

FINAL REPORT

# City of Bellingham Water Conservation Survey

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## EXECUTIVE SUMMARY

In fall 2007, the City of Bellingham's Department of Public Works (City) contracted with Applied Research Northwest and Cascadia Consulting Group to conduct a baseline survey of water customers' beliefs and behaviors relating to water use and conservation. The purpose of the survey was to inform the City's water conservation goals for the coming years, in response to a statewide mandate. The City plans to use the survey findings and social marketing strategies to develop conservation programs to raise awareness and change people's water use patterns.

The survey of single-family residential water customers in Bellingham covered attitudes and behaviors relating to water use and conservation. The survey results included 400 respondents from among the City's nearly 20,000 single-family residential water customers, including those with and without meters that track water usage. Fewer than one in five City water customers currently has a water meter. The survey, which is intended to establish a baseline and help plan for future conservation efforts, focused on these topics:

- Awareness and attitudes regarding the City's water supply, conservation, and water use;
- Fixture characteristics (faucets, toilets and shower heads) and washing machine use;
- Lawn watering;
- Responding to leaks; and
- Interest in participating in City conservation programs.

### ATTITUDES ABOUT WATER SUPPLY

Overall, respondents think that Bellingham has enough water now but are concerned about the future. Most people (72%) said they agreed that the city has more than enough water to meet current demands. On the other hand, a substantial proportion (67%) also agreed that climate change is already affecting our water supply, and a majority (54%) agreed that they are concerned there will be major water-supply problems in the next five years. A large proportion also agreed that conserving water will encourage new growth (67%), which could hinder conservation efforts.

### PERCEIVED OVERALL USE

Although encouraged by interviewers to estimate, nearly half of those responding could not say how much water they personally used in a day (48%). Of those who responded, half estimated that they used 15 gallons or less, with an average estimate of 35 gallons.

Respondents from metered households gave lower estimates (25 gallons) than those from unmetered households (37 gallons). For comparison, the City estimates that single-family residents actually use about 98 gallons of water per person per day.

## WATER USE IN THE HOME

Respondents were asked about the characteristics of water fixtures, water-using appliances, and their use of such fixtures and appliances in their homes.

### *Fixtures and water-using appliances*

Most respondents (56%) said that all of their showers had low-flow heads, though 27% reported that none of their showers had low-flow heads. Forty-five percent (45%) of respondents said that all of their faucets have aerators, while on the other hand, 29% said that they did not have aerators on any of their faucets. Nearly all respondents (99%) had a clothes washer in the home, including 29% with front-loading washers. On average, respondents said they wash 4.4 loads a week, and 62% said that their washer is *always* full whenever they run it.

### *Toilets*

Since new construction will include new toilets that meet efficiency standards (1.6 gallons per flush or less), respondents were only asked about the toilets in their households if they lived in a home built before 1994 (72% of respondents). On average, 43% of older homes reportedly contain only low-flow toilets, while 40% contain no low-flow toilets. When coupled with the proportion of respondents who lived in newer homes, this suggests that 63% of all single-family residences in Bellingham are fitted entirely with low-flow toilets, and 26% have no low-flow toilets.

Respondents with older toilets in the home were asked how likely they would be to replace one of those toilets with a low-flow model over the next year. Only 5% of respondents said they *definitely will* replace a toilet, while 12% said they *probably will*. Respondents from metered households were more likely to say they would *probably* or *definitely* replace an older toilet within the next year (27% compared to 16% of others).

Respondents with older toilets were also asked how likely they would be to replace a toilet if the city paid out varying levels of incentives: \$40, \$60 and \$80 per toilet. With a \$40 incentive, the likelihood of replacing an older toilet jumps from 5% (without an incentive) to 14%. A \$60 incentive adds 8%, and an \$80 incentive adds another 10% for a total of 32% saying they *definitely would* replace an older toilet with such an incentive.

Approximately 23% of respondents said they had noticed their toilet running when it should not have been in the past two years. When asked what they did, if anything to fix it, most responded with replacing the flapper or other internal parts (47% of comments).

## LAWN MAINTENANCE

Most respondents (55%) said that half or more of their outdoor area is covered in lawn. Thirty-nine percent (39%) of respondents who had more than *little or none* of their outdoor areas covered in lawn said they *never* watered their lawns. Another 26% watered only once or twice a month, and 15% said that they watered more than once a week. Most respondents (74%) said that, when watering, they had considered how much it had rained in the past week. Most (87%) also said they *never* or *rarely* noticed puddles or runoff from their watering.

## FAMILIARITY WITH AND INTEREST IN PUBLIC WATER PROGRAMS

Many respondents (41%) said they had heard *nothing at all* about the City's voluntary metering program, while 24% already had a meter. The large majority (78%) had not seen the City's segment called "Water: Every Drop Counts" on public access TV. Most respondents (61%) also said they knew nothing about the state's Municipal Water Law.

About 35% of respondents said they would be *somewhat* or *very* interested in a free or low-cost workshop on lawn care if offered by the City. Similarly, respondents were interested in free (49%) or low-cost (46%) water audits of the home.

## RECOMMENDATIONS

Given the results of this survey and Bellingham's existing conservation programs, the following options may be well suited for the City to consider:

- Increase residential metering by offering meters at no cost;
- Develop tiered water rate structure and phase out flat rate;
- Upgrade City parks to high-efficiency irrigation systems;
- Offer audits of high peak-season landscape water users and households;
- Promote and offer rebates on front-loading clothes washers, toilet replacements, efficient dishwashers, and other efficient fixtures and appliances;
- Promote residential leak detection and repair through education, test kits (e.g., toilet tablets), and repair kits (e.g., replacement toilet flappers);
- Media outreach through ads on TV, radio, buses, billboards, and before movies; and
- Educational materials, conservation kits, and interactive activities provided through the City's website and other channels;
- Educational programs for public schools;

- Target multi-family building managers and operators, businesses (including specific classes of business), high peak-season water users, and landscapers for financial incentives and/or technical assistance;
- Continue surveying customers and assessing conservation potential; and
- Evaluate program effectiveness.

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## INTRODUCTION

In Fall 2007, the City of Bellingham's Department of Public Works (City) contracted with Applied Research Northwest (ARN) and Cascadia Consulting Group (CCG) to conduct a baseline survey of water customers' beliefs and behaviors relating to water use and conservation. The purpose of the survey was to inform the City's water conservation goals for the coming years, in response to a statewide mandate. Washington State's Municipal Water Supply – Efficiency Requirements Act of 2003 requires that municipal water suppliers collect data on water consumption and production, include water-use-efficiency measures in planning, submit annual performance reviews, install service meters, and meet a 10% leakage standard to minimize water loss through leakage.<sup>1</sup> The City plans to use the survey findings and social marketing strategies to develop conservation programs to raise awareness and change people's water use patterns. The survey was limited to single-family residences (sfr), since programs for multi-family residences tend to require different strategies to reach the residents.

The City's residential water use is for the most part unmetered, although since 2005, residents have had the option of participating in the Voluntary Metering Program (VMP). In the VMP, the resident pays a one-time \$150 fee for the installation of a water meter (total cost \$450-750) and then is billed only for the water they use, rather than the flat rate otherwise applied to residences. As part of the VMP, the City subsidizes the outstanding portion of the cost of water meter installation. Approximately 3,200 of the City's 19,672 sfr water customers have meters. Since meters are known to correspond to different water use patterns, the survey used a random sample of residential phone numbers of water customers, supplemented by a sample of known metered households.

CCG provided a review of research and findings from other organizations and municipalities to inform the survey. The City's limited metering is key to the decisions that were made in designing the survey. In order for the City to set and meet goals, the goals could not be based on measures of water use, but rather needed to be based on residents' self-reported water use. The survey focused on a few substantial, easy-to-report features, including the following topics:

- Awareness and attitudes regarding the City's water supply and water conservation;
- Fixture characteristics (faucets, toilets, and showerheads) and washing machine use;
- Lawn watering; and
- Responding to leaks.

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<sup>1</sup> Washington State Department of Health, "Summary of the Water Use Efficiency Rule," July 2007  
[http://www.doh.wa.gov/ehp/dw/municipal\\_water/WUE\\_summary\\_packet\\_7-30-07.pdf](http://www.doh.wa.gov/ehp/dw/municipal_water/WUE_summary_packet_7-30-07.pdf) (Accessed on January 4, 2008)

In addition, the survey asked residents about their interest in participating in a toilet change-out rebate program, as well as workshops.

Four hundred (400) residents completed the 42-question survey. This sample size provides for a margin of sampling error of about 5%. More information about the survey's research methods is contained in Appendix A of this report.

The frequency report, which includes the actual telephone script used and the distribution of respondent answers, can be found in Appendix B. The verbatim responses given to the open-ended questions can be found in Appendix C.

This report uses the convention of *italicizing* any verbatim response option from the survey in an effort to convey the voice of the residents' survey responses more fully.

## FINDINGS

This section discusses the findings from the survey, along with analysis of all subgroups including:

- Metered and unmetered households;
- Education level;
- Age;
- Owner or renter;
- Familiarity with the City's metering program;
- Awareness of the City's Every Drop Counts public access program; and
- Awareness of the Washington State mandate to meter all households within the next 10 years.

Where statistical testing showed significant differences, those differences are described in the text.

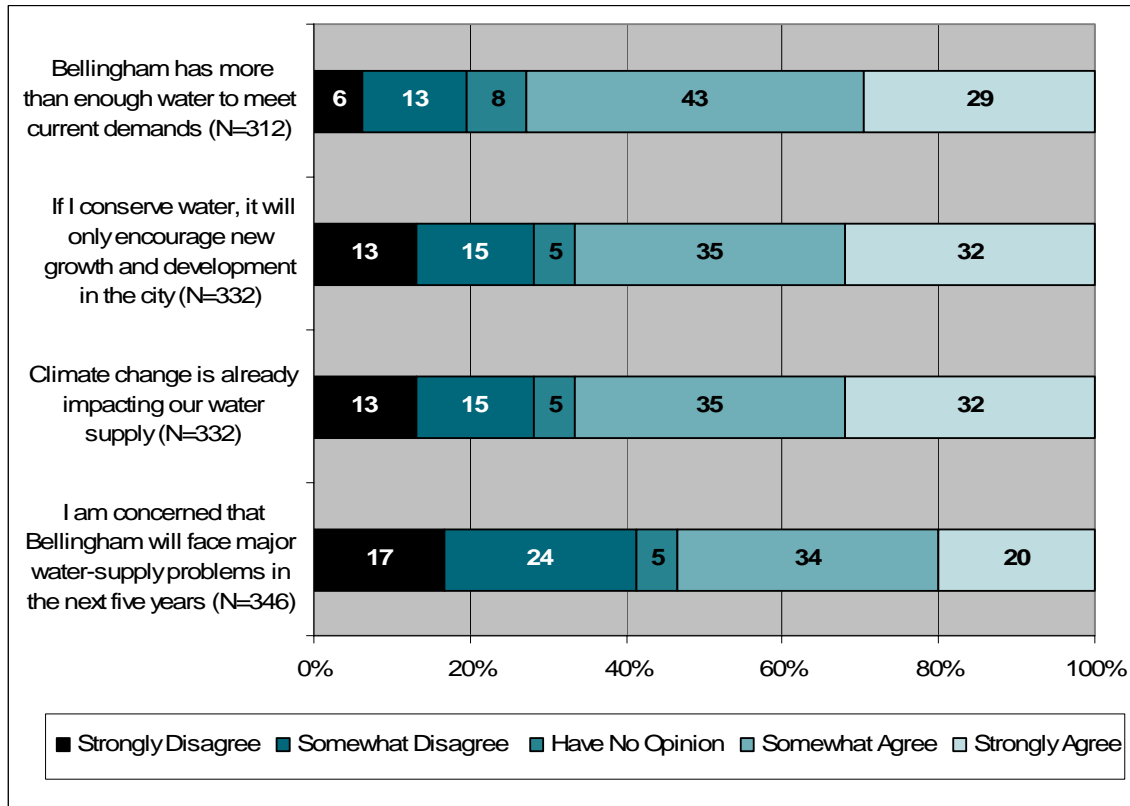
## ATTITUDES ABOUT WATER SUPPLY

Respondents were asked how much they agreed or disagreed with four statements that might describe how some people feel about water issues in Bellingham. They were:

- Bellingham has more than enough water to meet current demands.
- Climate change is already impacting our water supply.
- If I conserve water, it will only encourage new growth and development in the city.
- I am concerned that Bellingham will face major water-supply problems in the next five years.

Figure 1 shows the ways that people responded to these items, sorted by those that were agreed to the most frequently (including *strongly agree* and *somewhat agree* responses). Overall, people were optimistic about the city’s supply of water with 72% saying they agreed that the city has more than enough water to meet current demands. A similarly large proportion also agreed that conserving water will encourage new growth (67%). These two factors combined suggest that motivating people to conserve water in a culture of perceived abundance may be difficult.

**Figure 1. Attitudes about water supply (sorted by *somewhat* and *strongly agree*)**



Two-thirds of respondents (67%) also agreed that climate change is already impacting our water supply. A majority (54%) agreed that they are concerned there will be major water-supply problems in the next five years.

A similar question regarding concern over water supply was also asked by Seattle Public Utilities in a 2001 survey of its customers. In that survey, 11% answered that they were *not at all* concerned, while 26% were *very concerned*. Although not directly comparable due to the differences in the question format and the age of the data, the difference is suggestive that Bellingham residents are less concerned now about their water supply than Seattle residents were in 2001.

### ***Subgroup differences***

Respondents were generally consistent in their responses to these four items with only one notable exception: those with higher levels of education, particularly college graduates, were more likely to disagree that conservation encourages growth compared to their counterparts. Specifically, 49% of respondents with no college education *somewhat* or *strongly agreed* with the statement, compared to 13% of college graduates.

## PERCEIVED USE

Respondents were asked how much water they thought they personally used in a day. The purpose of this question was to set a baseline around people's perception of water use. With conservation programs and increased metering, people's awareness of their typical water use should increase.

Although encouraged by interviewers to estimate, nearly half of those responding could not say how much water they used (48%). Of those who responded, the range was from a low of 1 gallon to a maximum of 200. Half estimated that they used 15 gallons or less, with an average estimate of 35 gallons.

The question was deliberately vague and did not prompt people to think of cooking; drinking; bathing; or home, yard, and car maintenance.

In Bellingham, single-family residents use an average of 98 gallons per person per day.<sup>2</sup> In the U.S., single-family residents use an average of 101 gallons per person per day, including both indoor and outdoor uses. Nationwide, residents of multifamily homes typically use 45 to 70 gallons per person per day. According to Seattle Public Utilities, its customers use approximately 100 gallons per person per day.<sup>3</sup> Bellingham's typical water use appears to be on par with national averages and those in the region, but most survey respondents appear to significantly underestimate their own water use.

Those responding from metered households gave lower estimates (25 gallons) than those from unmetered households (37 gallons). The range around the estimates of respondents from metered households was also smaller, averaging 26 gallons compared to a 48-gallon average variation from those living in unmetered homes. No other differences in subgroups were detected.

## WATER USE IN THE HOME

Respondents were asked about the characteristics of water fixtures, water-using appliances, and their use of these fixtures and appliances in their home.

### *Characteristics of fixtures*

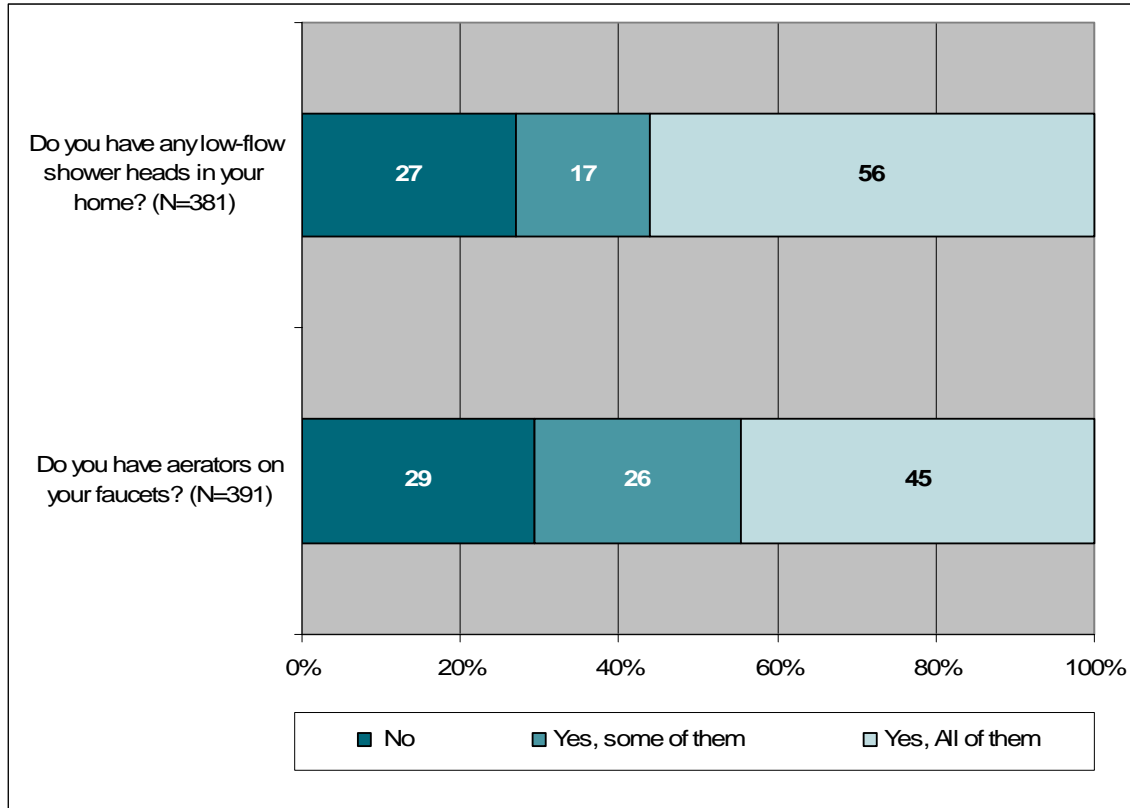
Respondents were asked if they had any low-flow showerheads, and if so, how many of their home's showers had them. Most (56%) said that all of their showers had low-flow

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<sup>2</sup> City of Bellingham, "Water Consumption and Water Conservation," October 2, 2006 <[www.cob.org/documents/pw/utilities/20061002\\_water\\_consumption\\_and\\_water\\_conservation.pdf](http://www.cob.org/documents/pw/utilities/20061002_water_consumption_and_water_conservation.pdf)> (Accessed January 4, 2008)

heads, though 27% said none of their showers had low-flow heads. A similar proportion said that they did not have aerators on any of their faucets, though 26% said there were aerators on at least some of their home's faucets, and 45% said there were aerators on all the faucets.

**Figure 2. Characteristics of water fixtures in the home.**



These characteristics tended to go together – with 47% of those having no low-flow showerheads also having no aerators on their faucets. Conversely, 70% of those with low-flow showerheads throughout the home also had aerators on all the faucets.

<sup>3</sup> Saving Water Partnership, "2006 Annual Report: Seattle Water Supply System; Regional 1% Water Conservation Program," August 2007.

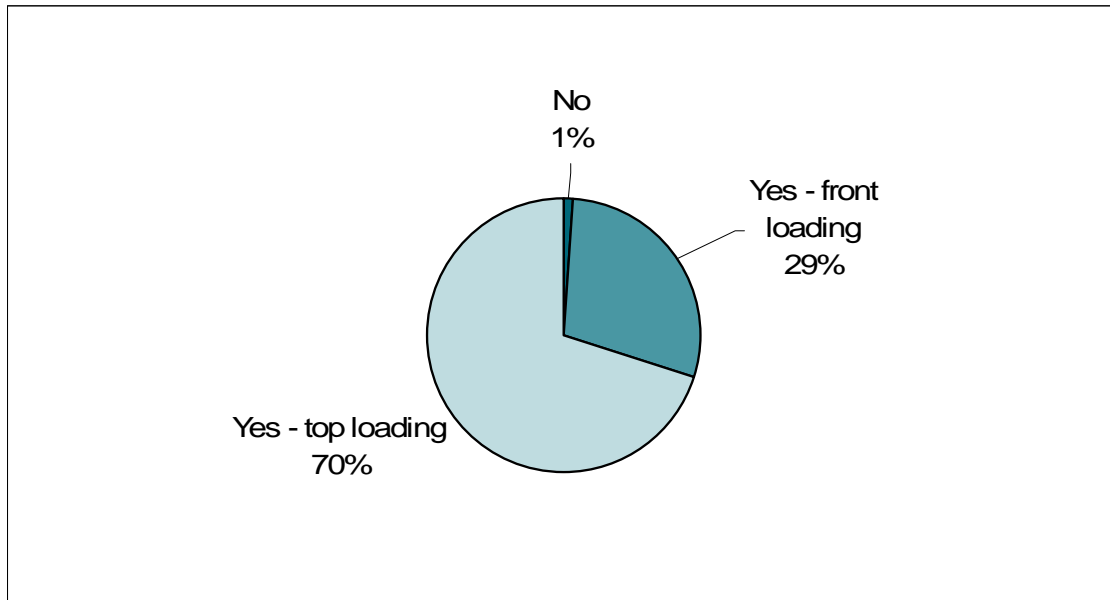
### Subgroup differences in fixtures

Owners are more likely to have both low-flow showerheads and aerators on their faucets than are renters. Specifically, 25% of owners had no low-flow showerheads compared to 47% of renters. In addition, 46% of owners had aerators on *all* of their faucets compared to 26% of renters.

### Appliances

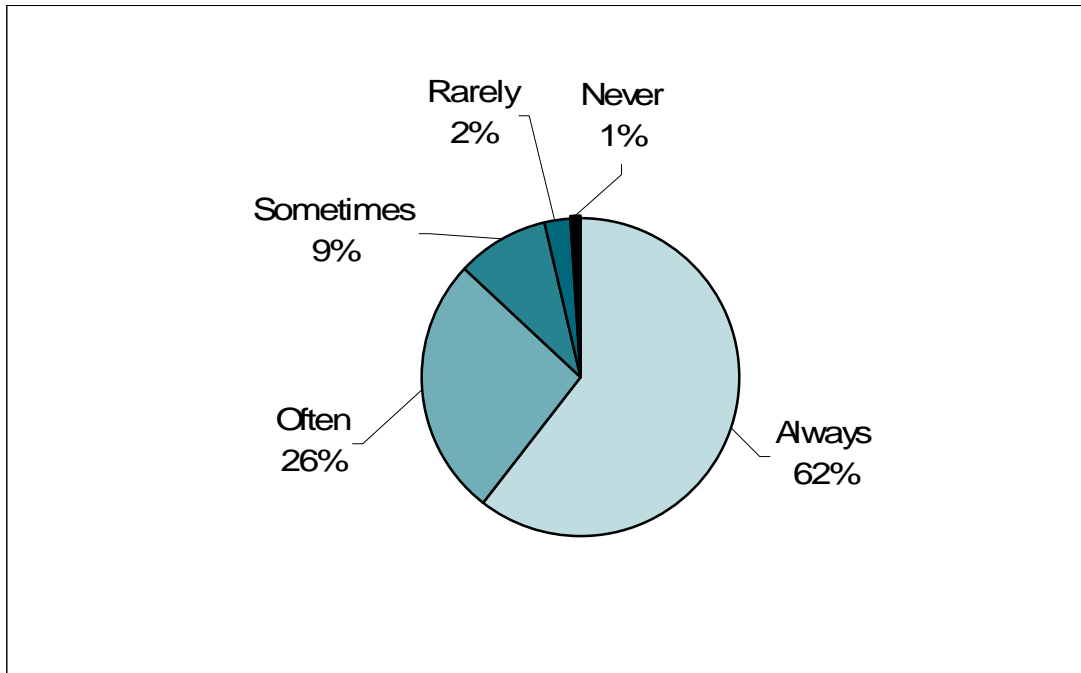
Respondents were asked about clothes washing. Nearly all of them had a clothes washer in the home (99%), and 29% had a front-loading washer (front-loading washers typically use less water than top-loading washers). On average, respondents said they wash 4.4 loads a week, with a median of 4 loads. Several respondents (4%) said they wash 10 or more loads a week.

**Figure 3. Type of clothes washer (N=398).**



When asked how full their washer is when they run it, most respondents (62%) said it is *always* full.

There was no association between the quantity of laundry done and the frequency with which the washer was run with a full load. However, those with top-loading machines were less likely to say they *always* ran their washer full (57% compared to 67% of those with front-loading machines). This suggests that those who own front-loading washers may be more aware of and likely to use water conservation strategies.

**Figure 4. How often is clothes washer run completely full? (N=392)**

### Subgroup differences

Respondents who were over age 65 reported doing fewer loads of laundry a week than those ages 35-49. Since people ages 35-49 are more likely than others to have children in the home, the association between loads and age is likely a function of household size – a question which was not included in this survey. Those over age 65 were also the least likely to *always* run their clothes washers full (43%, relative to over 60% in the population). It may be that they are more likely to be living alone, and therefore generate smaller loads, or that they wash their clothes on a fixed schedule rather than according to need.

Those with a college education were more likely to own front-loading washers (36% compared to about 20% of others) and to run their washers full *always* or *often* (90% compared to 83% of others). The association between education and this behavior suggests that there are different motivating factors for people from different educational backgrounds. It also suggests that conventional communications (brochures and written literature) may not be effective tools for reaching this population, which tends to prefer personal interaction or visual learning tools. [citation forthcoming]

## TOILETS

On average, toilets represent the largest water use inside the home, using more water than showers, washing machines, or other fixtures and appliances. Since 1994, new toilets have been restricted to using 1.6 gallons of water or less per flush, as mandated under the federal Energy Policy Act of 1992 (EPAct). Since new construction after that date will have modern low-flow toilets, respondents were asked about the toilets in their households only if they lived in a home built before 1994 (72% of respondents).

On average, respondents in older homes said they had 2.1 toilets, with a minimum of 1 and a maximum of 4. Respondents were asked how many of those were low-flow or had been installed since 1993. The average number of new or low-flow toilets that had been installed was 1.1. In 43% of older homes, all of the toilets were low-flow, while in 40% none of them was. When coupled with the proportion of respondents who were in newer homes, this suggests that 63% of all single-family residences in Bellingham are fitted with nothing but low-flow models and 26% have none.

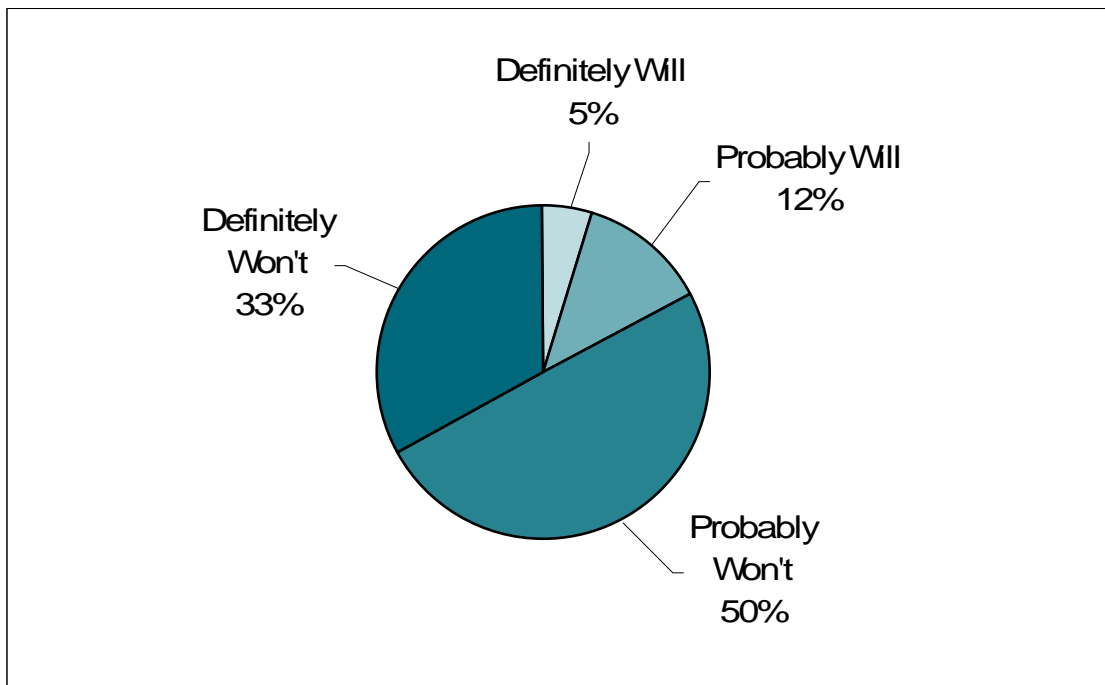
The residences containing older higher-flow toilets represent a ripe opportunity for water conservation in Bellingham. Providing financial incentives, or other information and assistance, may help encourage residents to replace these inefficient older toilets with new models that save several gallons of water with every flush. With sufficient incentives, such as rebates for new toilets, as discussed further below, the City could help facilitate replacement of many of these toilets. The City could consider a goal of replacing 10% of these toilets each year. The following sections provide examples from other jurisdictions of toilet replacement initiatives.

There was no association between the portion of toilets in the home that were low-flow and any of the respondents' characteristics.

### Likelihood of replacing older toilets

Respondents with older toilets in the home were asked how likely they would be to replace one of those toilets with a low-flow model over the next year. Half (50%) said they *probably won't* and another 33% said they *definitely won't*.

**Figure 5. Likelihood of replacing an older toilet with a low-flow model in the next year (Among respondents with older toilets in the home; N=172)**



### Subgroup differences

Respondents from metered households were more likely to say they would *probably* or *definitely* replace an older toilet within the next year (27% compared to 16% of others). No other associations were found.

### Responsiveness to rebate program levels

In many cities, rebate programs are instituted to promote exchanges to newer models of toilets. Bellingham may choose to do the same. Respondents who had older toilets in their homes were asked how likely they would be to replace an older toilet if the City paid out varying levels of incentives: \$40, \$60 and \$80 per toilet. If the respondent said they *definitely would* replace a toilet at \$40 or \$60, they were not asked about higher levels of incentives.

Figure 6 shows that with a \$40 incentive, the reported likelihood of replacing an older toilet jumps from 5% (without an incentive) to 14%. A \$60 incentive adds 8%, and an

\$80 incentive adds another 10% for a total of 32% saying they *definitely would* replace an older toilet.

In August 2005, the Cascade Water Alliance (an association of eight suburban cities and water districts near Seattle) surveyed households on water use.<sup>4</sup> Among respondents with at least one high-flow toilet, 19% reported planning to replace a high-flow toilet in the next year. These respondents were also asked whether a rebate would make them more likely to replace a toilet. With a \$40 incentive, the likelihood of replacing an older toilet jumped to 21%. A \$60 incentive adds 9%, and an \$80 incentive adds another 9% for a total of 39% saying they would be *very likely* to replace an older toilet. These figures are somewhat higher than, though relatively consistent with, the reported levels of response to rebates for toilet replacement in Bellingham.

Reported plans for toilet replacement may not turn into actual installation of new fixtures, however. Some cities elsewhere generated significant numbers of toilet replacements with higher rebate levels. Between 1994 and 1997, for example, New York City offered rebates \$150 or \$240 per toilet to encourage homeowners and apartment-building owners to replace inefficient toilets.<sup>5</sup> The program replaced 1.3 million toilets, saving 70-80 million gallons of water per day. Between 1990 and 1996 Santa Monica, California, replaced more than 41,000 residential toilets and 1,567 commercial toilets by offering a \$75 rebate.<sup>6</sup>

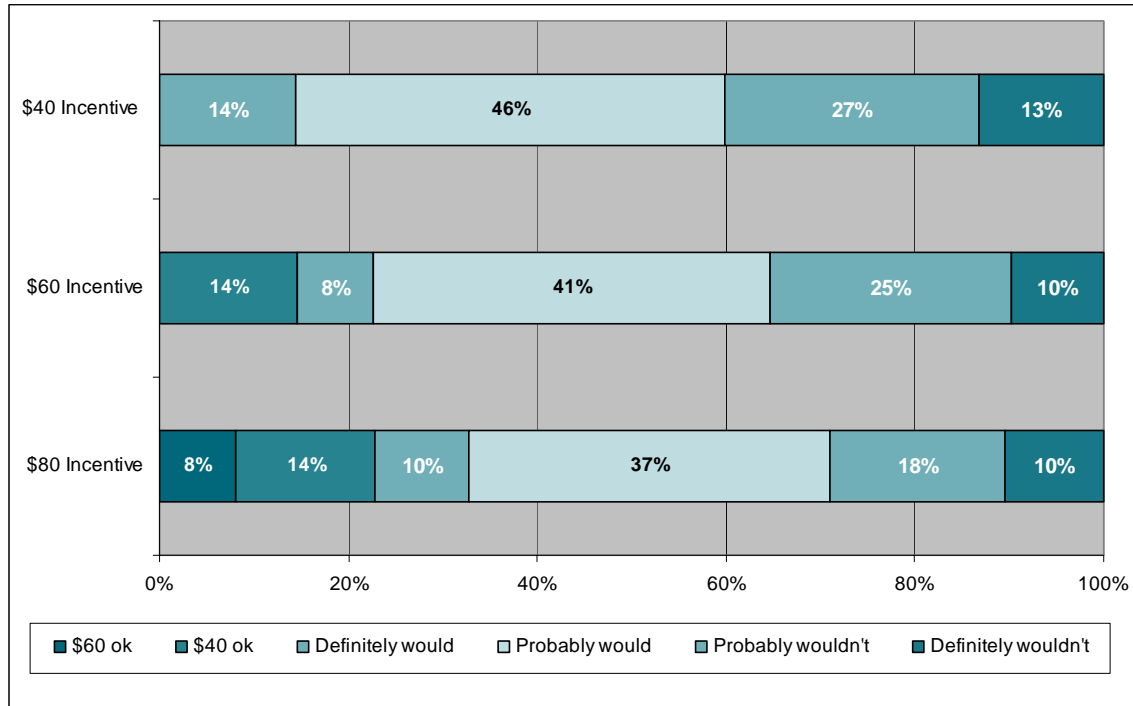
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<sup>4</sup> Cascade Water Alliance, "Conservation Potential Assessment – Appendix A-1," August 2005, <[http://www.cascadewater.org/con\\_potential\\_assessment.html](http://www.cascadewater.org/con_potential_assessment.html)> (Accessed October 31, 2007)

<sup>5</sup> U.S. Environmental Protection Agency, "Cases in Water Conservation," July 2002, <[www.epa.gov/watersense/docs/utilityconservation\\_508.pdf](http://www.epa.gov/watersense/docs/utilityconservation_508.pdf)> (Accessed October 31, 2007)

<sup>6</sup> U.S. Environmental Protection Agency, "Cases in Water Conservation," July 2002, <[www.epa.gov/watersense/docs/utilityconservation\\_508.pdf](http://www.epa.gov/watersense/docs/utilityconservation_508.pdf)> (Accessed October 31, 2007)

**Figure 6. Likelihood of replacing older toilet with incentives (N=167)**



Those who still said they would not replace an older toilet even with an \$80 rebate (112 of the 400 respondents) were asked what would keep them from doing so. Most noted concern about overall costs, as well as a resistance to making changes and worries about whether low-flow toilets work as well as older models.

**Table 1. Reasons people would not replace an older toilet, even with an \$80 rebate**

	<u>N</u>	<u>%</u>
Cost of toilet	35	31%
Difficulty/Inconvenience of installation	21	19%
Not concerned about replacing it/Current toilet works fine	19	17%
Concerns about efficiency of/Don't like low-flow toilets	15	13%
Selling home/Not owner of home	11	10%
Hiring a Plumber	5	4%
I would	5	4%
N/A; Don't know	4	4%
Other	19	17%

N=112 . Numbers sum to more than 100% due to multiple responses.

**Toilet maintenance**

Another key source of water waste comes from leaking toilets. While many leaks are silent and can only be detected with the use of dyes in the toilet tank, others are more obvious and can be heard.

Respondents were asked if they had noticed their toilet running when it should not have been in the past two years, and 23% said they had. When asked what they did, if anything, to fix it, most responded with replacing the flapper or other internal parts (47% of comments). Others just jiggled the handle (20%), followed by a large number of other strategies, including calling a plumber.

Replacing parts is the most desirable behavior, as running toilets tend to require a new flapper to stop the leak entirely. Making people aware that most leaks are silent may help encourage people to do a more thorough investigation of the leak when, or even before, a noisy one occurs.

**Table 2. What respondent did when toilet was running.**

	<u>N</u>	<u>%*</u>
Replaced the flapper	23	26%
Replaced parts	19	21%
Jiggled the handle	18	20%
Checked the chain	9	10%
Adjusted the float	8	9%
Called a plumber	7	8%
Other	6	7%
Nothing	6	7%
Checked the flapper	6	7%
"Fixed it" (no detail)	5	6%
<b>Total</b>	<b>90</b>	

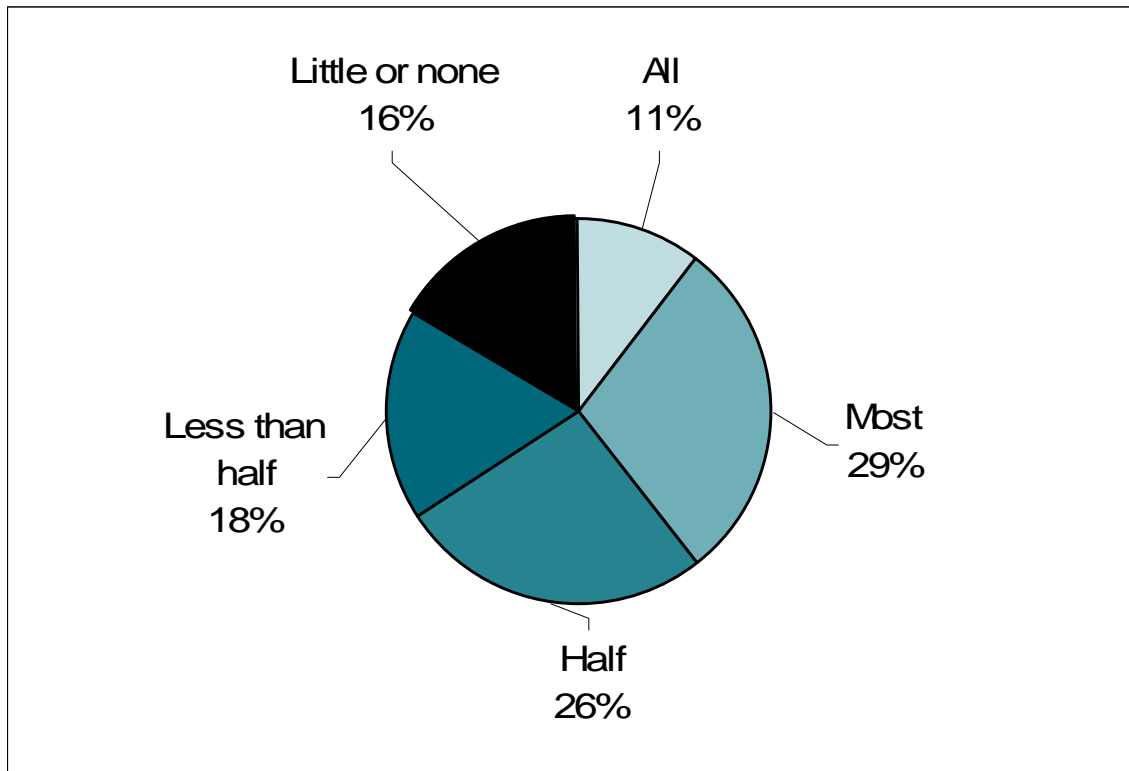
\*Multiple responses possible. Sums to more than 100%.

## LAWN MAINTENANCE

Another key area of high water use in the summer time is lawn maintenance. Rather than focus on a variety of outdoor water uses and conservation strategies, the City focused its attention on lawn watering as a predominant behavior that could be influenced through education and social marketing.

Most respondents said that half or more of their outdoor area is covered in lawn (see Figure 7).

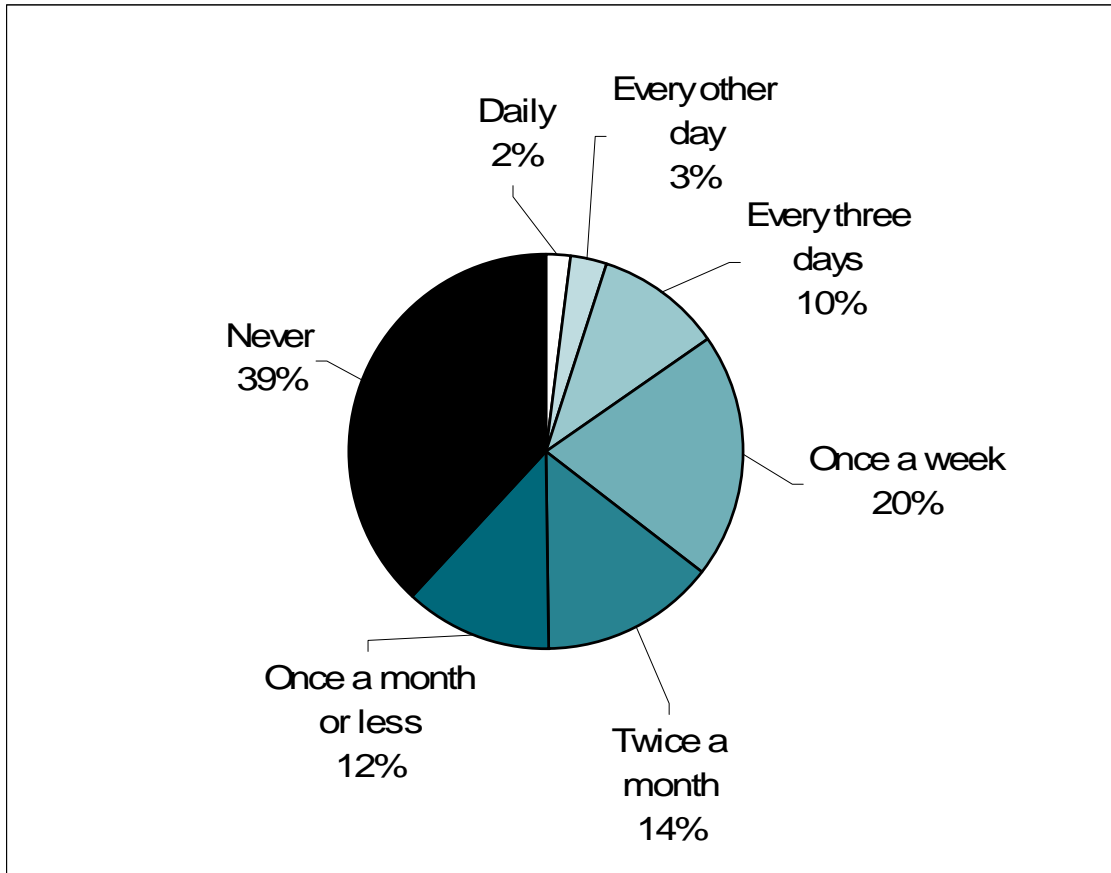
**Figure 7. How much of your outdoor area is covered in lawn? (N=397)**



Respondents who had more than *little or none* of their outdoor areas covered in lawn were also asked how often they watered their lawn last summer, when the weather got hot. Thirty-nine percent (39%) said they *never* watered their lawns. Another 26% watered only once or twice a month.

Fifteen percent (15%) said that they watered more than once a week, with 5% saying they watered as frequently as every other day or daily. These frequent users are key targets for changing behavior and teaching them to understand how little water may be needed to keep their lawn healthy.

Figure 8. Last summer, how often did you water your lawn? (N=335)



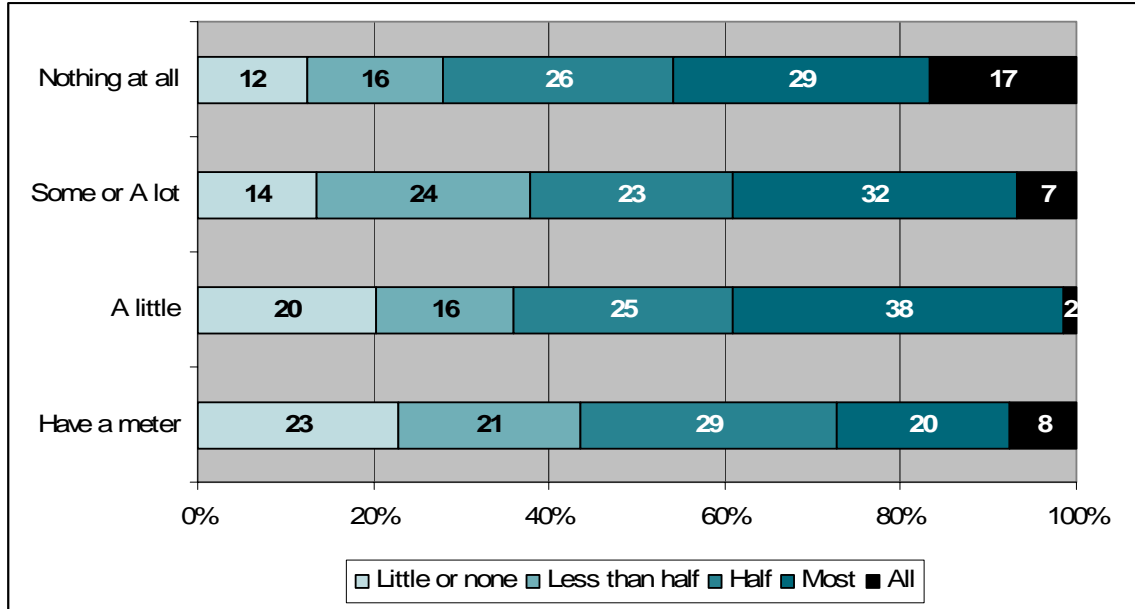
### Subgroup differences

Younger respondents (under age 35) were more likely to have more outdoor area covered in lawn. Fifty-nine percent (59%) said that *all* or *most* of their yards were lawn, compared to 43% of those ages 35-49 and 35% of those age 50 or over. Younger residents may be more likely to have young children in the home and desire to have lawns as play areas. Older residents may have more time and interest to develop gardens that take the place of lawn area; they may also have lived in the home for longer and have added patios or decks that replace lawn areas. Another possible explanation is that older residents may seek smaller lawns, or no lawns at all, to avoid the maintenance (e.g., mowing) that lawns necessitate.

There is also an interesting relationship between lawn coverage and respondents' awareness of the City's voluntary metering program. Those who had heard *nothing at all* about the metering program had more lawn coverage than those who knew more. It is likely that those who already had small lawns were most drawn to the metering program, since their outdoor water use is likely lower.

Those who watered most often (more than once a week) were exclusively homeowners.

**Figure 9. Lawn coverage and how much respondents had heard about the City’s voluntary metering program**



### Watering methods

Watering methods have a strong influence on outdoor water use. An important source of water loss is leakage from sprinkler systems; such leaks can often go unnoticed. Sprinkler systems may also need adjustment to account for rainfall, seasonal differences, or other changes over time. The majority of those who watered their lawns use a sprinkler and hose (54%), but a substantial number (33%) also used a sprinkler system that was either turned on manually or automatically (see Table 2).

	<u>N</u>	<u>%</u>
Sprinkler attached to a hose that is moved around	112	54%
A sprinkler system that is turned on and off manually	37	18%
Sprinkler system that is on an automatic timer	30	15%
Hand watering	25	12%
Soaker hoses	17	8%
Other	3	1%
Total*	207	

\*Multiple responses possible.

Those who had sprinkler systems on an automatic timer were asked how often, if at all, they had checked the system for leaks in the past two years.<sup>7</sup> Only 4 of 25 respondents had not checked the system at all. About half (N=12) had checked the system twice, suggesting that annual inspections may be fairly common. The survey did not probe regarding methods for leak-checking, however; some leaks, such as underground leaks, may be more difficult to detect and remedy.

Those with automatic systems were also asked how often they adjusted the systems for weather and seasons in the past two years. About a quarter of them (N=5) did not adjust their systems at all. Most had adjusted their systems 3-4 times. A few (N=4) had adjusted their systems more than 10 times.

<sup>7</sup> The original question did not include an option for manually operated sprinkler systems. Manual sprinkler systems were included as a response option after several respondents explained to interviewers that they had a system but it was not automatic. Although they were not asked about checking for leaks, their behavior is expected to be similar to that of those with automatic systems.

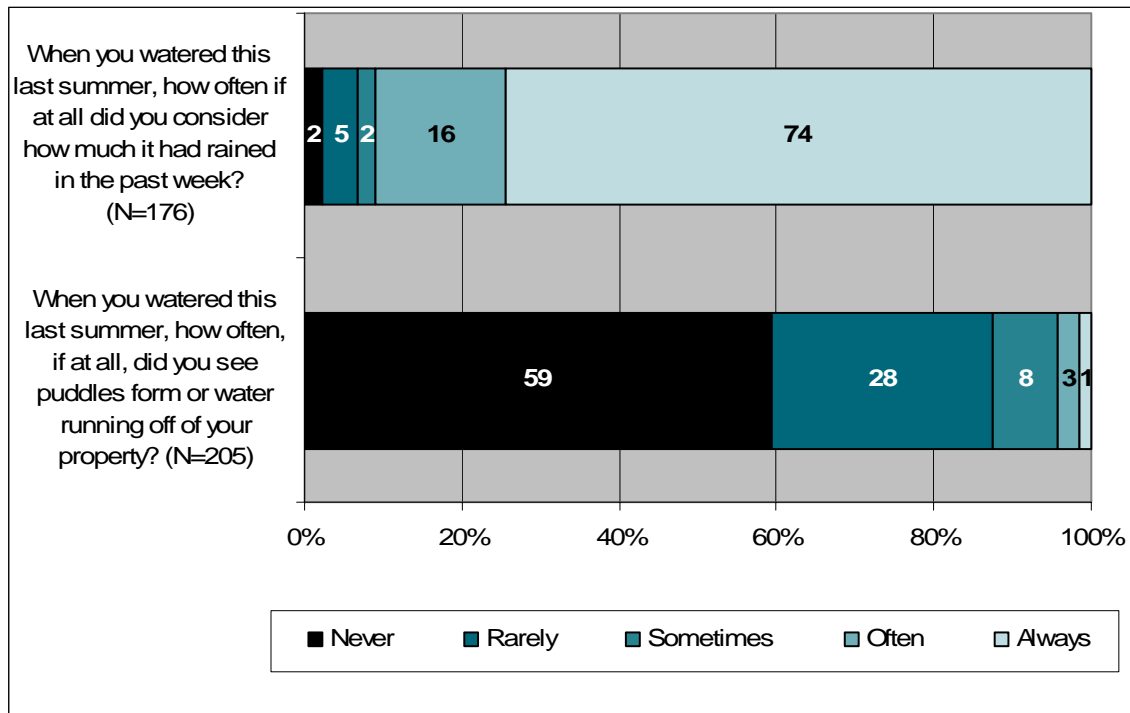
All respondents with lawns that they watered were asked two questions that relate to conservation.

- When you watered, how often did you consider how much it had rained in the past week?
- When you watered, how often did you see puddles form or water running off the lawn?

Most respondents (74%) said they had considered how much it had rained in the past week, with 9% saying they *never*, *rarely*, or *sometimes* considered rain.

Most respondents (59%) said they *never* noticed puddles or runoff from their watering, 12% said they *sometimes*, *often* or *always* noticed it. Watering frequency (e.g., daily, weekly) did not correspond to either of these items.

**Figure 10. Lawn watering.**



Respondents were also asked if they had measured how much water their sprinklers or hoses were putting on the lawn. Most (89%) said they had not. This question generated a great deal of interest from respondents who wanted to know how they would do so and what they would learn from it.

Interviewers followed up by asking what the main reason was people had not measured their water output. Many said they either did not think it was important or did not know

they should. Others said they did not know how to do so. Others said that they felt they were already paying attention to the issue by conserving, watering only as needed or watering at set times.

**Table 4. Reasons people did not measure output of hoses and sprinklers.**

	<u>N</u>	<u>%</u>
Didn't know you could/how to/never thought to	75	43%
Water for set times/Water only as needed/Already conserve water	44	25%
Not concerned about it/Not metered/Lazy or busy	42	24%
Have in the past/Already know how much	6	3%
N/A; Don't know	3	2%
Other	16	9%

N=175. Numbers sum to more than 100% due to multiple responses.

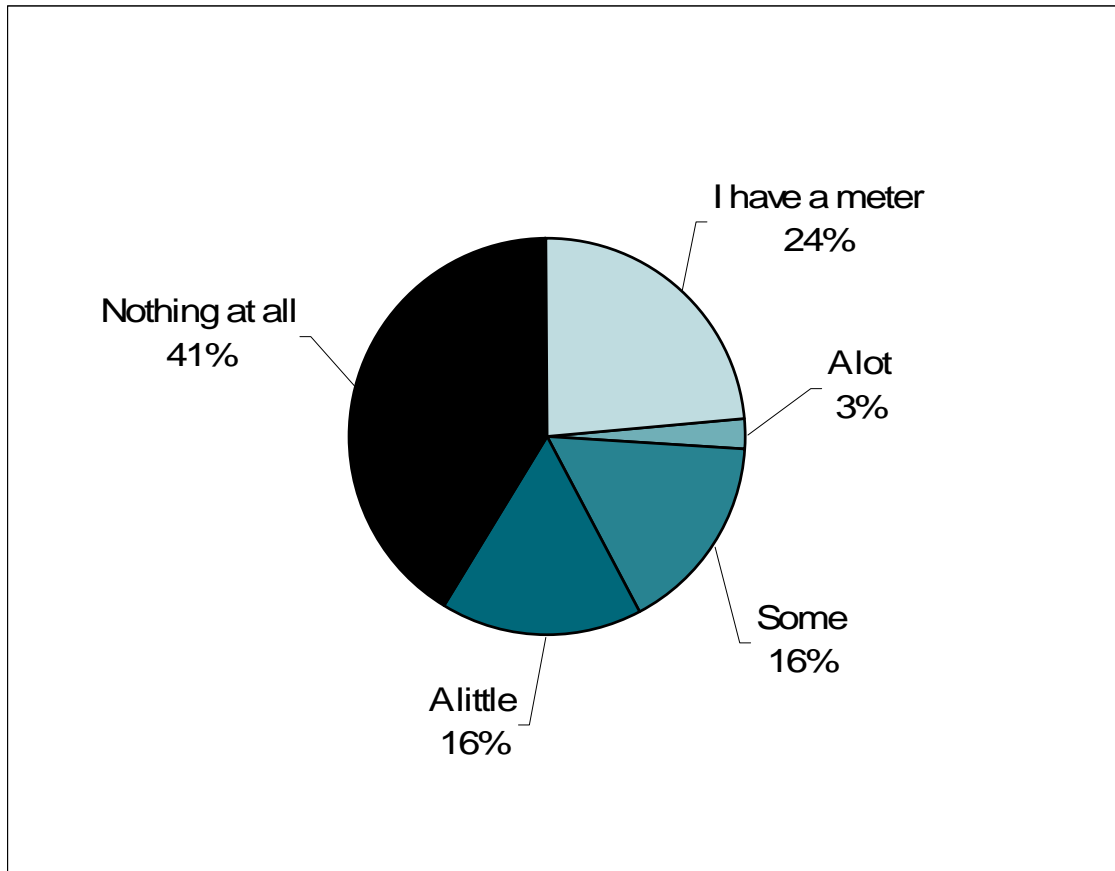
### Subgroup differences

Respondents with a college education were most likely to say they *always* considered how much it had rained (80%) compared to those with less education (64%).

## FAMILIARITY WITH CITY WATER PROGRAMS

Respondents were asked how much they had heard or read about the City's voluntary metering program. Many (41%) said they had heard *nothing at all*.

**Figure 11. Familiarity with City's Voluntary Metering Program (N=396)**

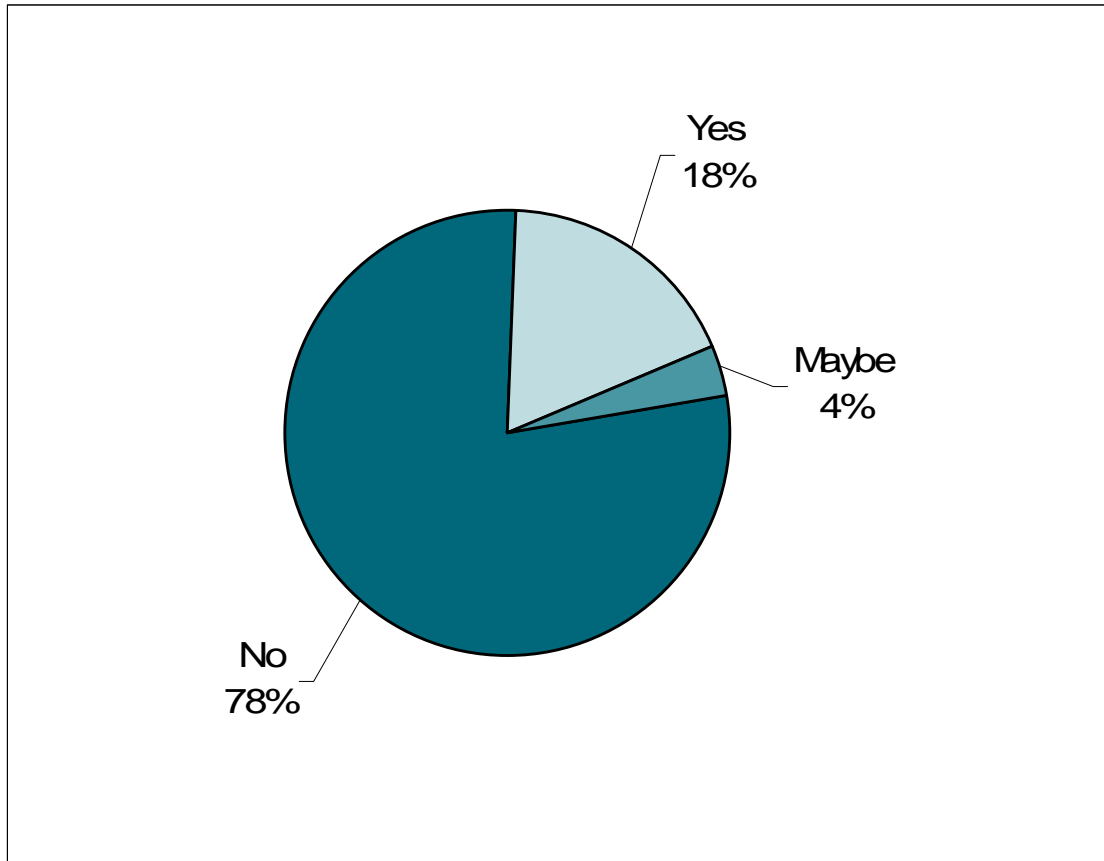


Familiarity with the program did not systematically vary with people's responses to other questions in the survey. However, those who reported having meters in response to this question also reported:

- Having more toilets in their homes (median 3, compared to 2 for others);
- Having installed more low-flow toilets since 1993 (68% compared to 58% of others);
- Having half or less of their outdoor areas covered in lawn (73% compared to 57% of others); and
- Never seeing puddles or water running off when they watered (70% vs. 54% of others).

Respondents were also asked if they had seen the City's segment called "Water: Every Drop Counts" on public access television. The large majority (78%) had not.

Figure 12. Ever seen “Water: Every Drop Counts” (N=398)



Those who had seen the program were more likely to:

- Have aerators on their faucets (81% compared to 68% of others);
- Be likely to replace an older toilet in the next year, without an incentive (17% *definitely will* compared to 3% of others);
- Be *a little* or more familiar with the City’s voluntary metering program (78% compared to 55% of others); and
- *Always* run their washers full (70% versus 59% of others).

### Subgroup differences

Those who were *a little* or more familiar with the voluntary metering program were more likely to be homeowners (52% compared to 21% of renters) and older than age 35.

Those who had seen the “Water: Every Drop Counts” television program were more likely to be homeowners (19% compared to 3% of others). Those ages 50 and up were also more likely to be familiar with the TV program.

## INTEREST IN POTENTIAL PROGRAMS

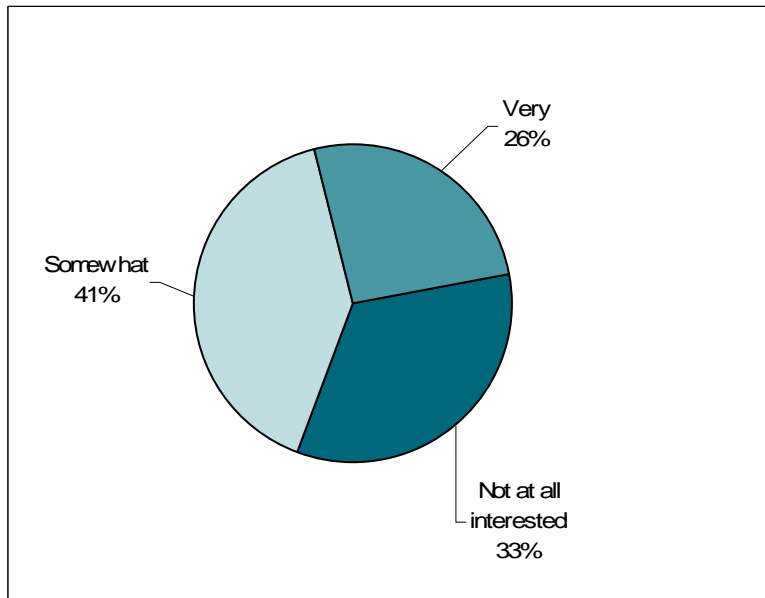
Respondents were asked about a variety of programs that the City might offer including:

- Toilet rebates;
- Workshops about reducing their lawn size; and
- Water audits of the home to detect conservation opportunities and leaks.

### Rebate programs

Those with older toilets in the home were asked about their interest in a toilet rebate program. Twenty-six percent (26%) said they would be *very* interested and another 41% said they would be *somewhat* interested.

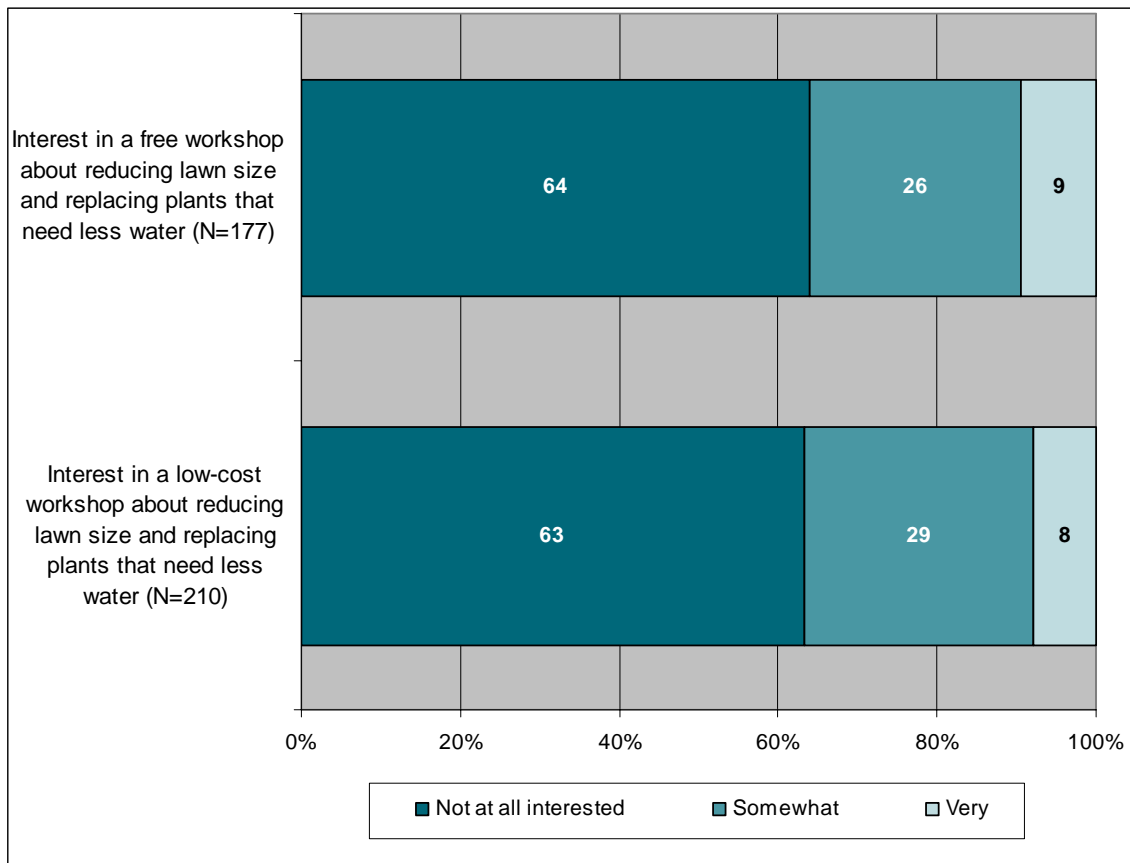
Figure 13. Interest in toilet rebate programs.



**Interest in workshops**

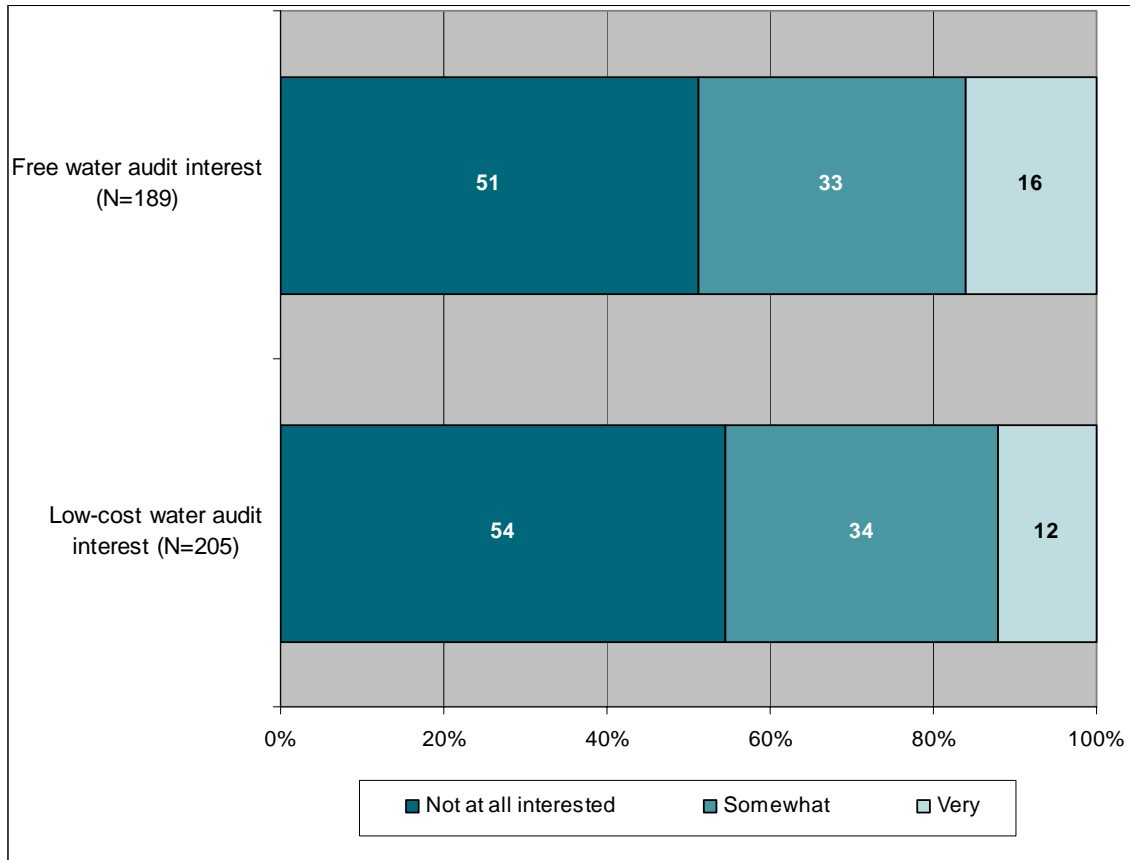
The survey explored interest in and willingness to pay for City-sponsored workshops on lawn care. ARN randomized respondents into one of two treatment groups – half of whom were asked about interest in a free workshop, and the other who were asked about interest in a low-cost workshop. Responses to each were similar, indicating little sensitivity to the issue of free vs. low-cost offerings. About 35% of respondents said they would be *somewhat* or *very* interested in either workshop.

**Figure 14. Interest in free or low-cost lawn care workshops.**



Similarly, the City could offer free or low-cost water audits of the home. Many respondents were interested, regardless of the cost component, with 49% being interested in the free water audit and 46% being interested in a low-cost audit.

**Figure 15. Interest in free or low-cost home water audit.**



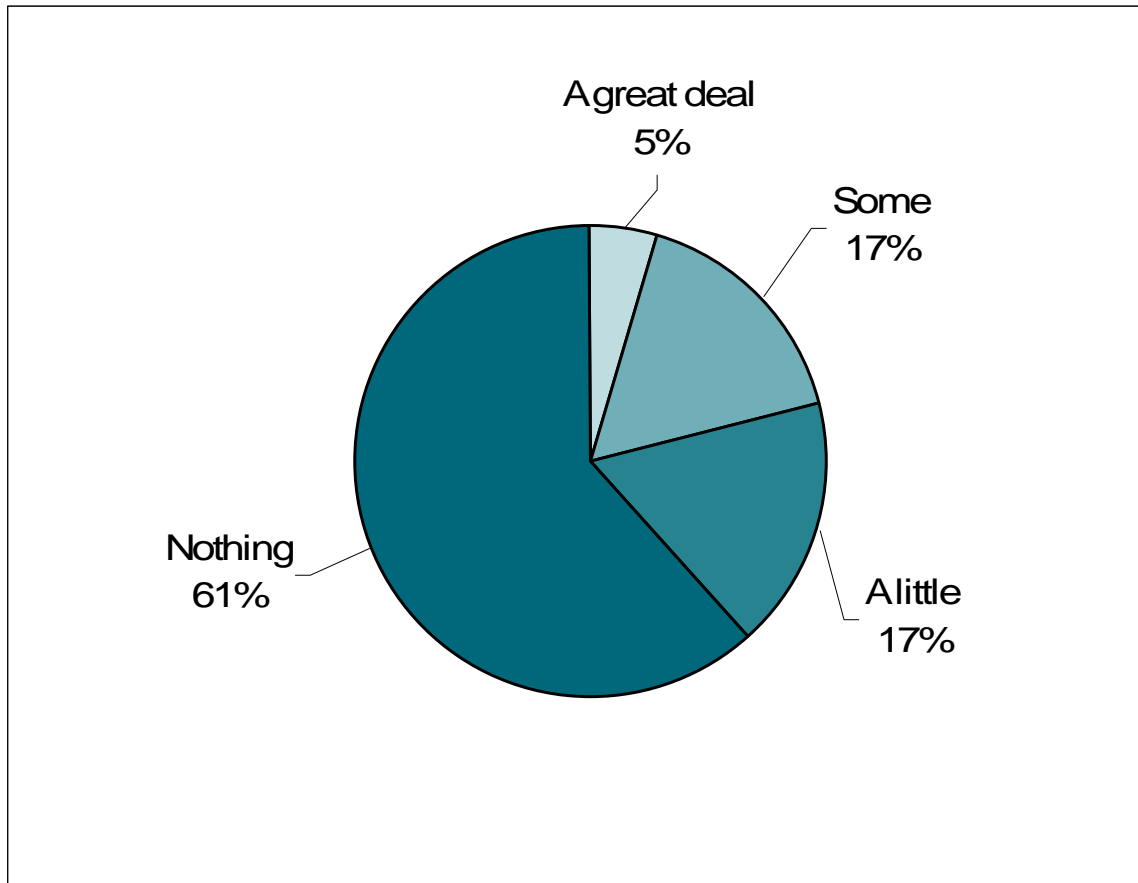
**Subgroup differences**

Only two characteristics varied with people’s responses to this set of questions. Respondents with college education were more likely to say they were *very* interested in the lawn care workshop (14% compared to 2% of others). Homeowners were less interested in a home water audit than renters (58% of owners said they were *not at all* interested compared to 24% of renters).

## AWARENESS OF WASHINGTON MANDATE

The Washington State Legislature passed the Municipal Water Supply – Efficiency Requirements Act of 2003, better known as the Municipal Water Law, which mandates that municipalities meter all residential water use by 2017. Respondents were asked how much they had heard or read about the mandate, and most (61%) said they knew nothing about it.

**Figure 16. How much have you heard or read about Washington’s mandate to meter household water use? (N=398)**



Awareness of the mandate tended to correspond with certain behaviors. For example, 31% of those who had heard *nothing at all* about Washington State’s mandate had no low-flow showerheads in their homes, compared to 21% of those who had *some* or more awareness of the mandate. Awareness of the mandate also varied with how many loads of laundry respondents did each week, but not in a way that was expected. Those who knew *a great deal* about the mandate averaged 7 loads of wash a week, compared to 4 loads for those who knew *nothing* about it.

### **Subgroup differences**

Homeowners tended to know more about the mandate than renters (41% compared to 17% of renters).

## CONCLUSIONS AND RECOMMENDATIONS

The City of Bellingham's Department of Public Works will set water conservation goals for the coming years in response to a statewide mandate. The Municipal Water Supply – Efficiency Requirements Act of 2003 requires that municipal water suppliers collect data on water consumption and production, include water use efficiency measures in planning, submit annual performance reviews, install service meters, and meet a 10% leakage standard to reduce water losses due to leaks.<sup>8</sup> The City plans to use social marketing, among other tools, in developing conservation programs to raise awareness and change people's water use patterns.

Currently, the City's residential water use is for the most part unmetered. Since 2005, residents have had the option of paying for the installation of a water meter and receiving a bill for only the water they use, rather than the flat rate otherwise applied to residences. Approximately 3,700 of the City's 19,672 water customers in single-family residences have meters.

The City of Bellingham is also in the initial stages of establishing other water conservation programs. The City currently offers water conservation kits, a water consumption calculator, and conservation tips through its website. The City plans to undertake the following measures:

- Toilet retrofit program for single-family residences, multi-family residences, and commercial water utility customers;
- Develop and implement water conservation education program for sixth graders;
- Lawn watering door hanger campaign;
- Evaluate and develop high-efficiency fixture program;
- Develop future water rate structures with an emphasis on water conservation;
- Upgrade city parks to high-efficiency irrigation systems; and
- Continue existing public outreach measures.

Successful models for conservation programs and activities exist in the Puget Sound region and around the country. In the Puget Sound region, the Saving Water Partnership and the Cascade Water Alliance provide examples, some of which have been evaluated for effectiveness. Nationally, the U.S. Environmental Protection Agency compiled case studies of successful programs around the nation into a report entitled *Case Studies in Conservation*.<sup>9</sup>

<sup>8</sup> Washington State Department of Health, "Summary of the Water Use Efficiency Rule," July 2007 [http://www.doh.wa.gov/ehp/dw/municipal\\_water/WUE\\_summary\\_packet\\_7-30-07.pdf](http://www.doh.wa.gov/ehp/dw/municipal_water/WUE_summary_packet_7-30-07.pdf) (Accessed on January 4, 2008)

<sup>9</sup> Program descriptions can be found in the following documents: Saving Water Partnership, 2006 Annual Report: Seattle Water Supply System; Regional 1% Water Conservation Program, August 2007 (and previous annual reports);

## RANGE OF OPTIONS

This section identifies a broad range of water conservation program options used by other utilities in the Puget Sound region and elsewhere in the country. The subsequent section considers Bellingham's current situation and recommends some specific options for the City to consider. The potential options include conservation strategies directed toward both residential and commercial customers as well as government and utility operations (e.g., system leaks, park irrigation).

### *City and Utility direct actions*

- Increase residential metering by offering meters at no cost;
- Develop tiered water rate structure and phase out flat rate;
- Establish conservation-based landscaping, irrigation, plumbing, and/or retrofit-upon-sale ordinances;
- Partner with energy utilities where conservation activities overlap (e.g., in clothes washers, dishwashers, and other hot-water efficiency);
- Audit, detect, and repair leaks in utility system;
- Upgrade City parks to high-efficiency irrigation systems;
- Audit and upgrade fixtures in City buildings; and
- Include water-efficiency in the criteria used to approve new developments.

### *Promotions and financial incentives*

- Offer audits of high peak-season landscape water users and households;
- Upgrade irrigation systems with rain shut-off devices and conservation controllers;
- Promote and offer rebates on front-loading clothes washers, toilet replacements, efficient dishwashers, and other efficient fixtures and appliances;<sup>10</sup>
- Partner with nurseries to promote conservation in landscaping and gardening using alternative products, plants, and aesthetics through rebates, discounts, technical information, and/or workshops;<sup>11</sup> and
- Promote residential leak detection and repair through education, test kits (e.g., toilet tablets), and repair kits (e.g., replacement toilet flappers).

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Cascade Water Alliance, 2006 Annual Report, 2006, [http://www.cascadewater.org/about\\_news\\_report.html](http://www.cascadewater.org/about_news_report.html); Cascade Water Alliance, Conservation Potential Assessment, December 7, 2005, [http://www.cascadewater.org/con\\_potential\\_assessment.html](http://www.cascadewater.org/con_potential_assessment.html); U.S. Environmental Protection Agency, Cases in Water Conservation, July 2002, [www.epa.gov/watersense/docs/utilityconservation\\_508.pdf](http://www.epa.gov/watersense/docs/utilityconservation_508.pdf).

<sup>10</sup> See, for example, Saving Water Partnership's 2001 Washwise Program and Toilet Round-up Promotion in Saving Water Partnership, "2001 Residential Programs Evaluation Report Volume 2: Back Up Reports and Data," September 2002.

<sup>11</sup> See, for example, Saving Water Partnership's 2001 Soaker Hose Promotion in Saving Water Partnership, "2001 Residential Programs Evaluation Report Volume 2: Back Up Reports and Data," September 2002.

### **Public outreach**

- Media outreach through ads on TV, radio, buses, billboards, and before movies;
- Portable display and information center for community events, workshops, and other gatherings;
- Sponsor water festivals and community events;
- Participation in conservation, water, and landscaping/yardcare events;
- Educational materials, conservation kits, and interactive activities provided through City's website; and
- Educational programs for public schools.

### **Other activities**

- Target multi-family building managers and operators, businesses (including specific classes of business), high peak-season water users, and landscapers for financial incentives and/or technical assistance;
- Continue surveying customers and assessing conservation potential; and
- Evaluate program effectiveness.

## **RECOMMENDED OPTIONS**

Given the results of this survey and Bellingham's existing conservation programs, the following options may be well suited for the City to consider:

- Increase residential metering by offering meters at no cost;
- Develop tiered water rate structure and phase out flat rate;
- Upgrade City parks to high-efficiency irrigation systems;
- Offer audits of high peak-season landscape water users and households;
- Promote and offer rebates on front-loading clothes washers, toilet replacements, efficient dishwashers, and other efficient fixtures and appliances;<sup>12</sup>
- Promote residential leak detection and repair through education, test kits (e.g., toilet tablets), and repair kits (e.g., replacement toilet flappers);
- Media outreach through ads on TV, radio, buses, billboards, and before movies; and
- Educational materials, conservation kits, and interactive activities provided through the City's website and other channels;
- Educational programs for public schools;
- Target multi-family building managers and operators, businesses (including specific classes of business), high peak-season water users, and landscapers for financial incentives and/or technical assistance;

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<sup>12</sup> See, for example, See Saving Water Partnership's 2001 Washwise Program and Toilet Round-up Promotion in Saving Water Partnership, "2001 Residential Programs Evaluation Report Volume 2: Back Up Reports and Data," September 2002.

- Continue surveying customers and assessing conservation potential; and
- Evaluate program effectiveness.

## APPENDIX A: RESEARCH METHODS AND DATA QUALITY

The survey consisted of 42 questions and was piloted with 20 households prior to the formal launch. Interviewers attempted to reach each case up to five times, with one daytime and one weekend call included. A list of metered households was provided by the City, and where no phone number was included, an online reverse-directory was used. In all, 364 randomly selected metered households were included in the study, with 191 yielding valid contact information. Other households were drawn from a database of randomly generated residential phone numbers from a reputable telephone sampling firm (Survey Sampling International).

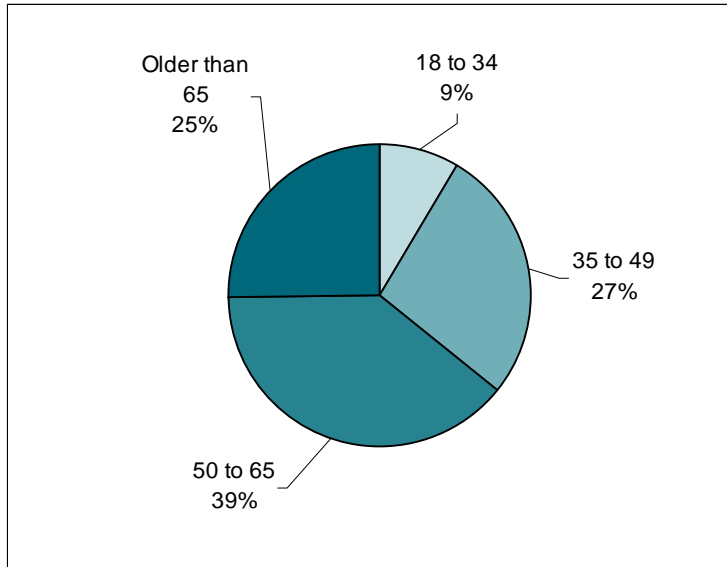
The survey was fielded from November 5 to December 20, 2007. The average response time was almost 9 minutes (8:49). In segments of the survey where series of questions were asked, questions were rotated to avoid question-order response bias. An incentive of a \$10 shower head and home water conservation kit was included.

<b>Result</b>	<b>Total</b>	<b>Metered households</b>	<b>Randomly selected households</b>
Completes	400	100	300
Partial Completes	1	1	0
Soft Refusal *	67	11	56
Refused	104	15	89
No Answer/Machine/Busy	240	53	187
Callback	19	11	8
<b>Total Valid Contact</b>	<b>831</b>	<b>191</b>	<b>640</b>
Bad number	1383	54	1329
Unable – Language	26	4	22
Unable – Physical/Mental	29	2	27
Not Qualified	458	43	415
Already Responded	2	1	1
Maximum Attempts	684	69	615
<b>Total Invalid Contacts</b>	<b>2582</b>	<b>173</b>	<b>2409</b>
<b>Total</b>	<b>3413</b>	<b>364</b>	<b>3049</b>
<b>Response Rate (completes/valid)</b>	<b>48%</b>	<b>52%</b>	<b>47%</b>

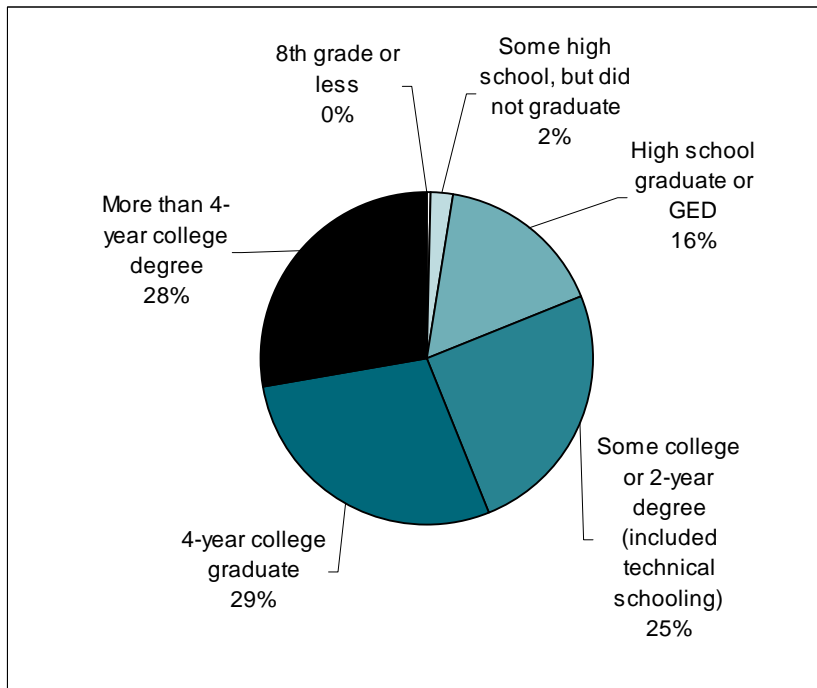
\*a soft refusal is one in which the respondent hangs up before hearing the purpose of the survey or being qualified as a respondent to the survey.

Nearly all of the respondents (91%) owned their homes. The median age group of respondents was 50-65 years – slightly older than the overall population, but similar to the characteristics of those in single-family residences. The median educational attainment of the sample was a four-year college degree.

**Figure A1. Age distribution of sample (N=400)**



**Figure A2. Education of sampled respondents (N=400)**



## APPENDIX B: SURVEY SCRIPT AND FREQUENCY REPORT

This appendix shows the weighted frequencies for the survey.

### Q32IM:

Condition of free versus for a small fee		
N = .....	404	100%
Offered free workshop Q32A .....	183	45%
Offered workshop for small fee in Q32B .....	221	55%

### Q33IM:

Condition of free versus for a small fee		
N = .....	404	100%
Offered free workshop Q33A .....	191	47%
Offered workshop for small fee in Q33B .....	213	53%

### METR:

Is this a metered household? (from city records)		
N = .....	404	100%
Yes.....	102	25%
No.....	302	75%

### PHONE:

Phone number (imported)		
N = .....	404	100%

### INTRO:

Hello, my name is \$I and I'm conducting a study on behalf of the City of Bellingham's Department of Public Works. The study is about water use in your home. I was hoping to speak to an adult who handles your household's utility bill - that's the bill that includes your water and sewer charges. Would that be you? Am I correct that your home is located within the Bellingham city limits? [If outside Bellingham city limits and a water customer then continue] [Regarding incentive for participating- full description in F8] The City is offering an incentive to people that respond to our survey - it's a water conservation packet that includes a low-flow showerhead.... Valued at \$10. [Frequently Asked Questions] Who are you? Where are you calling from? Applied Research Northwest is a privately owned social research firm in Bellingham. Who's doing this survey? City of Bellingham, Department of Public Works, How to contact the City of Bellingham about the survey: Department of Public Works, Anitra Accetturo, (360) 676-6850 extension 119 Who is paying for the survey?

	Frequency	Percent
Valid 1 Correct person within city limits or a water customer	400	100.0

**SCRN1:**

First, is your household a single-family home, such as a house, or is it part of a complex, such as an apartment building or duplex?

	Frequency	Percent
Valid 1 Single-family Dwelling	400	100.0

**INFO1:**

Now, I'd like to start by reading a few statements that describe how some people might think about Bellingham's water supply. For each statement, please tell me if you strongly agree, somewhat agree, somewhat disagree or strongly disagree. If you like, you can also respond that you have no opinion, or that you don't know. The first statement is...

	Frequency	Percent
Valid Y hit 'enter' to continue	400	100.0

**Q1:**

Bellingham has more than enough water to meet current demands. [Would you say...]

	Frequency	Percent
Valid 1 Strongly disagree	20	4.9
2 Somewhat disagree	41	10.3
3 Have no opinion	24	5.9
4 Somewhat Agree	135	33.8
5 Strongly Agree	92	23.0
7 Don't Know [do not read]	88	22.1
Total	400	100.0

**Q2:**

Climate change is already impacting our water supply [Would you say...]

	Frequency	Percent
Valid 1 Strongly disagree	44	11.0
2 Somewhat disagree	50	12.4
3 Have no opinion	18	4.5
4 Somewhat Agree	115	28.8
5 Strongly Agree	106	26.5
7 Don't Know [do not read]	65	16.3
9 Refused [do not read]	2	0.5
Total	400	100.0

**Q3:**

If I conserve water, it will only encourage new growth and development in the city  
[Would you say...]

	Frequency	Percent
Valid 1 Strongly disagree	149	37.2
2 Somewhat disagree	89	22.3
3 Have no opinion	34	8.5
4 Somewhat Agree	45	11.3
5 Strongly Agree	49	12.2
7 Don't Know [do not read]	31	7.8
9 Refused [do not read]	3	0.7
Total	400	100.0

**Q4:**

I am concerned that Bellingham will face major water-supply problems in the next five years [Would you say...]

N = .....

400 100%

	Frequency	Percent
Valid 1 Strongly disagree	58	14.5
2 Somewhat disagree	85	21.2
3 Have no opinion	18	4.6
4 Somewhat Agree	116	29.0
5 Strongly Agree	69	17.3
7 Don't Know [do not read]	53	13.3
8 Not Applicable [do not read]	1	0.2
Total	400	100.0

**Q5:**

How many gallons of water do you think you personally use each day? [Enter a number between 0 and 200] [IF NEEDED:] This includes indoor AND outdoor use. This is you personally, not your whole household. If you don't know that is still useful information. An estimate would be okay for this question.

N	Valid	202
	Missing (don't know response)	198
Mean		34.53
Median		15.00
Std. Deviation		45.049
Minimum		1
Maximum		200

**INFO2:**

I'd like to know more about how you use water inside your home.

	Frequency	Percent
Valid Y hit 'enter' to continue	400	100.0

**Q6:**

Do you have any low-flow showerheads in your home? Would you say... [A low-flow showerhead just adds more air instead of water so not as much water is used]

	Frequency	Percent
Valid 0 No	103	25.7
1 Yes, some of them	64	16.1
2 Yes, All of them	214	53.6
7 Don't Know [do not read]	17	4.2
8 Not Applicable [do not read]	1	0.2
9 Refused [do not read]	1	0.3
Total	400	100.0

**Q7:**

Do you have aerators on your faucets? Would you say... [an aerator is a spout on the faucet, a circular piece where the water comes out that has a screen in it. It allows more air than water through, so you have the same pressure with less water]

	Frequency	Percent
Valid 0 No	115	28.8
1 Yes, some of them	101	25.4
2 Yes, All of them	174	43.6
7 Don't Know [do not read]	9	2.3
Total	400	100.0

**Q8:**

Do you have a clothes washer? [If Yes] Is it a front-loading or top-loading washer

	Frequency	Percent
Valid 0 No	5	1.2
1 Yes – top-loading	279	69.7
2 Yes - front-loading	115	28.6
9 Refused (do not read)	2	0.5
Total	400	100.0

**Q9:**

How many loads of laundry does your household do in a typical week? [Enter a number]

N	Valid	393
	Missing (don't know)	7
Mean		4.42
Median		4.00
Std. Deviation		3.116
Minimum		0
Maximum		25

**Q10:**

When you run your clothes washer, how often is it completely full?

		Frequency	Percent
Valid	1 Never	5	1.2
	2 Rarely	9	2.3
	3 Sometimes	37	9.3
	4 Often	103	25.8
	5 Always	238	59.5
	8 Not Applicable [do not read]	1	0.3
	9 Refused [do not read]	2	0.5
	Total	395	98.8
Missing	System	5	1.2
Total		400	100.0

**Q11:**

Was your home built before 1994?

		Frequency	Percent
Valid	0 No	107	26.8
	1 Yes	287	71.8
	7 Don't Know [do not read]	6	1.5
	Total	400	100.0

**Q12:**

How many toilets do you have in your home? (1-5+)

		Frequency	Percent
Valid	1	74	18.6
	2	122	30.5
	3	88	21.9
	4	10	2.5
	99 Refused [do not read]	1	0.3
	Total	295	73.7
Missing	System	105	26.3
Total		400	100.0

**Q13:**

Can you tell me how many of those were installed since 1993 or are low-flow models? (within the last 13 years)?

		Frequency	Percent
Valid	0	105	26.2
	1	69	17.2
	2	57	14.3
	3	28	6.9
	4	3	0.7
	Total	261	65.4
	Missing	77 Don't Know [do not read]	29
99 Refused [do not read]		2	0.5
System		107	26.8
Total		139	34.6
Total	400	100.0	

**Q14:**

Within the next year, how likely are you to replace any toilets in your home that were installed before 1994 or that aren't low-flow?

		Frequency	Percent
Valid	1 Definitely won't	58	14.4
	2 Probably won't	86	21.4
	3 Probably will	22	5.4
	4 Definitely will	9	2.2
	7 Don't Know [do not read]	4	1.0
	8 Not Applicable [do not read]	1	0.3
	9 Refused [do not read]	2	0.5
	Total	181	45.2
	Missing	System	219
Total	400	100.0	

**Q15A:**

How likely would you be to replace an older toilet with a new low-flow model if the City paid you \$40 for each toilet you replaced? If R asks about rebate: The City is exploring interest in a variety of potential directions it could support in its water conservation program. At this time, there isn't a particular program in place. [New toilets can cost as little as \$60 or as much as \$700. Installation can be done without a plumber, or with a plumber for between \$100 and \$200].

		Frequency	Percent
Valid	1 Definitely Would not	22	5.5
	2 Probably Would not	45	11.3
	3 Probably Would	76	18.9
	4 Definitely Would	24	6.0
	7 Don't Know [do not read]	9	2.2
	8 Not Applicable [do not read]	3	0.8
	9 Refused [do not read]	2	0.5
	Total	181	45.2
	Missing System	219	54.8
Total	400	100.0	

**Q15B:**

How likely would you be to replace an older toilet with a new low-flow model if the City paid you \$60 for each toilet you replaced? If R asks about rebate: The city is exploring interest in a variety of potential directions it could support in its water conservation program. At this time, there isn't a particular program in place. [New toilets can cost as little as \$60 or as much as \$700. Installation can be done without a plumber, or with a plumber for between \$100 and \$200].

		Frequency	Percent
Valid	1 Definitely Would not	16	4.0
	2 Probably Would not	42	10.6
	3 Probably Would	69	17.2
	4 Definitely Would	13	3.3
	7 Don't Know [do not read]	11	2.7
	8 Not Applicable [do not read]	4	1.1
	9 Refused [do not read]	1	0.3
	Total	157	39.2
	Missing System	243	60.8
Total	400	100.0	

**Q15C:**

How likely would you be to replace an older toilet with a new low-flow model if the City paid you \$80 for each toilet you replaced? If R asks about rebate: The city is exploring interest in a variety of potential directions it could support in its water conservation program. At this time, there isn't a particular program in place. [New toilets can cost as little as \$60 or as much as \$700. Installation can be done without a plumber, or with a plumber for between \$100 and \$200].

		Frequency	Percent
Valid	1 Definitely Would not	17	4.3
	2 Probably Would not	30	7.6
	3 Probably Would	62	15.6
	4 Definitely Would	16	4.0
	7 Don't Know [do not read]	11	2.8
	8 Not Applicable [do not read]	4	1.1
	9 Refused [do not read]	2	0.5
	Total	144	35.9
Missing	System	256	64.1
Total		400	100.0

**Q16:**

What would prevent you from replacing an older toilet, even with an \$80 rebate? If R asks about rebate: The city is exploring interest in a variety of potential directions it could support in its water conservation program. At this time, there isn't a particular program in place.

	<u>N</u>	<u>%</u>
Cost of toilet	35	31%
Difficulty/Inconvenience of installation	21	19%
Not concerned about replacing it/Current toilet works fine	19	17%
Concerns about efficiency of/Don't like low-flow toilets	15	13%
Selling home/Not owner of home	11	10%
Hiring a Plumber	5	4%
I would	5	4%
N/A; Don't know	4	4%
Other	19	17%

**Q17:**

In the past two years have you noticed your toilet running when it shouldn't have been? [If Needed:] By running, I mean making the noise of water moving from the tank to the bowl, as it does after it's flushed.

	Frequency	Percent
Valid 0 No	305	76.3
1 Yes	90	22.6
7 Don't Know [do not read]	3	0.8
8 Not Applicable [do not read]	1	0.3
Total	400	100.0

**Q18:**

When you've noticed your toilet running, what, if anything, have you done to fix it? (Do Not Prompt; check all that apply)

N = ..... 94 100%

	N	%*
Replace the flapper	23	26%
Replaced parts	19	21%
Jiggle the handle	18	20%
Check the chain	9	10%
Adjust the float	8	9%
Called a plumber	7	8%
Other	6	7%
Nothing	6	7%
Check the flapper	6	7%
"Fixed it" (no detail)	5	6%
Total	90	
Missing	4	

\*Multiple responses possible. Sums to more than 100%.

**INFO3:**

My next questions have to do with your water use outdoors.

	Frequency	Percent
Valid Y hit 'enter' to continue	400	100.0

**Q19:**

How much of your outdoor area is covered in lawn, would you say...

	Frequency	Percent
Valid 1 Little or none	65	16.2
2 Less than half	72	18.1
3 Half	103	25.8
4 Most	114	28.6
5 All	42	10.5
7 Don't know (do not read)	2	0.5
9 Refused (do not read)	1	0.3
Total	400	100.0

**Q20:**

I'd like you to think about this past summer when it got drier and didn't rain.

Which best describes how often you watered your lawn? Would you say...

	Frequency	Percent
Valid 0 Never	125	31.3
1 Once a month or less	40	10.1
2 Twice a month	47	11.8
3 Once a week	66	16.6
4 Every Three days	34	8.6
5 Every other day	10	2.4
6 Daily	7	1.7
7 Don't know (do not read)	1	0.3
8 Not applicable (do not read)	1	0.3
9 Refused (do not read)	3	0.8
Total	335	83.8
Missing System	65	16.2
Total	400	100.0

**Q21:**

What methods do you use for watering your lawn? (Do Not Prompt; check all that apply) (If they say 'sprinkler system' it is ok to ask "is it one you turn on and off manually or does it turn on and off automatically?")

		Frequency	Percent
Valid	1 Other	3	1.3%
	2 Soaker hoses	17	7.4%
	3 Sprinkler attached to a hose that is moved around	112	49.1%
	4 Hand watering	25	11.1%
	5 Sprinkler system that is on an automatic timer	30	13.2%
	6 A sprinkler system that is turned on and off manually	37	16.4%
	7 Don't know (do not read)	1	0.5%
	8 Not applicable (do not read)	1	0.5%
	9 Refused (do not read)	2	0.9%
	Total	228	52.8
Missing	System	189	47.2
Total		400	100.0

**Q22:**

In the past two years, how often, if at all, have you checked your sprinkler system or had it checked for leaks?

Mean = ..... 1.58

Standard Deviation = ..... 1.02

		Frequency	Percent
Valid	0	4	0.9
	1	2	0.5
	2	12	3.1
	4	1	0.3
	77 Don't Know [do not read]	1	0.3
	88 Not Applicable [do not read]	4	1.0
	99 Refused [do not read]	1	0.3
	Total	25	6.3
Missing	System	375	93.7
Total		400	100.0

**Q23:**

In the past two years, how many times, if at all did you usually adjust your automatic sprinkler system to account for rain or seasonal changes?

Mean = ..... 6.47  
 Standard Deviation = ..... 7.17

		Frequency	Percent
Valid	0	5	1.2
	1	1	0.3
	2	2	0.5
	3	1	0.3
	5	1	0.3
	8	1	0.3
	10	2	0.5
	12	1	0.3
	19	3	0.8
	77 Don't Know [do not read]	4	0.9
	88 Not Applicable [do not read]	2	0.5
	99 Refused [do not read]	2	0.5
	Total	25	6.3
	Missing	System	375
Total		400	100.0

**Q24:**

When you watered this last summer, how often, if at all, did you see puddles form or water running off of your property? Would you say...

		Frequency	Percent
Valid	1 Never	122	30.5
	2 Rarely	58	14.4
	3 Sometimes	17	4.2
	4 Often	6	1.5
	5 Always	3	0.7
	7 Don't Know [do not read]	1	0.2
	8 Not Applicable [do not read]	2	0.5
	9 Refused [do not read]	3	0.8
	Total	211	52.8
Missing	System	189	47.2
Total		400	100.0

**Q25:**

When you watered this last summer, how often if at all did you consider how much it had rained in the past week? Would you say...

		Frequency	Percent
Valid	1 Never	4	1.0
	2 Rarely	8	2.0
	3 Sometimes	4	1.0
	4 Often	29	7.2
	5 Always	131	32.7
	8 Not Applicable [do not read]	2	0.5
	9 Refused [do not read]	3	0.8
	Total	181	45.3
Missing	System	219	54.7
Total		400	100.0

**Q26:**

When you watered this past summer, did you ever measure how much water your sprinklers or hose were putting out on the lawn? [An example of how to measure: Some people put an empty can in their lawn to measure how much water collects in the can while they are watering.]

		Frequency	Percent
Valid	0 No	186	46.6
	1 Yes	20	5.0
	7 Don't know (do not read)	2	0.5
	8 Not Applicable (do not read)	1	0.3
	9 Refused (do not read)	2	0.5
	Total	211	52.8
Missing	System	189	47.2
Total		400	100.0

**Q26A:**

What's the main reason you haven't measured how much water your sprinkler or hose uses?

	<u>N</u>	<u>%</u>
Didn't know you could/how to/never thought to	75	43%
Water for set times/Water only as needed/Already conserve water	44	25%
Not concerned about it/Not metered/Lazy or busy	42	24%
Have in the past/Already know how much	6	3%
N/A; Don't know	3	2%
Other	16	9%

N=175. Numbers sum to more than 100% due to multiple responses.

**Q27:**

How much have you heard or read about the City's Voluntary Metering Program? Would you say a lot, some, a little, nothing at all, or that you have a meter? [IF NEEDED] The voluntary metering program allows people to pay a \$150 fee to have a meter installed at their home. They are then billed only for the water they use rather than a flat rate.

		Frequency	Percent
Valid	1 I Have a meter	93	23.3
	2 Nothing at all	164	41.0
	3 A little	64	16.1
	4 Some	64	16.0
	5 A lot	10	2.5
	7 Don't Know [do not read]	1	0.3
	8 not applicable [do not read]	1	0.3
	9 refused [do not read]	2	0.5
	Total	400	100.0

**Q28:**

Have you seen the City's TV segment called Water: Every Drop Counts on public access Channel 10, BTV ? [if "no" or "maybe" ask]: In the program water is traced from nearby glaciers, down the Nooksack river to Lake Whatcom. It also has some tips on lawn care and watering. Do you remember seeing that segment?

		Frequency	Percent
Valid	1 No	312	77.9
	2 Maybe	15	3.7
	3 Yes	71	17.8
	5 not applicable [do not read]	2	0.5
	Total	400	100.0

**Q30:**

How interested, if at all would you be in a toilet rebate program? Would you say very, somewhat or not at all interested? If R asks about rebate: The city is exploring interest in a variety of potential directions it could support in its water conservation program. At this time, there isn't a particular program in place.

		Frequency	Percent
Valid	1 Not at all interested	57	14.2
	2 Somewhat	69	17.3
	3 Very	44	11.1
	7 Don't Know [do not read]	8	2.1
	8 Not Applicable [do not read]	2	0.5
	Total	181	45.2
Missing	System	219	54.8
Total		400	100.0

**Q31:\***

How interested, if at all would you be in a washing machine rebate program? [Would you say...] If R asks about rebate: The city is exploring interest in a variety of potential directions it could support in its water conservation program. At this time, there isn't a particular program in place.

		Frequency	Percent
Valid	1 Not at all interested	64	16.0
	2 Somewhat	20	5.0
	3 Very	22	5.5
	8 Not Applicable [do not read]	9	2.3
	9 Refused [do not read]	1	0.2
	Total	116	28.9
Missing	System	284	71.1
Total		400	100.0

\*Due to a programming error, this question was only asked of respondents with front-loading washers. As a result, it is not included in the analysis or report.

**Q32A:**

How interested, if at all would you be in a free workshop about reducing the size of your lawn or replacing plants that need lots of water with ones that don't need much water? [Would you say...]

		Frequency	Percent
Valid	1 Not at all interested	113	28.3
	2 Somewhat	47	11.7
	3 Very	17	4.2
	8 Not Applicable [do not read]	3	0.8
	9 Refused [do not read]	1	0.3
	Total	181	45.3
Missing	System	219	54.7
Total		400	100.0

**Q32B:**

How interested, if at all would you be in a low-cost workshop about reducing the size of your lawn or replacing plants that need lots of water with ones that don't need much water? [Would you say...]

		Frequency	Percent
Valid	1 Not at all interested	133	33.2
	2 Somewhat	60	15.1
	3 Very	17	4.2
	7 Don't Know [do not read]	2	0.5
	8 Not Applicable [do not read]	7	1.7
	Total	219	54.7
Missing	System	181	45.3
Total		400	100.0

**Q33A:**

How interested, if at all, would you be in a free Water Audit of your home, where a technician comes to assess all the places in your house where you could start saving water? [Would you say...]

		Frequency	Percent
Valid	1 Not at all interested	97	24.2
	2 Somewhat	62	15.5
	3 Very	30	7.5
	8 Not Applicable [do not read]	1	0.3
	Total	190	47.5
Missing	System	210	52.5
Total		400	100.0

**Q33B:**

How interested, if at all, would you be in a low-cost Water Audit of your home, where a technician comes to assess all the places in your house where you could start saving water? [Would you say...]

		Frequency	Percent
Valid	1 Not at all interested	112	27.9
	2 Somewhat	69	17.2
	3 Very	25	6.2
	7 Don't Know [do not read]	1	0.3
	8 Not Applicable [do not read]	2	0.5
	9 Refused [do not read]	2	0.5
Total		210	52.5
Missing	System	190	47.5
Total		400	100.0

**Q34:**

How much, if anything, have you heard or read about Washington's statewide mandate to have meters that measure water use installed at each household within the next 10 years? Would you say...

		Frequency	Percent
Valid	1 Nothing	246	61.4
	2 A Little	68	17.0
	3 Some	66	16.5
	4 A great deal	19	4.7
	7 Don't Know [do not read]	1	0.2
	8 Not Applicable [do not read]	1	0.3
	Total	400	100.0

**INFO4:**

These last few questions just help us better understand who completed our survey.

		Frequency	Percent
Valid	Y hit 'enter' to continue	400	100.0

**Q35:**

Do you own or rent your home?

	Frequency	Percent
Valid 1 Own	364	90.9
2 Rent	35	8.8
8 Not Applicable (do not read)	1	0.3
Total	400	100.0

**Q36:**

What age group are you in? Would you say...

	Frequency	Percent
Valid 1 18 to 34	34	8.5
2 35 to 49	108	27.1
3 50 to 65	155	38.8
4 older than 65	101	25.3
9 Refused (do not read)	1	0.3
Total	400	100.0

**Q37:**

What is the highest grade or level of school that you have completed?

	Frequency	Percent
Valid 1 8th grade or less	1	0.2
2 Some high school, but did not graduate	9	2.3
3 High school graduate or GED	65	16.2
4 Some college or 2-year degree (included technical schooling)	100	24.9
5 4-year college graduate	113	28.3
6 More than 4-year college degree	111	27.7
9 Refused (do not read)	2	0.5
Total	400	100.0

**F8:**

[Who are you? Where are you calling from?] Applied Research Northwest is a privately owned social research firm in Bellingham. [How did you get my phone number?] We got a random list of potential phone numbers of people in your area from a national company called Survey Sampling International. [Regarding incentive for participating] The City is offering an incentive to people that respond to our survey - it's a water conservation packet that includes a low-flow showerhead (2.5gpm), one toilet tank bank (goes inside tank and displaces water so you can flush with 1 gallon less of water), one kitchen faucet swivel aerator (2.0gpm), one bathroom faucet aerator (2.0gpm) and water conservation tips and information brochures .... Valued at \$10. How to contact the City of Bellingham about the survey: Department of Public Works, Anitra Accetturo, (360) 676-6850 extension 119

N = ..... 0 100%

## APPENDIX C: VERBATIM OPEN-ENDED COMMENTS

### Q16: What would prevent you from replacing an older toilet, even with an \$80 rebate?

- As long as they are working, you do not fix anything that is not broke [sic].
- Basically, I don't use the toilet all that much. I'm at other places, basically, using the Sani-can [sic]. I'm a construction worker.
- Because I do not know how much they actually cost.
- Because of our age, we're not looking to make any changes.
- Being lazy and taking time to do it.
- Can it keep clean and is flushing okay?
- 'Cause it wouldn't fit in the space.
- 'Cause my landlord handles it.
- Cost.
- Cost.
- Cost.
- Cost.
- Depending on the money, how much it would cost.
- Don't have the money.
- Finances. It costs more than that to replace it, and it works fine and it does not get used much - spare bathroom.
- Hassle.
- Having it done, my husband would not be able to do it and neither would I. We would have to hire a plumber.
- Having to hire a plumber.
- I assume that a toilet costs more than that and I don't think it would flush well.
- I do not know how much they cost to replace. I do not know the additional costs, as well.
- I do not know; I am just not interested.
- I do not like the low flow ones.
- I don't know.
- I don't believe in government spending my money like that.
- I don't know how well the replacement toilet would work. I have heard some very bad reports about those toilets.
- I don't know, because I don't know how far the 80 dollars will go toward the price of a new toilet or installation.
- I doubt the efficacy because with a low flow, you end up flushing 2 or 3 times and use the same amount of water.
- I guess just the hassle of it, just the whole tearing up of it.
- I guess, the trouble of getting a plumber.
- I have never thought about doing it and I haven't talked to my husband about it. The more I think about it, we like the new one we put in a lot. There is a possibility of us doing that.
- I just said I would.
- I know where the water comes from and I know that GP used to use 14 million gallons a day, which is the same amount that city of Seattle uses.
- I like just one flush toilets.
- I would have to figure out the cost.
- I've had such bad experiences with low flow models
- I'd certainly check out the exact price first, before making a decision on that.
- I'd have to know that they worked well.
- If I could not afford to do it.
- If it cost a lot.
- If it was running okay I wouldn't replace it.
- If it's working all right.
- If the one works now, I probably wouldn't change it. If something happened to one, then I would.
- If there's nothing wrong the one I have.

- I'm a renter.
- I'm renting, so I can't alter anything like that.
- I'm thinking about selling the house.
- Inertia.
- It costs more than that. I mean, it would cost a lot of money for labor, I think.
- It isn't used very often; only when I have company.
- It would be an pain in the ass.
- It would depend on the cost of the toilet.
- I've got my house up for sale and I wouldn't be putting any more money into it.
- Just cost and hassle.
- Just the cost.
- Just the cost. Right now.
- Just the idea of having to do it. It is not needing to be replaced.
- Just the low flow model. All the ones that I have encountered, you end up flushing them 2 or 3 times.
- Just the trouble of doing it.
- Just time.
- Laziness. Waste of the toilet.
- My dad, he probably wouldn't because he's on a fixed income.
- My husband not wanting to spend money when something that works [sic]. It depends on how much the toilet is, anyway.
- Nothing.
- Nothing.
- Nothing.
- Nothing.
- Nothing.
- Nothing. If I owned the home, I would definitely do it.
- Poverty.
- Probably not much.
- Probably the cost.
- Probably the fact that I might end up selling my house before too much longer.
- Retirement income.
- Scheduling.
- Sheer laziness.
- Some of the low flow toilets I have seen don't work well. They don't seem to have the pressure.
- That would depend on the overall cost of the toilet. If the toilet is more than 100 dollars, it is not worth the rebate possibly.
- The clogs that happen because of the low flow toilets.
- The cost involved in it.
- The cost of going from wall-mount to floor-mount plumbing.
- The cost of installing a new one.
- The cost of the new toilet.
- The cost of the toilet and the labor cost to install it.
- The cost.
- The efficiency. If they worked I would. I have seen them not work.
- The fact that I am already being gauged on excise taxes. I'm not happy and I don't think that a low flow toilet is enough of an incentive when they are proposing to raise sewer rates by 46% by 2012, because I am in the county and I will have to pay an excise tax of 50% on any surcharges over what people in Bellingham are charged. I think that when a person flushes a toilet, it won't make a dent in the six cubic meters of water I use every two months. I think it's ridiculous and unfair, and they do nothing to help low-income people except offer shut-off notices.
- The fact that I do not own the house.
- The inconvenience of replacing the toilet.
- The inconvenience of the toilet.
- The labor.
- The low flow toilets, they're inoperative at times and troublesome.

- The owner.
- The time and effort it would take to swap out the toilet. It works fine and I don't use it that often. Not worth my time.
- The wasting the other toilets [sic]. The other toilets are about \$160 to get a replacement, so it's only replacing half when it's working just fine.
- There is nothing that would prevent me from doing that.
- There's nothing wrong with it, until something goes with it.
- These things are all color-coordinated. The whole house is the same color, the color scheme is probably long gone. Plus there is just two of us, so there's not much use.
- This one works, I am 86 years old. I don't know what for. If they would pay the complete bill, they could do whenever [sic].
- Time and effort and other going on [sic].
- Time and energy.
- Time, convenience; trying to figure out how to do it. It's not broken.
- Uncertainty about the effectiveness of the toilet.
- We don't own the property.
- We just like old stuff.
- We just remodeled and we do not want to tear any more up.
- We usually don't replace things, unless they are worn out or broken.
- Well, a toilet is going to cost \$200 at least and we have 3 toilets and 2 people, so you know.
- Well, because I would have to do it myself and I do not know how.
- Well, I would not replace any toilet unless it would be necessary to replace it.
- Where we live. We live on Mt. Baker Highway and the place is for sale.
- Yes, I will.

**Q18: When you've noticed your toilet running, what, if anything, have you done to fix it? [Do Not Prompt; check all that apply]**

Q18 Response: "other"

- Adjust the flow.
- Check inside of it and flipped whatever is wrong.
- I adjusted the float too much and it broke.
- Looked for the leak.
- Messed around with the wires or tapped it to get it to stop.
- Mopped up the floor.

**Q21: What methods do you use for watering your lawn? [Do Not Prompt; check all that apply]**

Q21 Response: "other"

- A hose.
- Irrigation system.
- Low drip irrigation.

**Q26a: What's the main reason you haven't measured how much water your sprinkler or hose uses?**

- Beats me, I do not know.
- Because I didn't know that you could do that and we don't water very often.
- Because I do not have a way to do it.
- Because I do not know how to do that.
- Because I do not want to do that.

- Because I don't worry about my little bit of water consumption.
- Because I just let it go for a half-hour and I call it good.
- Because I wasn't using very much.
- Because I'm on a meter and I have to pay for it all.
- Because it is just automatic and does it, it keeps the grass green.
- Because my lawn lets me know when it is thirsty.
- Because the meter man tells me.
- Because we do not use it.
- Because we knew it would be an infrequent thing and it was nothing that we had to be concerned about.
- 'Cause I didn't feel that it was important.
- 'Cause I don't have a method to measure how much the hose uses.
- 'Cause I don't know how to do it.
- 'Cause I have no idea.
- Didn't think about it.
- Didn't think of it.
- Didn't think of it.
- Do not do it that often.
- Don't have a measurer.
- Don't have the capacity.
- Don't know how.
- Don't know how.
- Don't know how.
- Don't know how.
- Don't think that it is necessary.
- Generally, we just run the sprinkler for pre-specified amounts of time.
- Hasn't occurred to me.
- Have done it before.
- Haven't had an occasion to be concerned about it.
- How are you going to measure it? I have nothing to measure it with.
- How do you measure? It just does not occur to me to measure that, to me. It is a funny question to me.
- How would I? I don't have any way of doing it.
- How would we know? I did not know we were supposed to.
- I can't see a reason to do it.
- I conscientiously conserve water anyways and try to keep it down.
- I did not feel that I needed to.
- I did not have any way of measuring it.
- I did not know how.
- I did not know you could do that.
- I did not think I needed to.
- I didn't think about it.
- I didn't feel it was necessary. We are smart enough to figure out if the lawn was getting enough water. We are conservative.
- I didn't have the time or think it was important.
- I didn't know how; I didn't know that I should. I pretty much just water my garden.
- I didn't know that I needed to do that.
- I didn't know you needed a reason. I just am not a yard person and as long as the lawn didn't look too awful, I just let it go.
- I didn't think about it.
- I didn't think it made too much difference.
- I do for a set period of time and turn it off.
- I do it for a half-hour, 45 min and that'd good [sic].
- I do not do it that long.
- I do not know.
- I do not know. We just water what we think the lawn and plants need.

- I do not really have time to do that.
- I do not think we water that often.
- I don't get out and do it my daughter does.
- I don't have any way of measuring it.
- I don't know that I would have any way to measure it.
- I don't use a lot.
- I don't care. I pay for the water.
- I don't feel that I'm using enough to do that.
- I don't have a way to do that.
- I don't have a way to do that.
- I don't know how to do it.
- I don't know how to do that.
- I don't know how to do that. I also can't imagine getting much useful information from setting out a can or something like that.
- I don't know how to.
- I don't know how.
- I don't know how.
- I don't know how.
- I don't know; how would you do it? We pay dearly for the water, so it is our loss.
- I feel I can adequately gauge it by checking the soil moisture.
- I figure I'm only doing it once a month and I've never measured.
- I go by the time rather than the volume.
- I go if it feels wet or how it looks [sic].
- I guess I just never thought about it.
- I guess I never thought about it.
- I had measured the water usage of my sprinkler system the previous summer.
- I had no idea you could do that.
- I had other things to do.
- I have a moisture sensor, so I don't ever over-water my lawn.
- I have no idea how to do it, nor the time.
- I have no idea how to do that.
- I have no idea how to do that.
- I have no idea how to go about that.
- I have no idea of figuring out how it does it - measure the water of gallons per minute.
- I have no method of measuring.
- I have no way of doing that.
- I have no way of measuring it.
- I have not measured.
- I have such a small amount, I just don't think it is necessary.
- I haven't thought of it.
- I just didn't.
- I just haven't bothered.
- I just haven't thought about it.
- I just keep track of it by time.
- I just know it is so little that I wasn't worried about it.
- I just look at my plants I water and if they don't look like they need it, I don't. And I do watch the weather report and if they say rain is coming, then I don't water
- I just try to keep the lawn green and I try to make sure that there is never any runoff.
- I know how much it uses.
- I measured it in the past.
- I never considered it.
- I never measured it.
- I never thought about it.
- I never thought about it.
- I never thought of it.

- I never watered the whole lawn, just the flower beds. I just don't believe in a nice green lawn, I don't live in that kind of a neighborhood.
- I pay the same amount as people who have 6 times higher usage.
- I think the main reason is that I really do not water much in the summertime and I do not water on a regular basis. I just let it brown in the summer.
- I water when the lawn is brown and when it starts turning green I stop watering.
- I would look and see.
- I wouldn't even know how to go about doing that.
- I wouldn't know how to measure it.
- I'm looking at the plants to see if they need any water or not.
- I've done it in the past and it doesn't change. I know how much it uses, which is a quarter inch of water.
- I'm going to go look in the meter, I guess I could do that.
- I'm lazy.
- It didn't occur to me.
- It didn't seem necessary.
- It is complicated because we moved from the East side of the state and we had to water a lot, and when we moved over here we noticed that the grass stays green, so we didn't know if we were watering enough.
- It isn't metered and we don't pay attention to it.
- It wouldn't make any difference.
- It's not been a concern.
- It's not been relevant to me.
- It's not important to me.
- It's not something I do.
- I've been a gardener for many years, so I have a good sense of how much to water my plants and lawn.
- Just haven't thought about it.
- Just haven't taken the time.
- Just moving, I had no time to even think about that.
- Just never have done it.
- Just never thought of doing it.
- Just never thought of it, I guess.
- Just plain lazy, I guess.
- Lack of equipment to monitor the gallons.
- Lack of equipment.
- Laziness.
- Laziness.
- Laziness. I use a timer.
- My water bill is the same every month.
- Never occurred to me.
- Never really came into my mind. It seemed fine.
- Never thought about it.
- Never thought about it.
- Never thought about it.
- Never thought of it.
- No interest.
- No method of measuring.
- No reason to.
- No tool.
- None reason, because I didn't water much [sic].
- Not to go through the trouble. I have a good gauge and a good feel for how much water is necessary.
- Probably because I'm just too darn busy.
- Probably because we're lazy.
- Probably time and resources.

- The condo associations.
- The water is not metered.
- The yard is so small and I water so little. It had little impact. I watch the grass to see how it responded.
- There is no real efficient way to do it.
- Too hard for me to walk around for me to do any of these things.
- Usually when I'm watering my lawn, I'm out there and I can gauge the water use accurately.
- We do not use that much water.
- We never really thought about it.
- We try to conserve when it come to outside. That's why we haven't measured it.
- We watch it carefully. I don't set it and walk away. I watch it or I hand-water it.
- Well, I guess because we visually check what is going on.
- Well, I just did not put a can out there, but I timed it.
- Well, I just had no reason to.
- What we look for is to minimize the amount of water, so we check the dryness of the soil. And if it's moist, we don't water it. If it's dry, we increase.
- Wouldn't know how to.

### **CMTBX: Comment Box – Do Not Prompt**

- Hook me back up to Lake Padden and let all the newcomers drink boat Lake Whatcom [sic]. Hold the line on allowing development on rural areas by extending water service to act of a proponent of illegal growth, pursuit on growth hearings, and board hearings with a heavy bias. Roger Almskar perverted an inflationary population growth projection.
- I am more interested in quality of water and not quantity. I am very concerned with the homes and motorboats on our reservoir. I think we should look for a different reservoir for the city of Bellingham. Where I have lived, reservoirs for any public use has been in some pristine mountain without any population around it for miles [sic]. And we need to look at the cancer rate in this area due to water purification.
- I lived in a community that had rebates for various appliances and it truly convinced me to buy those appliances. I think it is a good idea, even though I already own those appliances and don't need to purchase them.
- I moved here 4 years ago from California. Now my water bill here in Bellingham does not change at all. It is \$140 every two months, no matter how much water I use and my son, who has a family of five, pays the same amount as I do. I do not understand that; it bothers me immensely.
- I think the city could do itself a favor by setting up a three models [sic]. The first is for the lowest water use, and another middle use, and another for high use - based on number of bathrooms and square footage of the lot.
- I would ask the city to at least get sidewalks on one side of the street here on Peabody. The reason: because people are coming from other neighborhoods to get to Cornwall Park.
- Incredibly wary of the projected rise in water and especially sewer. I feel I am unduly penalized for living a half a block from the city. I find that my water/sewer bill is incredibly expensive.
- My main concern is water quality. I am surprised about the lack of effort being made to protect our water supply in Lake Whatcom. I strongly recommend the elimination of powerboats on the lake, development around the lake, and the lack of adequate road drainage. There is not a proper drainage system that removes toxic compounds from cars. When it rains, it goes into the lake. My perception is that there is plenty of water, however, the quality is not good. Who cares if there is plenty of water, when the quality is bad?
- The city should put meters on everyone sooner rather than later. Then everybody would just pay for their use. We should just use the Middle Fork diversion, and then we would plenty of water, and don't put the perception out that we don't have enough water [sic]. I'd rather filter the water more, than curb all of the development around Lake Whatcom; it is much cheaper.
- They charge too much. They charge more in the county than they do in the city. They give me less units than what I would like to have.