

South Rim

Lower Panther Creek

Parts 1 & 2 (Scan)

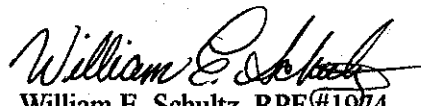
**OFFICIAL RESPONSE TO SIGNIFICANT ENVIRONMENTAL POINTS
RAISED DURING THE TIMBER HARVESTING PLAN EVALUATION
PROCESS**

**FROM THE DIRECTOR OF THE CALIFORNIA DEPARTMENT OF
FORESTRY AND FIRE PROTECTION (CAL FIRE)**

TIMBER HARVESTING PLAN (THP) No : 4-06-042/CAL-7
SUBMITTER : Sierra Pacific Industries
COUNTY : Calaveras
END OF PUBLIC COMMENT PERIOD : August 13, 2007
DATE OF RESPONSE AND APPROVAL : August 30, 2007

The California Department of Forestry and Fire Protection (CAL FIRE, CDF, Department) is the lead agency in the review of Timber Harvesting Plans. These Plans are submitted to CAL FIRE, which directs a multidisciplinary review team of specialists from other governmental agencies to ensure compliance with environmental laws and regulations. As a part of this review process, CAL FIRE accepted and responded to comments, which addressed significant environmental points raised during the evaluation of the plan referenced above. This document is the Director's official response to those significant environmental points, which specifically address this timber harvesting plan. Comments, which were made on like topics, have been grouped together and addressed in a single response. Remarks concerning the validity of the review process for timber operations, questions of law, or topics and concerns so remote or speculative that they could not be reasonably assessed or related to the outcome of a timber harvesting operation, have not been addressed.

Sincerely,


William E. Schultz, RPF #1974
Deputy Chief
Forest Practice

STAFF FORESTER:staff
cc: County Planning
Fish and Game
Parks and Recreation
Water Quality

PUBLIC NOTIFICATION

To inform the public of this proposed Timber Harvesting Plan (THP) and determine if there were any concerns with the plan the following actions were taken:

- Notice of the receipt of the plan was submitted to the county clerk for posting with other environmental notices (ref. 14CCR §1032.8).
- Notice of the plan was posted at the Department's local office and also at the regional office in Fresno.(ref. 14CCR §1032.8).
- Notice of the receipt of the THP was sent to those organizations and individuals on the Department's list for notification of plans (ref. 14CCR §1032.9(b)).
- A "Notice of the Intent to Harvest Timber" was posted near the plan site (ref. 14CCR §1032.7).
- A "Notice of Intent to Harvest Timber" was mailed to all property owners within 300 ft. of the plan boundary, where applicable (ref. 14CCR §§1032.7(e) & (f)).

In addition, the Department determined that a pre-harvest inspection (PHI) was required to take place on the site of the proposed operation before a decision could be made on the proposed plan. The review of this plan resulted in site-specific measures being incorporated into the THP. With the addition of these protective measures CAL FIRE determined there would be no significant adverse or cumulative impacts resulting from this plan.

THP REVIEW PROCESS

The laws and regulations that govern the Timber Harvesting Plan review process are found in Statute law in the form of the Forest Practice Act which is contained in the Public Resources Code (PRC), and Administrative law in the rules of the Board of Forestry and Fire Protection (the Forest Practice Rules) which are contained in the California Code of Regulations (CCR).

The Forest Practice Rules are lengthy in scope and detail and provide explicit instructions for permissible and prohibited actions that govern the conduct of timber operations in the field. The major categories covered by the rules include:

- Timber Harvesting Plan contents and the Timber Harvesting Plan review process
- Silvicultural methods
- Harvesting practices and erosion control
- Site preparation
- Watercourse and lake protection
- Hazard reduction
- Fire protection
- Forest insect and disease protection practices
- Coastal Commission Special Treatment Areas (where applicable)
- Use, construction, and maintenance of logging roads and landings
- County-specific rules (where applicable)

When a THP is submitted to the California Department of Forestry and Fire Protection, a multidisciplinary review team conducts the first review team meeting to assess the Timber Harvesting Plan. The review team normally consists of, but is not necessarily limited to, representatives of CAL FIRE, the Department of Fish and Game, the California Geological Survey, and the Regional Water Quality Control Board. The purpose of the first review team meeting is to assess the proposed logging plan and determine on a preliminary basis

whether it conforms to the rules of the Board of Forestry and Fire Protection. If it is found in conformance on this preliminary basis, questions are formulated which are to be answered by a field inspection team.

Next, a pre-harvest inspection (PHI) is normally conducted to examine the THP area and the logging plan. All review team members may attend, as well as other experts and agency personnel whom the Department may request. As a result of the PHI, additional recommendations may be formulated for site-specific conditions to ensure environmental protection.

After a PHI, a Second Review Team Meeting is conducted to examine the field inspection reports and to finalize any additional recommendations or changes in the Timber Harvesting Plan. The review team transmits these recommendations to the Registered Professional Forester (RPF) who developed the harvesting plan. The RPF must address and respond to each recommendation. To reach a decision on acceptance or denial of a proposed THP, the Director's representative considers public comment, the adequacy of the RPF's response, and the recommendations of the review team chairperson before reaching a decision to approve or deny a THP.

If a Timber Harvesting Plan is approved, logging may commence. The Timber Harvesting Plan is valid for up to three years, and may be extended under special circumstances for a maximum of 2 years more for a total of 5 years.

Before commencing operations, the plan submitter must notify CAL FIRE. During operations, CAL FIRE periodically inspects the logging area for compliance with the specifications of the Timber Harvesting Plan and for compliance with the Forest Practice Rules. The number of the inspections will depend upon the plan size, duration, complexity, regeneration method, and the potential for impacts. The contents of the Timber Harvesting Plan and the Forest Practice Rules provide the criteria CAL FIRE inspectors use to determine if violations exist. While CAL FIRE cannot guarantee that a violation will not occur, it is CAL FIRE's policy to pursue vigorously the prompt and positive enforcement of the Forest Practice Act, the Forest Practice Rules, related laws and regulations, and environmental protection measures applying to timber operations on the non-Federally owned lands in California. This enforcement policy is directed primarily at preventing and deterring forest practice violations, and secondarily at prompt and adequate correction of violations when they occur. The mitigation measures required or incorporated in this Timber Harvesting Plan will be monitored during the inspections conducted by CAL FIRE as authorized or required by the Forest Practice Act. The inspections include but are not limited to inspections during operations pursuant to Public Resources Code (PRC) section 4604, inspections of completed work pursuant to PRC section 4586, erosion control monitoring as per PRC section 4585(a), and stocking inspection pursuant to PRC section 4588.

Most forest practice violations are correctable and the Department's enforcement program assures correction. Where non-correctable violations occur, criminal action is usually taken. Depending on the outcome of the case and the court in which the case is heard, some sort of environmental corrective work is usually done. This is intended to offset non-correctable adverse impacts.

Once harvesting operations are finished, a completion report must be submitted certifying that the area meets the requirements of the rules. CAL FIRE inspects the area to verify that all aspects of the applicable rules and regulations have been followed, including erosion control work. Depending on the silvicultural system used, the stocking standards of the rules must be met immediately or in certain cases within five years. A stocking report must be filed to certify that the requirements have been met,

SIGNIFICANT ENVIRONMENTAL CONCERNS AND RESPONSES

ISSUE #1: *There was a concern that the applicant indicated possible use of herbicide and continued to claim that a discussion of spraying is not required in the THP. It is not clear how spray would be prevented from entering water bodies or impact amphibian species of concern. Additionally, recent studies by Davidson & Knapp (2007) indicate multiple factors that may be responsible for decline of frogs.*

Response: Rather than claim that it is not necessary to analyze chemical use, the statement from SPI on page 99 states *"We undertake to analyze and consider herbicide use within this THP area to the maximum extent feasible given the obvious constraint that such activity is remote in time, speculative and not susceptible to accurate description because future circumstances will dictate the extent, method and quantity of application assuming herbicides are used at all."* The plan does not limit environmental protection to the label restrictions of any product that may be used but has also added mitigation measures that include: watercourse and wetland buffers to be those specified in the FPR which are typically wider than label requirements, special interest plants protected by measures specified in the biological resources section of the THP, and wildlife habitat retention. Also included are details of the SPI monitoring of herbicides which started in year 2000 and has resulted in 2569 samples being taken for analysis through year 2005. As reported on page 107 of the THP, there have been no reportable detections of any measurable amounts of tested chemicals. The harvest plan and the Department's review did not depend on the registration of the herbicides as claimed in the concern. The Department has examined the literature independently of the registration material as shown in the section of this Official Response titled "Background" above. The measures included in the plan address the section of the CEQA Guidelines (15250) mentioned in the concern by "avoiding significant adverse effects on the environment where feasible," and the measures have been demonstrated to be effective by monitoring done on the samples taken from other SPI lands.

THP 4-06-042/CAL-7 proposes the use of silvicultural methods where artificial regeneration will be required in order to establish a new crop of trees. Typically, the Plan Submitter (SPI) has utilized herbicides to retard the encroachment of brush and weed species. Page 98 of the THP indicates that *"...some herbicide use is a reasonably foreseeable outcome of evenage timber harvesting."* Herbicides may be used for site preparation purposes and/or may be used later where needed for release of conifers where their survival is threatened by competition from unwanted brush or weed species. Page 5 of the THP indicates broadcast burning and mechanical methods for site preparation, but also indicates chemical site preparation could be used and refers to the discussion on page 98 of the analysis of potential herbicide use. Page 98 of the plan further states: *"At the present time, it is not possible to predict (without speculation) which herbicide, in which area, in which concentration, at which time will be used, if at all."* A previous landowner of the property on and surrounding this THP was Georgia-Pacific, and prior to that, Bendix Corporation and American Forest Products and the Winton Box Company. These previous industrial landowners employed silvicultural methods of repeated selection uneven-aged entries. Natural regeneration was sometimes successful, but often the stands were entered once or twice each decade where trees were selected depending on the species that were most valuable on the market at the time of entry. These repeated entries over the last 8 or 9 decades have resulted in pockets of trees that are growing at a slower rate than is desirable and has resulted in the desire of the current landowner to use even-aged methods with where artificial regeneration is required and where herbicides were typically used at least once during the next 50 to 80 year rotation cycle. The potential for use of herbicides appears to be included in the THP in the event that some treatment of competing vegetation develops in the future or is needed in site preparation activities. As these events are dependent on natural conditions that would only occur after the actual harvest of timber, it cannot be

predicted in advance with any degree of accuracy in advance the extent or type of chemical application that might be needed. The use of this tool may actually occur at time when the THP itself has expired and were CAL FIRE no longer has authority over activities that occur on this private property.

On a totally intuitive basis it is reasonable to expect that the use of herbicides as typically applied for forest management purposes and as constrained by the protection measures described in the plan and by using methods required by other laws would not produce significant adverse individual or cumulative impacts. Many of the products used in forest management are also used for agriculture and in urban/suburban settings. The rotation of a forest is on the order of decades with herbicides, if needed, being applied once or in rare cases two or three times during that rotation if 50 to 80 years in Sierra mixed conifer. In an agricultural or urban/suburban setting, herbicide application might be annually and often times it would be several times in a single year. Actual application methods in forest management or in agriculture may be similar or could also include backpack sprayers, hack and squirt, ground mounted sprayers or use of aircraft. In urban/suburban settings they are commonly applied by the general public with little to no oversight relative to proper application, clean up and disposal of unused materials. In a forest setting small areas, around 20 acres in size in Sierra mixed conifer, scattered over the landscape are treated - each with sizable buffers protecting ponds, wet areas and watercourses as indicated on page 102 of the plan; *"As a point of clarification, SPI would like to define 'required buffers' as used in item 8 to include all Forest Practice Rule required buffers even though commonly the herbicide labels allow narrower stream protection. In addition, 'carefully avoided' means no herbicide will be applied in these buffers."* In urban/suburban settings there may be no vegetated buffer between the treated lawn/garden/golf course and the storm drain that runs directly to the creek system. In agricultural settings many adjacent fields may be treated during the same calendar year if not at the same time. While buffers are provided for open water they are generally not as generous as those provided in the forest setting because agricultural crops are usually planted as close as possible to irrigation channels, drainage ditches and watercourses. Agricultural areas are not subject to the restrictions of the Forest Practice Rules. The expectation that watercourses are adequately protected in California forest management where subject to the Forest Practice Rules is supported by the fact that water monitoring downstream of timber harvest units treated with ground based herbicides has not detected herbicide residues (<http://www.cdpr.ca.gov/docs/emppm/pubs/tribal/min06-98.htm>).

Exposure to the herbicides used in forestry settings or related chemicals off site is virtually nonexistent as described above. The treatment sites themselves are small, widely scattered and the majority of the THP area is not readily accessible to the general public being behind locked gates. Page 41 of this plan states *"There is a company gate at the top of Lily Valley Circle Drive that can be used to access the plan area."*

Summaries prepared by the California Department of Pesticide Regulation (<http://www.cdpr.ca.gov>) for 2005 (the most recent posted information) show that for the state as a whole forest/timberland use of pesticides ranks 59th and 54th by weight of pesticides applied and by acreage treated respectively. Statewide the use of pesticides on forest/timberland, by weight was less than 1% of that used on wine grapes and less than 1% of that used on other grapes. Compared to the total for the state the weight of pesticide use for forest/timberland was approximately 0.2% (less than 1%). Likewise the use by acreage is less than 1% of the area of cotton or grapes (wine and other grapes combined) that was treated. Compared to the total for the state the area of pesticide use for forest/timberland was approximately 0.5% (less than 1%). Calaveras County ranked 48th in pesticide use (by pounds applied) out of the state's 58 counties. The weight of pesticide use in Calaveras County was approximately 0.02% (two hundredths of one percent) of that used in the state as a whole in 2005.

Page 98 of the plan lists the herbicides currently utilized on the ownership for vegetation management. These are "... *Imazapyr, hexazinone, Glyphosate, Atrazine, and Triclopyr.*"

United Nations Environmental Programme (UNEP) does not list imazapyr as a persistent organic pollutant (current as of February 2002 and not expected to change in the near future); the World Health Organization (WHO) Acute Hazard Rating is "Unlikely to present acute hazard in normal use"; it is registered for use in South Africa, Australia, New Zealand, Finland, Hungary, Portugal, United Kingdom, Canada and the United States. Only about 48 pounds of imazapyr was used in forestry applications in Calaveras County in 2005 on 238 acres. Calaveras County in 2005 accounted for less than 1% of the imazapyr used statewide for forest reforestation.

(http://www.pesticideinfo.org/Detail_ChemReg.jsp?Rec_Id=PC33386)

The Imazapyr used on timberlands by SPI goes under the trade names of Chopper or Arsenal. This product can be applied by air, but primarily by low-volume hand-held spray equipment or basal treatment, cut stump treatment or tree injection or frill. Imazapyr can remain active in the soil for 6 months to 2 years. It is strongly adsorbed in soil and usually found only in the top few inches. It is soluble in water. It has a low potential for leaching into ground water. It may move from treated areas into streams and use of a streamside management zone can significantly reduce the amount of offsite movement in stormflow. The half-life of imazapyr in water is about 4 days. Imazapyr is considered low in toxicity to invertebrates and practically non-toxic to fish, mammals and birds. It is of low toxicity to bees. Like many herbicides, it could be a hazard to endangered plants if applied to areas where they grow, but would probably not be a hazard to endangered animals because of low toxicity. Lab studies with imazapyr in rats indicated no evidence of teratology and tests were negative for mutagenicity. Given the scientific and toxicological information in conjunction with the speculative information that the Department has with respect to the timing, amount of product, weather conditions at the time of application, or even if the product would be used at all, CAL FIRE finds that there is no substantial evidence that imazapyr use would provide a significant human health hazard or significant adverse environmental impact when used in accordance to label or other regulatory restrictions and when used in reforestation in a typical manner.

United Nations Environmental Programme (UNEP) does not list glyphosate as a persistent organic pollutant (current as of February 2002 and not expected to change in the near future); the World Health Organization (WHO) Acute Hazard Rating is "Unlikely to present acute hazard in normal use"; it is registered in 14 African countries, six European countries, Australia, New Zealand, Philippines, Canada and the United States. Less than 1% of the glyphosate used in California in 2005 was used in forests. Over 90% of the glyphosate used in California in 2005 was used on right-of-ways, nuts (almonds, walnuts, and pistachios), grapes, cotton, fruit (nectarines, peaches, plums, cherries, and oranges), tomatoes, landscaping, and wheat. (http://www.pesticideinfo.org/Detail_ChemReg.jsp?Rec_Id=PC33138) Of the top pesticides used on forests in California in 2005, 57,938 gross pounds of glyphosate isopropylamine salt and 887 gross pounds glyphosate were applied to forest lands. In comparison 448,000 pounds glyphosate (about 8 times that applied to forests) were applied to wine grapes, which provide the raw material for a product consumed by people. Other food products that were treated with greater amounts of glyphosate isopropylamine salt than forestlands in 2005 include almonds, oranges, table/raisin grapes, walnuts, pistachios, lemons, avocados and peaches. For the state as a whole, nearly 5 million pounds of glyphosate were used on reportable crop and structural uses. For all uses, including urban and household, approximately 17,000,000 pounds of glyphosate were sold in California in 2005. Forestland use is a very insignificant portion of this total. (<http://www.pesticideinfo.org>) One of the articles cited in the concern letter (Relyea, 2004) underscores how prevalent the public use of glyphosate is; "Glyphosate is the second most widely used pesticide in the United States. It is currently applied to 8.2 million ha of

cropland in the Untied States including 2 to 3 million kg for home and garden applications and 4 to 6 million kg for commercial and industrial applications ..." 10-20% of the application of Glyphosate (Roundup) is attributed to homeowners who do not have to consider cumulative impacts when purchasing or applying these materials.

Glyphosate, also known as Roundup, is used to control grasses, herbaceous plants including deep rooted perennial weeds, brush, and some broadleaf trees and shrubs. It is applied to foliage and is adsorbed by leaves and rapidly moves through the plant. It acts by preventing the plant from producing an essential amino acid. Aminomethylphosphonic acid is the main break-down product. It is generally not active in soil and is not usually absorbed from the soil by plants. It remains unchanged in the soil for varying lengths of time, depending on soil texture and organic matter content. The half-life of glyphosate can range from 3 to 130 days. The surfactant in roundup has a soil half-life of less than one week. The main breakdown product of the surfactant is carbon dioxide. The potential for leaching into groundwater is low as it is strongly adsorbed by soil particles. It does not evaporate easily. Roundup has no known effect on soil microorganisms. Contact with non-target plants may injure or kill plants and therefore, use over the top of established conifers is mostly done when the conifers are dormant. It is practically non-toxic to birds and mammals and bees. It has not been tested for effects in terrestrial animals. It is no more than slightly toxic to fish and practically non-toxic to aquatic invertebrate animals. It does not build up in fish. Studies by Mitchell, Chapman & Long (1987) concluded that "*Roundup and Rodeo herbicides would be considered to be slightly toxic and practically non-toxic respectively to trout and salmon species.*" A study by Wan (1984) concluded that there was a wide variety of effects seen on salmonid species depending on the hardness or softness of water. For chronic toxicity concerns, the EPA has concluded that glyphosate should be classified as a compound with evidence of non-carcinogenicity for humans. Laboratory studies with glyphosate in pregnant rats at dose levels up to 3500 mg/kg per day, and rabbits at dose levels up to 350 mg/kg per day, indicated no evidence of teratology. A three-generation reproduction study in rats did not show any adverse effects on fertility or reproduction at doses up to 30 mg/kg per day. Glyphosate was reported to be negative in tests for mutagenicity, however, it is noted that Clements, Ralph, and Petras (1997) found DNA changes to bullfrog tadpoles at a concentration of 6.75 mg/l, stressing the importance of keeping the product out of bodies of water in accordance to label restrictions. For acute toxicity concerns, in tests in rats, the acute oral LD50 was 4320 mg/kg of body weight, putting it in Category III, or next to the lowest in concern. The acute dermal toxicity LD50 was equal to or greater than 794 mg/kg in female rabbits and 5010 mg/kg in male rabbits, putting it in Category III. As a primary irritation for skin, glyphosate was not an irritant in tests with rabbits, putting it in Category IV. Glyphosate was a mild eye irritant in Category III. For acute inhalation, this study was waved by EPA based on the results of the other studies. There are no reported cases of long-term health effects in humans due to glyphosate. Most short term incidents in humans have involved skin or eye irritation in workers after exposure during mixing, loading or application or have reported cases of nausea and dizziness. Swallowing the Roundup formulation caused mouth and throat irritation, stomach pain, vomiting, low blood pressure and in some cases, death. These effects have only occurred when the concentrate was accidentally or intentionally swallowed in amounts averaging about half a cup and not as a result of the proper use of Roundup. According to label restrictions, glyphosate is not to be applied directly to water or wetlands. Typically in forestland uses, roundup is applied to individual weed species that are in competition with growing seedlings, but may also be used in a broadcast spray over the top of planted seedlings when they are dormant to control competing vegetation. Once tree seedlings have control of the site, it is no longer necessary to use this product in the approximately 50 year rotation period of the stand. Site control is usually reached within the first 4 to 5 years after planting depending on the spacing and survival rate of tree seedlings. In a water quality monitoring report done on the Stanislaus NF (USFS 1995, 1996, Selected Excerpts), sampling for glyphosate was done following a reforestation project. The report states that, "*The project EIS predicted that glyphosate would not be detected in water or streambed sediment based on its environmental*

behavior and from monitoring results on similar projects on the Stanislaus and other national forests in California. Project monitoring results from intensive sampling in 1995 plus sampling in 1996 validated these predictions." (Surface Water, Ground Water and Soil Monitoring Report Hamm-Hasloe Reforestation Project, Stanislaus National Forest by Ellsworth and Grinn, 1996). Given the scientific and toxicological information in conjunction with the speculative information that the Department has with respect to the timing, amount of product, weather conditions at the time of application, or even if the product would be used at all, CAL FIRE finds that there is no substantial evidence that glyphosate use would be provide a significant human health hazard or significant adverse environmental impact when used in accordance to label or other regulatory restrictions and when used in reforestation in the typical manner.

United Nations Environmental Programme (UNEP) does not list atrazine as a persistent organic pollutant (current as of February 2002 and not expected to change in the near future); the World Health Organization (WHO) Acute Hazard Rating for atrazine is "Unlikely to present acute hazard in normal use". Atrazine is registered for use in 13 African Countries, India, Australia, New Zealand, Philippines, United Kingdom, Portugal, Hungary, Canada and the United States. There was no reported use of atrazine in 2005 in Calaveras County. The following uses; corn (non-forage), sudangrass and bermudagrass for forage (animal feed) accounted for 48% of the use in California in 2005. (http://www.pesticideinfo.org/Detail_ChemReg.jsp?Rec_Id=PC35042)

For atrazine, the product is registered in forestry, rangeland, and right-of-way uses. It is used to control grasses and broadleaf weeds and the mode of action is by adsorption by roots and leaves of plants. It moves up through the plant and builds up in the margin of the leaves and acts by inhibiting photosynthesis in plants. Plants which are killed by atrazine do not metabolize the chemical, while plants that are tolerant are able to metabolize atrazine to hydroxyatrazine and amino acid conjugates. Atrazine is applied before or after plant growth begins, but after growth begins, it should be applied when weeds are young and active and only about 1.5 inches tall. Atrazine is active in the soil for about 5 to 7 months. Atrazine is adsorbed by soils, but how much depends on the type of soil. Under certain soil conditions, it may not stay adsorbed. Atrazine persists longer under cold and dry soil conditions. Eventually, soil microorganisms break it down and sunlight may also break it down to a small degree. Detectable amounts of atrazine are usually not found below the upper foot of soil. The main breakdown product of atrazine in the soil is hydroxyatrazine, which does not move easily in the soil. Deisopropylated atrazine and deethylated atrazine have also been found. Atrazine does dissolve in water and can move easily in soil. Occurrences of ground water problems are related to sandy soils in areas that have been identified by the CalEPA as Pesticide Management Zones and there are restrictions for use of the product in those identified zones. Other concerns related to atrazine use come from runoff or loading situations where the product has access to wellheads. These groundwater readings are primarily in areas where atrazine has been used repeatedly on crops that are annually grown. Forestland use of atrazine does not follow this use pattern because it is normally used only once or twice in the 50 year rotation age of trees and is used prior to the time that the conifers gain control of the site and shade out grass and weed species. Because of the potential for groundwater transportation, the label restriction (EPA 100-497) states that users are not advised to apply atrazine to sand and loamy sand soils where the ground water is close to the surface and where these soils are very well-drained. The product is not to be applied directly to water or wetlands and it is not to be applied where runoff is likely to occur. Atrazine can be used for control of annual broadleaf and grass weeds prior to transplanting conifer seedlings or after transplanting or in established conifers, but should be applied when trees are dormant. It typically is not used on a frequent basis in the production of conifers since it can buildup in the soil and cause damage to growing conifers. Atrazine is moderately to slightly toxic to fish and can build up in fish to a small degree. It is slightly toxic to amphibian eggs and tadpoles. It is slightly toxic to almost non-toxic to birds. The toxicity to mammals is low. It is practically non-toxic to bees. As for chronic toxicity, atrazine was not found to be

carcinogenic in an 18 month laboratory study in mice at 82 ppm in the diet. In a laboratory study in pregnant rats fed a diet including up to 1,000 ppm, atrazine indicated no evidence of teratology. Most laboratory tests for mutagenicity were negative, although a study by Clements, Ralph, and Petras (1997) showed DNA damage to bullfrog tadpoles from atrazine at a level of 4.81 mg/l, stressing the importance of keeping atrazine out of and away from bodies of water in accordance to label use restrictions. A laboratory study recently attributed to Tyrone Hayes et al of the University of California, Berkeley, on African clawed frog larvae from hatching until metamorphosis, showed that, in atrazine doses as low as 1 ppb, twenty percent of dosed males developed into hermaphrodites. Atrazine, however, at these levels did not affect mortality, developmental rates, or time to metamorphosis in the experiment. Apparently field observations of this same effect have been noted in Iowa, Nebraska and Illinois (presumably in annual cropland use) in male Leopard frogs, although there was no such finding in Utah or Wyoming. It is not known from the study if there was any such occurrence found in frog's native to California or in the Sierra Nevada. It is also not known if this effect would have significant implications for the population numbers of any particular species of frog. The study is of concern, however, and should be subject to further analysis by DPA and EPA in terms of deciding if the current registration for atrazine is appropriate or if changes need to be made in either application rates, amounts or timing of application or in terms of buffers from water sources. In the meantime, CAL FIRE has found that the normal watercourse and lake protection zone buffers in combination with the fact that the product is not used in forestry applications with the repeated frequency found in annual croplands would provide protections for water borne amphibians and there is no indication at this time that there would be significant adverse impacts to any particular species as a result of the findings made in this report.

As for acute toxicity of atrazine, in tests in rats, the acute oral LD50 was 2,850 mg/kg of body weight, putting it in Category III or oral toxicity which is next to the lowest category. The acute dermal LD50 was 7550 mg/kg in rabbits, putting it in Category III. In laboratory tests in rabbits, atrazine was not an irritant to skin. However, in tests in rabbits, atrazine was an eye irritant in Category II, or next to the highest category for eye irritation. In inhalation tests, atrazine was found to have a LC50 greater than 167 milligrams per liter for one hour, putting it in Category IV as having no irritation. For human health effects, no adverse effects have been reported in man and no long term effects have been reported in man. Coming into contact with plants that have just been treated with atrazine and eating treated berries could cause some ill effects. The biggest concern with use seems to be with concentrations in aquatic communities. The EPA initiated use examinations for atrazine in 1994, and has issued preliminary ecological risk assessment that shows some research concluding that risk of using atrazine exceeds benefits for some aquatic communities. Most of the citations in the document involve use in annual croplands such as corn, cotton, sorghum and sugar cane, and impacts on adjacent aquatic communities in ponds. The review could result regulations that might include larger buffer zones to protect water sources, reduced amounts of the material per acre on a one-time application rate or over cumulatively over time, considerations in the timing of application as associated with precipitation events or other further restrictions on the use of atrazine. Given the scientific and toxicological information in conjunction with the speculative information that the Department has with respect to the timing, amount of product, weather conditions at the time of application, or even if the product would be used at all, CAL FIRE finds that there is no substantial evidence that atrazine use would be provide a significant human health hazard or significant adverse environmental impact when used in accordance to label and other regulatory restrictions and when used in reforestation in the typical manner that involves buffers from water sources and infrequent use over the 50-year rotation age of a crop of trees. Statewide sales of atrazine in 2005 were about 45,000 pounds

United Nations Environmental Programme (UNEP) does not list triclopyr as a persistent organic pollutant (current as of February 2002 and not expected to change in the near future). It is registered for use in 10 African countries, New Zealand, Philippines, Germany, Hungary, Netherlands, Portugal, United

Kingdom, Canada and the United States. Statewide the butoxyethyl ester formulation was reported in 2005 to be used mostly for landscaping and right-of-way uses, with less than 20% used in forestry applications. The vast majority of the triethylamine salt formulation was used for the cultivation of rice in 2005, with less than 2% used in forestry applications. Only about 48 pounds were used in Calaveras County in 2005, and all of this use was associated with right-of-way treatment and other non-forest management treatments. Other formulations of triclopyr were not reported among the top 50 pesticides used statewide in California in 2005.

(http://www.pesticideinfo.org/Detail_ChemReg.jsp?Rec_Id=PC36359)

For triclopyr, also known as Garlon, the product controls woody plants and broadleaf weeds forestland, rangeland and permanent grass pastures. It acts by disturbing plant growth and it is absorbed by green bark, leaves and roots and moves throughout the plant. It accumulates in the meristem region of the plant. Triclopyr is active in the soil and is adsorbed by clay particles and organic matter in the soil. Microorganisms degrade triclopyr rapidly with the average half-life being 46 days. The potential for leaching depends on the soil type, acidity and rainfall. It should not be a leaching problem under normal conditions since it binds to clay and organic matter in the soil. It may leach from light soils if rainfall is very heavy. Sunlight breaks down triclopyr rapidly in water in less than 24 hours. It is slightly toxic to practically non-toxic to soil microorganisms and low in toxicity to fish. Triclopyr does not accumulate in fish and is slightly toxic to practically non-toxic to invertebrates. It has not been tested for chronic effects in aquatic animals. However, a report by Wan, Moul and Watts (1987) indicated that *“under field conditions, the concentrations of Garlon 3A in a stream unintentionally oversprayed during an aerial operation would not likely exceed a level greater than 10 mg/L in 15 cm of water even at the highest rate of application. The potential of this product causing fish kill is therefore small when used under prescribed conditions.”* Pesticide use reporting data from SPI indicate that Garlon 3A is the primary formulation used by the company in its reforestation efforts. Triclopyr is slightly toxic to mammals, but most triclopyr is excreted, unchanged, in the urine. It has not been tested for effects to terrestrial animals. As for chronic toxicity considerations, laboratory tests in mice and rats fed up to 30 mg/kg per day for 2 years did not show any evidence of carcinogenicity. Tests in pregnant rats indicated no evidence of teratology. A three-generation reproduction study in rats did not show any adverse effects on fertility or reproduction at doses up to 30 mg/kg per day. It was negative in several tests for mutagenicity. For acute toxicity considerations, in tests in rats, the acute oral LD50 was 630 to 729 mg/kg of body weight, putting it in Category III, or next to the lowest category. The acute dermal LD50 was greater than 2000 mg/kg in rabbits, also Category III. Triclopyr was a slight to moderate irritant in Category III to IV. In laboratory tests in rabbits, triclopyr was a slight eye irritant in Category III. In laboratory tests in rats, exposure to 5.34 ppm for one hour caused no adverse inhalation effects, putting it in Category III. There are no reported long-term or short-term human health effects. It is not to be applied directly to water according to EPA label restrictions. (EPA 352-378) Triclopyr in forestland use would not be likely to be used more than once or twice in the rotation age of a conifer plantation since growing conifers would be able to get control of the site rapidly to shade out weed and grass species. Pines especially are damaged by triclopyr, so once pines are planted, overspray of the product would not be a typical application. A ground spray of the product directed away from pine seedlings might be possible however following tree planting. Given the scientific and toxicological information in conjunction with the speculative information that the Department has with respect to the timing, amount of product, weather conditions at the time of application, or even if the product would be used at all, CAL FIRE finds that there is no substantial evidence that triclopyr use would provide a significant human health hazard or significant adverse environmental impact when used in accordance to label or other regulatory restrictions and when used in reforestation in the typical manner.

For hexazinone, the product name is often known as Velpar or Pronone. About 88 pounds were used in

Calaveras County on forestlands in 2005. This compares to about 185,000 pounds were sold statewide in 2005 for all uses. It is used for control of broadleaf weeds, grasses and woody plants in the growing of conifers. It inhibits photosynthesis and is readily adsorbed through leaves and roots and moves in an upward direction through the plant. It is not to be applied to saturated soils. Hexazinone may remain active in the soil at low concentrations for up to three years after application. It is only minimally adsorbed to soil but is highly adsorbed to the leaf litter layer. It will release carbon dioxide upon breakdown. No information is available on the possible effects on the environment or other metabolites of hexazinone found in the soil. It could contaminate groundwater, however, some research has indicated that it is not likely to leach beyond the root zone. While other research has indicated its ability to extend beyond the root zone, even if found in water, it does apparently degrade rapidly in natural waters. EPA studies indicate hexazinone "appears to be persistent and mobile in soil and aquatic environments" and "may be of concern for both groundwater and surface water contamination" (EPA, 1994). Recommended rates of the product on a per acre basis was adjusted downward to increase the margin of safety in using the product based on conclusions in the study. It is not toxic to fungi, bacteria or other soil microorganisms at registered use rates. It is highly toxic to non-target plants, however. It is practically nontoxic to fish, freshwater invertebrates and mollusks and is slightly toxic to crustaceans. No studies have been reported for amphibians or aquatic organisms. It is practically nontoxic to birds and insects. Toxicity to mammals is also minimal. For chronic toxicity considerations, in laboratory tests with male and female rats, hexazinone was not an oncogen up to the highest dose tested. Tests with pregnant rats indicated no evidence of teratology. A three-generation rat study indicated no evidence of reproductive effects except for decreased weight of rats fed at the highest dose tested. The EPA concluded that hexazinone is not a mutagen. For acute toxicity considerations, in tests in rats, the acute oral LD50 of hexazinone was 1690 mg/kg of body weight, which puts it in a Category III, or next to the lowest category of concern. The acute dermal toxicity has an LD50 of 5278 mg/kg in rabbits tested, or Category IV, the lowest category. Hexazinone was a low-level irritant in Category IV as well. However, hexazinone was a severe eye irritant in Category I and as a result there are label restrictions for eye protection for handlers of the chemical and for applicators. In laboratory tests in rats, the acute inhalation LC50 was 7.48 mg/l, putting it in the lowest Category IV as a nonirritant. There are no reported cases of long-term health effects to humans and it has not been reported to have caused any deaths or hospitalized cases, although there is one report of vomiting after 24 hours after inhalation of hexazinone dust. Hexazinone is not to be applied directly to water or wetlands or where runoff is likely to occur (EPA 352-581). Grazing of animals on areas treated by hexazinone should not be done within 30 days after treatment to avoid residues of hexazinone in meat or milk. In forestland situations, it is typically used for release of planted conifers and because of its lasting effects on weed species, it is not usually needed more than once or twice in the 50 year rotation life of the planted conifers as the young trees will quickly gain control of the site and shade out the weed species. In water quality sampling done after application of the material by the USFS, (USFS 1995, 1996, Selected Excerpts), *there was a finding on the El Dorado National Forest that "The highest level of hexazinone detected in this monitoring effort was 19 ppb. The concentrations of hexazinone detected in all water samples are below the level used to predict human consumption risk in the FEIS. The levels were 10 to 200 times less than the EPA Lifetime Health Advisory level for hexazinone, which is 200 ppb. The EPA believes that water containing hexazinone at or below this level is acceptable for drinking every day over the course of one's lifetime (USEPA, 1988). This highest concentration detected is less than 0.06% of the concentration that would be needed to fall within the range of the Q-value for the most sensitive known species."* (abstract of Water Quality Monitoring Report, 1992 Herbicide Application Projects, ENF by Fiore, Christiansen, Bakke 1995) However, another water quality monitoring report done by the USFS on the Stanislaus National Forest stated levels of hexazinone as high as 600 ppb. But, as stated in the report, *"All hexazinone sampling results were in the predicted range except at the site where quantities exceeded 100 ppb. A review of that site was conducted which indicated that the probable causes were shallow soil*

conditions and herbicide misapplication." (emphasis added). The report went on to state that, "Hexazinone quantities detected met federal and state water quality objectives for beneficial uses of water. The short term exceedence of 200 ppb at MO-T2 did not compromise the EPA lifetime human health advisory since it did not represent a chronic occurrence. Aquatic life was not adversely affected since the maximum quantity detected is less than the acute toxicity to fish, amphibian, stream insects and algae. Hexazinone quantities detected at nine of the 10 sites monitored were acceptable as de minimus concentrations. The site review of timber stand 27-21 (monitored by MO-T2) indicated that adjusting herbicide application methods at such sites will likely reduce hexazinone detection to the minimum technically feasible." (Surface Water, Ground Water and Soil Monitoring Report Hamm-Hasloe Reforestation Project, Stanislaus National Forest by Ellsworth and Grinn, 1996). In yet another water quality monitoring report on the Stanislaus NF, the abstract summarized that "Hexazinone was sampled in surface and ground water and was detected in surface water in quantities ranging from .2 to 43 ppb. Hexazinone was not detected in groundwater." "State and federal water quality objectives for pesticide use were met". (Water Quality Monitoring Herbicide Application Paper Reforestation Project, Stanislaus NF, by Apperson and DeGraff, 1996) Given the scientific and toxicological information, along with sample water quality monitoring data from USFS reports from the central Sierra Nevada for reforestation projects, in conjunction with the speculative information that the Department has with respect to the timing, amount of product, weather conditions at the time of application, or even if the product would be used at all, CAL FIRE finds that there is no substantial evidence that hexazinone use would be provide a significant human health hazard or significant adverse environmental impact when used in accordance to label or other regulatory restrictions and when used in reforestation in the typical manner.

Biological effects of herbicide use can vary depending on the number of applications and the timing of the applications, but generally, CAL FIRE field observations would indicate that none of these materials are 100% effective in eliminating brush, forbs or weeds. All the products have labeled vegetation where the material is effective, but even a total elimination of these labeled species is not typically gained, although there may be stunting of the growth of some of these species for a time. Certainly, it could be expected that there would be a reduction of herbs, grasses and forbs for a number of years when compared to an area cleared by fire or mechanical means where no brush control methods were used at all. That can be expected since the purpose of the product is to reduce competition for sunlight, water and nutrients in order for planted conifers to gain a foothold and begin to grow. The real question is, would one expect to get more herbs, forbs and grasses in a closed canopy forest where there is no vegetation manipulation compared to a harvested area where brush control was employed? It would also be expected that damage could occur to endangered plant species that were sprayed by herbicide products and that stresses the importance of scoping, examining literature sources and survey for endangered plants if the first two processes indicate the potential for occurrence of endangered plant species within blocks of harvested timberland that are likely to be sprayed with herbicides. Except for atrazine, these products do not have much effect on seeds of brush, forbs or other species so that there can be reseeding of these species within a period of time. Atrazine has an effect on seeds for a while, but will break down over time and the remaining seed bank in storage in the soil or seeds blowing in from other areas will be available to regenerate the various species. Since the even-aged regeneration units are spaced out over time and over the area in accordance with BOF rules, other units that have brush, forb or weed growth will be available nearby so that there is not a total elimination of a variety of species useful for wildlife habitat and forage on any large landscape basis. As stated previously, the purpose of herbicide use on these forestlands is not to eliminate brush, forb and weed species, but rather it is needed to give the tree seedlings an opportunity to outgrow the competition and get up to a superior height were the trees are able to control the site by the natural process of dominating available site resources.

Several studies have focused on the apparent reduction of populations of amphibians in the Sierra Nevada that has been evident in recent years and the potential for agricultural use of chemicals to be implicated. A report by Carey & Bryant on the reduction of amphibian populations throughout the world, theorized that *"It is likely that no single factor or group of factors has been the causative agent through the world; each locality may have its own particular cause or causes"* and *"in most cases, causes of amphibian population declines are unknown."* Another study done locally on amphibian populations in California by Davidson, Shaffer and Jennings (2001) indicated *"However, to date, there has been no direct evidence linking pesticides to amphibian population declines."* This report attempt to suggest that wind borne agrochemicals in general may be a factor in contributing to the decline of red-legged frogs in the Sierra Nevada. However, there is nothing in the report that would assist in evaluating the potential impacts of any particular chemical, type or rate of application or distance between pesticide application and the subject amphibian population. The report examines a statistical way of testing four hypotheses that were considered by the authors to be likely culprits in the reported decline of red-legged frog species in California. The report did not attempt to relate any of the findings in the California situation with the reported world-wide decline of other amphibian species. As an example, the theory of pesticide drift from agricultural areas of the San Joaquin Valley being causal for red-legged frog decline may or may not hold up when compared to other areas of the world where other amphibian species decline is reported, but where there may not be intensive agricultural use of pesticides. Additionally, the report did not test some other hypothesis, such as the potential for air pollution to be a suspect in the process. *"We analyzed the climate change, UV-B, pesticides, and habitat destruction hypotheses, because each has distinct implications for spatial patterns of declines."* Finally, it is noted that nothing in the report concludes that the use of herbicides are problematical in the alleged decline of red-legged frog vs. the effects of fumigants, nematicides, or insecticides and any of the numerous other pesticides that are used in the San Joaquin Valley. In fact, the report cites several studies which have reported pesticide depositions in the Sierra Nevada, all of which chemicals turn out to be insecticides rather than herbicides. *"However, a number of studies for the Sierra Nevada have documented the transport and deposition of pesticides originating in the Central Valley. Zabik and Sieber (1993) found organophosphate pesticide residues (chlorpyrifos, diazanon, and parathion) in wintertime air and precipitation samples from sites at 533 m (1750 feet) and 1920 m (6300 feet) elevations in Sequoia national Park in the southern Sierra Nevada. They found that quantities of pesticides decreased with increased distance and elevation from agricultural lands in the Central Valley floor". "At other sites, McConnell et al (1998) found organophosphate pesticides in winter and spring rain and snow both in the southern Sierra and further north in the Lake Tahoe region." "Pesticides have been found in the bodies of frogs and fish in the Sierra Nevada, beginning with Cory et al's (1970) finding of DDT residues in the bodies of mountain yellow-legged frogs (*Rana muscosa*) throughout the Sierra. More recently, Datta et al (1998) found PCBs and organophosphate pesticides in the bodies of trout and the Pacific treefrog (*Hyla regilla*) tadpoles from the southern Sierra Nevada."* A report by Sparling, et al (2000) also identified insecticides in the bodies of tadpoles in the Sierra Nevada Mountains adjacent to the San Joaquin Valley. The analysis of amphibians in this report develops evidence for the theory that pesticide drift from insecticides that may be used in San Joaquin Valley agriculture are a factor in the decline of amphibian species in the Sierra Nevada. Among chemicals with measurable concentrations were *"chlorpyrifos, malathion, diazinon..."*. A report by Calumpang et al (1997) also measured the effects of several insecticides in rice paddy water that was allowed to overflow into water inhabited by various fish and frogs. However, again, the report measured the effects of specific insecticides and not herbicides that are actually being used on SPI lands. Nothing in the report is specific to the situation being reviewed as the subject of this Official Response. A report by Bishop, C (1997) suggested *"more research was needed on the effects of pesticides under field conditions suing native species in order to determine the extent to which environmental contamination contributes to declines in amphibian populations."* A

report by Berrill, M et al (1994) indicated that *"a buffer zone around large water bodies is usually left unsprayed, and sites are contaminated only by unintended spray drift."* However, the report was concerned with small lakes and ponds that may not be protected from contamination so that eggs and tadpoles are likely to be exposed to low concentrations of sprayed chemicals. The report examined Canadian frog species which, except for the introduced bullfrog species, are not of concern in the Sierra, and concluded that there are small, but important differences between the species tested and differences in the timing of the spray as it coincides with the developmental periods of frog species.

A recent study was published by Davidson & Knapp (2007) on the *Multiple Stressors and Amphibian Declines: Dual Impacts of Pesticides and Fish on Yellow-Legged Frogs*. This study attempted to correlate the lack of yellow-legged frog populations with the presence of introduced fish species as well as the patterns of wind borne pollutants from the central valley of California. The studies were done in Yosemite National Park and also Sequoia-Kings Canyon and the John Muir Wilderness area in between the parks. The study was apparently done in an area that would be most downwind and affected by chemical drift from Kings, Kern, Fresno, Madera and Tulare Counties. These counties account for a substantial percentage of the chemicals used in California for agricultural purposes. It is not clear from the study if the same results would have been obtained in the area of the North Fork of the Mokelumne River as this area is downwind from counties that would typically use less than 25% of the chemicals in agriculture than was used in the study area and clearly have different wind patterns being more exposed to the gap in the coast range mountains through the San Francisco Bay area. Additionally, the study only focused on the mountain yellow-legged frog, which typically occurs at an elevation higher than that which is found on this particular THP area. One of the conclusions of the study is that *"Our finding that both fish and pesticides are associated with declines strongly supports the need for additional multi-factor studies."* The regulations of the Board of Forestry and Fire Protection in Technical Rule Addendum No. 2 state *"The RPF preparing a THP shall conduct an assessment based on information that is reasonably available before submission of the THP."* The language of the study would indicate that additional multi-factor studies are needed to determine the reason for declines of amphibians. There is nothing in the study that would indicate which of the hundreds of chemical combinations was more of a problem in the population studies of mountain yellow-legged frogs. Other studies (Davidson 2004) found that *"declines were more strongly associated with cholinesterase-inhibiting pesticides (mostly organophosphates and carbamates) than with total pesticide use or any other class or group of pesticides."* Neither of these classes of insecticides is proposed for use on this particular THP that is the subject of this Official Response. It is also clear that the pattern of use of herbicides on a THP project is different than that which would be typical for agriculture use. Agriculture use of pesticides can occur multiple times within one season and cover large unbroken areas of land, often under conditions of high temperature where volatility of the product is more of a problem. As typically used in artificial regeneration of conifer crops, chemical use is infrequent at one or two occasions during a 50 to 80 year rotation on separated units that average around 20 acres in size and is done under cooler conditions given the elevations involved.

In Calaveras County in 2005 the top use of pesticides was not forest related. It was wine grapes followed by landscape maintenance and right-of way application. Forests by contrast accounted for about 5% of pesticide use, with an application rate per acre of less than that for many agricultural communities. For wine grapes alone, 12,560 pounds of chemical pesticides were used in Calaveras County in 2005, while 7,778 pounds were used on landscape maintenance. This compares to 4,583 pounds of chemicals used on forestlands in Calaveras County during the same year. Due to the location of the assessment area for this particular project which is the subject of this Official Response, other non-forestland applications are not likely to interact with applications made to the regeneration areas for this THP to create significant adverse individual or cumulative impacts. Within the assessment area, there are no substantial areas where agricultural crops are grown or farmed and there are no substantially sized urban locations where

lawn and garden chemical products would be used. While there could be some limited use of chemicals for right-of-way maintenance, the areas along the paved roads are largely timbered and shaded and do not have a brush control problem that would indicate the use of repeated chemical applications.

As there was only 125 acres of timberland on this THP that was located in Amador County and as the area within that county did not have an even-aged regeneration unit, that portion of the plan outside Calaveras County was not evaluated by CAL FIRE for potential herbicide use.

In evaluating the plan the Department found that the mitigation measures proposed were adequate to "lessen or eliminate any substantial, or potentially substantial, adverse change in the environment."

As noted in the concern, the Public Resources Code section 21068 defines 'significant effect on the environment' as 'a substantial, or potentially substantial, adverse change in the environment.' The Department's evaluation of readily available information has not found that use of the herbicides listed in the plan for forestry applications on these lands in Calaveras County resulted in substantial adverse changes in the environment when used in the past. Monitoring results were negative for samples taken on similar lands owned and managed by SPI as reported in the THP. With the restrictions stated in the plan no substantial, or potentially substantial, adverse change in the environment was found to be likely if herbicide treatment is determined to be necessary. See other responses.

ISSUE #2: *There was a concern that there would be an aesthetic impact of the project as viewed from Highway 88 and that the Amador County General Plan was conceived in part to protect the view from the scenic highway. There was a concern about the view of the project from the N. Fork of the Mokelumne which could be used as a whitewater boating route. The area was already impacted from the Power Fire which was salvage logged. There was a concern that the THP applicant only reviewed the visual resources within 3 miles of the project area.*

Response: The concern focuses on 13 even-age units that average around 20 acres in size (one is as large as 25 acres). These clearcut units will, for a time, be a noticeable feature on the landscape. However, the question is who will observe these units and where can they be seen? Portions of three of the units will be behind a topographic feature and will not be visible from Highway 88, a designated scenic highway. Seven of the units have the long axis of the clearcut parallel to Highway 88, and as such, residual trees standing in front of the units will largely block the view of the unit as seen from Highway 88. The 13 units are scattered out over five miles and it is not likely that there is any one spot on Highway 88 where all of the units can be seen at one time. The units themselves are more than three miles distant from Highway 88. The Board of Forestry and Fire Protection in Technical Rule Addendum No. 2 states, "*The visual assessment area is generally the logging area that is readily visible to significant numbers of people who are no further than three miles from the timber operation.*" and "*At distances of greater than 3 miles from viewing points activities are not easily discernible and will be less significant*". The rules of the BOF require an evaluation of significant adverse environmental impacts within a three mile assessment area for visual impacts of the project. The rules of the BOF recognize that the visual impacts fade into the overall background at long distance. Likewise, rules of the BOF require a size limit for even-age regeneration units precisely so there will be a limit to visual impacts. Additionally, there is a spacing requirement for even-age regeneration units and areas adjacent to these units may not be logged until the planted area reaches an age of 5 years or the planted trees are five feet tall. (14 CCR Sec. 953.1(a)) The BOF rules also require, "*where practical, that the boundaries of regeneration units be irregularly shaped and variable in size in order to mimic natural patterns and features found in landscapes.*" The even-aged units proposed in this THP fit the requirements of the Board to address these visual concerns.

While it is stated in the concern that the Amador County General Plan requires consideration of the scenic qualities of Highway 88, it is doubtful that the drafters of the Plan conceived of a situation where they would be requiring supervisors of the adjacent Calaveras County to be bound by the principles in the Amador Plan. Since the even-age units are located entirely in Calaveras County, the Amador County General Plan would not be in effect for this area of the state. Also, there is a 200' buffer adjacent to Highway 88 in Amador County which would provide a screen to make it more difficult to observe the even-age units. Most of the public that use the highway will be traveling through the area at a relatively high speed, possibly averaging more than 50 mph. At these speeds, the entire THP project would only be visible for a few minutes, assuming it was visible at all from the highway given the established screening buffer that is in place. Any one even-age area would theoretically only be visible for a few seconds in a vehicle, and that would only be possible if there was a large gap in the 200' scenic corridor lining Highway 88. The small openings in the group selection areas will be largely screened by the surrounding residual trees.

As viewed from anyone traveling by boat or kayak on the N. Fork of the Mokelumne River, the clearcut units are anywhere from 800 feet vertical to 1200 feet vertical and almost directly above the river. It will be very difficult if not impossible to see these units given the distance and nearly vertical angle that the units will be located in relation to anyone traveling on the river.

The clearcut openings are of course temporary in nature and are not long-term as these are required to be replanted soon after the completion of timber operations. There is an expectation in the rules of the BOF that trees five feet tall should occupy the clearcuts within five years of replanting. Based on CAL FIRES past experience in this area of the central Sierra Nevada, this expectation is realistic and has been repeatedly achieved on other similar replanted clearcuts. Once the planted trees have reached this size, they will shelter bare ground from view and at the distance of the viewing public on Highway 88, the replanted areas would be expected to blend into the forested background.

The Power Fire Incident occurred in October 2004 and was largely outside the assessment area for this THP project. The fire is briefly evaluated in the THP, however. The USFS BAER report for this fire indicates that about 10,000 of the 16,500 acre fire burned in low intensity. The BAER report also indicates vegetation recovery in 5 years from the date of the fire, or about calendar year 2009 or 2010. While this "vegetation recovery" will clearly not be in the form of a forested condition, it will result in an early successional cover of grasses, herbs, forbs and sprouting brush species that would likely provide for biological diversity for some wildlife species. While the public may or may not like the appearance of the burned area from a visual perspective, the area is expected by the BAER report to largely recover from sediment input into the N. Fork of the Mokelumne River and tributaries by 2009 or 2010. It should be noted that the current THP project that is the subject of this Official Response is in a watershed assessment area largely outside the boundaries of the Power Fire Incident. Also, given that the THP project is in effect for a minimum of 3 years and a maximum of 5 years, at least some of the project will be occurring at a time following the predicted vegetative recovery of the fire area. See also the Issue on Watershed impacts below.

ISSUE #3: *There was a concern about the watershed condition of the N. Fork of the Mokelumne River and in general, all forks of the Mokelumne River drainage from the standpoint of cumulative impacts from logging and other projects.*

Response: The THP itself, the rules of the BOF and other applicable laws provide protections for the beneficial uses of water. For example, the rules state that the "quality and beneficial uses of water shall

not be unreasonably degraded by timber operations. During timber operations, the timber operator shall not place, discharge, or dispose of or deposit in such a manner as to permit to pass into the water of this state, any substances or materials, including, but not limited to, soil, silt, bark, slash, sawdust, or petroleum, in quantities deleterious to fish, wildlife, or the quality and beneficial uses of water." (14 CCR Sec. 956.3) Regulations specify spacing of waterbreaks to protect from soil movement, widths of WLPZs and Equipment Limitation Zones to keep equipment away from watercourses, treatment of watercourse crossings, and also treatment of bare areas within the WLPZ of Class I and II watercourses and many more provisions. The Board of Forestry and Fire Protection's Monitoring Study Groups report on Hillslope Monitoring Program says in the executive summary: "*In summary, the Forest Practice Rules and individual THP requirements (i.e., site-specific mitigation measures developed through recommendations of interagency Review Teams) were generally found to be sufficient to prevent hillslope erosion features*". (Available on the internet at www.fire.ca.gov, then follow the links to the Board of Forestry and Fire Protection, and then to the Monitoring Study Group page.)

This particular THP contains provisions for cable yarding and helicopter yarding methods on steep slopes. Unstable areas are not being logged with ground equipment. WLPZ and ELZ are designed to protect the overstory, understory and/or filtering qualities as required by the Forest Practice regulations. There is a limited amount of new road construction and these spur roads will be eliminated upon completion of timber operations. An additional road and several existing watercourse crossings are being abandoned. Winter timber operations are limited by language in the THP to unsaturated soil conditions and timber operations will only take place during extended periods that are free from precipitation. During the winter, waterbarring will be done to High Erosion Hazard Rating spacing in areas with Moderate Erosion Hazard Ratings. During the winter, heavy equipment will not operate in the WLPZ. Over 80% of the THP area is being harvested using uneven-aged silviculture and the residual stand will meet stocking immediately upon completion of timber operations. Clearcut areas are well upslope from the N. Fork of the Mokelumne River, and are in many cases along or near ridgetops. Silviculture methods adjacent to Class II watercourses involve Selection harvesting to protect the overstory, understory and filtering qualities of the WLPZs.

CAL FIRE has repeatedly examined the effects of timber harvesting on all forks of the Mokelumne River in each and every THP that has been filed by the various industrial entities who have owned this private industrial timberland, or small non-industrial landowners within the Mokelumne River drainage to ascertain the potential for significant adverse cumulative impacts of similar areas to that of the proposed THP. The various forks of the Mokelumne River watershed have a similar mixed federal, and private industrial land ownership. After many years of timber harvesting, the following information was gleaned from various studies that were done in the Mokelumne drainage in the past:

General Conditions of the Middle Fork Mokelumne River. Ray Albright, PhD, assessed the condition of the Forest Creek watershed in 1991. Forest Creek is a tributary of the Middle Fork Mokelumne River. Albright's findings for Forest Creek were as follows:

- The data shows that Forest Creek's conditions as 51% good, 31% fair, and 18% poor (Albright, p.6).
- Sensitive stream segments account for 25% of Forest Creek with all of the segments occurring in the upper half of the watershed (Albright, p.6).
- In 1958, Forest Creek wildfire occurred in the mid-section of the watershed. The fire cleared everything on the hillslopes from the stream to the ridgeline. This exposed a large tract of soils with high and very high erosion hazard and some Iron Mountain soils (Albright, p.16).
- The data suggests that the overall health of Forest Creek watershed is somewhere between fair and good. A majority of the channel segments surveyed in the Forest Creek watershed proved to be in a good stable condition with few signs of adverse impacts (Albright, p.19).
- The evidence indicates that the stream degradation was caused by the fire (Albright, p.20).
- Water quality tests across the watershed revealed normal levels of pH, hardness, alkalinity and dissolved oxygen. The values varied only slightly between sensitive and stable segments. Water temperatures warmed in the degraded segments and cooled in the downstream shaded segments (Albright, p.23).

There was a detailed survey of fishery conditions in Forest Creek, (THP 4-91-81, Appendix J and Christophel, 1992) prepared by Beak Consultants in December 1992. In this study, ratings of good, fair, and poor were given to different channel segments. Statistical comparisons using the Kruskal-Wallis test showed no significant difference among the estimated populations of all trout (brown and rainbow trout combined) associated with the three channel stability conditions (Christophel, p.12). The report showed those fish population data from the current study also compare favorably with the results of surveys of other trout streams in California. Average total trout biomass estimates for each reach surveyed in Forest Creek were generally higher than those reported for other west slope Sierra Nevada trout streams (Christophel, p.23). The report concluded that fisheries conditions are suitable in Forest Creek, inferred by successful reproduction and presence of multiple age classes of trout (Christophel, p.23).

While not directly comparable with the report by Beak Consultants on the Fish Community Survey, CAL FIRE also considered the findings in the A. A. Rich and Associates report on Salmonid Habitat Conditions and Population Estimates in Forest Creek and the Middle Fork of the Mokelumne River, California (Rich, 1991). The two reports are not directly comparable because Rich's study design was restricted to sampling trout populations within a single habitat type (thalweg pools) while the Beak Consultants study sampled 300-foot sections encompassing several habitat types (Christophel, p.22).

Findings in the Rich report, sampling thalweg pools only, compared conditions in three stream reaches of Forest Creek with a "control" reach of the lower Middle Fork of the Mokelumne River. Presumably, this control reach was chosen because it had not been logged since 1983 when it received only a light selection harvest. The report, however, also states that there is no real control stream, as the entire Mokelumne watershed had been logged (Rich, p.15). This fact can be confirmed by CAL FIRE records in the Fresno headquarters indicating a logging history for the Mokelumne for at least the past 25 years. These records show numerous THPs filed within five years before the date the research was done for the Rich report.

From all indications, it is highly likely that the conclusions cited in the report relating to the better health of the fish in the control reach is blemished by the fact that the control reach actually has a logging history similar to that of the other reaches of both the Middle Fork and Forest Creek.

The Rich report was critical of the condition of the spawning habitat in both creeks, but did conclude that the trout were in good condition with mean condition factors above 1.0, a value considered to represent healthy salmonid. Mean biomass estimates were variable and the sites were not statistically different from one another (Rich, p.47).

General Conditions of the South Fork Mokelumne River. Ray Albright, PhD, conducted a stream survey of the Licking Fork of the South Fork of the Mokelumne River. Licking Fork is typical of Mokelumne River forested watersheds in the mixed conifer zone and has a land ownership heavy to private industrial timberlands. The Albright report for Licking Fork of the South Fork of the Mokelumne River, specifically indicated:

- Streamflow behavior would be similar to that observed on nearby Forest Creek where it was noted that annual discharge volumes were roughly 40-50% of the precipitation volume during the years when precipitation exceeded 30 inches (Albright, p.4).
- The data shows that 86% of Licking fork stream channel was in a good stability condition and 14% was in a fair condition (Albright, P.8).
- Livestock trampling of stream banks and small woody debris jams in L32 contributed to its high BAT. Placer mining for gold in L52 had flushed sizable amounts of sediment from the sideslopes into the stream (Albright, P.15).
- The results of the water quality testing are in Table 5 and the associated locations are shown on Map 1. Although tested for, no ammonium or nitrate was detected at any of the sample sites (Albright, P.28).
- Licking Fork watershed was found to be in a generally healthy condition with a few localized sources of adverse effects (Albright, P.37).

A "Stream Channel Analysis" by Ray Albright, PhD, documents the stream survey of the Mid-Section of the South Fork of the Mokelumne River. CAL FIRE considered the information in the Albright study of Swamp Creek to learn about the condition of that watercourse following years of logging. Both Licking Fork and Swamp Creek eventually drain into EBMUD's reservoirs and are therefore appropriate to consider:

- The stability condition of Swamp Creek was found to have 87% of the channel in good condition, 10% in fair condition, and 2% in poor condition. The poor condition reflects a single sensitive segment (Albright, p.24).
- Overall, Swamp Creek watershed has a stable channel that is effectively functioning as a transport mechanism for water, sediment and woody material. Sediment fluctuations (gains, losses) on the upper bench are having no adverse effects on the downstream conditions. Water quality and temperature records confirm that no degradation is occurring to the water quality parameters in the water column. The aquatic community is robust and productive with a wide array of habitat units and suitable habitat conditions (Albright, p.50).

The Albright report for the Mid-Section of the South Fork of the Mokelumne River, also indicated:

- The data showed that 100% of the South Fork Mokelumne river channel, within the study watershed, was in a good stability condition. A good stable condition denotes that the three channel components are in a sound, relatively undamaged state with few signs of adverse effects (Albright, P.18).
- The relative abundance of woods riparian species was very robust with good and excellent ratings (Albright, P.23).
- Overall, the existing road network within the study watershed was generating a low amount of sediment into the drainage system. Point sources, previously discussed, were observed but were not very common (Albright, P.48).
- Overall, this section of the South Fork Mokelumne is healthy and sound. The fact that water quality parameter showed no changes from above and below the sub-basins' inlets denotes that no adverse chemical changes are occurring (Albright, P.54).

General Conditions of the North Fork Mokelumne River. Ray Albright, PhD, also conducted a stream survey of West Panther Creek for Georgia Pacific in 1992. West Panther Creek and West Panther Creek Watershed are north of Swamp Creek and are on the North Fork rather than the South Fork of the Mokelumne River. Albright found that this watershed was generally in good health. Conditions in some localized tributaries were less stable than the main channel. Low instream sediments were found in the main channel. Several historic road crossings serve as sediment point sources, and as candidates for remedial work.

The Albright report for West Panther Creek provides CAL FIRE with information on the timber harvesting effects over many years on an area with a similar logging history and environmental setting to Swamp Creek. The report specifically indicated:

- Overall, the water quality parameters were within the tolerance levels of most aquatic organisms. The high pH readings were near the upper limits for fish, however, the dissolved oxygen readings were optimal (Albright, p.38).
- Most of the poor crossings were contributing sediment into the channel from old fill banks (Albright, p.41).
- Overall, the existing road network . . . was generating a low to moderate amount of sediment into the drainage system (Albright, p.41).
- Past disturbances and current channel influences have not adversely affected the stability of the watershed. The lack of any poor segments and the large number of good segments demonstrates the watershed's sound health (Albright, p.43).
- The main factor determined to be threatening the stability of the main channel was mass movement and, to a lesser degree, both debris jamming and instream sediment. The number of debris jams capable of causing channel instability was relatively low (Albright, p.43).
- Tributaries were found to be in a slightly less stable condition than the main channel (Albright, p.44). A certain amount of instability can be expected as compared to the main channel. Tributaries serve as "feeders" and not as main water conduits, and as storage areas for sediments (Albright, p.45).
- Instream sediment in the main channel was relatively low despite the wide distribution of soils with high erosion hazard potential, previous mass movement activities and other channel disturbances (Albright, p.46).
- Water quality readings were within the tolerance limits of most aquatic organisms and did not

appear to reduce the fish population.

Spittler, DMG Senior Engineering Geologist visited West Panther Creek Watershed and reported:

- Timber harvesting conducted prior to the implementation of the Forest Practice Act included in-stream road and skid trail construction, stream diversions, and construction of roads and trails across moderately steep slopes without installation of erosion control structures. Although the degree of acceleration of erosion control and corresponding increase in sediment yield from the property have moderated, mitigations of existing adverse conditions will occur from activities on the site that are conducted to Forest Practice Act specifications (Spittler, p.4).
- The Mokelumne River is a cold water stream that formerly supported an anadromous fishery. Comanche and Pardee reservoirs block migration of salmonids into the watershed. This significant impact will not be affected by proposed timber harvest operations (Spittler, p.8).
- Although the yield of sediment from the bed and banks of the watercourses on site are far greater than they were prior to in-stream road construction that occurred during harvesting in 1960, riparian vegetation is developing and the channels are stabilizing. . . . The damage from early episodes of logging will continue to affect the yield of sediment in the watershed for the greater part of a millennium . . . will continue to affect down stream beneficial uses for hundreds of years (Spittler, p.8).
- Most of the material eroded from roads and skid trails will be captured by existing vegetation on site and not transported to watercourse channels (Spittler, p.8).

From Cafferata (2001)..... One source of information is Euphrat's (1992) dissertation project completed in the Middle Fork of the Mokelumne River watershed. He reported that approximately 250 acre-feet of fine sediment was documented in Shaad's reservoir by the Calaveras Public Utility District (Duonsignore, N., 1991. Personal communication to Euphrat, cited in Euphrat 2002). Additionally, Euphrat found 30 acre-feet of sediment in the delta on the upstream end of the reservoir in about 1990. He calculated the average rate of basin erosion trapped in the reservoir over a 50-year period as 0.20 ac-ft/mi²/yr (the drainage area above the reservoir is 28.3 square miles). Therefore, utilizing Euphrat's work, the total average amount of sediment contributed per year to Shaads Reservoir can be estimated at 5.6 acre-feet. Euphrat estimated that approximately 6.2% of the capacity of the reservoir has been lost due to sedimentation in 50 years."

Other parts of the Euphrat (1992) dissertations provide valuable information for the Middle Fork Mokelumne River watershed. He stated that no significant erosion was found to leave timber harvest areas during the period he studied the Middle Fork Mokelumne River watershed. Euphrat also estimated annual erosion for the Middle Fork as follows: road surfaces (39%), old fill wedges (19%), ORV and domestic road use (16%), natural rate (11%), range cattle in timber harvest area stream channels (8%), farming (3%), mainstem widening (3%), channel activities, non-timber harvest areas (1%), and subdivision (<1%). Euphrat concluded that much of the past erosion in the upper Middle Fork did not derive from BMP-controlled systems, and shows the cumulative impact on the sediment system of accidents and past practices. Erosion rates for the upper Middle Fork, calculated via a sediment budget for Schaad's reservoir, are mid-range for Sierran watersheds, and about 25% greater than for Pardee reservoir.

Some mention of the nutrient work that Holloway and others (1998) have completed in the Mokelumne Watershed would benefit this section. They found that nitrogen-bearing rock in the lower watershed is a

major source of stream water nitrate in the lower Mokelumne River watershed. Stream water nitrate in the upper Middle Fork River watershed was found to have a median value of 2.3 $\mu\text{mol/L}$, while tributary streams in the lower watershed generally had elevated nitrate concentrations with median values of 18 to 99 $\mu\text{mol/L}$. These lower streams lie in a geologic region dominated by metasedimentary and metavolcanic rocks (Holloway et al. 1998). Holloway et al (1998) estimated that greater than 90% of the nitrate originates from the lower watershed that contains geological nitrogen (the upper watershed has 90% of the watershed area and a nitrogen flux of 0.12 kg N/ha/yr; the lower watershed has 10% of the area and nitrogen fluxes of 10-20 kg N/ha/yr. Therefore, we can conclude that nitrate levels from the timber management zone are low.”

Also noted in the literature is the study of the South Fork Tule River (Marvin 1996), which has undergone a continuous increase in land-cover changes in three general spurts, all primarily within the timber zone: 1950, pre-1966, and pre-1972. These changes include logging 140 million bd. Ft in 46% of the conifer forest, a doubling of roaded areas, and extensive conversion of dense oak woodland to grassland. Records began in 1961. The active management that occurred in the Tule River watershed was not correlated to an increase in flows with a five-year occurrence. Again from Cafferata (2001), “The citation of Marvin’s (1996) research paper on the South Fork of the Tule River watershed is appropriate and provides sound data regarding the magnitude of the potential peak flow effects associated with timber harvesting in the Sierra Nevada Mountains.”

The Foster Wheeler Assessment of the watershed-wide inventory of the Upper Mokelumne River watershed is also part of the literature of this area of the central Sierra Nevada and is referenced in the current THP. The study was conducted in 1999 and 2000 on an area covering 578 square miles. The results of the assessment indicated that the water quality in the Upper Mokelumne River is excellent, primarily due to the limited development that has occurred in the watershed. Quantitative ratings of stream reaches within state-planning watersheds within the Mokelumne before the January 1997 storm indicated that 2% of the stream reaches were characterized as “excellent”, while 75% were characterized as “good”, 18% as “fair”, and only 5% were “poor”. More specific to the 26 planning watersheds in the Upper Mokelumne that have SPI ownership areas, the report gave 6 an “A” ranking, 7 had a “B” ranking, 7 had a “C” ranking and 6 had a “D” ranking. This ranking is not regionally adjusted and cannot be compared to similar rankings in other geographic areas within the State. As an example, previous findings have shown that for total erosion potential, the Sierra Nevada ranks low, while the Klamath province ranks moderate and the north Coast ranks high. Therefore a “D” ranking in the Sierras may be equivalent to a “C” rank in the Klamath and a “B” rank in the north Coast. In conclusion, the report provided that the overall health, stability, and condition of the Upper Mokelumne River watershed are good.

Also referenced in the cumulative impacts assessment for THP 4-06-42/CAL-7 is a study done for PG&E during their FERC re-licensing of the Salt Springs Reservoir which was done in May 2001. This project is upstream from the current THP project and in the N. Fork of the Mokelumne River. Numerous water quality samples were taken from the stream which indicated that the water quality was very good and all samples meet or exceeded the California domestic water standards and EPA primary and secondary drinking water standards. The study also looked at fish populations and found an average of 27.2 to 45.8 pounds of rainbow trout per acre. The THP examines the condition of the N. Fork of the Mokelumne River on page 72 of the cumulative impacts assessment. The condition of the river is found to be good and in stable condition. The canopy closure is in the range of 80-100%, except for a few small areas where there are non-commercial timberlands bordering the channel. THP 4-06-42/CAL-7 proposes a no harvest area along the north bank of the N. Fork of the Mokelumne River. The south bank of the river will use Selection methods and the yarding methods for several thousand feet linear distance above the

river will be either helicopter logging or cable yarding. These yarding methods will have far less impact and ground disturbance than would be expected from ground-based heavy equipment yarding.

In addition to examining the record of past activities that are part of the public record within the Mokelumne River drainage, CAL FIRE has continuously examined watercourse segments as each and every THP has been submitted, harvested and completed in order to determine the health and maintenance of water quality within the entire drainage and elsewhere in the central Sierra Nevada. The public record of each and every THP shows the care taken by CAL FIRE employees to determine that the quality and beneficial uses of water are protected from sediment, slash and debris. Timber harvest plans are inspected numerous times before, during and after harvest by employees of CAL FIRE. To date, the CAL FIRE forest practice inspectors have not found significant adverse cumulative or direct environmental impacts to the public trust resources in the Mokelumne River drainage as a result of the timber harvests conducted by the primary industrial forest landowner.

Cumulative Impact Assessments are guided by the Board of Forestry through the regulations promulgated by the Board. CAL FIRE, however, supplements information during the review process (Technical Rule Addendum #2) and goes beyond consideration of the watershed assessment area to consider closely related activities both past, present and reasonably foreseeable in the future that CAL FIRE may be aware of.

The THP submitter is responsible for conducting an assessment and choosing the size of the watershed area to be assessed in detail. The RPF's watershed assessment area complies with that as outlined by the Board of Forestry. This watershed assessment area is the most effective method in evaluating a third or fourth order watercourse, according to the Director's letter of January 1992 and as outlined in the Board's regulations in CCR Section 897 (b)(2) and within the definition of "planning watershed" in CCR Section 895.

The development of the Cumulative Impacts Analysis (CIA) regulations began as early as 1980 with the creation of the Board's first Cumulative Effects Task Force (Richey, 1982) and ended with the approval of the Board's regulations in 1991. The Board's first Cumulative Effects Task Force made the following recommendations in their report after reviewing all the regulatory alternatives available to the Board for addressing cumulative impacts;

- Effective on-site best management practices, including special attention to sensitive lands, are the most direct method to avoid cumulative effects and should remain the backbone of the regulatory program. (Richey, p.13)
- Existing stream conditions should be considered in evaluating potential cumulative effects of the individual THP. Harvest planning should account for this potential during evaluation of alternative silvicultural methods. (Richey, p.13)
- Timber harvest allocation systems are complex and should not be considered unless the need is shown to be critical. (Richey, p.13)
- Road systems should be planned to minimize total disturbance and avoid sensitive sites. New road standards in the forest practice rules should be evaluated before further regulation regarding road planning is proposed. (Richey, p.13)

The Board used many of these findings in adopting the 1991 cumulative effects rules. The methodology used in the Board's rules to determine the size of the watershed assessment area was clarified by a letter

to all RPFs and LTOs from the Director on January 7, 1992. This letter states on page 4 that:

"The watershed assessment area for assessing cumulative watershed effects (CWEs) should be selected to include an area of manageable size relative to the THP (usually an order 3 or 4 watershed) that maximizes the opportunity to detect an impact. Where there is a choice of combining watersheds with different disturbance levels, the assessment area should be based on the smallest watershed area that includes the most disturbance. The intent is to focus on an area of manageable size, where the presence of cumulative effects related to the proposed project and the benefits or failings of the proposed practices can be reasonably considered." (emphasis added)

The size of the assessment area quoted in the letter above is supported in the Board rules described in 14 CCR Section 897(b)(2) and in the definition for "planning watershed" found in 14 CCR Section 895. The size of the watershed assessment area found in these regulations is a recommended third or fourth order watershed size, and therefore, the letter from the Director is consistent with the regulations of the Board.

However, it should be noted that the detailed analysis for the watershed assessment area selected by the RPF does not limit CAL FIRE with respect to consideration of other activities outside the assessment area. The watershed assessment area is more like a window which CAL FIRE can see through to view the combined effects of other related projects, rather than a wall or barrier.

The Board's rules do not require a specific method of CIA, because the Board determined that no single, available procedure adequately addresses the wide range of site conditions and THP activities found in California. The Board's rules in the Appendix to Technical Rule Addendum #2, do give the basic concept of what should be considered and what to look for with respect to an environment that may be at or near some level of concern. As stated in the Appendix, *"The watershed impacts of past upstream and on-site projects are often reflected in the condition of stream channels on the project area."*

The Appendix to Technical Rule Addendum #2 also describes the factors that can be used to evaluate the potential project impacts. Such factors include gravel embeddedness, pool filling, stream aggrading, bank cutting, bank mass wasting, downcutting, scouring, organic debris, stream-side vegetation, and recent floods. These factors can be examined in the field by experienced individuals to determine if the environmental setting has suffered from past projects and/or contains the ability to adsorb future projected impacts.

Individual RPFs preparing plans have surveyed other watercourse segments within the assessment area. CAL FIRE considered all these survey results to assess conditions in the entire assessment area. Information from all these assessment areas is combined like building blocks. This eventually gives CAL FIRE a thorough knowledge of the whole forested area of the drainage, and enables CAL FIRE to look up-stream and down-stream of each watershed assessment area.

If this project's residual impacts were great enough, after application of the CCRs and extra THP mitigations, the possibility exists to demonstrate that this project could combine in an adverse way with other past, present and future projects to cause a significant environmental effect. However, CAL FIRE did not find that this project would have such adverse residual effects.

CAL FIRE found that SPI correctly complied with the rules in the discussion and identification of cumulative impacts.

ISSUE #4: There was a concern about the amount of oak that was being retained in reference to the requirements of 14 CCR Sec. 959.15 in order to provide forage for deer.

Response: As indicated in the THP, there are 67 acres of no harvest areas within the THP that are "heavy to oaks, and possess wildlife value." (Page 4) The THP also indicates that oaks will be managed for stocking purposes. On page 20, it states that "Oaks of any size, but preferably larger oaks greater than 25" dbh, are a major component of the stand structure and efforts shall be made to protect these oaks." Also on page 20 of the THP, it states that "The objective is to maintain retention areas that include oak trees as undisturbed islands into the future within the context of the evenage regeneration units....if present a minimum two to three oaks...shall be left in each regeneration unit. Oaks outside of the evenage regeneration units shall be protected and not felled...." The language of the plan shows the intent to retain an acceptable level of oak stocking. 14 CCR Sec. 959.15 contains language adopted by the BOF states that a level of oaks "should be retained". Also, there is nothing in this regulation that would indicate that each and every acre of a THP should keep 10 sq. ft. of basal area. The regulation is written broadly so that the stated goal is actually 400 sq. ft. per 40 acres and that standard is not the same as saying that each acre should have 10 sq. ft. of oaks. While one could be critical of the language in the plan as being unenforceable as written, it can also be stated that the rule of the BOF in relation to oaks is permissive rather than enforceable. The plan states that 18% of the basal area of the plan area is comprised of oaks, and states on page 96 that the preharvest basal area of oaks is around 27 sq. ft. per acre. Given the intent language of the plan with respect to oak retention, the fact that 80% of the area is being harvested using uneven-aged silviculture and the fact that there are 67 acres of no harvest in areas heavy to oaks, it is probable that the overall residual stocking of oaks should be close to the BOF goals found in 14 CCR Sec. 959.15.

With respect to consideration of deer forage, the THP indicates that most of the plan area is in the range of the Railroad Flat deer herd and is designated by DFG as winter range and a small area of critical range. The area on the north side of the N. Fork of the Mokelumne River is in the range of the Salt Springs deer herd and is designated as critical range. The critical range area north of the Mokelumne has a large component of no harvest area and the remainder of the area is being logged with helicopter, which will have limited ground impact so that the vegetative component of the stand will remain for deer habitat and forage. Likewise, the majority of the area within the range of the Railroad Flat Deer Herd will be harvested using uneven-aged management. As noted, there are 13 clearcut units of about 20 acres in size widely scattered. These areas may be subject to herbicide use in order to control brush and weeds that would otherwise compete with planted conifers. Forage in these areas will be set back in development and will not be available for deer forage for a time. The herbicides do not eliminate all vegetative growth however and each pesticide used will only work of specific weed and brush species, with other species surviving. Additionally, the vegetative growth will only be set back for a time and each herbicide used has a particular "half-life" and a short time of effectiveness.

A letter was submitted to the THP file from DFG dated August 29, 2001 which indicated that the Railroad Flat deer herd had been declining for years, possibly as long as 30-40 years. Reasons for the decline were attributed to drought, residential and commercial development, and fire suppression efforts. The letter states, "The impacts of timber harvesting to deer are variable, but Department deer biologists feel that some timber practices, if done with proper consideration for wildlife needs, can actually benefit California's deer herds." The letter also states, "Our timber harvest review staff conduct desk reviews of all timber plans that we receive, and we currently conduct field reviews of 20-25 percent of these same plans. Desk and field reviews result in recommendations intended to protect and conserve aquatic and terrestrial resources, including deer, from adverse environmental impacts. These recommendations

include retention of oaks and other wildlife habitat attributes where appropriate.” (Curtis 2001) CAL FIRE notes that copies of this particular THP were sent to DFG for their review and input concerning not just deer, but all other species that might be adversely impacted by the proposed timber harvest operations.

Stated in the “Report to the Fish and Game Commission (California Department of Fish and Game 2001) is a finding that deer populations have declined greatly in the Central Sierra Nevada over the past five decades and that “*Openings of forests as a result of post World War II logging activities (Laudenslayer and Darr 1990) likely contributed to the final peak in deer numbers in the 1960’s. Deer numbers then began to decline as those forests began to “close” again. The relationship between understory forage (herbaceous and shrub) and overstory canopy is typical of much of California’s forested ranges – as canopy increases, forage decreases. The expansion of urbanization and residential development on private lands into the Sierra Nevada on both the West and East slopes further reduces available deer habitat, virtually eliminating the potential to purposely restore large-scale disturbances, such as fire, into the system in many areas. It’s well-documented that deer thrive on early successional vegetation in forested communities (Leopold 1950, Wallmo and Schoen 1981), and there is a period encompassing about 2-30 years following major disturbances such as fire or logging when herbaceous and shrub species are abundant, available, and in the highest quality. Livestock and perhaps hundreds of largely unstudied species of wildlife such as blue grouse or mountain quail, also rely on the vegetation produced in forest openings where sunlight is allowed to “hit the ground” and enable plants to grow and be available for consumption or as cover.*” (pg. 18)

Also stated in the report for the area known as DAU 5 - Central Sierra Nevada, which is the area of concern to the proposed THP, is that “*The main habitat issues affecting deer in the DAU are associated with forestry practices, lack of habitat disturbance that favors early successional communities, and overuse by livestock on key summer range habitats. Human development and encroachment onto private wildlands has been significant in many areas. Presence of this urban interface, adjacent to public lands, restricts options for use of fire to manipulate habitat, thereby resulting in declining early successional habitat.*” (pg 35)

It can be stated that there are only a couple kinds of disturbances that are practical and available to improve habitat for deer and other early successional wildlife on private forestlands in California. One of these is fire, both man-made and natural, and the other is harvesting or some other similar management technique. The report clearly indicates that disturbance from fire is increasingly difficult to achieve given rising populations in these areas of the Central Sierra Nevada. Even man-made fire has become increasingly difficult to accomplish due to political restrictions and objections to the addition of smoke and particulate into the air and given the sensitivity of the populous to breathing air infused with smoke and ash. CAL FIRE finds that opening up the canopy using silvicultural techniques that allow sunlight to reach the ground is still an economical and politically achievable way of increasing forage opportunities for deer and other early successional wildlife. Within the area of the project, there will be openings created which will allow for not only the establishment of a new generation of conifer seedlings, but also will encourage production of grass, herbs and forbs for deer foraging. While herbicides are expected to be used which would set-back or delay the development of these plant species, plants will not be eliminated by such use. There was determined to be an insignificant impact to the deer herd and recovery of the areas will be expected to be rapid, thereby returning cover to the affected areas so that any impacts would be temporary.

ISSUE #5: There was a concern about protection of listed plant species and questions about whether RPFs are qualified to do plant surveys. The concern stated that professional biologists should be doing the survey. There was further concern about protection of listed plants from herbicide use. Also, surveys in some cases are being proposed for later in the project cycle and this information is not available to the public prior to plan approval.

Response: CAL FIRE notes that RPFs typically have had training in botany. Trees and shrubs are a part of the plant community and foresters usually receive training in plant identification utilizing plant keys as part of their education leading to a B.S. degree. RPFs are certainly familiar with plant species that occur within a forested environment where they work and are familiar with the locations of the THP that they prepared and in all likelihood did most of the ground preparation of the plan and have walked all of the area and made observations with respect to plants existing in the area. For SPI in particular, this THP indicates training provided by Dr. Dean Taylor of the Jepsen Herbaria. The THP indicates the name of the RPF responsible for plant surveys and forms have been filled out to show the responsible RPF who performed the survey. Throughout, there was consultation with Dr. Dean Taylor where appropriate. Anyone submitting comments with respect to the bias of an RPF is perhaps not familiar with the licensing standards for an RPF nor is familiar with the disciplinary methods that are available under the law.

One comment mentioned several plants that were not included in the THP as having potential to be found in the vicinity of the THP area. Among these species identified, *Horkelia parryi*, *Mimulus pulchellus* and *Sphenopholis obtusata* are identified in the extensive plant list in the THP found on pgs. 117-128. The plan explains that either surveys will be done for the species or that the species was not further considered because either the habitat or the elevation range for each species was not consistent with the project location. Other species mentioned in the comment letter were not mentioned in the THP because they did not show up in the scoping work done during the development of the plan. As discussed in the THP on page 81, the plan utilizes data from the NDDDB and adds data from a contracting member of the Jepsen Herbaria in Berkeley, California to "scope" out the plant species that might be likely to occur in the area. Knowledge of the surrounding area is added in reviewing the THP along with added specific knowledge of the THP area from past submissions. This does not mean that there was no consideration of the plants not mentioned in the THP. For example, among the plants listed in the comment letter, the following would have escaped further consideration because the elevation range for the species did not match the location of the THP: *Arctostaphylos myrtifolia*, *Eryngium pinnatisectum*, and *Helianthemum suffrutescens* are all found at a lower elevation. (www.cnps.org) *Iris hartwegii* spp *columbiana* and *Allium tribracteatum* are not known from this particular location. (www.efloras.org), although there is an indication from the California Native Plant Society database (www.cnps.org) that the latter species does have habitat that would be within the inner gorge of the N. Fork of the Mokelumne, but would be in an area of the inner gorge that is not being proposed for harvest. Most collections of this plant species have come from Tuolumne County and several other locations and not from Calaveras County (www.efloras.org and cjeps.berkeley.edu).

Among the plants already surveyed during preparation of the THP were *Chlorogalum grandiflorum*, *Clarkia virgata*, *Mimulus inconspicuus*, *Mimulus laciniatus*, *Piperia colemanii* and *Lomatium stebbinsii*. These species were not found during the surveys. Surveys for several other species will be done during the appropriate flowering period. These are *Calochortus clavatus* var. *avius*, *Ceanothus fresnensis*, *Clarkia virgata*, *Mimulus inconspicuus* and *Mimulus laciniatus*. Also added were *Mimulus pulchellus*, *Cypripedium fasciculatum*, *Cypripedium montanum*, *Lillium humboldtii* ssp *humboldtii*, *Sphenopholis obtusata* and *Stellaria longifolia*. Intuitively, from examining the detail and attention

given in the THP to listed plants, it does not appear that the applicant has shirked their responsibility with respect to protection of plant species.

The comment from the public suggests that herbicide application to the location a found plant species would not be appropriate. However, an examination of the treatment specified by SPI in the THP shows that there would be no application to the plant by herbicide during the time that the plant would have a vegetative presence. The only herbicide application approved would be by a contact herbicide during a non-vegetative period. It is difficult to see how this would adversely impact the rare plant given that a contact herbicide, such as roundup, only works where the plant is present to take the herbicide into its vascular system. Where no plant is present, there is no opportunity for a contact herbicide to be introduced into the plant system and therefore, there is no impact to the plant.

Another comment suggested that the plant surveys should be done in advance of THP submittal. However, instructions to RPFs preparing THPs from CAL FIRE have indicated that there are two methods of satisfying the regulations with respect to surveys. One method, which was employed in this THP in part, is to perform the surveys during the pre-planning period, and specify mitigations to be done to protect any populations found. The other method, which was also employed in the THP in part, is to identify surveys that will be done prior to actual timber harvest, but to specify those protections in the THP that will be employed in the event that any of the species are actually found. The THP on pg. 19 identifies the process that will be taken in the event that any protected species are found during the appropriate survey period for the species.

In summary, the plan used a scoping technique to determine the most likely listed plant species that could be potentially found within the project area in consultation with Dr. Dean W. Taylor of the Jepsen Herbaria. The plan indicates those sensitive plant species that could potentially be located within the plan boundaries. The plan indicates protection for plants that may be found later prior to harvest operations. The plan shows that surveys were done for particular plant species in advance of submittal during the appropriate flowering period. There is no requirement in the Forest Practice regulations that a "certified botanist" be used to conduct surveys. The information certified by the RPF in the plan is subject to disciplinary action if it is not correct and supportable. CAL FIRE finds that the information provided in the THP provides the information necessary for CAL FIRE to make a determination concerning the potential environmental impacts of the project on sensitive plant species.

ISSUE #6: *There was a concern about the level of snag retention proposed in the THP.*

Response: The Forest Practice rules and regulations in 14 CCR Section 959.1 state that "within the logging area all snags shall be retained to provide wildlife habitat except as follows..." The exceptions include safety and fire hazard considerations or situations where snags are merchantable. With respect to clearcuts, it is often difficult to retain snags when considering safety because site preparation equipment would be working in close proximity to infirm snags and for this reason, snags may be selected for removal in these areas. Crews that come in after site preparation to perform artificial regeneration activities are also adversely impacted by infirm snags and the regulations allow for consideration of this activity as well. Additionally, where slash burning or broadcast burning is conducted, snags can be considered a hazard due to the potential for spread of fire. Therefore, the disposal of snags within

clearcuts would likely fall under the exceptions of the Forest Practice rules and would not constitute a violation of the law. There is certainly a consideration of liability if CAL FIRE or another agency required retention of snags in these areas in the absence of clear and enforceable snag retention standards in the Forest Practice regulations.

With respect to managed private industrial timberlands as a whole, there is a low level of mortality that is normal for these lands and therefore, snags are not as common in these areas as they might otherwise be in the general forest areas. The BOF has assembled numerous tools that are available for the timberland manager to use to keep mortality at a low level including the use of Exemptions to Timber Harvesting Plans and Emergency Notices in recognition of the legislative goals in the Forest Practice Act to provide for maximum production of high quality timber products. Trees are often harvested on these private timberlands as they decline in health and before they become dead snags and/or have the opportunity to spread insect or disease problems to the surrounding areas or ownerships. An analysis of the watershed area as a whole is needed, therefore, to insure that enough snags are present in unmanaged or publicly owned areas for wildlife needs.

Where even-age regeneration methods are being used, it is proper to analyze the snag retention situation in a larger area than just the logging area itself as it is likely that safety considerations are going to allow for removal of many snags within the logging area. In fact, Technical Addendum #2 of the BOF regulations state that the THP should consider the "...biological habitat condition of the THP and immediate surrounding area" with respect to snags/den trees. While there is no definition of "immediate surrounding area", CAL FIRE would take this to mean the area of the biological assessment wherein animals and birds, including raptors, which typically use snags are mobile enough to utilize snags that occur some distance away. CAL FIRE has found in the approval of the THP that the assessment area is mostly comprised of USFS lands where there is likely to be a higher level of snag retention. In fact, for this project area, SPI owns less than 50% of the biological assessment area. The federal agencies own 36% and PG&E owns 7%. The federal lands have generally been managed in a way that has resulted in excessive numbers of snags. While it is likely that fire hazard reduction type logging will be done on USFS lands, it is not likely that such logging will cover even a fraction of the assessment area. Snag numbers are therefore likely to continue to be plentiful within the assessment area that is largely comprised on USFS lands and also within wet areas and WLPZ areas. The THP on pg. 95 & 96 show the level of snags to be retained within the project area and the level found on SPI lands within the biological assessment area. These snags are shown by size classes of 11" dbh, 15" dbh and 24" dbh. While there are sufficient numbers of snags in the lower two size classes, there are insufficient numbers within the largest size class that are expected to be retained. Again, reference is made to safety and fire (broadcast burning and wildfire from lightning strikes on tall snags) concerns stated in the paragraphs above. However, when one looks at the large snag retention on SPI lands outside the current project within the biological assessment area, there are sufficient numbers of large snags per acre. There is also an observation that the USFS lands contain numerous snags within the biological assessment area. Given the extent of local knowledge of the area of the THP and the amount of USFS lands within the assessment area, and in the absence of known locations of listed species within or immediately adjacent to the project area, there is no substantial data indicating that there will be a significant adverse impact to wildlife species as a result of the treatment of snags as proposed in the plan and as specified in the Forest Practice regulations.

ISSUE #7: *There was a concern that the issue of noise from helicopter yarding or trucks was not adequately addressed in the THP. There was a concern over the use of logging trucks that might constitute an adverse increase in traffic.*

Response: The analysis with respect to this concern should be focused on who would be impacted by the noise from the project. As such the THP indicates the potential environmental impact to recreation use. The assessment area for recreation is stated to be within 300' of the plan boundary. Within this boundary, SPI allows limited access for fishing, hiking and other transitory uses. Therefore, there will not be a large number of persons exposed to any noise created by the timber operation from a recreation point of view. With respect to the noise of a helicopter, in an environment where sound can travel a long distance, the THP shows the location of the helicopter landing as being in the southwest corner of Sec. 16 and high up on a ridge above the area that will be helicopter logged. Flights from this location will be downhill into the inner gorge of the N. Fork of the Mokelumne River and back up onto the hilltop landing. It is certain that the machines used in this type of yarding activity are very large and do make quite a bit of noise. However, subdivisions to the south of the project area are largely protected by topography as the craft will be flying down into a canyon area and back up and sound will largely be screened by the mass of the mountainside. These helicopters make a "turn" in just a few minutes time, so that the noise will not be constant and will change tone and intensity as heard from any one point around the project area.

It is likely that the sound will be much more noticeable on the Amador County side, but as noted elsewhere in the Official Response and in the THP, that area is more than three miles distant. The sound would be somewhat reduced in intensity just by the distances involved. Anyone traveling in a vehicle on Highway 88, where most of the population would be expected to be, would only hear helicopter activity for a few minutes at highway speed. Sound would be expected to be screened by the noise of a car traveling on a road, excessive distance to the sound, and standing trees in the buffer area along Highway 88. Anyone using the river corridor for boating or fishing would most likely be impacted by noise as this area is immediately under the flight path of this equipment. However, there is not expected to be a large number of persons in this location as access is not convenient. There could also be somewhat of a tradeoff since a helicopter yarding operation can be interesting to observe. Use of a helicopter in yarding activities would be expected to be of a short duration as the equipment is extremely expensive to hire for this use. Use of this type of equipment is carefully planned to be efficient and rapid in order to maximize its effectiveness and economy. Therefore, any adverse impact from noise can be expected to be short term.

Noise from trucks can also create a disturbance to residences since they frequently arrive very early in the a.m. to line up at landings awaiting a load of logs to be hauled to the lumber mill. These trucks are unloaded when they arrive at this early hour, and thus are traveling at a faster speed so that the noise goes by quickly. There is typically no more than 8 to 12 trucks arriving at any one THP landing on any one morning and maybe another 8 to 12 later in the afternoon. However, this can still be disturbing along the route traveled. CAL FIRE notes that the THP does not really represent an increase in ambient noise levels, however, but is rather a continuation of a long-standing use of logging truck traffic going back for decades in this location. Analysis of truck use, including noise and traffic impacts from logging trucks, falls under the cumulative effects analysis of vehicular traffic impacts in BOF Technical Rule Addendum No. 2. The rule states that the RPF should "*Identify whether any publicly owned roads will be used for transport of wool products. Identify any public roads that have not been used recently for the transport of wood products and will be used to transport wood products from the proposed timber harvest. Identify*

any public roads that have existing traffic or maintenance problems. Identify how the logging vehicles used in the timber operation will change the amount of traffic on public roads, especially during heavy traffic conditions.” In the THP, the RPF identified that the timber harvest represents a continuation of past practices with respect to vehicular use. This is consistent with the analysis of cumulative vehicular traffic impacts required by the BOF in the rule addendum. As such, this project does not actually represent a change in ambient noise levels or traffic impacts and is not therefore a substantial or potentially substantial physical adverse change in the area affected by the project pursuant to the definition of a significant adverse impact on the environment. (14 CCR Sec. 895.1)

West of Highway 49, commute routes to central valley population centers would not be expected to be adversely impacted from the timber operation. Routes from the project area to the lumber mill will primarily be from Highway 49 north to Highway 50 and then to the SPI mill in Camino. Some trucks may go south on Highway 49 to the mill in Standard which is still accepting large logs only. Any logging trucks coming from the central valley to the project site would likely be going in the opposite direction during commute times as would commuters traveling from the mountains to the central valley.

ISSUE #8: *There was a concern that the THP failed to provide for adequate surveys for listed wildlife species, specifically mentioned were California spotted owl, furbearers, Red & Yellow-Legged Frog and Northern Goshawk and other raptors including Peregrine Falcon. The plan noted a Cooper's Hawk nest and there was a concern about protection.*

Response: RPFs and their designees typically have had training in recognizing wildlife species that occur within a forested environment and are, at the very least, familiar with the locations of the THP that they prepared and in all likelihood did most of the ground preparation of the plan and have walked all of the area and made observations with respect to wildlife living in the area. The Forest Practice regulations contain strict requirements for surveys of Northern Spotted Owl (NSO) in 14 CCR Sec. 939.9 and a requirement that a “state employed biologist designated by DFG” be used to perform the survey for this species. It can be inferred from the BOF requirements for a state employed biologist to be involved in NSO surveys in the absence of any like requirements for surveys of other wildlife species, which the BOF must have intended to allow non-specialists to do the surveys for other forest species. As such, the regulations do not have any specific requirement or qualification the type of person to be designated to perform surveys for California spotted owl, Mountain Yellow-Legged Frog, Red Legged Frog, Foothill Yellow-Legged Frog, Sierra Nevada red fox, Pacific Fisher, Pine Marten, Northern Goshawk, Cooper's Hawk, Peregrine Falcon or any number of other wildlife species other than that the person who prepares a THP must be an RPF or be supervised by an RPF. The plan demonstrates the scoping method used to determine which species would be likely to occur within or adjacent to the project area and shows that surveys were conducted by field personnel supervised by an RPF familiar with the project area in the method consistent with the intent of the BOF in the Forest Practice regulations. It is noted, however, that the plan applicant employs a wildlife biologist on staff and that the biologist was involved in some of the survey work in preparation of the plan as is stated in the THP.

Additionally, a PHI was required for the plan and a CAL FIRE forester familiar with wildlife in the area has also been on the ground making observations. The plan utilizes data from the NDDDB and adds data from the SPI wildlife database to “scope” out the wildlife species that might be likely to occur in the area. CAL FIRE added local knowledge of the surrounding area in reviewing the THP. A copy of the plan was sent to DFG for their review and biological input as a part of the Interagency Review Team

process. The plan specifies measures to be taken to further survey for the species during the active breeding period in compliance with the Migratory Bird Treaty Act. The plan also contains measures that will be taken in the event that these species are found as a result of future surveys. Instructions from the CAL FIRE Director have indicated approval of two different methods of surveying for special status species. One method would suggest that surveys would be done in advance of the preparation and submittal of a THP. This method is particularly appropriate for relatively small plans where timber operations would be conducted almost immediately upon approval of the plan.

Another method approved would be to conduct the survey at a time much closer to the actual conduct of timber operations, but to have the THP list the measures that would be taken in the event that listed species would be discovered. In the case of these SPI plans, it may take anywhere from one to three or even five years if an extension were granted before timber operations would be conducted in a particular area of the plan. Given the mobility of some species, including raptors which are known to use alternative nesting sites with frequency, it would appear to be logical for one to survey the area at a time closer to the actual conduct of timber operations in the particular area.

The plan contains statements that such surveys will be taken during appropriate survey seasons in advance of said timber operations and contains measures that will be taken to address protection of species habitat in the event that sensitive species are detected. There is no requirement in the Forest Practice regulations that a "certified biologist" be used to conduct surveys although the information certified by the RPF in the plan is subject to disciplinary action if it is not correct and supportable.

Regarding protection of furbearers, mammal species of concern were considered by the Department during the review of the THP. One of these was the Sierra Red Fox. However, using the scoping process described later in this Official Response, it does not appear likely that this project would have a potential for a significant adverse impact on the species. That is because some literature describes the range of the species to be between 3,900' and 11,900' in the Sierra, but primarily above 6,000', where it could be present given the elevation of the project area. The species seems to prefer forested areas interspersed with open areas and a wide variety of habitats from alpine shrub, wet meadow, sub alpine conifer, montane chaparral and mixed conifer. The species eats small mammals like squirrels, gophers and rabbits and dens in rocks, hollow logs and stumps or burrows in the ground. Overgrazing in meadows has been described as the primary reason for decline. Additionally, the animal has a large home range from 900 acres to 8000 acres in size, so is able to search out preferred habitat over a large area. (Univ of NV, Reno) For this project area, it is noted that there will still be a variety of habitats as in the description of the preferred habitat for the species, with forested areas interspersed with open areas. The area actually harvested may add to the primary food supply as gophers, rabbits and squirrels are typical invaders that seem to do well in clearings, especially when planted with seedlings. The harvested area would also be expected to contain stumps, hollow logs and areas of rock and ground suitable for denning for the species.

Another species considered was the Pine Marten, and this species is described in some of the literature as being more common above 7,000 feet. (Storer and Usinger, 1974). The animal has been known to travel up to 15 miles a day in search of food, so it can cover a wide variety of areas and habitats. (Ingels, 1965). It eats grasshoppers, birds, ground squirrels and chipmunks, all of which could be expected to do well in the logged areas. It seeks shelter in tree cavities and rocks, both of which would still be present either on the project area in WLPZ retention areas or in the intervening unlogged units.

CAL FIRE conducted an expanded search of the literature to determine independently if there was a

potential of a significant adverse impact to Pacific Fisher. Some of the information from the literature search including the information supplied by the RPF in the THP is as follows:

Baseline information is provided in the publication; California's Wildlife, Volume III, Mammals (1990) and identifies the following habitat requirements for the Fisher:

Feeding: An opportunistic feeder, the Fisher feeds on rabbits, hares, mice, porcupines, squirrels, mountain beavers, shrews, birds, fruits and carrion. They acquire their food by pouncing, chasing or digging.

Cover: The Fisher utilizes snags, logs, brush piles, slash, rock and cavities in large trees. Mature stands of dense trees are also utilized and provide cover, particularly within the winter period.

Reproduction: The fisher utilizes a variety of denning locations including protected cavities, brush piles, logs, and even upturned trees. Hollow logs, trees and snags are the most important.

Pattern: Suitable habitat is generally classified as areas of mature, dense forest stands with snags and greater than 50% canopy closure.

- While researchers have found significant fisher populations in the southern Sierra Nevada, they have been unable to detect fishers north of Yosemite National Park (Graber 1996).
- Elevation gradients are much steeper in the central and northern Sierra Nevada than in the southern Sierra Nevada fisher study area (Hubbard Scientific 1993).
- Steep elevation gradients cause a narrowing of the area of conifer forest that is free of relatively deep snow pack in the winter.
- The fisher, as a species, is known to avoid areas that contain consistent, stable and relatively deep winter snow pack (Powell and Zielinski 1994, Krohn et al. 1997, Krohn et al 2000).
- The combination of steep gradients in the central and northern Sierra Nevada coupled with the fisher's avoidance of areas of deep snow effectively reduces the amount of potential habitat for Pacific fisher in some areas between Yosemite to the California Cascades to about the size of a fisher's home range.
- Most of the area inventoried for fisher in the Sierra Nevada has been outside the conifer area that is relatively free of winter snow pack, (Zielinski et al. 1997) so it is not surprising that the detection effort has failed.
- No differences have been measured in the number of large trees available in areas of the Sierra Nevada that are known to support fisher populations and those areas of the Sierra Nevada where researchers have been unable to detect fisher (USDA 2000).
- Pacific fisher natal and maternal den trees in California averaged 33.1" in dbh plus or minus 16.3" at one standard deviation (Truex et al, 1998) Pacific fisher rest trees on National Forest land in the Southern Sierra Nevada average about 27 inches DBH and occur most often in stands of small sawtimber (trees less than 24" dbh) (Zielinski et al. 1996).
- Pacific fisher rest trees on private forest land in the Klamath province averaged 31" in dbh +/- 13 inches at one standard deviation (Self and Kerns 1995).

The majority of rest trees of Pacific fisher on private forest land in the Klamath province occurs in small areas with quadratic mean diameters (QMDs) greater than or equal to 10" DBH, with canopy closures exceeding 60% (Self and Kerns 1995). SPI has asserted in past THPs that the tree sizes described above are common on SPI's private forest land, currently averaging 18.90 per acre and are expected to increase in both amount and distribution over time as a result of proposed SPI management practices. Stand conditions used for resting by Pacific fisher occur throughout SPI's private forest land and are projected to increase in

amount and distribution in the future under SPI management practices. Additionally the RPF states that, *“Since it forages in a wide array of habitats including its rest tree habitats, its’ foraging habitat will always remain available under SPI’s management.”*

Analysis of terrestrial habitat within the THP also serves to evaluate the potential habitat pre- and post harvest, although not specific to Pacific fisher. Terrestrial habitats considered include hardwood cover, presence of snags/dens/nest trees, amount of large woody debris, presence of multi-story canopy, road density, presence of late seral characteristics and late seral stage forests. The RPF discusses these elements within the THP and has determined that the operations as proposed will not significantly affect these elements within the assessment area.

A recent report by the USFWS (2004) is found in the Federal Register, Vol. 69, No. 68, Thursday, April 8, 2004, which is data developed in response to a petition to have the Pacific Fisher listed as an endangered species. The Pacific Fisher was not listed, as is outlined in the report. Some of the information from this recent review as follows:

- There have been no good population estimates for fisher populations in California....so it is unknown precisely how many fishers exist. Estimates of fisher abundance and vital rates... are very difficult to obtain (Douglas and Strickland 1987) and may vary widely based on habitat composition and prey availability (York 1996).
- Fishers have large home ranges and male home ranges are considerably larger than those of females (Buck et al. 1983; Truex et al. 1998). Fisher home range sizes across North America vary from 3,954 to 30,147 acres for males and from 988 to 13,096 for females (Powell and Zielinski 1994; Lewis and Stinson 1998) However, Beyer and Golightly (1996) reported that male home ranges in northern California may be as large as 31,629 ac.
- According to Seglund (1995), riparian areas are important to fishers because they provide important rest site elements, such as broken tops, snags and coarse woody debris.
- The key aspects of fisher habitat are best expressed in forest stands with late-successional characteristics. Fishers use habitat with high canopy closure, large trees and snags, large woody debris, large hardwoods, multiple canopy layers, and avoidance of areas lacking overhead canopy cover (Aubry and Houston 1992; Buskirk and Powell 1994; Buck et al 1994; Seglund 1995; Klug 1996; Dark 1997; Truex et al. 1998; Mazzoni 2002; Weir and Harestad 2003; Zielinski et al. In press 2003b, in press 2003a)..... However, intensive management for fiber production on industrial timberlands does not typically provide for retention of these elements. It is unlikely that early and mid-successional forestry, especially those that have resulted from timber harvest, will provide the same prey resources, rest sites and den sites as more mature forests (Zielinski and Powell 1994).
- While the Forest Practice Regulations may incidentally protect some habitat or habitat elements used by the fisher, the rules do not require fisher surveys, protection of fisher or fisher den sites, or a mechanism for identifying individual or cumulative impacts to the fisher or its habitat. The California FPRs provide specific enforceable protections for species listed as threatened or endangered under CESA or the ESA, and for species identified by the BOF as sensitive species; however, the fisher is not currently on any of these lists.

The area does not contain the late seral stage habitat elements that are said to be the most desirable habitat. There appears to be nothing in the Federal documents that would lead to a conclusion that private land management activities of the type described in this THP would lead to a finding of a significant adverse impact on the fisher or its habitat. In fact, in their planning efforts, the federal government seems to assume that private lands will contribute nothing toward preserving fisher habitat or the species viability. (USDI,

2001)

Based upon the available information, including information available from federal studies, the long term impact of SPI's management practices throughout the Sierra will be to increase the habitat of species utilizing dense forests with a large tree component such as the Pacific fisher and California spotted owl. It is noted that SPI's forests are already in a managed condition given a hundred years of past harvesting activity by numerous previous landowners. Past selective logging has had an adverse effect on tree size and conifer volume per acre. These conditions will gradually be reversed over the next planning horizon by an increase in average tree size and volumes per acre.

Future projects were considered within the assessment area to the extent that they are known as reasonably foreseeable probable future projects and given the long term strategy of continued even-aged management as expressed by SPI in its Option "a" document. However, it must be stated that many factors can come into play to alter the course of future management and that some of these are natural events, such as fires or insect or disease in the timber stand, but perhaps just as important are unknown future political events such as legislation, initiatives or regulations, that could cause alterations in forest management. For that reason, currently unknown future projects will have to be re-evaluated at the time of plan submission and cumulative impact issues with respect to the Pacific fisher and other species.

Large trees will likely continue to be found on USFS and other federal lands which comprise about half of the biological assessment area. There does not appear to be a lack of habitat for the needs of the species at this time. Pursuant to the rules of the BOF, the Pacific Fisher is not a "listed species" in the definition of 14 CCR Sec. 895.1. Therefore, the level of protection in the regulations exists in the language of protection for non-listed species found in 14 CCR Sec. 959.4, which states that "*where significant adverse impacts to non-listed species are identified, the RPF and Director shall incorporate feasible practices to reduce the impacts as described...*"

The THP notes the possible presence of a Cooper's Hawk. Protection for any nest site is covered in the THP. This raptor is not a listed species, but the Migratory Bird Treaty Act would provide legal protection for a nesting bird. Additionally, the nest tree and screen trees are protected as described in the THP. The THP notes the possible location of a Northern Goshawk. This raptor does have protection under the law and in the FPA. DFG was consulted to develop protections for Northern Goshawk. Each tree that has a potential nest has been marked as a wildlife tree and will not be felled. Each tree was given a 100' radius buffer and these buffers were combined into one no-harvest area of about 7 acres. The area surrounding the buffer will be selectively harvested and will not drop canopy closure below 60% within 500' of the assumed nest. If the assumed nest is occupied, then the following shall occur within 400' of the nest: the road can be used as a haul route after June 1st; log haul trucks shall use a low rate of speed of less than 15 mph and shall not use Jake brakes or horns; trucks shall not stop in the area; the occupied nest shall be monitored prior to and/or during the first day of operations to make sure there is no agitation to the birds; a test vehicle will be used to gauge the level of agitation. If a different tree is being used for nesting, consultation with DFG shall reoccur to determine the protection measures needed.

Regarding protection for the California Spotted Owl (CSO), CAL FIRE notes that the THP does list several past recorded occurrences for the species, but that recent surveys have come up negative with respect to the presence of the bird. With respect to the silvicultural impacts of the plan on any population of CSO, clearcutting areas for this THP have been applied utilizing the limitations as per 14 CCR 953.1(a):

(1) Where a regeneration step harvest of even-aged management will occur on stands younger than 50 years