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Frequently Asked Questions from Streamside Landowners

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Streamside Living

I just bought a house on a stream. What do I need to know?

You are one of the luckiest people on Earth. To live along a stream in the Pacific Northwest is a privilege few people experience.

With privilege comes responsibility. You are the steward for some of our most important public resources. Clean and safe water, abundant salmon, wildlife habitat, drainage, flood control, and erosion control are all in your hands.

You are not alone. Chances are that other streamside landowners experience the same challenges as you. Because the water and wildlife in your stream are public resources, there are many opportunities available to help you care for your stream.

Can I live near a stream without affecting stream health?

Clearing trees or brush, building a house, planting a yard, and building a driveway all change the way rainwater flows to your stream, within your stream, and through the properties of your downstream neighbors. Your very presence on your property affects the wildlife species that live near your stream. Those changes create a ripple effect that affects the overall ecology of your stream.

On the positive side, there are many things that you can do to minimize and mitigate your impacts. Some are easy and some take a little more work, but it is possible to live near a stream and keep the stream healthy and safe. In fact, a few caring landowners can easily create dramatic improvements in a stream.

How can I learn to live near a stream without harming stream health?

There are many free resources available to you.

[Snohomish County's Surface Water Management Division](#) conducts half-day workshops for streamside landowners, multi-day Watershed Keepers programs, an evening lecture series, and Native Plant Steward Classes.

Surface Water Management's Watershed Stewards are available to visit your site at your request. They can provide property-specific answers to questions about streams, water quality and habitat. They can provide advice, ideas, or just listen to you. Watershed stewards are not inspectors and do not issue citations. Instead, they can offer advice, ideas, and answers to your most challenging

questions.

Local community organizations such as the [Stilly-Snohomish Fisheries Enhancement Task Force](#), the [Adopt-A-Stream Foundation](#), the [Washington Native Plant Society](#), and the [Snohomish Conservation District](#) also provide resources and services for streamside property owners.

See the [How To Get Help](#) page for details.

How can I landscape my yard without damaging my stream?

A few simple principles can make a huge difference.

- Plant lots of [trees](#).
- Plant [native trees and shrubs](#).
- Leave your [streambank natural](#).
- Don't use [fertilizers](#).
- Don't use [herbicides and pesticides](#).
- Don't clean [brush and debris](#) out of the stream.

There are examples in Snohomish County where just a few neighbors followed these principles and lowered bacterial contamination, reduced erosion, reduced silt, and increased salmon spawning in their creeks.

I've heard the word "riparian" a lot. Does that just mean streamside?

Essentially, yes.

Riparian areas are lands adjacent to streams, rivers, and lakes.

The dynamic interactions between land and water create diverse and productive habitat for plants and animals. The availability of water, rich soils and a variety of plants make the area attractive to wildlife, livestock and people. Riparian areas are critical for maintaining the ecological health of streams. Healthy streams and riparian areas provide fish and wildlife habitat, clean water, and natural flood and sediment control.

[Link to Riparian Areas factsheet.](#)

Streamside Vegetation

What should I plant along my stream?

Healthy riparian areas are a collage of forests of different ages with a variety of native shrub and tree species. No single area along a stream provides the best habitat for all species. The collage forest is a diverse landscape that can be used by large numbers of plant and animal species, and is the key to a healthy riparian system.

Many wildlife species, especially beneficial insects and some birds, depend on specific host plants for their survival, so variety is important.

Why the emphasis on planting trees? Aren't shrubs good for streams too?

Shrubs, especially native shrubs, are very good for streams. Trees, however, provide many services that shrubs and smaller plants cannot. Living trees provide shade that keeps water cool. They provide food such as beneficial insects. They also provide leaves, needles, twigs and branches for the insects, amphibians and fish that live in the streams. Dead and fallen trees provide habitat for insects, amphibians and fish. They create pools that control sediment and nutrient movement. They slow the flow of water, reducing erosion and property damage.

Why the emphasis on native plants?

Native plants are suited to our local climate and soils so they don't require watering, fertilizer, or pesticides.

Native plants are hosts for many species of [beneficial insects](#) that serve as pollinators, food for salmon, trout and birds, and predators of harmful insects. They also provide seeds and fruit for birds.

Salmon depend on native plants for shade, shelter (young salmon hide in overhanging shrubs at all times of the year), food (the mayflies, stoneflies, and caddisflies that salmon eat all need native plants), and leaf litter.

Many native riparian plants including cottonwood, dogwood, willow, and elderberry grow well from cuttings. Floodwaters frequently break branches and uproot these plants from shorelines and gravel bars. The ability of these plants to grow from cuttings allows them to sprout when they are buried in mud and gravel after floodwaters recede. In this manner, the plants propagate and stabilize scoured streambanks and loose sediment.

Snohomish County is home to some of the most beautiful native plants in the world. In fact, many common nursery plants sold around the world originated as Pacific Northwest native plants. It is possible to fill your yard with colorful flowers continuously from February through September by selecting the right native trees and shrubs!

Can I clear brush near my stream?

That depends on what you call "brush". In most cases, the shrubs and small trees found along streams are very important for bank stabilization and stream health. Salmonberry, for example, is considered "brush" by many people yet it is one of our most important streamside plants.

If you want to clear brush along your stream in order to plant a lawn or pasture, think again. Many landowners in Snohomish County have lost yards and pastures to erosion after removing streamside vegetation. If your goal is stream access, a good alternative is to build a path to your stream and leave most of your vegetation intact. The evidence is overwhelming: Removal of streamside plants increases erosion, water pollution, and flooding.

There are some exceptions. [Himalayan blackberry](#), [Japanese knotweed](#), [reed canarygrass](#), bittersweet nightshade, and [English ivy](#) are common invasive weeds that are best removed, because they out-compete native plants and disrupt streamside ecological systems. After removing them, however, you should replant as soon as possible with a good native plant. If you are not sure, contact a Surface Water Management Watershed Steward. They can help you identify problem plants and can help you find ways to safely remove them.

There are regulatory restrictions on brush clearing in designated [Native Growth Protection Areas](#), greenbelts, open-space tracts, and other properties. Some of these areas have existed for many years and their restrictions vary. The only way to tell for sure if you have one of these designations on your property is to do a title search or to check with the [County Auditor's office](#) for recorded documents.

A tree near my stream looks like it will fall soon. Should I cut it down so it won't damage the streambank?

If the tree might damage your home or other structures when it falls, it is best to have a qualified professional cut the tree. Otherwise, it is best to let it fall.

Dead and fallen trees, when they fall into streams, are known as large woody debris. It was once thought that large woody debris was bad for streams and salmon. Today, we know that woody debris provides important salmon habitat, sediment and nutrient retention, and stability to streams. The long term benefits of large woody debris along the length of a stream far outweigh the small amounts of local erosion caused when a tree first falls.

If you have a hazard tree cut, consider leaving the log on the ground near the stream. Fallen trees build good soils and provide habitat for beneficial insects, amphibians, reptiles, small mammals and birds. It also provides a surface for seedlings to establish. These nurse-logs help conifer seedlings survive and compete with shrubs and hardwoods.

Since there are regulatory restrictions on brush and tree clearing in designated [Native Growth Protection Areas](#), greenbelts, open-space tracts, and other properties, it is a good idea to contact [Snohomish County's Department of Planning and Development Services](#) before cutting a hazard tree.

Yard and Garden Care

Can I take water from the stream for my garden?

You may divert water from your stream only if you have a Certificate of Water Right from the State Department of Ecology.

A water right is a legal authorization to use a certain amount of public water for specific purposes. Washington State law requires users of public water to receive approval from the state prior to actual use of the water. Approval is granted in the form of a water right permit or certificate.

Diverting water is also regulated under the County Drainage Code since diversions of water from streams can have drainage, water quality, wildlife habitat, and flooding implications. Check with [Snohomish County's Department of Planning and Development Services](#) for Drainage Code details.

Even if you have a water right, using stream water to irrigate a yard or garden can harm your stream. Many streams in Snohomish County that once flowed all year are now dry in summer. At that time of year, fish cannot get to pools and spawning areas because low water tables can no longer replenish dry streambeds. Depressed water tables are primarily caused by ground water withdrawals (wells) and reduced groundwater recharge due to development (pavement and roofs). Diverting water from your stream for irrigation can make this problem worse.

[State Department of Ecology's water rights page](#)

Are there lawn chemicals that can harm my stream?

Most lawn chemicals can harm your stream.

Pesticides designed to kill terrestrial insects can also kill aquatic insects such as the mayflies, caddisflies and stoneflies that salmon and trout rely on for food. They can also kill important predatory insects like dragonfly and damselfly larvae, aquatic beetles, and water striders. These insects help control mosquitoes, blackflies, and other pests.

A recent U.S. Geological Survey study of the Puget Sound Area reported that more types and greater quantities of pesticides are applied in urban areas than in agricultural areas. Twenty-three pesticides were detected in urban streams during rainstorms. The concentrations of five of these pesticides exceeded limits established to protect aquatic life.

Herbicides designed to kill weeds can also kill aquatic vegetation, cutting off the food supply for the entire aquatic food chain.

The nitrogen and phosphorus in fertilizers, livestock waste, and pet waste are like vitamins. People need vitamins to live, but too much of some vitamins is toxic. Likewise, streams need phosphorus and nitrogen, but too much can cause severe problems. High nitrogen levels in water are also toxic to fish. Phosphorus is a major problem in many Snohomish County lakes.

Fertilizers dissolve in rainwater and wash into the soil. Some, but not all, of the fertilizer is absorbed and used by plants. The rest eventually migrates into streams, where it causes algae blooms. Algae blooms not only look bad, they consume dissolved oxygen in the water - oxygen that fish and other aquatic wildlife need to breathe. Cold-water fish species like salmon and trout require high oxygen levels.

Is organic fertilizer better for my stream than chemical fertilizer?

Although organic fertilizers have benefits over chemical fertilizers, they still cause problems for streams. Organic or not, fertilizers stimulate algae growth and result in depressed oxygen levels in water.

Your best bet is to stop using fertilizers in your yard and enjoy the green that nature gives us. After all, this is the "Evergreen State"!

I have caterpillars in the trees along my stream. Should I kill them?

Generally speaking, no. While tent caterpillar webs may not look attractive and the caterpillars can remove many leaves, insect grazing is not all bad. Recent research finds that grazing by insects actually stimulates tree growth. In many cases, the more individual trees are grazed by caterpillars, the more they compensate afterward.

Usually, tent caterpillars defoliate only a branch or two. However, the caterpillars can completely defoliate young trees growing in stressed or crowded conditions. Thick stands of young alders are common targets for severe defoliation. The long term effect is that the alder thicket is thinned, competition is reduced, and the surviving trees can grow more vigorously.

If you have caterpillars in your prized ornamental tree, you might consider removing the tent. Otherwise, think of the caterpillars as a gardener that prunes your trees for free and promotes healthier streamside forests.

[Rethinking Insects](#) (900K PDF download) reprint from [Conservation Biology In Practice](#) magazine

Invasive Weeds

Why should I care about weeds near my stream?

Most non-native, invasive plants do not cause problems in their native habitats in other parts of the world. When they are relocated to disturbed environments here in the Pacific Northwest, however, they can have dramatic impacts on stream health.

They take advantage of our moist, rich soils and gentle climate. They seek places where the local ecology has been disturbed, such as around homes, in yards and pastures, along roadways, and along lowland streams.

Some invasive weeds can damage streams by shading out and killing important native streamside vegetation. Other invasive weeds spread across streambeds in thick patches that can clog salmon spawning beds, block the movement of fish, and cause streams to grow shallow and wide.

[Link to Invasive Weed Factsheet](#)

Which weeds are bad for my stream?

Three invasive plants, in particular, can damage streams and important streamside vegetation: [Japanese knotweed](#), [Himalayan blackberry](#), and [reed-canarygrass](#). They all grow in tall dense stands, shading out and displacing native understory vegetation. They prevent the growth of young trees, which results in the gradual thinning of streamside forests. As the old trees die, there are no young trees to replace them. In streamside forests where short-lived species such as black cottonwood and red alder dominate, the thinning and displacement can occur quite rapidly. In addition, [English ivy](#), yellow flag iris, and bittersweet nightshade can be harmful to our northwest streams and native vegetation.

What should I do if I have invasive weeds near my stream?

First, make sure you actually have invasive weeds and not a look-alike beneficial native plant. Many of the resources in the [How to Get Help](#) section can help identify which plants you have.

Next, decide what you are going to plant after you remove the invasive weeds. The conditions that allowed invasive blackberries to grow in your yard are still there and are still attractive to other blackberry seeds waiting to sprout. If you don't plant something else, the invasive weeds will come back and you will be back where you started.

Remember: Our most troublesome weeds along streams love sunlight. If you create shade, you will have a better chance of beating the weeds.

How can I remove invasive weeds safely?

If you have a small patch, nothing is better than hand removal. Repeated cutting (to the ground) during the growing season is sufficient to suppress many weeds. [Blackberries](#) rarely survive two full years of frequent cutting. If you want faster results, cut your blackberries to the ground and dig-up the potato-like tuber that grows just below the surface.

[Reed canarygrass](#) is much harder to remove than blackberries. Repeated mowing and densely planting native shrubs and trees to create shade over the site is the only consistently effective method. After you have planted the shrubs and trees, you will need to mow the grass between them for the first two or three years until the native plants can effectively compete with the grass.

[Japanese knotweed](#) is the hardest of all to eliminate. It even out-competes blackberries! Experts are still experimenting with different methods to eliminate this aggressive plant. Repeated cutting (to the ground) for two or three years during the growing season can deplete much of the plant's energy. Some experts have had success placing several layers of heavy-duty cardboard on the ground after cutting the plants. They then place twelve inches of

mulch on top of the cardboard to act as ballast (otherwise the knotweed will lift the cardboard).

When removing any invasive weed, be careful how you handle cuttings. Keep all cuttings out of the water, otherwise you will spread your problem to your downstream neighbors. Small cuttings from some weeds, especially Japanese knotweed and English ivy, can easily sprout into a new plant. Be careful where and how you compost them.

With tenacity and patience, it is possible to remove acres of invasive weeds without herbicides. There are numerous success stories. If you decide to resort to herbicides, follow the directions and be sure the product is labeled for the specific plants you are trying to eliminate. Keep all herbicides away from water. Use the least amount necessary. More is not better - more is dangerous! Remember also, that different plants respond to herbicides differently at different times of year.

Can I get help removing invasive weeds?

Yes!

If you have a large patch of invasive weeds along your stream, and are willing to have that area converted to native plants, you may be able to find help cutting weeds and planting. Check the resources in the [How to Get Help](#) section.

Your County Watershed Steward can help you identify which streamside weeds you have and can offer suggestions of removal methods.

The Law

Why are there laws restricting my activities around my stream?

There are roughly 36,000 streamside properties in Snohomish County. The average person's activities along a stream don't seem to have much impact on their own. Collectively, however, the activities of 36,000 landowners have an enormous impact on our streams and rivers.

For example, due to bacterial contamination, [swimming is not recommended](#) in streams and rivers south of Marysville and west of Monroe. In many places, even wading is not recommended. Clearing streamside vegetation and increasing impervious surface area (roofs, lawns, and pavement) result in erosion and property damage in Snohomish County's developing areas. Less than one-tenth of the historic numbers of Chinook salmon return to spawn in Snohomish County rivers.

Regulations are designed to recognize and minimize stream impacts from human activities. These problems are cumulative and costly to repair. By preventing damage in the first place, we can reduce our impacts and leave a legacy, not a burden, to future generations.

Which laws do I need to know about?

If you are working in or around your stream, the laws you are most likely to encounter are the:

Federal Clean Water Act, which is intended to prevent and eliminate water pollution. [EPA Clean Water Act website](#)

Federal Endangered Species Act, which is intended to conserve species that are at risk of extinction. [EPA Endangered Species Act website](#)

State Hydraulic Code, which is intended to prevent adverse impacts to fish and shellfish from construction projects in fresh and marine waters. [State Hydraulic Project Approval website](#)

State Shoreline Management Act, which is intended to prevent the inherent harm in uncoordinated and piecemeal development of fresh and marine shorelines. [Introduction to Washington's Shoreline Management Act \(pdf download\)](#), [Snohomish County PDS Shorelines Site](#)

County or City Critical Areas Regulations, which are intended to protect the public from natural hazards such as geologic hazards and flooding, and to protect important elements of the natural environment such as wetlands, critical groundwater recharge areas, and fish and wildlife habitat. [Snohomish County PDS Critical Areas website](#), [City websites](#)

The specific laws that apply to you will vary depending on the activities you are planning. Exactly how the laws apply to you can also vary. It is helpful to familiarize yourself with the regulations as you plan your project. The resources in the [How to Get Help](#) section can help you get started.

Why are the laws for streams so complex?

In some cases, different laws are intended to address different issues. For example, the Clean Water Act addresses water quality, the Endangered Species Act addresses plants and wildlife, and the Shoreline Management Act addresses the impacts of development.

In some cases, federal and state laws are administered at the local level to accommodate local needs. For example, the Shoreline Management Act is a state law, but the County issues shoreline permits. The Clean Water Act is a federal law that requires the County to reduce pollution in stormwater runoff.

In most cases, the laws are more complex because a "one size fits all" approach may not be fair and may not achieve the desired effect. For example, a strict 200-foot protective buffer may not be enough to protect water quality on some streams, but may be more than adequate for others. That same buffer may have the effect of lowering value of one property while increasing the value of another. Laws written to cover a greater diversity of conditions may seem more complex, but when properly done, can ensure greater equity in resource protection and social values.

In one sense, that complexity is an indicator of the high value our

society places on its aquatic resources and the multiple functions that streams serve.

What permits do I need to work in my stream?

That depends on three things: 1) what kind of work you are planning, 2) on what stream you are working, and 3) the specific regulations of your local jurisdiction.

Activities that generally require permits include:

- Any work that alters the natural flow of a stream
- Altering a streambed
- Earth moving, excavation, grading, filling
- Dredging
- Any building construction
- Fish rearing
- Removing a beaver dam
- Diverting water from a stream
- In some cases, brush control and tree removal

Construction of any structure, including bridges and buildings, usually requires a building permit.

Grading or earth moving near your stream requires a grading permit.

Fish rearing requires a permit from the Washington State Department of Fish and Wildlife.

Any work within your stream channel requires a permit called a Hydraulic Project Approval, also known as an HPA, from the Washington State Department of Fish and Wildlife. This free permit is required even if your stream goes dry for part of the year. If you expect to get wet while building your project, you need this permit.

See the [How to Get Help](#) section for links to the agencies that issue permits.

[Washington Department of Fish and Wildlife HPA webpage](#)

Why do I need a Hydraulic Project Approval? If it's a free permit, then it can't mean much.

Actually, this permit is quite important. The State offers this permit for free to make it easier for people to apply. If you work in your stream without one, you can be subject to penalties.

The State Department of Fish and Wildlife is responsible for managing fish and shellfish habitat statewide. The only way the agency can do that effectively is to know what people are doing in streams and rivers.

The Department receives about 8,200 applications each year and less than one percent are denied. The intent is not to discourage your project, but to ensure that your project is not damaging aquatic resources.

When you apply, the Department will help you to design a project that is, at minimum, not destructive to your stream. Ideally, your

project will be beneficial to stream health.

What will the Hydraulic Project Approval require?

At minimum, the permit will require that any work in the water occur during summer, when the flows are low and salmon are not spawning. That usually means July, August, and September. Most permits mention specific dates such as, "Instream work must be completed by October 15." These dates vary depending on your location, stream, when salmon are spawning, and other critical times for wildlife.

You will be required to control erosion on your site and to re-establish native streamside vegetation as soon as possible. You can also expect additional project-specific requirements that are intended to reduce the impact of your project on your stream.

How far do I have to stay from my stream?

There are two answers. The first is the distance the law requires. The second is the distance that is best for the stream from an ecological perspective. These answers are not always the same. The distance the law requires varies depending on the width of your stream, what fish species use your stream, and which city or county you reside within. Depending on these conditions, the required stream buffer width may range from 25 feet to 150 feet on each side of your stream. If you have wetlands or steep slopes adjacent to your stream, the required buffer may be larger in order to include those features.

In some cases, impervious surfaces (materials such as roofing and pavement that prevent rainwater from soaking into the ground) may be restricted within 300 feet of your stream.

More often than not, it is safe to assume that if your stream is over five feet wide (two feet wide in some cities), your legally required buffer is at least 100 feet on each side of your stream.

The distance that is best for the health your stream and its wildlife is somewhat larger. Research indicates that, in western Washington, a 300 foot forested buffer on each side of a stream maintains most streamside forest functions such as shade, rainwater filtration, woody debris production, litterfall (food) production, windfall protection, soil moisture and temperature regulation, and consistent humidity. That distance can vary, depending on soils, slopes, vegetation, and other factors.

That's a fuzzy answer. How do I know for sure?

If you are planning any construction, Snohomish County Planning and Development Services will provide an on-site evaluation to help you determine exactly what your requirements are. If your property is located within a city limits, your city building department can provide similar service. This is done as a normal part of the permit application process. If you are not planning for construction, but are just curious, your local [Watershed Steward](#)

can direct you to the proper agency.

What's a Native Growth Protection Area?

A Native Growth Protection Area, also known as an NGPA, is an area designated by legal statute to protect fish and wildlife habitat conservation areas, geologically unstable areas, wetlands, and their buffers. These portions of the landscape are either particularly sensitive to development or are potentially hazardous to public health and safety. Streams, wetlands, erosion and landslide hazard areas, seismic and volcanic hazard areas can be classified as NGPAs.

How do I know if I have an NGPA?

Not all streamside properties have Native Growth Protection Areas.

You can find out if you have an NGPA by calling Snohomish County's [Planning and Development Services Office](#). You can also check with the [County Auditor's office](#) or do a title search. You will need your street address or parcel number when you call.

Who owns an NGPA?

Most Native Growth Protection Areas are privately owned - either as part of an individual property or held in common by property owners in a subdivision.

In terms of ownership, NGPAs are similar to the building setbacks that have been in place for many years. While a building setback defines where buildings may be constructed in relation to property lines or waterbodies, an NGPA defines where buildings may be constructed on a property in relation to streams, wetlands, steep slopes and other important public infrastructure. In both cases, the landowner has ownership of the property and is responsible for maintenance and upkeep.

Many new developments place NGPAs in separate parcels that are owned by a homeowner association or collectively by neighborhood landowners. Those landowners are collectively responsible for the maintenance and upkeep of the property.

I have a Native Growth Protection Area on my property. Does that mean I can't do anything on that part of my property?

Native Growth Protection Areas are intended to be left permanently undisturbed in a substantially natural state. No clearing, grading, filling, building construction, or road construction is allowed.

There are certain exceptions for fences, utilities, and removal of hazard trees, which may be allowed with County review. If you request one of these exceptions or if you apply for a building permit, the County will attempt to balance your property rights

with public resource issues.

Other than that, you are free to enjoy your property. Chances are that your stream was one of the assets that prompted you to purchase your property. People nationwide pay a premium for properties on green belts. Walk a path (not a road) to your stream. Enjoy the water. Enjoy the wildlife. Teach your children about the salmon spawning in fall. Watch young salmon and trout in your stream in spring. Your NGPA is there to protect your stream for you and for future generations.

Doesn't all this stream stuff infringe on my private property rights?

Your property is private. The water flowing through your property and the fish and wildlife in it are all public resources. Before the water flowed onto your property, it was on your neighbor's land. After it leaves your property, it will enter somebody else's property. In the course of a single day, the water in your stream may cross hundreds of properties. Therefore, the health of the stream system is important to a great many people, all with varying concerns and interests. If activities on your property impact stream health, then those activities become a public matter since they affect every downstream property owner.

Erosion and Sediment Problems

How can I stop streambank erosion?

Streambank erosion is influenced by many factors including water velocity, flood frequency and flow, streamside vegetation, soils, sinuosity (how your stream bends and weaves through the landscape), gradient (how steep your stream is), and your specific location on the stream system.

Bank erosion is a natural process that cannot be stopped. That is not necessarily a bad thing. Streams continually erode in some areas and deposit eroded material in others. Natural amounts of erosion are a necessary part of any healthy, productive stream, providing a consistent supply of salmon and trout spawning gravel.

Bank erosion can often be predicted, and with good planning, we can minimize problems associated with bank erosion. By manipulating the factors that cause bank erosion we can reduce it in places where it is particularly troublesome.

Removal of streamside vegetation almost always increases erosion. The single best thing people can do to reduce and prevent excessive erosion is to leave existing streamside forests intact and plant trees where no streamside forest currently stands. Roots stabilize soils and fallen trees reduce water velocity and erosion.

Occasionally, a fallen tree along a stream will cause some localized erosion. The long term benefits of a fallen tree in a stream or on a streambank far outweigh the local erosion caused when it first falls.

How do I repair streambank erosion?

Streambank erosion and how to address it varies from site to site. Since every site is unique and treatments in the wrong place may accelerate erosion instead of repairing it, your best option is to contact an expert for a site visit. Contact one of the resources in the [How To Get Help](#) page for technical assistance. They can offer expert advice and, in some circumstances, may even contribute labor and materials to fix the problem.

Can I dump rock along my streambank to stop erosion?

It was once common to dump rock along streambanks anywhere there was erosion. Research now shows that this practice has negative impacts on streams, salmon, flooding, and downstream erosion. Many rock-lined banks have caused serious erosion problems for downstream property owners. In many instances, the erosion caused by lining streambanks with rock is worse than the erosion the rock was intended to fix.

Today, streambank rock may be used in specific locations, where erosion problems are unusually severe or where unique conditions prohibit alternative solutions. In most cases, however, a technique called bioengineering is cheaper and more effective than rock.

Bioengineering uses carefully designed placements of trees, shrubs, and logs to stabilize soils. Bioengineering has the added benefit that it enhances fish and wildlife habitat. It is also self-sustaining, since trees and shrubs grow and reproduce over time, whereas rock needs to be replaced periodically.

Like any other stream project, careful engineering is essential, and permits are required. Contact one of the resources in the [How To Get Help](#) page for assistance.

How can I deal with upstream development that caused sediment and erosion problems on my property?

Snohomish County's Department of Planning and Development Services implements building, land use and other codes that are applicable to residential and commercial building construction. Specific services include building and site inspections, drainage and grading, and permit and site review.

If you suspect problems on your property are the result of upstream activity, contact the [Department of Planning and Development Services](#) at 425-388-3311. You should try to contact the department *when the problem is occurring*. Keep a careful record of when you see sediment in the stream and take photographs so that department staff can properly diagnose the problem.

If you see dirty, polluted, or discolored water, or if you are unsure of the source of the problem, you may also call the [Water Quality Investigation Line](#) at Snohomish County Surface Water Management, 425-388-6481, so an investigator can determine the source of the

problem.

My stream has changed a lot in the past few years. Is that normal?

Yes. You should expect change since streams are dynamic systems. The changes and movement we see in streams often create the best salmon habitat. Streamside vegetation grows, reproduces, and dies. Trees fall into the water, sediment moves around, pools are created, spawning beds shift, and new channels form. Our floodplains are criss-crossed by historic stream channels, long abandoned.

Experience is a good teacher, and we now know that attempts to alter or stop these natural processes frequently create problems for ourselves and our neighbors. Good property management strives to predict and accommodate movement and change in streams. It allows these natural processes to continue and works *with* them rather than against them.

If you see changes that you don't understand or don't seem right, contact your County Watershed Steward at 425-388-3464. Your Watershed Steward can answer questions and help you resolve problems.

How can I prevent my stream from jumping out of its channel? What should I do if sediment is accumulating in my stream?

These two questions are closely related.

Accumulations of sediment, such as sand and gravel, that can cause a stream to leave its channel are sometimes caused by [upstream activities](#). Certain portions of streams, however, naturally tend to accumulate sediment regardless of upstream activity by people. This is most commonly seen at the base of hills or slopes.

Fast-moving water carries higher volumes of sediment, and slow-moving water tends to deposit sediment. Where streams flow quickly down a slope, they move sediment. When those streams reach the bottom of a slope and the water moves more slowly, the sediment drops out of the water and accumulates in the stream bed.

Sometimes, accumulating sediment can raise a stream bed above the surrounding land. Since water flows downhill, the stream will leave its old channel and flow to lower ground. This is a natural occurrence in specific parts of streams and is one way that healthy habitat is developed. It often goes unnoticed and doesn't cause problems.

Unfortunately, if this occurs in your backyard or next to your house, it can be cause for concern. In the past, the problem was solved by dredging sediment from the creek bed or building a levee to contain the creek. Now, we know that these solutions can cause more problems than they solve (see the [Sediment and Dredging question](#)). In addition, dredging is usually a short term solution, since the stream bed will likely fill with sediment again. Getting to the root of the problem is important. It may involve doing a site survey and looking at the entire stream system to

determine the source of the sediment. Often, there are solutions to protect yards and buildings and protect water quality and stream health as well.

Since sediment problems are usually site-specific, your best bet is to contact one of the resources in the [How To Get Help](#) page for advice. They can look at your situation on the ground and help you develop a site-specific solution.

Water Quality

Is the water safe?

That depends on where you live and how you and your upstream neighbors have treated your stream.

Many of our streams are in good shape. Unfortunately, many of Snohomish County's waterways are threatened with pollution. For example, 37 of our rivers, streams, and lakes are considered "impaired", based on national water quality standards. That means that they no longer support traditional uses by people and wildlife. Snohomish County's main water quality problems are bacterial contamination, low oxygen levels and high temperatures.

While high temperatures and low oxygen levels are not a direct hazard to human health, they are very hazardous to your stream and the wildlife that depend on it, especially salmon.

Bacterial contamination, on the other hand, is a direct threat to human health. In fact, many of our water bodies south of Marysville and west of Monroe are not considered safe for swimming or wading due to bacterial contamination. The principle sources of this contamination are pet waste, improperly managed livestock waste, and failing septic systems.

Removal of trees and shrubs along streams also contributes to these problems.

More detailed information is available in the [Snohomish County State of the Waters Report 2000](#).

[Photos and descriptions of common water quality problems](#)

Is foam on the water bad?

[Foam](#) in streams can be caused by natural sources, failed septic systems, chemical spills, or soaps.

Natural foam is not a problem. Natural foam is caused by decaying leaves and other organic materials. These materials release organic substances that produce foam when mixed with air. Natural foam can accumulate in areas of slow moving water, behind rocks or in pools. Natural foam is usually light tan or brown in color, but can also be white. It has an odor that can be described as "fishy", "earthy" or like "freshly cut grass". If it doesn't feel slippery or greasy between your fingers, it is probably natural foam.

Soap or detergent foam is usually a bright white (clean) color with a soapy smell. It can pile up to several inches thick on the water surface and spread over a large area. Soap or chemicals that run into a storm drain will enter the nearest body of water. Most soap contains phosphate and other chemicals that can cause [algae](#) to bloom. The bacteria that decompose algae consume the oxygen in the water that fish need. Soap also harms fish by coating the gills, therefore limiting the ability of fish to breathe.

Soap foam and any foam that has a chemical or sewage smell should be reported to the [Water Quality Investigation Line](#) at Snohomish County Surface Water Management, 425-388-6481, so an investigator can determine the source of the problem.

What's the red gunk in my stream?

Most likely, you are seeing the deposits of harmless [iron or sulfur bacteria](#) known as *Leptothrix*, *Sphaerotilus*, and *Gallionella*. These are naturally occurring organisms that oxidize iron or sulfur as part of their normal metabolism, often leaving deposits in the form of strange-looking slimes. Essentially, they "exhale" iron or sulfur just like people exhale carbon dioxide. You may notice a pungent odor of "rotten eggs" associated with the onset of sulfur bacteria. Iron bacteria often create red mats of oxidized iron. These bacteria are not human health hazards or water quality concerns. Extensive deposits of oxidized iron caused by these bacteria were once economically important in the eastern United States, where they were mined for their iron. The name Pilchuck, which means "red water" in the Chinook language, is given to a local mountain, creek, and river where these red deposits are common.

Should I do anything about oily stuff on the water?

Sometimes, an oily sheen on calm water is caused by harmless bacteria called *Leptothrix* and *Siderocapsa*. If you touch the oily substance with a stick and it breaks apart like a puzzle, you most likely have these bacteria, which are closely related to the bacteria mentioned above that cause red slime in some water. Don't worry - it's harmless and temporary! The film on the water's surface is a thin layer of oxidized manganese.

If it doesn't break apart easily, you may have a petroleum spill. Contact the [Water Quality Investigation Line](#) at Snohomish County Surface Water Management, 425-388-6481, so an investigator can determine the source of the problem.

The water in my creek is brown. Does that mean it's really polluted?

Not necessarily. Many streams are fed by bogs and wetlands where calm water can be stained brown by leaves and decaying vegetation (just like water in a mug is stained brown by tea leaves

in a tea-bag).

If the water is stained brown like tea, but is still clear, then your stream is not necessarily polluted.

If your water is cloudy, silty, or opaque, then something is wrong, and should be reported to the [Water Quality Investigation Line](#) at Snohomish County Surface Water Management, 425-388-6481, so an investigator can determine the source of the problem.

My neighbor is doing things that are harming water quality in the stream. I'm uncomfortable turning my neighbor in, but what else can I do?

Many people are unaware that their activities can harm streams. County staff usually approach water quality problems by helping people to understand the problem and by providing advice and assistance to help them comply with water quality regulations.

The streams and lakes in our county are important public resources. Your stream is part of the infrastructure we leave for future generations. We all have a responsibility to ensure that it continues to function properly.

When you contact the Water Quality Investigation Line, a water quality investigator will visit the site and try to determine the source of the pollution problem.

The investigator will 1) try to identify the source of the problem, 2) work with the appropriate landowner or landowners to fix the problem and ensure it does not happen again, 3) protect the anonymity of the person who identified the problem.

Most people who cause water quality problems don't even realize they are creating a problem. Most landowners are happy to fix the problem when they learn of it from an investigator. By contacting an investigator, you can protect water quality and keep peace in the neighborhood.

The goal of the investigator is to fix the problem, educate landowners, and ensure clean water. Cases that require additional enforcement action are rare, however, if a landowner refuses to cooperate with investigators enforcement action may be necessary to solve the problem.

Investigators do not visit private property without the permission of the landowner. If the investigator visits your neighbor in the course of their investigation, they will not disclose who reported a problem.

Wildlife

Is there anything living in my stream?

Yes! Even if you don't see salmon, there are many [critters that live in and around your stream](#).

Juvenile salmon (many less than two inches long) live in many streams, even places that adult salmon do not use for spawning.

Juvenile coho and chinook salmon stay in freshwater for a year or more before going to sea. That means that you could have baby salmon hiding in the gravel and under the logs in your stream right now.

Cutthroat trout are common in many low-elevation streams in our area. They are experts at hiding - even experts have trouble finding these fish.

Sculpins, dace, brook lamprey, and other fish are also common, but are rarely noticed because of their small size and expert hiding skills. Other relatively common critters in Snohomish County streams include:

- Phytoplankton and zooplankton (which form the bottom of the aquatic food chain)
- Caddisfly, mayfly, and stonefly larvae (salmon food)
- Dragonfly and damselfly larvae (which eat mosquitoes and biting flies)
- Aquatic beetles (which also eat mosquitoes and biting flies)
- Crayfish, scuds (like freshwater shrimp), freshwater mussels, salamanders, frogs, and newts.

Why don't salmon spawn in my stream?

It's entirely possible that salmon spawn in your stream without you realizing it. Not all spawning areas have hundreds of salmon. Sometimes only a few salmon will use certain parts of some streams. Many salmon are more active at night than during the day, so you might not even see their activity. Some streams have several species of salmon that spawn in them from August to January, while others only have salmon spawning for a week or two.

Every stream has areas that are not used for spawning. In fact, salmon look for very specific features when deciding where to spawn, like clean gravel, upwelling water, appropriate flow, and the best temperature. Not every place in a stream has these features. Different species of salmon and trout look for slightly different features.

Some of the worst spawning locations, however, can be the best rearing locations. Rearing habitat is like a nursery for young fish after they emerge from the gravel (usually in spring). You may not have one spawning salmon in the fall and still have hundreds of juvenile salmon in spring!

How can I improve salmon habitat in my stream?

How can I attract more wildlife to my stream?

How can I attract birds?

I already have pristine streamside habitat. Is there anything I should do?

1. [Plant lots of trees.](#)
2. [Wash your vehicle at a car wash.](#)
3. [Avoid using pesticides and herbicides.](#)
4. [Avoid using lawn fertilizers.](#)

5. [Pick up your pet waste \(put it in a plastic bag in the trash\).](#)
6. [Leave your streambanks natural.](#)
7. [Learn to love beavers \(they're good for salmon\).](#)
8. [Keep pets and livestock out of streams.](#)
9. [Plant native plants.](#)
10. [Walk along your stream with a Watershed Steward.](#)

Living With Beavers

What should I do about beavers?

Don't knock down that beaver dam! Beaver ponds provide important rearing habitat for young fish, especially coho salmon. Beaver ponds also store water during heavy rains, reducing downstream erosion. They release water slowly during the dry season, ensuring year-round streamflow.

If you are troubled by beavers, the best long-term solution is to learn to co-exist with beavers. Trapping is a short-term, and expensive, solution because new beavers almost always re-populate vacant habitat, sometimes within just a few months. However, there are several techniques available to manage the negative aspects of beavers, while still taking advantage of their many benefits.

If the beavers are not causing problems: Wait for a warm spring day. Around dusk, take a lawn chair, a pair of binoculars, your favorite drink and your best friend to your creek or beaver pond. Sit back, relax, and enjoy the show!

If the beavers are causing flooding problems:

There are ways to control water levels in beaver ponds and still keep the beavers. For example, a [beaver deceiver](#) is a cage or rack around the end of a culvert or pipe to discourage the beavers from plugging the culvert. A [trickle tube or pond leveler](#) can be installed to regulate the water level after a dam is constructed.

These devices are tricky to install and are best done by someone with experience. They all require a permit from the State Department of Fish and Wildlife. Contact one of the resources in the [How To Get Help](#) page for advice.

[Snohomish County Beaver Management Web Page.](#)

If the beavers are cutting down your trees: Beavers have to eat! Their diet mostly consists of aquatic plants. Since some aquatic plants are unavailable for parts of the year, they supplement with the tender bark of young trees and shrubs. Willow is by far their favorite, but cottonwood, cedar, cherry, and apple are popular as well. Beavers also cut trees to supply their dam-building habits.

There are several options to protect your favorite ornamental trees. Not all options are fool-proof (beavers are clever!) but they can help you co-exist with these beneficial, yet challenging, critters.

Option 1: Make sure they have enough to eat. Planting lots of willows will provide a food source and can offer an alternative to

your prized ornamental apple tree. Expect the willows to be eaten. You may need to protect some of the willows for a few years to mature. Once they are well-rooted, they will re-sprout if the beavers cut them.

Option 2: Loosely wrap your prized trees with wire fencing. Wrap loosely so that the tree has room to grow. You'll need to check the wire every year to make sure the fencing is still loose. Beavers can chew through chicken wire. Two wraps with horse fence works well. Horse fence is the 12-14 gauge fence with a 2x4" grid. The fence needs to be at least four feet tall. On rare occasions, beavers have climbed the fence and cut the tree off four feet above the ground!

Option 3: Paint the tree with a repellent. We've tested Plantskydd and Deer Away Big Game Repellent on our sites with some success. They need to be re-applied periodically. The first one lasts about 6 months.

Do beaver dams prevent salmon from moving upstream?

Beavers and salmon have naturally co-existed in the Pacific Northwest for thousands of years. Beaver dams that prevent salmon from migrating are rare. In most cases, salmon will wait at the bottom of a dam until a heavy rain. When the flow of water over the top of the dam is higher, the fish will jump over the dam. Even juvenile trout and salmon just a few inches long can go over most beaver dams. Water flows over the top of the dam and across the sticks in the face of the dam, creating a fish ladder effect. Four inch long salmon have been observed scaling dams as high as six feet in this manner!

Should I knock down the beaver dam so the salmon can move upstream?

No. Removing beaver dams actually eliminates more salmon habitat than it helps. Beaver dams that prevent salmon from migrating are extremely rare. Beaver ponds are like nurseries to young salmon, providing them with food, shelter, calm water, and protection from floods. Coho salmon and cutthroat trout, in particular, rely on beaver habitat.

You should also consider the impact of removing a beaver dam to people. Some people who remove beaver dams drain the pond and are left with an unsightly mud-hole for years afterward. Draining a beaver pond has downstream impacts as well. The high flows of water created as the pond drains can cause severe erosion and deposit significant amounts of sediment on neighboring properties. You could be held liable for damage to downstream properties resulting from your removal of a beaver dam.

Stream Cleaning

Can I pull trash out of my stream?

Trash outside of your stream channel may be safely removed at any time.

Small amounts of trash in the water, such as beverage containers and plastic bags, may be safely removed from your stream. Do it in late summer when the water is low and there are no salmon eggs in the gravel. Small fish may hide in containers and debris, so be careful as you work.

Removing large piles of trash and large pieces like appliances, furniture, or automobiles can disturb the stream bed and may require a hydraulic permit from the State Department of Fish and Wildlife. Contact one of the resources in the [How To Get Help](#) page for advice. In many cases, they can even provide free labor and discounted disposal rates.

If you suspect toxic material in your stream, contact the [Water Quality Investigation Line](#) at Snohomish County Surface Water Management, 425-388-6481, so an investigator can determine the nature of the problem.

Should I clean-up my stream and remove brush and logs from the water?

While removing trash from your stream is generally good to do, removing natural debris such as brush, leaves, logs, and twigs is not advised. Such debris provides an important food source for many of the wildlife that live in your stream. It also provides shelter for young salmon and trout so they can hide from predators.

Natural debris also slows the flow of the water, reducing downstream erosion. While logs, twigs and debris have a negligible effect in raising the level of floodwaters, their value in reducing water velocity and erosion is immeasurable. The long term benefits of logs in streams far outweigh the small amounts of local erosion caused when a tree first falls.

I have lots of sediment. Should I dredge my stream?

Dredging of streams was once a relatively common thing to do, but it is so destructive to streams, water quality, fish, and wildlife, that it is not generally advisable and is rarely done today.

Dredging can also cause problems for downstream neighbors including erosion, silt, and water pollution. Because of its impacts, dredging requires permits from your county or city, the State Department of Fish and Wildlife, and potentially, the Army Corps of Engineers.

In most cases, dredging is only a temporary solution to a long term problem. Unless the conditions that caused your stream to accumulate excessive sediment have changed, your stream will likely fill with sediment again.

There are places in every stream system that are perpetual sediment sources. There are also places where sediment is perpetually deposited (such as the bottoms of hills or below road

culverts). If your property is at one of these locations, there is little you can do to stop sediment accumulation, but there are many ways to plan properties so that accumulation will not cause problems.

Since sediment problems are often very site-specific, your best bet is to contact one of the resources in the [How To Get Help](#) page for advice. They can look at your situation in person and help you develop a site-specific solution. In those rare instances where dredging is the only practical alternative, they can help you minimize your impact and work toward a long-term solution.

Building Things

Can I build a footbridge over my stream?

In most cases, on small streams, yes. Certain permits are required, depending on the size of the bridge you plan to construct.

At minimum, you should plan to get a building permit from the County [Department of Planning and Development Services](#).

You will also need a free permit called a Hydraulic Project Approval, also known as an HPA, from the Washington State Department of Fish and Wildlife.

See the [Working in Streams](#) section for more information and for links to the agencies that issue permits.

[Washington Department of Fish and Wildlife HPA webpage](#)

Can I build a trail to my stream?

You may build a footpath to your stream. Try to be gentle in your clearing and path creation. Be sure to lay mulch or bark over any bare soil.

Go to the water! Enjoy your stream!

If your footpath involves any grading or starts to resemble a road, however, you will need permits. If you plan to build a trail in a designated Native Growth Protection Area, it is also a good idea to call the County [Department of Planning and Development Services](#).

Pets and Stock

How do I keep cows and horses without harming the stream?

- 1) Fence the stream to prevent animals from trampling the stream, streambanks and streamside vegetation.
- 2) Plant lots of native trees and shrubs along your streambanks to

help keep contaminants from livestock waste from entering the creek.

3) If you are watering your stock from the stream, consider installing a trough with a nose pump instead.

4) If your stock need to cross the creek, build a bridge or install a concrete wash at your crossing.

5) Contact one of the resources in the [How To Get Help](#) page for assistance. They can look at your situation on the ground and help you develop a site-specific solution. They can often provide funding assistance for fencing, plants, pumps, bridges and other improvements. The Snohomish Conservation District specializes in assisting agricultural property owners.

Can I let my dog run in the stream?

Your dog may run in the stream, but consider the effects first: Pets and livestock are hard on streams. They damage streamside vegetation, cause erosion, and trample salmon eggs. They disrupt spawning salmon, disturb wildlife, and harass juvenile fish. Like fertilizer, [pet and livestock waste](#) can cause severe nitrogen, phosphorus, and bacterial problems.

Why is manure bad for streams?

Like fertilizers, the nitrogen in livestock waste and pet waste is like vitamins. People need vitamins to live, but too much of some vitamins is toxic. Streams need nitrogen, but too much can cause severe problems.

Nutrients from livestock and pet waste dissolve in rainwater and wash into the soil. Some, but not all, is absorbed and used by plants. The rest can migrate into streams, where it causes algae blooms. Algae blooms not only look bad, they consume dissolved oxygen in the water - oxygen that fish and other aquatic wildlife need to breathe. Cold-water fish species like salmon and trout require high oxygen levels.

High nitrogen levels in water are toxic to fish and are toxic to people in drinking water.

Bacterial contamination from manure is a direct threat to human health. In fact, many of our water bodies south of Marysville and west of Monroe are not considered safe for swimming or wading due to bacterial contamination. The principle sources of this contamination are pet waste, improperly managed livestock waste, and failing septic systems.

More detailed information is available in the [Snohomish County State of the Waters Report 2000](#).

Why is pet waste bad for streams? Doesn't it just break down and go into the soil?

[Pet waste](#) is a leading cause of bacterial contamination of streams in Snohomish County's non-agricultural areas. Fecal coliform, Cryptosporidium, Campylobacteriosis, Toxocariasis, Toxoplasmosis,

and Giardia, are all microorganisms that can be transmitted from pet waste to humans, with undesirable results. Children who play outside and adults who garden are at greatest risk of infection. Pet waste also causes the same nitrogen related problems that [fertilizer](#) and livestock waste cause.

The solution is safe and easy. 1) Scoop it up, 2) put it in a plastic bag, 3) place it in the trash, and 4) wash your hands.

Nobody picks-up after raccoons. Why the worry about my dog's waste?

True, nobody follows raccoons (or bears or beavers) with pooper-scoopers. Their waste contributes to bacterial and nutrient levels in streams just like any other animal waste.

It is also important to know that natural stream systems with abundant streamside vegetation can absorb low levels of contamination. Beneficial soil organisms consume natural "background" levels of problem organisms.

This filtering effect is reduced when streamside forests have been replaced by lawns and when stormwater bypasses streamside vegetation and enters creeks through pipes and ditches. In addition, high levels of contamination can exceed the ability of beneficial organisms to consume contaminants before they reach streams.

Approximately 36 percent of all households have dogs. Snohomish County's dog population is estimated at 132,500 dogs, concentrated in urban and suburban areas. The extreme density of the pet population combined with reduced streamside vegetation means trouble for streams.

[Frequently Asked Questions](#) [Links and Resources](#) [How to Get Help](#)

[Working in Streams](#) [Home Wildlife Habitat](#) [Streamside Living Home](#)

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