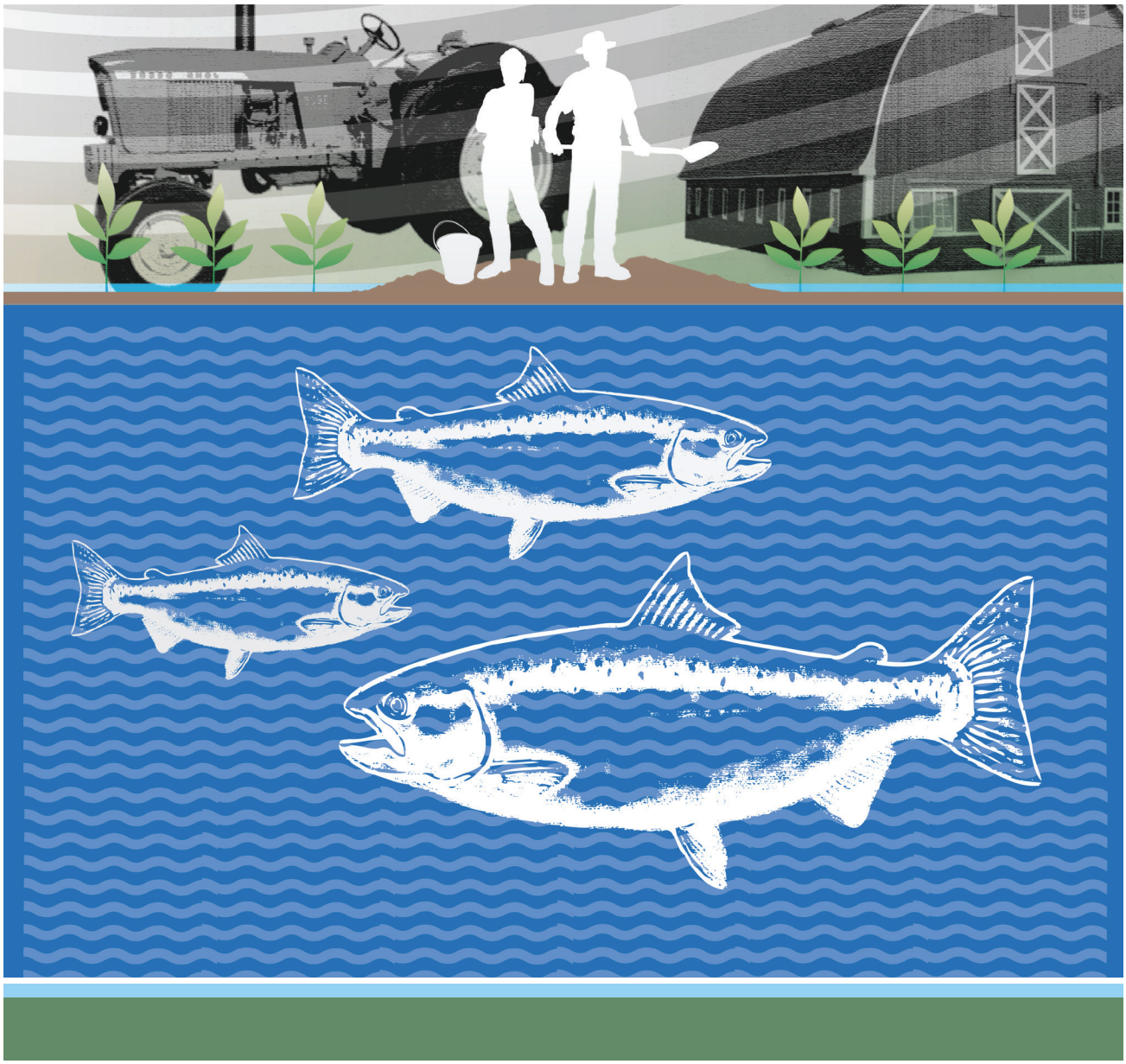
# SALMON-SAFE
# CERTIFICATION STANDARDS FOR FARMS

Version 3.0



February 2025

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# Introduction

Since 1996, Salmon-Safe's certification programs have successfully defined and promoted sustainable land management practices that protect water quality and promote habitat conservation across the West Coast.

## Why Farms?

As long-term stewards of the land, farmers play a key role in helping restore native fish and in maintaining healthy watersheds. This is the case, particularly now, during this time of increasing climate impacts.[1] Salmon-Safe certified producers provide a vision for voluntary adoption of resilience-building practices that keep streams healthy enough for salmon. Because salmon are indicator and keystone species, we know that if salmon thrive the watershed has the potential to thrive as well.

Salmon-Safe has worked collaboratively with farmers in Oregon, Washington, and California since 1997 and, in 2005, standardized fish-friendly farm guidelines under the *Salmon-Safe Farm Management Certification Program* (Salmon-Safe, 2005). In 2010, Salmon-Safe joined with two Canadian conservation organizations—Pacific Salmon Foundation and Fraser Basin Council—to expand Salmon-Safe farm certification across British Columbia.

Farmers face the challenges of limited time and resource availability. Wherever and whenever possible, Salmon-Safe rewards growers and ranchers who protect streams and other natural resources—those focusing on actions that provide the most benefit for fish and wildlife at the lowest cost to landowners.

Some of the benefits Salmon-Safe certification provides farmers include:

- **Stewardship recognition.** Through successful participation in the Salmon-Safe Farm Standards Program, farms will be recognized for:

    1. optimizing water use;
    2. maintaining healthy riparian and in-stream habitat conditions;
    3. using long-term soil conservation techniques;
    4. exercising nutrient and pest management practices that protect water quality; and
    5. contributing to overall habitat quality and productivity on the farm.

[1] Regional climate models project increases of up to 20% in extreme daily precipitation in Cascadia. The number of days with more than one inch of precipitation is projected to increase 13%. The increased precipitation is projected to occur during the late fall to early spring. Summer precipitation is anticipated to decrease. Regional warming and changes to the historical precipitation patterns have been linked to changes in the timing and amount of water availability. Region-wide summer temperature increases and, in certain basins, increased river flooding and winter flows and decreased summer flows, will threaten many freshwater species, particularly salmon, steelhead, and trout. Warming temperature impacts on watersheds with significant snowmelt contributing to spring and summer stream flows will likely result in lower summer flows. Salmonid species life stages are inherently tied to historic climate patterns and the resulting stream flow patterns. Any changes to flooding, duration of flows, and water temperature may adversely impact salmonid species.

- **The Salmon-Safe brand.** Salmon are an important part of the cultural, economic, and natural history of Pacific Coast watersheds. Salmon-Safe program participants lead the way in protecting salmon and other fish and wildlife species. Consumers have shown a willingness to pay premium prices for local, organic, and Salmon-Safe products. Producers using 95% or more Salmon-Safe certified ingredients may use the Salmon-Safe logo.
- **On-farm biodiversity.** By protecting and restoring habitat for native salmon and other native fish populations, Salmon-Safe farm certification may result in habitat benefits for other desirable native fish and wildlife on the property.
- **Climate resiliency.** Climate change is affecting water quality, water quantity, in-stream habitat, riparian habitat, and fish passage. Climate change considerations and opportunities for carbon sequestration are therefore integrated throughout Salmon-Safe's certification standards
- **Potential access to additional financial resources.** Salmon-Safe can assist farmers with finding grants and other funding sources for salmon habitat restoration activities, water rights leasing, and other conservation actions that benefit salmon.
- **Regulatory assurance.** Farmers using "beyond compliance" Salmon-Safe practices are less likely to create environmental risks that are subject to regulatory remedy and enforcement.

## Biological Basis for Certification Standards

While the primary focus of Salmon-Safe's certification programs is salmonid species and their habitat requirements, compliance with Salmon-Safe certification standards is intended to promote landscape-level conservation protection of biological diversity and climate resiliency. Salmon are keystone and indicator species in Pacific Coast watersheds and, because salmon conservation is tightly intertwined with the health of the larger ecosystem, Salmon-Safe farm evaluations focus on addressing the following key areas of habitat vulnerability, all of which are critical to salmonid survival:

- **In-stream habitat**—direct alteration of in-stream habitat, including stream beds and stream banks, through bank armoring, channelization, or removal of in-stream wood;
- **Riparian habitat**—elimination or reduction of riparian vegetation that can provide numerous stream habitat functions including shade, bank stabilization, source of in-stream cover (large and small wood), and food chain support;
- **Fish passage**—poorly designed or inadequately maintained stream crossings that are barriers to passage by adult or juvenile fish;
- **Water quantity**—increase in the magnitude, frequency, and duration of peak flows due to the loss of vegetative cover and conversion of natural soils to impervious surfaces; reduction of in-stream flows due to surface or subsurface water withdrawal for irrigation;

- **Biodiversity**—loss of the biodiversity of aquatic life, wildlife, and vegetation;
- **Water quality**—introduction of sediment, metals, nutrients, and other pollutants from surface or subsurface runoff (even where the closest waterway may seem distant); increases in water temperature from loss of canopy cover and water withdrawals; and
- **Climate resiliency**—temperature increases and changes in precipitation that will impact agricultural watersheds and the health of salmonid species.

Regional warming and changes to historical precipitation patterns have been linked to changes in the timing and amount of available water. The impacts of a warming planet have far-reaching implications, including, among others: (1) increased seasonal temperature; (2) precipitation changes; (3) rise in sea level; (4) human health impacts such as increased respiratory and cardiovascular disease; and (5) changes in forest health.[2] Salmon and many other native fish require cold water to thrive. Regional increases in summer temperature and, in certain basins, increases in river flooding and winter flows, plus decreases in summer flows, will threaten many freshwater species, particularly salmon, steelhead, and trout. The impact of warming temperatures on watersheds with significant snowmelt contributing to spring and summer stream flows will likely result in lower summer flows.

Salmon-Safe certification standards describe performance requirements that must be met for a farm to be considered for certification. These standards are designed to recognize farmers who operate with explicit goals of avoiding impacts to (and, ideally, improving) watershed health and habitat quality on their properties. Each certification standard includes performance requirements that define desired outcomes and restoration efforts that provide specific guidance for reaching these performance requirements.

[2] Extensive modeling has been conducted to predict future climate changes. These models predict that, by 2070, the average annual temperature could increase by approximately 3°F to 10°F, when compared to temperatures from the late 20th century. The greatest temperature increases are predicted to occur during the warmer months. The increased precipitation is projected to occur during the late fall to early spring. Summer precipitation is anticipated to decrease.

## Organization of Certification Standards

Certification standards are organized into seven categories:

### F.1 In-stream Habitat Protection and Restoration

F.1 standards focus on assessing the condition of the channel, including the streambed and bank, protecting intact habitats, and correcting deficiencies where feasible. For example, restoring volume and density of in-stream large wood can be an important tool for improving stream habitat. Standards address both physical and biological conditions that contribute to habitat quality.

### F.2 Riparian and Wetland Vegetation Protection and Restoration

F.2 standards focus on measures taken to protect land areas situated closest to rivers, streams, and wetlands. An intact riparian zone (i.e., an area generally defined as the transition between uplands and streams or rivers) is critical to the health and function of these waterways and to the health of salmonids and other aquatic species living within them. Similarly, protection of wetlands and adjacent wetland transition zones is important to maintaining water quality and the proper ecosystem functions salmonids and other aquatic species require.

When properly functioning, these areas can:

- improve and maintain water quality by filtering runoff as it flows from upland areas;
- provide shade to regulate water temperatures;
- promote bank stabilization; and
- provide breeding, forage, and cover habitat for both fish and wildlife.

### F.3 Water Use Management

Water withdrawals can adversely affect the habitat of salmon and other aquatic species, primarily by reducing in-stream flows. F.3 standards focus on actions that minimize the impacts of water withdrawal on fish and wildlife habitat by:

- reducing excess water use and water loss not related to productivity through more efficient irrigation technologies and practices and, when applicable, converting conserved water to in-stream use;
- adjusting the timing of water diversion so water is withdrawn only during periods when inadequate stream flow is not a major limiting factor for salmonid habitat and populations; and
- selecting alternative sources of irrigation water that help minimize or eliminate diversion of flows critical to salmon habitat and populations that minimize critical reductions to in-stream flows.

## F.4 Erosion Prevention and Sediment Control

Sediment delivery to fish-bearing streams is a major cause of habitat degradation, particularly in salmonid spawning areas. F.4 standards evaluate potential upland erosion sources, such as farm roads, agricultural fields, and pastures. (Bank erosion is primarily addressed in Category F.1 "In-stream Habitat Protection and Restoration", described above). Effective erosion control and maintenance practices are identified that improve soil stability and promote the creation of healthy soils by encouraging soil-building conditions.

## F.5 Integrated Pest Management (IPM) and Water Quality Protection

Salmon survival depends on clean water that is free of harmful levels of fertilizers (nutrients); pesticides (herbicides and insecticides, fungicides, and other biocides); petroleum (e.g., gasoline, diesel, oils, hydraulic fluid); and organic waste. These contaminants can travel long distances in surface water runoff and through shallow soils. F.5 standards focus on actions that:

- minimize overall inputs of these contaminants;
- restrict the type of chemicals that potentially could enter streams;
- develop acceptable methods of application through the use of a comprehensive management strategy such as an integrated pest management strategy; and
- construct proper facilities for the use, handling, and storage of chemicals.

## F.6 Animal Management

This category promotes management practices that prevent the adverse effects of livestock on waterways. Nutrients and pathogens from livestock operations can degrade water quality. Fecal contamination of streams and water bodies can be prevented through the use of adequate manure storage and handling methods. Erosion can be minimized by avoiding overgrazing and by careful management of trails, corridors, and streams. Wetlands are protected by limiting animal access to riparian areas.

Good animal management practices maintain pasture and rangeland health at levels that provide adequate forage while conserving soil and groundwater resources and providing habitat for fish and wildlife species.

## F.7 Landscape-level Biodiversity

F.7 standards focus on ensuring that farm practices support and enhance biodiversity for fish, wildlife, and vegetation throughout the farm. There is a growing body of evidence which indicates that agriculture benefits from greater biodiversity. Soil microfauna, such as bacteria and fungi, break down organic matter, help maintain the quality of soils, and recycle nutrients. Insects, spiders, and mites pollinate crop plants and fruit trees and prey on agricultural pests. At the ecosystem level, farm hedgerows, woodlots, and native planting areas attract beneficial insects or predators that feed on agricultural pests.

# Evaluation Process for Certification

## Scope: Whole Farm Assessment

The Salmon-Safe Farm Certification Standards are a "whole-farm" certification process, including both farmed and non-farmed areas. The evaluation process for Salmon-Safe farm certification assesses how a farm's operations directly and indirectly affect water quality and fish, as well as wildlife habitat.

The objective of the evaluation process is to compare overall farm management and operation to best management practices protecting watershed health and enhancing fish and wildlife habitat. Salmon-Safe certification is intended to acknowledge farms that do more than the minimum required to protect streams and salmon. All candidate farms must comply with local, state, tribal, and federal regulations on streams, wetlands, and natural resource areas. Existing restoration and enhancement projects are also assessed in the field to determine how effectively they provide habitat quality benefits for fish and wildlife. Based on the assessment, farm evaluators make additional conditions and/or recommendations for achieving certification under the Salmon-Safe Farm Standards.

Part A of the certification standards lists the pre-conditions that must be met by the farm for certification. Part B of the certification standards lists additional performance requirements and restoration efforts specific to six management categories that relate to the habitat needs of salmonids and other aquatic species (habitat-specific requirements for certification).

The phrase "to the greatest extent operationally feasible" is used throughout this document to recognize the need to balance guideline compliance with productivity, finances, and other site-specific conditions that may limit the ability of an operation to incorporate a portion of the standards or performance requirements into agricultural activities. Ultimately, the operational feasibility of implementing certain certification standards and performance requirements rests on the judgment of the evaluator(s) and is assessed on a site-specific basis.

### Independent Evaluation

One or more qualified independent experts, hired by Salmon-Safe, conduct farm assessments. Salmon-Safe often partners with LIVE (Low Input Viticulture & Enology, Inc.), Oregon Tilth, and other leading farm certification organizations to complete farm assessments. Consequently, an evaluator from one of our partner organizations, knowledgeable in aquatic ecological science, may conduct the assessment.

### The Evaluation Process

Salmon-Safe recognizes farms for going "above and beyond" the minimum requirements necessary to maintain a farm through addressing habitat quality benefits for fish and wildlife and overall environmental quality. It is not possible for every farm to achieve the standards necessary to be certified Salmon-Safe, however Salmon-Safe evaluators will make every effort to work with farm owners and/or managers to reach this goal.

The following is a general overview of the evaluation process.[3] Depending on the size of the farm, it may be modified. For growers wishing to be assessed as part of a group (e.g., growers operating under a common, umbrella organization), please refer to Appendix G: Group Assessment Protocol for additional information.

### Step 1—Review pre-conditions in Part A

Confirm the farm currently meets and is willing to comply with the pre-conditions in Part A prior to certification.

### Step 2—Contact Salmon-Safe or our regional partner

Salmon-Safe, or the regional partner representative, will ask questions to learn more about the property and its eligibility for Salmon-Safe certification. If the farm is a potential candidate, Salmon-Safe will assign an evaluator to assist in the process.

### Step 3—Preparation of baseline information

Prepare baseline information necessary for Salmon-Safe certification, including:

- map of the property showing the information described in the inventory section of each standard. (A single map is sufficient if it clearly shows the inventory items noted. Information to be included on the map is summarized in Appendix A);
- pest management information including pesticide use records covering a minimum of 12 months—a list of what pesticides have been used and what pesticides are planned to be used, along with their active ingredients. (See Table B-1, Appendix B for guidance);
- irrigation management information, including existing water rights;
- documentation or estimation of annual water usage, locations, and the condition of fish screens;
- all habitat restoration, soil stabilization, or soil conservation project planning documents;
- descriptions of other restoration or conservation activities conducted on the farm, if conducted outside of an established program; and
- documentation related to current animal waste management practices.[4]

[3] For farms pursuing Salmon-Safe certification in British Columbia, consult *Environmental Farm Plan (EFP)* (AGRI, 2010) for additional information.

[4] Farms pursuing Salmon-Safe certification in British Columbia, consult the *Nutrient Management Reference Guide* (BC Ministry of Agriculture, 2010) and refer to the description of the nutrient management plan (NMP) in the EFP guidelines (AGRI, 2010). NMP is a subcomponent of the EFP that is triggered by specific soil test indicators. The NMP includes a calculator that helps farmers optimize their crop nutrient usage while protecting surface and ground water resources.

### Step 4—On-site farm evaluation

Evaluator(s) will determine whether farms comply with standards by reviewing baseline documentation[5], interviewing farm owners/managers, and conducting farm assessments. In some situations, the farm evaluation may be performed virtually, in whole or in part.. Refer to Appendix F: Virtual Assessment Protocol for more information.[6]

### Step 5—Decision rule for certification

Certification is awarded when the farm meets all relevant certification standards and performance requirements. Specifically, the candidate farm must:

- meet all required R pre-conditions described in Part A of the certification standards;
- meet all applicable performance requirements described in Part B of the certification standards;
- meet or provide written agreement to meet restoration effort conditions stipulated by Salmon-Safe within a time period determined in conjunction with the farm evaluator. All certification candidates must show commitment to and progress toward meeting restoration effort conditions recommended by the evaluator; and
- meet any additional requirements enumerated by Salmon-Safe. Salmon-Safe may occasionally, on a case-by-case basis, stipulate one or more additional preconditions for certification that are specific to a particular candidate farm.

If the candidate farm does not fully meet the pre-conditions and/or performance requirements required for certification, the evaluation team may allow a farm operation to be conditionally certified by stipulating one or more conditions that must be met during the three-year certification period under an agreed-upon timeline.

[5] Farms pursuing Salmon-Safe certification in British Columbia who have completed the Riparian Health Assessment and Plan process of the EFP (BC Agriculture & Development Corporation, 2019) will have documentation from the planning process to assist in this determination.

[6] For large-scale farming operations, evaluators are typically not able to visit every part of candidate sites. Rather, the evaluators focus on key areas with the potential to positively or negatively impact fish, e.g., streams and other natural water resources, riparian areas, farm roads (which are often sources of sediment to streams), and other areas. In some instances, the evaluation may be conducted virtually (see Appendix E).

## Logo Use and Labeling Requirements

The Salmon-Safe labeling and marketing guidelines are intended to assure consumers that Salmon-Safe foods they purchase are produced and certified to consistent standards. The labeling requirements apply to raw, fresh, and processed foods that contain Salmon-Safe ingredients.

Products labeled "Salmon-Safe" must consist of at least 95% Salmon-Safe produced ingredients (excluding water and salt). Any remaining product ingredients must consist of products that are not available in Salmon-Safe form. Processed products that contain at least 70% Salmon-Safe ingredients may use the phrase "made with Salmon-Safe ingredients".

## Maintaining Certification

Salmon-Safe certification is valid for three years, subject to annual verification of satisfactory progress toward meeting certification conditions. Annual verification requirements vary depending on the scale and site characteristics of the farm but typically will, at a minimum, include photographs and/or written documentation. *[Note: Certified farms should also give Salmon-Safe notice regarding expansion plans, changes to crop selections that affect water usage, any changes to pesticide use, alterations to other management practices that are included in the certification standards, and staffing changes for Salmon-Safe's point(s) of contact].*

After the initial three-year certification period, farms may be recertified after a follow-up site assessment with a goal of continuous improvement of the land and stewardship practices related to watershed health.

# Certification Standards

## Part A: Pre-conditions for Certification

This section outlines pre-conditions that must be met for a farm to be eligible for certification.

1. Farm operation is not in violation of federal, provincial, state, or local environmental laws or associated administrative rules or requirements[7] determined by any regulatory agency through an enforcement action.

2. Water rights are legal and farms have met monitoring and reporting requirements.[8]

3. Standard management practices used in day-to-day farm maintenance do not jeopardize salmon or their habitat[9], as determined by conformance with performance requirements in Part B of the Certification Standards.

4. All pesticide use occurs within the context of an IPM process as documented in a comprehensive written strategy or as demonstrated or described during field assessment.[10]

5. Satisfactory progress is being made to address farm features and operations, such as irrigation ponds, road crossings, or concrete-lined streams that may degrade salmon habitat. These restoration efforts may include those required by the Salmon-Safe assessor as well as projects already being undertaken by farm management.[11]

[7] The *BC Environmental Farm Plan* identifies all federal and provincial regulatory requirements laid out in the EFP planning workbook.

[8] For farms pursuing Salmon-Safe certification in British Columbia, surface water and groundwater use must be licensed. Stored volumes, withdrawal rates, and annual water use must comply with the license.

[9] In British Columbia, all farms must comply with the *Code of Practice for Agricultural Environmental Management* as well as other provincial and federal regulations. These requirements are detailed in the EFP workbook.

[10] Farms pursuing Salmon-Safe certification in British Columbia should reference the EFP Reference Guide, Chapter 5, *"Pest Management"*, which is available for download at: *https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/environmental-farm-planning/efp-reference-guide/chapters/rg-chp5.pdf*

[11] An evaluation of buildings located on farm property is not included in Salmon-Safe certification.

## Part B: Habitat-specific Requirements for Certification

Part B organizes performance requirements under seven management categories.

Farm certification standards are designated with "F" prefixes (F.1 through F.7). The "F" designation is used to denote certification standards associated with farm operations in contrast to certification standards used for other entities, including the "B" series for corporate and university campuses (Salmon-Safe, 2008), the "G" series for golf courses (Salmon-Safe, 2010) and the "R" series for residential developments (Salmon-Safe, 2009).

**R** symbol indicates that conformance with the criteria is required as a precondition for certification. Those not designated with the **R** symbol are mandatory, but may be implemented during the certification process or, as a requisite requirement, be implemented over time for conditionally certified farm operations.

# Core Farm Certification Standards

The Core Certification Standards list standards and performance requirements organized into seven management categories, each covering a set of conditions important to conserving salmonid habitat.

## F.1 In-stream Habitat Protection/Restoration

### Standard F.1.1

**Stream channels provide habitat for salmonids and other aquatic species via naturally stabilized stream banks, meandering channel form, and accumulations of large and small woody debris where hydrologically and geomorphically appropriate.[12]**

Performance requirements

i. Stream and river crossings, in-stream structures, irrigation diversion structures, ponds, and any known historic channel manipulations are inventoried and locations are noted on a site map. See Appendix A for additional information on preparation of inventory maps.

ii. The number of stream crossings, including roads and trails, is minimized on the farm property. Stream crossings avoid filling, excavating, or straightening stream channels; unnecessary wood removal; and disconnection of off-channel wetlands and ponds.

iii. When a stream crossing is established, all applicable permits or authorizations from regulating agencies are obtained prior to undertaking any work[13]. The crossing is designed to avoid impacts to in-stream habitat, allow fish passage[14], and avoid constriction of flood conveyance during 50-year, 24-hour storm events or, if required by local, state, federal, or provincial regulations, meets more stringent flood conveyance requirements.

iv. Unnatural barriers to fish and wildlife, water, sediment, and large woody debris movement, such as undersized culverts, have been removed or plans are in place for removal.

v. Stream and wetland conservation and restoration measures provide a level

Standard F.1.1 *continues on next page* >

[12] For farms pursuing Salmon-Safe certification in British Columbia, refer to *BC Ministry of Water, Land and Air Protection,* 2025.

[13] For farms pursuing Salmon-Safe certification in British Columbia, Fisheries and Oceans Canada has developed materials to help those who plan to undertake projects in and around water comply with the federal Fisheries Act. See *DFO,* 2006 and *MOE,* 2005.

[14] See e.g., *NOAA Fisheries* (2008) or *BC Ministry of Water, Land and Air Protection* (2004).

of ecological function adapted to more extreme climate conditions, such as potentially higher and more frequent flooding in winter, and increased stream temperatures and reduced stream flows in summer.

vi. Existing channels are protected from new impacts such as filling and excavation, straightening, unnecessary stream crossings, excessive stormwater runoff from agricultural operations and disturbed areas, unnecessary removal of wood, or disconnection of off-channel wetlands. **R**

vii. Irrigation ponds with the potential to adversely impact stream temperature and water quality are not constructed or planned. **R**

viii. Irrigation diversion structures are designed to allow adult and juvenile fish passage and do not trap fish. New diversion structures meet applicable design guidance.[15]

Note: Certification Standard F.3 also addresses irrigation withdrawals.

### Restoration Efforts

i. Key in-stream habitat quality deficiencies have been identified and active efforts are being taken to restore stream channels to their natural conditions using techniques such as bioengineered bank stabilization (typically using a combination of large wood, plants, and other material to stabilize banks) and habitat enhancement.[16] Channel manipulation (except for habitat restoration) is avoided to the greatest extent operationally feasible.

ii. Unnatural in-stream barriers to fish and wildlife have been removed. If barriers exist, plans are in place to remove them where geomorphically appropriate.

iii. Existing levees have been removed or set back to avoid encroachment on the floodplain. Floodplains are restored to the greatest extent operationally feasible and no new levees or dikes are proposed.

[15] See e.g., *NOAA Fisheries* (2008) or *BC Ministry of Water, Land and Air Protection* (2004).

[16] Habitat enhancements can include such techniques as Beaver Dam Analog installation (BDAs) and Post-Assisted Log Structures (PALS).

## F.2 Riparian and Wetland Vegetation Protection and Restoration

The focus of category F.2 is protecting the land areas closest to streams and wetlands. An intact riparian zone is critical to the health and function of these waterways and the species within them. Protection of wetlands is essential to maintaining water quality and proper ecosystem function required by salmonids and other aquatic species.

For farm properties that do not contain streams or wetlands, upland vegetation can be critical in maintaining habitat complexity, reducing erosion and runoff, attracting beneficial insects and predators, and protecting downstream resources. Refer to Category F.7 for standards focusing on promoting landscape biodiversity, including biodiversity in upland areas.

### Standard F.2.1

Riparian areas are in good condition[17] and sufficiently maintain and restore stream health. Riparian buffers are maintained, restored, or unimpeded by structures or improvements.[18] The degree of canopy cover is comparable to healthy ecological reference conditions such that it provides adequate shade, wood recruitment, leaf litter supply, stream bank stability, and filtration of sediment to maintain aquatic habitat functions.

Performance requirements

i. Riparian areas, including size and quality of stream buffer areas, have been noted on a site map. At a minimum, the inventory consists of a map indicating areas where riparian function is impaired as described in Appendix A.

ii. Riparian zones or cultivation setbacks of perennial waterways (waterways with year-round flow, regardless of fish presence) and seasonal waterways potentially harboring salmonids and other aquatic species are an average of 50-100 feet wide, with a minimum width of 35 feet or other width consistent with local regulation.[19] As the slope of the adjoining field increases, the width of the riparian buffer zone

Standard F.2.1 *continues on next page* >

[17] For farms pursuing Salmon-Safe certification in British Columbia, refer to the *EFP Riparian Management Field Workbook for Streams and Small Rivers* (BC Agriculture Research & Development Corporation, 2019) for additional guidance.

[18] For farms pursuing Salmon-Safe certification in British Columbia, setbacks for farm buildings and manure storage facilities from watercourses conform to the *Code of Practice for Agricultural Environmental Management* (2019).

[19] Some flexibility in these distances may be considered if (1) the riparian zone can be demonstrated to be protecting waterways against sediment, agricultural chemicals, and other pollutants; (2) it provides shade when needed; and (3) it provides habitat for wildlife. Larger buffer widths are particularly important in geomorphic environments where the stream has a greater tendency to migrate widely and rapidly. In such instances, riparian buffer widths should extend across the entire channel migration zone. If 100% avoidance of the above setbacks and conditions is not possible, the effect on riparian buffers is minimized and mitigated to offset impacts to the function and qualities of the buffer and the water resources they protect.

must be increased to adequately protect the area from erosion and run-off. On slopes of 10% or more, riparian buffer zones should be no less than 50 feet wide. The required buffer zone size will also be affected by the width and depth of the adjacent water-way, riparian cover, soil properties, and the steepness of slopes.

iii. Riparian zones and buffer areas are adequately vegetated.[20] Riparian zones and buffer areas are vegetated, contiguous with the channel, and provide adequate protection of water resources.

iv. If 100% avoidance of disturbance to the riparian zone and buffer area is not possible, impacts are minimized and mitigated to maintain the function and quality of buffers and the water resources they protect.

### Restoration Efforts[21]

On farms where riparian buffer enhancements are needed, efforts are being taken to improve the vegetative cover and functional integrity of riparian zone buffer systems, with the most serious deficiencies being addressed first. Riparian zone restoration can be a large undertaking. Salmon-Safe looks to see whether farms with riparian zone deficiencies have identified problem areas, have a strategy in place for remedial action, and are showing signs of steady progress over a reasonable time frame. Implementation of restoration strategies is the responsibility of the grower, who reports their progress to Salmon-Safe.

i. Problem invasive plants within riparian buffers are identified, removed, and replaced with suitable plant species that are adapted to site conditions.

ii. Riparian zones are replanted with native species that are adapted to the region; promote winter nesting; provide cover for wildlife; and have forage value for aquatic invertebrates.

iii. New plantings for buffers are selected for their ability to improve overall biodiversity on a site within the constraints of project conditions. Priority is given to diverse selections of native species over other plant types. Plant selections that attract pollinators are encouraged because they have the potential to improve site biodiversity as well as agricultural productivity.[22]

iv. Where riparian buffer zones are already established, high priority is given to establishing tree canopy cover over salmonid-bearing and potentially salmonid-bearing streams in ways comparable to undisturbed local reference conditions

Standard F.2.1 *continues on next page* >

[20] Riparian canopy cover to provide water temperature reduction benefiting native fish and other aquatic species. Adequate vegetation will mean different things in different settings and will include variables such as type of plantings, depth of riparian buffer, density of plantings, and slope. For farms pursuing Salmon-Safe certification in British Columbia, use the quantitative methodology of *EFP Riparian Health Assessment* (BC Agriculture Research & Development Corporation, 2019) for furthe guidance.

[21] For farms pursuing Salmon-Safe certification in British Columbia, refer to *MAFF*, 2004.

[22] For farms pursuing Salmon-Safe certification in British Columbia, refer to *ARDCORP*, 2019.

(i.e., riparian zone restoration efforts aim to establish canopy cover similar to that present over relatively undisturbed salmon-bearing streams in the watershed). Subcanopy trees, shrubs, and groundcover provide additional cover and habitat, especially along stretches of streams or rivers in need of bank stabilization and shade to reduce stream temperature.

v. Dying trees, snags, and downed logs are left undisturbed in riparian buffer areas to provide cover, forage, and habitat complexity for species that use these ecosystems.

vi. Water from areas where runoff tends to concentrate is detained and treated before being discharged to the riparian buffer (see Standard F.4).

## Standard F.2.2

**Wetlands are protected and wetland buffers established to the greatest extent operationally feasible. Wetland protection is prioritized to provide off-channel salmonid (fish) habitat, improved water quality, additional floodplain storage, carbon sequestration, or other habitat benefits associated with proper wetland function.[23]**

### Performance requirements

i. Wetlands not currently in production remain set aside and protected to the greatest extent operationally feasible. If 100% of such wetland area cannot remain set aside and protected, wetland loss is mitigated on site to the greatest extent operationally feasible and in a way that contributes to overall site ecological and hydrological functions. R

ii. In dedicated agricultural production areas, wetlands are protected by a minimum 50-foot uncultivated buffer or to the greatest extent operationally feasible.[24]

Standard F.2.2 *continues on next page* >

[23] The goal is to improve wetland function consistent with local intact (properly functioning) reference wetland conditions. Note: Some enhancements may require agency notification or permitting documentation. Consultation with a local conservation specialist will help farm owners/managers navigate these options. Depending on the local reference conditions, enhancements may include:

- improvements of wetland hydrology and wetland vegetation;
- variations in wetland depth or spatial complexity;
- introduction of habitat features, such as placement of woody debris or encouragement of snags; and
- creation of adjacent upland habitats to support the life histories of wildlife using both wetland and upland habitats.

[24] For farms pursuing Salmon-Safe certification in British Columbia, refer to *Wetland Stewardship Partnership*, 2024.

### Restoration Efforts

i. Impacts to wetland functions, including water quality, water quantity, and habitat connectivity are minimized within 100 feet of wetlands to the greatest extent operationally feasible.

ii. Problem invasive plants in both wetlands and wetland buffers are identified, removed and replaced with suitable plant species adapted to site conditions. Whenever possible, native species are selected over other plants.

iii. Wetlands and wetland buffers should be vegetated consistently with local intact reference wetland conditions. Wetland vegetation, whether emergent, scrub-shrub, or forest, is characteristic of local reference wetlands and consistent with the habitat needs of local wetland species. New plantings are selected to improve overall biodiversity on a site within the constraints of project conditions. Plantings that attract pollinators will also improve site biodiversity and may provide benefits for agricultural productivity.

iv. If no livestock are kept on the property, wetlands and wetland buffers may be unfenced to allow unhindered access for local wildlife. Grazing by livestock is minimized and properly managed in wetland areas.

v. Degraded wetlands and wet areas exhibiting poor agricultural productivity have been identified. When possible, there is a plan to remove these areas from production and restore natural functions to the greatest extent operationally feasible. Mitigate impacts from use of wetland areas by (1) removing them from agricultural production, when possible, or (2) by creating improved floodplain habitat, off-channel habitat, and/or other wetland functions (e.g., habitat quality or water storage and infiltration).

## F.3 Water Use Management

The focus of this category is the use of water for irrigating farms. Withdrawals from waterways have the potential to impact salmonid and other aquatic species habitat, primarily by reducing in-stream flows. In addition, climate change is affecting the quantity, quality, and temperature of water available for salmon and other aquatic life. Impacts can be minimized by (1) selecting alternative water sources that do not reduce in-stream flows critical to salmon habitat and populations and (2) by reducing water use on such stream reaches. Water conservation methods that change the rate and volume of withdrawal are also beneficial. They include growing drought-tolerant crops, using efficient irrigation systems and reducing irrigated areas on the farm.

### Standard F.3.1

**Irrigation practices are managed to avoid impacts to salmonids and other aquatic species.**

Performance requirements

i. Irrigation system is efficient and minimizes water losses that do not contribute to crop productivity to the greatest extent operationally feasible. When applicable, conserved water is converted to in-stream use.

ii. For farms with a choice of irrigation water sources, the selected irrigation source has the least potential impact on in-stream flows or on stream reaches critical to salmon and other aquatic species, both on farm property and in areas downstream from it.

iii. Fish losses are avoided by installing fish screens or other equipment of comparable quality and type. Due to the presence of debris and sediment, and because of temperature changes and other damaging factors, fish screens are maintained on a regular basis.[25]

iv. Work on diversions, including installing and servicing pumps and intakes, is only done when salmonids are not present in streams, during approved in-stream work periods, and in accordance with federal, provincial, state, and local government regulations and permits.[26] R

Standard F.3.1 *continues on next page* >

[25] See, e.g., *NOAA Fisheries 2008*; *DFO*, 1995; or *USDA Guide to Fish Screens*, 2013 *https://efotg.sc.egov.usda.gov/references/public/NM/ENGTechNote6_Guide_to_Fish_Screens.pdf*

[26] If in-stream work is done when there is water in the stream, water is diverted around the construction area to limit impacts on water quality. As part of the dewatering, the program shall incorporate fish salvage/fish rescue to remove fish from the work area and prevent them from re-entering the construction area. Turbidity curtains or other in-stream sediment control and containment measures are used to prevent sediment and construction debris from entering the waterway.

v. Water is conserved through efficient application practices (i.e., micro-irrigation) as well as the scheduled timing of water application that gives specific consideration to crop requirements, daily rainfall amounts, soil types, and evapotranspiration rates for the area. Soil moisture is monitored to provide timely information about soil moisture levels relative to crop needs and to aid irrigation efficiency. Excessive water application is unacceptable.

vi. Irrigation withdrawal volumes and rates are estimated with the goal of showing reductions in water use over time and to demonstrate that no additional efficiencies are feasible. The performance of irrigation system equipment is routinely monitored to verify that motors, pumps, and delivery systems are performing well; according to specifications.

### Restoration Efforts

i. If the only available irrigation source is a salmon-bearing or potentially salmon-bearing stream, irrigation withdrawals are not harming fish or significantly limiting habitat quality for fish. If it is reasonably possible that fish may be harmed by irrigation withdrawals, the farmer takes one or more of the following actions to the greatest extent operationally feasible:

   - reduce the amount of area planted with high-water-demand crops;
   - select alternate crops that demand less water; and/or
   - seek alternative sources of water that do not limit habitat quality, particularly when required by fish during critical periods of their life cycle.

ii. If excess water rights not used for crop production exist for the property, consider leasing or transferring those excess water rights.

## F.4 Erosion Prevention and Sediment Control

Sediment delivery to fish-bearing streams is a major cause of habitat degradation, particularly for salmonid spawning beds. Stream bank erosion and upland surface soil erosion are two principal sources of sediment. Management practices need to adequately protect soils from movement in low and upland environments.

### Standard F.4.1

**Soil is protected from erosion and sediment is not transported to down-stream waterways or surface water bodies. Erosion is prevented using regionally adapted vegetative cover, mulch, or other methods that prevent off-site movement of sediment.**

Performance requirements

i. There is no evidence of unstable areas where surface runoff reaches streams or other waterways (e.g., rills, ditches, ruts, sheet erosion) on farm property.

ii. Regionally adapted cover crops, pasture grasses, and/or windbreak plantings are used to minimize soil erosion losses.

iii. Cover crops and pasture grasses selected are drought-tolerant and regionally adapted; sustain or increase levels of organic matter in the soil; enhance soil fertility, thereby reducing the need for nutrient application; and provide habitat value for wildlife (e.g. native plantings, pollinator habitat, wildlife migration corridors [27]) to the greatest extent operationally feasible. See Standard F.7.

iv. Highly erodible areas, such as the ends of row crop furrows, steep areas, or locations with unstable soils, are maintained in continuous vegetative cover or covered with straw, crop residues, mulch, or geotextile fabric to prevent erosion.

v. Deep-rooting native plants are used wherever possible to control erosion, improve soil stability, and enhance habitat value of crop rotation areas, buffers, and set-aside areas.

vi. Soil compaction is minimized by avoiding the use of heavy farm machinery when soils are susceptible to wasting or damage (e.g., when wet) and by planting deep-rooting crops or cover crops in high traffic areas. These practices help increase the soil infiltration rate and water holding capacity, thereby reducing surface runoff and associated erosion and sedimentation.

**Standard F.4.1** *continues on next page* >

[27] Refer to *NRCS Conservation Practice Standard, Pasture and Hay Planting Code 512*, specifically E512I and E512J.

vii. To the greatest extent operationally feasible, farm roads are stabilized, where appropriate, (e.g., where materials will not enter streams) with gravel, pine, or hemlock wood chips (avoid using cedar), geotextile fabric, or vegetative ground cover capable of withstanding the impacts of farm machinery use.

viii. Stormwater management systems reduce runoff from buildings and impervious surfaces such as roadways and parking lots using techniques such as dispersion (e.g., vegetated swales and rain gardens) and/or infiltration (vegetated filter strips) to minimize erosion and water quality impacts.[28] The size of these systems takes into account predicted changes in precipitation patterns relative to climate change and is appropriate for predicted changes in rainfall intensity and duration.

### Restoration Efforts

i. Reduced or minimum tillage allows plant residues to accumulate on the soil surface. This increases organic matter in the soil and increases soil organism diversity.

ii. Crop rotation is used to build soil to the greatest extent operationally feasible.

## Standard F.4.2

**Best management practices (BMPs), such as filter strips, water quality treatment ponds, swales, or other measures are used to prevent sediment from reaching waterways from high-erosion hazard areas including roads, steep slopes, dry gullies, animal watering and feeding locations, and animal trails.**

### Performance requirements

i. Erosion prevention and sediment control BMPs are developed and maintained at the farm. Farm property is regularly inspected following storm events. Evidence of erosion or surface runoff during inspections is immediately repaired consistent with BMPs and the above standards.

[28] For farms pursuing Salmon-Safe certification in British Columbia, AAFC has produced a "Revised Universal Soil Loss Equation for Application in Canada" (RUSLEFAC). Available for download at: *https://sis.agr.gc.ca/cansis/publications/manuals/2002-92/index.html*

## F.5 Integrated Pest Management and Water Quality Protection

Salmon survival depends on clean water free from harmful levels of nutrients (fertilizers), pesticides (herbicides and insecticides, fungicides, and other biocides), organic waste, and other pollutants. These contaminants can travel long distances in stormwater runoff to receiving streams. The principal methods for avoiding contamination of salmon-bearing waters are to (1) minimize overall inputs of these contaminants; (2) restrict the type of inputs; and (3) develop an acceptable method of application through comprehensive management processes, such as an IPM strategy.

### Standard F.5.1

**Soil fertility is maintained without excess nutrient runoff from cropland to surface waters and without nutrient leaching into shallow subsurface water or groundwater.[29]**

Performance requirements

i. The farm operation has developed and is adhering to a nutrient management strategy covering all major crops produced on the farm. Fertilizer, manure, compost, and other sources of nutrients are applied at agronomic levels. Fertilizer application rates are adjusted when manure or compost has already been applied. If excess nutrients remain in the soil at the end of the growing season, small grains or other cover crops are planted as feasible to help prevent excess nutrients from leaching to downstream waterways.[30]

ii. Plant tissue analysis, soil testing[31], or other methods of analysis are conducted on a routine basis to determine whether fertilizer is being over-applied to crops. Fertilization yield targets are set to avoid excessive rates of fertilization.[32]

iii. Nutrient application is timed to minimize runoff. Fertilizer use within buffer zones is restricted. Timing, application rate and methods, and fertilizer selection

Standard F.5.1 *continues on next page* >

[29] The 4R's of nutrient stewardship, or nutrient management, are commonly referred to when talking about proper nutrient application. The 4R's stand for right source, right rate, right time, and right place and serve to guide farmers to the management practices that help keep nutrients on and in the field. Refer to *https://www.canr.msu.edu/news/the-4r-s-of-nutrient-management* for more detail.

[30] For farms pursuing Salmon-Safe certification in British Columbia, refer to the *Code of Practice for Agricultural Environmental Management* (2019) enacted under the Environmental Management Act, for additional provincial reporting requirements.

[31] Baseline soil testing should be conducted at least once every three years, and should assess pH/electrical conductivity, organic carbon, bulk density, and soil texture.

[32] Fertilization yield targets provide a balance between fertilizing the crop and fertilizing the soil. Measuring Nitrogen Use Efficiency and averaging between field helps to implement a fertilization yield target. The Nutrient Tracking Tool (NTT) may be helpful: *https://ntt.tiaer.tarleton.edu/*

are based on minimizing impacts to riparian vegetation. R Fertilizer tracking shows a stable or declining trend in imported fertilizer use, taking into account any changes in acreage managed, specific uses, and other relevant factors.

iv. Soil compaction is minimized by avoiding field operations when soils are wet and by periodically planting deep-rooting crops or cover crops where possible. These practices help increase the soil infiltration rate and water holding capacity.

## Standard F.5.2

Pesticides on Salmon-Safe's "High Hazard" list of restricted pesticides (Appendix C) are strictly avoided. Chemistries on this list pose excessive risks to salmon and aquatic ecosystems, even when used carefully and in accordance with product label directions.[33]

### Performance requirements

i. No pesticide from the "High Hazard Pesticide List" (Appendix C) is to be applied.[34] R

ii. For applicable farms, Pesticide Risk Tool risk levels for both aquatic and non-aquatic indicators are within the acceptable range, or mitigation strategies are applied to reduce risk levels with Pesticide Risk Tool model output[35]. Salmon-Safe may, on a case-by-case basis, require growers to phase out additional chemistries that are highly impactful to pollinator and other non-target species.

[33] The compilation of the list, and additions to it, are driven by potentially acute or chronic impacts on salmonid fish and other aquatic species, including developmental and behavioral impacts Adverse impacts on essential organisms in the salmon food chain are also a factor in determining whether a pesticide should be placed on the list.

[34] Salmon-Safe is able to allow highly restricted and limited use of high-risk pesticides as an exception based on consultation with university researchers or extension and submission to Salmon-Safe of a variance request as described in Appendix C: Salmon-Safe High Hazard List.

[35] Salmon-Safe Pesticide Risk Tool implementation model currently under development. More information available at Pesticide Risk Tool: *https://pesticiderisk.org/*

## Standard F.5.3

Implement an IPM program that establishes an effective pest control management strategy, taking the environment into account, avoiding unnecessary treatments, and making the best use of the least toxic products and methods available.

### Performance requirements

i. Farm managers are committed to and demonstrate the use of IPM. Grower agrees to provide documentation of the use of IPM from scouting reports, ongoing pesticide use records, logs of cropping histories and past pest problems, or records of other practices. It is recommended that sightings of beneficial insects also be recorded in a farm log or other tracking mechanism (e.g., iNaturalist).

ii. Fields are scouted to enable early detection and targeted treatment of pest, disease and weed outbreaks.

iii. Pesticide selection takes into consideration the environmental persistence of chemicals, their toxicity to aquatic species, bloom timing of pollinator plantings, runoff, and leaching potential.

iv. Growers adopt soil fertility and cultural methods that help crops build natural pest resistance, help divert pests away from crops, and help slow the arrival and migration of pest species to and from crops.

### Restoration Efforts

i. A pesticide reduction strategy is in place that (1) reduces the impact of and unnecessary reliance upon pesticides; or (2) eliminates the need for them. These practices generally include the use of non-spray control methods (cultural practices and mechanical controls) and increased usage of biologically based methods for reducing the amount of chemical control required (see Appendix B).

## Standard F.5.4

Best management practices for responsible use of agricultural chemicals are in place to protect people and the environment and thorough training is provided for all workers who handle pesticides.

Standard F.5.4 *continues on next page* >

Performance requirements

i. Spraying is managed carefully to avoid drift and run-off, including to irrigation canals. The use of ultra low volume (ULV) applications is discouraged, except under ideal spraying conditions. Spraying is timed to avoid rain.

ii. Policy requiring field worker training in pesticide handling and use is in place and effectively implemented. This ensures farm worker safety is never compromised.

iii. Spray equipment is calibrated routinely to assure accurate rates of application and minimize control failures and environmental impacts. Anti-backflow devices are used on all continuous water, fertilizer, or pesticide application systems. Air gaps are maintained over spray tanks.

iv. Mixing, loading, transporting, and cleaning of pesticide and fertilizer application equipment do not produce appreciable surface water runoff. Practical steps are taken to minimize the chance of accidental spills.

v. On farms where fuel, fertilizer, or pesticides are stored in underground tanks, a groundwater or subsurface monitoring well is in place and checked at least once per year.

vi. Pesticides are safely stored in a locked building with ready access to safety and fire protection equipment. To prevent liquid products from flowing directly into streams or rivers due to fire or explosion, the storage building is surrounded by a berm or sited a suitable distance from all waterways.

## Standard F.5.5

Potentially hazardous materials, including pesticides and agricultural waste, are handled, stored, and disposed of properly such that streams, salmon, and other wildlife are protected.

Performance requirements

i. Materials handling is done in dry areas and where spills can be cleaned up without risk of contaminating stormwater or streams.

ii. Materials that could potentially contaminate streams or stormwater are stored in a secure dry location.

iii. The farm has rigorous policies in place to ensure that no contamination of storm-water or streams occurs due to methods and practices related to the storage and cleaning of equipment or the disposal of materials. These policies are adhered to by all farm personnel.

## F.6 Animal Management

Intensive management of livestock through rotational grazing practices is highly recommended. Rotating or moving livestock from pasture to pasture is determined by the number of livestock, the pasture size, whether the pasture is dry land or irrigated, the season, and the specifics of plant growth.

### Standard F.6.1

**Livestock are managed to avoid excessive soil compaction, erosion, and loss of vegetation cover while enhancing pasture condition.**

Performance requirements

i. On pasture lands, adequate forage remains or is restored throughout the year to protect soil and root systems, promote water infiltration and soil fertility, filter surface water runoff, restore hydrologic function, and increase and/or stabilize carbon balance and sequestration.

ii. Corridors and trails used to move livestock around pastures or to range land are managed to limit gullying and erosion and to preserve vegetation cover.

iii. Fencing, water gaps, dense vegetation, or other methods are used to prevent unwanted livestock access to streams[36] and other fish-bearing water bodies. R

iv. Alternative watering methods[37] like solar pumps, nose pumps, or wind pumps are considered.

v. Management Intensive Rotational Grazing (MIRG) systems are utilized to help prevent compaction and erosion; to maintain appropriate mowing and grazing heights; and to allow pastures to recover from grazing.

vi. Forage areas are routinely monitored for invasive plant populations. The spread of invasive plant populations on forage lands is identified using this monitoring process and treated early before it becomes a significant or pervasive problem.

[36] BC-based Salmon-Safe candidate farms refer to BCMAL. BC Range Fact Sheets & Publications: "*Riparian Grazing Management*", *https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/biodiversity/grazing-management-guide/grazing_management_guide.pdf*

[37] BC-based Salmon-Safe candidate farms refer to BCMAL, 2008. "Livestock Watering Worksheet: Watering Livestock Directly from Watercourses", *https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/water/livestock-watering/590302-1_direct_access.pdf*

## Standard F.6.2

Conduct animal waste management activities that limit fecal contamination of streams and water bodies. Manure has a high nutrient resource value that can be utilized to reduce fertilizer needs and to help avoid contamination of waterways.

### Performance requirements

i. Watering facilities are installed that limit or eliminate the need for livestock access to streams and irrigation ditches. R

ii. There is a manure management system in place (or in active development) that prevents contamination of surface or groundwater by animal waste.[38] See Appendix B for components of a manure management system. There is no evidence of manure leachate overflow from manure storage areas. R

iii. The operation has (or is actively developing) a manure and nutrient management strategy covering all manure produced on the farm, as well as all other sources of nutrients. A system is in place to beneficially recycle the nutrients in manure when supplies are in excess of local crop needs. Manure is applied to fields and pastures at agronomic rates, preferably in the form of compost. This field application method should not be used during the rainy season.[39] Where appropriate, fields are dragged to ensure manure is evenly distributed.

[38] For farms pursuing Salmon-Safe certification in British Columbia, refer to *Waste Management Code* and EFP guidelines (BC Agriculture Research & Development Corporation, 2019) for additional restrictions related to manure management.

[39] For farms pursuing Salmon-Safe certification in BC, see Farmwest for suggested spreading dates. *https://www.farmwest.com/climate*

## F.7 Landscape-level Biological Diversity Enhancement

There is a growing body of evidence suggesting that agriculture benefits from greater biodiversity. Soil microfauna, such as bacteria and fungi, break down organic matter, help maintain the quality of soils, recycle nutrients, and increases carbon storage and overall climate resiliency.[40] Insects, spiders, and mites pollinate crop plants and fruit trees and prey on agricultural pests, alongside bees, wasps, and butterflies. At the ecosystem level, farm hedgerows and woodlots can serve as conservation biological controls that attract beneficial insects or predators that feed on agricultural pests. Standards in this category are focused on ensuring that farm practices support and enhance biodiversity for fish, wildlife, and vegetation throughout the farm, and also protect rare and declining plant communities and, by extension, communities of native and declining insects, such as butterflies and bumblebees. Salmon-Safe may, on a case-by-case basis, require more extensive IPM practices that maintain pollinator and other non-target species.

### Standard F.7.1

Manage cultivated areas on the farm to encourage biodiversity. Using practices such as crop rotation and intercropping (the use of two or more crops together in combinations) supports beneficial insect and bird diversity and adds residues of different crops to the soil, stimulating soil organism diversity and aiding nutrient and disease management.

Performance requirements

i. In-farm biodiversity requires 5% ecological compensation area or in-farm functional equivalent. Add biological complexity to farming systems by increasing biodiversity of crops or areas surrounding crop margins. Strategies may include crop rotation, intercropping, strip cropping, pollinator or beneficial insect and bird planting strips, hedge-rows, windbreaks, or other practices that increase ecosystem wellbeing.[41] R A portion of the 5% must be designated permanent habitat.[42] If possible, ensure that pollinator habitat includes bloom covering the entire growing season (spring through fall).

[40] There are several resources that support on-farm climate resiliency, including energy, combustion, and electricity efficiency (NRCS standards 372 and 374), fuel breaks (NRCS standard 383), carbon and greenhouse gas accounting (COMET Farm, USDA), and quantifying carbon, water, and biodiversity performance (CoolFarm Tool).

[41] Additional, regenerative practices to consider include agroforestry, forage and biomass planting, forest stand improvement and forest slash treatment, grassed waterways, integrated crops and animals, mulching, perennial planting, reduction of off-farm inputs and recycling of on-farm biomass, silvopasture establishment, and tree/shrub establishment. Increased crop diversity may be achieved through the addition of diversified crops in the rotation, or *interseeding* (e.g., seeding a crop into an existing stand and staggering harvest; planting simultaneously or companion cropping; or alternating rows—strip-cropping).

[42] Refer to Xerces Society's *Plants for Pollinators* web page for guidance on seed mixes and regionally appropriate native plant recommendations for your area: *https://xerces.org/node/574*

## Standard F.7.2

Manage cultivated areas on the farm in a manner that maintains long-term soil health, biodiversity, structure, and fertility. Incorporate soil amendments, cover crops and plant residues as necessary to maintain soil. Compost, cover crops, biochar, and tilled-in plant residues help increase biodiversity within the soil which can lead to competitive exclusion of food-borne pathogens, increased soil fertility, reduced plant pests, and a more dynamic soil ecosystem.

Performance requirements

i. To the extent operationally feasible, provide beneficial soil cover (e.g., mulch, compost dressing) between cropping cycles or in areas where the ground is not cropped. Cover crops introduce nutrients and organic matter to soils, support soil microbial diversity, and provide habitat for beneficial insects and bird populations.

ii. To the extent operationally feasible, use reduced or minimum tillage techniques to decrease the intensity of soil cultivation and allow plant residues to accumulate on the soil surface. These strategies may promote an increase in the diversity of soil organisms on and below the soil surface (e.g., ground beetles, wolf spiders, entomopathogenic fungi, beneficial nematodes), limit loss of topsoil to erosion, and reduce the amount of carbon dioxide released into the atmosphere from farming practices.

iii. All tillage events shall be documented with a goal of reducing the intensity of tillage over time. Soil disturbance shall only occur when necessary to accomplish one or more of these objectives:

- to incorporate crop residues and/or green manures into soil to feed soil micro-organisms;
- to control weeds;
- to prepare seed bed/planting;
- to break up compacted soil; or
- to develop drainage.

Shallow cultivation tools must be used whenever possible.

# Standard F.7.3

## Implement farm practices that protect and maintain habitat for beneficial insects and wildlife within fields and field margins.

### Performance requirements

i. To the extent operationally feasible, harvest forage crops and mow to manage grass in sections (alternate mowing) to ensure that beneficial insects and wildlife have some intact habitat intact at all times. Practice mulch mowing and maintain a mowing or grazing height of no less than 3 inches in order to protect soil from weed establishment. Remove mowing from the annual maintenance cycle and implement biannual or varied mowing. Where possible, mow native species only after they have gone to seed.

ii. Create and implement an IPM protocol that incorporates strategies to attract beneficial insects and birds. Where possible, provide planting strips as habitat for beneficial insects and other wildlife and promote overall biodiversity.[43]

iii. Planting strips are strategically placed, where possible, to improve or expand riparian buffers; provide critical bird and wildlife habitat; encourage beneficial insects near crops and fields; reduce soil erosion; provide slope stabilization and uptake nutrients; and intercept sediment and other pollutants that may emanate from fields, developed areas, or roadways.

iv. Where possible, provide tillage refuges by leaving areas with native cover or soil amending cover crops intact between planting periods. When possible, delay fieldwork until after ground-nesting birds have finished nesting (until after young birds have fledged).

v. Operations will neither clear primary, untouched forest, or old-growth secondary forests, nor convert wetlands, shrublands, protected grasslands, or sagebrush, into agricultural production.

### Restoration Efforts

i. Incorporate strategies to encourage beneficial insects and provide habitat diversity within large fields such as planting strips, intercropping, hedgerows, and beneficial-insect attracting crops.

ii. To the extent operationally feasible and where shading will not adversely affect crops, plant and protect new trees to promote carbon storage and other ecosystem services.

[43] Examples include:
(1) beetle banks—grass strips in the center of large fields; and
(2) pollinator strips/hedgerows—multi-species planting strips that provide habitat for native insect species/pollinators and increase biological diversity and resilience with seed or plug nectar and pollen-producing plants (e.g., milkweed for Monarch butterfly habitat) located between fields, at field borders, and in riparian zones.

# Standard F.7.4

Protect and restore permanent non-farmed areas, including forests, wetlands, marginal fields, unimproved grasslands, fence rows, or other areas that are not actively farmed to promote refuges for biodiversity and increased carbon capture and storage.

### Performance requirements

i. Incorporate native flowering plants[44] that attract beneficial insects in areas that are not actively farmed.

ii. Encourage the development of areas with plantings that include both structural (trees, shrubs, and groundcover species) and species diversity along field borders and irregularly shaped areas of the farm to encourage beneficial and native insects, reduce soil erosion, decrease particulate emissions, and bolster carbon storage.

iii. Offer wildlife habitat and encourage beneficial insects.

iv. Leave wildlife trees (dying trees, snags, and downed logs) undisturbed in uncultivated areas to provide cover, forage, and habitat complexity for species that use such ecosystems.[45]

v. Encourage bats and insect- and rodent-eating bird populations through farm management practices.[46]

### Restoration Efforts[47]

i. Identify and eradicate problem invasive plants in non-farmed areas. Where invasive species and noxious weeds are identified, replace them with native plant species to improve overall biodiversity in uncultivated areas.

ii. Develop a strategy to monitor and control invasive species and noxious weeds using IPM protocols.

iii. Apply weed- and pest-free seed, planting stock, soil amendments, and thick mulches.

Standard F.7.4 *continues on next page* >

[44] Such plants are particularly important to adults of the wasp and fly families, which require nectar and pollen sources to reproduce the immature larval stages that parasitize or prey on insect pests.

[45] Leave woodlands as "wild" as possible. Retain fallen and rotting trees to provide habitat for insects, decomposers and soil microorganisms. Incorporate understory vegetation, roosting habitat for native forest dwelling bat species, forest songbird habitat, taller grass margins, and low-growing shrubs in woodland edges to provide continuous habitat from field to woodlands.

[46] Example practices include installing structures (e.g., bat boxes) and planting native vegetation.

[47] Native plants, such as oak trees and ceanothus, support more caterpillar food than non-natives, which in turn supports adult birds feeding their chicks. Other native plants such as Elderberry and Sumac, provide fruit. Natives such as pines and sagebrush provide good nesting habitat. For farms pursuing Salmon-Safe certification in British Columbia, refer to *ARDCORP* (2010).

iv. Where suitable, install nest boxes, nesting platforms, perches, bee blocks, and other habitat enhancement features. Conserve snags to improve habitat for bats, birds, pollinators, and other wildlife.

v. Install native plants for beneficial birds in field patches, hedgerows, and riparian areas.

## Standard F.7.5

### Maintain connectivity between riparian, wetland, and upland habitats to the greatest extent operationally feasible.

Performance requirements

i. Encourage wide ranging rodent-eating terrestrial predators through farm management practices.

ii. Habitat features on the property are, to the greatest extent operationally feasible, connected by vegetated corridors to other habitat areas on the farm and adjacent properties.

iii. Impediments to wildlife movement, including fencing and contiguous development or other unnatural barriers between habitats, are avoided to the greatest extent operationally feasible. If fencing is needed, it is designed to be wildlife-friendly.

Restoration Efforts

i. Where habitat features are not connected to other habitat areas (especially water), establish hedgerows, grass strips, tree canopy, or other contiguous vegetation.

ii. To the greatest extent operationally feasible, remove existing barriers to wildlife movement.

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[Note: this online resource is under development. Contact CWSP to request a copy.]

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# Glossary[48]

**303(d) list.** Under the Clean Water Act (CWA), the 303(d) list is the list of waters (streams and lakes) identified as impaired for one or more pollutants and that do not meet one or more water quality standards. The CWA is administered by the U.S. Environmental Protection Agency, with authority often designated to a state agency for local implementation. In Oregon, the 303(d) list is maintained by the Oregon Department of Environmental Quality (Oregon DEQ).

**6PPD-quinone, or 6PPD-Q.** A transformation product of 6PPD, which is contained in tire rubber as an antiozonant, and has been detected in roadway runoff, tire rubber leachates, and road dust.

**Best management practices, or BMPs.** Schedules of activities, prohibitions of practices, maintenance procedures, and structural or management measures that prevent or reduce the release of pollutants and other adverse impacts on the environment.

**Canopy cover.** A direct measure of the vegetation over the stream channel. Canopy cover is important in regulating stream water temperature.

**Carbon sequestration / carbon storage.** A natural or artificial process by which carbon dioxide is removed from the atmosphere and held in solid or liquid form (e.g. in the soil).

**Certification standards.** A set of specific guidelines or BMPs developed by Salmon-Safe for farm owners and other personnel with an interest in the design, construction, maintenance, and operation of farms in a manner that protects imperiled salmonid species and other associated aquatic and terrestrial habitat elements.

**Channel migration zone.** A channel migration zone (CMZ) is a geographic area along a stream or river channel where the channel is, has been, or may be in the future.

**Climate resiliency.** The ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate.

**Conservation biological control.** An approach to pest management that integrates beneficial insects back into crop systems for natural pest control, thus reducing the need for pesticide use.

**Evaluation team.** Farm assessments are conducted by qualified independent experts hired by Salmon-Safe. The evaluation team is well versed in aquatic ecological science, environmental engineering and landscape and stormwater management.

**Fish-bearing.** Indicates that the stream or waterway, ephemeral or perennial, has a fish population (salmonid or other) present at some time during the year.

**Indicator species.** An organism whose presence, absence, or abundance reflects a specific environmental condition. Indicator species can signal a change in the biological condition of a particular ecosystem, and thus may be used as a proxy to diagnose the health of an ecosystem.

**Keystone species.** A species on which other species in an ecosystem largely depend such that, if it were removed, the ecosystem would change drastically.

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[48] See BC Agriculture Research & Development Corporation. *Riparian Management Field Workbook for Streams and Small Rivers* (the companion document to the *Canada-British Columbia Environmental Farm Plan: Planning Workbook* (4th Edition, March 2019) for terms used in British Columbia.
*https://www2.gov.bc.ca/gov/search?id=2E4C7D6BCAA4470AAAD2DCADF662E6A0&q=riparian+management+field+workbook*

**Large woody debris (LWD).** Wood that is naturally occurring or artificially placed in streams. LWD is essential to a healthy stream because it provides habitat diversity and protects against flooding. Many streams negatively affected by human use lack a necessary amount of LWD.

**Management category.** In the context of these certification standards, six primary management categories have been defined to express the desired outcome of habitat conditions in a given project area:

(1) in-stream habitat protection and restoration;
(2) riparian, wetland, and locally significant vegetation protection and restoration;
(3) stormwater management;
(4) water use management (irrigation activities);
(5) erosion prevention and sediment control; and
(6) chemical and nutrient containment.

**National wetlands inventory (NWI).** A nationwide inventory and mapping database of wetland habitat, as maintained by the U.S. Fish and Wildlife Service. *http://www.fws.gov/nwi/*

**Performance requirement.** Specific, measurable criteria that represent the desired outcome for habitat conditions associated with a project. Performance requirements are a subset of their broader certification standards.

**Pesticide.** A general term for any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest; any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant; any nitrogen stabilizer.

**Potential fish-bearing stream.** A stream that either historically provided habitat or could, with adequate restoration, potentially provide habitat for fish, including salmonids.

**Riparian habitat.** Characterized by vegetated areas along bodies of surface water, including streams, wetlands and lakes. Typically, riparian habitats are distinct from upland areas, demonstrating an obvious difference in vegetation types, densities and structure.

**Salmonid.** A fish of the salmon family (*Salmonidae*, see below), including trout, salmon, char, and whitefish. All members of the family are freshwater fish or migrate into freshwater to spawn.

***Salmonidae.*** A family (taxonomic rank) of ray-finned fish that constitutes the only currently extant family in the order Salmoniformes, consisting of 11 extant genera and over 200 species, including North American salmon and trout species. Collectively known as "salmonids", and referred to as such throughout the Salmon-Safe standards.

**Salmon-Safe.** Salmon-Safe is an independent, nonprofit organization devoted to restoring agricultural and urban watersheds so that salmon can spawn and thrive. Founded as a project of Pacific Rivers, Salmon-Safe became an independent organization in 2002 and is based in Portland, Oregon.

**TMDL (Total Maximum Daily Load).** A calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources.

**Trout-Safe.** Trout-Safe is a program under Salmon-Safe that utilizes the core Salmon-Safe farm standards (this document) but offers a regionally appropriate, alternative brand for growers east of the Cascade Mountains.

**Waterway buffer.** A corridor of land of a specified width adjacent to the stream or wetland edge in which there are special management restrictions to protect and restore aquatic habitats.

**Wetlands.** Areas that are inundated or saturated by ground or surface water at a frequency and duration sufficient to support hydric soils and vegetation typically adapted for life in hydric soil conditions. Wetlands are regulated at the federal, state and local level.

# Appendices

# Appendix A Documents Required for Certification

The following documentation should, to the greatest extent possible, be prepared before any site visit by a Salmon-Safe evaluator occurs. The evaluator can, during the site visit, assist candidates with the completion of information that remains outstanding from this required list. The evaluator can also help candidates identify what information satisfies the outstanding information requirements.

## Farm Map

Map(s) should be prepared using an aerial photograph, a topographic map, a photo-copy of a road map, or a tax map as a base. If none of these basic resources or maps are available, the submitted farm map may be hand-drawn. Hand-drawn maps should be legible and able to show, as applicable, the following information:

- parcel boundaries
- rivers, waterways, wetlands[49]
- irrigation ponds and canals
- buildings/infrastructure[50]
- steep slopes, bare soils and/or other highly erodible land
- primary roads/bridges

## Integrated Pest Management Summary Information

- Integrated pest management strategies and related documentation including pesti-cide use records covering a minimum of 12 months (see Appendix B for guidance).

## Manure Handling and Storage Design Information

- Calculations demonstrating that the manure handling system has adequate capacity[51] for a 25-year, 24-hour storm event.

- Calculations or other documentation demonstrating that the manure handling system has sufficient storage capacity to store 120 to 180 days of manure production;

  OR

- Design information for composting, biogas, or other manure handling methods that are consistent with Standard F.6.1.

## Irrigation Management Summary

- An overview of irrigation methods, including a water right summary and estimate of annual water use.

[49] For farms pursing Salmon-Safe certification in British Columbia, refer to the nutrient management section of the EFP (BC Agriculture Research & Development Corporation, 2019) for manure storage guidelines.

[50] including farm operation areas (fields, animal feeding areas, equipment storage areas, etc.).

[51] EFP-BC Agriculture Research & Development Corporation (in 55).

# Appendix B

# Guidance on Developing an Integrated Pest Management (IPM) and Nutrient Containment Strategy

PM is a decision-making process that treats pests as a part of the total production system.

## The IPM Process

There are five parts to the IPM process:

1. PEST IDENTIFICATION—to positively identify the pest and learn about its biology
2. FIELD MONITORING—to track pest problems and beneficial insects over time
3. SETTING ACTION THRESHOLDS—to determine at what point treatment is necessary
4. REVIEWING TREATMENT OPTIONS AND MAKING THE TREATMENT—using "least toxic" products, when necessary, but also biological controls, trapping, and other non-chemical methods
5. EVALUATION—to determine whether the treatment has been effective and what else needs to be done

## Key Elements of a Salmon-Safe IPM Strategy

A Salmon-Safe IPM Strategy contains the following key elements:

1. **Pest control strategy** that emphasizes pest prevention and commitment to evaluate and use physical, mechanical, or biological control methods to the greatest extent operationally feasible before pesticides are used. Pest control strategies will be reevaluated at least once per year.
2. **Commitment to refrain from using high-hazard pesticides** identified in Appendix C
3. **Selection criteria for choosing pest control methods** that include/address potential negative impacts to aquatic systems
4. **List of approved limited-use pesticides**; reviewed annually; based on available information relating to their impacts on aquatic systems
5. **Training and education** in pest management techniques and IPM strategy
6. **Buffer zone width** and **pesticide use restrictions** within buffer zones
7. **List of strategies for attracting beneficial insects**
8. **List of applied pesticides and discussion of application methods** (including equipment, frequency, timing, location, formulations and amounts used)
9. **Precautions taken to prevent pesticide drift**
10. **Pesticide applicator licensing requirements**
11. **Pesticide storage, rinsate, and disposal policies**
12. **Pesticide tracking system**

## Manure Management System

The components of a manure management system includes and considers the following:

1. A manure storage management strategy is in place which takes into consideration a 25-year, 24-hour storm event; moves the facility outside of the floodplain, if applicable and operationally feasible; and protects the manure storage facility from structural damage caused by a 100-year flood event, regardless of the facility's location within or outside the floodplain.
2. Sufficient storage capacity is in place to store 120 to 180 days of manure production, unless the operation has access to other environmentally acceptable methods for recycling manure nutrients, such as composting and/or biogas production. All manure and/or compost piles are covered during rainy periods and/or a leachate containment system is in place.
3. Confined livestock facilities, manure piles, liquid storage tanks, and lagoons are not located in floodplains or other areas with shallow groundwater tables and/or frequently moist or saturated soils. Clean water runoff from roofs, surface flows, and overflowing waters are diverted away from manure piles.
4. Livestock confinement and manure storage facilities are designed to prevent direct or indirect flow of manure into streams, rivers, or other surface waters in the event sustained heavy rains and runoff, storage tank ruptures, leaching from in-ground pits, or storage lagoon breaches occur.
5. Seasonal livestock feeding areas are managed to avoid environmental contamination.
6. Roofs and covers for waste management facilities and secondary containment facilities are provided.

## Biologically-based Methods for Salmon-Safe Growers

Biologically-based methods for Salmon-Safe growers may include:

1. Insect-eating birds and bats can be encouraged by providing species-specific nesting boxes.
2. Beneficial plantings and/or choosing to not mow beneficial plants around the fields can encourage predatory insects and thereby reduce the need for chemicals.
3. Planting rows designated for insect use can decrease insect pressure on viable crops.
4. Beetle banks can be installed. These grass strips may be planted in the center of large fields to provide habitat for beneficial insects. Beetle banks take their name from ground beetles, an important predatory insect.

## Additional Resources for IPM Strategy Development

Additional resources for developing and improving IPM strategies can be found at:

*"Farmscaping for Beneficials Resource List"*
*https://agsci.oregonstate.edu/sites/agscid7/files/assets/fab_willamette_valley_resource_list_5.22.pdf*

*"Plants for Pollinators in Oregon"* (USDA & NRCS Plant Material No. 13)

Wild Farm Alliance. *Beneficial Bird Habitat Assessment and Native Plant Tool.*
*https://www.wildfarmalliance.org/tool*

Xerces Society. Mace Vaughan, et.al. *Farming for Bees: Guidelines for Providing Native Bee Habitat on Farms. 2015. Available for download at: https://www.xerces.org/publications/guidelines/farming-for-bees*

See Standard F.7 for additional methods for promoting on-farm biodiversity.

## IPM Template

This section is provides one option for demonstrating compliance with Standard F.5.3. Other formats are acceptable as long as they address the items described in the standard.

### Pest Control Strategy

Describe how pesticides are selected.

### Limited Use List

1. Describe which pesticides are approved for use in aquatic buffers.
2. What methods or restrictions are used to protect waterways when applying pesticides within buffer zones?
3. What policies are in place to ensure no contamination of stormwater or streams occurs due to the storage and cleaning of equipment or disposal of pesticides?
4. How are these policies communicated to farm staff?

### Pesticide Tracking

How is pesticide use tracked? Confirm the farm conforms with required Department of Agriculture tracking and describe any additional information collected.

### Pesticide Applicator Licensing

All persons applying pesticides must be currently licensed as private pesticide applicators by their state or provincial Departments of Agriculture. Licensed personnel must be specifically endorsed for any of the state-defined categories of pest control they undertake, such as aquatic endorsement for all aquatic pest control activities. Verbal check with landowner or manager.

**Table B-1.** Pesticide Use and Storage Locations

| List all pesticides stored and used on farm (attach additional pages if necessary).† | High hazard? Y / N ‡ | Active Ingredient | Storage Location | Location(s) where pesticide is applied | Distance from waterways | Application rates |
|---|---|---|---|---|---|---|
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† Farm owner or manager must provide update to Salmon-Safe if additional pesticides are added.

‡ If any pesticide included on the high hazard pesticide list is used, a written explanation for each high hazard pesticide must be provided. Describe why the pesticide is needed, what practices are used to minimize hazard to aquatic systems, and provide specific information on locations, timing, and application methods.

**Table B-2.** Fertilizer Use

| List all fertilizers stored and used on farm (attach additional pages if necessary). | Fertilizer Grade | | | Slow Release? | Location(s) where applied | Application rates |
|---|---|---|---|---|---|---|
| | Nitrogen | Phosphorus | Potassium | Y / N | | |
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# Appendix C Salmon-Safe List of High Hazard Pesticides

## Salmon-Safe High Hazard List of Pesticides (HHL)

High hazard pesticides are a serious threat to salmon and other aquatic life. Pesticide formulations can also contain other ingredients that are potentially more toxic than the active ingredients, such as non-ionic surfactants. In addition to killing fish, high hazard pesticides at sublethal concentrations can stress juveniles, alter swimming ability, interrupt schooling behavior, cause salmon to seek suboptimal water temperatures, inhibit seaward migration and delay spawning. All of these behavioral changes ultimately affect survival rates.

The following table lists many of the pesticides known to cause problems for salmon and other aquatic life. Use this list to identify pesticides that require special consideration.

***Note: The table lists only some of the currently available and commonly used pesticides.***

## SALMON-SAFE HIGH HAZARD LIST OF PESTICIDES (February 2025)

### Insecticides

| | | | |
|---|---|---|---|
| abamectin* | dimethoate(3) | methamidophos(3) | propargite*(7) |
| acephate | esfenvalerate* | malathion*(1) | spirodiclofen* |
| bifenthrin* | ethoprop(3) | methidathion | spirotetramat |
| carbaryl(2) | fenamiphos*(3) | methomyl | tefluthrin* |
| chlorantraniliprole | fenbutatin-oxide*+(7) | methyl parathion | terbufos* |
| chlorpyrifos*+(2) | fenpyroximate* | naled*(3) | thiacloprid |
| cyfluthrin* | fipronil* | novaluron | tralomethrin* |
| cypermethrin* | imidacloprid | permethrin* | zeta-cypermethrin |
| diazinon*+(1) | indoxacarb | phorate*+(3) | |
| diflubenzuron(7) | lamda-cyhalothrin* | phosmet*(3) | |

### Fungicides

| | | | |
|---|---|---|---|
| azoxystrobin* | copper sulfate** | mancozeb | quintozene (PCNB) |
| bensulide | fenarimol | maneb* | thiram |
| captan | folpet* | picoxystrobin* | trifloxystrobin* |
| carboxin | inpyrfluxam | propiconazole | triflumizole |
| chlorothalonil*(4) | iprodione | pyraclostrobin* | |

### Herbicides

| | | | |
|---|---|---|---|
| 2,4-D(4) | dithiopyr | oryzalin(5) | thiobencarb |
| alachlor | diuron+(4) | oxadiazon+ | triallate |
| atrazine | fluazifop-p-butyl | oxyfluorfen | triclopyr BEE(4) |
| bromoxynil* | isoxaben | pendimethalin+(5) | trifluralin+(5) |
| copper sulfate** | linuron(4) | pentachlorophenol (PCP)* | paraquat dichloride |
| dichlobenil | metalochlor | prometryn | simazine |
| dichlofop-methyl | norflurazon+ | pyraclonil | sulfentrazone |

Very Highly Acutely Toxic and/or Highly Acutely Toxic[1] to fish and/or aquatic invertebrates.
Based on EPA's Aquatic Life Benchmarks[2].

Pesticide names followed by a number in parentheses indicates the specific NOAA /NMFS Biological Opinion where it was assessed for jeopardy and/or habitat destruction/modification to endangered salmonids in accordance with the Endangered Species Act ***(https://www.epa.gov/endangered-species)***, regarding the 37 pesticides listed in the Washington Toxics Coalition (WTC) court settlement. Completed BiOps listed below[3].

* Active ingredients being Very Highly Acutely Toxic (LC50 or EC50 <100 ug/L) to BOTH fish and aquatic invertebrates

\+ Active ingredients determined to generally have very high potential for risk of off-target movement through surface runoff, based on the pesticide's adsorption to soil/sediment and its field dissipation half-life (persistence) ***https://ccpestmanagement.ucanr.edu/files/237465.pdf***

** Salmon-Safe limited-use restrictions apply to any pesticide containing copper, including copper hydroxide, copper ammonium hydroxide, copper carbonate, copper oxide, and others.

Salmon-Safe High Hazard List of Pesticides | List and Table References with Additional Notes

| 1. US EPA Toxicity Classification | Acute Aquatic LC50 or EC50 (ug/L) |
|---|---|
| Practically Nontoxic | > 100,000 |
| Slightly Nontoxic | > 10,000; <= 100,000 |
| Moderately Toxic | > 1,000; <= 10,000 |
| **Highly Toxic** | **> =100; <= 1,000** |

**These ratings are based on acute toxicity and do not account for chronic and/or possible sub-lethal effects:**

- Fish acute toxicity is generally the lowest 96-hour LC50 or EC50 in a standardized test, commonly using rainbow trout, fathead minnow, or bluegill.
- Acute invertebrate toxicity values are usually the lowest 48 or 96-hour LC50 or EC50 in a standardized test, commonly using midge, scud, or daphnia.

2. Both EPA-established acute and chronic aquatic benchmarks are available on the EPA website:
*https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks*

In addition to inherent toxicity, the overall assessment of the risk of a specific pesticide to aquatic water quality should consider a number of other factors: Pesticide Properties (e.g., water solubility, soil adsorption, half-life); Environmental Properties (e.g., soil makeup, climate); and Management Practices (e.g., application methods, use rate, irrigation, no-till). These properties and their possible interactions are discussed in detail in the following UC publications:
*https://anrcatalog.ucanr.edu/pdf/8119.pdf and https://anrcatalog.ucanr.edu/pdf/8161.pdf*

The 28 Threatened or Endangered species listed in the Biological Opinions (BiOps) are described as Evolutionarily Significant Units (ESU) and are species, location/habitat, and temporally specific. For example, Chinook salmon are assessed as 9 separate ESU's in the BiOps: (1) Chinook salmon (Puget Sound); (2) Chinook salmon (Lower Columbia River); (3) Chinook salmon (Upper Columbia River Spring-run); (4) Chinook salmon (Snake River Fall-run); (5) Chinook salmon (Snake River Spring/Summer-run); (6) Chinook salmon (Upper Willamette River); (7) Chinook salmon (California Coastal); (8) Chinook salmon (Central Valley Spring-run); and (9) Chinook salmon (Sacramento River Winter-run).

Refer to the Biological Opinions Summary and Schedule for a detailed list and description of each ESU and their geographic range:
*https://www.fisheries.noaa.gov/national/consultations/pesticide-consultations*

## Variances and Variance Requests

A farm using any of the pesticides indicated as "High Hazard" may be certified only if written documentation is provided that demonstrates a clear need for use of the pesticide, that no safer alternatives exist and that the method of application (such as timing, location and amount used) represents a negligible hazard to water quality and fish habitat. All variances must be approved in advance by Salmon-Safe.

For more information about the variance process, or to request a variance form, please contact Salmon-Safe at info@salmonsafe.org.

**Salmon-Safe Inc.**
1001 SE Water Ave, Suite 450
Portland, Oregon 97214
(503) 232-3750
info@salmonsafe.org

# Appendix D Whole-Farm Variance

The Salmon-Safe Farm Certification Standards are a "whole-farm" certification process, including both farmed and non-farmed areas. The evaluation process for Salmon-Safe farm certification assesses how a farm's operations directly and indirectly affect water quality and fish and wildlife habitat.

If it is infeasible to assess all contiguous property (i.e., whole-farm), the farm may be certified only if written documentation is provided demonstrating that it is impracticable for the excluded area to meet Salmon-Safe standards. No more than 20% of the property area may be excluded through the variance. Any crops harvested from the excluded area may not be identified with the Salmon-Safe name or logo.

All variances must be approved by Salmon-Safe as part of the assessment process and are subject to review every three years, during re-assessment. The variance evaluation shall consider crop selection, water quality protection across the farm, use of least-toxic options, expert guidance, and financial limitations.

The variance form follows on pages 50 and 51.

**An electronic fill-and-save version of the variance form is also available.**
Send your request to *info@salmonsafe.org*

# Appendix D Whole-Farm Variance Form

VISIT SALMONSAFE.ORG TO DOWNLOAD A FILL-AND-SAVE VERSION OF THIS FORM

**1. Describe the size and location of area(s) to be excluded, as well as total property acreage.**

*Variance acreage may not exceed 20% of the farm's total acreage.*

**2. List crops grown and describe barriers to meeting Salmon-Safe standards,**

*(e.g., pest pressure, economic sustainability challenges, labor requirements, etc.).*

**3. List "high hazard" pesticide challenges for variance acreage (if applicable).**

*The following "high hazard" pesticide products and methods of application are used on the variance acreage described in Questions 1 and 2.*

| Product Name | Active Ingredient(s) | Method of Use *application type-rate-frequency-location-amount* | Reduction Strategy |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

*To include additional "high hazard" pesticides in your variance request, please attach an additional form.*

## 4. Assessment of Risk to Water Quality and Fish Habitat

**Describe any impacts to water quality and fish from the proposed variance describe above.**
*Include information related to the variance area's proximity to sensitive habitats as well as proposed strategies that will ensure there is negligible risk to salmonids and other aquatic life in the variance area.*

## 5. Describe research efforts.

*Include information related to references and consultation with university extension offices and/or other technical experts.*

**CHECK HERE** if university extension or other outside experts have been consulted. ☐

**ADMIN USE ONLY** *Salmon-Safe Variance Decision*

☐ **APPROVED**

☐ Declined

Comments

Name

Date

# Appendix E

# Resources for Preliminary Assessment and Restoration Funding

## Water Management and Irrigation Efficiency Resources

### Freshwater Trust

Freshwater Trust works with landowners to restore flows to Columbia River tributary basins that are a priority for watershed restoration because of the presence of ESA-listed fish species. Farms with surface water withdrawals from streams in the Hood, Umatilla, Grande Ronde and John Day River basins would be eligible for lease, sale or efficiency incentives focused on restoring flows.

*http://www.thefreshwatertrust.org/*

### Washington Water Project of Trout Unlimited

Washington Water Project advocates for collaborative, commonsense water planning solutions that balance the needs of communities, farms and ranches with the health of rivers, fish and wildlife habitat. WWP also partners with ranchers and landowners to restore damaged streams and watersheds.

*https://www.tu.org/conservation/*

### Columbia Basin Water Transactions Program

The Columbia Basin Water Transactions Program (CBWTP) works with landowners in Oregon, Washington, Idaho and Montana to restore flows to streams through permanent acquisitions, leases, investments in efficiency and other incentive-based approaches.

*https://www.nfwf.org/programs/columbia-basin-water-transactions-program*

### Washington Water Trust

Washington Water Trust (WWT) works with landowners in Washington State to restore in-stream flows through lease or purchase of water rights. WWT prioritizes the Washington State Department of Ecology's designated 16 Critical Basins

*https://ecology.wa.gov/whacochp16_16_2017*
*http://www.washingtonwatertrust.org/*

### Washington State Conservation Commission

Sustainable Fields and Farms

*https://www.scc.wa.gov/programs/sustainable-farms-fields*

## Technical Assistance with Restoration

**Alberta Riparian Habitat Management Society** (also known as "Cows and Fish")
*http://www.cowsandfish.org/*

**ARDCORP** Environmental Farm Plan. Management Plan Resources.
*https://iafbc.ca/environmental-farm-plan/#resources*

ARDCORP (BC Agricultural Research & Development Corporation)
Environmental Farm Plan. Management Plan Resources.

*https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/programs/environmental-farm-plan*

*Biodiversity Guide*
*Drainage Management Guide*
*Irrigation System Assessment Guide*
*Nutrient Management Guide*
*Grazing Management Guide*
*Riparian Management Field Workbook*
*Vegetative Buffers Guide*

NOTE: The BC EFP is currently being delivered by the Investment Agriculture Foundation of BC.

*https://iafbc.ca/environmental-farm-plan/*
*https://iafbc.ca/environmental-farm-plan/#resources*

BC Ministry of Agriculture, Food and Fisheries

*Agricultural Ditch Maintenance Lower Fraser Valley and Vancouver Island.* ND.

*https://a100.gov.bc.ca/pub/eirs/lookupDocument.do?fromStatic=true&repository=BDP&documentId=6470*

BC Ministry of Environment

*Best Management Guidelines.* ND.

*http://www.env.gov.bc.ca/wld/BMP/bmpintro.html*

*Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia.* 2014. Available for download at:

*https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/laws-policies-standards-guidance/best-management-practices/develop-with-care?keyword=develop&keyword=with&keyword=care*

*Best Management Practices for Installation and Maintenance of Water Line Intakes.* July 27, 2006.

*http://www.env.gov.bc.ca/okanagan/documents/BMPIntakes_WorkingDraft.pdf*

*Wetland Ways: Interim Guidelines for Wetland Protection and Conservation in British Columbia.* "Chapter 3: Agriculture". March 2009.

*https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/best-management-practices/wetland_ways_ch_3_agriculture.pdf*

BC Ministry of Water, Land and Air Protection

*Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia.* November 2004.

*https://a100.gov.bc.ca/pub/eirs/finishDownloadDocument.do?subdocumentId=2993*

*Standards and Best Practices for Instream Works.* March 2004.

*http://www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf*

Community Alliance with Family Farmers.
Earnshaw, S. "Hedgerows for California Agriculture". *2000.*
*http://www.caff.org*

Ducks Unlimited, Wetland and Wildlife Conservation Programs
*https://www.ducks.ca/our-work/wetlands/*
*https://www.ducks.ca/our-work/wildlife/*

Fisheries and Oceans Canada and Ministry of Environment, Lands and Parks
"Land Development Guidelines for the Protection of Aquatic Habitat". 1992.
*https://waves-vagues.dfo-mpo.gc.ca/Library/165353.pdf*

NRCS. Climate-Smart Mitigation Activities.
*https://www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/climate/climate-smart-mitigation-activities*

Millar, J., N. Page, M. Farrell, B. Chilibeck, and M. Child. 1997. "Establishing Fisheries Management and Reserve Zones in Settlement Areas of Coastal British Columbia. Fisheries and Oceans Canada". *Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 2351*. Vancouver, B.C.
*http://waves-vagues.dfo-mpo.gc.ca/Library/213234.pdf*

Stewardship Centre for British Columbia
*https://www.stewardshipcentre.bc.ca/*

United States Department of Agriculture (USDA)
"Pollinator Conservation Farm Bill Programs (2018–2023)." *Biology Technical Note No. 78*, 4th Edition, June 2023..
*https://directives.sc.egov.usda.gov/49661.wba*

University of California Agriculture & Natural Resources Statewide Integrated Pest Management Program
*Bee Precaution Pesticide Ratings.*
*https://ipm.ucanr.edu/bee-precaution-pesticide-ratings/*

Xerces Society
*http://www.xerces.org/pollinator-conservation/*

# Appendix F Virtual Assessment Protocol

While Salmon-Safe certification typically is based on on-site inspection with an expert assessor, virtual assessment is available in response to a variety of restrictions preventing planned on-site assessments and reassessments during regular certification cycles (e.g., health advisories, inclement weather, remote locations, etc.). This protocol shall be used, as applicable, in areas subject to public health and mobility restrictions.

## VIRTUAL ASSESSMENT | New Certifications and Lapsed Certifications

Salmon-Safe assessments may, under certain circumstances and with assessor training, be conducted during the coronavirus pandemic on an entirely virtual basis, with growers, Salmon-Safe staff, and independent assessors working on Zoom or similar online conferencing platforms. These virtual assessments replace customary on-site assessments and include the following steps:

- grower reviews Salmon-Safe Farm Standards
- introductory call to review assessment process and address questions
- grower collects and submits most current pesticide application records, irrigation records, and other relevant documents to assessor for review
- assessor schedules and conducts assessment with grower
- assessor submits certification report to Salmon-Safe
- Salmon-Safe issues certification decision and letter for sign-off
- Salmon-Safe formalizes certification upon receipt of signed certification letter, if applicable

## ON-SITE ASSESSMENT | New Certifications and Lapsed Certifications

For sites ineligible for the virtual assessment process described above, growers may opt for a modified on-site assessment. Farm certification assessments during a health advisory are conducted on-site, based on a mutual agreement between Salmon-Safe and the grower. They are contingent on compliance with any travel restrictions or other directives issued by local, state, and federal government. On-site assessments include the following steps:

- grower reviews Salmon-Safe Farm Standards
- introductory call to review assessment process and address questions
- grower collects and submits most current pesticide application records, irrigation records, and other relevant documents to assessor for review
- assessor schedules and conducts assessment with grower

*Salmon-Safe assessors may opt to schedule a phone session before and/or after the site visit to minimize the time required on site.*

*Participating growers and Salmon-Safe assessors shall adhere to the appropriate health authority guidance (e.g. Centers for Disease Control and Prevention), as applicable.*

- assessor submits certification report to Salmon-Safe
- Salmon-Safe issues certification decision and letter for sign-off
- Salmon-Safe formalizes certification upon receipt of signed certification letter, if applicable

## RECERTIFICATION ASSESSMENT | Existing Certified Sites

For existing certified sites where it is not possible for an assessor to conduct an in-person assessment, Salmon- Safe offers an emergency procedure allows for an extension of certification upon confirmation that certification is current and all conditions have been met.

- Growers seeking an extension should contact Salmon-Safe before their certification expires.
- A revised certificate bearing the new certification expiration date will be provided once approved.

# Appendix G Group Assessment Protocol

## General Requirements

To qualify for group certification, the group of farmers shall:

- have similar farming practices;
- be located within the same geographical region; and
- be managed through an umbrella organization. (Farmer groups can be cooperatives, associations, or similar organizations).

Group certification shall be represented by a Group Leader and Group Members.
Group Leaders shall be responsible for:

- ensuring all members of the group certification have contractual relationships with the Group Leader;
- documenting and implementing group member eligibility and participation in the certification;
- payment of assessment fees; and
- correct use of the Salmon-Safe logo and claims related to marketing, as applicable.

## Group Sampling and Assessment Process

- A minimum of 20% of group sites shall be visited during an assessment/re-assessment
- Variation from operation to operation must be minimal; significant variation compromises the intent and purpose
- Each farm/production unit selected for assessment in a certification cycle provides all documentation listed in the Farm Standards Appendix A: Documentation
- Salmon-Safe Certification Specialist reviews the individual member documents and follows up as necessary to ensure submissions are complete
- Salmon-Safe Certification Specialist assigns an assessor or assessors
- Assessor(s) coordinate with operations to establish an assessment date and time Group Leader is encouraged to assist in coordinating the timing of assessments to reduce assessment travel time and costs
- Assessor(s) conduct assessments of group member operations
- Assessor(s) draft assessment reports to submit to Salmon-Safe for review
- Salmon-Safe Certification Specialist follows up with assessors as necessary to clarify findings and recommendations and makes final certification decision

## Formalizing Group Certification

- Group Leader issues a certification later and lists the brand and all Group Members; the letter outlines all conditions to the certification; upon letter sign-off, certification is formalized.
- Operations that are not consistent with the Farm Standards may be subject to conditions, re-assessment requirements, and/or may not be eligible to supply certified ingredients or products as part of the member group.
- Group Leader shall be responsible for reporting on condition progress, as applicable.
- A Salmon-Safe certificate shall be issued with the name of the group entity; it shall list all Group Members.
- Salmon-Safe group certification may be suspended if (1) one or more group members is found to be out of compliance with the Farm Standards; or (2) the Group Leader removes the non-compliant group member from the group certificate.

## Marketing and Logo Use

- Once certification is formalized, the group may use the Salmon-Safe logo on their product(s) and on Group Leader and Group Member websites, promotional materials, etc.

# Appendix H

## Salmon-Safe Guide for Logo Use

The Salmon-Safe logo may be featured in branding and packaging based on certified crop content.

*For example:*

| | **Primary** (full color) PMS: 647 PMS: 298 | **Primary** (single color) | **Primary** (single color) |
|---|---|---|---|
| **Salmon-Safe Certified Beer or Wine**<br>Requirement for logo use: sourced from 95% certified hops and malts, OR wine grapes |  |  |  |
| **Salmon-Safe Certified Hops**<br>Requirement for logo use: sourced from 95% certified hops |  |  |  |
| **Salmon-Safe Certified Malts**<br>Requirement for logo use: sourced from 95% certified malt |  |  |  |

For questions and clarification, email info@salmonsafe.org

**www.salmonsafe.org**


www.salmonsafe.org

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