservation Goal:

Reduce annual distribution system leakage (DSL) from the current level of 12.1% to 10% or less within six years.

Demand - Conservation Goal:

Reduce the average equivalent residential unit annual water consumption by a minimum of 1% (2gpd) within six years.
SECTION 6: WATER CONSERVATION MEASURES

The City of Battle Ground is implementing water conservation measures as mandated under WAC 246-290-466. Water meters are in place at all sources and service connections. Meter data is collected and evaluated to determine trends in the consumption of water, and to generally account for the water in the system. The following is an outline of the measures that will be taken in an effort to achieve our water use efficiency goals.

Supply Side:

1. **Leak Detection** – As leaks are discovered, they are repaired or mains are reconstructed as needed. One way we watch for system leaks is through our meter reading program. The City’s Finance Department uses software that tracks the consumption history of each meter. If a meter shows a higher than average consumption level during any given billing cycle a maintenance worker is sent to the site to verify the reading. If the reading is accurate, the location is then investigated for potential leaks to prevent further water loss.

Future work to decrease distribution system leaks will focus on service meter replacement and close monitoring of non-revenue water usage. Non-revenue water uses include, but are not limited to, water used in street sweeping, vacuum truck sewer cleaning, water line flushing and back washing at our treatment facility for wells 7, 8, and 9.

2. **Source Metering** – The City has production meters on all water sources as well as a state of the art telemetry system to monitor these sites. The telemetry system monitors the operation of our water production system for possible pressure loss, pump function and water reservoir levels. Each component of the water supply system including the city’s meters, water mains, supply wells, reservoirs, booster stations, pressure reducing valves, and other facilities is inspected regularly and repairs are made when necessary.

3. **Service Metering** – Industry standards for residential water meters state that these meters are expected to have a reasonable level of accuracy within their average service life of 10 to 12 years. The City’s Public Works staff has implemented a proactive meter replacement program with the goal to reduce system leakage and achieve a standard meter age of ten years or less.

A small percentage of our system’s DSL rate can be attributed to water theft related use. Historically, fire hydrants have been the primary source for water theft in our system. Our staff is diligent in identifying and discontinuing service when a violation is discovered. Violators can receive a misdemeanor charge and/or a related fine.
**Demand Side –**

1. **Public Education** – The City provides informational materials aimed at water use efficiency for customers on the City’s website, [www.cityofbg.org](http://www.cityofbg.org), and at several City offices. Documents like our “Every Drop Counts” brochure *(Appendix B)* and our annual water quality reports provide customers with information specific to the City’s water systems as well as tips that they can use to practice efficient water use in their daily lives. Additionally, the City utilizes the local newspaper to inform customers of the importance of water conservation *(Appendix C)* and to notify them of voluntary and/or regulatory restrictions whenever necessary.

Presumably, the most prominent component of our WUE public education efforts is our ‘Conservameter’ signs. These tools are usually implemented annually during our peak water usage months, late June through September. It allows our staff to communicate the state of the City’s water supply on a daily basis. During the drier seasons the production of water is significantly decreased, but due to the higher temperatures the demand for water increases. An assessment of the City’s water production and supply is taken daily, and staff will use these meters to express the need of conservation cooperation from our customers as necessary.

*Conservameter – located on E Main Street and SW 5th Ave*
2. **Building Code and Land Use Program** – The City’s building code includes several requirements for irrigation systems and low flow fixtures. Each new irrigation system requires a plumbing permit. Our inspectors make sure each system is installed correctly and is protected by a backflow device. They also make sure that each new residential and commercial development has low flow fixtures (faucets, toilets, showerheads, etc.) installed.

   Additionally, the City’s land use code requires new developments to typically be denser than existing land uses resulting in decreased irrigation demands as parcels are developed. We anticipate that with continued growth the average water use by each ERU is expected to decrease as well.

3. **Customer Consumption History** - The monthly utility statements that the City sends out to its customers indicate water consumption history. By allowing customers to track and compare their usage, citizens can be informed of their own water use trends. The awareness can allow them to evaluate their individual water conservation needs and alert them of potential leaks.

4. **Irrigation Program and Watering for City Property** – During the drier months, the City may elect to suspend watering and irrigation operations at select City owned parks and facilities. Likewise, we encourage consumers to keep water conservation in mind when tending to their private landscapes by promoting the following water conservation ideas:
   - Set sprinkler system timers to irrigate only when needed.
   - Water lawns and plants in the early morning or late evening to limit water loss due to evaporation.
   - Place a layer of mulch around plants and trees to avoid excessive evaporation.
   - Monitor irrigation so to water only as rapidly as the soil can absorb the water.
   - Install drip irrigation systems for a slow, steady supply of water to the plant roots.
   - Position sprinklers or drip irrigation systems to water only the root areas of plants and not sidewalks, gutters, or streets.
   - Consider native plants when landscaping.

5. **Inclined Block Rate Structure** – As the table below illustrates, the City’s Inclined Block Rate Structure establishes rates that will be applied to the customer based on their total usage. This rate schedule provides a financial incentive to reduce water demand, particularly during the peak summer period when the demand for water is more acute. It is estimated that our average residential customer will use no more than 3 units of water (748 gallons/unit, or CCF) per billing cycle. If that customer exceeds that estimate then the rate corresponding to their total usage in each billing cycle will be applied. *(See Table 2)*
### TABLE 2:

**Historic Customer Water Rates**

<table>
<thead>
<tr>
<th>Customer Class</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Residential - 3 units</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Inside City Limits)</td>
<td>$10.80</td>
<td>$10.80</td>
<td>$11.80</td>
<td>$11.80</td>
<td>$11.80</td>
</tr>
<tr>
<td>Residential - 4-15 units</td>
<td>+ $2.05/ ccf</td>
<td>+ $2.05/ ccf</td>
<td>+ $2.05/ ccf</td>
<td>+ $2.05/ ccf</td>
<td>+ $2.05/ ccf</td>
</tr>
<tr>
<td>(Inside City Limits)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential - 16+ units</td>
<td>+ $3.08/ ccf</td>
<td>+ $3.08/ ccf</td>
<td>+ $2.56/ ccf</td>
<td>+ $2.56/ ccf</td>
<td>+ $2.56/ ccf</td>
</tr>
<tr>
<td>(Inside City Limits)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Residential - 3 units</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Outside City Limits)</td>
<td>$16.20</td>
<td>$16.20</td>
<td>$17.70</td>
<td>$17.70</td>
<td>$17.70</td>
</tr>
<tr>
<td>Residential - 4-15 units</td>
<td>+ $3.08/ ccf</td>
<td>+ $3.08/ ccf</td>
<td>+ $3.08/ ccf</td>
<td>+ $3.08/ ccf</td>
<td>+ $3.08/ ccf</td>
</tr>
<tr>
<td>(Outside City Limits)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential - 16+ units</td>
<td>+ $3.84/ ccf</td>
<td>+ $3.84/ ccf</td>
<td>+ $3.84/ ccf</td>
<td>+ $3.84/ ccf</td>
<td>+ $3.84/ ccf</td>
</tr>
<tr>
<td>(Outside City Limits)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Commercial - 5/8'' meter</strong></td>
<td>$18.35*</td>
<td>$18.35*</td>
<td>$19.35*</td>
<td>$19.35*</td>
<td>$19.35*</td>
</tr>
<tr>
<td><strong>Commercial - 3/4'' meter</strong></td>
<td>$20.35*</td>
<td>$20.35*</td>
<td>$21.35*</td>
<td>$21.35*</td>
<td>$21.35*</td>
</tr>
<tr>
<td><strong>Commercial - 1'' meter</strong></td>
<td>$35.50*</td>
<td>$35.50*</td>
<td>$36.50*</td>
<td>$36.50*</td>
<td>$36.50*</td>
</tr>
<tr>
<td><strong>Commercial - 1.5'' meter</strong></td>
<td>$64.20*</td>
<td>$64.20*</td>
<td>$65.20*</td>
<td>$65.20*</td>
<td>$65.20*</td>
</tr>
<tr>
<td><strong>Commercial - 2'' meter</strong></td>
<td>$100.00*</td>
<td>$100.00*</td>
<td>$101.00*</td>
<td>$101.00*</td>
<td>$101.00*</td>
</tr>
<tr>
<td><strong>Commercial - 3'' meter</strong></td>
<td>$200.00*</td>
<td>$200.00*</td>
<td>$201.00*</td>
<td>$201.00*</td>
<td>$201.00*</td>
</tr>
<tr>
<td><strong>Commercial - 4'' meter</strong></td>
<td>$320.00*</td>
<td>$320.00*</td>
<td>$321.00*</td>
<td>$321.00*</td>
<td>$321.00*</td>
</tr>
</tbody>
</table>

* Plus $2.20/ ccf
DISTRIBUTION SYSTEM LEAKAGE EVALUATION

Distribution system leakage (DSL) is defined as the difference between total water produced and all water consumed or purchased. We account for water within our system by examining supply and service meter data, and tracking water used for non-revenue producing purposes (maintenance and firefighting). Our records show that unaccounted for water losses in Battle Ground currently account for about 12.1% per year.

The 1994 Conservation Planning Requirements set the maximum allowable rate of lost and unaccounted for water, at 20% of total source production. We estimate our DSL rate was significantly higher in the mid 1990’s, before Battle Ground experienced significant growth. Our current DSL average represents the significant improvement in our distribution system leak evaluation program. This is a direct result of continuous work to eliminate steel water mains, and directly respond to water system leaks as they are discovered.

The current WUE Rule mandates that we achieve an average DSL of 10%, based on a three year rolling average. Table 3, below, summarizes the current three year rolling average.

TABLE 3
City of Battle Ground Historic Distribution System Leakage

<table>
<thead>
<tr>
<th>Year</th>
<th>Metered Production (MG)</th>
<th>Metered Consumption (MG)</th>
<th>DSL (MG)</th>
<th>DSL (%)</th>
<th>3 yr Rolling Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007*</td>
<td>526</td>
<td>450</td>
<td>76</td>
<td>14.4%*</td>
<td>N/A</td>
</tr>
<tr>
<td>2008</td>
<td>518</td>
<td>448</td>
<td>70</td>
<td>13%</td>
<td>N/A</td>
</tr>
<tr>
<td>2009</td>
<td>520</td>
<td>471</td>
<td>48</td>
<td>9.3%</td>
<td>12.1%</td>
</tr>
<tr>
<td>Average</td>
<td>519.6 (MG)</td>
<td>456.3 (MG)</td>
<td>63.2 (MG)</td>
<td>12.1%</td>
<td>12.1%</td>
</tr>
</tbody>
</table>

*Our original 2007 report was submitted with a lower value as shown in Appendix D.

WATER LOSS ACTION PLAN

Since the City does not meet the current WAC 246-290 DSL standard of 10%, we have developed a Water Loss Action Plan. This plan will be funded by the water utility and will include the following actions:

- Replace 10% of our water meters annually to eventually achieve an average water meter age of 10 years;
- Continue to perform scheduled calibration on all source flow meters;
- If DSL does not come below 10% after two years, implement system leak detection studies.
PROJECTED WATER SAVINGS

The 1994 and 1998 Water System Plan estimated consumption at 120gpcd (gallons per capita per day) or 316 gallons per ERU. Our current water system planning estimates our system demand rate at 97gpcd or 235 gallons per ERU. Therefore we estimate that the per capita use of water in Battle Ground has declined by approximately 26% since 1994. Existing and further conservation measures are expected to continue to reduce peak daily and seasonal water demands.

If our Water Use Efficiency goals are realized, the City is expected to see significant additional savings in water use and distribution system leakage (DSL). A 2% reduction in distribution system leakage combined with a 1% reduction in consumer usage over six years (2gpd per ERU) will result in an estimated savings of about 14.7 million gallons annually. This savings would allow our current system to adequately support an additional 442 people or 171 ERU’s.

WATER USE EFFICIENCY PROGRAM EVALUATION

The WUE Program requires Battle Ground to set water use efficiency goals, and to evaluate each year’s progress towards meeting these goals. Our goals must include a measurable outcome, address the water supply and demand characteristics, and include an implementation schedule to account of each facet of our program.

Many of the measures selected for the WUE program require little funding, such as including consumption history in bills and notifying customers of potential leaks. The City will track the finances associated with each measure and compare it to water saved to evaluate the effectiveness of each measure. If measures do not provide enough savings to meet their goals, additional or modified measures will be considered.

ANNUAL WUE REPORTING

A WUE Report must be submitted to Washington Department of Health by July 1st of each year. The WDOH has developed a standard reporting form to help summarize the City’s progress toward meeting their goals. The annual report must include:

- Total source production and system wide consumption
- Distribution system leakage in percentage and volume
- Goal description, schedule, and progress toward meeting goals

The City’s WUE Reports for 2007, 2008 and 2009 are represented in Appendices D – F attached hereto.
APPENDIX B:
Water Conservation Brochure “Every Drop Counts”

Landscaping and Water - Getting the Most out of Both

Sometimes it’s hard to believe with our rainy weather here in the Pacific Northwest, that we need to conserve water. Water consumption skyrockets during the summer months, which in turn, depletes our water resources making water conservation a necessity.

You can help save water and your landscaping at the same time by following these practical guidelines.

1. Best time - Water in the early morning or evening. You lose a lot of water due to evaporation when watering after temperatures have reached their peak.

2. Get a timer - These $10 items are so handy and help you to not forget that sprinkler running outside when you get busy inside.

3. Use soaker hoses when possible and drip systems in pots.

4. Make sure valves are not leaking outside. Sometimes just slightly tightening can stop the drip at your outside nozzle.

5. Adjust your sprinkler before you turn it on. The street, driveway and sidewalks get plenty of water during the winter months!

6. Use mulch around shrubs and plants to reduce evaporation and cut down on weed growth.

7. Consider installing new landscaping at the end of the season when the weather is cooler and water usage is tapering off.

8. Landscape with grasses, plants and trees that are native to the Pacific Northwest. Group plants together based on similar watering needs.

Water saving tips for you.............

In the Kitchen.

- Never run the dishwasher without a full load. This will save water, energy, detergent and money.
- Fill a pan of water or put a stopper in the sink for washing and rinse pots, pans, dishes and cooking implements rather than turning on the water faucet each time a rinse is needed.
- Scrape the dishes clean instead of rinsing them before placing them in the dishwasher.
- Keep a container of drinking water in the refrigerator. Running water from the tap until it is cool enough to drink is wasteful.
- Use a small pan of cold water when cleaning vegetables rather than setting the water run over them. Use this to water potted plants.
- Always keep water conservation in mind. Avoid doing wasteful things like making a huge pot of coffee if you’re only going to drink a cup or two.

In the Bathroom.

- When building a new home or remodeling a bathroom, install a new low-volume flush toilet that uses only 1.5 gallons per flush.
- You save a lot of water by installing low-flow shower heads. Using these low flow devices you can save as much as 50% of gallons of water per minute.
- Test toilets for leaks. Add a few drops of food coloring to the water in the toilet tank; but do not flush the toilet. Watch to see if the coloring appears in the bowl within a few minutes. If it does, the toilet has a leak that needs to be repaired.
- In older high-volume flush toilets use some type of toilet tank displacement device to reduce the volume of water in the tank, but still provides enough for flushing. You can find these devices at most home improvement centers.
- Check faucets for leaks. A slow drip can waste as much as 170 gallons of water each day, or 5000 gallons of water each month. This adds a lot of money to your water bill.

In the Laundry.

- Wash only full loads of clothes when using your washing machine. You can take as much as 35 gallons of water to wash one load of clothes.
- Pay attention to your load size. Use the lowest possible water level setting on the washing machine according to the amount of clothes being washed.
- Use cold water whenever possible. This saves energy too, and conserves the hot water for others use. It’s also better for most types of fabrics.
- When purchasing new appliances, check the requirements of various models and brands. Some use less water than others.
- If possible, replace old washer and dryers with new energy saving models. You may even be able to receive a tax credit for these purchases.

In your Plumbing.

- Check water line connections and faucets for leaks. Repair leaksy faucets promptly. It is easy to do, it costs very little and can make a substantial savings in your water bills.
- Make sure that the line from the water meter to your house is free of leaks. To check, turn off all indoor and outdoor faucets and watering appliances. The water meter should be read at 13 to 20 minute intervals. If it continues to run or turns, a leak probably exists and needs to be located and repaired.
- Some estimate that about 75% of the water used at home is used in the bathroom. Taking a shower instead of a bath will usually save water, and a low-flow shower head may well be the single most effective water conservation measure you can take.

The water we conserve today can serve us tomorrow.
APPENDIX C:
Public Information Announcement

8 Easy Ways to Save Water

**Savvy Water Outdoors**

1. **Water your lawn early in the morning**
   - Watering your lawn in the early morning or early evening reduces evaporation and waste. Water only need watering every three to five days in the summer. If you need to water, do so early in the morning or late in the evening.

2. **Soil your yard and care**
   - Install a rainwater harvesting system or drip irrigation system for planting beds with shrubs and flowers. Make sure you are watering your plants and not the street or driveway.

3. **Group your sprinklerings**
   - Group your sprinklerings with drought-resistant ornamental grasses, plants, and trees. Grouping plants together helps prevent water waste, which results in water savings and reduced costs.

4. **Use a hose in the house**
   - Use a hose in the house to prevent water loss due to leaks or other issues.

5. **Save time, water, and money**
   - If you don’t have an automatic timer for your sprinkler, use a timer to save water and time.

6. **Delay household chores**
   - Run automatic dishwashers only when fully loaded. Use dishwashing detergent sparingly.

7. **Save your toilet and faucets**
   - Replacing an old toilet with a new, low-flow model can save 20,000 gallons of water per year.

8. **Shower yourself with savagery**
   - Keep your showers under five minutes, and replacing your showerhead can save a lot of water. Other features can deliver as much as 1.5 gallons per minute.

**Savvy Water Indoors**

1. **Replace your toilet and faucet savers**
   - Replacing your toilet with a low-flow model can save 20,000 gallons of water per year.

2. **Group your sprinklerings**
   - Group your sprinklerings with drought-resistant ornamental grasses, plants, and trees. Grouping plants together helps prevent water waste, which results in water savings and reduced costs.

3. **Save time, water, and money**
   - If you don’t have an automatic timer for your sprinkler, use a timer to save water and time.

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6. **Shower yourself with savagery**
   - Keep your showers under five minutes, and replacing your showerhead can save a lot of water. Other features can deliver as much as 1.5 gallons per minute.

Remember: water off while brushing your teeth and shaving.

WATER Conserve It.

For more information on water conservation, visit our website www.cityofbg.org or contact Public Works at 362-5076.

This message brought to you by the City of Battle Ground.

APPENDIX D:
City of Battle Ground’s 2007 WUE Report

Annual Water Use Efficiency Performance Report Form

General System Information:

System Name: City of Battle Ground
System ID #: 047004
County: Clark
Your Name: Cal Newton
Your Title: Operations Foreman
Your Phone Number: (360) 342-5365
Today’s Date: 09/25/08

Production and Distribution System Leakage Information:

12-Month Performance Reporting Period: 1 / 2007 to 12 / 2007 (Month/Year)

<table>
<thead>
<tr>
<th>Distribution System Leakage Summary:</th>
<th>526 millions of gallons*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Water Produced and Purchased – Annual Volume</td>
<td>526 millions of gallons*</td>
</tr>
<tr>
<td>Distribution System Leakage – Volume</td>
<td>76 millions of gallons*</td>
</tr>
<tr>
<td>Distribution System Leakage – Percent</td>
<td>8 %</td>
</tr>
</tbody>
</table>

*Report volume in millions of gallons or gallons: 1 cubic foot = 7.48 gallons

DSL = [(TP - AC) / TP] x 100
Percent of Distribution System Leakage (DSL)
Total Water Produced and Purchased (TP)
Authorized Consumption (AC)
Goal Setting Information:

Date of Public Forum:  (Month/ Date/Year)

Note: Goals must be established through a public process.

Has goal been changed since last performance report?  □ Yes  □ No

In the following section, provide a narrative on progress in reaching your goals. Include the following information:

1. Identify water savings goals.
2. Identify the time schedule for achieving goals.
3. Describe progress made toward achieving goals, such as:
   - Estimate how much water you have saved.
   - Report progress toward meeting goals within your established timeframe.
   - If you are not on track to reach your goals, identify any adjustments or changes to your WUE measures.
   - Include any other information that helps you tell your story.

1. Public education,
   Informational brochures at City Hall and Public Works
   Installed water conservation signs at City well sites
2. We are also keeping track of water used for flushing, street sweeping and sewer line cleaning, this will give us a better idea of actual water loss

Note: If you cannot complete electronically, attach separate pages with general system information at the top.

Meter Installation Information:

Is your system fully metered?  □ Yes  □ No
If yes,  /   (Month/Year)  If no, complete the rest of this section.

Date for completing installation on all existing connections and interties:
   /   (Month/Year)  Due by January 22, 2017

Describe your progress in metering and any efforts taken to minimize leakage:

Note: If you cannot complete electronically, attach separate pages with general system information at the top.

Return this completed form to:  E-mail:  wue@doh.wa.gov
Mail:  WUE Program, Office of Drinking Water
      PO Box 47822, Olympia, WA  98504-7822
      FAX:  (360) 236-2252

For more information, contact a regional planner:
   Eastern Regional Office – Spokane – Main Office:  509-456-3115
   Southwest Regional Office – Tumwater – Main Office:  360-236-3030
   Northwest Regional Office – Kent – Main Office:  253-395-6750

The Department of Health is an equal opportunity agency. For persons with disabilities, this form is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388).
APPENDIX E:
City of Battle Ground 2008 WUE Report

Annual Water Use Efficiency Performance Report Form
You must submit this report by email.
Save the completed form with your water system’s name
and email it to WUE@doh.wa.gov by July 1.

General Water System Information:

System Name: City Of Battle Ground

System ID #: 047005

County: Clark

Your Name: Cal Newton

Your Title: Operations Foreman

Your email address: cal.newton@ci.battle-ground.wa.us

Your Phone Number: (360) 342-5365

Today’s Date: 07/23/09

Who should we contact if we have questions about this report?

Name: Elain Huber

Phone Number: (360) 342-5355

Is your water system fully metered? Yes

If Yes, continue to next page.

If not fully metered:
Current status of meter installation:

Describe efforts to minimize leakage:

DOH Form #331-376 (Revised)  Page 1  January 2009
**Production, Authorized Consumption, and Distribution System Leakage Information:**

**Reporting Year:** 2008

**12-Month WUE Reporting Period:**

01/01/08 to 12/31/08  Enter as mm/dd/yy. Example: 07/01/08

Incomplete or missing data for the year?  No.

If yes, explain:

Distribution System Leakage Summary:

<table>
<thead>
<tr>
<th>Description</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Water Produced and Purchased (TP) – Annual</td>
<td>518,653,306</td>
</tr>
<tr>
<td>Volume</td>
<td>gallons</td>
</tr>
<tr>
<td>Authorized Consumption (AC) – Annual Volume</td>
<td>448,286,512</td>
</tr>
<tr>
<td>Distribution System Leakage – Annual Volume</td>
<td>70,366,794</td>
</tr>
<tr>
<td>TP - AC</td>
<td>gallons</td>
</tr>
<tr>
<td>Distribution System Leakage – Percent DSL = [(TP - AC) / TP] x 100</td>
<td>13.0 %</td>
</tr>
</tbody>
</table>

**Goal Setting Method:**

Date of Most Recent Public Forum:  Enter as mm/dd/yy.

**Goals must be established through a public process.**

Has goal been changed since last annual WUE report? No

---

DOH Form #331-376 (Revised)  Page 2

January 2009
Each goal must identify the measurable water savings that will be achieved at a specific time in the future. Identify all water saving goals established by elected governing board.

WUE Goals:

Supply Side Goal (if applicable):

Formal adoption still in progress

Demand Side Goal (required):

☑️ I don’t have this information

Describe Progress in Reaching Goals:

• Estimate how much water you have saved.
• Report progress toward meeting goals within your established timeframe.
• Identify any WUE measures you are currently implementing.

Supply Side Goal Progress:

consulting engineering under way for an additional 500 gpm intertie to Clark Public utilities for whole sale water supply
Construction scheduled for 4th Qtr of 09

Demand Side Goal Progress:

Landscape management water curtailing on peak days
Meter program consistently repairs and replaces leaking meters
Hang door hangers for accounts that are leaking on consumer side
Additional Information Regarding Supply and Demand Side WUE Efforts

- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day), you must explain why you are unable to reduce water use below that level.

- Include any other information that describes how you and your customers use water efficiently.

For more information, visit our Web at http://www.doh.wa.gov/ehp/dw/programs/wue.htm or contact a regional planner:

**Eastern Regional Office—Spokane—Main Office: (509) 456-3115**
**Southwest Regional Office—Tumwater—Main Office: (360) 236-3030**
**Northwest Regional Office—Kent—Main Office: (253) 395-6750**

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Annual Water Use Efficiency Performance Report Form

Please refer to the Getting Started: Water Use Efficiency Guidebook

Today's Date: 10/4/2010

General System Information

| System Name: | BATTLE GROUND WATER DEPT, CITY OF |
| System ID #: | 04700 |
| County: | CLARK |
| Your Name: | Cal Newton |
| Your Title: | Operations Foreman |
| Your Email Address: | cal.newton@ci.battle-ground.wa.us |
| Your Phone Number: | (360) 342-5365 |

Meter Installation Information

| Is your water system fully metered? | Yes |
| Current status of meter installation: | Fully metered |

Production, Authorized Consumption, and Distribution System Leakage Information

| Reporting Year: | 2009 |
| 12-Month WUE Reporting Period: | 1/1/2009 to 12/31/2009 |
| Incomplete or missing data for the year? | No |
| If yes, explain: |

Distribution System Leakage Summary

| Distribution System Leakage Summary | Total Water Produced and Purchased (TP) - Annual Volume | 520,507,310 Gallons |
| Authorized Consumption (AC) - Annual Volume | 471,858,227 Gallons |
| Distribution System Leakage - Annual Volume TP - AC | 48,648,483 Gallons |
| Distribution System Leakage - Percent DSL = [(TP - AC) / TP] x 100 | 9.3 % |
| 3-Year Annual Average - Percent | -- % |

Goal-Setting Information

| Date of most recent public forum: | |
| Has goal been changed since last WUE report? | No |
| Demand Side Goal: | Formal Adoption still in progress |
| Demand Side Goal Progress: | Landscape irrigation management with water curtailment on peak days; Meter program to replace meters on a set schedule; hanging of door hangers to notify customers of leaks on customer (Demand) side |
| Additional Information: | |

Please click 'Back' if you need to make changes.