King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Responses to questions from
Engineering and Planning Subcommittee of MWPAAC
RE: 9/19/07 presentation of the *Reclaimed Water Feasibility Study Marketing Analysis*

Questions regarding the contents of the Feasibility Study analysis

1. Does the "comprehensive regional market" analysis include identifying demand? Was there a conscious county decision to reduce scope of market analysis? Did you attempt to gather water purveyor information?

Water Reuse Policy (WRP)-2 directed staff to provide a "Detailed review and an update of a regional market analysis for reused water". The process used in previous regional market studies (e.g., EconNW 1995) was mostly a GIS exercise that identified acreage and uses and extrapolated reclaimed water potential. To update that information, King County staff contacted water purveyors directly and, based upon those interviews, estimated amount (demand) of the reclaimed potential.

Our analysis of demand is largely based on the level of interest expressed by water purveyors in interviews, considering how much reclaimed water could be used for intended purposes e.g., irrigation or industrial processes. In some cases volume estimates were more specific using metered sources or estimates for agronomic applications as recommended by King Conservation District personnel.

2. What do you mean by water supply mitigation?

South county agencies described water supply mitigation as a process by which reclaimed water could be used in recharging ground water to offset future withdrawals for potable needs.

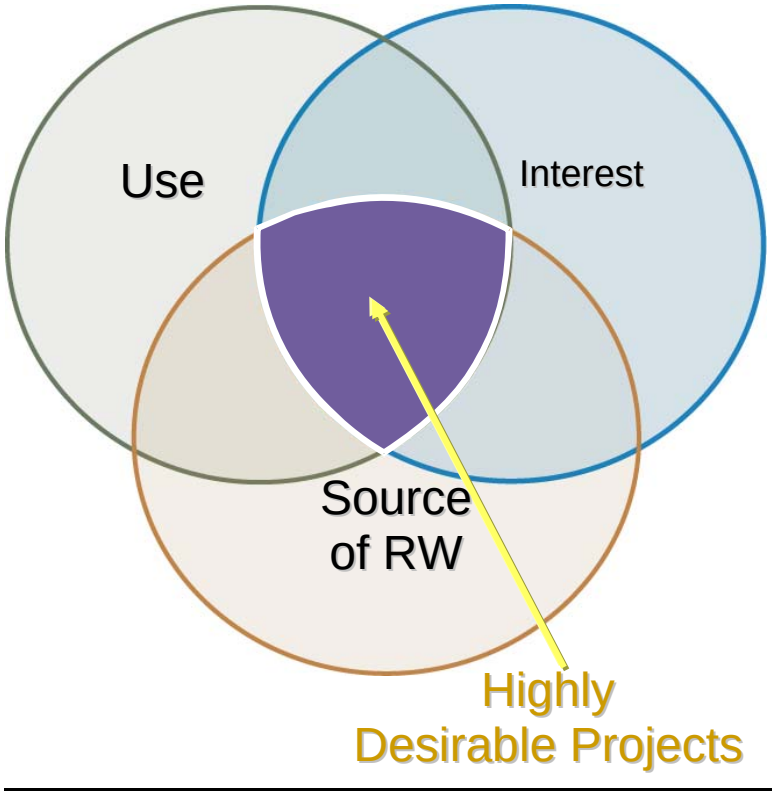
3. When you use the terms 'average seasonal day demand' does that mean by summer use or annual use?

The information depends upon the type of use. For example, industrial uses (Seattle Times and Nucor) are annual average day flows because they have a year-round need for water. However, irrigation uses are both seasonal and for short periods each day (4-8 hours) and therefore systems are designed for peak hour use, which is assumed to be the average day consumption concentrated in the 4-8 hours of irrigation each day during the irrigation season. For tables where total demands are given, such as the summary table shown below, the average seasonal (that is, irrigation season only) day demand is given for all uses so that we are adding like data.

Example	Use	Average Seasonal Day Demand, mgd estimated
Coal Creek	Golf course, park	0.36
Tukwila	Golf course	0.30
South County	Water supply mitigation	8.10
Bothell	Landscape, industrial, wetland	1.20
Nucor	Industrial	0.08
Samm. Valley	Agricultural	2.80
Marymoor Pk	Recreational	0.10
	(Total)	12.94

4. Are the seven illustrations that you have presented the likely "best" examples? Are these best for cost effectiveness?

The seven examples presented in the briefing were chosen because they include a variety of the type of use (industrial, and irrigation), an expressed interest in the use of reclaimed water and the local availability of reclaimed water. These three factors were expressed in the diagram in our slide presentation:



5. How do you "shape" demand to fit seasonal uses? What is the demand shape and variability as used in Feasibility Study?

Irrigation uses are structured to show peak hour and average seasonal day during the irrigation period. Included in these calculations are evapotranspiration demands by crops developed and documented by WSU and others, and metered data to validate the peak month and peak day demands during irrigation season. In the illustrations that we used for this study, the typical irrigation months used are May through September.

Questions about benefit/cost analysis

6. Will results of the benefit/cost analysis be compared to other alternatives? Will Raucher's "step four" be part of the discussion on Oct 24th?

We are not going to do a detailed analysis comparing the use of reclaimed water to all potential other alternatives that provide benefits. The WateReuse Association Economic Framework step four refers to comparing alternatives providing the same environmental benefit with other alternatives. For example, this might compare alternatives for cooling a stream such as tree planting vs. using reclaimed water for non potable uses to leave more water in the stream. That effort is well beyond the scope of the Feasibility Study. It may also be the prerogative of other jurisdictions to determine the benefit/cost of using reclaimed water. In other words, when retail water purveyors explore the use of reclaimed water in their communities, they will be able to analyze alternatives using community interest and values. The WateReuse Association Economic Framework and other tools for that analysis are available for jurisdictions to use in their own regions using the interests and values of their communities.

7. Will all sample illustrations presented here be run through Raucher's framework? Will we get this information at the Oct 24 presentation with E & P?

The Feasibility Study will contain the seven illustrations analyzed using the economic framework. However, at our meeting on Oct 24 only a small number will be presented.

Questions about wholesale/retail relationships & pricing

8. Will the wholesale/resale relationship be discussed in the Feasibility Study?

The Feasibility Study assumes the current policy: that wherever possible the county will be the wholesaler of reclaimed water and the local water purveyor the retailer in their jurisdiction area. The policy may be one of many that could be re-examined if a comprehensive plan is undertaken.

9. What pipes are assumed to be part of a wholesale system and what pipes are assumed to be part of a retail system?

Generally, large trunk lines that deliver reclaimed water to a logical distribution point would be part of a wholesale system. Smaller service lines that serve individual customers would be part of the retail distribution system. Agreements with the local retailers would address this question.

10. What criteria are being established to distinguish wholesale vs. retail?

In cases where there is a willing purveyor to partner with King County, there will be an agreement as required by state law that will identify the roles for each party and delineate wholesaler retail boundaries.

11. Will each reclaimed water agreement be consistent on each wholesale/retail situation?

There will be general consistency on those things that are required by state and federal law with customized language for the reclaimed use and geographic area.

12. Will there be geographically distinct areas for pricing and will the Feasibility Study address this?

We have learned from other jurisdictions nationwide that there are distinct areas for pricing. The Feasibility Study will note this and identify pricing as a major issue for further consideration but will not identify or recommend any geographically distinct areas for pricing.

13. Are you estimating full cost to point of use? What does retailer vs. wholesaler pay for?

The costs in the Feasibility Study include costs to deliver to the 'front door' of the user. On site conversions are not included because of the many unknown variables that will affect costs on the users' sites; ultimately, the user has to make the final choice if reclaimed water meets their needs. Generally, King County pays for the treatment and delivery of the reclaimed water to the retailer and the retailer pays the

cost of delivery to the user. However, this may vary and can be subject to a negotiated agreement.

Questions about the focus groups and stakeholder outreach

14. Did focus groups bring up environmental benefits themselves?

Yes, participants brought up environmental and other benefits themselves. One participant stated, "There are considerable environmental effects and so on that should be taken into account … not just the dollars. The intangibles need to be considered in a cost-benefit analysis."

15. Is the small sample size used in the focus groups valid for assumptions regarding the general public? You should add the focus group comments in the Feasibility Study.

Focus groups are not intended to be a statistically valid sample of the general public. King County conducts statistically valid phone surveys of 400 people in the region annually to discuss water quality issues, including reclaimed water. The focus groups were designed to provide more in-depth discussion of the issues than could be accomplished in a statistically valid survey. Data from the phone surveys (see December 2006 King County Water Quality Survey) and the focus groups (see Spring 2007 King County Reclaimed Water Focus Groups report) will be used for the feasibility study and will be posted on the MWPAAC Web site.

16. How were focus groups set up and conducted? You need to have an independent body to run focus groups.

An independent consultant called EnviroIssues designed and conducted the focus group research. All participants in the public focus group sessions were recruited randomly from areas near the Brightwater reclaimed water backbone and the South Treatment Plant. Efforts were made to include participants of both genders and varying ages in the focus groups. Two focus groups were composed of random members of the public. The third focus group was made up of representatives of agricultural interests and the fourth focus group was composed of business interests.

17. How do you explain the survey results stating that 50% of the agencies are concerned about cost? As stated in the slide, "50% see cost as a significant issue or primary concern."

Of the 19 purveyors/jurisdictions interviewed, 50% responded that cost would be the primary factor when deciding on a reclaimed water program/project. However, this does not mean that the other 50% ruled out cost as a top priority in considering reclaimed water – they just listed other factors that would likely be considered in addition to, or that might mitigate, costs. Some examples of these considerations included: benefits that mitigate costs, recognition of significant start-up costs, and cost savings for reduced potable water use (see Summary of Responses from Jurisdictional Interviews Spring 2007).

Questions about permitted uses of reclaimed water

18. Are all the uses identified in the Feasibility Study regulated in the State of Washington?

Yes, through the current guidelines in RWC 90.46, which can be found at the Ecology website http://www.ecy.wa.gov/programs/wq/reclaim/index *There is a state rule-making process to replace these guidelines by 2010.*

19. Can you put reclaimed water in a potable water aquifer? Has it been permitted before?

Current state guidelines allows this use under certain conditions, see DOH/DOE Publication #97-23 article 3 page 15. We are not aware of any permitted in Washington. For further information contact Kathy Cupps, Department of Ecology Reclaimed Water Coordinator 360-407-6452

Questions about Operations & Information

20. Is there enough base flow in 2 MGD for solids management?

This has been the threshold recommendation upon consultation with wastewater engineers. There are concerns regarding downstream operation and maintenance impacts as yet not fully studied.

21. Who is responsible for marketing and credibility of reclaimed water?

At present both the wholesaler and the reclaimed water purveyor need to be jointly responsible. King County is, however, taking the lead in developing information, establishing education information and working with science communities on research and demonstration projects.

22. How is the county planning to show that reclaimed water is safe to use?

King County has been producing and safely using reclaimed water since 1997. In that time, we have developed scientifically based information for use in public outreach and education. King County is also participating in long term nationwide studies on ongoing reclaimed water uses. In addition, King County is a member of the WateReuse Association, America Water Resources Association and other national and international groups researching the safety of reclaimed water. King County is constantly reviewing the scientific literature for similar uses of reclaimed water throughout the country and world and has constructed demonstration gardens and commissioned research with the University of Washington.

23. Can you give one example?

Installation of a greenhouse began in early 2007 at the South Treatment Plant as part of the county's resource recovery program. The greenhouse will showcase the safe use of reclaimed water and biosolids compost in growing ornamental and horticultural plants. Researchers from the University of Washington will be able to use the greenhouse for on-site studies involving reclaimed water and biosolids. Much of their research will focus on answering questions from current and future

customers of reclaimed water and will use water from South Plant's sand filters and from membrane bioreactor systems.

Studies currently under way include:

- *Effects of reclaimed water on growth of golf course turf grasses*
- *Fate and degradation of various organic compounds (pharmaceutical, anti-microbial, and estrogenic compounds) in soil irrigated with reclaimed water and in soil amended with biosolids.*

The research will also help to fine-tune operational practices at the treatment plants.

Questions about sample illustrations

24. Explain 15-50 MGD for South County study.

These were rough estimates of need provided by the south county cities.

25. There is going to be a perception regarding the safety of reclaimed water for groundwater augmentation in the South County. Will the Feasibility Study look at the full impact and scope of ground water augmentation for South County project?

No, that is beyond the scope of this Feasibility Study. Currently, there is no actual proposal for groundwater augmentation in the South County. Any project proposed of this nature would require extensive review, permitting and consultation. King County would be in a wholesale role and would rely on the partnership of the retailer to help address any safety or perception issues.

26. Explain proportions of stormwater, potable and well water that make up 300,000 GPD for NUCOR Steel

Nucor provided the following information:

- *Reclaimed stormwater, 250 gpm, no total quantity given*
- *Well water -- no quantities given*
- *Potable water -- 450ccf/day*

- *Nucor did not offer to total daily water uses outside the purchased water. Nucor is not interested in replacing their reclaimed stormwater and well water with reclaimed water, only their potable water purchases.*

Questions about the reclaimed water decision-making process

27. How does the Feasibility Study fit into the comp plan? What is the difference?

The Feasibility Study is being drafted to inform decision makers and to comply with the major provisions of WRP-2. A Comprehensive Plan is much more thorough and covers a broad range of issues related to reclaimed water. In addition, there is a required public process for a Comprehensive Plan. If a Comprehensive Plan process is undertaken, the Feasibility Study will provide useful information that will be incorporated into the Comprehensive Plan as appropriate.

28. Will a demand analysis be done in the comp plan?

The scope of the Comp plan will be developed once the Executive and Council give WTD approval to begin.

29. What are we going to do in the next 30 years to meet expectation of focus groups / stakeholders? (80% have need in 30 years).

King County has adopted policies directing WTD to actively pursue the use of reclaimed water, facilitate the development of a water reuse program to help meet the goals of the county to preserve regional water supplies, and to ensure that reclaimed water reintroduced into the environment will protect water quality and aquatic life.

King County produces approximately 255 million gallons of reclaimed water annually at its existing treatment plants. With the completion of the Carnation Treatment Plant, 0.21mgd of reclaimed water will be used to provide hydrologic and aquatic habitat enhancement to a wetland that flows into the Snoqualmie River.

Earlier this year the Executive issued the 2007 Climate Change Plan, outlining future efforts to support reclaimed water efforts in the region.

And currently the King County Executive is evaluating whether to undertake a reclaimed water comprehensive plan to meet these goals. A decision on this is expected later this year. It is anticipated that a Comprehensive Plan would include various strategies, budgets and schedules for future production and distribution of reclaimed water for consideration by the King County Council and interested stakeholders. Ultimately the selection of a preferred alternative would then set the course for reclaimed water production into the future.

30. Are you moving forward on an educational component over the next 30 years?

KCC Water Reuse Policy 7 directs WTD to develop an active water reuse public education and involvement program to correspond with the development of the water reuse program and be coordinated with other water conservation and education programs. King County is also participating in national and local scientific studies that will inform the public about the safety and uses of reclaimed water.

31. What is the County going to do next with the Feasibility Study?

WRP-2 states: "By December 2007, the King County executive shall prepare for review by council……" Upon completion, the Feasibility Study will be submitted to the Council for review by 12/31/07. No other action is required by the policy.

32. What was the intent of the Feasibility Study a year ago? Now?

The intent of the Feasibility Study a year ago and presently, is to inform the Executive and the Council on specific issues related to reclaimed water as identified in WRP-2.

33. What if benefits do not equal costs on the seven sample illustrations? How does that influence the comp plan? When will decision makers know if the time is ripe now or later to move forward with reclaimed water?

The Feasibility Study is designed to address specific issues related to reclaimed water as identified in WRP-2 and will make no recommendation on these specific

illustrations. A reclaimed water comprehensive plan (if undertaken) would be expected to address the viability of several options and schedules to provide reclaimed water in the future.

Questions regarding communication with MWPAAC

34. Can the committee get copies of all the slides of this presentation?

Yes, a revised version (revisions requested by E & P) was posted on the MWPAAC website on Oct 1, 2007.

35. Does this committee review the Feasibility Study before it goes to Council?

Due to schedule constraints, the Feasibility Study will be released for public review, including review by this committee, at the same time as it's submitted to the Council and RWQC.

36. Are you going to identify MWPAAC involvement in Feasibility Study?

We will indicate the number of meetings with MWPAAC and E & P and the subjects presented. We will develop draft text for the study in advance and send it to E & P members for review.

37. MWPAAC will plan to review the Feasibility Study in January 08 through RWQC

We expect that there will be meetings on the Feasibility Study in the first quarter of 2008.

In addition to the previous questions, the following comments were included on the flip charts at the meeting.

Regarding Marymoor Park:

- There is land owned by the City of Bellevue not annexed to Redmond that is adjacent to Marymoor Park.

- Redmond does provide water to Marymoor Park. The City is also encouraging annexation of the Park into the City of Redmond.
- Please note that benefits are not counted as potable water offsets if the offsets are not done with potable water – i.e.: Marymoor.

- Suggestions on the presentation slides (changes have been made):
- Distinguish between annual use vs. periodic seasonal use (pg 12 of slideshow)
- Show summer and winter demand.
- Put note on slides where meter data provided vs. estimate.

- *General suggestions*
- Since demand shaping would affect price or costs, it should be completed before Raucher does his analysis.
- You should distinguish between solid information vs. “best guess” in the Feasibility Study.
- Quantifying the pollutant loading into Puget Sound is dependent on the treatment technologies used at the various plants.

King County

Department of Natural Resources and Parks

Water Quality Survey

December 2006

King County
Department of Natural Resources and Parks

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METHODOLOGY

This report is based on the findings of a telephone survey conducted December 3-5, 2006 by Evans/McDonough. Four hundred (400) King County residents were selected for interviewing using an RDD (Random Digit Dial) sample. This sampling method means that every working phone number in King County has an equal chance of being selected for participation in the survey. Respondents were interviewed by trained, professional telephone interviewers. Respondents were screened to make sure they were over 18 years old and lived in King County. The margin of error for the overall survey results is ± 4.9 percentage points at the 95% confidence level. This confidence level means that if the survey were repeated, it would provide the same results to within ± 4.9 percentage points 95 times out of 100.

Research Design Summary

#Interviews:	400
Interviewing Dates:	December 3-5, 2006
Margin of Error:	± 4.9 points at the 95% confidence level
Universe:	King County residents 18 years or older

Results are compared where appropriate and possible to previous water quality surveys conducted by EMC.

KEY FINDINGS

Many 2006 figures are consistent with results from previous years.

- **The most important environmental problem continues to be air quality, though mentions of Global Warming are on the rise.**
- **A majority of residents continue to be aware that the County provides salmon and habitat protection, and they continue to overwhelmingly believe that water quality has a significant impact on salmon.**
- **At the same time, residents also believe the County isn't doing enough to bring salmon and bull trout back from endangerment.**
- **Residents continue to agree that garbage disposal, sewage treatment, and stormwater management help protect the environment.**
- **Residents continue to struggle in identifying the watershed they live in.**
- **Residents continue to be overwhelmingly concerned about the County running out of sewage treatment capacity.**

Some results have declined.

- **County residents are more likely in 2006 than in any other year to think our local salmon populations are at risk.**
- **Awareness of county water management services has dropped slightly.**
- **Water quality ratings have dropped nine points since 2005, and these ratings have returned to 2004 levels.**
- **Even though residents overwhelmingly support using as much reclaimed water as possible, they have also grown more concerned over the use of reclaimed water for growing vegetables, at nurseries, at for children's recreational fields.**

There continues to be strong resident demand and support for a reclaimed water network.

- **Well over three-quarters (82%) of residents say the County should use as much reclaimed water as possible.**
- **The vast majority of residents (at least 70%) has no concerns with using reclaimed water for a variety of uses, and suggests a significant market for reclaimed water.**
- **A strong majority (72%) of residents say they would be willing to pay $1 more per month on their sewer bill to help build a reclaimed water system.**

More than three-quarters (78%) of residents are willing to pay $1.50 per month on their sewer bill to reduce the occurrence of sewage/stormwater releases into Puget Sound.

There is strong support (79%) for expanding the County's regional trail system, even though nearly half (47%) of residents did not use it last year.

A majority (51%) say the County should enforce County rules and regulate property owners to protect the environment and other property owners while a third (35%) say the County should protect property owners.

- **Seattle residents are most likely to say the County should enforce County rules (60%), while residents in South King County and East King County are evenly split.**

Residents are generally unfamiliar with the Natural Yard Care program.

SUMMARY OF FINDINGS

General Environmental Issues

Most Important Environmental Issue

Air and water pollution are still at the top of the list of environmental problems. But mentions of these two have declined, while mentions of global warming and our region's transportation problems are increasing.

- Air pollution mentions have declined over the last two years to 17% (30% in 2004).
- Mentions of water pollution are unchanged from 2005, and continue to be at their lowest level tested.
- Mentions of global warming have more than doubled in the last year to 16% (7% in 2005).

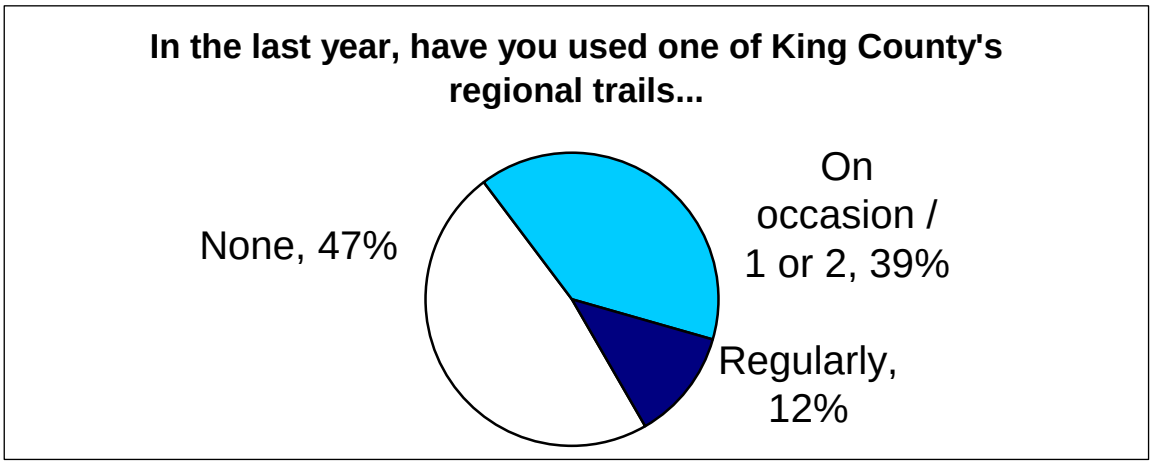
Q7. What do you think is the most important environmental issue facing our region today?

Issue	2000	2001	2002	2003	2004	2005	2006
Air pollution	38	20	19	23	30	26	**17**
Water pollution/quality	17	23	22	26	24	19	**17**
Global Warming	5	3	6	4	6	7	**16**
Traffic/Transportation	--	7	4	--	--	4	**11**
Growth/Population growth	8	16	29	12	12	10	**6**
Fuel Shortage/Gas Prices	--	--	--	--	--	2	**4**
Deforestation	5	3	4	5	3	5	**3**
Salmon	9	5	3	2	4	2	**1**
Toxic waste	2	2	3	1	2	1	**1**
Water Shortage/Availability	--	--	--	1	--	2	**1**
Vehicle Emissions	--	--	--	6	--	--	**--**
Energy/Power Conservation	--	--	--	1	--	--	**--**
Garbage/Landfills/Trash	--	--	--	1	--	--	**--**
Recycling	--	--	--	1	--	--	**--**
Anthrax	--	1	1	--	--	--	**--**
War/terrorism	--	1	--	--	--	--	**--**
None/Other/DK/Refused	17	19	10	16	19	22	**21**

King County's Trails

Half (51%) of King County residents have used a King County trail in the last year

- Almost as many (47%) did not use a King County regional trail in the last year.
- Most used a trail only occasionally (39%), while one resident in ten (12%) uses the regional trails on a regular basis.



- Trail usage is highest in East King County (17% Regularly / 48% Occasionally) and lowest in South King County (62% None).

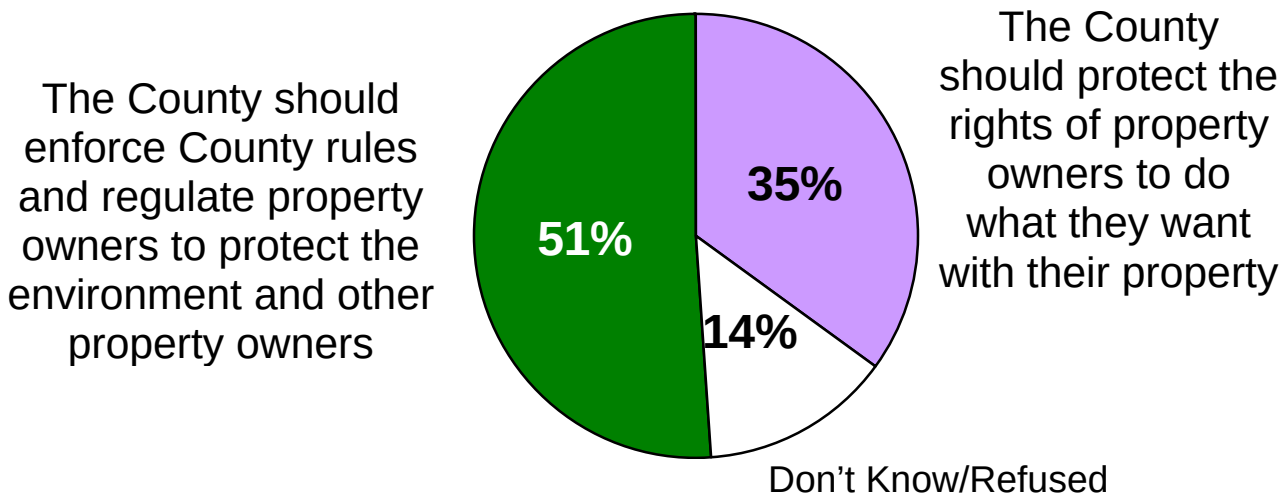
More than three-quarters (79%) of King County residents support expanding the regional trail system.

- This question is a general measure of support for expanding the system. It did not include specific items for expansion.
- Support for expansion is intense; half (50%) strongly support expansion.
- Support levels, while still strong, are the least intense in South King County (43% Strongly Support / 36% Somewhat Support).

The Citizens, The County, and Property Regulations

Half (51%) of residents think the County should enforce land use rules.

- Respondents were read a forced-choice question, and given two options.



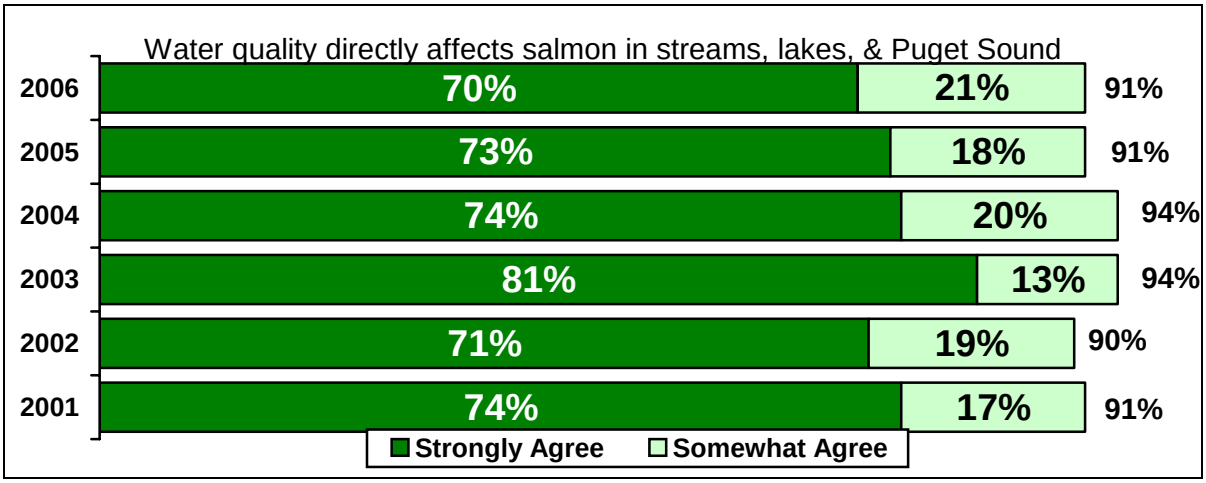
A majority (51%) of residents think King County should enforce County rules and regulate property owners to protect the environment and other property owners. A third (35%) think the County should protect the rights of property owners to do what they want with their property.

- Seattle residents are the most likely to say the County should enforce its rules; a strong majority (60%) of Seattle residents select this option.
- South King County residents (45% / 45%) and East King County residents (41% Property Rights / 39% County Rules) are evenly split on the question.

Salmon

Virtually all residents continue to agree that water quality directly affects salmon.

- As with previous years, virtually all residents strongly agree that water quality directly affects salmon in our streams, lakes, and in Puget Sound.



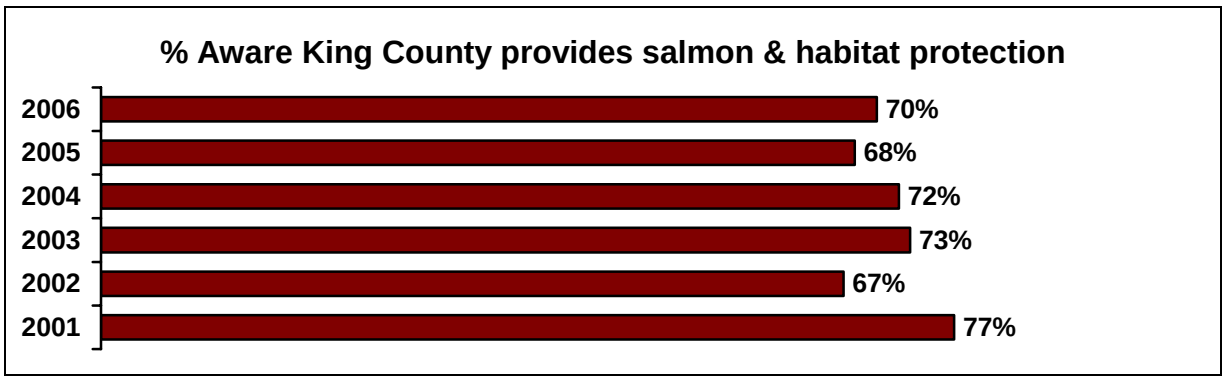
- The mean score rating how at risk salmon populations in the region are has fluctuated since 2001. This year's score is highest risk level recorded since EMC began conducting the survey.

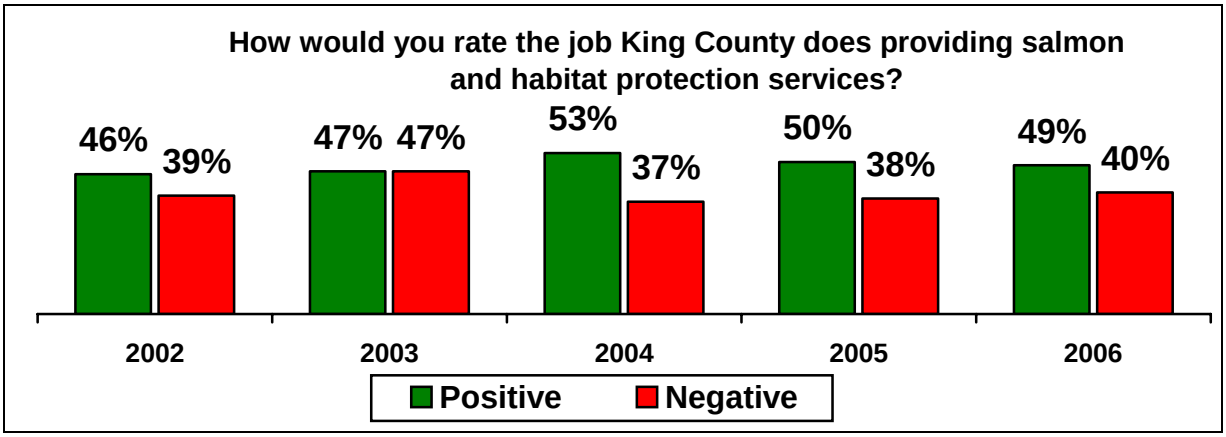
Q28. On a scale of 1 to 7, where 1 means not at all at risk and 7 means extremely at risk, how at risk do you think salmon populations in our region are?

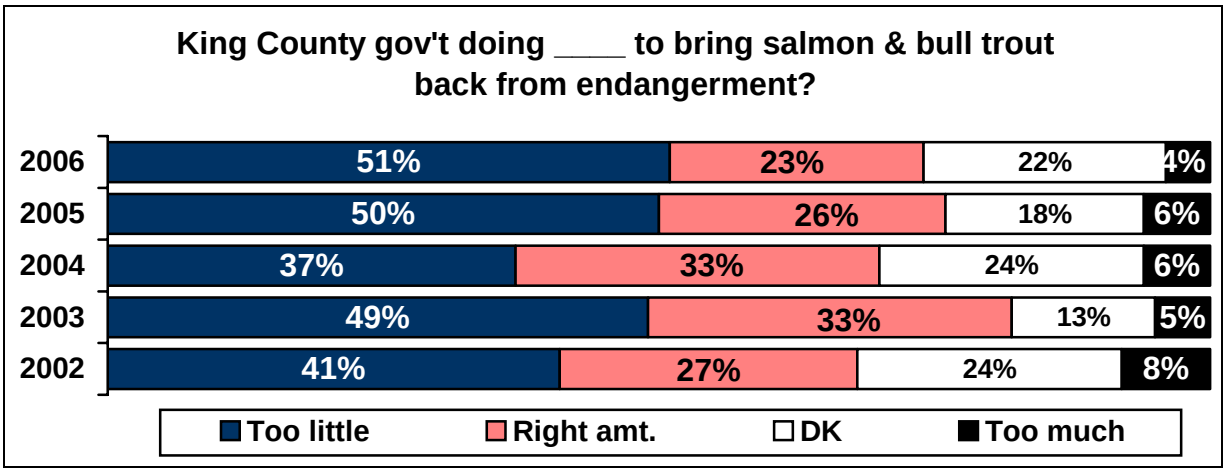
Rank	2001	2002	2003	2004	2005	2006
7- Extremely at risk	20	22	23	19	18	**27**
6	7	17	16	11	12	**16**
5	26	24	26	25	33	**23**
4	18	17	17	15	15	**12**
3	7	6	10	15	10	**9**
2	3	3	3	3	3	**4**
1- Not at all at risk	5	4	3	3	3	**2**
(Don't Know)	4	7	2	7	5	**6**
MEAN	4.92	5.11	5.03	4.78	4.92	**5.17**

As in previous surveys, most King County residents (70%) are aware that the county provides salmon and habitat protection. Ratings for the job the County does protecting salmon and salmon habitat are similar to last year's and previous figures.

- Half (51%) of residents continue to think County government is not doing enough to bring salmon and bull trout back from endangerment.





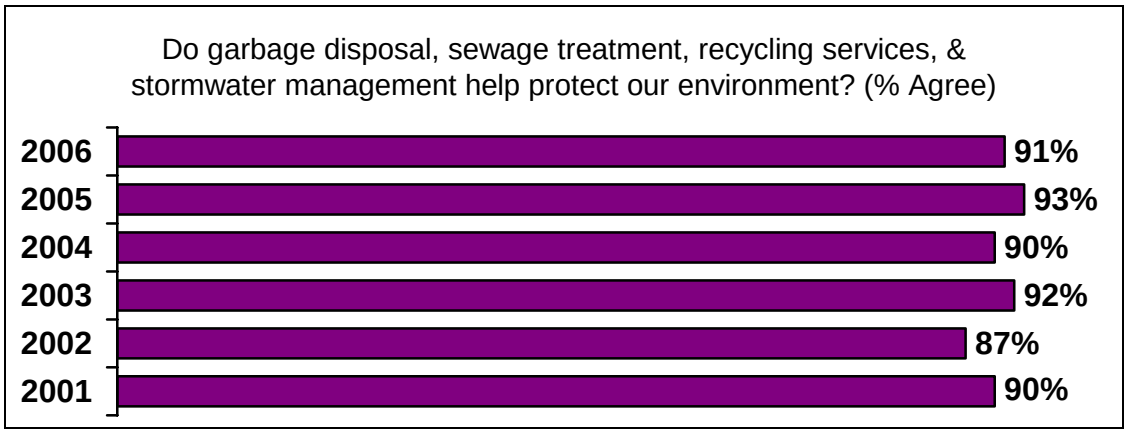


County Services

County Services and the Environment

Virtually all residents (93%) continue to agree that garbage disposal, sewage treatment, recycling and stormwater management help to protect the environment.

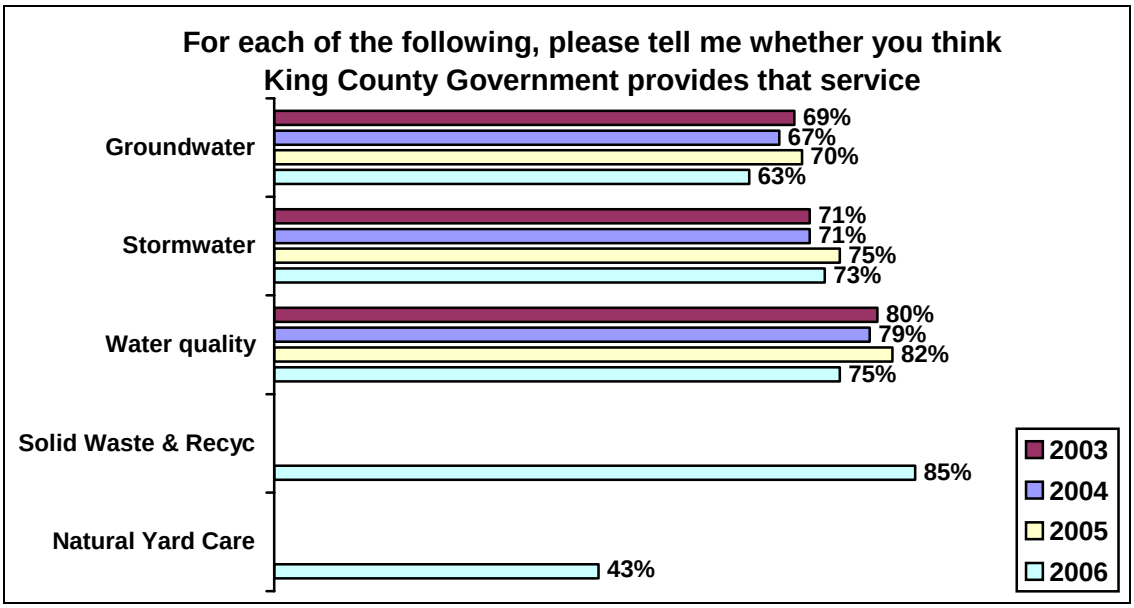
- These results are statistically equivalent to the results from previous surveys.



Familiarity with Selected King County Services

While reported awareness of King County water management services continues to be a strong majority of residents, the figures have declined.

- More than two-thirds of residents say they are aware that King County provides water quality, stormwater, and groundwater management services.



Heard About King County's Water Quality Efforts

A quarter (24%) of County residents say they have seen or heard something about King County's efforts to protect water quality.

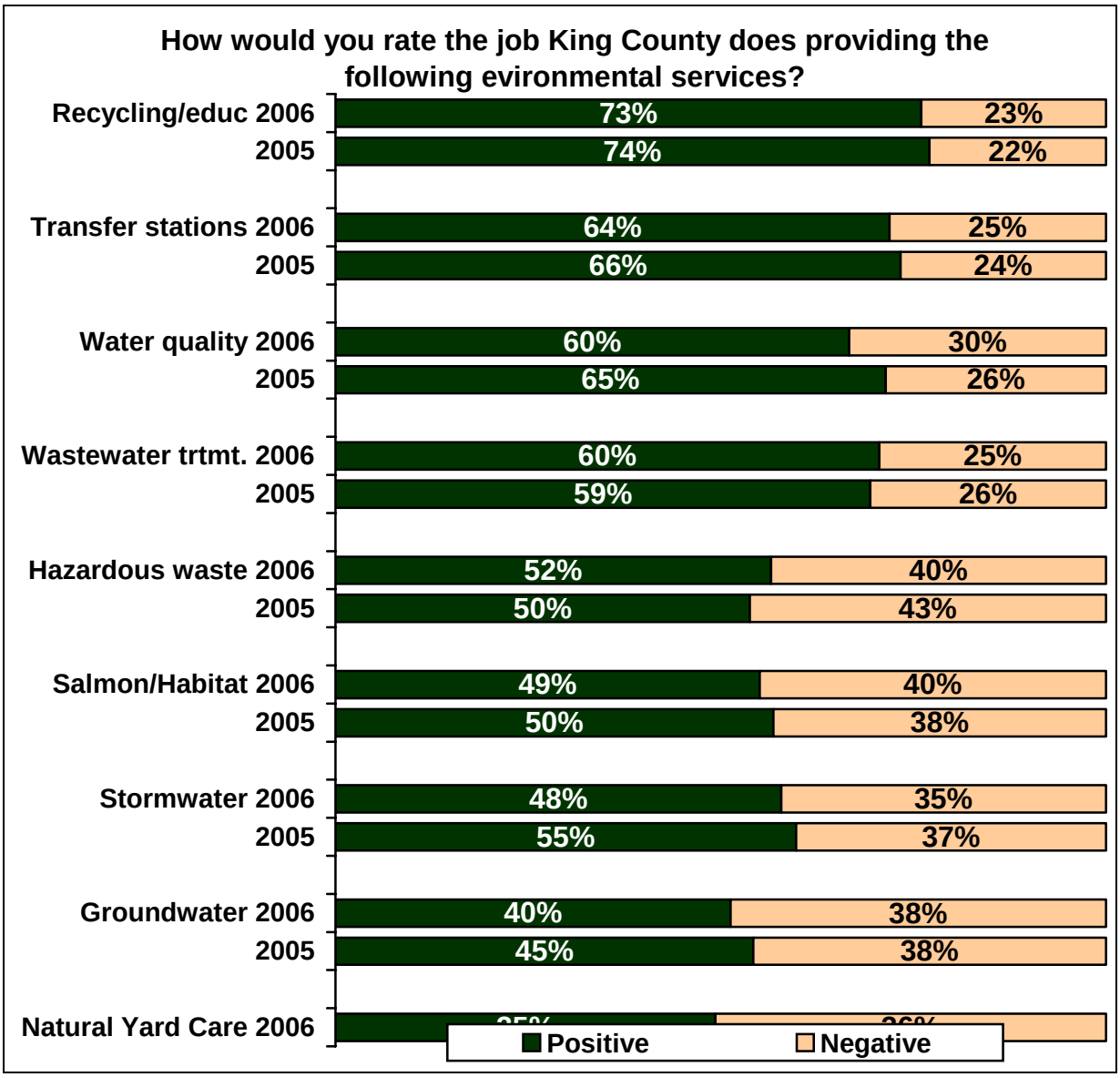
- The remaining 76% have not heard anything.
- Those that say they had heard something were asked what they have heard in a follow-up open-ended question.

Water quality / Looking for contaminants	17
Articles in the newspaper	16
New treatment plant / Center	9
Stuff in the Media	9
Salmon / Protecting Salmon in creeks	8

Rating of Selected King County Environmental Services

County residents give roughly the same ratings in 2006 to a set of job performance questions asked in 2005 and 2004. Recycling services and education (73% positive) continue to be the highest scoring item.

- Most ratings are consistent with figures from the 2005 and 2004. Only one item has changed outside the margin of error.
    - Water quality ratings have declined (-9) since 2005. The 2006 rating is very similar to the 2004 rating (62% Positive / 30% Negative).
- 2006 included Natural Yard Care for the first time in the ratings, and it is the lowest-rated item on the list. However, nearly a third (29%) of residents do not know enough about the program to rate it.

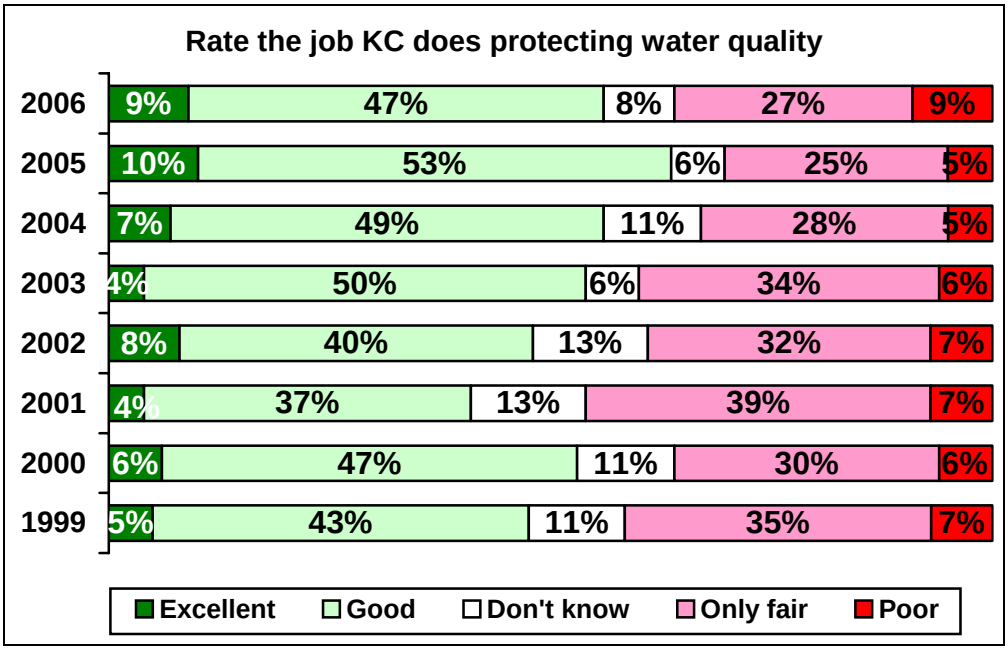


Water Quality in King County

Resident Ratings of the County

Resident rating for the job King County does protecting water quality (56% positive / 36% negative) was consistently improving until this year.

- The ratings for water quality in 2006 have dropped back to levels similar to 2004.
- At the same time, ratings for the last three years are statistically similar.



Water Quality Education

When asked how the county can improve its efforts to protect water quality, the top response continues to be "education/increase awareness."

How could King County improve its efforts to protect water quality throughout the county?

	1999	2000	2001	2002	2003	2004	2005	2006
Education/Make people aware	19	16	18	21	22	14	21	14

- The "Don't Know" response (40%) continues to be a significant proportion of the answer to this open-ended question.

- Nearly two respondents in ten (18%) gave an answer coded into the “other” category. These items total les than 1% of the total mentions and do not fit into a combinable category.

(Education/Awareness)	14
(Better enforcement of laws/higher fines)	6
(Better storm water/runoff water management)	5
(Tougher environmental laws)	4
(Doing a good job now)	3
(Limit development)	2
(More research)	2
(Pesticide control/Contamination)	2
(Spend more money/higher priority)	1
(OTHER)	18
(Nothing)	5
(Don't Know/Refused)	40

Watersheds

When asked, a majority (55%) cannot name the watershed they live in.

- When asked what watershed they live in, half (55%) say they don’t know.

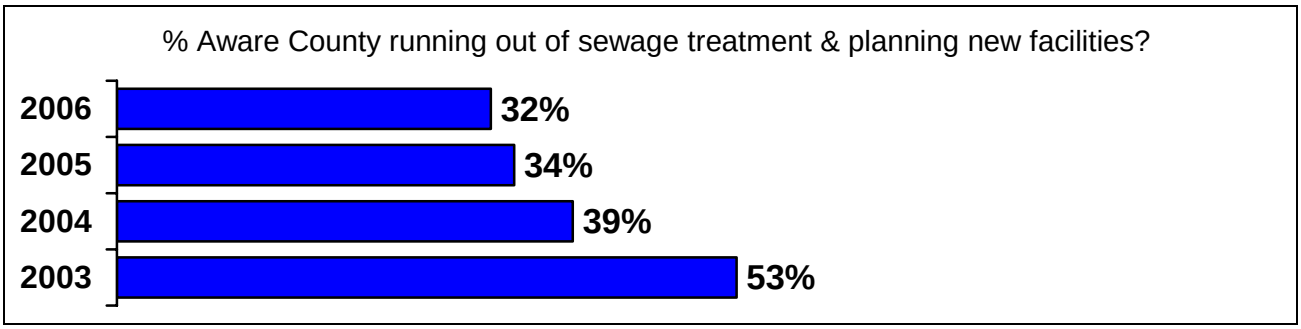
As you may know, a watershed is an area of land that drains water to a central outlet. Can you tell us what watershed you live in?

	1999	2000	2001	2002	2003	2004	2005	2006
Cedar/Cedar River	8	10	12	12	14	8	12	11
Sammamish	-	-	1	1	1	1	1	5
Seattle	-	-	-	-	-	-	-	4
Tolt River	2	5	3	3	2	3	3	3
Green River	2	4	3	3	1	3	3	3
Snoqualmie	-	-	-	-	-	1	2	3
Puget Sound	2	2	1	1	2	2	1	2
Piper’s Creek	-	2	2	1	1	1	-	2
Lake Young	-	2	2	1	3	2	1	1
Soos Creek	2	1	1	2	2	-	-	-
King County	-	2	1	1	1	-	-	-
Other Mentions	20	-	8	18	18	10	17	12
Don’t know	64	71	62	54	50	61	59	55

Sewage Treatment Facilities

Though awareness of King County running out of sewage treatment capacity remains well below the high level from 2003 (53%), an overwhelming majority (80%) continue to be concerned about the County running out of treatment capacity.

- A majority of residents (68%) are not aware that the county is running out of sewage treatment capacity and planning for new facilities. A third (32%) are aware, which is statistically unchanged from 2005.



- The question about resident concern over sewage treatment capacity was changed in 2005. A comparison of the different version is shown below.

2003 and 2004 Version

Does it concern you that either sewage overflows and backups could occur or that new building permits could be halted if King County runs out of sewage treatment capacity?

	2003	2004
Yes	83	73
No/(Don't Know	17	26

2005 and 2006 Version

Are you concerned or not concerned that sewage overflows and backups could occur and that new building permits could be halted if King County runs out of sewage treatment capacity?

	2005		2006	
Extremely Concerned	44		37	
Somewhat Concerned	37	=> 81	43	=> 80
Not Concerned	14		18	
Don't Know/Refused	5		2	

Biosolids

A proportion of residents supports each of the three potential uses for biosolids, and a majority say they are likely to use a topsoil containing biosolids in their landscaping or garden.

- In 2005, the introductory question about biosolids was edited for clarity and uniformity of answers. The two version of the question are below:

2004 Version

Now I would like to ask you a question about biosolids. The nutrient-rich, organic solids that are recovered from wastewater and then treated are called biosolids. For many years, King County has been safely recycling biosolids as a fertilizer and soil amendment for agricultural and forestry uses and as an ingredient in compost. Of the following, which do you think would be the best use of biosolids and compost to help improve soils, water quality and habitats?

Make more compost available for home and garden use	10
Use for land reclamation and soil improvement projects	28
Continue to use in agriculture and forestry	37
(All of the above)	13
(None of the above/Don't Know)	12

2005 and 2006 Version

Now I would like to ask you a few questions about biosolids. In our area, storm water and sewer water from homes is cleaned at treatment plants. During the process, nutrient-rich, organic solids are recovered and treated to make a product called biosolids. For many years, King County has been safely recycling biosolids. Of the following, which do you think would be the best use of biosolids?

	2005	2006
Use in compost or topsoil for landscaping and home gardens	20	19
Use for restoring land without vegetation, such as gravel pits	26	34
Use in agriculture and forestry	35	26
(All of the above)	9	8
(None of the above/Don't Know)	8	12

- There is a small increase in the percentage choosing biosolids for land restoration, and a small decrease for use in agriculture and forestry.

- In 2005, a question about likeliness to purchase a biosolids product was also changed. The two versions of the question are shown below:

2004 Version

Using a scale of very likely, somewhat likely, not that likely and not at all likely, if a biosolids soil mix or compost was available in bags, for a competitive price at a local garden center, how likely would you be to buy and use it?

Very likely	28	
Somewhat likely	27	=> 55
Not that likely	18	=> 40
Not at all likely	22	
(Don't know)	4	

2005 and 2006 Version

Some biosolids are composted or mixed with other materials to create products for landscaping and home gardens. Using a scale of very likely, somewhat likely, not that likely and not at all likely, how likely are you to use compost or topsoil containing biosolids in your landscaping or home garden?

	2005		2006	
Very likely	26		24	
Somewhat likely	34	=> 60	28	=> 52
Not that likely	14	=> 36	12	=> 42
Not at all likely	22		30	
(Don't know)	3		6	

- There is a noticeable decline in the percentage of residents who say they would use biosolids since 2005. The net shift away from using biosolids is 14 percentage points, a significant change.
- One possible explanation, which appears in a subsequent question, is that this survey was conducted during a national e-coli outbreak. This may have impacted participant opinions about biosolids.

Reclaimed Water – Support For and Resident Acceptance Of

County residents overwhelmingly support reusing as much wastewater as possible.

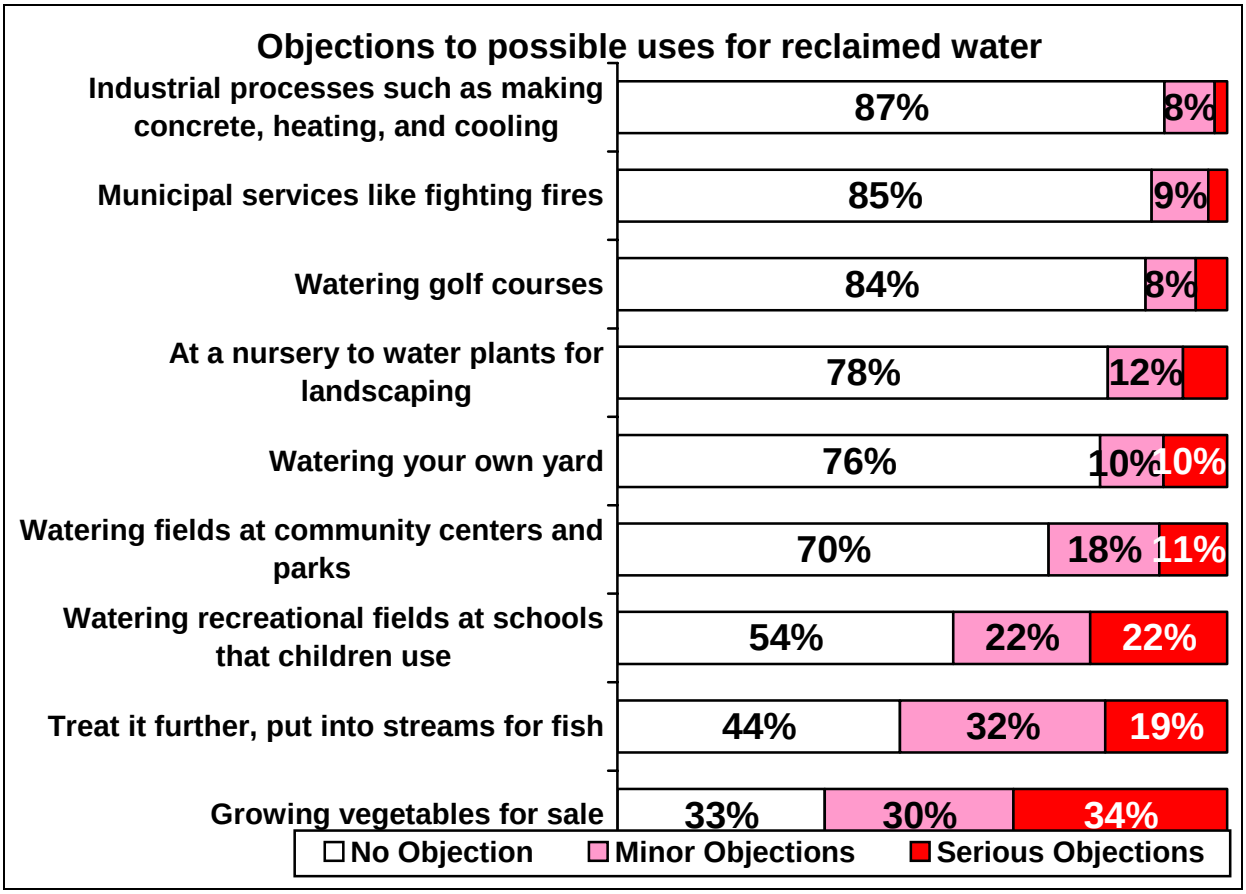
- The results of this question indicate strong support among residents for King County using as much reclaimed water as possible.

Changing subjects, I'd like to ask you about reclaimed water. King County collects wastewater from sewers. Some of this water will soon be sent to a new treatment plant that has the ability to treat this water to near drinking water quality. This water is called reclaimed water. Although it is not suitable for drinking, reclaimed water can be used for a variety of purposes. In general, would you like to see King County reuse as much of this water as possible, or should King County not make an effort to reuse this water? (IF UNDECIDED) Well, do you lean towards reusing as much as possible or towards not making an effort to reuse this water?

	2005		2006	
Reuse as much of this water as possible	79		81	
(Lean reuse as much as possible)	3	=> 82	1	=> 82
Not make an effort to reuse this water	11		11	
(Lean not make an effort to reuse this water)	1	=> 12	1	=> 12
(Undecided/Doesn't Matter)	6		6	

- As in 2005, there is overwhelming resident support for a reclaimed water program.

- Residents are then asked a series of questions about specific potential uses for reclaimed water to help identify potential markets for reclaimed water, and identify those uses for reclaimed water that might need additional education.



- As with the questions from 2005, the 2006 results provide useful information on potential market sizes for products that use reclaimed water.
    - As in 2005, there are a wide variety of uses for reclaimed water that a strong majority of residents (at least 70%) have no concerns with.
    - A new item, treating water further and putting it into streams to increase flows for fish, has among the lowest level of "no objection" (44%) of the items tested. However, it also has the highest level of "minor objection" (32%).
    - Acceptance of using reclaimed water at a nursery and for growing vegetables have both declined since 2005. The shift is particularly noticeable for growing vegetables; those with serious objections to this use are now a third (34%) of all respondents.

- There are also more serious objections to watering recreational fields that children use in 2006 (22%, vs. 16% in 2005).
- It is likely that most of the increase in objections can be attributed to the e-coli outbreak.

- As in 2005, women are more likely to object to the various uses for reclaimed water than men.
  - More than a third (38%) of women have serious objections to using reclaimed water for growing vegetables while

Resident questions about reclaimed water center on what it might leave behind.

- Following the "objections" section, residents are asked what questions they have about the use of reclaimed water. The questions posed by respondents are highly informative as to their concerns about the use of reclaimed water. Though residents have been given a basic explanation of what reclaimed water is, the answers to the "objection" series and the open-ended "questions about reclaimed water" series show that a "basic" definition of reclaimed water may not be enough for many residents to be completely comfortable with its use.

What questions, if any, do you have about the use of reclaimed water?

	2006
Is it really safe? / Is it clean?	7
Purity of the water / What components are retained/filtered?	6
Water treatment / What was the process for treating it?	5
Safety Standards / How is it tested? / What's the procedure to ensure it really is free of harmful matter?	5
Usage / Where is it used? / How much is being used?	3
The health issues that might arise / Potential risks	3
What were the chemicals involved in the process?	2
Will it get into the water table? / Contaminate underground water?	2
How much does it cost?	2
How does it compare to drinking water?	2
None / No questions	54
Other	8
Don't Know / Refused	3

- Though all respondents were given the opportunity to answer this open-ended question, more than half (54%) said they have no concerns with the use of reclaimed water.
- The concerns expressed by those that were able to are specific and technical.

Residents can see a variety of benefits to using reclaimed water.

- An open-ended questions shows that residents see a variety of benefits.

What do you think are the benefits, if any, of using reclaimed water?

	2006
Conservation / Helps save fresh water for drinking	23
Recycling / Reclaimed water can be used for many different things	18
Less waste of water / Less clean water consumption	12
Loosen demand on water supply / Helps the environment	10
Helps during summer months / Decrease water shortages	5
Lower cost of water / Saves money	4

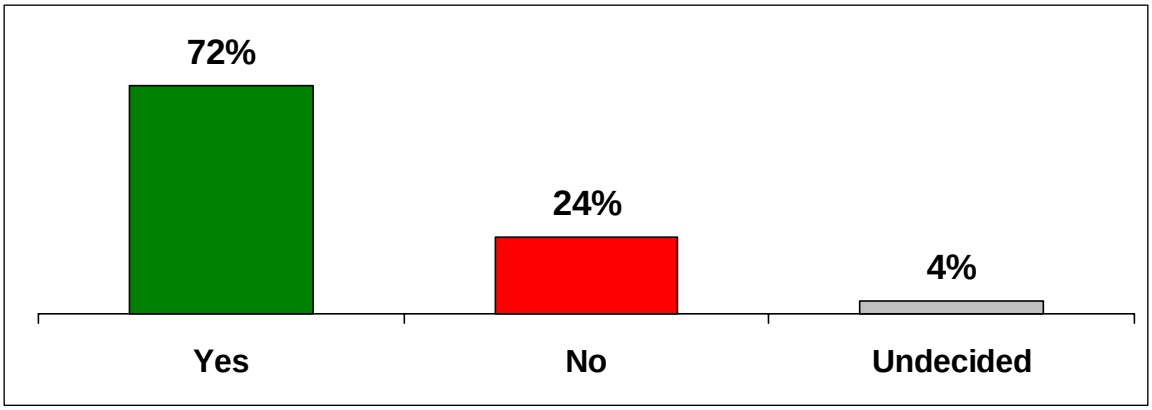
Though an overwhelming percentage (82%) think they County should use as much reclaimed water as possible, a smaller percentage (59%) say they would be more likely to use a business or buy a product if they used reclaimed water.

- A quarter (26%) of County residents say they would be much more likely to use a business or buy a product that used reclaimed water. An additional third (33%) say they would be somewhat more likely.

A strong majority (72%) of County residents say they would be willing to pay one dollar more a month on their sewer bill to help build a reclaimed water system, and residents would pay almost $3 ($2.92) for a voluntary program.

- Only a quarter (24%) say they would not be willing to pay a dollar more to help build the system.

> Right now, there is enough money to build the major service lines to get reclaimed water to parts of King County. Service lines to bring reclaimed or recycled water to individual users like businesses, golf courses, and factories do no exist yet. Would you be willing to pay one dollar more per month on your sewer bill to help build this system, yes or no?



- Seattle residents are the most likely to support this idea (76% Yes / 21% No).
- South King County residents (74% Yes / 23% No) are just as likely as all residents to support the idea.
- East King County residents are least supportive (62% Yes / 32% No).

- Following this question, respondents are asked what they might pay if this program were voluntary.

> What if this program were voluntary, that is, you could choose to pay more on your bill to support building this system. How much would you choose per month to pay to help build this system?

- Almost a third (30%) of respondents said they would not pay anything on their bill; slightly higher than the quarter (24%) who said “no” in the previous question. An additional 12% refused to answer the question.

- The “mean” or average dollar amount from all responses is around $3 a month ($2.92).

Sewage and Stormwater – Willigness to Pay

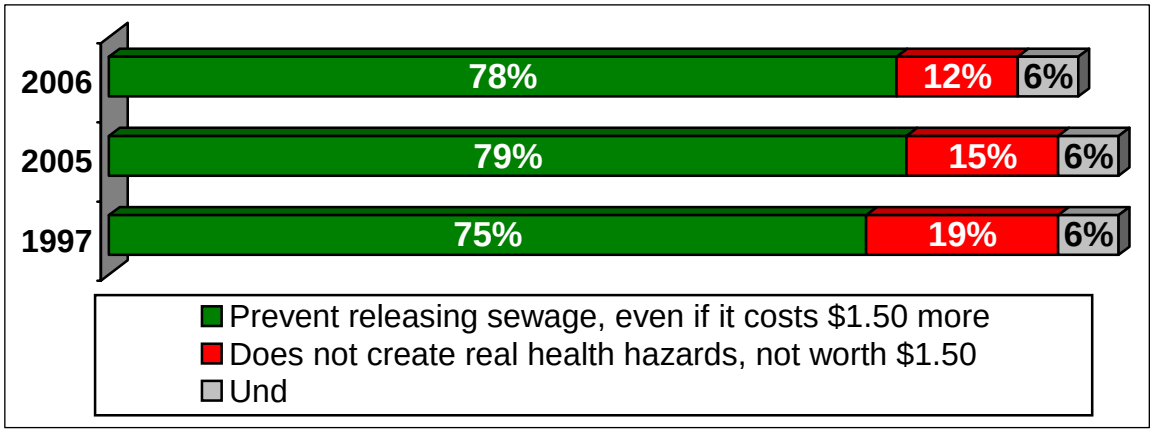
More than three-quarters of residents (78%) are willing to pay $1.50 per month on their sewer bill to reduce sewage/stormwater releases into Puget Sound.

In some areas of King county, sewage and stormwater travel through the same pipes. During heavy rains, this combination of sewage and stormwater can overflow into Puget Sound and other waterways because sewer pipes are full. This can happen up to 100 times per year, during our heavier storms. We will soon pay about a dollar and fifty cents more per month on our sewer bills to reduce the occurrence of these releases, but this will not eliminate the problem. Which of the following comes closest to your opinion?

We should prevent releasing this diluted sewage into Puget Sound rivers and lakes during storms, even if it costs $1.50 more per month on our sewer rates

OR

Some people believe releasing some diluted sewage into Puget Sound rivers and lakes during storms does not create any real health hazards for people or wildlife. It is not worth $1.50 more per



- Seattle (82% for $1.50) and South King County (86% for $1.50) residents are noticeably more supportive of the charge than East King County residents (67% for $1.50).

APPENDIX A: DEMOGRAPHICS

	1999	2000	2001	2002	2003	2004	2005	2006
Gender								
Male	48	48	48	49	50	49	49	50
Female	52	52	52	51	50	51	51	50
Homeowner								
Own/buying	72	66	72	69	72	77	68	71
Rent	28	32	27	29	27	21	28	28
(DK/Refused)	2	2	1	2	1	1	4	1
Children living at home								
Yes	31	36	32	33	27	33	38	34
No/(Refused)	69	64	68	67	73	67	62	66
Age								
18-24	8	10	8	8	7	6	8	8
25-29	6	9	10	9	7	6	9	9
30-34	9	10	8	9	10	10	11	11
35-39	10	11	8	8	10	11	9	9
40-44	13	12	12	12	8	11	12	13
45-49	14	10	9	10	12	11	10	8
50-54	8	12	11	10	11	11	12	10
55-59	7	6	7	6	9	9	7	11
60-64	5	6	5	3	8	7	4	6
65+	18	13	18	21	16	15	15	13
(Refused)	3	3	3	4	2	1	2	1

King County Reclaimed Water Focus Groups – Spring 2007

King County's Wastewater Treatment Division conducted four focus groups in late April and early May 2007 to determine the public perception and acceptance of reclaimed water and uncover specific issues from agriculture and business interests that could affect program planning. In addition, the focus groups were used to identify some effective mechanisms for educating and raising awareness about reclaimed water.

Key Findings

- **The public must have reliable information about the safety of reclaimed water.** Most of the public focus group participants felt that reclaimed water use could be acceptable as long as its safety was backed with data from independent sources and adequate health and safety measures were taken in its use. On the agricultural side, farmers cannot take the risk that consumers will not have confidence in the safety of their products.

  "One of the best ways would really be listing all of the other places throughout the country where people do this already and have done it for years and showing that there really haven't been any negative effects."

- **Once they know it's already being safely used, people are supportive of reclaimed water use.** Views shifted over the course of the public focus group sessions as participants learned more about reclaimed water and the history of its use in other places. Participants who were initially hesitant seemed much more comfortable by the end of the session. Business interests highlighted the consistency reclaimed water could provide during the dry summers.

  "As we project ahead in the next 10, 20 years, the more we are able to use this, the more we will be able to continue to grow without significant impacts to our water system."

- **More information about how reclaimed water will be priced and the infrastructure financed is vital to its acceptability.** Members of the public want to know who will pay for this water source and how taxpayer dollars will be impacted. Agricultural and business interests want to know the details about cost comparisons to potable and other sources of water and the costs of constructing pipes and transporting the water. Landscapers acknowledge that reliable supply is ultimately more important than price, but still believe reclaimed water should be cheaper than potable.

  "I'd like to see a cost-benefit analysis. I want to see the money."

  "There are considerable environmental effects and so on that should be taken into account…not just the dollars. The intangibles need to be considered in a cost-benefit analysis."

- **More communication and education is needed.** It was evident from the focus groups that everyone needs specific detailed information to support expanded reclaimed water use. In addition, agricultural and business interests would like to see education implemented ahead of reclaimed water service startup in order to ensure users and the public are prepared and comfortable.

  "There needs to be a lot of talk or exposure about it so all of the sudden people don't feel like they have been blindsided or that the county hasn't come in through the back door with this idea."

- **"Recycled" water is probably a better term to use than reclaimed water.** Opinions on this point varied throughout all the focus groups, but a majority felt the word "recycled" has better connotations and is a more honest description. People have a positive association with the word recycling and would see the water source as having a beneficial environmental impact. Participants also suggested finding some consistency with terms used in other locations around the country.

Examples of Questions and Concerns

The list below demonstrates some of the questions the county must be prepared to address when preparing for reclaimed water marketing and education.

- **Safety details.** What's left in the water after treatment? How can we be sure that reclaimed water will not get into the drinking supply? Is there a residue left after the water evaporates? It is safe for my kids and pets to be exposed to it? Will the public be sufficiently informed about the uses of reclaimed water in their neighborhood and region? Can the public get access to findings and reports?

- **Pricing/Cost.** Who will pay for infrastructure and/or delivery systems? Will reclaimed water cost less than potable water (or even be given away for free), especially in the early stages when the county is trying to gain acceptance? Will taxpayers cover the expense of bringing reclaimed water to city parks?

- **County Plans.** How will the county regulate how reclaimed water is used? What kind of controls will the county put on using reclaimed water? How will the supply be monitored? How will the construction of a pipeline impact the public's access to the park/s? What happens if a purple pipe carrying reclaimed water breaks?

- **Business risk.** Does the county take on the responsibility for anything bad that might happen? If reclaimed water has been used in other parts of the state and country, how is it working?

- **Reclaimed water messaging: consistency, reliability and environmental benefits are the keys.** The public will support programs that can clearly demonstrate environmental benefits to the region such as salmon enhancement

and water supply conservation. But clarity will be a challenge: if a sign says reclaimed water is safe to use, yet warns that it is not safe for drinking, that is a confusing message.

Focus Group Details

Two focus groups were composed of random members of the public. The third focus group was made up of representatives of agricultural interest and the fourth focus group was composed of business interests. Each session was approximately an hour and a half in length. The sessions were held at the following facilities:

Old Redmond Schoolhouse Community Center
16600 NE 80th St.
Redmond, WA 98052

Consumer Opinion Services
12825 1st Ave S
Burien, WA 98168

Carol Edwards Center
17301 133rd Ave NE
Woodinville, WA 98072

The Old Redmond Schoolhouse Community Center and the Carol Edwards Center were both facilities selected because of their proximity to the Brightwater reclaimed water backbone. The Consumer Opinion Services office in Burien was selected as a location for a public focus group session because of its proximity to the South Treatment Plant.

Methodology for Selecting Participants

All participants in the public focus group sessions were recruited randomly from areas near the Brightwater reclaimed water backbone and the South Treatment Plant. Efforts were made to include participants of both genders and varying ages in the focus groups. A total of 21 people participated in the public focus groups; 11 men and 10 women. The participants ranged in age from under 30 to 50+ years.

Participants met the following selection criteria:

- Identified themselves or a member of their family as a park-user who visits a park, sports field or golf course at least once a month.
- Not employed by or related to anyone employed by a department in King County or another sewer or water service provider.
- Not employed by or related to anyone employed by a marketing research firm, newspaper, television station, radio station or other media outlet.
- Not participated in a focus group or market research study within the past year.

Participants in the agriculture session were recruited from a list compiled by the county that included granges, farm alliances and farms in the Sammamish Valley. Five participants attended the agriculture session. Business session participants were recruited from professional landscape associations, area developers and local Chambers of Commerce. Two participants attended the business session.

Session Outline

EnviroIssues staff members facilitated the focus group sessions.

At the public sessions, participants introduced themselves and mentioned how long they had lived in the area and the park they frequented most often. The facilitator asked the participants if they knew about reclaimed water and then read a description of reclaimed water's source and potential uses. Participants were then encouraged to think about what questions they would have if they were told that their neighborhood park would soon begin using reclaimed water.

For the agriculture and business sessions, participants were asked about their familiarity with the county's plans for reclaimed water and then asked to articulate concerns and questions.

Additional questions included:

- Who would you trust as a source of credible answers to your questions?
- Other than cost, what factors would influence a farmer or business to consider reclaimed water usage?
- What would make it more likely the agricultural or business community would be supportive?
- What should the county be thinking about in terms of program planning for the future?

Session wrap-up included distribution of the reclaimed water program brochure and Brightwater backbone fact sheet and an explanation of the incorporation of focus group results into the feasibility study.

Additional Thoughts about Reclaimed Water

Public Sessions

- Overall, most participants reacted positively to the concept of reclaimed water and appreciated the county's efforts to take advantage of this potential source of water. Participants felt that information on reclaimed water would be more credible to the public if given by an unbiased third party (the EPA, University of Washington and environmental groups were mentioned) so as to ensure that the data was accurate and thorough research had been conducted**.** One participant said information from the Department of Health would be sufficient, since they currently set the standards for water quality.

- It is important that information be provided ahead of time so the public can get used to the idea and become educated about the benefits of reclaimed water. Kids especially were seen as a great avenue for reaching adults with educational materials. In addition, it will be very important that information be consistent from all departments. Everyone who could possibly get calls about reclaimed water should be prepped with the facts and trained on how to respond to questions.

- Participants emphasized distributing information about reclaimed water in more than one format in order to reach as many citizens as possible. Many felt that the media would be vital in spreading awareness and that messages about reclaimed water would need to be placed on local radio and television channels as well as in newspapers and on the internet. Testimonials from people who use parks or eat food grown with reclaimed water would also be helpful in establishing acceptability.

- All participants were in agreement that city parks using reclaimed water to irrigate their grass or playing fields should have signs with information about the treated water, pamphlets available that park users can take home with them, and ways to obtain more information.

- Participants felt that reclaimed water could have a larger role in new development in the region. Piping could be constructed for new projects and the cost would be less than replacing piping for existing residences and businesses.

- Strategic thought should be given to the timing of the introduction of reclaimed water use to the public. It was noted people would likely grab onto the idea more if it was introduced to them during the summer months or in the months leading up to the summertime; in other words, at a time in the year when the water supply would be at its lowest and reclaimed water would have the greatest possible impact.

- If reclaimed water is to be used on produce, the marketing effort must be very strategic. Participants felt reclaimed water signage was better used at farms and better avoided in the supermarket. One participant said it might be useful to provide information at specific grocery stores that already offer significant education like PCC and Whole Foods.

Agriculture Session

- Agricultural users are concerned about the risk of being first adopters. Participants suggested that acceptability will build with a history of safe use by large water users, such as golf courses, parks and landscapes. This will lay the foundation for wide public acceptability before agricultural use is introduced.

- It’s not just about the cost of the water, but also about how the water would get to the farms and who would pay for the construction of piping. Unless reclaimed

water cost much less than the water they currently use, there would not be much incentive to switch.

- The county will need to look at rates across the country to determine what the cost of reclaimed water should be. Some participants suggested 5-10% of potable cost.

- Participants seemed to think that non-edible uses of reclaimed water would be the best way to introduce reclaimed water to the region.

- Farms without legal water rights probably would have a greater interest in using reclaimed water when it is available. Hmong farmers in particular were mentioned because many of them rely solely on rainfall for growing.

- Better trust needs to be established between the farmers and the county. The farmers are unsure of the intentions of the county, so it would help to increase the communications and work on the relationships.

- Not many people in the Sammamish River Valley area are familiar with reclaimed water. Reclaimed water is simply not yet on people's radar. And, if it is on their radar, they may have concerns about the water source.

- Farmers would rely on the county to lead the marketing efforts. The public will have to be informed about the safety and benefits of reclaimed water so that they will continue to purchase products grown using this new water source. Farmers will use reclaimed water if the public identifies it as a worthwhile investment.

- Farmers are well aware of their dependence on water. They do see a role for reclaimed water in the region, but because other sources of water (wells, water rights to withdraw from rivers, and sometimes potable) are currently available and affordable, and the public may not be ready to accept reclaimed water, farmers are not yet prepared to commit to reclaimed water use.

- One participant felt the county was missing an opportunity to spread messages about water conservation. She expressed concern that expanding reclaimed water use could confuse messages about conserving the water in the first place. With reclaimed water, people might believe that it is okay to use water because it can be reused.

Business Session

- In landscaping, consistent water supply is critical and a key benefit reclaimed water offers.

- Businesses like plenty of lead time, so the county should be careful about "springing" plans on them.

- Like farmers, businesses will be concerned about what remains after the water is treated and will expect the county to provide information about residuals, including things like pharmaceuticals.

- People will put a high value on keeping landscapes viable year-round and using reclaimed water can help shift the image that green summer lawns mean high water consumption. One participant suggested that using reclaimed water to keep landscapes green longer in the summer would help global warming by allowing plants to continue drawing carbon from the air longer each year before going dormant in winter.

- Some additional uses to consider for reclaimed water include car washes, street cleaning, hydroseeding and recharging recreational water bodies.

- The county should consider the possibility of water stations for reclaimed water in the initial stages to build usage before investing in a large network delivery system.

Project Overview Text

Note: The text below was read aloud at the public focus group sessions. The facilitator also circulated a photo of purple pipes and signage.

Reclaimed water is wastewater that's treated to such a high level it can be used safely and effectively for many purposes that do not require drinking water. It is used in communities throughout the United States in a variety of ways, including:

- watering landscape plants at nurseries
- watering recreational fields at community centers, parks and schools
- watering golf courses and cemeteries
- watering residential and commercial landscaping
- municipal services like fighting fires
- industrial processes such as making concrete, heating and cooling.

Reclaimed water is available year-round, even during dry summer months or when a drought strains other water resources. King County has been safely using reclaimed water since 1997 for irrigation and industrial processes at its two regional treatment plants. King County Parks and the City of Tukwila have safely used reclaimed water on athletic fields since 1998, saving over 5 million gallons of drinking water every year.

King County's reclaimed water is Class A, meaning it meets strict standards of the state Departments of Ecology and Health. Reclaimed water is highly filtered and disinfected and is tested often. It is not drinking water, but it is safe for human contacts – even unintentional swallowing or exposure to open cuts.

Reclaimed water is distributed through a separate set of purple pipes, used to help guarantee that is doesn't get mixed up with certified drinking water supplies. *(Show purple pipe photo from brochure.)*

Using reclaimed water can replace some water now being drawn from local rivers and aquifers. Further, the state Departments of Ecology and Natural Resources have encouraged King County to look for opportunities to use this valuable resource, rather than sending all of it to Puget Sound.

Additional Quotes from Focus Group Participants

From the public and agricultural interest sessions

Environmental:

- With the increase in awareness of green and the push to get on board with that, I think a lot of people in Seattle are forward in that industry.

Population growth/future usefulness to region

- Having grown up in the desert climate for more than 20 years, when you really have a shortage of water, it would be nice to have a source that could ease the pressure off of our clean water source for our secondary uses like watering parks.

How to market it/public perception of reclaimed water:

- Whole this is about getting the baseline information out there and then if people need more info, be sure to provide a place where they can go to get it.

- Since King County is already doing it in several locations, it would help to have testimonials of people who use parks (treated with reclaimed water). 'I've played in the park and taken my kids and pets to the park and I am healthy.'

- The fact that California is using it; that speaks volumes. It does to me.

- From a farmer: If my customers won't touch my lettuce, it is a pretty easy decision.

- If there was a problem with reclaimed water, we would have heard about it by now.

Educate through children/schools:

- I think it needs to start in grade school. Educate them and they in turn will, if nothing else, create an interest with their parents. Kids tend to talk and share about their day.

- Getting the word out to schools. They all have to learn about water cycle. Incorporate it into the education so it becomes routine to the kids.

Cost:

- As a taxpayer, I'd be concerned about the cost. If I have to pay more to have reclaimed water, I might think about it differently.

- Is it really a cost-effective program or is it something we're doing to say we're being environmentally friendly?

- From a farmer: I'd want to know what's the difference. What's the difference between the cost of reclaimed water versus what I pay for well water?

Concerns:

- From a farmer: Does the County take on any responsibility for any of the things that might happen with the water?

Who would you trust to spread info about reclaimed water:

- Someone who is independent and who has more of the consumer's interest at heart.
- I would trust an independent third party or a governing body like the EPA

Possible usages of reclaimed water

- To me it almost seems like the focus should initially be on ornamental usage, non-edible usages. There are an awful lot of golf courses and they all use municipal water that could be better served to the public. It seems like, why don't we take care of those needs first where probably the money exists…and where everyone would buy off on it a lot quicker. Then you could try putting it on lettuce fields once you establish a track record locally. Then it would be easier to introduce it into the farming scene.

From the business group session

Benefit for business

- Economic benefit for horticultural business might be most strongly found in the fact that water supply would be consistent and there wouldn't be ups and downs when there is a drought concern or when the supply is low…when the water supply is not considered adequate, it disrupts businesses so having steady supply is valuable.

Concerns

- The big issue is that they do not have a delivery system for it. How do you deliver reclaimed water to its usage point?

- Businesses have concern recently about materials not taken out of the water in treatment…what is not removed in the process and its impacts on the ecosystem in essence. Golf courses are considered a great target for grey water or purple pipe water and they have found in Oregon apparently that water has pharmaceuticals in it that were not removed during treatment. Businesses know about this and are concerned about this.

Who would use it

- Large water users who could in some way benefit would be the first users in terms of usages of supply and cost.

Media

- The media does have a big spin on things.

Cost

- It should be the same or less. It is not potable. You've narrowed its usages down. With a higher quality, you can charge a higher price. Lower quality, lower price.

What would you need in order to use this or promote reclaimed water? What source would need to provide this?

- Out of state. UW and Oregon collaborate (research could come from a University)

- I want to know testing continues.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	**Projected Use**			**Benefits**	**Drawbacks**	**Drivers**							
2	5 years	10 years	30 years			*Conservation Goals*	*Industry*	*Instream Flows*	*Source Exchange*	*Irrigation*	*Sustainability*	*Wetlands Migration*	*Water Supply*
3													
4	none	regionally, not in district	regionally; district dependent on facility location/costs	not adverse to RW but want satellite plants instead of BW	building purple pipe throughout KC not feasible	toilet rebates popular; can meet goals w/o RW	local industry; business park	no	no	no	no	n/a	no; in good shape
5	maybe 5-7 years	continue to use	continue to use	conservation, upstream flows, wetlands mitigation	EDCs (not enough info) costs but quantitative offset	top priority	waiting on WA regulations	another top priority	none	possibly parks	possibly	yes	development a factor
6	none	wait and see	for land use	increase water supply if used with satellite plants	EDCs, cost-benefit; duplicating transmission lines	impact on single-family irrigators	golf course, small use in parks	possibly but concerns	possible with more information	might mandate for new golf courses	premature to consider for environ	not aware of any	potential for aquifer recharge
7	current plans	increase as able	likely regional needs for RW	replaces potable supplies	cost; building infrastructure to connect to system	yes	yes	no	no	yes	yes	yes	eventually; not currently
8	none	none	maybe for parks or center medians	would save Snow Pack	smell, public perception	wait and see what other jurisdictions are deciding	none; no need in small jurisdiction	no	no	Maybe Parks	wouldn't affect goals	no	supply
9	none	enough time to implement	wants RW now; is advocate for use	keeps discharge out of streams; irrigation use	as potable rates increase RW use up if fiscally sound	could cut back on potable if used RW	process water	meet instream flows through SPU	same as instream flows	golf courses but too $ to pump uphill	goals are informed by SPU direction	future issue	growth, climate change and water rights
10	none	none	regionally	reliability, green power; asset for irrigation, industrial supply	how to sell to public aware of EDCs; high cost	updating Comp Plan	no	if high enough water quality	no	yes	n/a	n/a	growth a factor
11	too soon	depends on cost	yes if scalping or main distributed	offset peak demands of outdoor watering	sees as "treated sewage" against use near children	reduce peak flows	timing for RW use re: land use	no	no	outdoor watering	could help meet council goals	no	no
12	too soon	yes; new source	need re: climate impacts, development	reliable; replaces freshwater; Master Plan will explore	EDCs and other unknowns; not enough research	yes	industrial park could use ASAP	no	no	RW replace freshwater supply	RW not in current goals yet	exploring RW use	current & future growth depletion
13	none	none	regional systems; replace existing pipe w/purple pipe	if using RW increases potable supply want green credits	EDCs; pesticide use by farmers; raises river temp	goals met with low impact development	no	no	worry about RW raising water temp	golf courses but too $ to pump uphill	no	no	yes; growth built out might need RW
14	none	none	maybe regionally if cost-effective source	eliminates need for supplemental source	cost ratepayers too much upfront	doesn't fit with current goals	none	none	none	no large irrigators	no	none	not applicable to our needs
15	none	none	aquifer recharge if legal	"perceived" env/ecological benefits	cost, quality, EDCs	follows SPU direction	none	no	no	none	not included in goals	no	ludicrous to doubt SPU's supply
16	none	small	5-10 mgd	none	cost, people won't support; no "green ethic" in Seattle	COST (x 3)	if less costly than potable	n/a	no	most likely use	what does that word mean?	n/a	no
17	not feasible	close to source	regionally in a huge way	environmental benefits should be priority with all	high costs to convey from plant (located too far away)	want it to meet peak demands	uses by major industry	Maplewood & Cedar River	no	most problematic demand	no	future issue	future issue; know it's coming
18	none	small if cost-effective	regionally but skimming facility best	frees up drinking water	cost; don't want to see used for aquifer recharge	yes	no except for gravel pit	no	mitigation but KC closed basin	possible	no	haven't explored	no; part of Cascade Water Alliance
19	little to none	very little	SPU has water for 60 yrs; won't consider for 30 - 40	very few current benefits	extremely high costs; EDCs	perhaps but not for long time	not a current driver	ultimately possible	not a driver	not a driver	far from clear if RW would do this	not a driver	improving Puget Sound water quality is a driver
20	exploring for long time	Comp Plan directs use	plan to operate skimming plants	stretches water supply; good quality effluent w/high nutrients	EDCs, lost revenues; higher fees for users	yes; Comp Plan explored using RW to meet goals	none	worried about EDCs	EDCs cause worry	yes (but none given)	yes	no	water supply fine; RW is beneficial
21	identified use sites	always look for new opps	used significantly throughout region	quality nutrients, "right" use of resource; high green ethic		yes	yes	no	no	yes	yes	no	saves supply whether need is present or not
22	none	definitely	expect high use regionally	protects potable/drinking water supply	EDCs; cost	depends on how future events unfold	possible	n/a	n/a	yes	yes	n/a	good sense to protect supply

	N	O	P	Q	R	S	T	U
1		**Factors**					**Barriers to Public Acceptance**	**Replace / Supplement Existing Supplies**
2	*Other*	*Economics*	*Environment*	*Water Quality*	*Social Factors*	*Other*		
3								
4	watching Woodinville's project for outcomes	#1 factor in making decision	no	no	no		yes; cost, EDCs (people already have knowledge)	can't access infrastructure without KC subsidy
5	city might have differing views about environmental benefits	highest concern	opportunity to support Environmental Plan	want to maintain current high quality	population and land use mitigation	want scalping plant option & backbone from south plant	EDCs, negative public perception due to lack of education	golf course, industrial plant
6	not enough known about RW & climate change	highest concern/most influential factor	would consider	consider but hard to convince public	player down the road; RW technology may improve making it cheaper to use	Critical Areas Ordinance meets stewardship needs	EDCs, health implications, cost, water quality, does it help environment?	golf course has own supply
7	KC in negotiations with city for large-scale RW use	benefits could mitigate costs	yes	yes	will review public survey information to identify drivers	abandoned city water lines as potential conduits	will coordinate with city for public outreach campaign	none stated
8	none given	if saved $ on potable	potentially	public perception would drive	anticipating more land tagged for parks development		negative perception; costs for re-plumbing; long-term costs a factor for small cities	no industry; maybe a cemetery or a small lake
9	look at stranded costs, make it cost-effective	wish this wasn't a high factor but it is	Storage augments potable; rates rise w/fixed costs	don't hide data from the public	population growth and land use likely factors	would like to see RW use progress	health issues; financial feasibility; perceived water rich environment	golf course, industrial plant, city parks
10	RW could stretch limited water rights; increase # of customers	number one priority	especially use for benefit to fish, wetlands	must ensure water quality	population growth	follow Rules Advisory Committee	trust; EDCs; water quality; liability; selling against "water rich" perception	
11	none	want cost benefit <1; with environmental costs	evaluate quantifiable benefits	acceptance critical thru public ed	no	determine who owns sewer prior to RW use	cost (include potable water offset; promote environmental stewardship	peak jumps; parks; some parks have own wells
12	need skimming plants for most beneficial use	understand significant start up costs	env benefits; improves salmon spawning	water quality currently not issue;	growth/development major concern;	imminent use for aquifer recharge, wells, wetlands	educate & inform public; dwindling freshwater supply will help convince	with RW use domestic water may last "forever"
13	might lay purple pipe if replace water pipes	scalping plants better approach than BW	no	no	no	yes	energy issues w/pumping from BW; need small scalping plants	service area has own water
14	none given	first priority	yes, if proven that it protects fish	yes, if promotes water quality	no; long-term supply contracts fix quantity & will cover potential growth	if legal mandate of course would use RW	economics #1 barrier; People have psychological aversion to idea of RW	none; golf courses have own water rights
15	if climate change driver would look at de-sal first	cost #1 driver	not convinced RW benefits environment; may harm	SPU water high quality; don't need RW	factors are figured into SPU long term outlook		EDCs, perception of water quality; aesthetics (ick factor)	none
16	none given	cost is only consideration	no	no	no data proving climate change; man didn't cause, doesn't have to fix it		soil better for absorbing EDCs; should not discharge RW	none
17	explore geographically advantageous distribution lines	yes but development will push use	absolute priority	want highest quality RW, Class A (?)	can overcome public barriers through education and demonstrated need	want to use; prior plans not implemented	marketplace won't accept cost until driven to do so; EDCs, who pays for monitoring	irrigation of large recreation facility
18	would consider RW from reverse osmosis	primary	maybe	could reduce impacts to GW quality	acceptance by public a huge obstacle	parents unglued when mention use for playgrounds	evidence of safety	small -- maybe for irrigation if need shown
19	SPU will continue to keep open mind toward RW use	extremely more expensive than potable	lack of proven environmental benefits	unknown impacts of EDCs	population growth not driver; additional water supply not needed		proven water supply need; resolve public perception of RW	golf courses, cemeteries, industrial process users
20		will pay if owns own sewage	EDC research must prove benefit	existing water supply high quality	RW never cheaper than potable; it's a valuable resource	observing Carnation permitting; WA lagging in clear-cut regulations	have to "stage" introduction and don't make them pay all at once or will have revolt	jr/sr. schools; city parks
21	believes KC should already be supplying RW	always a consideration but benefits outweigh	RW use supports green ethic	ecological and health benefits important	land use; provide quality recreation for residents;		public education, information promotes acceptance	yes, though mainly used as green option
22	satellite plants good idea	main driver	will become more important	yes	must convince public		usual public acceptance barriers	potentially

	V	W	X	Y	Z
1	**Current potable users as potential RW users**	**Challenges to Use**	**Anyone else we should meet with?**	**Anything else we should ask?**	**Other Comments**
2					
3					
4	qualified yes; golf course but only if package plant	public perception; cost			
5	large scale recreation	cost; infrastructure; ability to site scalping plant	MasterBuilders	can't think of any	Need mass media education campaign; explore hauling RW to sites before extending infrastructure
6	golf course	cost, no infrastructure; public perception	potential end users	drivers not vetted; survey with valid questions	Saw Solid Waste skew survey questions to get what they wanted; afraid RW team will do the same
7	industrial, business park, wetlands	connecting to distribution line; funding (will seek grants, other money w/KC)	presentation to city council		explore RW "filling station"
8	might replace golf course drawing from lake	small jurisdiction, mostly residential; not likely to need RW	city gov't, schools	how it's paid for -- will state contribute?	familiar from living in other state; totally support RW use, just not applicable to small town far from source
9	wells; lake pumping for lawns, boat lifts	debate over who pays and who owns the sewage	none	Why those who won't benefit paying for BW	KC not drinking another system's wastewater; BW fantastic idea but cost is prohibitive
10	golf course, industry	district plan can't use sewage; would have to be pumped for most non-potable users	exec should meet w/council, exec	how to keep cheap with liability; Codes	people in CV region can dig exempt wells; abuse of this permission leading to increased aquifer depletion
11	city parks; industrial; some environmental mitigation	see "barriers" column	new high school personnel;	Show public full costs; prove env benefits	airtight, unbiased feasibility study; exec summary to their Council; need enterprise fund (separate from agencies)
12	self-supply golf club may consider; future city water needs	public worried about exposure; will back RW when domestic supplies lessen	can't think of any	don't extend costs 20 yrs will box in new choices	knows must share debt; on-site storage tanks at industrial park; can flush discharge to wetland, re-fill
13	golf course, a few along the lake and valley	EDCs, cost; KC not reaching out to rural area customers; seen as heavy handed	exec-to-exec discussions	explore feasibility of small scalping plants	wells/groundwater users using district system as redeveloped; no feasibility study on BW; who pays?
14	all have enough water already	irrigation requires new costly delivery system; not feasible unless cost-effective	talk to major irrigators	who will pay to make it cost-effective?	
15	possibly a cemetery	public perception	city	would you use by choice	KC ahead of its time promoting RW; DNRP/WTD responding to political pressure
16	golf course will be served by other entity	explain to public the true cost of RW (don't ask if willing to pay extra on sewer bill)	sewer rate payers	explain why we're paying for BW	RW too expensive so will encourage illegal pumping from rivers
17	city park next to high volume development; industrial uses	building infrastructure; plant location too far away; other logistics	council & public officials, industry	use for fire response;	Need to evaluate potential customers every 6 yrs. Could RW ever be cheaper than potable?
18	carwashes golf courses	who pays? Cities think it should be free; it's a sewer cost;	environmental groups	determine economics of making it work	BW too costly to transmit water; decentralized skimming plants cost effective
19	some golf courses, cemeteries; industrial	cost; lack of infrastructure; lack of proven need; negative public perception	potential users & retail customers	what would RW use solve? What benefits?	much more cost-effective and efficient ways to reach same and more results as RW
20	possibly some private corporations	securing funding for yet another utility; infrastructure; fight for sewage ownership	good that you're talking to utilities	why KC is pushing RW	used in other parts of country; KC should not own sewage
21		agrees 100% with using			ready to contract to use RW for irrigation
22		public perceptions/acceptance	agriculture/farmers	explore satellite plants	explore decentralized RW production