Water Conservation Topic Paper

Issues

Many current water conservation methods are proving to be effective. Do opportunities exist for additional conservation practices? If so, which opportunities are most effective? How can additional conservation measures be realistically implemented?

Are there ways to work around disincentives to water conservation found in water right laws?

Introduction and Background

Purpose and Definition of Water Conservation

Water conservation is defined by the Federal Government as "any beneficial reduction in water loss**,** waste, or use." (USEPA, 1998, Water Conservation Plan Guidelines.) The Washington State Department of Health (DOH) does not consider conservation as curtailment (i.e., as in a temporary water shortage or drought situation). DOH considers water conservation as "water efficiency" to be thought of as reduction in regular, long-term uses of water.

Although conservation can be approached in a variety of ways, in all cases it should reflect the goals of the community for short and long-term water supply. In Island County, the biggest threats to water supply are salt-water intrusion and overdrawing of groundwater.

Population Trends and Water Supply in Island County

Despite its "rural" designation under the Growth Management Act, Island County is one of the fastest growing and densely populated rural County's in Washington State, with approximately 73,000 residents. According to 2000 census figures, during the 1990's Island County's population increased by 11, 000 residents and 10,000 more are expected over the next 8 years**.**

Between 65-70% of residents in Island County rely on groundwater for their main water source. The City of Oak Harbor and the Whidbey Naval Air Station (NAS) obtain most of their potable water from the Skagit River (piped); purchased from the City of Anacortes.[1] By 2025, over 100,000 people will reside in Island County with 28,000 of 40,000 households relying solely on ground water.

Current Laws and Practices

Since the adoption of the 1971 Water Resources Act, water conservation has been at the forefront of water management and policy in Washington State. Numerous regulations and measures were implemented to encourage efficient use for both surface and groundwater, and to promote conservation (RCW 90.03.005, 90.54,180 and RCW 43.20.230).

[1] The City of Oak Harbor is participating in the Phase 2 Watershed Planning process and is providing water use data.

A significant step in water conservation took place in the early 1990's with the revision of the Uniform Plumbing Code requiring the use of water saving plumbing fixtures for new construction or remodeling that involves replacement of plumbing fixtures. New toilets are limited to 1.6 gallons per flush and showerheads, faucets, and replacement aerators are limited to a flow of 2.5 gallons per minute (RCW19.27.170).

Link between Water Conservation and Savings

Evidence exists verifying the theory that conserving water saves the public money. In Island County, the King Water Management Company has saved water systems thousands of dollars by implementing conservation measures such as tiered rate and leak detection systems. According to Author, Amy Vickers, "Utilities that have pioneered the use of conservation as a viable long-term supply option have achieved remarkable results, which in some cases have downsized or averted planned water and wastewater system expansions. This approach has saved considerable capital and operating costs for utilities and consumers, avoiding environmental degradation, and built political bridges instead of walls." (Vickers, Amy, For the Love of Water, 2001).

Local Actions and Accomplishments

For over three decades, Island County government, along with strong involvement from the Whidbey Island Conservation District, citizens, and other organizations, has been active in water resource management. With assistance from the Whidbey Island Conservation District, WSU Cooperative Extension, Island County and state agencies, citizen groups commissioned studies and participated in the writing and implementation of two key documents: The 1990 Coordinated Water System Plan and the Groundwater Management Program.

In 1996, Island County employed a full-time hydrogeologist, and in 1998 a Water Resources Element was adopted as part of the County's Comprehensive Plan. Shortly after, a citizens water resources advisory committee (WRAC) was formed. The WRAC provides recommendations on salmon recovery, surface water and groundwater protection and is charged with overseeing the development of a Watershed Management Plan for WRIA 6.

Island County Watershed Plan Requirements

The 1998 State Legislature passed the Watershed Management Act (ESHB 2514) to provide a framework for local citizens, interested groups and government organizations to collaboratively identify and solve water-related issues in each of the 62 Water Resource Inventory Areas (WRIAs) of the state. Island County represents WRIA 6. To assist WRIA's in implementing the Watershed Management Act, state funding was provided to form local "planning units " composed of citizens, representatives from local governments and technical advisors. Formed in 1998, Island County's Planning Unit consists of the Water Resource Advisory Committee (WRAC), representatives from Island County, Langley, Coupeville and Oak Harbor, and technical advisors from various government entities.

Island County's Planning Unit is charged with: "Developing a Watershed Plan that is required to provide strategies for increasing water supplies in WRIA 6 which many include, but are not limited to, increasing water supplies through water conservation, water reuse, the use of reclaimed water and voluntary water transfers (RCW 90.82. 070). The objective is to supply water in sufficient quantities to ensure future supplies are available for agriculture, energy production and population and economic growth under the requirements of the Growth Management Act and to satisfy the minimum instream flows for fish.

Issue Discussion

This section examines the effectiveness of current conservation programs and identified potential opportunities for improvements.

Large Water Systems

Numerous large water systems in Island County have effectively implemented conservation measures leading to significant reduction in water use and long-term savings for the users. Two noted examples are the Penn Cove Water and Coupeville Water Systems.

- Penn Cove Water System: In 1997 the Penn Cove Water System became a ulility local improvement district. This enabled the community to fully upgrade and replace water lines over a two year period and establish a leak detection program. By 1999, an efficiency (tiered) rate system was also in place. These combined activities reduced water usage by 25% and significantly reduced summer peak water use (See Graphs A and B on page 8).

- Town of Coupeville Water System: Since 1992, Coupeville's water usage has reduced by nearly 30 percent due to a new tiered rate structure/summer surcharge, educating customers and offering rebates on water –efficiency toilets. The Town's leak detection program and other internal efforts, including meter testing, have resulted in Coupeville's unaccounted for water hovering nearly 8 percent, well below Department of Health Standards ("Options for Success" Washington State Department of Health, April 2001).

Water conservation measures have been largely driven by:

- economics,
- limited water supply,
- State DOH requirements for water system planning,
- the employment of professional water system managers, and
- state low interest loans that facilitate infrastructure improvements.

Disincentives to Conserve

Despite the proven need to conserve water, the "use it or lose it" aspect of water rights continues to be a disincentive. Water purveyors are afraid of losing their rights to the full amount of water they are permitted to use. This is an issue that will be addressed further in the topic paper on water rights.

Small Water Systems

It is unclear to what degree small water systems are practicing conservation. Group B Water Systems (3-14 connections) are required to submit water systems plans that, among other things, address potential conservation measures. Yet, the rules are vague on how conservation measures should be implemented. Many small systems are managed by part-time residents, and record keeping varies greatly. Billing systems also vary, with many charging a nominal flat yearly rate for any amount of water used.
Individual and two-party well systems have virtually no conservation requirements. Most are not metered, and those that do have meters are rarely monitored.

Overall, small water systems lack the funding and staff support for conservation education and incentives. Significant water waste also occurs with poorly maintained infrastructure. Finally, many lack individual house metering and use-based or tired rate structures. Low interest loans to cover the costs of infrastructure upgrades and metering are not available from the state for systems smaller than 15 connections.

Individual information and Choices

Outside of infrastructure management, economic incentives such as tiered rate structures, and passive measures such as low-flow toilets, the effectiveness of conservation lies with individual willingness to conserve. As noted above, some of the larger water systems provide education and incentive programs for conservation. Island County does not maintain any ongoing conservation programs. The State does not provide on-going conservation education programs to the general public.

Private and non-profit groups such as the Whidbey Island Conservation District (WICD), WSU Waste Wise, Master Gardeners, Beach Watchers, League of Women Voters and Maxwelton Salmon Adventure are providing effective public education and incentives. For example, water conservation is a component of WICD's farm conservation plans. There is probably willingness and the ability to do more of this work.

Findings

Need for Water Efficiency / Conservation

There is consensus among the WRAC that long-term water conservation / efficiency measures are beneficial to the residents of Island County. These long-term measures would address the needs to:

- reduce the threat of salt water intrusion,
- reduce the threat of over-drawing groundwater,
- reduce the need for capital spending,
- reduce operation, maintenance and waste water treatment costs,
- reduce peak demands,
- maintain public health, and
- maintain quality of life.

Effectiveness

Conservation programs should focus on where the greatest gains will be made for the least effort, lowest cost, and least disruption in people's lives. To help understand where the greatest gains in conservation can be made, the WRAC has assembled the following priorities of conservation potential from conservation literature, initial analysis of water use in Island County, and consultations with local water system operators:

- tiered rate structures,
- on-going education,
- reduced outdoor watering/irrigation,
- reduction in water system loss (leaks),
- installation of low-flow showers an faucets,
- replacement of existing high-flow toilets,
- more efficient household appliances (clothes washer, dish washer), and
- other household practices.

Options

Option #1: No further action. – *Low Efficiency / Low Cost*

Option #2: Form an Association of Water Associations on Whidbey Island (similar to the Camano Water Association). Partner with both associations to provide resources and education necessary to promote education. – *Medium Efficiency / Low Cost*

Option #3: Implement a public education program for water system managers and homeowners, focusing on efficiency rate structures, water resource information, behavior modification and point of use leak detection. Below is a list of suggestions for programs that could be implemented with availability of additional staff time. There is a possibility existing or new citizen volunteer groups could achieve the same objectives. – *High Efficiency / Medium Cost*

A. Provide water purveyors necessary tools and data to inform customers on the benefits of changing behaviors, establishing water efficiency programs and tiered rate systems.

B. Provide conservation devices and literature at various public locations throughout the County.

C. In conjunction with A above, encourage purveyors to initiate and/or continue leak detection programs to identify problems in distribution systems, such as inspection and repair of valves, meters and other components and replace older pipes.

D. Encourage water purveyors to lower water pressure to reduce use.

E. Encourage all existing unmetered water systems to install meters and monitor consumption rates.

F. Adopt a policy or resolution encouraging citizens to practice water conservation as a permanent lifestyle; emphasizing water conservation as a countywide goal.

G. Feature a monthly "Water Conservation Column" in local newspapers highlighting "success stories" of local water systems.

Option #4: Increase the effectiveness and outreach of private and volunteer education programs and work off of existing community based programs. Establish a county staff point of contact for conservation (estimated to be 1/10th of an FTE) to serve as a liaison to private groups, identify education needs that private groups may be able to assist with, and to help obtain grant funding. – *Medium Efficiency / Low to Medium Cost*

Option #5: Petition the state to extend low interest loans to small water systems (including systems less than 15 connections), for infrastructure and water use efficiency improvements and require tiered rate structures to pay back the loans. Alternatively, apply for a large state loan that the county can, in turn, parcel out to small water systems. – *Medium Efficiency / Low Cost*

Option #6: Track current legislation on the "use it or lose it" portions of the state water code. Where appropriate, show support and comment to proposed changes that encourage water

conservation and/or eliminate the sections currently creating disincentives to conservation. – *Medium Efficiency / Low Cost*

Option #7: Find an effective way to foster the acceptance of tiered rate structures and financial management / capital improvement plans for all water systems to encourage true-cost water billing (and thus household metering and tiered rate structures) and better infrastructure management. For example, allowing additional hook-ups to help allocate costs could be a very strong motivational tool to encourage such "true water cost billing." – *High Efficiency /Medium Cost.*

Table 1: Effects and Correlation of Proposed Measures

ACTION		RESULTS			
		Reduced Outdoor Watering/ Irrigation	Reduction in Household Water Use (behavior oriented)	Reduction in Water System Leaks	Installation of low-flow showers, water efficient appliances and other Household Practices
General Public Education		X	X	X	X
Metering		X	X	X	X
Efficiency Rate Structures		X	X		X
Targeted Education (water system operators)		X		X	
Give-away Rebates			X		X
Low Interest Infrastructure Loans				X	
Financial Management / Capital Improvement Plans				X	

Recommendations

Implement options 3, 6 and 7 in the following order of priority:

Option #3: Implement a public education program for water system managers and homeowners, focusing on efficiency rate structures, water resource information, behavior modification and point of use leak detection. Above is a list of suggestions for programs that could be implemented with availability of additional staff time. There is a possibility existing or new citizen volunteer groups could achieve the same objectives.
– *High Efficiency/ Medium Cost*

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High Efficiency / Medium Cost

Graphs A and B

Example: Penn Cove Water System