
SUSTAINABLE LANDS STRATEGY FOR SNOHOMISH COUNTY

REACH-SCALE PACKAGE FOR THE LOWER SKYKOMISH RIVER

FINAL

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PREPARED BY
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TABLE OF CONTENTS

Part 1. Background	1
A Solution: The Sustainable Lands Strategy	1
The Problems.....	2
Competing Demand for Use of the Land	2
Complex Requirements for Implementing Projects	2
Lack of Clarity and Direction for Resolving Conflicts	2
The Opportunities	3
Sustainable Lands Strategy Accomplishments, So Far.....	3
Executive Committee	3
The Framework.....	4
Reach-Scale Approach	4
Metrics	5
Objectives for Phase 3.....	5
Part 2. Approach to Reach-Scale Package Implementation.....	7
Overall Approach.....	7
Keys to Success	9
A Range of Tools and Strategies	9
A Database of Needed Information.....	9
Technical, Design and Implementation Assistance	10
Measuring Success	11
Metrics for Farms.....	12
Metrics for Fish.....	13
Metrics for Farms and Fish.....	14

PART 1. BACKGROUND

The economy and culture of the Puget Sound region have long relied on healthy fisheries and successful agriculture, along with the high-quality land and river systems they require. Throughout the region, many groups and individuals have sought to protect fish habitat in local waters; and many others have worked to safeguard the farmlands that often affect those waters. However, proponents for the two resources have often failed to work together toward mutual benefits, and conflicts have arisen between the goal of preserving farming and the goal of recovering failing fisheries.

Important developments in recent years have led to intensified conflicts. Salmon and other fish that use Puget Sound area water bodies have been listed under the federal Endangered Species Act, and now the entire region must act to recover these fish species. Native American tribes, with significant rights to fish and wildlife upheld by federal court decisions, have taken an active role in efforts to sustain those resources. At the same time, the local agricultural community has felt its role in the regional economy and culture threatened by broad economic, social and regulatory changes.

The often emotional concerns of the parties interested in these resources can sometimes block constructive approaches toward cooperation. “Fish or farms” has become a shorthand reference to a web of divergent interests affected by wide-ranging aspects of the culture, the economy and the environment. With opposing views often vying for limited funding and public support, the results are rarely the mutual benefit that this region and its economy need to maintain a viable future. Rather, competition between groups can cause polarization and prevent overall improvements in quality of life for all who call the Puget Sound region home.

A SOLUTION: THE SUSTAINABLE LANDS STRATEGY

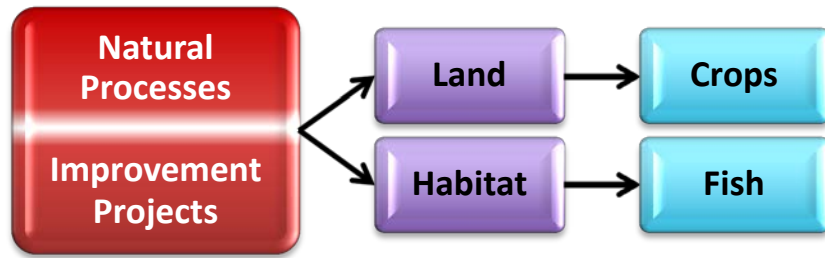
In Snohomish County, an effort by municipal, state, federal and tribal governments, as well as conservation and agricultural interests, began in 2010 to look for ways to cooperate for the benefit of both fish and farms. The goal is to create a “Sustainable Lands Strategy” — a broad set of common understandings about the importance of fish and farms and the need for collaboration to simultaneously protect and enhance both resources. The strategy also needs to recognize and uphold the treaty rights and cultural traditions of affected Native American tribes. The mission for the Sustainable Lands Strategy is as follows:

To generate net gains in agricultural, tribal cultural, and ecological productivity and health in Snohomish County by developing a broadly supported framework of tools, strategies, and policies, including Comprehensive Plan amendments, that will drive harmonized sustainable land-use and resource management decisions.

The term “net gains” used in the mission statement refers to the principle that the benefits of a broad-scale agreement should be greater than its cost for every party involved. No person or group should be expected to accept a net loss so that someone else may gain. Only “win-win” agreements, in which everyone sees more gain than loss, should be completed under the Sustainable Lands Strategy.

As part of the Sustainable Lands Strategy, coordinated packages of measures will be outlined for each of four major river reaches in Snohomish County — the Lower Skykomish, the Lower Snohomish, the Snohomish Estuary, and the main stem of the Stillaguamish. The measures included in these

packages will be directed not at the end results—fish or farm crops—but at the root processes that promise to yield those results in an ongoing, sustainable way. Crops need high-quality land and fish need high-



quality habitat; and the quality of land and habitat is driven by the interaction of natural processes and human activities. The most effective measures under the Sustainable Lands Strategy will aim to guide human activities and enable natural processes.

The Sustainable Lands Strategy can serve as a model for the region. Leadership will be needed to bring to fruition the promise and progress generated to date, but there is a growing sense of a window of opportunity to protect fish, preserve farms and increase a quality of life that the Puget Sound region understands, appreciates and deserves.

THE PROBLEMS

An early step in development of the Sustainable Lands Strategy was to identify specific problems associated with the fish-farm conflict. The numerous concerns raised by advocates for fish and advocates for farms fall into a few broad categories as described below.

Competing Demand for Use of the Land

The voices of the agricultural community in Snohomish County have been clear about one key concern: The loss of land available for farming due to encroachment by urban development and restrictions imposed by environmental regulations. At the same time, advocates for fisheries have been just as concerned about fish-supporting habitat being lost to all forms of human development along rivers and in floodplains. Farmers want lands along rivers preserved for agriculture; fish supporters want river lands converted back to natural habitat—this is a fundamental conflict over a limited resource.

Complex Requirements for Implementing Projects

Fish and farm advocates agree on one thing: Complex regulations and permit processes make it difficult to get anything done. Those proposing projects to improve habitat for fish complain about the many hurdles that must be overcome before such projects can be carried out. Members of the farming community are equally frustrated with the complexity of requirements to be met before they can make changes to enhance local agriculture. Both sides have asked for streamlined regulatory processes that support improvements rather than stand in the way.

Lack of Clarity and Direction for Resolving Conflicts

Snohomish County's Comprehensive Plan establishes broad policy for county government. The policy in turn drives the development of regulations and permit requirements that apply to many land activities throughout the county. Although Comprehensive Plan policy has long emphasized the value of agriculture and the value of environmental protection, it has historically failed to provide direction on how to resolve conflicts between the two.

Moreover, the information needed for a comprehensive, integrated approach to land-use decision-making often is in the hands of different parties. For instance, tribal interests have often been at odds with state and county land-use planning requirements. Snohomish County has made steps toward joint planning with the tribes, but some state laws governing land use remain restrictive. Without an overarching land management strategy with shared goals among government entities and tribes, regulations and decision-making can fall short of the needs of each party, leading to ongoing conflicts and confusion.

THE OPPORTUNITIES

While the identified problems are significant, there are good reasons to believe they can be resolved, given an array of opportunities for change. For example, the County's Comprehensive Plan, which routinely undergoes updates, can provide a foundation for the Sustainable Lands Strategy as shared visions among all parties are integrated into future updates.

Opportunity also is available for Snohomish County to provide a solid database of accurate and extensive information regarding agriculture and fisheries that is essential to the Sustainable Lands Strategy. An evolving, integrated, reliable land-management information system is being built from already available data held by various agencies, geographic information system mapping, and ongoing analytical modeling of key river reaches.

Tools and strategies have been identified that benefit both agriculture and fish, such as quantitative reach-scale studies, flood fencing, regulatory streamlining, flexible investments to fund both farms and fish projects, and programs for purchasing or transferring development rights. "Performance-based" approaches to regulation provide flexibility by allowing a variety of ways to achieve results, rather than prescribing specific actions that may or may not provide the desired benefits.

Perhaps most important, key stakeholders for both farms and fish have agreed that now is the time to work together to resolve conflicts and forge an effective new approach to land management in Snohomish County. It is with all these considerations in mind that these parties—farmers, conservationists, government agencies and local tribes—are now moving forward to create the Sustainable Lands Strategy.

SUSTAINABLE LANDS STRATEGY ACCOMPLISHMENTS, SO FAR

In the three years since the Sustainable Lands Strategy effort got underway, two phases of work have been completed. In Phase 1, participants agreed on basic principles and an overall framework for the strategy. Phase 2 identified tools and strategies to use in developing and implementing projects that will sustain farming and restore fish habitat.

Several parties have been critical to the work at hand, including Snohomish County staff, state agencies such as Washington Department of Fish and Wildlife, tribal interests led by the Tulalip Tribes and Stillaguamish Tribe, representatives of the French Creek Diking District, local farmers and environmental interests.

Executive Committee

One of the first steps accomplished at the start of the Sustainable Lands Strategy was the creation of an Executive Committee with members representing agricultural interests and fish recovery groups. The Executive Committee played a key role in decisions regarding the development of the Strategy so

far, and will maintain an ongoing role in the future. It will be the responsibility of this standing committee to review and approve all actions proposed under the Sustainable Lands Strategy.

The Framework

A key result of the Phase 1 work for the Sustainable Lands Strategy was the identification of a “framework” consisting of four components deemed to be essential to the strategy’s success:

- Connection—Coordinate and bring together the efforts of people and groups working for the benefit of agriculture and for the restoration of fish habitat.
- Information—Develop and compile relevant information about farmlands and fish habitat into an integrated geographic information system.
- Packaging—Create packages of activities that represent overall benefit for farms and overall benefit for fish.
- Evaluation—Measure the effectiveness of any steps taken and adapt them as needed to achieve the desired benefit.

Reach-Scale Approach

Phase 2 demonstrated that farm and fish interests can work together cooperatively to identify measures that benefit both. Out of that cooperation in Phase 2 came an agreement that broadly supported packages of such measures, developed for individual river reaches, can generate net gain for agriculture and fish, opportunities for streamlined approvals, and coordinated funding for package elements.

PACKAGING THE EFFORT

An important understanding reached in the early phases of the Sustainable Lands Strategy is that not every individual action proposed to help fish or farms will provide benefits for both. Some fish habitat restoration projects present no real opportunity to enhance farming, and in fact may have negative impacts on farming. Likewise, individual actions to strengthen agriculture may have undesirable consequences for fish habitat. For this reason, the Sustainable Lands Strategy is being applied not to individual actions but to “packages” of multiple measures affecting broader areas. Within each package, both farms and fish may experience some undesired impacts; but a package will be accepted if the Executive Committee agrees that all stakeholders will receive a net gain over the broader region.

It is with this understanding that “reach-scale” package agreements are being developed for the Lower Skykomish, the Lower Snohomish, the Snohomish Estuary, and the main stem of the Stillaguamish. By focusing on the reach scale and stressing mutual benefit and communication, the Sustainable Lands Strategy will seek long-term agreement on the fish and farm net gain needed by the participants in a larger, regional picture. The key will be to analyze impacts and benefits without devolving into a point-by-point scorekeeping of gains and losses. The strategy will seek to abandon the concept of “sides” in favor of an approach in which all interested individuals and groups are involved for the same overall purpose of restoring, preserving and enhancing an environment upon which all depend.

CUSTOMIZING THE APPROACH

It has been agreed that a “one-size” approach will not work in every part of Snohomish County. That is why the Sustainable Lands Strategy has divided the county’s main rivers into four reaches. Each reach has its own set of needs and priorities, and the reach-scale package for each can be tailored

specifically to those needs and priorities. Some measures may be applicable to all Snohomish County rivers, and those will be included in a countywide package to be developed separate from the four reach-scale packages.

SIMPLIFYING WORK AND COORDINATING FUNDING

A major concern of both fish and farm advocates under the status quo is the difficulty of getting projects underway. Regulatory friction, win-lose politics, and public opinion often present hurdles that greatly draw out the time and costs required to implement projects. The need to simplify processes is one point on which the interests of agriculture and fish recovery already agree.

When fully implemented, the Sustainable Lands Strategy's packaged approach will establish a unified and public approval process for each reach-scale package rather than separate processes for many small projects. The emphasis on net gain for both fish and farms makes it more likely that packages will win broad support. Broad support and a unified consistent approach to included projects will assist with regulatory and funding approvals, shortening the total time required and costs needed to gain permits and funding decisions. In the meantime, reach-scale packages could allow for coordination, flexibility, and bundling of permits for individual projects.

The cooperation so far among parties that have often disagreed over projects in the past has garnered notice, especially in terms of funding opportunities. The first two phases have demonstrated that a coordinated funding concept can be successfully applied to support the Strategy, through contributions from federal, state, county, and tribal participants. The Sustainable Lands Strategy has also been helpful in generating indirect grant funding for Snohomish County.

Metrics

One of the products created under Phase 2 of the Sustainable Lands Strategy outlined nine categories of measurable outcomes (metrics) to assess the success of implementing Sustainable Lands Strategy reach-scale and countywide-scale packages. The categories of outcomes, based on the identified problems and needs for both farms and fish, represent priorities for incorporating actions into Sustainable Lands Strategy packages. The following are the categories of measurable outcomes; the detailed metrics are outlined in Part 2 of this plan:

- Farmland Protection
- Enhanced Agricultural Productivity
- Flood Damage Reduction
- Habitat Improvement
- Water Quality Improvement
- Understanding of Ecological Processes
- Integrated Farm-Fish Information System
- Greater Farm and Fish Coordination, Reduced Conflict
- Streamlined Permit Approval Process for Farms and Fish.

Objectives for Phase 3

A final important accomplishment of Phases 1 and 2 was defining the following objectives to be achieved in Phase 3:

- Coordinate the development of four reach-scale packages and a countywide Sustainable Lands Strategy package. The packages will consist of actions that, as a whole, generate net gain for fish and agricultural interests. Coordinators will engage directly affected agricultural

- and fish recovery interests, expert technical support, the Strategy's Executive Committee, and other stakeholders.
- Propose policy amendments and coordinated processes, which include possible code amendments and structures, interdepartmental coordination, and community outreach procedures.
 - Facilitate streamlined regulatory approvals and coordinated funding for actions that are part of reach-scale packages by providing integrated information, engaging a multi-agency permitting team and key funders, and using a streamlined process.

Phase 3 will make the Sustainable Lands Strategy fully operational, enhancing opportunities to leverage funding in partnership with other governments as has already been done in Phases 1 and 2.

PART 2. APPROACH TO REACH-SCALE PACKAGE IMPLEMENTATION

The Sustainable Lands Strategy is being applied to reach-scale packages of fish and farm enhancement measures. Key ingredients to the success of these packages is a foundation of technical and land use information, mutual respect and cooperation, a set of measures that generate net gain for farms and fish, and evaluation of net gain progress. Participation in a SLS package is not an obligation or a required regulatory review step; it is an *opportunity* to tap into best available information and design assistance, work collaboratively to build a mutually beneficial set of measures, and generate broad support.

This approach is designed to create better projects and more effective measures, reduce process friction, streamline regulatory approvals, and provide priority access to funding. In practice, the SLS approach is already beginning to demonstrate such benefits. These packages are our best hope to increase salmon numbers, protect farmland, comply efficiently with regulatory requirements, and improve the quality of life of those who call Snohomish County home.

Overall Approach

While the Sustainable Lands Strategy is a non-regulatory body, its processes will be overseen by an Executive Committee, whose goal is to bring together stakeholders to assist with creating broad-based support from key stakeholders, regulators, farmers and fish recovery advocates for projects and actions that provide net gains for both .

A broad-based approach founded on thorough science, technical support, and design assistance provides multiple benefits. In reality, this structure already has shown it can make projects more amenable to the awarding of state and federal funds and can also speed regulatory processes by reducing opposition and appeals, cutting costs and giving a wider audience a better understanding of the goals and benefits of the proposed work.

Such a team approach means SLS projects and actions are designed from the outset with the needs of fish and farms at hand. This makes a project or proposed action better and more likely to succeed. It also helps fit individual projects and measures together into a balanced package: restoring fish and water quality while preserving our farmland and enhancing agricultural productivity.

To be successful in creating net-gain packages for fish and farms, the SLS participants and Executive Committee must have a means of evaluating the values and effectiveness over time of proposed projects and off the package overall. Stakeholders with interests in a project should have some level of involvement in evaluating the landscape and fish and farm needs, conducting science to assess the projects, and choosing the tools and strategies to be used, ensuring the package is a net gain for both. The interests associated with any given project could range from farmers' needs for good land to a tribe's cultural interests in restoring salmon to county and state agency needs to comply with regulatory requirements.

The SLS Executive Committee has proposed an integrated approach for including projects in the reach-scale packages, based on the following steps:

- The Executive Committee will meet regularly to discuss regional work, ongoing reach-scale projects and new proposals.
- The Executive Committee will engage key stakeholders early and often at multiple levels.
- The Executive Committee will consider projects and initiatives proposed by Sustainable Lands Strategy participants and others.
- The SLS Executive Committee will convene a technical team to identify and assess potential net gains from projects being considered for inclusion in a reach-scale package.
- The technical team will use the Lower Snohomish and Stillaguamish Work Groups for processing, and Snohomish County will host as a technical support hub as needed.
- The technical team will use an integrated information system to review projects and determine how best to make net gains. Information to consider will include the following as needed:
 - o Geomorphic analysis
 - o Hydraulic modeling of the project
 - o Land-base reconnaissance
 - o Geographic information system analysis with farm and fish data
 - o Highlighting priorities and opportunities within the reach.
 - o Additional scientific methods.
- The technical teams will recommend project concepts and initial design aspects to the Executive Committee.
- The Executive Committee will consider projects that provide the most net gains for fish and farms within the reach as well as for Snohomish County overall.
- Supported projects will be included in the reach-scale packages as part of regular updates.
- The Executive Committee will track project completion and results while providing assistance to see each action come to fruition.

While a project's proponents are not required to work through the Sustainable Lands Strategy process, again, there will be multiple benefits to doing so:

- Projects accepted by the Executive Committee will have garnered necessary multi-party support, giving them broader support and a larger general audience who is aware of the benefits of the project or action.
- Technical support will offer sound science and design assistance, resulting in improved project benefits upon completion and in connection with other work being completed throughout the county. This means better benefits overall.
- Aspects of necessary design work and regulatory processes will either already be completed or easier to accomplish due to the fact that the Sustainable Lands Strategy process includes state and federal regulatory participation.
- Supported projects are more likely to receive state and federal funding due to an already approved Sustainable Lands Strategy process.

KEYS TO SUCCESS

A Range of Tools and Strategies

It will be important to provide stakeholders with information and assistance with design and implementation to create net gain outcomes for farms and fish, build broad support and reduce process friction, and generate an efficient and effective path forward. A number of tools and strategies can be employed to achieve these goals. The following is a sample of techniques to consider for reach-scale projects:

- Development of new project management tools and approaches specific to reach scale projects and processes
- Development of new information, including geomorphic analyses, infrastructure inventories, drainage assessments and scenario modeling
- Technical assistance programs, including tools such as:
 - o Flood fencing to keep flood debris off fields, build a natural berm and vegetated riparian zone, create roughened edge habitat, etc.
 - o Anaerobic digesters to convert manure that could contaminate fish habitat into revenue-generating renewable products, such as energy, fertilizer, fiber (peat moss substitute), or carbon credits
 - o Riparian plantings to improve water quality and prevent erosion
 - o Placement of large woody materials

A Database of Needed Information

All aspects of the Sustainable Lands Strategy, from initial identification of the strategy's framework to implementation and assessment of actions recommended in the reach-scale plans, require reliable information to be successful and should be available to everyone.

Snohomish County is one of the most data-rich areas in the state and has been monitoring agricultural, salmon recovery, land-use and water-quality indicators for many years. The initiatives that make Snohomish County data rich include the following:

- Federally approved salmon recovery plans, recognized as among the best in the state, including assessments of ecological processes for most river reaches in the Snohomish County portions of the Snohomish and Stillaguamish basins
- Computer modeling at the basin and reach scales, using advanced computational tools
- Extensive agricultural land-use information, studies and reports outlining opportunities, flood control and drainage infrastructure needs and investments, and agricultural enhancements
- An adaptable GIS system that includes farm, fish, water quality, zoning and related data layers to support land use and resource management decision-making.
- Quantitative information from the reach-scale assessments showing where agricultural practices could be impacted positively and negatively by conservation projects.

It will be important to build on these data sets, mesh them with existing data-gathering programs, and use the county's technology infrastructure to make essential information widely accessible.

Technical, Design and Implementation Assistance

The reach-scale packages for the Sustainable Lands Strategy will incorporate projects proposed by a diverse range of agencies and organizations. Some are well versed in all aspects of developing and implementing such projects, but others would benefit greatly from assistance in guiding the project from concept through completion. Because the reach-scale approach is based on the success of each individual measure, there is benefit to everyone in making sure that all needed assistance is available to help proponents implement projects efficiently and well. This means reviewing the science, assessing impacts and benefits, and knowing all the steps and requirements and the best ways to complete them.

With reliable support from county and tribal staff, state officials, funding organizations, outside consultants and collective opinion, the Executive Committee will provide project proponents with technical support, design assistance and implementation assistance in approving work within the reach-scale plans. With this assistance in place, the Sustainable Lands Strategy stands the best chance of success. Key components of this assistance will be as follows:

- Technical Support
 - Hydraulic and geomorphic analysis and evaluation, mapping
 - Habitat protection and restoration priority actions, targets and goals from salmon recovery plans
 - Water-quality analyses, 303(d) listings, established limits on pollutant loads discharged to impaired waters, local water-quality measures
 - Infrastructure assessments
 - Agriculture protection and enhancement opportunities and priorities
 - Zoning and land-use overlays
 - Climate modeling
- Design Assistance
 - Help identifying potential tools and strategies to achieve net gain (such as flood fencing, multi-benefit ecosystem services, engineered installations of large wood in streams), best management practices and edge complexity improvements)
 - Modeling of potential projects to determine in advance their likely effects and outcomes
 - Conceptual design work to achieve 30-percent design requirements
 - Better coordination with technical consultants and contractors
 - Coordination with other projects to achieve net gain at the reach level
- Implementation Assistance
 - Broad support and reduced process friction due to net gain approach
 - Streamlined regulatory approvals possible due to broad support
 - Flexible, priority funding for reach package elements
 - Monitoring, evaluation and adaptive management
 - Policy recommendations, appropriations.

MEASURING SUCCESS

The Sustainable Lands Strategy process will not be over once a project is accepted and implemented. At the end of the day, a project or action will be measured by its total net gain and impact upon fish and farms. However, each project can and should also be evaluated using accepted metrics developed under the Strategy. This evaluation can help gauge the effectiveness of the project so that it can be modified as needed and so that future projects can be improved before they are implemented. Development of a monitoring and evaluation system should include the following steps:

- List the metrics needed to track net gain progress (an initial list developed in Phase 2 is presented below).
- Identify existing monitoring capabilities associated with these metrics (see sidebar), seeking monitoring that provides the following:
 - An historical baseline against which progress can be measured
 - Geographically specific measurements
 - Data that can readily be included in online or GIS formats
 - Ongoing measurements (likely to continue during implementation of the Sustainable Lands Strategy)
- Identify gaps between monitoring needs and capabilities and propose strategies for bridging gaps, including the following:
 - Using surrogate or modeled indicators
 - Creating a new monitoring capability (perhaps building off existing monitoring efforts)
 - Changing the Sustainable Lands Strategy goal or objective to make it more measurable
 - Accepting that the goal cannot be practically measured.
- Develop an evaluation process, based on at least annual performance milestones, and the three-year review identified in the Phase 1 Report.

Snohomish County is one of the most data-rich areas in the state and has been monitoring agricultural, salmon recovery, land use, and water quality indicators for many years. The following are some of the initiatives that make Snohomish County data rich:

- Solid salmon and watershed recovery plans, recognized as among the best in the state, including geomorphic analyses of most river reaches in the Snohomish County portions of the Snohomish and Stillaguamish basins
- Hydrodynamic modeling, using advanced computational tools
- Extensive agricultural land-use information, studies, and reports outlining opportunities, flood control and drainage infrastructure needs and investments, and agricultural enhancements
- An adaptable GIS system that includes farm, fish, water quality, zoning and related data layers to support decision-making.

An initial set of metrics developed during Phase 2 of the Sustainable Lands Strategy is outlined in the tables below. The metrics themselves will be assessed as packages are implemented and evaluated, to ensure the most meaningful results when they are applied to future actions.

Metrics for Farms

Desired Outcome	Metric
Farmland Protection	
A reach level assessment of agricultural land and infrastructure requirements and priority investments that will improve agricultural productivity, profitability, and long-term viability	• Identification in a Snohomish County agricultural strategic plan
Increase in acres of land protected for future agricultural use	• Measured in acres of protected agricultural lands utilizing strategies such as purchase and transfer of development rights, agriculture conservation easements, zoning changes or other land use planning methods
Increase in land actively used in farming	• Measured in the change in acres in farms as reported in the USDA Census of Agriculture
Enhanced Agricultural Productivity	
Improved drainage and diking infrastructure	• Measured in acres of affected farmland or value/amount of infrastructure improvement
Increased market value of local farm production	• Measured in market value of agricultural products sold as reported in the USDA Census of Agriculture
Improved economic viability of local farms	• Measured in net cash farm income of operation as reported in the USDA Census of Agriculture
Flood Damage Reduction	
Flood damage reduction strategies incorporated into individual projects supported by farm and fish communities	• Measured in acres of farmland protected from flood damage on a project-by-project basis for projects incorporated in the Sustainable Lands Strategy or participant reports or plans
Improved diking and drainage infrastructure	• Identification of infrastructure needs in a countywide strategic plan and measured in annual progress toward those goals in project planning, deployment and dollars spent
Increased deployment of flood fencing	• Measured in linear feet of flood fencing installed on an annual basis.
Reduced erosion and flooding threat	• Measured in increased linear shoreline protected (and associated cost savings if available) by measures recommended in the Sustainable Lands Strategy.

Metrics for Fish

Desired Outcome	Metric
Habitat Improvement	
Progress toward 3-year watershed council Work Plan priorities; achievement of federally approved Salmon Recovery Plans' 10-year habitat targets for Snohomish and Stillaguamish basins and floodplain habitat by 2017; progress toward 50-year habitat goals	Evaluate through existing watershed council updates
Progress toward Sustainable Lands Strategy milestones	- Approval of Sustainable Lands Strategy recommended restoration projects - Demonstration of farm-friendly habitat restoration practices, tools, and strategies (e.g., flood fencing, riparian "smart" buffers, fish-friendly tide gates) measured in number of projects
Water Quality Improvement	
Progress toward water quality standards	Reduce or eliminate 303(d) listings of impaired water bodies and meet milestones set under total maximum daily loads
Improved water quality in farm-friendly ways (filter strips, ponds, aquifer recharge)	Implement and evaluate Sustainable Lands Strategy recommended projects that achieve desired outcome
Progress on anaerobic digester and innovative manure management strategies	- Secure funding for and launch a Stillaguamish digester feasibility study - Demonstrate nutrient extraction and utilization technologies - Secure funding for and launch a feasibility study of the opportunity to fully condition digester biogas to pipeline quality methane for greater value and to demonstrate the viability of renewable natural gas in high-value uses

Metrics for Farms and Fish

Desired Outcome	Metric
Understanding of Ecological Processes	
Progress in understanding ecological processes, especially hydrology and geomorphology at the river-reach scale through the county's reach assessments, modeling scenarios, restoring process function, and working with, rather than against, these processes	• Number of river reaches that have been assessed through the county's geomorphic analysis program • Use of process assessment information planning and decision-making related to land, infrastructure and resource management • Number of geomorphic and hydrologic scenarios evaluated with computational models • Number of process-based restoration and infrastructure projects • Number of landowners utilizing comprehensive farm management plans
Integrated Farm-Fish Information System	
Development and expanded use of the county's GIS with integrated farm and fish data layers to improve farm-fish coordination and improve land use and resource management decision-making	• Number of reach-scale work groups that use the integrated information system • Number of reach-scale work groups that have field-verified agricultural use of designated farmlands and identified areas where restoration projects would not affect agricultural productivity • Number of additional data layers that are accessible through the integrated information system • Listing of other entities that use the system
Greater Farm and Fish Coordination, Reduced Conflict	
Progress toward establishing connections between fish and farm individuals and groups that promote early and ongoing coordination	• Agricultural Advisory Board and watershed group meetings, measured in joint sessions and collaborative initiatives • Sustainable Lands Strategy Executive Committee meetings, work groups, and other collaborative sessions among farm, tribe and fish leaders • Other joint farm-fish sessions and collaborations • Greater understanding between leaders of farm, fish and tribal communities as determined by interviews with Executive Committee, Agriculture Board, watershed group, and tribal leaders • Reduced legal conflict over farm-fish issues, measured by reductions in lawsuits and legal appeals • Joint farm/fish initiatives
Streamlined Permit Approval Process for Farms and Fish	
Progress toward streamlined regulatory approvals and coordinated funding	• Development of a template for streamlined programmatic permit approvals for agricultural activities and restoration actions specified as part of Sustainable Lands Strategy packages • Development of a mechanism to utilize "credits" from Sustainable Lands Strategy projects to meet regulatory requirements for projects that benefit agriculture infrastructure • Indications of support for a programmatic template from key regulatory agencies • Demonstration of regulatory assurances as part of a Sustainable Lands Strategy package

SUSTAINABLE LANDS STRATEGY FOR SNOHOMISH COUNTY

REACH-SCALE PACKAGE FOR THE LOWER SKYKOMISH RIVER

PART 3

REVIEW DRAFT

August 2014

PART 3: LOWER SKYKOMISH RIVER REACH PACKAGE

The reach of the Lower Skykomish River that is the focus of this reach-scale plan extends 13 miles, from the Town of Sultan to the confluence where the Skykomish and Snoqualmie Rivers merge to form the Snohomish River. Making improvements for fish and farms in this reach means prioritizing projects that will improve salmon spawning and rearing, protect floodplains, and reduce erosion.

This section describes issues related to achieving net gains for the Lower Skykomish reach and presents projects to accomplish the needed improvements. Not all projects presented will provide net gains individually. However, taken together, and in conjunction with work being done throughout other Snohomish County reaches, the package of projects will help to comply with federal requirements, protect tribal interests and preserve farmland. With an improved understanding of the river's behavior as the package begins to be implemented, projects will be reviewed and redesigned as necessary. New projects will be added to the overall reach package as needed to fully achieve the goals of the Sustainable Lands Strategy.

SUMMARY OF WORK BEFORE THE SUSTAINABLE LANDS STRATEGY

The needs and priorities that the Sustainable Lands Strategy must address have been defined through many efforts completed before the strategy was created. A summary is provided below of the concerns raised by previous research and the ultimate goals for fish protection and farmland preservation along the Lower Skykomish River.

Fish Habitat

SNOHOMISH RIVER BASIN SALMON CONSERVATION PLAN FINDINGS ON CONDITIONS

According to the 2005 *Snohomish River Basin Salmon Conservation Plan*, the Lower Skykomish sub-basin has high use by salmonid fish but degraded watershed conditions. For the Skykomish population of Chinook salmon, spawner abundance—the number of fish returning from the ocean to spawn—historically was 51,000 fish. Between 1999 and 2003, the average spawner abundance for natural-origin Skykomish Chinook was 1,755, only 3.4 percent of the historical level.

Fish use different kinds of habitat for different stages of their lives: some types of habitat are ideal for spawning; others are best for rearing of young fish. Along the Lower Skykomish, some spawning habitat quality is degraded, but the primary factor affecting salmon is the loss of rearing habitat:

- Dikes, bank armoring, roads, railroads, and bridges confine the river, disconnect off-channel habitat and reduce the complexity of edge habitat (the area of rivers unaffected by currents).
- Forest cover along the river main stem has been substantially reduced, so the river lacks substantial quantities of large woody debris that would enhance habitat complexity. Intact forest cover in the Lower Skykomish River sub-basin is predicted to decrease by about 10 percent during the next 25 years.
- Other habitat problems are excessive erosion of stream banks, culverts on small streams that block the passage of fish, and degraded water quality (high temperature, low dissolved oxygen, high fecal coliform counts, and high levels of toxic metals).

Since the early 1990s, the cities of Monroe, Sultan, and Gold Bar have been some of the fastest growing urban areas in the Snohomish County portion of the Snohomish River basin. With the expansion of these urban areas comes a growing need for roads, utilities and other infrastructure.

Such development increases runoff and isolates the river from the floodplain, leading to increased erosion and flooding downstream. This in turn creates pressures from downstream property owners for additional bank armoring. Culverts that block coho habitat in Skykomish River tributaries also continue to be a problem.

SNOHOMISH RIVER BASIN SALMON CONSERVATION PLAN VISION FOR RECOVERY

The long-range vision for salmon recovery in the 2005 *Snohomish River Basin Salmon Conservation Plan* calls for restoring Chinook salmon spawner abundance to near the historical steady level within 50 years. A successful recovery approach will focus on improving watershed processes within and upstream of critical main stem reaches. Main stems of rivers need to have more room to move, overflow their banks, recruit large woody debris from healthy riparian forests, and form pools. For the first 10 years, the plan focuses on two goals:

- Improving habitat on the main stems of the Snohomish, Skykomish and Snoqualmie Rivers, the Snohomish River estuary, and “nearshore” areas along Puget Sound’s shorelines;
- Minimizing habitat losses elsewhere in the basin.

Over the long-term, the Snohomish River basin plan expects the greatest returns in fish population performance to come from setting back dikes, removing armoring, restoring access to isolated habitats, replanting riparian forests, and implementing agricultural best management practices along the river main stems. To jump-start the process, structural enhancements such as the construction of logjams are recommended.

The basin plan divides the Snohomish River basin into “sub-basin strategy groups” for recommended recovery actions. The Lower Skykomish sub-basin is within the “Main Stem, Primary Restoration” strategy group (which also includes the main stems of the Snohomish and Snoqualmie Rivers). The 10-year proposed goals for this strategy group are to gain the following:

- 10.4 miles of restored river edge habitat
- 256 acres of riparian (riverside) habitat
- 167 acres of off-channel habitat
- 41 logjams.

As of 2012—seven years into the 10-year action plan—the three-year work plan for the Snohomish Basin indicated that 15 percent of the 10-year goal had been achieved for logjams and off-channel habitat, 18 percent of the goal had been achieved for edge habitat, and 75 percent of the goal had been achieved for riparian habitat.

In the Skykomish sub-basin, the greatest gains in Chinook population performance are expected to result from removal of bank armor, floodplain reconnection, and riparian planting. The reconnection of side-channels, floodplain ponds, and small streams could have a large benefit for coho salmon. Potential habitat gains along the Lower Skykomish main stem have the potential to achieve significant portions of the 10-year goals for the Main Stem Primary Restoration sub-basin strategy group. Identified areas for potential Lower Skykomish projects could provide the following:

- Edge habitat restoration through dike removal: 2.5 miles
- Riparian area restoration: 128 acres
- Off-channel habitat reconnection: 177 acres
- Large woody debris jams: 15

A secondary priority identified in the 2005 Snohomish River basin plan is to implement actions to reduce water-quality problems, such as preventing illicit discharges and implementing agricultural best management practices and farm plans.

LOWER SKYKOMISH RIVER GEOMORPHIC ANALYSIS FINDINGS

Snohomish County is undertaking detailed assessments of the river reaches targeted for reach-scale plans under the Sustainable Lands Strategy. The assessments evaluate existing conditions along these reaches and identify habitat restoration options. They focus on how the natural processes by which rivers convey water and sediment affect the shape of the rivers themselves, the surrounding floodplains, and the habitat that the river systems provide. The broad study of these processes is called “geomorphology” and the overall assessment is called “geomorphic analysis.”

The geomorphic analysis for the 13-mile reach of the Lower Skykomish River that is the focus of this reach-scale plan was conducted in 2010 (*Results of Geomorphic Analysis of Hydraulic, Hydrologic, and Sediment Conditions in the Lower Skykomish River Below the Sultan River*). The analysis concluded that the Skykomish River main stem has become separated from its floodplain and side channels, with significant constraints on the channel’s ability to migrate across the floodplain. The railroad and U.S. Highway 2 along the river affect at least half of the river’s channel migration zone, from Gold Bar to the mouth—in many places blocking off channel migration completely. The results of this change include reduced salmon spawning gravels, increased scour during high flows, and simplification of the river’s edge habitat, with side channels reduced and new habitat formation impaired.

Wood debris and logjams in rivers establish multiple river channels and forested islands, which can provide rearing and refuge habitat for fish. Wood and debris along banks significantly increases the fish habitat value over riprap or vertical banks with no cover. Bank armoring and wood removal in the Skykomish River main stem have reduced such rearing capacity for coho and Chinook salmon by more than 50 percent.

The Lower Skykomish geomorphic analysis recommended four general types of restoration projects:

- Projects to allow movement of the river channel (“channel migration”) and to reconnect the main stem of the river to side channels
- Projects to increase the complexity of in-stream habitat in side channels, which improves the suitability of the habitat for juvenile salmon
- Projects to provide better spawning habitat in the river main stem
- Projects to preserve islands within the river main stem to increase habitat diversity.

LIST OF POLLUTANT-IMPAIRED WATER BODIES

Washington’s 2012 list of pollutant-impaired water bodies (called the “303(d) list”) lists the Skykomish River main stem as being impaired based on high water temperature and low dissolved oxygen levels. A previous listing for fecal coliform bacteria, cited in the 2002 limiting-factors analysis, is no longer in place.

Agriculture

FARMLAND ASSESSMENTS

Key efforts related to Snohomish County agriculture prior to the beginning of the Sustainable Lands Strategy were development of the *Snohomish County Agriculture Action Plan* in 2005 and a *Community Vision for Sustainable Agriculture in Snohomish County* in 2009. These documents presented a range of problems and needs for the Snohomish County agriculture industry:

- Agricultural permitting regulations and processes are overly complex.
- Area farmers lack essential infrastructure (such as processing plants, slaughterhouses, commercial kitchens and distribution) and financing options. New farmers struggle to get started due to a lack of financing and infrastructure. While a year-round farmers' market will add opportunities here, it could be years before such infrastructure becomes fully available.
- A base of land-mapping information is needed, to be used for economic development, farmland preservation, and identification of farmlands suitable to be purchased for habitat restoration because of site constraints that limit farming on them.
- Improvements are needed in the management of drainage and flooding in Snohomish County that will benefit rivers and farmland alike.
- The industry needs County support to promote local agriculture through one voice. Ongoing County policies, projects and programs are needed to enhance the economic viability of agriculture. Continued support from elected leaders is a must to keeping agriculture economically viable.
- Fewer people are pursuing farming as a livelihood at the large scales that historically were common in Snohomish County. New farmers are taking up smaller pieces of land, creating new trends and opportunities for the county's agricultural industry that must be addressed.
- With no direct relationship to agriculture, many urban and suburban Snohomish County residents fail to understand the importance to the region of protecting agriculture as an economic driver. Food security issues alone warrant a deeper commitment and understanding at all levels.

The U.S. Department of Agriculture's most recently published Census of Agriculture (2007) showed an increase in acreage farmed and number of independent farmers working in Snohomish County, although other studies have shown a decline and increased pressure on converting farmland. Most of this pressure has come from urban growth and the need to provide housing and jobs for new residents to Snohomish County.

Some of the most fertile farmlands in the Lower Skykomish Reach, because of their proximity to the water, are areas that have been diminished by flooding and erosion caused by river migration. Such areas must be protected in order to promote food security, to keep agriculture economically viable, and to preserve a traditional source of income that has long been accepted as an important part of Snohomish County's history.

AGRICULTURAL PRIORITIES

From numerous past planning efforts and studies going back to 2004, the Snohomish County farming community has established a broad vision for the future of the local agriculture industry:

- The 2005 Action Plan identified action items and measurable outcomes emphasizing four priorities:
 - o Farm regulation reform
 - o Economic development
 - o Outreach and education
 - o Cultural heritage.
- The 2007 *Strategies for Economic Recovery and Expansion of Snohomish County's Agriculture Industry* identified strategies emphasizing three priorities:

- o Preserving the agricultural land base
 - o Marketing Snohomish County agriculture
 - o Providing needed financial support and infrastructure.
 - The 2009 Community Vision laid out recommendations emphasizing three priorities:
 - o Economic opportunities
 - o Land use and regulation
 - o Community engagement.
-

PACKAGE ELEMENTS

Overview

For any reach scale package to work, especially along the Lower Skykomish River, two things must occur. The first is to give consideration to what can be done and what will occur along the river during a 10- to 20-year period. Natural processes often take such time to become apparent and any projects approved for the Lower Skykomish River through this Reach Scale Plan may also need such time to mature and show effectiveness.

The second consideration is that projects must be designed with the entire stretch of river in mind. This Reach Scale Plan does little to distinguish itself from other recovery plans if it becomes nothing more than a list of project points and accompanying projects along the river. Rather, consideration of impacts along the entire reach is critical to any Reach Scale Plan's success. What occurs upstream will always have an impact downstream, and more so than just one or two river miles of flow.

In short, we must consider that river work takes a very long time and impacts the entire river, not just a brief moment of time during which an individual project occurs.

So then, how do we determine net gain for agriculture and fish in addition to floodplain benefits?

First, we must determine what the river looks like and consider the extent of its current flows and processes along the entire reach. Then we can begin to look at subsections of the river – in the case of the Lower Skykomish River, we will divide the river into three subsections – followed by more pointed concepts that eventually lead into design elements and project work.

The Lower Skykomish River is a unique mainstem tributary of the Snohomish River. It has not been diked to the extent that the Snohomish River has but its course is still controlled by numerous revetments along the way. These revetments have prevented channel migration for years along the Lower Skykomish River, meaning it is a river deficient in side-channel habitat as well as low-water and high-water hiding places for Chinook salmon and other species.

Riparian resources appear to be in relatively good shape, but even these could use improvement. Most of the land along the corridor is owned by farm and mining interests, so this also means that we have a very specific landowner to which we must appeal for access. Of those farm interests, we see high levels of dairy silage and beef production, but there are still other types of farming occurring within the river corridor.

Flooding impacts have long been a source of concern for landowners and the two cities that are found within this stretch of river. Not only does the Lower Skykomish overflow its banks with regularity, inputs such as the Wallace River and Sultan River also receive a great deal of flood waters that impact agricultural operations and transportation (roads such as Mann Road and Ben Howard are routinely closed during flooding). Local businesses in Monroe and Sultan suffer and city and county expenses tied to flood fighting are never inexpensive and have in the past led to Presidential disaster declarations.

Fish in this 10 to 12 miles of the Lower Skykomish River also need the opportunity to do what they do here, and that is grow as they move downstream. Where upper stretches of river are habitat for spawning, this section should be considered the nursery, including those fish out of the Wallace and Sultan rivers. The first place young fish migrate to are the side channels just west of Sultan. Here, they start to congregate on their way now to learning how to eat and hide.

Flood-reduction efforts through new channel formation along this stretch of river will provide benefit to long-term salmon recovery goals as well as support farming in the basin, allowing us to achieve net gains. Restoring normative riverine functions by balancing what goes in and what goes out in terms of sediment and water flows will provide fish with ample opportunities for refuge while also keeping flood debris out of fields and providing economic relief to many parties.

New side-channel formations – really the re-creation of channel formations that once existed – will provide fish these places to develop. They also will take some of the flows that now only have a main channel in which to spill, lessening the impacts and providing more space for heavy waters during flood periods.

A close look at river maps show opportunities exist at almost every point along this reach for such a return to the more natural form the Skykomish River was meant to have. However, some places may be easier due to access and willing landowners. Some spots also might provide more benefit to farms and fish, and so with limited funding available, these are likely to be the first areas of improvement.

There is a need in many of these cases to purchase the property for the success of the project. Parcels need to be larger than the project site so that we can adequately protect the farm land in the area. Active farm land would need to be leased back for ag use.

Unique project types

Now with an overview of Lower Skykomish River reach, we will take a look at the project types best suited for this reach.

Four general types of restoration projects would be typical along the Lower Skykomish River Reach. Each is described below and in some instances, locations along the river have been identified to suggest where these might work best.

It should be remembered, however, that identifying a project type on one of the included maps does not mean a project there is underway or being considered. Multiple steps must first be climbed including gaining landowner permission, necessary permits and funding.

CHANNEL MIGRATION PROJECTS

Channel migration (the ability of a river to freely change directions) and side channel connectivity (the main stem of a river's connection to tributaries and side streams) can benefit juvenile salmonid

side channel habitat. But much of the Lower Skykomish River is artificially constrained by riprap, which prevents these natural functions to occur and thus benefit increased salmon production. Two ways have been identified to induce channel migration:

- **Side Channel Connectivity**—Remove riprap to allow the channel to reconnect with side channels and the floodplain and allow meandering in more natural patterns.
- **Channel Splits**—Construct in-channel structures (flood fence or logjams) to create forced channel splits. The addition of these hard points and in-stream roughness allows silt deposits to build up and thus allows movement of the channel in the direction of the opposite bank.

Side Channel Connectivity

Suitable sites for riprap removal are upstream of River Mile (RM) 9.7 and downstream of Haskell Slough (RM 3.5), subject to evaluation of avulsion potential (the formation of a new river channel) and landowner willingness to reengage floodplain channels. Historically, the river meandered at these locations and side channels are more prominent. Between RM 3.5 and 9.7, the river actually may be too channelized and side channels too limited for small-scale riprap removal to have much effect on new channel formation; a few opportunities may exist to re-engage side channels in conjunction with floodplain protection and riparian restoration measures such as flood fencing. To minimize the potential for significant relocation of the main stem channel, riprap removal should be at locations where upstream-downstream sediment transport rate imbalances are minor. The following locations have conditions favoring reconnection with side channels subject to landowner agreement, additional restoration measures improving connectivity and riparian conditions, or suitable grade controls to reduce avulsion risk:

- C-6: Segment 6
- C-17: Segment 17
- C-31: Segment 31
- C-38: Segment 38 (Haskell Slough)
- C-56: Segment 56

Channel Splits

Suitable sites for in-channel structures occur where there is a strong tendency for sediment to accumulate. A structure could be constructed to facilitate sediment deposition and to set up conditions favoring channel migration away from the location of silt deposits to split the flow. The following analysis segments have conditions favoring structures inducing channel splits:

- S-21: Segment 21 (for right bank channel)
- S-44: Segment 44
- S-51: Segment 51
- S-57: Segment 57
- S-62: Segment 62

IN-STREAM HABITAT COMPLEXITY PROJECTS

Side channel habitat complexity is needed for juvenile salmonids. Structures providing cover should be located in relatively persistent and prominent side channels that are in contact with groundwater and potentially even flowing during the summer. To maximize the effective lifespan of the structures,

the heads of such channels should be located where sediment neither erodes nor accumulates and where avulsion potential is relatively low. Geomorphic analysis suggests the following locations:

- H-Groeneveld: Groeneveld Slough (Segments 3-7)
- H-Right: Segments 12-16, right channel
- H-Haskell: Haskell Slough (if reconnected with main stem through riprap removal)

ISLAND SPLITS

A persistent island/split channel configuration is limited in the lower Skykomish River in part because of the relatively channelized and trained nature of most of the river. This configuration provides habitat diversity, especially during high flow. It is beneficial to fish to preserve islands where they exist. This can be accomplished by constructing jams at the upstream end of islands not associated with a strong erosion or sediment accumulation. Two locations generally meet these criteria and may be suitable for this type of project:

- I-11: Segment 11
- I-62: Segment 62

With so much need and yet so much possibility, willing property owners backed by strong science and secure funding will allow the goals of this reach scale package to be met.

BUFFER INCENTIVES

In addition, reach scale plans such as this one for the Skykomish River should also consider buffer incentives where land purchases are not possible. We know that buffers are often emotional and political issues, however, they offer shade and woody debris, catch debris from flood flows, increase vegetative food for insects and add a necessary vertical component to the river. Most salmon eat terrestrial insects for a good part of their lives until heading to sea and buffers provide this source.

River Subsection Breakdowns

With this understanding of the Lower Skykomish River between Sultan and Monroe, as well as the types of projects that will benefit the reach, we can begin to take a closer look at three subsections of the river, each with similarities as well as some peculiarities.

Subsection 1 (River Mile 13.5-9.7, Segments 1-17 on the accompanying maps)

Within this subsection of the Lower Skykomish River, there are at least five sloughs and channels that are either open partially or no longer accessible by salmon. They are:

- Shingle Bolt Slough at the Mann Road bridge
- Upper Groeneveld Slough, Segment 3-4, River Mile 12.98
- Groeneveld Slough, Segment 4-7, River Mile 11.8
- River Left Slough, Segment 7-10
- Bahnmler Slough, River Mile 11.1-10.

There is no doubt that fully opening these channels are major projects, however, access to these side channels would provide juvenile salmon refuge and complex edge habitat. Such work along this section of river would provide simple yet major gains.

All channels within this subsection have need of riparian work and wood placement, as well as flood fences to prevent debris loading where possible. This reduces the need for rock, and the river assessment completed here suggests that flood-reduction benefits would naturally occur by allowing the water to flow freely through these additional channels. Waters access to additional space reduces the duration and the severity of peak flows in the main stem of the Lower Skykomish River.

There are multiple ways to open these sloughs and create new channels. Some would need to include engineered logjams, in-stream flood fencing and anchored woody complexes. The introduction of large woody debris creates pools or holding areas for larger adult fish. This gives them a place to “hang out and chill.” Currently, Chinook salmon, because of their territorial tenacity, expend too much energy fighting and looking for a place to slow down and wait before moving further upstream in this part of the Lower Skykomish River. Such improvements would reduce fecundity, allowing for deeper redds that are not as easily washed away, especially during a flood event.

Land purchases along this stretch are integral to the success of all three goals :fish, farms and floodplain. One example for consideration is the purchase of the Groeneveld property east of Mann Road adjacent to Shingle Bolt Slough. This land could be leased back for farm use.

It is also extremely possible that completing all of the channel work within this subsection would eliminate the effects of most 2-year flood events, creating a positive impact on farmland by limiting erosion and fields full of debris while improving soils in the area.

In conclusion, give the fish here more room to spread out through additional channel space and they will grow larger, produce deeper and stronger redds while also increasing their chances of survival and success. Create additional channels to take in more water, especially during heavy and high flows, and farmland along the subsection will see a natural decrease in flood impacts. Channel creation will provide multiple benefits, one of the direct goals of the SLS process.

Subsection 2 (River Mile 9.7-6, Segments 18-37)

Within this subsection of river, we begin to see more braiding, more island stems, more meandering characteristics, and that’s mainly because it’s flatter. At Haskell Slough, we have mainstem bifurcation, an island with distributory channels already in existence. More of this is needed.

So similar to Subsection 1, the goals within Subsection 2 are to open up additional side channels for habitat, which will provide for refuge and rearing needs while also benefiting landowners along the main stem of the river.

Within this subsection there are at least three areas that should be considered first for project work. They are:

- Upper Fernbluff Dike, Segment 19-23
- Klock Channel, Segment 22-26, Left Bank
- Lower Fernbluff Levy, Segment 28-30, River Right.

The benefit to farmers by creating a new channel is the opportunity for a robust riparian buffer, keeping debris and water away.

Again, consideration of land purchases to complete projects while also protecting ag land is important. An example would be to consider purchasing about 20 acres to assist with the Upper Fernbluff Dike project. Much larger purchases could be needed to properly complete the Lower Fernbluff Levy project while also conserving ag land for long-term use.

We see on the map other channel opportunities for consideration, for instance at River Segments 34-37, where one could open up a new channel or feeder stream, reducing flood flows and providing new access for fish. This same section is prime area for flood fencing, as are Segments 22 through 30. The key to any project within Subsection 2 is whether it provides new refuge and rearing opportunities while also providing reductions in flood flows. Salmon rear all the way down the river and need refuge during that journey. Better travel conditions mean they are healthier, giving them again better survival rates and leading us closer to our overall goals.

Subsection 3 (River Mile 6-0, Segments 38-63)

While the upstream section of this subsection bears remarkable similarity to Subsection 2, the river naturally begins to steepen at the Highway 203 bridge to the confluence of the Snohomish River.

Despite the change in riverbed, projects should be similar but perhaps built differently. All work must be based on the hydraulics of each river section and the assessment work done previously offers a good look at what is needed.

While upper stretches tend to work better with flood fencing to direct flows and catch wood, parts of this subsection might show better improvement through a combination of new feeder streams as well as wood revetment and logjams to provide cover.

In addition, the need for riparian efforts is obvious. Such work lessens erosion, debris on the fields and scour. It also provides shade, which is of benefit to salmon by creating cooler water temps and disguised areas for hiding. Overall, the Lower Skykomish River is well oxygenated and there are many cold water inputs into the system that should be identified and protected. That work has yet to be done.

This provides us opportunities to re-open channels that once existed and were part of the normal course of the Lower Skykomish River.

Within this subsection, there are some more obvious areas to consider, including:

- Haskell Slough Dike, Segment 38-50, River Left
- Woods Creek Channel, Segment 42-46, behind Buck Island
- Three Rivers Pit Channel, Segment 49-52, River Right
- Remlinger Mitigation Bank Channel, Segment 52-59, River Right
- Remlinger Channels, Segments 60-63, River Right
- Upper Remlinger Channels, Segment 60, River Left.
- Riley Slough, Segment 59-60, River left.

Opening up Woods Creek would take pressure off a system that routinely floods, producing positive floodplain benefits and reducing impacts here for farmers and the Monroe community.

Where the river steepens, there are a couple of opportunities to consider, mostly within the Remlinger channel sections. One is the opening of an old wall-based channel that runs behind the Three Rivers Quarry. Another is a cutoff on river left (Segments 52-54) that could be reactivated. Near the Werkhoven property, bioengineered bank and riparian plantings would provide tremendous benefit to bigger adult fish beginning the trek upstream to the braided reaches for spawning.

There is also tremendous interest in the farming community to reconnect Riley Slough. It will be necessary and recommended to complete a feasibility analysis to see how this project would work.

Overall, there are many options to consider within Subsection 3 that provide multiple benefits and should be considered.

Conclusion

There are many initiatives already being developed along the Lower Skykomish River Reach as well as projects that have been identified but still need many steps to accomplish. There are even those yet to be identified that will provide benefit to fish and farms as we begin the work along the reach.

The success of one project leads to ideas and opportunities for a new project and so on until perhaps there are no projects left, but especially until the point where Chinook salmon and other fish species are restored to healthy numbers.

It should be realized and appreciated that this Reach Scale Plan for the Lower Skykomish River is only a first round of thought toward the overall success of the Sustainable Lands Strategy and the future of fish and farming in Snohomish County as a whole.

Two levels of review must be considered necessary and ongoing.

The first is the evaluation of individual projects that are a part of this Reach Scale Package. Individual projects must be assessed during all phases of work, including design and construction. A project that does not meet part of the overall goals must either be reconfigured or abandoned.

In addition, new projects must become part of the equation and added to this Reach Scale Package. This is not a document that has any particular end in sight other than the successful restoration of salmon and other fish species to the river system and the long-term preservation of farmland and farming as an economically viable industry.

Neither will be achieved without constant review and consideration.

As such, the goals of this Reach Scale Package must also be scrutinized, measured and when needed adjusted. The years of work that have gone into creating this Reach Scale Package and the concepts guiding the Sustainable Lands Strategy will only be deemed worthwhile when we accept successes with failures, and when failures do occur, we find new ways to consider work that will lead to success.

In years to come, as projects are completed, it is the hope of the Sustainable Lands Strategy and its participants that new work will be easier to identify and projects with even greater levels of success easier to achieve. This will occur with the continued review of the Sustainable Lands Strategy Executive Committee and a commitment to reach the goals set forth.

In the end, the Sustainable Lands Strategy and this Lower Skykomish Reach Scale Package will be considered worth the effort when we can say the resultant work was good for fish and good for farms.