Seattle Public Utilities

Saving Water Partnership

FINAL REPORT

2006 Residential Water Conservation Benchmarking Survey and Attribution/Consumption Analysis

Submitted to

Nota Lucas, Project Manager

Seattle Public Utilities

Seattle, Washington

Submitted by:

DETHMAN & TANGORA LLC

Seattle, Washington

November 2007

Acknowledgements

Many people contributed to the success of this project, which turned out to be even more challenging – and interesting – than any of us had envisioned. First, great thanks to Nota Lucas, our fearless project manager at Seattle Public Utilities, who helped us, time and again, figure out how to do things efficiently and well, and who has been vital in getting the word out about the results. Thanks also go to others at SPU were very helpful in supporting this project, especially (but not limited to) Rich Gustav, Al Dieteman, Tim Morrison, Bruce Flory, Julie Burman, and Allegra Abramo. Finally, we thank the residential customers who kindly cooperated in this study.

Linda Dethman, Principal Researcher
David Thomley, Project Analyst

DETHMAN & TANGORA LLC
3600 38th Avenue S, Seattle, WA 98144
206 760 1974
ldethman@speakeasy.net

Table of Contents

List of Tables and Figures

SECTION 1: EXECUTIVE SUMMARY

1.1 STUDY BACKGROUND AND PURPOSES

Seattle Public Utilities (SPU) provides water to over 450,000 households in the Seattle-King County area. Most of these households (64%) are within the Seattle city limits, receiving their water directly from SPU (Seattle customers). The remaining 36% of households receive their water through seventeen water utility districts that purchase wholesale water from the City of Seattle (Wholesale customers). SPU and its Wholesale customers comprise the Saving Water Partnership (SWP), sponsors of the 1% Water Conservation Program (1% Program). The 1% Program's goal is to keep water demand steady between 2000 and 2010, despite population and economic growth in the region.

To better understand their customers and how best to deliver conservation services, the SWP has long sponsored research to examine awareness, attitudes, and behaviors among their customers. This study -- the 2006 Residential Water Conservation Benchmarking Survey – continues in this tradition. The purposes of this study are to:

1. Track trends over time by comparing 2006 data to similar data collected in 1999 and 2001
2. Create baseline measures for new topics of concern
3. Provide feedback on awareness and satisfaction with conservation services
4. Help guide conservation efforts in the future
5. Explore the relation of the SWP's conservation efforts to changes in awareness, attitudes, and behaviors
6. Explore the relation of survey variables to water consumption, especially the effects of conservation program efforts on consumption (attribution/consumption analysis)

This Executive Summary highlights three types of findings: overall findings; differences between Seattle and Wholesale customers; and comparisons of 2006 results with 1999 and 2001 survey results. Conclusions and recommendations follow the key findings.

1.2 STUDY METHODS

1.2.1 Survey Methods

SPU staff worked closely with Dethman & Tangora LLC, a research and evaluation firm in Seattle, to draw the sample, define the research questions and survey instrument (see Appendix A), and conduct this research. Gilmore Research Group conducted telephone interviews, using a randomly drawn representative sample of residential customers, in the late fall of 2006 and lasted 20-25 minutes. Standard data reduction and statistical methods were used to analyze the data.

Table ES1 shows the sample sizes, margins of error, and the weighting used for Seattle and Wholesale respondent households[1] for the three surveys compared in this study. Although sample sizes are robust, readers should consider these factors when interpreting the data.

- All the samples have margins of error (+/- %)[2], meaning that the proportions in the report can vary from "true" population proportions by the error margin listed. Sub-samples

[1] The unit of analysis is the household as represented by the respondent.

[2] For instance, in the 2006 survey, the overall margin of error is +/-2.9%. If 50% of respondents said "yes" to a question, the population proportion could vary between 52.9% and 47.1%.

(e.g., Seattle and Wholesale customers) have larger margins of error than the overall samples.

- All samples have a 95% confidence internal. This means that in 95 out of 100 similarly drawn random samples, the results of this survey research would be similar.
- The surveys from all three years over-represent some groups compared to 2000 census figures: single family and higher income households, homeowners, older residents, and women; these groups are typically more likely to respond to telephone surveys. Unlike the 1999 and 2001 surveys, minority groups are well represented in the 2006 survey due to extra efforts being made.[3]
- As in past surveys, the overall findings are weighted to reflect the relative proportions of Seattle and Wholesale customer households. Due to the departure of several Wholesale Customers when the Cascade Water Alliance was formed, proportions are quite changed for 2006.
- The 2001 survey was conducted during a drought alert year.

Table ES1: Sample Statistics for 1999, 2001, 2006 Surveys

	1999	Error Margin	Weight	2001	Error Margin	Weight	2006	Error Margin	Weight
Overall	1223	+/- 2.9%	100	1035	+/- 3.2%	100%	1146	+/- 2.9%	100%
Seattle	603	+/- 4.1%	45%	530	+/- 4.5%	45%	896	+/ 3.3%	64%
Wholesale	620	+/- 4.1%	55%	505	+/- 4.5%	55%	250	+/ 6.2%	36%

1.2.2 Attribution/Consumption Analysis Methods

Early in the survey interview, interviewers asked respondents living in single-family residences to confirm or correct their addresses, reassuring them that this information would be used for research purposes only. SPU staff then matched the addresses with account numbers, resulting in 619 households where 2006 consumption data was available. SPU provided the consumption data along with selected household data from the King County Assessor. We then appended consumption and assessor data to the household's survey data. We used various approaches to explore how survey and consumption data might provide more insights about household water use. Further details on methods used for the consumption analysis are discussed in Section 2.4, while the results of the analysis are presented in Section 6.

1.3 GENERAL KEY FINDINGS

1.3.1 Demographics and Household Characteristics

In general, Seattle and Wholesale customers are more similar than different and the significant differences occurring between these two groups in past surveys continue to be true for the 2006 survey. Key demographic and household characteristics from the survey include:

- Over three-quarters of respondents are homeowners (77%) are homeowners, with fewer homeowners in Seattle (72%) than in Wholesale customer areas (84%).

[3] The terms "respondent" and "customer" are used interchangeably throughout this report despite the limitations of the sample.

- Similarly, over three-quarters of respondents live in single-family homes (80%) built before the 1994 plumbing code took effect (88%). Most customer houses are built on small and average lots (less than 10,000 square feet), with lots being larger in Wholesale areas than in Seattle.
- Half of respondents (48%) have lived in their homes more than 10 years, while 20% have lived in the same home between 5 and 10 years, and one-third (32%) have lived in their homes less than five years.
- About one-quarter of respondents (26%) are single-person households, while 36% have are two-person households, 15% have three people, and 22% have four or more people.
- Over three-quarters of households have access to both Internet and email at home (80%).
- One-fifth of respondents were 65 years of age or older (20%), while another 20% were aged 55 to 64. One-quarter (24%) were aged 45 to 54, 21% were aged 35 to 44, and 13% were between the ages of 18 and 34.
- Three-quarters of respondents were Caucasian (77%), 6% African American, 7% Asian or Pacific Islander, and 4% were of other races or ethnicities. Seattle has a higher proportion of minority household respondents than Wholesale areas (21% to 13%).
- A small proportion of respondents have family incomes of less than $25,000 per year (11%), while 31% have incomes between $25,000 and $75,000, 34% have incomes over $75,000, and 22% of respondents did not provide their income levels.

1.3.2 Concern about Environmental Issues

- Over half of customers surveyed (60%) say they are very concerned about major environmental issues facing the region over the next two decades, and most often point to concerns about water (quality, shortages), air pollution, and growth/traffic congestion.
- Similarly, 53% of surveyed customers say they are very concerned about global climate change. Reasons for this level of concern were diverse, with rising temperatures (18%), changes in weather (17%), and melting glaciers (11%) being mentioned most often.
- When respondents were asked to say how much global climate change would affect water supply, 50% said it would have a great impact, 21% said it would have some or little impact, and 28% were unsure how it would affect water supply.
- Respondents say they are less concerned about major water supply issues than environmental issues overall and global warming. Still 28% report they are very concerned and another 45% say they are somewhat concerned, citing water shortages, population growth, and global climate change as the reasons behind their concerns.

1.3.3 Tracking Water Use and Costs

- Two-thirds of respondents said they review their water bill. Of these respondents, 24% say they track water costs carefully, 46% track costs somewhat carefully, and 28% track their costs little or not at all. Similarly, 26% say the bill influences their water use a lot, 42% say it influences their use somewhat, and 30% say the bill has little influence on their water use.
- Among respondents who recall having year-to-year consumption charts on their bills, most (84%) say they use the chart to track if their use has changed.
- Eight percent of all customers surveyed rated their household use as “more than average,” while 47% think they are “average” consumers, and 41% think they use “less than average.” When these ratings are compared to the High, Medium, and Low peak use

categories that were developed based on actual consumption, only 41% of self-ratings matched the actual consumption categories, with those in "High" use households having the least accurate view of the level of their water use.

1.3.4 Water Conservation Services Awareness, Support, Satisfaction, and Information Sources

- Two-thirds of all respondents (68%) said they were aware of utility-sponsored conservation services, a significant drop from the 84% who were aware of these services in 2001.
- Among those aware of utility conservation services, 91% say they are very important (55%), or somewhat important (36%).
- Aware customers were most likely to have made use of these water conservation services and programs: Natural Yard Care brochures (33%), the WashWise Washer Rebate program (24%), and sales of discounted compost (19%).
- Almost all respondents who used their utility's conservation services were satisfied – 89% – with 42% being very satisfied and 47% being somewhat satisfied.
- Customers report they prefer to receive information about saving water through bill inserts, printed materials, and the Internet.

1.4 INDOOR KEY FINDINGS

1.4.1 Toilets

- The number of households with more than one toilet appears to be increasing: in 1999, 35% of households had one toilet, compared to 32% in 2001, and 28% in 2006. The number of homes with three or more toilets has grown from 28% to 36%. Homes in Wholesale areas have significantly more toilets than homes in Seattle.
- Forty-six percent of households living in homes built before 1994 say that they still have at least one high water using toilet. At the same time, two-thirds have switched out at least one toilet to a low-flow one, and 19% say they have specific plans to replace a high use toilet within the next year.
- When asked why they replaced a high flow toilet, most respondents cited multiple reasons; 85% said the toilet was broken or they were remodeling, over half gave environmental reasons, including saving water, 47% said they wanted to reduce their bills, and 21% gave credit to the influence of water utility efforts.
- Clear dissatisfaction with low-flow toilets is low – less than 15%.
- Respondents most often said they would seek help in selecting a new toilet from a home improvement store (51%) or the Internet (24%).
- A small proportion of customers (18%) say they have used a dye tab to check for "noiseless" toilet leaks. If they did find a leak, half would plan to fix it themselves, 28% would seek out help from a plumber, and 20% would ask a friend.
- If they needed help in fixing a toilet, customers would most ask for advice at a home improvement store (31%), ask their family and friends (25%), or search on the Internet for assistance (23%).
- Over half of customers (59%) say they have replaced a flapper on a toilet in their home during the past five years.

1.4.2 Showers

- Although not tracked like toilets over time, the number of showers may be increasing in homes, particularly through use of multiple showerheads and nozzles: 15% of respondents say they have a shower with more than one showerhead.
- 58% of respondents report they only have low-flow showerheads at home, while 27% say they have at least one high water use showerhead, and 15% do not know the type of showerheads they have.
- Two-thirds of respondents had replaced at least one high water using showerhead with a low-flow showerhead, with the most common reason being saving water (74%). Other common reasons to replace showerheads were broken showers, remodeling, and environmental reasons. One-third said they had taken action due to water utility help.

1.4.3 Clothes Washers

- Of the 89% of homes that have clothes washers, 29% have purchased front loading, resource efficient washers.
- Almost all customers who purchased resource efficient washers said they were motivated by saving water (88%); many also said they wanted to replace a broken washer, reduce bills, and protect the environment for the future. A majority (58%) also said utility efforts influenced them to purchase a resource efficient washer.

1.5 OUTDOOR WATER USE KEY FINDINGS

1.5.1 Yard Care

- The vast majority of survey respondents (80%) care for a yard, and of these households. most have both lawns (88%) and garden areas (96%). Significantly more Wholesale customers have yards (85% to 77%), and yards with lawns (91% to 86%), than Seattle customers.
- Two-thirds of respondents with lawns say they have at least some interest in lawn care (68%). However, interest in maintaining a "year-round" green lawn has dropped significantly over time – from 61% saying it was important in 1994 to 33% saying it is important in 2006. Wholesale customers are significantly more likely than Seattle customers to give higher importance to maintaining a green lawn.
- The proportion of households that do not water their lawns during the summer months has grown substantially – from 30% in 1999 to 53% in 2006. However, those who do water their lawns appear to be doing it more often. In 1999, 21% of households with lawns watered at least every three days; in the drought alert year of 2001 this number had dropped to 11%. In 2006, the percentage has climbed back up to 19%.
- Most people care for their own lawns (71%), but the percent who hire professionals for at least some lawn work may be rising, from 23% in both 1999 and 2001, to 28% in 2006. Wholesale customers are more likely than Seattle customers to hire lawn care assistance (35% to 24%).

1.5.2 Garden Care

- Almost all respondents with yards said their household's interest in gardening is strong (90%), with interest in gardening far exceeding interest in lawn care. The desire to maintain their gardens well is equally strong to their enthusiasm for gardening.

- Garden watering is more frequent than lawn watering, with 25% saying they water their gardens at least every other day (compared to 10% for lawns), and 23% saying they water garden areas every three days (compared to 9% for lawns).
- Those who rated themselves as very interested in gardening, compared to those less interested, more often care for their gardens themselves. Very interested gardeners also more often took steps to reduce water use in their gardens, saying they were motivated to do so because it improves the health of their gardens and is good for the environment. In addition, they participated more in utility sponsored gardening services and they were more interested in utility sponsored new services.
- At the same time, very interested gardeners more often have vegetable gardens and water features, water their gardens more frequently, and say their households use more than an average amount of water.

1.5.3 Yard Care Practices

- More than half of customers with yards said they had, in the past five years, added at least an inch of mulch to garden beds (73%), reduced their amount of lawn watering (68%), and added plants that use less water to their landscapes (54%). Adding mulch has increased from 54% in 1999 to 73% in 2006, and 57% of 2006 customers reported that mulching reduced their water use.
- Thirty to forty percent of customers say they have checked soil moisture, added soaker hoses, and grouped plants by water needs in the past five years, but only 14% have added a timer to an outdoor faucet and 13% have used the "tuna can test" to measure how much water is being applied.
- Small proportions of households report having a water feature (11%) or a hot tub, swimming pool, or spa (12%).

1.5.4 Automatically Controlled Underground Sprinkling Systems

- 19% of households have automatic underground sprinkling systems, and they are more prevalent among Wholesale customers (25% to 15%).
- Over half of customers with automatic systems think these systems water with minimum waste or evaporation. However, data from this study show that SWP households with automatic systems water significantly more often and are significantly more likely to fall in the "High" use category based on consumption data. Data show that:
  - 33% of households using automatically controlled underground sprinkler systems water their lawns every other day (25%) or every day (8%), compared to 5% of households without automatic systems.
  - 40% of households with automatic underground systems water their gardens every other day (30%) or every day (10%), compared to 19% of households without these systems.
  - 47% of households with automatic systems fell in the "High" use category (based on actual peak consumption per person per day), compared to 15% of households not using these systems.
- Most respondents with automatic systems say they check them for leaks once a year (84%), with 47% doing it themselves, 35% hiring an irrigation specialist, and 16% using a landscape company. To get leaks fixed once they are detected, 42% use an irrigation specialist, 41% do it themselves, and 15% use a landscape company.

- Three-quarters of households with automatic systems set their own watering schedule, with half saying they adjust it as the weather changes. One-quarter say their systems have rain sensors.
- One-quarter (24%) of households with automatic systems report they were aware of the watering index. A small proportion of these households (9%) say they are aware of utility rebates for automatic irrigation system upgrades.

1.5.5 Information Sources and Interest in New Outdoor Services

- The Internet (34%) and water utilities (32%) are the preferred information sources for customers seeking information about saving water outdoors.
- Having a discounted bulk compost program had the most appeal for customers with yards (28%), with 18% very being interested in an emailed garden newsletter, 16% being very interested in support for neighborhood garden projects, and 13% being very interested in neighborhood gardening workshops. When extrapolated to the population, each of these services could receive a strong response.

1.6 ATTRIBUTION/CONSUMPTION ANALYSIS KEY FINDINGS

- Large proportions of respondents report that core utility messages (such as “save water” and “protect the environment”), as well as specific conservation programs (such as “Washwise” and outdoor programs), have influenced them to take a variety of water saving actions.
- Respondents aware of utility sponsored water conservation programs report their households have taken significantly more indoor water conserving actions than households not aware of these services. Over one-third (36%) of aware customers report having taken three or more actions, compared to 23% of unaware customers.
- Similarly, aware households report they have taken significantly more outdoor water saving actions than unaware households. Just over one-third (38%) of aware customers report they have taken five or more actions, compared to 22% of unaware customers.
- Few significant differences emerged across the three levels of water consumption (High, Medium, Low) for indoor use variables, including equipment, behavioral, and demographic variables.
- Many significant differences did emerge for the three levels of peak consumption for outdoor use variables, including:
    - Households in the High peak use group are significantly more likely than the Medium and Low use groups to be very interested in lawn and garden care; hire professionals to care for their yards; water more often; add mulch, soaker hoses, and timers to their garden; use underground automatic sprinkling systems that are tended to by professionals; and have extra outdoor water uses such as water features and swimming pools.
    - Households in the High peak use group are much more likely to have one or two occupants and be older than those in the Medium and Low use groups.

- The consumption analysis[4] suggests that households aware of utility conservation programs, on average, may use less water than households who are not aware of the programs; these findings are consistent with aware households reporting they are taking more actions. The largest difference, although not at a statistically significant level, emerges for peak use. The analysis shows that aware households use between 7 and 12 gallons of water less per person per day or 3-6 CCF less per person per year. On a per person basis, average consumption during the peak summer season is 11% less for aware versus unaware households.

1.7 CONCLUSIONS AND RECOMMENDATIONS

1. **Customers voice strong environmental concerns.** Sixty percent of survey respondents voiced strong concerns about looming environmental issues for the Puget Sound area. The level of concern about water supply has grown significantly since the 2001 survey, even though that survey was conducted in the wake of a drought alert. Just over half of respondents also said they were very concerned about global climate change, even though many were not sure about its specific effects, including on water supply.

    - **Recommendation.** The SWP should consider increasing its presence as a leader in helping customers understand the future of water supply in our region and demystifying the potential effects of global climate change on water supply.

2. **Utility programs significantly contribute to customers saving water.** Those who are aware of conservation programs report taking significantly more indoor and outdoor conservation actions than those who are not aware of the programs. The attribution/consumption analysis also clearly shows that utility efforts, which have been largely educational in nature, do affect customer behaviors. Customers most often say they take actions because they want to conserve water, a central program message, and many say utility efforts influenced them to take water saving steps, especially for established programs, such as WashWise (for high efficiency washers), and landscape programs. For these programs, the majority of customers (58% in each case) say that utility efforts influenced them to take water saving actions. These findings suggest that customers respond well to sustained, long-term program efforts that have a consistent "brand name" and/or message and presence, and that financial or other incentives encourage them to take action.

    Strongly consistent with these findings, although not at a statistically significant level, consumption data suggest that aware customers, on average, may use less water throughout the year per person than unaware customers, with peak period consumption showing the strongest difference between aware and unaware customers.

    Despite strong targeted program efforts, however, the general level of awareness of utility sponsored water conservation efforts has dropped noticeably in the past five years. The steepest drop is among Wholesale customers, perhaps related to the loss of some Wholesale customers that strongly supported conservation activities.

    - **Recommendation.** General awareness of utility water conservation programs appears to be an essential building block for customers to take water saving actions. The SWP should consider renewed efforts at more general "awareness building" to remind customers of the utility water conservation services available to them and the

[4] The sample for the attribution/consumption analysis was made up of all the single family households where the respondents agreed to provide their addresses and where these addresses could be matched to consumption. Very low or very high consumption was not eliminated since the sample was assumed to be random and to reflect the overall population of single family households.

need and reasons to save water, both indoors and outdoors. Long-term, targeted, consistent, and "branded" utility conservation programs need to go hand in hand with awareness building; these efforts could include incentive programs.

3. **Customer misperceptions about the "level" of their water use may be a barrier to reducing use.** Findings show that many customers cannot accurately gauge if their households are high, average, or low water users. High users are least likely to accurately perceive their level of use. While most customers report using the charts in their bills to see if their use has increased, decreased, or stayed about the same, the charts do not help them analyze their use relative to a desired level of use. Thus, High water using households may be satisfied that their use is steady, or pleased that it has gone down, but the level of use may still be high. On the other hand, Low water using household are not being reinforced for their efforts. More signals to customers about their level of use, and what is the desired "normative" behavior, could help prompt or reinforce action.

   Recommendation: The SWP should consider developing better tools to help customers grasp their household's level of water use relative to desired levels of use. While these tools may be imperfect, and should be carefully pilot-tested, they are consistent with findings from SWP focus groups where customers have asked for better ways to benchmark their use. While all customers need these tools, this information is especially important for High users, since these households are the least likely to accurately perceive their level of use.

   One approach would be to provide another chart on the bill that shows how the customer's use compares to other households that are similar to theirs (e.g., single family homes of a certain size with a certain lot size) and/or to High, Medium, or Low ranges of use. The SWP could also develop an interactive, on-line tool that would allow customers to better analyze their consumption (e.g., calculating the difference between peak and off-peak use), and to compare their use to households with similar characteristics and/or to Low, Medium, and High use categories.

   Both tools could suggest water use goals for customers to target and could be linked to conservation tips that would help them reach those goals. In addition, the tools could include normative messages to influence change (e.g. "x% of customers in homes similar to yours have helped ensure the health and beauty of our region by taking this step to save water"). These messages would encourage High users to reduce their use, would reassure and reinforce the behavior or Low users, and would help Medium users assess what more they can do to save water.

4. **The definition for High water users is too narrow.** The consumption analysis suggests that 20% of owned single-family homes should be considered as High water using households during the summer peak period, a larger proportion than previously considered. Peak season High use households have many distinct characteristics compared to Medium and Low use households, mostly in relation to outdoor water use practices. Key significant differences include more interest in and attention to lawn and garden care and use of automatic irrigation systems, along with more efforts to take outdoor water saving steps.

   - **Recommendation.** A wider definition of summer High use households should be considered, and the distinct characteristics of the High user groups should be reviewed to ensure they match current program assumptions and efforts.

5. **Avid gardening goes hand-in-hand with high peak use and demographic trends.** One of the clear challenges in influencing outdoor water use, supported by the consumption analysis, is that the most avid gardeners also tend to be in the High peak use group. They engage in gardening practices that are likely to use more water, such as having vegetable gardens, automatic sprinkling systems, and watering more often.

At the same time, avid gardeners report they have taken more steps to save water than less interested gardeners, such as mulching and adding drought tolerant plants. Findings suggest utility programs may have influenced many avid gardeners to use less water than they would have otherwise, but this effect cannot be shown by analyzing the current data. At the same time, avid gardeners still may be, at the least, overwatering their garden areas. The behavior of avid gardeners – both using more water and making greater efforts to save – may also interfere with demonstrating significant differences in consumption between aware and unaware customers for summer peak use, since avid gardeners are also significantly more likely (along with somewhat interested gardeners) to be aware of conservation programs.

Avid gardeners have many characteristics that separate them from less interested gardeners aside from their stronger passion for gardening and their gardening practices. They are more likely than less interested gardeners to know they use more than an average amount of water. They are more interested in having well maintained, healthy, and beautiful gardens. They are more concerned about our environmental future and global warming, and are more likely to believe global warming will have a great impact on our water supplies. Avid gardeners are more likely to be older, to live in one or two person households, and along with somewhat interested gardeners, to be more affluent. Demographic trends suggest that the avid gardening population may grow, given an increased number of retiring and affluent "baby-boomers" who may decide to put their energies into one of the nation's most popular pastimes – gardening.

- **Recommendation.** SWP educational efforts should continue to focus on the very interested gardener groups, emphasizing how many avid gardeners may be overwatering their gardens and how this can diminish their garden's health and beauty. These efforts should also specifically show how water conscious avid gardeners could be important contributors to a healthy environment and planet.

6. **Households with automatic underground sprinkler systems, as well as those who install and maintain them, remain an important audience to target and influence.** This research clearly shows that households with these systems, compared to those without them, water significantly more often and are more likely to be "High" peak users. Data also show that most respondents with these systems are unaware of programs designed to reach them and that most think they are watering efficiently. However, many studies show that automatic irrigation systems waste 40% or more of the water they apply due to evaporation, runoff and/or uneven precipitation patterns.

   Recommendation. Those with automatic irrigation systems should continue to be targeted with programs to change behavior and to improve system efficiency. These programs should reveal to customers that these systems are likely to waste water, result in higher bills, and may harm gardens and the environment as well. Discouraging new automatic systems, or ensuring that they are as efficient as possible, should also be considered. The SWP should also work with irrigation and landscape companies to make sure they understand how to best encourage lower water use and greater garden health.

7. **Indoor water use also faces some potential efficiency challenges.** Most aspects of indoor water use appear to be stable and improving through better equipment and ongoing upgrades. Still, the trend toward "spa" bathrooms with multiple showerheads and sprays, especially among Medium and High users, is notable. In addition, findings suggest that most customers are not looking for noiseless leaks, which could be a significant source of waste.

   - **Recommendation.** The SWP should make sure it provides information to consumers about the resource, financial, and environmental consequences of having multiple showerheads and sprays. In addition, the SWP should develop a strong program to emphasize the importance of detecting noiseless leaks in toilets.

2.1 STUDY BACKGROUND AND PURPOSES

Seattle Public Utilities (SPU) provides water to over 450,000 households in the Seattle-King County area. Almost two-thirds of these households (64%) – mostly those living within the Seattle city limits – receive their water directly from SPU (Seattle customers), while the remaining 36% of households receive their water through seventeen water utility districts that purchase wholesale water from the City of Seattle (Wholesale customers). SPU and its Wholesale customers comprise the Saving Water Partnership (SWP), which sponsors the 1% Water Conservation Program (1% Program). The 1% Program's goal is to keep water demand steady between 2000 and 2010, despite population and economic growth in the region.

The SWP has sponsored ongoing research to understand water conservation awareness, attitudes, and behaviors among their customers. These studies have assessed conservation potential, tracked water use trends, helped plan programs, and evaluated the effectiveness of programs. This study -- the 2006 Residential Water Conservation Benchmarking Survey – continues in this tradition. The purposes of this study are to:

1. Track trends over time by comparing 2006 data to similar data collected in 1999 and 2001
2. Create baseline measures for new topics of concern
3. Provide feedback on awareness and satisfaction with conservation services
4. Help guide conservation efforts in the future
5. Explore the relation of the SWP's conservation efforts to changes in awareness, attitudes, and behaviors
6. Explore the relation of survey variables to water consumption, especially the effects of conservation program efforts on consumption (attribution/consumption analysis)

2.2 STUDY METHODS

2.2.1 Survey Approach

SPU staff worked closely with Dethman & Tangora LLC, a research and evaluation firm in Seattle, to draw the sample, define the research questions, and design the survey instrument (see Appendix A), and conduct this research. The survey instrument combined items from former regional surveys with new items to match current research goals.

Telephone interviews lasted 20-25 minutes and were conducted in the late fall of 2006 using a computer assisted interviewing system. Data were analyzed using standard data reduction and statistical methods. The randomly drawn, representative sample of residential customers provides adequate numbers for a separate analysis of Seattle and Wholesale customers, as well as reliable overall population estimates. The following margins of error and confidence intervals apply for the 2006 survey:

- **Overall Population Sample = 1146**. This sample has been weighted to reflect household population proportions of Seattle (64%) and Wholesale (36%) customers, and carries a +/– 2.9% margin of error at the 95% confidence level.
- **Seattle Customer Sample = 896.** The Seattle customer sample carries a +/– 3.3% margin of error at 95% confidence. (When weighted, the Seattle sample equals 732 cases.)

- **Wholesale Customer Sample = 250.** The Wholesale customer sample carries a +/– 6.2% margin of error at 95% confidence. (When weighted, the Wholesale sample equals 414 cases.)

Respondents were filtered in and out of the survey so that they only were asked the questions appropriate to their circumstances. In addition, to cut down on the interview length, a number of questions were administered to only half of the respondents. These smaller sub-samples carry with them a larger margin of error. Care should be taken when interpreting a sample size below 70 since it carries with it at least +/- 10% error.

This report also compares results from similar questions posed to residential customers from three surveys: 1999, 2001, and 2006. In general, the methods used for these three studies are comparable. **Table 4** shows the sample sizes, margins of error, and the weighting used for Seattle and Wholesale respondent households[5] for the three surveys. Although sample sizes are robust, readers should keep these factors in mind when interpreting the data.

- All the samples have margins of error (+/- %)[6], meaning that the proportions in the report can vary from "true" population proportions by the error margin listed. Sub-samples (e.g., Seattle and Wholesale customers) have larger margins of error than the overall samples.
- All samples have a 95% confidence internal. This means that in 95 out of 100 similarly drawn random samples, the results of this survey research would be similar.
- The surveys from all three years over-represent some groups compared to 2000 census figures: single family and higher income households, owners, older residents, and women; these groups are typically more likely to respond to telephone surveys. Unlike the 1999 and 2001 surveys, minority groups are well represented in the 2006 survey due to extra efforts being made.[7]
- As in past surveys, we have weighted the overall findings to reflect the relative proportions of Seattle and Wholesale customer households at the time of each survey. The notable changes to the Seattle/Wholesale proportions in 2006 reflect the departure of several Wholesale customers when Cascade Water Alliance was formed.
- 2001 data were gathered during a drought alert year, which likely affected some findings.

Table 1: Sample Statistics for the 1999, 2001, 2006 Surveys

	1999	Error Margin	Weight	2001	Error Margin	Weight	2006	Error Margin	Weight
Overall	1223	+/- 2.9%	100	1035	+/- 3.2%	100%	1146	+/- 2.9%	100%
Seattle	603	+/- 4.1%	45%	530	+/- 4.5%	45%	896	+/ 3.3%	64%
Wholesale	620	+/- 4.1%	55%	505	+/- 4.5%	55%	250	+/ 6.2%	36%

[5] The unit of analysis is the household as represented by the respondent.

[6] For instance, in the 2006 survey, the overall margin of error is +/-2.9%. If 50% of respondents said "yes" to a question, the population proportion could vary between 52.9% and 47.1%.

[7] The terms "respondent" and "customer" are used interchangeably throughout this report despite these limitations of the sample.

2.2.2 Differences Among the Survey Efforts

While the surveys used comparable methods, it is important to note these differences between some of the circumstances for the prior surveys and for the 2006 survey:

- The Wholesale customer population and location has changed significantly, with five utilities leaving to become part of the Cascade Water Alliance. In prior surveys, the proportion between Seattle and Wholesale customer households was approximately 45% Seattle and 55% Wholesale, while in this survey the proportion is 64% Seattle and 36% Wholesale. Some of the departing utilities were also very active SWP members. These changes in the population may affect the comparability of the data.
- Questionnaire items, while often similar, have evolved over time, reflecting new information and better measurement approaches. These changes are noted in the narrative, but should be kept in mind when comparing results across the years.
- In 2001, SWP service territories were in a drought alert situation. Media focused attention on this issue and customers were asked to do specific things to conserve.
- In 2006, additional efforts were made to include a greater proportion of non-white respondents in the survey so that survey data better reflect the growing diversity in the SWP population. This emphasis, while appropriate, may affect the comparability of the data.
- Survey data often over-represent households that are available, willing, and able to respond to telephone surveys. This is further discussed under the "Demographic and Household" section that follows. While further weighting of the data to better reflect census proportions was considered for the 2006 survey analysis, in the end we, in concert with SPU staff, decided not to further weight the data in order to retain as much comparability as possible across the surveys.

2.2.3 Table and Figure Notes

This report uses the current survey question numbers and questions (sometimes shortened) as headings. Tables may present:

1. Weighted population results for 1999, 2001, and 2006.
2. Seattle and Wholesale customer results for each of the surveys. These samples are unweighted.
3. Unweighted Seattle and Wholesale customer results and overall weighted population results for questions that were only asked in the 2006 survey.

Other important table and figure notes include:

- Samples sizes are indicated in the tables.
- The notation "DK" means "don't know" and "NA" means "no answer."
- Due to rounding, or for questions where more than one response is allowed, total percentages may exceed 100%.
- **"Sig."** is used to designate significant statistical differences for cross-tabulations (less than a 5% of the result occurring by chance). Statistically significant differences are derived from numerical assumptions and computations and may not be meaningful. N.S. indicates a non-statistically significant comparison.
- Cross-tabulations, except for the Seattle and Wholesale customer comparisons, use weighted data.

2.3 DEMOGRAPHIC AND HOUSEHOLD CHARACTERISTICS

Table 2 compares 2006 survey results to 2000 King County census data on various demographic and household characteristics, providing insights about the representativeness of the survey sample. These comparisons show that the sample, compared to the census data, contains a larger proportion of these groups: homeowners; those living in single family homes; those living longer than five years in the same home; households with larger incomes; respondents aged 65 or older; and female respondents. These types of differences between survey and census data are not unusual for telephone surveys; they reflect a population that is slightly more willing and able to respond to public opinions surveys. Similar patterns for demographic and household characteristics were also evident in the 1999 and 2001 surveys (**Table 3**).

Due to added sampling and screening efforts, the racial proportions for the 2006 survey sample are fairly similar to those in the overall population, except for the proportion of Asian and Pacific Islander respondents. Investigation of data collected during the survey revealed that many Asian respondents could not be interviewed due to language barriers.

Table 3 summarizes all the household and demographic information collected in this survey effort, providing overall weighted population level results and results comparing Seattle and Wholesale customer households. In general, Seattle and Wholesale customers are more similar than different and the significant differences occurring in past surveys continue to be true for the 2006 survey. Key demographic and household characteristics from the survey include:

- Most respondents are homeowners (77%), with fewer homeowners in Seattle (72%) than in Wholesale customer areas (84%).
- Most respondents are single-family home dwellers (80%) with no significant difference between Seattle and Wholesale customers. Most customer homes (+/-75%) are on lots less than 10,000 square feet. Based on the 1999 and 2001 surveys, customer lots are larger than Seattle customer lots.
- Most houses were built before 1994 (88%), when the plumbing code changed to require more water efficient toilets and showerheads.
- Half of respondents (48%) have lived in their homes more than 10 years, while 20% have lived in the same home between 5 and 10 years, and 32% have lived in their homes less than five years.
- About one-quarter of respondents (26%) are single-person households, while 36% have are two-person households, 15% have three people, and 22% have four or more people
- Almost all households have access to both Internet and email at home (80%).
- One-fifth of respondents were 65 years of age or older (20%), 20% were aged 55 to 64, 24% were aged 45 to 54, 21% were aged 35 to 44, and 13% were between the ages of 18 and 34.
- Three-quarters of respondents were Caucasian (77%), 6% African American, 7% Asian or Pacific Islander, and 4% were of other races or ethnicities. Seattle has a higher proportion of minority households than Wholesale areas (21% to 13%).
- A small proportion of customers have family incomes of less than $25,000 per year (11%), while 31% have incomes between $25,000 and $75,000, 34% have incomes over $75,000, and 22% of respondents did not provide their income levels.

Table 2 Comparison of Census and Survey Data Characteristics

	2000 KC Census	2006 Survey
	%	%
Homeowners	60	77
Single Family Homes	63	80
Lived in Home over 5 years	48	68
Average Household Size	2.5	2.4
Income under $25,000	20	24
Income over $100,000	26	18
65 or Older	14	20
Caucasian	76	77
Asian/Pacific Islander	14	7
African-American	6	6
Other Racial Categories	4	3
Other/No Response	--	7
Female	51	62

Table 3: Summary Table of Demographics

	Sea %	Whls %	Wgtd Pop %	Sea %	Whls %	Wgtd Pop %	Sea %	Whls %	Wgtd Pop %
	1999			2001			2006		
Own/Rent Sig.									
Own	68	80	75	67	77	72	72	84	77
Rent	31	19	24	31	22	26	27	14	22
DK/NA	1	1	1	2	1	2	1	2	1
Single/Multi-Family NS									
Single Family	74	82	78	72	81	77	77	85	80
Multi-Family	26	17	21	27	17	22	22	15	19
DK/NA	-	1	1	1	2	3	1	--	1
Lot Size (Sq. Ft.) Sig. 1999, 2001							**Asr[8]**	**Est.**	**Est.**
Small (<5K)	36	16	24	32	25	28	32	25	28
Average (5-10K)	49	39	43	43	38	40	58	45	50
¼ acre to ½ acre	10	24	18	8	18	13	9	18	13
More than ½ acre	2	17	11	4	13	9	1	3	9
DK/NA	3	4	4	12	7	9	--	--	--
Household Size NS									
1	28	16	22	29	18	23	30	20	26
2	38	40	39	38	38	38	36	36	36
3	17	18	17	16	17	17	17	13	15
4	10	15	13	8	16	12	12	18	14
5 or more	6	11	8	4	10	9	4	12	8
DK/NA	*-	-	-	1	1	1	1	1	1
Average	*2.3*	*2.7*	*2.5*	*2.5*	*2.6*	*2.6*	*2.3*	*2.9*	*2.5*

[8] To more accurately capture self-reported lot size, the 2006 data for Seattle is based upon data from the King County Assessor's office for 476 households that provided us with their address. If the "don't know" households in the 2001 survey are added into the "average" lot size category, proportions are almost identical between 2001 and 2006. This provides greater confidence in the self-reported data. For Wholesale and Weighted Population samples, assessor data was not available. Thus, the figures are estimated by using 2001 figures and adding the "don't know" percent into the average lot size category.

	Sea %	Whls %	Wgtd Pop %	Sea %	Whls %	Wgtd Pop %	Sea %	Whls %	Wgtd Pop %
	1999			2001			2006		
Age of Home NS	**Not Available**			**Not Available**					
Pre-1994							88	87	88
1994-2000							4	5	4
2001 or later							5	5	5
DK/NA							**3**	**3**	**3**
Years in Home NS	**Not Available**			**Not Available**					
Less than 5 years							35	27	32
5-10 years							20	20	20
More than 10 years							45	53	48
Use of Internet at Home NS	**Not Available**			**Not Available**					
Both Internet/Email							79	81	80
Internet only							1	3	2
Email only							1	1	1
None							19	14	17
DK/NA							0	1	1
Age NS							--	--	
18-24	5	4	5	6	6	6	3	3	3
25-34	14	12	13	18	14	16	12	7	10
35-44	20	23	22	20	22	21	22	18	21
45-54	19	19	19	18	22	20	25	24	24
55-64	11	15	13	13	15	14	19	21	20
65 or older	28	24	26	22	19	21	18	25	20
DK/NA	2	2	2	3	2	2	1	2	2
Ethnicity Sig. 2006									
Caucasian	82	84	83	81	83	82	74	80	77
Asian/Pacific Islander	7	3	5	4	6	5	8	6	7
African-American	3	2	2	3	0	2	9	2	6
Native American	1	1	1	1	1	1	1	1	1
Mixed ethnicity	2	2	2	3	5	4	2	2	2
Other	1	1	1	4	3	3	1	2	1
DK/NA	4	6	5	4	3	4	5	7	6
Income[9] Sig.									
Less than $15,000	8	3	5	7	6	7	9	1	6
$15,000 to $25,000	12	6	9	8	5	6	6	4	5
$25,000 to $50,000	23	21	22	20	18	19	15	10	14
$50,000 – $75,000	15	14	14	15	19	17	18	20	19
$75,000 - $100,000	8	11	9	9	13	11	14	15	14
Over $100,000	7	11	9	9	11	11	20	21	20
DK/NA	27	34	31	32	28	30	18	29	22
Gender Sig. 1999; NS 2001, 2006									
Female	50	56	54	57	54	57	60	66	62
Male	50	44	46	43	46	43	40	34	38
Overall Ns =	*603*	*620*	*1223*	*530*	*505*	*1032*	*896*	*250*	*1146*

[9] The income question was posed differently in 2006, leading to fewer respondents not answering the question. Since non-response to income questions usually indicate higher incomes, the higher proportion of respondents in the "Over $100,000" category is likely to both rising incomes and a higher response rate to the question.

2.4 WATER CONSUMPTION ANALYSIS METHODS

In addition to analyzing past and current survey data on its own merits, this study was designed to explore how survey and King County Assessor data[10], in conjunction with consumption data, might illuminate the factors that influence single family household water consumption.[11] This analysis used measure of respondent awareness, knowledge, attitudes, and behaviors, and respondent and household characteristics, to explore how and if these variables relate to different levels of household water consumption in 2006. This section describes the general approach we used to match respondent information to consumption data and the handling of the consumption data. Chapter 6 discusses the results of this analysis.

Early in the survey interview, interviewers asked respondents living in single family residences to confirm or correct their addresses, reassuring them that this information would be used for research purposes only. SPU staff matched the addresses with account numbers, which resulted in 619 matches. SPU provided Total Consumption in CCF[12], Total Consumption Per Day in gallons, Peak Consumption in CCF, Peak Consumption Per Day in gallons, the Total Days of Service, the Peak Days of Service, and King County Assessor data, which we then matched to household survey responses.

After discussions with SPU, we initially created two consumption measures:

- **Peak Consumption Per Day** (Peak/Day) for use with outdoor water use-related questions
- **Off-Peak Consumption Per Day** (Off-Peak/Day), for use with indoor water use-related questions[13]

Since the Peak/Day and Off-Peak/Day consumption variables do not take into account household size and the natural tendency of households with more occupants to have higher water consumption, we also created these two additional variables[14]:

- Peak Consumption Per Person Per Day (Peak/Person/Day)
- Off-Peak Consumption Per Person Per Day (Off-Peak/Person/Day)

Finally, we segmented each of these consumption variables into Low, Medium, and High water consumption, using these definitions:

- **Low** consumption = all consumption values in the 20th percentile and below
- **Medium** consumption = all consumption values above the 20th up to the 80th percentile
- **High** consumption = consumption values above the 80th percentile

---

[10] SPU matched addresses with customer rolls and provided 2006 consumption data. SPU also provided King County Assessor data, including home and lot square footage and the year the home was built.

[11] For a variety of reasons, consumption data was not available for multi-family households.

[12] 1 CCF equals 100 cubic gallons or 748.05 gallons.

[13] To calculate Off-Peak/Day, we took these steps:

- Total Consumption – Peak Consumption = Off-Peak Consumption
- Total Days of Service – Peak Days of Service = Off-Peak Days of Service.
- Total Off-Peak Consumption/Off-Peak Days of Service = Off-Peak/Day consumption, in CCF.
- CCF x 748.05 = the amount in gallons per day (making it comparable to Peak/Day figures)

[14] These variables were created by dividing Peak and Off-Peak/Day consumption by the number of people living in each household as reported by survey respondents.

Various break-points were investigated for use in the consumption analysis, including self-reports of use and the previous break-point used to define high water users. The final break points, which assumed that water consumption approximated a "normal" distribution, proved to be the most robust for revealing differences among the groups.

2.5 REPORT ORGANIZATION

The remainder of this report is organized into the following sections:

- Section 3: Views of Environmental and Water Issues
- Section 4: Indoor Water Use
- Section 5: Outdoor Water Use
- Section 6: Consumption Analysis
- Section 7: Key Segment Profiles

SECTION 3: VIEWS OF ENVIRONMENTAL AND WATER ISSUES

This chapter discusses the results from a variety of awareness and attitudinal questions concerning the environment and water supply. Where data are available, questions are compared with 1999 and 2001 survey results.

3.1 MAJOR ENVIRONMENTAL ISSUES FACING PUGET SOUND

Q1: Would you say you are not at all concerned, not too concerned, somewhat concerned, or very concerned that the Puget Sound area will need to deal with major environmental issues over the next 20 years? Q2: Why do you give that rating?

As shown in **Table 4,** respondents are quite concerned about the region's environmental future. Over 90% of all respondents said they were very (60%) or somewhat (31%) concerned that the region will face major environmental issues over the next two decades; these perceptions are consistent across Seattle and Wholesale customers.

Table 4 Concern about Major Environmental Issues Facing Region

N.S.	Seattle	Wholesale	Weighted Population
	%	%	%
Very concerned	64	53	60
Somewhat concerned	28	36	31
Not too concerned	5	9	6
Not at all concerned	2	1	1
DK/NA	1	1	2
N =			*576*[15]

When asked in an open-ended question to give the reasons behind their ratings **(Table 5)**, respondents focused on several issues. Over one-third of respondents mentioned water related concerns, with 26% saying they were concerned about water quality issues. One-fifth of respondents said they were concerned about air pollution, and 11% each were concerned about population growth and traffic congestion. Seven percent each mentioned global climate change or pollution in general, 4% voiced concerns about salmon and natural areas, and 2% were concerned about energy shortages.

Table 5 Reasons for Concern about Environmental Issues

	Weighted Population
	%
Water quality (26), general water concerns (5), water shortages (4)	35
Air pollution	20
Population growth/over-development	11
Traffic congestion/lack of transportation	11
Global climate change	7
Pollution general	7
Threats to salmon/wildlife/natural areas	4
Energy shortages	2
Other	11
Unsure	13
NA	1
N=	*576*
Percentage totals may exceed 100% due to multiple responses	

[15] To reduce interview time, a number of questions were randomly administered to half of respondents.

3.2 CONCERNS ABOUT WATER SUPPLY

Q3: Would you say you are not at all concerned, not too concerned, somewhat concerned, or very concerned that the Puget Sound area will need to deal with major issues related to the supply of water over the next 20 years? Q4: Why do you give that rating?

All three surveys asked respondents to rate how concerned they were about water supply issues in the future (in 1999 and 2001, the time horizon was 5 years; for 2006, the horizon was 20 years). As shown in **Table 6**, most (73%) 2006 respondents were very (28%) or somewhat (45%) concerned that supply problems would arise over the next 20 years. This is a notable increase from the 63% in 2001 and 62% in 1999, although this may reflect the longer time horizon. Although the difference is not statistically significant between Seattle and Wholesale customers **(Table 7)**, Seattle respondents in 2006 have a notably larger proportion of *very* concerned ratings (31%) compared to Wholesale customers (24%).

When asked "why" they were concerned about water supply, respondents most often mentioned three reasons to be concerned **(Table 8):**

- Water shortages/uncertainty about supply (34%). A higher proportion of respondents (42%) gave this reason in 2001 during the drought alert.
- Population growth and over-development (20%). This reason has been steady over time.
- Global climate change and environmental reasons (19%). This figure has risen sharply since 1999 (3%) and 2001 (8%).

One other change among the reasons given for concern, or lack of concern, about water supply is notable: in 1999, 71% of customers said that having enough water was not a problem. By 2001, during the drought, only 26% held this view. In 2006, this viewpoint was almost non-existent (5%).[16]

Table 6: Concern about Water Supply – Whole Population Comparisons

Weighted Population	**1999**	**2001**	**2006**
	%	**%**	**%**
Very concerned	24	26	28
Somewhat concerned	38	37	45
Not too concerned	23	25	16
Not at all concerned	13	11	9
DK	2	1	2
N =	*1223*	*1032*	*1146*

Table 7 Concern about Water Supply – Seattle/Wholesale Customer Comparisons

Seattle-Wholesale Customers	**Sea**	**Whsl**	**Sea**	**Whsl**	**Sea**	**Whsl**
N.S.	**%**	**%**	**%**	**%**	**%**	**%**
	1999		**2001**		**2006**	
Very concerned	22	25	29	24	31	24
Somewhat concerned	42	36	36	38	44	45
Not too concerned	21	25	23	27	15	18
Not at all concerned	13	12	12	10	8	9
DK	2	2	2	1	2	4
N=	*603*	*620*	*530*	*505*	*896*	*250*

[16] The 7% of respondents who gave "other" reasons for their ratings tended to restate their ratings (e.g., "because it's important" or "that's how I feel"), gave vague answers (e.g., "trends"), or gave reasons that were difficult to classify (e.g, "I was a disaster planner").

Table 8: Reasons for Concern about Water Supply

Weighted Population	1999	2001	2006
	%	%	%
Finite water supply/shortages/uncertainties in supply	13	42	34
Population growth/over-development	16	19	20
Global climate change/environment/fish	3	8	19
Good water is important/necessary	13	10	--
Health/general water quality	10	5	8
People don't care/conserve enough	6	5	7
Water management issues including selling water	6	3	3
Increased media coverage	3	5	--
Rising water rates	3	8	1
Terrorists could attack supply	0	3	--
Utility does a good job/supply and water system are good	2	3	15
Not concerned/live in good water area compared to others	71	26	5
Never thought of/not informed about it	9	0	5
Other	--	--	7
DK/NA	3	3	5
N=	*1198*	*1032*	*741*
Percentage totals may exceed 100% due to multiple responses			

3.3 CONCERN ABOUT GLOBAL CLIMATE CHANGE

Q5: Would you say you are not at all concerned, not too concerned, somewhat concerned, or very concerned about global climate change, or that you do not know enough about this issue? Q6: Why do you give that rating?

Q7: Is it your understanding that global climate change, were it to occur, would have little, some, or great effect on water supply, or are you unsure what effect it would have?

When asked directly to rate their level of concern about global climate change, over half of SWP customers said they were very concerned (53%) and another 28% said they were somewhat concerned **(Table 9).** Nine percent were not too or not at all concerned, and 10% said they did not know enough about the issue to rate their concern. Seattle customers were significantly more likely than Wholesale customers to say they were very concerned (57% to 46%). Customers gave a broad array of reasons when asked to explain their ratings.

Table 9: Concern about Global Climate Change

Sig.	Seattle	Wholesale	Weighted Population
	%	%	%
Very concerned	57	46	53
Somewhat concerned	27	29	28
Not too concerned	4	4	4
Not at all concerned	3	8	5
DK enough to rate	9	13	10
N =	*452*	*123*	*573*

As shown in **Table 10**, the top four reasons for customer concerns about global climate change were:

- Rising temperatures (18%)
- Changes in weather (17%)

- Belief that global warming is a proven scientific fact (16%)
- Melting glaciers and ice caps (11%)

Table 10: Reasons for Concern about Global Climate Change

	Weighted Population
Reasons for Concern	**%**
Rising temperatures	18
Changes in weather	17
Melting glaciers/ice caps	11
Water issues/lack of clean water	10
Impacts on wildlife/habitats	9
Ozone layer/CO2 going into atmosphere	3
Air pollution	3
Overpopulation	2
Food contamination	1
Major problem/proven scientific fact	16
Aware from news about the problem	7
Impact on future generations	5
Will be bad consequences, general	4
Not being taken seriously enough	6
Need group effort/long term effort to reverse	5
Not affected directly/not convinced it is real	8
Other	9
DK/NA	2
N=	*512*
Percentage totals may exceed 100% due to multiple responses	

Table 11 shows that the majority of customers either thought global climate change would greatly affect water supply (50%) or somewhat affect it (18%), over one-quarter (28%) said they were unsure about the effect of this climactic change on water supply.

Table 11 Effect of Global Climate Change on Water Supply

N.S.	**Seattle**	**Wholesale**	**Weighted Population**
	%	**%**	**%**
Little effect on water supply	3	4	3
Some effect on water supply	15	24	18
Great effect on water supply	54	42	50
Unsure of effect	28	29	28
NA	--	1	1
N =	*452*	*123*	*573*

3.4 TRACKING WATER USE AND COSTS

Q8: Do you generally review or pay the water utility bill at your home?

Q12: How carefully do you track how much your household spends for water over time?

Q13: Would you say your water bills have little influence, some influence, or a lot of influence on how much water you use at home?

Q9: Does your water bill include a chart or other information that lets you compare the amount of water your household used during the current billing period to the amount of water your household used during the same period the year before? Q10: In the past year or so, have you used the information or chart on your water bill to compare how much water you used this year to the year before? Q11: If no chart: Would you find such a chart useful?

Q14: Compared to other households like yours, do you think your household uses more than an average amount of water, use an average amount, or uses less than average?

As shown in **Table 12**, two-thirds of the respondents to the survey reported that they usually reviewed or paid the water bill for their households. Those respondents were then asked how much attention they paid to tracking their water costs. As **Table 13** shows, 28% of respondents say they do not tend to track their water costs, while about half (46%) say they pay some attention to tracking costs, and 24% say they track costs carefully. Seattle customers are significantly less likely than Wholesale customers to say they track their water costs "little or not at all."

Table 12 Proportion of Respondents Reviewing Water Bill

N.S.	**Seattle**	**Wholesale**	**Weighted Population**
	%	**%**	**%**
Yes	67	70	68
No	32	29	31
DK/NA	1	1	1
N =	*896*	*250*	*1146*

Table 13 Tracking Water Costs

Sig.	**Seattle**	**Wholesale**	**Weighted Population**
	%	**%**	**%**
Track little/not at all	23	38	28
Track somewhat carefully	50	39	46
Track very carefully	25	21	24
DK/NA	2	2	2
N =	*602*	*176*	*783*

All respondents who were familiar with their water bills were asked to what extent the amount of their bills influenced the amount of water they use **(Table 14)**. Just under one-third of customers overall (30%) say the bill has little influence on their use, while 42% say the bill has some influence, and 26% say it has a lot of influence. Again, Seattle customers are significantly less likely than Wholesale customers to say the bill has little influence on their use.

Table 14 Influence of Water Bill on Use

Sig.	Seattle	Wholesale	Weighted Population
	%	%	%
Little influence	26	37	30
Some influence	44	39	42
A lot of influence	28	22	26
DK/NA	2	2	2
N =	*602*	*176*	*783*

Other key findings related to bill tracking and the influence of the water bill on use include:

- Those who say they very carefully track their bills are significantly more likely to say their bills influence their use a lot (52% compared to 21% who track their bills somewhat carefully and 13% who don't track their bills).
- Renters, while less likely to track their water bills carefully than homeowners (62% compared to 73%), are more likely to say that their water bills have a lot of influence on their water use; this may be related to the lower incomes of renters, which, in turn, may make them more concerned about water costs.
- While income does not appear to be related to how closely people track their bills, it does relate to how much their bill influenced the amount of water they use. In general, more affluent customers were less likely to say their bills influenced their use a lot.
- Women are significantly more likely than men to say they track their bills very or somewhat carefully (76% to 70%), and to say that their water bills influence their use (74% to 66%).

Most SWP households (84%) report they receive a bill that contains a chart that compares how much water they used in the current period with the same period a year before. Significantly more Seattle than Wholesale customers said their bills had consumption charts. Almost all customers (84%) with a water use chart on their bills say they review the chart to see if their use has changed **(Tables 15, 16)**. Among those who do not receive a bill with a water use chart, most respondents (68%) say they would like to have one added (no table**).**

Table 15 Water Consumption Comparison Chart on Bill?

Sig.	Seattle	Wholesale	Weighted Population
	%	%	%
Yes	89	76	84
No	6	13	9
DK/NA	5	11	7
N =	*602*	*176*	*783*

Table 16 Use of Water Consumption Comparison Chart?

N.S.	Seattle	Wholesale	Weighted Population
	%	%	%
Yes	86	78	84
No	13	20	15
DK/NA	1	2	1
N =	*539*	*133*	*661*

Table 17 shows that a small proportion of all customers (8%) believe they use more than an average amount of water, while 47% believe their household use an average amount of water, and 41% believe their water use is less than average. A larger proportion of Wholesale than Seattle customers believe their household's water use is average or above average (61% compared to 52%), while more Seattle than Wholesale customers believe they use less than an average amount of water (42% compared to 36%).

Table 17 Level of Water Use

Sig. (.056)	**Seattle**	**Wholesale**	**Weighted Population**
	%	**%**	**%**
Uses more than average	7	10	8
Uses average	45	51	47
Uses less than average	43	36	41
DK/NA	5	3	4
N =	*896*	*250*	*1146*

When respondent assessments of their household water use (more than average, average, or less than average) are compared to the billing data[17] we had for 619 single family households, only 41% of all self-ratings matched the levels we defined based on actual peak season use (High, Medium, and Low). "High" use households had the greatest mismatch between self-reports and actual consumption, while "Medium" and "Low" users made more accurate assessments, but many discrepancies emerged between self-reported and actual use, as described below:

- Among the 122 households we categorized as "High" use, only 16% of respondents had rated their households as using "more than average," while 53% had rated themselves as "average" users, and 25% had rated themselves as "less than average" users.
- Among the 368 households we classified as "Medium" use, 47% had identified their households as average users, but 38% thought they used less than average, and 10% thought they used more than average.
- Among the 129 households we categorized as "Low" use, 48% had rated themselves as less than average used, while 46% thought they were average users, and only 3% thought they were above-average users.

3.5 AWARENESS, SUPPORT, AND USE OF CONSERVATION SERVICES

Q14a: Are you aware local utilities provide water conservation information, services, and rebates to their customers?
Q78: How important is it for water utilities to provide conservation services?
Q80: How satisfied are you with your water utility's water conservation services?
Q81: How would you most like to get information about saving water from your water utility?

Although just over two-thirds of customers (68%) are aware their local water utilities provide water conservation information, services, and rebates to customers, this proportion has dropped significantly from 84% in 2001 **(Table 18)**. The proportion of households aware of utility programs is significantly

[17] In the following bullets, self-reported levels of consumption are compared to households categorized as High, Medium, and Low peak users based upon actual peak consumption. The comparisons were made between survey data and the 619 households used for the consumption analysis. Further information about this aspects of the consumption analysis can be found in Section 6.2.3.

higher in Seattle than in Wholesale customer households (72% versus 60%). In addition, while awareness has dropped in both Seattle and Wholesale customer areas, the drop among Seattle customers is much smaller than among Wholesale customers (10% to 26% drop).

Table 18: Awareness of Water Utilities Conservation Services

N.S. for 2001/ Sig. for 2006	Sea	Whsl	Wgtd Pop	Sea	Whsl	Wgtd Pop
		2001			2006	
	%	%	%	%	%	%
Yes	82	86	84	72	60	68
No/Don't Know	18	14	16	28	40	32
N =	530	505	1032	896	250	1146

The next question assesses customer support for utility water conservation materials. services, and rebates among those customers who are aware of these programs **(Table 19)**. Support is strong, with 55% of customers rating conservation services as very important, and 36% rating them as somewhat important. Support is stronger among Seattle than among Wholesale customers (57% to 48% very important ratings.) A similar pattern overall was in evidence for the 2001 survey. However findings suggest that support for conservation programs has eroded a little among Wholesale customers, with the "not important" proportion rising from 9% in 2001 to 15% in 2006.

Table 19: Importance of Utility Conservation Services*

Sig.	Sea	Whsl	Wgtd Pop	Sea	Whsl	Wgtd Pop
		2001			2006	
	%	%	%	%	%	%
Very Important	58	51	54	57	48	55
Somewhat Important	30	38	34	36	36	36
Not Too/Not At All Important	10	9	11	6	15	9
DK	1	--	1	1	1	--
N =	*437*	*433*	*870*	*395*	*69*	*439*

Half of "aware" respondents, selected at random, were asked this question.

Table 20 shows the proportion of "aware" customers who say they have participated in each of ten key water conservation services. (Note: The proportion from the whole population using these services would be smaller.) The top three services used by these customers are the:

- Natural Yard Care brochures (33%)
- WashWise clothes washer rebate (24%)
- Discounted compost sales (19%)

Table 20: Use of Water Conservation Services in the Past Five Years

	% Of "Aware" Customers Using Each Service
Used these Services:	**%**
Natural Yard Care Brochures	33
Washwise Clothes Washer Rebate	24
Discounted Compost Sales	19

Savingwater.Org Website	11
Discounted Soaker Hose Sales	10
Natural Yard Care Workshops	9
Northwest Yard Days	5
Natural Lawn/Garden Hotline	5
Savvy Gardener Classes	4
N =	437

Satisfaction with utility water conservation services among those who have used them is quite high (**Table 21**), with 42% saying they are very satisfied, 47% saying they are somewhat satisfied, and only 3% giving dissatisfied ratings. Seattle customers gave higher satisfaction ratings than Wholesale customers, but not at a statistically significant level (primarily due to the small number of Wholesale customers eligible to answer the question).

Table 21: Overall Satisfaction with Utility Conservation Service*

Sig. in 2001/N.S. in 2006	Sea	Whsl	Wgtd Pop	Sea	Whsl	Wgtd Pop
		2001			2006	
	%	%	%	%	%	%
Very Satisfied	48	44	46	45	31	42
Somewhat Satisfied	36	45	41	45	55	47
Not Too/Not At All Satisfied	10	8	9	3	3	3
DK/NA	5	3	4	7	10	8
N =	*437*	*433*	*870*	*240*	*29*	*244*

In 2001, all those aware of utility conservation services were asked this question. In 2006, respondents recalling use of at least 1 of 9 services (see Table 20) rated their overall satisfaction.

Table 22 shows satisfaction ratings by the type of conservation service used; these figures were derived by cross-tabulating the overall satisfaction ratings with each service. Bearing in mind the small sample sizes for some of the categories, the highest proportion of very satisfied ratings went to Northwest Natural Yard Care Days (75%) and the Natural Yard and Garden Hotline (65%).

Table 22 Conservation Services Used by Overall Satisfaction

Overall Level of Satisfaction	Very Satisfied	Somewhat Satisfied	Not Satisfied	DK/ NA	N =
	%	%	%	%	
Northwest Yard Days	75	17	-	8	24
Natural Lawn/Garden Hotline	65	35	-	-	20
Discounted Soaker Hose Sales	55	43	2	-	42
Washwise Clothes Washer Rebate	53	36	4	7	105
Natural Yard Care Workshops	53	39	5	3	38
Savingwater.Org Website	51	43	2	4	47
Natural Yard Care Brochures	47	46	2	5	147
Discounted Compost Sales	46	45	-	7	84
Savvy Gardener Classes	35	55	-	10	20

When asked to given their strongest preference (**Table 23**) for how to receive information about saving water, bill inserts were the most frequently given method (44%), followed by various typed of printed materials (24%), and the Internet (18%). When respondents were asked to give their other preferred ways of information, and these responses were added to the "most preferred" responses, the same three preferred sources emerged, but in slightly different order: bill inserts (55%), Internet (41%), and printed materials (36%).

Table 23 Preferred Method of Receiving Information on Saving Water

	Seattle	Wholesale	Weighted Population
	%	%	%
Bill inserts	44	45	44
Printed materials – brochures, newsletters, mailings	22	28	24
The Internet	18	19	18
Media – newspaper, radio, TV	6	3	5
Other	7	1	6
DK/NA	5	1	4
DK/NA			
N=	*395*	*69*	*464*

SECTION 4: INDOOR WATER USE

4.1 INTRODUCTION

This section explores responses to a variety of questions addressing indoor water using equipment and use, as well as steps taken to conserve water.

4.2 TOILETS

4.2.1 Number and Type of Toilets

Q15A: How many toilets do you current have in your home?
Q15: How many are high water using toilets?

As shown in **Table 24**, 28% of respondents have one toilet in their home, while 36% have 2 toilets, 27% have 3 toilets, and 9% have 4 or more toilets. Overall, the trend toward having more than one toilet, detected in the 2001 survey, is now more apparent, and the jump from 4% to 9% of households having four or more toilets is notable. As in past surveys, Seattle households are significantly more likely to have one toilet, while Wholesale customers are more likely to have three or more toilets; the major growth in the number of toilets is clearly among Wholesale customers **(Table 25)**.

Table 24 Number of Toilets

Population Comparisons	**1999**	**2001**	**2006**
	%	**%**	**%**
1 toilet	35	32	28
2 toilets	37	37	36
3 toilets	25	26	27
4 or more toilets	3	4	9
DK	N/A	1	0
N=	*1223*	*1032*	*1146*

Table 25 Number of Toilets – Seattle/Wholesale Customers

Seattle-Wholesale Customers *Sig.*	**Sea**	**Whsl**	**Sea**	**Whsl**	**Sea**	**Whsl**
	%	**%**	**%**	**%**	**%**	**%**
	1999		**2001**		**2006**	
1 toilet	46	26	43	23	38	12
2 toilets	37	37	37	37	38	35
3 toilets	16	33	17	33	19	40
4 or more toilets	2	4	2	5	6	13
DK	NA	NA	1	1	--	--
N=	*603*	*620*	*530*	*505*	*896*	*250*

All respondents living in homes built before 1994, when the plumbing code changed to require low-flow toilets, were asked if they had any high water using toilets in their homes. Based on self-reports, 42% of respondents live in homes with no high water using toilets **(Table 26)**, while 22% have one high water toilet, 24% have two or more high water toilets, and 12% do not know if they have a high water toilet in their homes. The data also show that Seattle customers are significantly less likely to have high water using toilets than their Wholesale customer counterparts, and that Wholesale customers are more likely to have two or more of these toilets.

Table 26 Presence of High Water Using Toilets

Sig.	Seattle	Wholesale	Weighted Population
	%	%	%
No high water toilets	44	39	42
1 high water toilet	24	18	22
2 high water toilets	12	17	14
3 high water toilets	6	13	8
4 or more high water toilets	1	3	2
DK/NA	13	10	12
N =	*787*	*218*	*1004*

4.2.2 Toilet Replacement, Satisfaction, Change Motivations, and Information Sources

Q16: Since 1994, have you replaced any high water using toilets in your home with low-flow ones?
Q17A, C, D, E, F: Did you replace your toilet with a low flow one for these reasons?
Q18/24: Would you say you are not at all satisfied, not too satisfied, somewhat satisfied, or very satisfied with the performance of your low-flow toilet?
Q19: Do you plan to replace a high water use toilet with a low-flow toilet in the next year?
Q21, 22, 24: How motivated would you be to change to a low-flow toilet if you knew . . . you could save $1,000 in water/sewer bills over the next 10 years? . . .you could save thousands of gallons of water a year? . . .the toilet would pay for itself in two years due to lower water/sewer bills?
Q25: If you wanted help in selecting a new toilet, where would you usually go for information?

Homeowners living in homes built before the plumbing code changed were asked if they had replaced any high water using toilets with low-flow toilets since 1994; the results are shown in **Table 27**. Overall, about two-thirds of respondents reported they had switched at least one high-flow to a low-flow toilet, and another small proportion reported that someone else had replaced the toilet. Seattle and Wholesale customers did not differ from one another.

Table 27 Replaced High Use with Low-Flow Toilet?

N.S.	Seattle	Wholesale	Weighted Population
	%	%	%
Yes	68	66	67
No	21	18	20
Replaced by someone else	4	6	5
DK/NA	7	10	9
N =	*425*	*136*	*572*

Respondents were then asked to indicate if various factors had influenced them to replace their high water using toilets (**Table 28**). Replacing a broken toilet or remodeling their homes influenced the largest proportion of respondents (85%) to change out their toilets. Other factors, however, were also strong, with over two-thirds (69%) saying that saving water influenced them and over half (56%) saying protecting the environment was a reason. Just less than half (47%) said that saving money on their bill was an influence. Finally, 21% of respondents said they were encouraged to switch out their toilets due to utility efforts or programs. Significantly more Seattle than Wholesale customers said they were motivated by reducing water bills (55% to 36%) and by conserving water (75% to 60%).

Table 28 Reasons to Replace High Use Toilets

N.S.	**Seattle**	**Wholesale**	**Weighted Population**
Wanted to . . .	**% Yes**	**% Yes**	**% yes**
A. Replace broken toilet/remodel home ***N.S.***	84	87	85
C. Conserve water/waste less ***Sig***	75	60	69
E. Protect environment for future generations ***N.S.***	61	48	56
B. Reduce water bills ***Sig.***	55	36	47
D. Respond to utility encouragement or program ***N.S.***	25	15	21
N =	*287*	*87*	*384*

Since low-flow toilets have not always received positive reviews for performance, and this can be a barrier to installing them, respondents were asked to rate their satisfaction with their low-flow replacement toilets (**Table 29**). Just under half of respondents (45%) said they were very satisfied with their low-flow toilet, 39% said they were somewhat satisfied, and 14% were either not too or not at all satisfied. Significantly more Seattle than Wholesale customers were very satisfied with their low-flow toilets (48% to 41%).

Table 29: Satisfaction with Low-Flow Replacement Toilets

Sig.	**Seattle**	**Wholesale**	**Weighted Population**
	%	**%**	**%**
Very satisfied	48	41	45
Somewhat satisfied	38	41	39
Not too satisfied	9	8	9
Not at all satisfied	4	7	5
DK/NA	2	4	3
N =	*361*	*121*	*495*

Homeowners living in homes built after 1994 were also asked to rate their satisfaction with the low-flow toilets in their homes, as shown in **Table 30,** with a somewhat higher proportion (53%) saying they were very satisfied. Seattle customers were significantly more satisfied than Wholesale customers with the low-flow toilets installed in their homes; only 7% of Seattle customers were dissatisfied compared to 30% of Wholesale customers.

Table 30: Satisfaction with Low-Flow Toilet Performance in Post 1994 Homes

Sig.	**Seattle**	**Wholesale**	**Weighted Population**
	%	**%**	**%**
Very satisfied	58	46	53
Somewhat satisfied	33	25	30
Not too satisfied	6	13	9
Not at all satisfied	1	17	7
DK/NA	1	--	1
N =	*78*	*24*	*103*

When homeowners living in pre-1995 homes were asked if they planned to switch out a high use toilet within one year, 19% said yes (**Table 31**), with significantly more Seattle customers planning to replace their high use toilets (22% to 15%).

Table 31 Plans to Replace High Use Toilet in Pre-1995 Homes

Sig.	Seattle	Wholesale	Weighted Population
	%	%	%
Yes, within one year	22	15	19
No	73	83	77
DK/NA	5	3	4
N =	*324*	*110*	*447*

When asked if three "benefits" scenarios would motivate them a lot, somewhat, or a little to replace their high water using toilets (**Table 32**), less than half of respondents were highly motivated by any scenario:

- 38% said they would be motivated a lot if they knew the toilet would pay for itself through reduced bills within two years
- 32% said they would be very motivated by saving thousands of gallons of water per year
- 29% said they would be very motivated if they knew they would save $1,000 on their bills over the next ten years

Table 32 Motivations to Replace High Use Toilets

	Seattle	Wholesale	Weighted Population
How motivated would you be to replace your toilet if you knew you could. . .	**% Motivated a Lot**	**% Motivated a Lot**	**% Motivated a Lot**
Q22. Have the toilet pay for itself in two years ***N.S.***	44	30	38
Q21 Save thousands of gallons of water a year ***N.S.***	36	26	32
Q20 Save $1,000 in water/sewer bills over 10 years ***N.S***.	34	23	29
N =	*324*	*110*	*447*

Table 33 shows where respondents would go to get help if they needed to choose a new toilet. Home improvement stores were the most frequently named source of help (51%), followed by the Internet (24%). Fourteen percent would ask a plumber and 7% each would seek help from their water utility or from friends and relatives.

Table 33: Sources of Help in Selecting a New Toilet

	Seattle	Wholesale	Weighted Population
	%	%	%
Home improvement or plumbing store	48	57	51
The Internet	27	20	24
Plumber or handyman	14	15	14
Water utility or government	9	5	7
Friends, family, coworkers	8	7	7
Home repair books/magazines	4	1	3
Other sources	6	5	5
DK/NA	--	--	6
N=	*647*	*210*	*1042*
Percentage totals may exceed 100% due to multiple responses			

4.2.3 Checking for Toilet Leaks and Replacing Flappers

***Q26: In the past year, have you checked any of your toilets for leaks by putting food coloring/dye in the tank?* (Note: Significant wording change from prior surveys)**
Q27: If you wanted to fix a leaking toilet, would you most likely fix it yourself, ask a friend or family member to fix it, or call a plumber or repair person?
Q28: If you wanted help on fixing a leaking toilet, where would you go for information?
Q29: Have you replaced a toilet flapper in any toilet in your home in the past five years?

In past surveys, respondents were asked a general question about checking for toilet leaks. As shown in **Table 34**, almost two-thirds of respondents in 1999 and 2001 said they checked for toilet leaks. Because many toilet leaks are silent, waste a lot of water, and go undetected unless dye tabs or food coloring are used in testing, the 2006 question was narrowed to determine how many households regularly use this method of leak detection. The data shows that only 18% of respondents do this more proactive type of leak detection. While Wholesale customers were significantly more likely to say they checked for leaks in 1999, subsequent surveys show no significant difference with Seattle customers.

Table 34: Checked for Toilet Leaks?*

Weighted Population	**1999 %**	**2001 %**	**2006 %**
Yes	64	63	18
No	34	35	82
DK	2	2	0
N =	*1223*	*1031*	*876*

Note: Past surveys did not specify using dye to check for leaks.

Table 35: Checked for Toilet Leaks – Seattle/Wholesale Comparisons

Sig. 1999; N.S. 2001, 2006	**Sea %**	**Whsl %**	**Sea %**	**Whsl %**	**Sea %**	**Whsl %**
	1999		**2001**		**2006**	
Yes	57	71	61	65	18	18
No	40	28	38	33	82	82
DK	2	1	2	2	--	--
N=	*602*	*620*	*530*	*505*	*647*	*210*

When asked who would fix their leaking toilet if detected, half of respondents said they would fix the leak, while 28% said they would call a plumber, and 20% would ask a friend or family member to fix the leak **(Table 36)**.

Table 36: Who Would Fix Your Leaking Toilet?

N.S	**Seattle %**	**Wholesale %**	**Weighted Population %**
Self	51	47	50
Plumber/handyman	29	27	28
Friend/family member	18	23	20
Other	1	1	1
DK/NA	1	2	1
N =	*647*	*210*	*876*

About one-third of respondents said they would go to a home improvement store to get information to help fix a leaking toilet, while 25% would use the Internet, 23% would gather information from friends and family members, and 15% would call a plumber **(Table 37)**.

Table 37: Sources of Information for Fixing Toilet Leaks

	Seattle	Wholesale	Weighted Population
	%	%	%
Home improvement or plumbing store	28	36	31
Friends, family, coworkers	6	28	25
The Internet	26	19	23
Plumber or handyman	17	13	15
Home repair books/magazines	13	11	12
Water utility or government	0	1	1
Other sources	1	7	7
DK/NA	--	--	2
Percentage totals may exceed 100% due to multiple responses			
N=	*447*	*148*	*610*

Finally, 59% of respondents report they have replaced at least one toilet flapper in a toilet at home in the past five years **(Table 38)**.

Table 38 Toilet Flapper Replacement in Past Five Years

N.S.	Seattle	Wholesale	Weighted Population
	%	%	%
Replaced flapper	57	63	59
Did not replace flapper	39	33	36
DK/NA	5	4	4
N =	*647*	*210*	*876*

4.3 SHOWERS

Q30: How many showers do you have in your home?
Q30A: Do you have any showers with multiple showerheads or spray nozzles?
Q30B: Could you tell me the total number of showerheads and spray nozzles you have?
Q31: How many of your showerheads are high water using showerheads?
Q32: Since 1994, have you had any high water using showerheads in your home replaced with low-flow showerheads?
Q17A, C, D, E, F: Did you replace your high water using shower with a low flow one for these reasons?

Ninety-nine percent of homes contain at least one shower (**Table 39**), with 40% overall reporting they have one shower, 43% having two, 15% having three, and 2% having four or more showers. Seattle customers are much more likely to have just one shower (50%) than Wholesale customers (22%), while Wholesale customers are much more likely to have two or more showers than Seattle customers (78% to 49%). Fifteen percent of respondents report having showers with multiple heads or nozzles, reflecting the "spa" trend in bathrooms. Seattle customers are significantly less likely to have showers with multiple heads or nozzles than Wholesale customers (12% to 20%). Among those who have showers with multiple heads or nozzles, 47% report they have two nozzles, one-quarter have three nozzles, and 20% have four or more nozzles (**Tables 40, 41)**.

Table 39 Number of Showers

Sig.	Seattle %	Wholesale %	Weighted Population %
0 showers	1	0	1
1 shower	50	22	40
2 showers	36	56	43
3 showers	12	19	15
4 or more showers	1	3	2
DK/NA	0	0	--
N=	*896*	*250*	*1146*

Table 40 Showers with Multiple Heads and Nozzles?

Sig.	Seattle %	Wholesale %	Weighted Population %
Yes	12	20	15
No	87	79	84
DK/NA	1	0	1
N =	*887*	*250*	*1139*

Table 41 Total Number of Showerheads/Nozzles

Sig.	Seattle %	Wholesale %	Weighted Population %
2 showerheads/nozzles	46	49	47
3 showerheads/nozzles	22	26	24
4 showerheads/nozzles	10	16	13
5 showerheads/nozzles	5	2	3
6 or more showerheads/nozzles	7	2	4
DK/NA	10	6	9
N=	*109*	*51*	*174*

As shown in **Table 42**, 58% of respondents report they have no high water use showerheads in their homes, while 16% say they have one, 8% have two, and 3% have three. Significantly fewer Seattle customers than Wholesale customers report having two or more high water using showerheads (8% to 16%). Overall, 69% of respondents report they have replaced a high water using showerhead with a low-flow showerhead since the plumbing code changed in 1994 (**Table 43**). Almost three-quarters of respondents said they had been motivated to change out a showerhead because they wanted to save water, while 68% said they had needed to fix a broken showerhead or remodel (**Table 44**). Just over half said they wanted to protect the environment for future generations (57%) and 56% wanted to reduce water bills. Almost one-third said that utility encouragement or programs influenced them to change to a low-flow showerhead.

Table 42 Number of High Water Using Showerheads

Sig.	Seattle %	Wholesale %	Weighted Population %
0 high use showers	58	58	58
1 high use shower	17	15	16
2 high use showers	7	10	8
3 high use showers	1	5	3
4 or more high use showers	--	1	--
DK/NA	17	12	15
N=	*778*	*218*	*997*

Table 43 Replaced High Use with Low-Flow Showerhead?

N.S.	Seattle	Wholesale	Weighted Population
	%	%	%
Yes	58	65	69
No	30	24	28
Replaced by someone else	10	8	9
DK/NA	2	3	2
N =	*589*	*185*	*788*

Table 44 Reasons to Replace High Use Showerhead

N.S.	Seattle	Wholesale	Weighted Population
Wanted to . . .	**% Yes**	**% Yes**	**% yes**
C. Conserve water/waste less ***N.S.***	73	74	74
A. Replace broken shower/remodel home ***N.S.***	66	70	68
E. Protect environment for future generations ***N.S.***	58	56	57
B. Reduce water bills ***N.S.***	58	52	56
D. Respond to utility encouragement or program ***N.S.***	36	27	32

4.4 CLOTHES WASHERS

Q 37: Do you have a washing machine in your home?
Q38: Is your washing machine a top loading washer or a washer that loads from the front?
Q39: Since moving into your home, have you replaced a top loading washer with a front loading one?
Q40 A, C, D ,E, F: Did you replace your high water using shower with a low flow one for these reasons?

Almost all respondents (89%) report having washing machines in their homes (**Table 45**), with significantly fewer Seattle customers having washers than Wholesale customers (85% to 97%). While most customers still have top loading machines (71%), 29% report having front loading resource efficient washers (**Table 46**). Over three-quarters (77%) of households with front loading washers report they have been the ones to replace the washing machine in their homes **(Table 47)**.

Table 45 Incidence of Washing Machines in Homes

Sig.	Seattle	Wholesale	Weighted Population
	%	%	%
Yes	85	97	89
No	15	3	11
N =	*896*	*250*	*1146*

Table 46 Type of Washers in Homes

N.S.	Seattle	Wholesale	Weighted Population
	%	%	%
Top loader	70	72	71
Front loader	30	27	29
N =	*758*	*242*	*1020*

Table 47 Replacement of Top Loaders with Front Loaders

N.S.	Seattle	Wholesale	Weighted Population
	%	%	%
Yes	73	83	77
No	27	15	22
N =	*203*	*60*	*265*

As **Table 48** shows, saving water motivated almost all customers when they changed to resource efficient washers (88%), but replacing an ailing washer or remodeling also influenced most customers (77%), as did reducing water bills (75%), protecting the environment for future generations (74%), and getting encouragement or assistance from their water utility (58%). Significantly more Wholesale than Seattle customers said environmental protection was a motivator (78% to 72%) while more Seattle customers said they were influenced by their water utilities (63% to 52%).

Table 48 Reasons to Replace Top Loading with Front Loading Washer

N.S.	Seattle	Wholesale	Weighted Population
Wanted to . . .	**% Yes**	**% Yes**	**% yes**
C. Conserve water/waste less ***N.S.***	88	88	88
A. Replace broken washer/remodel home ***N.S.***	74	82	77
B. Reduce water bills ***N.S.***	76	74	75
E. Protect environment for future generations ***Sig.***	72	78	74
D. Respond to utility encouragement or program ***Sig.***	63	52	58

SECTION 5: OUTDOOR WATER USE

5.1 INCIDENCE OF YARDS, LAWNS, AND GARDEN AREAS

Q43: Do you have a yard that your household is responsible for?
Q44: Does your yard have areas with lawn or grass?
Q45: Does your yard include garden areas with trees flowers shrubs or vegetables.

As shown in **Table 49** below, most 2006 respondents (80%) report having a yard they care for. Data comparisons in **Table 50** show that significantly more Wholesale than Seattle customers are responsible for yards (85% vs. 77%). Of households caring for yards, almost all have lawns or grass (88%) and an even larger proportion (96%) have garden areas (**Table 51**). Although Seattle yards are significantly less likely than Wholesale yards to include a lawn as part of the landscape (86% to 91%), the proportion of yards with lawn area is very high throughout all service territories.

Table 49: Presence of a Yard

Weighted Population	**1999 %**	**2001 %**	**2006 %**
Yes	77	71	80
No	23	29	20
N =	*1223*	*1032*	*1146*

Table 50: Presence of a Yard -- Seattle/Wholesale Comparisons

Sig. All years	**Sea %**	**Whsl %**	**Sea %**	**Whsl %**	**Sea %**	**Whsl %**
	1999		**2001**		**2006**	
Yes	74	80	64	77	77	85
No/DK	26	20	35	23	23	14
N=	*603*	*620*	*530*	*505*	*896*	*250*

Table 51 Incidence of Lawn and/or Garden Areas

Sig.	**Seattle %**	**Wholesale %**	**Weighted Population %**
Yard includes grass ***Sig.***	86	91	88
Yard includes garden areas ***N.S.***	95	95	96
N =	*685*	*213*	*912*

5.2 LAWN CARE

5.2.1 Interest In and Importance Of Lawn Care

Q54: How would you describe your household's interest in lawn care?
Q47: How important is it to have a green lawn as part of your yard throughout the year?

Among customers who have lawns, 28% say they are very interested in lawn care, while another 40% say they have some interest in caring for their lawns (**Table 52**). Almost one-third of respondents report they have limited interest in caring for their lawns, with Seattle customers being significantly less interested in lawn care compared to Wholesale customers.

Table 52 Interest in Lawn Care

Sig.	Seattle	Wholesale	Weighted Population
	%	%	%
Very interested	25	33	28
Somewhat interested	40	41	40
Not too interested	21	17	19
Not at all interested	15	8	12
DK/NA	1	1	1
N =	*588*	*193*	*800*

Customers with lawns were asked to rate how important it was to have a green lawn throughout the year. As shown in **Table 53** below, 10% said it was very important and 23% said it was somewhat important to have a green lawn, while the remainder said it was either not too (30%) or not at all (37%) important. The data clearly show that customer attachment to green lawns continues to decline and it now, by far, at its lowest point. As in past years, Wholesale customers are still significantly more likely to value green lawn more highly than Seattle customers (**Table 54)**, but this finding needs to be placed within the context that the majority in each group think a green lawn is not important.

Table 53: Importance of a Green Lawn Year Round

Weighted Population	**1994**	**1999**	**2001**	**2006**
	%	%	%	%
Very Important	22	16	15	10
Somewhat Important	39	30	29	23
Not Too Important	27	30	30	30
Not At All Important	12	25	25	37
N=	*2255*	*1223*	1032	800

Table 54: Importance of a Green Lawn -- Seattle/Wholesale Comparisons

Sig. All years	Sea %	Whsl %	Sea %	Whsl %	Sea %	Whsl %
	1999		**2001**		**2006**	
Very Important	11	19	14	15	9	13
Somewhat Important	26	33	22	34	22	23
Not Too Important	30	28	34	29	26	35
Not At All Important	32	22	30	22	43	29
N=	*603*	*620*	*530*	*505*	*588*	*193*

5.2.2 Frequency of Lawn Watering and Lawn/Yard Maintenance Responsibilities

Q49: About how often is your lawn watered during the summer months?
Q48: Do you mostly maintain your own lawn ("yard" used in 1999 and 2001), mostly hire a professional lawn services, or do both?

When asked how often they water their lawns during the summer months, just over half (53%) of customers with lawns said they do not water it or water it very infrequently (once or month or less). Seven percent water twice a month, 14% once a week, 9% every 3 days, 7% every other day, and 3% every day (**Table 55**).

Looking across the three years of survey results, there may be a slight upswing in the frequency of lawn watering with 10% watering at least every other day in 2006 compared to 4% in 2001 and 7% in 1999. The decline in watering frequency in 2001 was likely due to the drought alert, but those behaviors did not appear to persist. In 2006, unlike other survey years, there was no significant difference between Seattle and Wholesale customers in terms of frequency of watering, although the statistical test just missed the required level **(Table 56)**.

Table 55: Frequency of Lawn Watering

Weighted Population	**1999**	**2001**	**2006**
	%	**%**	**%**
Never/Once a month or less	30	52	53
Twice a month	24	14	7
Once a week	24	17	14
Every third day	14	7	9
Every other day	5	3	7
Every day	2	1	3
DK	1	6	7
N=	*1223*	*1032*	*800*

Table 56: Frequency of Lawn Watering -- Seattle/Wholesale Comparisons

Sig. 1999,2001 ***N.S. 2006 *.068***	**Sea** **%**	**Whsl** **%**	**Sea** **%**	**Whsl** **%**	**Sea** **%**	**Whsl** **%**
	1999		**2001**		**2006**	
Never/Once a month or less	36	27	56	49	56	48
Twice a month	23	24	10	17	7	7
Once a week	21	25	14	19	14	14
Every third day	14	15	6	6	7	12
Every other day	3	6	3	3	5	10
Every day	2	2	1	1	2	3
DK	-	-	10	3	8	7
N=	*410*	*448*	*293*	*355*	*588*	*193*

As shown in **Table 57**, 71% of respondents report they maintain their own lawns. Although the meanings of "lawn" and "yard" may differ somewhat, we decided to compare the results of this question with a question in prior surveys that used the term "yard." Findings are fairly consistent, although the data may be signaling a slight shift to more use of professionals, with 23% of households in the past using at least some professional help, compared to 28% in the 2006 survey. As in past years, Wholesale customers are significantly more likely than Seattle customers to hire professional help to maintain their lawns/yards **(Table 58)**.

Table 57 Lawn/Yard Care Responsibilities

Population Comparisons	**1999**	**2001**	**2006**
	%	**%**	**%**
Self-maintained	75	75	71
Hires professionals	12	12	12
Both	11	11	16
DK	1	2	1
N=	*946*	*734*	800

Table 58 Lawn/Yard Care Responsibilities – Seattle/Wholesale Customers

Seattle-Wholesale Customers *Sig.*	Sea %	Whsl %	Sea %	Whsl %	Sea %	Whsl %
	1999		2001		2006	
Self-maintained	73	77	71	78	75	69
Hires professionals	14	12	14	11	11	14
Both	11	11	10	11	13	21
DK/NA	1	--	4	1	1	1
N =	445	497	340	388	588	193

5.3 GARDEN CARE

5.3.1 Interest In and Importance Of Garden Care

Q56: Would you say your household is not at all interested, not too interested, somewhat interested, or very interested in gardening?
Q57: How important is it to your household that your garden areas are maintained?
Q58: Do you maintain your own garden areas, hire a professional gardener to maintain them, or do both?
Q70: Do you have vegetable beds as part of your garden?

Respondents to this survey confirm the Seattle area is a haven for gardeners: 90% of those who have gardens say they are either very interested (45%) or somewhat interested in gardening (**Table 59**). Interest in garden care far exceeds that of lawn care (45% versus 28% very interested). In the past, Seattle customers appeared to be slightly more avid gardeners than their Wholesale counterparts, but now there is no statistical difference in their level of gardening interest. The data also clearly show that the interest in gardening has grown substantially in just the past five years. In 2001, 66% of respondents said they were very or somewhat interested in gardening; in 2006, the proportion is 85%.

Table 59 Interest in Gardening

Sig. 2001; N.S. 2006	Sea	Whsl	Wgtd Pop	Sea	Whsl	Wgtd Pop
		2001			2006	
	%	%	%	%	%	%
Very interested	42	40	41	47	42	45
Somewhat interested	30	38	25	40	41	40
Not too interested	12	12	12	8	9	8
Not at all interested	16	10	12	6	8	7
	341	*388*	729	647	204	866
N =						

Not surprisingly, the importance of maintaining garden areas mirrors the level of interest, as shown in **Table 60**, where 90% of respondents said it was either very important (50%) or somewhat important (40%) to ensure their gardens are maintained. **Table 61** shows that more gardens than lawns are maintained by those in the household (79% to 71%). In addition, just over one-third of gardens contain vegetable beds, with significantly more vegetable gardens in Seattle than in Wholesale customer areas (**Table 62)**.

Table 60 Importance of Maintaining Garden Areas

N.S.	Seattle	Wholesale	Weighted Population
	%	%	%
Very important	49	49	50
Somewhat important	41	42	40
Not too important	7	6	8
Not at all important	3	3	3
N =	*647*	*204*	*866*

Table 61 Garden Care Responsibilities

Sig.	Seattle	Wholesale	Weighted Population
	%	%	%
Self-maintained	83	72	79
Hires professionals	4	7	5
Both	12	20	15
DK/NA	1	1	1
N =	*647*	*204*	*866*

Table 62 Presence of Vegetable Beds

Sig.	Seattle	Wholesale	Weighted Population
	%	%	%
Yes	38	31	35
No	62	69	65
=	*647*	*204*	*866*

5.3.2 Garden Watering

Q61: Excluding vegetable beds, how often are your garden areas watered during the summer months?

As shown in **Table 63**, garden watering behavior is evenly divided among four quartiles: those that water every other day (16%) or every day (9%); those that water every third day (23%); those that water once a week (24%), and those that water twice a month or less (25%). This table also shows that the frequency of garden watering does not differ between Seattle and Wholesale customers. However, the frequency of garden watering far exceeds the frequency of lawn watering: 60% of respondents report they water their lawns twice a month or less compared to 25% of respondents watering their garden areas with that frequency.

Table 63: Frequency of Watering – Garden and Overall Lawn

			Weighted Population	
N.S.	Seattle	Wholesale	Garden	Lawn
	%	%	%	%
Never/Once a month or less	17	18	17	53
Twice a month	10	11	8	7
Once a week	24	25	24	14
Every third day	23	23	23	9
Every other day	14	13	16	7
Every day	8	7	9	3
DK	4	4	4	7
N=	*647*	*204*	*800*	*800*

5.4 GARDEN PRACTICES, WATER FEATURES, AND HOT TUBS

Q62A, B, C, D, E, F, G, H, I: In the past five years have you done any of these yard care practices?
Q63A, B, C, D, E, F, G, H: Did you take these actions because. . . .
Q64: Have you reduced the amount of water you apply to beds you have mulched?
Q74: Do you have a water feature in your garden, such as a fountain or waterfall?
Q75: Do you have a hot tub, swimming pool, or outdoor spa?

Respondents with yards were asked if they had taken any of 10 yard care steps. Although they were not told this, each step helps save water in caring for lawns and gardens. The results for these questions are shown in **Table 64**. A few of these behaviors were asked about in previous surveys and these comparisons are in parentheses in the table.

The most frequent natural yard care behaviors taken in the past five years were to add an inch of mulch to garden beds (73%), reduce the amount of lawn watering (67%), and to add plants to the garden that use less water (54%). Around 40% of respondents said they had checked the soil for moisture levels, added soaker hoses, and grouped plants together that had similar watering needs. One-third of respondents said they had reduced the size of their lawns. Smaller proportions said they had added a timer to an outdoor faucet (14%) and used a tuna can test to measure the amount of water being applied. Seattle customers were significantly more likely than Wholesale customers to add mulch, add water friendly plants, and check soil moisture. Both adding mulch and reducing lawn size, two practices that were tracked in prior surveys, have increased quite dramatically.

Table 64 Incidence of Gardening Practices in the Past Five Years

N.S.	**Seattle**	**Wholesale**	**Weighted Population**
	% Yes	**% Yes**	**% yes**
C. Added as least an inch of mulch to garden beds ***Sig.***	75	70	(54, 58) 73
B. Reduced amount of lawn watering ***N.S.***	68	67	67
E. Added plants that use less water ***Sig.***	60	44	54
D. Checked soil for moisture level ***Sig.***	46	35	42
G. Added soaker hoses ***N.S.***	40	37	39
F. Grouped plants together w/similar water needs ***N.S.***	39	33	37
A. Reduced lawn size ***N.S.***	36	29	(25) 33
H. Added a timer to an outdoor faucet ***N.S.***	13	17	14
I. Used a tuna can ***N.S.***	13	11	13
Q64: Reducing water use after applying mulch ***N.S.***	57	55	57
			Overall Ns range from 781 to 890

All respondents who indicated they had taken at least one of the water friendly yard care actions were asked if various reasons influenced them to take those actions. The results of these questions are shown in **Table 65**. The single most frequently chosen reason to take natural yard care actions were to conserve water, with 87% saying this reason influenced them. Five other reasons influenced about 70% of respondents: protecting the environment for future generations (74%); using lawn areas for other purposes for those that had removed lawn (71%); improving the health of lawn or plants (71%); reducing water bills (71%); and reducing lawn/garden maintenance (70%). Over half of respondents also said that encouragement from water utilities or programs influenced them to take natural yard care actions (58%) and 51% said that saving water for salmon was a reason for action.

Table 65 Reasons to Take Yard Care Actions

N.S.	Seattle	Wholesale	Weighted Population
	% Yes	%	%
Did you do any of these things because you wanted to . . .		Yes	Yes
E. Conserve water/waste less ***N.S.***	89	85	87
G. Protect environment for future generations ***N.S***	72	78	74
A. Use lawn area beds, hard surfaces (lawn removed only) ***N.S***	73	66	71
B. Improve the health of lawn or plants ***N.S***	72	69	71
D. Reduce water bills ***N.S.***	72	68	71
C. Reduce lawn or garden maintenance ***N.S***	73	66	70
F. Respond to utility encouragement or program ***N.S***	63	52	58
H. Save water for salmon ***N.S***	54	48	51
			Overall N = 838 for most items

Finally, small proportions of households have water features (11%) and a similar proportion (12%) have hot tubs, spas, or swimming pools (**Table 66**).

Table 66 Incidence of Water Feature in Garden and Hot Tubs/Pools/Spas

N.S.	Seattle	Wholesale	Weighted Population
	%	%	%
Have water feature	10	13	11
Have hot tub, swimming pool, spa	11	14	12
N =	*678*	*212*	*905*

5.5 AUTOMATIC SPRINKLING SYSTEMS

5.5.1 Incidence and Maintenance

Q65: Do you use an automatically controlled underground sprinkling system to water your yard?
Q66: Do you think this system applies water with minimum water waste, that it wastes some water, or that it wastes a fair amount of water?
Q67: About how often in the system checked for leaks, overspray, and other problems?
Q67A: Who checks for problems – irrigation specialist, landscape company, household member?
Q68: Who fixes problems – irrigation specialist, landscape company, or someone in household?
Q69: Who sets the watering schedule – irrigation specialist, landscape company, household member?

About one-in-five households in 2006 have automatically controlled underground sprinkling systems installed at their homes **(Table 67)**; this proportion is consistent with the 1999 survey results. As shown in **Table 68,** Wholesale households are consistently more likely to have these systems than Seattle households (25% to 15% for 2006).

Table 67 Incidence of Automatic Sprinkling System

Population Comparisons	1999	2001	2006
	%	%	%
Yes + Yes don't use it	21	12	19
No	79	88	81
N=	*946*	*734*	905

Table 68 Incidence of Automatic Sprinkling System – Seattle/Wholesale Customers

Seattle-Wholesale Customers *N.S. 1999, 2001; Sig. 2006*	Sea %	Whsl %	Sea %	Whsl %	Sea %	Whsl %
	1999		2001		2006	
Yes + Yes, don't use it	19	23	11	13	15	25
No	81	77	89	87	85	75
N =	445	497	340	388	678	212

Most respondents with these systems (55%) believe they water with minimum water waste or evaporation, while 30% they waste some water, and 9% think they waste a fair amount of water (**Table 69)**.

Table 69 Perception of Automatic Systems and Water Waste

Sig.	Seattle %	Wholesale %	Weighted Population %
Wastes with minimum waste	53	57	55
Wastes some water	29	32	30
Wastes a fair amount of water	13	5	9
DK/NA	5	7	6
N =	*83*	*44*	*141*

In addition to research studies that show automatic underground systems use more water than other watering approaches, survey data show that SWP households with these systems water significantly more often and are significantly more likely to fall in our "High" use category based on consumption data. Data show that:

- 33% of households using automatically controlled underground sprinkler systems water their lawns every other day (25%) or every day (8%), compared to 5% of households without automatic systems.
- 40% of households with automatic underground systems water their gardens every other day (30%) or every day (10%), compared to 19% of households without these systems.
- 47% of households with automatic systems fell in the "High" use category (based on actual peak consumption per person per day), compared to 151% of households not using these systems.

Most respondents with these systems say they are checked for problems once a year (84%), with Wholesale customers significantly more likely to do a yearly check than Seattle customers (86% to 81%). The proportion of respondents saying they have their systems checked once a year has risen substantially from the 74% in 1999 and 75% in 2001. (**Tables 70, 71)**

Table 70 Frequency of Checking Automatic Systems for Problems and Leaks

Population Comparisons	1999 %	2001 %	2006 %
Once a year	74	75	84
N=	*125*	*81*	141

Table 71 Frequency of Checking for System Leaks – Seattle/Wholesale Customers

Seattle-Wholesale Customers *N.S. 1999, 2001; Sig. 2006*	Sea %	Whsl %	Sea %	Whsl %	Sea %	Whsl %
	1999		2001		2006	
Once a year	63	80	76	74	81	86
N =	NA	NA	NA	NA	83	44

Table 72 shows who checks automatic watering systems for leaks, who repairs them, and who sets watering schedules, as follows:

- The responsibility for checking watering systems is spread among homeowners (47%), irrigation specialists (35%), and landscape/garden companies (17%). Wholesale customers are significantly more likely to use irrigation specialists to check their systems while Seattle customers are more likely to do it themselves.
- Many respondents use irrigation specialists to fix leaks in their systems (42%) but an equal proportion do it themselves (41%) and small proportions use landscape firms (15%). Although not quite a statistically significant difference, Wholesale customers are more likely than Seattle customers to use irrigation specialists to fix leaks (52% to 30%).
- The large majority of households set their own watering schedules (72%), with significantly more Seattle households handling this task than Wholesale households (81% to 64%).

Table 72 Entities Responsible for Maintaining/Setting Automatic Systems

	Seattle %	Wholesale %	Weighted Population %
Who checks for problems? *Sig.*			
Irrigation specialist	21	48	35
Landscape/garden company	13	18	16
Household member/friend	61	34	47
DK/NA	6	0	3
Who fixes leaks? *Sig. *.061*			
Irrigation specialist	30	52	42
Landscape/garden company	17	14	15
Household member/friend	48	34	41
DK/NA	5	0	2
Who sets watering schedule? *Sig.*			
Irrigation specialist	7	27	18
Landscape/garden company	11	9	10
Household member/friend	81	64	72
DK/NA	1	0	1
N =	*83*	*44*	*141*

5.5.2 Watering Schedule and Use

Q70: How often is the watering schedule adjusted during the watering season?
Q71: Do you have a rain sensor installed to automatically turn the system off when it rains?
Q72: Have you heard of the watering index talked about by Steve Pool on KOMO or KVI?
Q73: Have you heard about any utility rebates for sprinkling system upgrades that save water?

Half of respondents with automatic systems report they adjust their system's watering schedules as the weather changes, while 24% say they do it once a season, 18% say they manage the system manually,

turning it on when needed, and 2% use a combination of methods (**Table 73**). One quarter of these households report their systems have rain sensors that turn their automatic systems off automatically when it rains (**Table 74**). Some respondents have heard about the watering index talked about regularly in the local media (24%), and a smaller proportion (9%) are aware that water utilities offer rebates for automatic sprinkling system upgrades(**Table 75**) .

Table 73 Frequency of Adjusting Watering Schedule

N.S.	**Seattle**	**Wholesale**	**Weighted Population**
	%	**%**	**%**
Once a season	23	25	24
As weather changes	57	52	54
Manage manually	15	21	18
Combination of methods	5	0	2
DK/NA	1	2	2
N =	83	44	141

Table 74 Incidence of Rain Sensors

N.S.	**Seattle**	**Wholesale**	**Weighted Population**
	%	**%**	**%**
Yes	23	27	25
N =	*83*	*44*	*141*

Table 75 Awareness of Watering Index and Utility Rebates

N.S.	**Seattle**	**Wholesale**	**Weighted Population**
	%	**%**	**%**
Aware of **watering index**	41	27	24
Aware of **utility rebates**	15	5	9
N =	*83*	*44*	*141*

5.6 INFORMATION SOURCES AND INTEREST IN OUTDOOR PROGRAMS

Q76: If you wanted to get help saving water outdoors, where would you go for information?
Q77A, B, C, D: How interested are you in the following types of yard care programs and services?

When asked how they preferred to get information about saving water outdoors, 34% said the Internet, and a similar proportion (32%) said they looked to their water utility for help (**Table 76**) . Other sources were mentioned much less frequently. Still, the findings suggest that to effectively communicate with customers about saving water outdoors, a variety of outlets will be needed.

Table 76: Preferred Sources of Information Saving Water Outdoors

	Seattle	**Wholesale**	**Weighted Population**
	%	**%**	**%**
The Internet (not including utility web sites)	37	28	34
Water utility/city (including web site)	32	31	32
Garden books/magazines	12	8	10
Home improvement or plumbing store	8	11	9
Friends, family, coworkers	6	6	6
Retail nursery	7	5	6
Landscape professional	4	6	5

	Seattle	Wholesale	Weighted Population
Lectures/local garden experts/master gardener clinics	8	6	6
Other sources	4	4	4
No other information needed	2	3	2
DK/NA	12	15	14
N=			*890*
Percentage totals may exceed 100% due to multiple responses			

When asked to rate their interest in four potential yard care services that their utility could provide, the most interest was in having bulk compost available at a discount (28% very interested). About one in five customers (18%) were very interested in receiving an emailed garden newsletter, 16% were very interested in seeing support for neighborhood gardening projects, and 13% were interested in neighborhood workshops on gardening topics. (**Table 77**)

Table 77 Interest in Four Yard Care Programs

Sig.	**Seattle**	**Wholesale**	**Weighted Population**
	%	**%**	**%**
Discount on bulk compost *Sig.*			
Very interested	29	25	28
Somewhat interested	30	23	27
Not interested	40	50	44
DK/NA	0	3	1
Emailed garden newsletter *N.S.*			
Very interested	17	19	18
Somewhat interested	35	23	30
Not interested	48	58	52
DK/NA	1	01	
Neighborhood gardening workshops *Sig.*			
Very interested	16	8	13
Somewhat interested	35	24	31
Not interested	48	67	55
DK/NA	1	1	1
Support for neighborhood gardening projects *Sig.*			
Very interested	19	10	16
Somewhat interested	35	23	31
Not interested	45	66	53
DK/NA	0	1	0
N =	*354*	*111*	*473*

SECTION 6: ATTRIBUTION AND WATER CONSUMPTION ANALYSIS

6.1 INTRODUCTION

This consumption analysis addresses three major questions, each of which are discussed in the following sections of this chapter:

- How do utility program efforts affect behavior and consumption?
- How do indoor use survey variables relate to consumption?
- How do outdoor use survey variables relate to consumption?

As defined in Chapter 1, the water consumption analysis uses these key variables[18]:

- Peak Consumption Per Day (Peak/Day)
- Peak Consumption Per Person Per Day (Peak/Person/Day)
- Off-Peak Consumption Per Day (Off-Peak/Day)
- Off-Peak Consumption Per Person Per Day (Off-Peak/Person/Day)

For each of these variables, consumption was divided into these three levels:

- Low use households (up to 20th percentile of water use)
- Medium use households (between the 20th and 80th percentile of water use)
- High use households (above the 80th percentile of water use).[19]

The results of cross-tabulating these variables are shown in **Table 78** below. Consumption is shown in gallons. Clearly, the ranges of consumption are wide for each variable. The measures of central tendency include the "mean" or average consumption and the "median," which indicates that half of the respondents consume at a level above or below that level. For the survey households analyzed, daily water use averages about 233 gallons per day during the outdoor watering season while off-peak daily use averages about 159 gallons.

Table 78 Consumption Statistics in Gallons by Peak and Off-Peak Variables

		Peak/Day	Peak/Person/Day	Off-Peak/Day	Off-Peak/Person/ Day
N		618	612	613	605
Mean		233.03	106.70	159.31	68.99
Median		186.85	75.59	129.21	53.47
Minimum		18.37	9.00	0.00	6.00
Maximum		3255.00	1166.00	3966.00	992.00
Percentiles	10	78.92	36.22	57.56	30.51
	20	113.29	45.87	82.50	36.67
	25	124.90	50.42	91.95	38.97
	30	137.02	54.36	97.90	42.88
	40	161.96	63.76	113.73	48.37
	50	186.85	75.59	129.21	53.47
	60	214.00	89.03	152.64	59.74
	70	262.92	115.83	176.29	68.66
	75	291.90	127.86	189.53	76.46
	80	318.26	147.36	207.98	86.77
	90	415.36	204.35	255.53	114.69

[18] We have reviewed the relationship between levels of consumption and many variables; this chapter presents the most interesting and useful results from these efforts.

[19] Please note that this is a much larger group of "High use households" than has been defined in past studies.

6.2 UTILITY PROGRAM EFFORTS AND THEIR EFFECTS ON BEHAVIOR AND CONSUMPTION

6.2.1 Recap of Relevant Survey Results

Throughout the survey results, respondents were asked to indicate which factors motivated them to take water conservation actions, including replacing broken equipment, reducing water bills, conserving water, protecting the environment, and responding to utility encouragement or programs. In most cases, respondents said they were influenced by more than one factor. While SWP educational efforts make use of all these messages in motivating customers to save water, two reasons most directly suggest utility influence: "I did it to save water" and "I did it due to utility encouragement."

Table 79 summarizes the proportion of customers who say they took water conservation actions because they wanted to conserve water or due to utility programs. The data clearly show that core utility messages and efforts have been critical change agents. Saving water was a strong driver in all cases and utility encouragement influenced over half of respondents to switch to high efficiency washers and to take various yard care actions from mulching to reducing lawn watering.

Notably, the proportion of customers directly influenced by conservation program efforts increases with the level of effort the utilities put into the programs or services. For instance, the SWP, while generally recommending toilet change-outs, has sponsored only one toilet replacement program for general residential customers (the Toilet Roundup). On the other hand, WashWise is an established incentive program and significant efforts have been put into educating and encouraging customers to reduce their outdoor water use. In addition, except for toilet replacement, "saving water" was the most frequently chosen reason to change. Finally, while not shown in the table, data suggest that direct Seattle customers are consistently more likely than Wholesale customers to say they made changes because they wanted to save water or because of utility influence.

Table 79 % of Respondents Changing Equipment/Behavior to Save Water or Due to Utility Efforts

Note: Sample sizes vary but all percentages reflect weighted data	% Saying They Changed to Conserve Water	% Saying Utility Efforts Influenced Change
Replaced high use toilet	69	21
Replaced high use showerhead	74	32
Replace top loading washer with high efficiency washer	88	58
Took various yard care actions	87	58

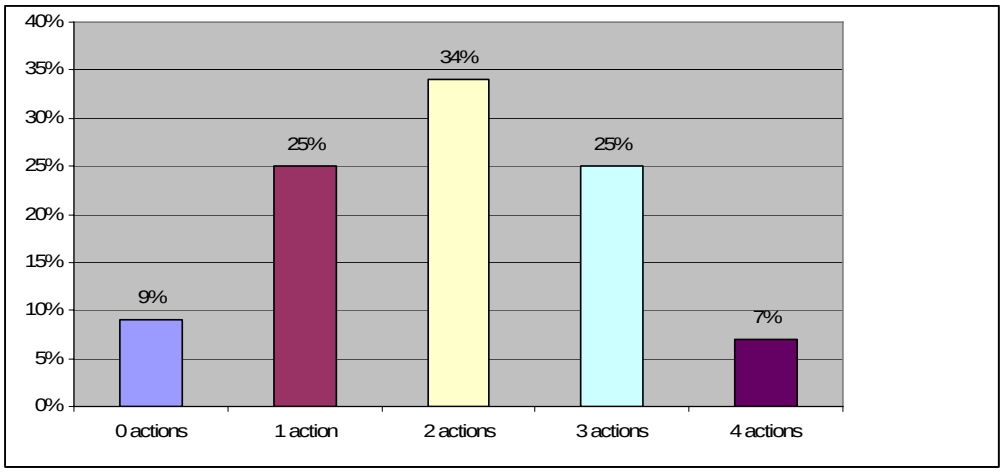
6.2.2 The Importance of Awareness of Utility Programs

Awareness is usually cited as a necessary first step on the road to changing behavior. The survey and consumption data build a solid case that awareness of utility conservation programs and services is a critical component in changing water using behaviors and reducing consumption. This section looks at the impact of awareness on the number of outdoor water conservation actions taken and upon water consumptions. The reader should bear in mind that 68% of respondents, overall, are aware of utility water conservation programs while 32% are not aware of these programs. The percent of aware respondents has dropped significantly since 2001 – from 84% to 68%.

The survey asked all respondents whether they had any of four actions that would save water indoors: switching from a high-flow toilet to a low-flow toilet; replacing a toilet flapper; changing a high-flow showerhead to a low-flow one; and replacing a less efficient top loading clothes washer with front loading one. **Figure 1** shows the percent of respondents taking one to four indoor actions (the data represent only

those customers living in single family homes with a washing machine). As shown, 9% have taken none of the actions, 25% have taken one action, 34% have taken two actions, 25% have taken three actions, and 7% have taken all four actions.

Figure 1 Percent of Respondents Taking One to Four Indoor Conservation Actions (N=779)



When the number of indoor actions is separated by aware and unaware respondents, the results, as shown in **Table 80**, reveal that the aware customers have taken significantly more indoor actions than unaware customers. Just over one-third (36%) of aware customers have taken three or more actions, compared to 23% of unaware customers.

Table 80 Indoor Conservation Action "Scorecard" for Aware and Unaware Respondents

Number of Actions Taken (*Sig.*)	Aware %	Unaware %
0 actions	8	12
1 action	23	31
2 actions	33	34
3 actions	27	20
4 actions	8	4
N =	575	188

Similarly, the survey also asked respondents with lawn and/or gardens if they had taken any of nine outdoor water saving actions during the past five years. As displayed in **Figure 2,** one-half of respondents have taken four or more actions while one-half have taken zero to three actions. As with the indoor action scorecard, when aware and unaware respondents are compared it is clear that being aware of conservation programs has significantly influenced the number of actions taken, as shown in **Table 81.** The distribution of scores for aware and unaware respondents shows that 38% of aware respondents report they have taken five or more actions compared to 22% of unaware respondents. In addition, 30% of aware respondents have taken two or fewer actions compared to 51% of aware respondents. The average number of actions for aware respondents is 3.76 while the average number of actions for unaware respondents is notably less – 2.85. Equally notable is that the median (the middle value of the whole distribution of respondents) is higher in the aware group than in the unaware group: 4 actions compared to 2 actions.

Figure 2 Percent of Respondents With Yards Taking 0-9 Water Saving Actions (N = 905)

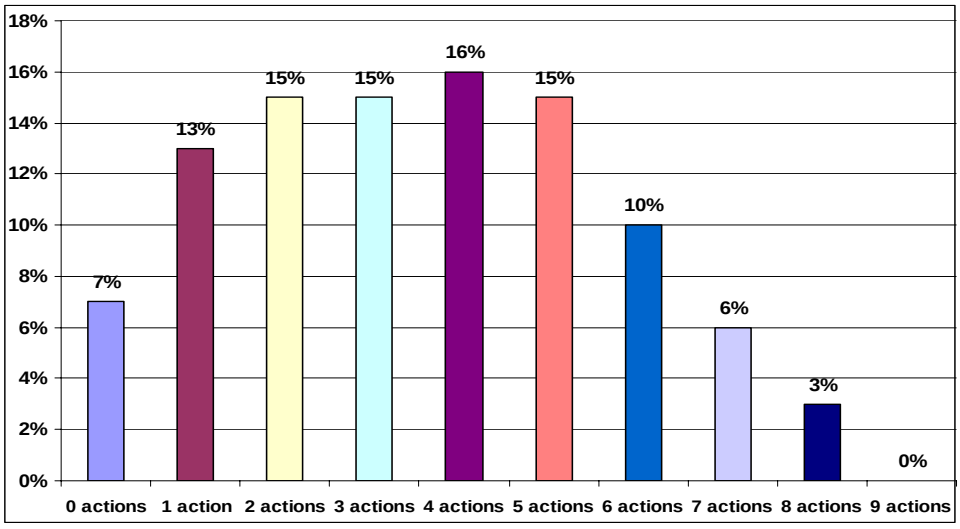


Table 81 Outdoor Conservation Action Scorecard for Aware and Unaware Respondents

Number of Actions Taken *(Sig.)*	Aware %	Unaware %
0 actions	6	10
1 action	12	17
2 actions	12	24
3 actions	16	13
4 actions	16	14
5 actions	16	13
6 actions	12	6
7 actions	7	2
8 actions	3	1
9 actions	0	0
Mean Number Actions	3.76	2.85
Median Number of Actions	4.00	2.00
N =	667	218

The potential importance of awareness of utility conservation programs continues when consumption is examined. As shown in **Table 82**, for every measure of consumption, those who report being aware of utility conservation programs use less water than those who are not aware. While these differences did not prove to be statistically significant[20], they are consistent with all other findings that show utility programs are influencing customers to reduce water use and the amount of difference in use between

[20] Demonstrating significant differences with consumption data due to program awareness, participation, and actions taken has typically proved to be a challenge. This is due to many factors including: how robust the survey measures are (in this case, a scaled measure of awareness or involvement, instead of a yes/no screener may have increased the likelihood of significance); the different impacts on reducing water use among the actions taken; self-reporting errors; "take-back" effects where customers reduce in one area but increase use in other areas; the assumptions of statistical methods; the size of the expected difference (in this case, we would think that the difference between aware and unaware households would be less than 10%); and consumption data issues. For this analysis, we included all households with consumption and survey data, even those with very high or low consumption, assuming that all cases were good and having no justification for including or eliminating them on a consistent basis.

aware and unaware customers is close to the 10% goal set by the 1% per year for ten years conservation effort. The interrelation of all these findings strongly suggests that awareness of utility conservation programs does positively affect conservation behavior. In addition, some data (see Section 2.6.4) suggest that programs may be influencing customers to use less water than they otherwise would have, although this finding cannot be demonstrated directly with the current data.

Larger differences between aware and unaware customers surface for peak consumption measures than for off-peak consumption measures. In addition, controlling for the number of household occupants produces a wider gap between aware and unaware households. This analysis suggests that aware households use between 7 and 12 gallons of water less per person per day or 3-6 CCF less per person per year. During peak season use, on a per person basis, consumption is 11% less for aware versus unaware households.

Table 82 Aware and Unaware Respondents and Measures of Household Consumption

	Aware	Unaware	Aware	Unaware	Aware	Unaware	Aware	Unaware
	Peak/ Day	Peak/ Day	Peak/ Person/ Day	Peak/ Person/ Day	Off-Peak/ Day	Off-Peak/ Day	Off-Peak/ Person/ Day	Off-Peak/ Person/ Day
Mean Consumption in Gallons (rounded)	231	238	103	115	160	162	68	73
Median Consumption in Gallons (rounded)	185	190	74	77	129	139	53	55
N =	462	143	462	143	459	140	459	140

6.2.3 Consumption Insights – High, Medium, and Low Indoor Use

This analysis explores how survey questions related to indoor water use relate to a household's level of consumption – Low (below 20th percentile), Medium (20th up to 80th percentile), or High (above 80th percentile) Off-Peak Use/Person/Day. While most indoor questions did not produce statistically significant differences among the three consumption groups, a few notable ones did and others were close. For this analysis we have expanded significance from Sig. = <.05 to Sig. = <.10, meaning that we have accepted as significant Chi Square statistics where there is less than 10% probability (rather than less than a 5% probability) that the differences between groups is due to chance.

Significant differences in consumption levels related to the toilet type and replacement were few. Although the High group has the smallest proportion with no high water use toilets (37% compared to 41% in the Medium group, and 49% in the low group), the difference is not significant and households with lower consumption levels have their share of high water using toilets too. The groups do not differ by whether they have replaced any high flow toilets, and, if they have replaced a toilet, their motivations to do so are similar. However, respondent households in the Low use group are significantly more likely to say they replaced a high flow toilet with a low flow one because of utility encouragement (34% for the Low group versus 20% for the Medium and High Groups).

High group members are significantly more likely (at Sig. = <.06 level) to say they have specific plans to replace a high water use toilet by the summer of 2007 (26% compared to 19% for the Medium use group and 21% for the Low use group.)

Checking for toilet leaks does not differ by consumption level, and if a leak needed to be fixed, about half in each group say they would do it themselves. However, those in the High use group would be more

likely to hire a plumber or handyman to do the repair than those in the other two groups (34% to 24% of the Medium group and 21% of the Low Group), while those in the Low and Medium groups would be more likely to ask a friend or family member to fix the leak (23% for each group). The consumption groups do not differ by whether or not they have replaced a toilet flapper in the past five years.

Those in the High and Medium use Off-Peak/Person/Day groups have significantly more showers than those in the Low use group (23% in the High use group and 22% in the Medium use group have 3 or more showers compared to 10% in the Low use group). The Medium and High use groups are also more likely than the Low use group to have showers with multiple heads and sprays (18% in both groups compared to 8% in the Low use group). In addition, when they do have multiple heads/sprays, those in the Low use group tend to have just 2, while those in the Medium and High groups often had three or more heads/sprays. Replacing a high flow showerhead with a low flow one does not differ by the three groups.

Virtually all the households have washing machines in their homes. Although the difference is not statistically significant, 34% of those in the Low use group have front loading washers compared to 30% in the Medium group and 23% in the High use group.

6.2.4 Consumption Insights – High, Medium, and Low Outdoor Use

Unlike the analysis of indoor use and consumption levels, the analysis of Low, Medium, and High use groups in relation to outdoor water use variables revealed many differences. In this case the groups were formed using the same percentile breakdown but consumption was based upon Peak Use/Person/Day. The significance level has not been expanded beyond Sig. =<.05.

Peak High Water Users and Garden Care

Households in the High water use tier are significantly more likely than households in the other two tiers to:

- Be very interested gardeners (66% versus 45% for households in the Medium tier and 37% in the Low tier)
- Want their gardens to be well maintained (72% say it is very important compared to 51% for the Medium group and 31% for the Low group)
- Hire professional gardeners to help them maintain their gardens all or part of the time (32% compared to 13% for the Medium and Low water use groups)
- Water their garden areas every three days or more often (59% compared to 42% for the Medium use households and 35% for the Low use households). Notably, a similar proportion (58%) of very interested gardeners also water their gardens that often, further pinpointing the strong overlap between High users and very interested gardeners.

Lawn Care

Households in the High water use tier are significantly more likely than households in the Low and Medium use tiers to:

- Say they are very interested in lawn care (46% compared to 23% in the Medium use group and 22% in the Low use group)
- Rate having a green lawn throughout the year as very important (22% in the High use group compared to 6% and 8% in the Medium and Low groups respectively)
- Hire a lawn care service all or some of the time (40% compared to 24% in the Medium use group and 15% in the Low us group)

- Water their lawns every three days or more often (35% compared to 15% for the Medium group and 8% for the Low us group)

Motivations to Take Utility Recommended Steps

The High use group was significantly more likely to:

- Say they took various conservation steps because they wanted to improve the health of their lawn and/or plants (81% compared to 75% for the Medium group and 62% for the Low group)

Otherwise, the three groups did not vary in their motivations to take conservation actions, with their reasons reflecting overall results.

Automatic Underground Sprinkler System Use and Care

High use households are significantly more likely to:

- Use an automatically controlled underground sprinkler system (35% compared to 12% for the Medium Group and 4% for the Low consumption group).
- Given the low number of automatic system user in the Low group (N = 5), only Medium and High use groups were compared to reveal the following findings. Between these two groups, High use customers are more likely to:
  - Hire a company specializing in irrigation to check their systems for problems and leaks (33% for the High group compared to 19% for the Medium group) or hire a landscape or garden company to check their systems (21% for the High Group compared to 11% for the Medium group). Medium use household are more likely to check the systems themselves (67% for the Medium use households compared to 41% for the High use households)
  - Hire an irrigation or landscape professional to fix leaks and other problems (69% compared to 38% for the Medium group)
  - Use a irrigation or landscape company to set the schedule for watering (31% for the High group compared to 14% for the Medium use group)

Conservation Steps Taken

High peak use households have taken more outdoor water conservation steps than households in the Medium and Low groups, with the proportion stepping up 10% for each group: 27% of Low peak use households report having taken five or more steps, compared to 37% in the Medium group, and 47% in the High group. In addition, High use households are significantly more likely than Medium or Low use household to take these specific conservation steps:

- Adding at least an inch of mulch to their garden beds (85% compared to 76% for the Medium group and 64% for the Low use group)
- Adding soaker hoses or drip irrigation systems (54% compared to 41% from the Medium use group and 29% from the Low use group)
- Adding a timer to an outdoor faucet that turns the water off after a set time period (24% versus 15% for the Medium group and 8% for the low group)

Other Outdoor Water Uses

High use households are significantly more likely than Medium and Low use households to:

- Have a water feature (22% compared to 10% and 5%)
- Have a swimming pool or outdoor spa (19% compared to 12% and 8%)

Household and Demographic Characteristics

Households in the High peak use tier are significantly more likely than Medium and Low use groups to:

- Not have both Internet and email at home (77% have both, compared to 86% for the Medium group and 80% for the Low group)
- Live in a one or two-person household – 87% for the High use households, with 45% living in single-person households. This is compared to 56% of Medium use households living in one or two-person households (14% one-person and 42% two-person) and 36% of Low use households (12% one-person and 25% two-person households).
- Not have added anyone to their households in the past five years (89% "no" compared to 76% and 66% "no" respectively)
- Be aged 55 to 64 (30% compared to 21% for the Medium group and 15% for the Low group) or be 65 or older (38% compared to 17% for the medium tier and 14% for the Low tier)

Non-significant Consumption Factors

Responses to key outdoor questions that did not vary significantly by Low, Medium, and High water consuming households included:

- Having a vegetable bed
- Reducing lawn size
- Reducing lawn watering (although High use households report doing this the most)
- Checking the soil for moisture (although High use households report doing this the most)
- Adding drought tolerant plants
- Grouping plants according to their water needs
- Using the "tuna can test" to check watering volume (although High users do this the most)
- Replacing part of the lawn with something else (although High use households did this more)
- Reducing watering where they applied mulch to beds
- Wanting a discount on bulk compost (although those in the High use group are most likely to be very interested)
- Level of interest in an emailed newsletter with garden events and advice
- Being interested in neighborhood workshops (although High use households were less interested than those in the other tiers)
- Level of interest in programs to support neighborhood garden projects
- Importance ratings for utility sponsored conservation services
- Satisfaction ratings with utility sponsored programs and services (although High use households had fewer "very satisfied" ratings – 26% compared to 48% for Medium use households and 51% for Low use households)
- Participation in various utility sponsored programs
- Preferred sources of information about water saving topics
- Household income levels
- Gender

SECTION 7: KEY SEGMENT PROFILES

Chapter 6 looked at potential target audiences by consumption levels. This chapter profiles other key audiences that the SWP is likely to want to target with information and services.

7.1 VERY INTERESTED GARDENERS

Intersection of Very Interested Gardeners and High Peak Use

Looking across the various findings for High peak users, findings show that a strong interest in gardening, as well as having a well maintained garden, is related to high peak consumption. At the same time, as described in this section, very interested gardeners are also significantly more likely to have taken more conservation steps than less interested gardeners. This intersection of high gardening interest, high reports of conservation actions, and high water use suggests there is a segment of interested gardeners who are aware of utility programs, are engaged in conserving, and yet remain high peak users. These gardeners could well be using less water than they might have otherwise, but they still may be watering too much for the needs of their gardens. Thus, targeting High water using very interested gardeners makes sense, since conservation services can appeal to their passions.[21]

The following bullets provide more details about all very interested gardeners, whatever their level of consumption. Compared to those who rate themselves as being less interested in gardening, these gardeners are **significantly more likely** to:

- Say they are very concerned about having enough water to meet future needs (36%) and about global warming (66%), and believe global warming will have a great impact upon water supply (66%)
- Say they use more than an average amount of water (14%)
- Care for their gardens themselves (84%)
- Have vegetable gardens (52%)
- Rate garden maintenance as very important (86%)
- Water more often than once a week (57%)
- Watch their water bills very carefully (28%)
- Have automatic watering systems (19%)
- Have water features (15%)
- Have reduced their lawn size (46%); cut down on watering (73%); added mulch (87%); checked their soil for moisture (56%); added plants that need less moisture (68%); grouped plants according to their watering needs (52%); added timers (18%); added soaker hoses (48%); used a tuna can test (17%); reduced their water use due to applying mulch (64%)
- Be motivated to make more natural yard care choices because it improves the health of their plants (84%); reduces their water bill (74%); wanted to use less water (90%); protects the environment for the future (79%)
- Be interested in bulk discounts on compost (40%); an emailed garden newsletter (30%); neighborhood workshops on gardening (24%); support for neighborhood programs (26%)

[21] Note: Current outdoor conservation programs do target these gardeners with various messages and services, including the "Better Way to Beautiful" marketing campaign and the Savvy Gardener communications.

- Use the Natural Yard Care Hotline (10%); bought discounted compost (31%); participated in Natural Yard Care Neighborhood Workshops (16%); and attended Savvy Gardener classes (9%)

7.2 RENTERS

Much of the focus of conservation programs over the years has been on homeowners, especially owners of single family homes. However, given the importance of program awareness in saving water and the fact that renters often do become owners, it becomes important to understand how renters differ from homeowners.

Respondents who are renters, compared to homeowner respondents, are significantly more likely to:

- Be part of a minority group (63% are white compared to 80% of homeowner respondents being white)
- Be newer in their homes (63% have lived 5 years or less in their homes compared to 28% of homeowners)
- Be a direct Seattle customer (76% live in Seattle compared to 60% of homeowners)
- Be younger (28% are 34 or younger compared to 9% of homeowners)
- Earn less income(56% report incomes below $50,000 compared to 19% of homeowners reporting this income level)
- Live in one-person households (42% compared to 22% of homeowners)
- Be less aware of utility sponsored conservation services (50% compared to 73% of homeowners)
- Be less concerned about the region facing major environmental issues in the future (52% very concerned compared to 62% very concerned among homeowners)
- Know less about global warming (16% don't know about this issue compared to 9% among owners)
- Not review or pay the water bill (36% compared to 78%). Among those who review their water bills, renters are significantly:
    - Less likely to use the chart on their water bill to compare last year's use to this year's use (69% compared to 85%)
    - Less likely to track their water bill carefully (39% say they look at it little or not at all compared to 28% of homeowners)
    - More likely to say their water bills have a lot of influence on how much water they use (39% compared to 24%)
- Believe their households use less than an average amount of water (52% compared to 40% for homeowners)

SECTION 8: APPENDIX A – QUESTIONNAIRE

8: **QB**

Could you please tell me what zip code your home is in? TYPE NUMBER:

10: **QC**

IF NEEDED: Would it be...READ 1-96

And could you please tell me which water utility, city, or jurisdiction supplies your drinking water? IF DON'T KNOW/NOT SURE, SAY: Which of these choices best describes the area where you live...READ 1-96

11: **QE**

12: **QF**

As we go through the survey, if there is a question you can't answer, just let me know. These first questions will help us make sure we represent all households. Do you live in a single family home, a duplex, or in a multi-family building with three or more units?

14: **QD**

For part of our analysis, it would help us a great deal to have your correct address. Your address is confidential and for research purposes only. My information shows that your address is: <addr> <city> is that correct? IF NEEDED: All information you give me is absolutely confidential, and your address will only be used for research that will help us better plan customer programs.

=> **Skip to Q1D if no address in sample file OR if QF ≠1**

15: **QDA**

What is your correct address? ADDRESS LISTED: <addr> RECORD ADDRESS, ON NEXT SCREEN RECORD CITY.

=> **Skip to QDB if QD ≠2**

16: **QDB**

What is the correct city? CITY LISTED: <city>

=> **Skip to Q1D if QD ≠ 2**

17: **Q1D**

For part of our analysis, it would help us a great deal to have your address. Your address is confidential and for research purposes only. Could you please give me your address? RECORD ADDRESS, ON NEXT SCREEN RECORD CITY IF NEEDED: All information you give me is absolutely confidential, and your address will only be used for research that helps us plan customer programs.

=> **Skip to QG if address in sample file OR if QF ≠ 1**

18: **Q2D**

(For part of our analysis, it would help us a great deal to have your address. Your address is confidential and for research purposes only. Could you please give me your address?) RECORD CITY:

33: **QG**

Do you own or rent your home?

34: **QH**

Do you identify yourself as Hispanic or Latino?

35: **QI**

READ 1-97 IF NEEDED. UP TO 6 RESPONSES

How do you identify your race?

36: **QJ**

Do you know if your home was built before 1994, between 1994 and 2000, or in 2001 or later? IF RESPONDENT SAYS THE HOUSE HAS BEEN SUBSTANTIALLY REMODELED IN 1994 OR LATER, ASK: Did the remodel include all the bathrooms? IF YES, CODE AS LATER DATE.

37: **QK**

Have you lived in your current home less than five years, five to ten years, or more than 10 years?

41: **Q1**

Now I'd like you to think for a moment about environmental issues overall. Would you say you are not at all concerned, not too concerned, somewhat concerned, or very concerned that the Puget Sound area will need to deal with major environmental issues over the next 20 years?

=> **Asked of a randomly selected proportion of respondents**

42: **Q2**

CLARIFY

What do you think is the single most important environmental issue facing the Puget Sound area over the next 20 years?

43: **Q3**

Now please just focus on water supply for the Puget Sound area -- that is, having enough water to meet all our water needs. Would you say you are not at all concerned, not too concerned, somewhat concerned, or very concerned that the Puget Sound area will need to deal with major issues related to the supply of water over the next 20 years?

45: **Q4**

PROBE ONLY ONCE AND CLARIFY

Why do you say you <word>?

=> **Asked of a randomly selected proportion of respondents**

46: **Q5**

Now I'd like you to think about an issue referred to as global climate change. Would you say you are not at all concerned, not too concerned, somewhat concerned, or very concerned about global climate change, or that you don't know enough about this issue to rate how concerned you are?

=> **Asked of a randomly selected proportion of respondents**

48: **Q6**

PROBE AND CLARIFY

Why do you say you <worda>? ONLY PROBE ONCE.

=> **Skip to Q7 if Q5 = 5-6**

49: **Q7**

Is it your understanding that global climate change, if it were to occur, would have little effect on water supply, have some effect, would have a great effect on water supply, or are you unsure what effect it would have?

50: **Q8**

Now I have some questions about your water utility bill. Do you generally review or pay the water utility bill at your home?

51: **Q9**

Your water bill may include a chart and other information that lets you compare the amount of water your household used during the current billing period to the amount of water your household used during same period the year before. To your knowledge, does your bill include information like this?

=> **Skip to Q14 if Q8 ≠ 1**

52: **Q10**

In the past year or so, have you used the information or chart on your water bill to compare how much water you used this year to the year before?

=> **Skip to Q11 if Q9 ≠ 1**

53: **Q11**

Would you find a chart or information like this useful to you?

=> **Skip to Q12 if Q9 ≠ 2**

54: **Q12**

READ 1-3

How carefully do you track how much your household spends for water over time? Would you say you track...

55: **Q13**

Would you say your water bills have little influence, some influence, or a lot of influence on how much water you use at home?

56: **Q14**

Now I'd like to know more about your water use at home, both indoors and outdoors. Please just give me the most accurate information you can. Compared to other households like yours, do you think your household uses more than an average amount of water, uses about an average amount of water, or uses less than an average amount of water?

57: **Q14A**

Are you aware that your local water utility provides water conservation information, services, and rebates to their customers?

58: **Q15X**

Now I'd like you to think about how you use water inside your home. The first questions are about toilets.

59: **Q15A**

How many toilets do you currently have in your home?

60: **Q15**

The plumbing code that went into effect in 1994 required all new or replacement toilets to be low-flow toilets using 1.6 gallons of water or less per flush. Before 1994, toilets used 3 and 1/2 to 7 gallons per flush. To your knowledge, how many of the toilets in your home are high water using toilets - toilets installed before 1994 that use 3 and 1/2 or more gallons per flush?

=> **Skip to Q24 if QJ ≠ 1**

62: **Q16**

Now I'd like to know about toilets that have been replaced in your home. Since 1994, when the plumbing code started to require low flow toilets, have you had any high water using toilets in your home replaced with low-flow toilets?

=> **Skip to Q30 if QG ≠ 1**

63: **Q17**

Now I'm going to read you a list of reasons for replacing a high water using toilet with a low-flow toilet. For each one, please tell me if that was a reason you replaced a high water using toilet...

=> **Skip to Q18 if Q16 ≠ 1**

64: **Q17A**

(Did you replace a high water using toilet with a low flow because...)
You needed to replace a broken toilet or you wanted to improve or remodel your home.

66: **Q17C**

(Did you replace a high water using toilet with a low flow because...)
You wanted to reduce your water bills

67: **Q17D**

(Did you replace a high water using toilet with a low flow because...)
You wanted to conserve water or be less wasteful

68: **Q17E**

(Did you replace a high water using toilet with a low flow because...)
Your utility encouraged you to save water or helped you replace your toilet

---

69: **Q17F**

(Did you replace a high water using toilet with a low flow because...)
You wanted to protect the environment for future generations

71: **Q18**

Please think about your satisfaction with the performance of any low-flow toilets in your home. Would you say you are not at all satisfied, not too satisfied, somewhat satisfied, or very satisfied with the performance of these toilets?

=> **Skip to Q19 if Q15 ≠ 0 AND Q16 ≠ 1,5**

72: **Q19**

Do you have specific plans to replace a high water use toilet with a low-flow toilet in the next year - that is, by the summer of 2007?

=> Skip to Q24 if Q15 ≠ 1-6

74: **Q20**

Your water utility wants to know more about what might motivate you to change your high water use toilet to a low-flow toilet. How motivated would you be to change to a low-flow toilet if you knew you could save $1,000 in water and sewer bills over the next 10 years? Would that not motivate you, motivate you somewhat, or motivate you a lot to replace your high water use toilet?

76: **Q21**

How about changing to a low-flow toilet if you knew you could save thousands of gallons of water in a year? Would that not motivate you, motivate you somewhat, or motivate you a lot to replace your high water use toilet?

77: **Q22**

How about changing to a low-flow toilet if you knew the toilet would pay for itself in two years due to lower water and sewer bills? Would that not motivate you, motivate you somewhat, or motivate you a lot to replace your high water use toilet?

79: **Q24**

Please think about your satisfaction with the performance of the toilets in your home. Would you say you are not at all satisfied, not too satisfied, somewhat satisfied, or very satisfied with their performance?

=> **Skip to Q25 if QJ ≠ 2,3**

80: **Q25**

PROBE TO FIT. UP TO 7 RESPONSES

If you wanted help in selecting a new toilet for your home, where would you usually go for information?

=> **Skip to Q26 if QG ≠ 1**

81: **Q26**

In the past year or so, have you checked any of your toilets for leaks, by putting food coloring or a dye tablet into the tank and seeing if the dye shows up in the bowl without flushing?

=> **Skip to Q30 if QG ≠ 1**

82: **Q27**

If you wanted to fix a leaking toilet in your home, would you most likely try to fix it yourself, ask a friend or family member to fix it, or call a plumber or handyman to fix it?

=> **Skip to Q30 if QG ≠ 1**

83: **Q28**

PROBE TO FIT. UP TO 7 RESPONSES

If you wanted help on how to fix a leaking toilet, where would you usually go for information?

=> **Skip to Q29 if Q27 ≠ 1,2**

84: **Q29**

Have you replaced the toilet flapper in any toilet in your home in the past five years, between 2001 and 2006? The flapper is the rubber seal or valve inside your toilet tank that opens to let the water out when you flush and closes to keep the water in once the tank is full.

85: **Q30**

Now I'm going to ask you a few questions about the shower in your home. How many showers do you have in your home?

86: **Q30A**

Do you have any showers with multiple showerheads or spray nozzles?

=> **Skip to Q37 if Q30 = 0**

87: **Q30B**

Could you tell me the total number of showerheads and spray nozzles you have?

=> **Skip to Q31if Q30A ≠ 1**

88: **Q31**

The plumbing code for shower heads also changed in 1994. Since then, all new or replacement shower heads are required to use 2.5 gallons per minute or less. Old, high water using showerheads could use 5 gallons of water per minute or more. To your knowledge, how many of your showerheads are high water using showerheads, installed before 1994?

=> **Skip to Q37 QJ ≠ 1**

89: **Q32**

Now I'd like to know about showerheads that have been replaced in your home. Since 1994, when the plumbing code started to require low flow showerheads, have you had any high water using showerheads in your home replaced with low-flow showerheads?

=> **Skip to Q37 if QG ≠ 1**

90: **Q33**

Now I'm going to read you a list of reasons for replacing a high water using showerhead with a low-flow showerhead. For each one, please tell me if that was a reason you replaced a high water using showerhead...

=> **Skip to Q37 if Q32 ≠ 1**

91: **Q33A**

(Did you replace a high water using showerhead with a low-flow showerhead because...)

You needed to replace a broken showerhead or you wanted to improve or remodel your home.

93: **Q33C**

(Did you replace a high water using showerhead with a low-flow showerhead because...)
You wanted to reduce your water bills

94: **Q33D**

(Did you replace a high water using showerhead with a low-flow showerhead because...)
You wanted to conserve water or be less wasteful

95: **Q33E**

(Did you replace a high water using showerhead with a low-flow showerhead because...)
Your utility encouraged you to save water or gave you a low-flow showerhead

---

96: **Q33F**

(Did you replace a high water using showerhead with a low-flow showerhead because...)
You wanted to protect the environment for future generations

99: **Q37**

Do you have a washing machine in your home?

100: **Q38**

Is your washing machine a top loading washer or a washing machine that loads from the front?

=> **Skip to Q43 if Q37 ≠ 1**

101: **Q39**

Since you moved into your home, have you replaced a top loading washer with a front loading washing machine?

=> **Skip to Q43 if Q38 ≠ 2 OR QG ≠ 1**

102: **Q40**

Now I'm going to read you a list of reasons for replacing a top loading washer with a front loading washer. For each one, please tell me if that was a reason you replaced a top loading washer...

=> **Skip to Q43 if Q39 ≠ 1**

103: **Q40A**

(Did you replace your top loading washer with a front loading washer because...)
You needed to replace a broken washer or you wanted to improve or remodel your home.

105: **Q40C**

(Did you replace your top loading washer with a front loading washer because...)
You wanted to reduce your water bills

106: **Q40D**

(Did you replace your top loading washer with a front loading washer because...)
You wanted to conserve water or be less wasteful

107: **Q40E**

(Did you replace your top loading washer with a front loading washer because...)
Your utility encouraged you to save water or gave you a rebate for buying a front loading washer

---

108: **Q40F**

(Did you replace your top loading washer with a front loading washer because...)
You wanted to protect the environment for future generations

110: **Q43**

Now please think about your household's outdoor water use. Do you have a yard that you or your household is responsible for?

111: **Q44**

Does your yard have areas with lawn or grass?

=> **Skip to Q78 if Q43 ≠ 1**

112: **Q45**

Does your yard include garden areas with trees, flowers, shrubs, or vegetables?

113: **Q46**

Now I'd like to ask you some questions about your lawn or grass. How would you describe your household's level of interest in lawn care? Would you say you are not at all interested, not too interested, somewhat interested, or very interested?

=> **Skip to Q56 if Q44 ≠ 1**

114: **Q47**

How important is it to have a green lawn or grass as part of your yard throughout the year? Would you say it is not at all important, not too important, somewhat important, or very important?

115: **Q48**

Do you mostly maintain your own lawn, mostly hire a professional lawn service to maintain it, or do you do both?

116: **Q49**

READ 1-6

About how often is your lawn watered during the summer months...

117: **Q56**

Now I'd like to ask you about your home's garden areas. Garden areas have trees, shrubs, flowers, and vegetables. How would you describe your household's level of interest in gardening? Would you say you are not at all interested, not too interested, somewhat interested or very interested?

=> **Skip to Q62 if Q45 ≠ 1**

118: **Q57**

How important is it to your household that your garden areas are maintained? Would you say it is not at all important, not too important, somewhat important, or very important?

119: **Q58**

Do you mostly maintain your own garden areas, mostly hire a professional gardener to maintain them, or do you do both?

120: **Q60**

Do you have vegetable beds as part of your garden?

121: **Q61**

READ 1-6

Excluding any vegetable beds, about how often are your garden areas watered during the summer months...

122: **Q62**

Now, please think about your lawn and garden practices. I'm going to read you a list of things that can be done in your lawn and garden. For each one, please tell me if you have done that in the past five years...

=> **Skip to Q78 if Q44 ≠ 1 AND Q45 ≠ 1**

123: **Q62A**

(In the past five years, have you...)

Reduced the size of your lawn

=> **Skip to Q62C if Q44 ≠ 1**

124: **Q62B**

(In the past five years, have you...)

Reduced the amount of water you put on your lawn, either by watering less often, watering for shorter periods, or both?

125: **Q62C**

(In the past five years, have you...)

Added at least an inch of mulch, such as wood chips, leaves, or compost to your garden beds

=> **Skip to Q62D if Q45 ≠ 1**

126: **Q62D**

(In the past five years, have you...)

Checked your soil for its moisture level before watering

127: **Q62E**

(In the past five years, have you...)

Added plants that use less water once they are established

=> **Skip to Q62H if Q45 ≠ 1**

128: **Q62F**

(In the past five years, have you...)

Grouped your plants together according to their water needs

129: **Q62G**

(In the past five years, have you...)

Added soaker hoses or drip irrigation system

130: **Q62H**

(In the past five years, have you...)

Added a timer to an outdoor faucet to turn the water off after a set time period. This does not apply to automatic systems which turn the water on or off

---

131: **Q62I**

(In the past five years, have you...)

Used what is called a tuna can test to see how much water your sprinkler puts out

=> **Skip to Q63 if Q44 ≠ 1 AND Q49 ≠ 4,5,6**

133: **Q63**

You've just told me about some things you've done in your lawn or garden in the past five years. I'm going to read you a list of reasons for doing those things. For each one, please tell me if that was a reason you did any of those things in your lawn or garden.

=> **Skip to Q65 if none of Q62A-Q62H = 1**

134: **Q63A**

(Did you do any of those things because...)

You wanted to use the lawn area for something else, like garden beds or putting in hard surface for entertaining

=> **Skip to Q63B if Q62A ≠ 1**

135: **Q63B**

(Did you do any of those things because...)

You wanted to improve the health of your lawn or plants

136: **Q63C**

(Did you do any of those things because...)

You wanted to reduce the amount of lawn or garden maintenance

---

137: **Q63D**

(Did you do any of those things because...)

You wanted to reduce your water bill

138: **Q63E**

(Did you do any of those things because...)

You wanted to use less water or not waste it

139: **Q63F**

(Did you do any of those things because...)

Your utility encouraged you to save water or you attended a class or workshop about lawn or garden care

---

140: **Q63G**

(Did you do any of those things because...)

You wanted to protect the environment for future generations

141: **Q63H**

(Did you do any of those things because...)

You wanted to save water for salmon

142: **Q64**

You said that in the past five years you had added at least an inch of mulch on your garden beds. Have you reduced how much water you apply to those beds due to adding a layer of mulch?

=> **Skip to Q65 if Q62C ≠ 1**

143: **Q65**

Do you use an automatically controlled underground sprinkler system to water all or part of your lawn or garden areas? These systems use a timer or controller to turn the water on and

off at specified times. IF NEEDED The sprinkler system needs to be automatically controlled and underground. This does not include drip or soaker hose systems.

144: **Q66**

These next questions are about your automatic underground sprinkler system, Do you think this system applies water to your lawn and garden with a minimum of waste or evaporation, that it wastes some water, or that it wastes a fair amount of water?

=> **Skip to Q74 if Q65 ≠ 1**

145: **Q67**

About how often is the system checked for leaks, overspray, and any other problems? Is it usually checked about once a year, once every two years, once every three years, or less often than once every three years?

146: **Q67A**

Who usually checks your system for any problems? Is it a company specializing in irrigation, a landscape or garden care company, or someone in your household?

147: **Q68**

If your automatic irrigation system has a problem such as a leak, who fixes it? Is it a company specializing in irrigation, a landscape or garden care company, or someone in your household?

148: **Q69**

Who sets the watering schedule on your automatic sprinkling system? Again, is it a company specializing in irrigation, a landscape or garden care company, or someone in your household?

149: **Q70**

READ 1-3

Which of the following best describes how often the schedule is adjusted during the watering season...

150: **Q71**

Do you have a rain sensor installed on your system that automatically turns the system off when it rains? IF NEEDED; This must be automatic and not manual.

151: **Q72**

Have you heard of the watering index talked about by Steve Pool on KOMO TV or on KOMO radio or on KVI Radio?

152: **Q73**

Have you heard about any utility rebates for underground automatic sprinkling system upgrades that save water?

153: **Q74**

Do you have a water feature to your garden, such as a fountain or waterfall?

154: **Q75**

Do you have a hot tub, swimming pool, or outdoor spa?

155: **Q76**

PROBE TO FIT. UP TO 12 RESPONSES

If you wanted help in saving water outdoors, where would you usually go for information?

156: **Q77**

Next, I'm going to read you a list of types of yard care programs and services that your water utility might offer. Please tell me if you would be not interested, somewhat interested or very interested in each one.

=> **Asked of a randomly selected proportion of respondents**

157: **Q77A**

READ ONCE, THEN REREAD AS NEEDED: Would you say...READ 1-3

(How interested are you in these types of yard care programs and services that your water utility might offer...)

Discount on deliveries of bulk compost.

158: **Q77B**

READ ONCE, THEN REREAD AS NEEDED: Would you say...READ 1-3

(How interested are you in these types of yard care programs and services that your water utility might offer...)

An emailed-newsletter with gardening events and advice.

159: **Q77C**

READ ONCE, THEN REREAD AS NEEDED: Would you say...READ 1-3

(How interested are you in these types of yard care programs and services that your water utility might offer...)

Neighborhood workshops on gardening topics.

160: **Q77D**

READ ONCE, THEN REREAD AS NEEDED: Would you say...READ 1-3

(How interested are you in these types of yard care programs and services that your water utility might offer...)

Support for neighborhood gardening projects.

161: **Q78**

Earlier in the interview, you said you were aware that your water utility sponsored water saving services. How important is it to you that local water utilities provide water conservation materials, services, and rebates to their customers? Would you say it's not at all important, not too important, somewhat important, or very important.

=> Asked of a randomly selected proportion of respondents for whom Q14A = 1

162: **Q79**

Now I'd like to ask you if you've taken part in or used the following utility sponsored activities or services over the past five years...

163: **Q79A**

(Now I'd like to ask you if you've taken part in or used the following utility sponsored activities or services over the past five years...)

Northwest Natural Yard Days

164: **Q79B**

(Now I'd like to ask you if you've taken part in or used the following utility sponsored activities or services over the past five years...)

Natural Lawn and Garden Hotline

165: **Q79C**

(Now I'd like to ask you if you've taken part in or used the following utility sponsored activities or services over the past five years...)

Discounted compost sales sponsored by utilities, nurseries, and home stores

---

166: **Q79D**

(Now I'd like to ask you if you've taken part in or used the following utility sponsored activities or services over the past five years...)

Discounted soaker hose sales sponsored by utilities, nurseries, and home stores

---

167: **Q79E**

(Now I'd like to ask you if you've taken part in or used the following utility sponsored activities or services over the past five years...)

WashWise high efficiency clothes washer rebate

168: **Q79F**

(Now I'd like to ask you if you've taken part in or used the following utility sponsored activities or services over the past five years...)

Natural Yard Care Workshops conducted in neighborhoods

169: **Q79G**

(Now I'd like to ask you if you've taken part in or used the following utility sponsored activities or services over the past five years...)

The SavingWater.org website (utility web site)

170: **Q79H**

(Now I'd like to ask you if you've taken part in or used the following utility sponsored activities or services over the past five years...)

Natural yard care brochures sponsored by utilities

171: **Q79I**

(Now I'd like to ask you if you've taken part in or used the following utility sponsored activities or services over the past five years...)

Savvy Gardener classes

173: **Q80**

Overall, how satisfied have you been with any of the utility sponsored activities or services that you've used? Would you say you've been not at all satisfied, not too satisfied, somewhat satisfied, or very satisfied?

=> **Skip to Q81 if none of Q79A-Q79I = 1**

174: **Q81**

PROBE TO FIT

How do you prefer to get information about saving water and related topics from your water utility? Please give me your strongest preference first.

175: **Q81A**

PROBE TO FIT. UP TO 7 RESPONSES

(How do you prefer to get information about saving water and related topic from your water utility?) What other ways would you prefer to get information?

=> **Skip to Q82 if Q81 = 98,99**

176: **Q82**

Finally, I have a few questions about your household to help us better interpret the opinions you've given us. As with all your answers in this survey, your responses are confidential. Do you make use of the Internet, e-mail, or both from a home computer?

178: **Q84**

How many people, including yourself, currently live in your home most of the year?

179: **Q85A**

Over the past five years, from 2001 to 2006, have any of the following changes occurred to your household...

One or more people have been added to your household

180: **Q85B**

(Over the past five years, from 2001 to 2006, have any of the following changes occurred to your household...)

One or more people have left the household

181: **Q86**

READ 1-7

Which of the following categories best describes your age?

182: **Q87**

Is your total annual household income above or below $50,000?

183: **Q88A**

READ 1-4

Is that...

=> **Skip to Q88B if Q87 ≠ 1**

184: **Q88B**

READ 1-4

Is that...

=> **Skip to Q89 if Q87 ≠ 2**

186: **Q89**

Finally, to help your local utility plan better conservation services for you, they are planning to host 1 1/2 hour focus group meetings to discuss water use topics and programs. Each participant would be paid $50 and refreshments would be provided. Might we contact you about participating in a focus group?

=> **Skip to GENDR if QG ≠ 1 OR QF ≠ 1**

187: **Q89A**

What is your name?

=> **Skip to GENDR if Q89 ≠ 1**

188: **Q89B**

What would be the best phone number to reach you at?

189: **Q89C**

Let me just double check your address: <caddr> <ccity> <czip>. Is this correct?

=> **Skip to Q89C1 if QDA = 2**

190: **Q89C1**

What is your address? ADDRESS LISTED: <caddr> RECORD ADDRESS, ON NEXT TWO SCREENS RECORD CITY AND ZIP

191: **Q89C2**

RECORD CITY: CITY LISTED: <ccity>

192: **Q89C3**

RECORD ZIP: ZIP LISTED <zip>

209: **GENDR**

DO NOT ASK!

RECORD GENDER