

Executive Summary

This Agriculture Resilience Plan is a plan guided by and developed for the local farming community in Snohomish County. The Plan will help build a more resilient agricultural landscape – one that can withstand pressures and changes associated with development, population growth, flooding, shifts in weather and climate change. Through a combination of information gathering and sharing, creation of online planning tools, project scoping and design, project implementation, and farmland protection, the Agriculture Resilience Plan will help ensure local agriculture remains a cornerstone of our way of life and value system in Snohomish County.

“The Agriculture Resilience Plan is an effort to help all of us farmers weather the changes that are coming in the future. It’s a way for farmers to raise their voices together and create change to benefit agriculture.”

Libby Reed, Orange Star Farm

The goals of the plan are to:

- Provide **information** and project **funding** for farmers to manage for future risk on their farms
- Develop landscape-scale **projects** to improve agricultural resilience
- **Protect** agricultural lands from subdivision or development

Agriculture in Snohomish County

- Over 63,000 acres of active farmland
- 1,558 farms
- Farms as large as 2,000 acres
- Agricultural products selling for over \$157 million per year

Source: United States Department of Agriculture

Agricultural resilience can be improved by helping farmers plan for future challenges and risk, absorb future change, and more quickly recover from stress.

The Agriculture Resilience Plan is linked to the work of the Snohomish County Sustainable Lands Strategy (SLS). SLS, started in 2010, is a collaborative effort of partners working to improve coordination and generate progress for fish, farm, and flood management in the Snohomish and Stillaguamish watersheds. As a participant in SLS, the Snohomish Conservation District identified a gap in the scientific understanding of agricultural needs, particularly as they relate to climate change, as well as an organized planning approach to developing priority landscape-scale projects. This Agriculture Resilience Plan is intended to fill this data gap and identify priority resilience projects that will keep Snohomish County’s agricultural lands viable into the future.

Need for Resilience

Despite the increasing importance of and need for local farming in Snohomish County, agriculture is threatened by development and environmental changes. The United States Department of Agriculture noted that farm sector profits declined by \$9.8 billion from 2017 to 2018 across the country. This represents 13 percent of the profits from farming. Production expenses are forecast to increase by \$11.8 billion due to increases in costs for fuel, feed, and hired labor. Finances are just one of the pressures facing farmers. American Farmland Trust has identified that 175 acres of farm and ranch land in the United States are lost to sprawl and development every hour, while 1.7 billion tons of topsoil are lost to erosion each year. These trends and pressures also affect Snohomish County farms. Everett is one of the fastest growing cities in Washington State, and the rising cost of land makes it difficult for farmers to stay in the county.

In addition to the existing economic and development pressures on agriculture, climate change will present additional challenges into the future. In Snohomish County, sea level rise is expected to lead to saltwater intrusion and rising groundwater tables. A changing climate will cause drier summers, wetter winters with more intense storms, and increased river flooding. Land subsidence and riverbank erosion are expected to continue and increase.

How the Agriculture Resilience Plan was Developed

The Agriculture Resilience Plan is intended to be the farmers' plan – a document that reflects the interests and priorities of farmers in Snohomish County. Therefore, outreach to and engagement with farmers and the farming community has been a key component of developing this plan and will continue to be central to its implementation. Input from farmers has been solicited through the formation of a Steering Committee of local farmers, outreach to existing agricultural groups and individual farmers, and a photo documentation project called PhotoVoice.

Snohomish Conservation District formed a Steering Committee for the Agriculture Resilience Plan in order to ensure that the plan is guided by the input of local farmers. The Committee is comprised of 9 Snohomish County farmers representing various types, sizes, and locations of farms. The Steering Committee met quarterly to provide guidance on the direction and development of the plan.

In addition to soliciting guidance from the Steering Committee, the Conservation District conducted extensive outreach to the local farming community. In fall 2016 and winter 2017, the Conservation District reached out to existing agricultural groups to ask for input into the scope of this project. Groups included the Snohomish Conservation District Board of Supervisors, Focus on Farming attendees, the Sustainable Lands Strategy Agriculture Caucus, the Snohomish County Farm Bureau, Snohomish County Cattlemen, the Snohomish County Agricultural Advisory Board, SnoValley Tilth, the Coordinated Diking Council, the Marshland Flood Control District, the French Slough Flood Control District, and the Stillaguamish Flood Control District.

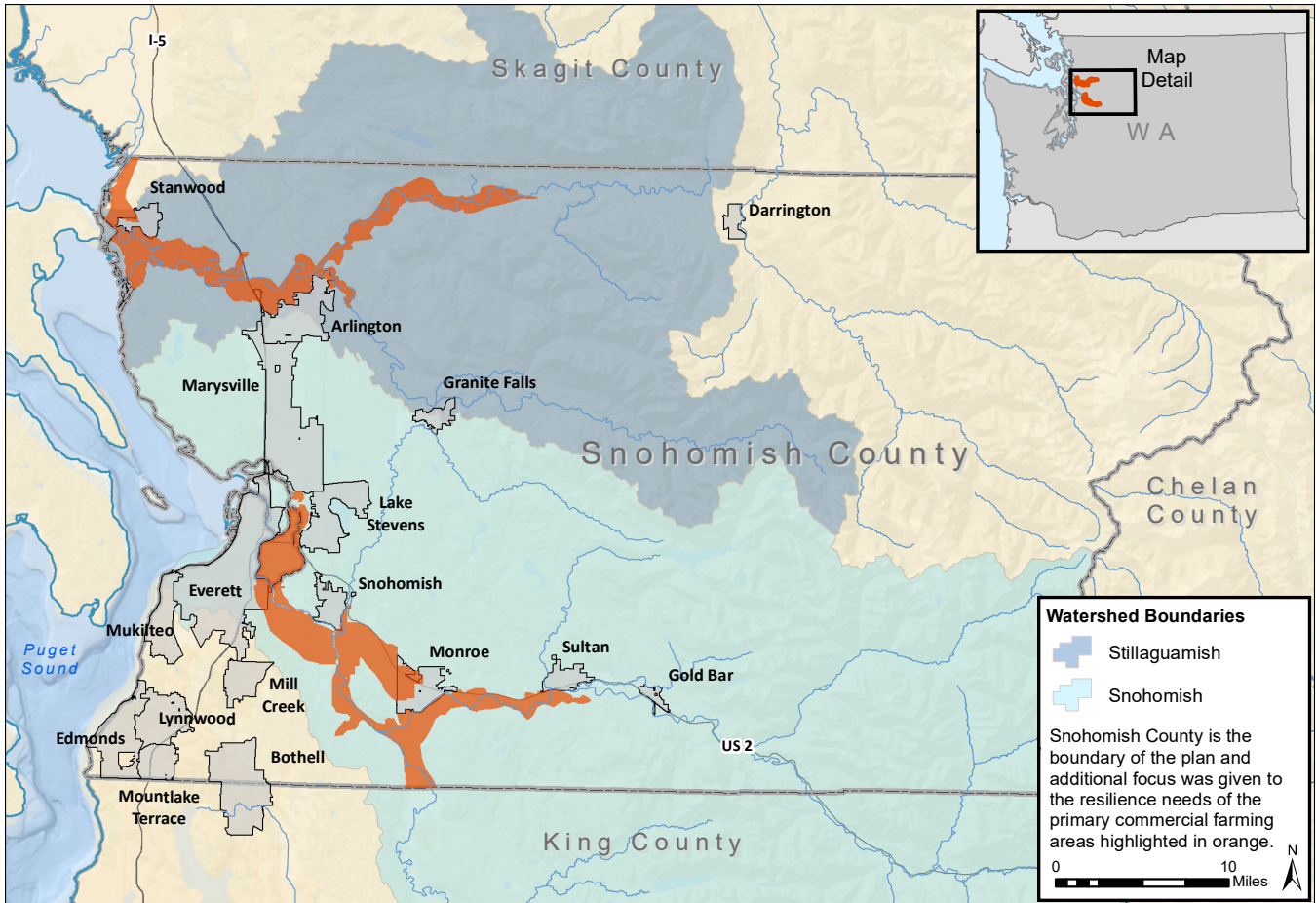


Figure E-1. Plan Study Area. This map shows the study area for the Plan, which includes all of Snohomish County with a focus in the key floodplain agriculture reaches in orange.

In spring 2019, the Conservation District launched a broader community engagement effort, primarily focusing on commercial farmers in the river floodplains. Presentations were given for local diking, drainage, and flood control districts and community meetings were organized outside of these areas. The goals of this effort were to provide localized results from the risk modeling and assessment work and to gather feedback on resilience needs and potential projects. This information was used to create Reach Summaries that were then reviewed and revised by the farming community in summer 2019.

STEERING COMMITTEE MEMBERS

- Andrew Albert, Andrew’s Hay
- Dan Bartelheimer, Sno-Valley Farms
- Brian Bookey, Cherry Lane Farms
- Darren Carleton, Carleton Farms
- Jeff Ellingsen, SCD Board Member and Farmer
- Spencer Fuentes, Hazel Blue Acres
- Nick Pate, Raising Cane Ranch
- Libby Reed, Orange Star Farm and SCD Board Member
- Jeremy Visser, dairy farmer

Impacts Assessment

To understand the impacts of climate change on agricultural land in Snohomish County, the Conservation District initiated technical studies on flooding, groundwater levels, saltwater intrusion, land subsidence and aggradation, and crop impacts. Key take-aways from each technical study are listed below. The studies are summarized in Chapter V of this plan, and full studies can be found on the Conservation District website at <https://snohomishcd.org/impact-assessment>.

FLOODING

Increases in the extent of flooding will put additional farmland at risk of inundation, particularly during more frequent storm events (such as the 2-year and 10-year floods). Thousands of additional acres will be flooded on a 2-year event by mid-century and critical stage heights will be exceeded more frequently each year.

GROUNDWATER

Rising sea levels are anticipated to delay the time when estuary farmers can access their fields in the spring by up to three weeks by the 2050s and up to five weeks by the 2080s.

SALTWATER INTRUSION

Areas closest to the shoreline are at the highest risk of saltwater intrusion. Areas within 5,000 feet of the shoreline are especially vulnerable, and areas within 10,000 feet could also experience increases over time.

Florence Island, in the Stillaguamish River estuary, already experiences saltwater intrusion above crop tolerance thresholds in patches, and those impacts are likely to increase in severity over the next 50 years. Increasing pumping could pull salty water upward in the groundwater table.

SUBSIDENCE AND AGGRADATION

The analysis of farmland subsidence for both the Stillaguamish and the Snohomish River floodplains indicated that some areas may be sinking 2-3 inches per decade due to cultivation of organic soils, although error rates in this study are high.

The Lower Stillaguamish River channel is aggrading, and this trend is likely to continue into the future. The Lower Snohomish River is not aggrading in general, but upper reaches (from the SR-9 bridge to the Skykomish River) show some aggradation.

CROPS

Increasing air temperatures in summer months are projected to negatively impact some existing crops while at the same time providing opportunities for new types of agricultural production. This warming will result in a longer growing season but also an accelerated growing degree day accumulation, which can have a negative impact on yields. Models project a decrease in summer precipitation and an increase in winter precipitation.

By the 2040s, Snohomish County is predicted to have similar growing conditions to Santa Cruz County, CA, just south of San Jose. And by the 2080s, conditions are expected to be most similar to Santa Barbara County, CA, just north of Los Angeles.

Priority Needs

The agricultural community in Snohomish County is facing many current and projected challenges associated with increased development and a changing climate. Through a robust community engagement process, farmers provided priority resilience needs. Addressing these resilience needs will require partnership building, innovative approaches to problem solving, and funding acquisition. Farmers highlighted the need for grant and/or loan funding to address many of these issues described below.

FARMLAND CONSERVATION

Much of Snohomish County’s commercial farmland is in the floodplain, where state and local regulations provide partial barriers to conversion of the land. Still, many farms in both the floodplains and upland areas continue to be lost to development, habitat restoration, and other uses. Existing funding sources are insufficient to reach conservation targets or satisfy farmer interest. Potential options for increasing funding available include augmentation of the Transfer of Development Rights program at Snohomish County, as well as additional grants and/or taxes.

DRAINAGE INFRASTRUCTURE IMPROVEMENTS

Diking, Drainage, and Flood Control Districts across the County consistently report insufficient funding to manage current drainage needs, citing runoff from upland areas and increased flooding as major contributors. Climate change projections indicate increased winter flood frequency and scale, highlighting the need for improvements to and increased capacity of drainage

systems. Many agricultural areas require a drainage needs assessment to inform projects that would increase capacity of existing culverts, tide gates, and pump stations as well as replace aging infrastructure.

COMPENSATION FOR UPLAND RUNOFF

Development of upland areas has resulted in increased runoff reaching our floodplains, in many cases exacerbating drainage challenges for farmers. Some diking, drainage, and flood control districts have agreements with local jurisdictions to collect stormwater fees to help offset the costs of this increased runoff and sediment, yet most do not. There is a need to work with individual districts and local jurisdictions to help develop these compensation agreements and potentially increase revenue under existing agreements. Projects or initiatives to reduce upland runoff would also greatly benefit farmers. These include use of green stormwater infrastructure, regulatory changes to county and city development codes, and education of or incentives for urban and suburban landowners to reduce runoff from their properties.

Farmers Helping Farmers

“Collaboration is a big part of farming on a small scale. Farmers need opportunities such as the Tilth to work together and learn from each other. Farms might benefit from a grown-in-Snohomish County brand. This would help consumers recognize when they are buying locally.”

Anna Caruso, Caruso Farm, Photovoice 2017



FLOOD PROTECTION

While farms in the floodplain are often inundated in winter months, damages are minimized and spring drainage made possible through a system of sea dikes, river levees, and riverbank protection projects. In many places, this flood protection infrastructure is in need of improvements or replacement, and in others, there is a need for additional protection. With flood frequency and severity predicted to increase, impacts to this infrastructure will increase.

ACCESS TO IRRIGATION WATER

Many farms do not have legal water rights yet have a need for irrigation water to maintain their viability. Climate change predictions indicate the need for irrigation water will increase with less precipitation falling in summer months and increasing temperatures. At this time, new water rights are not available for farmers. There is a need for creative approaches to providing access to water. Potential options include on-farm water storage or the coordinated management and leasing of water rights at a landscape scale.

“We may have enough water now but we may not have enough in five years. We need to be looking to the future.”

– Jesse Allen, farmer

ASSISTANCE IMPLEMENTING DROUGHT RESILIENCE PRACTICES

There are numerous techniques that can be used to increase a farm’s resilience to drought or to reduce the need for irrigation. Existing incentive and grant programs through the state and federal government provide cost-share funding for practices that build soil water holding capacity, hold and/or store water, and increase irrigation efficiency. These programs, however, are often highly competitive or pay low rates. With climate predictions indicating hotter and drier summers, additional funding, research, and on-farm trials are needed to incentivize new practices.

ADDITIONAL GROUNDWATER ANALYSIS

Further study of groundwater levels and saltwater intrusion are recommended in the estuaries of the Stillaguamish and Snohomish Rivers to validate predicted impacts of sea level rise on farmland. In particular, additional data collection and analysis has been recommended for Florence Island and Drainage District 7 in the Lower Stillaguamish River floodplain and Ebey Island and Diking Districts 2 and 4 in the Lower Snohomish River floodplain.

While the intent of this Agriculture Resilience Plan is to focus on needs and actions to make the agricultural land itself more viable and resilient to future change, farmers also provided valuable feedback on other market, research, and education-related needs. These include:

- **Assistance complying with regulations** – The costs of and time associated with complying with county and state regulations puts incredible pressure on farmers, particularly smaller operations.
- **Research into new crop varieties** – The impacts of changing land use, climate, and markets continues to necessitate research into crop varieties that are resilient, drought tolerant, salt tolerant, and/or slower to mature.
- **Flood risk training for new landowners** – New farmers moving into the floodplain could benefit greatly from training on how to minimize flood risk by accessing flood data and predictions available through Snohomish County and preparing for floods.

Next Steps

This Agriculture Resilience Plan for Snohomish County will help ensure the viability of our farmlands into the future. The next step is to continue to work together as an agricultural community to implement the actions included in this Plan. The Steering Committee recognizes that these actions cannot be achieved without collaboration and partnership. The needs represented in this plan, therefore, are a starting point for collaborative thinking with partners, communities and government bodies about how we manage our land and our natural resources in a time of changes and uncertainty.

Implementation of the Agriculture Resilience Plan will involve the following:

- Project scoping and design
- Coordination with SLS partners
- Funding procurement for project implementation and farmland conservation
- Continued education to local farmers
- Partnership building

Growing a Thriving Local Food Culture

“Inspiring and supporting the future generation of farmers and eaters is really what it is all about. The excitement in this kiddo’s eyes as she proudly holds up her veggies, fresh from the field, is energizing for us. We want to grow a food culture in our community that shares this excitement and pride in fresh, healthy, local food that tastes great and allows the farming community to thrive here as well.”

Chelsea Johansen, Rainy Sunday Ranch, Photovoice 2017





Hands on Farming

"We are a small farm, a husband and wife team. If it needs prepped, seeded, weeded, planted, irrigated, transplanted, harvested, packed, marketed, or sold, we do it, all of it. We do almost all of it by hand, both out of necessity and preference. We enjoy being in close contact with the soil, with our farm, with our customers. We see value in small farms that are dedicated to being sustainable and relevant in our communities."

Chelsea Johansen, Rainy Sunday Ranch, Photovoice 2017