STREAMFLOWS & AQUATIC HABITAT TOPIC PAPER

Island County / WRIA 6 Watershed Planning Process
Prepared by the Salmon Technical Advisory Group - Subcommittee of the WRAC
Revised by the Groundwater subcommittee
Approved by the Water Resources Advisory Committee 2/5/2004

Streamflows & Aquatic Habitat Topic Paper

*Note: Terms in **bold** are defined in the glossary.*

1. Issues

- The Watershed Planning Act (1999, HB 2514; RCW 90.83) directs each watershed planning unit to identify strategies for increasing water supplies in the management area. These strategies are designed to address both out-of-stream uses and instream uses for fish.

- As recognized in the water resources watershed planning (HB 2514; RCW 90.83) ***Early Action Plan***, maintaining adequate **streamflow** is particularly important for fish bearing and potential salmonid bearing streams. It is known that **groundwater withdrawals** can impact **streamflows** and these impacts should be minimized to protect fish, wildlife, aesthetics, and recreational activities.

- Only one of Island County's streams has limitations on additional water allocations in order to protect stream flow. This is an unnamed creek on northeast Whidbey Island that was added to Department of Ecology's surface water source limitation (SWSL) list in the 1950's. In a very limited number of cases, water right applications have been examined on a case-by-case basis (e.g. Maxwelton) for impacts to streamflows as part of a **public interest** review. It should be noted that these case-by-case reviews do not preclude future water right applications.

- Maintaining adequate water table levels is also important for maintaining **proper functioning conditions** in Island County's wetlands, lakes, **estuaries**, and **nearshore** areas. Groundwater provides an important part of the water supply to these natural systems. These ecosystems help maintain high water quality levels, provide flood control, and provide critical habitat to the diverse terrestrial and aquatic species that live in Island County. These ecosystem functions are key to maintaining the quality of life enjoyed by Island County residents and visitors.

2. Introduction

This topic paper presents a brief background on **minimum instream flows**, the importance of surface and groundwater levels to Island County aquatic habitats, and options for addressing **streamflows** and habitat in the watershed management planning process (HB 2514; RCW 90.83).

Identifying ways to maintain instream flows necessary for fish is an essential part of Island County's watershed plan. It is a requirement of the Watershed Planning Act (1999, HB 2514; RCW 90.83) to, among other things, provide an estimate of the surface and ground water

available for future appropriation. This estimate would take into account the **minimum instream flows** adopted by rule (or to be adopted by rule) for streams in the management area, including the data to evaluate necessary flows for fish.

While Island County has opted to not pursue the **water quality**, **instream flow** and **habitat assessment elements** in the watershed planning (HB 2514; RCW 90.83) process, identifying ways to maintain adequate groundwater contributions to wetlands, lakes, **estuaries** and **nearshore** areas is critical to maintaining **properly functioning conditions**. Maintaining **properly functioning conditions** in aquatic habitats affords the citizens of Island County natural water quality improvement, flood storage, shoreline erosion protection, opportunities for recreation and aesthetic appreciation. These functions can protect our health and safety by reducing flood damage and preserving water quality.

This topic paper examines Island County's need to address **instream flow** issues. This topic paper is related to the conservation topic paper, because water use is directly related to the amount of water available for fish and other aquatic organisms in streams, lakes, and **estuaries**. Conserving water helps to ensure adequate instream flows for fish, especially during the dry summer months and other low flow periods. There is an inherent competition between human water use and maintaining sufficient water levels in our natural aquatic systems. This is especially true in areas with periodic dry seasons, limited water resource opportunities, and high development pressures. Finding a balance between water for people and water for fish is a primary focus of the watershed planning process (HB 2514; RCW 90.83). While this topic paper focuses on **streamflows**, it is recognized that the health of a stream depends on much more than just groundwater. Other factors include land use patterns, land cover changes, water quality and stormwater routing.

3. Background

3.1. Maintaining Adequate Streamflows to Protect and Restore Fish Habitat

Three statutes form the basis for this focus on **instream flows**.

(1) 1949 – Amendments to the state fisheries code recognized the need to protect flows to adequately support fish (RCW 75.20.050)

(2) 1967 – The Minimum Water Flows and Levels Act established WA Department of Ecology's regulatory authority to establish minimum flows or levels on streams and lakes for the purpose of protecting fish, game, birds, and other wildlife, recreational or aesthetic values or water quality (RCW 90.22).

(3) 1971 – The Water Resources Act requires WA Dept of Ecology to establish **baseflows** to protect and preserve a variety of instream beneficial uses, such as fish, wildlife, navigation, recreation, aesthetics, and other environmental values.

These statutes tie in to the requirement in the Watershed Planning process (HB 2514; RCW 90.83) to include strategies to address minimum **streamflows** for fish. Fish species native to

coastal, Pacific Northwest streams, particularly salmon and trout, need adequate amounts of cool, clean water.

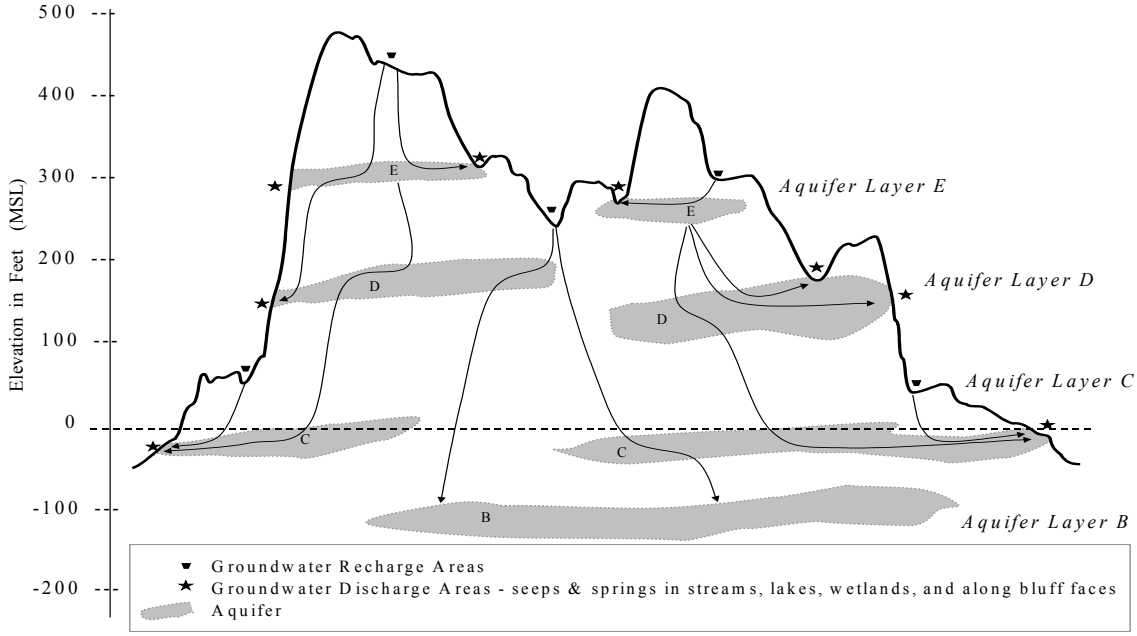
3.2. Salmon and Cutthroat Trout in Island County Streams

Fifteen streams have been identified in the Salmon Habitat Limiting Factors Report for Island County (WA Conservation Commission, April 2000) as current or potential habitat for salmon and/or trout. These streams were listed in the Watershed Planning (HB 2514; RCW 90.83) ***Early Action Plan***. The report made the recommendation that the Department of Ecology and **Island County Water Conservancy Board** should review applicable information on salmon and other fish species distribution and the potential impact to surface water when reviewing water rights applications. This recommendation focuses on having adequate water in streams for fish as required by state statute. Current review of applications for water rights include an assessment of fishery resource needs.

Maintaining adequate groundwater levels is key to supplying summer **baseflows** to streams that flow year round. **Groundwater discharge** feeds many of the coastal Puget Sound streams, producing much and often the entire flow in streams during the dry summer season. Groundwater flow also supplies water to wetlands, lakes and **nearshore** areas. The complexity of Island County's **aquifer** systems makes the process of identifying groundwater-surface water connectivity particularly difficult. Conceptually, water levels in **aquifer zone E** (the top-most layer of the aquifer) are most likely to have a significant impact on **streamflows**, springs and ponds in the upper reaches of Island County's streams. **Aquifer zones D and C** are the strata that intersect the lower reaches of streams, **estuaries**, and **nearshore** areas (Figure 1) and wells in these layers are most likely to impact the lower reaches of streams, and the **estuary** and **nearshore** areas.

As discussed in the "Data Collection and Management" topic paper, the Island County Health Department has a groundwater monitoring network that will eventually encompass 100 wells. There are no lake or wetland monitoring stations in Island County at this time. In 2002, the Island County Health Department, in conjunction with a Centennial Clean Water Fund grant, established stream gauges in twelve streams (Chapman, Crescent, Cultus, Deer, Dugualla, Glendale, Kristoferson, Lone, Maxwelton, North Bluff, Old Clinton, and Swantown) throughout the county. The data from the gauges will be used to assess groundwater withdrawal impacts on Maxwelton, Glendale and Chapman Creeks. This analysis will be completed in 2004. This data will also be used to refine **water budget** analyses in the future.

Figure 1. Conceptual Diagram of Groundwater Flow in Island County
(Based on Hydrologic Cross Sections in the Island County Ground Water Management Plan: Part A – Technical Memorandum (Economic and Engineering Services, Inc., 1989)



3.3. Protection of Island County Streamflows

Options for **streamflow** protections are discussed below. In order to aid watershed planning units in the assessment of **streamflow** needs, the state has allocated additional funds for research to support the setting or amending **minimum instream flow** (MISF) rules. These supplemental funds are available on a competitive basis (up to $100,000) to aid in research to determine stream flow needs for fish, aesthetics, recreation, and other factors.

Minimum instream flows are water rights to a specific quantity of water at a specific time and place to be maintained in a stream. These rights are established and held by the state with associated priority dates and are subject to the same rules as all water rights (i.e. first in time, first in right). When streamflows drop below the specified minimums, water right holders that are "junior" (received their water right after the **Minimum Instream Flow** went into effect) must curtail **water withdrawals**. In surrounding WRIA's with larger streams, much of the watershed planning (HB 2514; RCW 90.83) process is focused on developing recommendations for formal MISF rules or **closures**. MISF rules can greatly restrict future water allocation (including **groundwater allocations**) in affected watersheds.

Similar to a **minimum instream flow**, a stream may have a **closure** that conditions or prohibits future water rights in an area (stream or groundwater) for all or part of a year. Closures are established in state rule similar to a **minimum instream flow** and are generally

based on evidence that a stream has been over-allocated or cannot sustain additional water withdrawals without detrimental effects to fish or wildlife. Unlike a **Minimum Instream Flow**, a closure is in effect without regard to flows in the stream. That is, no future water allocations may be made that would affect stream flow during the period of closure.

General stream protection measures can be applied to water rights on a case-by-case basis. A recent example involved a surface water right application on Maxwelton Creek. The water right was denied by the Department of Ecology based on a finding that water was not available in the stream for further appropriation and that it would be contrary to the **public interest** to appropriate the water. These finding were supported in part by a stream flow assessment conducted by the Department's of Ecology and Fish and Wildlife. The water right denial has been challenged by the applicant and will be considered by the Pollution Control Hearings Board next year.

There are no **minimum instream flows** established for Island County. Similarly, there are no **closures** established by rule for Island County. One creek, an unnamed creek north of Strawberry Point (NE Whidbey Island), is the only stream in Island County with formal **streamflow** protection. This creek was added to the Department of Ecology's Surface Water Source Limitation (SWSL) list in 1952. The SWSL list stemmed from the 1949 legislation protecting flows for fish and wildlife. Steams were added to the list based on case-by-case assessments of recommended sites. The list is still used by the Department of Ecology to limit new water right allocations on identified streams, however streams are no longer added to the list.

3.4. Island County Lakes, Wetlands and Nearshore Waters

It is important to note that stream habitats are just one of the ecosystems that require **groundwater discharge** to maintain **proper functioning conditions**. Island County lakes, wetlands and **nearshore** areas are also dependent on water table levels and groundwater flows during summer conditions. These ecosystems help maintain high water quality levels, provide flood control, and provide critical habitat to the diverse terrestrial and aquatic species that live in Island County. Salt and freshwater wetlands are recognized as highly productive systems. The importance of **groundwater discharge** to **nearshore** ecosystems is a topic that is currently being researched by scientists interested in eelgrass, kelp beds, and shellfish communities. Freshwater seeps in **nearshore** areas provide freshwater, saltwater mixing zones that may have significance for **nutrient transport**.

4. Options

4.1. Option 1: No additional protections needed

If the data that has been collected to date indicates that additional water resources allocations are unlikely to unacceptably impact **streamflows** and aquatic habitats, then the county could

make an affirmative statement that there is no need for additional protections. This statement needs to be supported by empirical evidence that water resources allocations, particularly **groundwater withdrawals**, are not likely to impact **baseflows** to streams and other critical water ecosystems. An assessment of water resources allocations is currently being done for three streams (Maxwelton, Glendale, and Chapman).

4.2. Option 2: Continue/Increase communication between WA Dept of Ecology and the Island County Water Conservancy Board

The WA Department of Ecology maintains a log of permitted surface and groundwater water right permits, and they have the qualified water quality inspectors to determine if quantity or quality standards have been exceeded. Ecology will be asked to keep the **Island County Water Conservancy Board** appraised of any new water rights applications, and the **Conservancy Board** will keep the WRAC and Salmon TAG informed of these applications. Based on feedback from the **Conservancy Board** and/or the appropriate local watershed group, such as Maxwelton Salmon Adventure for the Maxwelton basin, Ecology and WDFW will perform a field analysis to assist in a final determination of a water rights withdrawal. It should be noted that this option recommends that Ecology and WDFW maintain the capacity to provide the county with **streamflow** technical support.

4.3. Option 3: Assess the potential for water withdrawal impacts on streams and aquatic habitats

Impacts of **water withdrawals** to streams and other aquatic habitats are related to the quantity of water being withdrawn from surface and ground water sources and the complexity of the hydraulic connectivity between these water sources. The county may be eligible for supplemental funding that could be used to evaluate the connectivity between water resources allocations, **streamflow** levels, and aquatic habitat. Research options include expanding the assessment of **streamflow** hydrologic connectivity, assessment of biological uses of Island County streams, study of water allocations on **streamflows** and **baseflows** to **estuaries** and **nearshore** areas, or studies examining the economic and aesthetic values of streams. These assessments would expand upon the studies of well withdrawal impacts currently being done by Island County for Maxwelton, Glendale and Chapman Creeks under the Island County Watershed Implementation Grant. This study will be completed at the end of 2004.

4.4. Option 4: General discussion of stream protection (e.g. Early Action Plan)

The county's Water Resources Planning ***Early Action Plan*** recognized the importance of **streamflows** for fish, wildlife, aesthetics, and recreational activities and recommended that extra consideration be given to water allocations in these areas. This option would expand on the recommendation included in the ***Early Action Plan*** to provide more information on the streams and related aquatic ecosystems. This general discussion of **streamflow** and habitat needs should then be used as guidance for the Department of Ecology and the Water Conservancy Board in reviewing new/change applications.

4.5. Option 5: Public Interest Policy for streams and aquatic habitat

This action would take a step further from the general discussion of stream protection. Providing a **Public Interest** policy to the Department of Ecology would provide direction for the assessment of impacts to specific "**public interest**" elements. All water rights have a "**public interest**" element in their decision making. This option has not been used in the water resources watershed planning (HB 2514; RCW 90.83) process, but water rights applications are sometimes conditioned or denied based on location specific "**public interests**". A local example is the protection of Maxwelton **streamflows**. This option provides the county with the ability to specify the "**public interest**" elements important to citizens of Island County. The watershed plan should describe the "**public interest**" in protecting streams and recommend applications.

4.6. Option 6: Develop seasonal closure rules for fish bearing streams and watersheds contributing to important estuary and nearshore habitats

Under this option the county would conduct studies to identify watersheds which have **streamflows** that drop below minimum **streamflow** levels during the low flow period. Closure of these watersheds would prohibit future water right allocations that affected the streams during the period of closure. The protections may also extend to smaller "exempt" (not subject to state water right permitting) wells. This would likely limit wells to deeper **aquifers** long distances from the closed streams, and/or require the water users to mitigate any impacts to stream flow. After identifying the streams and times of year subject to **closure** the county would recommend that the Department of Ecology write the **closures** into state rule.

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4.7. Option 7: Develop minimum instream flow recommendations for fish bearing streams and watersheds contributing to important estuary and nearshore habitats

Under this option the county would commit to conducting the studies to describe minimum flows for some or all of Island County streams. These studies would be started during the watershed planning process, and continue during the implementation phase. The results of these studies would provide the basis for negotiations about proposed water allocation regulations with the Department of Ecology. The regulations would establish rules about the future of water rights allocations in the affected watersheds and might incorporate a "relief valve" in the form of recommendations for development of critical community water uses. After negotiating the **minimum instream flow** recommendations, the county would recommend that the Department of Ecology write the flows into state rule. Establishing **instream flow** rules would affect all future water rights claims, since an **instream flow** rule acts as a senior water right to all subsequent rights.

The goals for setting minimum **instream flow rules include:**

- Meeting legal obligations – acknowledge needs and costs of in-stream flow uses;
- Providing clarity, predictability and equity for all users of a water source;
- Promoting healthy, sustainable environments;
- Using water resources responsibly and in a manner which respects natural resources;
- Enabling timely decisions to support growth, & direct growth to urban area, where possible; and
- Supporting comprehensive water planning efforts.

5. Recommendations

The Water Resources Advisory Committee does not recommend setting instream flow rules at this time. However, adequate **streamflows** are important to all aspects of our water resources in Island County, as groundwater resources, streams and lakes, and nearshore areas are hydrologically connected.

Island County is characterized by small, coastal streams, which support small populations of salmon and cutthroat trout. These streams also support other fish (ex. Stickleback and Sculpin), amphibians and invertebrates. Instream flow is important to the support of these populations as well as to fish utilizing nearshore estuarine systems. It is recommended that Island County seek additional scientific data to support the current and future allocations of our water resources. This would include:

- Further assessing the potential for water withdrawal impacts on streams *(option 3);*
- Enhancing the "**Early Action Plan**" recognition of streams' importance to Island County water resources in the final plan *(option 4)*; and
- Beginning the scientific research to analyze what the county should do to establish instream flow rules *(option 7)*.

Appendix – Glossary

Allocation: The quantity of water assigned to a particular water use.

Aquifer: An underground geological formation or group of formations that contain water; a source of ground water for wells and springs. The Island County aquifer is described using five zones, Zone E being nearest to the land surface and generally above sea-level, moving downward to Zone A, the deepest aquifer layer.

Baseflow: Streamflow resulting from precipitation that infiltrates into the soil and eventually moves through the soil to the stream channel. This is also referred to as ground water flow, or dry-weather flow.

Closure (partial or year-round): A limitation or prohibition on future water rights in an area (stream or groundwater) for all or part of a year. Closures are established in state rule and are generally based on evidence that a stream has been over-allocated or cannot sustain additional water withdrawals without detrimental effects to fish or wildlife.

Early Action Plan: A plan prepared by the WRAC in August 2000 during the first stages of watershed planning that makes recommendations on the timely processing of water right applications and a regional priority order for processing those applications. The plan recommends that WDOE direct its work in two priority areas: first, those areas with the oldest applications; second, in high priority areas as determined by a ranking of agricultural demand, undeveloped parcels, urban growth area, evidence of seawater intrusion, and relative availability of water.

Estuary: Semi-enclosed coastal body of water which have free connections with the open sea in which freshwater and saltwater mingle and water is usually brackish due to daily mixing and layering of fresh and salt water.

Exempt Well: Small withdrawals of groundwater of less than 5,000 gallons per day for domestic use or irrigation of ½ acre or less exempted from permitting requirements.

Groundwater Discharge: Water flowing from a groundwater aquifer at a place where the water table intersects the land surface (spring or seep into streams, lakes, wetlands, or marine coastal waters).

Island County Water Conservancy Board: Consists of three citizen members appointed by the County Commissioners; established to process water right change applications and issue initial decisions on the change requests. Conservancy Board decisions are subject to WDOE review.

Low Flow Period: Dry season (summer) period when precipitation inputs to streamflow are limited and streamflow is fed by groundwater discharge.

Minimum Instream Flow: Water rights to a specific quantity of water at a specific time and place to be maintained in a stream. These rights are established and held by the state with associated priority dates and are subject to the same rules as all water rights (i.e. first in time, first in right). When streamflows drop below the specified minimums, water right holders that are "junior" (received their water right after the **Minimum Instream Flow** went into effect) must curtail **water withdrawals**.

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Nearshore: The estuarine/delta, marine shoreline and areas of shallow water from the top of the coastal bank or bluffs to the water at a depth of about 10 meters relative to Mean Low or Low Water. This zone incorporates those geological and ecological processes, such as sediment movement, freshwater inputs, and subtidal light penetration, which are key to determining the distribution and condition of aquatic habitats. (As defined by the Puget Sound Nearshore Ecosystem Restoration Project.)

Nutrient Transport: The movement of nutrients as particles or dissolved constituents in surface water or ground water.

Properly Functioning Conditions: The sustained presence of natural habitat-forming processes that are necessary for the long-term survival of the species through the full range of environmental variation.

Public Interest: Benefiting the general public, a large class of persons or the natural world. Not something which only benefits one person or a small number of people at the expense of the general public or our environment.

Streamflow: The amount of water in a stream bed, influenced by factors such as rainfall, snowmelt, temperature, season, vegetative cover, soil and geology.

Water Budget: An assessment of all the inputs and outputs to a hydrologic system. Budget components might include, for example, rain and fog as inputs, soil water as storage, and stream runoff and evapotranspiration as outputs.

Watershed Planning (HB 2514; RCW 90.83) Optional Planning Elements:

- **Water Quality**: Examination of existing studies on water quality standards met or violated, causes, and pollution capacity; legal uses of fresh water; total maximum daily load (TMDLs) standards established for the area; and impacts of fresh water on marine systems. Recommendations for implementing TMDLs and monitoring for compliance. Water quality standards or TMDLs are adopted at the state level; the planning unit can be a part of studies and make recommendations to the state.

- **Instream flow**: Focused assessment of existing minimum instream flow rules and studies to identify needs for new minimum instream flow rules. Any rule changes or additions would be recommended to the Department of Ecology and would require consultation with all local government and tribal planning unit members.
- **Habitat assessment**: Use the Salmon Recovery (HB 2496) plan as the primary nonregluatory part of an assessment of aquatic habitats. Integrate aquatic habitat recommendations with salmon recovery efforts. Rely on existing laws and shoreline, growth management and forest planning processes.

Water Withdrawal: Water removed from streams, lakes and aquifers for human use.

WRIA 6 Salmon Recovery Strategy (Nov, 2002): Habitat project list and project prioritization strategy developed by the WRIA 6 Salmon Technical Advisory Group and approved by the Water Resources Advisory Committee under the Salmon Recovery Act (HB 2496). This documents guides local groups in developing project proposals for submission to the Salmon Recovery Funding Board.