Stacy K. Li, Ph.D. principal
Aquatic Systems Research
1210 Spencer Avenue **707-566-7937**
Santa Rosa, CA 95404 **stacy_li@sbcglobal.net**

Mr. Bill Cowan
State Water Resources Control Board
rrfrostregulation@waterboards.ca.gov
fax: 916-341-5400

RE: Russian River Frost Protection Environmental Impact Report.

This is in response to State Water Resources Control Board's (SWRCB) scoping document on Russian River Frost Protection Environmental Impact Report.

Mr. Casey Caplinger of New Old Ways Wholestically Emerging (NOWWE) asked me to comment on frost protection relative to water rights issues in the Russian River watershed. From 2001 until my retirement in 2008, I was the Water Rights Specialist for the Habitat Conservation Division, National Marine Fisheries Service (NMFS), Santa Rosa Field Office. In general, NOWWE is writing in support of the NMFS position on frost protection.

Problem Statement

Both vineyards and orchards use direct diversion for frost protection. Vineyards are expanding in the North Coast region. As more and more vineyards use water from direct diversions to protect from frost damage, there is less water available in the streams for fish habitat.

Frost protecting 100 acres of vineyard with 50 gallon/hour sprinklers typically consumes 1 cubic foot per second (cfs) per hour.

Coho salmon (*Oncorhynchus kisutch*) inhabit the Russian River watershed. Coho salmon of the Central California Coast Evolutionarily Significant Unit (ESU) was listed under the Endangered Species Act (ESA) as an endangered species on 28 June 2005 (70FR37160) and its critical habitat, of which the Russian River watershed is a part, was designated on 5 May 1999 (64FR24049).

Steelhead trout (*Oncorhynchus mykiss*) also inhabit the Russian River watershed. Steelhead trout of the Central California Coast Distinct Population Segment (DPS) was listed as threatened under the ESA on 5 January 2006 (71FR834). Critical Habitat for this species was designated on 2 September 2005 (70FR52488). The Russian River watershed was designated as Critical Habitat. Protective regulations were announced of 10 July 2000 (65FR42422).

Extreme frost seasons are infrequent, but are expressed in two general forms: extremely cold events which increases the daily duration of water diversion and frost seasons that last many days which increases the frequency of water diversion.

Threats from frost protection come in two general forms:

First, drawdown of the main stem Russian River from cumulative direct diversion demands for frost protection. Extreme events of this type occurred during the 2001 and 2008 frost seasons. The mainstem at the USGS at Hopland gage loss 36% to 50% of the flow on some nights during those frost seasons. Steelhead fry were killed in 2008 when a gravel bar was exposed to air. This source of take of listed species has been proactively addressed by the Mendocino Flood Control District and several owners of large vineyards. There are sufficient new off-stream reservoir storage to account for current frost protection demands that avoids drawdown of the mainstem. In addition, Mr. Sean White, the general manager of the flood control district is developing a communication system so that compensatory releases can be made in anticipation of frost protection demand from Coyote Reservoir.

Second, Vineyards and orchards located adjacent to and dependant upon direct diversions from tributary streams. In 2008, Felta Creek, a small tributary to the Russian River, was dewatered through direct diversion to protect a modest acreage of vineyard, killing young-of-the-year coho salmon rearing in the creek. Threats from this form of frost protection have not yet been addressed. The threat from tributary direct diversion is greater because there are more vineyards that directly divert from tributaries, tributaries are more easily dewatered than the mainstem, and coho salmon and steelhead trout juveniles tend to rear in the tributaries.

Mark West Creek

Mark West Creek is a main tributary to the Russian River. Mr. Caplinger owns property adjacent to Mark West Creek and has riparian water rights from Mark West Creek. Sonoma County identified Mark West Creek as a water limited watershed. Mr. Caplinger is particular concerned about the second form of frost protection with direct diversion from tributary streams.

This watershed is particularly susceptible to direct diversion for frost protection. Mark West Creek base-flow has decreased from 3 cfs to less than 1 cfs.

Coho salmon and steelhead trout inhabit Mark West Creek. Mark West Creek has been designated as critical habitat for both species. California Department of Fish and Game made at least three salmonid abundance estimates between 1965 to 1970 in Mark West Creek that ranged between 60 steelhead and coho salmon per100 feet, 60 yearling steelhead per 100 feet and 175 steelhead per 100 feet (CDFG 2000). Bill Cox, CDFG

district fisheries biologist for Sonoma and Marin counties rated these salmonid abundances as very high (personal communication, 2008). In my thirty years as a professional fisheries biologist in California, I have not encountered higher abundance estimates for steelhead trout. The high salmonid production potential Mark West Creek should be protected to facilitate recovery of these listed species.

There has been recent vineyard development in the headwaters of Mark West Creek. Both Pride Vineyard and the pending Cornell vineyard development may potentially use direct diversion from Mark West Creek as frost protection. Further use of surface water likely to impinge on Mr. Caplinger's riparian water right.

Alternative Solutions to Direct Diversion

We offer these alternatives to direct diversion to the State Water Resources Control Board (SWRCB) for their consideration:

- SWRCB should prohibit any future direct diversion for frost protection. Given documented take of listed species, this form of frost protection should be deemed an unreasonable use of water.

- A stopgap approach would be to change the sprinklers to low emitters to reduce the rate of water consumption.

- The number of direct diverters dependant upon tributary water is already excessive. Therefore SWRCB should initiate a program to convert present direct diverters to either groundwater from wells or off-stream reservoirs with appropriate bypass flows and seasons of diversion, i.e., December 15- March 31 to maintain adequate flows in these small tributaries.

- SWRCB should limit the number of days annually that frost protection from direct diversion can be used. The number of frost threat days in 2001 and 2008 were excessive. Protection for the owners of orchards or vineyards should come in the form of crop insurance under these circumstances.

- SWRCB should encourage use of wind mills where appropriate to reduce the demand on water.

- Cloth canopies made of Remay could be placed over the vines to reduce threat of frost. This would reduce the demand on water.

- There are other alternatives to be investigated such as some form of electrical resistance (similar to engine block heaters) or Christmas tree lights (those that give off heat) as alternatives to water protection.

It is now clear that even small direct diversions on tributary streams can be dewatered quickly causing take of the endangered coho salmon and the threatened steelhead trout. There is no incidental take of coho salmon because they are endangered. SWRCB must

take a proactive stance to avoid liability for take of listed species. NOWWE is willing to assist SWRCB in finding solutions to this recently documented threat to listed anadromous salmonids in the Russian River watershed, but particularly as it relates to the Mark West Creek watershed.

Sincerely,

Stacy K. Li, Ph.D