DRY CREEK VALLEY
PROGRAMMATIC SAFE HARBOR AGREEMENT

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1. INTRODUCTION

This Dry Creek Valley Programmatic Safe Harbor Agreement (Agreement) is made and entered into on the 3rd day of March, 2016, by and among the Sonoma County Water Agency (SCWA), and NOAA's National Marine Fisheries Service (NMFS); and [insert other Phase 2 party here] on the [insert date here] hereinafter collectively called the "Parties." This Agreement will serve as a programmatic safe harbor agreement under which individual landowners ("Cooperators") will be enrolled through Cooperative Agreements. This Agreement is authorized under and in compliance with Endangered Species Act Section 10(a)(1)(A), 50 C.F.R. Section 222(Sub-Part C), and NMFS' Final Safe Harbor Policy (64 FR 32717).

The Safe Harbor program encourages proactive management to benefit endangered and threatened species by non-Federal landowners, by providing regulatory assurances in the form of an Endangered Species Act (ESA) Section 10(a)(1)(A) Enhancement of Survival Permit (ESP) that, subject to the caveats identified in Section 11 of this Agreement, future property-use restrictions will not be imposed through the incidental take provisions of Section 9 of the ESA.

The purpose of this Agreement is to promote the conservation, enhancement of survival and recovery of endangered Central California Coast (CCC) coho salmon (*Oncorhynchus kisutch*), and threatened CCC steelhead (*O. mykiss*) and California Coastal (CC) Chinook salmon (*Oncorhynchus tshawytscha*) on non-federal lands adjacent to Dry Creek. This will be achieved by Cooperators undertaking beneficial management activities that include making habitat available to coho salmon, Chinook salmon and steelhead trout, and assisting in the enhancement, maintenance, management and monitoring of those species and their habitats on enrolled properties.

2. RECITALS

The Parties have entered into this Agreement in consideration of the following facts:

i. Section 10(a)(1)(A) of the ESA authorizes NMFS to issue ESA Section 10(a)(1)(A) Enhancement of Survival Permits; Applicable regulations at 50 C.F.R. § 222. 308 and NMFS' Safe Harbor Agreement Policy (64 FR 32717; "Policy"), guide NMFS in issuing Section 10(a)(1)(A) Enhancement of Survival Permits to property owners or appropriate collaborators who agree to participate in Safe Harbor Agreements that satisfy the criteria set forth in the aforementioned regulation and;

ii. This Agreement is reasonably expected to provide a net conservation benefit for each of the Covered Species and contribute, either directly or indirectly, to the recovery of the Covered Species, which in turn supports the issuance of an ESP by NMFS pursuant to Section 10(a)(l)(A) of the ESA in accordance with 50 C.F.R. § 222.308;

iii. The Parties developed beneficial management activities identified in Section 9 of this Agreement that are reasonably expected to benefit the Covered Species.

iv. Upon approval and subject to the satisfaction of any necessary conditions, a Programmatic Safe Harbor Agreement serves as the basis for NMFS to issue the Program Administrator(s) their own ESP under Section 10(a)(1)(A) of the ESA. The Programmatic Safe Harbor Agreement will authorize the Program Administrator(s) to enroll non-federal landowners (Cooperators) with Certificates of Inclusion under the ESP when Cooperators sign individual Cooperative Agreements that include management activities that will be taken to benefit the Covered Species. The ESP authorizes certain incidental taking of covered species that have increased above the baseline established in the Cooperative Agreement as a result of Cooperators' beneficial management activities.

v. When a Cooperator meets all the terms of its Cooperative Agreements, the ESP authorizes incidental taking of the Covered Species at a level that enables Cooperators ultimately to return the enrolled property back to the elevated baseline conditions established in the applicable Cooperative Agreements. The Parties anticipate this level of take is unlikely to be realized except under unforeseen circumstances out of the reasonable control of NMFS, the Program Administrators and the Cooperator. Nevertheless, for the purpose of determining whether a net conservation benefit is expected to result, the Parties assume that such a return to elevated baseline will occur.

vi. The issuance of a Certificate of Inclusion will not preclude the need for the Cooperator to abide by all other applicable Federal, State, and local laws and regulations.

vii. Incidental take is defined by the ESA as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity and does not include shooting, capture or other direct take of animals.

viii. This Agreement will be implemented in two phases. Phase 1 will cover properties participating in SCWA's Dry Creek Habitat Enhancement Project pursuant to Element 3.3 in the Reasonable and Prudent Alternative of NMFS (2008). SCWA's obligations as Program Administrator under this Agreement apply only to Phase 1. Phase 2 will cover the remainder of Dry Creek. NMFS anticipates working with interested parties to identify a Program Administrator for Phase 2.

THEREFORE, the Parties hereto agree as follows:

3. DEFINITIONS

a. **Terms Defined in Endangered Species Act and Regulations**. Terms used in this Agreement and specifically defined in the ESA or in regulations adopted by NMFS under the ESA have the same meaning as in the ESA and those implementing regulations, unless this Agreement expressly provides otherwise.

b. **Terms defined in the Policy.** Terms used in this Agreement and specifically defined in the Policy (Part 2 at 64 FR 32722- 32723) have the same meaning as in the Policy, unless this Agreement expressly provides otherwise.

c. **"Elevated Baseline Condition"** means those conditions defined in Section 8 of this Agreement.

d. **"Covered Species"** means those species identified in Section 7 of this Agreement.

e. **"Covered Area"** means the areas of land and water identified in Figure 1 in Section 5 of this Agreement.

f. **"Program Administrator"** means an entity that holds the ESPs authorizing this Agreement.

g. **"Non-Covered Species"** means all ESA listed or candidate species not identified in Section 7 of this Agreement.

h. "**Cooperative Agreement"** means the Agreement identified in Attachment 3.

i. "**Certificate of Inclusion"** means the Certificate identified in Attachment 4.

4. BACKGROUND

Dry Creek is located in Sonoma County, California and is tributary to the Russian River. Dry Creek and the lower Russian River are heavily influenced by the operation of Warm Springs Dam. Warm Springs Dam is jointly operated by SCWA and the United States Army Corps of Engineers (Corps). When operating Warm Springs Dam, SCWA must release water to maintain minimum instream flows in Dry Creek and the Russian River, in accordance to the State Water Resource Control Board's Decision 1610 (D1610). SCWA must maintain D1610-specified minimum instream flows regardless of source and/or magnitude of losses that occur downstream of Warm Springs Dam. Throughout the year, SCWA diverts water released from Warm Springs Dam at its diversion facilities located along the Russian River at Wohler and Mirabel. Water that is diverted is delivered to over 600,000 residents in Sonoma County and Marin County. Current summer and fall flows in Dry Creek are in the range of 110 to 175 cubic feet per second (cfs).

Dry Creek's current hydrology is a result of regulated flow releases by Warm Springs Dam and flow from unregulated tributaries that enter the 14.1 miles of Dry Creek downstream of Warm Springs Dam. In general, regulation by Warm Springs Dam has reduced the magnitude of peak flows while substantially elevating baseflow during the summer-fall period. The existing stream

and riparian habitat is a result of the current hydrology. This regulated hydrology together with a Mediterranean climate creates ideal conditions for riparian trees to colonize on gravel bars adjacent to Dry Creek. Colonization and establishment of these bar surfaces by mature riparian vegetation limits lateral migration of the active channel and results in a simplified single thread channel.

As part of the Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Army Corps of Engineers (Corps), the Sonoma County Water Agency, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River watershed (NMFS 2009), NMFS found that the existing habitat within Dry Creek, in combination with outflow from Warm Springs Dam, results in stream velocities that are too high for optimal juvenile coho salmon and steelhead rearing habitat; despite these flows having optimal water temperature for salmonid rearing (NMFS 2009). NMFS (2009) concluded that the continued operation of Warm Springs Dam, together with other actions by SCWA and Corps, are likely to jeopardize the continued existence of CCC steelhead and CCC coho salmon; and are likely to adversely modify critical habitat for these species. To avoid the likelihood of jeopardy to the species and adverse modification of critical habitat NMFS collaborated with the Corps and SCWA in developing a Reasonable and Prudent Alternative (RPA) to their continued operations. An element of the RPA is for SCWA to enhance six miles of habitat along Dry Creek over a 12- year period to create low velocity areas for juvenile coho and steelhead. To implement the RPA, SCWA commissioned studies that resulted in specific plans and designs (outlined in Interfluve (2012)) to enhance habitat throughout the entire 14.1 mile segment of Dry Creek below Warm Springs Dam, exceeding the six miles stipulated in RPA. SCWA intends to use Interfluve (2012) to enhance six miles of Dry Creek; heretofore described as Phase 1 of this Agreement or SCWA's Dry Creek Habitat Enhancement Project. NMFS intends to work with a separate entity and use the remaining, unused plans and designs in Interfluve (2012) to implement Phase 2 of this Agreement. Funding for the implementation of Phase 2 has not been dedicated. Nevertheless, NMFS believes that habitat enhancement projects implemented in Phase 2 could be privately funded by willing landowners or funded through various grant programs through the California Department of Fish and Wildlife, NMFS and the Natural Resource Conservation Service.

5. DESCRIPTION OF THE COVERED AREA

Private landowners within the geographic scope of this Agreement, as shown in Figure 1, are eligible to enroll their properties in this Agreement. For the purposes of this Agreement this area is known as the Covered Area. Approximately 99.6% of these lands are privately owned. The lands adjacent to Dry Creek include numerous private and some local-government controlled properties, which are primarily being managed as vineyards and farms, with a few residences. These properties contain sites (*i.e.*, 'areas of interest' as described in Interfluve 2012) for habitat enhancement for the Covered Species. This Agreement may include any and all of those sites

adjacent to or within Dry Creek, or other suitable sites that are adjacent to Dry Creek that have not yet been specifically identified in Interfluve (2012). Non-federal property owners within the Covered Area may enroll their properties in this Agreement by following the procedures outlined in Section 6 of this Agreement and ultimately entering into a Cooperative Agreement with the Program Administrator.

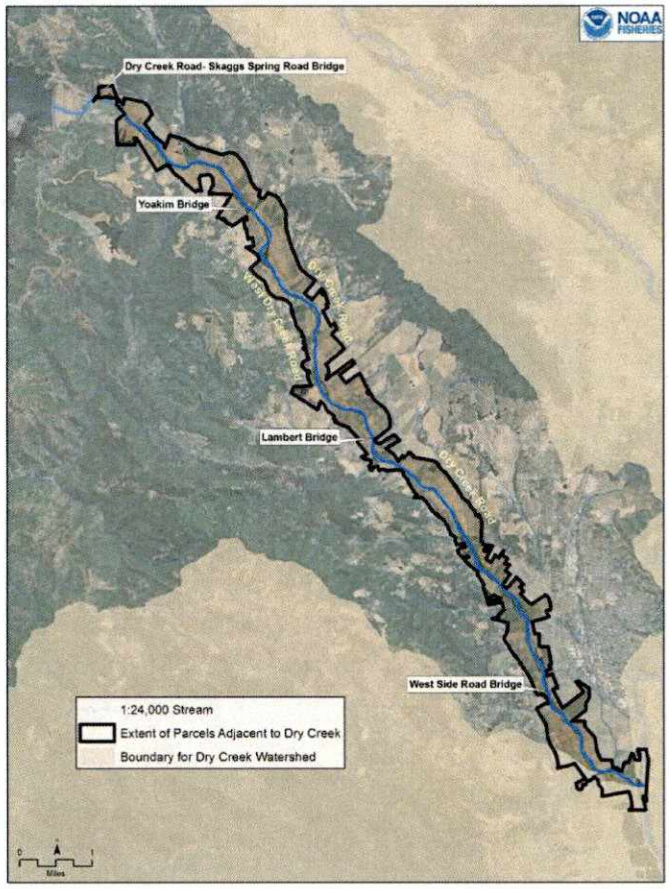

Figure 1. Boundaries of properties potentially eligible for inclusion in Safe Harbor Agreement (Covered Area).

6. ENROLLMENT PROCEDURES FOR COOPERATIVE AGREEMENTS AND CERTIFICATES OF INCLUSION

Upon the effective date of this Agreement and issuance of the associated ESPs, the Program Administrators are authorized to being implementation of the Agreement by enrolling eligible non-federal landowners through Cooperative Agreements and Certificates of Inclusion (Certificates).

As prerequisites to enrolling property under this Agreement, a non-federal landowner must allow the Program Administrator to implement, monitor, and maintain, a Habitat Enhancement Project

(see Section 8) within the Enrolled Property. In addition, the non-federal landowner must agree to an Elevated Baseline for the Enrolled Property as defined in Section 8 of this Agreement. The non-federal landowner must also describe the Enrolled Property and their Routine Viticulture Activities (see Section 10) by completing a Farm Plan or Assessment (Attachment 1 and Attachment 2) as part of their Cooperative Agreement.

In order to enroll a property under this Agreement, a Program Administrator and a non-federal landowner must enter into a Cooperative Agreement (Attachment 3), wherein the landowner would agree to allow the Program Administrator to implement, monitor, and maintain the Habitat Enhancement Project; to have an Elevated Baseline for the property; to carry out the Routine Viticulture Activities that are sufficiently described in the Farm Plan or Assessment; and to the other measures that satisfy the provisions and intent of this Agreement. For a Cooperative Agreement to be approved and a Certificate to be issued, NMFS must reasonably expect that enrollment of the proposed property and the implementation of the Habitat Enhancement Project together with the implementation of Routine Viticulture Activities described in the Cooperative Agreement, will result in a Net Conservation Benefit, described in the Policy and in Section 14 of this Agreement, for the Covered Species. Upon entering into a NMFS-approved Cooperative Agreement, the Program Administrator will issue the non-federal landowner a Certificate of Inclusion stepped down from the ESP. The Certificate of Inclusion will provide assurances described in Section 11 of this Agreement to the landowner. The expiration date of each signed Cooperative Agreement and associated Certificate will be no later than the expiration date of the Permit. At the point the eligible landowner and a Program Administrator execute the Cooperative Agreement and Certificate; the landowner will become a "Cooperator" for purposes of this Agreement and the associated Permit.

A prospective Cooperator wishing to enroll their property in a Cooperative Agreement should follow the steps below:

1. An interested landowner should meet and discuss a Habitat Enhancement Project for the property as well as the terms and conditions of this Agreement with one or more of the Parties;
2. The landowner should meet and discuss with one or more of the Parties to discuss the content of the Farm Plan or Assessment needed for the Cooperative Agreement.
3. The landowner and the Program Administrator should develop a Cooperative Agreement (Attachment 3) that is sufficient to meet the provisions and intent of this Agreement.
4. Once the landowner and Program Administrator have completed a proposed Cooperative Agreement, NMFS must review the Cooperative Agreement to determine if implementation of the Cooperative Agreement will reasonably provide a Net Conservation Benefit for the Covered Species. If NMFS anticipates the proposed Cooperative Agreement is will result in a Net Conservation Benefit for the Covered

Species, NMFS will provide the Program Administrator written approval of the Cooperative Agreement.

5. After receiving written approval from NMFS, the Program Administrator and the landowner sign the Cooperative Agreement. Once signed by both Program Administrator and the landowner, the Cooperative Agreement will become effective and binding. The Program Administrator will then issue the landowner a Certificate of Inclusion, which will provide the landowner with assurances described in Section 11 of this Agreement during the term of the Cooperative Agreement and Certificate of Inclusion.

Each Cooperative Agreement will be developed from the template in Attachment 3. In completing a Cooperative Agreement the Program Administrator and landowner will include the following information:

1. Map of the Enrolled Property;
2. A Farm Plan or Assessment and Best Management Practices (see Section 10);
3. A description of the existing instream and riparian habitat conditions on the enrolled property;
4. A detailed description of a Habitat Enhancement Project for the property that will improve existing instream and riparian habitat conditions;
5. A description of the Elevated Baseline Condition
6. A timetable for implementing the Habitat Enhancement Project;
7. The extent and nature of any incidental take that may occur from Routine Viticulture Activities particularly those related to pesticide use, sediment discharge, and water diversion;
8. A description of current water diversion practices (consistent with the reporting requirements of the State Water Resource Control Board).
9. The term of the Cooperative Agreement (10 year minimum);
10. Further details of the Cooperator's and the Program Administrator's respective responsibilities under the Cooperative Agreement.

7. COVERED SPECIES

This Agreement covers the federally endangered Central California Coast (CCC) coho salmon (*Oncorhynchus kisutch*), the federally threatened CCC steelhead (*O. mykiss*) and California Coastal (CC) Chinook salmon (*O. tshawytscha*).

Covered Species Description

A brief overview of the life history of each salmonid is provided below in order to illustrate the importance of survivorship at each life stage in the overall abundance and productivity of each species. More detailed information is available in Good *et al.* (2005) and the NMFS final rule listing the CCC steelhead Distinct Population Segment (DPS) (71 FR 834).

Chinook salmon: Chinook salmon are easily the largest of any salmon, with adults often exceeding 40 pounds (18 kg); individuals over 120 pounds (55 kg) have been reported. Chinook mature at about 36 inches and 30 pounds. Chinook salmon are very similar coho salmon in appearance while at sea (blue-green back with silver flanks), except for their large size, small black spots on both lobes of the tail, and black pigment along the base of the teeth.

Chinook salmon in the CC Chinook salmon Evolutionary Significant Unit (ESU) usually enter rivers from August to January. These fall-run Chinook salmon typically enter freshwater at an advanced stage of maturity, move rapidly to their spawning areas on the main stem or lower tributaries of rivers, and spawn within a few weeks of freshwater entry (Healy 1991). Run timing is, in part, a response to stream flow characteristics, with most spawning occurring in November and December.

Adults migrate from a marine environment into the freshwater streams and rivers of their birth in order to mate. Egg deposition must be timed to ensure that fry emerge during the following spring at a time when the river or estuary productivity is sufficient for juvenile survival and growth. Adult female Chinook salmon prepare redds in stream areas with suitable gravel composition, water depth, and velocity. Spawning generally occurs in swift, relatively shallow riffles or along the edges of fast runs at depths greater than 24 cm. Optimal spawning temperatures range between 5.6 and 13.9°C (Allen and Hassler 1986). Preferred spawning substrate is clean, loose gravel, mostly sized between 1.3 and 10.2 cm, with no more than 5 percent fines (Allen and Hassler 1986). Gravels are unsuitable when they have been cemented with clay or fines or when sediments settle out onto redds, reducing intergravel percolation (62 FR 24588). Chinook salmon are semelparous (*i.e.*, they spawn once and then die).

Chinook salmon eggs incubate for 90 to 150 days, depending on water temperature. Successful incubation depends on several factors including Dissolved Oxygen (DO) levels, temperature, substrate size, amount of fine sediment, and water velocity. Maximum survival of incubating eggs and pre-emergent fry occurs at water temperatures between 5.6 and 13.3°C with a preferred temperature of 11.1°C. Fry emergence begins in December and continues into mid-April (Leidy 1984).

After emergence, Chinook salmon fry seek out areas behind fallen trees, back eddies, undercut banks, and other areas of bank cover. As they grow larger, their habitat preferences change (Everest and Chapman 1972). Juveniles move away from stream margins and begin to use deeper water areas with slightly faster water velocities, but continue to use available cover to minimize the risk of predation and reduce energy expenditure. Optimal temperatures for both Chinook salmon fry and fingerlings range from 12 to 14°C, with maximum growth rates at 12.8°C (Boles 1988). Chinook salmon feed on small terrestrial and aquatic insects and aquatic crustaceans.

Chinook salmon typically migrate to sea within the first three months of life. In order to prepare for the marine environment sub-yearlings undergo a physiological transformation called smoltification. The smolt out-migration typically occurs from April through July (Myers *et al.* 1998). Chinook salmon remain at sea for 1 to 6 years (more commonly 2 to 4 years), before returning to their natal streams to spawn. However, a small proportion of yearling males (called jack salmon) mature in freshwater or return after 2 or 3 months in salt water.

Coho salmon: The size of an adult coho may measure more than 2 feet (60 cm) in length and can weigh up to 35 pounds (16 kg). However, the average weight of adult coho is 8 pounds (3.6 kg). Coho salmon have dark metallic blue or greenish backs with silver sides and a light belly and there are small black spots on the back and upper lobe of the tail while in the ocean. The gum line in the lower jaw has lighter pigment than does the Chinook salmon. Spawning fish in inland rivers are dark with reddish-maroon coloration on the sides.

The life history of coho salmon in California has been well documented by Shapovalov and Taft (1954) and Hassler (1987). Coho salmon in California generally exhibit a relatively simple 3-year life cycle (Shapovalov and Taft 1954, Hassler 1987). Adult coho salmon typically begin the freshwater migration from the ocean to their natal streams after heavy late-fall or winter rains breach the sand bars at the mouths of coastal streams (Sandercock 1991). Adult migration continues into March, generally peaking in December and January, with spawning occurring shortly after the fish return to the spawning grounds (Shapovalov and Taft 1954).

Female coho salmon choose spawning sites usually near the head of a riffle, just below a pool, where water changes from a laminar to a turbulent flow and there is small to medium gravel substrate. Flow characteristics usually ensure good aeration of eggs and embryos and the flushing of metabolic waste products from the redd. Preferred spawning grounds have nearby overhead and submerged cover for holding adults, and have clean, loosely compacted gravel (1.3 to 12.7 cm diameter) with less than 20 percent fine silt or sand content. The lack of suitable gravel often limits successful spawning in many streams.

At each redd site, the female creates a hollowed depression in the gravel into which she releases several hundred eggs. As they are deposited, the eggs are fertilized with milt from one or more attending males. The fertilized eggs are then covered with gravel by the female. Coho salmon are semelparous.

Coho salmon eggs generally incubate for four to eight weeks, depending on water temperature. Egg survival and development rates depend on temperature and DO levels within the redd. According to Baker and Reynolds (1986), under optimum conditions, egg mortality can be as low as 10 percent, but under adverse conditions of high scouring flows or heavy siltation, mortality may be close to 100 percent. McMahon (1983) found that egg and pre-emergent fry survival drops sharply when fines make up 15 percent or more of the substrate. The newly-

hatched fry remain in the gravel from two to seven weeks before emergence (Shapovalov and Taft 1954).

Upon emergence from the gravel, coho salmon fry seek out shallow water, usually along stream margins. As they grow, they often occupy habitat at the heads of pools, which generally provide an optimum mix of high food availability and good cover with low swimming cost (Nielsen 1992). Chapman and Bjornn (1969) determined that larger parr tend to occupy the head of pools, with smaller parr found further down the pools. As the fish continue to grow, they move into deeper water and expand their territories until, by July and August, they are in the deep pools. Juvenile coho salmon prefer well shaded pools at least 1 meter deep with dense overhead cover; abundant submerged cover composed of undercut banks, logs, roots, and other woody debris. For good survival and growth of juvenile coho salmon water temperatures range from 10°C to 15°C (Bell 1973; McMahon 1983). Growth is slowed considerably at 18°C and ceases at 20°C (Stein *et al.* 1972; Bell 1973). The likelihood of juvenile coho salmon occupying habitats that exceed 16.3°C maximum weekly average temperature declines significantly (Welsh *et al.* 2001).

Preferred rearing habitat has little or no turbidity and high sustained invertebrate forage production. Juvenile coho salmon feed primarily on drifting terrestrial insects, much of which are produced in the riparian canopy, and on aquatic invertebrates growing in the interstices of the substrate and in the leaf litter within pools. As water temperatures decrease in the fall and winter months, fish stop or reduce feeding due to lack of food or in response to the colder water, and growth rates slow down. During December-February, winter rains result in increased stream flows and by March, following peak flows, fish again feed heavily on insects and crustaceans and grow rapidly.

During late March and early April, coho salmon yearlings begin smoltification and migrate downstream to the ocean. Out-migration usually peaks in mid-May, if conditions are favorable. Emigration timing is correlated with peak upwelling currents along the coast. Ocean entry at this time facilitates more growth and, therefore, greater marine survival (Holtby *et al.* 1990). At this point, the smolts are about 10 to 13 cm in length. After entering the ocean, the immature salmon initially remain in near-shore waters close to their parent stream. They gradually move northward, staying over the continental shelf (Brown *et al.* 1994). Although they can range widely in the north Pacific, the oceanic movements of California coho salmon are poorly understood.

Steelhead trout: Steelhead trout can reach up to 55 pounds (25 kg) in weight and 45 inches (120 cm) in length, though average size is much smaller. They are usually dark-olive in color, shading to silvery-white on the underside with a heavily speckled body and a pink to red stripe running along their sides.

They are a unique species; individuals develop differently depending on their environment. While all *O. mykiss* hatch in gravel-bottomed, fast-flowing, well-oxygenated rivers and streams, some stay in fresh water all their lives. These fish are called rainbow trout. The steelhead that migrate to the ocean develop a slimmer profile, become more silvery in color, and typically grow much larger than the rainbow trout that remain in fresh water. Steelhead spend anywhere from one to five years in saltwater, however, two to three years are most common (Busby *et al.* 1996). Some return as "half-pounders" that over-winter one season in freshwater before returning to the ocean in the spring.

Only "winter" steelhead are found in the CCC steelhead ESU. The timing of upstream migration is correlated with seasonal high flows and associated lower water temperatures. Steelhead begin returning to the Russian River in December, with the run continuing into April. The minimum stream depth necessary for successful upstream migration is about 13 cm (Thompson 1972). The preferred water velocity for upstream migration is in the range of 40-90 cm/s, with a maximum velocity, beyond which upstream migration is not likely to occur, of 240 cm/s (Thompson 1972). Most spawning takes place from January through April. Steelhead may spawn more than one season before dying (iteroparity), in contrast to other species of the genus *Oncorhynchus*. Most adult steelhead in a run are first time spawners, although Shapovalov and Taft (1954) reported that repeat spawners are relatively numerous (about 17 percent) in California streams.

Steelhead spawn in cool, clear streams featuring suitable water depth, gravel size, and current velocity. Reiser and Bjornn (1979) found that gravels of 1.3-11.7 cm in diameter were preferred by steelhead. The survival of embryos is reduced when fines smaller than 6.4 millimeters (mm) comprise 20 to 25 percent of the substrate. The number of days required for steelhead eggs to hatch is inversely proportional to water temperature and varies from about 19 days at 15.6°C to about 80 days at 5.6°C. Fry typically emerge from the gravel two to three weeks after hatching (Barnhart 1986).

Upon emerging from the gravel, fry rear in edgewater habitats and move gradually into pools and riffles as they grow larger. Instream cover is an important habitat component for juvenile steelhead both as velocity refuge and as a means of avoiding predation (Meehan 1991). However, steelhead tend to use riffles and other habitats not strongly associated with cover more than other salmonids during summer rearing. Young steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles. In winter, they become inactive and hide in any available cover, including gravel or woody debris.

Because rearing juvenile steelhead reside in freshwater all year, adequate flow and temperature are important to the population at all times. Water temperature influences juvenile steelhead growth rates, population density, swimming ability, and their abilities to capture and metabolize food, and withstand disease (Barnhart 1986; Bjornn and Reiser 1991). Rearing steelhead juveniles prefer water temperatures of 7.2-14.4°C and have an upper lethal limit of 23.9°C.

However, they can survive short periods up to 27°C with saturated dissolved oxygen (DO) conditions and a plentiful food supply. Fluctuating diurnal water temperatures also aid in survivability of salmonids (Busby *et al.* 1996). DO levels of 6.5-7.0 mg/l affect the migration and swimming performance of steelhead juveniles at all temperatures (Davis *et al.* 1963). Reiser and Bjornn (1979) recommended that DO concentrations remain at or near saturation levels with temporary reductions no lower than 5.0 mg/l for successful rearing of juvenile steelhead. Low DO levels decrease juvenile steelhead swimming speed, growth rate, and food consumption rate, efficiency of food utilization, threat avoidance behavior, and ultimately survival.

During rearing, suspended and deposited fine sediments can directly affect salmonids by abrading and clogging gills, and indirectly cause reduced feeding, avoidance reactions, destruction of food supplies, reduced egg and alevin survival, and changed rearing habitat (Reiser and Bjornn 1979).

Generally, throughout their range in California, steelhead that are successful in surviving to adulthood spend at least two years in freshwater before emigrating downstream. Emigration appears to be more closely associated with size than age. In Waddell Creek, Shapovalov and Taft (1954) found steelhead juveniles migrating downstream at all times of the year with the largest numbers of age 0+ and yearling steelhead moving downstream during spring and summer. Smolts can range from 14-21 cm in length before entering the marine environment. While in the ocean, coded wire tag recoveries indicate that most steelhead tend to migrate north and south along the continental shelf (Barnhart 1986), before returning to their natal streams to spawn.

Covered Species Distribution

Chinook salmon: The current range of Chinook salmon in North America extends from the Bering Strait area off Alaska south to Southern California. Historically, they ranged as far south as the Ventura River, California. Chinook salmon also occur along the coast of Siberia and south to Hokkaido Island, Japan. NMFS designated 17 separate Evolutionary Significant Units (ESU) of Chinook salmon in the watersheds of Washington, Idaho, Oregon, and California. Chinook salmon in the vicinity of Dry Creek belong to the California Coastal (CC) Chinook salmon, which are endemic to coastal California streams between (and including) Redwood Creek (Humboldt County) and the Russian River (Sonoma County). CC Chinook were listed as threatened under the Endangered Species Act in 1999 (64 FR 50394, 1999), and their listing status has been reaffirmed in two subsequent status reviews (Good et al., 2005; Williams et al., 2011).

The Russian River is the largest watershed in the CC Chinook Central Coastal Diversity Stratum and likely has the largest population. This population is also at the southern extent of the species range. Bjorkstedt *et al.* (2005) conclude that a single population of Chinook salmon historically

occupied the Russian River. This conclusion is based on the lack of evidence of substantially different selective environments. For example, spawning habitat is relatively contiguous throughout portions of the main stem river and Dry Creek. The spawning population is therefore likely to have been strongly influenced by dispersal from all areas within the basin. In addition, genetic analysis offers little support for the existence of separate populations.

Though there are conflicting reports, the high likelihood of suitable habitat under historical conditions offers strong evidence that a substantial population of fall-run Chinook salmon historically existed in the Russian River (Bjorkstedt *et al.* 2005; Moyle 2002). The historic size of the population remains mostly unknown (Chase *et al.* 2007). However, beginning in 2000 population counts have been made from SCWA's video cameras within fish ladders at the Mirabel rubber dam in the middle reach of the Russian River (see Figure 2).

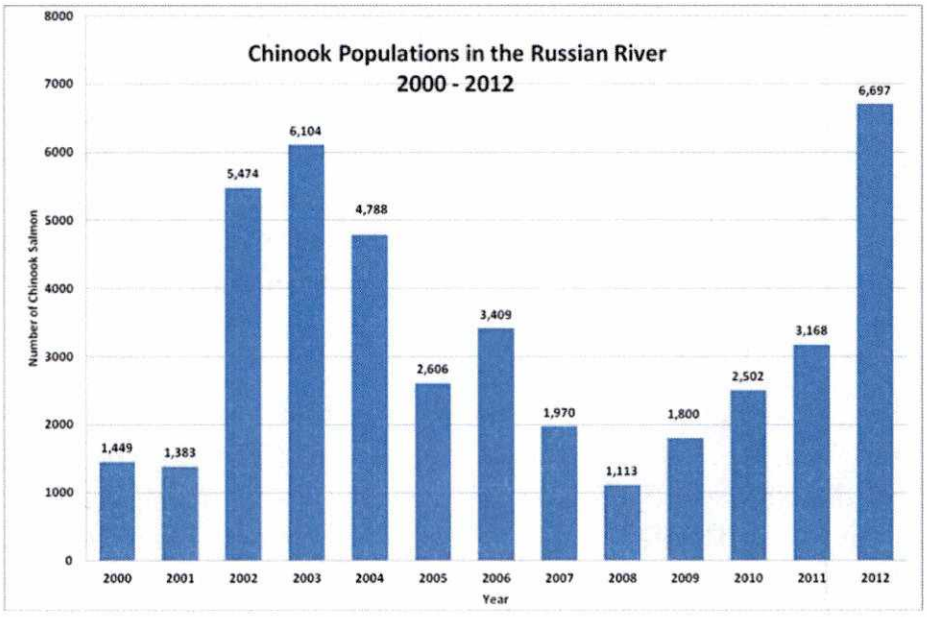

Figure 2. Estimated Chinook salmon run in the Russian River above Mirabel Dam (http://www.scwa.ca.gov/files/images/environment/chinook%20population%20with%20numbers2.pdf)

These data suggest a possible increase in adult escapement within the last several years. Smolt trapping at the screw trap below the Westside Road Bridge over Dry Creek has documented large numbers of Chinook salmon smolts heading downstream. SCWA estimates the population of Chinook smolts that passed the Dry creek screw tap in 2009 was 222,487 (95% CI: ± 15,627), and 86,594 (95% CI: ± 17,425) in 2010 (Martini-Lamb and Manning 2011a, b).

Coho salmon: The current North American range of coho salmon extends from Point Hope, Alaska, south to streams in Santa Cruz County, California. Within this coastal area, National Marine Fisheries Service (NMFS) designated seven Evolutionarily Significant Units (ESUs) of coho salmon, each with its own distinct geographic range. The coho salmon in Dry Creek

belong to the southernmost ESU, the Central Coast California (CCC) coho salmon, which are endemic to coastal California streams from Punta Gorda in southern coastal Humboldt County, California south to Aptos Creek in Santa Cruz County, California. CCC coho salmon was listed under the Federal Endangered Species Act as a threatened species in 1996 and as endangered in 2005 (70 FR 37160). Bjorkstedt et al. (2005) identified each of the 12 largest coastal streams in this ESU as having its own independent population of CCC coho salmon.

The Russian River is the largest river and near the geographic middle of the CCC coho salmon ESU. Bjorkstedt et al. (2005) indicates that the Russian River historically supported the largest population of coho salmon in the ESU; however, this species was nearly extirpated from the Russian River by the late 1990's. Between 2000 and 2003, the documented annual returns of adult coho to the RR were less than 10 fish, and few of the watershed's tributaries continued to contain juveniles of this species. The Russian River Coho Salmon Captive Broodstock Program was initiated in 2001 to reestablish self-sustaining runs of coho salmon in tributary streams within the Russian River Basin (Obedzinski *et al.* 2007). Under this program, offspring of wild Russian River coho salmon are reared in a hatchery and then released as juveniles into Dry Creek and other tributaries that historically supported the species, with the expectation that a portion of them will return to these areas as adults to naturally reproduce. The program involves the conservation of the remaining native Russian River coho salmon genome through genetic management that optimizes the genetic diversity of the progeny of the captive broodstock. In the past three years several hundred adult coho salmon were documented returning to the Russian River, and wild-spawned juvenile coho salmon were documented in Dry Creek.

Steelhead trout: The current North American range of steelhead extends from western Alaska, south to coastal streams near the U.S. border with Mexico. NMFS designated 15 separate Distinct Population Segments (DPSs) of steelhead in the watersheds of Washington, Idaho, Oregon, and California. The steelhead in Dry Creek belong to the Central Coast California (CCC) steelhead DPS, which includes all of the coastal streams from the Russian River south to Aptos Creek in Santa Cruz County, California, plus all of the watersheds entering San Francisco and San Pablo Bays with the exception of the Sacramento River. CCC steelhead was listed under the Federal Endangered Species Act as a threatened species in 1997 (62 FR 43937).

Spence et al. (2008) identified 37 separate independent (or potentially independent) populations of steelhead in the CCC DPS, including six that reside in the Russian River basin. The Russian River is the largest watershed within the CCC steelhead DPS and its six independent populations are estimated to have collectively supported a run of 32,000 adult fish, which represented about 30% of the total historical (pre-development) number of steelhead in the entire DPS (Spence et al. 2008, revised figures 2012). Other estimates suggest that the Russian supported runs of 50,000+ adult steelhead (NMFS 2008). Today, wild steelhead are found in many of the tributaries to the Russian River; however, the estimated annual return of adult wild steelhead is now around 4,000 adult fish (McEwan 2001).

Threats to the Covered Species

Chinook salmon: The principal threats to the CC Chinook Salmon ESU stem from logging, road construction, urban development, mining, agriculture, ranching, and harvesting. These threats have resulted in the loss, degradation, simplification, and fragmentation of CC Chinook salmon habitat, and caused resulting declines in CC Chinook salmon populations. Associated impacts of these activities include: alteration of stream bank and channel morphology; alteration of ambient stream water temperatures; degradation of water quality; elimination of spawning and rearing habitats; fragmentation of available habitats; elimination of downstream recruitment of spawning gravels and large woody debris; removal of riparian vegetation resulting in increased stream bank erosion; and increased sedimentation input into spawning and rearing areas resulting in the loss of channel complexity, pool habitat, and suitable gravel substrate.

The coastal river systems of the CC Chinook salmon ESU have specifically been affected by agriculture, logging, and mining activities (NMFS 1998). The effect of periodic flood events has been exacerbated by these practices. Additionally, the distribution of the CC Chinook salmon ESU has been restricted by dam construction in the Eel and Russian River basins. Specific dams known to restrict access to spawning and rearing habitat are: Peters Dam (on Lagunitas Creek), Nicasio Dam (on a tributary to Lagunitas Creek), Warm Springs Dam (on a tributary to the Russian River), Coyote Dam (on the Russian River), and Scott Dam (on the Eel River).

Coho salmon: The principal threats to the CCC coho salmon ESU stem from logging, agriculture, mining, urbanization, stream channelization, dams, wetland loss, and water withdrawals and unscreened diversions for irrigation. These threats have contributed to the decline of the CCC coho salmon ESU. Land use activities associated with logging, road construction, urban development, mining, agriculture, and recreation have significantly altered coho salmon habitat quantity and quality (61 FR 56138). Impacts of concern associated with these activities included the following: alteration of streambank and channel morphology, alteration of ambient stream water temperatures, elimination of spawning and rearing habitat, fragmentation of available habitats, elimination of downstream recruitment of spawning gravels and large wood, removal of riparian vegetation resulting in increased stream bank erosion, and degradation of water quality (61 FR 56138). Of particular concern was the increased sediment input into spawning and rearing areas resulting from the loss of channel complexity, pool habitat, suitable gravel substrate, and LWD (61 FR 56138). Decreased large woody material in streams has also reduced habitat complexity and contributed to the loss of cover, shade, and pools which are required by juvenile coho salmon (60 FR 38011).

Steelhead trout: Destruction, modification and curtailment of the CCC steelhead DPS habitat and range is the result of forestry, agriculture, mining and, most importantly, urbanization. Water storage, withdrawal, conveyance, and diversions for agriculture, flood control, domestic, and

hydropower purposes have greatly reduced or eliminated historically accessible habitat. Two habitat blockages are Coyote and Warm Springs Dams located in the Russian River Basin (NMFS 1996). Many other minor blockages likely exist throughout the range of this DPS. Blockages have been reported in 12 of 46 tributaries within the CCC steelhead DPS (Titus et al. 2002). Modification of natural flow regimes has had significant negative impacts on CCC steelhead directly and indirectly (e.g., mortality of adults/juveniles, alterations of fish communities and impacts to migration, spawning, rearing, and refuge).

Land use activities associated with logging, road construction, urban development, mining, agriculture, ranching, and recreation have resulted in the loss, degradation, simplification, and fragmentation of CCC steelhead habitat. These changes result in significant alteration in streambank and channel morphology, stream temperature, water quality, access, sediment/large wood recruitment and depletion which significantly affect all life stages of CCC steelhead.

Importance of Private Lands

Both the historic and current existing aquatic habitats of CC Chinook salmon, CCC coho salmon and CCC steelhead are largely on or directly adjacent to properties owned by private citizens, states, and local governments. Non-federal lands contain or are directly adjacent to rivers, streams, estuaries and lagoons that represent 83.6% of CC Chinook salmon aquatic habitat, and 95% of CCC coho salmon and CCC steelhead aquatic habitats. Therefore, conservation on non-federal properties is critical to the survival and recovery of these species. NMFS strongly believes that a collaborative stewardship approach to the proactive management of listed salmon and steelhead involving government agencies and the private sector is critical to achieving the ultimate goal of the Endangered Species Act. The "Safe Harbor" approach provides an avenue to garner the non-Federal landowners' support for species conservation on non-Federal lands. Through its implementation of its Safe Harbor Policy (64 FR 32717), NMFS is able to create incentives for non-Federal property owners to implement beneficial management activities for listed salmonid species by providing certainty with regard to possible future land, water, or resource use restrictions should the Covered Species later become more numerous as a result of those efforts undertaken.

Dry creek below Warm Springs Dam is designated critical habitat for the Covered Species. 99.6% of the land adjacent to Dry Creek is privately owned. During the summer, Dry Creek, whose flow is highly regulated by Warm Springs Dam, provides an abundant source of cold water suitable for rearing the Covered Species. However, the existing habitat within Dry Creek, in combination with outflow from Warm Springs Dam, results in stream velocities that are too high for optimal juvenile coho salmon and steelhead habitat (NMFS 2009). Given the similarities of habitat requirements of the Covered Species; habitat enhancements specific to coho salmon and steelhead will also result in improved survival of Chinook salmon, albeit to a lesser extent than that of coho salmon and steelhead. To create optimal habitat conditions for the Covered Species throughout Dry Creek, this Agreement will provide assurances described in Section 11

to private landowners who voluntarily allow the enhancement of habitat for the Covered Species to occur on their property.

8. ELEVATED BASELINE CONDITIONS

To establish a net conservation benefit and to aid recovery of the Covered Species, this Agreement adopts an elevated baseline. The Parties agree the elevated baseline should be based on desirable aquatic habitat conditions that can be reasonably attained by each enrolled property. To determine the elevated baseline, a Cooperative Agreement for each property will include the following:

1. A description of the existing instream and riparian habitat conditions on the enrolled property (via "Current Conditions Inventory Report" (Interfluve 2010) and Table 1 below).

2. A detailed description of a Habitat Enhancement Project for the property that proposes to improve existing instream and riparian habitat conditions (via Fish Habitat Enhancement: Conceptual Design Report" (Interfluve 2012).

The description of existing instream and riparian habitat conditions will be based on information documented in the "Current Conditions Inventory Report Dry Creek: Warm Springs Dam to Russian River Sonoma County, CA" (Interfluve 2010) and Table 1in Exhibit B of Attachment 3, which addresses water quality and other parameters not covered in Interfluve 2010. The Habitat Enhancement Project for each property being considered for enrollment will be designed to improve the impaired habitat conditions identified in Interfluve (2010) and will be based on conceptual designs outlined in the final "Dry Creek Fish Habitat Enhancement: Conceptual Design Report" (Interfluve 2012). The elevated baseline will be defined by the value of each "Habitat Parameter" identified in the "Elevated Baseline Condition" column of Table 1 (*i.e.*, Elevated Baseline Habitat Worksheet) of each Cooperative Agreement. The values listed in the "Elevated Baseline Condition" column of Table 1 will be based on the condition of the respective "Habitat Parameter" that will likely occur on the enrolled property once the Habitat Enhancement Project for that property has been constructed. NMFS and the Program Administrator will determine the elevated baseline conditions for each enrolled property with input from the landowner. NMFS, the Program Administrator and each prospective Cooperator must concur with the elevated baseline determination for the property being considered for enrollment prior to its inclusion under this Agreement.

Following construction of the Habitat Enhancement Project, NMFS and the Program Administrator, in coordination with the Cooperator, will verify that the Elevated Baseline Conditions have been achieved, using the monitoring protocols detailed in Section 15. The Program Administrator may enroll properties that have previously allowed Habitat Enhancement Projects, consistent with Interfluve (2012), to be implemented prior to this Agreement. In those

circumstances, the Program Administrator may establish baseline conditions in those Cooperative Agreements using the property's existing instream and riparian habitat conditions.

Unforeseeable events or catastrophic natural events such as extreme rainstorms, flood events, drought, forest fires, or insect/disease epidemics are beyond the reasonable control of the Cooperator, and could either extirpate the Covered Species from enrolled lands or render habitat for the Covered Species unsuitable for continued occupation. These events may, on the enrolled property, reduce the numbers of the Covered Species or habitat below the elevated baseline through no fault of, the Cooperator. In such circumstances the Cooperator and Program Administrator, upon approval by NMFS, may revise the elevated baseline in the Cooperative Agreement to reflect the new circumstances.

9. COOPERATOR'S BENEFICIAL MANAGEMENT ACTIVITIES FOR THE COVERED SPECIES

The primary objective of this Agreement is to aid in the recovery of CCC coho salmon, CCC steelhead, and CC Chinook salmon and to assist in the re-establishment of self-sustaining, wild populations of these species. To accomplish this, it is essential that Cooperators, the Program Administrator and NMFS work together to provide suitable habitat and positive stewardship for sites to be used for adult spawning and rearing of juvenile salmon and steelhead. Once implemented, the Parties expect the beneficial management activities discussed in this section will result in at least six miles of high quality spawning and rearing habitat for the Covered Species. The Beneficial Management Activities undertaken by Cooperators pursuant to this Agreement include the following:

1. The Cooperator will allow Program Administrator, after reasonable prior notice and in coordination with the Landowner, access to the enrolled property for purposes of: 1) construction of the Habitat Enhancement Project identified in Part 4 of this Agreement; 2) maintaining the Habitat Enhancement Project; and, 3) monitoring the Habitat Enhancement Project. Access to the enrolled property for these purposes will be scheduled to reasonably accommodate and avoid interference with commercial or other uses of the property.

2. The Cooperator will allow, after reasonable advance notification, access to the enrolled lands by the Program Administrator, or mutual agreeable party, to monitor, stock or remove the Covered Species, or to carry out other management activities as necessary.

10. COOPERATOR'S LAND MANAGEMENT PRACTICES EFFECTING THE COVERED SPECIES

Land management practices considered under the Permit for which incidental take may be authorized on the enrolled lands are Routine Viticulture Activities. For the purposes of this Agreement, Routine Viticulture Activities means: any lawful viticulture practices performed

by the Cooperator, and persons associated with the Cooperator, that are incident to or in conjunction with viticulture operations, including wine-grape farming best management practices, production, cultivation, growing, replanting, irrigation including frost protection, harvesting, preparation for market, delivery to storage or market, and delivery to carriers for transport to market. Other non-farming routine viticulture activities include erosion control, removal of trash, and invasive plant removal. These activities will be described by each Cooperator by completing a Farm Plan outlined in Attachment 1. These activities may result in taking of the Covered Species, which should be minimized and avoided through the implementation of best management practices (see below) described in the farm plan (Attachment 1) for an enrolled property.

Best Management Practices

Cooperators who participate in this Agreement are committed to supporting the presence of Covered Species at their enrolled property by voluntarily managing and maintaining the property to provide benefits to the Covered Species. In keeping with this commitment the Cooperators will describe their enrolled property by completing a farm plan or assessment (Attachment 1), which includes best management practices (BMPs) associated with various viticulture operations that are currently implemented or may be implemented during the term of the Cooperative Agreement. For the purposes of this Agreement, BMPs are voluntary and are intended to avoid or minimize take of the Covered Species and assist the Cooperator in maintaining the elevated baseline conditions for the enrolled property. Following completion of a farm plan via an existing or new viticulture program (*e.g.* Fish Friendly Farming, Code of Sustainable Winegrowing, LandSmart or another plan completed by the farmer or a private consultant) or the assessment provided in Attachment 1, NMFS will review the farm plan or assessment, and related BMP's which describe the farm and operations in the Landowner Cooperative Agreement. BMPs are intended to avoid and minimize impacts to Covered Species and habitat that may result from Routine Viticulture Activities. If necessary, NMFS will work with prospective Cooperators to further identify BMP's to ensure that a net conservation benefit for the Covered Species can be achieved.

If over the duration of a Cooperative Agreement, the Parties and Cooperator find that the expected results of BMPs as described in a Farm Plan or Assessment appear ineffective, these measures can be changed or alternative activities undertaken to achieve those results. If BMP's need to be altered to improve benefits for the species, this will be done by amending the Farm Plan or Assessment, not by altering the responsibilities of parties in existing Cooperative Agreements. However, if existing Cooperators agree to alter their Cooperative Agreements then any modification of their responsibilities in relation to adaptive management will be addressed on a case by case basis. Strategies to reduce incidental take, if necessary, will be reviewed by the Parties with individual Cooperators and implemented where appropriate on a voluntary basis.

11. ASSURANCES

Upon execution of this Agreement by the Parties, and the satisfaction of all other applicable legal requirements, NMFS will issue the Program Administrator an ESP under Section 10(a)(1)(A) of the ESA; that authorizes the Program Administrator to issue Certificates of Inclusion to Cooperators. The Certificate of Inclusion assures the Cooperator they may incidentally take Covered Species, in accordance with the ESP and this Agreement, as a result of Routine Viticulture Activities as described in each Cooperative Agreement, and except where such Routine Viticulture Activities would result in the diminishment or non-achievement of the Elevated Baseline Conditions established for the enrolled property. This assurance depends on the Cooperator achieving the Elevated Baseline Conditions set forth in the Cooperative Agreement, complying fully with this Agreement and their Cooperative Agreement, and so long as the continuation of Routine Viticulture Activities would not be likely to result in jeopardy to Covered Species or the adverse modification or destruction of their designated critical habitat. NMFS provides no assurances with regard to intentional violations of the ESA related to Covered Species, or any action that may affect Non-Covered species, including the take of Non-Covered Species and the adverse modification or destruction of their designated critical habitat. NMFS Office of Law Enforcement may investigate and document such apparent violations of the ESA.

12. INCIDENTAL TAKE OF COVERED SPECIES

As used in this Agreement, incidental take refers to take of Covered Species that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Section 3(19) of the Act defines take to mean to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Nothing in this Agreement authorizes the Cooperators to capture, collect, or deliberately kill or injure any such species.

Safe harbor agreements are written in anticipation that take of the Covered Species could occur at some point in the future. Any take that occurs as a result of a reduction in the habitat quality and/or quantity established as the Elevated Baseline Conditions on the enrolled property is not authorized. Under this Agreement, provided that the Elevated Baseline Conditions identified for the Enrolled Properties are maintained, the Permit authorizes the Program Administrator to issue Certificates of Inclusions to Cooperators, which authorize Cooperators to take the Covered Species incidental to otherwise lawful activities in the following circumstances:

1. Conducting Routine Viticulture Activities on the enrolled property after the beneficial management activities have been initiated.

2. Returning the enrolled property to the Elevated Baseline Conditions at the termination of the Cooperative Agreement.

Cooperators will have authorization to incidental take of the Covered Species resulting from lawful activities within the enrolled properties, for the term specified in their Cooperator's Agreement. This Agreement does not provide incidental take authorization for the construction of the enrolled properties Habitat Enhancement Project described in Section 8 of this Agreement. Cooperators may conduct lawful activities, even if such use results in the incidental take of the Covered Species. Such incidental take of the Covered Species on the enrolled properties could occur as a result of Routine Viticulture Activities. As a result of these activities, incidental take could occur in the form of harassment, direct mortality or injury to the egg, juvenile, or adult life stages of the Covered Species through smothering of redds, disrupting feeding behavior, disrupting spawning behavior, disrupting migration behavior, stranding or other behavior modifications or disruptions.

13. EFFECTIVE DATE AND DURATION OF AGREEMENT

The Agreement becomes effective upon issuance of the Enhancement of Survival Permit, which will be in effect for 35 years. Cooperative Agreements developed pursuant to this Agreement will be effective for a minimum of 10 years but no longer than the term of this Agreement. This Agreement and the ESP may be extended by mutual written consent of the Parties.

14. EXPECTED NET CONSERVATION BENEFIT

In accordance with NMFS' Safe Harbor Policy (64 FR 32717), "net conservation benefit" means the cumulative benefits of the management activities identified in a Safe Harbor Agreement that provide for an increase in a species' population and/or the enhancement, restoration, or maintenance of Covered Species' suitable habitat within the enrolled property, taking into account the length of the Agreement and any off-setting adverse effects attributable to the incidental taking allowed by the enhancement of survival permit. Net conservation benefits must be sufficient to contribute, either directly or indirectly, to the recovery of the Covered Species.

NMFS believes that after implementation of the beneficial management activities within the enrolled property, Dry Creek will provide the Covered Species with high quality habitat that also sustains abundant clean, cold water flows throughout the year. Because of each Cooperator's willingness to allow the Program Administrator to construct, maintain, and monitor Habitat Enhancement Projects, and allowing access for the Program Administrator to stock, remove and monitor the Covered Species in Dry Creek, the Covered Area is an ideal location to promote the recovery of the Covered Species. Each Cooperator's commitment to include habitat conditions created by the Habitat Enhancement Project as part of the elevated baseline condition for their enrolled property will ensure survival and help contribute to the recovery of the Covered Species not only for the duration of this Agreement, but also likely in the years following. Dry Creek, within the Covered Area is considered a Core Recovery Area in the NMFS's Central California Coast (CCC) Coho Salmon Recovery Plan (NMFS 2012). Restoration of this area is the highest

priority for near-term restoration projects in recovery of the Covered Species (NMFS 2012). All of the beneficial management activities to be implemented by this Agreement are consistent with the priority restoration actions identified in NMFS (2012); and therefore are expected to result in demonstrable conservation benefits to the Covered Species.

Each Cooperator will manage their enrolled property in a manner that is beneficial to Covered Species while conducting Routine Viticulture Activities. Therefore, NMFS anticipates that implementation of this Agreement will produce a net conservation benefit to the Covered Species by ultimately:

1. Providing areas where existing suitable habitat for the Covered Species will be maintained or increased in quantity and quality;
2. Providing areas where suitable habitat for the Covered Species will remain relatively undisturbed;
3. Providing habitat for the Covered Species that will increase population numbers and distribution; and
4. Providing an example to the community that a cooperative government/private partnership can achieve biological goals for the Covered Species while maintaining the Landowner's land-use objectives.

NMFS anticipates the net conservation benefit to Covered Species from this Agreement, and thus contribution to their recovery will remain in place for at least 35 years and, due to the Cooperator's voluntary commitment to an elevated baseline condition for the enrolled property, the net conservation benefit is expected to last for years beyond the duration of this Agreement.

15. MONITORING & REPORTING

Compliance Monitoring

The Program Administrator with the assistance of NMFS where appropriate, will monitor the habitat enhancement projects and verify the maintenance of elevated baseline conditions to ensure compliance with this Agreement, including any obligations of Cooperators under Cooperative Agreements. Cooperative Agreements will grant NMFS, after reasonable prior notice to the Cooperator, the right to enter the enrolled lands to ascertain compliance with the Agreement.

Habitat Monitoring

The Program Administrator, with the assistance of NMFS where appropriate, will conduct habitat monitoring by visiting the enrolled properties to monitor aquatic habitat quality in accordance to the SCWA's Dry Creek Adaptive Management Plan (AMP) (ESSA 2014). Habitat monitoring for this Agreement will be conducted to detect habitat improvements resulting from each Habitat Enhancement Project. The AMP includes: 1) identification of performance measures; 2) success criteria for each performance measure; 3) an approach for

evaluating performance measures relative to success criteria; and 4) decision rules for determining the total amount of habitat enhanced by the Habitat Enhancement Project. The evaluation of performance measures is based on the results of Implementation Monitoring that is conducted following construction of the Habitat Enhancement Project. Implementation Monitoring relies on quantitative data to qualitatively determine whether the habitat enhancement was implemented correctly and the elevated baseline conditions were achieved. The AMP also includes Effectiveness Monitoring of Habitat Enhancement Projects that will be conducted periodically to determine if the enhancement is having the intended effect on physical habitat quality, and whether elevated baseline conditions are being maintained. The results from ongoing Validation (fish) Monitoring conducted by SCWA, and as required by NMFS (2009), will assist NMFS in determining whether the habitat enhancement is achieving the intended benefits to the Covered Species.

Annual Report and Adaptive Management

The Program Administrator must compile, and the respective Cooperator shall provide information to assist with the compilation of, an annual report on the implementation of this Agreement. Annual reports will cover the period from October 1st to September 30th each year and are due April 1st of each year. Copies will be made available to NMFS and the relevant Cooperator(s). The report will list all of the properties that are enrolled through Cooperative Agreements under this Agreement and their legal descriptions, current ownership, and a description of the status of the Habitat Enhancement Project for each property. The report will include copies of all Certificates of Inclusion and the associated Cooperative Agreements executed during the reporting period. This annual report will include information on the results of biological and compliance monitoring, including, overall status of Habitat Enhancement Project, the amount of habitat that has been enhanced to date, management activities undertaken by the Program Administrator related to the Covered Species on the enrolled properties, maintenance of elevated baseline conditions, and any take of Covered Species by Cooperative Agreements signed under this Agreement, including numerical losses of individuals or habitat that cannot be attributed to specific causes.

The Annual Report will also include suggestions for, or documented modifications of, improvements to a Habitat Enhancement Project and the elevated baseline of an enrolled property, or through the AMP, as described above. Adaptive management allows for mutually agreed-upon changes to a Habitat Enhancement Project, in response to changing conditions or new information. Decisions related to adaptive management will be based on an evaluation of the compliance and habitat monitoring results detailed in the annual reports and on field observations by the Parties to this Agreement.

16. RESPONSIBILITIES OF THE PROGRAM ADMINISTRATOR, COOPERATORS, AND NMFS

Program Administrator

The Program Administrator has the following responsibilities:

1. Be the recipient of the Federal ESA 10(a)(1)(A) Enhancement of Survival Permit for this Agreement.

2. Enter into Cooperative Agreements with private landowners and issue Certificates of Inclusion. The Program Administrator will enroll non-Federal landowners (Cooperators) with Certificates of Inclusion under the Permit when Cooperators sign Cooperative Agreements. NMFS has provided a Cooperative Agreement template (Attachment 3), and a Certificate of Inclusion template (Attachment 4).

3. Conduct habitat surveys to determine the elevated baseline or ensures that surveys have been conducted by qualified individuals.

4. Ensure that NMFS has approved each individual Cooperative Agreement prior to enrolling the Cooperator.

5. Furnish NMFS with copies of each Cooperative Agreements within 2 weeks after are signed.

6. Compile reports from Cooperators (outlined in Cooperator Responsibilities 5, 6, 8, and 10) and summarize the information in an annual report to NMFS. The report is due April 1st of each year. The record keeping process will document implementation of the Agreement's management practices while protecting the confidentiality of Cooperators.

7. Notify NMFS of dead specimens of the Covered Species of which the Program Administrator becomes aware on the Enrolled Properties.

8. Inform NMFS if a Cooperator chooses to undergo an activity that will reduce the number of Covered Species or amount or quality of associated habitat on the enrolled property. This notification is for the sole purpose of allowing an opportunity to relocate Covered Species from the property.

9. Ensure compliance of the terms of the Cooperative Agreement. If a Cooperator is incompliant with the Cooperative Agreement, the Program Administrator will follow the procedures in Attachment 5 of this Agreement.

Cooperators

Cooperators are landowners and/or land managers who voluntarily enter into a Cooperative Agreement with the Program Administrator to carry out habitat enhancement activities that benefit the Covered Species. Each Cooperator has the following responsibilities, which shall be specified in each Cooperative Agreement:

1. Enroll their property by entering into a Cooperative Agreement with the Program Administrator.

2. Work with the Program Administrator and NMFS to determine the elevated baseline conditions for their property.

3. Carry out the Cooperative Agreement's Farm Plan and associated BMPs therein.

4. With reasonable advance notification, allow access to the enrolled lands by the Program Administrator to enhance and manage habitat for the Covered Species, as well as monitor, stock or remove the Covered Species, or to carry out other management activities as necessary.

5. Annually provide the Program Administrator information, or lack thereof, regarding any activities that resulted in, or may have resulted in, incidental take of the Covered Species to assist the Program Administrator in compiling their annual report on activities related to management of the Covered Species.

6. Notify the Program Administrator regarding any changes to the Farm Plan or Farm Assessment for which the Cooperative Agreement is based upon.

7. With reasonable advance notification, allow access to the enrolled lands by the Program Administrator for purposes of ascertaining compliance with the Cooperative Agreement.

8. Inform the Program Administrator and NMFS within two business days of natural or man-caused emergency circumstances, such as storm events, or accidental discharge events, which could negatively affect occupied aquatic habitats and could result in take of Covered Species, and allow access to the Program Administrator and NMFS for emergency salvage or relocation of affected individuals.

9. Manage aquatic habitats within the enrolled property to maintain water quality and other parameters necessary for the survival of Covered Species, to the extent required under the terms of this Agreement and Cooperative Agreement.

10. Notify the Program Administrator and NMFS at least 60 calendar days in advance of any land management activity that modifies or alters the enrolled lands to an extent that such activity may reasonably be expected result in the loss of Covered Species individuals or degrade occupied habitat as described in the respective Cooperative Agreement. The notification will allow the Program Administrator and NMFS an opportunity to capture and relocate the affected individuals, thereby minimizing the impact of the authorized take.

11. Ensure that all instream diversions are properly screened in accordance to NMFS Screening Criteria.

NMFS

NMFS has the following responsibilities:

1. Upon execution of the Agreement, NMFS will issue to the Program Administrator a permit in accordance with Section 10(a)(1)(A) of the ESA.

2. Provide technical assistance to the Program Administrator and Cooperators, to the extent practicable, when requested; and provide information on federal funding programs as appropriate.

3. Assist the Program Administrator and Cooperators in determining the Elevated Baseline Conditions, reviewing the Farm Plan or Assessment, reviewing or identifying BMPs, and developing Cooperative Agreements.

4. Prior to the Program Administrator signing a proposed Cooperative Agreement, NMFS will provide written verification to the Program Administrator if NMFS has determined that proposed Cooperative Agreement will likely result in a Net Conservation Benefit for the Covered Species

5. Review annual reports provided by the Program Administrator.

17. MODIFICATION AND TERMINATION

A. Modification of the Agreement. Any party may propose amendments to this Agreement, as provided in 50 C.F.R. §222.306 (a)(b)(c)(d), by providing written notice to, and obtaining the written concurrence of, the other Parties. Such notice shall include a statement of the proposed modification, the reason for it, and its expected results. Both the Program Administrator and NMFS must sign the notice. The Parties will use their best efforts to respond to proposed

modifications within 60 days of receipt of such notice. Proposed modifications will become effective upon the Parties' written concurrence.

B. Termination of a Cooperative Agreement by the Cooperator. As provided for in Part 12 of the NMFS's Safe Harbor Policy (64 Fed. Reg. 32717), a Cooperator may terminate his/her Cooperative Agreement by giving written notice to the Program Administrator. In such circumstances, the Cooperator may return the enrolled property to the elevated baseline conditions, without penalties or disincentives for withdrawing participation, even if the management activities identified in this Agreement have not been fully implemented, provided they notify the Program Administrator prior to undertaking an activity that will cause take of the Covered Species. In the event of early termination, a Cooperator must give NMFS and the Program Administrator prior notice of at least 60 days to provide an opportunity to relocate, if appropriate, any affected Covered Species. Withdrawal from a Cooperative Agreement will extinguish the take authorization and assurances provided to the Cooperator.

C. Termination of the Agreement and Cooperative Agreements by NMFS and Program Administrator. NMFS and Program Administrator may terminate this Agreement and Cooperative Agreements in accordance with the laws and regulations in force at time of such termination. Even where the Cooperator has complied fully with this Agreement and the ESP, if the continuation of the Agreement is later deemed likely to result in jeopardy to any ESA-listed species, to modify adversely or destroy ESA-listed species' designated critical habitat, result in the unauthorized take of ESA-listed species, or if the action of another entity makes the realization of the net conservation benefit unlikely, NMFS and Program Administrator may terminate this Agreement or Cooperative Agreements.

D. Permit Suspension or Revocation. NMFS may suspend or revoke the permit/approval for cause in accordance with the laws and regulations in force at the time of such suspension or revocation. As provided in 50 C.F.R. §222.306 (e) NMFS may also, after pursuing appropriate options to avoid permit revocation, revoke the permit if continuation of permitted activities would likely jeopardize the continued existence of the Covered Species, newly listed species under NMFS's jurisdiction, or species under NMFS's jurisdiction not covered by the agreement and previously unknown by NMFS to be present, or adversely modify a Covered Species' designated critical habitat or the designated habitat of a newly listed species under NMFS' jurisdiction. The Program Administrator or any Cooperator may object to any suspension or revocation of its Enhancement of Survival Permit or Cooperative Agreement.

E. Baseline Adjustment. The elevated baseline conditions for any enrolled property may, by mutual agreement of the Parties and the Cooperator, be adjusted if, during the term of the Cooperative Agreement and for reasons beyond the control of the Cooperator or as an unintended result of properly-implemented beneficial activities, the elevated baseline habitat conditions are reduced from what they were at the time the Cooperative Agreement was

negotiated. The Cooperator's elevated baseline will be adjusted to reflect any mutual agreement reached by the Parties.

F. Inability of the Program Administrator to Continue. If the Program Administrator is unable to perform its obligations under this Agreement for any reason, it will give written notice to NMFS at least 60 days prior to ceasing to perform its obligations under the Agreement. Upon receiving such notice, NMFS may, at its discretion, after consultation with Cooperators, either amend this Agreement and the associated permits to substitute a new Program Administrator as provided in 50 C.F.R. §222.305 (a)(3), or if a Cooperator prefers, convert any previously approved Cooperative Agreement into an individual Safe Harbor Agreement between the Cooperator and NMFS under the same terms.

G. Other Listed Species, Candidate Species, and Species of Concern. In the event that other species in Dry Creek not initially covered by this Agreement, are subsequently listed as threatened or endangered under the ESA, the Parties may consider amending the Agreement to add the newly-listed species as a Covered Species. Previously approved Cooperative Agreements may be amended to include newly-listed species as Covered Species, subject to approval by NMFS. The amendment of any Cooperative Agreement to include subsequently listed species will require a baseline for the species to be determined in a manner approved by NMFS.

F. Notices and Reports. Any notices and reports, including monitoring and annual reports, required by this Agreement will be delivered to the persons listed below, as appropriate:

General Manager
Sonoma County Water Agency
404 Aviation Blvd,
Santa Rosa, CA 95403

Assistant Regional Administrator
California Coastal Office
National Marine Fisheries Service
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

18. OTHER MEASURES

A. Remedies. No party will be liable in monetary damages for any breach of this Agreement, any performance or failure to perform an obligation under this Agreement or any other cause of action arising from this Agreement.

B. Dispute Resolution. The Parties and Cooperators agree to work together in good faith to resolve any disputes, using dispute resolution procedures agreed upon by all. Modification to the Agreements shall follow the procedures detailed in Section 17.A above. For disputes other than modifications, the Parties and affected Cooperators agree to meet and confer within 30 days of a request by any party. If necessary, the Parties and affected Cooperators agree that a mutually agreed upon arbitrator may be used to solve the dispute.

C. Succession and Transfer. As provided in 50 C.F.R. §222.305(a)(3), if a Cooperator transfers his or her interest in the enrolled property to another non-Federal entity, NMFS will regard the new owner or manager as having the same rights and responsibilities with respect to the enrolled property as the original Cooperator, if the new owner or manager agrees to become a party to the Cooperative Agreement in place of the original Cooperator.

D. Availability of Funds. Implementation of this Agreement is subject to the requirements of the Anti-Deficiency Act and the availability of appropriated funds. Nothing in this Agreement will be construed by the Parties to require the obligation, appropriation, or expenditure of any funds from the U.S. or state treasuries. The Parties acknowledge that NMFS will not be required under this Agreement to expend any Federal appropriated funds unless and until an authorized official of that agency affirmatively acts to commit to such expenditures as evidenced in writing.

E. No Third-Party Beneficiaries. This Agreement does not create any new right or interest in any member of the public as a third-party beneficiary, nor will it authorize anyone not a party to this Agreement to maintain a suit for personal injuries or damages pursuant to the provisions of this Agreement. The duties, obligations, and responsibilities of the Parties to this Agreement with respect to third parties shall remain as imposed under existing law.

F. Other Laws. This Agreement and activities conducted under it are subject to all applicable federal, state, and local laws and regulations. Nothing contained in this Agreement is intended to limit the authority of the United States to fulfill its enforcement responsibilities under applicable federal or state law.

19. SIGNATURES

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this programmatic Safe Harbor Agreement to be in effect as of the date that NMFS issues the Enhancement of Survival Permit.

3/2/16

William W. Stelle Jr.
Regional Administrator
West Coast Region
National Marine Fisheries Service

Date

3.2.16

Grant Davis
General Manager
Sonoma County Water Agency

Date

20. REFERENCES

60 FR 38011 - Endangered and Threatened Species; Proposed Threatened Status for three contiguous ESUs of coho salmon ranging from Oregon through central California

61 FR 56138 - Endangered and threatened species: threatened status for central California coho salmon evolutionarily significant unit (ESU)

62 FR 24588 - Endangered and threatened species; threatened statues for Southern Oregon/Northern California Coast Evolutionarily Significant Unit (ESU) of coho salmon.

62 FR 43937 – Endangered and threatened species: listing of several Evolutionarily Significant Units (ESUs) of West Coast Steelhead.

64 FR 32706 – Safe Harbor Agreements and Candidate Conservation Agreements with Assurances.

64 FR 32717 – Announcement of Final Safe Harbor Policy.

64 FR 50394 - ENDANGERED and threatened species; threatened status for two Chinook salmon Evolutionarily Significant Units (ESUs) in California

70 FR 37160 - Endangered and threatened species: final listing determinations for 16 ESUs of West Coast Salmon, and Final 4(d) Protective Regulations for Threatened salmonid ESUs.

71 FR 834 - Endangered and threatened species: Final listing determinations for 10 distinct population segments of West Coast steelhead.

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ATTACHMENT 1. Farm Plan

A. Completion of Farm Plan

If the landowner wants coverage for their entire property under the Dry Creek PSHA for their Routine Viticulture Activities, then the completion of a Farm Plan or an assessment of farm operations is a necessity. A Farm Plan will be utilized to describe the property and the associated BMP's intended to avoid or minimize take of the Covered Species and assist the Cooperator in maintaining the elevated baseline conditions for the enrolled property. This plan will form the basis of the property description section in the Cooperative Agreement for the enrolled property.

Please check the box or boxes below, to indicate whether you have you gone through a farm planning process and to identify which one:

- o Fish Friendly Farming
- o Code of Sustainable Winegrowing
- o LandSmart
- o another plan completed by yourself or a private consultant identify:_____

B. Farm Plan Review

Please check the appropriate box below, to indicate if your Farm Plan may be reviewed by NMFS in order to describe the enrolled property:

- o NMFS may review the completed farm plan for my property

In accordance with the enrollment procedures described in the PSHA, the landowner will meet with NMFS and/or the Program Administrator, and other appropriate personnel (*e.g.* a representative from their farm planning process) as the landowner sees fit to review the farm plan and develop a site description to be part of the Landowner Cooperative Agreement. Since there are differences between the different Farm Plans, and between versions of the same Farm Plan type, any additional information that is not part of a completed Farm Plan will be gathered at that time. Typically this will only require several questions related to chemical storage and mixing sites, water supply infrastructure, fish passage, and frost control practices that can be answered quickly during the meeting with NMFS. The landowner may provide the Farm Plan to the Program Administrator and NMFS, prior to meeting with you to finish the site description and the Landowner Cooperative Agreement but this is not required (Go no further, and Do not complete Attachment 2 below.). OR;

- o I have not completed a farm plan for my property but I am interested in working with (check below) to complete a farm plan for my property:

- o Code of Sustainable Winegrowing
- o Fish Friendly Farming
- o LandSmart
- o another plan completed by yourself or a private consultant identify:_____

When your Farm Plan is completed, in accordance with the enrollment procedures, the landowner will meet with NMFS and other appropriate personnel (e.g. a representative from their farm planning process) to review the farm plan and develop a site description to be part of the Landowner Cooperative Agreement. As above, the landowner has the option of providing it to the Program Administrator, to be reviewed by NMFS and the Program Administrator prior to meeting with you to finish the site description and the Landowner Cooperative Agreement, but this is not required (Go no further, and Do not complete Attachment 2 below.). OR;

- o I have completed a farm plan for my property but my farm plan is not available for review
- o I have not completed a farm plan for my property and wish to complete a Farm Assessment

If you checked one of the last two boxes, please proceed to Attachment 2: Farm Assessment and Recommended **Best Management Practices (BMPs) for Routine Viticulture Activities on the Enrolled Property.**

ATTACHMENT 2. Farm Assessment and Recommended Best Management Practices (BMPs) for Routine Viticulture Activities on the Enrolled Property

This checklist and description will be used to describe your property and your current management practices. Following completion of Part 1 (Farm Assessment), please select the appropriate BMP's in Part 2 (Best Management Practices) that have or will be incorporated into your operations. These BMP's are necessary to avoid and minimize impacts from your farm operations, and to maintain habitat conditions for Covered Species, on your property. Both Part 1 and 2 will be reviewed by NMFS and the Program Administrator prior to or while meeting with you to finish the site description and the Landowner Cooperative Agreement.

Part 1. Farm Assessment – to be completed only if you have not already completed a farm plan, or your farm plan is not available for review

COOPERATOR CONTACT INFORMATION	
Cooperator Name	
Mailing Address	
Phone Number	
Email Address	
ENROLLED PROPERTY INFORMATION	
Address	
Assessor Parcel Numbers	
Acres under viticulture	
Acres of Enrolled Property	

PART 1. SECTION 1. SEDIMENTATION AND INCREASED TURBIDITY IMPACTS				
Tillage Practices Worksheet (Page 1 of 2)		**YES**	**NO**	**N/A**
1	Do you periodically evaluate your tillage program and only till the minimal amount necessary for agronomic needs?	☐	☐	☐
2	Is the entire property managed as a no-till property? (If yes, skip to 16.)	☐	☐	☐
3	Are portions of your property managed as no-till?	☐	☐	☐
4	Do you typically till only alternate rows?	☐	☐	☐
5	Do you restrict tillage on slopes greater than 10 percent?	☐	☐	☐
6	Briefly describe the factors behind your tillage decisions and how your tillage regime may change over time:			
7	Have you established filter strips between cultivated areas and waterways or ditches?	☐	☐	☐
8	Are these filter strips untilled (*e.g.*, mowed only)?	☐	☐	☐
9	Have you monitored their performance in filtering sediments from overland flow?	☐	☐	☐
10	Do you leave the end of vineyard blocks untilled to increase the effective filter strip size?	☐	☐	☐
11	Briefly describe the size, condition and maintenance practices for your filter strips. Consider if you can monitor their performance in removing sediments through photo documentation (*e.g.*, sediment building up in locations during the wet season, or clear water flowing out of the filter strip area).			
12	Are the turn-around areas left untilled?	☐	☐	☐
13	Are the vineyard avenues left untilled?	☐	☐	☐

Tillage Practices Worksheet (Page 2 of 2)		YES	NO	N/A
14	Is your equipment adequate to leave these areas untilled (*e.g.*, it is not too old or in disrepair)?	☐	☐	☐
15	Briefly describe your tillage equipment:			
16	Do you keep erosion control materials (*e.g.*, straw bales, wattles, silt fencing, *etc.*) on hand to use in the event of an unforeseen erosion control problem?	☐	☐	☐
17	Are vineyard personnel or the ranch manager trained in their proper use?	☐	☐	☐
18	Use this box to describe additional information if necessary.			

PART 1. SECTION 1. SEDIMENTATION AND INCREASED TURBIDITY IMPACTS				
Vineyard Drainage Systems Worksheet (Page 1 of 4)		**YES**	**NO**	**N/A**
1	Does your site have an installed drainage system? (If no, skip to row 31.)	☐	☐	☐
2	Is it engineered for the 50 or 100 year storm as per any applicable local regulations?	☐	☐	☐
3	Do you have subsurface drain lines?	☐	☐	☐
4	Do you have a surface system (*e.g.*, ditches, grassy swale)?	☐	☐	☐
5	Do you have a combination of both (*i.e.*, surface and subsurface)?	☐	☐	☐
6	Is your drainage system designed to avoid concentrating flows at a few discharge points that can cause erosion?	☐	☐	☐
7	Does your system discharge directly to a creek?	☐	☐	☐
8	Does your system discharge directly to an ephemeral swale or ditch?	☐	☐	☐
9	Does your system discharge directly to a pond?	☐	☐	☐
10	Is it a combination of the above questions (*i.e.* rows 7-9)?	☐	☐	☐
11	Please briefly describe and note the design capacity of the drainage system and whether it was designed and installed by a professional engineer. On an aerial photograph or screen capture(s) from Google Earth or other system, illustrate the drainage system for the property showing both surface and subsurface drainage features, and all outlet points. Label this property map for later reference.			
12	Does your drainage system allow for infiltration (percolation) of flows into the soil at some point in the system?	☐	☐	☐
13	Is the drainage system set up to maximize infiltration?	☐	☐	☐
14	Do you use infiltration basins or galleries in your drainage system?	☐	☐	☐
15	Does your drainage system discharge into the riparian zone in a manner that promotes infiltration?	☐	☐	☐
16	Can you alter the drainage system to promote infiltration of storm water to improve summer flows and groundwater supplies?	☐	☐	☐

Vineyard Drainage Systems Worksheet (Page 2 of 4)		YES	NO	N/A
17	Infiltration of water is important for extending baseflows in streams into the dry season and for reducing peak flows in streams and their associated erosion. Briefly describe how your layout allows for infiltration and consider how you could allow for greater infiltration volumes or rates. Areas actively managed to promote infiltration should be noted on your drainage map.			
18	Do you have drop inlets into your subsurface drainage system? (If no, skip to row 24.)	☐	☐	☐
19	Do you inspect the drop inlets post-harvest to ensure they are free of obstructions or sediments as part of your site winterization practices?	☐	☐	☐
20	Are your drop inlets equipped with sediment traps to remove fine sediments?	☐	☐	☐
21	Do you regularly check the drop inlets during the rainy season and remove any built up sediments before they are re-suspended into the drainage system?	☐	☐	☐
22	Do you use straw wattles around the drop inlets to provide filtration of sediments from the system?	☐	☐	☐
23	Do you check the performance of these wattles throughout the rainy season and remove accumulated sediment?	☐	☐	☐
24	Do you have a sediment basin(s) built into your drainage system to reduce sediment delivery and associated turbidity impacts?	☐	☐	☐
25	Do you monitor the performance of the sediment basin to determine if there is a lot of sediment entering it and if it is collecting a significant portion of the sediment?	☐	☐	☐
26	Do you clean the sediment basin out periodically to minimize re-suspension and delivery of sediments from the system?	☐	☐	☐
27	Do you use stilling basins as energy dissipaters in your system?	☐	☐	☐
28	Do you use T-spreaders for steep, hillside drainage dispersal?	☐	☐	☐
29	Briefly describe your maintenance program for your subsurface drainage system:			

Vineyard Drainage Systems Worksheet (Page 3 of 4)		YES	NO	N/A
30	Do you use long runs of flex pipe attached to the end of a drainage pipe to bring the discharge down to a steady grade before discharging to a creek or infiltration area?	☐	☐	☐
31	Do you use surface ditches in your drainage system? (If no, skip to row 43.)	☐	☐	☐
32	Are they permanent ditches?	☐	☐	☐
33	Are they cut into the property or significantly reshaped every year?	☐	☐	☐
34	Are they stable (*i.e.*, not contributing sediment themselves)?	☐	☐	☐
35	Are they grassed ditches?	☐	☐	☐
36	Are they rock lined for stability?	☐	☐	☐
37	Are they lined with filter fabric to prevent erosion?	☐	☐	☐
38	Has it been necessary to install checks within the ditches to slow water velocity and prevent erosion?	☐	☐	☐
39	Do the ditches include a combination of the above features?	☐	☐	☐
40	If the ditches are permanent, are they planted with native species on top to provide cut bank stability?	☐	☐	☐
41	Are there energy dissipaters present at the outlets of the drainage system to prevent erosion?	☐	☐	☐
42	Briefly describe how ditches are used, managed and maintained in your drainage system. Improperly designed or maintained ditches can be significant sources of eroded sediment by themselves.			
43	Does your property use grassy swales in the system?	☐	☐	☐
44	If located within the vineyard, are the swales a no-till area?	☐	☐	☐
45	Are the grassy swales sprayed with herbicides?	☐	☐	☐
46	Are the grassy swales monitored for performance in removing sediments and cleaned as necessary?	☐	☐	☐

Vineyard Drainage Systems Worksheet (Page 3 of 4)	
47	Briefly describe any other features of your drainage system not covered by the above questions:
48	Use this box to describe additional information if necessary.

PART 1. SECTION 1. SEDIMENTATION AND INCREASED TURBIDITY IMPACTS				
Disturbed Areas Worksheet (Page 1 of 2)		**YES**	**NO**	**N/A**
1	Do you have areas on the ranch that are subject to constant disturbance (e.g. tilled blocks, areas where crawlers routinely tear up the soil, *etc.*)?	☐	☐	☐
2	Do you plan to disturb ground for repair, planting or replanting in the near-term (<5 years)?	☐	☐	☐
3	Do you use straw (at a rate of at least 2 tons per acre) or wood chips (at a rate of at least 5 tons per acre) to provide protection to disturbed areas as part of your winterization program?	☐	☐	☐
4	Do you use straw wattles, silt fences, straw bale check dams or other control measures as part of your winterization program for disturbed areas?	☐	☐	☐
5	Have you had training in their proper installation and use?	☐	☐	☐
6	Do you actively seed disturbed areas with a cover crop?	☐	☐	☐
7	Do you typically seed these areas before October 15th?	☐	☐	☐
8	Do you allow natural covers to come in as your cover crop?	☐	☐	☐
9	Are they typically established by the end of October in disturbed areas?	☐	☐	☐
10	Briefly describe how you manage routinely disturbed areas on your property to prevent their erosion and delivery of sediment from these features:			
11	Do you have any larger scale erosion sites on your property such as gullies or landslides? (If no, skip to the next worksheet, Roads and Road Systems.)	☐	☐	☐
12	Have you had these features evaluated by an erosion control specialist (*e.g.*, from NRCS or other organization)?	☐	☐	☐
13	Have they been determined to be anthropogenic in origin?	☐	☐	☐
14	Have they been determined to be natural in origin?	☐	☐	☐
15	Have you designed an implementation plan to address this erosion feature(s)?	☐	☐	☐
16	Have you already fixed erosion problems on your property in the past?	☐	☐	☐
17	Are you monitoring the stability of the feature(s) including taking photographs?	☐	☐	☐

Disturbed Areas Worksheet (Page 2 of 2)	
18	Please describe larger scale erosion features on your property and identify them on an aerial photo or other graphic illustration. Briefly describe past erosion control projects or efforts you have undertaken on the property:
19	Use this box to describe additional information if necessary.

PART 1. SECTION 1. SEDIMENTATION AND INCREASED TURBIDITY IMPACTS				
Roads and Road Systems Worksheet (Page 1 of 2)		**YES**	**NO**	**N/A**
1	Do you have permanent roads that are directly connected to stream systems by road surface drainage? Note that permanent roads do not include unimproved vineyard avenues. (If no, skip to row 8.)	☐	☐	☐
2	Have you evaluated the road system to determine how to change portions of the road network from being directly connected in this manner?	☐	☐	☐
3	Do portions of your road system include features such as water bars or rolling dips to direct drainage into vineyard or forested areas where it can infiltrate?	☐	☐	☐
4	Has a portion of your road system been out-sloped or crowned to reduce the collection and concentration of water at discharge points?	☐	☐	☐
5	Can portions of your road system be modified to use the features described above?	☐	☐	☐
6	Does the road surface contribute fine sediment to a creek or drainage system?	☐	☐	☐
7	Following efforts to hydrologically disconnect the road to the maximum extent possible, can/has the road surface be/been changed to minimize erosion and sediment delivery (*e.g.*, permanent covers of dirt roads, pave the road, sufficient rock to prevent erosion, *etc.*)?	☐	☐	☐
8	Do you have permanent roads that are directly connected to stream systems by a ditch system? (If no, skip to row18.)	☐	☐	☐
9	Identify your roads on an aerial photo or other graphic illustration. Briefly designate the roads' surface types, their length, how they are drained and the location of drainage features such as culverts or stream crossings. Describe any past road improvement projects you have undertaken on the property:			
10	If your road system contains in-board ditches, are there frequent ditch relief culverts installed to prevent concentrating flows and that discharge into an area where the water can infiltrate?	☐	☐	☐
11	If your road network uses ditch relief culverts, are they properly sized to prevent clogging and associated potential road erosion?	☐	☐	☐
12	Are they sized for a 100-year storm?	☐	☐	☐
13	Are they equipped with energy dissipaters or other features to prevent erosion at the outlets (*e.g.*, T-spreaders or long runs of flex pipe to bring the discharge to grade, *etc.*)?	☐	☐	☐
14	Do you monitor your road ditch network for stability?	☐	☐	☐

Roads and Road Systems Worksheet (Page 2 of 2)		YES	NO	N/A
15	Is the ditch network eroding and delivering sediment to a creek?	☐	☐	☐
16	Have you evaluated ditch repair options such as reshaping, rock-lining or using erosion control fabric to prevent erosion?	☐	☐	☐
17	Have you implemented a regular ditch inspection and repair program?	☐	☐	☐
18	Are there road/bank cuts or fills in your road network? (If no, skip to row 23.)	☐	☐	☐
19	Do you monitor these areas for stability?	☐	☐	☐
20	Are the road cuts or fills eroding now?	☐	☐	☐
21	Have you evaluated repair options such as using erosion control fabric, planting cover crops (by hydroseeding or other method) or other vegetation, or using rock to provide stability?	☐	☐	☐
22	Have you consulted an engineer or other qualified erosion control specialist for this matter?	☐	☐	☐
23	Are portions of your road network constructed in close proximity (*i.e.*, within 50-100 feet) of a creek? (If no, skip to row 27.)	☐	☐	☐
24	Is the road located close to the top of the bank so that it prevents establishment of riparian vegetation that provides sediment filtration, stream bank stability, and stream shade benefits?	☐	☐	☐
25	Have you evaluated moving those portions of the road which impact the riparian zone?	☐	☐	☐
26	Can it be moved from the riparian zone?	☐	☐	☐
27	Do you close all or portions of your road network to vehicle traffic in the rainy season?	☐	☐	☐
28	Do you inspect the roads routinely after storms to ensure integrity?	☐	☐	☐
29	Identify on your road map areas where ditches or road cuts are eroding and contributing sediments to local waterways. Identify culverts that are undersized and prone to plugging. Establish a plan with timelines to fix these problems.			
30	Use this box to describe additional information if necessary.			

PART 1. SECTION 1. SEDIMENTATION AND INCREASED TURBIDITY IMPACTS				
Riparian Areas Worksheet (Page 1 of 2)		**YES**	**NO**	**N/A**
1	Does your property contain or border a stream (or streams)?	☐	☐	☐
2	Does the stream run all year?	☐	☐	☐
3	Does the stream run for part of the year but usually go dry sometime in the summer?	☐	☐	☐
4	Does the stream only run during and/or immediately after rainstorms?	☐	☐	☐
5	Does your stream contain fish for all or part of the year?	☐	☐	☐
6	Do you know if your stream is used by salmon or steelhead?	☐	☐	☐
7	Is your riparian zone less than 50 feet wide on average?	☐	☐	☐
8	Is it less than 100 feet wide on average?	☐	☐	☐
9	Does the riparian corridor for your stream include large trees that provide shade, stream bank stability, leaf litter and potentially large woody debris to the stream?	☐	☐	☐
10	Do you manage your riparian areas to encourage or allow for the growth of the next generation of trees to provide these benefits?	☐	☐	☐
11	Does your riparian corridor include a mix of bushes and trees?	☐	☐	☐
12	Is it more than a single line of trees or bushes?	☐	☐	☐
13	Are your riparian areas full of invasive plant species such as Himalayan blackberries, vinca, *Arundo donax*, *etc*. that is preventing the establishment of native species?	☐	☐	☐
14	Have you conducted projects to remove invasive plant species and replant native trees and shrubs?	☐	☐	☐
15	Are the stream banks at your site failing or currently at an unstable slope (1:1 to 2:1)?	☐	☐	☐
16	Are the stream banks at your site generally at a stable slope (2:1 to 3:1 or greater)?	☐	☐	☐
17	Are there numerous trees on the stream banks or the top of banks to provide some stability through their root structure?	☐	☐	☐
18	Is the streambed incising (dropping or eroding)?	☐	☐	☐
19	Are you maximizing infiltration of drainage from your vineyard and road system to minimize hydro-modification impacts to the stream network?	☐	☐	☐
20	Are you using energy dissipaters to slow water being discharged into the stream?	☐	☐	☐
21	Are you capturing your discharges and controlling the rate of their release?	☐	☐	☐
22	Are you capturing discharges from your subsurface drainage system in an irrigation pond?	☐	☐	☐
23	Are you working with a professional entity to evaluate the condition of your riparian zone and then plan and/or implement a riparian zone restoration or improvement project?	☐	☐	☐

Riparian Areas Worksheet (Page 2 of 2)	
24	Identify your streams or other water bodies (marshes, lakes, *etc.*) on an aerial photo or other graphic illustration, including ephemeral streams and swales. Identify areas where the riparian zone is less than 100 feet wide, areas with erosion problems and areas with excessive amounts of invasive plant species. Describe any past stream improvement or management projects you have undertaken on the property:
25	Use this box to describe additional information if necessary.

PART 1. SECTION 2. *Chemicals and Fertilizers*				
Selection and Application Worksheet (Page 1 of 2)		**YES**	**NO**	**N/A**
1	Do you monitor pest populations to make spray decisions rather than spraying on a schedule?	☐	☐	☐
2	Have you determined and recorded acceptable economic impact thresholds for different pests to guide your spray program?	☐	☐	☐
3	Do you select the product with the lowest possible toxicity rating?	☐	☐	☐
4	Are you aware of any required application buffers around salmonid streams for some insecticides and herbicides?	☐	☐	☐
5	Do you check the California Department of Pesticide Regulation's PRESCRIBE website for the for the latest information and use limitations applicable to pesticide products and endangered species at: http://www.cdpr.ca.gov/docs/endspec/salmonid.htm?	☐	☐	☐
6	Do you treat only impacted areas in the vineyard rather than the entire vineyard?	☐	☐	☐
7	Do you use herbicides for weed control? (If no, skip to Question 10.)	☐	☐	☐
8	If you use a pre-emergent herbicide, do you only use products that are considered non-mobile in the soil and avoid older, mobile products such as simazine and diuron?	☐	☐	☐
9	Briefly describe how you make you pest management decisions. Please list any restricted use materials you have applied in the last 5 years. Please tell us how you monitor wind speeds during spray operations.			
10	Do you strip spray under the vines with herbicides?	☐	☐	☐
11	Do you monitor spray operations to ensure products are not drifting from targeted areas?	☐	☐	☐
12	Do you use instrumentation to monitor wind speeds rather than relying on visual estimates?	☐	☐	☐
13	Do you use a low volume sprayer for applications?	☐	☐	☐
14	Do you use an electrostatic sprayer?	☐	☐	☐
15	Do you frequently check the sprayer to ensure it has maintained calibration?	☐	☐	☐

Selection and Application Worksheet (Page 2 of 2)		YES	NO	N/A
16	Do you check for nozzle wear and conduct repairs as needed during the growing season?	☐	☐	☐
17	If you contract out for spray services, do you know if the application company takes these steps to protect against mechanical failure of the spray equipment?	☐	☐	☐
18	Briefly describe your spray equipment and the frequency with which you check its calibration:			
19	Do you turn off the sprayer in the turn-around areas?	☐	☐	☐
20	Do you turn off one side of the sprayer when applying along a creek or ditch so that pesticide products are not sprayed toward the waterway?	☐	☐	☐
21	Does your spray equipment limit your management choices to avoid drift?	☐	☐	☐
22	Do you use Integrated Pest Management (IPM) practices to reduce your reliance on chemical pest controls?	☐	☐	☐
23	Is your property certified as organic?	☐	☐	☐
24	Is your property certified as biodynamic?	☐	☐	☐
25	Do you use a PCA to guide your pest management and spraying program?	☐	☐	☐
26	Do you plant cover crops or perimeter vegetation to increase beneficial insect populations?	☐	☐	☐
27	Briefly describe any other cultural or IPM practices you employ to avoid unnecessary chemical applications, minimize amounts used or prevent drift from targeted application areas or any additional information if necessary.			

PART 1. SECTION 2. *Chemicals and Fertilizers*				
Storage and Mixing Worksheet (Page 1 of 2)		**YES**	**NO**	**N/A**
1	Do you have a permanent or seasonal chemical storage area at this property? (If no, skip to Row 8.)	☐	☐	☐
2	Is the chemical storage unit properly labeled and locked when not in immediate use?	☐	☐	☐
3	Is the chemical storage unit located within 100 feet of a well, surface water body or drainage feature?	☐	☐	☐
4	Is it bermed to contain any spill or container failure?	☐	☐	☐
5	Is it located down slope from nearby wells, surface water bodies or drainage features?	☐	☐	☐
6	Is it bermed or graded to direct any spilled products away from nearby wells, surface water bodies or drainage features?	☐	☐	☐
7	Does it have an impermeable floor to prevent leaching from one large or numerous smaller spills from reaching surface or groundwater?	☐	☐	☐
8	Do you have one or more mix and load sites at this property? (If no, skip to Question 13.)	☐	☐	☐
9	Are your mix and load sites located within 100 feet of a well, surface water body or drainage feature?	☐	☐	☐
10	Are your mix and load sites bermed to contain any spill or container failure?	☐	☐	☐
11	Are your mix and load sites bermed or graded to direct any spilled products away from a well, surface water body or drainage feature?	☐	☐	☐
12	Does your mix and load site (or sprayer) have a backflow prevention device of some sort (*e.g.*, a built-in air gap) to prevent potential well contamination?	☐	☐	☐
13	Identify your chemical storage, mix/load sites, fueling stations, manure or compost stockpiles and any wells on an aerial photo or other graphic illustration. Please note if you only bring in chemicals on a day-by-day basis and/or use a nurse tank for water supply for chemical applications.			
14	Do you have a fuel tank at this property? (If no, skip to row 18.)	☐	☐	☐
15	Is it located within 100 feet of a well, waterway or drainage feature?	☐	☐	☐
16	Is the fuel tank locked to prevent discharge of fuel in the event of a theft?	☐	☐	☐
17	Is the fuel tank surrounded by a containment structure to prevent discharge of the fuel in the event of an accident or tank failure?	☐	☐	☐

	Storage and Mixing Worksheet (Page 2 of 2)	YES	NO	N/A
18	Do you use manure or compost as a soil amendment? (If no, skip to row 22.)	☐	☐	☐
19	Do you store it away from creeks or drainage features to prevent accidental discharge or leaching of nutrients?	☐	☐	☐
20	Is this storage area bermed or otherwise contained to prevent accidental discharge of product or leachate?	☐	☐	☐
21	Do you keep any manure or compost stockpile covered to prevent wind movement?	☐	☐	☐
22	Do you have a waste area or equipment graveyard on the property? (If no, skip to row 26.)	☐	☐	☐
23	Is it in close proximity to a creek or drainage feature?	☐	☐	☐
24	Do you routinely clear out waste from this area that can potentially discharge or leach contaminants such as containers, treated wood products or tires by taking them to authorized disposal or recycling facilities?	☐	☐	☐
25	Has old equipment been emptied of potential discharges of fuel, oils, *etc.*?	☐	☐	☐
26	Does your property contain an equipment yard or shop area? (If no, skip to row 31.)	☐	☐	☐
27	Has this area been designed to minimize potential impacts to nearby water bodies?	☐	☐	☐
28	Does it result in direct discharges to creeks or drainage features from impermeable areas (*e.g.*, pavement, roof tops, and compacted areas) that may contribute to peak flow impacts?	☐	☐	☐
29	Is the drainage from this area filtered by directing it through a vineyard's cover crop, a grassy swale, infiltration basin or other BMP?	☐	☐	☐
30	Is the runoff captured or otherwise dispersed or infiltrated to prevent these impacts?	☐	☐	☐
31	Is any trash area designed to prevent leachate discharge to water bodies or drainage structures?	☐	☐	☐
32	Is the trash area covered (*e.g.*, dumpsters have lids), monitored and any problems promptly corrected?	☐	☐	☐
33	Use this box to describe additional information if necessary.			

PART 1. SECTION 3. ***Physical Habitat Impacts/Water Use and Infrastructure Impacts***				
Prevent Direct Diversion Impacts Worksheet (Page 1 of 1)		**YES**	**NO**	**N/A**
1	Do you have a direct surface water diversion? (If no, skip to Question 5.)	☐	☐	☐
2	Is your surface diversion screened with a NMFS/CDFW compliant system?	☐	☐	☐
3	Can you change it to a subsurface diversion such as a streamside well or an intake buried within the gravel to prevent potential impingement or entrainment impacts?	☐	☐	☐
4	Do you use other sources of water to reduce your direct diversion volume such as groundwater or capturing/recapturing water from an installed drainage system?	☐	☐	☐
5	Is your water supply metered to track your water usage?	☐	☐	☐
6	Are you fulfilling all water use or diversion reporting requirements from the State of California or other local entity?	☐	☐	☐
7	Do you have those reports available as needed?	☐	☐	☐
8	Are you aware of the State Water Resources Control Board's on-line small irrigation pond ministerial registration option for facilities less than 20 acre-feet per year?	☐	☐	☐
9	Do you have the potential to install a small irrigation pond to eliminate or reduce the volume of your direct diversion or to alter it's timing to the benefit of salmonids?	☐	☐	☐
10	Identify your water supply infrastructure (e.g., reservoirs, diversion points, sumps, *etc.*) and any wells on an aerial photo or other graphic illustration. Include pictures of your direct diversion facilities and any screens in your farm plan. Develop a description of how you obtain water for your operation and record all water rights information (permit or licenses, statements of diversion, *etc.*).			
11	Use this box to describe additional information if necessary.			

PART 1. SECTION 3. *Physical Habitat Impacts/Water Use and Infrastructure Impacts*				
Prevent Direct Diversion Impacts Worksheet (Page 1 of 1)		**YES**	**NO**	**N/A**
1	Do you have an on-stream reservoir, weir or other water supply infrastructure? (If no, skip to Frost Control Impact Worksheet.)	☐	☐	☐
2	Is it on a fish-bearing water body used by salmonids?	☐	☐	☐
3	Have you evaluated the structure for potential adverse impacts to adult and juvenile fish migration?	☐	☐	☐
4	If found, have you developed plans to eliminate the passage impairment?	☐	☐	☐
5	Have you requested a non-regulatory evaluation of your facility from NMFS, CDFW, RCD, or other appropriate nongovernmental organization?	☐	☐	☐
6	Identify your on-stream reservoirs on an aerial photo or other graphic illustration. If you are unsure if your infrastructure presents a migratory barrier to salmonids, please schedule a non-regulatory evaluation with NMFS.	☐	☐	☐
7	Use this box to describe additional information if necessary.			

PART 1. SECTION 3. *Physical Habitat Impacts/Water Use and Infrastructure Impacts*				
Frost Control Impacts Worksheet (Page 1 of 2)		**YES**	**NO**	**N/A**
1	Do you have a frost control system on your property that uses water? (If no, skip to row 16.)	☐	☐	☐
2	Are you participating in SWRCB approved Water Demand Management Program?	☐	☐	☐
3	Do you have an on-site weather station(s) or other site-specific system to provide information to make frost control decisions?	☐	☐	☐
4	Do you use a local weather or frost prediction service to provide a site-specific forecast?	☐	☐	☐
5	Does your frost control system utilize water as its primary means of protection?	☐	☐	☐
6	Do you use water for frost control because it has traditionally been available?	☐	☐	☐
7	Do you use standard sized overhead sprinklers (50-55 gpm per acre) for frost control?	☐	☐	☐
8	Have you evaluated lower flow sprinkler heads (30-35 gpm v. 50-55 gpm) for efficacy on your property?	☐	☐	☐
9	Have you evaluated the use of micro sprinklers to provide frost protection on your property?	☐	☐	☐
10	Have you evaluated recapturing your frost water through a sump and pond system to minimize your demand on surface water bodies?	☐	☐	☐
11	Have you installed valves throughout your frost control system in order to provide frost water only to those blocks which need it at a given time?	☐	☐	☐
12	Is your frost system metered so that you can track the volume of water you are using for frost control?	☐	☐	☐
13	Have you evaluated conditions at your property to determine if frost control options that do not use water are typically possible?	☐	☐	☐
14	Has this evaluation included monitoring to determine if an inversion layer is typically present at locations in your vineyard?	☐	☐	☐
15	Could you use wind machines, cold air drains or another system to meet your frost control needs?	☐	☐	☐
16	Do you double prune to delay bud break?	☐	☐	☐
17	Do you use other cultural practices such as mowing or disking cover crops to minimize frost potential?	☐	☐	☐
18	Do you manage border vegetation to promote air flow across the vineyard?	☐	☐	☐
19	Have you considered changing varietals in the frost-prone portions of your vineyard to a later budding varietal in order to minimize frost water use?	☐	☐	☐

Frost Control Impacts Worksheet (Page 2 of 2)	
20	Describe your frost control system and practices. In particular discuss any changes you have made since 2008. If you have conducted evaluations of installing lower flow sprinkler heads or switching to wind machines, please present the methods and results of these evaluations.
21	Use this box to describe additional information if necessary.

Part 2 - Best Management Practices

In the follow Pages please select the relevant BMPs that already are or will be implemented as part of the Routine Viticulture Activities conducted on enrolled property during the term of the Cooperative Agreement. If relevant BMPs are implemented on the enrolled property, but are not identified below, please list them at the end.

PART 2. SECTION 1. *Sedimentation and Increase Turbidity BMPs*				
Tillage BMP Worksheet (Page 1 of 1)		**YES**	**NO**	**N/A**
1	Minimize the extent of tillage. Less tillage equals less sheet erosion and an increased amount of infiltration on non-compacted soils.	☐	☐	☐
2	Plant cover crops or allow native covers to grow post-harvest. Having them established by early to mid-October is best if the weather cooperates. Do not till them in until the chance of significant precipitation passes (typically mid-April or May).	☐	☐	☐
3	Manage steeper portions of your property (>10 percent) as no-till. NMFS recognizes that periodic tillage may be necessary to reduce compaction and control gopher populations in some areas.	☐	☐	☐
4	Plant or improve filter strips around vineyards and between roads and streams or other waterways. Filter strips should be thick enough to settle suspended sediment from overland flow. Width depends on the slope of the property and the size of the disturbed area with more buffer needed at steeper slopes.	☐	☐	☐
5	Leaving permanent cover in the last few vineyard rows can be helpful to establish a filter area of sufficient width. Staggering filter strips throughout a vineyard or between vineyard blocks can also be effective on large properties or long slopes.	☐	☐	☐
6	Monitor filter strip performance by observing if the strips effectively filter suspended sediment from overland flow. Increase filter strip size or diffuse flow as necessary to improve performance.	☐	☐	☐
7	Do not till turn around areas or vineyard avenues.	☐	☐	☐
8	Keep emergency erosion control materials on hand for use throughout the farm and ensure that all personnel are trained on their proper installation.	☐	☐	☐
9	Describe other BMPs not listed above			

PART 2. SECTION 1. ***Sedimentation and Increase Turbidity BMPs***				
Drainage Systems BMP Worksheet (Page 1 of 2)		**YES**	**NO**	**N/A**
1	If the site has and needs installed drainage, ensure that it is properly sized (50 or 100 year storm typically by local regulations) so that it does not fail in a large storm and cause erosion.	☐	☐	☐
2	Drainage systems should be designed or modified to limit the concentration of flows at a small number of discharge points. This can lead to increased erosion issues.	☐	☐	☐
3	Maximize infiltration on the property. Utilize infiltration galleries or basins in stable areas. Disconnect outfalls upslope of riparian areas to allow for infiltration in stable areas. Infiltrating rainfall prevents hydro-modification impacts to stream beds and banks and improves dry season water supplies.	☐	☐	☐
4	Install or replace drop inlets to include inlets systems with risers and sediment traps. Maintain the drop inlets regularly during the wet season by removing built up sediment.	☐	☐	☐
5	Use straw wattle collars around existing drop inlets to filter sediments from the drainage system. Drop inlets may require screening to keep them from clogging and blowing out.	☐	☐	☐
6	Install sediment basins at the discharge points of the system. Monitor drainage quality to determine if sediments are being delivered through the drainage system. (Many new or replanted vineyards on significant slopes are required to install these systems by county regulations.)	☐	☐	☐
7	If the vineyard uses surface ditches, make sure the ditches are stable and not eroding. Larger ditches with erosion may need check dams installed to slow water movement. Seek a professional evaluation in these situations. Line ditches with rock or filter fabric if necessary. Check frequently and clean the ditches in wet weather. Do not spray ditches with herbicides. Allowing grasses to grow in the ditches can provide additional stability. Trees and bushes also provide strength to larger ditch banks with their root systems.	☐	☐	☐
8	Drainage outlets should be equipped with energy dissipaters (typically rock) or stilling basins to prevent erosion at the discharge site. Hillside sites may use T-spreaders to diffuse runoff across an area. Outlets into creeks and ditches may need to be extended with flex pipe to bring them to grade before installing an energy dissipater.	☐	☐	☐
9	Grassy swales/grassed waterways can effectively replace ditches or subsurface pipes in gently sloping vineyards. They can be planted with vines, but should not be tilled or treated with herbicides.	☐	☐	☐

Drainage Systems BMP Worksheet (Page 2 of 2)	
10	Describe other BMPs not listed above

PART 2. SECTION 1. ***Sedimentation and Increase Turbidity BMPs***				
Disturbed Areas BMP Worksheet (Page 1 of 1)		**YES**	**NO**	**N/A**
1	Disturbed areas (*e.g.*, ground under repair, replanting areas, vineyards which use crawlers, *etc.*) need to be specially prepared for wet weather, preferably by the start of the rainy season (mid-October). Spread straw mulch (at least 2 tons per acre) or wood chips (at least 5 tons per acre) thickly on exposed soil to minimize erosion. Use straw wattles, silt fences or straw bale check dams to slow overland flow and to filter suspended sediments from overland flow. Get professional help as needed to properly install these measures as needed.	☐	☐	☐
2	Disturbed areas will be seeded with an appropriate cover crop to provide protection from surface erosion through the entire wet season.	☐	☐	☐
3	Address large erosion sites with professional assistance as necessary. Gullies and landslides may be the result of natural processes or human actions such as concentrated drainage outlets. Many gullies can be effectively repaired, and NRCS and NGO groups have extensive experience with these erosion features. Landslides may be managed to the benefit of both the landowner and ecosystem.	☐	☐	☐
4	Avoid disturbing any areas with landslides, gullies and slips.	☐	☐	☐
5	Reduce the length of slopes draining to riparian areas using numerous drop inlets with sediment traps, vegetated filter strips, or rolling dips.	☐	☐	☐
6	Incorporate structural erosion control systems to intercept and diffuse water flow and encourage infiltration into vineyard design: use drop inlets with sediment traps; daylight underground outlets to vegetated swales; energy dissipaters; infiltration galleries; or sediment basins to prevent excess sediment from entering streams.	☐	☐	☐
7	Plan vineyard/orchard blocks and developed areas supporting the vineyard/orchard to drain to a grassy filter area or a detention/sedimentation pond to remove pollutants.	☐	☐	☐
8	Describe other BMPs not listed above			

PART 2. SECTION 1. *Sedimentation and Increase Turbidity BMPs*				
Roads and Road Systems BMP Worksheet (Page 1 of 2)		**YES**	**NO**	**N/A**
1	Hydrologically disconnect roads from water courses to minimize erosion. This means that road systems should not directly drain into streams or concentrate flows into ditches that flow directly into streams. Utilize guidance in "Handbook for Forest and Ranch Roads" http://wildlandscpr.org/files/Part%201%20-%20Weaver,%20W.%20E.%20and%20D.%20K.%20Hagans.%201994.%20Handbook%20for%20forest%20and%20ranch%20roads.pdf or the 5 Counties Road manual (available at: http://www.5counties.org/roadmanual.htm) for guidance. This may require professional expertise.	☐	☐	☐
2	Road systems are often constructed in close proximity to creeks leading to delivery of fine sediment from the road to the creek and difficulty establishing vegetation to stabilize creeks or provide filtration. Roads should be relocated away from creeks when possible.	☐	☐	☐
3	Redesign/Regrade roads to minimize the concentration of water on the road surface or in inboard ditches to minimize erosion. Establish an area where road spoils will be taken that will not result in discharge to a waterway.	☐	☐	☐
4	Improve road surfaces to minimize erosion. This includes permanent covers on dirt roads along with waterbars or rolling dips.	☐	☐	☐
5	Outsloping roads eliminates concentration of flow in ditches, associated erosion and maintenance expenses. Crowning roads eliminates approximately 50 percent of flow concentration.	☐	☐	☐
6	Install waterbars and/or rolling dips to shorten road slope lengths and minimize the concentration of flows. Water should be diverted into the vineyard cover crop or another well vegetated area for filtration and infiltration whenever possible.	☐	☐	☐
7	Use frequent, properly-sized ditch relief culverts to minimize flow concentration in the ditch. Culverts should be sized to a 100 year storm in order to pass debris without clogging and be equipped with energy dissipaters at their outlets.	☐	☐	☐
8	"Shotgun" culverts should be retrofitted with flexible pipe to bring the discharge down to the grade of the stream to prevent bank erosion. An energy dissipater should then be added at this location if needed.	☐	☐	☐
9	Establish a regular road inspection and repair program. Monitor road ditches, and road cuts and fills, for erosion and promptly address any situations. Road ditches may need to be reshaped and lined with rock or erosion control fabric.	☐	☐	☐

Roads and Road Systems BMP Worksheet (Page 2 of 2)		YES	NO	N/A
10	Repair and prevent erosion from road cut and fill areas. The use of erosion control fabric, jute netting or hydroseeding may be needed. Water flowing over the top of a road cut or fill may be problematic and require mitigation.	☐	☐	☐
11	Close roads seasonally to minimize traffic that may cause erosion. Inspect the road system before and after storms to ensure integrity.	☐	☐	☐
12	Consolidate all-weather surfaced access roads, staging areas, and parking away from the riparian zone.	☐	☐	☐
13	Describe other BMPs not listed above			

PART 2. SECTION 1. *Sedimentation and Increase Turbidity BMPs*				
Riparian Areas and Streambeds BMP Worksheet (Page 1 of 2)		**YES**	**NO**	**N/A**
1	It is important to understand the stream network that is on or adjacent to your property. Record details of your streams such as flow patterns and rates, fish presence and absence, salmon or steelhead use, riparian zone width and condition, stream bank heights and slopes, stability of the stream banks and the streambed, streambed characteristics (*e.g.*, cobble, gravel or silty bed), *etc*. Work with your local RCD, other nongovernmental organization or NMFS for this evaluation as appropriate.	☐	☐	☐
2	Stream bank failures can be a major source of fine sediment in a stream. Maintain a healthy riparian area consisting of native trees and bushes to provide stream bank stability through their root systems to minimize failures. This may require active management to remove invasive plants that choke out natives and prevent the growth of new trees (*e.g.*, Himalayan blackberry, vinca, arundo donax, Tree of Heaven, *etc*.).	☐	☐	☐
3	Riparian areas should be avoided if still intact, and if altered, they should be re-vegetated and restored.	☐	☐	☐
4	Repair of stream erosion sites should avoid lining banks with rock riprap and focus on vegetative solutions. In some cases a combination of vegetative and structural solutions will be needed. The California Salmonid Stream Habitat Restoration Manual, Part VII can be used for guidance. See https://www.dfg.ca.gov/fish/resources/habitatmanual.asp . The NRCS and NGO groups have significant experience planning, permitting and implementing riparian improvement projects.	☐	☐	☐
5	Discharge of excess water from road ditches and drainage systems can cause channel incision and eventual stream bank failure. Maximize infiltration upslope of riparian areas to minimize these impacts.	☐	☐	☐
6	Maintain the existing riparian zone. A healthy riparian zone consists of trees, shrubs of different ages growing closest to the channel and a grassy zone closest to the vineyard/orchard operation.	☐	☐	☐
7	Maintain existing riparian vegetation to provide at least 65 percent shading of streams less than 50 feet in wetted width.	☐	☐	☐
8	Plant native species in riparian zones that are not presently forested. Irrigate for the first two or three years and protect from browsing. Once established, leave riparian zone in a natural state.	☐	☐	☐
9	Replace existing all-weather access roads that are within the county required setback no touch areas with grassy avenues. If the road must be used as an all-weather access road, then move the road out of the setback area and replant the old roadbed with riparian vegetation and/or a filter strip.	☐	☐	☐

PART 2. *Riparian Areas and Streambeds BMP Worksheet (Page 2 of 2)*		YES	NO	N/A
10	Leave downed trees in the riparian corridor for recruitment as large woody debris, as long as it does not pose an immediate threat to infrastructure or property downstream.	☐	☐	☐
11	Maintain grass buffers along natural streams and drainage channels with a defined bed and bank.	☐	☐	☐
12	All native trees and associated woody vegetation should be retained within the active channel of all stream corridors.	☐	☐	☐
13	Avoid placing other debris from tree removal operations in locations where it could potentially be discharged into streams.	☐	☐	☐
14	Replanted vineyard projects must abide by the required stream, pond, and wetland setbacks as defined in the County's Grading, Drainage, and Vineyard/Orchard Site Development Ordinance. The Ordinance provides requirements for setbacks depending upon the designated stream type. Generally the Ordinance requires: • Existing riparian corridors be maintained. • The roots of the vegetation provide bank stability and should be protected. • Shade from trees and bushes keep water temperatures cool, which is important for sustaining aquatic species, and should be maintained. • Native grasses help filter sediment from surface runoff. However, if the existing vegetative cover is in poor condition the setback area may be improved with a vegetative filter strip for use as an agricultural avenue. The strip must be planted with a filter strip seed mix and maintained for the intended use.	☐	☐	☐
15	Describe other BMPs not listed above			

PART 2. SECTION 2. *Chemical and Fertilizers BMPs*				
Application BMP Worksheet (Page 1 of 1)		**YES**	**NO**	**N/A**
1	Various chemicals, both organic and nonorganic, are used in viticulture. Monitor pest populations and make spray decisions based upon impact thresholds. Monitor chemical selection and spraying frequency when contracting out this service.	☐	☐	☐
2	Application needs to be in conformance with the pesticide label as well as any required buffers from anadromous streams. See http://www.cdpr.ca.gov/docs/endspec/salmonid.htm for a list of pesticides and associated court ordered buffer widths that may not appear on the labels.	☐	☐	☐
3	When possible, spot treat areas rather than treating the entire vineyard in order to reduce the amount of pesticides applied.	☐	☐	☐
4	Avoid broad spectrum insecticides as they are more likely to be harmful to non-target organisms including fish and aquatic insects if exposed. Choose chemical options with the lowest possible toxicity rating when possible.	☐	☐	☐
5	Avoid mobile, pre-emergent herbicides. They can impact non-target plants in the riparian area leading to other impacts such as sedimentation. Spot spray with foliar herbicides when possible.	☐	☐	☐
6	Avoid exposing aquatic resources by managing spray drift. This includes using modern spray equipment that does not limit your management choices (*e.g.*, low volume or electrostatic sprayers); routinely checking for nozzle wear and calibrating the sprayer frequently throughout the growing season; turning off the sprayer along creeks, drainages and in the turn-around areas; supervising the spraying by having assigned personnel watch for drift; and monitoring wind speeds with instrumentation (*e.g.*, on site weather station or an anemometer) rather than relying solely on visual estimates.	☐	☐	☐
7	Utilize Integrated Pest Management (IPM) and cultural practices (*e.g.*, leaf removal, predatory insect releases, insectiary plantings, dust control, pheromone puffers, *etc.*) to help manage pest populations and reduce the amount of pesticides applied.	☐	☐	☐
8	Plan vineyard/orchard blocks and developed areas supporting the vineyard to drain to a grassy filter area or a detention/sedimentation pond to remove pollutants.	☐	☐	☐
9	Describe other BMPs not listed above			

PART 2. SECTION 2. ***Chemical and Fertilizers BMPs***				
Storing and Mixing BMP Worksheet (Page 1 of 1)		**YES**	**NO**	**N/A**
1	Minimize the chance of exposure from accidents by ensuring fuel tanks and chemical storage areas have impermeable floors or spill containment structures to contain spills or leaks, are properly secured, are not located adjacent to a water body where a spill can flow or easily leach into the water, and are not in close proximity to a well. The distance from water bodies and wells should be at least 100 feet when possible.	☐	☐	☐
2	Mix/load sites should be located away from water bodies and wells (at least 100 feet) and graded or bermed so that spills flow into the vineyard and/or away from water.	☐	☐	☐
3	Mix/Load sites (or the sprayers themselves) should be equipped with a back flow prevention device (*e.g.*, providing an air gap) to ensure that chemicals cannot be sucked back into the water system.	☐	☐	☐
4	Fertilizers such as manure or compost and other soil amendments will not be stockpiled adjacent to creeks where they may spill into or any runoff from them finds its way into a water body. Piles of loose material should be covered to prevent wind movement.	☐	☐	☐
5	Clean up any junk piles or storage areas and move them away from creeks. Oils and grease from old equipment, chemicals from containers, leachates from tires or treated wood materials, *etc*. can impact aquatic resources especially if they enter the creeks during low flow periods.	☐	☐	☐
6	Equipment yards, *etc*. should be designed to be low impact meaning there is minimal runoff directly into water bodies, infiltration is maximized, proper storage of equipment, fuel and chemicals is maintained, and trash management to prevent pollution is practiced. Trash areas should be covered and monitored so that any discharge problems can be quickly resolved.	☐	☐	☐
7	Describe other BMPs not listed above			

PART 2. SECTION 3. *Physical Habitat Impacts/Water Use and Infrastructure Impacts BMPs*				
	Prevent Direct Diversion Impacts Worksheet (Page 1 of 1)	**YES**	**NO**	**N/A**
1	Evaluate changing surface diversion structures to subsurface to eliminate potential entrainment and impingement impacts. Subsurface intakes include streamside wells or intakes buried in the gravel.	☐	☐	☐
2	On surface diversions that cannot be changed to subsurface systems, install a fish screen that meets NMFS/CDFW standards for salmonids.	☐	☐	☐
3	Install meters on your diversions to track your water usage with precision and to meet all reporting requirements of State or local agencies.	☐	☐	☐
4	Install sumps in existing drain systems to divert drainage water to a small pond to minimize the volume taken directly from surface water bodies.	☐	☐	☐
5	Explore registration for a small irrigation use pond (<20AF) as authorized under California Water Code § 1228.1 *et seq.* to allow for diversion and storage during winter periods (December 15 to March 31). Diversion during wet portions of the year rather than direct diversions throughout the growing season can significantly prolong summer base flows.	☐	☐	☐
6	Describe other BMPs not listed above			

PART 2. SECTION 3. *Physical Habitat Impacts/Water Use and Infrastructure Impacts BMPs*				
Fish Passage Impacts Worksheet (Page 1 of 1)		**YES**	**NO**	**N/A**
1	Provide passage over or around on-stream ponds/in stream structures for all life stages of salmonids where possible. This will likely require a professional evaluation and design.	☐	☐	☐
2	Remove on-stream diversion structures that block fish passage with off-stream structures. In some cases this may mean rerouting a stream around an existing pond.	☐	☐	☐
3	Describe other BMPs not listed above			

PART 2. SECTION 3. *Physical Habitat Impacts/Water Use and Infrastructure Impacts BMPs*				
Frost Control Impacts Worksheet (Page 1 of 2)		**YES**	**NO**	**N/A**
1	Install weather stations or web-bulb thermometers in the vineyard for precise measurement of frost conditions.	☐	☐	☐
2	Use other cultural practices to delay bud break or modify frost conditions such as mowing cover crops, double pruning, or managing border vegetation to encourage air flow.	☐	☐	☐
3	Evaluate your use of water for frost control to determine if it is the only option for a site or if it is being used because water has traditionally been available. If site specific conditions allow, install wind machines or cold air drains in the vineyard to provide protection either as a replacement for frost water systems or to be used when conditions allow rather than using frost water systems.	☐	☐	☐

	Frost Control Impacts Worksheet (Page 2 of 2)	YES	NO	N/A
4	Evaluate if lower flow sprinkler heads can be used for frost control at a site. Frost sprinklers are traditionally sized for a rate of 50 to 55 gallons per minute per acre. New or modified sprinkler heads can often be sized for a 30 to 35 gallon per minute per acre setting and still give sufficient protection in all but the coldest of microclimates. Micro sprinklers can be used in many areas typically at rates around 4 gallons per minute. NMFS recognizes that more sprinkler heads are needed in micro sprinkler systems and they typically need to be turned on earlier to avoid freezing. This leads to some unnecessary use and limits their water savings over time, but they should still be evaluated.	☐	☐	☐
5	Vineyards with both impact sprinklers and subsurface drainage systems should install sumps and ponds to recapture frost water for repeated use.	☐	☐	☐
6	Install valves and flow meters in the irrigation system to allow for more precise application of frost water to blocks with varying microclimates and varietals. Do not apply frost water to areas where it is not needed.	☐	☐	☐
7	Consider changing varietals in the vineyard, or the frost prone sections of the vineyard, to a later budding variety in order to reduce frost water needs.	☐	☐	☐
8	Participate in a SWRCB approved Water Demand Management Program.	☐	☐	☐
9	Describe other BMPs not listed above			

ATTACHMENT 3. Landowner Cooperative Agreement Template

This Cooperative Agreement constitutes a written, binding contract between the parties identified in Section 1 below, and recognizes the unique and important role that private landowners in the Dry Creek Valley can play in helping the Covered Species valued by the people of the state and of the nation. The purpose of the Cooperative Agreement is to enable beneficial management activities for the Covered Species to be carried out on privately owned land while minimizing the impact of such activities on the right and ability of the owner or manager to conduct "Routine Viticulture Activities" as he or she wishes. Participation in this Cooperative Agreement is a prerequisite for obtaining a Certificate of Inclusion [Attachment 4 to the Programmatic Safe Harbor Agreement] from the Program Administrator issued as part of the agreement between the Program Administrator and the National Marine Fisheries Service (NMFS) titled, "Dry Creek Valley Programmatic Safe Harbor Agreement" (Agreement).

The terms of this Cooperative Agreement are based on an accurate and complete description of the enrolled lands provided by the Cooperator in their attached "Farm Plan/Assessment and Best Management Practices (BMPs) for Routine Viticulture Activities" conducted for the Enrolled Property. For the purposes of this Cooperative Agreement, Routine Viticulture Activities means: any lawful viticulture practices performed by the Cooperator, and persons associated with the Cooperator, that are incident to or in conjunction with viticulture operations, including wine-grape farming best management practices, production, cultivation, growing, replanting, irrigation including frost protection, harvesting, preparation for market, delivery to storage or market, and delivery to carriers for transport to market. Other non-farming routine viticulture activities include erosion control, removal of trash, and invasive plant removal.

The terms of this Cooperative Agreement are as follows:

1. The [INSERT PROGRAM ADMINISTRATOR HERE] ("Program Administrator") and _____ (Cooperator) have entered into this Cooperative Agreement to improve and manage habitat for the Covered Species. The enrolled property is delineated on the attached map (Exhibit A). The Covered Species relevant to this Cooperative Agreement are:

   Central California Coast steelhead (*Oncorhynchus mykiss*)
   ESA threatened (71 FR 834)
   Critical habitat (70 FR 52488)

   Coastal California Chinook salmon (*O. tshawytscha*)
   ESA threatened (70 FR 37160)
   Critical habitat (70 FR 54287)

   Central California Coast coho salmon (*O. kisutch*)
   ESA endangered (70 FR 37160)

Critical habitat (64 FR 24049)

2. The National Marine Fisheries Service (NMFS) has issued an Enhancement of Survival Permit to the Program Administrator that authorizes the Cooperator to incidentally take Covered Species during Routine Viticulture Activities until the year [20..].

3. The Cooperator will allow the Program Administrator to construct or oversee the construction of the Habitat Enhancement Project for Phase [insert 1 or 2], which will improve habitat for the Covered Species on the enrolled property. A description and final designs for the Habitat Enhancement Project on the enrolled property is provided in Exhibit B. In addition, the Cooperator and the Program Administrator agree that once constructed, the Habitat Enhancement Project will likely result in the improved habitat conditions identified in "Elevated Baseline Conditions" column of Table 1 in Exhibit B. These habitat conditions, identified in Table 1, are likely to occur following construction of the Habitat Enhancement Project and shall be considered the "elevated baseline conditions" applicable to the enrolled property.

4. The Cooperator shall grant the Program Administrator access to the enrolled property to enhance and manage habitat for Phase [insert 1 or 2] for the Covered Species, as well as monitor, stock or remove the Covered Species, or to carry out other management activities as necessary. The Cooperator shall also grant the Program Administrator access to the enrolled property for purposes of ascertaining compliance with the Cooperative Agreement. The Program Administrator shall give the Cooperator reasonable notice of these visits.

5. The Cooperator will assist the Program Administrator in compiling an annual report on activities related to management of the Covered Species and any activities that resulted in or may have resulted in incidental take of the Covered Species.

6. The Cooperator shall inform the Program Administrator and NMFS, as soon as practicable, but in no event more than two business days after the occurrence of natural or man-caused emergency circumstances, such as storm events or accidental discharge events which could negatively affect occupied aquatic habitats and could result in take of Covered Species, and allow the Program Administrator and NMFS to the enrolled property for emergency salvage or relocation of affected individuals.

7. The Cooperator shall voluntarily manage aquatic habitats within the enrolled property to maintain water quality and other habitat parameters necessary for the survival of Covered Species, to the extent required under the terms of Agreement and this Cooperative Agreement.

8. The Cooperator shall notify the Program Administrator and NMFS at least 60 calendar days in advance of any land management activity that may modify or alter the enrolled lands to an extent that such activity may reasonably be expected result in the loss of Covered Species individuals or degrade occupied habitat *[describe specific activities that may reasonably result in the loss of Covered Species or degrade occupied habitat]*. The notification will allow the Program Administrator and NMFS an opportunity to capture and relocate the affected individuals, thereby minimizing the impact of the authorized take.

9. As long as the Cooperator implements the terms of this Cooperative Agreement, and elevated baseline levels are maintained, the Cooperator may conduct any Routine Viticulture Activity as described in the attached "Farm Plan/Assessment and Best Management Practices (BMPs) for Routine Viticulture Activities" on their Enrolled Properties, even if loss of the Covered Species or occupied habitat above the established baseline levels occurs.

10. The Cooperator agrees to notify the Program Administrator if the Cooperator decides to sell or transfer ownership or management of the enrolled property. The rights and obligations under this Cooperative Agreement shall run with the ownership of the enrolled property and are transferable to subsequent private property owners pursuant to 50 C.F.R. §222.305(a)(3). The Certificate of Inclusion issued to the Cooperator will be extended to the new owner. By becoming a party to the original Cooperative Agreement and permit, the new owner will have the same rights and obligations with respect to the enrolled property as the original owner at the original baseline. The Cooperator shall notify the Program Administrator of any transfer of ownership at least 90 calendar days prior to the intended transfer, so that the Program Administrator can attempt to contact the new owner, explain the responsibilities applicable to the enrolled property, and seek to interest the new owner in signing the existing Cooperative Agreement or a new one to benefit the Covered Species on the property. In the event that a new owner chooses not to be party to the existing Cooperative Agreement or a new one, Cooperator must provide the Program Administrator the opportunity to remove the Covered Species in excess of the established baseline from the included properties beginning 60 calendar days prior to the estimated date of transfer of ownership at the expense of the Program Administrator and in coordination with the Cooperator, following which the Cooperator and future landowners will be released from any further obligations under the Agreement.

11. The Program Administrator will issue the attached Certificate of Inclusion to the Cooperator, after this Cooperative Agreement is signed. This Certificate authorizes the Cooperator (or designees) to make use of their enrolled property in any otherwise lawful manner that does not result in reducing the population and/or occupied habitat of the Covered Species below the established baseline conditions. This Certificate will authorize incidental take of the Covered Species resulting from lawful Routine Viticulture Activities within the enrolled property, from the time this Cooperative Agreement is signed until expiration of the permits.

The Cooperator may continue current Routine Viticulture Activities, even if such use results in the take of Covered Species or loss of occupied habitat of Covered Species in excess of the elevated baseline amounts.

[Insert description of level of take that may potentially occur on the enrolled property based on property acreage, management activities, habitat types, and current distribution and population status of the Covered Species.]

12. The Cooperator may terminate the Cooperative Agreement for any reason by giving 60 days written notification to the Program Administrator, in which case the Cooperator's right to incidentally take the species covered under the Certificate of Inclusion will expire. This Cooperative Agreement can be renewed, extended, or modified at any time subject to written approval of the Cooperator, the Program Administrator and NMFS. Unforeseeable events or catastrophic natural events such as extreme rainstorms, flood events, drought, forest fires, or insect/disease epidemics are beyond the reasonable control of the Cooperator, and could either extirpate the Covered Species from enrolled lands or render habitat for the Covered Species unsuitable for continued occupation. These events may, on the enrolled property, reduce the numbers of the Covered Species or habitat below the baseline through no fault of, or negligence by, the Cooperator. In such circumstances the Cooperator and the Program Administrator, in coordination with NMFS and only upon NMFS' approval, may revise the elevated baseline in the Cooperative Agreement to reflect the new circumstances.

13. Funding for Routine Viticulture Activities undertaken by the Cooperator will be the responsibility of the Cooperator. NMFS and the Program Administrator will inform the Cooperator of potential funding opportunities through State or Federal grant programs that may be relevant. The Program Administrator may, with the agreement of the Cooperator, fund and/or undertake management activities on the enrolled property to benefit the Covered Species. Any such activities will be identified and detailed as an amendment to this Cooperative Agreement.

14. The Cooperator and the Program Administrator agree with respect to liability and indemnification for injuries to persons or property arising out of this Agreement as follows: [*details may vary from agreement to agreement*]. The Cooperator assumes no liability for injury to any employee or representative of the Program Administrator in the course of any visit to the property under this Agreement. The Program Administrator shall not be liable for any damage to the property of the Cooperator arising from any visit to the property pursuant to this Agreement.

Program Administrator:
Sonoma County Water Agency
404 Aviation Blvd,
Santa Rosa, California 95403

Sonoma County Water Agency	Cooperator
Name_____	Name_____
Date_____	Date_____

Exhibit A

[Map of the property subject to the cooperative agreement]

Exhibit B

[Description and Final Designs for Habitat Enhancement Project]

[Include Baseline Table]

Table 1. Elevated Baseline Habitat

Habitat Category	Habitat Parameter	Basis of Estimate	Existing Condition	Elevated Baseline Condition
Summer Rearing Physical Habitat	Alcove/backwater channel (Interfluve 2012)	Area within habitat inundated at 110cfs		
	Main-channel LWD margin (Interfluve 2012)	Area of LWD in channel +3 foot extension of hydraulic influence into the channel		
	Side Channel (Interfluve 2012)	2/3 of habitat at 110cfs		
	Pilot Off-channel (Interfluve 2012)	• 100% of pilot backwater habitats inundated at 110cfs • 2/3 of pilot backwater habitats inundated at 110cfs		
	Riffle (Interfluve 2012)	Area of habitat inundated at 110cfs		
	Pool (Interfluve 2012)	Pool area of habitat inundated at 110cfs		
Incremental Winter Refuge Habitat	Winter Refuge (Interfluve 2012)	Area of habitat inundated at 110cfs		
	Pilot Winter Refuge (Interfluve 2012)	80% of overbank area inundated at 500cfs		
	Alcove/Backwater channel (Interfluve 2012)	Additional area within grading inundated between 110cfs and 1000cfs.		
Large Wood Debris	Pieces per 100m	Interfluve (2010)		
	% live wood	Interfluve (2010)		
	# pieces S, M, L	Interfluve (2010)		
Habitat Complexity	Shelter rating	Interfluve (2010)		
	% cover	Interfluve (2010)		
Riparian Condition	Acres occurring on property	Mapping exercise		
	Canopy Cover	Percentage of stream area shaded by overhead foliage.		

ATTACHMENT 4. Certificate of Inclusion Template

This certifies that the property described as follows [DESCRIPTION], owned by [NAME OF COOPERATOR], is included within the scope of (Permit No. ____), issued by the National Marine Fisheries Service on [DATE] for a period of [xx] years to the [INSERT PROGRAM ADMINISTRATOR HERE] under the authority of § 10(a)(1)(A) of the Endangered Species Act of 1973, as amended. This permit authorizes certain activities by participating landowners as part of the Dry Creek Valley Programmatic Safe Harbor Agreement to aid in the conservation and recovery of the Covered Species, while providing incidental take coverage for Routine Viticulture Activities. Pursuant to the permits and this certificate, the holder of this certificate is authorized to engage in any otherwise lawful activity on the above described property that may result in the incidental taking of the Covered Species above elevated baseline subject to the terms and conditions of the permit and Cooperative Agreement No. _____ entered into pursuant thereto by the [INSERT PROGRAM ADMINISTRATOR HERE] and [NAME OF COOPERATOR] on [DATE].

_____

[INSERT PROGRAM ADMINISTRATOR HERE]

_____

Title

Date: _____

ATTACHMENT 5. Administrative Plan to Ensure Compliance of Cooperators

As the permit holder, the Program Administrator has the responsibility to assure compliance by all Cooperators. The procedure for monitoring Cooperators' compliance and revoking Certificates of Inclusion in the event Cooperators do not comply is set forth below:

The Program Administrator will monitor compliance of Cooperators by planned monitoring visits with prior agreed upon notice, and via reviewing annual reports. In the event of non-compliance on the part of a Cooperator to carry out their responsibilities the following steps will be taken:

- Within one month of becoming aware that a Cooperator has failed to carry out their responsibilities, the Program Administrator will contact the Cooperator and inform them of their non-compliance and develop a plan to become compliant with the Agreement and Cooperative Agreement.

- If the Cooperator has not complied within two months of initial contact, the Program Administrator will notify the Cooperator in writing regarding their non-compliance and that the process to revoke their Certificate of Inclusion will commence, if they do not come into compliance.

- Within three months of initial contact, the Program Administrator will notify NMFS of the lack of compliance by a Cooperator in writing.

- NMFS then has the opportunity to notify the Program Administrator what additional measures shall be taken to bring the Cooperator into compliance or if the Cooperator's Certificate of Inclusion shall be revoked, and Agreement will be voided.

- Upon determining the need for revocation of a non-compliant Cooperator's Certificate of Inclusion, NMFS may issue a revocation request to the Program Administrator. The Program Administrator shall notify the Cooperator in writing of the revocation of the Certificate of Inclusion and voided Agreement.