



*Aerial photo of the Dungeness River and east watershed.*

# A Guide to Water and How We Use It in the Dungeness Watershed

Many people think the weather in Sequim and the Dungeness Watershed is as good as it gets west of the Cascades. Residents delight in the fact that while surrounding areas may be drenched with rain, Sequim is basking in the sunshine. We love our sunshine, but what effect does the local climate have on our water supply?

That depends on how you look at it. As a homeowner whose yard gets soggy in the winter, you may think there is plenty of water. A salmon trying to spawn in the Dungeness River in August would feel differently. There are many factors affecting water in the Dungeness -- and its availability cannot be taken for granted.

This is a guide to water in the Dungeness Watershed and how we use it. It's a complex picture being addressed in an instream flow and water management rule drafted by the state Department of Ecology, working closely with local agencies and governments, the Jamestown S'Klallam Tribe and interested citizens.

The water management rule is one of many efforts in the watershed to protect the long-term economic health and vitality of your community by ensuring water supplies now and into the future for people, farms and fish.

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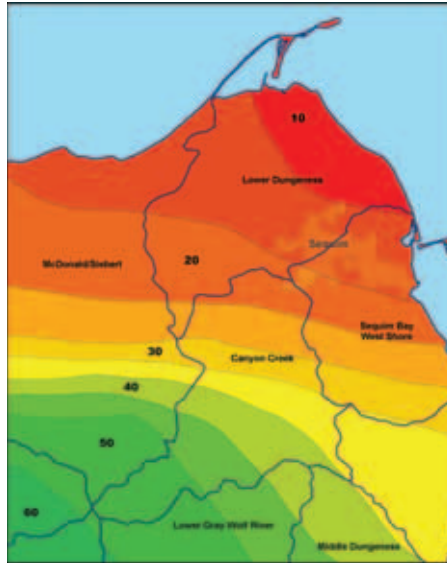
# Introduction to Managing Water in the Dungeness Watershed: Supply and Demand

## It's Not As Wet As You Might Think

Did you know that some parts of our watershed\* receive about the same amount of rain as the Arizona desert? While the precipitation in the mountains averages 80 inches per year, Sequim receives 16 inches per year—only four inches more than Tucson!

This lack of rain results from our location at the northeast corner of the Olympic Mountains. The high mountains catch the rain and snow coming from the west, so little precipitation makes it all the way to the Dungeness Basin. This phenomenon is known as “the rainshadow effect.”

\* Note: The terms “basin” and “watershed” are used interchangeably throughout this brochure.



*This figure shows the variation in the amount of rainfall in the Dungeness Basin, ranging from 10 inches annually (red) to 60 inches (dark green). Note the dramatic change in precipitation over very short distances.*

## Demands For Water Highest When Water Most Scarce

Water supply in the Dungeness varies greatly throughout the year. Melting snow from the mountains is the main source for streams and rivers in spring and early summer. As the summer continues, stream flows drop rapidly as snow pack diminishes and there is little rain. By late summer, streams and rivers are almost entirely fed by groundwater.

Farm irrigation and lawn-watering are at their peaks in the summer and early fall, the same time that spawning fish and the natural environment also need water in streams.

With population growth here among the highest in the state, demands on water are only expected to increase. It is already difficult to get water for new projects since most water is legally spoken for, especially in the late summer. Four fish species dependent on the Dungeness River have come under the protection of the federal Endangered Species Act (ESA) due to insufficient stream flow levels, and other species are being considered. And there are several Dungeness fish species listed as “critical” by the state.

For all these reasons and more, smart water management is needed now for the Dungeness watershed.



*The Dungeness River in August.*

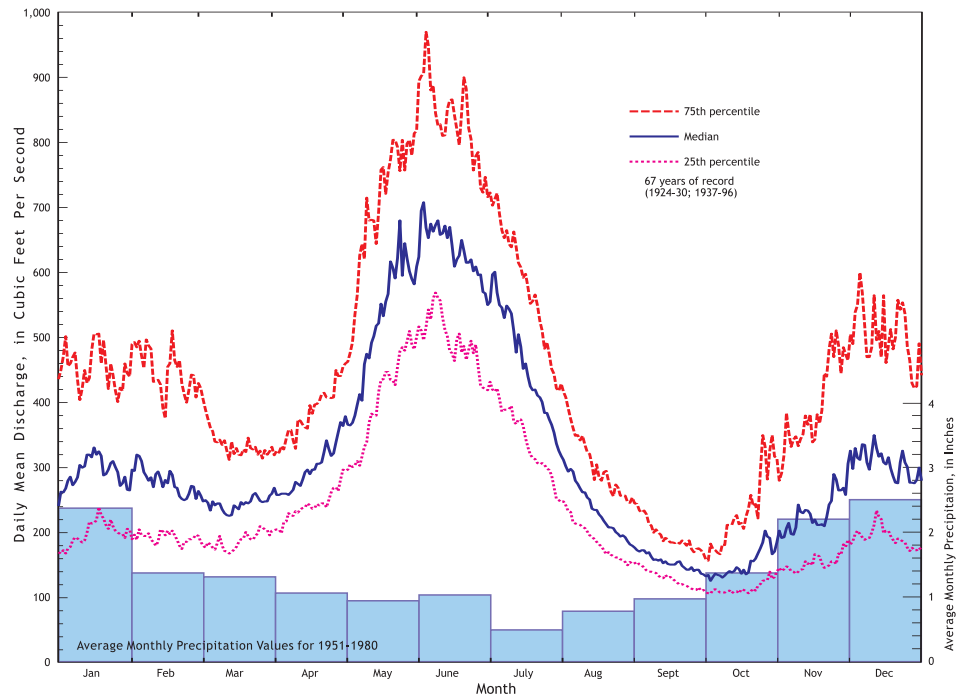
## Farming: Just Add Water

Agriculture has long been an important part of our landscape and community. Water decisions made more than a hundred years ago at the onset of farming in the Dungeness valley still affect our landscape and water supply today.

Presently, irrigation districts and companies hold substantial rights to use water from the Dungeness River, providing irrigation water to almost 6,000 acres. These rights are the oldest in the basin, which means that they have seniority over all rights that were granted afterwards.

For more than a decade, the farming community has played a major role in salmon recovery efforts, by limiting their withdrawals during low-flow periods to leave more water in the river for fish. Until recently, unlined irrigation ditches brought water from the Dungeness River to the fields. To reduce the amount of river water leaking into the ground or evaporating on its way to farmers' fields, many ditches have been converted to piped systems. At the same time, studies are being done on how to replenish groundwater supplies with surface water when flows are high.

*In 1895, the Sequim Prairie Ditch Company was formed to convey Dungeness River water to cleared lands. Over 100 years later, farming faces many pressures, including the conversion of farms to residential and commercial developments. An important watershed management planning goal is the continuation of a strong agricultural community in the valley.*



*Dungeness River average daily flows (discharge) compared with average monthly precipitation near Sequim. Flows peak in May due to snow melt. (USGS chart)*

## The Importance Of Smart Water Management

Smart water management is needed now more than ever to help ensure there is enough water for the current and future needs of people and the environment. Our challenge is to adopt practices that have a minimal impact on streams, but still sustain thriving communities. Our choice must not be whether to have a healthy economy or healthy salmon runs – but rather how we can support both.

We are currently looking at five keys to success:

- ✳️ Make the most of available supplies.
- ✳️ Increase available water.

- ✳️ Avoid further harm to already low stream flows.
- ✳️ Conserve water.
- ✳️ Protect existing water rights.

These strategies are the basis for the new Dungeness water management rule. The 2005 Elwha-Dungeness Watershed Plan, developed locally and unanimously adopted by the Clallam County Commissioners, called for the development of this rule.

The well-being of your family, neighbors, local farmers, fishermen and businesses is intertwined with that of your watershed. Smart water management is in everyone's best interest.



# Surface Water and Groundwater in the Dungeness Basin

## Snow + Rain + Groundwater = Stream Flow

The lofty Olympic Mountains provide a key source of water for the Dungeness River in the form of melting snow and rain (precipitation). Most of our precipitation occurs between October and March. This produces high flows during late fall, winter and early spring. Following snow melt in late spring and summer, flows in the river gradually drop until the rains return in the fall. By late summer, river flows are low and fed primarily by water under the ground: groundwater.

By contrast, smaller lowland streams are primarily fed by rain and groundwater year-round. These have their highest flows in the winter months but do not benefit from melting snow. Some streams get water directly or indirectly from irrigation water.

Both the Dungeness mainstem and the small streams have something very important in common: late summer flows are primarily fed by groundwater flowing into the streams. This is an important concept for understanding water in the Dungeness watershed: water is constantly in motion, moving between surface water (such as lakes, rivers and streams) and underground sources. What affects one affects the other.

*All the fresh water in the world moves continuously in a closed-loop system. No new water is being made. Water from snow and rain becomes surface water (such as rivers and lakes), seeps into the ground (groundwater), which in turn also feeds surface water. Water circulates from land to sky and back again.*

## How Groundwater Works

Groundwater is one of our primary sources of potable water. It can come from several sources, such as snow melt or rainwater percolating down through the soil, leakage from irrigation ditches, or water seeping into the ground from a stream or a river.

Groundwater is contained in aquifers—underground formations composed of materials such as sand, soil or gravel that can store groundwater and supply it to wells and springs. The water we see flowing in our rivers and streams in late summer and fall is mostly groundwater that has seeped into streams.

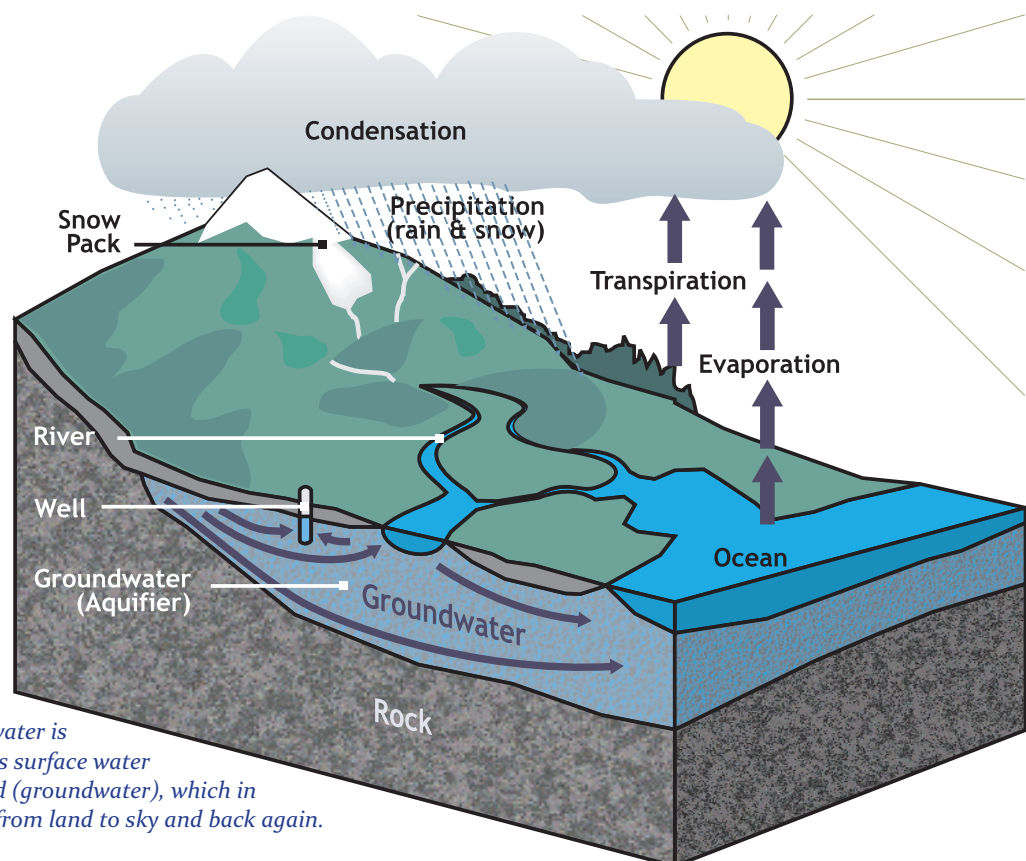
The underground layers of rock, gravel, clay and sand in the lower Dungeness Valley are mostly glacial deposits that vary tremendously.

In the foothills there is just one thin aquifer that doesn't contain much water. In other areas there are three or more distinct aquifer layers.

## Pumping Groundwater Affects Surface Water

The fact that water can easily seep through sand and gravel is what allows us to pump and use groundwater. But pumping water out of the ground reduces the amount of groundwater available to move to streams and rivers.

Aquifers are also connected to each other. Groundwater pumping affects water movement within an aquifer and between aquifers as well as influencing what is happening in surface streams.



## Where Does Your Water Come From?

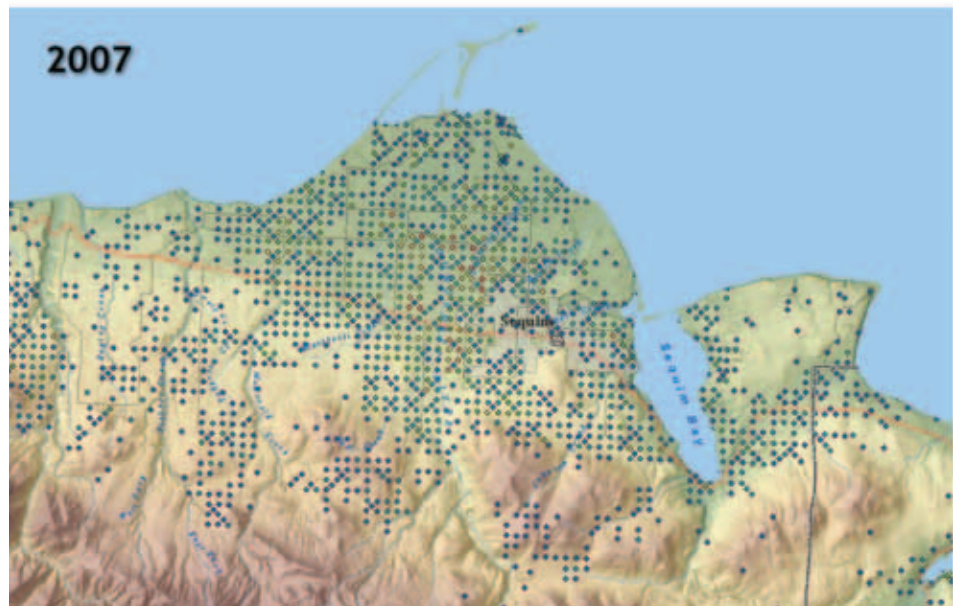
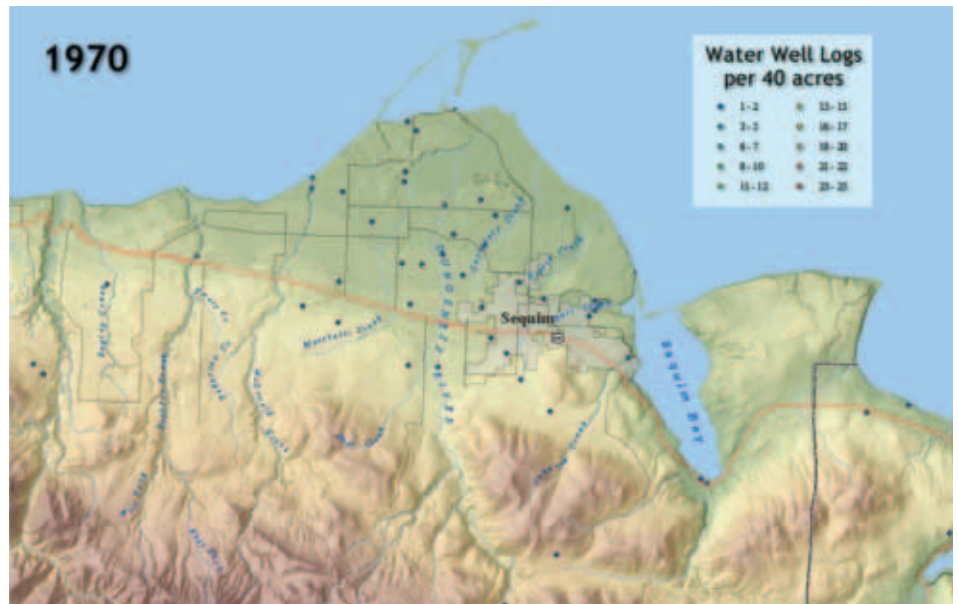
Nearly all residents in the Dungeness Basin get their drinking water from groundwater. In contrast, the irrigation districts and companies (the senior water right holders) take their irrigation water directly from the Dungeness River.

Rural residences typically have an individual well or may be served by small community water system wells. Many residences in Carlsborg and nearby areas are served by the Clallam County Public Utility District (PUD), which pumps its water from a single 177-foot-deep well. Residences in Sequim are hooked up to a city water system that gets most of its supply from several large wells.

## Taking Small Well Use Into Account

Many people living in the Dungeness Valley get their water from small, single-owner wells referred to as “permit-exempt wells.” These well owners do not have to go through the state’s permit application process for a water right before using their water. Small community water systems (such as those with two to six houses) may also use permit-exempt wells. Although exempt from permitting requirements, these are legal water rights that must be managed along with other water rights issued by the State of Washington.

Thousands of wells already exist in the Dungeness Basin. Add in the thousands expected in the future, and you can see how withdrawing groundwater can significantly affect the amount of water in our streams and aquifers. Adding these impacts to already low stream flows could devastate aquatic life.



*Dungeness Basin water wells, based on well log data. Each dot represents the number of wells per 40 acres (see legend). And these maps don't tell the whole story - submitting well logs to Ecology has only been required since 1971, so many existing wells are not represented.*

## The Whole, Complex Picture

So how much water does the average Dungeness household actually use? The estimate for total indoor use in Clallam County households is about 150 gallons a day. But if there is outdoor lawn watering, the numbers rise significantly. For example, in the Sequim area, watering a ¼ acre of lawn during peak summer months can use between 850 to over 1,000 gallons per day!

Any single home, by itself, is probably not going to have a big impact on our streams or groundwater, but the cumulative use—the effects of many, many homes and uses taking and consuming water—really adds up.

It is not just the amounts of water being used, but also how much is consumed or returned to the ground that contributes to the overall effects. For example, if you limit your water use to indoor use (no outdoor watering) and are on a

properly functioning septic system, you would have only a small part in the cumulative effect on stream flows.

By contrast, a household doing a lot of outdoor watering all summer long would have a much greater effect on the water supply. Much irrigation water is lost through evaporation or taken up by lawns and other plants, so little returns to the ground.

## Groundwater Model: What It Tells Us

Water in the Dungeness Basin is one of the most studied and best understood water systems in the state. Many organizations collaborated during the development of a state-of-the-art groundwater model, including Clallam County, Clallam County PUD, City of Sequim, U.S. Geological Survey, Jamestown S'Klallam Tribe, Foster-Wheeler Tetra Tech, Aspect Consulting, Pacific Groundwater Group,



*New growth can continue with smart water management. The focus is on redistributing the water already in use, rather than new withdrawals which will further stress limited water supplies, especially in the summer.*

Clallam Conservation District, the irrigator's Water Users Association and Ecology.

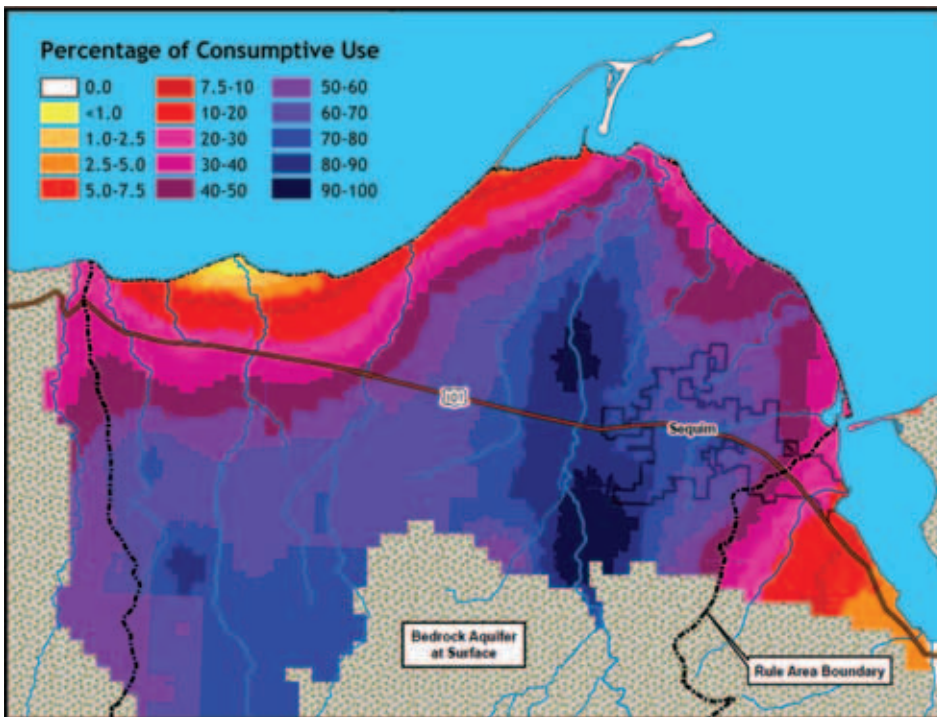
This computer model estimates how much groundwater there is and how it moves through the Basin. The model provides significant information for helping evaluate new ways to

stretch, replenish and manage water. It will also help evaluate the effects of withdrawals on streams, the Dungeness River and the aquifers.

Developed over the past 15 years, more than \$1 million is invested in this tool to make it as accurate and useful as possible. For more information on the model: [www.clallam.net/environment/assets/applets/PGG\\_2008\\_Dungeness\\_Model\\_Final\\_Report.pdf](http://www.clallam.net/environment/assets/applets/PGG_2008_Dungeness_Model_Final_Report.pdf) (Note this is a very large file, 11 MB.)

For general information on groundwater:

- ✳ USGS Groundwater Information: <http://water.usgs.gov/ogw/>
- ✳ EPA Ground Water and Drinking [www.epa.gov/safewater/](http://www.epa.gov/safewater/)
- ✳ King County's The Groundwater Story (musical animation): [www.kingcounty.gov/environment/waterandland/groundwater/education/animation.aspx](http://www.kingcounty.gov/environment/waterandland/groundwater/education/animation.aspx)
- ✳ Ecology's Groundwater Assessment pages: [www.ecy.wa.gov/programs/eap/groundwater/gwintro.htm](http://www.ecy.wa.gov/programs/eap/groundwater/gwintro.htm)



**Total Stream Impacts From Pumping in Shallow Aquifer.** Map shows groundwater model results and the impacts to streams from pumping the shallow aquifer. Colors show how effects vary by percentage on rivers and streams.

# Washington Water Law

## Water Is A Shared Resource

Water in Washington State is a public resource. A private party might be granted rights to use a certain amount of water, but the water belongs to all the citizens of the state.

The right to put a certain amount of the public's water to beneficial use is granted through a "water right." A water right is the right to put a certain amount of water to specific beneficial use from a specific diversion or point of withdrawal. The State of Washington's Department of Ecology issues water rights and administers state laws regarding water use.

## Seniority Takes Priority

All western U.S. states have adopted what is known as the "prior appropriation doctrine." The doctrine, often described as "first in time, first in right," means that whoever withdrew water first and secured their "right" from a water source is considered senior to all subsequent water users.

If there is not enough water at any given time, "junior" water right holders have to stop their use to allow "senior" right holders to withdraw their full amount.

In the Dungeness Valley, irrigation was introduced in the late 1800s and in 1924 Washington courts validated irrigator rights through a legal process known as "adjudication." The irrigators hold the Dungeness's most senior water rights. Today,



1895 water right certificate for the Dungeness River.

more water rights have been issued for withdrawals from the Dungeness River than there is actual water in the river. In legal terms, the river is "over-appropriated."

## Small permit-exempt wells

The 1924 adjudication only considered surface water rights. Groundwater uses did not have to go through the permitting process until 1945. The state Groundwater Code includes a "groundwater permit exemption" (RCW 90.44.050), which allows for certain amounts and uses of groundwater without obtaining a permit from Ecology. These withdrawals are still subject to all other state water laws.

## A Water Right For Fish, Instream Resources And Uses

The Department of Ecology is required under state law to protect and preserve stream flows for instream resources and "beneficial uses," which include:

- \* Fish and wildlife.
- \* Drinking water.
- \* Water quality.
- \* Irrigation.
- \* Recreation.
- \* Scenic and aesthetic values.
- \* Industrial and commercial uses
- \* Navigation.

An instream flow and water management rule is, in essence, a water right for the stream and the resources that depend on it. Once adopted, the rule sets the framework for decisions on water use made thereafter. It has no effect on senior (existing) water rights -- although all Dungeness residents can still play a role in helping protect our streams.

## Tribal Rights Go Way Back

In addition to its water management responsibilities, the State of Washington must respect treaty obligations and collaborate with the governments of Native American Tribes. The federal government and Tribal governments hold reserve rights to a certain undetermined amount of water.

Treaty Tribes in western

Washington are co-managers of the fish resource and have fishing rights in their historic "usual and accustomed areas" since "time im-



S'Klallam ancestors on the Dungeness River in 1919.

memorial." A right to productive salmon habitat is asserted along with the right to fish, meaning that flows to support productive fish stocks need to occur frequently in salmon-producing rivers and streams.

For more information on Washington water law and water rights refer to these Ecology publications (at [www.ecy.wa.gov/pubs.shtm](http://www.ecy.wa.gov/pubs.shtm)) and webpage:

- \* "Washington Water Law – A Primer" (#98-152)
- \* *Frequently Asked Questions about Water Rights in Washington* (#96-1804-S&WR)
- \* "Changing or Transferring an Existing Water Right" (#98-1802-WR)
- \* *Water Resources Rules, Laws, Policy, Procedures, Guidance and Case Law* web pages: [www.ecy.wa.gov/programs/wr/rules/rul-home.html](http://www.ecy.wa.gov/programs/wr/rules/rul-home.html)

# Instream Flows

## What's Good For Streams Is Good For People

Fish are not the only ones who depend on adequate water in streams. Low stream flows put wildlife and other resources at risk. Sufficient flows are required to support fishing, recreation, stockwatering, navigation and other uses. Flows contribute to the aesthetic qualities of natural settings. They influence groundwater levels, as well as other surface water (such as wetlands, lakes and ponds). And flow levels are a key aspect of water quality.

“Out of stream” water uses, including farming, industry and domestic water supplies, also suffer during times when stream flows are limited. High flows have their own role in supporting a healthy stream, by moving sediment and altering channel shape.

When it comes to healthy streams, what's good for fish is also good for people.

## An Important Tool: Instream Flows

*Stream flow* is the naturally varying amount of water flowing down a river or stream. *Instream flow* is a legal term meaning stream flow levels set in a state rule. Instream flows are usually defined as the flow levels that would protect and preserve those resources and uses dependent on adequate water. Instream flows are fixed numbers based on a scientific analysis of the flow and the resources that depend on a certain amount of flow at different times of year.

Instream flows are described in rule as specific levels of stream flow (measured in cubic feet per second, cfs) for a given stream, on a month-

by-month basis. For example: instream flows on the Dungeness River range from 575 cfs in January to 180 cfs in August. Compare these numbers with a small stream like Cassalery Creek, where instream flows vary from 5 cfs in January to 2 cfs in August.

Instream flow levels are, in essence, a water right for the stream. When adopted into a state rule, an instream flow level serves as a regulatory number that Ecology uses to determine if there may be enough water in a stream for **new** water uses.

Instream flows have already been adopted for many of Washington's rivers, and will eventually be set throughout the state.

## How Adopting Instream Flows Helps

Once adopted in rule, instream flows are established water rights intended to prevent further degradation by **future** withdrawals. Another way to say this is that instream flows are set to help keep things from getting worse.

An instream flow is effective as of the date of rule adoption, and so is “junior” to water rights already in use. Instream flows therefore protect existing, or senior, water rights, including small household wells. The instream flow levels serve as a “cap” on new uses. When instream flow levels are **not** being met, there usually can be no new withdrawals unless they are mitigated (compensated for, or offset).

If instream flows are met, new water rights may be available. Because of low flows in the Dungeness and the number of senior water rights, no new water rights (other than permit-exempt wells) have been issued since 1997.

## What Setting Instream Flows Doesn't Do

Here's what an instream flow rule *does not* do:

- ✳ Does not reduce or diminish existing or senior water rights, including small household wells.
- ✳ Does not require people to put water in streams.
- ✳ Does not guarantee water will be in the stream to meet instream flow levels.

You are not alone if it seems counter-intuitive to set flow levels with the understanding that they will not always be met. But if an instream flow is set at a low, frequently-met number, it will not protect and preserve fish and other instream resources, which is the standard required in state law. It boils down to this: Ecology cannot make water available for new residential and agricultural uses at the expense of stream health. Ecology is required by state law to protect water for all the varied demands placed on it, for people and the natural environment.



*A fish biologist performs field studies.*



## Setting instream flows v. restoring flows

Setting and adopting instream flow levels by rule is different from restoring flows. Flow restoration projects in the Dungeness basin have focused on fixing leaky irrigation systems and leasing water from farmers in late summer so that the water stays in the river for fish. This significant effort and expense – along with other conservation efforts – has led to an improvement in summer stream flows and the amount of salmon habitat.

## How Instream Flow Levels Are Determined

To determine instream flow numbers, a lot of discussion centers on what fish need to survive during their different life stages. This is because fish are considered an “indicator species” – if the fish are doing well, then generally other instream resources are too. (See page 7 for more on instream resources.)

However a fish habitat study (*habitat = living space*) cannot by itself determine the stream flow levels needed for healthy fish populations. Recommendations are based on a mix of biology, hydrology and professional judgment. Data from fish studies are integrated with an understanding of the stream flow needs of fish and other instream values, and balanced with the water needs of people to determine the final instream flow numbers.

### Stream flow studies

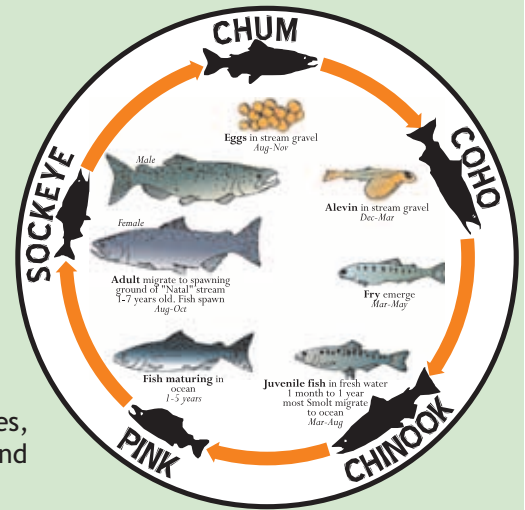
Two stream flow study methods were used to determine instream flows for the rivers and streams in the Dungeness: Instream Flow Incremental Methodology (IFIM) and the Toe-width Method. (See also page 10.)

## Fish Needs in the Dungeness Watershed

### Salmon Need Fresh Water, Too

Although we often think of salmon as ocean fish, most spend important parts of their lives in streams and estuaries such as the Dungeness River and Bay.

The salmon’s complex life cycle can be broken into five life stages, four of which occur in streams and estuaries. Only one stage—adult growth—occurs solely in the ocean.



Life cycle of Dungeness salmon.

### Fish and Flows

Various species of fish use different sections of Dungeness River and streams throughout the year. This is because stream flows vary within the river, and fish need certain ranges of flows at different life stages.

For example, adult Chinook salmon usually enter the river in the spring and summer months when snow melt is occurring. Spawning takes place in late summer when river flows are dropping. They need enough water in the channel to migrate upstream through a series of gravel bars and pools to their spawning grounds. If flows are too low, Chinook may not have sufficient flows to migrate upstream and be forced to lay their eggs in the center of the channel, where they can be scoured out by floods.

### A Threat To Fish Survival

Four species of fish that depend on the habitat of the Dungeness River have been listed as “threatened” under the federal Endangered Species Act (ESA): Chinook, steelhead, Eastern Strait of Juan de Fuca summer chum and bull trout. Federal law requires the State to protect the habitat of ESA-listed species. Other Dungeness salmon stocks are in critical condition.

Many factors have contributed to the alarming decline of these species. One is reduced stream flows due to water withdrawals.

IFIM is used nationwide and is accepted by most water resource managers as the best available tool for determining the relationship between stream flows and fish habitat. The Toe-width method uses stream bank measurements and simple calculations.

For more information on instream flows, refer to these Ecology publications (at [www.ecy.wa.gov/pubs.shtm](http://www.ecy.wa.gov/pubs.shtm)) and webpages:

✳️ *Focus on Instream Flow Study Methods Used in Washington State* (#09-11-019)

✳️ *Setting Instream Flows in Washington State* (#98-1813-WR)

✳️ *FAQ on IFIM: An Overview of the Instream Flow Incremental Methodology* (#Q-WR-95-104)

✳️ *Instream Flows in Washington* webpage: [www.ecy.wa.gov/programs/wr/instream-flows/isfhtm.html](http://www.ecy.wa.gov/programs/wr/instream-flows/isfhtm.html)

✳️ For a broader look at instream flows: *Instream Flow Council*, an international organization dedicated to instream flow programs in the U.S. and Canada: [www.instreamflowcouncil.org/](http://www.instreamflowcouncil.org/)

# Dungeness Instream Flow and Water Management Rule

## Proposed Instream Flow And Water Management Rule

Ecology led the drafting of the Dungeness watershed rule, working with local agencies and governments, Jamestown S’Klallam Tribe and interested citizens. Recommendations from the locally-developed Elwha Dungeness Watershed Plan are the foundation for the rule. Clallam County Commissioners unanimously adopted the Plan in 2005.

The Watershed Plan directed Ecology to develop an instream flow and water management rule. The rule will set a framework for future water use decisions that support a balance for the economy, community and salmon runs. It includes setting instream flows and establishing new ways to stretch existing water supplies to meet current and future needs in a water-smart way.

The rule will cover part of eastern Clallam County, from Bagley Creek to Bell Creek.

## How The Instream Flow Numbers Were Determined

A lot of investigation, science and debate went into determining the amount of water needed for fish in the Dungeness River. Under the leadership of the U.S. Fish & Wildlife Service, biologists from local, state and federal agencies and the Jamestown S’Klallam Tribe conducted field studies and computer modeling to analyze key characteristics of the river. These

studies also considered rain and snow patterns as well as historical flow levels. The results describe how different amounts of water in the Dungeness River affect the amount of habitat (living space) available for fish.

The levels proposed in the 2010 rule are the same levels identified in the 1994 Dungeness Quilcene Water Resources Management Plan and reaffirmed in the 2005 Elwha-Dungeness Watershed Plan. Biologists reviewed flow and habitat data for a number of different fish species and life stages. They chose chinook spawning and migration flows in the summer as the most important species and life stage to focus on in the Dungeness River. (Both IFIM and Toe-width methods were used to study stream flows; *see page 9.*)

## How Can I Get Water Under The Instream Flow Rule?

The proposed rule sets up several ways to access water for new growth while protecting stream flows. New uses will be required to offset (“mitigate”) potential impacts on stream flows.

If you can build within the service area of an existing water system, the rule will not directly affect your water use. Based on the recommendation in the Elwha-Dungeness Watershed Plan, new homes and businesses must hook up to existing water systems if available (*see page 12*). There may be opportunities to build within small developments and use an existing community well. The rule will also enable Ecology to make

decisions on new water rights for water supply systems.

For new homes and businesses that cannot hook up to an existing supply, other ways of getting water under the new rule include:

✳ *Mitigating via the Dungeness Water Exchange: Accessing groundwater by buying in to the water exchange being developed by Clallam County, Ecology and Washington Water Trust. The Exchange will obtain water for mitigation and sell “credits” for it to offset new uses.*

✳ *Mitigating on your own: You can submit your own mitigation plan to Ecology for approval before getting your subdivision approval or building permit. These plans will be reviewed on a case-by-case basis.*

✳ *Accessing “reserves” of water: The rule creates small reserves of water set aside for each subbasin to provide indoor water. Reserve water can be accessed through the exchange where there is not enough mitigation water.*

For more information on the Dungeness water management rule, refer to these Ecology publications (at [www.ecy.wa.gov/pubs.shtml](http://www.ecy.wa.gov/pubs.shtml)) and webpage:

✳ *“Frequently Asked Questions on Water for New Projects in the Dungeness Watershed” (#10-11-017)*

✳ *“Overview of the Dungeness Water Resources Management Program” (#09-11-004)*

✳ *Ecology Dungeness rule webpage: [www.ecy.wa.gov/programs/wr/instream-flows/dungeness.html](http://www.ecy.wa.gov/programs/wr/instream-flows/dungeness.html)*



*With smart water management now, we can help ensure water will be available into the future for people, farms and fish.*

## You Can't Manage What You Don't Know

State law now requires that water uses are measured in watersheds with fish listed under the federal Endangered Species Act (ESA), including the Dungeness. Currently water use is measured for irrigation ditches, the City of Sequim, and other water systems -- but not for the more than 5,000 individual wells estimated to be in the Dungeness Valley. The proposed rule would put this metering requirement into place for any new wells developed after the rule is adopted (existing homes with wells will not be required to measure their water use).

A water meter provides information on actual amounts of water used, which is essential for good water management. This data is part of a larger information-gathering effort which includes monitoring stream flows and groundwater levels.

Although whoever is developing the well is ultimately responsible for the cost of installing a meter, Ecology hopes to provide financial assistance during the first years of rule implementation. For general information on metering in Washington State:

[www.ecy.wa.gov/programs/wr/measuring/measuringhome.html](http://www.ecy.wa.gov/programs/wr/measuring/measuringhome.html)

# More Tools for Managing Water, Now and into the Future

## They're Not Making Any More Water

All the fresh water in the world moves in a closed-loop system. Except for the very expensive exception of turning seawater into drinking water, we can't make more fresh water—we can only take good care of what water we have. Lots of good efforts are underway in the Dungeness watershed – and more work is needed.

## Make The Best Use Of The Water We Have

Conservation, efficiency and water re-use are some of the most important tools we have to make the best use of the water we have. A few successful examples of these actions in the Dungeness include:

✳️ **Conservation/Efficiency:** Commercial irrigators' piping projects and other efforts have reduced April to September irrigation diversions from the Dungeness River from about 100



*Fishing Pond at the Water Re-use Demonstration Area in Carrie Blake Park.*



*Landscaping with drought-tolerant plants is one of the best water-saving devices around.*

cubic feet per second (cfs) to 55 to 60 cfs (on average). This has resulted in an increase in the habitat available for salmon to spawn and rear in the river, and helps keep water temperatures at the right level.

✳️ **Conservation/Managing Demand:** Clallam County PUD's tiered pricing system encourages people to use less water in the summer.

✳️ **Conservation/Landscaping:** Clallam Conservation District conducts natural landscaping workshops to help homeowners reduce lawn areas and landscape with low-water-demand plants.

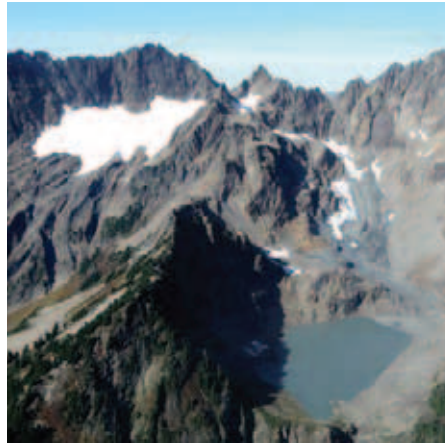
✳️ **Re-use of Treated Reclaimed Water:** The city of Sequim's award-winning facility to treat and re-use water from its sewage treatment plant has the capacity to allow the reuse of 100 percent of the city's treated water.

## Be Aware: Pay Attention To Climate Change

Research is underway locally and world-wide to assess potential effects of climate change. Should predictions turn out to be accurate, the snow pack normally feeding the Dungeness River and aquifers will be much reduced in the not-very-distant future. Given the uncertainty around climate change effects, scientists are urging more conservative decision-making in watershed management. For more information, see Ecology's website: [www.ecy.wa.gov/climatechange/index.htm](http://www.ecy.wa.gov/climatechange/index.htm)

## Band Together: Encourage Public Water Systems

Collective public water systems are a much more efficient way for new users to get water than if every household drills a separate well. The Elwha-Dungeness Watershed Plan specifically recommends that new users get water from existing water systems whenever they can.



*The Anderson Glacier in 2009, which is located just beyond the headwaters of the Dungeness River. The glacier once covered the entire lower flanks of the mountain.*

Using water from a larger system can have several advantages over drilling a single residence well – for the individual user as well as to the benefit of overall water management – including:

- ✳ Increased reliability of supply.
- ✳ Regular testing of water quality.
- ✳ Reduced numbers of holes in the ground that are pathways for pollution to enter the groundwater.
- ✳ Better ability to manage the water.



*The Dungeness River, taken from Highway 101 in June 2002.*

## For More Information

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### Ecology Publications On Water Management

These publications are available at [www.ecy.wa.gov/pubs.shtm](http://www.ecy.wa.gov/pubs.shtm):

- ✳ *Water Smart, Not Water Short: 5 Ways to Secure Water for Washington's Future* (#09-11-008)
- ✳ *Issue Up Close: Managing Our Water Successfully* (#06-11-023)
- ✳ *Working for Washington's Future: Healthy Watersheds, Healthy People* (#08-01-018)

### Websites

(these webpages all include links to other pages of interest)

- ✳ *Dungeness Instream Flow and Water Management Rule:*  
[www.ecy.wa.gov/programs/wr/instream-flows/dungeness.html](http://www.ecy.wa.gov/programs/wr/instream-flows/dungeness.html)
- ✳ *Clallam County:*  
[www.clallam.net](http://www.clallam.net)
- ✳ *Ecology's Water pages:*  
[www.ecy.wa.gov/water.html](http://www.ecy.wa.gov/water.html)
- ✳ *Ecology Home Page:*  
[www.ecy.wa.gov/](http://www.ecy.wa.gov/)

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