

## APPENDIX E

### Compliance with the Water Quality Control Plan for the Lahontan Region

#### Alder Creek Project

The U.S. Forest Service has a Management Agency Agreement (MAA) and a Memoranda of Understanding (MOU) with the State Board Executive Director in 1981, which waives discharge requirements for certain USFS non-point source discharges provided that the Forest Service implements State Board approved Best Management Practices (BMPs) and procedures and additional provisions of the MAA. Implementation of BMPs, in conjunction with monitoring and performance review requirements approved by the State and Regional Boards, is the primary method of meeting the Basin Plan's water quality objectives for the activities to which the BMPs apply. A specific BMP monitoring plan is included for this project to demonstrate that this project meets the intended outcomes.

#### Beneficial Uses

Alder and Prosser Creeks are the two main streams within the Alder Creek Project analysis area. These streams are part of the Truckee River Basin and drain into Prosser Reservoir. The *Water Quality Control Plan for the Lahontan Region*, California Regional Water Quality Control Board Lahontan Region (CRWQCBLR, 2000), defines the beneficial uses for the Little Truckee River and water quality objectives. Both Alder and Prosser Creek drainages share the following beneficial uses:

- Municipal and domestic water supplies
- Irrigation and water supply for agriculture
- Groundwater recharge
- Contact and non-contact recreation
- Commercial and sport fishing
- Cold freshwater fisheries and spawning habitat
- Wildlife habitat, rare, threatened or endangered species habitat
- Alder Creek also includes the migration of aquatic organisms
- Prosser Creek also includes navigation

#### Water Quality

The specific water quality objectives which apply to tributaries of the Truckee River and are applicable to the activities proposed for the Alder Creek Project include the following:

1. **Oil and Grease** – *Waters shall not contain oil, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the water or on*

*objects in the water, that cause nuisance, or that otherwise adversely affect the water for beneficial uses.*

**Compliance:**

BMPs 1-8 and 7-4, which would be implemented as part of the Alder Creek proposed action provide for managing of petroleum products to protect beneficial uses of water. Application of these measures would prevent visible film or coating on the surface of water or on objects in the water, and would ensure that activities associated with the use of petroleum products in this project would not adversely affect water quality or beneficial uses.

2. **Pesticides** – For the purposes of Lahontan Basin Plan, pesticides are defined to include insecticides, herbicides, rodenticides, fungicides, pesticides, and all other economic poisons. An economic poison is any substance intended to prevent, repel, destroy, or mitigate the damage from insects, rodents, predatory animals, bacteria, fungi, or weeds capable of infesting or harming vegetation, humans, or animals. (CA Agriculture Code 12753). The proposed action includes the addition of Sporax® to stumps.
  - a. *Pesticide concentrations shall not exceed those allowable by applicable antidegradation policies (see State Water Resources Control Board Resolution No. 68-16 and 40 C.F.R. Section 131.12.),*

**Compliance:**

The proposed action includes the addition of Sporax® to stumps. The primary constituent of concern is the inorganic trace element boron. Dost (1966) describes the wide distribution of boron in nature, and notes that it may be difficult to distinguish inputs of Sporax®, at label application rates from levels that naturally occur in water. Hem (1992) discusses the origins of boron as typically a constituent of granite rocks and pegmatites and also present in biotite and amphiboles. Thermal springs, and closed basins may also have considerable amounts of boron present [examples in Hem (1992) were up to 18 mg/l]. Levels for irrigation water vary based on crop tolerance. Permissible levels for sensitive crops such as citrus range from 0.67 to 1.0 mg/l, while more tolerant crops have permissible levels from 2.0 to 3.0 mg/l. Boron has a potential to vary in concentration due to natural inputs and physical properties. The amount of boron added through the proposed action would be unlikely to exceed the range of natural variation that might be observed naturally in adjacent waters.

Dost (1996) completed a literature review of boron applications to stumps. When boron was applied in heavy doses it appeared to be absorbed into the stumps with the highest levels in the upper 3 cm and decreasing with gradient. When concentrations were lower the samples did not vary from the untreated butt end of fallen trees. Although unproven, this result may suggest that when Boron application to the stump is over applied, excess boron is absorbed into the stump. At the application levels proposed, and based on the information presented in Dost, it would be difficult to discern boron levels resulting from Sporax® application versus boron concentrations resulting from the natural variation in background levels. While no information verifying the interpretation from Dost is available, it seems a plausible explanation.

According to the Sporax® label, moisture in the exposed wood from freshly cut stumps, dew or rain, will dissolve the product and leach it into the wood. With timely applications to freshly cut stumps, and implementation of appropriate management requirements such as hand application methods that target stump surfaces, cessation of use under conditions of sustained rain, and removal of surface debris prior to application most of the product would enter the stump. A 25 foot no treatment buffer along live stream courses or riparian vegetation, spill contingency planning, and monitoring and evaluation, would further reduce the potential for borax to enter stream courses.

The Water Quality Control Board for the Lahontan Region has outlined water quality objectives for boron at specific locations. The Truckee River at Stateline is set as 1.0 mg/l, while at Lake Tahoe the standard is 0.01 mg/l. The Stateline location lies downstream of the Alder Creek project. Potential amounts of boron added by the Alder Creek Project are not likely to be measurable, as any input would be diluted by Prosser Reservoir, which lies between the project area and Stateline. Additional sources of inputs, and the bodies of water that may lie between the project area and Stateline would likely have a greater influence on water quality. Beneficial uses of water would not be impaired from the application of Sporax®, as part of the Alder Creek Project activities under Alternative 1, the proposed action.

- b. Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses

**Compliance:**

Through implementation of BMPS 5.8, 5.10 and 5.12, the use of Sporax® would not cause an increase in boron concentration in bottom sediments or aquatic life that would adversely affect beneficial uses. The use of Sporax®, as proposed would not cause an increase in boron concentrations in bottom sediments, due to project design features that minimize the risk of borax entering live stream courses. These design features include: BMPs such as strict adherence to federal state and label requirements for safe use of Sporax®, 25 foot no treatment buffers along live stream courses or riparian vegetation, project monitoring, and spill contingency planning that together would minimize potential risks of water quality degradation.

As described under 2a, most of the boron applied to stumps is leached into the cut surface. Under proposed use rates, if a small amount of borax were inadvertently spilled, plant uptake would likely reduce the amount that could be transported on soils or by leaching (Dost et al, 1996). Measures will be taken to prevent spills into a water body, and clean up measures for spills that exceed application requirements will further reduce the potential for boron to be present as waste. As reported by Dost et al (1996) and USDA, 1994, boron is practically non-toxic to fish, amphibians, aquatic invertebrates and aquatic plants, and is not known to bioaccumulate in fish. Boron in small amounts is used to fertilize plants (Dost et al, 1996, and USDA, 1994), and at the proposed use rates, boron is not likely to reach toxic levels for aquatic plants. The project design features would minimize the likelihood that borax would be spilled or applied to soil, leached into watercourses, or spilled directly into water, which would be a violation of the label directions. Additional analysis of the impact to aquatic

organisms is found in the Alder Creek Environmental Assessment (EA) in Appendix B - *Human Health and Safety and Ecological Risk Evaluation for Borax Stump Treatment*, and the *Biological Evaluation Amphibians, Reptiles, Fish, Invertebrates, Alder Creek Project* (Aquatic BE).

- c. Pesticide concentrations shall not exceed the lowest levels technically and economically achievable.

**Compliance:**

As discussed under 2a and 2b, the ID Team has designed the Alder Creek Project, so that the risk of borax entering watercourses from leaching, or spills is minimal. Implementation of project design features including standard management requirements, and site-specific BMPs would ensure that boron concentrations shall not exceed the lowest levels technically and economically achievable. The BMPs, and management requirements for the Alder Creek Project are found in the Appendix A , *Standard Management Requirements for the Alder Creek Project of the EA*.

- d. Concentrations of pesticides in excess of the Maximum Contaminant Levels set forth in California Code of Regulations, Title 22, Division 4, Chapter 15.

**Compliance:**

As discussed under 2a, 2b, and 2c, proposed application of Sporax® and its inorganic constituent boron would adhere to all applicable federal and state regulations and product label requirements, and site-specific BMPs. Therefore, use of Sporax®, as proposed would not result in boron concentrations in excess of the Maximum Contaminate Levels set forth in the California Code of Regulations.

### 3. Sediment and Turbidity

Suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

Settleable Materials – Waters shall not contain substances in concentrations that results in deposition of material that causes nuisance or that adversely affects the water for beneficial uses. For natural high quality waters, the concentration of settleable materials shall not be raised by more than 0.1 mL/L.

Suspended Material – Water shall not contain suspended materials in concentrations that cause nuisance or that adversely affects the water for beneficial uses. For natural high quality waters, the concentration of total suspended materials shall not be altered to the extent that such alterations are discernable at the 10% significance level.

**Compliance:**

Based on section 13050 (m) the Porter-Cologne Act Water Quality Control Act, amended January 1, 2004.

“Nuisance” means anything which meets all of the following requirements:

- (1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
- (2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
- (3) Occurs during, or as a result of, the treatment or disposal of wastes.

**Compliance:** The Interdisciplinary Team has designed the Alder Creek Project to minimize soil disturbance, and the potential for off-site movement and degradation of water quality. Project design features include low-impact harvest and fuels reduction methods in RCAs to minimize ground disturbance. There is an increased risk that the waters of the state could receive additional sediment from isolated locations over the first three years following project implementation. Timber harvesting and shredding activities can increase availability of smaller organic materials and ash created from prescribed burns, which can contribute to turbidity. Typically increases in turbidity, i.e. inorganic and organic particles that reduce water clarity, are observed during runoff events. These increases then subside with the peak flow. Numerous BMPs were integrated into the proposed action to reduce potential negative effects, and maintain background water quality levels for sediment and turbidity. These mitigation measures include erosion control measures, stream course protection, ground cover requirements, and others, which would prevent increases in turbidity beyond the natural range contributed from these sources. BMPs and management requirements, which significantly reduce the potential for sediment transport, assure that water quality objectives would be met, and that beneficial uses would not be impaired. Implementation of the Alder Creek Project would not alter suspended sediment load and suspended sediment discharge rate of surface waters in such a manner as to cause nuisance or adversely affect beneficial uses.

#### 4. Temperature:

a) The natural receiving water temperature of all waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect the water for beneficial uses.

##### **Compliance (BMP 7-1)**

The proposed activities would not alter water temperatures to a degree where temperature changes would adversely affect local aquatic and riparian species assemblages. There is a potential for some solar radiation increases to occur due to thinning activities in aspen stands, and in units along Alder Creek; however the magnitude of change is not expected to be prevalent enough to have influences over the existing conditions that preside along the activity area.

While some trees will be removed within a 100 foot buffer along Alder Creek, Larry Ford, Certified Silviculturist for the project, indicated the effective canopy closure

within the buffer would not change (personal communications, December 2005). By project design, the East Zone Fisheries Biologist and Hydrologist would designate areas, where only trees with overlapping crowns would be removed within the first 100 feet of the Alder Creek RCA, when needed to maintain shade.

This implies that changes in shade and solar radiation would not be expected in this buffer and the changes in shade would be primarily driven by reduction in standing dead trees, and small understory conifers, within the buffer along Alder Creek. While this could result in slight increases in solar radiation, those changes are not believed to be significant. Existing processes from stream aspect, orientation, beaver activities and other factors already modify temperature in Alder Creek, along the reach above and below the area of proposed activities. Temperature trends from one season of data indicate a progressive increase in water temperature downstream of the project area. The average downstream increase in maximum temperature was 3.6 degrees Fahrenheit and the average downstream increase in the minimum temperature was 2.8 degrees Fahrenheit. The natural processes are already driving a temperature change, and any measurable increases in solar radiation, from the proposed action, is not likely to be sufficient to significantly affect temperature change already occurring in this system.

While the removal of conifers under aspen restoration may result in larger openings with increased solar radiation, these openings would be small and localized. Other sections along the stream would retain shade. Reduction in canopy cover would be discontinuous along the length of the drainage. Conifer harvest can increase soil moisture and ground water levels, due to decreased interception losses and transpiration (Hetherington, 1987; Adams et al., 1991). Increases in ground water levels following forest harvest may promote cooling or at least ameliorate warming (Moore, Spittlehouse, and Story, 2005). Aspen restoration has the potential to increase water yields allowing for wetter soil profiles and increased late season water availability which can improve habitat for aspen associated aquatic and riparian dependent species.

Although, changes in canopy density across upland units can be expected to be reduced to around 30 percent. Average canopy density in the RCAs would not be reduced below 40 percent. Within 5 years of treatment the canopy would begin to expand, thereby increasing the effective canopy and reducing solar radiation to the stream. Additionally, Best Management Practices would limit the areas where timber can be removed within the RCA. Near bank shade would be maintained and willow would be planted to increase effective habitat cover and near bank shade. Thus, beneficial use in Alder Creek would be maintained for aquatic species. A discussion on temperature effects and temperature data results are included in the Aquatic BE under Aspen Treatment, and in the EA under Intensity Element #9, Lahontan Cutthroat Trout, Thermal Regulation.

## **Protection of Beneficial Use**

### **1. Municipal and Domestic Water Supplies**

Agricultural (Irrigation) use would be protected as the levels of boron in water would not be expected to be increased beyond natural variation in background levels. Industrial (power) uses are located outside of the cumulative effects analysis area. These beneficial uses would not be affected by increased sediment transport from the proposed action alternatives. Due to sediment transport mechanisms, if perceptible increases in sediment from the proposed activities did occur, the effect would be diminished by the time it reaches the point of use.

## **2. Groundwater**

Groundwater-Recharge and Groundwater quality would not be expected to be negatively effected by the proposed activity. Best management practices were developed to minimize compaction along Alder Creek and this would retain recharge capacity in the alluvial system. Improvements incorporated in the proposed action include increased porosity and improved subsurface flow to the alluvial systems from decommissioning roads through sub-soiling and mulching, as needed, and by limiting access in areas already impacted over 1 mile of unclassified roads.

## **3. Recreation Contact and Non-contact**

Recreation (REC1 and REC2) use would be maintained within the effected watersheds. No changes to designated use would result. Improvements within the RCAs would result in improved conditions for some uses. Boron, sediment, oil and grease levels would not affect contact recreation nor would non contact recreation be affected under the proposed activities. The proposed action is complementary to the designated uses in adjacent waters.

## **4. Cold/Warm and Freshwater Habitat, and Fishing**

Fishing commercial and sport, and cold or warm freshwater fisheries would not be impacted by the proposed activities. No negative effects are expected from thinning, application of Sporax®, and fuels reduction. The ID Team has designed the project to maintain or improve background sedimentation levels. Water temperature is not expected to be significantly affected by changes in canopy cover, with all other factors remaining the same.

Spawning habitat can be impacted by the delivery of fine material and by negative geomorphic changes. However, the project is designed to minimize direct effects of sediment and compaction that could influence sediment delivery and the quality or presence of spawning habitat. Potential increases in late season water availability can increase survival of yearlings. Similarly, rare, threatened or endangered species habitat is expected to be maintained.

## **5. Wildlife Habitat**

No changes to accessibility of water would occur from the proposed action, and no changes to water quality or quantity would occur from the proposed action that would impair wildlife habitat. Re-invigorating Aspen stand health could increase diversity and improve wildlife habitat.

## **6. Additional Uses**

None of the activities proposed along Alder Creek would affect the migration of aquatic organisms. Similarly none of the activities proposed in the upper watershed of Prosser Creek would affect navigation.

### **Other Water Quality Requirements**

The Tahoe National Forest will submit an application for a conditional waiver of waste discharge according to the California Regional Water Quality Control Board, Resolution No. R6T-2003-0001 (Lahontan Regional Board) for actions implemented as part of the Alder Project for timber harvest activities.