California's Forest Practices and Environmental Quality

Response to California State Senate Natural Resources Committee Report on Forest Policy Alternatives; and the California State Senate Office of Research Report on Timber Harvesting and Water Quality

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- United Brotherhood of Carpenters and Joiners of America
- Western Council of Industrial Workers
- Woodworkers IAM District 1

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List of Acronyms and Abbreviations

ATF	American Tree Farm System
bbf	Billion Board Feet
BMP	Best Management Practices
BMPS	Best Management Practices Subcommittee
BOFFP	Board of Forestry and Fire Protection
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CIA	Cumulative Impacts Assessment
CGS	California Geologic Survey
CDFFP	California Department of Forestry and Fire Protection
EPA	U.S. Environmental Protection Agency
ESA	Federal Endangered Species Act
FPA	Z'Berg-Nejedly Forest Practice Act
FRRAP	Forest Resources and Rangeland Assessment Program
FSC	Forestry Stewardship Council
FPR	Forest Practice Regulations
HCP	Habitat Conservation Plan
HMP	Hillslope Monitoring Program
LWD	Large Woody Debris
LTO	Licensed timber Operator
MAP	Monitoring and Assessment Plan
mmbf	Million Board Feet
MRT	Multi-Disciplinary Review Team
MSG	Monitoring Study Group
MSP	Maximum Sustained Production
NIPF	Non-Industrial Private Forest-Landowner
NOI	Notice of Intent
NMFS	National Marine Fisheries Service
PHI	Pre-harvest Inspection
RPF	Registered Professional Forester
SBE	State Board of Equalization
SDR	Sediment Delivery Ratio
STC	Simpson Timber Company
SWRCB	State Water Resources Control Board
SFI	Sustainable Forestry Initiative
SYP	Sustained Yield Plans
T&E	Threatened and Endangered
THP	Timber Harvest Plan
TPZ	Timber Production Zone
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service
WLPZ	Watercourse and Lake Protection Zone

Author's Background and Qualifications

The author has a Ph.D. in forest engineering and hydrology from Oregon State University. He has been a forestry consultant since 1975 and holds a California Registered Professional Foresters (RPF) License 911. He was a professor at Humboldt State University for almost 30 years and was the lead and primary faculty member with expertise in forest operations, forest practice regulations and policy, and professional forester responsibilities. He has been an *Emeritus Faculty* since 2000.

Carl Yee has been involved with developing rules for forest operations since 1978. Besides a Ph.D. in this area, he has more than 30 years of research experience in the area of forest operations, water quality, fishery habitat and soil erosion processes and mitigation. He is also a co-author of the chapter concerning road construction and maintenance (chapter 8) in the compendium, *Forest Influences of forest and rangeland management on salmonid fishes and their habitats. Special Publication 19.* American Fisheries Society. (Furniss *et al*, 1991). In addition, he was one of two technical advisors to the Best Management Subcommittee (BMPS) of the Board of Forestry (BOFFP) from 1978 to 1980, which resulted in the first revision to soil erosion, watercourse and lake protection, and other forest practice regulations.

From 1983 to 1991, he served as chair and vice-chair of the State Board of Forestry. He was also chair of the Forest Practices Committee and headed up negotiations with the State Water Resources Control Board (SWRCB) towards BMP certification of the Forest Practice Rules. He also led efforts to institute the first joint monitoring efforts of the Calif. Department of Forestry and State Water Board, the Monitoring and Assessment Plan and the "208 Study." These monitoring efforts continue to this date as the Hillslope Monitoring Program.

Prof. Yee presented classes to RPFs at both the CDFFP Academy in Ione, California, and to workshops of the California Licensed Foresters Association in the subject areas of road design and construction, harvesting methods, erosion control and mitigation and hydrology.

The author is also the expert examiner for the Calif. Professional Forester Examining Committee, the group that examines and disciplines RPFs in the state. Dr. Yee provides forest management expertise in California, Oregon and Washington. His consulting expertise includes forest operations, logging systems, watershed effects from logging and the mitigation of those effects and he provides both direct on-the-ground expertise, expert witness advice and testimony. Carl Yee continues to serve as the logging and roads expert on forest sustainability auditing teams for several major auditing firms. He is currently the Chair of his county's Soil and Water Conservation District.

Executive Summary

As of March 2003, the California State Senate Committee on Natural Resources and Wildlife is considering timber reform proposals. Two papers have been supplied to the committee: a report crafted by the committee's staff - Report on Forestry Policy Alternatives, referred hereafter as the Senate Resources Report, and a report prepared by the Senate Office of Research - Timber Harvesting and Water Quality, hereafter referred to as the Senate Research Report.

Both reports, propose solutions based on allegations and assumed problems in the forests of California. All of these allegations have little or no evidence to support the purported problems. Both reports do not give a full and objective representation as to the condition of the forests or the state of forest practice regulations in California, their efficacy, or the condition of the resources on California's private forestlands.

California forest landowners are operating under the toughest set of FPRs in the world and have regulatory costs that greatly exceed their neighboring states to the north. Global competition and restrictions of operations in California, both on federal and private lands, have California importing 80% of its wood needs from outside the state. The private timberlands are currently supplying about 92% of the annual cut in California as of 2001. The annual cut on federal forestlands is down more than 90% and the private forestland annual cut is decreasing. Logging costs in California exceeds Oregon and Washington landowners' costs by about 80-90%. Harvest planning and other overhead costs are from 40-50% higher than in these two states. The reductions of harvest on private lands can be attributed to increasing regulatory burdens that have increased costs, slowed permit approvals, and increased the complexity of planning. As costs associated with regulation of timber harvest becomes prohibitive in California, many landowners are pursuing other uses of their forestlands including conversion to residential and commercial development, and non-forest related agriculture commodities.

This report presents a literature review, actual field results and a summary which focuses on the issues raised in both reports. The findings are:

1. The harvesting of timber in California is a significant element of the state's overall economy. Indeed, in many areas of the state, timber harvesting and forest management are the predominant economic activities. Issues raised by the Senate Resources Report are without scientific justification and will lead to severe and adverse economic effects on both forest landowners and timber-dependent communities. Just two of the legislative proposals raised in this report (old-growth harvest ban and even-aged harvest restrictions) **could result in a loss of 5,745 timber and mill jobs in the long-term, with additional regional impacts on indirect unemployment of 10,700 rural community jobs, and a reduction of estimated tax collections of more than $15 million.** The total cumulative cost of these proposals could be in the billions of dollars. The cumulative effect of these proposals will lead to more California forestry concerns disinvesting, and to further economic decline in many of the timber-dependent rural counties of California.

2. California is growing significantly more timber than it is harvesting and sustained yield is a fact of life. Private forests are increasing about 170% faster than we are cutting them and the growth-over-harvest rate is increasing. Standing volume is increasing and predicted to increase at a faster rate in the next decades. Private timberland owners are supplying more than 92% of the state's annual cut in 2001.

3. The cost and difficulty of conducting a forestry business in California has increased to the point that some companies are curtailing future investments or disinvesting in the state. In addition to a lack of further business investments into California's forests

and forest industrial base, the danger of forestry disinvestment through subdivision and rural development of today's private timberlands cannot be discounted.

4. Old growth forest logging is not a problem on California's private timberlands. In fact, forest stands that are old growth or structurally mimic old growth are increasing on private lands. California has more old growth in protected status than any other state, except for Alaska. All major forest types are represented in the 2.7 million acres of current old growth. Future stand changes on both publicly owned and privately owned lands will increase the amount of forests that are old growth.

5. Clearcutting is a valid forestry management tool, is not being over-used or abused in California, and is adequately controlled and reviewed by timber harvesting plan (THP) review and approval process and the Forest Practice Rules (FPRs). Clearcutting amounts to only 7.1% of the acreage cut in the last decade.

6. The California Forest Practices Act protects water quality through harvest planning, environmental analysis, regulation, enforcement, research and monitoring. Research has demonstrated that logging-related erosion is only about 2% of the total erosion on a typical acre in northwestern California.

7. The California Forest Practices Act protects aquatic and terrestrial threatened and endangered species (T&E). Prime examples are protection of coho habitat through recent FPR additions, and documented implementation in the field, and the success with spotted owls. On one company's land in Humboldt and Del Norte counties alone there are 1,064 owls on or near their properties, which may be the greatest concentration of owls known to exist on managed timberlands anywhere. With the owls on other ownerships in these two counties there are nearly as many owls in just two counties as were thought to be in all of California in 1990.

8. California forest practices are protecting environmental quality and have adapted to meet new needs and requirements. Since the passage of the 1973 Z'Berg-Nejedly Forest Practice Act, there have been over 16 significant rule packages adopted addressing water quality issues alone, most having to do with erosion, logging methods, road construction and watercourse protection.

Introduction

As of March 2003, the California State Senate Committee on Natural Resources and Wildlife is considering timber reform proposals. Two papers have been supplied to the committee: a report crafted by the committee's staff – Report on Forestry Policy Alternatives – referred hereafter as the Senate Resources Report (Craven, 2003), and a report prepared by the Senate Office of Research – Timber Harvesting and Water Quality – hereafter referred to as the Senate Research Report (Wiley, 2002).

Both reports propose solutions based on allegations and assumed problems in the forests of California. Some of these allegations have little or no evidence to support the purported problems. Both reports do not give a full and objective representation as to the state of forest practice regulations in California, their efficacy, or the condition of the resources on California's private forestlands.

This paper will present current research data and fieldwork to demonstrate that California forest practices are protecting environmental quality.

California Forestry's Accomplishments Since 1973

1. <u>California is growing significantly more timber than it is harvesting</u>

California is approximately 100 million acres in size and approximately 40% is forestlands of any stripe – commercial, noncommercial, public, available for harvesting, etc. From those 40 million acres, approximately 16.7 million acres are privately owned and available for harvesting. Of that acreage, about 4.5 million acres are in industrial ownership and the remaining 12.2 million acres are in private, non-industrial type ownerships (CDFFP, 1988). With the marked decline of federal timber harvesting, the great majority of California's timber harvest comes from this 16% of the state.

According to the USDA Forest Service's (USFS) research branch, growth of timber on private lands in California is approximately 2.55 billion board feet (bbf) per year (Smith *et al*, 2002). This is for 1997, the last complete year for which the USFS compiled and reported on. Standing inventory on these lands is approximately 93.4 bbf and has been increasing since the 1970s decade. A review of the same data indicates a pattern of increasing growth on California's private land. This can be explained since much of the young growth forests are now passing 25-30 years in age, a point where incremental volume growth reaches a maximum for most conifer species found in California.

According to California Yield Tax Records from the State Board of Equalization (SBE), annual timber harvests averaged only slightly more than 2 bbf on these lands for the period from 1980 to 2000. A trend analysis of the last 30 years indicates that harvest rates on private lands have been decreasing. For example in 2000, the harvest was about 1.7 bbf and in 2001, the harvest was slightly more than 1.4 bbf (Appendix A). (It is interesting to note that federal timber harvests added only 0.26 bbf to the 2000 total harvest in California.) With a statewide lumber demand estimated by CDFFP at more than 10 bbf, California currently imports about 80% of its wood. As recently as 1990, the import rate was under 50%.

Assuming a 93.4 bbf standing volume and cut rate equal to 2001's, 1.4 bbf, it is apparent that the cut amounts to about 1.67% a year. (At that rate, it would take about 60 years to rotate

through a large private forest ownership.) With a growth rate of about 2.55 bbf, the standing volume on private lands is increasing at 2.7% a year. In other words, private forests are increasing about 170% faster than we are cutting them and the growth-over-harvest rate is increasing.

Compare those documented facts with the Senate Resources Report which alleges, “In a trend that is still continuing, California harvests far more timber than its forests replace and, as a consequence, the amount of harvestable timber available today has declined precipitously.” (p. 5, 6). With just a modicum of research, the author of this statement could have discovered that this is and has not been the case for at least five decades or more. No matter whether he was talking about the state’s forests as a whole (including both public and private forests) or only forests available for harvesting (excluding parks and other reserves, including USFS withdrawn and dedicated acreages), or only privately owned forests, this statement is patently false. Since the Senate Resources Report fails to specify what land base this statement refers to, I will assume that this sustained yield discussion centers around the privately owned forest lands as the basis for comparison since the State of California only has regulatory purview over these lands.

In addition, the Senate Resources Report notes the decrease in annual harvest and attributes the resulting job loss to over-harvesting (p.5). This allegation is also patently wrong as the data given above and below demonstrates. The most significant cause of the loss of jobs in logging and milling in the rural counties has been the crash of federal timber sales by about 90% from historic levels (see Appendix A). The reductions in the harvest on private lands, previously noted, can be attributed to increasing regulatory burdens which have increased costs, slowed permit approvals, and increased the complexity of planning.

As a professional consulting forester, I practice in Oregon and Washington, as well as California. I am intimately familiar with the harvest permitting process in all three states. It is my professional experience that the costs to harvest timber in California exceeds Oregon and Washington landowners’ costs by about 80-90%. Harvest planning and other overhead costs are 40-50% higher. The reason is that in California we are required to build in more environmental protections, are continually limiting the land base and timber we can operate on, and must hire more RPFs and other staff to plan, implement, monitor and investigate the impacts on public trust resources. A few examples to demonstrate the differences are:

- In Oregon, the harvesting permit is not a discretionary permit and for most operations a simple two-page notice of intent is all that is required. A complex permit application might run 15 pages.
- Rules are performance-based rather than prescriptive-based, allowing for more flexibility, innovation and professional judgment.
- Surveying for Threatened and Endangered Species is much simpler, if required at all.
- Archaeologic surveys are not normally required.
- Cut units may be considerably larger in both Oregon and Washington
- Cumulative effects need not be analyzed in Oregon to harvest timber.

These are a few differences to demonstrate why California is at a cost disadvantage to its northern competitors. In short, California timber landowners’ must pay these increased costs with a corresponding reduction in profits since they have no pricing power to pass these costs on in a commodity driven global market.

The continuing trend towards more regulations and more restrictions on harvesting and land use will eventually lead to disinvestment within the forest industry in California. As an example, a century-old Sierra Nevada-based company that owns 103,000 acres of timberlands including a 10,000-acre swath of Mendocino County redwoods has announced that it will no longer make further investments in California. It is ranked among the state's most respected

timber companies. Recently the company announced it would make a multi-million dollar forestry investment in New Zealand rather than California.

In the 1980s, New Zealand ended 60 years of government ownership of a vast system of commercial timber plantations that was originally established to halt depletion of the country's indigenous forests. The government plantations were sold to private investors, whose practices are now monitored by the New Zealand Ministry of Forestry. In New Zealand, government regulators judge timber companies "on the merits" of their operations, instead of relying on "prescriptive" measures favored in California to address environmental concerns.

The company's president stated that it's multimillion-dollar commitment in New Zealand marks an end to four decades of investment and expansion in California. Given the state's current and increasing political regulatory and environmental climate, he said, "One conclusion is inescapable: it is no longer prudent to make forestry investments in California." (*Press Democrat*, 2003 [Feb. 8]). This opinion has also been expressed by several of my Oregon and Washington consulting clients when I acquainted them with possible forestry investment opportunities in California.

In addition to a lack of further business investments into California's forests and forest industrial base, the danger of forestry disinvestment through subdivision and rural development of what are today's industrial timberlands cannot be discounted. All of the large forest ownerships are made up of many tax parcels that remain unmerged by California law (Map Subdivision Act). Previous court cases have basically ruled that "once a parcel, always a parcel," and minor subdivisions which do not require an environmental analysis can occur on a legal parcel. Thus, a larger forest ownership, made up of perhaps several hundred original parcels, could see each parcel sold off and from there a four-way subdivision could occur.

2. <u>Old growth forest logging is not a problem in California</u>

A definition of old growth forests must go beyond the average age of the forest under discussion. Old growth forests are not characterized solely by tree age or size (i.e. big and old), but more completely by structural features, such as by tree size, seral state, numbers of live trees and snags, canopy conditions, and other characteristics (Society of American Foresters, 1998). There are other definitions, but whatever definition is used, a study of the facts will show that the logging of old growth forest in California is not a problem in need of a solution.

According to CDFFP, California has approximately 2.7 million acres of old growth forests using the "big and old" definition, with 97% of it in public ownership and only 3% existing on private lands – 2% on NIPFs and 1% on industrial land. About 92,000 acres of old growth, in all forest types in California, exist of private forestlands, out of a total of 16.8 million acres of private forestland (Appendix G).

On industrial forestlands, almost all the old growth has already been placed in public ownership or was logged long ago. What remains is either being preserved for habitat purposes, in structural reserves such as stream buffers, or for aesthetic, the owner's desires and other reasons. In fact, more acres of old growth exist on non-industrial ownerships than on industrial ownerships and are retained mostly because these owners desire to do so. In most cases, whether on industrial or non-industrial timberlands, what is left in old growth is not ecologically significant because of fragmentation and isolation. Therefore, from a harvesting standpoint, old growth logging of "big and old stands" is not a significant environmental factor today. In fact, the SBE no longer even has a category for old growth logs in its Yield Tax reporting, as it had as recently as five years ago.

On the other hand, a further examination of available data shows that using a structural definition of old growth, rather than just age and size, California is increasing forests which have old growth functionality (i.e. young or medium aged and big). California has had, for almost a

decade now, FPR regulations that require the maintenance of some late seral stage forests across ownerships. In particular, these landowners are required to assess how their harvesting of late seral stands will maintain functional wildlife habitat. According to CDDFP Director Andrea Tuttle, the agency has received almost no THPs that propose to reduce late seral stands below the Wildlife Habitat Relationship class they are currently in (Tuttle, 2003). In other words, there has been no degradation in amount of late seral stage forests due to logging.

The late seral-stage requirements are part of the BOFFP regulations (14 CCR 913.11) which define the process to demonstrate the achievement of Maximum Sustained Production (MSP) and gave landowners three options for showing how they intended to achieve MSP within the next 100 years. The BOFFP regulations define the process by which the achievement of MSP of timber is demonstrated. Landowners have three options for showing how they intended to achieve MSP within the next 100 years. These rules went into effect in March of 1994.

Under option (a) the Forest Practices Rules state that MSP is achieved on an by:

1. “Producing the yield of timber products specified by the landowner, taking into account biological and economic factors, while accounting for limits on productivity due to constraints imposed from consideration of other forest values, including but not limited to, recreation, watershed, wildlife, range and forage, fisheries, regional economic vitality, employment, and aesthetic enjoyment.”
2. “Balancing growth and harvest over time, as explained in the THP for an ownership, within an assessment area set by the timber owner or timberland owner and agreed to by the Director. ...”
3. “Realizing growth potential as measured by adequate site occupancy by species to be managed and maintained given silvicultural methods selected by the landowner.”
4. “Maintaining good stand vigor.”
5. “Making provisions for adequate regeneration. ...”

For option (b), similar goals are addressed. In Sustained Yield Plans (SYPs) and Nonindustrial Timber Management Plans (NTMPs), forest landowners demonstrate how they intend to grow and harvest sustainable levels of forest products while giving consideration to public trust resources. SYPs look at a 100-year planning horizon using data and planning tools that are available at this time. The SYPs must show the long-term schedule of timber harvest levels and an analysis of possible large scale cumulative impacts on fish and wildlife, and watershed resources that may result (see section on Cumulative Effects). Any significant adverse impacts revealed by the analysis must be mitigated or reduced to insignificance by changes to the harvest schedule or mitigations in the THP.

These standards are the basis for the development of SYPs. Forest landowners demonstrate in these documents how they intend to grow and harvest sustainable levels of forest products while giving consideration to public trust resources. These SYPs look at a 100-year planning horizon using data and planning tools that are available at this time.

In addition to SYPs, several companies have Habitat Conservation Plans (HCP). HCPs are documents which layout a company’s goal to manage their land while protecting one or multi-species of threatened and endangered animals. HCPs are recognized in the federal Endangered Species Act and are the culmination of years of field study, paperwork and consultation usually with two federal agencies, the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS). Depending on the species, one or both agencies will issue a finding that the HCP will meet the requirements of the ESA in protecting the designated T&E species.

The HCP will change how a company operates. The HCP will legally bind the company to practices defined in the plan. Changes in such things as winter operations, road maintenance and repair, and the way timber is managed and cut are all part of the strategy. Among the most critical components of the plan are roadwork designed to keep sediment out of creeks and strict

limits on cutting trees in streamside areas and on steep slopes. In areas, like the North Coast of California, where trees grow extremely fast, there will be some very large trees in WLPZs. As a consequence, trees in streamside areas will be allowed to get bigger and bigger, becoming more like old-growth trees. Coupled with the fact that FPRs require minimum stand ages of 50-80 years before harvesting, for lands being harvested by even-aged silviculture, large but not necessarily old trees are behaving as effective surrogates for “big and old” old growth. CDFFP (Tuttle, 2003. p.7) estimates that at least 6.2 million acres of private forestland might currently meet structural old-growth definitions based on size and numbers of trees per acre, snags and downed logs.

In addition, the total amount of old growth in California will also increase due to young growth stands owned by the various parks in California. For example, the Redwood National Park has approximately 76,000 acres within its boundaries. Of that, 19,000 acres are in old growth. The remaining 45,000 acres is predominately second growth redwood forests. All of this will eventually become old growth. There are, likewise, tens of thousands of second growth acres in the California State Parks, within the redwood forest type, which will also become old growth (see Appendix G).

Along with SYPs and HCPs, all of the major California forest industry companies have third party forest certifications such as through the Sustainable Forestry Initiative (SFI) or the Forest Stewardship Council (FSC). These two certification standards cover at least 3.3 million of the 4.5 million acres (74%) in industrial ownership. Both of these certification standards require attention to late seral stage structure, maintenance, and habitat for threatened and endangered species, many of which use old growth. While these plans and certifications do not pretend to be “old and big” old growth, they do provide conscious attention to the structural benefits of managed forest stands that mimic old growth benefits to wildlife.

Before leaving the area of third party certification, some discussion of the Senate Resources Report’s recommendations concerning this subject are warranted. In the Senate Resources Report, recommendations are made to:

1. Use FSC as the sole standard by which the state should buy forest products (p.3).

2. Purchase conservation easements only from landowners who are certified by FSC (p.3).

3. Support developing new milling capacity for landowners who manage their land by FSC standards and accept a total chain of custody from tree-to-product (p. 4).

4. Reduce THP paperwork for only those landowners who are certified by FSC (p.10).

5. Allow performance based harvesting with less documentation-on a pilot basis, for operations on land certified by FSC (p.11).

Whether or not any of these recommendations is a good policy or practice is not the focus of this discussion. But it should be pointed out that the Senate Resources Report fails to even mention SFI certification or the American Tree Farm System (ATF) certification which has over 534,000 acres of non-industrial ownerships under its standards in California. The reputation of the ATF system certification is well respected and its members take great pride in their stewardship. The Senate Resources Report solely recognizes FSC. However as shown above, FSC is not the only third party certification available and may not necessarily be the best one for every forest landowner. Accepting only one certifier of sustainable forestry may have the unintended consequence of pushing some consumers away from renewable forest products and toward nonrenewable, energy-intensive materials such as steel, concrete and plastic (Moore, 2002).

In summary, California has more old growth in protected status than any other state, except for Alaska. All major forest types are represented in the 2.7 million acres of current old growth. Future stand changes on both publicly owned and privately owned lands will increase the amount of forests which are either “old and big” old growth or have structural characteristics which effectively serve as surrogates for old growth. Because trees grow relatively quickly in California, the net number of large trees in California is growing, especially on NIPF lands. New logging regulations will not save or produce more old growth, nor are they needed. In fact, the threat of additional regulations may lead many non-industrial owners into liquidating the small patches of old growth they have preserved leading to a decrease in old growth.

Using the above data, the Senate Resources Report’s allegation that old growth forests are being liquidated (p.5) and that there is a need for another new commission to over help create future old growth forests (p.4) can be seen to be erroneous. This presumption also rests on the previously discussed false allegation that non-sustained yield forestry is being practiced in California.

3. <u>Clearcutting is a valid forestry management tool</u>

Clearcutting is a silvicultural system used to re-establish trees that cannot tolerate shading when being regenerated. In addition, these same species, such as Douglas-fir, require well scarified (disturbed), bare mineral soil to prosper as seedlings. Coastal redwoods also prosper under the clearcutting method of regeneration. The seedlings have the same basic requirements of Douglas-fir, but redwood also benefits from being able to sprout. Unfortunately, the sprouts have been shown in numerous cutting experiments to not grow into mature trees under the shade of over story trees. For the mixed conifer forests of most of the Sierra region, single tree selection is well suited to the ecological conditions and has often been the silvicultural method of choice.

However, in some cases improper selection cutting in the past has led to over harvesting of the pines and high-grading out the larger trees of all species, leaving a stand of poor quality trees. In the last decade, landowners in this area, who often bought such high-graded land, have needed to restart their stands. For this reason, clearcutting is now more prevalent in the Sierra than in the past.

Clearcutting is also a valid silvicultural tool to achieve other management objectives such as to increase biodiversity, habitat for certain wildlife species, reduce the spread of insect and disease, or provide for fuel breaks to reduce the spread of catastrophic wildfires.

In actuality, clearcutting is not the dominant silvicultural method being practiced in California. Data for the last decade (Appendix B) shows that an average of only 19,752 acres per year were clearcut in California out of an average total approved THP acreage of 279,130 acres per year (7.1%). CDFFP data for 2001 indicates that about 19,740 acres were clearcut. Interestingly, clearcutting was the fourth lowest acreage, out of nine, in the silvicultural methods used. CDFFP projections are for clearcutting levels to remain about the same for several decades, then move downward for several decades and finally increase again by the end of the century as many newly established stands reach rotation age. It should always be noted that clearcutting is a regeneration method and not a timber stand improvement method, such as thinning and for some species and conditions the re-establishment of a new stand requires this method.

Where clearcutting is the silvicultural prescription, FPRs place additional limits on clearcutting (Appendix B). Unit size is limited to 20 acres for tractor yarding and for aerial or cable yarding may be 30 acres. Tractor yarding may be increased to 30 acres where the EHR is low and the slopes are less than 30%. The RPF may propose increasing these acreage limits to a maximum of 40 acres under a demonstration of need and with CDFFP approval (14 CCR 913.1(a)(2)). These acreage limits, even at the 40 acres, are considerably less than the 120

acres normally permissible under the Oregon and Washington FPAs, with exceptions up to 240 acres.

Additionally, the FPRs require that even aged regeneration units (i.e. clearcuts) within an ownership shall be separated by a logical logging unit that is at least as large as the area being harvested or 20 acres, whichever is less, and shall be separated by at least 300 ft. in all directions (14 CCR 913.1(a)(3)). Within ownership boundaries, no logical logging unit contiguous to an even aged management unit may be harvested using an even aged regeneration method any sooner than 3 years and more likely five years for most parts of the state (14 CCR 913.1(a)(4). Also, clearcuts cannot occur within 150 ft of each side of fish-bearing streams (Class I watercourse), or a 300 ft total protection zone (WLPZ). As will be documented below, since these Class I streams are not being logged, even where it would be permissible under selection silviculture, these are true reserves and will add to the old growth component of the landscape.

Since most landowners who wish to maximize growth and site occupancy by their crop trees, clearcuts are restocked with seedlings as quickly as possible. The FPRs require that clearcuts be certified to be restocked to FPR standards within five years. However the trees must have been planted for at least two growing seasons, so for all practical purposes, planting must have occurred by the end of the third growing season or sooner (14 CCR 912.7). Restocking compliance has been extremely good according to CDFFP.

The Senate Resources Report states that, “The practice of clearcutting, whether on the North Coast or in the Sierra, often results in an **increased risk** of sedimentation into streams, the destruction of wildlife habitat for many species including salmon, and ...” (p. 8). It then goes on to recommend a ban on clearcutting in old growth forests and limit harvesting so that half of the tree canopy area is maintained, in effect eliminating clearcutting as a silvicultural tool for intolerant species such as Douglas-fir and coastal redwoods. What the Senate Resources Report fails to mention is that RPFs recognize that there may be an increased risk for erosion and sedimentation inherent with the use of the clearcutting system and therefore they build into their plans adequate mitigation measures to reduce the risk the absolute minimum, as will be demonstrated below in the discussion concerning water quality.

In this same area of discussion, the Senate Resources Report then states that “The practice of clearcutting ... is often followed by the planting of single species tree plantations that have none of the ecological benefits of a diverse forest landscape.” (p.8-9). This factoid can easily seen to be false by walking through any number of second and third growth stands that have been planted. Simple field observation would show that resulting new second and third forest in this state do not resemble the pure pine plantations of the southeastern U.S.

Foresters have known for decades the need for second and third managed forests to mimic what is found in nature, especially stand species mix. One of the main reasons is to prevent complete stand decimation by drought, insects and disease. In other words, it is an insurance policy. Where the forests of a region in California naturally supported multi-species forests, RPFs have long prescribed planting seedlings of all the intolerant conifer species, in a mix close to that found in nature. Even where one conifer is usually more valuable than another at harvest, the planted seedlings will not all be of the most valuable species, coastal redwood for example. Shade tolerant species may also be planted, but are often not because they always end up as volunteer seedlings from adjacent seed sources and can grow under the shade of the intolerant trees. Restocking is usually done to more than 300 seedlings per acre in clearcuts to compensate for possible seedling mortality. The FPRs allow RPFs to use any conifers specified on each Forest District’s list and do not prescribe set ratios or species. California has too wide a range of conditions and site-specific planting prescriptions are needed. However, it is professional practice to use a mixture of conifers for replanting that mimics the natural forests in the area.

Since hardwoods are a component of almost all forest in California, the FPRs allow restocking to be met with both conifers and hardwoods. However, to avoid the substitution of all hardwoods for conifers, an allowable procedure under the pre- 1973 FPA, the FPRs require that the percentage of the stocking requirements be met with conifers shall be no less than the percentage of the stand basal area they comprised before harvesting. The site occupancy provided by conifers shall not be reduced relative to hardwood species (14 CCR 912.7(c)(1)(D)). Since most hardwood species in California are prolific seeders, vigorous sprouters, or both, the planting of hardwood seedlings is not normally done or required on most timberlands since their presence is usually impossible to prevent.

From the foregoing, it should be apparent that clearcutting and single species replanting are well regulated and further regulations will only add extra and unnecessary burdens to California's forest landowners.

4. <u>The California Forest Practices Act protects water quality</u>

There has been considerable research in the past 30 years on forest water quality, erosion, sedimentation, stream shading, and results from using the FPRs. Recognizing that the efficacy of any set of practices can never be truly evaluated without research and monitoring, both CDFFP and the forest products industry have conducted numerous landmark research projects over the last four decades and both have ongoing implementation and effectiveness monitoring programs.

Erosion and Water Quality – Research

Sediment production varies greatly in rate and dominant processes across the steep, forestlands of California primarily because of differences in tectonic history, geology, soils, and climate. Sediment production is also temporally complex and reflects infrequent major storms and wildfire or other disturbances of vegetation that increase the sensitivity of the landscape to erosion.

Even undisturbed watersheds experience erosion, which is generally referred to as the background or natural erosion rate. In most forested basins of this region, tree throw, animal burrowing, and soil creep move sediment slowly downhill and feed mechanisms such as stream bank erosion that deliver it to channels. Mass wasting and surface erosion following wildfires can also deliver sediment to streams in undisturbed basins.

In the research area, most notably CDFFP has conducted the Critical Sites Erosion Study (CSES) and over 40 years of data in the ongoing Casper Creek paired watershed studies whose latest results were summarized in a 1998 proceedings (Henry, 1998).

One of the most studied questions in the area of logging erosion is where logging-related sediment comes from, in terms of the phase of logging activity on the site and how much is produced. Based on studies relevant to northwestern California, road building has been consistently shown to be the source of most logging-induced erosion (McCashion and Rice, 1983; Cafferata and Spittler, 1998).

The most comprehensive study of the FPRs is the 1989 Critical Sites Erosion Study (Lewis and Rice, 1989). Covering over 1,100 THPs and 180,000 acres, Lewis and Rice looked at erosion sources, amounts, and correlations. Their estimate of total logging-induced erosion from logging and roads was about 1.4 cubic yards per acre per year; the majority being from roads and mass-wasting associated with roads. Since Lewis and Rice were essentially measuring "voids" from erosional events, all of this soil did not reach streams. Using an assumed sediment delivery ratio (SDR) of 22% based on past research and studies (Rice *et al*., 1979), they computed that 0.31 cubic yard per acre per year reached the streams. It should be noted that this study included some THPs that had been logged under the pre-BMP revised FPRs rules adopted

in October 1983. A relatively recent estimate of the present long-term sediment yield, from all sources, for Redwood Creek is about 4.0 cubic yards per acre per year (Madej and Ozaki, 1996). The CSES logging-related sediment yield of 0.31 cubic yard per acre per year amounts to less than 8% of the long-term total sediment yield for Redwood Creek.

Since the CSES looked at roads built statewide in the 1960s through early 1980s, Rice (1999) performed a comparison of road-related erosion with roads built to FPRs adopted since the BMP revisions of the FPRs. Rice's study in Redwood Creek showed that road-related erosion, for roads built to the FPRs standards set by the BMP modifications and later revisions, created about 372 cubic yards of erosion per mile. Based on the number of acres in the watershed and the number of miles of roads, this erosion amounted to about 2.4 cubic yards per acre. Using the 22% SDR and accounting for the 17 years in Rice's study period, this amounts to about 0.03 cubic yard per acre per year. This is about a ten-fold **decrease** in road-related erosion when compared with the CSES. When compared to the Redwood Creek long-term sediment delivery average of 4.0 cubic yards per acre per year, roads appear to be responsible for less than 1% of the total erosion. Even if the surficial erosion from logging areas were equal to the road-related erosion (most studies show that road-related erosion is well over half of the total logging-based erosion), that would indicate that logging-related erosion is still only about 2% of the total erosion on a typical acre in northwestern California.

From the preceding, it can be concluded that average logging-related erosion from THPs using the current FPRs accounts for less than 2% of the total erosion from a typical acre. This is an insignificant amount when compared to the natural variability and total natural erosion rates extant on these watersheds. The 2% is further reduced in significance if consideration is given to the effect of large, regional climatic events such as the 1955 or 1964-65 floods on erosion and sediment yields in streams of northwestern California. In summary, the trend in the sediment levels in Redwood Creek appears to be downward and scouring is occurring. This would indicate the sediment delivery from upstream is or has decreased (Madej and Ozaki, 1996).

Neither of Rice's studies, the CSES nor the 1999 Redwood Creek study, included events of this magnitude, 50- to 100-year floods, in the periods of study. However, we know that large flood events such as these are also very large erosional and sediment transport events. The laws of physics tell us that increase in stream power increase sediment carrying capacity in a highly exponential manner (Dunne and Leopold, 1978). The sediment yield for these flood events is probably a minimum of 10 to 100 times the average sediment yield for the stream. One can posit that logging-related erosion would likewise increase on a highly exponential manner, thereby maintaining 2%, or greater, comparative position. However, man's activities such as these are designed to withstand the large flows. Landslides and bank undercutting are natural events. That is the way the stream canyons, indeed most of California was created. Therefore, it is reasonable to believe that any logging-related erosion associated with properly designed THPs must pale in significance.

From the Casper Creek Watershed studies, Lewis *et al* (2001) showed that logging conducted using methods and rules prior to the current FPRs produced 2.4 to 3.7 times more suspended sediment than logging done under the current FPRs. Caffereta and Spittler (1998) also concluded from the Casper Creek data that erosion and sedimentation from logging conducted under the current FPRs were very much less than from pre-1973 logging. Cafferata and Spittler also documented that there was no significant difference in number or size for landslides in Casper Creek after logging under the current FPRs. Others including Maas and Barber (2001), Koehler *et al* (2001), Custis and Spittler (2002) have come to similar conclusions for other watersheds.

The above studies show a picture that is totally opposite to the conclusions reached in the U.S. Environmental Protection Agency's (EPA) conclusions in their Analysis of Timberland Management on Water Quality based on North Coast TMDLs from 1998 through 2001 (EPA, 2002). They are more in line with the findings of CGS as to the natural background rates in North

Coast watersheds and as to the contribution of logging to sediment found in these streams and they state, "...implementation of the FPA of 1973 and associated FPRs appears to have resulted in substantial sediment reduction from management-related activities, especially from hill slopes." (Bedrosian and Custis, 2002, p.17). The EPA's conclusions appear to be based on very selective use of the available data and severely underestimate the background levels of sediment delivery-by more than an order of magnitude, especially for the set of geologic conditions found in California. Also the EPA report appears to give short shrift, if any, to the beneficial effects the FPRs have on correcting long-standing problems from pre-1970s logging and reducing sedimentation. Further discussion of these so-called "Legacy Effects" and the role of FPRs in correcting them can be found below.

Stream Water Temperature – Research

Actually quite a lot is known about the role of streamside vegetation shade and the resulting water temperature. It has been a research topic of interest since the mid-1960s, especially on the West Coast of the U.S. because of the cool water requirements of salmonids which use the streams of California, Oregon and Washington.

The primary environmental factors affecting stream temperature are local air temperature, stream depth, groundwater inflow, and the extent to which riparian canopy and topography shade the stream (Sullivan and Adams, 1990; Theurer *et al*, 1984; Beschta and Weatherred, 1984). Heat energy can be transported downstream with flowing water, although as water moves downstream, various heat transfer mechanisms cause the water temperature to change until the net heat transfer is balanced, i.e., energy in equals energy out. The temperature at which the net heat transfer is balanced is referred to as the equilibrium water temperature. Equilibrium temperature is determined by local environmental conditions that control the heat transfer processes of solar radiation (short-wave), radiation between the stream and the adjacent vegetation and sky (long-wave), evaporation from the stream, convection between the stream and the air, conduction between the stream and the streambed, and groundwater exchange with the stream (Adams and Sullivan, 1990).

In reality, the equilibrium temperature is not a constant, but varies with changes in environmental conditions over time and space, especially distance from the ocean, geographic position (mainly latitude) and longitudinal position within the watershed (Lewis *et al*, 2000). For example, as the temperature of the air above the stream rises over time, the water temperature will also rise. As waters flow from well-shaded locations into exposed locations and back into shade, water temperatures will increase and subsequently decrease (Sullivan and Adams, 1990; Zwieniecki and Newton, 1999).

Research on the influence of forestry operations on stream temperature in California come predominantly from the Casper Creek paired watershed study mentioned previously. Studies by Caferreta (1990), Nakamoto (1998), and Keppler (1998) among others describe the research results. All of these and other studies conclude that current FPRs regarding WLPZ width and canopy retention adequately prevented stream warming from exposure to sunlight. The latest rules for WLPZs for Threatened and Impaired Watersheds passed in July 2000 incorporate the results from Casper Creek.

Monitoring

Forest landowners have implemented a wide variety of forestry management practices designed to avoid and minimize potential adverse impacts to water quality and in-stream fishery habitat. In addition, both CDDFP and the companies have designed and implemented water quality and riparian monitoring programs within many of the coastal and Sierra watersheds in Northern California the extent of these monitoring efforts is shown on the map in Appendix C.

A variety of water quality issues have been identified with respect to timber harvest practices, which include, but are not limited to potential changes in seasonal water temperature and sediment loading to stream systems that may adversely impact both the water quality within a stream, and the quality and availability of suitable habitat for various fish species, including coho salmon, steelhead and other aquatic resources. The ongoing water quality and riparian monitoring programs provide information related to these water quality issues. The monitoring programs provide information that can be used to:

- characterize existing water quality conditions, including compliance with in-stream water quality objectives;
- identify spatial and temporal trends in water quality conditions;
- identify the causes of water quality problems and sources of contaminants;
- evaluate the effectiveness of source control and Best Management Practices (BMP) for controlling nonpoint source contaminants; and
- provide water quality measurements for use in assessing habitat quality and availability for coho salmon, steelhead and other aquatic resources.

Review of the existing water quality and riparian monitoring programs being conducted by CDFFP and forest landowners has shown that a wide variety of parameters have been monitored as part of these programs. Although not all of the monitoring efforts are comprised of the same suite of parameters, the range of parameters includes water temperature, air temperature, channel bed/bank characteristics, channel cross-section measurements, riparian canopy, riparian vegetation, pebble counts and gravel characteristics, sediment sampling to determine percent fines, macro invertebrate sampling, fish sampling (including surveys of the abundance and distribution of adult spawning salmonids and juvenile downstream migrants), vertebrate monitoring, monitoring of instream fishery habitat, flow measurements, turbidity, roads and stream crossings, large woody debris, mass wasting, substrate permeability, nutrients and chemicals. The range of parameters therefore includes both water quality constituents and indicators, in addition to indicators of instream fishery habitat and the status of salmonids within many of the watersheds. Although water quality and fishery monitoring programs are complementary and provide useful information on trends in the health and condition of aquatic resources within the watersheds, water quality parameters provide a more direct method for measuring and evaluating the effectiveness of forest management practices on instream conditions.

The water quality monitoring efforts that have been undertaken provide a useful foundation of information for evaluating instream water quality conditions and for use in identifying those parameters that provide the most cost-effective and beneficial information on water quality conditions for use in evaluating the effectiveness of forest management practices. The existing monitoring programs provide a wealth of information on various water quality parameters, which are linked to both forest management practices and factors affecting habitat quality and availability for aquatic resources inhabiting stream systems within these watersheds. The existing water quality monitoring programs provide the scientific foundation for evaluating water quality conditions, on a watershed and regional basis, within areas of Northern California influenced by forest management practices. Data collected through the existing water quality monitoring programs are analyzed and synthesized as part of the overall processes of evaluating instream water quality conditions within watersheds supporting timber harvest.

It would not be possible to review all the results from these monitoring efforts in this report, but a review of two of the major monitoring efforts should give some feeling for the level of effort and results found to date.

Hillslope Monitoring Program

To complement the direct water-quality monitoring efforts described above, BOFFP has established a Monitoring Study Group (MSG) whose primary goal is to provide timely information on the implementation and effectiveness of forest practices related to water quality that can be used by forest managers, agencies, and the public in California. It is a standing advisory committee to the BOFFP. Monitoring efforts started in 1990. The MSG is made up of members of the public, resource agencies, and the timber industry. Since 1990, there have been many accomplishments produced by the MSG's efforts (CDFFP, 2002). One of the most notable has been the ongoing Hillslope Monitoring Program (HMP).

The HMP is the main study by which CDFFP gathers implementation and effectiveness data for the THP program. It started in 1996 and is in its seventh year. Data has been collected on approximately 300 THPs and Non-industrial Timber Management Plans (NTMP), as of the end of the 2002 survey season. Fifty THPs are added to the database each season (CDDFP, 2002). The monitoring measurements cover the width and breadth of the FPRs sections, such as roads and landings, water crossings, WLPZ conditions, erosion and sedimentation, and logging methods. Monitoring and field analysis is conducted by an independent, third-party contractor. Results to date (CDDFP, 2002) show that:

- Implementation of the FPRs related to water quality are high, and individual practices required by the FPRs are effective in preventing erosion when properly implemented.
- WLPZs provide adequately for the prevention of harvesting related erosion with over 90% FPR implementation.
- Landings and skid trails do not produce substantial impacts to water quality; with greater than 90% implementation rates for relevant FPRs.
- Field measurements of canopy closure for fish bearing (Class I) and non-fish bearing streams (Class II) were 83% and 80%, respectively. In other words, essentially full canopy closure.
- The frequency of erosion events has decreased substantially in the last three years.
- Roads, with drainage structures remain the main source of delivered sediment off of harvest areas.

Air and Water Temperature

Air and water temperature monitoring is being done at a large number of locations geographically dispersed through various watersheds. The resulting monitoring data provides a foundation for evaluating the effects of timber harvest activity on temperature. Water temperature has been identified as a key factor affecting habitat quality, growth and survival of salmonids (salmon, steelhead, and trout) inhabiting California streams. The temperature monitoring programs provide information on the seasonal and geographic variation in water temperature, and represent an important component to the overall water quality monitoring effort. Water temperature is being monitored within a variety of watersheds on a regional basis by 12 of the companies involved in California forest management and timber harvest.

An evaluation of the industry data regarding stream temperatures can be found in a compendium issued by the Humboldt State University Foundation Forest Science Project entitled, Regional Assessment of Stream Temperatures Across Northern California and Their Relationship to Various Landscape level and Site Specific Attributes (Lewis *et al*, 2000). This document represents the state-of-the-art knowledge of forest stream temperatures in Northern California. The study represents continuously recorded stream and air temperatures from almost 1100 sites, over the period 1990 to 1998. Significant findings of this study were:

- Local ambient air temperatures greatly influence stream water temperatures. Interior watersheds have hotter summer air temperatures and warmer stream temperatures, while coastal streams influenced by the fog zone have cooler summer water temperatures.

- Stream reaches that are farther from the watershed divide have warmer water temperatures than stream reaches nearer the divide. Increases in watershed drainage area and decreases in stream gradient as one moves downstream in the watershed probably account for this correlation.

- Historical data indicates that water temperatures in the same stream and at the same measuring location change over time. Data collected by the USGS between 1950 and 1969 were warmer than recent temperature readings.

- Data from the 1950s and 1960s indicate that stream temperatures in northern California regularly exceeded 20°C (68°F), a temperature that is often detrimental to salmonids.

- Empirical modeling to predict stream water temperatures is more complicated than some of the simple models of the past (Brown, 1969; Bescheta *et al*, 1987) that often only emphasized one or two factors, such as solar radiation loading. A better prediction model used regional air temperature, watershed size, distance to watershed divide, and canopy closure to predict stream temperature.

Lewis *et al* concluded that a single temperature standard would be difficult and inappropriate to apply across a broad region such as Northern California. Each stream differed markedly in the factors listed above. These physical factors directly or indirectly influenced water temperature regardless of any forest management that occurs adjacent to the WLPZs.

Recalling the HSM canopy closure data cited above, streams across California's coastal forest district averaged 83% canopy closure along Class I streams and 80% for Class II streams. In all cases, average post-harvest canopy closure exceeds 70%. Since even natural streams do not have 100% crown closure, especially in the interior of California, these percentages, in effect, represent full crown closure. Such crown closure virtually eliminates any potential impacts from forest management activities on stream temperature. The scientific conclusion is that natural climatic and riparian conditions have the only significant causal effects on stream temperature, not forest management is it is practiced under the current FPRs.

The Role of the Forest Practices Program and the THP Process in Protecting Water Quality

Without reviewing the above works and others available, a fair-minded evaluation of the success or failure of the FPA in protecting water quality is not possible. Additionally, the Senate Research Report and the Senate Resources Report do not appear to recognize the intricacies and improvements built into the THP process. A complete flow chart of the Forest Practices Program and the THP Planning Process appears in Appendix D.

The THP permitting process relies on more than just the mitigation measures set forth in the FPRs. California's program mandates an integrated process involving legislative authority, administrative regulations (FPRs), licensing of registered professional foresters (RPFs), licensing of timber operators (LTOs), and an active state enforcement program. The Senate Resources Report and the Senate Research Report both give the impression that little has changed in the 1973 FPRs. The use of reports such as the Ecology Law Quarterly (1975) report [It should be noted that the Z'Berg-Nejedly Forest Practice Act did not go into effect until 1974.] and the Little

Hoover Commission report (1994) leave one with the impression that over the last 33 years little has been done to address changing needs and standards for the protection of trust resources. To aid the reader, a complete chronology of changes to the FPRs, up through 2002, is contained in Appendix E. The chronology is hardly scant or inconsequential.

If one were to read only the FPRs, one would not obtain an accurate picture of the actual mitigation measures that are eventually factored into an approved Timber Harvesting Plan (THP) and are implemented on the ground. The process involves a Multi-Disciplinary Review Team (MRT) review process that changes a THP through RPF and agency discourse, in effect producing a "mitigated EIR." This positive feedback loop not only affects THPs but also eventually works its way back up the regulatory chain to the Board of Forestry (BOFFP). Changes in the FPRs are often the result of this feedback loop built into the THP process, where new knowledge and experience are used to modify the rules. The regulatory program for approval of THPs in California has undergone continual changes since its inception in 1973. The Z'Berg-Nejedly Forest Practice Act and the Public Resources Code establish the authority for CDFFP to act as the lead agency. The California Forest Practice Rules (FPRs), also known as Title 14 of the California Code of Regulations, provide the explicit requirements by which a) Registered Professional Foresters (RPFs) prepare THPs, and b) DF serves as the lead agency and reviews their completeness, adequacy and enforceability.

In fact, the 1973 Forest Practices Act addressed a broader range of environmental concerns, including erosion control, water quality, wildlife, unstable soils and streamside protection. The focus and level of forest practice regulations increased greatly and continue to increase to this date. Major changes in the FPRs occurred in response to the California Environmental Quality Act, Section 208 of Public Law 92-500 (1972 Amendments to the Federal Water Pollution Control Act), and the Endangered Species Act, among others.

Almost simultaneously with the implementation of the FPRs in 1973, the State of California instituted the licensing of foresters. Registered Professional Foresters (RPFs) had to meet standards of education and experience and pass an examination before being licensed by the State Board of Forestry. The possession of the professional license was required for a forester to prepare a THP for submittal to the California Division of Forestry (which later became the Department of Forestry and Fire Protection or CDFFP). Hence an infrastructure of RPFs to prepare THPs and a State Agency to review, inspect, and enforce the FPRs was in place. The imposition of multidisciplinary review teams came later.

During its life, a THP serves several purposes:

- Propose a timber harvesting operation,
- Environmentally review the project,
- Notify the public and elicit public input,
- Provide an operating plan for the logger, and
- Enforce violations of the FPR's and to insure restocking of the logged land.

In response to any potential adverse effect of timber harvesting, there are many possible mitigation measures. However, measures that work in one locale in California may not work in another locale, or may not be needed, or may even cause damage of the resource to be protected. A prescriptive, one-size-fits-all solution will not work in California for the protection of water quality or for any other resource. Until 1978, the Director of CDFFP could require almost any necessary mitigation measures, even if such measures were not spelled out in the FPRs. In 1978, the California Legislature mandated that the BOFFP include standards in the FPRs limiting the Director's ability to exercise unlimited discretion in their application. This mandate changed the types of rules that could be used by the BOFFP and led to more emphasis on procedures and use of the THP review process to make the rules specific to a site. This is an extremely important point to be considered in discussions on this subject.

The THP process begins when the THP and supporting documents are submitted to CDF. In the first two days after submittal, CDF sends copies to CDFG, the appropriate Regional Water Quality Control Board, California Geological Survey (CGS), and the county planning agency for the county where the THP is located. The California Coastal Commission and California Department of Parks and Recreation may also get a copy of the THP, if appropriate. Since 1997, CDF has also sent THPs to NMFS for their review before CDF acts on them. NMFS is asked to make a determination as to whether the THP will result in a "take" or jeopardy to coho salmon. It should be noted that CGS provides field review on almost 100% of THPs with "Coho Considerations" and geologically sensitive THPs. However, as a whole, only about 60% of THPs rank as medium or high priority based on the office review of CGS. CGS staffing for the THP review program increased markedly in 1999 to handle the increased workload resulting from the coho salmon listing and CDF increased requests for geologic field review (Thomas E. Spittler, CGS, 2000, personal communication).

Each RPF is required to submit with their THP a Notice of Intent (NOI) and an address list of property owners within 300 feet of the THP boundary. CDFFP then sends a copy of the NOI to each addressee on the list. Adjacent landowners, and any member of the public, may obtain a copy of the THP for a modest cost. The NOI also advises that public comment can be submitted at the proper CDFFP address shown.

The distribution of these THPs is designed to provide for a review of the THP by a MRT drawn from other agencies, with CDFFP acting as the lead agency. Depending on the issues contained within the THP, agency experts such as foresters, water quality engineers, fish and game biologists, geologists, soil scientists and archaeologists are used for this review. The multidisciplinary review is certified by the California Secretary of Resources as a "functional equivalent" to an EIR required under CEQA.

Two separate MRT meetings are generally held for each THP, the first within 10 days of the submission of the THP. The purpose of this first review is to determine if the plan is acceptable for filing. If a plan is found deficient, most commonly because of incomplete information, it is returned with written specifications of the deficiencies. If a THP is found acceptable for filing, the MRT usually will have a list of questions or clarifications to be answered by the RPF. The MRT will also list questions to be answered by the agencies participating in the on-the-ground pre-harvest inspection (PHI) by CDFFP if one is deemed to be necessary.

Included in the THP is an assessment of cumulative impacts [CIA] (14 CCR 912.6). The assessment covers more than just cumulative watershed effects, for which it is best known. Soil protection, biological productivity and changes, recreational resources present and at risk, visual impacts, traffic loads, and other factors are assessed by the RPF and others involved with the THP process.

The Senate Research Report raises the issue of CIA and its adequacy by citing the findings of the University of California Committee on Cumulative Watershed Effects (U. of California, 2001). CDFFP Director Wilson authorized this report the summer of 1998. This latest committee to investigate the subject apparently did not find it any easier to summarize or explain CIA, than did the four other committees and task forces who were asked to study and recommend a CIA procedure for the THP process (Standiford and Ramacher, 1981; Ritchey *et al*, 1982; Cobb *et al*, 1985, and Cromwell *et* al, 1999) – since it took almost exactly three years to produce.

The main criticisms of the University of California Committee were the supposed parcel-by-parcel analysis of THPs, a lack of scientific understanding, and a lack of understanding and training for RPFs. They then go on to recommend a whole new state bureaucracy to administer just timber CIAs. Unfortunately, the report reads like a University solution to a problem, rather than a procedure for evaluating impact for an economic activity. The Committee describes a

solution that reads more like a full-blown Watershed Analysis Assessment (Washington Forest Practices Board, 1997) than a CEQA-type assessment.

Also, the University of California Committee gives scant attention to the effect SYPs and HCPs, now in force for many of the larger ownerships who harvest most of the timber volume in California (previously discussed on pages 6-7) have in avoiding the parcel-by-parcel failing they believe is present. Also, no examples of "better" CIA methodologies were given in this report. In fact, it has been the experience of the author, as a member of a previous CIA committee as a BOFFP member,[1] and through professional forestry and other environmental work in California and other states, that the CDFFP process is more complete and detailed than any other agency's process experienced to date, including those used by such agencies as Caltrans or Department of Water Resources.

An understanding of CEQA's intent for CIA, the findings of the previous four reports commissioned by CDFFP, and other agencies' procedures and processes for analyzing cumulative impacts leads one to believe that the level of complexity, scientific data gathering, modeling, and precision envisioned by the University of California Committee's report is not what was intended or envisioned when CEQA was implemented by the Legislature. Coupled with the SYPs and the HCPs, the CDFFP CIA methodology is satisfactory and allows the THP to be modified so as to reduce any cumulative impacts to a nonsignificant status. In effect, the THP is similar to a "mitigated EIR".

California is one of only two states that require a private landowner to secure a discretionary environmental permit (THP) before logging on their own land. The THP process is more than just a paper plan. Almost from the beginning, field verification is undertaken. Statewide, approximately 90% of THPs receive a pre-harvest inspection (PHI) and approximately 98% of THPs containing coho or coho habitat receive PHIs (Thompson, 2000). Some THPs do not receive PHIs because they concern innocuous areas that present no cause for concern, or for other similar reasons. When a PHI is deemed appropriate, a field inspection is made. The PHI serves several purposes. It allows CDFFP and other agencies on the MRT to confirm that the THP as proposed conforms to the FPRs. It also gives CDFFP and other agencies the opportunity to propose mitigations that they believe will provide greater protection to resources that may be potentially affected by the THP. After a PHI, CDFFP and any other participating agencies provide written reports to the MRT chairperson and other members of the MRT. At this time, additional mitigation measures may still be proposed. For example, in 2000, approximately 98% of the THPs approved in the Santa Rosa CDFFP offices were mitigated by this procedure.

After the PHI, the MRT meets a second time. All agency reports have been received by CDFFP at this time. During this second review, MRT members may recommend incorporation of additional mitigation measures. At this meeting, the MRT will determine whether the plan conforms to California FPR standards and make a recommendation to the Director's Designee to approve or deny the plan. The FPRs provide that THPs shall be disapproved if they do not incorporate feasible silvicultural systems, operating methods, and procedures that will substantially lessen adverse impacts on the environment (14 CCR 898.1(c)(1)). The Director is also required to deny a THP if it would result in the "take" of a listed species, such as coho, unless a habitat conservation plan has been approved which allows a taking under certain circumstances.

The MRT chairperson then prepares a recommendation, and the entire file, including reports and comments from agencies and the general public, is forwarded to the Director's Designee for a final decision. If the MRT chairperson is prepared to recommend approval of the THP, any other review team may file a non-concurrence with CDF, opposing the approval. The MRT chairperson must prepare a written report addressing the non-concurrence. Should the Director of CDFG or the SWRCB be so disposed, either may appeal the approval of a THP to the

[1] The author served as a BOF member on the 1985 Task Force on Cumulative Impacts.

BOFFP. Head of Agency appeal was selected by the BOFFP, rather than letting a Regional Water Quality Control Board (RWQCB) or Regional CDFG office appeal, so as to insure that the Director of the SWRCB or CDFG was satisfied that a case as valid, before an appeal was made[2]. The BOFFP then grants a hearing to decide whether to overturn the Director's approval of the THP.

If the THP is approved, CDFFP sends a copy of the final, approved THP and a copy of CDFFP's written response to significant environmental issues raised during the review process to the MRT members and members of the public who requested copies of the THP. At this time, an $850 fee is payable to CDFG, by the THP applicant, for its environmental review costs. If the Director denies a THP, the THP applicant may appeal the denial to the BOFFP for a public hearing. The BOFFP can either sustain or overturn the Director's denial.

While it appears that the THP process is only 45 days long (14CCR 1037-1037.4), for the timber landowner, the process may have started over two or three years earlier (See Appendices D1 through D4). Wildlife surveys, such as for spotted owls, are set by the season when detection is most successful. Hence, depending on when the landowner's RPF is brought into the process, the date to file a THP may be a year or more off. If there is a possibility that coho or other listed species will be found on the project area, other delays may be encountered. It should be noted that the times shown in the regulations between steps are maximums, they are statutorily set in the Public Resources Code. However, in reality, many THPs have much longer review periods, as the RPF generally accepts a request by CDFFP for more time during the review process. A refusal to allow more time often results in a denial of the THP by CDFFP.

Some landowners are using a watershed analysis on each major stream system in their ownership to evaluate direct and cumulative effects on coho, even though this is not formally required in the FPRs (Pacific Lumber Company, 2001; Mendocino Redwood Company, 1999). The California BOFFP is evaluating the practice.

Some large landowners are attempting to obtain a HCP that covers coho and other listed aquatic species (Simpson Timber, 2002). Although these types of efforts are very expensive and add to the cost of THPs, the promise of not having to study the same material more than once for successive THPs in the same watersheds is sufficient reason to absorb this cost for large landowners.

With an understanding of how the THP process is intended to work, one can now address the Senate Research Report's water quality allegations and the alleged failings of the FPRs to adequately address them. No one denies that logging and road building may cause accelerated erosion, with resulting sedimentation in streams. These have been the subjects of many studies, some cited in this report. While the results of these studies vary, the amounts of erosion attributable to logging activities range from a few to many percent increases. However, various studies have also shown that surface erosion appears to be relatively insignificant when erosion control measures are installed.

Most studies show that road-related erosion is the largest component of logging-related erosion. Mass wasting associated with roads and gullying at culvert downspouts have been repeatedly documented as the main sediment sources from roads (Lewis and Rice, 1989; Rice, 1999). Numerous other studies demonstrate that logging can be compatible with anadromous fish production, if adequate attention is given to erosion control and stream protection (Cafferata and Spittler, 1998; Natural Resources Management Corporation, 2000.)

It is undisputed that some streams have been impacted by forest operations. However, a distinction must be made between logging as it is currently done and that which was carried out as recently as 1975. The streams of northwestern California, and in other parts of the State, have

[2] The author developed the Head-of-Agency appeal process while a member of the BOFFP.

seen logging since as early as 1850. Logging prior to the FPRs used the streams as access routes to the timber, often skidding right down the bottoms. Log drives added to the impacts in many streams in northwestern California. What needs to be brought to the discussion now is the fact that these practices left sediment in channels that are still pushing the stored sediments out to the ocean today. The pulse-wave effect, as sediment moves down the watershed's streams, means that some of this sediment from logging in the 1950s to 1973 and the CDF&G stream clean-out projects of the 1950s to 1970s are still there. However, evidence shows that some streams, such as Redwood Creek, have nearly reached a condition similar to that before the 1900-1970 logging period (Redwood Creek Landowners Association, 2000.). Others appear to be on a significant recovery trend, such as the Garcia River, where past logging was acknowledged to be some of the most disturbing in northwestern California. Today, there are indications that some streams in northwestern California may be in a net sediment removal state, where sediment inputs are less than outflow to the sea (Mendocino Redwood Company, 1999; Stewart, 1998; Natural Resources Management Corporation, 2000). In any event, it is safe to conclude that past logging practices delivered many times more sediment to streams than logging today.

Mass wasting amounts have also been reduced with better implementation of FPRs regarding road construction on steep slopes above 50%. A direct comparison of mass results between 1960s logging and road construction and post-FPRs road construction techniques can be found in the Caspar Creek Study (Cafferata and Spittler, 1998). In this study, mass wasting did not appear to be related to logged or unlogged status as the volumes, size and frequency of mass wasting events were not significantly different between logged and unlogged areas.

Similar results were reported in Redwood Creek for logging roads built in the two time periods (Rice, 1999). Compared to timber operations before 1976, or thereabouts, modern logging done under the FPRs appears to produce less than 10% of the pre-1976 rates of erosion, both mass and surficial (Best *et al*., 1995). An Oregon study by Robison *et al* (1999), in western Oregon forests affected by very intense storms in 1996, concluded that road associated landslides were low in numbers and smaller than those noted in earlier studies. They concluded that current road management practices are reducing the size and number of road-associated landslides. Since I have performed professional forestry under both the FPRs and the Oregon Forest Practice Rules – and find that the FPRs are similar in their requirements to the Oregon regulations – my professional opinion is that the conclusion of Robison *et al* would apply to the forest roads built under the FPRs. This marked difference in rates can be attributed to the measures mentioned above, including an increased use of Professional Geologists and Engineering Geologists, better location of roads on ridgelines and out of inner gorges and headslope areas, better fill and culvert design (Furniss *et al*., 1991; Weaver and Hagens, 1994). From these and other works, it is apparent that roads constructed to standards set in the FPRs are reducing mass erosion compared to roads built prior to the FPRs.

In addition, in-unit mass wasting related to logging appears to be a problem mainly in inner gorges in northwestern California. The FPRs formally codify the CGS practice of closely evaluating any logging proposed in and above inner gorges (Thomas E. Spittler, CGS, 2000, personal communication). This was also one of the recommendations put forth in the Scientific Review Panel (State of California, 1999). Changes in the FPRs are often the result of the "feedback loop" built into the FPRs process, where new knowledge and experience are used to modify the rules (see Appendix E). This regulation should markedly reduce in-unit mass wasting where silvicultural operations may pose a problem. It should be noted, however, that open slope mass wasting as well as large rotational failures will still occur, since they are a natural process, on both logged and unlogged areas. Landslides are a natural and necessary part of the renewal process for productive streams (Reeves *et al*., 1995) Without the input of gravels and LWD that slides episodically provide, streams could soon become depleted of both gravels and LWD.

As for the protection of threatened and endangered species (T&E), the Senate Research Report alleges that these are also not protected by the FPRs (p.1). While there are several T&E

species that live in California's forests and are dependent of clean, cool water, this report will limit the discussion to salmonids in demonstrating how forest management and salmonids are compatible.

A number of actions have been implemented in recent years, in part in response to the federal listing of Coho salmon under the Endangered Species Act, that provide substantial additional protection for the Coho salmon and its habitat. Actions include development of HCPs, changes in land use management, improvements in habitat quality and availability, actions designed to reduce mortality of juvenile Coho salmon within inland waters, and changes in ocean harvest regulations that provide substantial additional protection and reduce mortality for juvenile and adult Coho salmon. The current level of protection afforded to Coho salmon and their habitat appears to be appropriate and adequate (Hansen, 2002).

In 2000, I conducted an administrative study to statistically determine the percentage of THPs in the Coho range of northwestern California that pose no threat to coho or have incorporated additional coho protection (above that required in the FPRs in force during this period) into the THP by the RPF. I was free to choose any THPs of my selection on ownerships of my selection, contingent upon the landowners' agreement to cooperate. The only limitation was that these THPs should be within the heart of the coho range in northwestern California and within a certain time period.

Using CDFFP THP records, a population of 379 THPs was determined to meet the study requirements. Due to the limits of time and expense, work was to be concentrated in the counties of Mendocino, Humboldt and Del Norte. The THPs in the chosen counties totaled 319 of the 379 in the original population. Statistical analysis showed that a random sample of 40 THPs would adequately sample the population to the desired levels of statistical precision.

Nine THPs (23%) had coho using streams within the THP area. The remaining 29 THPs (72%) identified coho using streams, within a short distance, downstream. One or more additional safeguards to protect coho or their habitat were included in 98% of the THPs (39 out of 40). Two (5%) of the 40 THPs sampled did not have any coho within the THP area or immediately downstream of the plan area. In fact, one of these THPs did not even have a stream within the plan area. The following is a brief list of the most commonly found additional coho safeguards:

A. Wider WLPZ zones used than required by FPRs
B. No-cut WLPZ specified in Class I
C. No-cut WLPZ specified in Class II
D. Canopy retention percentage increased above that required FPRs
E. Use of a 100 sq. ft. bare soil threshold in WLPZ, for mulching or other erosion control mitigation measure (vs. 800 sq. ft)
F. No broadcast burning for site preparation
G. Full bench and/or excavator road construction on slopes of less than 65%
H. Stream culverts replaced on existing roads to meet a 100-year flood.
I. Existing roads to be deconstructed and properly abandoned
J. Stream culverts replaced to facilitate fish passage at all life stages

To obtain the most relevant information for the time available, I chose to inspect THPs on some of the larger ownerships in the coho region. Based on the best available information (and excluding Pacific Lumber Company for the above stated reasons) I requested permission from three of the larger companies in the north coast region. Using information from the three companies and commonly available sources, such as the CDF Forest and Rangeland Resources Assessment program (FRRAP), it appears that the three companies have the acreage shown in the table below under their ownership. These three ownerships' holdings comprise approximately 57 % of the 1.3 million acres held in privately owned redwood region timberlands (State of California, 1988).

Acreage owned	Landowner
Company A	237,000
Company B	47,000
Company C	456,000
Total Acreage of Above	740,000

Using the 40 sample THPs as a basis for inspection requests, I requested permission to inspect THPs selected, by me, which met the following criteria:

A. THPs must be partially or completely operated.
B. At least part of the THP that has been operated must have over-wintered.
C. THPs must be reasonably accessible to accommodate visitation within a half-day period.
D. THPs should not be in an area of active operations where visitation may pose potential safety concerns regarding tree felling, yarding, or log hauling operations.

In addition, I requested to inspect THPs outside of the 40 THP sample that would meet additional criteria, such as:

A. NMFS actively participated during the review process.
B. THPs have some component of “Legacy Road” or stream habitat

All three companies granted permission to inspect any THPs I selected. I selected nine THPs for inspection. In addition, each company supplied photocopies of relevant portions of each THP file. In September 2000, I conducted the inspections. My primary inspection interests centered around aspects involving logging systems, soil disturbance, road maintenance and installations (such as culverts, bridges and surface conditions), WLPZs and stream impacts, if any, from timber operations. In all of the aforementioned aspects, I was particularly interested in whether the THP specifications were implemented, and if the results appeared to protect water quality and coho habitat. I was also observant of whether timber operations could possibly improve coho habitat, rather than merely protecting or maintaining it.

In all nine THPs, I found the following:

A. Landowners were extensively using the “1997 CDFFP Coho Considerations” advisory package to design THPs.

B. All three landowners were using private, in-house, and/or public agency fisheries consultants to evaluate coho presence, requirements and mitigations. In two cases, watershed analysis or similar documents have been produced for the relevant watersheds In the third case, Company B was operating in Sprowl Creek and the Mattole River systems, and both have extensive California Department of Fish and Game surveys, records and reports.

C. In all nine THPs, each and every item listed in the THP important to coho protection was effectively and correctly implemented in the field.

D. On all nine THPs, I noted a consistent pattern of operation between what I read in the THPs and what I observed in the field. In all THPs, the RPFs were citing specifications that were required by the FPRs and “1997 CDFFP Coho Considerations.” However, in the field, the supervising logging RPFs were exceeding the specifications contained within the THP. For example, in one cable-logged unit, the THP specified a 150 feet WLPZ, since slopes were greater than 50%. The rules also allowed that the WLPZ could be reduced to 100 feet for cable logging. In the field, I observed that the WLPZ was kept at 150 feet rather than using the allowable

100 feet. Similar patterns were noted in canopy retention and harvesting of trees in the WLPZ. In fact, all three companies were using a “no harvest of conifers” policy in Class I WLPZs, even though the rules cited in the THP allowed some harvesting. Other examples were noted. In general, the three landowners appeared to be instituting a policy of using the FPRs as a design minimum and acting on the conservative side when implementing the FPRs in the field.

E. Eight of the nine THPs had road improvements or planned, engineered deconstruction (abandonment) tied to the THP. Each of the three companies had ongoing planning, evaluations and prioritization for the correction and improvement of “Legacy Roads.” In each case, the “Legacy Road” provisions contained in the THP was designed to improve coho functioning and habitat. Examples observed were:

   a) Planned abandonment of roads that are causing or have the potential to cause significant adverse impacts to coho or their habitat.

   b) Replacement of failing fills, “Humboldt Crossings,” and old failing culverts to prevent fill material from entering coho streams.

   c) (c) Extensive resurfacing of roads adjacent to coho watercourses with abrasion resistant rock to reduce fine sediments washing into ditch lines and into streams.

A. Only one of the nine THPs had NMFS consultation. (It was my understanding that at the time of this THP’s review by NMFS, this THP was one of 16 reviewed by NMFS, out of over 1,600 sent to it. This THP was a plan with current logging and had not over-wintered. Log skidding and hauling was suspended on the day of my inspection due to a half-inch of rain falling within the last 24 hours. Page 4 of the CDFFP response document details their participation and recommendations. All NMFS recommendations were agreed to by the landowner and were implemented.

B. All three companies have standing policies to shut down yarding and hauling at a moment’s notice for weather reasons. In fact, for the two days I spent inspecting Company C THPs, all yarding and hauling was shut down due to a rain event on Sept. 13, 2000-of about one-half to one inch of rain. Only timber falling was allowed to continue. Shutdowns may occur in mid-shift, if necessary.

C. All three companies had THPs that included geologic input by retained registered geologists or engineering geologists. Besides critical site identification and mitigation recommendations, the geologic reports gave estimates of erosion offsets if “Legacy Road” actions were tied to the THP.

D. In terms of slash burning as a tool for site preparation after clear cutting, I found that Companies A and B no longer broadcast burns as a company policy. Company C still does broadcast burn, but only where needed and where the risk to coho habitat is low. All three companies use full tree harvesting for the “no-burn units” and employ stroke delimbers or other types of tree processors on the landing. Landing piles are then burned or used to mulch skid trails around the landings. Even on Company C where broadcast burning is necessary, Class I and II WLPZs are lined before burning and stage sequencing is used to avoid sucking fire or super-heated air into the WLPZ and possibly scorching and damaging the WLPZ trees. Company C does less broadcast burning each year.

E. All three companies have stated that the conifers left in the Class I WLPZs are effectively there “forever.” There are no plans to log them in the future, when smaller conifers grow to larger sizes and could be counted in the LWD future recruitment

cohort. Therefore, on these three ownerships, it appears, in my professional opinion, that future recruitment of LWD comprised of large conifers is assured.

On the nine THPs, I observed no stream degradation in any Class I or II stream within or outside of the THP areas. I had opportunities to inspect streams and roads not included in the nine THPs in my fieldwork. As an example, Company B showed me portions of Sprowl Creek, where new bridges were installed and fish-trapping work was being done **outside** the limits of any active THP. Where sediment may have reached a watercourse, the amount appeared to be nonsignificant. In two instances, sediment appeared to have possibly reached a stream due to landslides from old roads that were not part of current or recent operations. In both cases, the amount appeared small and was abated by the landowner as soon as noticed.

In all nine THPs, the safeguards contained within the THPs and implemented in the field appeared to be effective in protecting coho habitat and associated water quality. Items such as WLPZ width, canopy retention percentages, LWD recruitment potentials, operation limitations during wet weather, and others were all executed as specified within the THPs. No observable negative effects on coho habitat were observed with any Class I, II or III streams. Erosion control methods appeared to be working satisfactorily on both roads and within harvest units.

The three landowners appear to be treating the FPRs as “minimum standards,” which provide the floor from which the RPFs begin to construct the THP. Additional mitigations are built-in as site-specific conditions warrant. Because the RPFs are exceeding the stated FPRs during THP execution, such as for canopy retention, a mere reading of the FPRs does not provide an adequate description or understanding of the mitigations and timber harvesting features that actually occur within a specific THP or on the ground. All three landowners were exceeding the FPRs regarding coho protection, both in their THPs and in practice. This is consistent with what I found in the 40 THP samples, where 39 out of the 40 THPs had included coho safeguards above the standards set within the FPRs. Based on the consistency (100%) of the on-the-ground implementation I observed, I believe that the same consistency of implementation is being met throughout these three timberowners’ lands, which make up 57% of the privately held redwood lands and form the heart of the coho region in northwestern California. I also believe that most other landowners exceed the minimum requirements since the system operates in that manner.

All nine THPs had coho habitat within the THP area, adjacent to the THP area or immediately downstream a short distance from the THP boundary. Indeed, the selection of the nine THPs was in large part predicated on this fact. The goal of the field inspection was to observe coho safeguards and their effectiveness and implementation. With this in mind, one should not draw the inference that every THP poses some danger to coho. Using the 40-THP sample, it appears that a small percentage of THPs, perhaps 5% within the three counties surveyed, will not have conditions where coho or their habitat exist within or immediately downstream from the THP area. Hence, not every THP has the potential to harm coho.

In regard to the participation of NMFS on the one Company C THP, it appeared, in my professional opinion, that there were other THPs, even within the nine I selected, which had more possibilities for coho impacts than the one reviewed by NMFS. Be that as it may, the requested and agreed to NMFS recommendations, which had mostly to do with road-related items, did not appear to produce a THP noticeably different from what Company C did on its other three THPs that I inspected.

Besides the aforementioned findings regarding THPs conducted under today’s FPRs, it was observed that logging is proactively improving coho habitat throughout the region. Examples observed and documented include:

A. Formalized “Legacy Road” improvement programs (correction, mitigation and engineered abandonment) tied to the THP are removing many “loaded cannons” which have the potential to deliver very large amounts of sediment to coho streams.

By including these “Legacy Road” corrections in the THP, the landowners have made such actions enforceable by state agencies, rather than voluntary.

B. Streams deficient in LWD due to CDFG stream clean-out programs of 30-50 years ago are being improved by planned and permitted LWD placements, with CDFG approval, into coho streams. These LWD additions are often tied into THP requirements as is done with “Legacy Road” improvements.

While the FPRs regarding coho are effective in preserving coho habitat, factors including ocean conditions, inter- and intra-annual variation in hydrologic conditions, land use practices, water diversion project operations, and a large number of other factors have been identified as influencing the population dynamics and resiliency of the coho salmon population. The status of the population to be viewed within the context of these complex and interacting factors and not solely as a forest practices effect. Additional time and monitoring information will be required to further evaluate the adequacy and biological response of the coho population to these enhanced regulatory protections.(Hansen, 2002).

In summary, the Senate Research Report does not include any current research or performance-based data, such as cited above, or recent research and monitoring studies to support its allegations that the THP process is flawed, inadequate, and ineffective in meeting its obligation to protect water quality during forest operations.

5. <u>The California Forest Practices Act protects terrestrial endangered species</u>

Again while there are many T&E listed species, along with species designated by the FPRs to be “sensitive”, who live in California’s forests, the spotted owl, both northern and California, has been the subject of much interest and FPA rule making. This report will use the spotted owl as an example of how modern FPRs have protected these birds.

In the late 1980s, it was assumed that spotted owls were old growth dependent, but no one really knew. In fact during hearings prior to listing, BOFFP members were hard pressed to get the scientists of the US Forest Service and USFWS to survey second growth forests. In 1986, at a BOFFP meeting in Fresno, CDFG testified that only 73 out of a known 1460 spotted owl-nesting areas in California were on private land (Martin, 1989). It was apparent to some RPFs that a listing was about to be made based on very poor data and assumptions. The Northern spotted owl was listed as threatened by the USFWS in 1990.

Today, it is known that the varying figures given by wildlife officials during the late 1980s, purporting to be Northern spotted owl population figures, were not only way low, but that the Northern spotted owl turned out not to be old growth dependent. Give spotted owls a nesting tree, sheltered roost trees to protect them from solar stresses during the heat of the day, refuge from predatory birds, trees in the nearby area that have structural attributes akin to old growth, and a good food supply, spotted owls thrive in second growth forests.

In California, dusky footed wood rats are epidemic in maturing clearcuts and are a preferred food source for spotted owls in northwestern California. For spotted owls, a regenerating clearcut is akin to having a fast food restaurant next door. In fact, on Simpson Resources Company lands alone, in Humboldt and Del Norte counties, the company currently has banded 1,064 owls on or near their properties, which may be the greatest concentration of owls known to exist on managed timberlands anywhere (Jim Brown, Simpson Resources Company, 2002, personal communication). With the owls on other ownerships in these two counties, it is readily apparent that there are nearly as many owls in just two counties as were thought to be in all of California in 1990. Simpson's Northern Spotted Owl HCP has been in effect for more than six years and Simpson’s lands are around 98% second growth. The current FPRs protecting the Northern spotted owl are basically taken from what have been proven to be effective on Simpson’s ownership.

In 2002, USFWS was petitioned to list the California spotted owl by the Center for Biological Diversity and the Sierra Nevada Protection Campaign. After the experience with the Northern spotted owl, both the scientists and landowners had plenty of evidence to answer this listing solicitation. For example, genetic studies in the early 1990s and to date had not been able to demonstrate any genetic or morphological differences between the Northern and California spotted owls that rise to the level of describing different sub-species (Barroclough and Gutierrez, 1990; Federal Register (February 14, 2003)). Given the lack of genetic and morphological differences between the Northern and California spotted owls, the current separation between these two spotted owls is probably not warranted. With that in mind, the combined populations of the Northern and California spotted owls are essentially continuous across its range in California with over 5,000 owl sites (8,000 – 10,000 individuals) identified to date. Additionally, evidence was presented that the California spotted owl still occurs throughout all or most of its historical range. Survey data indicates there are approximately 2,200 sites or territories in the Sierra Nevada and Southern California where California spotted owls have been recently observed (Appendix F).

The USFWS found no clear statistical evidence to show that the California spotted owl is declining throughout its range. Completing a 12-month review as required by the ESA, USFWS biologists concluded in early 2003, based on the best scientific and commercial information available, that the overall magnitude of current threats to the California spotted owl does not rise to a level requiring federal protection and declined to list the California spotted owl. In their decision in the *Federal Register* (February 14, 2003 (Volume 68, Number 31:Page 7580-7608)) the USFWS stated that the FPRs requirement for a SYP and MSP "...does provide a sophisticated projection for long term increases in habitats characterized as suitable for nesting, roosting, foraging and dispersal by spotted owls. These habitats will be well distributed across the landscape".

In a February 10, 2003 news release, the USFWS additionally stated:

> " We have based our decision in part because we believe current land management direction on Federal lands (the Sierra Nevada Framework) and long-range timber harvest strategies on commercial timberlands have projected increases in habitats important to spotted owl nesting, roosting, and foraging." (Steve Thompson, USFWS manager of the Service's California-Nevada Operations Office.)

6. <u>Economic Implications of Senate Resources Report's Recommendations</u>

The Senate Resources Report identified a number of issues and recommended solutions based on allegations and assumed problems in California forestry. As has been previously discussed, most of the issues raised are in direct opposition to the facts. The Senate Resources Report proposed to:

1. Ban or severely limit even-aged silviculture, including clearcutting.
2. Mandate the SWQCB to independently certify THPs as to their fidelity to the relevant basin plan and any sediment discharge requirements,
3. Add additional requirements on CIA for THPs, and
4. Ban the harvest of old-growth trees under any circumstances.

Individually and in the aggregate, each of these proposals, if imposed, would have a detrimental effect on forestland owners, forestry investment, and rural communities in the state. Some of the proposals have greater effects than others. For example, the proposal to limit the rate of harvest under even-aged silviculture (clearcutting, shelter-wood and seed-tree) by itself would decrease the allowable sustained yield of some companies currently using this method by 30% (Dr. Dan Opalach, Personal Communication, 2003). In 2001, CDFFP reported that statewide, 41% of the acres harvested fell into even-aged methods. Since several major

California forest industry companies have sustained yields of more than 250 million board feet and use even-aged silviculture as their primary stand-regeneration method, the impact of a 30% reduction on their annual cut is apparent. It is logical to assume that more than 41% of the annual harvest would be affected, since these are acres to be regenerated and often produce the highest harvest yields per acre. Assuming an annual cut equal to 2001's – 1.4 bbf – a 30% reduction of even-aged harvest (605 mmbf) would be equal to around 182 mmbf. Using standard manufacturing ratios, this could result in a potential loss of 1,545 mill and logging jobs, and another 1,700 support and service jobs.

Another of the proposals, the Heritage Tree (old-growth harvest restriction) proposal which was originally proposed as an Initiative in 2001, was analyzed by Forest Economics Professor William McKillop (Appendix H) to result in an immediate reduction in harvest of 32% (371 mmbf), a loss of 4,200 timber jobs in the long-term, with additional regional impacts on indirect unemployment of 9,000 rural community jobs, and a reduction of estimated tax collections of $14.4 million.

Each landowner's situation will be different and the total impact of these proposals will change with the company. However, from past experience, a summary of effects can be predicted, some more precise than others:

- For every million board feet reduction in harvest, a loss of about 6.4 mill and logging jobs will occur (U.S. Dept. of Commerce, 1998).
- Each job lost in the mill and logging sectors is equivalent to an annual payroll of $30,000 per employee (U.S. Dept. of Commerce, 1998). These are some of the few family wage jobs left in timber-dependent counties.
- For every million board feet reduction in harvest, a loss of another 7.1 jobs in supporting and service industries will occur. This assumes a multiplier effect of 2.1 (U.S. Forest Service and U.S. Bureau of Land Management. 1993).
- More miles of roads will need to be kept open to access more acres to try and sustain a company's mill needs. Landowners will have to re-enter watersheds on a more frequent basis, resulting in a multitude of undesirable environmental consequences, and associated logging and road maintenance costs.
- More sawmills and other wood-products plants will close (Appendix I).
- California will increase its dependence on the import of lumber and other wood products, at 80% currently.
- Loss in revenues to state and local governments will be many and significant under the proposals. State income tax payments by wage earners will be reduced significantly. State income taxes paid by corporations and other timber owners will decrease. Losses in timber yield tax collections will occur. Sales tax collections will also fall since fewer pieces of equipment will be sold, and logging and milling firms will purchase fewer supplies. Property tax revenues will fall as timberlands' assessed values decrease under lower sustained-yield outputs.
- Landowners will incur substantial increases in management costs because of watershed assessments and monitoring for the cumulative effects proposal. Additional THP preparation, administration of THPs and timber sales, loss of ability to salvage timber, need to inventory road systems, need for additional road rocking, and potential legal costs due to loosely written rules will add to the costs for timberland owners. These costs could amount to tens of millions of dollars. CFA estimates that THP preparation costs have been on a steep upward trend, from $400 in 1988, $8,000 in 1995 and to about $25,000 in 2002. As these costs rise, more and more small landowners are precluded from harvesting as the volume to support THP preparation becomes too large for them to participate. Logically, the high costs imposed by the proposals would force smaller owners out of the timberland owning business. Larger landowners have for some time, survived the increasing THP costs.

However, even for some of them, forestry becomes a poor investment choice and disinvestment will occur.

- Increases in the assessment of fees and enforcement costs. According to budget data from the Legislative Analyst's Office, it is estimated that the costs have increased 97% for forest practice regulation since 1997– or about 20% a year. The new proposals, if initiated, will increase the state's costs markedly.
- Expenditures will most likely be required due to a regulatory taking – under the Fifth Amendment of the U.S. Constitution – by the state, due to the prohibition on harvesting within old-growth stands and individual old-growth trees. Moreover, since this proposal in essence creates a public trust resource for large old trees that has not been previously recognized in statute or common law, and since a value can be assigned to each tree, the state would be liable to compensate the landowner the determined value of each standing tree. Besides the cost of purchase of these trees, a loss of property tax revenue will also occur. These costs could amount to tens of billions of dollars since data from USFS and CDDFP estimate that there are currently more than 11 million large trees that exceed 150 years of age in California on private forestlands. While this number appears to be significant, one should be aware that 90% of the state's large old-growth trees (estimated to be more than 100 million trees) are already preserved in public ownership such as national and state parks and national forests (Appendix G).
- There are numerous other adverse environmental consequences that will occur under the old-growth proposal. First, there will be no inclination to grow large, old trees in the future. As these large old trees die and are not replaced, over time the distribution of diameter classes will be skewed to smaller diameter trees. From a silvicultural perspective, landowners managing forestlands under an uneven-aged (select harvesting) management regime will be forced to consider more even-aged (clearcutting) management.

In addition to the forest landowner impacts noted above, there will be a severe cumulative impact on the already struggling economies of the timber-dependent communities of the state. Currently a recession in the U.S. economy, a nearly complete collapse of harvesting from public timberlands, and increased costs and restrictions from state forest-practices regulation have combined to produce a major reduction in employment in California's wood products sector. Despite a continuation of high levels of national wood-products demand, California's harvest and employment in wood products continued to decline. Since 1989, California has lost 77 wood product mills and factories of all types. This has translated into job losses amounting to 10,250 forest products jobs, 7,700 mill jobs and 2,550 woods jobs (P.F. Ehinger and Associates, personal Communication, 2003). Today there are less than 45 mills left in the state. These job losses do not account for losses in associated businesses that supplied goods and services to these mills and employees that would increase the negative impact on these communities. In addition, the volume harvested from private lands has decreased by more than 25% since 1997, and the number of THPs has dropped by 30% in the same time period.

While these mill closings and job losses may not seem significant in an economy as large as California's, it is worth noting that the harvesting of timber in California is a significant element of the state's overall economy. Indeed, in many areas of the state, timber harvesting and forest management are the predominant economic activities. The negative fiscal impacts described above will hit hardest in the some of the least economically advantaged counties of California. In fact, only 10 California counties account for more than 76% of the 2001 timber harvest, almost all of it from private lands. The lack of proximity to metropolitan areas, the large amounts of federal timberland ownership, and a lack of modern infrastructure mean that other family wage employment opportunities are almost non-existent for workers in these timber-dependent communities.

A prime example of the cumulative economic effect possible from the proposals offered up by the Senate Resources Report is the town of Hayfork in Trinity County. In 2000, Trinity

County unemployment rates were as much as 50% above the statewide unemployment level. (A loss of even 100 to 200 jobs can be a severe blow where the total labor force is less than 6,000, according to the California State Department of Commerce.) In 2000, Hayfork's unemployment figure was 21%, compared with 7% for California as a whole.

Up to the early 1990s, Hayfork was a booming small town, fueled by a robust national demand for lumber. In 1996, the sawmill closed laying off 110 workers in the mill and an estimated 35-40 woods workers. In 1989, about 325 million board feet of timber were harvested in Trinity County, according to the SBE. In 2001, that figure fell to 83.5 million board feet (a 75% decrease)–- and most of that was from private land.

In 2000, 18% of Hayfork's families lived in poverty, compared with 11% statewide. Twenty-eight percent of the town's children were poor, compared with 19 percent for the state. Median family income was a bit under $26,000, while the state's average was slightly more than $53,000. From 1990 to 2000, the town's population dropped from 2,605 to 2,315. The young people are leaving and the schools struggle to survive. Hayfork lost 25% of its residents age 20 or younger, and 32 percent of the residents in the 20-44 age group. Spousal abuse incidents increased, as did the use of drugs and alcohol. Today, the theater is closed and shuttered. Only one gas station is left, one of the hardware stores burned down and never reopened, a grocery store closed and only two restaurants are left. There are other towns just like Hayfork scattered throughout the timbered counties of California. Other communities are just one mill closure away from being impoverished.

As has been pointed out previously, California already has a set of FPRs which makes the harvesting and growing of timber much more expensive and cumbersome than Oregon and Washington. Adding additional regulations and layers to the THP system can only add to the costs, both to landowners and to the state. The adverse effects on forest landowners of more regulations, such as those proposed above, would be difficult in good times to accommodate, but today they would shake the very viability of this industry at a time of extreme economic weakness already exacerbated by regulatory gridlock. The cumulative effect of these proposals, promulgated without any scientific justification on both forest landowners and timber-dependent communities will lead to more Hayforks and more forestry companies leaving California.

Summary

California forest landowners are operating under the toughest set of FPRs in the world and have regulatory costs that greatly exceed their neighboring states to the north. Global competition and restrictions in operations in California, both on federal and private lands, have California importing 80% of its wood needs from outside the state. This amount is predicted to grow in the coming years.

This report has demonstrated that:

1. California is growing significantly more timber than it is harvesting and sustained yield is a fact of life. Standing volume is increasing and predicted to increase at a faster rate in the next decades. As of 2001, private timberland owners are supplying more than 92% of the state's annual cut.

2. The cost and difficulty of conducting a forestry business in California has increased to the point that some companies are curtailing future investments or disinvesting in the state.

3. Old growth forest logging is not a problem on California's private timberlands. In fact, forest stands that are old growth or structurally mimic old growth are increasing on private lands.

4. Clearcutting is a valid forestry management tool, is not being over-used or abused in California, and is adequately controlled and reviewed by the FPRs.

5. The California Forest Practices Act protects water quality through harvest planning, environmental analysis, regulation, enforcement, research and monitoring.

6. The California Forest Practices Act protects aquatic and terrestrial endangered species. Prime examples are protection of coho habitat and the success with spotted owls.

7. California forest practices are protecting environmental quality and have adapted to meet new needs and requirements.

8. The Senate Resources Report identified a number of issues and recommended solutions based on allegations and assumed problems in California forestry. As has been previously discussed, most of the issues raised are in direct opposition to the facts. Costs to the state could be in the billions of dollars. One example is the Heritage Tree (old-growth harvest restriction) proposal which was originally proposed as an Initiative in 2001, and was estimated in a December 7, 2001 analysis by Dr. William McKillop to result in an immediate reduction in harvest of 32% (371 mmbf), a loss of 4,200 timber jobs in the long-term, with additional regional impacts on indirect unemployment of 9,000 rural community jobs and a reduction of estimated tax collections of $14.4 million. Another proposal that would have a similar and additive impact on jobs is the proposed limitation on the use of even-aged management. This proposal could result in as much as a 30% reduction on annual harvest from even-aged methods, which constitute at least 41% of total harvest, resulting in a potential loss of at least an additional 1,545 timber-related rural community jobs, along with another 1,700 support and service jobs. The detrimental effects on already struggling timber-dependent rural communities will be great. Cost to landowners could lead to further disinvestment in the forestry assets of the state.

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