Outdoor Water Use

As expected, the amount of water used for outdoor purposes (primarily irrigation) is positively related to the size of the lot and the percentage of the lot that is irrigable landscape.

The following are other specific interpretations of the results of the outdoor end use model:

- Homes with in-ground sprinkler systems use 35 percent more water outdoors than those who do not have an in-ground system
- Households that employ an automatic timer to control their irrigation systems used 47 percent more water outdoors than those that do not
- Households with drip irrigation systems use 16 percent more water outdoors than those without drip irrigation systems
- Households who water with a hand-held hose use 33 percent less water outdoors than other households
- Households who maintain a garden use 30 percent more water outdoors than those without a garden
- Households with access to another, non-utility, water source displayed 25 percent lower outdoor use than those who used only utility-supplied water
- On average, homes with swimming pools are estimated to use more than twice as much water outdoors than homes without swimming pools, everything else held constant.

Leaks

In the REUWS it was found that a small number of homes were responsible for the majority of the leakage. While the average daily leakage was 21.9 gallons, the standard deviation was 54.1 indicating a wide spread in the data. The median leakage rate was only 4.2 gallons per household per day. Nearly 67 percent of the study homes leaked an average of 10 gallons per day or less, but 5.5 percent of the homes leaked an average of more than 100 gallons per day. Saying it another way, 10% of the homes logged were responsible for 58% of the leaks found.

In the 100 data logged homes with the highest average daily indoor water use, leaks accounted for 24.5 percent of average daily use. These top 100 homes averaged 90.4 gallons per day (gpd) of leaks compared with 21.9 gpd for the entire 1,188 home data logged group.
Many variables were found to explain the variance in leakage rates. The quantity of water attributable to leaks increased with temperatures and decreases with precipitation. Accounting for the effects of the other variables in the model, higher leakage was registered for households logged during the winter months.

The quantity of water leaks showed a statistically significant relationship with both the marginal price for water and the marginal price for sewer. Results imply that a one-percent increase in the marginal price of water will lead to a 0.49 percent decrease in the amount of leakage, while a one-percent increase in the marginal price of sewer will lead to a 0.12 percent decrease in the amount of leakage. These findings seem to verify that higher prices lead to some degree of voluntary leak detection and correction. With regard to correcting leaks, renters as group had a lower amount of leakage than non-renters. This may confirm the expectation that landlords seek to minimizing costs.

Following a pattern consistent with the indoor end uses, the amount of leakage was positively related to the number of persons in a household, but negatively related to the number of people working full-time outside the home. The amount of leaks were shown to increase with the number of toilets in the home.

Leakage was found to be higher in homes that were built in the 1970s and in households that use a sprinkler system that is attached to the garden hose. Leakage is found to be generally lower for households that use drip irrigation systems or use a hand-held hose for watering and for those who have reported taking behavioral and technological actions to save conserve water outdoors.

Water Savings

Showers -

So called "Low Flow" showerheads are designed to restrict flow to a rate of 2.5 gallons per minute (gpm) or less. By calculating the modal shower flow rate for each shower at each study residence it was possible to separate homes which always showered in the low-flow range (LF houses), homes which occasionally showered in the low flow range (Mixed houses), or homes which showered exclusively above the low flow range (Non-

LF houses). About 15 percent of the study homes showered in the low flow range exclusively, 60.4 percent occasionally showered in the low flow range, and 24.5 percent showered exclusively above the low flow range.

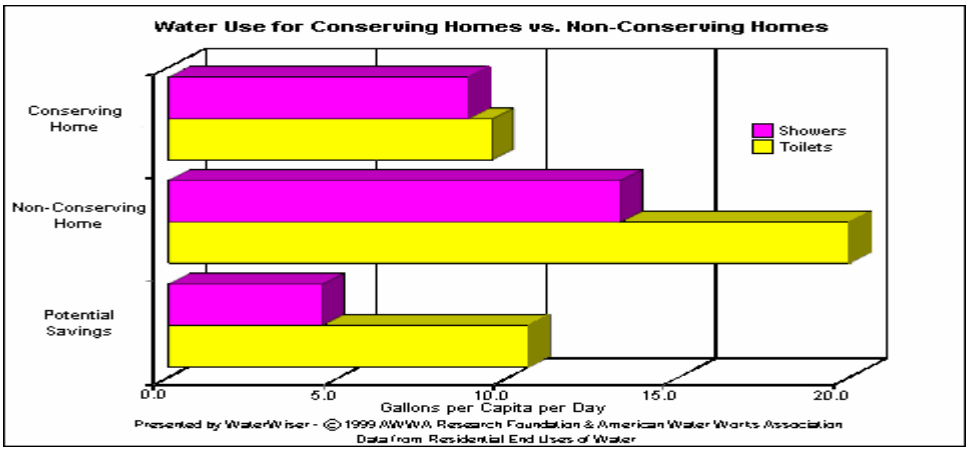
The LF shower homes used an average of 20.7 gpd and 8.8 gallons per capita per day (gpcd) for showering, while the non-LF shower homes used an average of 34.8 gpd and 13.3 gpcd. However, the duration of the average shower in the LF shower homes was 8 minutes and 30 seconds, 1 minute and 48 seconds longer than the average shower duration in the non-LF homes which was 6 minutes and 48 seconds.

Toilets -

Of the over 289,000 toilet flushes recorded during the two year end use monitoring portion of the REUWS, 14.5 percent of the flushes were less than 2.0 gallons per flush (gpf), 34.7 percent of the flushes were between 2 and 3.5 gpf, and 50.8 percent were greater than 4 gpf.

Of the 1188 data logged homes in the REUWS, 101 (8.5 percent) used ULF toilets almost exclusively. This number was determined by first calculating the average flush volume for each study residence. Homes with an average volume per flush of less than 2.0 gallons over the 4 week data logging period were classified as "ULF only" homes meaning that while they may have other units, they use ULF units almost exclusively. The 101 "ULF only" homes used an average of 24.1 gpd for toilet purposes. The residents of these homes flushed the toilet an average of 5.04 times per person per day and used an average of 9.5 gpcd for toilet purposes.

Another 311 study homes (26.2 percent) were found to have a mixture of ULF and non-ULF toilets. These homes were distinguished by counting the number of toilet flushes which used less than 2.0 gallons per flush. Homes that had six or more ULF flushes (and who were not part of the "ULF only" group were placed in the "mixed" toilet group. Homes with a mixture of ULF and non-ULF toilets used an average of 45.4 gpd for toilet purposes. The residents of these homes flushed the toilet an average of 5.39 times per person per day and used an average of 17.6 gpcd for toilet purposes. The remaining 776 study homes we placed in the "non-ULF" group. The "non-ULF" study homes averaged 47.9 gpd for toilets. Residents in these homes flushed an average of 4.92 times per person per day and used an average of 20.1 gpcd. The net potential savings when comparing "ULF only" homes from this study to the "non-ULF" homes is therefore is 10.5 gpcd.



Bangor Offers the Facts on Drinking Water

Bangor Water Department Has the Truth About Bangor's Drinking Water Quality, Supply

The City of Bangor - As part of the National Drinking Water Week celebration (May 6-12, 2001), Bangor Water Department wants residents to know where to get the facts about their drinking water. Bangor residents should look no further than Bangor Water Department.

"The Bangor Water Department spends more time thinking about and improving Bangor's drinking water quality than anyone," said City Manager Larry Nielsen. "We're happy to talk to our customers about their water because we believe they have a right to know anything and everything about it."

Although an overwhelming majority of Americans believe their drinking water is of good quality, some consumers remain concerned about the quality of the water coming out of their tap. For those consumers, the best place to get the facts about their drinking water is straight from the utility. Utilities across the nation produce and distribute water quality reports, known as Consumer Confidence Reports, every year. This report lets consumers know first-hand where their water comes from, who is responsible for degrading its quality, and what treatments and technologies workers at Bangor Water Department to make it safe use.

"The City of Bangor is dedicated to providing customers with a safe supply of drinking water and all the information customers may want about it," added Nielsen. "No one is better equipped to talk to consumers about their drinking water than those who work every day to ensure it is available." Customers with questions may call the Bangor Water Department at 427-7918.

These facts, provided by the American Water Works Association, about our water supply help put the important work of drinking water providers into perspective:

- Only 1% of the Earth's water is fresh water available to humans.
  (97% of the Earth's water is salt water, 2% is frozen)
- The U.S. has access to less than 1/20th of 1% of the world's fresh water.
- The U.S. withdraws more water from its resources than any other country in the world.
- Americans tap into those resources for about 370 billion gallons of water every day.
- Only 1% of the water withdrawn by the U.S. is used for drinking water.
- American water utilities spend approximately $22 billion annually to treat our water supplies

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Mother Nature Makes the Water,

Bangor Water Department Makes it Fit to Drink

Bangor Water Department Proud to Serve by Helping Mother Nature

The Bangor Water Department wants to clear up any confusion about the journey water must take to get the taps of Bangor. Bangor Water Department has been highlighting the importance of water to our lives and lifestyles all week in celebration of National Drinking Water Week (May 6-12, 2001).

"Every living thing on the planet needs water to survive," said City Manager Larry Nielsen. "However, not all living things rely on that water to be as clean as Bangor does in order to be healthy."

Bangor gets its water from the ground, but Bangor isn't the only group using it for a variety of purposes. Most of the water in has come into contact with some component of nature or civilization long before it reaches Bangor Water Department.

Erosion and the weathering of rock produce many toxic metals such as arsenic, lead and uranium to trickle down into aquifers and accumulate there. Leaking underground fuel storage tanks and pollution from landfills also seep into our groundwater resources, making groundwater unfit for use by Bangor until someone cleans it up. That's when Bangor Water Department goes to work.

American water utilities spend $22 billion a year to make water fit to drink, and additional billions on ensuring they can deliver it to the homes of their customers. The processes used to deliver safe drinking water to the homes of customers are complex and expensive, but the public health and commercial benefits of having ample supply of clean water make it a worthy investment.

In Bangor this means adding chlorine, phosphate and fluoride. The adding of these chemicals to clean and clear water and protect teeth, is monitored daily by the systems water operator. The city spends thousands of dollars adding chemicals and the testing and sampling of Bangor's water.

"Our work providing safe drinking water to Bangor will continue as long as people live and work in Bangor," concluded City Manager Larry Nielsen. "As residents of Bangor themselves, Bangor Water Department is more than happy to keep up doing the job for everyone."

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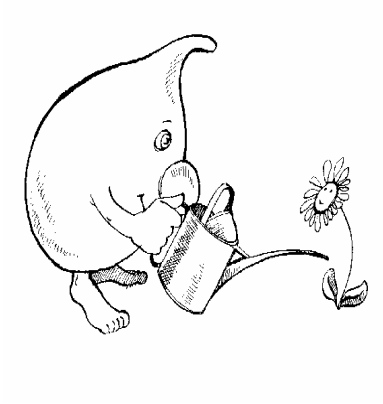
Bangor Water Department Can Help You Make the Most of Your Lawn and Garden

Water Can Be Your Best Friend or Worst Enemy in Tending to Your Yard

Bangor Water Department wants to help customers with their yard work. As part of National Drinking Water Week (May 6-12, 2001), Bangor Water Department is offering Bangor's residents some simple, practical ways to improve water use in gardening and lawn maintenance around the house and save money doing so.



"Most people recognize that watering is essential to a healthy lawn and garden," said City Manager Larry Nielsen. "However, the time and amount of watering done can be the difference between a lawn or garden's success or failure."

Nielsen also advised customers that the City of Bangor also offers residents a seasonal lawn-watering program; “This program can save customers who regularly water lawns and gardens money.” Information on the program can be obtained at City Hall or by calling City Hall at 427-5831.

According to the American Water Works Association (AWWA), North American households use about 172 gallons of water per person every day. Approximately 58 percent of that amount - 101 gallons- is used outdoors for various purposes, including landscaping activities such as lawn maintenance and gardening. However, regular lawn and garden watering doesn't guarantee a homeowner's good intentions. In fact, a full 85 percent of landscaping problems are directly related to over-watering – according to the AWWA.

"Homeowners in Bangor can improve their chances of having a healthy lawn or garden by knowing more about how to water them," said DPW Director Cherokee Thompson. To help Bangor's residents practice good watering habits this spring, Bangor Water Department recommends the following:

- Know your climate. Some plants are better suited to the soil and weather conditions present in your area. Trying to plant vegetation that is not well suited to the conditions in Bangor can be a frustrating waste of time, money and water.
- Use sprinklers in the early morning or in the evening to water lawns. This will give your grass the even water distribution it needs without losing much of the water to evaporation from the hot sun.
- Make sure sprinklers or irrigation systems deliver water close to the ground to avoid evaporation from sun or wind.
- Provide your trees, shrubs and gardens with shallow basins or ditches to retain water until it seeps into the ground.

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