

# MARIN ORGANIC/SALMON-SAFE STANDARDS

## Required Conditions for Salmon-Safe Certification of Agricultural Land in California

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### Background

Marin Organic and Salmon-Safe are partnering to provide Salmon-Safe certification to organic farmers who are working to protect habitat for salmon and steelhead trout (salmonids) in California. Our goal is to enable pioneering organic growers who are going the extra mile to protect water quality and imperiled native fish to gain recognition in the marketplace. As a leader in the organic movement in Marin, Marin Organic is proud to offer our farmers this opportunity to take their growing and marketing practices to the next level.

Marin Organic/Salmon-Safe inspections are conducted by inspectors who have been trained in the evaluation of farming practices that protect salmonid habitat. Certification is based on conditions and practices in place at the time of inspection and is valid for three years. The standards will be periodically revised to reflect scientific and technical advances in the field.

### 1. Instream Habitat Protection

**Standard 1.1: Stream channels** are in good condition for providing salmonid habitat. This standard applies to a) known and potential fish-bearing streams on the property and b) non-fish bearing perennial or intermittent streams greater than two feet in bankfull width on the property that are connected to fish bearing streams on or off the property.

Performance requirements:

- 1.1.1 Inventory – Streams on the property are identified and mapped. (Aerial photos or hand drawn maps are generally sufficient.)
- 1.1.2 Channel conditions – existing channels are in good condition for providing salmonid habitat, with naturally protected stream banks and large and small wood structure.

**Standard 1.2: Road crossings of streams** on the farm are minimized and have a minimal effect on instream habitat, fish passage, and constriction of flood conveyance. This standard applies to known and potential fish-bearing streams.

Performance requirements:

- 1.2.1 Crossing structures are sited appropriately, are designed to withstand 50-year flood events and are kept clear of debris.
- 1.2.2 Crossing structures provide adequate fish passage.

### 2. Riparian Protection

**Standard 2.1: Riparian areas** and associated wetlands are in good condition, functioning to maintain and restore stream health; provide shade, wood

recruitment, leaf litter supply, stream bank stability and cover, water storage and filtration of sediment.

Performance requirements:

- 2.1.1. Inventory – Riparian areas of these streams are identified and mapped. (Map may be hand-drawn.)
- 2.1.2 Riparian zone width – The width of riparian zones or cultivation setbacks are based on local ecological considerations, including stream width and depth, topography, hydrology, and habitat type, with a minimum width of 50 feet between the top of the bank and the edge of the field or road. As the slope of the adjoining field increases, the width of the riparian buffer zone must be increased to adequately protect area from erosion and runoff. On slopes of 10% or greater, riparian zones must be no less than 75 feet. Riparian width requirements may be adjusted if justified by local ecological considerations, as determined by the inspector.
- 2.1.3 Vegetation – Riparian zones are dominated by vegetation that provides riparian functions of bank stability and shade, at a minimum. There must be good canopy cover (>80%) of a diverse mix of multi-aged, native or non-invasive non-native species.

### 3. Water Use Management (Irrigation Activities)

**Standard 3.1: The selected source of irrigation water** results in the least potential impact to instream flows of fish-bearing streams on the property.

Performance requirements:

- 3.1.1 Water diversions are permitted under the law.
- 3.1.2 Withdrawals of surface water sources are managed to avoid impact to salmonids and other aquatic life in the source stream during the late spring, summer and early fall and during droughts.
- 3.1.3 Fish losses are avoided by installing fish screens on diversions, as necessary.

**Standard 3.2: Water conservation measures** reduce irrigation water use to the minimum necessary to support farming operations.

Performance requirements:

- 3.2.1 Water conservation plan – If located in a water scarce area, or an area where agricultural water use is known to be impacting fish habitat, the farm follows a plan to conserve water.<sup>1</sup> The system utilizes design features to minimize delivery losses and crops are chosen to fit the climate.

### 4.Erosion and Sediment Management

**Standard 4.1: Improving water infiltration** and water holding capacity of the soil helps reduce erosion.

Performance requirements:

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<sup>1</sup> See Attachment 4. Water Conservation Plans.

- 4.1.1 Cover cropping, composting, mulching, perennial crops and the appropriate use of animal manures are used to increase soil organic matter and support healthy communities of soil microorganisms.

**Standard 4.2: Soils protection** is accomplished by vegetative cover, mulch, or other methods to prevent off-site movement of sediment.

Performance requirements:

- 4.2.1 Critical areas are maintained in continuous vegetative cover.<sup>2</sup> Steps have been taken to minimize soil movement from high-erosion hazard areas including, steep slopes, dry gullies, animal watering and feeding locations, and animal trails.

**Standard 4.3: Filtering runoff and trapping sediment** is achieved by using filter strips, sediment traps and other measures.

Performance requirements:

- 4.3.1 Field borders, filter strips, tailwater ponds and/or water courses vegetated with native or non-invasive non-native plants<sup>3</sup> are used in areas subject to concentrated flow and along down-slope field borders to slow runoff and trap sediment, nutrients and any weed, insect, or disease control substances.<sup>4</sup> Runoff from houses, storage buildings and other structures is managed to minimize erosion.

**Standard 4.4: Managing erosion from farm roads** – Unpaved farm roads can be a significant source of sediment, particularly when poorly designed or poorly maintained roads fail and cause landslides.<sup>5</sup>

- 4.4.1 Roads are protected by surface coverings, such as mulch, grass, or gravel and/or engineering practices, such as water bars, outsloping and rolling dips, as necessary to prevent erosion.
- 4.4.2 Runoff from roadside ditches passes through an energy dissipator (usually rocks) and/or a vegetative filter before entering streams, or is diverted to an infiltration pond or catchment area.
- 4.4.3 Unused roads are decommissioned and revegetated.

## 5. Nutrient Management

**Standard 5.1: Nutrient supply is balanced** with crop nutrient demand.

Performance requirements:

- 5.1.1 The operation has a nutrient management plan<sup>6</sup> for balancing nutrients applied to the fields with nutrients removed from fields.

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<sup>2</sup> Native vegetation is used where appropriate.

<sup>3</sup> The width and design of the border area, filter strip or grassed waterway should match the volume and velocity of surface water runoff occurring during periods of peak runoff, as specified in NRCS field technical guides. Wherever possible, vegetated waterways should use locally collected (i.e., collected within the watershed), genetically appropriate native species of grasses, sedges and rushes.

<sup>4</sup> Such areas are also used to allow groundwater recharge and avoid diverting water offsite, thereby reducing irrigation needs and minimizing the occurrence of destructively high flows in streams.

<sup>5</sup> See section on road drainage and hillslope stability in Attachment 5. Roads and Water Quality.

5.1.2 Irrigation water is applied in a manner that minimizes leaching.

**Standard 5.2: Manure and compost storage** is managed to minimize leakage.

Performance requirements:

- 5.2.1 Permanent areas for manure and compost storage must have an impermeable concrete floor or be placed on a plastic tarp with a slope that allows runoff or leachate to flow into a collection or filter area.<sup>7</sup>
- 5.2.2 Short-term storage areas must be established on soils that have been compacted, have had a clay liner installed, or on a plastic tarp in order to minimize permeability.
- 5.2.3 Storage piles must have roofs or plastic tarps over them to prevent excessive leaching of nutrients and pathogens.
- 5.2.4 Storage areas must be located far away from the creek. The specific setback distance must be determined based on topography, hydrology and other factors.

## 6. Pest Management

**Standard 6.1: Pesticide use and storage** is managed to reduce risk to salmon.

Performance requirements:

- 6.1.1 No pesticides are applied on the farm operation that appear on the Salmon Safe “Do Not Use” list. (These pesticides are also prohibited by the USDA’s National Organic Program (NOP).)
- 6.1.2 Pesticide use is minimized through integrated pest management as described in a pest management plan. (A pest management plan is required by the NOP.)
- 6.1.3 Pesticides are stored in a separate, secured location with ready access to safety and fire protection equipment. To prevent liquid products from flowing directly into streams or rivers in the case of a fire or explosion, the storage building is either surrounded by a berm, or is sited sufficiently far from waterways.

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<sup>6</sup> Plan may include elements such as managing manure and plant residue applications so that nutrient mineralization coincides with plant nutrient uptake, using cover crops and crop rotations to enhance the efficiency of nutrient use, and using catch crops to scavenge excess nutrients before they can be leached out of the soil. (Adapted from Bellows, Barbara, *Protecting Water Quality on Organic Farms*, Organic Matters Series, Appropriate Technology Transfer for Rural Areas, National Center for Appropriate Technology, 2002.)

<sup>7</sup> A filter area is usually a vegetated area laid out on a shallow slope in a manner that encourages infiltration and microbial breakdown of the leachate.

## 7. Animal Management

**Standard 7.1: Animal movement and grazing** is managed so as to avoid compaction of spawning redds, soil compaction, destruction of riparian vegetation, and contamination of water with pathogens. Animal management may be used to achieve desired vegetative conditions and vegetation communities.

Performance requirements:

- 7.1.1 In riparian zones, grazing is managed to allow for recovery of native plants and prevent reduction in biodiversity. Rotational grazing systems or exclusion are utilized, as needed, to allow for recovery of vegetation. Judicious use of grazing is allowed to control weeds and promote native plant growth.
- 7.1.2 Permanent or temporary (e.g., electric) fences are utilized to limit direct livestock access to streams and other fish-bearing water bodies. The use of farm ponds and troughs for watering livestock is allowed and encouraged. Ponds should be fenced and the use of solar pumps is encouraged.

**Standard 7.2: Manure handling and storage** is managed to minimize leakage.

Performance requirements:

- 7.2.1 In general, sufficient storage capacity must be accessible to store 120 to 180 days of manure production, unless the operation has access to other environmentally acceptable methods to recycle manure nutrients (such as composting and movement offsite, or biogas production). Manure must be either covered or handled in such a way as to not lead to runoff or leach into ground water.
- 7.2.2 Large scale confined livestock facilities and manure piles or liquid storage tanks or lagoons must not be located in floodplains or areas with shallow groundwater tables and/or frequently moisture-permeated soils.

## **GLOSSARY**

Bankfull width – the average width of the stream when the flow is at the ordinary high water mark, generally considered the two year flow event and measured in the field as the stream channel below the line of perennial vegetation.

Best management practices – farming activities that are conducted in such a way as to minimize environmental impacts and maximize environmental benefits.

Fish-bearing stream – a stream that is known to provide habitat for fish during at least some portion of the year. Fish-bearing includes all species of fish to ensure that potential salmonid streams are not excluded because of current degraded conditions.

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

Riparian zone – an ecological zone of varying width adjacent to a waterway or wetland that, in a natural condition, provides critical wildlife habitat and is essential for maintaining the healthy functioning of the adjacent stream, pond, or wetland. The width of the riparian zone depends on ecological criteria, including geology, hydrology, slope, climate, vegetation and other factors.

**Attachment 1. Data and Documents Required for a Farm Assessment**

1. Map of streams and riparian areas, noting known salmonid-bearing reaches. Aerial photos or hand drawn maps are generally sufficient.
2. Organic System Plan.
3. Irrigation records, if available.

## Attachment 2. Stream Setback Requirements

The naturally occurring width of riparian zones varies based on ecological processes—the interaction of plants and animals with hydrologic, geomorphic and climatic conditions. Many riparian areas are over 2000 feet wide in California, especially along major rivers.

The riparian zone plays an important role in providing salmonid habitat. Trees keep the water cool by shading the water and provide leaf litter, a food source for the aquatic insects that salmonids eat. Tree roots and fallen trees and branches provide shelter from predators and create pools for resting and spawning.

Ecologists are currently researching the minimum width required for adequate protection of salmon habitat for various California watersheds. Inspectors are advised to consider the ecological functions described above and to consult the latest guidelines for their watershed in order to determine an acceptable width for salmonid protection at a given site.

In addition, local political processes have produced regulations that set minimum widths. These are not considered sufficient by conservation scientists and are included here only as background information.

### 1. Sonoma County Ordinance 5172 (Vineyard Ordinance)

When land is cleared for vineyard use for the first time, the required riparian setback distances (25-50') depend on slope. If vines are replanted within an existing vineyard, the required setback is always 25'. No vineyard may be planted on land with a slope greater than 50%.<sup>8</sup>

Level I Replant or slopes <15%: Setback = 25'

Level II/III Slopes 15-50%: Setback 50'

Level IV Slopes >50%: Vineyard prohibited

Riparian setbacks apply to streams that are shown as a blue line on a USGS map or have certain measured channel characteristics (> 4' depth, 3:1 banks).

Any grower who wants to plant or replant a vineyard must notify the Agricultural Commissioner's office and submit an erosion control plan when average slope exceeds 10% on highly erodible soils or exceeds 15% on all other soils.<sup>9</sup>

### 2. Napa County Code Chapter 18.108 (Conservation Regulations)

No clearing of land for new agricultural uses as defined by Section 18.08.040 shall take place within the following setbacks from streams:

Slope (Percent)	Required Setback (feet)
<1	35
1-5	45
5-15	55
15-30	65

<sup>8</sup> A 50% slope may also be expressed as a 2:1 ratio, i.e., the land surface falls one foot for every two feet of horizontal distance. A 25% slope has a 4:1 slope ratio and a 100% slope has a 1:1 ratio.

<sup>9</sup> Sonoma County Grape Growers Association website, <http://www.sonomagrapevine.org/pages/growerstoobox/timelytopic/gttimescggafaq.html>

30-40	85
40-50	105
50-60	125
60-70	150

Riparian setbacks apply to streams that are shown as a blue line on a USGS map, have certain measured channel characteristics, or are specifically listed by Napa County.

Erosion control plans are required for all agricultural developments which involve a proposed change of land use or replant on sites of 5% slope or greater.

### **Resources**

Bellow, Barbara, *Protecting Riparian Areas: Farmland Management Strategies*, Appropriate Technology Transfer for Rural Areas, National Center for Appropriate Technology, 2003. <http://attra.ncat.org/attra-pub/PDF/riparian.pdf>

Gaffney, Karen, *A Guide to Restoring Native Riparian Habitat in the Russian River Watershed*, Circuit Rider Productions.

Hillside Vineyard Manual. Napa County Resource Conservation District.

The Napa River Watershed Owner's Manual: A Framework for Integrated Resource Management. 1994. Napa County Resource Conservation District.

Stream and Hillside Natural Resource Protection Guide: Understanding and Complying with Environmental Regulations in Napa County. Prepared by the Napa County Conservation Information Group in cooperation with the USDA Natural Resources Conservation Service.

### **Attachment 3. Water Rights in California**

California landowners can use water without a permit if they hold riparian rights, purchase water, pump groundwater lying beneath their land (in an unregulated basin), or use water from springs or standing pools lacking natural outlets on their land. In other cases, the right to use water requires a permit from the State Water Resources Control Board (State Board).

#### **Riparian and Appropriative Rights**

The two main types of water rights in California are riparian rights and appropriative rights. According to the State Board, “a riparian right entitles the landowner to a correlative share of the water flowing past his or her property. Riparian rights do not require permits, licenses, or government approval, but they apply only to water that would naturally flow in the stream. Riparian rights do not entitle a water user to divert water to storage in a reservoir for use in the dry season or to use water on land outside the watershed.” Appropriative rights, which allow for diversions to reservoirs and for use outside the watershed, do require permits from the State Board.

In some cases, it may be more beneficial to salmon for farmers to store water during the wet season and use it in the dry season rather than diverting year round. However, storage requires a permit and may require an environmental impact review under the California Environmental Quality Act.

#### **Ground Water Rights**

According to the State Board, “In most areas of California, overlying landowners may extract percolating ground water and put it to beneficial use without approval from the State Board or a court. California does not have a permit process for regulation of ground water use. In several basins, however, ground water use is subject to regulation in accordance with court decrees adjudicating the ground water rights with the basins.”

#### **Public Trust Doctrine**

In some cases, existing water rights may be determined to be in conflict with safeguarding the public trust, which includes protection of fish and wildlife. Certainly, research over the last thirty years has made clear that the current system of dams and diversions throughout the state has seriously threatened many species, including salmon and steelhead.

The State Board writes, “Under the public trust doctrine, certain resources are held to be the property of all citizens and subject to continuing supervision by the State....The difficulty comes in balancing the potential value of a proposed or existing water diversion with the impact it may have on the public trust. After carefully weighing the issues and arriving at a determination, the Board is charged with implementing the action which would protect the latter. The courts also have concurrent jurisdiction in this area.”

As the biggest water user in the state, agriculture bears a large responsibility for degrading salmon habitat through using water supplied by dams and diversions, as well as by contributing to non-point source pollution. The CALFED process is attempting to restore habitat in the San Francisco Bay-Delta ecosystem while maintaining a viable agricultural system. CALFED’s plan relies on more storage facilities and greater exports of water, and environmentalists have criticized it, calling for greater emphasis on water use efficiency and incentives for fallowing land during droughts.

CCOF and Salmon-Safe support statewide efforts to reform agricultural water use and will seek to support the efforts of individual farmers to do their part to conserve water. However, we recognize that larger forces are at work, and legal and political processes

may eventually determine that some of the farms we certify as Salmon-Safe are participating in a water use system that is failing to protect the public trust. At some point, and they may lose or be forced to sell their water rights.

**Resources**

The Water Right Process, State Water Resources Control Board, Sacramento, CA,  
[http://www.waterrights.ca.gov/html/wr\\_process.htm](http://www.waterrights.ca.gov/html/wr_process.htm).

CalTrout's Public Trust Protection Policies, California Trout,  
[http://www.caltrout.org/consact/PublicTrust\\_Policies.html](http://www.caltrout.org/consact/PublicTrust_Policies.html).

Carvajal, Arturo, CALFED Water Use Efficiency Program, Natural Resource Conservation Service.

#### **Attachment 4. Water Conservation Plans**

At the first inspection, the water conservation plan may be an informal explanation of efforts made to save water. To retain Salmon-Safe certification, farms will be required to meet the following standards:

1. The system includes a method to measure the volume of water withdrawals and return flows. Consumptive water use for each major crop on the farm can be estimated with reasonable accuracy. Reporting documents a decline in water use per acre for the farm over a five-year period or explains how no further efficiencies are feasible.
2. Restoration effort – A plan is being implemented that shows significant progress toward increased water conservation, including:
  - Selection of crops and varieties which are well suited to the meteorological regime of the region in which the farm is located.
  - Low water use farming – dry farming techniques and mulching are used to reduce dependence on irrigation.
  - Installation of an efficient, modern irrigation system that adjusts water supply based on crop requirements.

CALFED, a multiagency organization designed to address water issues in California, is encouraging agricultural water use efficiency. The following irrigation conservation practices are being funded at the state level: land leveling, micro-irrigation systems, sprinklers, tailwater return systems, ditch lining, piping, and integrated water management.

The California Department of Water Resources recommends using irrigation scheduling and tailwater return systems to improve water use efficiency:

“Deciding when and how much to irrigate has a significant impact on the total amount of water used by the crop and crop water use efficiency. A number of different scheduling systems have been developed that can use either soil- plant or atmosphere-based measurements to determine when to irrigate. Using a more scientific approach to scheduling has generally been shown to decrease the amount of water applied while improving yield.”

“To provide adequate water to the low end of the field, surface irrigation requires that a certain amount of water be spilled or drained off as tailwater. Tailwater return systems catch this runoff and pump the water back to the top of the field. On-farm water savings have been estimated at 10-15%.”

#### **Resources:**

Carvajal, Arturo, *CALFED Water Use Efficiency Program*, Natural Resource Conservation Service.

Agricultural Water Use Program, Office of Water Use Efficiency, California Department of Water Resources, <http://www.owue.water.ca.gov/agdev/index.cfm>

Water Management Series - publications available for purchase from the UC Cooperative Extension Office, Davis, CA, (530) 752-1130.

- Agricultural Salinity and Drainage
- Drip Irrigation for Row Crops
- Irrigation Pumping Plants
- Low-Volume Irrigation
- Micro-irrigation of Trees and Vines
- Scheduling Irrigations: When and How Much Water to Apply

□ Surge Irrigation

## **Attachment 5: Roads and Water Quality**

### **Stream Crossings**

Weaver and Hagan's road handbook, listed in the resources section below, provides helpful guidance on proper management of stream crossings.

#### *Crossing Types*

"When a road crosses a watercourse, provision should be made to carry the water under the road. Streams can be crossed with bridges, culverts or fords. Culverts are the most common stream crossing structure. Bridges are best for large streams or where there is a lot of floating wood and debris in flood flows. Bridges also have less effect on fisheries than other methods. Fords work well on small to medium sized streams where there is a stable stream bottom and vehicle traffic is light. Compared to a culverted fill, they have the advantage of little fill to wash out during flood flows."

"[Stream crossings] may be permanent, including a culverted fill crossing, a bridge or a ford, or they may be temporary, such as a temporary culverted fill or a log crossing that needs to be removed before the beginning of the following winter period (generally considered as beginning on October 15). All forest-land [or farmland] stream crossings that are to remain in place for one (1) or more winter periods must be designed to pass at least the 50-year storm flood flow."

#### *Location*

"Stream crossings should be located where the channels are least incised, across natural benches, and where sideslopes are gentle and stable. In addition, stream crossings should be built at right angles to the stream channel, and, where possible, streams requiring a 48", or larger, diameter or large volumes of fill should be bridged.

#### *Fish Passage*

"Some stream crossings require extra careful design to accommodate fish passage. These will require CDFG experts, to determine crossing type (ford, bridge, pipe arch or plate arch culvert or full round culvert), culvert length, the need for baffles, inlet and outlet location, acceptable culvert grade, resting and jump pools, and water depth."

"On fish-bearing streams, fish passage must be designed into all watercourse crossings....Culverts should be placed at or slightly below grade (so fish don't have to jump into the culvert). If flows are rapid, the culvert diameter should be increased and the culvert grade reduced. Resting pools should be designed immediately below and above the culvert....Avoid installation of round culverts where fish passage might be difficult. Instead, use either open arch culverts or bridges. In order of decreasing desirability, bridges, structural plate arch culverts, corrugated pipe arches, and corrugated round metal culverts can be used for fish passage. Bridges should be used on all larger, faster streams."

"Debris control structures (trash racks) at culvert inlets and energy dissipators at culvert inlets and outlets, are key components of stable culvert design....Energy dissipation (rock armor is most common) may be needed to prevent high velocity culvert flows from eroding the channel bed or banks at the culvert outlet. Rock should be sufficiently large to resist erosion and transport."

#### *Permitting*

"Stream crossing installations often require a California Department of Fish and Game 1603 permit before any in-stream work can be undertaken....If you need assistance, ask the Department of Fish and Game for their advice in preparing a stable stream crossing."

“Information about requirements pertaining to road building work can be obtained from the Regional Water Quality Control Board with jurisdiction for your area.”

### **Road Drainage and Hillslope Stability**

Some of the most serious erosion occurs when roads wash out or cause landslides because of poorly designed surface or subsurface drainage. Less serious but still harmful impacts can occur if road drainage is not adequately filtered before flowing to streams.

Massive erosion can occur when stream crossings become clogged and water is diverted over the surface of the road. Rolling dips in the road downslope from stream crossings can be used to direct water off the road rather than along it.

Roads can fail and cause landslides when the inner ditch of an insloped road accumulates too much water. To avoid water accumulation in drainage ditches, roads should be built to slope outward whenever possible so that water can drain off them and down the side of the hill. Crowned roads, in which the center of the road is higher than both sides, are also preferably to insloped roads. If a road must be sloped inward for safety reasons, drainage ditches must be of adequate size and ditch culverts must be of adequate frequency to withstand a 50-year flood event. The outlets of ditch culverts need energy dissipators and vegetative filter to reduce erosion.

Erosion or cracks along the outer edge of a road are signs of hillslope instability. Areas along the road where the soil is saturated for most of the year by springs or seeps require subsurface drains to keep the road from collapsing.

Roads must be inspected and maintained regularly. Roads built next to creeks should be evaluated for relocation.

### **Resources**

Weaver, William, and Danny Hagans, *Handbook for Forest and Ranch Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads*, Mendocino County Resource Conservation