WASHINGTON WATER ACQUISITION PROGRAM

FINDING WATER TO RESTORE STREAMS

WASHINGTON STATE DEPARTMENT OF ECOLOGY

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EXECUTIVE SUMMARY

This report describes the Washington Water Acquisition Program, a voluntary initiative that offers monetary compensation to water-right holders who are willing to revert all or a portion of their right back to the state to benefit salmon. The Department of Ecology (Ecology), which manages state water supplies, will hold the water in trust to restore stream flows.

Acquiring water rights is one of many ways to help restore stream flows across the state. As outlined in this document, the Washington Water Acquisition Program strategy provides a framework that links different approaches and guides future water-rights acquisitions.

Water-right holders who choose to participate in the program can sell, lease or donate all or part of their right. The program is focused on increasing stream flows in 16 basins or "watersheds" across the state experiencing chronic water shortages. While each basin is unique with its own distinctive set of issues, all water-rights acquisitions need to be undertaken in a consistent fashion to ensure fish actually benefit and the public gets the best possible investments.

Background

Washington residents, state lawmakers, Indian tribes and federal, state and local agencies have long recognized the environmental, economic, cultural and social benefits of keeping enough water in our state's streams and rivers. Beginning in 1989, the state legislature passed several key provisions allowing the Department of Ecology to acquire water rights on a voluntary basis and hold that water in trust as a way to increase stream flows for fish or provide water for irrigation, municipal and other beneficial uses.

In 2000, the legislature provided $1 million to Ecology to fund a pilot program to acquire water rights in the Dungeness, Methow, Walla Walla and Yakima basins. During Washington's second-worst recorded drought in 2001, the department negotiated 21 water-right leases with farmers to keep water in several key fish-bearing streams.

Water-right acquisitions proved to be effective in keeping many streams and rivers flowing during the drought emergency and have assisted in restoring stream flows in the four pilot watersheds.

Low stream flows put fish populations at peril

Unfortunately, in many of the state's 62 watersheds, water conditions remain too poor to sustain most life stages of fish. Water withdrawals, impoundments and land use changes have caused extremely low flows in nearly one-fourth of the state's river basins. The 1999 *Washington Statewide Strategy to Recover Salmon* found that 16 watersheds were "over-appropriated," meaning more water has been legally allocated than is naturally available.

The salmon populations in these critical basins require intervention to keep them from further harm or possible extinction. Many fish species found in these basins are currently listed as threatened or endangered under the federal Endangered Species Act.

The16 critical basins are evenly split between Eastern Washington (*Lower Yakima, Methow, Middle Snake, Naches, Okanogan, Upper Yakima, Walla Walla and Wenatchee watersheds*) and Western Washington (*Cedar-Sammamish, Chambers-Clover, Duwamish-Green, Elwha-Dungeness, Nooksack, Puyallup-White, Quilcene-Snow and Snohomish basins*). Acquisitions within the 16 basins will be targeted to small tributaries with good fish habitat located in areas where there is willingness and interest from water-right holders and the local community.

Tools and challenges

A number of water acquisition tools are currently available. Some, like water-right leasing and purchasing, have already been used on a limited basis. Other more innovative measures such as water banking, auctions, source water substitution and dry-year leases are currently being tested and employed. Determining which acquisition tool is best depends on a wide array of factors including the extent and duration of instream-flow problems, acceptance by water-right holders and communities of instream flow needs and available funding.

The market exchange of water to increase stream flows is limited, despite strong interest and support by local, state, federal, tribal and private entities in using market-based incentives to find water. One of the most challenging tasks in acquiring water rights to improve stream flows is finding willing sellers.

Many potential participants are uninformed about the problem, have concerns about the long-term impacts of transferring water out of agriculture or other industrial uses, and generally mistrust both instream flow transfer activities and governmental-run water markets. Ecology and its partners are working to broaden public media understanding about the need to increase and maintain stream flows, raise awareness about the program and build public and private partnerships to establish an active presence in the communities where acquisitions are needed.

Coordinating acquisition efforts vital

In order to maximize expertise and keep duplication to a minimum, Ecology has been working closely with a number of different state agencies including the Governor's Salmon Recovery Office, Department of Fish and Wildlife and Washington Conservation Commission; federal entities such as the Bureau of Reclamation and Bonneville Power Administration; tribes; local conservation districts and salmon recovery boards; and private organizations such as Washington Water Trust and Walla Walla Watershed Alliance. Some activities described in this report will be carried out by entities other than Ecology, either under contract or by mutual understanding.

Finally, since millions of dollars of state and federal funds are expected to be spent on water rights acquisitions, there is a need to become more sophisticated and knowledgeable about the effectiveness of water rights acquisitions as well as public acceptance and participation in the program. Lawmakers, participants and the general public need to be confident that their water acquisition investments ultimately help fish populations by putting water back in areas where it is needed most. It is therefore necessary to have a well-defined compliance and monitoring program in place to ensure protection of trust water rights acquired for instream flows and evaluation and improvement of water acquisition activities over time.

BACKGROUND: SETTING THE CONTEXT

Health of some watersheds in peril

The state of Washington is renowned for its mountain peaks, flowing rivers, ocean beaches and bountiful agricultural production. Another enduring icon of the Evergreen State has been its abundance of fish species, especially salmon.

To survive and thrive, salmon need plenty of cool, clean water and suitable, accessible habitat in our rivers and streams. During the last decade, however, numerous populations have been listed as endangered or threatened under the federal Endangered Species Act.

A ***watershed*** is the area of land that water flows across or under on its way to a river, lake or ocean. It includes all surface fresh water and adjacent estuaries and marine areas. In this report, the terms "watersheds," "basins" and "Water Resource Inventory Areas" are used interchangeably.

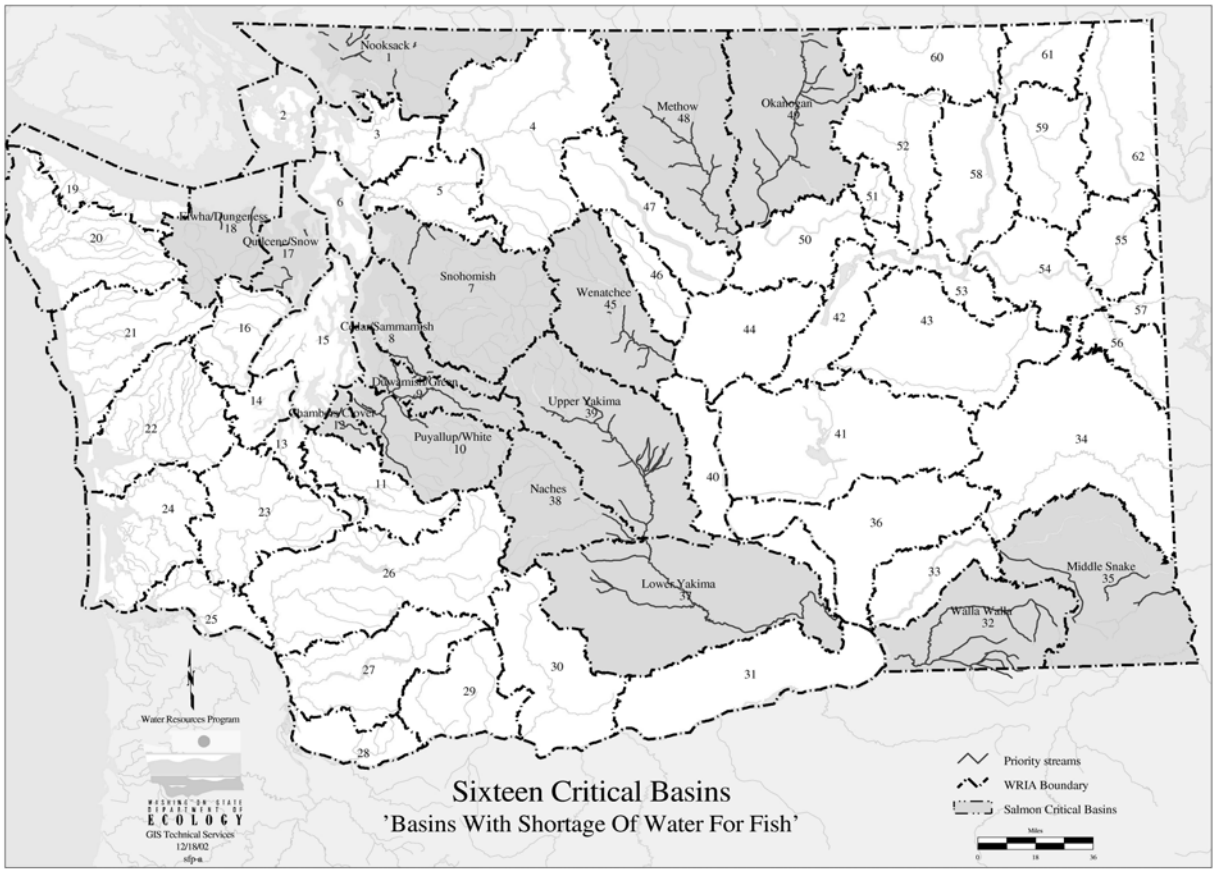
In many Washington watersheds, current water conditions are simply too poor to sustain most life stages of fish. Water withdrawals, impoundments, and land use changes have caused extremely low flows in more than a dozen river drainage systems. In November 1999, the Washington Statewide Strategy to Recover Salmon classified watersheds with shortage of water for fish as critical basins. There are 16 critical basins out of the state's 62 watersheds. The 16 critical basins *(see list and map below)* are also referred to as "over-appropriated," meaning more water has been legally allocated than is naturally available.

Table 1: List of critical basins

Eastern Washington	Western Washington
▪ Lower Yakima	▪ Cedar-Sammamish
▪ Methow	▪ Chambers-Clover
▪ Middle Snake	▪ Duwamish-Green
▪ Naches	▪ Elwha-Dungeness
▪ Okanogan	▪ Nooksack
▪ Upper Yakima	▪ Puyallup-White
▪ Walla Walla	▪ Quilcene-Snow
▪ Wenatchee	▪ Snohomish

In these 16 critical watersheds, the amount of remaining water cannot sustain healthy fish populations. In some places, water can vanish completely. Inadequate stream flows are particularly common in late summer and early fall when human consumption and agricultural demands are at their highest — the same time fish need water for migration, spawning or rearing. Low summer stream flows also raise water temperatures and concentrate pollutants that can harm or even kill fish.

Map – Sixteen critical basins targeted for water rights acquisitions



Water for fish: A fairly recent concept

Prior to 1949, there were no state laws protecting stream flows. For nearly a century, water-right development in Washington occurred with little or no regard for fish and other "instream" uses such as fishing, hunting, boating, swimming and scenic beauty. Under the state rule-making process, instream flows are defined as the amount of water needed in streams and rivers to support aquatic, water quality and other instream values. Since 1949 the legislature adopted key state laws that recognized the need to protect stream flows for fish, including provisions that allow the state to set instream flow levels in rules for rivers and streams within watersheds.

***Salmon** refers to all species of salmon, steelhead, trout and char native to Washington.*

Some watersheds have established instream flows

The Washington Department of Ecology has established 19 instream flow rules. Unfortunately, most major water diversions, reservoirs and other developments such as hydropower facilities occurred well before any instream flows were established. For instance, nine of the fish-critical basins already have instream flows in place. Under state law, however, those established flows are subservient to most existing water rights – the established instream flow rights are junior and may exist only on paper.

> ***Instream flows*** *are stream flows set in rule to protect and preserve "in-stream" values and resources.*

In the 16 critical basins as well as other watersheds with chronic low-flow conditions, simply setting new or amending existing instream flows will not increase the amount of water available to support instream functions and beneficial uses. The most important and immediate need is to put water back into rivers and streams to help fish recovery.

Restoring stream flows for fish

Many private organizations and local, state, tribal and federal agencies are interested in working cooperatively to restore instream flows to enhance and maintain fish production. There are several regulatory and incentive-based mechanisms for putting water back into a stream and preventing further flow declines. They include:

- Water right acquisitions through purchases, leases, donations and other means.
- Flow augmentation from water conservation and reuse projects.
- Water releases from existing and new water storage projects, including surface and underground structures.
- Water releases below hydropower projects to protect stream flows.
- Enforcement activities against illegal uses and excessive water waste.
- Stream habitat restoration projects implemented by various watershed groups such as lead entities established under the Salmon Recovery Planning Act.

This strategy focused on restoring stream flows through water rights purchases, leases, donations and other means.

Getting real water through acquisitions

Obtaining water rights through acquisitions is one of the most effective ways to get water when and where it is needed. Water right acquisitions are particularly well-suited for small streams and tributaries, where even adding small amounts in the right reach can be critical. Acquisition opportunities may not be available in all critical basins or in every stream or river within a basin. Other stream-flow restoration efforts are already underway in some of those basins, including putting water conservation and reuse projects in place as well as utilizing water storage facilities to help restore stream flows.

Past and current water rights acquisitions

Ecology began to acquire water rights in 2000 after the legislature established prioritization criteria and provided $1 million to fund a pilot to purchase and lease water rights. Under the pilot, the department leased and acquired water rights in the Walla Walla, Dungeness, Methow and Yakima basins.

Using money from the emergency drought account in 2001, Ecology negotiated 21 water right leases with farmers to keep water in the following fish-bearing streams during Washington's second-worst recorded drought:

- Libbey Creek (Methow watershed)
- Yakima and Teanaway rivers (Upper Yakima watershed)
- Touchet River (Walla Walla watershed)
- Dungeness River (Elwha-Dungeness watershed)

To help fish populations in the Columbia River basin, Ecology also entered into an agreement with the Bonneville Power Administration (BPA), federal Bureau of Reclamation (BOR) and Columbia-Snake River Irrigators Association to take advantage of BPA efforts to address potential power production shortfalls. Under the agreement, BPA paid growers in the Columbia Basin Project to remove 75,000 acres from agricultural production. The action kept extra water in the river during the most critical drought months. Some of the Columbia Basin Project water was made available to downstream irrigators with junior, interruptible water rights.

LEGAL AND FINANCIAL MECHANISMS

The state legislature has recognized the ecological, economic and social benefits of creating a state water right acquisition program. Lawmakers enacted several statutory provisions that address the legal constraints found in the state surface and groundwater codes by establishing a "trust" water right program. Under the program, the Department of Ecology is authorized to acquire water rights from willing water-right holders, and hold the water in trust in order to increase stream flows or provide water for irrigation, municipal and other beneficial uses. Later provisions were added to encourage water donations to the trust water program and fast-track application processing, including transfers of acquired water rights to the trust water right program.

I. Statutory foundation for acquiring 'trust' water rights

Two pieces of legislation – the 1989 Yakima Basin Trust Water Rights Act and the 1991 Water Resources Management Act – created a trust mechanism to acquire water rights on a voluntary basis. Under the measures, water rights can be transferred to meet presently unmet needs, including instream flows for fish.

Under the trust water law, Ecology can acquire water rights through purchases, leases, donations and other appropriate means, including water conservation projects, from any person or entity or combination of persons or entities. Once acquired, these rights become trust water rights. The following outlines some general legislative provisions:

- **A "trust water right" means any water right acquired by the state** for management in the state's trust water rights program.
- **A water right acquired by the state expressly conditioned to limit its use to instream purposes** must be used as a trust water right in compliance with that condition.
- **Trust water rights retain their priority date** during time they are held in trust and are not subject to relinquishment due to lack of use.
- **Trust water rights can redirect the use of conserved water saved through state- or federally-funded conservation.** The conserved water or "net water savings" means the amount of water determined to be conserved and usable within a specified stream reach for other purposes without impairment or detriment to water rights existing at the time that a water conservation project is undertaken.
- **Trust water rights must not reduce the ability to deliver, or supply water** that otherwise would have been available to other existing water uses.

In 2001 and 2002, the legislature expanded the trust water rights program by encouraging water donations to help provide stream flows for fish. The law also requires Ecology to manage donated rights so they qualify as a charitable deduction for tax purposes, although the agency cannot guarantee every donation will qualify.

In 2001, lawmakers created two lines for water-right applications – one for new rights and one for changes and transfers. This enables Ecology to pull changes and transfers that had been stuck behind requests for new water rights, significantly simplifying the task of processing these

applications. In 2002, the legislature also created an expedited process to establish a donation, waiving the advanced, detailed public review for water rights donated in the short-term designed to help achieve an established instream flow.

II. Other legal and institutional mechanisms

1. Salmon Recovery Funding Board
Created in 1999, the Salmon Recovery Funding Board is responsible for funding the most important salmon habitat projects and activities. Using the best available science, the board funds habitat projects that protect, restore and enhance salmon habitat and watershed functions, including land and water acquisitions. The board has also approved funding for setting, achieving and monitoring instream flows – $6.9 million in federal money earmarked by Congress for salmon recovery and with another $2 million in state funds to augment existing resources to acquire water through purchases, leases and other means to meet instream flows in the 16 critical basins.

2. Local Conservation Districts: Water Irrigation Efficiencies Grant Program
In 2001, lawmakers set aside $7.8 million to provide grants to farmers to improve the efficiency of their existing irrigation systems. The Washington Conservation Commission is making the funds available to local conservation districts with the following conditions and limitations:

- **Grants are made to local conservation districts to assist the agricultural community** in implementing water conservation measures and irrigation efficiencies in the state's 16 critical basins. Only 19 local conservation districts are eligible to apply for grants.
- **Grants are awarded based on demonstrated need and environmental benefit.** A conservation district receiving funds will manage each grant to ensure a portion of the water saved by the water conservation measure or irrigation efficiency will be placed in the Trust Water Rights Program to enhance instream flows.
- **The proportion of saved water placed in the trust water rights program must be at least equal** to the percentage of the public investment in the conservation measure or irrigation efficiency.
- **The percentage of the public investment may not exceed 85 percent of the total cost** of the conservation measure or irrigation efficiency. When awarding grants, priority will be given to family farms.
- **No single project can receive more than 6.25 percent** of the total financial assistance funds available for allocation.
- **The amount of saved water will be determined** by the U.S. Department of Agriculture's Natural Resource Conservation Service, in consultation with Ecology and Center for Environmental Law and Policy (CELP).
- **Contracts must be approved by Ecology and the Conservation Commission**.
- **The lease of saved water is for a minimum of 10 years.**
- **The Washington Conservation Commission will submit a progress report** to the Legislature by Feb. 1, 2003.

3. Bonneville Power Administration
The Northwest Power Planning Council, National Marine Fisheries Service (NMFS) and Bonneville Power Administration (BPA) have recognized the need for water rights acquisition to restore water in many streams within the Columbia Basin.

The Northwest Power Planning Council, in its 2000 Columbia River Basin Fish and Wildlife Program, noted that "experience implementing this program has shown great advantages in being able to move quickly and flexibly to acquire interests in land and water rights for the purpose of protecting or enhancing fish and wildlife habitat." Water right acquisition has also been recognized by NMFS in the Federal Columbia River Power System Biological Opinion.

Additionally, BPA is required to implement innovative ways to increase tributary flows within the Columbia River Basin, including establishing a "water brokerage." The Washington Water Trust, Walla Walla Watershed Alliance and state Department of Ecology have all been approved as local brokerage entities in Washington. Therefore, Ecology is eligible to submit proposals to BPA's regional entity, the Northwest Fish and Wildlife Foundation, for funding consideration and implement proposals that meet BPA's Water Transaction Program goals.

4. Washington Water Trust
Washington Water Trust, a private, nonprofit organization founded in 1998, works to restore instream flows in Washington's rivers and streams. It is the only non-governmental organization working statewide to restore flows to streams and rivers by acquiring water rights. The entity works cooperatively with farmers, ranchers, irrigation districts, tribes, public agencies, land trusts and other non-governmental organizations to acquire water rights from willing sellers through purchases, leases or gifts to improve water quality, fisheries and recreation. The Trust works on small streams and tributaries to identify streams and rivers that have a combination of low flows, endangered or threatened fish species and water-right holders willing to sell, lease or donate their water rights. The organization acquires water rights from voluntary leasers or sellers, leaving acquired water in rivers and streams.

5. Nature Conservancy
The Nature Conservancy's mission is to "protect the plants, animals and natural communities that represent the diversity of life on Earth." The organization has an extensive land acquisition program to protect and conserve fragile habitats while promoting economic development. Some land acquisition projects have valid water rights that can be transferred to the trust water right program. Ecology will work with local Nature Conservancy chapters to acquire water rights and help transfer them to the state trust water right program.

6. 2002 Federal Farm Bill
The 2002 federal farm bill contains special provisions for surface and ground water conservation. Additional funding has been appropriated for increasing the use of efficient irrigation systems.

III. Funding sources: State, federal and private

Funding sources for water rights acquisitions include:

- **$3.5 million appropriated by the Legislature** during the 2001-03 budget biennium to be used for water rights acquisition in the 16 critical basins.
- **$2 million approved by the state Salmon Recovery Funding Board** to augment existing resources to acquire water to meet instream flows in the 16 critical basins.
- **$7.8 million in grant money available to farmers** operating in the 16 critical basins through the Water Irrigation Efficiencies Grant program.
- **Federal agencies** such as the U.S. Bureau of Reclamation and Bonneville Power Administration are funding water-rights acquisitions to mitigate the effects of past and current water and land developments.
- **Finally, various private entities** such as the Washington Water Trust are spending money to acquire water rights to help achieve instream flow requirements.

INTRODUCING WASHINGTON WATER ACQUISITION PROGRAM

The Washington Water Acquisition program is a voluntary initiative offering monetary compensation to water-right holders willing to revert all or portion of their right back to the state to hold in trust. Water-right holders can participate by selling, leasing, or donating all or part of their right. The Water Acquisition Program is focused on increasing stream flows in basins experiencing chronic water shortages, referred to as the 16 critical basins. While each basin is unique and has a distinctive set of issues, a consistent approach to water rights acquisition ensures credible and effective program. Limited acquisition work has been performed to date. This work has often not been strategic and coordinated.

The water rights acquisition strategy provides a framework that brings together different approaches and guides future water rights acquisitions. A strategic and consistent approach will help ensure a greater likelihood that water acquisitions funded by public monies have the highest potential for long-term success. To achieve long-term success, the water rights acquisition strategy:

- **Provides a vision** describing the desired goals, and objectives needed to achieve those goals.
- **Identifies priorities** based on credible information.
- **Effectively and strategically guides** water rights acquisitions.
- **Documents clearly** how the water rights acquisition program "works" and **how to evaluate proposals**.
- **Promotes and endorses active partnerships** with local watershed groups, water-right holders and other interests.
- **Supports locally-established** water rights acquisition initiatives.
- **Provides a foundation for integrating and coordinating** projects and programs funded by state, federal, local and tribal governments and private organizations and for coordinating water rights acquisition with other stream flow restoration programs.
- **Establishes an accountability system** to ensure good investment decisions.

I. Vision, goal and objectives

Vision:
Sufficient water is available for productive fish populations.

Goal:
Assist in achieving stream flow requirements for fish in all 16 critical basins.

Objectives:
The strategic objectives of the Washington Water Acquisition Program are tailored to specific watersheds and consider the following:

- Status of instream flows and water rights in each watershed.
- Where, when and quantity of water needed to most effectively increase fish productivity.

- Opportunities for achieving instream flows via water rights acquisition and other means.
- Levels of community support and among interested parties.
- How to ensure public monies are used effectively and efficiently.

The following objectives are considered central to the success of the stream flow restoration program:

Objective 1
Target stream flow efforts to streams and reaches most biologically important for current and future fish production, especially where chronic low flows impede fish recovery.

Objective 2
Acquire and protect a sufficient amount of water to meet stream flows for fish populations within priority critical basins and to **optimize productivity** of salmon stock, where feasible and practical.

Objective 3
Engage local watershed communities and gain public trust and acceptance of the need to achieve instream flows for fish production through water rights acquisitions as well as other means to restore flows.

Objective 4
Ensure the water rights acquisition program is applied fairly and impartially; and the decision-making process is predictable, open and expedient.

Objective 5
Ensure cost-effective and efficient use of state and federal investment in water rights acquisitions.

II. Barriers, benefits and incentives for water rights acquisitions

When pursuing water acquisitions for fish, it is vital to understand and recognize barriers and benefits for achieving instream flows. This means understanding the perspectives of water-right holders and local communities where acquisitions are likely to occur. To be successful, the strategy for water acquisition must:

- Result in fish habitat and fish populations improvements.
- Provide direct economic benefit to the water right holder. Even participants donating a water right may receive tax and charity benefits.
- Help avoid litigation under the Endangered Species Act.
- Avoid relinquishment of the water right through non-use.
- Promote broad community support and adequate incentives.
- Necessitate active partnerships to locate willing sellers, and dispel the fear and distrust of transferring water to instream flows.

III. Action strategies

The action strategies are aimed at helping agency representatives and local partners engaged in stream flow restoration use water rights acquisition strategically and effectively. Each strategy has been developed and is described in-depth in the following seven chapters.

Guiding principles

The action strategies were shaped using the following principles:

- Water acquisitions are voluntary transactions based on the concept of "willing sellers, willing buyers."
- Water acquisitions are part of the larger context of managing water to maximize uses and benefits, including consumptive and ecosystem water needs.
- Water acquisitions are based on state and local scientific knowledge and consider social and local economic conditions.
- Water acquisitions are accomplished through partnerships with local watershed and regional groups, and private organizations engaged in water and land acquisition.
- Water acquisitions include on-going, long-term monitoring and accountability efforts.

Strategy 1: Selecting Right Tools for Acquiring Water Rights

There are various mechanisms and tools for putting water back into streams (leasing, water banking, etc.). To select the right tool, Ecology and its partners will:

- Research existing efforts in other states and evaluating applicability to Washington.
- Develop a concept paper, soliciting input and developing proposals for implementation, including any needed legislative changes.
- Select key areas within the priority critical basins for implementation of "innovative mechanisms," garnering local support and setting up appropriate mechanisms.
- Design or select tools in tandem with evaluating barriers and benefits of potential acquisitions within each targeted basin.

Strategy 2: Prioritizing Where and When to Acquire Water Rights

Watersheds, sub-watersheds, streams and stream reaches are identified and prioritized by the departments of Ecology and Fish and Wildlife. These priorities will be shared and possibly modified based on input from local watershed planning units, regional salmon recovery boards, tribes other local, state and federal agencies and private, non-profit organizations. Key steps of knowing where and when to acquire water rights include:

- Developing prioritization criteria.
- Gathering and analyzing information regarding relative condition of current stream flow problems and fish status, the number of diversions; amount of water needed to improve flow conditions; and opportunities for acquisitions.
- Selecting priority basins and streams within each basin.
- Producing maps for each priority basin, indicating potential acquisition areas.
- Sharing information with key stakeholders.

Lists and maps outlining the prioritized rivers and streams have been developed and are located in **Appendix II**. The first map is a "coarse" level analysis that identifies and prioritizes rivers

and streams. A more "refined" product will be produced later after consultation and coordination with key stakeholders.

Strategy 3: Establishing Partnerships and "Local Market Places"
This strategy is aimed at generating interest and building public trust about the need to achieve instream flows through water rights acquisitions and assisting local communities and others establish their own "local market places" for acquisitions and find willing sellers. Key steps include:

- Developing partnerships with key stakeholders. Partners include local, tribal, state, federal and private interests.
- Implementing outreach strategies tailored for specific targeted watersheds.
- Actively seeking support of local communities and potential sellers.
- Supporting local community presence by sharing technical information and providing funding, whenever possible.
- Coordinating with other water rights acquisition activities in the basins.

Strategy 4: Evaluating Water Rights for Transfer to Trust Water
Knowing the characteristics of potential water rights (its seniority, historic beneficial use, transferable quantity of water, etc.) can help ensure that acquired water rights are more than paper claims or rights. This evaluation must be performed prior to finalizing an acquisition. In addition, a preliminary evaluation is recommended prior to determining and negotiating value of the water right. The evaluation can be complex and varies with the type of transaction (short-term vs. long-term lease, etc.). Key steps include:

- Reviewing existing statutes and procedures and identifying issues and process for resolution.
- Developing clear, simple and streamlined technical and administrative guidance for Ecology staff and partner entities.
- Conducting preliminary and final evaluation of water rights for transferring into the trust water right program.
- Providing training on how the trust water right transfer program works.

Strategy 5: Determining and Negotiating Fair Market Value
The rapid development of water markets in Washington and the need for accountability of the public's investment demand assurance that citizens are getting the best "bang for the buck." Determining and negotiating fair market value for water rights requires knowledge of what is being purchased (legal characteristics of the water right, etc.) as well as length of time, location and type of transaction being contemplated. Key steps include:

- Researching and adopting methodologies.
- Setting up guidance regarding what the state will and will not pay for.
- Developing qualifications and list of potential "appraisers."
- Developing templates for water rights acquisition agreements, including conditions required of the water-right holder involved in the transaction.
- Communicating information developed.
- Tracking the effectiveness of the valuation methodology, basin-by-basin.

Strategy 6: Ensuring Cost-Effective and Efficient Use of Investments
State, federal, tribal, local and private organizations all have intensified their interest in water rights acquisitions. Funding has been approved by the U.S. Congress, Washington state legislature and federal agencies to acquire water rights through purchases, leases, conservation efficiencies and other means. In addition, private funds are available for water acquisition by private, non-profit organizations. To ensure efficient and effective use of public funds, there is a need to coordinate and cost-share acquisition activities, track expenditures and the water rights put into trust, exchange information, and seek long-term funding opportunities. Key steps include:

- Coordinating water rights acquisition funding activities with other funding sources dealing with instream flow restoration such as the Water Irrigation Efficiencies Program, federal Farm bill, BPA water brokerage funds, etc.
- Identifying future water rights acquisitions funding needs.
- Investigating and seeking cost sharing and other funding opportunities.
- Tracking and reporting water rights acquired by all funding sources.

Strategy 7: Protecting Trust Water and Evaluating Success
A monitoring program is needed to determine whether instream flows are being met, whether or not acquired water rights are being protected and actually putting in more water in targeted streams, and whether fish species are being helped. Key steps include:

- Implementing compliance and enforcement actions to protect trust water rights.
- Developing an effective monitoring program for each basin.
- Identifying baseline data and information needed and means to acquire the data such as installation of additional gauges, metering, and fish population measures.
- Designing and implementing a system to evaluate the benefit to fish.
- Designing and implementing a process for evaluating public acceptance of the program.
- Setting up a reporting system regarding program implementation and effectiveness.
- Coordinating with other related monitoring and compliance activities.

STRATEGY ONE: SELECTING RIGHT TOOLS FOR ACQUIRING WATER RIGHTS

Washington has several potential tools for water acquisition. Some, such as water right leasing and purchasing, have already been used on a limited basis. Other more innovative measures such as water banking, auctions, source water substitution and dry-year leases are currently being tested and employed.

Determining which acquisition tool is best depends on a wide array of factors, including the extent and duration of instream-flow problems, acceptance by water-right holders and communities of instream flow needs and available funding. The mechanisms that appear most promising are:

- Strategically-placed purchases
- Long term, split-year and dry-year leases
- Reverse water auctions
- Water banking

I. Promising acquisition tools

1. Purchases

Purchasing all or a portion of a water right means that right is permanently transferred into the state's trust program. A purchase offers permanent solution to instream flow needs. This is the most expensive means of acquiring water rights. The per-acre-foot value of a water right comes at a higher cost and may also include appraisal and escrow fees. It is, however, the best and most reliable tool of putting water back into streams with chronic flow problems. Due to limited funding, however, the Washington Water Acquisition Program is unlikely to make many purchases. Any water right considered for purchase needs to be located in high priority area and have a sufficient enough seniority or priority date so the water can be protected from withdrawals by other water users.

2. Leases

Leasing offers the opportunity for water-right holders and local communities to become comfortable with instream flow restoration efforts. For example, **annual leases** can be targeted to solve short-term flow problems, such as extreme low-flow conditions during drought. Annual and seasonal leases were used in Washington during the 2001 drought. While short-term leases may be appropriate in certain situations, the best leasing solution is entering into long-term multi-year agreements.

A **split-season lease** allows a portion of a water right to be used for irrigation early in the season, leaving the remaining portion of the right for instream use later in the summer or fall. Split-season leases allow farming to continue while supporting salmon. A trigger event such as stream flow levels must be identified for determining when to exercise the split-season lease. These leases are likely less expensive than full-season leases. To minimize administrative costs, one contract can by drawn to cover several years and might cover a single water-right holder or

multiple leases from several water rights holders within an irrigation district, as was done in the Elwha-Dungeness basin.

Another type, the **dry-year lease,** provides an occasional rather than a permanent water transfer. While dry-year leases are long-term in duration and provide some predictability, very few have actually been negotiated. Even so, at least three types of dry-year leases have been contemplated – insurance, option and predictive.

Under an **"insurance"** dry-year lease, a water-right holder or lessor is paid a yearly amount as insurance against the possibility that a dry year will occur. In a dry year, lessors agree not to use the water and receive a yearly insurance payment whether there is a dry year or not. Some versions use one-time rather than yearly payments against the occurrence of a dry year. A trigger event such as stream flow levels, precipitation, snowpack, runoff or storage must be identified to provide an objective basis for determining when the lease is exercised.

Under the "**option"** dry-year lease, the contract agreement provides an option where a lessee has first call of the water in a dry year and the water-right holder receives a payment, regardless of whether there is a dry year or not. An option payment is made either at the initiation of the contract or annually to ensure that a valid contract exists. An additional payment is made, however, when the lessee exercises the dry-year option, usually at a predetermined price. With an option lease, the trigger is less important because the lease will be paid only when use of the water by the lessee is necessary.

Another version, the **"predictive" dry-year lease**, was developed by the Oregon Water Trust for a dry-land irrigator to run over a 10-year period. The trust and farmer determined that on average irrigation was needed three out of 10 years. A contract between the trust and the irrigator included an up-front payment for forgoing irrigation when it would have been needed (three out of the 10 years) and water was donated for the other seven years. As a result, the contract essentially required the irrigator not to irrigate for 10 years.

3. Water auctions

Auctions provide an opportunity for a seller to offer water rights to numerous buyers. The Deschutes Resources Conservancy, a non-profit organization in Oregon, is currently developing guidance for a new program for leasing water rights using a "reverse auction" *(see boxed text)*. The conservancy hopes to run a reverse auction in January 2003 and is now consulting with area irrigation districts to explore how best to undertake this tool.

Mechanisms for a "reverse" water auction

- Water bank is established in an area.
- Tributaries/reaches needing water are identified.
- Budget is set for the water auction.
- Request for proposals, public information and press releases are advertised and distributed.
- Submittals are reviewed for validity, seniority, stream location and asking price.
- Leases are awarded based on the priority of the lease and available funds.
- Remaining proposals can be listed on the exchange board if proponents desire.

4. Water banking
Water banking can be defined as any activity where water is held by an institution and withdrawn at another time. Banked water can be held in storage, in a reservoir system or an underground aquifer. It can even be held on paper for future withdrawal or exchange.

A survey of the other 18 states west of the Mississippi River revealed that nine states have state-operated water-banking activities in various stages of development. The states are: California, Arizona, Idaho, Texas, Nevada, Kansas, New Mexico, Colorado and Oregon. The details of water banking vary greatly from state to state. Most banks operate regionally within each state, usually at a watershed or basin level. Some states bank groundwater and some bank surface water from reservoirs and some use "paper" credits for unused surface water. Some states also purchase water to put in the bank and accept proposals for water to be held and offered for sale to prospective buyers.

To design a water bank program, the following questions need to be addressed:

- What should a bank accomplish? Should it be limited to increasing instream flows or should it also function as an exchange program for willing buyers and sellers?
- Should a bank operate statewide, or at a regional or watershed level?
- Should a bank be run solely by Ecology, private local entities, or as a public-private partnership?
- Should a bank be limited to operating in areas where there is reservoir storage, or should a bank use paper credits reflecting the individual contributions of water users?
- What mechanisms should the bank use (e.g., purchase credits, soliciting proposals, reverse auction, reservoir release etc.)?
- How should a water bank be piloted to determine if it will meet state needs?

A water bank program to restore instream flows in Washington can be done using the existing state trust water right program. However, new legislation would be required to establish mitigation water banks, multi-state water banks or create private local banks to hold trust water.

Ecology, Washington Water Trust, U.S. Bureau of Reclamation, Colville Confederated Tribes, Bonneville Power Administration and other local entities are currently exploring how to set-up water banks in the Yakima and Okanogan river basins. A proposal to design and develop a working water bank in the Yakima River basin has been approved by BPA under BPA/NMFS Water Transactions Program. It will be funded by both Ecology and BPA. The proposal will support efforts to increase instream flows in the basin and will be built on the existing organizational structure for expediting transfers of water rights to instream flows.

II. Other acquisition tools

1. Source of water substitution
This type of acquisition involves changing the point of a surface water diversion or substituting one source of water for another, usually from surface to ground water. Changing the point of diversion to a location below a critical stream reach might increase flows in that reach. Where ground and surface waters are hydrologically connected, changing the point of diversion from surface water to wells can result in more water remaining in the stream. This option is being

implemented by the Methow Valley Irrigation District. A diversion source may also be changed from an existing surface diversion on a small tributary to a larger mainstem river or stream.

2. Gifts or donations
Water-right holders can choose to donate all or part of their water rights to the trust water program, on either a temporary or permanent basis, to help increase stream flows. Any portion of a donated water right is managed by Ecology. The person or entity donating their water right may qualify for a federal income tax deduction.

3. Net water saving
This type of transaction involves the acquisition by the state of the amount of water that is determined to be conserved and usable within a specified stream reach or reaches without impairment or detriment to water rights existing at the time that a water conservation project is undertaken. This type of acquisition must be the result of physical or operational improvements financed in whole or in part by the state and/or federal agencies. The net water saving conveyed to the state water right trust is proportional to the amount of public money provided.

STRATEGY TWO: PRIORITIZING WHERE AND WHEN TO ACQUIRE WATER RIGHTS

The authorization to spend state and federal dollars on water rights acquisitions are limited to the 16 critical basins identified earlier, these basins are characterized by:

- **The presence of salmon, steelhead or trout stocks** listed under the federal Endangered Species Act as either endangered (in danger of extinction) or threatened (determined likely to become endangered within the foreseeable future).
- **Inadequate instream flows as major factors contributing to the loss** of salmon population and limiting their recovery.

The causes of low flows vary by basin and streams but are usually due to either one or both of the following factors:

- **Over-allocation**, where legally-authorized water diversions and withdrawals have reduced stream flows well below the needs of fish. In some cases, streams go dry completely during the summer and early fall.
- **Physical and hydrological alterations due to extensive urbanization, land development and high water demand.** Snohomish County, for instance, experienced a 45 percent increase in urban land use between 1982 and 1992. Stream flows in urban areas are typically high during rainy, winter months and usually low during the summer, contributing to the poor status of salmon.

Limited resources and the need to produce effective and efficient results require the Washington Water Acquisition Program to be strategic and focused where and when water is needed. Therefore, it is necessary to:

- Evaluate opportunities in each of the 16 critical basins.
- Identify rivers, streams, and stream reaches within the critical basins where acquisition must be targeted.
- Develop criteria for prioritizing and approving water right acquisition proposals.

I. Water acquisition opportunities in the 16 critical basins

While the critical basins are not prioritized, opportunities for funding acquisitions in those basins will be based on the following considerations:

- **Diversity of fish species and stock assemblages present** and their designated health status. Those streams with the greatest numbers of stocks and those with most stocks designated as being depressed, critical, threatened or endangered will receive highest priority.
- **Stream flow conditions and/or associated high water temperature** limiting salmon populations caused mainly by legally-authorized surface water withdrawals.
- **The necessity to restore stream flows in the basin** has been recognized by watershed planning groups and/or the state Department of Fish and Wildlife, affected Indian Tribes and the federal National Marine Fisheries (NMFS) and U.S. Fish and Wildlife (USFWS) services.

- **There are opportunities for water rights acquisitions** based on number of water diversions and willingness indicated by some water-right holders.
- **Local involvement in salmon recovery planning and restoration activities**, as expressed by the existence of lead entities under the 1998 Salmon Recovery Planning Act (2496) and/or local watershed planning units under the 1998 Watershed Planning Ac (2514).

II. Opportunities for acquisitions in rivers and streams *within* the 16 critical basins

1. Criteria for targeting/prioritizing rivers and streams:

- Number of Endangered Species Act-listed salmon species as threatened or endangered or identified as depressed or critical by state Department of Fish and Wildlife and various tribes in the Salmon and Steelhead Stock Inventory (SASSI).
- The stream is a migration corridor and/or provides important spawning, and rearing habitat for anadromous and resident salmonids.
- Extreme low flow conditions and/or associated high water temperature are primary factors limiting or causing salmon population decline within the stream.
- Current surface water diversions and withdrawals from the stream have resulted in extreme low flows in the stream (dewatering by irrigation, municipal, industrial use, or during water storage periods), or stream flows during critical life history stages (smolt out-migration) for salmonids is insufficient for survival.
- Size of the stream is well-suited for water rights acquisitions.
- Instream flow recommended targets can be reasonably expected to be achieved.
- Water rights acquisitions are most likely to contribute to the survival of threatened or endangered fish stocks, or stocks designated by SASSI as at risk.
- There is potential for "net surface water savings" from physical or operational improvements of irrigation systems in the area.
- Willingness and interest from water-right holders to forgo irrigation on a temporary or permanent basis in exchange for monetary compensation.
- The necessity to restore stream flows by putting water back into the stream has been recognized by a watershed planning group and/or state Fish and Wildlife, affected tribes and federal Marine Fisheries (NMFS) and Fish and Wildlife (USFWS) services.

2. Information used to target/prioritize rivers, streams and stream reaches

The rivers, streams and stream reaches are identified and prioritized using:

- Limiting factors analysis conducted by the Washington Conservation Commission, watershed groups, tribes and/or state and federal agencies.
- Watershed assessment produced by watershed planning units.
- Stream flow gauge data provided by the U.S. Geological Survey, U.S. Forest Service and U.S. Bureau or Reclamation, Ecology, irrigation districts, public utility districts and other agencies and tribes.
- Instream Flow studies, such as Instream Flow Incremental Methodology (IFIM).
- Assessments of existing, and expected habitat conditions to determine its suitability to provide for salmon recovery in the event that additional stream flows are provided. Fish

barrier and screen inventories conducted by state Department of Fish and Wildlife (WDFW) and other agencies may also be reviewed.

- Other fish assemblage and inventory data conducted by tribal, state, or federal resource agencies

3. Methodology for targeting/prioritizing rivers, streams and stream reaches

The methodology used to establish prioritization for water rights acquisitions within streams in critical basins considered:

- **Number of salmon species listed** as threatened or endangered under the federal Endangered Species Act.
- **Status of the various salmonid stocks present as designated by SASSI.** Stocks were assigned progressively higher values based on their status. Salmon stocks designated as having "critical" or "depressed" status were assigned higher values than those designated as being healthy.
- **Existing habitat conditions within the stream and/or reaches** as determined by Limiting Factor Analysis (LFA) conducted by the Washington Conservation Commission and other habitat inventory data. Five habitat parameters within each stream were assigned condition ranking indices of "poor," "fair," "good," or "excellent" which were then assigned corresponding values between one and four, with poor being assigned a "1." The higher the total ranking of all habitat parameters, the higher the overall stream rank. Streams with equivalent species assemblages and size, supporting healthy habitat, ranked higher.
- **Estimate of the time period that stream flows are determined to be inadequate.** Streams determined to be suffering low flow conditions a higher proportion of the time during summer, were ranked higher than those only occasionally suffering low-flow conditions.
- **Mean flows of the stream between June 1 and Sept. 30.** Stream prioritization was roughly inversely proportional to their mean stream flows between June 1 and Sept. 30. Thus, small, tributary streams with low flows generally received higher priority than larger streams. Research indicates that fish benefits are generally better realized by restoring multiple small streams rather than attempting to restore flows in one or two large streams. Small streams can benefit significantly from relatively small increases in stream flow. However, some larger streams supporting large number of endangered or threatened species actually ranked higher than smaller streams.

The prioritization was provided by state Department of Fish and Wildlife in collaboration with regional water resources staff and watershed leads. Streams and reaches receiving the highest possible rankings were small, tributary streams that support at-risk species and possess relatively good or excellent habitat conditions.

List and maps outlining the prioritized rivers and streams are contained in **Appendix II**. The first maps are "coarse" level. Additional information will be collected and reviewed to specifically identify the biological needs of salmon populations and potential water-right holders (names, addresses, types of crops raised, historic water use, etc.). Staff will also consult with watershed planning units, salmon recovery boards, American Indian tribes, conservation districts and federal agencies (NMFS, USFWS, U. S. Forest Service (USFS), U. S. Bureau of Reclamation (USBR) and others). More "refined" products will be produced later after the consultation and coordination with key stakeholders.

For maps of priority rivers and streams within each of the 16 basins and a more detailed description of the functions utilized for prioritization of streams for water acquisition, see **Appendix II.**

III. Selecting and approving water acquisition proposals

1. Minimum criteria for selecting and approving projects

At a minimum, and prior to acquiring water rights through purchases, leases or other means the following will be required:

- Sufficient documentation on the water right is available to allow Ecology to make a tentative determination as to the extent and validity of the water right considered for acquisition (e.g., the water right was put to use in the previous five years.)
- The water right has a sufficiently early priority date and can be protected from water withdrawals by other water-right holders for a sufficient stream reach so as to provide increased flows for salmonids throughout a significant proportion of a critical stream reach.
- The acquisition provides benefit (short and long term) in achieving stream flow requirements for fish.

2. Preference criteria for selecting and approving acquisition proposals

In addition to the minimum criteria listed above, the following criteria will also be considered when giving preference to water rights acquisition proposals:

- The acquisition provides other benefits such as decrease in stream temperature; creation of off-channel habitats; and rejuvenating riparian vegetation.
- The water right is reasonably priced within the context of the local market for water.
- The acquisition has received a broad level of support among interested parties.
- The acquisition can be accomplished within a reasonable time period.
- The acquisition can be accomplished with partial funding from other sources.
- The acquisition can be done with minimum administrative costs.

3. No purchase or lease will be done if:

- An acquisition requires the encumbrance of future legislation. Acquisition must be done within existing state law.
- Water rights will not measurably increase stream surface flows.
- Water rights are interruptible, subject to regulation to protect minimum flows established by rule.
- Inchoate or unperfected water “rights” will not be considered for acquisition.

STRATEGY THREE: EVALUATING WATER RIGHTS FOR TRANSFER TO TRUST WATER

It is important to know the characteristics of a water right before acquiring it. Factors such as a water right's seniority, historical use, transferable quantity of water, etc., will be evaluated to ensure that acquired rights are more than mere paper claims or rights. The program goal is to acquire "wet" water. Therefore, the evaluation of a water right must be performed prior to making a final acquisition. Preferably, a preliminary evaluation will be conducted as soon as a proposal is submitted and prior to determining and negotiating the value of the water right. The evaluation process can be complex and extensive, depending on a variety of factors such as:

- Type of transaction being negotiated (e.g., short-term lease, long-term lease, permanent purchase or donation)
- Status of the water right
- Number of diversions on the stream
- Availability of data and information

I. General considerations

1. Underlying document and basis for the water right
The initial assessment must first determine the foundation of the water right in order to understand the protections that may or may not be afforded the trust water right. If the right is a state-issued certificate, an adjudicated certificate of water right, or a perfected state-issued permit, the resulting trust water right can be "protected" from other junior water users in the watershed. The state's ability to regulate water users to protect a trust water right based on a water right claim is limited. This will be taken into account when considering using state funds to purchase or lease a water right claim. However, there may be value in transferring a water right claim to an instream flow in certain streams and under certain conditions.

2. Priority date
Attempts will be made to acquire water rights with senior priority dates. In some watersheds, junior water rights are frequently regulated in favor of senior water rights. In most cases these junior rights would have little value for increasing flows in water-short years.

3. Season of use
Some water rights are limited to a season of use that may not have much value to fish. One of the strategies of the trust water program is to return water to the stream when it would naturally occur. Changing the season of use may or may not be acceptable or desirable. The ability to store water in a reservoir for release at a later time may allow for changes in seasonal use that could help stream flows. For example, if water is stored in a reservoir and then released in pulses, it may serve to encourage out-migration of juvenile fish.

4. Interruptible/seasonal water use
Some water rights are subject to regulation in favor of adopted instream flows (based on 90.22 RCW, 90.58 RCW and accompanying Washington Administrative Codes). Other water rights have water availability limited by natural conditions, such as rights from small intermittent or ephemeral streams. The water right document may indicate a full season of use but the appropriation of water may be naturally limited to the amount of water occurring at the point of diversion. In most cases, these rights would have little value for increasing flows in water-short years. Interruptible water rights will not be considered for acquisition by the state.

5. Ground water rights transferred to the Trust Water Right Program
For the purposes of acquiring water rights for instream flows, the state will consider only those ground water rights where there will be a benefit to a surface water body within the timeframe when water is needed. Consultation and concurrence with state Department of Fish and Wildlife or other fisheries agencies will be required.

6. Validity and extent of the water right
In many cases, the process to transfer a water right to the trust water right program will mirror any other change in purpose of use. The water right should be evaluated and quantified, based on historical beneficial use by using records research, aerial photographs, applicant interviews and other evaluation techniques and procedures. In most cases, information regarding the last five years of water use will be necessary to determine the extent of the right and to quantify the trust water right.

7. Relinquishment
Prior to the state purchasing or leasing a water right, an evaluation of the water right will be made to ensure the water right has not been relinquished for non-use. Once the right is placed into the trust water right program, the right is exempt from relinquishment.

8. Inchoate transfers
Inchoate or unperfected water "rights" will not be considered for acquisition by the state. In order for the state to purchase or lease the right, a showing must be made of conserved water through efficiency changes or a reduction in consumptive use. For irrigation rights, this could occur through crop type changes or reduction of irrigated acreage.

9. Application required/not required
When an application is required, a standard change application form is submitted and must indicate a transfer/change from the existing use to instream flows. When an application is not required, Ecology has developed a form to be used to initiate the processing of the trust water right. **See Appendix III.** No fee is required for these transfers to the trust water right program.

10. Expedited processing under Washington Administrative Code (WAC) 173-152
In most cases, the application for transfer to the trust water program can and will be expedited for significant environmental benefit under WAC 173-152. This will require consultation and coordination with state Fish and Wildlife or other fishery agencies (e.g., NMFS, tribal fisheries managers, etc.) and a letter from that agency describing the environmental benefit to justify Ecology expediting the application processing.

11. Irrigation district rights
The state will not contract with any person to acquire a water right served by an irrigation district without the approval of that irrigation district's board of directors.

12. Transfers of claims
The evaluation of a water right to potential transfer to the trust water program is not an adjudication of the right and only a tentative determination of the validity of the right is made for the purposes of the change. The status of a donated right as a trust water is not evidence of the validity and quantity of the donated right

13. Location and "fish value"
The location of the primary and secondary reaches of the resulting trust water right is critical to the success of the trust water right. Ecology will consult with state Fish and Wildlife to determine critical streams and stream reaches (*see* ***Strategy Two**: **Prioritizing Where and When to Acquire Water Rights***). Prior to the state acquiring the water right, an evaluation that takes into account the amount and the timing of the water will be made to determine its relative "value" to the fisheries resources.

14. Impairment
Throughout the trust water right statute, Revised Code of Washington (RCW) 90.42, there are explicit statements that a trust water right will not be created if it will involuntarily impair existing water rights.

15. Protection of the trust water right
The amount of protection afforded a trust water right is dependent on a mix of various factors such as the type of water right (claim, certificate), its priority among other water rights in the watershed and its location along the stream. The exercise of the trust water right and the methods and authority to protect the right by regulating other water rights is discussed later in **Strategy Seven: Protecting Trust Water and Evaluating Success.**

16. Processes and procedures
Depending on the type of trust water right proposed, different procedures must be followed in transferring the water right to the trust water program. The procedures for Permanent Trust Rights, Leases/Temporary Trust Rights, Donated Trust Rights, and trust rights arising from water conservation programs are discussed below.

Glossary of terms used in this chapter and associated Appendix III:

- ***Application*** – The standard Application for Change form is used for transfers to the trust water right program, when the requirements of RCW 90.03.380 apply to the changes.
- ***Trust Water Right Form*** – Applications to change some types of water acquisitions are not required. In these situations a form will be supplied to document and initiate the processing of the transfer to the trust water right program. This form is only to be used for donations into the trust program, short term leases, and conserved water through efficiency improvements.
- ***Notice*** – Refers to the standard public notice in the affected county or counties. Ecology will also provide notice containing pertinent information regarding the proposed trust right to all appropriate state agencies, potentially affected local governments, federally-recognized tribal governments and other interested parties. Note that some transfers are exempt from the upfront public notice process but they are subject to public notice if the trust water right is exercised.
- ***Evaluation*** – Refers to Ecology's evaluation of the extent and validity of the existing water right. In many cases, the process to transfer a water right to the trust water right program will mirror any other change in purpose of use. The water right should be evaluated and quantified based on historical beneficial use by using records research, aerial photographs, applicant interviews, and other evaluation techniques and procedures. In most cases, information regarding the last five years of water use will be necessary to determine the extent of the right and for quantifying the trust water right.
- ***Quantification*** – Refers to Ecology's determination of the amount of water transferred to instream flows. In some cases this is based on the highest water use within the last fiive years of water use. In other cases, the standard provisions of RCW 90.03.380 apply. This is the average of the two highest years of use within most recent five-year period of continuous beneficial use.
- ***Decision Document*** – Ecology's decision in the form of a Finding of Facts is the authorization of the trust water right. The final document issued varies. For permanent transfers up to two documents can be issued: A water right certificate to the state for the trust water and a superseding certificate or certificate of change for claims to the water right holder, if partial water right was acquired. For temporary transfers, the Finding of Facts document will remain active until the trust water reverts back to the right holder. If no Public Notice was made and there is no intention of protecting the water right, the Ecology will acknowledge the right has been placed into trust by a letter to the applicant similar to a transfer under RCW 90.03.390.
- ***Impairment Analysis*** – Is an evaluation to determine whether impairment of existing water rights will occur when the water right is changed to instream flows in RCW 90.42.040(4). Under some circumstances, transfers of water rights to the trust water right program are exempt from this upfront evaluation, until the trust water is exercised.
- ***Exercise of Trust Water Right*** – Refers to the circumstances when other water rights would or could be regulated in favor of the instream flow trust right.

II. Process and procedure specific to type of acquisition

1. Permanent trust water rights acquired through purchase:

- **A standard application for change/transfer** must be submitted. The requirements of 90.03.380 apply to these changes. All or a portion of a right may be acquired.
- **Standard public notice** of the proposed trust water right will be made in newspapers in the affected county or counties. The state must also provide notice containing pertinent information regarding the proposed trust right to all appropriate state agencies, potentially affected local governments, federally-recognized tribal governments and other interested parties.

- **Ecology will evaluate the extent and validity** of the water right. The water right will be evaluated and quantified based on historical beneficial use by using records research, aerial photographs, applicant interviews and other evaluation techniques and procedures.
- **Quantification of the trust water right** is based on the existing state guidelines developed under RCW 90.42.050, including determining the primary and secondary reach, if appropriate, and the instantaneous rate to be protected in each of the reaches. See section on quantification of the trust water right below.
- **For partial purchases**, the amount of the trust water right is the annual consumptive quantity calculated based on the average of the two highest years of use within the most recent five-year period of continuous beneficial use. For purchase of the total right the amount is based on the highest use within the last five years of continuous use.
- **An impairment analysis** will be made to ensure that existing water rights are not impaired.
- **A report of exam or findings of fact** will be issued that describes the extent of the right, quantification of the trust water right, and may include a description of the circumstances when other water rights will be regulated in favor of the trust water right.
- **For trust rights based on a state-issued certificate**, a superseding certificate will be issued to the state indicating the affected reaches and the instantaneous rate to be protected in each of the reaches. If a portion of the right was acquired, a superseding certificate will be issued for the remaining portion documenting the reduction of the water right. For trust rights based on a claim, certificates of change will be issued describing the trust water right and, if applicable, the remaining portion of the claim.

2. Short-term lease/temporary trust water rights (less than five years):

- **A standard application for change/transfer** must be submitted. All or a portion of a right may be acquired.
- **Public notice is not required** for short term leases until the state intends to exercise the trust water right for the first time. As a practical matter, standard public notice should be made during the processing of the trust water right in order to protect the trust right.
- **When two or more consecutive short-term leases are acquired** on the same water right, whenever the cumulative lease period exceeds five years, a standard change application is required as well as public notice and other legal requirements under RCW 90.03.380 will apply.
- **If the right is to be protected**, the trust right must be quantified including the determination of the primary and secondary reach, if appropriate, and the instantaneous rate to be protected in each of the reaches. The amount of trust water right cannot exceed the extent to which the water right was exercised during the five years before the acquisition. Nor may the total of the leased portion of a right together with the remaining original water right exceed the extent to which the right was exercised during the five years before the acquisition. This quantification is not evidence of the validity or quantity of the water right. Ecology may review claims of impairment and its decisions can be appealed to the state Pollution Control Hearings Board.
- **Short-term leases are exempt from an impairment analysis** prior to the water right being placed into trust. Ecology may review impairment claims and its decisions can be appealed to the state Pollution Control Hearings Board.
- **Ecology's decision in the form of finding of facts** is the authorization of the trust water right and will remain active until the trust right reverts back to the right holder. If no Public

Notice was made and there is no intention of protecting the water right, Ecology will acknowledge the right has been placed into trust by a letter to the applicant.

3. Long-term lease/temporary trust water right (greater than five years):

- **A standard application for change/transfer** must be submitted. All or a portion of a right may be acquired.
- **Standard public notice** of the proposed trust water right will be made in newspapers in the affected county or counties. The State must also provide notice containing pertinent information regarding the proposed trust right to all appropriate state agencies, potentially affected local governments, federally recognized tribal governments, and other interested parties.
- **Ecology will evaluate the extent and validity** of the water right and determine if the transfer will be detrimental to the public interest and whether it will impair existing water rights.
- **Quantification of the trust water right** is based on the state guidelines developed under RCW 90.42.050, including determining the primary and secondary reach, if applicable, and the instantaneous rate to be protected in each of the reaches. The amount of trust water right cannot exceed the extent to which the water right was exercised during the five years before the acquisition; nor may the total of the leased portion of a right together with the remaining original water right exceed the extent to which the right was exercised during the five years before the acquisition. This quantification is not evidence of the validity or quantity of the water right. Ecology may review impairment claims and its decisions can be appealed to the state Pollution Control Hearings Board.
- **Ecology's decision in the form of a finding of facts** is the authorization of the trust water right and will remain active until the trust right reverts back to the right holder.

4. Donation of a trust water right under RCW 90.42.080:

- **An application for change/transfer is not required**, however the applicant must submit a Trust Water Right Form (*see **Appendix III***) to allow the department to process and track the trust water right. No fees are required. The transfer must be for the purpose of instream flows. The transfer may be permanent or temporary.
- **Public notice is not required** for donations of water to a trust water right until the state intends to exercise the trust water right for the first time. In order to protect the right instream, standard public notice is required.
- **An evaluation of the right must occur** since the resulting trust water right cannot exceed the water right as it was exercised during the five years before the donation.
- **The amount of trust water right shall not exceed** the extent to which the water right was exercised during the five years before the donation. This quantification is not evidence of the validity or quantity of the water right. This amount reverts back to donor or person from whim it was acquired when the trust period ends.
- **Donations of water to trust water rights are exempt from an impairment analysis** prior to the water right being placed into trust. Ecology may review impairment claims and its decisions can be appealed to the state Pollution Control Hearings Board.
- **Ecology will acknowledge the donation** to trust in the form of a letter documenting the trust water right.

- **If the donation is permanent and based on a state-issued certificate, a superseding certificate** will be issued by Ecology indicating the affected reaches and the instantaneous rate to be protected in each of the reaches. If a portion of the right was donated, a superseding certificate will be issued for the remaining portion documenting the reduction of the water right. For permanent donations based on a claim, certificates of change will be issued describing the trust water right and, if applicable, the remaining portion of the claim. Temporary donations will be acknowledged by a letter from Ecology describing the terms of the donated trust water right.

5. Partial donation of a trust water right under RCW 90.42.040(9):

- **A standard change or transfer application** must be submitted, and RCW 90.03.380 applies to these donations. The donations can be temporary or permanent but must be for the purpose to assist in achieving established instream flows.
- **Standard public notice** of the proposed trust water right will be made in newspapers in the affected county or counties. Ecology will also provide notice containing pertinent information regarding the proposed trust right to all appropriate state agencies, potentially affected local governments, federally-recognized tribal governments, and other interested parties.
- **Ecology will evaluate the extent and validity** of the portion of the water right to be transferred to the trust water right program and determine if the transfer will be detrimental to the public interest and whether it will impair existing water rights.
- **Quantification of the trust water right** is based on state guidelines developed under RCW 90.42.050 and RCW 90.03.380, the statute authorizing changes to water rights. This includes determining the primary and secondary reach, if appropriate, and the instantaneous rate to be protected in each of the reaches. The quantity of water is based on the average water use of the highest two of the last five years of water use.
- **A report of exam or findings of fact** will be issued that describes the extent of the right and quantification of the trust water right.
- **If a donation is permanent and based on a state-issued certificate**, Ecology will issue a superseding certificate indicating the affected reaches and the instantaneous rate to be protected in each of the reaches. If a portion of the right was donated, a Superseding Certificate will be issued for the remaining portion documenting the reduction of the water right. For permanent donations based on a claim, a change certificates will be issued describing the trust water right and, if applicable, the remaining portion of the claim. For temporary donations, Ecology's decision will be in the form of a report of exam or findings of facts and constitutes the authorization of the trust water right and will remain active until the trust right reverts back to the right holder

6. Conserved water projects (publicly funded):

- **A change or transfer application is not required**, however the applicant must submit a trust water right form (*see **Appendix III***) to allow Ecology to process and track the trust water right. No fees are required. The right must have a priority date prior to 1991.
- **Standard public notice of the proposed trust water right** will be made in newspapers in the affected county or counties. Ecology will also provide notice containing pertinent information regarding the proposed trust right to all appropriate state agencies, potentially

affected local governments, federally recognized tribal governments, and other interested parties.

- **Ecology will evaluate the extent and validity** of the water right and determine if the transfer will be detrimental to the public interest and whether it will impair existing water rights.
- **Quantification of the trust right is based on the net water savings** as described in the state trust guidelines. When state money is involved, the recipient will convey all or a portion of resulting net water savings back to the state. If the project is funded through the Irrigation Efficiencies Grant program, the portion put into trust must be equal to or greater than the percent of cost share investment from this program. The final amounts may be negotiated. The water right holder and Ecology will specify the process to determine amount of water the water right holder would continue to be entitled to after project is complete. If the project is through an irrigation district, approval of the board of directors must be obtained and evidence of the district's authority to represent water-right holders must be submitted..
- **A report of exam or findings of fact** will be issued that describes the extent of the right and quantification of the trust water right.
- **If it is a permanent transfer, Ecology will issue a superseding certificate** indicating the affected reach and the instantaneous rate to be protected in the reach. If it is a temporary lease, Ecology's decision in the form of a report of exam or finding of facts is the authorization of the trust water right and will remain active until the trust right reverts back to the right holder.

A matrix summarizing the processing of water rights acquired into trust water for instream flows is included in **Appendix III**.

III. Quantification of the trust water right

1. Quantifying water rights acquired through purchases, leases or other means

There may be two distinct stream reaches for each trust water right transfer, depending on the circumstances:

- The **primary reach** is that portion of the stream that benefits from the reduced diversion and augmentation of flows in the reach directly below the historical point of diversion downstream to the point on the stream where any return flows resulting from the water use, have returned to the stream or the aquifer.
- The **secondary reach** is the reach downstream of the primary reach which is augmented by "salvaged" or non-consumed water which had not previously been available. Credit cannot be given downstream for the portion of the original diversion that previously ended up as return flows. Only the eliminated consumptive use can be considered as a downstream benefit.

Primary reach calculations

The primary reach begins at the original point of diversion. How far it extends downstream must be determined on a case-by-case basis but should extend downstream to a point where the decision-maker is reasonably sure any return flows from the diversion and water use have returned to the stream or aquifer system. Calculating the trust water right for the primary reach is a matter of determining the volume of water historically diverted or authorized under the water

right. This includes the water that will be consumptively used under the right as well as any transportation or carriage water. In many cases, the annual volume of water authorized by the water right will be less than the amount that could be diverted with a continuous diversion at the authorized diversion rate.

Since a trust water right cannot be issued for more water than that authorized by the water right, the volume of water determined to be the diversionary right is pro-rated throughout the period the water was historically diverted. The resulting trust water right for the primary reach will be a constant rate over the period of time the water was historically diverted.

Secondary reach calculations
The trust water right for the secondary reach is calculated by determining the historical consumptive use of the water. If the entire right is being changed to a trust right, the highest water use in the last five years can be used as the basis for the calculation. If a portion of the right is to be changed to a trust right, we are adding a purpose of use to the water right and the "average of the highest two of the last five years" water use (as described in RCW 90.03.380) should be used as the basis of the calculation.

There have been several methods used to determine the instantaneous rate of the trust water right of the secondary reach but all have been based on the consumptive use of the right. A description of the preferred method of calculating a trust water right, commonly called the "bell curve" method is included in **Appendix III.**

2. Quantifying conserved water put into trust program
Where water use efficiency is affected by upgrading to a more efficient irrigation system, there is no (or at least "no significant") reduction in the amount of water consumptively used. The amount of water lost to the basin by evapotranspiration is the same after the efficiency upgrade as it was before the upgrade. The only difference is that there was a lot more conveyance loss and return flow before the irrigation system upgrade than there is after the upgrade.

The trust water right that efficiency upgrades create is present only in the reach between the historic point of diversion and the point where the last of the historic return flows returned to the stream. Efficiency upgrades allows less water to be diverted from the stream to satisfy the off-stream use, thereby allowing more water to be kept instream at the historic diversion point and increasing flows in the reach where those conveyance losses or return flows historically returned to the stream.

The trust water right created by efficiency improvements only applies to the primary reach. It cannot result in creating a trust water right in the stream reach below the last return flow point because efficiency improvements do not benefit or affect the stream below the last return flow point.

STRATEGY 4: ESTABLISHING PARTNERSHIPS AND "LOCAL MARKET PLACES"

The market exchange of water to increase stream flows is limited despite strong interest and support by local, state, federal, tribal and private entities in using market-based incentives to find water. One of the most challenging tasks in acquiring water rights to improve stream flows is finding willing sellers. Many potential participants are uninformed about the problem, have concerns about the long-term impacts of transferring water out of agriculture or other industrial uses, and generally mistrust both instream flow transfer activities and governmental-run water markets. The key to overcoming barriers such as mistrust, lack of awareness and uncertainty is to:

- **Broaden public and media understanding** surrounding the need to increase and/or maintain adequate stream flows for fish in the most critical creeks, streams and rivers.
- **Raise overall awareness** about the Washington Water Acquisition Program and increase water-right holder participation in the initiative.
- **Build partnerships with public and private organizations** to expand participation in the Washington Water Acquisition Program.
- **Establish an active community presence** to promote the establishment of a "local market place."

To accomplish the above objectives Ecology will collaborate with public and private organizations engaged in water acquisitions. Ecology recognizes that different organizations, such as Washington Water Trust, Walla Walla Watershed Alliance and county conservation districts bring certain strengths and expertise to the effort. Also each organization is best suited to certain roles and tasks in the overall collaboration. In order to maximize strengths and expertise and to minimize duplicative efforts several of the activities described below will be carried out by others either under contract or by mutual understanding.

To effectively broaden public understanding of water acquisition program and find willing participants in the program efforts must focus on the messages and messengers, ensuring active participation by stakeholders, tailoring information, supporting partners and soliciting continuous feedback.

1. Key messages:

- Current water withdrawals, impoundments and land use changes have resulted in extreme low flows in many state rivers, creeks and streams throughout Washington.
- Low flows become an acute problem in late summer and early fall when important fish species need adequate water for migration, spawning and rearing– the same time water use by agriculture and people is also at its height.
- Low summer flows raise water temperatures and concentrate pollutants that can sicken or kill fish. Some creeks and rivers even dry up completely.
- To help increase and/or maintain adequate stream flows, Ecology and other entities have launched the Washington Water Acquisition Program.

- The program is targeting 16 critical watersheds where fish populations are threatened because of extremely low stream flows.
- Participation in the program is completely voluntary. The more water holders participate, however, the likelihood is greatly that fish habitat and productivity will improve and federal intervention may diminish under the Endangered Species Act.
- Water right purchases, long-term leases and dry-year leases are considered the most important and effective way to put water where and when it is most needed.
- All water sold, leased or donated through the Washington Water Acquisition Program will be held in trust and returned to targeted streams, rivers, creeks and reaches.
- Water right leases and donations retain the seniority of the original rights and are not subject to relinquishment while in trust. Donated rights may qualify as a deduction for charitable contributions on federal income taxes.
- Washington state agencies (departments of Ecology and Fish and Wildlife, Conservation Commission, etc.) are working in partnership with local water and land conservation organizations, conservation districts, irrigation associations, agricultural interests and tribes to identify potential water-right donors and sellers.
- The agency will work with individual water-right holders to help ensure any purchase, or lease receives fair-market value.

2. Identifying partners and resources

Staff will gather information about each critical basin in order to identify key contacts and primary issues and barriers for program success. This includes:

- Working with individual Ecology watershed leads.
- Working with Ecology and Fish and Wildlife field staff, especially those involved in previous lease or trust agreements.
- Identifying and communicate with key local community leaders within each critical basin.
- Identifying and contact previous lease or trust participants.

3. Meet with local groups and organizations in their communities

Examples include:

- Watershed planning units and when applicable Local Entities (within the 16 critical basins).
- Local conservation districts (within the 16 critical basins).
- Local Washington State University Cooperative Extension offices (within the 16 critical basins).
- Other applicable local interests (irrigation, farming and business entities, tribes, environmental groups, etc.

4. Produce outreach materials:

- Brochures, fact sheet tailored for individual watersheds.
- Presentations targeted to specific audiences.
- A web page with links.
- Press releases when needed.

5. Develop partnerships with other entities engaged in water acquisition
These include activities such as:

- Developing and executing agreements with Washington Water Trust, Walla Walla Watershed Alliance, BPA, and the National Fish and Wildlife Foundation (NFWF) to engage in a large-scale outreach and water rights transactions efforts.
- Working collaboratively with conservation districts, irrigation districts and others to craft and implement outreach strategies on specific issues and for specific watersheds.
- Giving presentations and training to various partners.
- Co-sponsoring open houses and face-to-face meetings.
- Meeting with local media, including editorial boards, radio stations, etc.

6. Evaluate public acceptance of the program
These activities, which may be contracted out, involve:

- Developing a basic interview survey and contact list.
- Identifying and interviewing sellers and leasers, trust participants, key local community leaders and others.
- Compiling results and identifying what works as well as needed changes.

STRATEGY 5: DETERMINING AND NEGOTIATING FAIR MARKET VALUE

Water rights acquisitions to restore instream flows, either through leases, purchases, dry-year options or other transactions involve the creation of new, untested markets. Although these new approaches are developing rapidly in some areas of the state, there are legal, physical and economic limits to water markets to increase stream flows. It is critical for Ecology to become more sophisticated and knowledgeable about how markets function efficiently. The public needs to be confident that their investment is getting the best "bang for the buck" and that both buyers and sellers benefit from the acquisitions.

I. Understanding the "water market"

Washington water markets are typically comprised of few buyers and relatively few sellers. Water markets face enormous uncertainty and potential high transaction costs. To overcome these limitations, measures must be undertaken to help reduce costs to both buyers and sellers. These include:

- Increasing certainty and acceptance regarding the Washington Water Acquisition Program.
- Examining all water rights involved in water acquisition transactions to assure acquired water can be placed into the state trust water program and used to enhance stream flows.
- Providing information about a particular water right, including its legal characteristics and whether it can be protected.
- Creating efficient legal and administrative mechanisms for processing transactions.
- Negotiating the right type and length of transaction contemplated.

II. Determining the price

Determining and negotiating a fair market value for water rights is essential to ensure the best value for fish, stream flows and public benefit. The price of a water right will be determined using either outside water appraisals or applying acceptable valuation methods (see below for common valuation methods).

Valuation methods will be used to establish an initial offer price, set negotiation time and inform current and potential sellers and buyers of the market condition. Water valuation will establish the value of the water in its current and potential future uses and a range of values will be generated that allow a well-informed buyer to select an initial offer price that will be closer to the ultimate sales price.

Water valuation reports or appraisals can play an important part in negotiations to offset unrealistic price expectations. Appraisal reports provide a way for prospective buyers and sellers to objectively compile and analyze information that may influence both price and sales terms. In addition, using water evaluation methods to estimate the value of the water rights in its current use prior to engaging in negotiations can reduce the risk of paying more for water than necessary and can help diffuse seller price expectations. A valuation report or appraisal can

combine valuation approaches to set a range of the value of the water rights to start final negotiation of the purchase price.

Ecology will use as much as possible the following approach in determining and negotiating fair market value for water rights proposed for acquisition with Ecology-administered funds:

- **A market appraisal using two or three of valuation approaches** should be obtained prior to starting negotiation on the value of water rights purchases and long-term leases. These water rights appraisals will generally be used for transactions greater than $50,000.
- **For short-term leases, seasonal leases, and purchases or long-term leases under $50,000**, the income capitalization approach to determine the value of the water right should be used.

All transactions will have the water right examined thoroughly to assure the purchased water can be placed into the state trust water right program and can be used to enhance stream flows. All transactions funded by state monies will be covered by contract. A template contact for buying or leasing water rights is available in **Appendix IV.**

III. Common water valuation methods

1. Sales comparison method
This method involves comparing the subject water right with similar water rights that have been sold or leased. Sufficient sales data are required to make accurate comparisons. If necessary, the sales information from other similar basins can be supplemented to develop a more comprehensive analysis. Thorough knowledge of the terms and conditions of the sales is required to ensure that the values are comparable to the water rights proposed to be purchased.

2. Land price differential method
Land and water are commonly sold together — water rights are rarely separated from the land. Therefore, market sales identifying the value of the water in alternative uses are limited. The land price differential is a useful addition to the sales comparison approach in regions where buying and selling of water rights separately is relatively uncommon. The approach reveals the implicit price of water by comparing sales of land with and without water rights. The difference in value between irrigated and non-irrigated land represents the incremental value attributable to the water rights.

3. Income capitalization method
The income capitalization method can be used to estimate the agricultural value of water in its current use. It involves determining the contribution of irrigation water to net revenue from agriculture production. The approach is well-suited for measuring the foregone agriculture revenues resulting from production losses due to reduction in available water supply. Physical characteristics of the land, irrigation application, delivery system, and crop yields under irrigated and non-irrigated conditions are incorporated into the analysis to reflect on-farm conditions as accurately as possible. Available information about physical factors such as irrigation efficiency factors, crop requirements, return flows, and variation in local climate conditions are used to determine the irrigation application requirements for a specific area.

4. Replacement cost method

This method involves examining the potential supply side of the market. Constraints on existing water resources in a basin as well as current uses of water within a market area have important value impacts that must be considered. A water right's value in a particular market is limited by the costs of obtaining water from an alternative source. In a well-functioning market, the price of a surface water right will not exceed the cost of drilling and operating a well – assuming that ground water is available and of comparable quality. In basins closed to new surface and groundwater development, characterization of other permitted and certificated water uses will help identify where potential new users in the basin might obtain supplies.

STRATEGY 6: ENSURING COST-EFFECTIVE AND EFFICIENT USE OF PUBLIC INVESTMENTS

State, federal, tribal, local and private organizations all have intensified their interest in water rights acquisitions. Funding has been approved by the U.S. Congress, Washington state legislature and federal agencies to acquire water rights through purchases, leases, conservation efficiencies and other means. In addition, private funds are available for water acquisition by private, non-profit organizations. To ensure efficient and effective use of water acquisition investments, there is a need for those involved in water rights acquisition to coordinate acquisition activities, cost-share acquisitions, track expenditures and amount of water put into trust, exchange information on valuation techniques, and seek long term funding opportunities.

I. Coordination of acquisition activities and funding

Ecology is working jointly and cooperatively with many entities involved and interested in water rights acquisition. The cooperative work takes many forms, for example:

1. Water Irrigation Efficiencies Grant Program

Local conservation districts are assisting the agricultural community in implementing water conservation measures and irrigation efficiencies in the 16 critical basins. Local districts, the Washington Conservation Commission and Ecology are working cooperatively to ensure a portion of the water saved from the $7.8 million irrigation efficiencies program will be placed in the state trust water rights program to restore instream flows. Template contracts were developed jointly by Ecology and Washington Conservation Commission. Negotiated contracts will be co-signed by both agencies. Saved water will be put into the trust program and the benefit it provides to fish will be tracked jointly by Ecology and local districts.

2. Bonneville Power Administration and the National Fish and Wildlife Foundation

The Bonneville Power Administration (BPA) is implementing its Columbia Basin Water Transaction Program through 10 "qualified local entities" within the four states. In Washington, these qualified local entities are comprised of the Department of Ecology, Walla Walla Watershed Alliance and Washington Water Trust. Together, the three organizations have submitted joint proposals to BPA and National Fish and Wildlife Foundation. These collaborative efforts will result in cost-effective water transactions designed to increase tributary flows to protect or enhance fish habitat in eight critical basins.

II. Tracking and reporting water rights acquired by all funding sources

The following information need to be documented for each transaction:

- Where and how much water is being acquired — and for how long.
- How much is being spent on acquisitions and by whom.
- Whether opportunities for future acquisitions exist.
- Price, administrative costs and time to complete acquisitions.

- Willingness and acceptance of the water-right holders and the local community.
- Cost-sharing and future funding opportunities.

All trust water rights will be tracked in the future using Ecology's water rights tracking database. Pending the completion of the system water rights acquired by Ecology will be tracked as displayed in **Appendix IV**. Efforts are underway to track all transactions, particularly when public funds are used to acquire water rights.

STRATEGY 7: PROTECTING TRUST WATER AND EVALUATING SUCCESS

Since millions of dollars of state and federal funds are expected to be spent on water rights acquisitions, there is a need to become more sophisticated and knowledgeable about the effectiveness of water rights acquisitions as well as public acceptance and participation in the program. Lawmakers, participants and the general public need to be confident that their water acquisition investments ultimately help fish populations by putting water back in areas where it is needed most. Also the amount of protection afforded a trust water right is a key concern for any entity interested in acquiring water rights for instream flows.

It is therefore necessary to have a well-defined compliance and monitoring program in place to ensure protection of trust water rights acquired for instream flows and evaluation and improvement of water acquisition activities over time.

I. Monitoring for program success

Monitoring and evaluation is a vital component of the strategy, it must focus on the efficacy of the acquisition program and whenever possible establish links between the amount of water acquired and the fish populations responses. Monitoring helps improve decision making by providing the ability to track progress and financial accountability.

The necessity for monitoring has been endorsed by the state Legislature, the Governor's Salmon Recovery Strategy, Salmon Recovery Funding Board and NMFS biological Opinion for the Columbia River Basin. A comprehensive statewide strategy is underdevelopment for monitoring watershed health, with a focus on salmon recovery.

1. Types of monitoring

There are different kinds of monitoring:

- **Status and trend monitoring** to determine habitat and ecological conditions in the stream and how those conditions are changing.
- **Implementation monitoring** to confirm that management decisions were implemented.
- **Effectiveness monitoring** to accurately assess whether strategy objectives are being achieved.
- **Compliance monitoring** to assure that measured flows are consistent with legally-established instream flow requirements or other performance targets.
- **Validation monitoring** to confirm that actions have the desired results and that salmon are responding to the measures taken.
- **Public perception monitoring** to evaluate the social acceptance of the program.

As work continues on development of specific watershed monitoring programs, there is a need to begin the design of the implementation, effectiveness and compliance components of a water acquisition monitoring program. While the validation monitoring is very important, it is complex, expensive, and will require more time and money to implement. Validation monitoring

is outside the scope of this strategy at this time, as it may take years, or perhaps decades for results of restoration activities to be realized.

2. Designing a monitoring program

A working assumption of the Washington Water Acquisition Program is 'putting water back into stream and tributaries will result in habitat improvements'. On-going monitoring and evaluation is necessary to validate this assumption and to better understand the connection between water rights acquisitions and habitat improvements. A monitoring program will be designed to:

- **Set up performance targets as measurable criteria** to determine whether or not acquisition action achieves desired outcome. The desired outcomes will be characterized in a variety of ways – a desired trend, conditions at a site deemed appropriate for a species of interest, and an established target.
- **Define and measure indicators of habitat conditions and ecological health**. The types of indicators that will be measured include stream flows, temperature and biological integrity. The frequency, spatial and temporal scales that these indicators need to be measured will also be determined.
- **Set up a quality assurance plan prior to measuring indicators.** The quality assurance plan will include data quality objectives, protocols for data collection, quality control procedures, data management procedures, and data evaluation and reporting products.
- **Specify funding needed to conduct** necessary monitoring and evaluation.
- **Identify participants to conduct the required activities**. The use of volunteer help will be evaluated.

Monitoring results will be tracked and reported by basin and stream reaches and data will be shared with the Legislature, participating water-right holders, local partners, federal agencies and the general public.

Monitoring and evaluation program will not be limited to physical and biological indicators. The program will also define specific activities to:

- Evaluate social/public acceptance of the program.
- Evaluate effectiveness of various acquisition tools.
- Set up a financial accountability system.

3. Performance indicators

Indicators are expected to provide meaningful information relevant to the objective of acquiring and protect a sufficient amount of water to meet stream flows for all life stages of salmonids within critical basins. The Joint Natural Resources Cabinet (JNRC) developed several salmon scorecard indicators to track and report on the effectiveness of state agencies actions and progress toward salmon recovery. The following indicators proposed by JNRC and Ecology are pertinent to the water acquisition program:

- **Volume of water restored to salmon streams** where water availability and flows are limiting factor. The table below illustrates the volume of water acquired in fiscal Year 2002, in several critical basins.
- **Number of days per year when instream flow** targets are met.
- **Number of days per year when temperature targets** are met (temperatures not limiting to salmon productivity).

4. Baseline data and information

It is paramount that flow discharge measurement be as accurate as possible to effectively assess flow improvements. Ecology field staff already operates a statewide stream gauging network. This network provides timely and accurate instantaneous stream flow data at various rivers, streams, and stream reaches. These instantaneous stream flows are a key element in determining the water available for instream and out-of-stream uses.

Various flow techniques are used to develop rating curves to relate river stage to discharge for each measurement site. Ecology also utilizes information from stream gauges operated by other governmental agencies (U.S. Geological Survey, Army Corps of Engineers and Bureau of Reclamation, etc.).

The stream flow network is being expanded in most of the 16 critical basins. There is increased need for accurate and timely stream flow data to assist in the recovery of salmon, including those protected under the federal Endangered Species Act and ensure efficient water resource management. More than $3 million in state and federal funds are available to:

- Purchase and install stream gauges
- Operate and maintain the gauges
- Provide financial support to local partners
- Collect and report stream flow and temperature data

Several high and medium priority rivers and tributaries in 10 the 16 critical basins have been identified as needing additional gauging:

- **Nooksack** watershed (Water Resource Inventory Area 1)
- **Quilcene/Snow** watershed (Water Resource Inventory Area 17)
- **Elwha-Dungeness** watershed (Water Resource Inventory Area 18)
- **Walla Walla** watershed (Water Resource Inventory Area 32)
- **Middle Snake** watershed (Water Resource Inventory Area 35)
- **Lower Yakima** watershed (Water Resource Inventory Area 37)
- **Naches** watershed (Water Resource Inventory Area 38)
- **Upper Yakima** watershed (Water Resource Inventory Area 39)
- **Wenatchee** watershed (Water Resource Inventory Area 45)
- **Okanogan** watershed (Water Resource Inventory Area 49)

The remaining six basins either have adequate existing network within the basin (Methow and Snohomish) or the adequacy of existing network has not been determined.

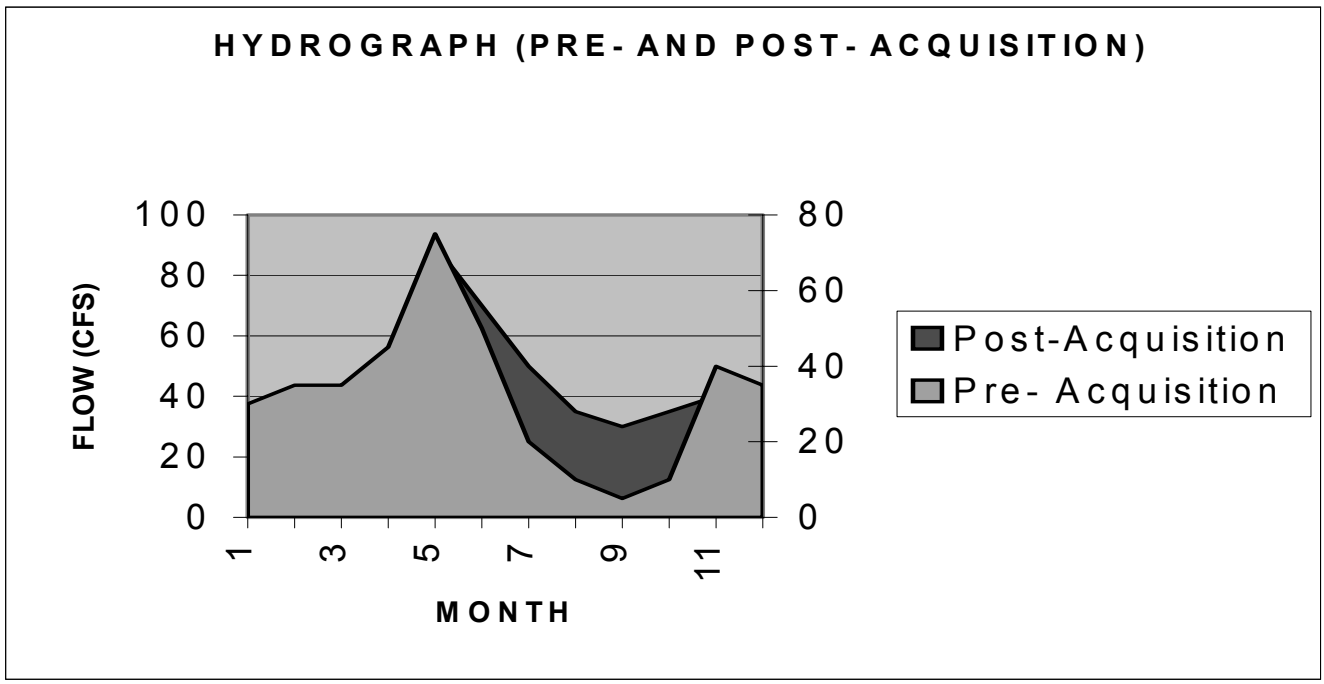
Currently, 10 of the 16 critical basins have a standardized system of continuous, real-time stream gauges and permanent staff gauges. These gauges, most installed in 2002, will provide accurate, documented, and easily accessible data. The stream flow data is being collected consistent with protocols established by the departments of Fish and Wildlife and Ecology, and outlined in the following web site: http://www.wa.gov/wdfw/hab/sshiap/dataptcl.htm.

The data will be incorporated into the SASSI program, an information system that characterizes freshwater and estuary habitat conditions and distribution of salmonid stocks in Washington. Stream gauge data will be used to:

- **Improve baseline information** used to determine flow-limiting reaches and tributaries.
- **Better target and prioritize flow acquisition needs** and the assessment of various proposals.
- **Verify the presence of water purchased** to restore flows in priority streams and reaches.
- Provide information on the status and trends of instream flow. This information will be used to compare actual flows to target instream flows, where available to determine acquisition needs.
- **Provide stream temperature data.**
- **Support compliance and enforcement** by providing near real-time data when trust water rights are exercised.
- **Monitor long-term trends** and the effect of factors other than withdrawals on instream flow and temperature.

The hypothetical hydrograph below depicts how acquired water increases flows during the typical low-flow period between June and October.

Table 2: Hydrograph for monitoring pre- and post-acquisition flow conditions



5. Monitoring diversions
The top 80 percent of total water users in each of the 16 critical basins are required to meter their diversions and to record and report specific flow data. By Dec. 31, 2002, about 700 water-right holders in 13 of the 16 basins will be under order to install water-measuring devices and begin reporting their water use to Ecology. The department is also providing grants to assist water-right holders in purchasing, installing and calibrating measuring devices. The 2001 Legislature allocated $3.4 million in cost-share grants to help water users pay for the meters.

Flow measurements will provide information about the instantaneous and total amount of water diverted from the streams. This is needed to:

- Determine the total amount of water diverted under a water right considered for acquisition.
- Estimate the consumptively used portion of the water right.
- Estimate the return flow portion of a water right by subtracting the consumptively used portion from the total amount of water diverted.
- Estimate the net water saving resulting from efficiency improvement.
- Determine the likelihood of detriment or impairment of existing senior water rights.
- Verify the instream presence of the portion of the water acquired through partial purchase, lease or donation.
- Support compliance and enforcement against unauthorized uses.

6. Monitoring stock status
A comprehensive update and revision of the state's SASSI is underway. The inventory is a standardized, uniform approach to identify and monitor the status of Washington's salmonid stocks. SASSI stock distribution and status will be incorporated into the broader state Salmon and Steelhead Habitat Inventory and Assessment Program. This will link flow conditions and stock distribution with productivity modeling efforts, which can be used as a basis for prioritizing and measuring the effect of water right acquisition efforts on salmonid populations.

In addition, annual spawning survey and adult salmon inventory data collected by state and federal agencies as well as tribal nations can be used to assess salmonid recovery trends in streams where flows are restored. In some instances, additional surveys may be conducted to determine to presence of salmonids in streams and reaches where fish access has been restored through water acquisition.

II. Protection of instream flow trust water rights

Several explicit statutory statements require no impairment or detriment to other water rights at the time of the transfer. The preliminary and final evaluation of the acquired water right, in most cases, includes an impairment analysis. The results of impairment analysis, type of water right, its priority among other water rights on the stream and its location along the stream will be taken into account before approving any transfer to the state trust water program. Once a trust water right is established, the key question is: can it be protected without impairing other existing senior water rights?

As with any water right, the following parameters of the trust water right and the regulated right must be reviewed and understood:

- **Trust water right instantaneous quantity:** What rate will be protected?
- **Trust water right priority:** How does the priority of the trust water right relate to other rights in the subject stream reach?
- **Legal status of the right acquired – claim, state-issued or adjudicated:** Ecology cannot regulate to protect a trust water right that was based on a claim. This is not to say that claim-based trust water rights have no value; only that Ecology cannot regulate in favor of that claim.
- **Trust water right season of use:** For which part of the year is the trust water right valid (seasonal, year-round, etc.)?
- **Provisions/conditions of the regulated right:** Is the regulated right subject to an adopted instream flow? Are there other conditions or provisions regarding the particular right that might determine how it is regulated?
- **Limitations due to natural conditions:** Is the stream intermittent or ephemeral?

Water-right holders with senior rights to the trust water right generally have first call for water. Water rights junior to the trust water right are also of concern since regulation may occur both above and below the original point of diversion for the trust water right.

The actual regulation for a trust water right can be split into two elements:

- Curtailment of upstream diversions to satisfy the trust right at the original point of diversion.
- Regulation of junior water rights to protect the trust right downstream from the original point of diversion.

1. Upstream regulation

Regulation of upstream rights to satisfy a trust water right at the original point of diversion is no different than regulating upstream rights for an off-stream use at the same diversion point. The trust water right will carry a priority date of the original right and if insufficient flow is available to satisfy that right, junior upstream diversions may be curtailed beginning with the most junior, in order to provide sufficient quantity to satisfy the trust water right at the former point of diversion. Ecology cannot regulate claims in favor of a trust water right or regulate other rights in favor of a claim-based trust water right.

If a trust water right is created by severing a portion of the original right, then the trust water right will be considered junior to the remaining portion of the original right, unless some other agreement is reached between the state and the right holder which would specify an alternative arrangement. Therefore, the remaining portion of the original diversionary right needs to be fully satisfied before any water is allocated to the trust water portion of the right.

If instream flow regulation is in place, a trust water right, if senior, will be considered additive to the adopted instream flow. All upstream junior appropriators subject to the instream flow regulation will be regulated to protect the instream flow and the more senior trust water right.

Note: No water right should (and will) be acquired, especially through purchase or lease, if it is subject to regulation to protect minimum flows established by rule.

2. Downstream protection

The protection of a trust water right downstream from the original point of diversion presents a much more challenging task than regulating junior rights above the point of diversion. Protection of a trust water right is very information intensive; distinctions must be made between existing conditions and the trust water right. Again, rights existing at the time the trust water right is established cannot be impaired. When stream flows drop to level where Ecology must consider attempting to protect a trust water right, the distinction will be made between out-of-stream diversions impacting stream flows below the point of diversion and what is occurring "naturally" within the same stream reach. Some naturally-occurring events which will affect flow include:

- **Gaining/losing reaches:** What are the effects on the stream? What are the boundaries?
- **Transportation loses:** Evaporation, transpiration from riparian vegetation, diurnal fluctuations, etc.
- **Tributary input:** Springs, streams, return flows, etc.

The fact a trust water right generally is a continuous flow water right versus the intermittent nature of an appropriative off-stream use is an additional factor to consider in avoiding impairment while protecting a trust water right. The program must also consider how the trust water right was established relative to the original water right (*e.g., has the season of use been compressed or otherwise altered?*) in considering potential impairment. In any event, in no case should a junior appropriator be regulated for a trust water right if it can be shown that historically, the junior rights were never regulated for the original diversionary right since this would be considered impairment.

If sufficient information necessary to make the distinction between "natural" condition impacts to the stream and pumping diversions is available and understandable, and a determination is made that junior pumping is diminishing a trust water right, that junior right may be regulated in favor of the senior trust water right. In most cases, the farther downstream one attempts to protect a trust water right, the more difficult it will be to determine to what extent a diversionary pump is diminishing a trust water right.

APPENDIX I

BACKGROUND INFORMATION

- Chapter 90.42 RCW
- Acronyms
- Glossary

1. Revised Code of Washington (RCW) Chapter 90.42 Revised

Sections

90.42.005	Policy--Findings.
90.42.010	Findings--Intent.
90.42.020	Definitions.
90.42.030	Contracts to finance water conservation projects--Public benefits--Trust water rights.
90.42.040	Trust water rights program--Water right certificate--Notice of creation or modification.
90.42.050	Guidelines governing trust water rights--Submission of guidelines to joint select committee.
90.42.060	Chapter 43.83B or 43.99E RCW not replaced or amended.
90.42.070	Involuntary impairment of existing water rights not authorized.
90.42.080	Trust water rights--Acquisition, donation, exercise, and transfer--Appropriation required for expenditure of funds.
90.42.090	Jurisdictional authorities not altered.
90.42.900	Severability--1991 c 347.

RCW 90.42.005 Policy--Findings.

(1) It is the policy of the state of Washington to recognize and preserve water rights in accordance with RCW 90.03.010.

(2) The legislature finds that:

(a) The state of Washington is faced with a shortage of water with which to meet existing and future needs, particularly during the summer and fall months and in dry years when the demand is greatest;

(b) Consistent with RCW 90.54.180, conservation and water use efficiency programs, including storage, should be the preferred methods of addressing water uses because they can relieve current critical water situations, provide for presently unmet needs, and assist in meeting future water needs. Presently unmet needs or current needs includes the water required to increase the frequency of occurrence of base or minimum flow levels in streams of the state, the water necessary to satisfy existing water rights, or the water necessary to provide full supplies to existing water systems with current supply deficiencies; and

(c) The interests of the state will be served by developing programs and regional water resource plans, in cooperation with local governments, federally recognized tribal governments, appropriate federal agencies, private citizens, and the various water users and water interests in the state, that increase the overall ability to manage the state's waters in order to resolve conflicts and to better satisfy both present and future needs for water.

[1991 c 347 § 1.]

Notes:

Purposes--1991 c 347: "The purposes of this act are to:

(1) Improve the ability of the state to work with the United States, local governments, federally recognized tribal governments, water right holders, water users, and various water interests in water conservation and water use efficiency programs designed to satisfy existing rights, presently unmet needs, and future needs, both instream and out-of-stream;

(2) Establish new incentives, enhance existing incentives, and remove disincentives for efficient water use;

(3) Establish improved means to disseminate information to the public and provide technical assistance regarding ways to improve the efficiency of water use;

(4) Create a trust water rights mechanism for the acquisition of water rights on a voluntary basis to be used to meet presently unmet needs and future needs;

(5) Prohibit the sale of nonconforming plumbing fixtures and require the marking and labeling of fixtures meeting state standards;

(6) Reduce tax disincentives to water conservation, reuse, and improved water use efficiency; and

(7) Add achievement of water conservation as a factor to be considered by water supply utilities in setting water rates." [1991 c 347 § 2.]

RCW 90.42.010 Findings--Intent.

The legislature finds that a need exists to develop and test a means to facilitate the voluntary transfer of water and water rights, including conserved water, to provide water for presently unmet needs and emerging needs. Further, the legislature finds that water conservation activities have the potential of affecting the quantity of return

flow waters to which existing water right holders have a right to and rely upon. It is the intent of the legislature that persons holding rights to water, including return flows, not be adversely affected in the implementation of the provisions of this chapter.

[1998 c 245 § 173. Prior: 1993 sp.s. c 4 § 14; 1993 c 98 § 1; 1991 c 347 § 5.]

Notes:

Findings--Grazing lands--1993 sp.s. c 4: See RCW 79.01.2951.

Purposes--1991 c 347: See note following RCW 90.42.005.

RCW 90.42.020 Definitions.

Unless the context clearly requires otherwise, the definitions in this section apply throughout this chapter.

(1) "Department" means the department of ecology.

(2) "Net water savings" means the amount of water that is determined to be conserved and usable within a specified stream reach or reaches for other purposes without impairment or detriment to water rights existing at the time that a water conservation project is undertaken, reducing the ability to deliver water, or reducing the supply of water that otherwise would have been available to other existing water uses.

(3) "Trust water right" means any water right acquired by the state under this chapter for management in the state's trust water rights program.

(4) "Pilot planning areas" means the geographic areas designated under RCW 90.54.045(2).

(5) "Water conservation project" means any project or program that achieves physical or operational improvements that provide for increased water use efficiency in existing systems of diversion, conveyance, application, or use of water under water rights existing on July 28, 1991.

[1991 c 347 § 6.]

Notes:

Purposes--1991 c 347: See note following RCW 90.42.005.

RCW 90.42.030 Contracts to finance water conservation projects--Public benefits--Trust water rights.

(1) For purposes of this chapter, the state may enter into contracts to provide moneys to assist in the financing of water conservation projects. In consideration for the financial assistance provided, the state shall obtain public benefits defined in guidelines developed under RCW 90.42.050.

(2) If the public benefits to be obtained require conveyance or modification of a water right, the recipient of funds shall convey to the state the recipient's interest in that part of the water right or claim constituting all or a portion of the resulting net water savings for deposit in the trust water rights program. The amount to be conveyed shall be finitely determined by the parties, in accordance with the guidelines developed under RCW 90.42.050, before the expenditure of state funds. Conveyance may consist of complete transfer, lease contracts, or other legally binding agreements. When negotiating for the acquisition of conserved water or net water savings, or a portion thereof, the state may require evidence of a valid water right.

(3) As part of the contract, the water right holder and the state shall specify the process to determine the amount of water the water right holder would continue to be entitled to once the water conservation project is in place.

(4) The state shall cooperate fully with the United States in the implementation of this chapter. Trust water rights may be acquired through expenditure of funds provided by the United States and shall be treated in the same manner as trust water rights resulting from the expenditure of state funds.

(5) If water is proposed to be acquired by or conveyed to the state as a trust water right by an irrigation district, evidence of the district's authority to represent the water right holders shall be submitted to and for the satisfaction of the department.

(6) The state shall not contract with any person to acquire a water right served by an irrigation district without the approval of the board of directors of the irrigation district. Disapproval by a board shall be factually based on probable adverse effects on the ability of the district to deliver water to other members or on maintenance of the financial integrity of the district.

[1993 c 98 § 2; 1991 c 347 § 7.]

Notes:

Purposes--1991 c 347: See note following RCW 90.42.005.

RCW 90.42.040 Trust water rights program--Water right certificate--Notice of creation or modification.

(1) All trust water rights acquired by the state shall be placed in the state trust water rights program to be managed by the department. Trust water rights acquired by the state shall be held or authorized for use by the department for instream flows, irrigation, municipal, or other beneficial uses consistent with applicable regional plans for pilot planning areas, or to resolve critical water supply problems. To the extent practicable and subject to legislative appropriation, trust water rights acquired in an area with an approved watershed plan developed under chapter 90.82 RCW shall be consistent with that plan if the plan calls for such acquisition.

(2) The department shall issue a water right certificate in the name of the state of Washington for each permanent trust water right conveyed to the state indicating the reach or reaches of the stream, the quantity, and the use or uses to which it may be applied. A superseding certificate shall be issued that specifies the amount of water the water right holder would continue to be entitled to as a result of the water conservation project. The superseding certificate shall retain the same priority date as the original right. For nonpermanent conveyances, the department shall issue certificates or such other instruments as are necessary to reflect the changes in purpose or place of use or point of diversion or withdrawal.

(3) A trust water right retains the same priority date as the water right from which it originated, but as between them the trust right shall be deemed to be inferior in priority unless otherwise specified by an agreement between the state and the party holding the original right.

(4) Exercise of a trust water right may be authorized only if the department first determines that neither water rights existing at the time the trust water right is established, nor the public interest will be impaired. If impairment becomes apparent during the time a trust water right is being exercised, the department shall cease or modify the use of the trust water right to eliminate the impairment.

(5) Before any trust water right is created or modified, the department shall, at a minimum, require that a notice be published in a newspaper of general circulation published in the county or counties in which the storage, diversion, and use are to be made, and in other newspapers as the department determines is necessary, once a week for two consecutive weeks. At the same time the department shall send a notice containing pertinent information to all appropriate state agencies, potentially affected local governments and federally recognized tribal governments, and other interested parties.

(6) RCW 90.14.140 through 90.14.230 have no applicability to trust water rights held by the department under this chapter or exercised under this section.

(7) RCW 90.03.380 has no applicability to trust water rights acquired by the state through the funding of water conservation projects.

(8) Subsections (4) and (5) of this section do not apply to a trust water right resulting from a donation for instream flows described in RCW 90.42.080(1)(b) or to a trust water right leased under RCW 90.42.080(8) if the period of the lease does not exceed five years. However, the department shall provide the notice described in subsection (5) of this section the first time the trust water right resulting from the donation is exercised.

(9) Where a portion of an existing water right that is acquired or donated to the trust water rights program will assist in achieving established instream flows, the department shall process the change or amendment of the existing right without conducting a review of the extent and validity of the portion of the water right that will remain with the water right holder.

[2002 c 329 § 8; 2001 c 237 § 30; 1993 c 98 § 3; 1991 c 347 § 8.]

NOTES:

Finding--Intent--Severability--Effective date--2001 c 237: See notes following RCW 90.82.040.

Intent--2001 c 237: See note following RCW 90.66.065.

Purposes--1991 c 347: See note following RCW 90.42.005.

RCW 90.42.050 Guidelines governing trust water rights--Submission of guidelines to joint select committee.

The department, in cooperation with federally recognized Indian tribes, local governments, state agencies, and other interested parties, shall establish guidelines by July 1, 1992, governing the acquisition, administration, and management of trust water rights. The guidelines shall address at a minimum the following:

(1) Methods for determining the net water savings resulting from water conservation projects or programs carried out in accordance with this chapter, and other factors to be considered in determining the quantity or value of water available for potential designation as a trust water right;

(2) Criteria for determining the portion of net water savings to be conveyed to the state under this chapter;

(3) Criteria for prioritizing water conservation projects;

(4) A description of potential public benefits that will affect consideration for state financial assistance in

RCW 90.42.030;

(5) Procedures for providing notification to potentially interested parties;

(6) Criteria for the assignment of uses of trust water rights acquired in areas of the state not addressed in a regional water resource plan or critical area agreement; and

(7) Contracting procedures and other procedures not specifically addressed in this section.

These guidelines shall be submitted to the joint select committee on water resource policy before adoption.

[1991 c 347 § 9.]

Notes:

Purposes--1991 c 347: See note following RCW 90.42.005.

RCW 90.42.060 Chapter 43.83B or 43.99E RCW not replaced or amended.

The policies and purposes of this chapter shall not be construed as replacing or amending the policies or the purposes for which funds available under chapter 43.83B or 43.99E RCW may be used.

[1991 c 347 § 10.]

Notes:

Purposes--1991 c 347: See notes following RCW 90.42.005.

RCW 90.42.070 Involuntary impairment of existing water rights not authorized.

Nothing in this chapter authorizes the involuntary impairment of any existing water rights.

[1991 c 347 § 11.]

Notes:

Purposes--1991 c 347: See note following RCW 90.42.005.

RCW 90.42.080 Trust water rights--Acquisition, donation, exercise, and transfer--Appropriation required for expenditure of funds.

(1)(a) The state may acquire all or portions of existing water rights, by purchase, gift, or other appropriate means other than by condemnation, from any person or entity or combination of persons or entities. Once acquired, such rights are trust water rights. A water right acquired by the state that is expressly conditioned to limit its use to instream purposes shall be administered as a trust water right in compliance with that condition.

(b) If the holder of a right to water from a body of water chooses to donate all or a portion of the person's water right to the trust water system to assist in providing instream flows on a temporary or permanent basis, the department shall accept the donation on such terms as the person may prescribe as long as the donation satisfies the requirements of subsection (4) of this section and the other applicable requirements of this chapter and the terms prescribed are relevant and material to protecting any interest in the water right retained by the donor. Once accepted, such rights are trust water rights within the conditions prescribed by the donor.

(2) The department may enter into leases, contracts, or such other arrangements with other persons or entities as appropriate, to ensure that trust water rights acquired in accordance with this chapter may be exercised to the fullest possible extent.

(3) Trust water rights may be acquired by the state on a temporary or permanent basis.

(4) A water right donated under subsection (1)(b) of this section shall not exceed the extent to which the water right was exercised during the five years before the donation nor may the total of any portion of the water right remaining with the donor plus the donated portion of the water right exceed the extent to which the water right was exercised during the five years before the donation. A water right holder who believes his or her water right has been impaired by a trust water right donated under subsection (1)(b) of this section may request that the department review the impairment claim. If the department determines that exercising the trust water right resulting from the donation or exercising a portion of that trust water right donated under subsection (1)(b) of this section is impairing existing water rights in violation of RCW 90.42.070, the trust water right shall be altered by the department to eliminate the impairment. Any decision of the department to alter or not to alter a trust water right donated under subsection (1)(b) of this section is appealable to the pollution control hearings board under RCW 43.21B.230. A donated water right's status as a trust water right under this subsection is not evidence of the validity or quantity of the water right.

(5) The provisions of RCW 90.03.380 and 90.03.390 do not apply to donations for instream flows

described in subsection (1)(b) of this section, but do apply to other transfers of water rights under this section.

(6) No funds may be expended for the purchase of water rights by the state pursuant to this section unless specifically appropriated for this purpose by the legislature.

(7) Any water right conveyed to the trust water right system as a gift that is expressly conditioned to limit its use to instream purposes shall be managed by the department for public purposes to ensure that it qualifies as a gift that is deductible for federal income taxation purposes for the person or entity conveying the water right.

(8) If the department acquires a trust water right by lease, the amount of the trust water right shall not exceed the extent to which the water right was exercised during the five years before the acquisition was made nor may the total of any portion of the water right remaining with the original water right holder plus the portion of the water right leased by the department exceed the extent to which the water right was exercised during the five years before the acquisition. A water right holder who believes his or her water right has been impaired by a trust water right leased under this subsection may request that the department review the impairment claim. If the department determines that exercising the trust water right resulting from the leasing or exercising of a portion of that trust water right leased under this subsection is impairing existing water rights in violation of RCW 90.42.070, the trust water right shall be altered by the department to eliminate the impairment. Any decision of the department to alter or not to alter a trust water right leased under this subsection is appealable to the pollution control hearings board under RCW 43.21B.230. The department's leasing of a trust water right under this subsection is not evidence of the validity or quantity of the water right.

(9) For a water right donated to or acquired by the trust water rights program on a temporary basis, the full quantity of water diverted or withdrawn to exercise the right before the donation or acquisition shall be placed in the trust water rights program and shall revert to the donor or person from whom it was acquired when the trust period ends.

[2002 c 329 § 9; 2001 c 237 § 31; 1993 c 98 § 4; 1991 c 347 § 12.]

NOTES:

Finding--Intent--Severability--Effective date--2001 c 237: See notes following RCW 90.82.040.

Intent--2001 c 237: See note following RCW 90.66.065.

Purposes--1991 c 347: See note following RCW 90.42.005.

RCW 90.42.090 Jurisdictional authorities not altered.

It is the intent of the legislature that jurisdictional authorities that exist in law not be expanded, diminished, or altered in any manner whatsoever by this chapter.

[1991 c 347 § 13.]

Notes:

Purposes--1991 c 347: See note following RCW 90.42.005.

RCW 90.42.900 Severability--1991 c 347.

If any provision of this act or its application to any person or circumstance is held invalid, the remainder of the act or the application of the provision to other persons or circumstances is not affected.

[1991 c 347 § 30.]

2. Acronyms

BPA	Bonneville Power Administration
CELP	Center for Environmental Law and Policy
Ecology	Department of Ecology
ESA	Endangered Species Act
IFIM	Instream Flow Incremental Methodology
JNRC	Joint Natural Resources Cabinet
LFA	Limiting Factor Analysis
NFWF	Northwest Fish and Wildlife Federation
NMFS	National Marine Fisheries Service
RCW	Revised Code of Washington
SASSI	Salmon and Steelhead Stock Inventory
USBR	U.S. Bureau of Reclamation
USCE	U.S. Corps of Engineers
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WAC	Washington Administrative Code
WCC	Washington Conservation Commission
WDFW	Washington Department of Fish and Wildlife
WRIA	Water Resources Inventory Area
WWT	Washington Water Trust
2514	ESHB 2514 or Watershed Planning Act, 1998
2496	ESHB 2496 or Salmon Recovery Planning Act, 1998

3. Glossary

Ecosystem Diagnosis and Treatment (EDT): **is** a method that uses a "rule-based" system that focuses on habitat as the unit of analysis, and estimates salmon performance by using an analytical model that predicts the numbers of fish supported by the habitat over the salmon's life history. It is an "expert system" that captures the state of existing knowledge including areas of incomplete or missing data.

Flow/hydrology: includes several components of the natural flow regime of streams and rivers, such as: volume is the amount of surface flow; frequency is how often a flow above a given magnitude recurs; duration is the period of time a specific flow condition persist; timing is the regularity or consistency of specific flow conditions; and rate of change is how quickly amount of flow increases or decreases. All of these components are important to the ecological integrity of rivers, streams, adjacent floodplains, and estuaries.

Habitat access: unobstructed upstream and downstream movement of fish of all life stages.

Habitat capacity: the maximum average number or biomass of salmon that can be sustained in a habitat over the long term.

Instream flows: used to identify a specific stream flow (typically measured in cubic feet per second) at a specific location for a defined time, and typically following seasonal variations. Instream flows are usually defined as the stream flow needed to protect and preserve instream resources and values, such as fish, wildlife and recreation.

Limiting factors: defined in the context of the Salmon Recovery Act (ESHB 2496) as "conditions that limit the ability of habitat to fully sustain populations of salmon."

Productivity: the ability of a biological system or a given area to produce biological matter (e.g., salmon); refers to the efficiency with which a biological system converts energy into growth and reproduction.

Reach: a defined section of a river or stream channel.

Salmon: all species of salmon, steelhead, trout, and char native to Washington.

Stock: fish spawning in a particular lake or stream(s) at a particular season, which to a substantial degree do not interbreed with any group spawning in a different place at the same time, or in the same place at a different time.

Sub-watershed: geographic drainage units that combine to form a larger watershed.

Trust water right: any water right acquired by the state.

Water Resource Inventory Area (WRIA): watershed areas administratively defined n RCW Chapter 173-500-040. Within area boundaries, all surface freshwater and adjacent estuaries and marine areas are included.

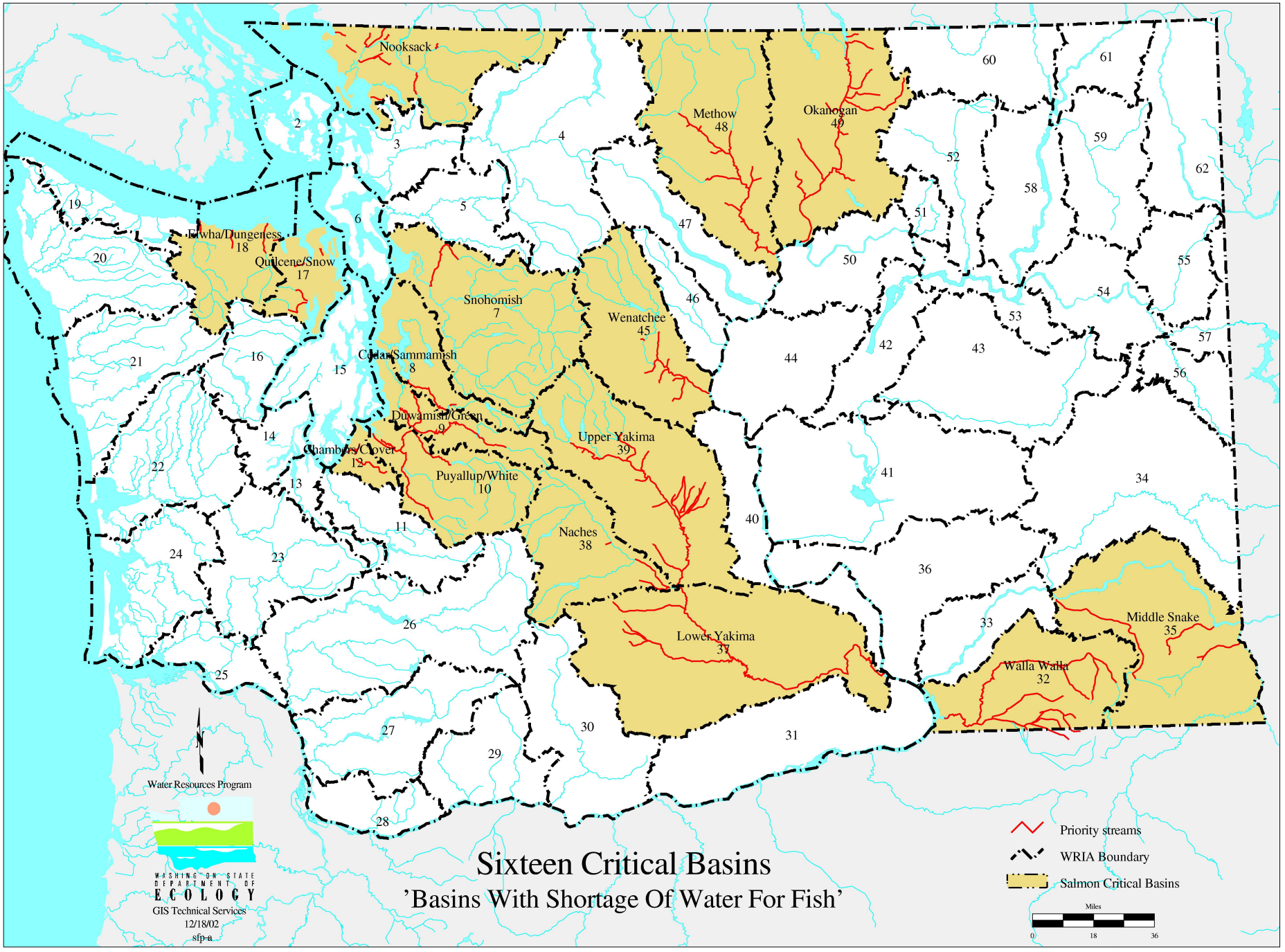
Watershed: area of land that water flows across or under on its way to a river, lake or ocean.

APPENDIX II

(FOR STRATEGY TWO: PRIORITIZING WHERE AND WHEN TO ACQUIRE WATER RIGHTS)

- Map of 16 critical basins
- Flow restoration prioritization for the 16 critical basins
- Flow restoration prioritization for each critical basin and maps depicting targeted streams and reaches for priority flow restoration:

- **Nooksack watershed** (Water Resource Inventory Area 1)
- **Snohomish watershed** (Water Resource Inventory Area 7)
- **Cedar-Sammamish watershed** (Water Resource Inventory Area 8)
- **Duwamish-Green watershed** (Water Resource Inventory Area 9)
- **Puyallup-White watershed** (Water Resource Inventory Area 10)
- **Chambers-Clover watershed** (Water Resource Inventory Area 12)
- **Quilcene-Snow watershed** (Water Resource Inventory Area 17)
- **Elwha-Dungeness watershed** (Water Resource Inventory Area 18)
- **Walla Walla watershed** (Water Resource Inventory Area 32)
- **Middle Snake watershed** (Water Resource Inventory Area 35)
- **Lower Yakima watershed** (Water Resource Inventory Area 37)
- **Naches watershed** (Water Resource Inventory Area 38)
- **Upper Yakima watershed** (Water Resource Inventory Area 39)
- **Wenatchee watershed** (Water Resource Inventory Area 45)
- **Methow Watershed** (Water Resource Inventory Area 48)
- **Okanogan Watershed** (Water Resource Inventory Area 49)


Nooksack
1
Methow
48
Okanogan
49
Elwha/Dungeness
18
Quilcene/Snow
17
Snohomish
7
Wenatchee
45
Cedar/Sammamish
8
Duwamish/Green
9
Chambers/Clover
12
Puyallup/White
10
Upper Yakima
39
Naches
38
Lower Yakima
37
Walla Walla
32
Middle Snake
35
Water Resources Program
WASHINGTON STATE
DEPARTMENT OF
ECOLOGY
GIS Technical Services
12/18/02
sfp-a
Sixteen Critical Basins
'Basins With Shortage Of Water For Fish'
Priority streams
WRIA Boundary
Salmon Critical Basins
Miles
0
18
36

Flow Restoration Prioritization for the 16 Critical Basins

I. GENERAL DISCUSSION

In an attempt to be more strategic in selecting streams and reaches throughout the state for stream flows restoration and to guide acquisitions of water rights a statewide prioritization matrix was developed. In order to develop equitable prioritization between and among streams and reaches, common parameters were selected.

When acquiring or leasing water is important to determine which streams would benefit from expenditure of acquisition monies. Evaluation and prioritization of streams within the 16 critical basins which would most benefit from increased flows, is necessary to strategically acquire water. Prioritizing streams is complex, requiring review of data regarding the size of a stream; current and future habitat conditions; historical, existing, and potential fish use; fish production potential; base flows; instream flow recommendations; the volume of water necessary to achieve the instream flows; projected future water and land use; and other factors. Unfortunately, this data is limited and is not generally available to allow meaningful comparisons of streams. Only stream and reaches in which low instream flows were noted as being a limiting factor to salmon production due to surface water diversions, were prioritized.

In many instances, especially where water has been used extensively for irrigation for more than a century, it is difficult to determine baseline flow conditions. In addition to surface diversions, there often has been significant alteration of the landscape and surface infiltration. Surface runoff coefficients have also been significantly altered in many instances due to soil compaction, roads, ditches, impervious surfaces, etc. Estimates can perhaps be made if relatively unaltered adjacent or nearby watersheds with similar fluvial, and geological characteristics, and climate are available.

These factors compound the ability to determine how much water is needed within each reach throughout the year. Where recommendations for instream flows levels have been developed or where minimum flows have been established by rule, those levels will be used to determine acquisition needs for specific streams and reaches. However, in many instances water quantity is so limiting that any additional flow that can be acquired for instream flow is desirable.

Ideally, specific information including detailed hydrologic and biological data, specific habitat data, flow data for current and baseline conditions, and existing and potential fish productivity would also be used to assess and prioritize water rights acquisition. In addition, some measure of expected participation by water right holders would desirable to maximize efficiencies in the administration of the program. Unfortunately, while there is much biological and flow data available for some stream and reaches, there is little or none available for others. In order to prioritize streams in a meaningful and equitable manner somewhat general habitat data, flow data, and species status and assemblages were used. In addition, it is desirable to use data collected using similar methodologies and techniques.

Thus, the Washington State Conservation Commission's, Limiting Factor Analysis data was used extensively in the development of the priority matrix (see Appendix II (2)) as it is one of the few recent studies in which similar methods and techniques were used to assess limiting factors to salmon production. USGS and DOE flow data was used as well. The matrix is intended to provide a relative index of the size, habitat conditions health, future condition, fish species diversity and status, which reflects the likelihood of success of stream flow restoration.

II. PRIORITIZING STREAMS AND REACHES

Low flows due to surface water diversions (gravity or pump) were assumed to be limiting factors for all identified streams and reaches in the prioritization matrix. While many streams and reaches are known to have low flow which are limiting, the low flows may be natural or as a result of exempt wells, impervious surfaces, logging, or other land use practices. The water right acquisition strategy specifically targets low flows resulting from diversion of surface flow, or instances where there is relatively direct continuity between ground and surface water, which can be documented without extensive investigation.

The prioritization matrix is intended to be used as a screening tool to provide focus on streams where water rights acquisition will likely result in greatest benefit to fish and wildlife. Input from biologists with local knowledge of fish assemblages, streams with potential for recovery, life histories, flows, and habitat conditions can provide valuable assistance in prioritizing streams within sub-basins. The prioritization matrix will be considered a working document and changes can be made where appropriate, as new information becomes available. Thus, streams may be added or removed from the prioritization matrix as new information becomes available.

There are many unique variables affecting water acquisition prioritization of individual streams or watersheds. In some locations coordination with other states (such as in the Walla Walla River Basin) or even other countries (Okanogan, Nooksack, and Sumas River Basins) may be required to ensure success of stream flow restoration efforts. Flows in some streams are regulated by storage reservoirs operated by the BOR, USACOE, PUDs, irrigation districts, or other entities.

Acquisition priorities would potentially include diversions upstream and downstream of the identified reaches and tributaries to the identified streams and reaches, provided surface flows are enhanced within the target reach. Water rights with senior status will generally be favored over junior water rights to ensure that the water remains instream. Senior water lower in the sub-basin may be of highest priority if available to ensure that entire reaches remain watered. Creative leases and acquisitions may be useful in maximizing the benefits of acquisitions

While the habitat parameters included in the matrix were selected as being representative of the watershed condition, in some instances it is expected that this may lead to erroneous conclusions, especially where most or all habitat parameters are rated as being poor. This statewide index is not expected to be of sufficient sensitivity to discern differences in streams/reaches with habitat conditions suffering various degrees of poor condition. Therefore, local expertise will be sought and welcomed in the assessing various water rights.

When prioritizing streams for water acquisition, it is important to consider potential existing and future limiting factors to salmonid production. Otherwise, fish productivity may not be realized despite increasing stream flow because other limiting factors exist. For example, if instream flow recommendations were achieved, but temperatures, or other water quality parameters were outside tolerance thresholds for salmonid survival, few if any benefits to salmon may be realized. The expected future condition of the habitat and water quality may also be an important consideration. If other factors are expected to become limiting in the future, it is not logical to acquire water in those streams as successful salmonid recovery would be unlikely. Significant increases in the density of exempt wells in a sub-basin may perpetuate low flow conditions as a limiting factor despite surface water acquisitions. While growth and land use projections could have been generated for some watersheds using comprehensive plans, it was determined that this data was unlikely to be an good indice of habitat impact and limiting factors due to complex variables involving location and types of development. It was assumed that current floodplain conditions and off-channel habitat indices reflected developmental pressure and land use to some extent.

Other limiting factors to salmonid recovery may include temperature, passage barriers, disease, water quality, predation, and poaching. There factors must be considered when evaluating stream flow restoration projects as these factors could be compounded by providing fish access into small tributary streams where they may be more vulnerable.

1. Water Quantity

The size a stream is another determining factor in prioritizing streams for water acquisition. It is important to know what existing flow conditions and instream flow needs (targets), to determine the volume of water necessary to achieve instream flow needs. It was assumed that the acquisition of a relatively large volume of water would be necessary to effect notable or measurable fish benefits in large, main stem streams. For example, very significant increases in instream flow would be required in the Okanogan or Yakima Rivers to effect measurable benefits to salmon recovery, as it is likely that other limiting factors, such as water quality, would continue to persist.

Due to the volumes of water and costs associated with restoring large streams, it is unlikely that sufficient quantities of water and funding would be available. However, some of the larger streams did rank relatively high due to the diversity and status of salmonid stocks they support and the condition of their habitat. There may also be opportunities to acquire smaller quantities of water during critical time periods to provide additional water during critical periods of the freshwater life histories of salmonids. Foe example if stored water could be acquired it may be used to provide pulse of flow during critical out-migration periods, to temporarily supplement flows during spawning periods until fall rains increase instream flow, or provide passage for adult salmonids.

Instream flow recommendations have not been developed for most of the smaller tributary streams within the critical basins. Additionally, baseline flow data is not available for many

streams as annual diversions may have been occurring for many decades. Thus, in some streams it is difficult to determine how much water must be acquired within a stream to meet instream flow needs for fish. Gage data was used where available to determine mean monthly flow (MMF) for streams. Where gage data was not available, the basal area of the watershed was compared to the area and flow of adjacent water watersheds, to estimate instream flow.

The sizes of the streams were determined by their MMF between June 1 and September 30th, which typically is the low flow period when surface diversions are in use. There are exceptions, as the base flows for some streams actually occur during mid-winter months, when surface water is frozen.

Developing instream flow recommendations for all streams would be desirable to identify the volume of water needed for each stream. It would be desirable to determine if there is sufficient water available to achieve sufficient instream flows such that measurable benefits could be provided to fish. If only a fraction of the water needed is available, it may not be prudent to acquire of lease water within that stream or reach. However, incremental acquisitions through establishment of a Water Trust or bank may be used to secure a sufficient amount of water over a long term to provide measurable benefit.

2. Fish Species Diversity

Flow restoration in streams which would benefit a diversity of salmonids, were ranked higher than those with few species. Acquisitions which protect a diversity of species were assumed to be of higher value and diverse habitat conditions could generally be expected to exist. A diversity of species would also reflect watershed health to some degree. Some streams or reaches may provide only rearing or spawning habitat, or may just serve as a migration corridor. Those streams supporting all freshwater life histories of salmonids present should be ranked higher.

3. Fish Status

One of the most important components of the prioritization process is determining which fish species and life stages are present, and their status. Those streams supporting salmonid species most in need of protection and listed as threatened or endangered under the Endangered Species Act, or those listed as “critical” or “depressed” under the Salmon and Steelhead Stock Inventory (SASSI) were generally be ranked higher than streams healthy stocks. However, careful consideration should also be provided to important healthy, stocks of salmonids which may be at risk of becoming depressed or requiring federal protection under the ESA. While the focus of the program is directed primarily towards salmonid restoration, it is also recognized that projects benefiting a diversity of fish and wildlife species, should also be considered. In some instances it may be more prudent to protect streams with diverse, healthy stocks and habitat, rather than attempting to restore salmonids in habitat which is in poor condition with little prospect of recovery. It is generally less costly to preserve and protect healthy habitat and fish runs than to

attempt to restore degraded habitat and depressed stocks. Expected future conditions of habitat and flow is a consideration.

4. Salmon Life History

Salmonids have varying life history strategies in freshwater. Some are fall spawners, such as coho, chinook, chum, pink, bull trout, and sockeye, while steelhead, cutthroat trout and rainbow trout are spring spawners. There are also summer spawning chinook and chum salmon. Some species migrate to the sea soon after emergence from the gravel, while others may rear in freshwater from one to three years prior to emigrating. Most juvenile salmonids out-migrate in the spring between Late-March and June. Knowing which species are present and when they are present is an important factor in acquiring water for salmonid recovery to increase efficiency. Acquiring water when and where it is most beneficial will likely be more cost effective than acquiring water throughout the year.

As indicated above, some streams and reaches may not support adult spawning fish but may provide critical winter or summer rearing habitat for juvenile salmonids. Increasing flow in reaches can be very important if rearing habitat is also a limiting factor in the watershed.

5. Habitat Conditions

It is expected that salmon recovery efforts will be more successful in those streams with habitat currently in proper functioning condition. Water acquisition in streams with relatively poor habitat conditions are less likely to realize increased salmonid productivity in the near future because other limiting factors may exist. If temperatures remain excessive, large woody debris and other important rearing habitat is unavailable, or if sediment loading in spawning beds is excessive, little of no salmonid recovery may result.

Stream which have been channelized, diked, dredged, or suffer significant alteration from past and existing alterations may take many decades to recover unless significant restoration activities occur concurrent with flow restoration. Restoration efforts can accelerate recovery of various habitat parameters to proper functioning condition.

6. Altered Flow and Hydrology

In some streams flows can actually be excessive during certain times of the year, especially if water storage facilities are used to provide water for irrigation or municipal use. Artificially high stream flows during the wrong time of the year can have a variety of direct and indirect impacts to salmonids. High flows can cause scour or redds and spawning gravels, alter timing of migration and spawning, alter riparian plant communities, result in loss of redds, juvenile salmonids, and aquatic invertebrates through dewatering and stranding (if fish spawn when flows are artificially high then flows are later reduced), and other impacts. Increased frequencies of flow fluctuations can also result in significant impacts due to redd (nest) dewatering and stranding.

Care must be exercised when acquiring water to avoid unintended consequences of providing additional flows such that other sources of mortality result. If fish access were provided into upper stream reaches and tributaries which naturally dewater, fish may suffer increased predation or stranding in some circumstances. Access could also be provided for predators into critical reaches, or diseases may appear where none currently exist. There may also be consequences to the genetic integrity of listed species, such as if brook trout access were provided to stream reaches inhabited by isolated populations of bull trout.

There are many other streams other than those prioritized, which suffer from low instream flow due to a variety of reasons other than surface diversions. Stream flow is affected by climate, snow pack, geomorphology, landscape alterations, including impervious surfaces, logging, agricultural practices, density of permitted and exempt ground water wells, and many other variables.

7. Other considerations

The potential site condition or expected future condition of the stream/reach should be considered in flow restoration assessment. While it would be desirable to include this variable in the prioritization, it is difficult to assess, as there are no consistent indices of future or expected conditions. It is expected that streams with greater opportunities to achieve flows ad habitat in proper functioning conditioned would be rated higher than streams with little chance of even achieving minimal productive capacity.

Water conservation efforts can complicate water acquisition and leasing. Lining canals in some stream reaches can result in less water reaching other tributaries and wetlands. The degree of continuity between surface waters and ground water can be variable. If various ground and surface waters are appropriated it is important to identify the extent to which surface waters would benefit with water acquisition. If instream flow benefits cannot be determined or realized, or there is risk in acquiring water at risk of being lost through conservation efforts, caution should be exercised.

In some instances, acquiring junior water rights may be beneficial, especially split season leases or instances when more senior water right holders may not exist downstream, and instream flows can be preserved through the target reach.

8. Public Participation and Interest

It is recognized that one of the most determining factors regarding the success of the program will be finding willing participants in the program where water is most needed by salmonids. Outreach programs will be used to assess interest in the program prior to acquiring water. Participation is expected to be higher where community and local support exists for the program and where water right holders may be more familiar with the program. In addition, creative means of water acquisition will be explored to find solutions which address the needs of water rights holders while recovering salmonids.

The water right characteristics including its location, validity, and seniority is recognized as being a very important consideration in water acquisition. This is addressed in "Strategy Three" elsewhere in this document.

III. RESTORING STREAMS WITHOUT FISH

In general, streams in which flows are limiting and have naturally spawning populations of wild salmonids would rank higher than those not supporting fish, as recovery would be expected to occur more rapidly. However, current and future habitat conditions must also be considered. Some streams or reaches may not support adult fish populations, but may provide critical rearing habitat for salmonid production during critical time periods. While these streams may not be prioritized as highly as streams providing both spawning and rearing habitat, they should be considered for water acquisition, especially where rearing habitat is also limiting. In other streams, spawning habitat may be precluded due to a high sediment load. If efforts are underway to restore habitat and provide passage, these streams should receive higher priority.

There are also stream reaches which currently do not support fish life because low flows over a period of many decades has precluded access to spawning and rearing habitat. If the habitat is in proper functioning condition, and the stream historically produced salmonids, it should be included in the prioritization process. Some of these dewatered streams could realize significant production potential if flows were restored. Thus, the number of salmonid species with recovery potential within a stream was also used in determining the priority indices for these streams. It is expected that natural colonization of a stream without fish would likely occur quite slowly, and may take decades, although artificial reintroduction techniques could assist in jump starting recovery efforts.

It is recognized that fish passage plays and important role in prioritization process. Improving instream flows within stream which are inaccessible to fish is obviously unproductive, unless passage can be expected in the near future. However, passage is often related to instream flows. Streams with most favorable existing passage conditions received higher priority indices than streams suffering some form of passage barrier. However, consideration should be provided in instances where significant production potential may exist above a barrier.

It is expected that additional streams will be added to the prioritization matrice as more information is available. If newly prioritized streams rank favorably, they should be considered for flow restoration efforts. In addition, if tributary flows can be preserved downstream to benefit designated target reaches, the tributaries would receive the same priority as the receiving reach. However, if acquired water can be diverted by other water right holders prior to reaching a target reach, it would not rank very high as it is unlikely that there would be significant benefit to fish.

Flow Restoration Prioritization for each Critical Basin

Nooksack River Watershed - WRIA 1

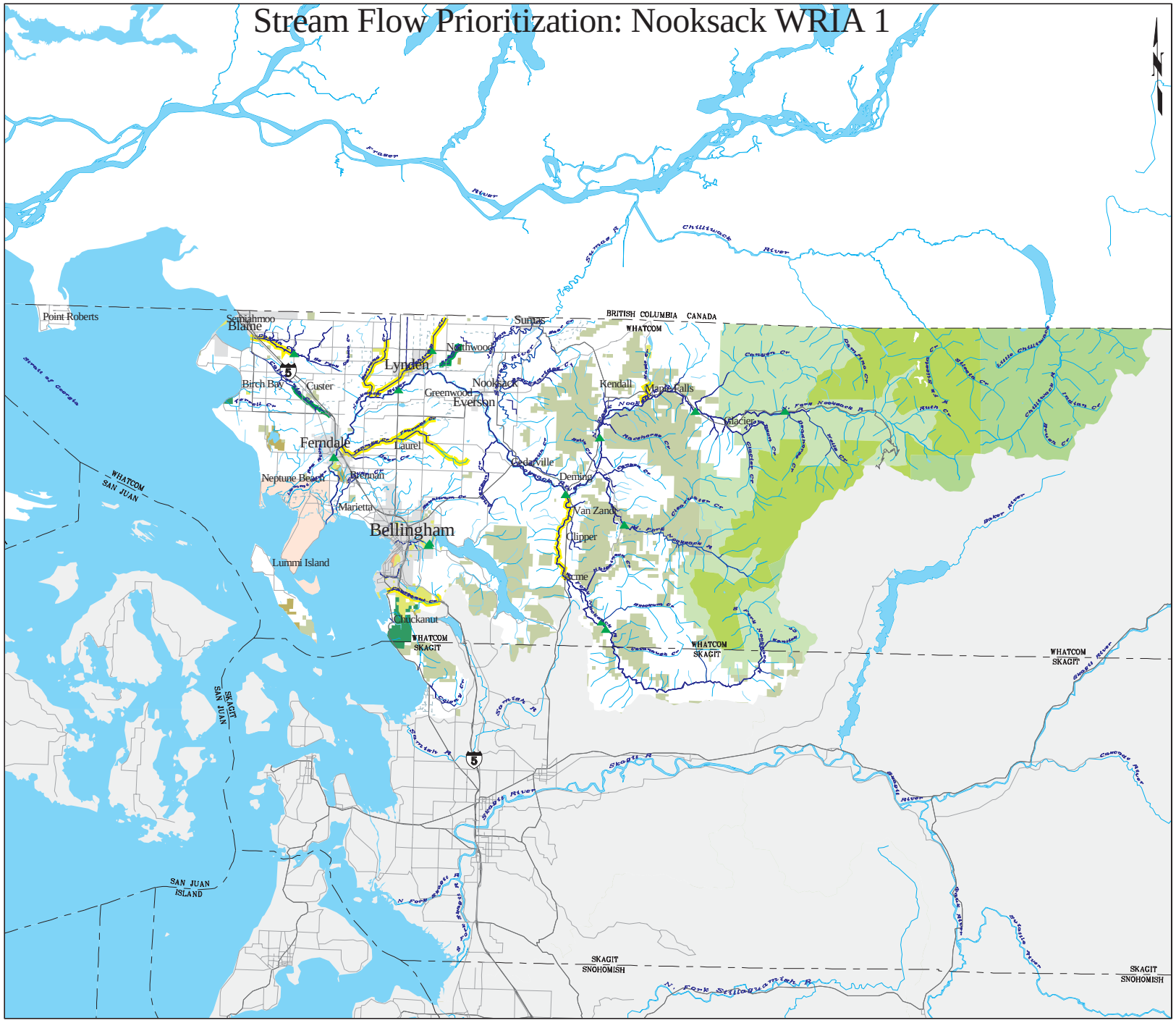
Inadequate streams flows have been identified as a limiting factor to salmonid productivity in several lowland tributaries of the main stem, South Fork, and North Fork of the Nooksack Watershed. Water is diverted primarily for agricultural purposes, but conversion of these lands for residential and commercial land use is accelerating. More than 30 streams and reaches have been closed to further water appropriations by rule. In addition, independent drainages such as Chuckanut, Dakota, and California Creeks have numerous surface water rights and have been closed to further appropriation. Most of these streams also suffer from water quality and temperature problems associated with poor riparian and floodplain conditions associated with agriculture and development.

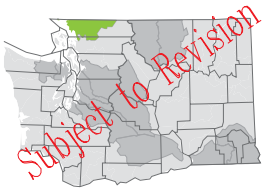
Primary surface water users include power producers, commercial, industrial, and municipal/ domestic users, with agricultural use identified as being ranked relatively low overall. Groundwater is the primary source of water used for agriculture in this watershed. Groundwater withdrawal from shallow aquifers during the later summer months is thought to be a contributing factor to low flows. Stream channelization and the ditching of wetlands are thought to have significant impacts to aquifer storage and summer flows. However, surface water withdrawals are most significant in areas with intensive agriculture such as Dakota, California, and Chuckanut Creeks and some of the tributaries of lower Nooksack. It is here that water rights acquisition activities should be focused.

The South Fork Nooksack River is identified on the 303(d) list as having critical low surface flows and excessive temperatures during the summer months. Low flow limits pool habitat for rearing salmonids. There are numerous surface water rights in the lower South Fork which should be investigated for acquisition.

While groundwater withdrawals, hydrology alterations from land uses including impervious surfaces and logging,, and municipal and industrial withdrawals stream all contribute to low flows, flow restoration should be focused on acquisition of surface water rights in the smaller independent tributaries and tributaries of lower Nooksack. It is not expected that sufficient water could be acquired with the available budget to effect measurable change in mainstem flows.

Stream Flow Prioritization: Nooksack WRIA 1





- US Forest Service
- US Wildlife Refuge
- US Parks/Recreation
- USFS Wilderness Area
- Bureau of Land Management
- US Dept. Defense/Energy
- Wa. Dept. of Fish & Wildlife
- Wa. Dept. of Naural Reasources
- State School/Hospital/Prison
- Wa. Parks & Recreation
- City/County Watershed/Park
- Tribal Lands
- Incorporated City

- Low priority stream
- Medium priority stream
- High priority stream
- Salmon/Bull Trout Spawning/Rearing area
- Other streams
- Canal/ditch/pipe

- USGS Stream Flow Gage
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- Water Right Purchase

- County
- Highway
- Local Paved Roads

WDNR/Ecology - Major Public Lands 2002 100k
WDFW/Ecology - Hydrography, 2000 100k
Ecology - WRIA, 2002 24K
WDOT - Transportation, 2001 24K
WDFW - Stream Flow Prioritization 2002
WDFW - Spawning/Rearing Areas 2002 100k
USGS/Ecology - Stream Gages 1:100k

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Snohomish River Watershed – WRIA 7

Conditions of the streams and rivers of the Snohomish River watershed range from pristine to moderately impacted to heavily impacted (Pentec 1999). The range of conditions reflects the variety of land uses found in the watershed, including wilderness, commercial forestry, agriculture, residential development, and urbanization. Most of the water bodies greatly affected by human activities drain the suburban foothills or lie in the floodplains or the major rivers. Principal impacts to fish production have resulted from construction of dikes, channelization of floodplain tributaries, elimination of wetlands and estuarine habitat, riparian forest removal, non-point water quality pollution, industrial discharges, fish passage barriers, log rafting, and removal of large wood from channels.

The basin is recovering from some of the past impacts; many impacts of past land use actions remain present in the watershed. Rapid urbanization is the greatest new threat to salmonid habitat in the Snohomish watershed.

Water Quantity

While habitat loss through diking, ditching, wetland loss, loss of estuaries, and floodplain alteration have significantly reduced salmonid productivity, water quantity is also a recognized limiting factor. Low stream flow or associated elevated stream temperatures function as passage barriers and reduce rearing habitat during certain times of the year.

The Department of Ecology set instream flows and year round closures for the Snohomish River and it's tributaries in 1979. These established flows apply only to water right issued after the regulation was established. Instream flow regulations exist at 10 locations along streams within the watershed.

Instream flows on the Snohomish River near Monroe have typically not been met an average of 121 days during the year, especially between mid-July and mid-October. Minimum flows are not met during the month of October in half of all years, and are not met during most of the year (except during spring run off) in oneof ten years.

Up to 95 percent of the water allocated in the Snohomish River basin is from surface water. Municipal use account for 72 percent of the allocations, while 21 percent is used for domestic purposes, and the remainder for irrigation, fish culture and power generation. The 901 surface water rights issued by the Department of Ecology are equivalent to a flow of 743cfs. Allocations represent the volumes legally available for use if all wayter rights are exercised. As the water used approaches the amount allocated , due to continued development of water allocated by Seattle and Everett, further reductions of instream flow will occur. Diversions for municipal water supplies are highest during the summer months.

There is a relatively direct connection between shallow water aquifers and surface water in the Snohomish River watershed. These connections are most obvious during periods of low flows when the primary source of surface flow is shallow ground water. Thus, flows in this watershed

are susceptible to increased impervious surface area associated with development, and increases in the numbers of exempt wells.

Flow Restoration Opportunity
Changes in reservoir storage and management o the Sultan River have helped meet instream flows targets since 1985, however, the number of days that flow requirements have been met annually on the Snoqualmie River has been declining. Applications for appropriating new surface water rights for municipal use total 1000cfs, and applications for municipal groundwater water total 164 cfs.

Any additional appropriations must be reviewed critically to ensure that the established 1979 flows are maintained. Increased impervious surfaces and additional exempt wells alone will continue to have an impact on surface flows.

Because most of the water allocated in this basin is for municipal uses, and considering the current demand for more surface water, there may be little opportunity to acquire surface water in this basin. It is expected that there will be little water available, and that which is available will likely be prohibitively expensive. Acquisition efforts should focus on small tributaries which have water diversions associated with domestic of agricultural use. Stream flow can be reduced by over-allocation of groundwater and by creation of impervious surface, both lowering the water table by reducing groundwater recharge to streams

Marshland Drainages, Wood Creek 07.0036, Larimer Creek 07.0107, Thomas Creek 07.0108, Batt Slough, Hanson Slough

Increased peak flows, decreased summer low flow levels, and high sedimentation rates related to high levels of impervious surface in the headwaters of the Marshland tributaries, adversely impact the quality of salmonid habitat in the Marshland tributaries (Haas 2001); however, a study by Chris Konrad (USGS hydrologist) of perennial streams in the Puget Sound lowland concluded that while urbanization decreased winter baseflow, it did not significantly affect the quantity of summer base flow (study report interpretation by Dan Mathias, City of Everett). Increased impervious surface area associated with land use is the primary factor affecting flows in these sub-basins. Thus, acquisitions of surface waters are unlikely to resolve low flow problems other than perhaps a few localized streams or reaches. Care must be exercised to ensure that any acquisitions result in measurable flow increases.

Pilchuck River Mainstem
The City of Snohomish operates a domestic-supply water diversion dam at RM 26.4. The pool and weir fish ladder for the dam is located on the left-bank, which is the side of the river where sediment and debris tend to accumulate, necessitating regular and frequent maintenance of the fish ladder to ensure unrestricted fish passage (Tom Burns, WDFW). Impassable conditions over as little as a week during the adult return period could significantly impair salmonid production from the watershed upstream of the dam. Poaching of returning adult salmon and steelhead is also a routine concern at the fish ladder.

Surface water withdrawals from the Pilchuck River at RM 23 by the City of Snohomish can reduce summer and fall low flow in the river by 10-20% (Pentec 1999). No assessment of effects to resulting downstream salmonid production is available but salmonid passage at the diversion can be affected at low flows (Chamblin, WDFW).

Model estimates of impervious surface are 12% for the lower Pilchuck, 7% for the middle Pilchuck, and 1% for the upper Pilchuck (Purser and Simmonds 2001, as cited in SBSRTC 2002 DRAFT). Extensive floodplain alteration, diking, and increases in development suggest that a reduction in base flows should be occurring in the lower Pilchuck, although no reduction in base flows has been identified.

There may be limited opportunity to acquire water from the City of Snohomish, although drought year acquisitions to maintain fish passage may be cost effective. The effects of this diversion on salmonid production should be further investigated.

French Creek and tributaries

Low stream flows affect salmon productivity by reducing the amount of rearing habitat. HSPF modeling looked at the potential for low stream flows to affect summer instream habitat (Carroll 2000). The model predicted that at anticipated future development, Upper Spada, Upper Stables, Ghost Horse, Chain Lake, Upper Cripple, tributary to Cripple, Trench, and Lords Hill tributary creeks would likely go dry in summer. Portions of Cripple Creek, Alston, Stables, and all of Trench Creek currently dry up in summer months. The HSPF modeling identified a corresponding significant increase in peak flow magnitude in the watershed. French Creek peak flows have increased approximately 11-12% from forested conditions; the historic 100-year flood approximately equals the current 50-year flood (Washington State Conservation Commission / Northwest Indian Fisheries Commission , Limiting Factors Analysis, 2002 DRAFT). Further increase in peak flows is likely as further development occurs in the watershed. Stormwater detention and ability to infiltrate stormwater is limited by ~3% of the watershed soils being glacial till, that does not infiltrate well. Like many Puget Sound streams, the expansion of impervious surfaces and exempt well threaten instream flows. (Washington State Conservation Commission / Northwest Indian Fisheries Commission , Limiting Factors Analysis, 2002 DRAFT). Limited opportunity exists to restore increase stream flow because opportunities to acquire surface waters are limited, and additional data is needed to determine the feasibility of acquiring groundwater to preserve surface flow.

Snoqualmie River

Fish resource agencies have reached an agreement with Puget Sound Energy to maintain a minimum 300 cfs flow between the base of the falls and the outfall for power plant 2, approximately 0.5 mile downstream (1998 subbasin workshop). The flow has been set to allow fish access to the plunge pool below Snoqualmie Falls.

There are water withdrawals from the river occurring for agriculture although the quantities are unknown; affects on instream flow are also unknown (1998 subbasin workshop). Minimum flows established in 173-507 WAC vary from 700 cfs in late August to September to 2800 cfs between November and the end of June (Washington State Conservation Commission / Northwest Indian Fisheries Commission , Limiting Factors Analysis, 2002 DRAFT). Opportunities to acquire water from agricultural users in the lower end of this basin should be further investigated.

Tolt/NF Tolt River , Moss Lake Creek, Stossel Creek, North Fork Creek, SF Tolt River, and tributaries

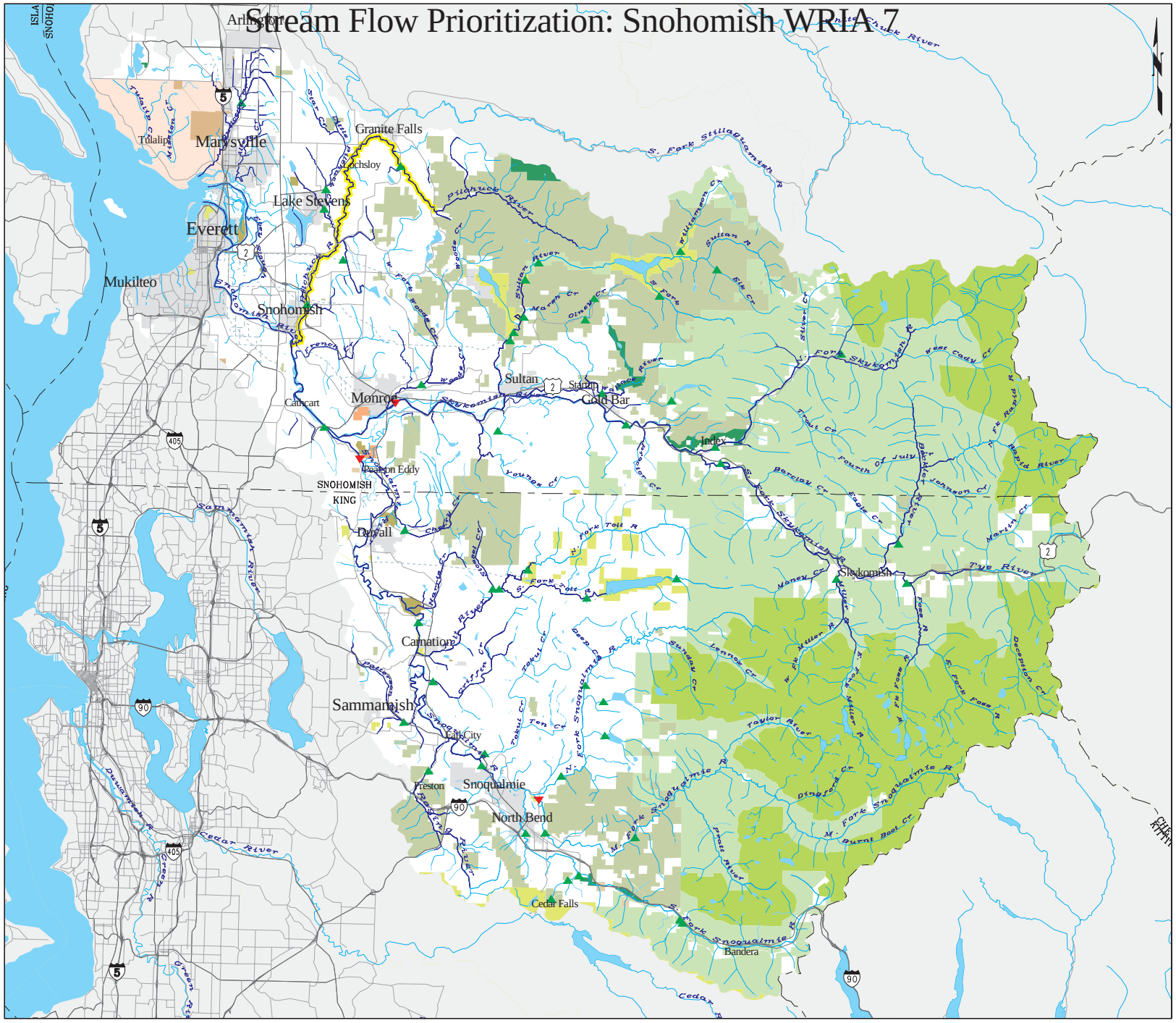
USGS gauge information before and after construction of the SF Tolt dam demonstrates altered peak flows, base flows, and flow timing since dam construction. (EBASCO Environmental 1993, as cited in SBSRTC 2002 DRAFT). The dam and associated reservoir on the SF Tolt were completed in 1963; the intent of the dam was for municipal water supply, and was not intended for flood control operations (Parametrix 2001). The SF Tolt flow is regulated by the SF Tolt water supply and hydroelectric projects. Water is withdrawn by the City of Seattle for municipal and industrial uses, under Superceding Reservoir Permit No. R-206 and Superseding Surface Water Permit No S1-10602. Instream flows are governed by a settlement agreement with resource agencies, associated with the federal license for FERC Project 2959 (FERC, 1988). Water storage in the SF reservoir has reduced lower Tolt River flood peaks by 29-36%, depending on the magnitude of the event (Parametrix 2001). Since reservoir flows are governed through FERC licensing and due to demand for municipal water, it is unlikely that water acquisitions would be feasible in this basin.

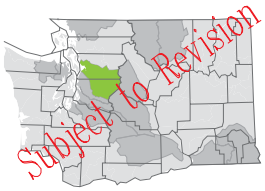
(Washington State Conservation Commission / Northwest Indian Fisheries Commission , Limiting Factors Analysis, 2002 DRAFT)

Other limiting factors

The analysis conducted by Haas and Collins (2001)(based primarily on Skagit data) suggests that the Snohomish River estuary is commonly a bottleneck to chinook production, with chinook experiencing density-dependent production constraints 45-87% of the time during the period 1968-1999. Several TAG participants question whether the model assumptions are accurate or valid enough to define the estuary as a “bottleneck”. Researchers have not been finding the degree of utilization of saltwater marshes by chinook that is represented in the model used by Haas and Collins (Houghton, Rowse). However, there is agreement on the importance of estuarine habitat, agreement that estuarine habitat has extensively altered, and that restoration of estuarine habitat is likely of highest priority in the lower watershed (Washington State Conservation Commission / Northwest Indian Fisheries Commission , Limiting Factors Analysis, 2002 DRAFT). The greatest reduction in coho salmon production capacity is estimated to have occurred through the disconnection and draining of large palustrine marshes within the floodplain (Haas and Collins 2001). It appears that more research may be necessary to determine the extent that estuary habitat is limiting in this basin prior to acquiring water to increase productivity for chinook and coho.

Stream Flow Prioritization: Snohomish WRIA 7





- US Forest Service
- US Wildlife Refuge
- US Parks/Recreation
- USFS Wilderness Area
- Bureau of Land Management
- US Dept. Defense/Energy
- Wa. Dept. of Fish & Wildlife
- Wa. Dept. of Naural Reasources
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WDNR/Ecology - Major Public Lands 2002 100k
WDFW/Ecology - Hydrography, 2000 100k
Ecology - WRIA, 2002 24K
WDOT - Transportation, 2001 24K
WDFW - Stream Flow Prioritization 2002
WDFW - Spawning/Rearing Areas 2002 100k
USGS/Ecology - Stream Gages 1:100k

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Cedar /Sammamish Watersheds - WRIA 8

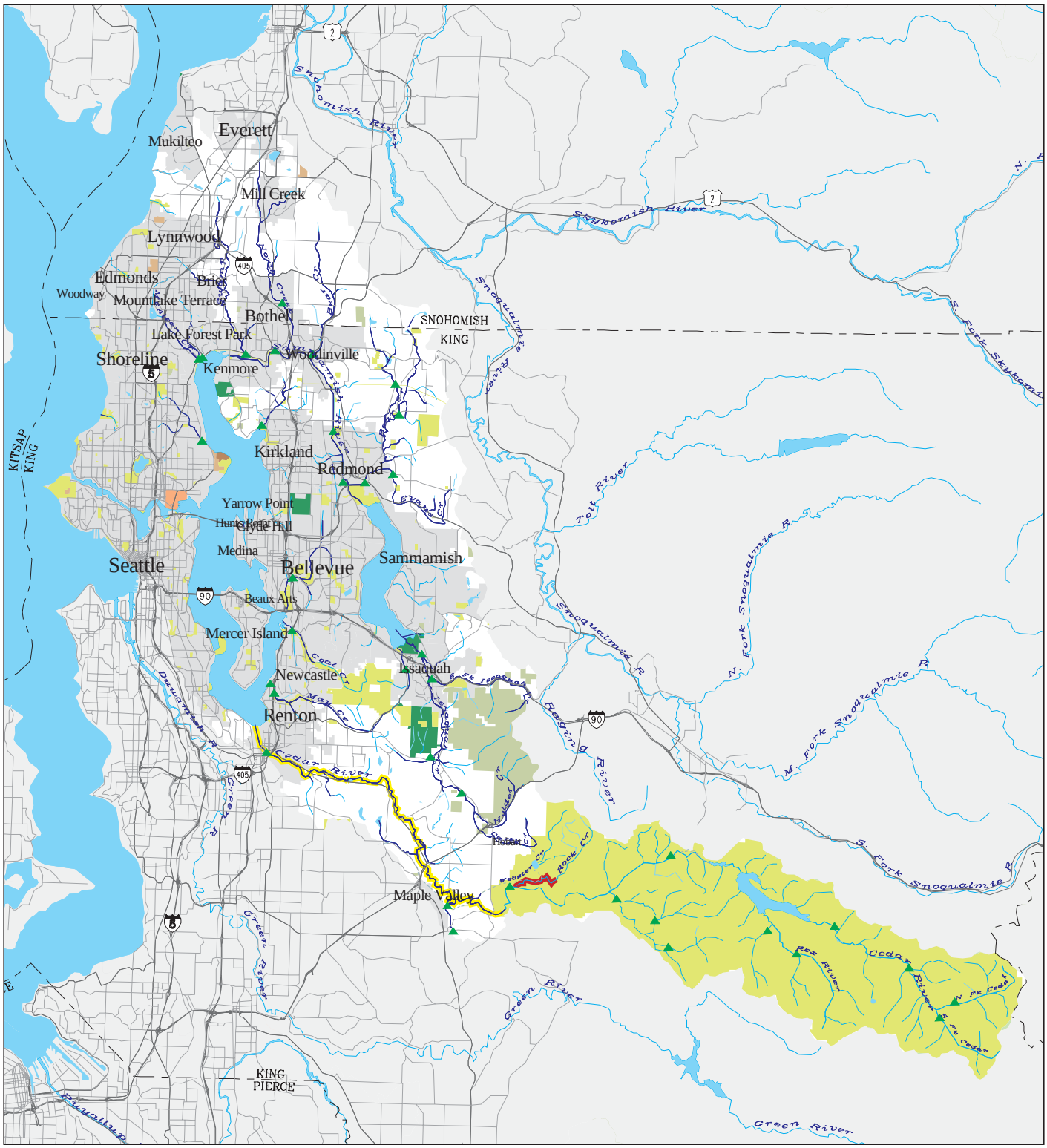
There are numerous streams draining directly into Puget Sound within this WRIA, but little hydrological data is available. Further review of the cedar and Sammamish streams is needed to determine instream flow deficiencies or needs. As with other Puget Sound tributaries, many of the streams in this watershed have undergone significant hydrological changes due to land use modification (roads, extensive development and impervious surfaces, wetland loss, loss of forest cover etc.) One of the expected and observed effects of land use changes and proliferation of exempt wells has been lower base flows, especially in small tributaries.

The Lansburg Diversion Dam diverts up to 22 percent of the mean annual flow of the Cedar River for the City of Seattle. However, during drought conditions the percentage of flow diverted can be much higher. Flows from the upper river are managed under the City of Seattle's HCP. Low flows in the lower watershed are being analyzed by the WRIA 8 flow committee which is investigating alternative stream flow management options.

Rock Creek is seasonal above RM 2.6 and typically flows only from early December to early July. The Washington Conservation Commission's LFA indicates that this creek supports excellent habitat quality throughout its length, and increased flows would be expected to provide significant benefits. The City of Kent operates a well field near RM 1.7which may withdraw as much as 75 percent of the base flow from the creek. Instream flows can drop as low as 1.9 cfs when chinook and sockeye adults are migrating. These low flows can also significantly affect rearing juvenile steelhead, cutthroat, and coho. Due to the apparent direct continuity of the well field with surface flows, this may be one of the few instances where the acquisition of well water may be justified to increase instream flows during this initial stage of stream flow restoration.

The North Fork of Issaquah Creek is also significantly affected by groundwater withdrawals. However, without additional information regarding which of the ground water wells may be most contributing to low surface flow, ground water acquisition should not be a priority. The initial phase of stream flow restoration is focused on the acquisition of surface water rights unless continuity between ground and surface water is well established.

There are numerous limiting factors to salmonid recovery in the watershed and although stream flow is limiting, it appears relatively unfeasible to address during current flow restoration efforts and funding. In general, most withdrawals in the watershed are associated with groundwater or large municipal surface diversions. It is anticipated that there is little opportunity for cost effective water acquisition in this basin with the possible exception of Rock Creek because it is unlikely that municipalities will willingly sell their water rights due to the demand and cost of alternatives in this area.



Stream Flow Prioritization: Cedar/Sammamish WRIA 8

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- City/County Watershed/Park
- Tribal Lands
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- USGS Stream Flow Gage
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- Water Right Purchase

Miles
0 3.5 7

- Low priority stream
- Medium priority stream
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- Salmon/Bull Trout Spawning/Rearing area
- Other streams
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- County
- Highway
- Local Paved Roads

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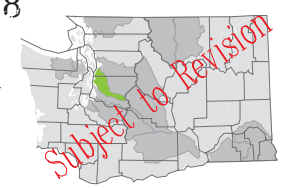


WDNR/Ecology - Major Public Lands 2002 100k
WDFW/Ecology - Hydrography, 2000 100k
Ecology - WRIA, 2002 24K
WDOT - Transportation, 2001 24K
WDFW - Stream Flow Prioritization 2002
WDFW - Spawning/Rearing Areas 2002 100k
USGS/Ecology - Stream Gages 1:100k

Green River Watershed – WRIA 9

Low flows have been recognized as being limiting to salmonid production for many decades in the Green River Watershed. Perhaps no other basin has suffered such significant changes to its historic hydrology due to entire sub-basins being diverted into neighboring watersheds. Significant alterations to the hydrology of this watershed include:

- Diversion of the White River in 1906;
- Diversion of the Cedar/Black River in 1913;
- Construction of Tacoma Water Headworks Diversion Dam in 1911; and
- Construction of Howard Hanson (HHD) dam in 1962.

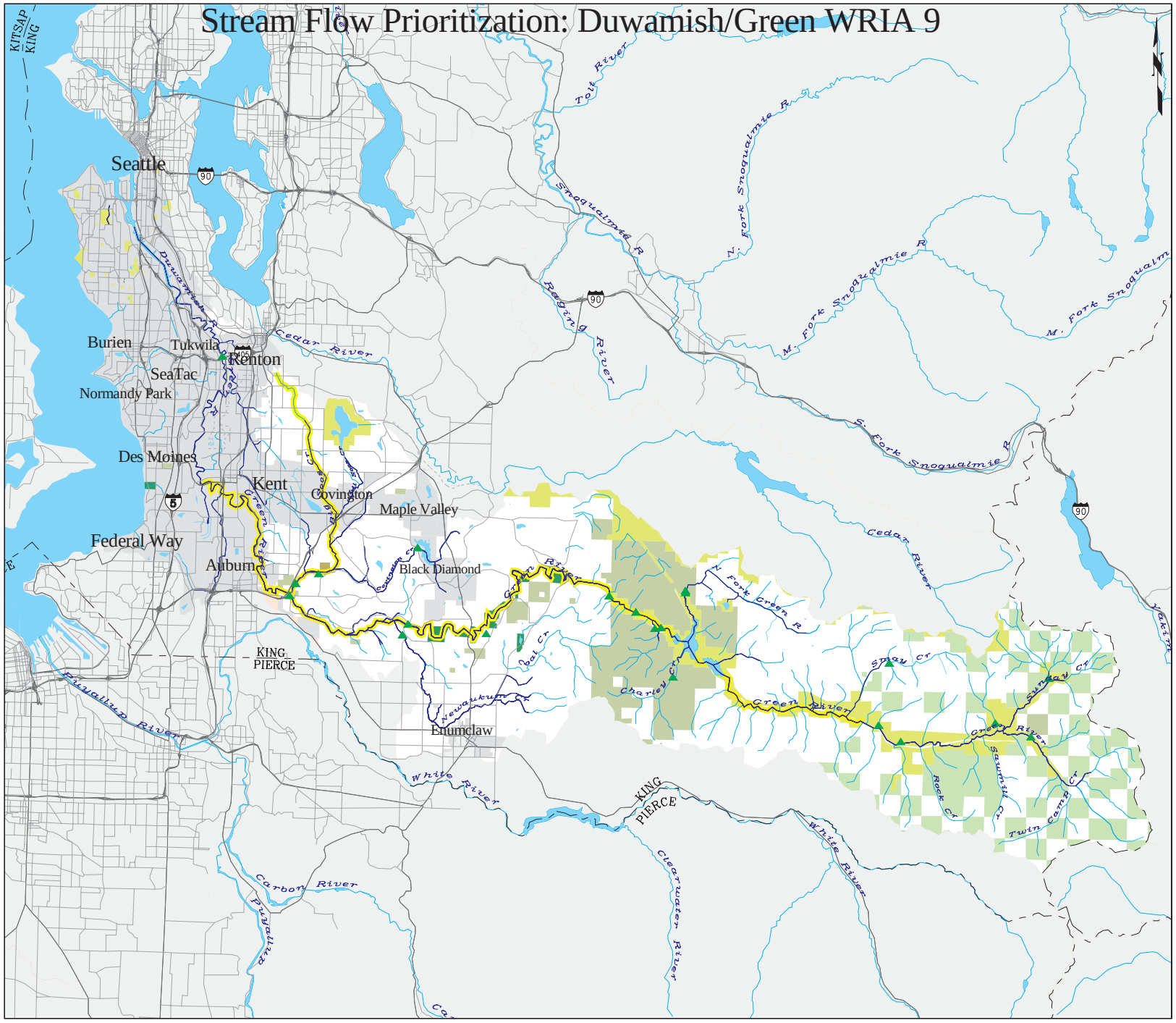
The City of Tacoma's diversion diverts up to 113cfs. The HHD was constructed to provide flood control and low flow enhancement in the lower river. Despite this, natural low flow conditions are not met 49 percent of the time, and during late summer instream flow requirements established by rule have only been met nine of the last 30 years. Low flows result in migration delays, a reduction in spatial rearing habitat, and alteration of adult spawning timing and location. This is leading to increased mortality through redd scour and adverse effect on early life stage development and fitness. Stream maintenance flood flows are also altered. Hydrology is further altered by development and other land use activities such as logging and forest road construction.

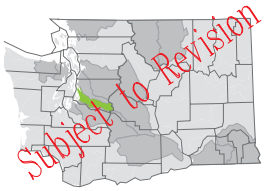
Big Soos Creek

Low instream flows have been identified as a limiting factor to salmonid productivity although the cause has not been specifically identified. The western portion of the watershed has suffered land use changes with an associated increase in impervious surface, which has significantly altered the hydrograph of this basin. The most significant diversion is at the WDFW hatchery although numerous, small residential diversions also exist on this stream.

Due to water demands in the Puget Sound Metropolitan area and potential cost associated with water acquisition, there is not likely to be many opportunities to acquire sufficient water to effect meaningful change in salmonid production in this basin. Opportunities to enhance flows in the Soos Creek Watershed should be explored further.

Stream Flow Prioritization: Duwamish/Green WRIA 9





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WDFW - Stream Flow Prioritization 2002
WDFW - Spawning/Rearing Areas 2002 100k
USGS/Ecology - Stream Gages 1:100k

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Puyallup River Watershed – WRIA 10

This was one of the first major watersheds in the state to undergo intensive industrial and urban development. Similar to many streams perched on glacial out-wash throughout the Puget Sound trough, many of the lowland small tributaries not fed by glaciers experience low flow conditions during late summers and early fall months, especially during periods of below normal precipitation.

Basin hydrology has been significantly altered primary by land use activity beginning with agriculture and logging, hydroelectric dams, and intensive urban, residential, and industrial development. For the 14 year time period between 1980 and 1993 the established minimum instream flow (MIF) of 1000cfs at the lower Puyallup River gage were not met an average of 35 days/year. Annual instream flows are continuing to decline despite establishment of MIF's in 1980; perhaps due to increased impervious surface area and exempt wells, associated with development. Unpermitted water withdrawals are also known to occur throughout the Puyallup River Basin. These unauthorized diversions typically occur during the low flow period, which compound their impacts to migrating and spawning salmonids.

Flows within the White River are diverted at a diversion dam located near Buckley at RM 23.4, through Lake Tapps and discharged back into the river at RM 3.5. Minimum flows within the bypass reach have ranged from 0 to 130cfs, and minimum bypass flows are yet to be established or agreed upon between Puget Sound Energy and resource agencies and Indian nations. Low flows within this bypass reach have resulted in significant impacts to migration, spawning, and rearing of salmonids. Increasing flows within this bypass reach may not be practical due to costs involved and may be better addressed through FERC licensing negotiations or some other venue such as the Lake Tapps Task Force (see below). Opportunities for cost-sharing a larger scale project to address flow problems should be investigated.

Wapato Creek is undergoing conversion from historical agricultural use to commercial, industrial, and residential use. There are surface water rights for up to 12 cfs that is used primarily form irrigation between May and September. There is virtually no remaining intact riparian vegetation and the channel and floodplain have been significantly altered. Salmonid use is currently limited to Simmons Creek which supports marginal habitat. This sub-basin is expected to continue to undergo significant alteration though increasingly intensive land use. There is some question whether flow restoration in this basin is cost-effective due to the expected future conditions associated with urbanization.

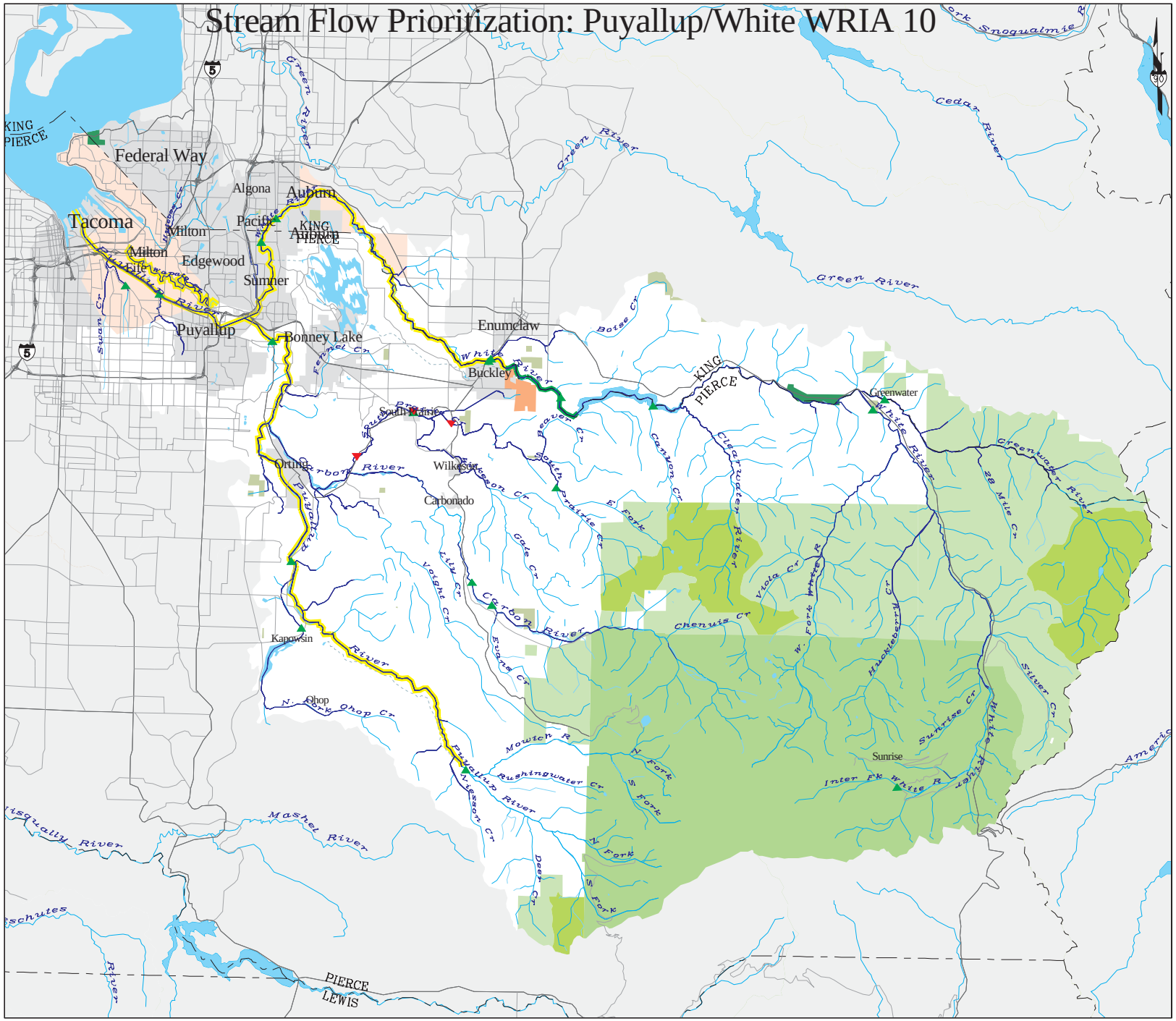
White River Hydroelectric Project / Lake Tapps Task Force - NMFS Biological Opinion: The Lake Tapps Task Force (LTTF) is developing their comments to the National Marine Fisheries Service (NMFS) regarding the NMFS Preliminary Draft Biological Opinion (PDBO) for the White River Hydroelectric Project. The LTTF would like WDFW to sign, or otherwise endorse their comments to NMFS. The first draft of some of the comments was distributed Friday, November 15, 2002. These comments currently are 54 pages long. LTTF will be

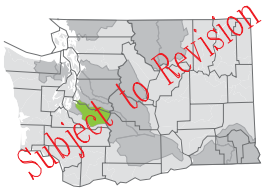
finalizing their comments on Thursday, November 21, 2002. They want WDFW's endorsement at that time. The deadline for delivery of comments to NMFS is November 27, 2002.

While the LTTF has modified some of the language in their comments to satisfy concerns raised by Ecology, NMFS, and WDFW, they are not expected to change their comments regarding the water temperature criteria. The LTTF has identified that their temperature criteria recommendations are contrary to the technical opinion expressed by WDFW. So far, no literature has been provided to refute WDFW's or NMFS' literature citations for temperature criteria.

Ed Schild (Puget Sound Energy) is expected to contact Greg Hueckel this week to find out what policy direction will be taken by WDFW regarding temperature criteria, and regarding support of the LTTF's comment letter to NMFS. Staff continues to review and provide comments to the LTTF regarding the LTTF's response to the PDBO. Staff will be meeting with the LTTF work group again on Wednesday, November 20th, as well as attending the meeting on Thursday. In addition to the temperature criteria, it is likely the LTTF will be making recommendations that if adopted by NMFS will impact fish in the White and Puyallup Rivers.

Stream Flow Prioritization: Puyallup/White WRIA 10





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USGS/Ecology - Stream Gages 1:100k

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Chambers-Clover Creek Watershed – WRIA 12

The Chambers-Clover Creek Watershed is located entirely in Pierce County, Washington between Puget Sound on the west and the community of Graham on the east. The watershed covers 144 square miles and includes approximately 2,020 acres of lakes, extensive wetlands, as well as Chambers Creek and Clover Creek (PCPWU, 1994). The Chambers-Clover Creek drainage originates from spring and ground-water discharge to springs and seeps in the northeast corner of the watershed. The ground-water discharge forms the headwaters of Clover Creek, which cuts through the center of the watershed, flowing from east to northwest, ending just west of Interstate 5. Clover Creek enters Steilacoom Lake at river mile (RM) 5.8. Chambers Creek is then formed from the outlet of Steilacoom Lake flowing 4.0 miles north and west down a narrow ravine where it is joined by Flett and Leach Creeks before it discharges to Puget Sound through Chambers Bay. The watershed is also typified by a number of small lakes. American Lake (the largest lake in the WRIA) is hydrologically linked to ground water and has no natural outlet.

Land Cover and Land Use

The Chambers-Clover Creek Watershed is located entirely in Pierce County. The WRIA is predominantly urbanized, with land use consisting of residential, urban, and light industrial activities. Forty-two percent of the land in the watershed is classified as built-up (PCPWU, 1994). Large portions (approximately 68%) of the Tacoma West and Clover Creek/Steilacoom Lake subbasins are considered urbanized. The Tacoma West Subbasin is distinguished by higher industrial and higher density commercial land uses, while the Clover Creek/Steilacoom Lake Subbasin is dominated by suburban and medium-density development (PCPWU, 1994). The least urbanized portion of the Chambers-Clover Creek Watershed is the American Lake Subbasin, particularly within the northern portion of Fort Lewis and along the southwest portion of the subbasin (PCPWU, 1994).

The American Lake Subbasin includes Sequalitchew Lake and Sequalitchew Creek which flows west into Puget Sound. The development of the Town of DuPont and surface-water usage at the Fort Lewis Army Reservation has severely impaired the flow and character of Sequalitchew Creek, which has been documented in a report by Andrews and Swint (1994). The 38.4-square mile drainage basin of Sequalitchew Creek includes Kinsey Marsh which drains into American Lake through Murray Creek; seasonal overflow from American Lake flows into Sequalitchew Lake from which Sequalitchew Creek begins. A Fort Lewis diversion dam, canal, and a set of complicated culverts carry water from the creek into Puget Sound at Tatsolo Point. The remainder of the natural creek flows through Edmond Marsh, a 130-acre wetland bordering Fort Lewis and DuPont, then through a lush, steep canyon, supplemented by a spring and several seeps, into a salt marsh, and finally through a culvert under a railroad dike into the Sound.

Agricultural land includes active and open agriculture. Less than 300 acres (0.3 % of the watershed) are classified as agricultural. Natural cover accounts for 36 percent of the watershed and includes primarily grasses, shrubs, and brush, but schools, golf courses, cemeteries, landfills, and small farms also were included in this classification scheme (PCPWU, 1994). The Clover

Creek Subbasin supports approximately 19,000 acres of natural habitat or 43 percent of the subbasin. The American Lake Subbasin is 38 percent natural cover, or approximately 6,500 acres, much of which lies within Fort Lewis (PCPWU, 1994). The population of Pierce County increased by 112.5 percent from 1950 to 1990. Between 1980 and 1990, the population of the county increased 20.7 percent The majority of the population growth during the 1980s occurred in the unincorporated areas of the county.

The interconnection between ground and surface water is evidenced by the relatively high proportion of recharge contributed from stormwater infiltration to ground water (21 percent). Precipitation accounts for 66 percent of the recharge, and septic tank drainage and surface water bodies account for 11 and 2 percent, respectively (Brown and Caldwell, 1985). Thus, increasing urbanization can be expected to continue to adversely affect instream flows within this WRIA.

Water Rights and Claims

Water-use statistics for the Chambers-Clover Creek Watershed have not been consistently recorded over the years. WDFW biologists have observed illegal water diversions for irrigation or other purposes (Jim Fraser, Personal Comm.); however, it is also likely that numerous recorded or claimed rights are no longer in use. Until actual use is known, it must be assumed that all recorded water rights and claims are fully in use today and represent consumptive water use.

Surface-water use has increased steadily, with a total annual withdrawal of 131 cubic feet per second (cfs) and 2,478 per year acre-feet authorized from the surface waters of the watershed. As of September 1994, one application, requesting a total of 12 cfs for fish propagation was on file at Ecology . Ground-water withdrawals have shown a steady increase, and a total annual withdrawal of 453.2 cfs (203,401 gallons per minute [gpm]) and 144,705 acre-feet per year has been authorized from the watershed. As of September 1994, 17 applications for additional withdrawal, requesting a total of 50 cfs (22,395 gpm) for municipal supply, domestic supply, and irrigation were on file. After the 1980 closure of Chambers, Clover, and Sequalitchew Creeks and their tributaries from surface water withdrawal, the rise in water consumption has been dominated by the granting of ground-water rights.

A surface-water right issued in 1990 for 96 cfs is a non-consumptive use (for flood control) that diverts flow from Leach Creek into culverts in Nalley Valley. This diversion occurs to prevent flooding and is only triggered when Leach Creek flows exceed 60 cfs.

In addition, the Puyallup Tribe has fishing rights within the watershed that are considered to predate water rights and claims. In accordance with the Bolt Phase II decision, water quantity and water quality must be maintained to ensure adequate salmonid habitat. Implementation of this decision may require Ecology to consider the tribal fishing rights as the driving factor in water allocations, as well as issuance of wastewater-discharge permits and non-point-source pollutant controls.

As previously indicated, the original purpose of the Fort Lewis diversion is unclear, and detailed analysis of its effect on flow is difficult because of the lack of data on stream flows before

construction of the diversion dam and canal. Controversy remains regarding authorization of the diversion, its effect on the
salmon fishery, and current authority and responsibility for the dam's operation.

Fish Use
Anadromous salmonids found within the Chambers-Clover Creek watershed include hatchery and wild summer chinook (*Oncorhynchus tshawytscha*), hatchery and wild coho (*O. kisutch*), winter chum (*O. keta*), steelhead (*O. mykiss*), and cutthroat trout (*O. clarki*) (PCPWU, 1994). Chambers Creek formerly had a native summer run of chum salmon. Their escapement and number of fish returning to the creek to spawn ranged from 0 to 200 individuals between 1975 and 1980. They spawned from mid through late October in Chambers and Leach Creeks. The last three fish were seen in October of 1983. The stock has been declared extinct (WDFW, 1993; PCPWU, 1994).

Adult or juvenile salmon and/or steelhead trout are present within the basin throughout the entire year. Physical passage barriers, both anthropogenic and natural, pose a serious problem to anadromous fish movement and habitat conditions are generally very poor. A dam with a spillway and fish ladder forms the head of Chambers Bay approximately 0.75 miles upstream from the Burlington Northern Railroad dike at tidewater. In addition, a fish trap near the mouth of Chambers Creek and an impassible dam at the outlet of Steilacoom Lake, restrict the passage of anadromous fish. All salmonids that enter Chambers Creek are netted and placed on the upstream side of the fish trap. Because of existing passage barriers, the overall habitat available for anadromous salmonid production is limited to 9.0 stream miles in the lower watershed. However, salmonid spawning habitat in the lower watershed is rated as fair to excellent quality.

Anadromous fish production in the Chambers-Clover Creek Watershed is depressed as has been so for many decades.

Streamflow Status
Some of the conditions adversely affecting anadromous salmon and steelhead include seasonal flooding (altered hydrograph due to increased impervious surface area), low summer flows, unstable stream beds, physical barriers, poor water quality, high stream temperatures, the destruction of spawning habitat, and over harvest of wild stocks. Low streamflows experienced over a period of several years are known to be particularly problematic in this watershed.

No minimum instream-flow requirements have been established for this watershed. However, WAC 173-512 (1980) closed Chambers, Clover, and Sequalitchew Creeks, and their tributaries (including lakes) to further water withdrawals.

Because the summer flows have not been measured since 1986 at three of the gages, no conclusions can be drawn about trends in low flows. For the Fircrest Gage on Leach Creek, the recent record indicates below average seven-day low flows. Increasing demands for surface and ground water can be expected to continue to affect low flows in this basin as development continues. Furthermore, increases in impervious surface areas due to expanding urbanization reduces ground-water recharge and, thereby would reduce base flows in the drainage basin. The

effects of increased water demands through exempt wells and reduced ground-water recharge will have even greater consequences to flows, especially during extended drought conditions.

Summary and Conclusions

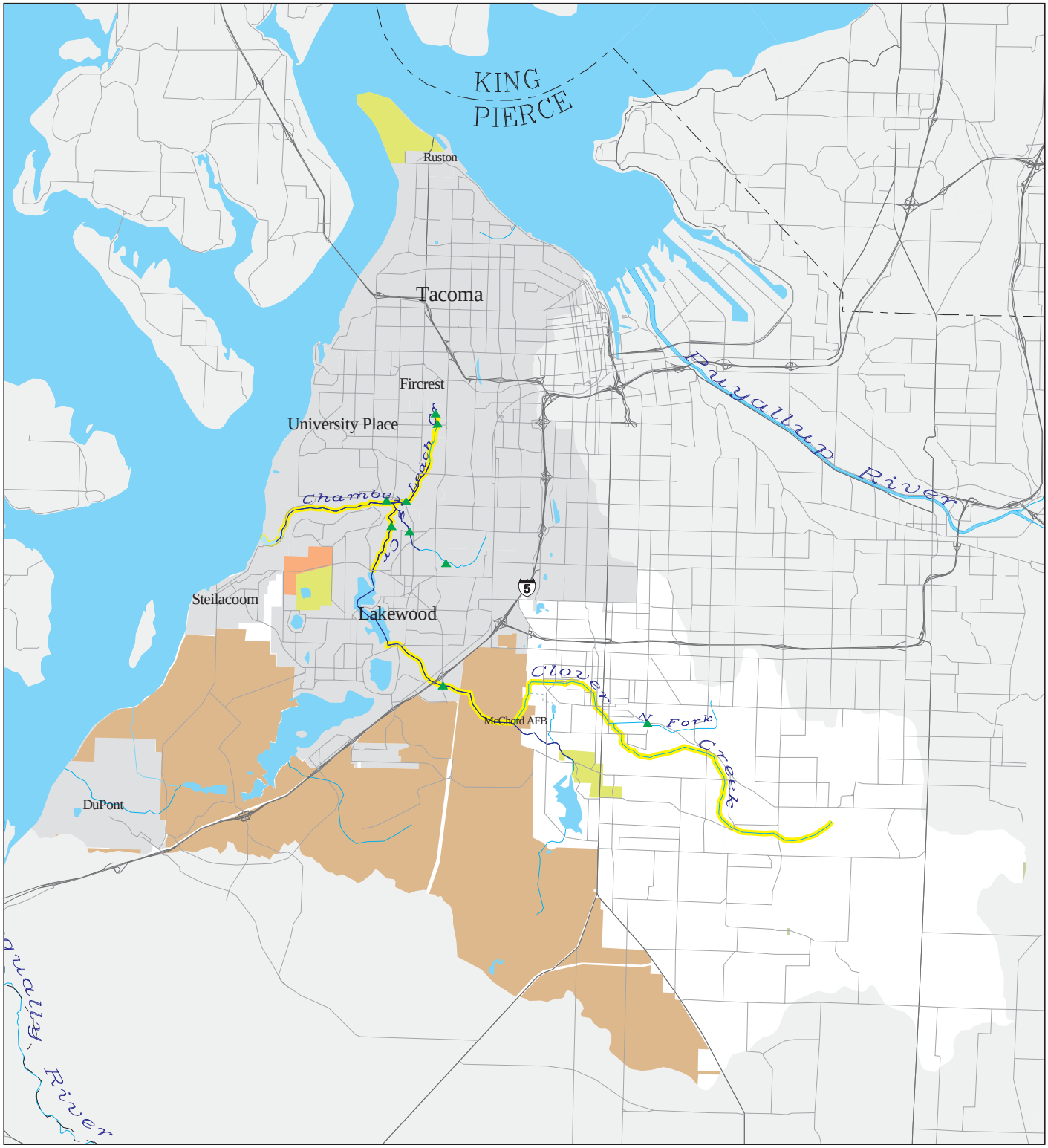
The National Groundwater Association classified the uppermost aquifer as either moderately or highly vulnerable to contamination because of the excessively well drained soils that are common throughout the area (EPA, 1993). The vulnerability has been substantiated by a number of instances of contamination. The interconnection between surface water and ground water is apparent in this watershed. Increased demand for ground water probably have affected low flows in the streams, although insufficient data is currently available to draw quantitative conclusions. Increases in impervious surface areas from expanding urbanization have reduced ground-water recharge and base flow.

To assist in re-establishing flows, a program to account for all water withdrawals (including the exempt withdrawals of less than 5,000 gallons per day) should be established. Unauthorized withdrawals also should be eliminated.

The measurement of actual water use or quantification of water rights has not been assessed by Department of Ecology for a number of reasons (Ecology, 1995). First, unauthorized-water users and claimed rights no longer exercised prevent correlation between the amount of water being used and the amount which are of water allocated by rights. No procedure is in place to track whether or not water rights issued in the past are still used. Second, most water-right claimants did not specify quantities on their claims; therefore, quantities for claims were estimated. A survey of actual use is critical to proper management of the resource. Third, unauthorized withdrawal has been documented but not eliminated. Such water use should be investigated and enforcement action taken, where appropriate.

Federal government facilities do not need water rights and are not required to report water use or consumption to the State of Washington. McChord Air Force Base and Fort Lewis operate their own water supplies independent of Washington's system of water management. This complicates the ability to assess water use and restoration opportunity in the basin.

Thus, it would not be prudent to acquire surface water for salmonid recovery in this basin until an inventory and measurement of actual water use is completed. Assurances are also needed to avoids instream flows from being affected by continued increases in exempt well use and increased impervious surface areas. It is unlikely that large industrial water users would be willing to sell water in this basin, especially when few alternative sources are available. Management of land use to maintain the status quo may be more feasible than water acquisition.



Stream Flow Prioritization: Chambers/Clover WRIA 12

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Miles
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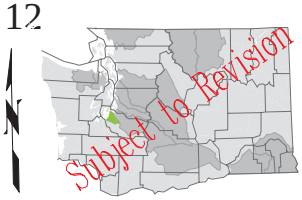

WDNR/Ecology - Major Public Lands 2002 100k
WDFW/Ecology - Hydrography, 2000 100k
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WDFW - Stream Flow Prioritization 2002
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USGS/Ecology - Stream Gages 1:100k

Quilcene River Watershed - WRIA 17

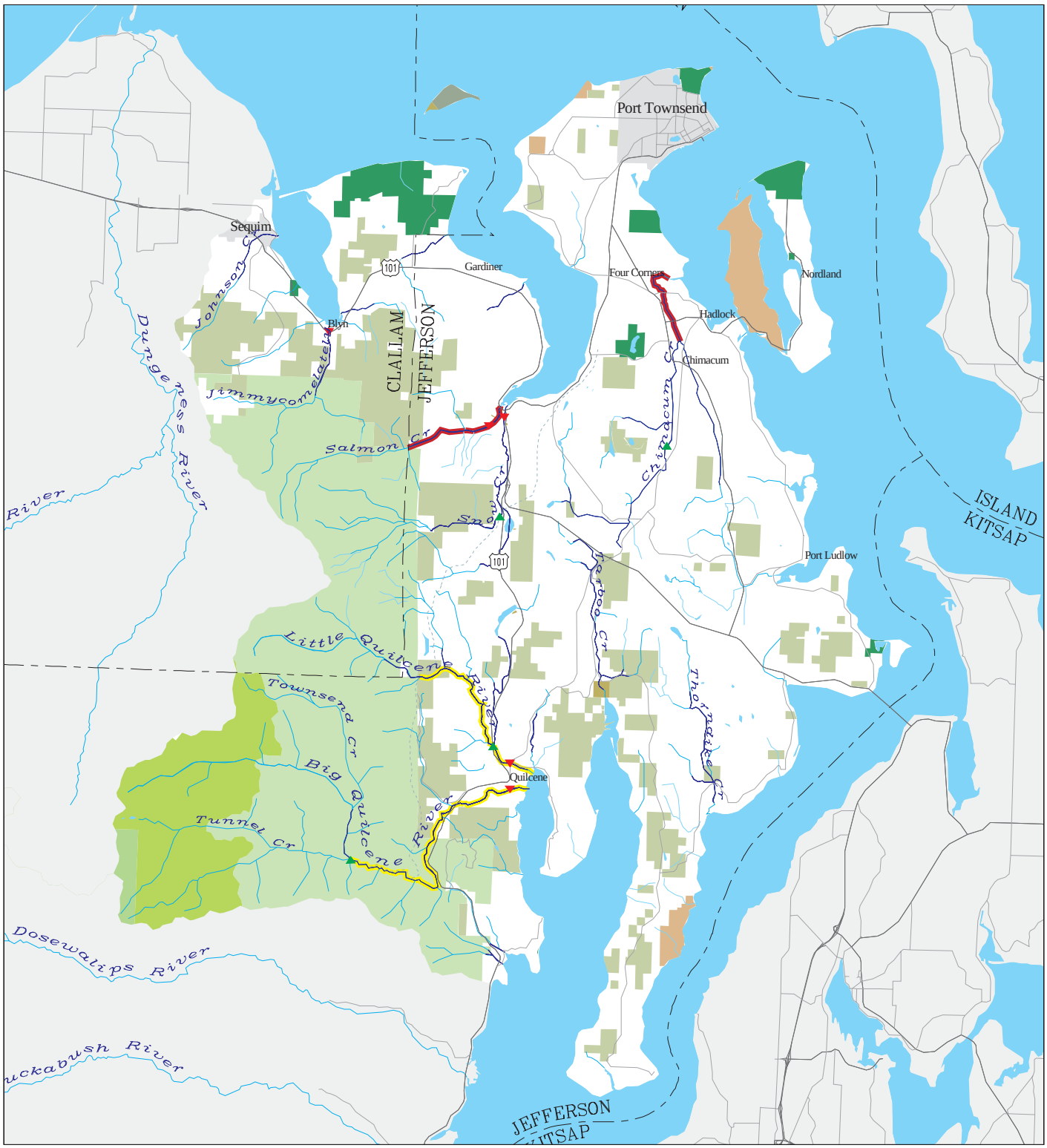
Surface diversions are primarily limited to the Big (17.9cfs) and Little Quilcene (4.1cfs) sub-basins due to the City of Port Townsend's diversions, which total 87 percent of all diversions. The next largest diversions within this WRIA occur in West Sequim Bay and the Ludlow Sub-basins. The sum of all consumptive surface water diversions is 63.6cfs. Irrigation is the second largest use of diverted surface water. An additional 287 water claims exist within this WRIA, totaling 45.5cfs.

Chimicum Creek has water rights totaling 2.9cfs, and claims totaling 6.6cfs, while the MMF for this creek averages only 5.05cfs between June and September. Thus, the stream may be dewatered during periods of low flow.

Salmon and Snow Creeks have surface water diversions totaling 1.6cfs and claims totaling 2.02, which is primarily for irrigation.

None of the streams identified meet or exceed instream flow recommendations developed by Department of Ecology and Washington Department of Fish and Wildlife. Thus, water rights should be reviewed for acquisitions in this basin. Because the City of Port Townsend's large diversion results in 87 percent of all diversions, acquisitions should be focused on low water year or seasonal leases or acquisitions, conservation efforts, and seeking alternative water supplies. It is apparently unlikely that the city would interested in selling existing water. Providing storage of water during the high flow period to provide city water during the low flow period may be another option worth exploring.

Groundwater withdrawals and land use are increasing concerns within this WRIA. Increased withdrawals in impervious surfaces are expected to be significant in their effects on surface flows.



Stream Flow Prioritization: Quilcene/Snow WRIA 17

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Miles
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Subject to Revision

WDNR/Ecology - Major Public Lands 2002 100k
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Ecology - WRIA, 2002 24K
WDOT - Transportation, 2001 24K
WDFW - Stream Flow Prioritization 2002
WDFW - Spawning/Rearing Areas 2002 100k
USGS/Ecology - Stream Gages 1:100k

Dungeness/ Elwha Watershed - WRIA 18

This watershed is somewhat unique in that it is a west side stream with numerous gravity diversions for irrigated agriculture, similar to many streams of eastern Washington. This watershed is also unique in that it supports one of the most diverse assemblages of salmonid stocks in the state. IFIM models indicate that even relatively small increases in instream flow could result in significant benefit to salmonids, particularly rearing habitat for chinook. In addition to the agreement between resource agencies and irrigation districts regarding instream flows and diversions, there are other opportunities to increase flow through additional acquisition of water.

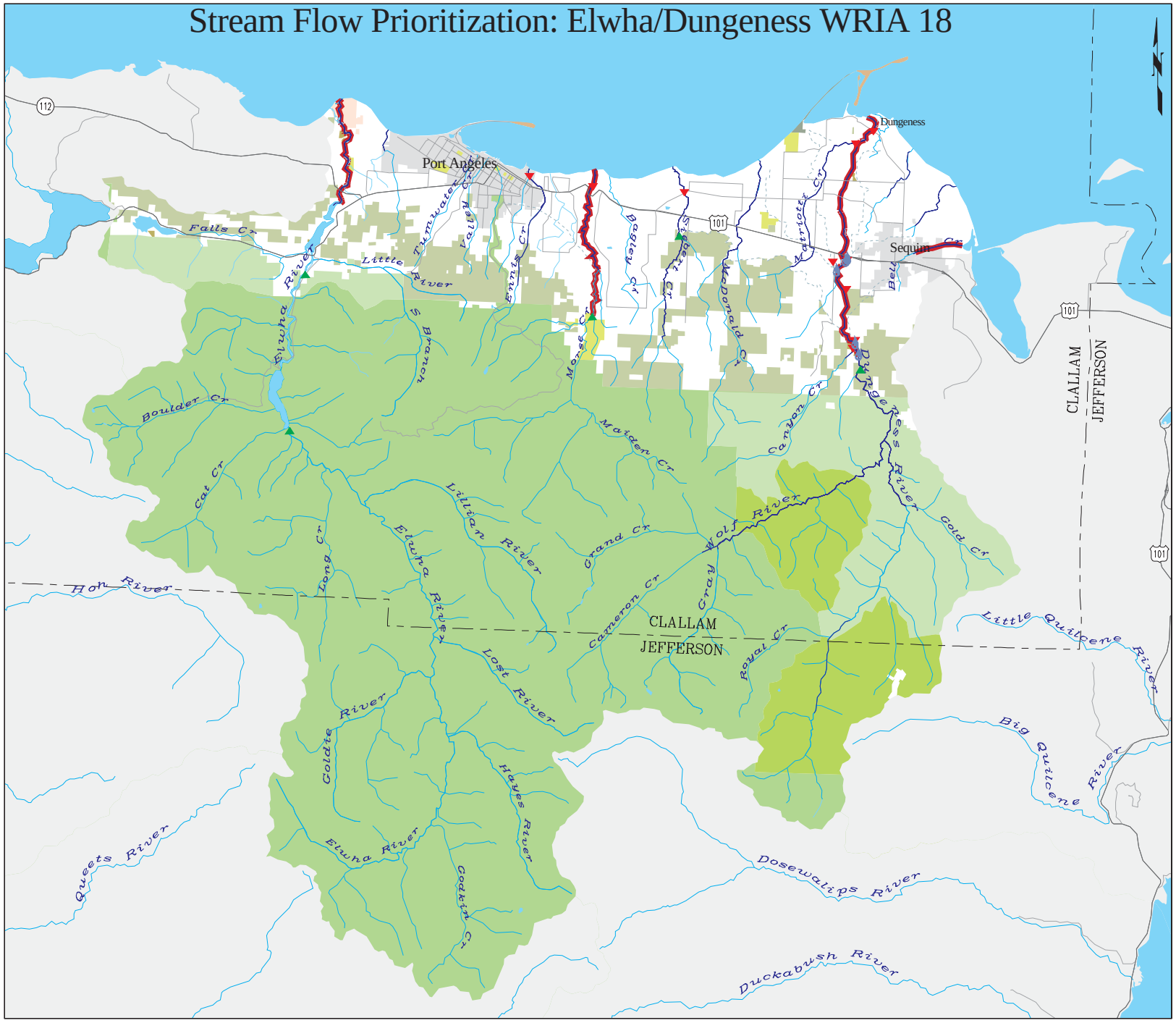
Due to the significant continuity between the groundwater and surface water in this basin, it is suspected that the 3500+ ground water rights may be resulting in significant surface water impacts. Existing water rights significantly exceed available surface flows in the mainstem during the summer and fall months. Low flow adversely affects rearing and spawning habitat, as well as adult salmonid migration during late summer and fall. Due to the high porosity of the substrata there may be opportunity to conserve water through conservation efforts to reduce conveyance losses of the open ditch delivery systems.

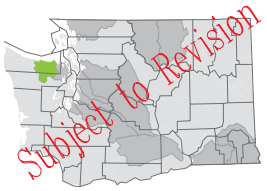
Morse Creek is a moderate sized creek located between the Dungeness and Elwha Rivers and is known to have one produced a surprising diversity of salmonids stocks for a stream of it's size. There is a City diversion at RM 7.0 which could result in limiting flows during late summer months if the right is fully appropriated. Up to 19CFS could be diverted by the City of Port Angeles. Total surface rights are 24cfs with numerous additional claims. Sufficient water should be sought to secure sufficient future instream flow needs for fish.

The Elwha River is one of the largest and perhaps historically the most productive salmonid stream of the Olympic Peninsula. This river historically produced a great diversity of salmonid stocks including perhaps some of the largest chinook in the state. The average minimum flow in the Elwha is 350cfs, while surface withdrawals may total 215cfs. Although full appropriation of water is rarely exercised, up to 50 percent of the stream flow has been diverted. Flows below 300cfs can result in significant impacts to rearing salmonids, and low summer flows can result in elevated stream temperatures and increased incidence of disease in chinook. The primary water user is the City of Port Angeles, which has rights to 150cfs.

Bell Creek is a small tributary located near the mouth of Sequim Bay. A diversion just upstream of Carrie Lake Park diverts up to 50 percent of the stream flow. As with other small tributaries in the Dungeness plain, flows are further compromised by conservation efforts on gravity diversions from the Dungeness River, due to interconnected sub-surface hyphoreic flow with the Dungeness.

Stream Flow Prioritization: Elwha/Dungeness WRIA 18





- US Forest Service
- US Wildlife Refuge
- US Parks/Recreation
- USFS Wilderness Area
- Bureau of Land Management
- US Dept. Defense/Energy
- Wa. Dept. of Fish & Wildlife
- Wa. Dept. of Naural Reasources
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- Wa. Parks & Recreation
- City/County Watershed/Park
- Tribal Lands
- Incorporated City

- Low priority stream
- Medium priority stream
- High priority stream
- Salmon/Bull Trout Spawning/Rearing area
- Other streams
- Canal/ditch/pipe

- USGS Stream Flow Gage
- Ecology Stream Flow Gage
- Water Right Purchase

- County
- Highway
- Local Paved Roads

WDNR/Ecology - Major Public Lands 2002 100k
WDFW/Ecology - Hydrography, 2000 100k
Ecology - WRIA, 2002 24K
WDOT - Transportation, 2001 24K
WDFW - Stream Flow Prioritization 2002
WDFW - Spawning/Rearing Areas 2002 100k
USGS/Ecology - Stream Gages 1:100k

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Walla Walla Watershed - WRIA 32

Stream flows are limiting to salmonid production in most of the tributaries of the Walla Walla Basin including the mainstem due primarily to irrigation diversions. Summer steelhead access and rearing habitat is primarily limited by low flows, although "push-up" diversion dams exist throughout the watershed, which result in passage barriers during spring migration.

While the stream flow prioritization matrix weights small streams more favorably for restoration due to reduced instream flow needs to achieve target flows, it is recognized that fish access must be provided through mainstem reaches downstream for successful salmon recovery.

While acquisition of senior water rights in the lower reaches of the Walla Walla River would be of highest priority, seasonal acquisition of junior water right during fall and spring months to extend passage times for adult steelhead would also be valuable. Alternatively, senior water rights acquired low in the basin would require junior holders to release flows downstream during drought or late summer conditions, though not from specific upstream reaches.

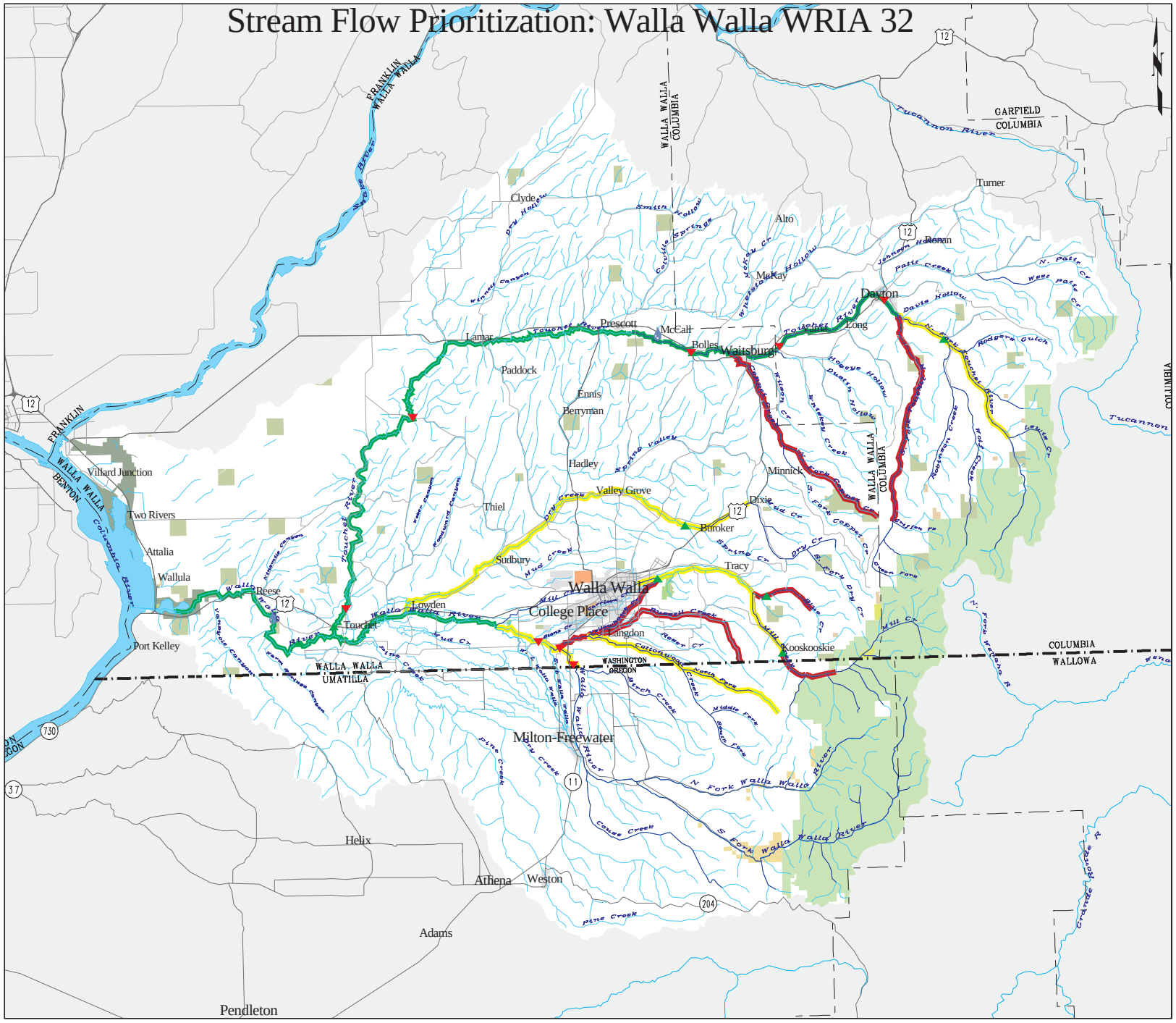
One of the primary reasons for the relatively low rankings of many of the streams in the Walla Walla River Basin is the poor condition of existing habitat. However, habitat conditions are relatively good in the headwaters of the Mill Creek and Touchet River watersheds including their tributaries (Coppei Creek, North and South Forks Touchet, and Blue Creek), which are located within relatively remote forested zones. Thus, providing access to this relatively intact habitat should be a high priority.

Tributaries in the lower Walla Walla basin also have potential for salmonid and stream flow restoration but will also require habitat restoration efforts as well. Yellowhawk Creek, which is actually a braid of Mill Creek, is relatively unique in that it functions as the primary channel for summer flow below Bennington Dam during the summer months when water is diverted from Mill Creek. Due to the poor passage and habitat conditions in Mill Creek below Bennington Dam, one alternative suggests that Yellowhawk Creek should permanently serve as the primary channel for fish passage and fish should be screened out of lower Mill Creek. If so, flow, passage, and habitat restoration should be focused on Yellowhawk Creek, while lower Mill Creek would be used as a high flow or flood control channel.

Dry Creek, Cottonwood Creek, and perhaps the Little Walla Walla River, Pine Creek, and Mud Creek currently support remnant populations of summer steelhead and have recovery potential. However, portions of Pine Creek, Little Walla Walla River, and Cottonwood Creek extend into Oregon and the success of flow restoration efforts is somewhat dependent on collaboration with the State of Oregon. In addition, habitat conditions of tributaries located in areas of intensive agricultural use generally have poor habitat conditions. Expected future habitat conditions in these tributaries of the lower Walla Walla Basin should be a determining factor in the final prioritization process. The Little Walla Walla River and its associated braids are actually distributaries of the Walla Walla River and a fish screen prevents juvenile access from the upstream end. However, both adults and juveniles do migrate into this system from the lower

end. Multiple springs arise from groundwater in Washington thought to be due to groundwater surcharge from irrigation in Oregon. There is some question regarding connectivity between these springs and conservation efforts occurring in this tributary. Water right acquisitions in this area should be carefully evaluated to ensure that instream flows will be preserved if acquired.

Stream Flow Prioritization: Walla Walla WRIA 32


Walla Walla
College Place
Milton-Freewater
Waitsburg
Dayton
Prescott
McCall
Lamar
Paddock
Ennis
Berryman
Hadley
Valley Grove
Thiel
Sudbury
Lowden
Touchet
Reese
Wallula
Attalia
Two Rivers
Villard Junction
Port Kelley
Clyde
Alto
McKay
Turner
Long
Bolles
Minnick
Dixie
Burroker
Tracy
Langdon
Kooskooskie
Helix
Athena
Weston
Adams
Pendleton
FRANKLIN
WALLA WALLA
BENTON
GARFIELD
COLUMBIA
WALLA WALLA
COLUMBIA
COLUMBIA
WALLOWA
WASHINGTON
OREGON
WALLA WALLA
UMATILLA
Columbia River
Touchet River
Walla Walla River
Tucannon River
N Fork Walla Walla River
S Fork Walla Walla River
Mill Creek
Dry Creek
Mud Creek
Pine Creek
Couse Creek
Cottonwood Creek
Russell Creek
Reser Cr
Blue Cr
Spring Cr
Dry Cr
S Fork Dry Cr
Green Fork
Patte Creek
N. Patte Cr
West Patte Cr
Davis Hollow
Rodgers Gulch
Robinson Creek
Wolf Creek
Lewis Cr
Tucannon
Cranberry Creek
Cottonwood Creek
Kiesel Cr
Kinney Creek
Hoover Hollow
Dueth Hollow
Johnson Hollow
Smith Hollow
Dry Hollow
Coyote Springs
Hoksey Cr
Pressey Hollow
Spring Valley
Kosmos Canyon
Wenaha
Grande Ronde R
Mill Cr
N Fork Walla Walla River
Middle Fork
Blue Creek
Birch Creek
Pine Creek
Dry Creek
Lasalle Canyon
Wenaha Canyon
Jasper Canyon
Hideaway Canyon
Touchet River
Walla Walla River
Mill Creek
Mud Creek
Dry Creek
Pine Creek
Couse Creek
Cottonwood Creek
Russell Creek
Reser Cr
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Dry Cr
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Columbia River
Tucannon River
Snyder Cr
Lewis Cr
Wolf Creek
Robinson Creek
Rodgers Gulch
Davis Hollow
Patte Creek
N. Patte Cr
West Patte Cr
Johnson Hollow
Smith Hollow
Dry Hollow
Coyote Springs
Hoksey Cr
Pressey Hollow
Kiesel Cr
Kinney Creek
Hoover Hollow
Dueth Hollow
Spring Valley
Kosmos Canyon
Wenaha
Grande Ronde R
Cranberry Creek
Cottonwood Creek
Russell Creek
Reser Cr
Blue Cr
Spring Cr
Dry Cr
S Fork Dry Cr
Green Fork
Mill Cr
N Fork Walla Walla River
Middle Fork
Blue Creek
Birch Creek
Pine Creek
Dry Creek
Couse Creek
S Fork Walla Walla River

Middle Snake River Watershed - WRIA 35

The Tucannon, and Asotin drainages are the primary streams within the WRIA in which low flows are identified as being limiting to salmonid production.

Asotin Creek - A total of five cfs of surface water diversions are allocated for Asotin Creek. WDFW has recommended that a minimum of 15 cfs be maintained within the creek to meet instream flow needs for fish at SR128 between July 1 and March 31, and 70cfs April 1 through June 30th. There are two surface diversions in the lower two miles of Charley Creek contributing to loss of habitat and create a barrier to migration during low flow periods.

Alpowa Creek is the only perennial stream within this sub-basin. Lows flows average about five cfs during the low flow period (July to October) while diversions total approximately 7 cfs. Steelhead production could benefit significantly by providing additional flow. However, there is significant impact on the riparian and floodplain habitat associated with ranching which must also be addressed for salmonid recovery to occur.

Tucannon River - A total of 67 water rights for 60cfs have been issued in the lower Tucannon River, while additional claims for 133cfs have not been adjudicated. Flows in the lower Tucannon River, fall below the 65 cfs target more than 50 percent of the time between July and October which is limiting salmonid productivity. It is assumed that only verified rights should be considered for acquisition to meet target flows in the Tucannon River to ensure that instreams flows can be preserved. This may be challenging within this basin as water rights are based on consumptive use and have not been adjudicated.

Tenmile and Couse Creeks have very little water in the summer and fall. It is unknown how much water is legally or illegally withdrawn, from these streams. There should be no further appropriation of water from these streams due to existing critically low flows. Both of these streams have sections that go dry during the summer and salmonids concentrate in isolated pools or wet areas to try to survive. Small amounts of water (e.g. 0.5 cfs) are very important to these streams. Steelheads are present but flows are very limiting to production. There is a lack of specific data on historic flows or any water use in this sub-basin.

Mill Creek - There may be diversions in or above the town of Anatone on Mill Creek, and upper Mill Creek goes dry in summer and fall. The degree to which low flow is related to diversions and how much in "natural" is unknown. We have little or no information on diversions from this stream.

Meadow Creek - Water use in this stream is largely unknown. This basin has little salmonid value as indicated by Glen Mendel, (WDFW Fish program, personal comm.). Summer steelhead are present, but very limited.

Wawawai Creek – Water diversions are suspected, but there is no current documentation. Any additional water would be very important for this stream. The culvert at the bottom is being examined for repair to improve passage. Juvenile summer steelhead has been observed in this

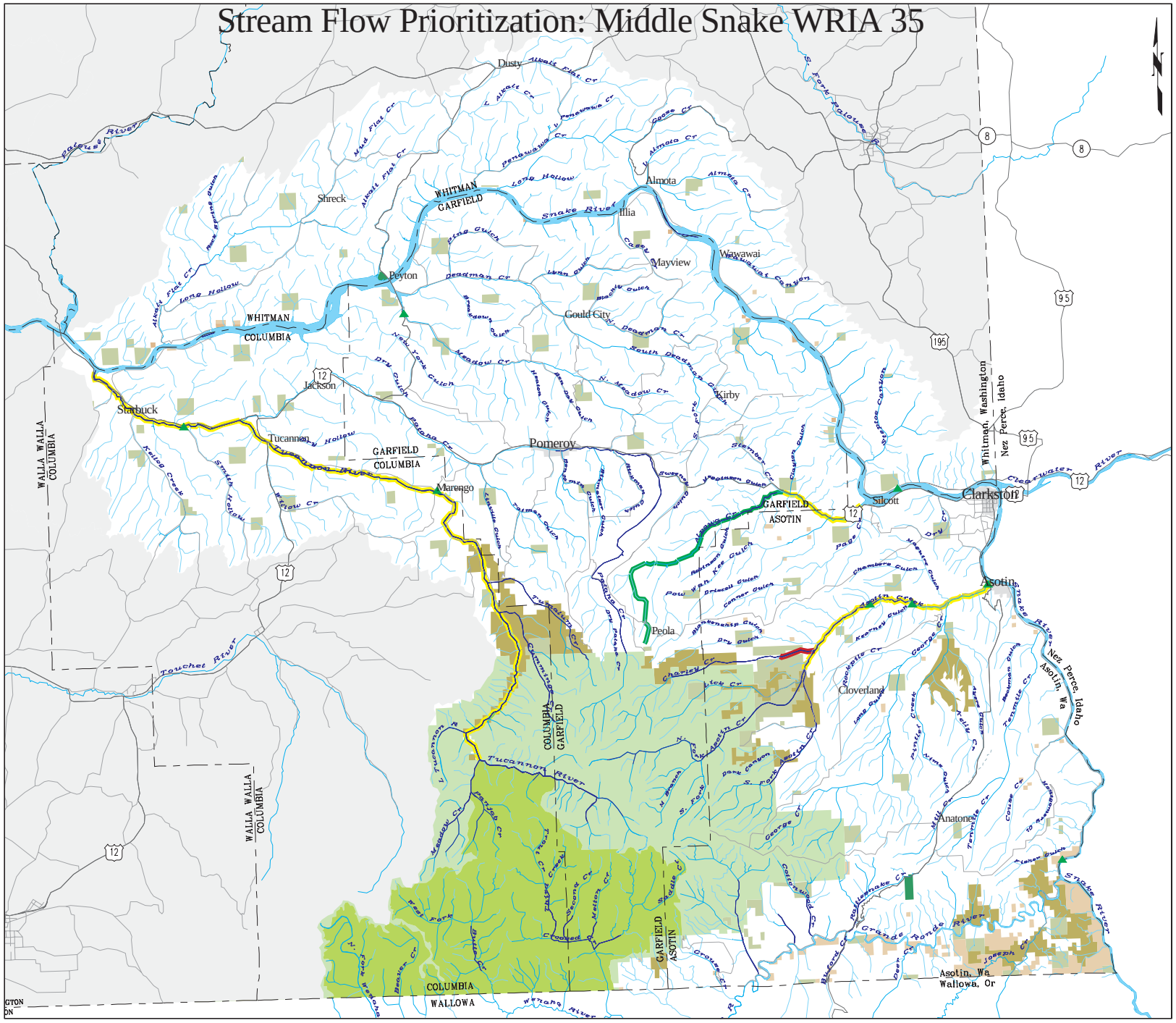
stream and adults have been observed attempting to enter the culvert, which appears to be a barrier in all but the highest flows.

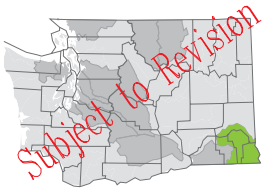
Alkali Flat Creek – diversions are unknown in this sub-basin. It is suspected that there are diversions near the town of Hay. Any increase in water would be valuable for fish. Flows are very limiting to summer steelhead production.

Penewawa Creek – This is a small stream with steelhead use that has very little water in the summer and fall. Any water we can protect or acquire would be valuable for fish production. Diversions are unknown.

Limited summer and fall flows significantly limit steelhead productivity in the above listed independent tributaries of the Snake River. Water is so limited that during some years adult steelhead either can't get into these streams at all or they are delayed, or there are stretches that they can't access because of little or no water. Low flows or lack of water affects adults in spring and juveniles in summer and fall in these sub-basins.

Stream Flow Prioritization: Middle Snake WRIA 35





- US Forest Service
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WDNR/Ecology - Major Public Lands 2002 100k
WDFW/Ecology - Hydrography, 2000 100k
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WDOT - Transportation, 2001 24K
WDFW - Stream Flow Prioritization 2002
WDFW - Spawning/Rearing Areas 2002 100k
USGS/Ecology - Stream Gages 1:100k

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Yakima River Watersheds – WRIA's 37, 38, and 39

Low flows in the Lower Yakima River below Parker Dam and during the spring out-migration has been identified as one of the most limiting factors to salmonid production in the Yakima River Basin. Low flows are associated with high temperatures and predation which result in significant mortality, especially during years with below normal snow pack and associated spring flows. Juvenile steelhead and fall chinook tend to be affected to a greater degree than spring chinook due to their later migration timing.

Low flows during spawning and incubation periods for spring chinook can be significant during some years. If flows are too high during spawning there may be insufficient storage remaining in the reservoirs to support incubation flows during the fall months prior to fall and winter precipitation and an increase in instream flow. Acquisition of sufficient flows to ensure successful spawning and incubation would provide significant benefit, especially during drought years.

In addition to low main stem flows, there are several tributaries in which surface water is diverted to the extent that rearing, migration, and spawning habitat is significantly affected. In some instances, entire stream flows are diverted for agricultural purposes.

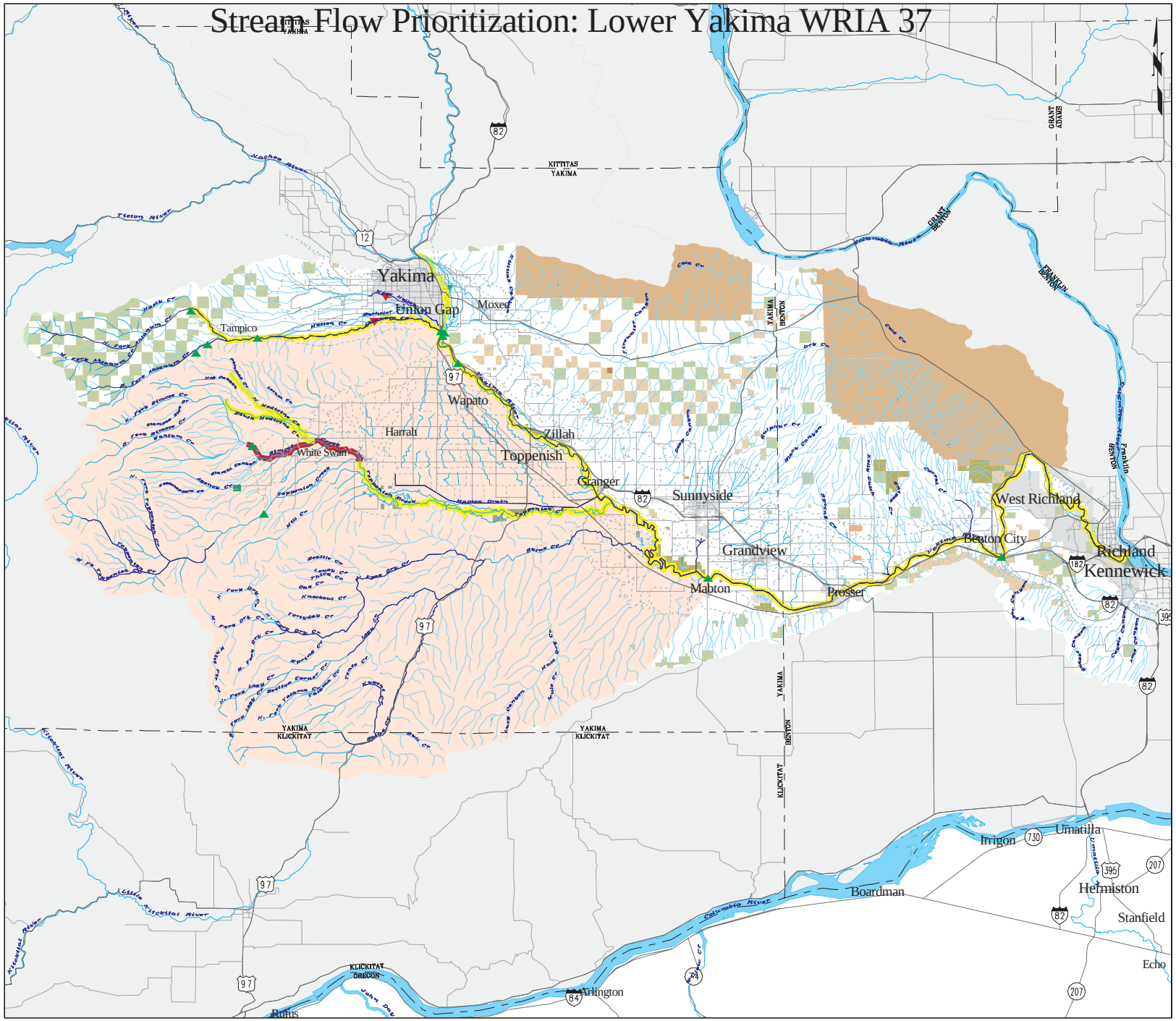
Within WRIA 39 of the upper Yakima Basin , Taneum Creek, Manastash Creek, Teanaway River, Big Creek, Little Creek, Swauk Creek, and Tributaries of the Wilson/Cherry Creek complex and others, all suffer from low flows to the extent that the salmonid production potential of these streams is significantly depressed. While most of the diversions are gravity surface diversions with associated diversion structures, some of the diversions are pump stations. With few exceptions, most of these diversions are for agricultural purposes. While the Bureau of Reclamation has been involved in flow restoration efforts in the Teanaway River, to the extent that flows are less limiting, summer flows in Manastash, Big, and Swauk Creeks continue to be very low, or non-existent.

Within WRIA 37 of the lower Yakima River Basin, low flows in the main stem during the spring and summer months are most limiting to salmonids, as discussed above. There are also some tributaries within this reach in which low flows are limiting. Ahtanum Creek, Blue Slough, Toppenish Creek, and Simcoe Creek suffer low flows due to irrigation diversions. It is difficult to assess the historic base flows of many of the smaller tributaries in the lower Yakima because they are supplemented by irrigation returns or used for controlled spill purposes. Ironically, some of the tributary flows are highest during the irrigation season and lowest during the late winter months. False attraction of adults is a problem in some of the tributaries which receive return flows from water diverted from the Yakima River.

While stream flows are not as limiting within WRIA 38, there are some exceptions. Cowiche Creek and Rattlesnake Creek suffer from low flows and fish passage barriers during the irrigation season. There is opportunity and local support to provide alternative water from the Tieton Irrigation District for water right holders in Cowiche Creek. Cowiche Creek and its

tributaries have significant production potential for salmonids and extensive habitat which is currently inaccessible due to low flows. Flow is somewhat less limiting in lower Rattlesnake Creek. However, the two gravity diversions can result in migration delays for spring chinook and bull trout in some years. Low flows for migration and spawning in the Lower Naches River appear to have largely been resolved by the recent purchase of the water rights associated with PP & L's Wapatox Power Plant by the Bureau of Reclamation and Department of Ecology. Low flow problems do exist in the Tieton and Bumping Rivers, but these flows are likely be better addressed through FERC licensing or negotiations regarding BOR project operations as storage dams exist on both of these streams.

Stream Flow Prioritization: Lower Yakima WRIA 37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Tampico
Wapato
Harrah
White Swan
Zillah
Toppenish
Granger
Sunnyside
Grandview
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Prosser
Beaton City
West Richland
Richland
Kennewick
Irrigon
Umatilla
Hermiston
Boardman
Stanfield
Echo
Arlington
Rufus
KITTITAS
YAKIMA
GRANT
ADAMS
GRANT
BENTON
FRANKLIN
BENTON
YAKIMA
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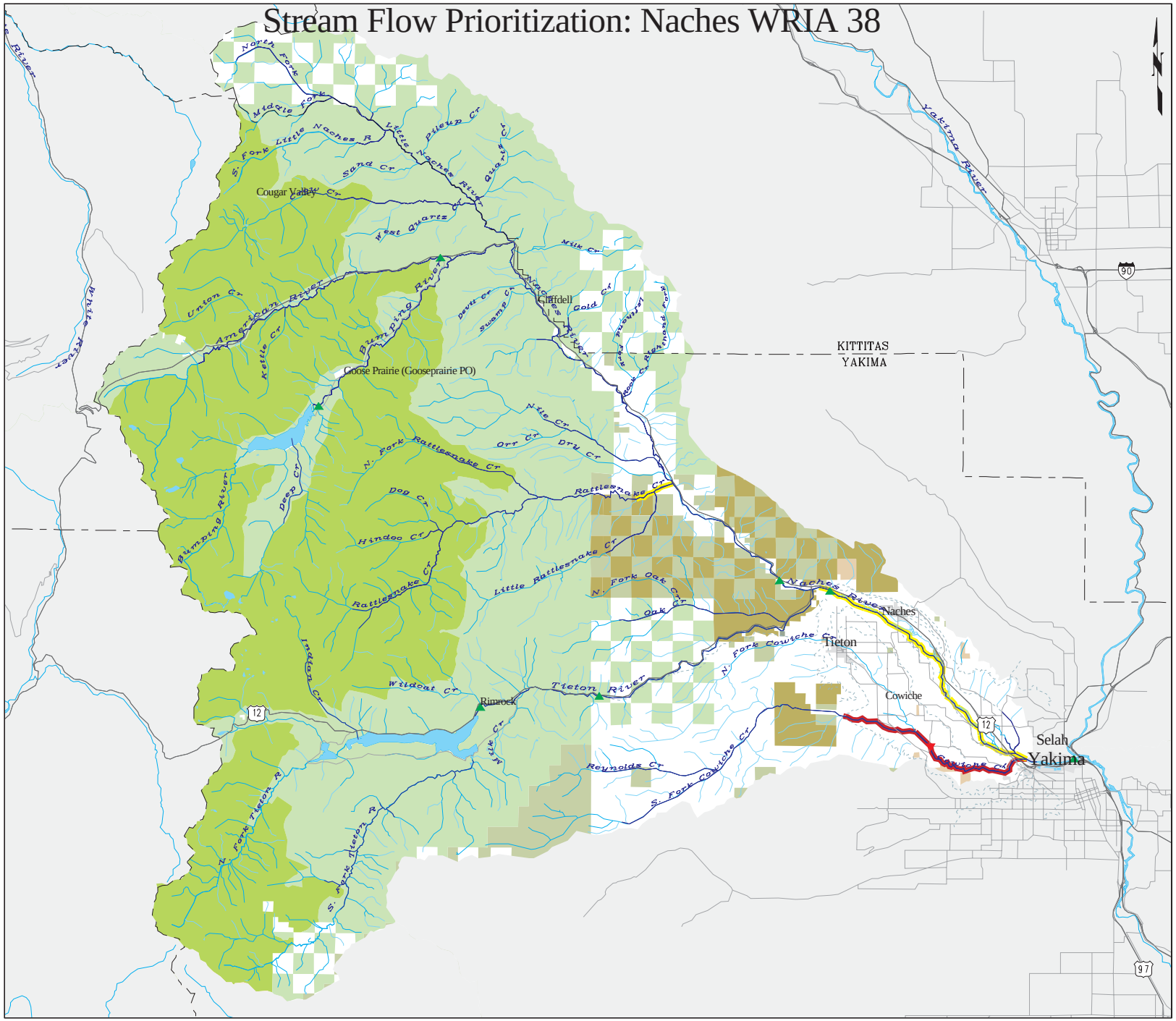
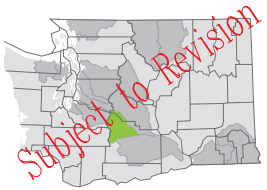
YAKIMA
KLICKITAT
KLICKITAT
BENTON
KLICKITAT
OREGON
Yakima River
Naches River
Tieton River
Ahtanum Cr
Wide Hollow Cr
Sulphur Cr
Toppenish Cr
Satus Cr
Columbia River
Umatilla River
Little Klickitat River
Klickitat River
Rock Creek
Cow Cr
Dry Cr
Alkali Cr
Snipes Cr
Cold Cr
Rattlesnake Cr
Cottonwood Cr
Spring Cr
Sand Cr
Cougar Cr
Ringer Cr
Dry Creek
Cherry Cr
Ward Cr
Dry Cr

Stream Flow Prioritization: Naches WRIA 38





- US Forest Service
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- Wa. Dept. of Naural Reasources
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WDNR/Ecology - Major Public Lands 2002 100k
WDFW/Ecology - Hydrography, 2000 100k
Ecology - WRIA, 2002 24K
WDOT - Transportation, 2001 24K
WDFW - Stream Flow Prioritization 2002
WDFW - Spawning/Rearing Areas 2002 100k
USGS/Ecology - Stream Gages 1:100k

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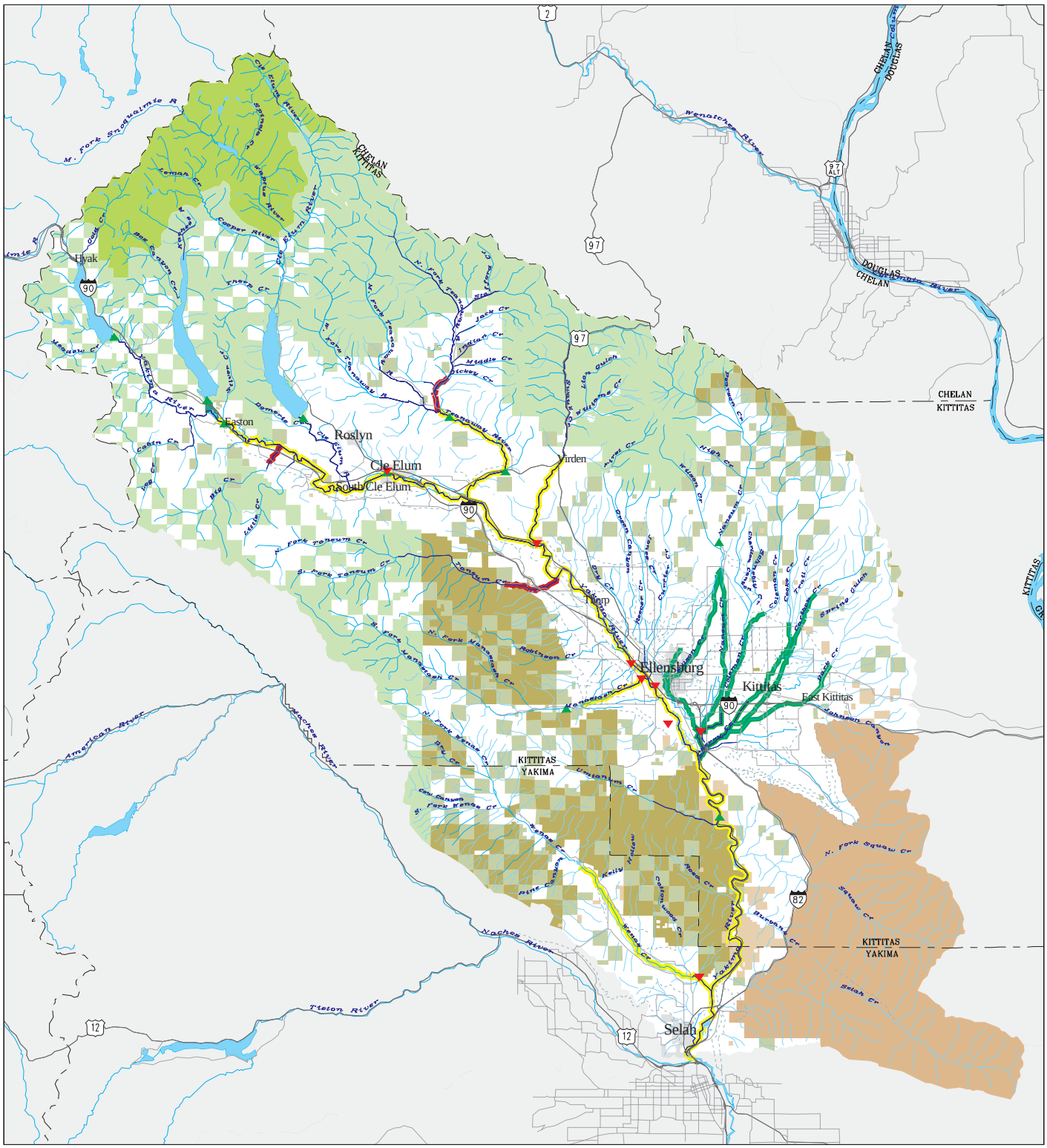
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Easton
Roslyn
Cle Elum
South Cle Elum
Virden
Thorp
Ellensburg
Kittitas
East Kittitas
Selah
CHELAN
KITTITAS
DOUGLAS
KITTITAS
YAKIMA
Wenatchee River
Yakima River
Cle Elum River
Teanaway River
Naches River
Tieton River
American River
M. Fork Snoqualmie R.
Cooper River
Taneum Cr
Manastash Cr
Reecher Cr
Swauk Cr
Squaw Cr
Selah Cr
Wilson Cr
Coleman Cr
Cook Cr
Trail Cr
Shaller Cr
Johnson Canyon
Umtanum Cr
Kittitas Cr
Ringer Cr
Ranger Cr
Cherry Cr
Reecher Cr
Kelly Hollow
Pine Canyon
Cabin Canyon
Bucher Cr
Yakima River
Naches River
Tieton River
Wenatchee River
Lemah Cr
Peshastin Cr
Mission Cr
Icicle Cr
Chiwaukum Cr
Nahahum Cr
Nason Cr
Tumwater Cr
Chumstick Cr
Eagle Cr
Ingalls Cr
Mineral Cr
Cle Elum River
Teanaway

Wenatchee River Watershed - WRIA 45

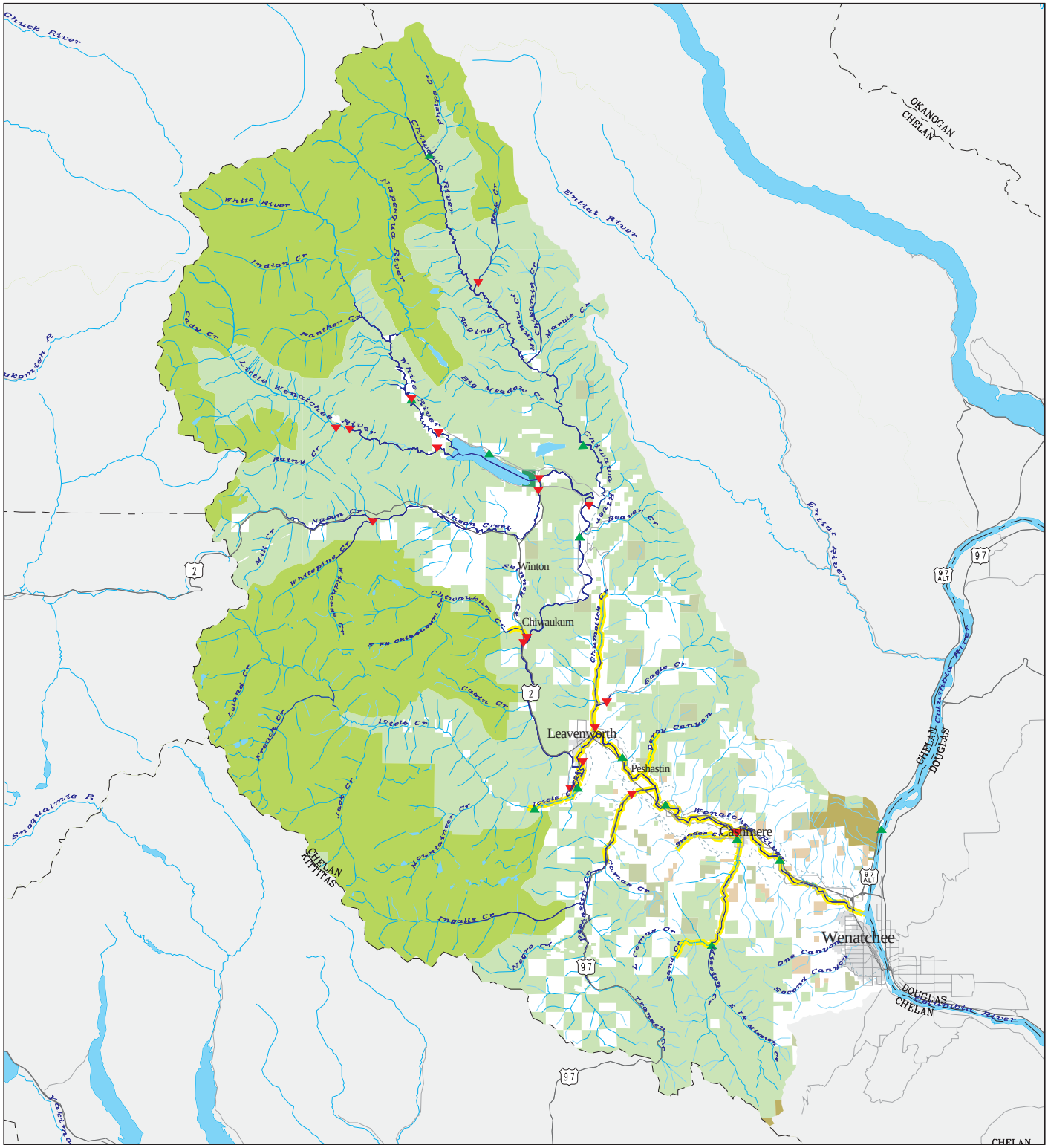
Low instream flows and dewatering occur naturally as a result of climatic and geological conditions within smaller tributaries of the Wenatchee River Basin. While further data collection and analysis is needed to further identify the extent at which water diversions affect instream flow in some sub-basins, the effect of surface diversions in some tributaries is evident. Low instream flows during late summer months are common in some tributaries and there appears to be significant annual flow variation. During years of low snowpack and drought, low flow periods limiting to salmonids can begin earlier and extend later in the season, due to surface water withdrawals.

Low stream flows are limiting to rearing and adult passage in Chumstick, Mission, Sand, Brender, and Peshastin Creeks as well as the lower Icicle Creek. Flows are recognized as a significant limiting factor in Peshastin Creek. The Peshastin Irrigation District Diversion at RM 4.8 contributes significantly to low flows or dewatering, resulting in a migration barrier and loss of rearing habitat. Flow restoration is determined to be a priority to provide access for bull trout and spring chinook.

The Icicle/ Peshastin water diversion at RM 5.7 on Icicle Creek contributes significantly to low flows and elevated temperatures throughout the lower stream reach. Adult salmonid passage and rearing habitat are significantly impacted by this diversion.

Derby Canyon Creek is a small stream which is annually dewatered below RM 1. There are 0.4 cfs of surface water rights and claims for another 1.1cfs. It is suspected that these diversions contribute to dewatering of the lower reaches of the creek, resulting in passage barriers and lost rearing habitat. While small sub-basins like Derby Canyon Creek have little potential to contribute significantly to the total production potential of the basin, little water is required to restore them, and they may provide critical refugia for rearing salmonids in some flow conditions.

Improving summer and early fall instream flows to increase available rearing habitat is recognized as a priority for restoration in the main stem Wenatchee River. For the purposes of the Water Acquisition Program, water acquisition in the mainstem Wenatchee is not a priority as it is unlikely that sufficient water or funding is available to measurably increase available rearing habitat.



Stream Flow Prioritization: Wenatchee WRIA 45

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- US Forest Service
- US Wildlife Refuge
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- Bureau of Land Management
- US Dept. Defense/Energy
- Wa. Dept. of Fish & Wildlife
- Wa. Dept. of Naural Reasources
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- Tribal Lands
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- Water Right Purchase

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- Low priority stream
- Medium priority stream
- High priority stream
- Salmon/Bull Trout Spawning/Rearing area
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- Highway
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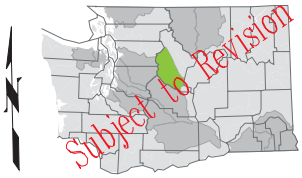


WDNR/Ecology - Major Public Lands 2002 100k
WDFW/Ecology - Hydrography, 2000 100k
Ecology - WRIA, 2002 24K
WDOT - Transportation, 2001 24K
WDFW - Stream Flow Prioritization 2002
WDFW - Spawning/Rearing Areas 2002 100k
USGS/Ecology - Stream Gages 1:100k

Methow River Watershed -WRIA 48

Low instream flows and de-watering occur naturally in some reaches as a result of climatic and geological conditions within the Methow River Basin. De-watering of the main stem is known to be a natural occurrence in the vicinity of Robinson Creek during late summer and early fall annually. The extent to which water diversions affect main stem flows is not well documented.

Early Winters Creek has two diversions diverting up to 15 cfs of surface flow, which can have a significant impact on rearing habitat, adult steelhead and chinook passage, and contributes to low flows in the lower 1.3 miles of the creek.

There are four diversions within the annually dewatered reach of the upper Methow River (above RM 61), including a significant diversion of 1.8 cfs on Goat Creek. It is likely that this diversion contributes to earlier dewatering of the main stem during late summer months than would otherwise occur.

There are three identified water diversions on Wolf Creek. The lower 0.5 miles of the stream dewaters during most years after late July. Low flow hinders migration of spring chinook and bull trout and results in loss of rearing habitat and stranding of salmon and steelhead juveniles.

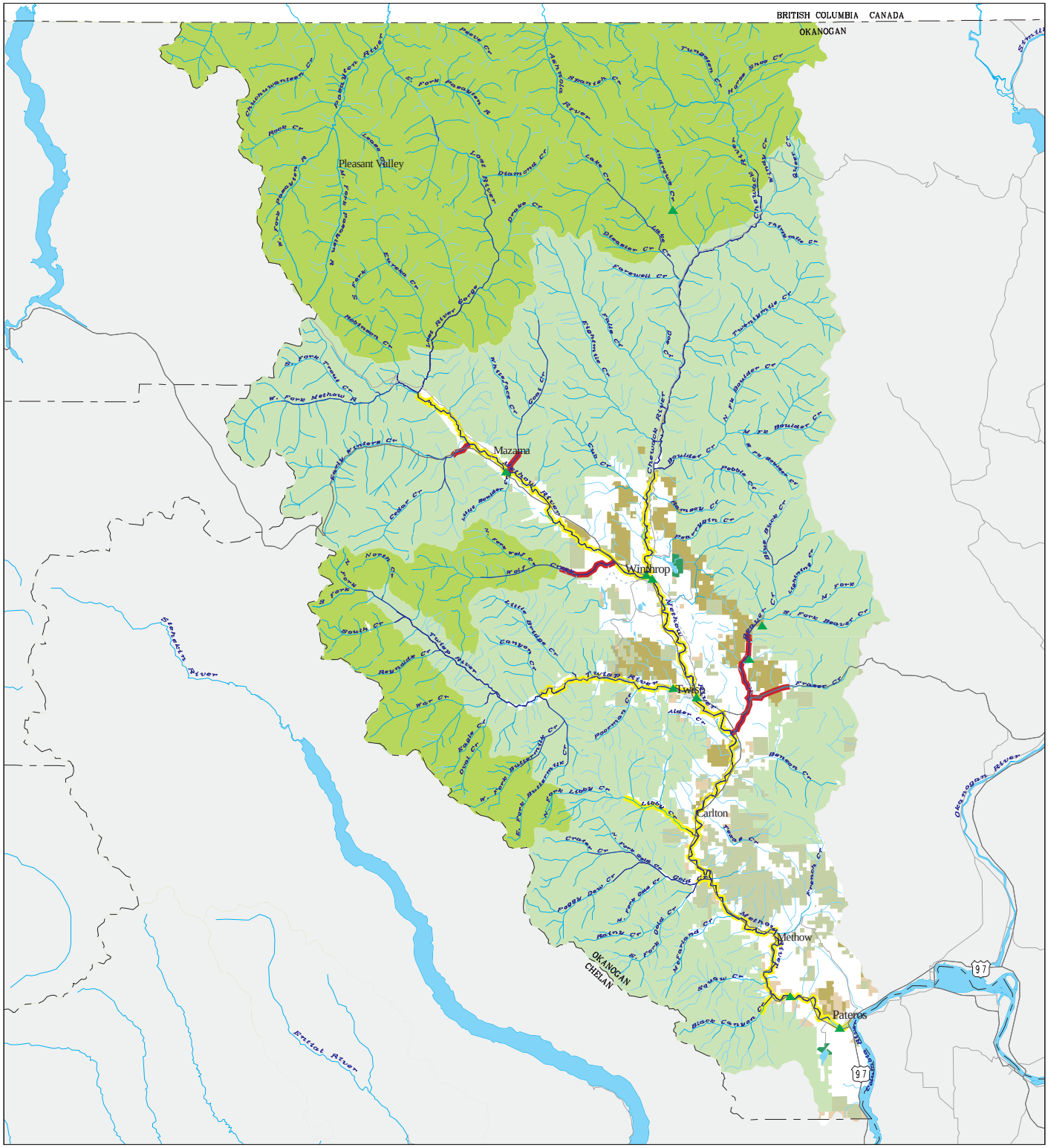
There are a total of five surface water diversions in the Chewuch River sub-basin, two of which are located on Eight Mile Creek. While water diversions may not be the most limiting factor to salmonid production in this basin, they contribute to lost rearing habitat and production potential in the Chewuch and Methow Rivers.

Rearing habitat is potentially limiting in the middle-main stem of the Methow River from surface diversions. Diversions are proportionally the highest during September during most years. Acquisitions in the main stem are not considered to be of highest priority due to the volume of water necessary to effect measurable change in rearing habitat. Tributary acquisitions may provide incremental increases in instream flow in the mainstem.

There are numerous surface diversions in Beaver Creek and water use exceeds flow during late summer and early fall in most years. Due to the number of diversions present, there may be significant opportunity to acquire water for instream flows in this sub-basin.

The are also diversions which contribute to low flows on Gold, Libby, and Black Canyon Creeks which contribute to loss of rearing habitat and create fish passage barriers. Diversions in Libby Creek may exceed summer base flows and eliminate potential rearing habitat.

The Twisp River is listed on the 303(d) list for temperature and instream flow deficiencies. The Methow Valley Irrigation District (MVID) diverts 24.6cfs from the Twisp River, about 46 percent of the mean flow in September. There are a total of seven surface diversions from RM 3.9 to the mouth. Low instream flows limit both fish passage and rearing habitat for salmonids. Acquisition should be focused on restoring flows up to approximately RM 4.



Stream Flow Prioritization: Methow WRIA 48

Water Resources Program

WASHINGTON STATE DEPARTMENT OF ECOLOGY

GIS Technical Services
12/13/02
sfp48-mpla

- US Forest Service
- US Wildlife Refuge
- US Parks/Recreation
- USFS Wilderness Area
- Bureau of Land Management
- US Dept. Defense/Energy
- Wa. Dept. of Fish & Wildlife
- Wa. Dept. of Naural Reasources
- State School/Hospital/Prison
- Wa. Parks & Recreation
- City/County Watershed/Park
- Tribal Lands
- Incorporated City
- USGS Stream Flow Gage
- Ecology Stream Flow Gage
- Water Right Purchase

Miles
0 4.5 9

- Low priority stream
- Medium priority stream
- High priority stream
- Salmon/Bull Trout Spawning/Rearing area
- Other streams
- Canal/ditch/pipe
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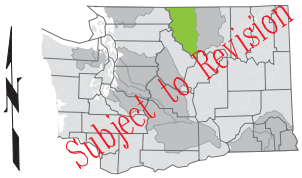


WDNR/Ecology - Major Public Lands 2002 100k
WDFW/Ecology - Hydrography, 2000 100k
Ecology - WRIA, 2002 24K
WDOT - Transportation, 2001 24K
WDFW - Stream Flow Prioritization 2002
WDFW - Spawning/Rearing Areas 2002 100k
USGS/Ecology - Stream Gages 1:100k

Okanogan River Watershed - WRIA 49

Stream flow in the Okanogan River, as well as most of the tributaries, have been altered primarily for flood control and irrigation. As a result, their natural hydrographs have been severely altered and are generally rated as "poor". Most of the tributaries of the Okanogan River are significantly diverted for irrigation purposes, resulting in adult migration barriers and lack of rearing habitat.

Due to varying geological and climatic conditions, many of the tributaries naturally suffer low flows during late summer and early fall and the tributaries are of relatively small size compared to other basins in eastern Washington. However, these small tributaries of the Okanogan provide critical rearing habitat for juvenile salmonids, especially those in which a significant proportion of flow originates from springs or groundwater. Some of the tributaries are capable of providing spawning habitat for summer steelhead but are generally too small to provide suitable spawning habitat for chinook. Due to significant alteration of off-channel habitat and hydrology in the mainstem of the Okanogan River, these small tributaries cumulatively provide critical rearing habitat, which is recognized as limiting in this basin.

Waters in Loup Loup Creek are heavily diverted and used for irrigation. Surface water withdrawals permitted account for only 0.1 cfs of the diversions in this creek, but claims amount to 2,366.9 cfs. The system is over allocated, and is usually dry in its lower reaches throughout the summer, precluding its use by salmonids. Due to the potentially uncertain nature of the status of these claims, any water acquisition in this basin should be carefully evaluated to ensure that acquired water could be preserved instream.

Surface water rights on Omak Creek, amount to a potential withdrawal of only 1 cfs. However, there are18 surface water claims, totaling 1.8 cfs. This creek has significant potential for recovery of both steelhead and spring chinook and is of somewhat larger size than many other tributaries of the Okanogan. However, habitat condition is ranked poor throughout the lower reaches of this creek, and concurrent habitat restoration would be needed with any flow restoration activities.

This variability of surface runoff in the Salmon Creek Basin is so great that surface runoff from the upper watershed is often insufficient to fill Conconully Reservoir or Salmon Lake. A substantial portion of Salmon Creek flows are diverted and stored within these reservoirs. There are 89 permits for surface water withdrawals on Salmon Creek, which total 2.9 cfs. In addition, there are another 137 surface water claims for a total of 408cfs. This system is significantly over-allocated and flows are a significant limiting factor to salmonid production. Prospective water rights must be carefully evaluated to ensure that acquired water remains instream.

Base flows in the summer and fall in Tunk Creek appear to fluctuate around 1 to 1.5 cfs throughout the lower reaches, and the lower ¾ mile of the stream may become dewatered during dry years. Recent monitoring by the Okanogan Conservation District in the upper Tunk Creek watershed, measured flows ranging from 0.83 to 17.7 cfs, with peaks occurring in May or June (T. Nelsen-- OCD). This creek has potential to provide critical rearing habitat for salmonids, and

perhaps limited spawning habitat for summer steelhead within this reach of the Okanogan River. There is a barrier falls located at approximately RM 0.75.

Aeneas Creek is primarily spring fed, thus there is little seasonal variation in the hydrograph relative to other Okanogan tributaries influenced primarily by snowmelt runoff. Currently, there are six permitted groundwater withdrawals on Aeneas Creek, with a potential yield of 3.8 cfs. There are two surface water withdrawals permitted with a potential yield of 0.2 cfs. There are five surface water claims with potential withdrawals of 3.6 cfs. Due to the spring fed nature of this stream, temperatures are likely to be moderated and provide suitable temperatures for rearing juvenile salmonids. In addition, the habitat in this stream is relatively intact. There is a barrier falls located at about RM 0.75.

Surface water withdrawals are made from Bonaparte Creek, its tributaries, and Bonaparte Lake. The MWG (1995) documented 124 permitted surface water withdrawals from Bonaparte Creek and another 106 surface water claims. Permitted withdrawals total 26.1cfs, while claims total 26.5cfs. The Bonaparte Water Users Association has water rights to 1080 acre-feet of water from Bonaparte Lake (Unpublished memorandum, USFS 1998a). Habitat conditions are generally ranked as poor throughout this creek and anadromous access is limited to the lower one mile of creek below the barrier falls. Summer steelhead spawning does occur in this stream.

There are nine permitted surface water rights on Siwash Creek, totaling 0.1 cfs. There are an additional 27 surface water claims totaling 6.5 cfs. Siwash Creek can be dry during late summer and early fall. Irrigation withdrawals peak at this time and may be the reason for such reduced surface flows. Another hypothesis is that Siwash Creek recharges groundwater draining to Antoine Creek, and Siwash Creek will only have surface flows during times when the groundwater "aquifer" is sufficiently recharged to spill water into the Siwash aquifer. Thus, further investigation in the hyphorheic connectivity of these sub-basins is prudent prior to acquiring water. Anadromous access is limiting to the lower 1.4 miles below a steep cascade.

According to MWG et al. (1995), there are 20 permitted surface withdrawals on Antoine Creek, yielding a potential removal of 7 cfs. There are additional 91 surface water claims for nine cfs. Groundwater withdrawals of 3.3 cfs are currently permitted, and an additional 76 claims are registered for 1.87cfs.

Fancher Dam reservoir entrains water from both Antoine and Mill Creeks and their tributaries. The water in Fancher Dam reservoir is used for crop irrigation on Fancher Flats during the months of May to October, annually. During this time, flow at the mouth of Antoine Creek is minimal and sometimes non-existent (D. Van Woert, personal communication). "Surface stream flow in the lower reach of Antoine Creek is often reduced to no flow during the driest part of the year. Antoine Creek has sometimes been completely dewatered in dry years due primarily to irrigation withdrawals" (USFS 1999). Anadromous fish access is limited to the lower 11.5 miles of the creek below the dam and falls.

Irrigation withdrawals are limited to the lower part of Tonasket Creek. According to MWG et al. (1995), there are 13 permitted surface withdrawals on Tonasket Creek, totaling 0.2 cfs. There are additional 70 surface water claims totaling 2.7 cfs. Other water withdrawals from Tonasket

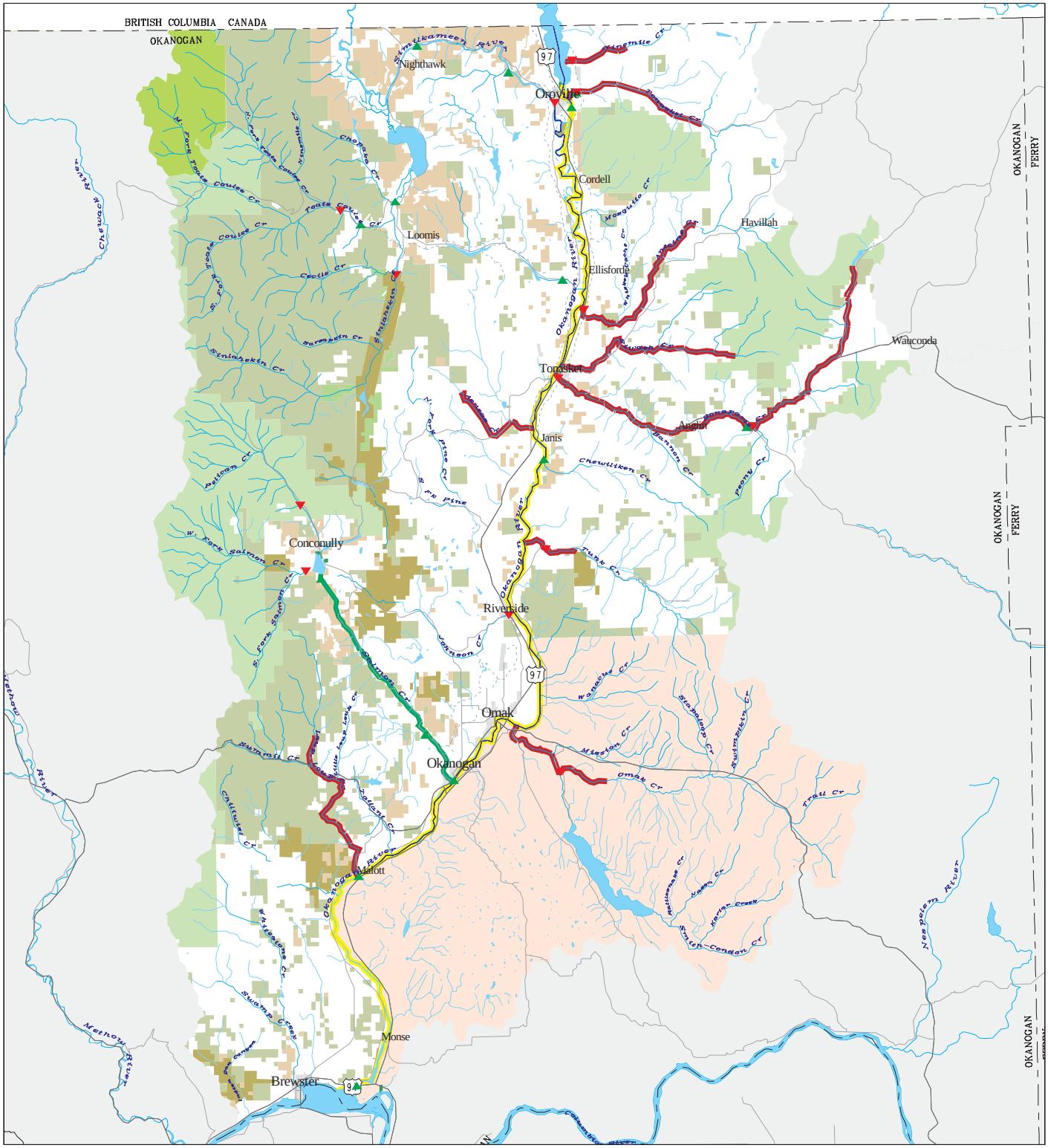
Creek and its tributaries in the Nine Mile Ranch subdivision area are suspected, as well as Mud Lake Valley and Dry Creek areas. These withdrawals may be for irrigation, stock watering or perhaps domestic use. Anadromous access is limited to the lower 1.9 miles of stream due to a passage barrier at an impassable cascade extending to RM 2.4. Summer steelhead adults have been found in this reach.

Water supply to the Nine-Mile Creek drainage is limited by the arid conditions of this sub-watershed. Effect of groundwater withdrawals on stream flows has not been established, but they may be substantial.

According to MWG et al. (1995) there are 17 surface water claims totaling 6.3 cfs. There is currently only 1 surface water permit. Flows can be limited to non-existent, generally about 1 cfs, except during a brief period of snowmelt occurring generally during the spring. Snowmelt plays a most significant role in recharging ground waters to supply summer base flows. Due to its small size, this stream has very limited potential for spawning salmonids, but could provide important rearing habitat.

Although mainstem temperatures and flow are identified as being limiting in the Okanogan River, it is not expected that sufficient water is available for acquisition to address them with current funding programs. Therefore, acquisitions should be focused on tributaries providing critical rearing habitat and spawning habitat for anadromous salmonids.

Unfortunately, many of the diversions in the tributaries of this watershed are claims and not perfected rights, which may limit acquisition opportunities to restore instream flows. There may be substantial risk in acquiring water without appropriate investigation.



Stream Flow Prioritization: Okanogan WRIA 49

Water Resources Program

WASHINGTON STATE DEPARTMENT OF ECOLOGY

GIS Technical Services
12/13/02
sfp49-mpla

- US Forest Service
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- USFS Wilderness Area
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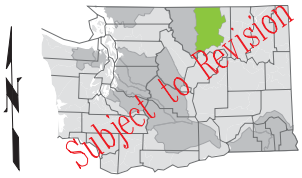

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Ecology - WRIA, 2002 24K
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WDFW - Stream Flow Prioritization 2002
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USGS/Ecology - Stream Gages 1:100k

APPENDIX III

(FOR STRATEGY FOUR: EVALUATING WATER RIGHTS FOR TRANSFER TO TRUST WATER)

- Quantification of trust water rights for secondary reaches
- Matrix: Guidance for Processing Acquired Water Rights into Trust Water for Instream Flows
- Trust Water Right Form

1. Quantification of Trust Water Rights for Secondary Reaches

Below is a description of the preferred method of calculating a trust water right for the secondary reach, commonly called the "bell curve" method.

The annual quantity of consumptive use is proportionally pro-rated throughout the irrigation season. The crop consumptive use (usually CIR) is used as the basis of this calculation although other calculations can be made using flow meter data, etc. Using a guide such as the Washington Irrigation Guide, it is possible to determine the water requirement for each month during the irrigation season. Using the monthly percentage as a guide, the total annual quantity is allocated in a manner closely resembling the crop consumptive use pattern throughout the irrigation season. It should be pointed out that the trust right is not static throughout the season creating different regulatory targets for different months.

Below is an example of a trust water right calculation based on the following assumptions:
A water right for 6 cfs,
992 AF/Y (includes 75% efficiency factor),
774 ac-ft CIR (consumptive use),
300 acres of alfalfa near Ellensburg,
180-day irrigation season from May through October.

We Startby determining the consumptive use of the water right (CU). In most cases it is the crop irrigation duty or water use based on power records (minus return flows), etc. In this example, it is assumed that the CU is determined to be 774 ac-ft. The consumptive use of the water over the growing season needs to be pro-rated in a manner consistent with the pattern of water consumed. Based on a guide like the Washington Irrigation Guide, a proportionate amount of consumptively used water per month can be determined. In this case for alfalfa at Ellensburg the distribution is:

May	June	July	Aug	Sep	Oct
7.5%	22.1%	30.4%	24.2%	13.7%	1.9%

Pro-rating the 774 ac-ft out in these proportions we get the following monthly distribution:

May	June	July	Aug	Sep	Oct	
58.4	171.4	235.6	187.4	106.3	14.9	ac-ft

A continuous instantaneous rate based on the monthly volume of water is then calculated. So for the month of August, the calculations look like this:

187.4 ac-ft multiplied by 325851 about 61 million gallons
Divide by 31 (days) about 2 million gallons per day
Divide by 1440 (minutes per day) = 1,368 gallons per minute
Divide by 449 (gpm per cfs) = **3.05 cfs**

Using similar calculations the distribution, in cfs, for each month is as follows:

May	June	July	Aug	Sep	Oct	
0.98	2.88	3.83	3.05	1.79	0.24	cfs

This is a representation of the amount of water in CFS that would have been consumed in each of these months, and that we could protect from junior water users in the stream during those months.

Matrix: Guidance for Processing Acquired Water Rights into Trust Water for Instream Flows

(See footnotes for exceptions to the guidance contained in the table.)

	Purchase	Short Term Lease	Long Term Lease	Donation 90.42.080	Publicly funded Conserved Water (See Footnote 1)
Source of the Trust water	Permanent acquisition of all or part of a water right 90.42.080 (1)(a)	Short term Lease of five years or less of all or portion of a water right 90.42.080(1)(a)	Long term lease of over 5 years of all or portion of a water right 90.42.080(1)(a)	Water right holder donates all or portion of a water right to assist instream flow on permanent or temporary basis 90.42.080(1)(a)	Conveyance of all or portion of net water saving resulting from improvements financed by State or federal funds. Saved water is conveyed through water right transfer, lease contract or other binding agreement (RCW 90.42.030)--can be temporary (at least 10 years) if funded through CC Irrigation Efficiency Grant--90.42.030(1)
Application	Yes 90.03.380 applies-- Not exempt under 90.42.080(5)	Yes 90.03.380 applies-- Not exempt under 90.42.080(5)	Yes 90.03.380 applies--not exempt under 90.42.080(5)	NO application for donation under 90.42.080(1)(b). To get info for evaluation will use a "trust water right form"-- 90.42.080(5)	NO change application, and NO fees--90.42.040(7). Contract is required. To collect info will use "Trust water Right Form"
Notice--Public & agencies	Yes notice requirement in 90.03.380 applies. It must be done in accordance with 90.03.280	NO upfront notice for short term lease (exempt until exercised -- see Exercise of TW below (90.42.040(8))	Yes notice requirement in 90.03.380 applies. It must be done in accordance with 90.03.280	NO upfront notice for donation under 90.42.080 (1) (b). But required first time TW is exercised 90.42.040(5)	Yes notice is required under 90.42.040(5). This specific provision trumps general exemption from 90.03.380
Evaluation- extent and validity of WR--Is there a valid right? (See Footnote 2)	Yes, evaluation is required 90.03.380	Yes--evaluation is required 90.03.380	Yes--evaluation is required 90.03.380	Yes, evaluation is required to meet the requirements of 90.42.080(4)	Evaluation is discretionary--Evidence of a valid water right may be required under 90.42.030(2)
Quantification of TW	For partial purchase--annual consumptive quantity is average of 2 highest years of use within most recent 5 year period of continuous beneficial use per 90.03.380. For purchase of the total right--annual consumptive quantity is the highest use within the last 5-year of continuous use.	Annual consumptive use is highest use within last 5 years. Total leased plus remaining is not to exceed highest use per 90.42.080(8). For temporary acquisitions, the full quantity of water diverted or withdrawn is placed in the trust program, per 90.42.080(9)	Annual consumptive use is highest use within last 5 years. Total leased plus remaining is not to exceed highest use per 90.42.080(8). For temporary acquisitions, the full quantity of water diverted or withdrawn is placed in the trust program, per 90.42.080(9)	Annual consumptive use is highest use within last 5 year period. Donated amount plus remaining shall not exceed highest use--90.42.080(4). For temporary acquisitions, the full quantity of water diverted or withdrawn is placed in the trust program, per 90.42.080(9).	Net water saving is determined by the state and water right holder --90.42.030(3) and is done in accordance with the "Guidelines"--90.42.030(2), 90.42.020(2).
Upfront impairment analysis	Yes upfront analysis. Must be No impairment, or reduction of water delivered, or water supply (including return flows)--90.03.380	No upfront analysis for short term lease, until the first time TW is excercised--90.42.040(8) & 90.42.040(4)	Yes, upfront impairment analysis under 90.03.380	No upfront analysis for donation under 90.42.080 (1)(b)	Yes upfront analysis. Must be No impairment, or reduction of water delivered, or water supply (including return flows)--90.42.020(2). Special provisions apply to TW from and within irrigation district--90.42.030(5) and (6)
Decision Document	Report of exam or findings of Fact--	Findings of Fact or letter-- 90.42.040(2)	Finding of Facts--90.42.040(2)	Findings of Facts--90.42.040(2)	Contract or Findings of Fact--90.42.030
Final Document to the Trust Water Program and the water right holder	TW: WR certificate to the State is issued If partial purchase WR holder is issued a superseding certificate or certificate of change for claims 90.42.040(2)	Letter or Findings of Fact--for TW and water right holder--90.42.040(2)	Findings of Facts for TW and water right holder--90.42.040(2)	Permanent--certificate to the State for TW and Superseding certificate or certificate of change (for claims) to water right holder for remaining right. Temporary--Findings of Facts for both--90.42.040(2)	Permanent--Certificate to State for TW and Superceding certificate or certificate of change to WR holder Temporary--Contract or Findings of Fact-- 90.42.040(2)
Exercise of TW and protecting TW	Only if no impairment to existing water rights and public interest. --90.42.040(4), 90.03.380, & 90.42.070	Notice is required the first time a short-term lease is exercised. A water right holder may ask Ecology to review an impairment claim. Ecology's decision to alter or not alter the TW based on the impairment claim is appealable. 90.42.040(8), 90.42.080(8), 90.42.070	Only if no impairment to existing water rights and public interest. A water right holder may ask Ecology to review an impairment claim. Ecology's decision to alter or not alter the TW based on the impairment claim is appealable. 90.42.040(4), 90.42.080(8), 90.42.070	Notice is required the first time the donated TW right is exercised. A water right holder may ask Ecology to review an impairment claim. Ecology's decision to alter or not alter the TW based on the impairment claim is appealable. 90.42.040(8), 90.42.080(4), 90.42.070	Only if no impairment to existing water rights and public interest 90.42.020, 90.42.040(4), 90.42.070

FOOTNOTES:

Footnote 1: For acquisition of saved water from privately funded water conservation projects, apply the requirements for purchases, leases or donations, as appropriate.

Footnote 2: For acquisition of a portion of a water right (through purchase, lease or donation), where such acquisition will assist in achieving established instream flows, only the portion that will be acquired in trust is subject to an evaluation of validity of the right. The portion of the right that will remain with the water right holder is not subject to a validity review. The extent of the water right must be evaluated as needed to satisfy the requirements of 90.42.080(1)(b) (donations to instream flows), 90.42.080(8) (leases), or 90.03.380 (purchases), as applicable.

STATE OF WASHINGTON

TRUST WATER RIGHT FORM

Transfer of CONSERVED WATER to the Trust Water Right Program ☐

DONATION of a water right to the Trust Water Right Program ☐

PARTIAL DONATION of a water right to the Trust Water Right Program ☐

*****IF MORE SPACE IS NEEDED, ATTACH ADDITIONAL SHEETS (PLEASE PRINT OR TYPE CLEARLY)*****

1. Applicant Information:

APPLICANT/BUSINESS NAME	PHONE NO. ( )	FAX NO. ( )
ADDRESS		
CITY	STATE	ZIP CODE

CONTACT NAME (IF DIFFERENT FROM ABOVE)	PHONE NO. ( )	FAX NO. ( )
ADDRESS		
CITY	STATE	ZIP CODE

2. Water Right Information:

WATER RIGHT OR CLAIM NUMBER	RECORDED NAME(S)
DO YOU OWN THE RIGHT TO BE CHANGED? ❑ YES ❑ NO IF NO, PROVIDE OWNER(S) NAME:	

Please attach copies of any documentation that demonstrates consistent, historical use of water since the right was established.

FOR OFFICE USE ONLY

WATER RIGHT NO._____ FILE NO._____

ECY 070-54 (12/02)

3. Purpose of Use Information:

A. Existing

PURPOSE OF USE	GPM or CFS	ACRE-FT/YR	PERIOD OF USE

B. Proposed

PURPOSE OF USE	GPM or CFS	ACRE-FT/YR	PERIOD OF USE

3. Place of Use:

A. Existing

LEGAL DESCRIPTION OF LANDS WHERE WATER IS PRESENTLY USED:							
¼	¼	SEC.	TWP.	RGE.	COUNTY	PARCEL #	# OF ACRES
DO YOU OWN ALL THE LANDS IN THE EXISTING PLACE OF USE? ❑ YES ❑ NO – IF NO, PROVIDE OWNER(S) NAME:							

B. Proposed

LEGAL DESCRIPTION OF LANDS WHERE NEW USE IS PROPOSED:							
¼	¼	SEC.	TWP.	RGE.	COUNTY	PARCEL #	# OF ACRES
DO YOU OWN ALL THE LANDS IN THE PROPOSED PLACE OF USE? ❑ YES ❑ NO – IF NO, PROVIDE OWNER(S) NAME:							

Are there any ADDITIONAL WATER rights OR CLAIMS RELATED to the same property as the ONE PROPOSED FOR TRANSFER TO THE TRUST WATER RIGHT PROGRAM? ❑ YES ❑ NO – IF YES, PROVIDE THE WATER RIGHT/CLAIM NUMBER(S):

4. Remarks and Other Relevant Information:

IF TEMPORARY, START DATE _____/_____/_____ END DATE _____/_____/_____

5. Signatures:

I certify that the information above is true and accurate to the best of my knowledge. I understand that in order to process my application, I am hereby granting staff from the Department of Ecology access to the above site(s) for inspection and monitoring purposes. If assisted in the preparation of the above application, I understand that all responsibility for the accuracy of the information rests with me.

_____ _____/_____/_____
(Applicant) ***(Date)***

_____ _____/_____/_____
(Water Right Holder) ***(Date)***

_____ _____/_____/_____
(Land Owner(s) of Existing Place of Use) ***(Date)***

WE ARE RETURNING THIS FORM FOR THE FOLLOWING REASON(S):

❑ MAP NOT INCLUDED or INCOMPLETE

❑ ADDITIONAL SIGNATURES REQUIRED ❑ SECTION _____ IS INCOMPLETE

❑ OTHER/EXPLANATION:_____

STAFF: _____ ***DATE:*** _____/_____/_____

Ecology is an equal opportunity employer.
If this form is needed in an alternate format, please contact (360) 407-6607 voice, 711 (TTY) or 1-800-833-6388 (TTY).

APPENDIX IV

(FOR STRATEGY FIVE: DETERMINING AND NEGOTIATING FAIR MARKET VALUE)

- Contract template for buying or leasing water rights

AGREEMENT TO TRANSFER WATER UNDER TRUST WATER RIGHTS PROGRAM
CHAPTER 90.42 RCW

BETWEEN
THE STATE OF WASHINGTON DEPARTMENT OF ECOLOGY
AND
(Insert Water Right Holder Name)

I. PURPOSE OF AGREEMENT AND STATEMENT OF INTENT

This Agreement is a contract between the parties to create a trust water right under Chapter 90.42 RCW.

The Department of Ecology and Water Right Holder enter into this Agreement for Trust Water for the following reasons:

1) To *sell (or lease)* designated *all or portions* of (Insert Name of Water Right Holder)'s water rights to the Department of Ecology for transfer to the Trust Water Rights Program;

2) To protect the acquired water from relinquishment under provisions of Chapter 90.14 RCW;
3) To tentatively determine the amount of water to be transferred to the Trust Water Rights Program under Chapter 90.42 RCW; and
4) To document water put to beneficial use and the number of irrigated acres based on current and historical records.

II. PARTIES TO THIS AGREEMENT

The Department of Ecology and (Insert Water Right Holder's name) are parties to this agreement. Ecology's contact is:

Insert Ecology Name
Insert Ecology Address
Insert phone (, FAX).

The (Insert Water Right Seller Name) contact is:

Insert Name
Insert Address
Insert phone (, FAX).

III. EVALUATION OF WATER USE AND TRUST WATER

This Agreement makes a tentative determination of water rights for purposes of this transfer only. It is not a legally binding quantification of the (Insert water Rights Holder)'s underlying water rights for the property.

Quantification of water applied to a beneficial use under a water right and the amount of water transferable to other purposes is based on analysis of "reasonably efficient practices". In making a tentative determination of the water right, Ecology considers the instantaneous amount of diversion as written on the face of the certificate and as historically applied to beneficial use; the annual volume of water diverted, as written and as historically applied to beneficial use; the described place of use and that established through practice; and the season and purposes of use.

A. TRANSFERS TO THE TRUST WATER RIGHTS PROGRAM

The water rights acquired under this agreement will be administered under Chapter 90.42 RCW. To determine the amount of water available for the trust water rights program, Ecology evaluates the historic diversion and beneficially used amount of water that has been established for the property.

The amount of water that can be transferred to the trust program will be reserved as trust water fully designated for instream flow purposes. The trust water for instream flows will retain its original priority date.

B. APPLICATION FOR CHANGE OF USE

Water purchased or leased under this agreement will be protected from relinquishment under provisions of Chapters 90.14 and 90.42 Revised Code of Washington. Ecology will process an application to change the place and purpose of use of the purchased water rights to instream use.

C. TENTATIVE DETERMINATION OF BENEFICIAL USE/ AMOUNT OF PURCHASED WATER

The (Water Rights Holder name) water rights are associated with their property. The property is (location of parcel or parcels). The water rights certificates, with legal descriptions are incorporated by reference and attached as Appendix A.

The amount of irrigated acreage has been determined by (verification method). The entire property encompasses -----acres. Ecology and the (Insert Water Right Holder name) agree that ------ acres have been historically irrigated, and that these same ------ acres are currently irrigated.

Ecology calculated the net crop irrigation requirement using (insert method used). The result is ----- inches per acre per year, or just over ---- acre/feet per acre. This calculation matches the calculations completed by the (Insert water right holder name), and the amount that the parties agree to use for purposes of this agreement.

Ecology will buy the water right associated with ---- irrigated acres.

IV. CONSERVATION EASEMENT/RIPARIAN BUFFER

Insert requirements or delete if not applicable

V. TERMS OF THE LEASE

Insert if applicable

VI. WATER PURCHASE/OPTION TO PURCHASE ADDITIONAL WATER

Complete if applicable

VII. LAND TRANSFER/ESCROW ACCOUNT

(escrow instruction if used)

VIII. EFFECTIVE DATE OF AGREEMENT

The effective date of this agreement is the date it is signed by the Department of Ecology.

IX. AGREEMENT AMENDMENT

This agreement may be amended by mutual agreement of the parties. Such amendments shall not be binding unless they are in writing and signed by personnel authorized to bind each of the parties.

X. TERMINATION FOR CAUSE

If for any cause, any party does not fulfill in a timely and proper manner its obligations under this agreement, or if any party violates any of these terms and conditions, the aggrieved party will give the other parties written notice of such failure or violation. The responsible party will be given the opportunity to correct the violation or failure within 15 working days. If the failure or violation is not corrected, and is a material breach of this agreement, this agreement may be terminated immediately by written notice of the aggrieved party to the others.

XI. GOVERNANCE

This agreement is entered into pursuant to and under the authority granted by the laws of the state of Washington and any applicable federal laws. The provisions of this agreement shall be construed to conform to those laws.

In the event of an inconsistency in the terms of this agreement, or between its terms and any applicable statute or rule, the inconsistency shall be resolved by giving precedence in the following order:

a. applicable state and federal statutes and rules;
b. statement of work; and
c. Any other provisions of the agreement, including materials incorporated by reference.

XII. ASSIGNMENT

The work to be provided under this agreement and any claim arising thereunder, is not assignable or delegable by any party in whole or in part, without the express prior written consent of the other parties, which consent shall not be unreasonably withheld.

XIII. WAIVER

A failure by any party to enforce its rights under this agreement shall not preclude that party from subsequent enforcement of such rights and shall not constitute a waiver of any other rights under this agreement unless stated to be such in a writing signed by an authorized representative of the party and attached to the original agreement.

XIV. SEVERABILITY

If any provision of this agreement or any provision of any document incorporated by reference shall be held invalid, such invalidity shall not affect the other provisions of this agreement which can be given effect without the invalid provision, if such remainder conforms to the requirements of applicable law and the fundamental purpose of this agreement, and to this end the provisions of this agreement are declared to be severable.

XV. ALL WRITINGS CONTAINED HEREIN

This agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this agreement shall be deemed to exist or to bind any of the parties hereto.

IN WITNESS of the foregoing provisions, the parties have executed and delivered this agreement as of the date set forth below.
(Insert name of water right holder.)

_____

_____
Date

County of _____
Signed or attested before me on _____by _____.

(Seal or stamp)

_____
Title

My appointment expires _____ .

DEPARTMENT OF ECOLOGY

_____
(Name of Ecology signatory)

_____
Date

State of Washington
County of _____
Signed or attested before me on _____by _____.

(Seal or stamp)

_____
Title

My appointment expires _____

APPENDIX V

(FOR STRATEGY SIX: ENSURING COST-EFFECTIVE AND EFFICIENT USE OF PUBLIC INVESTMENTS)

1. Tracking water buying and leasing

FY July 1, 2000 - June 30, 2001

WRIA	County	Stream Name	Lease or Purchase	Period of Time Lease is for	Purpose	Acre Feet/yr	CFS	Funds Committed
Walla Walla - 32	Walla Walla County	Walla Walla River	Purchase		Irrigation	1008		680,000.00
Upper Yakima - 35	Yakima County	Taneum & Lower Wenas Creek	Reimburse for Purchase	6/15 - 6/30/01	Irrigation	2,278		200,000.00
Methow - 48	Kittitas County	Methow River	Lease	4/1/00-8/15/02	Transfer of Leased Water Right used for Irrigation	101		15,000.00
					Total	**3387**		**895,000.00**

FY July 1, 2001 - June 30, 2002

WRIA	County	Stream Name	Lease or Purchase	Period of Time Lease is for	Purpose	Acre Feet/yr	CFS	Funds Committed
Elwha-Dungeness - 18	Clallum County	Dungeness River	Lease	8/1 - 9/15/01	Irrigation - Alfalfa and Pasture	417.11		$3,200.00
	Clallum County	Dungeness River	Lease	8/1 - 9/15/01	Irrigation - Alfalfa Grass Hay and Pasture			$21,451.50
	Clallum County	Dungeness River	Lease	8/1 - 9/15/01	Irrigation - Alfalfa Grass Hay and Pasture			$12,100.00
	Clallum County	Dungeness River	Lease	8/1 - 9/15/01	Irrigation - Alfalfa Grass Hay			$10,500.00
	Clallum County	Dungeness River	Lease	8/1 - 9/15/01	Irrigation - Alfalfa Hay, Grass Hay, Alfalfa Grass Hay and Pasture			$23,250.00
	Clallum County	Dungeness River	Lease	8/1 - 9/15/01	Irrigation - Alfalfa Grass Hay and Pasture			$18,750.00
	Clallum County	Dungeness River	Lease	8/1 - 9/15/01	Irrigation - Pasture			$6,400.00
	Clallum County	Dungeness River	Lease	8/1 - 9/15/01	Irrigation - Grass Hay, Alfalfa Hay, and Grass Alfalfa Hay			$18,050.00
	Clallum County	Dungeness River	Lease	8/1 - 9/15/01	Irrigation - Pasture and Grass Hay			$2,800.00
	Clallum County	Dungeness River	Lease	8/1 - 9/15/01	Irrigation - Pasture and Grass Hay			$17,200.00
	Clallum County	Dungeness River	Lease	8/1 - 9/15/01	Irrigation - Alfalfa Hay and Grass Hay			$21,000.00
	Clallum County	Dungeness River	Lease	8/1 - 9/15/01	Irrigation - Alfalfa Hay and Grass Hay			$5,135.00
	Clallum County	Dungeness River	Lease	8/1 - 9/15/01	Irrigation - Pasture			$8,600.00
Walla Walla - 32	Columbia County	Touchet River	Lease	7/1/ - 10/1/01	Irrigation and Stock Water	88		$10,560.00
	Columbia County	Touchet River	Lease	7/1/ - 10/1/01	Irrigation - Pasture	114		$13,680.00
	Columbia County	Touchet River	Lease	7/1/ - 10/1/01	Irrigation - Wheat and Seed Peas	42		$5,040.00
	Columbia County	S. Fk. Touchet River	Lease	7/1/ - 10/1/01	Irrigation - Alfalfa and Pasture	23		$2,760.00
Upper Yakima - 39	Kittitas County	Spring Creek/Yakima River	Lease	7/1/ - 10/1/01	Irrigation and Stock Water	407.5		$52,500.00
	Kittitas County	Teanaway River	Lease	7/1/ - 10/1/01	Reimburse for Lease	78.07		$8,657.00
	Kittitas County	Yakima River	Lease	4/1 - 10/15/01	Irrigation and Stock Water	232		$30,000.00
Methow - 48	Okanogan county	Libby Creek	Lease	7/1/ - 10/1/01	Irrigation - Alfalfa Hay and Grass Hay	160		$19,200.00
BPA		Columbia River	Lease	4/1 - 9/30/01	Voluntary Energy Load Reduction Program	33,322		$1,000,000.00
US Bureau of Reclamation		Columbia Basin	Lease	8/1 - 9/31/01	Water Transfer to Trust		250	$40,000.00
					Total	**34883.68**	**250**	**$1,350,833.50**

FY July 1, 2002 - June 30, 2003

WRIA	County	Stream Name	Lease or Purchase	Period of Time Lease is for	Purpose	Acre Feet/yr	CFS	Funds Committed
Lower Yakima - 37	Yakima County	Yakima River	Purchase/ Pending		Irrigation	363.35		
Methow - 48	Okanogan County	Naches River	Purchase/ Pending		Power Generation		300	$1,000,000.00
					Total	**363.35**	**300**	**$1,000,000.00**

Updated 12/20/02

Combined Totals	**38270.68**	**550**	**$3,245,833.50**