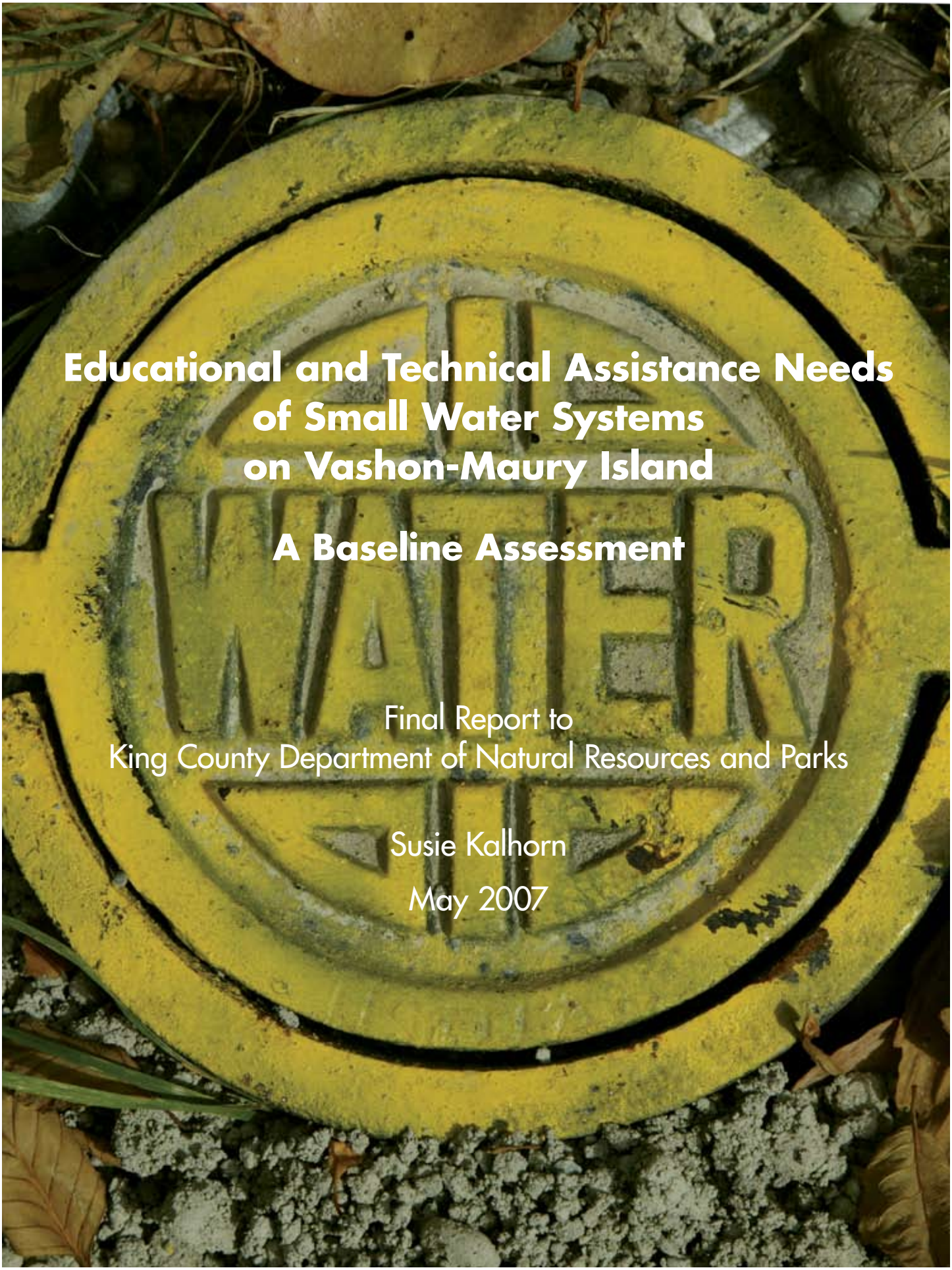

Educational and Technical Assistance Needs of Small Water Systems on Vashon-Maury Island

A Baseline Assessment

Final Report to
King County Department of Natural Resources and Parks

Susie Kalhorn

May 2007

Design by Novak Creative • Photos by Charles Backus Documentary Photography

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Educational and Technical Assistance Needs of Small Water Systems on Vashon-Maury Island

A Baseline Assessment

Key Findings and Recommendations

Twenty public water systems on Vashon-Maury Island were surveyed to assess their educational and technical assistance needs and to provide them with information on the Island's aquifer characteristics, water balance modeling efforts, and water quality data. This project is funded by the Washington State Department of Ecology and is administered by King County Department of Natural Resources and Parks for the Vashon-Maury Island Groundwater Protection Committee.

The educational and technical assistance needs of Group A and Group B water systems are fundamentally different because Group A systems rely on licensed water system operators to ensure their system is in compliance with regulatory requirements and water is reliably distributed to users, while most Group B systems are managed by volunteers. Licensed operators are required by the state Department of Health to take continuing education courses to maintain their operator's license. The educational and technical assistance needs listed below are most applicable for volunteer members of Board of Directors and volunteer water system managers.

The primary technical assistance needs identified by volunteer Group B water system purveyors are:

- Understanding the regulatory responsibilities of a water purveyor and legal issues of working with neighbors;
- Routine maintenance and monitoring needs of their system;
- Identifying strategies to protect their water source.

The secondary needs identified are:

- Understanding island hydrology;
- Understanding water quality tests and lab results;
- Strategies for water conservation.

The primary technical assistance needs identified by Group A water system purveyors are:

- Strategies to protect their water source;
- Regulatory responsibilities of water purveyors with an emphasis on legal mechanisms to protect their water sources.

The secondary needs identified are:

- Understanding island hydrology;
- Understanding water quality tests.

Educational and Technical Assistance Venues and Format

The Vashon-Maury Island Groundwater Protection Committee should consider sponsoring technical assistance and educational workshops that meet the stated needs of Island water purveyors. The preferred educational formats identified are evening or weekend hands-on workshops taught by practitioners. Listed below are recommended educational providers, venues, and formats.

For Group A and Group B water system Board of Directors:

- Contract with Evergreen Rural Water of Washington or equivalent educational group to provide a workshop focused on the roles and responsibilities of water system Board members.

For Group B and small Group A water purveyors and interested Board members:

- Contract with Evergreen Rural Water of Washington and/or local licensed Group A water system operators to provide a series of hands-on Saturday workshops and field trips such as:
  - Water system components, operation, and routine maintenance.
  - Water quality tests, common sources of contamination, and recommended solutions.
  - Strategies to protect water sources, including obtaining covenants.
  - Developing bylaws and policies for a small water system.
- Work with the Vashon-Maury Island Water Purveyor's Committee to develop an electronic newsletter to help keep Island water purveyors informed about regulatory changes, scientific findings, technological alternatives, and places to go for assistance.

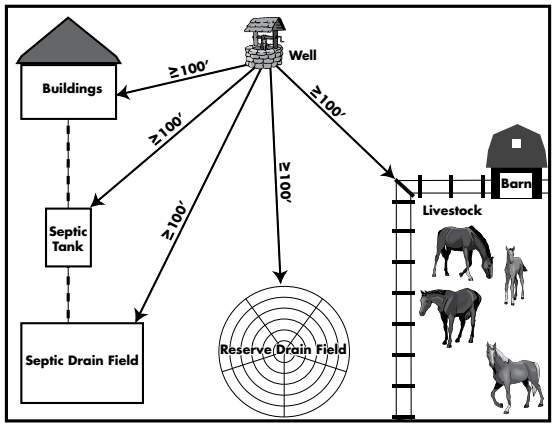
For Group B water purveyors:

- Seattle/King County Environmental Health should provide Group B water systems annual notification on their water quality testing requirements and other pertinent information.

For livestock owners:

Both Group B and Group A water systems identified source protection as a major issue and the proximity of livestock to their water source was a common concern.

- Contract with Horses for Clean Water, the King Conservation District and/or WSU Cooperative Extension to provide a workshop series and farm tours on:
  - Pasture management.
  - Mud management.
  - Manure management.



Resources

Evergreen Rural Water of Washington (www.erwow.org)

Horses for Clean Water (www.horsesforcleanwater.com)

King Conservation District (www.kingcd.org)

WSU Cooperative Extension (http://king.wsu.edu/foodandfarms/)

Licensed Water System Operators on Vashon-Maury Island

(From Washington State Department of Health, May 2007)

ID#	First Name	Last Name
004199	Mark	Tuel
005538	Doug	Dolstad
007429	Robert	Seibold
007582	Harley	Miedema
007683	Derrick	Reed
008956	Mark	Salkind
010153	Keith	Kassik
010648	Jerry	Tonkin
010794	Armin	Wahanik
011223	Gerald	Nopp
011237	Evan	Simmons
011357	Harold	Perry Jr.
011206	Jeffery	Lakin

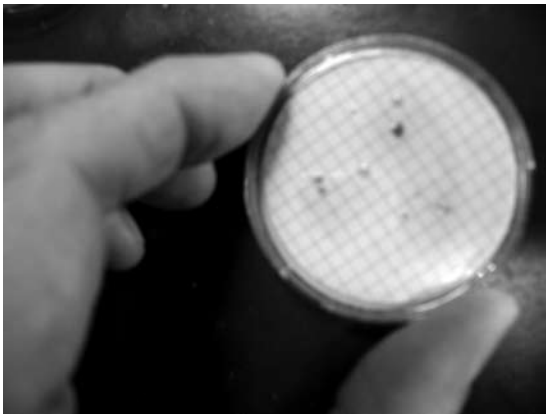
Background

The intent of this project was to both assess the educational and technical assistance needs of water purveyors on Vashon-Maury Island and to use the interview as a vehicle to provide information to the water systems about recent research regarding the Island's aquifer characteristics, water balance modeling, and water quality monitoring. Public water systems within a specific target area were surveyed regarding their educational efforts, water conservation programs, source protection plans, outreach to exempt well owners in their service area, technical assistance needs and monitoring programs. This project is funded by the Washington State Department of Ecology and is administered by King County Department of Natural Resources and Parks for the Vashon-Maury Island Groundwater Protection Committee.

The *Vashon-Maury Island Watershed Plan* reported that there were 22 Group A systems and 106 Group B systems on Vashon-Maury Island in 2005. Group B water systems generally serve two to fourteen households, while Group A water systems serve fifteen or more households. The Washington State Department of Health (WaDOH) provides regulatory oversight of the Group A systems, while the Group B systems report to the Seattle/King County Department of Public Health (KCHealth).

Profiles of Water Systems Interviewed

Information for this report was garnered during interviews with representatives of thirteen Group B water systems and seven Group A water systems on Vashon-Maury Island held in December 2006 through February 2007. Using WaDOH records, I identified 22 Group B water systems and one Group A water system within the primary focus area which extends west of Burton, south to Shawnee, and north to Lisabuela. This area was selected because of the apparent clustering of nitrate levels above 2.5 milligrams per liter and the fact that it encompasses private wells, small Group B systems, and the shallow water source for a relatively large Group A system serving about 400 households (See Attachments 1 and 2.) I was able to secure interviews with 15 of the Group B systems, but representatives of two of these systems said that their wells were no longer operating as public systems so information was not collected from them. I also interviewed an owner of the only Group A system within this area.



In addition, I interviewed representatives from five Group A systems that were identified with water sources that may be vulnerable to contamination because they utilize shallow spring sources and do not control much land adjacent to these sources (see Attachment 1). For one of these systems, I collected input only on their technical assistance and educational needs due to the Board of Directors' time constraints. I interviewed an additional Group A system on Maury Island because it has elevated nitrates in its well and has a service area in close proximity to one of the "vulnerable" water sources. I identified four more Group B systems close to these Group A water sources, but they did not respond to my attempts to schedule interviews.

Although I was able to meet with all seven Group A systems contacted, the Group B systems were less responsive. Representatives from two systems declined to be interviewed. One system preferred not to be interviewed. Seven systems were contacted at least three times without response and one system had out-of-date contact information and a disconnected phone. Those who declined to be interviewed were concerned about possible regulatory implications; one person specifically felt the GWPC had a no-growth agenda, while the other felt the questionnaire would lead to further restrictions on livestock.

The Group B systems interviewed range from serving one household to serving nine households. Seven of the thirteen serve only two homes. All of the Group B systems utilize wells as their water source ranging from 60 to 281 feet deep and averaging 107 feet deep. The Group A systems interviewed serve 22 to 415 households. Two of these systems used exclusively

wells, three systems used spring water, and two utilized both well water and spring water.

The needs of the Group B systems are fundamentally different than that of the larger Group A water systems because the Group A systems employ licensed operators to manage their systems. Most of the Group B systems are managed and operated by volunteer users of the system.

Summary of Group B Results

Source Protection

The Group B wells are generally in household yards surrounded by grass, near gardens, orchards, pastures, woods, parking areas and driveways. Seven of the systems indicated they were concerned about nearby activities that might affect their water quality or quantity. The most common concern is the possible effect livestock (cattle, horses, chickens, turkeys and sheep were mentioned) might have on water quality. Irrigation and fertilization practices of Misty Isle farms are also a concern. Hazardous materials associated with a recently discovered methamphetamine lab, haphazard storage of solvents at a neighbor's wood shop, and transport of oil and gas were also noted. Two people wondered whether neighbors, uphill from their wells, had functioning septic systems.

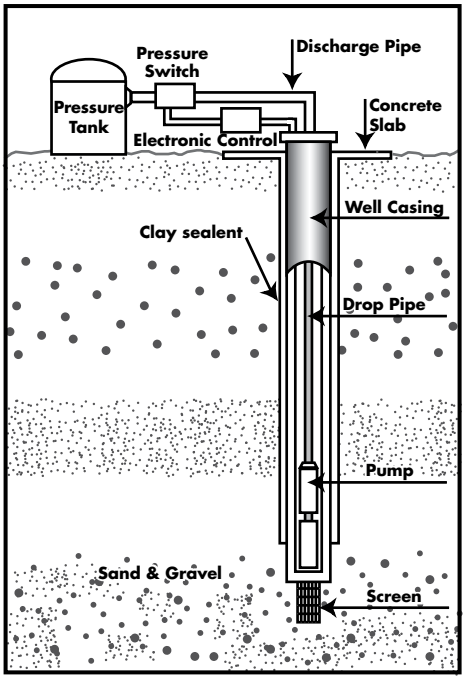
Monitoring

All of the systems test their water for coliform bacteria and nitrates. King County requires that Group B systems test for nitrates every three years and bacteria on an annual basis. Four systems indicated that they have tested positive for bacteria, but the contamination problems were resolved using the County's protocols or, in one case, by digging a new well. Seven of the systems indicated they would like additional water quality testing to be provided by the King County Groundwater Program as part of this project funded by the state Department of Ecology.

For the most part, Group B water systems do not monitor their water output or consumption. Only one of the thirteen systems interviewed has a source meter. Another system has individual service meters at each household, while a third purveyor keeps track of the electricity used by the well pump and notes that the kilowatt-hours used has not varied much over the past ten years. Five of the purveyors said they would like to install source meters.

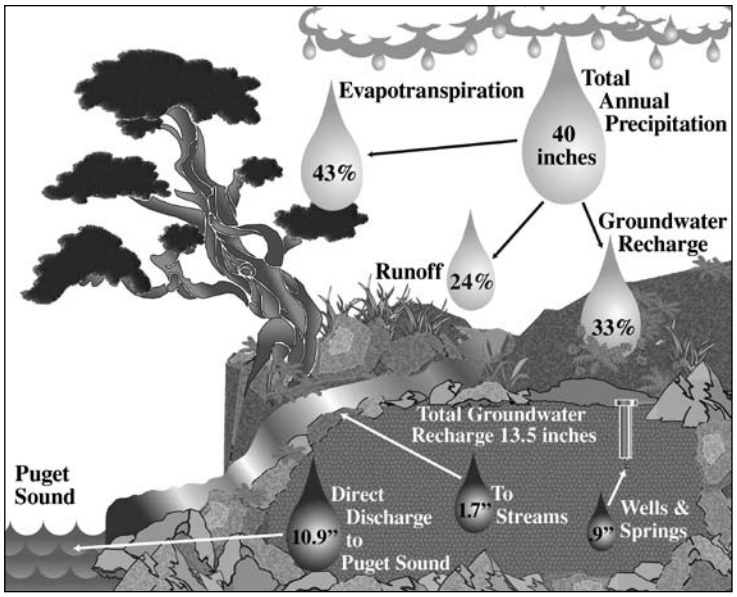
Water Conservation

Two of the systems indicated that they have experienced water shortages when a pipe has broken and during summer months when people irrigate heavily. These problems trigger system-wide water conservation tactics until the problem is remedied. One purveyor thought that water conservation should be a focus of educational programs because more and more parcels are being landscaped, requiring more water. Some purveyors were interested in learning about rain water collection systems, grey water use, and wetland or "natural" systems for wastewater disposal.



Educational Outreach

Group B water purveyors tend to discuss ways to protect the system's water quality and quantity with users when the need arises, such as: conserving water when the power goes out; assessing possible contamination from a nearby methamphetamine laboratory; and the possibility that new-comers will unknowingly overuse water. Two of the thirteen systems have approached neighbors not served by the system about landuse practices they thought could contaminate their water



source(s). There is no focused effort to provide information to adjacent exempt well owners.

Educational and Technical Assistance Needs

1. Understanding the *regulatory responsibilities of a water purveyor* was cited by eight systems as a need. These small systems need help in knowing what their legal responsibilities are and how to comply. They would like to know how to legally deal with their neighbors who do not pay their water bills, leave their water running, or fail to agree on preventative maintenance. They need help in developing policies and procedures and, for the larger systems, rate structures. Some would like to know how to approach neighbors to get a restrictive covenant around their well (see 3 below).

2. Seven of the systems would like education and technical assistance on *routine maintenance and monitoring of their system*. They would like an overview of the system components, how they work, and routine maintenance that they should perform themselves. One couple noted they are comfortable with the mechanics of the system, but would like greater insight on water quality monitoring.

3. Six systems indicated they would like help on identifying *strategies to protect their water source such as "wellhead protection programs."* Most of the systems do not have protective covenants around their wells and wonder how they might approach neighbors to get a restrictive covenant recorded.

4. Five systems noted education or technical assistance would be helpful on the following three topics:

Understanding island hydrology

Understanding water quality tests and lab results

Strategies for water conservation

In my conversations, it became clear that many people do not really understand what constitutes our Island aquifers. People envision underground lakes or rivers as opposed to water filling up the space between grains of sand and gravel.

Educational Format

A series of evening or Saturday workshops taught by practitioners was the suggested educational format. The educators could be local licensed operators or an entity like Evergreen Rural Water of Washington. The Group B water purveyors were generally less comfortable having regulators provide technical assistance or education.

Regulatory Oversight

The Group B water systems would like to be better informed about their regulatory responsibilities, particularly with regard to water quality testing. One purveyor suggested that the county mail out an annual check list, similar to what the state Department of Health does for Group A systems, which details:

What do I need to do?

How and when do I need to do it?

How much do I need to pay?

Summary of Group A Results

Source Protection

Most of the Group A systems interviewed were chosen in part because they have spring water sources that may be vulnerable to contamination. Five of the seven systems I spoke with capture shallow groundwater ranging from 2-20 feet deep using well points, Roman siphons, or shallow wells. Two of these systems also have deep wells (over 350 feet deep) which are used as secondary sources to the spring water. Two systems exclusively use well water (70 feet and 125 feet.)

The Group A systems control surprisingly little property "upstream" from their shallow groundwater sources. Two systems do not own the land where their well points and Roman siphons reside; one system owns about 3.2 acres, but the well points are situated close to the "upstream" neighbors' property lines; and the other two systems own 4.5 acres and 18 acres, respectively. None of the systems interviewed indicated that they had protective covenants around their water sources.

All of the systems indicated they had concerns about nearby activities. These include: proposed mining activities; development and the number of private wells being drilled in their service area; septic systems and pesticides the neighbors might be using; Misty Isle's activities and the increase in nitrates; the use of a shallow aquifer which is dependable, but vulnerable to contamination; and the threat of surface water contamination in shallow well points because they have no control of what people do up-stream.

Monitoring

All of the Group A systems indicated they test water quality as prescribed by WaDOH. Some systems go beyond what is required. Most of the systems indicated they have had positive coliform readings in the past and one system noted they had a positive e-coli in their well water so they now chlorinate. Testing requirements for Group A systems are much more extensive than that of Group B systems.

All of the Group A systems monitor their water output. One system does not have a source meter so the system operator measures the total flow once per year with a bucket and a timer. Source productivity does not seem to have decreased over time, except for in well points which get clogged with sediment.

Water Conservation

Three of the six systems interviewed say that they do experience water shortages and an additional system said the problem was solved when they dug a well in 1992 to augment their water supply from well points. One system manager said that the shortages come under extreme conditions such as excessive usage, not because wells are drying up. Frozen soils disrupt flow to the Roman siphons causing occasional shortages in the winter and another system is having more frequent, inexplicable shortages (although the manager indicated there may be leaks in the distribution system.) Some of the Group A systems have adopted graduated rate structures to encourage water conservation. One system asserted that "we have succeeded too well. Our cash flow is tight because people are conserving." Another system is not concerned about conservation because "at this point, we have all sorts of water."

Educational Outreach

The Group A water systems are required to send out consumer confidence reports (CCR) on an annual basis to their customers. These reports must, among other things, explain water quality results and detail any violations of state standards and how the problem was, or will be, rectified. The CCR is one of the primary tools the water systems use to communicate with their customers on ways to protect water quality and quantity. Some of them include educational information on topics like backflow prevention or water friendly gardening practices, for example. One system, until recently, has mailed out a monthly newsletter. Five of the systems interviewed are non-profit organizations co-owned by the members and have annual meetings, although membership turn-out tends to be low. Outreach to non-users of the system, including exempt well-owners, is not common, but does occur when there is a landuse activity of concern.

Education and Technical Assistance Needs

There was not unanimity on the education or technical assistance needs of the Group A water systems. The interviewees were sometimes speaking about their own needs, the needs of the Board of Directors, or the needs of the users at large. The general tenor was that water users are not particularly interested about their water system unless there is a problem.

1. Four systems indicated that information on *strategies to protect your water source like "wellhead protection programs"*

was of interest. One representative noted that he was aware of the strategies, but had no power to implement them. Another system would like help with draft language for covenants and is concerned about horses near their spring. Two systems addressed the role that the county plays in source protection through permitting: one wonders how to make sure the spring is flagged at the County as a "Public Water Source," while another feels that the County should be the steward of drinking water protection via the Department of Development and Environmental Services (DDES) by keeping development away from public water sources. One suggestion was to require upgraded septic systems on properties near a public water supply. Two systems noted they were concerned about potential effects of the proposed mining by Glacier NW and one suggested that the Groundwater Protection Committee ought to take action against Glacier's proposal.

2. Four of the water systems indicated that they (the Board of Directors or owners) would like a heads-up on changes being contemplated in Olympia on the *regulatory responsibilities of water purveyors*. They rely on their licensed operator to keep up to speed with regulations, but need to know about potential changes for planning purposes. Several systems alluded to the need for legal assistance on such topics as: water rights, bylaws, policies and procedures, liability protection for Board members, and drafting covenants, etc. One representative suggested having an attorney available for consultation that could be shared by all of the systems.

3. Three of the systems indicated that technical assistance on *understanding island hydrology* and *understanding water quality tests and lab results* would be useful.

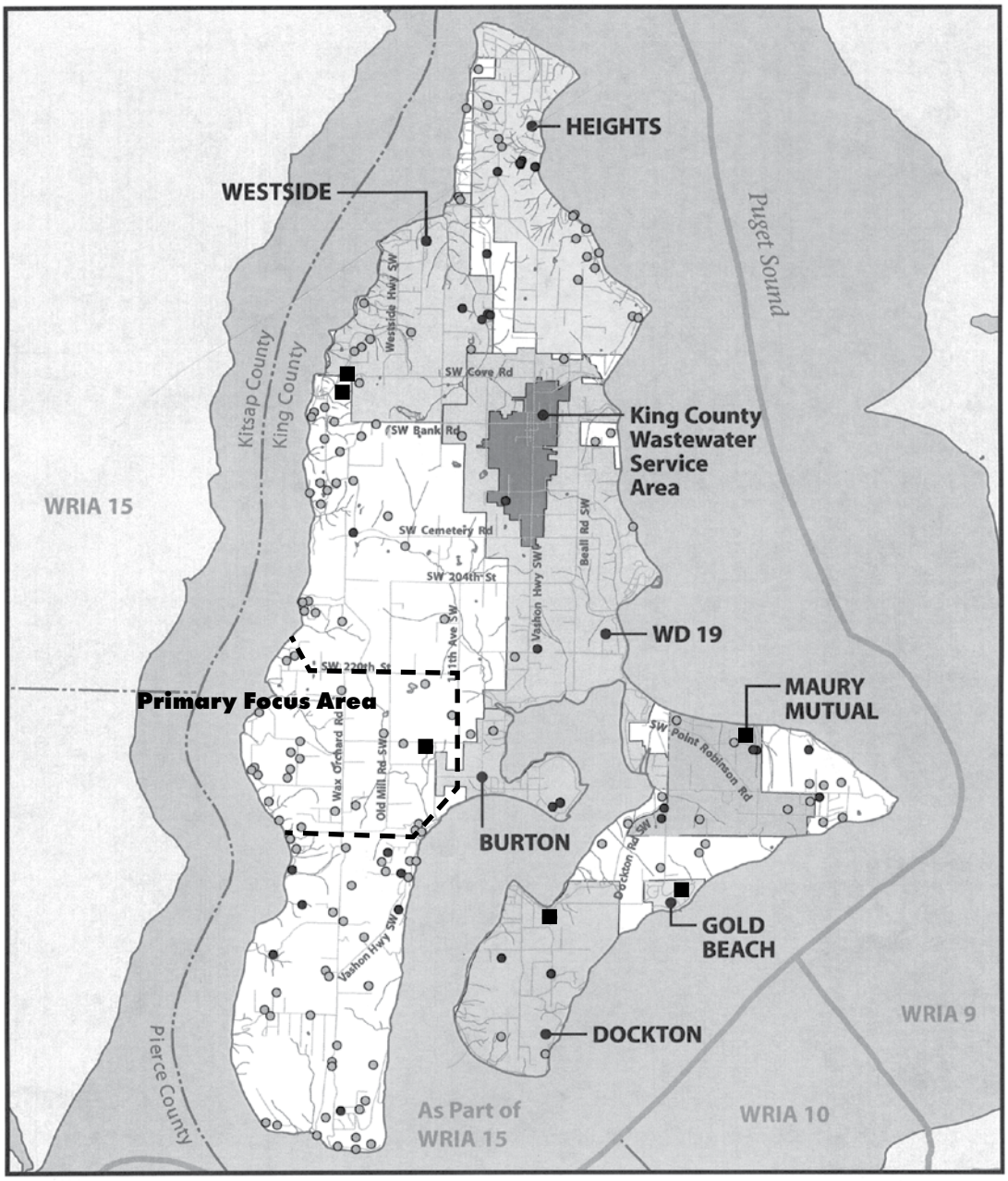
Educational Format

The Group A systems are not interested in going to meetings nor do they think it is necessary to have one-on-one consultations, like this interview. One noted that the water system operators and managers need the technical information that is required for licensing, while the Board members need an overview like Evergreen Rural Water of Washington's class for Water System Board members. A follow-up suggestion was to develop a newsletter for Island purveyors that summarizes recent and upcoming regulatory changes, new technological options, and where to go to get assistance.

Attachments

Attachment #1

Educational Focus Area



Public Water Systems of Vashon-Maury Island

- Group A Sources
- Group B Sources
- Primary Focus Area
- Vulnerable water sources
- King County Wastewater Service Area
- WRIA Boundary
- Roads

N

0 1 2 Miles

May 2005

King County

Department of Natural Resources and Parks
Water and Land Resources Division

The information included on this map has been compiled by staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.

Data Sources:
King County GIS coverages
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Attachment #2

Focus Area Identification and Rationale

From: Protecting Vashon-Maury Island's Ground and Sound Water
PSAT Contract #PO6-11
May 26, 2006

Background

Reviewers of the original PIE proposal submitted to the Puget Sound Action Team (PSAT) suggested that the Vashon-Maury Island Groundwater Protection Committee conduct a more targeted education effort as opposed to attempting to reach all Islanders. Both Donna Klemka (GWAC chair) and Susie Kalhorn (contractor) agreed to this concept and the identification of the target areas and audiences is identified in the Personal Services Contract between PSAT and Kalhorn Consulting as a principal task under Deliverable #1.

Criteria

We started our Focus Area identification task by developing some working criteria with caveats:

1. Are there elevated nitrates in the drinking water source(s)?
   Note: What do we consider elevated?
2. Does the source with elevated nitrates serve a lot of people?
   Note: What is considered a "lot" of people? Because our mandate in the Watershed Plan is to work with exempt well users, we should have exempt wells in the focus areas, too.
3. Is the water source vulnerable to contamination?

   a. source is a shallow well or spring;

   b. surrounding landuse is developed with relatively dense housing on septics, landscaped yards, livestock, or general lack of buffers protecting water source.

In addition, Susie solicited recommendations from the GWAC, the Vashon-Maury Island Water Purveyors Committee, King County Groundwater Program staff, a WaDOH water quality engineer, three water system managers, and a consulting engineer who contracts with three Island Group A systems

Data Collection

Susie garnered water system and well monitoring data from King County Department of Natural Resources and additional Group B water system data was obtained from Seattle King County Department of Health. Data has been requested from Washington State Department of Health, but it is likely to duplicate material already obtained from King County.

None of the drinking water data shows Nitrate-N surpassing the drinking water standard of 10mg/l. Trend analyses of data from 1990-2004 does show some increase in Nitrate-N in some water systems. The top 15% of the observations are 2.5mg/l and above, with 7.6mg/l representing the highest observation.

Results

Susie plotted the location of samples with Nitrate-N values of greater than or equal to 2.5mg/l (collected within the last 5 years) on a wall-size map of Vashon-Maury Island. Of the 17 points indicating elevated nitrate plotted Island-wide, there appears to be a cluster of five data points with elevated nitrates west of Burton. This data includes water collected from a Group A system (Burton Water Company), three Group B systems, and a private well. Nitrate-N concentrations ranged from 3.2-7.3 mg/l.

Two group A water systems on the north side of Maury Island (Maury Mutual and Luana Beach) have elevated nitrates. The Luana Beach system has sustained elevated nitrates (above 5 mg/l) for at least 15 years. The source of the nitrates is not clear since the area is not highly developed and the well is in a forested ravine. The Luana Beach Water System's engineer theorizes that it may be due to nitrogen fixation by alders.

The Gold Beach water system on the east shore of Maury Island has two wells. One source in particular shows erratic behavior with nitrates fluctuating from less than 1mg/l to over 4 mg/l. The other well shows lower nitrate levels but appears to have seasonal fluctuations.

The remainder of the elevated nitrate data points are scattered throughout the Island.

Focus Area Selection

On May 26, 2006, Susie conferred with Donna Klemka (GWAC Chair), John Gerstle (GWAC past-Chair) and Yvonne Kuperberg (Vashon-Maury Island Community Council Land Use Committee Chair) to review the data and select Focus Areas. Although our educational programs will

be open to all who wish to participate, marketing will be intensified in the Focus Areas and the landowners within these areas comprise our target audience.

The primary Focus Area will be the region west of Burton described above. This area is selected because of the apparent clustering of "elevated" nitrates and the fact that it encompasses private wells, small Group B systems, and the shallow water source (20 foot wells/wellpoints) for a relatively large Group A system serving about 400 households. The area is bordered roughly on the east by 111th Avenue SW; on the north by SW 220th street; on the south by SW 248th street (not a through-road); and on the west by Puget Sound.

Other targeted audiences include landowners living in close proximity to water system sources that are not well buffered. The following systems were identified by a local water system manager as: Maury Mutual's spring, Dockton Water Association's spring, Beulah Park's spring and Cove Beach's spring. We will also focus our attention on Gold Beach because of the relatively dense residential development reliant upon on-site septic systems, the apparent rise in well-water nitrate, and the sandy soils which can readily allow mobility of contaminants.

Attachment #3

Identified Group B Water Systems in the Primary Focus Area or Near Group A Spring Water Sources

PWS Number	Name
01117	WOW
02240	Mayer, F. Community Water System
03308	Baker Water System
03397	Whitmer, D. Water System
04019	Caster Water Association
04207	Gems Water System
04343	Sinner Water System
04353	Misty Isle Water System
04854	Preston/Langton Water System
05159	Stonington Water System
05265	Barron Water System
05807	Vashon Mareview Water System
05815	Calvary Full Gospel Church
07901	Both Water System
09586	Forever Yours Water System
09599	Scott, James C #2
11051	Vornbrock Water System
25765	Deignan Water System
28064	Crecilius Water System
28890	Opelsky Water System
30885	Hansen, A Water System
35366	Jenkins/Root/Miles Water System
52777	Fernheath Water System
53038	Salerno Water System
53051	Waipuka Water System
93900	Wax Orchards Water System

Attachment #4

Identified Group A Water Systems In Educational Focus Areas

PWS Number	Name
06100	Beulah Park Community Water System
09800	Community Water Company, Incorporated
15600	Cove Beach Water System
19550	Dockton Water Association
28350	Gold Beach Water Company, Incorporated
48800*	Luana Water Association
52100	Maury Mutual Water Company

*Luana Water Association was interviewed because of on-going elevated nitrates and the fact that their service area is close to Maury Mutual's. Luana's water source is a 79 foot well.

Attachment #5

Vashon-Maury Island Group B Water System Questionnaire Data Compilation

General Location: 13 Interviews of Group B water systems in Primary Focus Area

People Present:

2 people from one household on a 2 household system.

2 people (the current and future purveyor) representing 2 households on a 9 household systems.

1 person on a system which currently only has one hook-up.

1 person, the designated purveyor, of a two household system.

2 people from one household on a two household system.

2 people from one household, including the purveyor, on a two household system.

1 person from a two household system.

2 people from one household on a 2 household system.

1 person from a 4 household system.

*1 person from a system that currently only has either zero or one hook-up.

2 people from the only household currently hooked-up, on a system with five shares.

1 person from the only household hooked up to a 4-share system and 1 co-owner of a vacant parcel on the system.

1 person representing a system with three households and a cannery, soon to be closed.

1 person on a 1 household system informed me that he had gone to considerable efforts to formally declassify his system from a group B to a private well. No data on this system is included below.

1 person representing a system supplying a non-operational slaughterhouse. The well is no longer in use. It was capped about 4 years ago, but is not decommissioned. No data on this system is included below.

*Interviewee is not sure whether the Group B designation is on the well that serves their current household or is the well they dug on one of two vacant parcels they own across the street. The data reflect the assumption that the Group B well is serving their current occupied household.

System Administration

5a. How many households are served by your water system?

2, 9, 1, 2, 2, 2, 2, 2, 4, 2, 1 (5 shares allocated), 1 (4 shares allocated), 3 and a cannery which is closing.

5b. Can you estimate how many total people rely on your water system?

6-8 people.

Approximately 20, although one household is empty.

2 people on adjoining parcel. The well is on my parcel and serves the adjoining parcel.

3 people.

3+ people, neighbors only use the house on weekends, about 25 weekends/year.

2-7, neighbors are here on a seasonal basis.

1.5 – neighbor's house is empty and daughter is here half the time.

3.

8.

2.

2.

1-2.

5 (and a cannery).

5c. Can you estimate how many livestock rely on this system?

4-5 horses and 4-5 sheep or goats.

N/A Not a question at the time this interview was conducted.

N/A Not a question when this interview took place.

N/A not a question when this interview took place.

0.

0.

0.

0.

0.

0.

0.

0.

0.

6a. Do the households meet to discuss water system management?

Yes.

Yes.

Not yet – it's not really a system yet. I don't know why it comes up as a Group B in the data base. Maybe because it is on my parcel and serves the adjoining parcel.

Not really. The other user doesn't really have much interest. I do it all and charge her 1/4 of my costs. It's cheap.

Yes.

Yes.

No – neighbor is non-cooperative and doesn't live here.

Yes, occasionally.

No, not really.

There is no other household.

No, although a woman just bought the parcel across the street so there will be communication.

I call my neighbor who will be co-owner of a share to a vacant parcel.

No.

6b. If so, how often?

As issues arise. Usually my husband does the maintenance work and we share the costs with the other household.

As needed, less than once/year and to discuss bylaws maybe once/year.

Periodically maybe once/year.

When the neighbors are in the country we meet over a glass of wine. It's very collaborative now that one of the households has withdrawn.

Doesn't happen.

We have met a couple of times over 3 years to develop a written agreement on the water system management and costs.

Only when there is an issue with the well.

Once per year.

7a. Does your water system have a designated purveyor?

Not really, but my husband does what needs to be done.

Yes. It is being transferred to a new person.

Not yet. Owner of adjoining parcel paid to put the systems in – covenant is on both parcels.

Yes. I do it all.

Not to my knowledge, but all of the correspondence from the County goes to _____. (SK Note: one of the people present at the interview)

Yes.

Yes.

Yes.

Yes.

No—I didn't know we were a Group B system.

Yes and it is being transferred to me.

Yes.

Yes.

7b. If not, how do you make sure the system is maintained and in compliance with regulatory requirements?

We don't—we don't know what they are. Only when our neighbor applied to refinance her home was there a requirement to test our water quality.

Not used by more than one household.

The treatment guy comes out every two years. He installed the treatment system. (SK Note: this system has an iron/manganese treatment system.)

Our household takes care of it.

8. How long have you been served by this water system?

10 years.

Current purveyor =13 years and the incoming purveyor = 2 years.

I'm owner of the parcel, but not yet "served" by the system.

Since the 1960s when the house was built. We improved the system in 2004 after we decided to move out here permanently in 2003.

16 years – as long as we have lived here.

18 years – as long as we have been here.

23 years.

3+ years.

16 years.

30 years.

2 years.

12 years.

5 years. New well was dug in 2001. We transferred 1/2 of water right from Old-Mill Rd surface water to ground water.

Water Source

9. Do you utilize a well, a spring, well points or a stream for your water source(s)?

Well.

Well.

Well.

Well.

Well.

Well.

Well.

Well.

Well.

Well.

Well.

Well.

10. How deep is your well or well point(s)?

68 feet.

Approximately 80 feet.

202 feet from drillers report.

Approximately 65 feet.

103 feet – 37 gallons/minute is its flow rate.

Screen is at 63' and the well is 68' feet deep.

60'.

185 feet with a static level of 55' and drawdown to 90'.

Between 100 and 200'.

67 feet and one across the street is not significantly different.

281'.

210'.

132-142' is depth of screen.

11a. Do you ever have a shortage of water?

No.

Yes. During the summers of 2005 and 2006.

No.

No. Although it has a slow recharge rate so we used to get a lot of grit in the system when the well pumped. Now it fills a pressure tank and turns off long enough for the area around the well to recharge.

No.

No.

No.

No. We only have a 10 gpm pump.

Yes.

No.

No.

No.

No.

11b. If so, under what circumstances?

A pipe broke and one landowner repeatedly left a sprinkler on.

Only when a pipe breaks. The spigot came off the shut off valve once. There's a little lower pressure in the summer. I have an orchard and the neighbor used to water their lawn everyday which seemed like a waste to me.

12. Where is your water source located?

West half of property downhill from house close to pump house. The pump house contains the water distribution elements such as the pressure tank, et al.

On a relatively central parcel in our 9-parcel system.

Northwest corner of the property.

About 200 feet from the shoreline. It's probably about 50 feet from my door, behind the house.

It is in the southeast section of a 2.1 acre parcel.

On the northwest portion of the property.

Downhill and northwest of the house.

In the backyard uphill and northwest of house.

In the backyard about 100 feet from the house and about 90 feet north of an access road.

40-50 feet west of house.

Across the street way back in the woods. There are 4 pressure tanks, too.

About 300 feet downhill from the house.

Southwest of house in the only spot we could get the 100 foot radius.

Water Source Protection

13a. What activities or landuses occur within a 100 foot radius of your well?

Pasture, landscaping, parking for a trailer and tractor, close to 100 feet from the road.

Lawn and garden.

Woods – nothing really happens there. It's the woods.

Pre-existing uses: parking on gravel, house, gardens and forest.

Boat house, boat repair and cleaning, landscaped gardens, and parking.

Two driveways and a fir forest.

Vegetable gardening, fruit trees, compost, lawn, wood storage, lawnmower storage w/2 gallons of gas, deer and peacocks visit the yard.

Lawn, trees, flower and vegetable gardens, storage shed, garage (downhill), woodshed, our shed that stores the lawn mower and oil and gas is downhill from our well.

Access road, lawn and trees which are untouched except for mowing.

House, two all-organic gardens, an old pumphouse used as a workshop, an abandoned well, pasture grass.

Forest.

Forest and the edge of a private road that serves 10 houses.

Grass that gets mowed and cows are occasionally in the fenced area beyond the 100 foot radius.

13b. What activities or landuses occur within a 200 foot radius of your spring?

14a. Do you have recorded protective covenants around your spring or well, on your property, or (Note: explain difference of Declaration of Covenant and Restrictive Covenant.)

Don't know. We probably do because there's a co-agreement with the neighbor: she has drainfields for both households and this property has the well.

Yes. There's a covenant on ___ property around the well.

Yes.

Nope – neighboring user has access to this water because of one line recorded years ago in a deed.

No. We have maintenance and use agreement with our neighbor. We have a Declaration Covenant filled out in our file but not recorded. (SK Note: recorded that there is a covenant on neighbors' property, but did not note whether or not there's a declaration of covenant on parcel where well is located.)

Maybe. Don't know.

No.

No.

No.

Probably, the person who developed the system is very thorough.

Yes.

Not really.

14b. On your neighbor's property?

Don't know. We probably do because there's a co-agreement with the neighbor: she has drainfields for both households and this property has the well.

N/A – this question was not part of initial interview. (SK note: I believe that the 100 foot radius is wholly on property where well is located.)

Yes.

No.

No.

Yes. On two adjoining parcels.

Maybe. Don't know.

No – the 100 foot radius is all on our property.

No.

No.

Probably not.

Yes – it was done when the well was developed.

No – the 100 foot radius around the well is all on our property.

15a. Are you concerned about nearby activities that might affect your water quantity or quality?

Not at this time. Both sides (neighbors) are just pasture and behind us (uphill) the lot is empty.

Yes.

No.

Nope – no chemicals used next door.

Yes.

Yes.

Yes.

Yes.

Not really – I used to be concerned about Misty Isle ranch.

No.

No.

Yes.

Yes.

15b. If so, what activities are you concerned about?

Future development of lot behind us to the east may be an issue later.

Meth lab was on one of our system's properties; fertilizer and weed killer use on one of the parcels; livestock influence from Misty Isle's property; possible road traffic (on private road near well) with transport of oil, gas, etc.

Not really concerned – homes next door along the shoreline are only occupied part time. I don't know where the uphill neighbor's septic is located.

For me, I would like to know about Misty Isle's farming practices. How stable is our well – is our water going to go away. Every summer, how do you know if it is going to come out the tap. I have questions (second speaker at interview), about whether or not to take the iron and manganese out of the water. About 5 years ago, Misty Isle increased their pasture. They applied organic fertilizer and okara was put on it. They graze cattle there once in a while. I believe it is affecting the nitrates. That's a concern. I don't really worry about running out. I (first speaker at interview) should collect water off the roof. I would like to have workshops about how to set up such a system. Misty Isle irrigates with big spigots during the heat of the day. Are they draining the aquifer? How does their well which is deeper than ours, affect the shallower wells in the area. I'm not sure we own water – we don't own the air. It's a dynamic system – it's everybody's' water. You can't own it.

We're concerned about the possible affects of nearby irrigation, livestock, and fertilization. The irrigation might affect water quantity while the livestock and fertilizing could affect water quality.

I have wondered about neighbors above me – whether or not they have a septic system. It's a rental house right above the ravine. They have a barn with chickens and turkeys, so I'm concerned about livestock and septics. I've not put manure on my garden in 7 years and have a new septic in the last decade.

Our neighbor's (uphill from the well) land use includes hazardous materials like paints and solvents for wood working. Buckets are stored haphazardly around.

Misty Isle applied for an increase of water capability. Not sure whether it was for slaughter house or irrigation. People were concerned about the water table.

We're doing a restoration plan for our property with PBRS.

We're planting more vegetation to increase structural diversity. There is a downhill property-owner who has sheep near his well in a wetland. Manure storage practices of livestock owners would be a concern if I were downhill from them.

I actually have questions. We have an engineered system to take care of run-off with a catch basin and piping down to the beach. (SK Note: recorded comment about blackberry clearing.) Our uphill neighbors developed a pasture and arena so there's runoff from the hill and runoff from the pasture and arena with 5 horses. Does this affect our water quality? There's quite a flow of manure to our catch basin. The caretaker there said that a horse produces 50#s of manure per day.

Misty Isle's use of the deep well and their use of fertilizers/nitrates on their fields.

Water Testing

16a. Do you test your water quality?

Yes.

Yes.

Only after installation. Once we hook up more than one household, then we'll comply with Grp B regulatory requirements.

Yes.

Yes.

Yes.

Yes, but not in the past two years.

Yes.

Yes.

Yes – we're part of the County's monitoring program.

Yes – the current purveyor does.

Yes. I haven't tested it as often as I should.

Yes.

16b. If so, for what parameters and how often?

Bacteria, once every three years or so. (Note: respondents were unaware of the requirement to test nitrates.)

In compliance with nitrate every three years and bacteria every year. We also did arsenic.

I started doing bacteria quarterly. Now I probably look at bacteria annually. Installation guy checks iron and manganese system every two years.

Bacteria and Nitrate – last was in 2004. Don't really have a plan.

Nitrate and coliforms as required. (Nitrate = once/ 3 years and coliforms = once/year.)

Nitrates and bacteria.

Nitrate every three years and bacteria, yearly. We've tested arsenic once and plan to do "everything" for $240 in maybe a year.

Every year I do bacteria and every three years I do nitrate. I also had our iron tested when we installed the hot tub to see how much additive we needed to counter balance it.

Nitrate. The county looks at a whole array of components, but nitrates are the only element of concern.

According to code: 1 bacteria per year and 1 nitrate every three years.

Whatever the County says. The county has changed its requirements and costs a lot without notification.

I try to do coliforms twice a year. I don't think I have done nitrates.

17a. Have you ever had water quality results that are in *violation of the state water quality standards?

(*SK Note: A positive coliform test does not necessarily constitute a violation. I explained that we were looking for any "problematic" results.)

We have tested positive for coliforms.

No.

Not applicable – only one hook-up.

No. (bacteria is primary parameter – no nitrates tested)

No.

No.

Yes. I know that there have been some rejections for bacteria.

No.

Yes.

No.

No.

No.

No. (The surface water source started to have coliforms, so we moved the water rights and dug a well.)

17b. If so, for what parameter(s)?

Coliform bacteria

Bacteria

Tested positive for bacteria (Note: The old well had bacteria and is now unused. We bought the house without water.)

17c. Were you able to resolve the problem (if so, how?)

Yes, we followed the King County Health's website and did a shock treatment on the well and the distribution system as well.

Added bleach. Continued testing and took samples from a spigot closer to the well.

We adopted the county's water sample collection procedures.

We dug a new well.

18a. Would you like to do additional water quality testing free of charge? (Limited to nitrate, arsenic, pesticides and fertilizers.)

Yes.

Yes!

No.

No.

No. (Maybe later.)

Yes – willing to do it if it fits into the needs of the research, but not imperative.

Yes.

Yes.

I don't use pesticides/ fertilizers – we don't really need it.

We already get it from the County's monitoring program. But, the unused well across the street in the woods might be a good place to test for background levels of pesticides and fertilizers and/or depth to water measurements.

Yes.

Maybe.

Yes.

18b. If so, may I give your contact information to the King County Groundwater Program so that they can follow-up with you?

Yes. Would like to talk to them to make sure the data is informational (not regulatory.)

Yes. (Refer County to new purveyor.)

No.

No.

No. (Maybe later.)

Yes – willing to do it, but not requesting that it be done.

Yes.

Yes. Also willing to do depth to water measurements if you would consider it on a group B well.

Don't really need it.

Eric knows about it.

Yes, we're interested in supporting data collection if needed.

I'm concerned about regulatory implications.

Yes.

19a. Do you monitor the output of your water source?

No.

No, although each customer has an individual meter.

No.

No.

No.

No.

No.

Only have service meter on pipe to neighbor's, not on well.

No.

No, but will be getting a meter as a test-case for the County.

No.

No.

Yes.

19b. If so, has it been increasing or decreasing over time?

No.

N/A – don't really measure it.

N/A.

We knew the pumping capacity was 3/4 gallon/minute – recharge; Everything is really slow. We now have 800 gallons of storage.

Don't know.

Don't know.

Don't know.

Don't know.

I can only guess that it has been increasing because there are more houses hooked-up.

Don't know, but water level isn't dropping.

Don't know.

Don't know.

Meter does measure what we use, but I'm not sure what the units are.

19c. If not, would you like to install a meter?

No – we're just two households. It's not really necessary and, as a plumber, we could do it at any time.

Maybe!

(No response.)

No.

Maybe – it's a later decision.

No.

Maybe – not sure why.

Don't know.

Yes – Our informal agreement is $15.00/household/ month for the cost of electricity.

Yes – we're getting one as part of the County's program.

When all the properties are sold, we'll need meters.

No. Our electrical meter tells me the kilowatts used. Our electricity use hasn't varied much over 10 years.

Already have one.

Education and Outreach

20. Do you discuss ways to protect your system's water quality/quantity with:

a. users of the water system?

No.

Yes, particularly with meth lab problem and some health concerns regarding amoebas.

No.

We talk about conserving water when the power is out. We also keep bottled drinking water on hand.

Not much – just within our own household.

Yes, over our annual glass of wine.

Rarely.

When we first met, the neighbor was concerned we would over-use the water. We were brand new and didn't know how much we could use or how much the well would produce.

Not really. We treat it like a private well. We only discuss it with the other users if there is a problem. The size of the system is small. If we had more users, we would be more organized. We're at full capacity with 4 households.

Within our own household – there are no other users.

Within this household, yes. There aren't any other users, yet.

Not really.

No, but I make sure all the septics are pumped.

b. neighbors of the water system?

No.

On occasion, talked with landholder of large parcel adjacent to system.

No.

No. There's not much around to affect our system.

No.

Have not had to.

Yes, because we have had high nitrates.

Not really. We've helped-out new neighbors from California

understand how their well operates.

No.

No.

Not now, but if there were a concern, we would.

No.

No.

21a. Are there private wells near your public water supply?

Everyone is on a well in this area with 2.5-5 acres plus.

Likely, but not close to our well.

Two that I know of on adjacent parcels – one to the north and one to the east.

There's a brand new (three years old) one northwest of our well on neighbor's property, but it is down gradient from our system and only serves a single family.

Not sure. Probably on the property to the east as they wouldn't be served by Burton Water System.

Yes – we're surrounded by private wells.

Yes, but not close.

Yes, across the street and uphill, but not close.

Not really.

North of us.

Not close.

Not really.

Probably across the street.

21b. If so, how close?

Maybe 300 feet or so, not terribly close (houses are on 2.5-5. acres plus). We think there is a well across the street (downhill), but the property behind us (uphill) is undeveloped.

Not close.

Next door, greater than 100 feet away.

Approximately 150 feet away.

Don't know.

Greater than 300 feet away.

Maybe 300 feet downhill.

Well over 100 feet up hill from of us off Shawnee.

The closest is probably greater than 300 feet away to the south.

At least 250 feet away.

Several hundred feet away.

Greater than 600 feet away.

Probably greater than 500 feet away.

22. Do you want educational or technical assistance on:

a. Understanding Island hydrology?

No, information you gave us was helpful.

Yes.

No. (SK Note: provided Balancing Water sheet.)

No.

Yes.

Yes.

Yes. As a well owner, this conversation is underscoring the ethical importance of staying well informed. Maybe through a forum format on a Saturday afternoon.

We would go to a public program, but there's no need for individuals to come out to train us.

No.

No.

Yes – in workshop type scenario.

No.

No.

b. Strategies to protect your water source such as "wellhead protection programs?"

We do manure management at the greatest distance from the well maybe 600 feet away (SK note: it is uphill from well.) We have the area around the well in our control so there isn't really a need to approach neighbors.

Yes… need to be really careful with how we approach neighbors.

No.

No – no concerns about anything nearby.

Yes. Covenants – it would be good to have the neighborhood talk about it.

N/A (SK note: response was that they needed info on general O&M so I moved to "e" below.)

Yes.

Information on this topic would help us confront our neighbor regarding hazardous waste storage.

No.

Would like to know what steps to take given the fact our house is within 50 feet of the well.

Yes.

Maybe.

No.

c. Understanding water quality tests and lab results?

Yes.

Yes.

No.

Maybe.

Yes.

I would show up, but not my highest priority.

Yes.

Not really – we look to the lab for this information.

No.

No.

No.

Yes.

No.

d. The regulatory responsibilities of a water purveyor?

Yes. (SK Note: I provided King County web page on this.)

Yes.

No.

No.

Yes.

Yes – there's plenty of "fine print" that we need to know about.

Yes – and the legal implications of multiple hook-ups like relationships with users.

Yes.

No.

No.

Yes.

Yes.

No.

e. Routine system maintenance and monitoring?

We're good on the components and plumbing although how to do the water quality monitoring would be helpful.

Yes. We do a work party once per year, but not everybody is available. We do need to get on top of it.

No.

No.

Yes.

Yes. More about how the well functions, how to remove a submersible pump, more about wattage and technical operations – how it all works.

Yes.

I know how to maintain the system, but our neighbor doesn't want to pay for preventative maintenance. For example, the life cycle of a pump is 10-15 years. The current pump has probably been in the ground since 1967 as there is no information that it has been replaced. It is a big inconvenience for us if the pump were to fail. For our neighbor it isn't a big deal because he doesn't live there (it's a wood working shop.) I would like to know what our capital improvement budget should be.

No.

Yes.

Yes.

Not really – I did all the things on a check list the county gave me.

No.

f. Strategies for water conservation?

We know all the information on low flow utilities and soaker hoses, etc. We know the information, but don't necessarily employ the strategies.

No.

No.

Yes. It would be good to know how much water I used in a 10 minute shower for example and good techniques for the garden.

Yes. Information on how to dig a holding tank for a rainwater (roof) collection system with which to irrigate.

Yes.

Not really.

No.

Yes.

Yes (I know most of them.)

No.

No.

g. Anything else?

The spring on 220th on the way down to Lisabuela blows out the road every year. Couldn't someone install well points to drain it so that it wouldn't destroy the road?

No.

I'm interested in natural beach protection. I went to the workshop at Camp Sealth put on by the Conservation District.

Emergency strategies – Do we need a reserve tank? How do we build-in emergency water supply to our system?

That's enough!

Explain the legal aspects of water provision. For example, under what circumstances can we turn off water if there is a problem with payment? We need a workshop on getting along with neighbors as co-managers and users of a water system.

I use to have problems with bacteria samples. A neighbor told me to do a quick pre-bleach of the system before I took water quality samples. I would put bleach in the line and let it sit. I couldn't get a clean sample. I don't do the pre-bleach anymore and changed the faucet I use and have adopted King County's recommended procedures and don't have problems anymore.

With repairs our agreements are all informal. The neighbors paid $4500 for a share to the previous owner. We replaced an old pump about 7 years ago. A neighbor helped haul the old pump out. Everyone contributed. I take care of the testing and I take care of the building, too.

No.

More push to collect rainwater instead of just dumping it. We lived in Australia where we survived on rainwater to get through the dry spells.

Legal aspects like County's requirement for an as-built of the water system. She didn't have one and they are now required every time someone hooks-up.

23. Is there anything else regarding water supply issues that you want the Vashon-Maury Island Groundwater Protection Committee to know?

How do you get the information about what is required of a Group B purveyor? How is a property owner to know? There's nothing on the title. There's no support on when and what to test on our well – no-one tells us what to do. Why wouldn't the County tell us what, where, and how to test our water quality – where would we have been exposed to this information? For example, there's no where to get sample bottles on the Island – no way do I have time during business hours to go to the mainland to pick up a bottle! There's no support for us to make sure we're doing what we need to do. I believe in personal responsibility, not in increased regulations, but we need to be informed. Add a question about how many livestock rely on a given system. We need to plan for 5 gallons per day per horse during an emergency. Backflow prevention is easy. A double check valve is required in the building. You should require a check valve at the source.

Referring to our issues with a meth lab and potential parasites, we feel that King County Health needs to be more responsive. We need the water quality samples to be taken promptly (regarding meth lab) and, with regard, to parasites – are we getting state of the art information? Is the annual fecal coliform test really enough to assure the safety of our water? Some of us (SK Note: I don't remember if this referred to people in one or two households) have antibodies to an entero amoeba which is in the realm of Giardia – did we get it from our water?

Water Conservation should be a focus of educational programs. We're getting more and more landscaping on parcels

provided water by our system. We also need help understanding the legal elements of running a water system. For example, we had three water outages in the summer because one of the shareholders left the sprinkler on. How do you handle these situations when you share a water system? One person hasn't paid their bills – do you have any recourse? Can you turn their water off? We need help in developing a rate structure and maybe a maintenance fund, too. Also, what are the Water Treatment options for small systems? What do they cure? What do they cost? And, what's recommended by those with expertise in small system management?

The surface water management fee is far too expensive for commercial enterprises (SK Note: This landowner is developing a group B system on his residential parcel in our Primary Focus Area, but he also owns a commercial lot on the main highway.) I ran the County guy off my property – I'm not paying. They want to charge me as if my entire parcel is impervious. The barriers for commercial enterprises with respect to surface water retention are far too expensive. I would love to rebuild this place and start from scratch, but there simply is not enough space here to comply with the retention requirements. The worse thing is that I've been doing business here for 30 years and I might have to leave and go to Fife where they welcome commercial businesses.

This is just a two household system. I would resent additional regulations and I do not want to pay for additional regulation.

I am interested in: rainwater collection systems; greywater verses brown water systems; living systems like wetland construction for septic; reuse of greywater. Let's grab some of that 24% of the rain that runs off and use it. Conserve what comes to us by collecting rainwater. Why use drinking water for everything like flushing a toilet? We need education on how to augment our water system ourselves. We need to know about: innovations in the field and political forces in the County. We need to push the county to fund some alternative like a "living system." I really don't understand the relationship between: surface water, aquifers, and groundwater. The community needs to be educated on their differences and relationships – how do they physically affect one another. I worry because I don't know – I need to understand their relationship.

Thank you.

Water people at the county keep sending different messages. Every year it changes: the personnel, the philosophy, the funding. "He did it" is the explanation as people move from office to office. It's not malicious, but there is no consistency in regulation or fiscal management. I need a check list. What should I do each year. Mail it to us every year – I need to know what to do, when and how to do it, and how much we need to pay. Send a letter with a computer print out to purveyors reminding us what we need to do to continue to maintain our license to supply water.

Don't think so – the fact that you are here is a gift. I need to pay attention.

GWPC – Please pay attention to growth. Make sure we don't over develop and compromise the water supply. Please pay attention – the *Beachcomber* keeps a good eye on things.

Have someone like Bob Sieboldt explain the nuts and bolts of a system like a "booster pump" – what does it do? You just don't know what the parts of a system are or what they are for.

If they send any literature out, I would like to be involved: PO 2106, Vashon WA 98070

No.

Attachment #6

Vashon-Maury Island Group A Water System Questionnaire Data Compilation

I spoke with people from six different Group A water systems in our focus areas and one additional system nearby. In one case, I met with the Board of Directors and showed the group "The Water We Drink" slide show and asked them what they thought their educational and technical assistance needs are. The time it takes to convey the questionnaire has precluded meeting with other Boards, so I have interviewed presidents, owners, or managers of the other systems and have offered to come to future Board meetings and/or annual meetings, usually held in the summer, to show the "Water We Drink" slide show.

System Administration

5a. How many households are served by your water system?

About 100.

185.

415.

42 (8 reserve shares.)

41.

about 22.

5b. Can you estimate how many total people rely on your water system?

About 230.

About 370.

Not very well. There are probably 3-3.5/households Approximately 1245-1452.

There are about 2 people/household and 18 hh are fulltime while 23 are only weekend and summertime. (About 51 on an annual basis..

About 75.

8 weekend and 14 fulltime HH. 2 people/HH on average. (about 32 on annual basis.)

5c. Can you estimate how many livestock rely on this system?

About 7 horses and a llama.

0.

Maybe about 6.

0.

0.

0.

6a. Do the households meet to discuss water system management?

Yes.

No.

No.

Yes.

Yes, but we had an annual meeting, only four people showed up.

Yes.

6b. If so, how often?

Once/year at the annual meeting and one board meeting every 2-3 months.

We send out our CCR (Customer Confidence Report) every year and the Homeowners Association meets once per year.

We had a couple of meetings with customers over a year ago, but that's the only one we have had.

Once/year at our annual shareholders meeting around Labor Day.

We have an annual meeting, but since our emergency situation has gone away, few people come. Our Board meets quarterly and it's an open meeting.

We meet 1/year in person. We have votes by U.S. Mail. We have an executive committee of 2 plus a Water System Manager that meet more often.

7a. Does your water system have a designated purveyor?

Yes, we have a licensed Water System Manager. (SK note: Licensed Operator.)

Yes, we have a licensed operator and a bookkeeper.

Yes, we are transitioning into a new licensed Water System Manager. (SK note: Licensed operator.)

Yes, we have a Water System Manager. (SK note: Licensed operator.)

Yes, we have a contracted off-Island Water System Management company.

Yes, we have a Water System Manager. (SK note: Licensed operator.)

7b. If not, how do you make sure the system is maintained and in compliance with regulatory requirements?

8. How long have you been served by this water system?

14 years.

I don't live in the district, but the first well was drilled in 1965.

I don't live in the district, but have owned my house for 57 years.

We built our cabin in 1964, 43 years.

33 years.

We've had our house for 30 years; the system has been in place since 1910.

Water Source

9. Do you utilize a well, a spring, well points or a stream for your water source(s)?

A deep well and well points.

Two wells.

Wells and wellpoints.

Well.

Springs.

Well points, but we're in the process of obtaining a well.

10. How deep is your well or well point(s)?

The well is approximately 360 feet deep and the well points 5-10 feet.

About 125 feet.

Wells (3 ea) are 20-30 feet and well points are about 20 feet.

70 feet.

10 feet (Roman siphons).

About 2 feet.

11a. Do you ever have a shortage of water?

Not since we dug a deep well about 1992.

No.

Yes – sometimes we're short during summer high usage.

No.

Yes.

Yes.

11b. If so, under what circumstances?

When we served only by the well points, during summer high demand.

Under extreme conditions such as excessive usage, not because wells are drying up, but because of high summer usage.

When the soil is frozen the siphon slows.

It used to be holiday weekends in the summer during high water demand or because of a leak. Now it happens under unknown circumstances.

12. Where is your water source located?

Water Source Protection

13a. What activities or land uses occur within a 100 foot radius of your well?

Neighbor is over 180 feet away. County road is the closest activity, probably 60 feet away, but it is downhill of our well.

Septic tanks, road, homes, gardens and lawns.

Wells and well points are in the woods. There are 2 houses that are greater than 100 feet from the system, but their property is about 50 feet from the well point.

It's an alder forest.

13b. What activities or landuses occur within a 200 foot radius of your spring?

The County road is within a 200 foot radius of our wellpoints, but it is downhill from the points. (SK Note: I didn't ask how close. I think this is only a few feet off the road.)

Property line is about 50 feet from wellpoints and road is

greater than 200 feet away.

There's been some logging uphill from the Roman siphon. One house is within 100 feet of the siphons, but is downhill.

The well points are in a forested marsh.

14a. Do you have recorded protective covenants around your spring or well, on your property? (Note: explain difference of Declaration of Covenant and Restrictive Covenant.)

A Declaration of Covenant is being filed as we speak.

No.

No.

No, it's undeveloped.

We don't own the property where we get our water. We tried to get a three-party covenant. One owner said yes, one said no and the third didn't answer.

No. We don't own the property where the springs are.

14b. On your neighbor's property?

No – I believe a 100 foot restrictive radius is all on our property.

No.

No.

No, protective radius is all on our property.

We don't own the property. We have an easement for tanks, pipes, and the enjoyment of the easement. Since we're not a municipal corporation, we should be a "district" and be able to put a lien on people's property if they don't pay and be able to condemn suitable property to act as a buffer to protect our water supply.

We don't own property that the springs are on. We have an easement, but probably not a covenant.

15a. Are you concerned about nearby activities that might affect your water quantity or quality?

Yes, proposed mining activities of Glacier.

Yes, failing septic system nearby, but it has been replaced and the nitrates in water have gone down.

Yes.

When we see something.

Yes.

I'm concerned. It's a fairly shallow aquifer which might be as far down as 20 feet below surface. We're drinking water from everyone's puddles. I'm concerned about nitrate going up year by year.

15b. If so, what activities are you concerned about?

Mining is by far the biggest issue and second is the # of homes with private wells.

Septics and pesticides that neighbors might be using.

Misty Isle's activities and the effect on water quality, specifically increasing nitrates.

We raised a question when a property above our well was developed. The drainfield is below his house. We got concerned. He got an engineer to certify that there was no danger to our water source.

I'm concerned that our shallow aquifer is the most dependable, but is also the most vulnerable.

Surface water contamination (shallow wellpoints) – we have no control of what people do upstream.

Water Testing

16a. Do you test your water quality?

Yes.

Yes.

Yes.

Yes.

Yes.

Yes.

16b. If so, for what parameters and how often?

Per state code as prescribed by WaDOH.

Per WaDOH requirements: bacteria every month, nitrates once per year, VOC every three years, inorganics every 3 years, etc.

We test for bacteria 2/month and nitrates 1/month.

One bacteria/month. We're chlorinating now. We test per WaDOH requirements.

Bacteria once per month and the rest of the spectrum including VOC, SOC, herbicides, pesticides, nitrates, HAA-5 (DOH refused waiver.)

WaDOH's prescription: bacteria monthly and nitrate annually.

17a. Have you ever had water quality results that are in violation* of the state water quality standards? (*having a positive sample for bacteria alone is not necessarily a violation.)

No, although we have had to repeat a bacteria test. Never had to issue a "boil water" notice.

No, although we have gotten coliforms and resample is OK.

Yes.

No violations, but did have a high fecal coliform.

17b. If so, for what parameter(s)?

Occasionally test positive for total coliforms.

We had coliforms and e-coli. Maybe a mouse got down there.

Years ago we had bacteria, but not much.

No violations, but had fecal coliform. (SK: not sure if he meant total coliforms.)

17c. Were you able to resolve the problem (if so, how?)

Resampling throughout the system – where we take the sample is an issue like kitchen faucets and outdoor faucets (no dedicated sampling ports.)

We stopped using one well point which may be contaminated with surface water.

We pumped and chlorinated. There was no sign of anything. We now chlorinate and do a monthly test of the well and the distribution system.

Subsequent tests for bacteria were all clear.

18a. Would you like to do additional water quality testing free of charge? (Limited to nitrate, arsenic, pesticides and fertilizers.)

No need – we are participating in the monitoring program.

No, we're already doing it with the county.

No.

Wouldn't really help.

Probably don't need them.

It depends whether the tests are regulatory in nature or just for our information.

18b. If so, may I give your contact information to the King County Groundwater Program so that they can follow-up with you?

19a. Do you monitor the output of your water source?

Yes for both wells and well points. We use the well as a summer back-up.

Yes.

Yes.

Yes.

Yes.

Yes.

Yes – once per year with a bucket and a timer. There's no meter at the source. We have cluster meters down below at the service side of the system.

19b. If so, has it been increasing or decreasing over time?

Don't know.

They are consistent.

Pretty much the same.

The depth to water level has been pretty consistent so there's no apparent draw-down.

Constant.

Decreasing – the well points get filled up with sediment and plug up.

19c. If not, would you like to install a meter?

Yes. (SK Note: response from only system without a source meter.)

Education and Outreach

20. Do you discuss ways to protect your system's water quality/quantity with:

a. users of the water system?

Not on a formal basis. If we have a broken pipe, our manager talks to people.

Only through newsletter and CCR once/year.

Had a meeting over a year ago.

It's mentioned at our annual meeting.

We've sent a monthly newsletter, but probably won't in the future.

Yes.

b. neighbors of the water system?

Not really. We would if there were land-use issues like someone clear-cutting a lot.

No.

Talked with some of the "hydrologically" uphill livestock owners.

Yes, when a concern arises.

Only with people who want to hook-up through sweat equity investment.

No.

21a. Are there private wells near your public water supply?

Yes.

Sure.

Yes, to the west and to the north.

Not that we are aware of—there's only three houses on the ridge above us.

No.

Maybe near the well we are purchasing.

21b. If so, how close?

Several uphill over 300 feet away. There are probably some on parcels downhill from us that are not served by our system.

Over 600 feet away from our wells.

Approximately 200 feet.

Don't know.

22. Do you want educational or technical assistance on:

a. Understanding Island hydrology?

The Board would split, 3 would say yes and 2 would say no.

No. Anything short to send to homeowners like a one pager on alternative garden products – can't say enough.

Yes, I would like to hear about that.

I don't think so.

I know it pretty well.

Our members don't care. For me, maybe a 1/2 day workshop.

b. Strategies to protect your water source such as "wellhead protection programs?"

Yes. What lies in the future?

We already have that.

Yes.

No.

I know about them, but we have no power to implement them.

Yes.

Yes – need draft language for covenants. There are horses near our spring.

c. Understanding water quality tests and lab results?

Yes. A lot of people would be indifferent, but the younger people would be more in tune to this.

That wouldn't hurt.

No.

I'm up to speed on that.

No.

Yes.

d. The regulatory responsibilities of a water purveyor?

No, we have a Water District Manager who must keep up with this.

It's covered in our newsletter – CCR.

Yes, if there is something new coming down the pike.

I would let the system manager stay up to speed, but I do get mailings from Olympia like the Water Tap and the Water

Efficiency Rule from DOH.

On an annual basis an update of changes or what is coming down the pike.

Yes.

e. Routine system maintenance and monitoring?

No, the manager is responsible for this.

No.

No.

No, we are praised by the state!

No. We have no electricity in the system, just gravity.

Yes – the basics.

f. Strategies for water conservation?

We succeeded too well. Our cash flow is tight because people are conserving.

We have addressed this.

Yes, as long as we don't have to go to meetings. Rainwater collection provides a small amount of the total water you use and it's a lot of work.

At this point we have all sorts of water.

No.

Yes.

g. Anything else?

For Group A systems, it would be helpful to have a heads-up on what the future holds. What's happening in Olympia? We need information on that which affects long-term planning. What about the "use it or lose it doctrine?" We don't have unused water rights, however.

No.

No.

The thing that scares me most, with regard to development, how do I protect my water source? Properties near our water source should be tagged for "Concern About Water Supply." Even if they are required to have upgraded septics, does it stay that way?

I need a basic amount of information. The water system managers need the technical information and the Board members need an overview like the Evergreen Rural's class for water system Board members.

23. Is there anything else regarding water supply issues that you want the Vashon-Maury Island Groundwater Protection Committee to know?

Water Purveyors Group: I had hoped that District 19 would serve as a pass-through of information to the smaller systems. It hasn't really happened.

In my heart of hearts, I still think that Glacier is the biggest problem we have. There won't be any restraints on Glacier. I don't know where it all leads, but we don't understand the local hydrology well. We don't know what disturbances on South Maury will do.

There's good representation on the GWPC.

Anxious to hear what you find out regarding water modeling efforts.

I haven't thought about it. I'm interested in the science because I have an engineering background. Most of our users are happy if water comes out of the tap.

Putting controls on septics: if you make conditions on permit you fall into constitutional issues.

I think "wellhead protection" is the purview of the County. County is the steward via DDES and the permit process. They can keep people away from this water source. I think the County owes us protection in a general sense. The County can't put, as a condition of a permit, to test the viability of the waste water disposal system, was the reply from Gregoire's office.

It would be useful for all of the small systems, if there was an alternate source of water. There's no organized source of drinking water if our primary source gets messed up – we have all dodged it.

Information on Water Rights, Bylaws, Policies, and Procedures. Protection of Board members (liability.) It would be helpful to have an attorney who knows water issues available to systems on a consultation basis. We need a water system attorney on retainer.

We could use draft language for covenants. How do we deal with horse owners near our water source? Mostly we need legal help on issues like covenants and making sure our spring is flagged as a Public Water Source by the permitting agencies. Shouldn't the groundwater committee take action against Glacier's mining proposal?

Attachment #7

Informational Materials Available During Interviews

WaDOH Publications

"Coliform Bacteria in Drinking Water," WaDOH pub. #331-181, September 2006.

"Nitrate in Drinking Water," WaDOH pub. #331-214, September 2006.

"Simple Fixes for Wellhead Openings," WaDOH pub. #331-232, November 2005.

Seattle/King County Public Health Drinking Water Program Publications

Declaration of Covenant Public Water Supply (blank form.)

"Group B water systems – purveyors responsibilities," http://www.metrokc.gov/HEALTH/water/purveyor.htm, pp1-2.

"How to develop a Small Group B Water System using a well source," http://www.metrokc.gov/HEALTH//water/develop.htm, pp1-7.

Restrictive Covenant Public Water Supply (blank form.)

"Shallow wells," http://metrokc.gov/health/water/wells.htm, pp1-6.

"Sources of contamination of small public water systems," http://www.metrokc.gov/HEALTH/water/contamination.htm, pp1-2.

Vashon-Maury Island Groundwater Protection Committee Publications

"Waterfacts #1: Water on the Rock," October 2006.

"Waterfacts #2: Wells, Springs and Livestock," October 2006.

"Waterfacts #3: Island Drinking Water Quality," October 2006.

"Waterfacts #4: Island Sewage – Where Does it All GO?" October 2006.

"Balancing Water," based on 2005 data from KC Groundwater Program.

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