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September 24, 2017

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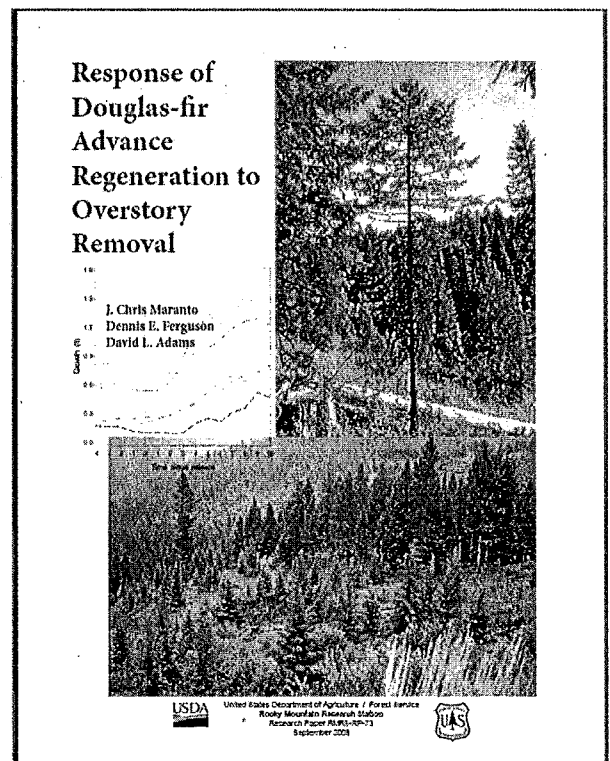
Greetings Secretary Laird, Director Pimlott, Chairman Gilles:

My name is Chris Maranto and for the last 17 years I have served as CDF/CalFire's **Sustained Yield Forester** in the Forest Practice program. CDF/CalFire goes to great lengths to present itself as the leader in forestry and wildland fire fighting. As a former wildland firefighter during the 1980's, I would not dispute such claims respective to CalFire's firefighting mastery. However, when it comes to forestry, I would take issue with a number of aspects.

I am personally writing to you to solicit your attention and leadership to address on-going issues which continue to plague the Department's oversight pertaining to regulations on forest sustainability.

You may recall that one of the central pillars of the *Z'Berg-Nejedly Forest Practice Act* is the management of California's forestlands for a sustainable flow of high quality forest products as well as multiple-use that include production of fresh water, protection of native wildlife and fisheries, and other public-trust natural resources "*in this and future generations*." As I will demonstrate, the issues confronting the various permit options that are specified in the Forest Practice Rules date back to the 1990's, years before my employment, and were of concern to even my predecessors. And since my employment, I have discovered many additional issues. I will address the more prominent ones here.

Up until now—and frankly for far too long—I have attempted to deal with these issues in the background and behind-the-scenes by presenting my specific concerns to management as well as serving as a conduit between management and our field staffs. I have also met with Executive Officers of Foresters Licensing, and members and staff of the Board of Forestry and Fire Protection (**BOF**) to discuss and make them aware of these issues.



But the BOF development of the Working Forest Management Plan (WFMP) really convinced me that something different was necessary. These new regulations were based on the NTMP program as a template, because this program is held up as a bed-of-roses. I have been illustrating for years this is not the case.

Don't get me wrong, there are good landowners and a few excellent foresters out there who's forests reflect the true intent of the legislation. But sadly, this is the result of sound professional forestry and ethical land stewardship and not a result of effective regulation.

In my more recent efforts, back in March 2016 as Chairman Gillless may recall, I reached out to Dr. Gillless whom teaches growth and yield at UC Berkeley/¹. I was seeking to engage Dr. Gillless behind the scenes about these issues because he seemed to have a view of the NTMP program that, if he had more information, would change substantially.

After I attempted to have this private conversation with Dr. Gillless, I submitted as a California RPF a personal letter in June 2016 to the **Professional Foresters Licensing Committee (PFEC)** for which I had two objectives (letter attached as **Appendix 1**). One, to ask specific questions that started with "*does PRC §752(b) of the Professional Foresters Law apply to analysis of sustained yield,*" what accountability does a supervisor or someone of higher rank assume if they over-rule the in-house expert, and thresholds PFEC would require before considering action against a RPF. My second objective was to directly impart to the PFEC that there were significant issues involving the competency of RPFs that prepare sustained yield analysis.

One recommendation I had of the PFEC was to first address the issue in their "Licensing News" newsletter, and they asked that I prepare a draft for their consideration. Attached as **Appendix 2** is my draft that discusses significant elements that should be considered before the profession allows a RPF to submit an analysis of forest sustainability.

As I detail below, it was subsequently suggested to me that I should approach Secretary Laird and Director Pimlott to make you aware and give you both an opportunity to address these issues.

Again, for the longest time I have tried to work cautiously on this difficult matter and I take no joy in having to raise this issue to your level. If you were to query our experienced and properly trained staffs in private, you would learn that many have little confidence that our sustained yield program is being effectively implemented. As you read this report I hope that it becomes apparent that significant changes are necessary in order to deliver an effective program consistent with State laws and regulations. Director Pimlott, you likely recall how the Department struggled for decades in sending foresters to Academy until you issued Department-wide direction to make it happen; in a lot of ways this issue needs the same firm directive.

Sincerely,



J. Chris Maranto, MS, CF #772, RPF #2502

cc: Mike Lopez, President, CalFire Local 2881.
Richard Wilson, former Director, California Department of Forestry & Fire Protection, & Board of Forestry member.
Robert Heald, RPF #1808, former Board of Forestry member and current RPF test writer/grader.

¹ Dr. Gillless is co-author of a forestry textbook which I have in my personal library that teaches foresters various methods in decision making. ("Decision Methods for Forest Resource Management" by Joseph Buongiorno and J. Keith Gillless, 2003.)

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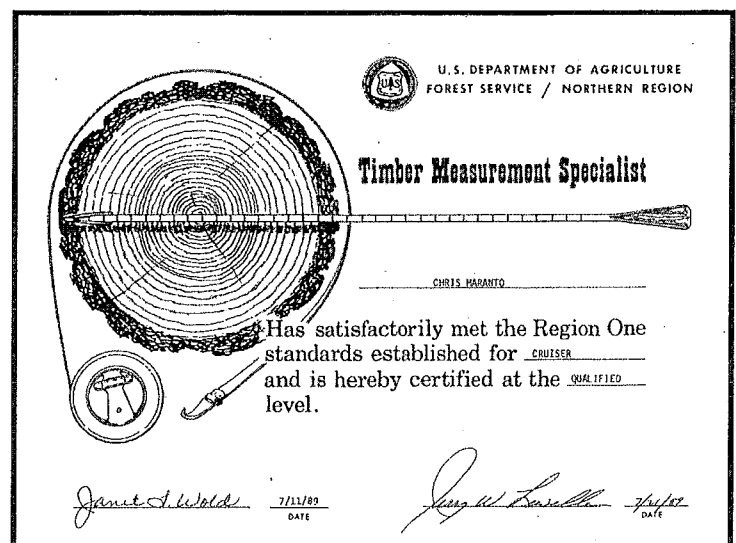
Introduction

Former Board of Forestry and Department Leaders: I first want to provide you with my rationale for including former CDF Director Richard Wilson and former Board of Forestry member Robert Heald as parties to this letter. Both individuals likely could help you understand the issues that follow.

Richard Wilson served as a member of the Board of Forestry during the 1980's and then as CDF Director for most of the 1990's, a time of tremendous turmoil within forest industry due to public outcry for the apparent liquation that was occurring across the west (California was a focal point due to the high-profile nature of the old growth redwood stands, but a similar process discussed below was occurring in Idaho, Montana and other states at the time). Although there were obvious signs of growing pains, during Director Wilson's tenure the Department was out front and worked hard to educate the RPF community on the many rule changes. Director Wilson also penned several Department documents on sustained yield and watershed protection and the internal documents show that he was intimately involved in implementation of the sustained yield rules. Such direct and firm involvement by the Director of our agency set the tone to all staff that these issues were contemporary, serious and required constant attention.

I additionally included Robert Heald as it is my understanding that he was instrumental in crafting the sustained yield rules that remain in effect today. He was also chair of a Board of Forestry committee that I appeared in front of twice during 2004 representing CDF in regard to sustained yield for NTMPs. During those appearances, I discussed that some RPFs were not stratifying their forest inventory in to stands. Mr. Heald responded to a packed room that included CDF upper management that the Department should not approve any NTMP where the RPF had failed to stratify. Although retired and living in Arizona, Mr. Heald currently serves as a "grader/test writing" for the RPF exam and is respected for his knowledge on these complicated issues.

My Background: Before I proceed, I first want to present some information on my professional background. I graduated from the University of Idaho with a BS (1990) and MS (1993) in Forest Management where my Master's degree was in quantitative silviculture. My research was published by the U.S. Forest Service as Research Paper RMRS-RP-73 (http://www.fs.fed.us/rm/pubs/rmrs_rp073.pdf). While in Idaho, I obtained certification as a U.S.F.S. Region One Timber Cruiser, and Red Card certification and endorsement in "Line Clearing" where I served 3 years on Type II hand crews and as a firefighter on an engine (**Figure 1**) with the Idaho Department of Lands (CalFire's counterpart). In 1994, I obtained California RPF status where until employment with CDF in June 2000, I worked for forestry consulting firms as I prepared THPs and developed sustained yield analyses for Sierra Pacific Industries and Roseburg Resources Company. On a smaller scale, I worked with independent RPFs in their development of NTMPs. My position with CDF/CalFire is very technical and my responsibilities chiefly revolve around the administration of 30 industrial "MSP" (*maximum sustained production of high-quality timber products*) plans submitted under Option A, B (SYP) or PTEIR that encompasses roughly 4-million acres. When called upon, I may also be involved in assisting the field units with silviculture questions across all permit types, assisting review teams with



analyses of NTMPs and addressing consistency issues in Timber Harvest Plans associated with corresponding MSP analysis. To illustrate the technical nature of my work several examples are provided:

- 2014 *Collins Almanor SYP renewal*, although no longer available on CalFire's Internet site is attached as **Appendix 3**.
- 2007 rule compliance for an "Emergency" harvest permit for *Fuel Hazard Reduction* that required the mathematical reconstruction of a forest stand back to its pre-harvest state needed to evaluate whether the RPF had increased the average diameter of the post-harvest stand as required in regulation (attached as **Appendix 4**).

AND

- Humboldt Redwood Company Option A review available on the CalFire THP library as linked in the footnote:²

What follows reflects my explanation for my letter to PFEC, issues of RPF competency, my numerous attempts dating to 2002 to raise awareness that professional practices and our rules on silviculture and sustainability were not being followed, my participation in helping craft the WFMP legislation and the unresolved

Figure 1. Firefighter on Idaho Department of Lands engine in 1987.



² [ftp://thp.fire.ca.gov/THPLibrary/North Coast Region/THPs/THPs2015/1-15-085HUM/Amendments/Major%20Am%20%231/20160526_1-15-085HUM_AM1S_ADD-CDF-COR.pdf](ftp://thp.fire.ca.gov/THPLibrary/North_Coast_Region/THPs/THPs2015/1-15-085HUM/Amendments/Major%20Am%20%231/20160526_1-15-085HUM_AM1S_ADD-CDF-COR.pdf)

issues coming out of that Legislation, examples of Department experts and competent Inspectors having been over-ruled or ignored by superiors, and issues with industry analyses of sustainability.

A. What Prompted My Letter to PFEC

As I conveyed in my cover letter, I submitted a personal letter to *Professional Foresters Licensing Committee (PFEC, or Forester's Licensing)* to ask specifically if **PRC § 752(b)** applies to the discipline of forest sustainability (a.k.a., *growth & yield, sustained yield*). I believe it necessary to present to you what factors came together to prompt my letter, which included the following:

- 1) **RPF representations made to the BOF during development of the WFMP.** During development of the regulations that began in 2014 that would define the *Working Forest Management Plan (WFMP)* program, I observed numerous verbal and written statements made to the BOF and its Forest Management Committee by RPFs. Some comments displayed simple ignorance of past Board actions and legislative intent, others were openly disingenuous. Further, countless claims were made by numerous RPFs that no information regarding abuse of the NTMP program had ever been presented (Option A plans were also thrown into these statements). **This is simply not true.**

Because of this, I went back to research prior correspondence that I had with many RPF's over my tenure, both my formal review questions and discussions made outside of the review record. As I detail below in Section D, I list over 16 cases where I had raised the "red flag." This list does not include my communications with RPFs that were well aware of the issues but continued to portray the opposite to the BOF.

- 2) **Characterizations of the Department's NTMP Report to the Legislature.** Additionally, during committee hearings for the WFMP, BOF Forest Management Committee Chair Stu Farber commented numerous times that the Department's 2003 **NTMP Report to the Legislature** failed to identify any issues with the NTMP program. This and other repeated assertions by other individuals created a perception that the NTMP program was a "bed-of-roses" and was a perfect template for the WFMP regulations. I need to convey and as detailed below that in developing the WFMP legislation, the Assembly's Natural Resources working group lead by Assembly staffer Mario DeBernardo was well aware that there were many issues with the NTMP program but we ran out of time to address them all. This is further detailed below. And as I conveyed to the BOF committee this past year (2016)—which I also conveyed to Assembly's Natural Resources working group in 2012 and before that, Doug Piirto's BOF Forest Management committee in 2010—the Department's **Report to the Legislature** did not tell the full story as it omitted all issues that had plagued the NTMP program.

As I described in these public venues and many times to Department management as well as my letter to Dr. Gilles, an "Appendix D" was developed as part of the main report to the Legislature. This appendix spanned 7.5 pages covering 22 specific items for which Department review teams had expressed concerns. This draft appendix is presented here under **Appendix 5** including e-mail communications with Department personnel at the time as I solicit their input.

During development of the report, the Department's Deputy Director Ross Johnson instructed the writers that "Appendix D" would be referenced but not included in the main report that would be delivered to the Legislature. Chief Johnson conveyed that "Appendix D" would only be included in the version that would be submitted to the BOF. Ultimately, **this did not occur**; there was no discussion

for omitted it, not even a modified version and the Department did not take actions to address Review Team concerns.

Regarding the WFMP, even though the WFMP enabling legislation refers to the NTMP program as the model that the WFMP was based, the narrative also provides that the WFMP was enhanced to ensure that RPFs understood that inventory stratification would be performed. Again, we ran out of time to address issues surrounding what constituted an adequate demonstration of forest sustainability. Those of us that were intimately involved in development of the WFMP legislature were under an impression that the Board of Forestry would take up the outstanding issues, which at the Board's very first committee hearing, did not want to entertain in the least. This was even obvious to the three attending environmentalist where they expressed concern and amazement to the chairman that the Department was prohibited from delivering its presentation regarding problems in the NTMP program.

- 3) **Other Certification Programs Relying on Department Reviews.** During the April 6, 2016 BOF meeting, retired CalFire Deputy Director Bill Snyder gave a presentation³ about the "*California Tree Farm Program*" where Bill affirmed a Board member question that a NTMP could substitute for the "*written management plan*" that would be required in this new certification program for California, that will be under authority of the **American Forest Foundation**. I followed up in a note to ask Bill to ensure that his program inspectors examine each NTMP applicant to confirm that the inventory had been stratified and that the analysis of sustainability had employed an appropriate growth and yield model, as I wrote that I did not want to see "*this hole*" (i.e. "demonstrations" that do not comply with the Forest Practice Rules and professional standards) get "*any deeper*" with another program.

Bill responded that "*the core responsibility for growth and yield and post-harvest [standards] would still rest with CalFire*", and that (emphasis added) ... "*There could be a remote chance that the Tree Farm inspector would observe inconsistency with actual conditions on the ground that CalFire failed to note*". Based on this, it is my prediction that the State of California will end up with another miscarried program and **this must stop!**

- One point that I want to highlight from Bill's presentation to the BOF was a section on "*Standards of Sustainability & Guidelines*" for certification. "Standard 1: Commitment to Practicing Sustainable Forestry" requires that the "written forest management plan" "***reflect current knowledge of forest science & management***". Since the issue of stratification (that I detail below) has been a recognized practice in the profession dating to Gifford Pinchot's work in—1892—on the Biltmore Estate forest, many NTMPs could not comply with this standard. Further, several points should be noted that can best be summed up by Green Diamond's Dan Opalach 1995 presentation to CLFA's "*Growth & Yield*" workshop, which by-the-way was an excerpt from a chapter out of a forest management textbook that the BOF had submitted to OAL circa 1993/94 in documenting professional standards (emphasis added).

- ✓ "*The empirical core of our claim to manage land scientifically and to ensure that owner objectives are met lies in our ability to predict quantitatively the future characteristics of current and regenerated stands of a given stand type managed under a specified prescription. If we cannot predict with acceptable accuracy, then it is hard to convince*

³ Presentation available at this BOF Internet address (last accessed 9/21/16):
[http://www.bof.fire.ca.gov/board_business/binder_materials/2016/april_2016/full/full_14.0_california_tree_farm_presentation.p
df](http://www.bof.fire.ca.gov/board_business/binder_materials/2016/april_2016/full/full_14.0_california_tree_farm_presentation.pdf)

our clients that their goals are being met and that we foresters really know what we are talking about. Concepts are one thing, but the real world wants to know how much!"⁴

The Metastasizing of Incompetency. From another experience, also in 2016 CalFire staff member Jeff Calvert had returned from a meeting to convey a conversation he had where my name came up as he was visiting with two retired CalFire foresters that are now administering other certification programs (e.g., carbon, conservation easements) where they seek to piggyback on CalFire's permitting programs. They conveyed to Jeff that my "*perspectives*" represent just one way to meet sustained yield and by their very own "*perspectives*," they in effect hold the position that inventory stratification is not necessary in order to make an appraisal of sustainability. What they as well as many RPFs fail to understand is that stratification of a forest into "stands" is an absolute must in order to understand *stand dynamics* which correlates to growth rates, and which is necessary to determine what any particular site can optimally produce. Further, one reason for having professional standards is so that other properly trained foresters may derive similar results and conclusions from the same information; the "art" in forestry can only take you so far. Just like any two arson investigators, both should come to the same "point-of-origin" for where the fire started. Both disciplines, sustained yield analysis and arson investigation, are based on science. As it relates to forestry, any group of competent RPFs working independently from one another on the same piece of forest ownership will produce results that are similar in terms of baseline strata information and what can sustainably be produced under a specific management regime.

Based on a sample of plans that I have seen, if you were to examine plans approved under these now retired CDF/CalFire staff, you would find no accurate baseline, no legitimate analysis, and no obligation or commitments to sustained yield. In fact, in some cases, there is less public disclosure in the application of silviculture methods than in a standard THP. Periodically I have received from recent/current staff examples of approved plans that date in to the 1990s which do not comply with California regulations, professional standards, including the **Department's 1995 NTMP review standards**, which translates in to a "plan" that is not trackable for monitoring purposes. This has been a significant concern to competent Department staff. As one review staff member long ago commented, these "plans" reflect more of a *management theme* rather than a *plan*. To buttress my claim simply cross-reference each plan's content to the Department's 1995 "Review Guidelines for Maximum Sustained Production in Nonindustrial Timber Management Plans" attached as **Appendix 6**. This document was vetted and endorsed by the then BOF, was disseminated to the RPF community by the Department at the CLFA **1995** Growth & Yield Workshop held in Redding CA., and then re-distributed by the Department in 2006 as incorporated with a new Department "Growth and Yield Guidelines". It should become *painfully clear* to foresters that are capable of recognizing competent work that many of these NTMPs are indeed, as Helge Eng wrote in August 2000, "*meaningless both in a professional and regulatory sense.*"

From time-to-time, I receive phone calls from auditors in the forest certification programs (SFI, FSC) and carbon markets. They typically want to know about California rules governing sustained yield. Although as they convey they conduct their own audits, I'm compelled to tell them that they should not in any regard rely on Department approval for the simple fact that politics, management discretion and disagreement between review team members come into play in the review process. And as reflected

⁴ From Davis, Lawrence S., K. Norman Johnson. 1987. Forest Management, 3rd edition. McGraw-Hill Book Co., New York. In Chapter 2: *Elements of Forest Management: Land Classification, Prescriptions, and Yield Predictions*. Submitted to OAL as per their requirement to document professional standards in support of the BOF's Silviculture & MSP rules that became and have remained effective since May 1994.

below, these issues are not minor. Consequently, I flat-out specify to these auditors that they have to do their own thorough review including inventory audit and mining of all computer simulations, not just a sample provided by the applicant.

- 4) **Rewarding Incompetent Work.** Competent RPFs continue to close their consulting businesses with some coming to work for CalFire and others are being out-competed for work because analyses that comply with the Rules and our professional standards cost a lot more. This is probably the most disturbing aspect as these competent RPFs will spend \$1,000s more that is necessary to accurately assess the baseline inventory, and then spend \$1,000s more in using a computer model that subsequently allows development of a professional and legally compliant management plan. Conversely, other RPFs that fail to stratify and use appropriate growth models submit NTMPs—at a much lower cost to their clients—but fail to comply with the Forest Practice Rules, which allows them to significantly under-cut their competition. This is a clear example of a regulatory program that has been and continues to be ineffectively administered. In effect, the Departments action/inaction on this issue creates an unfair business advantage that favors poor and inadequate work products.
- 5) **Department Not Requiring Inaccurate Plans to be Corrected.** Over my 17-year tenure I have discovered that the work by many RPFs to be inadequate. As I highlighted in my personal letter to BOF Chairman Dr. Gilles, one RPF responded to me in a memorandum with the following:

“We have hired a Consulting Mensurationist (Dr. Gerald M. Allen) to assist us with this NTMP... We are committed to re-submitting this NTMP with the upgrades that you request. However, please understand that until recently, our original NTMP format was accepted and approved by CDF for many years. Regardless of its shortcomings, this was the standard accepted by the Department.”

Dr. Allen was the mensuration professor at Humboldt State University. Up to this point-in-time this firm of RPFs had received approval for 14 plans covering 11,513-acres and there was no effort to have the RPF correct these plans.

There have been many other cases where previously approved NTMPs were found to be substantially faulty in their analysis. Two central issues are failure to stand type and as discussed further below, failure to account for harvest in developing projections of growth.

In another case of 6 NTMPs prepared by a different RPF, the Department had committed back in 2012 to send letters to the respective landowners to notify them of the flaws (as well as over-harvesting in 3 plans based on analyses of Board of Equalization data) and that each assessment would require a new analysis before any additional **Notice of Timber Operations** could be submitted. But, from the information I have it appears that the letters were never mailed.

In another case involving a large consulting firm that had been developing NTMPs from the early 1990s up to 2011, I discovered that they had not been accounting for harvest in their projections of growth. They simply pretended that the forest grew unharvested forever! I went on to develop a “critical issues” memo for CalFire management that identified significant issues in their planning template and identified the specific plans impacted by their faulty analyses. The list of affected NTMPs represented 79 plans covering 35,539-acres. **Not once** did management inquire about the status of this memo, thus it became apparent again that the Department’s priorities were someplace else. I subsequently learned in 2016 from a long-time review staff member that they were instructed to not raise issues with these approved plans, so long as they met **minimum stocking**, even though the plans

included narratives that indicated post-harvest stocking levels would exceed the Forest Practice minimum standards. I have said this for the longest time, even though the RPF community rails against government regulations and entitlement programs, they have successfully turned the NTMP program in to one of an *entitlement*. You can confirm this by listening to recordings of the Forest Management Committee meetings during 2010-2011.

- 6) **Correspondence with Dr. Gilless.** At the January 2016 WFMP workshop that was attended by the full Board, Dr. Gilless indicated that he could not understand how an analysis could be prepared that was absent projections of Basal Area. **This occurs in 99.9% of NTMPs** which I have tried to correct dating to my review of the San Jose Water Company NTMP from 2006.⁵ Then the two following Forest Management Committee meetings held in Redding, I continued to hear comments made by Chairman Farber and stakeholders which I decided needed to be addressed privately. Consequently, in March 2016, I approached Dr. Gilless with a private letter as I sought to have a professional discussion regarding the issues that plague the NTMP program, some of which I believe could come in to play in the WFMP program, to help him understand the on-going comments that were being submitted on behalf of the Department. Please find attached in **Appendix 7** my personal letter that I sent to Dr. Gilless. In it you will find my explanations and concerns that included the following:
- a) Genesis of the WFMP legislation;
 - b) CDF's 2003 *Report to the Legislature* on whether uneven-aged management and sustained yield was being achieved. As I conveyed in my letter, since Department's management did not follow through in submitting "Appendix D" to the BOF to address problems in the program, the report to the Legislature went on to paint an inaccurate portrait of the NTMP program. In hindsight, I regret that my "fingerprints" are all over this report. At the time and due to the issues that had been circulating throughout management, I was under a belief that the Department would subsequently "wake-up" and begin to implement the program properly. **Was I wrong!** and,
 - c) Discussion about RPF competency, with examples.
- 7) **CalFire Staff concerns with Forester's Licensing.** It has been conveyed to me numerous times from Unit Foresters to field Inspectors that licensing complaints have been worked up against RPFs as it related to the sustained yield analysis presented in NTMPs, but nothing ever came of them. I never attempted to follow up or explore why "*nothing ever came of them*" since such matters are confidential. Then last year in a private conversation I had with a PFEC committee member, I learned that in their long tenure on the PFEC, there has not been one complaint presented to the committee for this issue. I subsequently reviewed previous "Licensing News" publications dating to when I became a RPF in 1994, and I could not find not a single case that was related to sustained yield. Consequently, by way of submitting my letter to PFEC, I sought to notify them that there are significant issues of RPF competency in the NTMP program. Further, I sought to understand just what are the thresholds of RPF competency. Because of this, I have to ask the question, "*what is happening to the complaints being made from the field?*" Is CalFire management failing to move the cases forward? Or could the Executive Officers of Forester's Licensing have been dismissing them without PFEC consultations?

I should further add to this conversation that the Department had considered filing licensing cases against the RPFs involved in the apparent manipulation of a computer model back in 2002. In 2008

⁵ See my July 13, 2006 question #5 in the review record that can be found with the following link:
ftp://thp.fire.ca.gov/THPLibrary/North_Coast_Region/NTMPs/NTMPs2006/1-06NTMP-012%20SCL/20060713_1-06NTMP-012SCL_ADD-CDF.pdf

testimony in Federal Court, former CDF Sacramento Forest Practice Staff Chief testified that the Department had found that the computer model had “*significantly overstated what the growth and yield ought to be*” in that the results had been inflated. “*in the neighborhood of 40 to 50 percent over*” what would have resulted for PALCO’s plan of sustained yield if the model would have been properly parameterized. And this was coupled with the baseline inventory having been inflated by 181%. But then as the Staff Chief testified, the Department decided not to file licensing complaints in what likely would have been against 3 RPFs because “*...we didn’t think that the –that the discipline which might issue from such a thing would – would warrant the effort and time and work that might go into trying to pursue that. So we didn’t pursue it.*”

Clearly something is broken and this apparent breakdown needs to be confidently addressed.

As I go on to detail some of the more salient examples, please remember I have attempted to address these issues chiefly in the background for years. I do not get any satisfaction in going down this road. In fact, I have been working on this letter off-and-on since 2009, hoping that I could find justification to stop. But the last few years have become so disgusting and building with more issues that I now feel compelled to raise it to your level as our profession must have integrity and competency so that the Department can deliver an effective program of timberland regulation. Director Pimlott, you likely recall how the Department struggled for decades in sending foresters to Academy as required under their probation until you issued Department-wide direction to make it happen; this issue needs the same firm directive. I strongly encourage you sit down with other staff individually and in private if you want honest feedback.

B. Main Issues with NTMPs

1) RPF Failure to Stratify.

Several times over my tenure I have stated to Department staff and management—as well as the BOF in 2010—that when I took this job, I strongly sensed that I would face issues with industry landowners. But I was not remotely prepared for what I was to face in the NTMP program. When Forest Practice Staff Chief Jerry Ahlstrom hired me June 2000, he said that I wouldn’t have many friends in this position and I accepted that as part of doing my job. Prior to my discovery in 2009/⁶ that numerous RPFs had not been accounting for harvest when projecting forest growth, the most significant issue centered around RPF failure to divide NTMP forests into stands that would be defined by current forest conditions and future management goals. Delineating or stratifying a forest in to stands that have unique characteristics distinct from neighboring stands is called *stand typing*.⁷ Stand typing also incorporates the productivity of the soil which becomes the most significant predictor in growth models. For review...

- The forestry profession defines a “*stand*” as “*a contiguous group of trees sufficiently uniform in age-class distribution, composition, and structure [vertical and horizontal], and growing on a site of sufficiently uniform quality, to be a distinguishable unit*”.⁸

⁶ To be clear, the division-of-labor that the Department developed in the 1990’s as passed on to me upon my hire was that Sacramento would review industry plans with Region offices responsible for NTMPs. Consequently, Sacramento does not review every NTMP that is submitted across the state, but is available to assist Regions when time permits. My estimate on the proportion of NTMPs that Sacramento has reviewed is around 1%.

⁷ Further, the profession defines a “*type map*” as a “*map showing the distribution of various types of soil, vegetation, or site quality throughout a forest*”.³

⁸ The Dictionary of Forestry. 1998. Society of American Foresters. John A. Helms, editor. Bethesda, MD. 210p.

- In 2013, the California Legislature defined a “stand” as “a geographically identifiable group of trees sufficiently uniform in age-class distribution, composition, and structure and growing on a site of sufficiently uniform quality to be a distinguishable unit.” (PRC § 4597.1)⁹

Stratifying a forest into units or stands composed of similar characteristics is fundamental to developing a silviculture prescription. Like I have reported in both public and CalFire-only venues as early as 2002 and most recently as 2012, more than one-half of the 12 RPFs having the greatest number of acres in approved NTMPs had submitted NTMPs where no stratification had occurred.

Below, **Figure 2** represents the table that I prepared in 2003 that was used to illustrate to CalFire management and review staffs the magnitude of the problem; again, more than half of the 12 leading RPF’s listed in this table do not stratify and do not believe that it is necessary. I subsequently presented this table on two occasions that were open to the public: (1) to the BOF in 2010 when they were addressing the adequacy of the NTMP rules (another effort that died on the vine), and then to the Assembly’s Natural Resource Committee working group in 2012 in development of the WFMP legislation (and another effort that I now conclude fell short).

Explanations provided by RPFs in their efforts to justify that stand typing is not necessary make no sense and I can find no forestry literature that would support their notions of *forest management*. In my attempts to come to grips with why so many RPFs were not stratifying, I first discussed with my predecessors Dr. Helge Eng and Tim Robards.

Figure 2. Table of RPFs by number of submitted NTMPs and corresponding acres through October 2003.

Acreage Summary Of NTMPs By RPFs (through 10/2003, excludes RPFs having lesser acreages)

Acreage Summary Of NTMPs By RPFs (through 10/2003,				
Total Acres	Last Name	First Name	Total Plans	Total Acres
12,628	COHOON	DANIEL	16	2,419
10,522	SOLINSKY	WILLIAM	13	2,303
9,838	KENT	NICHOLAS	24	2,269
9,016	HOWARD	GARY	8	2,237
8,094	BLENCOWE	CRAIG	11	2,069
7,894	ABLE	JAMES	23	2,042
7,361	JACOBSZON	RANDALL	20	1,967
7,054	HOWELL/MOTL	MICHAEL/TIMOTHY	9	1,871
6,815	MAHONEY	DARCIE	20	1,862
6,237	POSSEHN	DENNIS	12	1,810
6,186	HOHMAN	STEPHEN	7	1,746
5,946	ANDERSON	CARL	5	1,675
5,678	STEWART	MARK	9	1,656

My original question and Dr. Eng response is attached as **Appendix 8** where he goes on to state that

“The strongest argument is probably that it gives them an insufficient basis for making management decisions, and for us to monitor progress. This is more of a common sense silviculture argument.”

Anyone with a legitimate background in forestry would recognize this response as spot-on.

⁹ This definition resulted from my efforts in drafting the WFMP legislation.

Tim Robards spoke to me directly that the failure to stratify is a professional issue that should be taken to *Forester's Licensing*. He also made the following comments that I had documented in my notes:

- 1) *The purpose of stratifying a forest is to identify or differentiate areas of contrasting stocking, productivity, composition and age class;*
- 2) *Stratifying a forest is a stocking issue because 'lumping' (not stratifying) does not get to the issue of appraising for adequate or full stocking which is needed to maximize productivity (i.e., growth levels) including addressing what a particular piece of ground (site) can sustainably produce.*
- 3) *Lumping could allow a RPF/landowner to high-grade and it wouldn't become apparent to the Department until it was too late. Then we would have tough row to hoe in making a licensing case.*

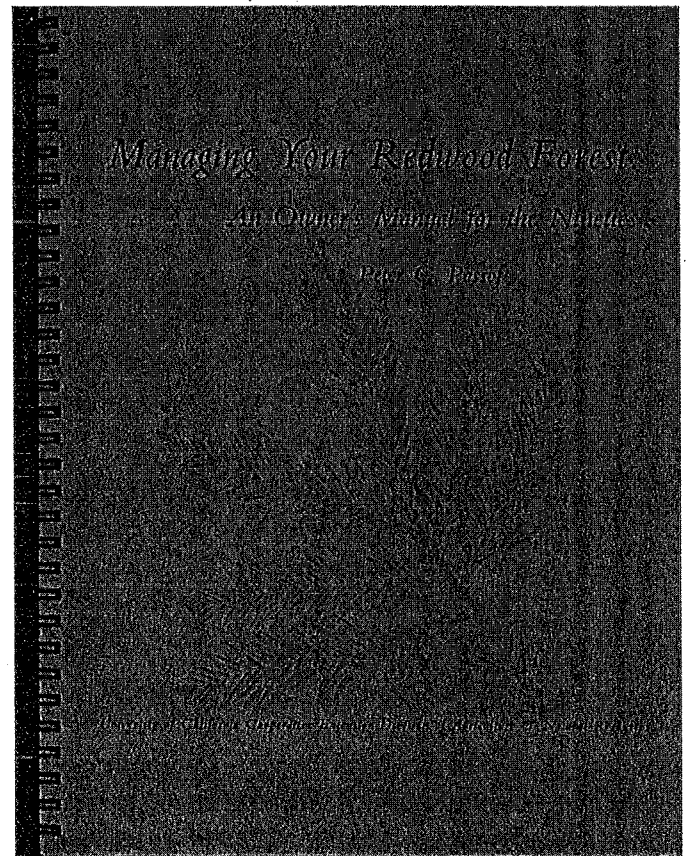
I also obtained and reviewed mensuration textbooks going back to 1935 (Tim Robard's personal library)¹⁰ and could not find any evidence of prior teachings that could support their notion of forest management without stand typing. Even more significant, back in July 2016 PBS television ran a one-hour documentary by the Forest History Society called "*America's First Forest; Carl Schenck and the Asheville Experiment*" that showed what was the first-ever forest management plan developed by America's first forester, Gifford Pinchot. The program showed Pinchot's inventory stand map he had prepared in 1892 for the Biltmore Forest Estate in North Carolina which covered approximately 7,000-acres where Pinchot had delineated **92 stands**, with the smallest stand represented at 5.7-acres (see **Appendix 9** for a facsimile of this historic map). Even a century ago trained foresters coming out of Europe recognized the importance that stratification played in understanding the relationship between stand dynamics, site productivity and tree growth.

Furthermore, the 1983 mensuration textbook that I had in college has the following¹¹;

"When applying growth and yield models, one assumes a relatively homogeneous stand with regard to independent variables (e.g., age, site index, BA) used to predict stand values. If there is significant variation in variables such as site or stand density for a given area, the area must be stratified into reasonably homogeneous stands and predictions made separately for each of these stands to ensure accurate results."

Moreover, the Department endorsed and funded a non-industrial landowner guide entitled "**Managing Your Redwood Forest: An Owner's Manual for the Nineties**" (1993) by Peter C. Passof/¹² states on page #32 the following:

"A well designed timber cruise will take into account variations in timber types so that each



¹⁰ Bruce, Donald and Francis X. Schumacher. 1935. Forest Mensuration. McGraw-Hill Book Company. New York.

¹¹ Avery, Thomas Eugene and Harold E. Burkhardt. 1983. In Forest Measurements, 3ed. McGraw-Hill Book Company. New York. (Specifically, Chapter 15: Growth & Yield Models; section 15-15; Applying Growth & Yield Models, page #303.

¹² Passof, P.C. 1993. Managing Your Redwood Forest: An Owner's Manual for the Nineties. Publ. of University of Calif. Cooperative Extension Division of Agriculture & Natural Resources, Davis, CA. 104 pp.

distinct type has a representative stand table. These data are then entered into a computer model...If the owner's objective is to have a sustainable forest, then it is critically important that an accurate estimate of growth is obtained in order to know how much can be safely harvested."

When I presented this manual during the PHI to the pair of RPFs for what became a multi-year review for 1-08NTMP-010 (SCR) having many deficiencies, the lead RPF responded to the inter-agency review team that Passof's work was "*old school*." I subsequently issued my report (see **Appendix 10**) that challenged the RPFs on multiple fronts and in my report, you will see photographs—both aerial and on-the-ground—of what was represented as a single (homogenous) stand. I believe your own review will show it clearly was not.

After I issued my report, one of the RPFs called my supervisor and told him that he was going to file complaints against the Unit Inspector and Unit Forester, as well as myself and my supervisor—for *not properly managing me*. At the same time, I reported this incident to Chairman Doug Piirto's BOF Forest Management Committee (2010). I want to add that it is real shame that the reality of what actually goes on in the woods is really never delivered to Sacramento. This NTMP was subsequently withdrawn covering up this shameful example of bad forestry.

GIGO ~ Garbage in, Garbage out

Finally, our Canadian neighbors have vast amounts of forests for which they offer unabashed and refreshing comments on the matter. Issued in February 2000 from the **Forest Practices Branch** of the *British Columbia Forest Service*, was the following entitled document:

"Guidelines for Collecting Input Data for Forest Growth Models used in British Columbia to Support the Development of Silviculture Prescriptions"

In the "*concluding remarks*" of this document contains discussion on "**GIGO: garbage in, garbage out**" where they describe with a series of questions why it is necessary to stratify a forest in to stands types. They close with the following comment:

"Without favourable answers to these questions, the next phase of the project (i.e., growth projections) is already compromised. Regardless of how well a model can simulate stand growth, the results are meaningless if the stand being simulated in the computer does not match what's on the ground. A well designed sampling plan is the first stage in the process to achieving simulation results that are believable and defensible."

None of these technical elements should be new to any properly trained forester!

The Beginning: Coming to grips in the magnitude of the problem; NTMP "1-01NTMP-054-HUM"

Over the years, I have collected many examples where the plan RPF had failed to stratify, several of which I detail further in this document as it leads to other issues that I present. The example that I want to introduce at this junction is one of the clearest. This 442-acre property had been fairly well abused in the past and an NTMP was submitted on it in 2001 where Region requested that I take a look at it. The data in **Figure 3** is compiled from the plan documents.

In the plan the RPF stated that *"In all regards, the timber stand is homogenous throughout the property,"* which I found was clearly not accurate. During the PHI (pre-harvest inspection) I observed 3-4 unique stand types from 3-year old plantations up to 45-year old timber stands. Further, the RPF had not stratify the timber stands resulting in homogenized (blended) inventory data that did not reflect any specific areas on this property. As indicated in this table the averaged volume per acre for this 442-acre NTMP was a meager 6,181 board feet/acre where the growth rate was a heroic 981 bd.ft./acre/year!

The RPF described that the age class distribution ranged from 10-years up to 45-years with an average of 25-years. Further, the RPF wrote that *"A significant component of timber in the 45-year age class exists within"* Management Unit #3.

The RPF went on to divide the total area in to four "Management Units" (MU) simply for the sake of "scheduling" the plan in to four harvest units. The error that resulted was that Management Units #1, 2 and 4 did not have the inventory volume that was represented as most of the merchantable trees were standing in MU #3. Additionally, MU #1 was not growing at the rate of 981 bd.ft./acre/year as all the trees were non-merchantable, less than 10 to 12-inches. And about 20% of the MU consisted of a recent Clearcut and utility right-of-way. (A subsequent RPF in 2015 had typed out the utility right-of-way as he wrote that PGE will never allow the trees to reach merchantability size.)

Appendix 11 consist of excerpts from the plan that serve to illustrate this discussion. Simply look at each "Size Class Distribution" table, and add up all redwood tree counts 18-inches in diameter (DBH) and larger then divide by acres from the respective Management Unit, which I have already done on the left margin to each table. They all pencil out at 14 trees per acre for a diameter range that varies 18 to 44-inches. Again, my observation during the PHI, MU #1 did not have any trees in this range as they were all sitting over in Management Unit #3 and a small area that carried over in to MU #4 as I recall.

As shown in **Figure 3** as well as stated on NTMP page #41 available in Appendix 11, MU #1 was the first of the four units scheduled for harvest beginning in 2006. The RPFs instructions to the landowner regarding the amount of harvest volume that he had projected that would come out of Management Unit #1 was faulty. This amount totaled 580,000 board feet (145-acres X 4,000 bd.ft./acre) which again, was not going to materialize because most of the volume was residing over in MU #3. In my review of MU #1, all 145-acres, I could not envision in what was a stand that currently had zero merchantable trees would be capable to deliver in harvest in four years (by 2006) any more than perhaps three 12 to 14-inch diameter trees per acre; not amounting to anything close to 4,000 board feet per acre.

Figure 3. Inventory data from NTMP 1-01NTMP-054-HUM.

Mgt Unit	Acres	Avg BA/Ac	Avg Vol/Ac	Growth/yr	1st Entry	"Projected Vol at Time of 1st Harvest"	"Projected Harvest Vol"
1	145	100	6,195	981 BF	2006	12,045	4,000
2	104	100	6,195	981 BF	2008	14,000	4,600
3	86	100	6,195	981 BF	2010	16,000	5,263
4	107	100	6,195	981 BF	2012	17,900	5,900

In my subsequent presentation to our review staffs I offered the following scenario as a real possibility:

What if the landowner goes to his/her bank for a short-term loan with his approved NTMP in hand and shows the bank official that his RPF estimates that 580,000 bd.ft. will be harvested in 2006 from Management Unit #1. The bank extends the loan that is secured with the volume projected for harvest in 2006 with an expectant balloon payment in 2007. Come time to harvest only a trickle is harvested out of Management Unit #1; nowhere close to what the RPF told his client and that CDF had approved. Will the landowner look at his RPF and CDF and pose, "What's going on? Is this what I have paid my RPF thousands of dollars for, and taxes to the state?"

In my discussions with the RPF, I learned that he did not conduct the inventory sample of the property, that it was other foresters from the consulting firm that he affiliated with. Further, I learned that the inventory design was one where the sole purpose is to appraise standing timber ("*timber appraisal cruise*") and that the sample plots were not number on the "cruise plot layout" map. Thus, you could not take the sample data and do any kind of analysis except for developing basic inventory statistics on the ownership. As explained below, such homogenized data is meaningless for use in developing silviculture prescriptions. (I do find it peculiar that some RPFs are not numbering their cruise plots on their maps, even if it was a *timber appraisal cruise*.)

The RPF subsequently wrote to me on June 12, 2002 a letter that said, "*I don't have the power to manipulate this inventory. So I'd incorporate into the NTMP, a system of re-inventory [out in the future] more appropriate and relevant to actual management. This is feasible and cost effective.*" My response was, why didn't you do this to begin with?

Additionally, regarding the inaccurate harvest projection specifically for Management Unit #1, the RPF said, "*I'd like to put a disclaimer in Item #14 to wit, "...actual yield from management units may be less proportionally, based upon acres not entered for management purposes..."*"

Even with these issues the supervisory Inspector recommended the plan for approval mainly due to significant erosion sores that the road network had. In the end, the plan was approved with its many shortcomings. This is not the kind of "forestry" that I was taught in college but this example has generally been the modus operandi for many RPFs.

2) Failure to evaluate Age Class. NTMPs are limited to the use of uneven-aged management methods and the predominant method used is Single-Tree Selection. This type of method is based on managing (i.e., maintaining or developing) trees across all diameter classes. To successfully implement this method new trees must be regenerated as a result of each harvest. What I found early on was that most RPFs that I had reviewed were simply using a sampling scheme where the only objective was to appraise how much standing timber volume was present. Consequently, besides the failure to stratify the forest in to **stands** as presented above, RPFs were failing to address age class distributions that are critical in planning for sustained yield and an even flow of forest products through each decade. **Figure 4** is from my presentations that I first presented to CDF/CalFire management and review teams in 2003 and my presentation to the CLFA 2005 Growth & Yield Workshop. It is important to point out that measuring for what are referred to as "non-merchantable" diameter classes is not a new concept with the introduction of the NTMP program in 1991.

Figure 4. Illustration used to explain the types of inventory designs that has been employed in most NTMPs, i.e., “cruising to appraise timber”.

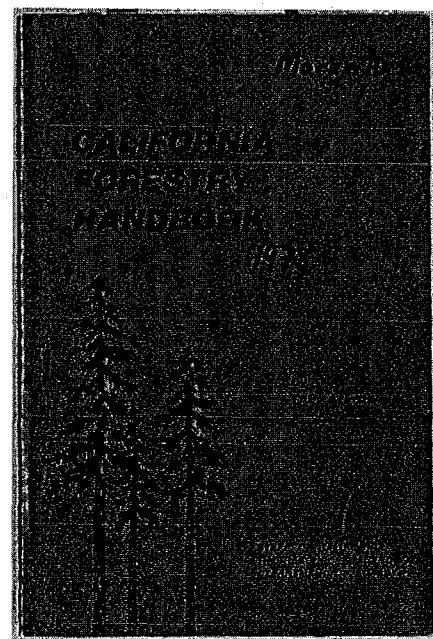
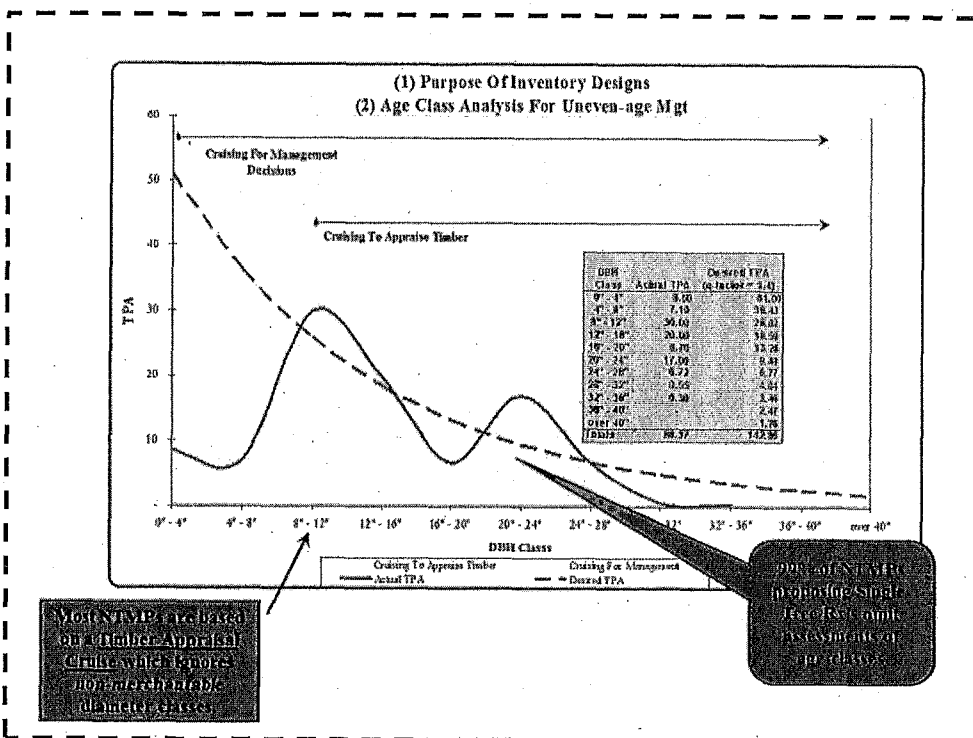
The California Forestry Handbook¹³ published in 1978 by the Department of Forestry in discussing “timber cruising” presents that “Reproduction, pole-size trees under 12” dbh” are also recorded, “not for volume purposes, but to get information for management needs.”

>>>This should be common sense for anyone trained in silviculture, and it takes little effort to implement.<<<

Furthermore, in leading off discussion on forest “management planning,” the handbook states that (emphasis added) “the concept of forest management includes the regulation of the forest so as to promote maximum continuous production of crops. This is called sustained yield. The objective is to eventually achieve a balance between the growth of a forest and the amount harvested.”

The handbook goes on to describe that having a proper distribution of “age classes” across the forest is key to forest “regulation” and attaining sustained yield. All of this should be basic knowledge to individuals trained in forest management.

3) Improper Use of Growth Models. The third significant issue that I faced through my tenure was the use by RPFs of inappropriate growth projection “models.” I first brought this issue up to managements’ attention in 2002 in my presentation to Department’s Forest Management Committee August 2002 meeting. Further, as discussed below I continued to voice concerns in 2010 with the BOF and in 2012 in my presentation to the working group which was writing the Legislation that Assembly Member Chesbro sponsored as AB 904, the **Working Forest Management Plan**. During the initial development of AB 904, Mario DeBernardo of the Assembly Committee on Natural Resources had requested Agency presentations “on the good and bad aspects of the NTMP program” (see October 01, 2012 e-mail correspondence in **Appendix 12**). In my October 10, 2012, reply I



¹³ Arvola, T.F. 1978. California Forestry Handbook. State of California, The Resources Agency, Department of Forestry. Sacramento, CA. 233 pp.

informed Mr. DeBernardo via e-mail that “Two of the ‘bad’ aspects are fairly significant though and goes on to raise issues around RPF competency in assessing for sustained yield.”

Figure 5 represents a slide from my October 16, 2012 Agency Presentation again “on the good and bad aspects of the NTMP program” that each agency was asked to present.

Figure 5. CalFire Agency presentation October 16, 2012 to the Assembly Committee on Natural Resources, NTMP/WFMP Working Group.

NTMP Growth Projections
5 Types Of Methodologies Utilized in Calif.

- 1) **% of inventory:** Growth & harvests are based on a % of inventory. (e.g. 20,000 x 3% growth = 600 BF/yr).
- 2) **Yield Tables:** Growth projections are based on “dialing-in” subject stand into yield table (e.g. Lindquest & Palley-1960, Schumacher- 1951).
- 3) **Stand Table Projection:** Future growth projections based on measurement of previous increment of diameter growth. Tree species and diameters must be sampled in proportion to occurrence.
- 4) **Individual Tree Model:** CACTOS, CRYPTOS, FORSEE, Forest Visualization System, etc.
- 5) **Soil Descriptions.** Growth obtain from Soil Survey descriptions. (MAI)

7

During my presentation, I questioned the appropriateness of 3 of the 5 methods that were being used by RPFs. During questioning by Mr. DeBernardo, he was intrigued by the issue and indicated that at a later date he wanted to take up this issue. Then in separate e-mails from November 14 and 27, 2012, I further engaged Mr. DeBernardo with additional “pointers” to look for as he embarked on his trip to Humboldt country for an NTMP workshop.

Additionally, I want to emphasis that during our deliberations other issues were discussed including examples of over-harvesting and not accounting for Basal Area stocking and thus over-projecting how much timber could be harvested. This is evidenced in Mr. DeBernardo’s November 26, 2012 e-mail where he prepared a summary of “*Issues, Concerns, and Solutions, Presented by Agencies to the NTMP Subgroup*” included as part of **Appendix 12**. You will also see that in my presentation in slide #28 that I had disclosed to participants a more recent development in NTMP review where RPFs were not accounting for harvest in their development of growth projections. It was during this period of development of the WFMP that I was beginning to come to grips in the magnitude of this new issue.

4) Failure to account for harvest in developing projections of growth.

Most astounding has been discovery and continued discovery of plans where RPFs have not accounted for the lost growth that comes from trees they plan to harvest. Essentially, they are cutting trees in the forest but never accounting for them in the model. As a result, they claim growth that never actually occurs which boosts their allowable cut, at least on paper. This is like having a bank account with a million dollars in it, regularly withdrawing money but always calculating interest as if you had all the money in the account. If a banker did this, they would go to jail. One of numerous examples is shown in the 2009 Hawk Creek NTMP (4-09NTMP-003-ELD). **Figure 6** represents a “Stand Table Projection” (STP) that the RPF

developed to estimate growth. In developing a STP, growth is actually measured from the prior 10-years and is assumed to be the same for the next 10-years going forward. STP is a crude technique to measure future growth as trees do not grow at a constant rate, but it can be a useful estimator for short-term projections. In this case, the RPF failed to account for harvest which can be confirmed by simply scanning two columns: "# Trees Present Stand" and "# Trees Future Stand." Our review teams were confused as they had interpreted the 5 separate columns ("0", "1" through "4") as trees projected for harvest, which actually related to the number of trees that would grow from their current diameter class in to the next larger diameter class. From this table, the RPF expanded "1 YEAR" growth (122,012) out to a 15-year estimate (1,830,180). This value was then used to forecast a 105-year "analysis" of sustainability as shown by **Figure 7**, that was based on a harvest level of 1.83 million board feet over the first 15-year planning period.

Figure 6. Example of a Stand Table Projection that was incorrectly used to estimate growth.

Graeling Resources												
Hawk Creek												
Stand Table Growth Projection Ten Years												
Group Selection (206 acres)												
DIA	10 YR. GROWTH	MOVEMENT RATIO	# TREES PRESENT STAND	BF VOLUME TREE	# TREES FUTURE STAND	No. of trees moving up "x" diameter classes.					BF VOLUME PRESENT	BF VOLUME FUTURE
						0	1	2	3	4		
8"	2.00	1.00	1,377	10	0	0	1,377	0	0	0	13,770	0
10"	3.04	1.52	1,404	20	1,377	0	674	730	0	0	28,080	27,540
12"	2.23	1.12	1,755	35	674	0	1,544	211	0	0	61,425	23,590
14"	2.01	1.01	1,053	72	2,274	0	1,042	11	0	0	75,816	163,728
16"	2.34	1.47	1,107	123	1,253	0	919	188	0	0	136,161	154,119
18"	2.26	1.13	918	220	930	0	799	119	0	0	201,960	204,600
20"	2.47	1.24	999	256	987	0	759	240	0	0	255,744	252,672
22"	2.11	1.06	675	394	878	0	635	40	0	0	265,950	345,932
24"	1.96	0.98	540	533	886	11	529	0	0	0	287,820	472,238
26"	2.43	1.22	513	822	569	0	400	113	0	0	421,686	467,718
28"	1.94	0.97	648	939	419	19	629	0	0	0	608,472	393,441
30"	2.24	1.42	297	1,183	742	0	261	36	0	0	351,351	877,786
32"+	2.20	1.10	378	1,835	675	0	340	38	0	0	693,630	1,238,625
TOTAL			11,664		11,664						3,401,845	4,621,989
(9/7)			GROWTH(BF) 1 YEAR		122,012							
Start			GROWTH(BF)/ACRE/YEAR		592							
			GROWTH(BF) 15 YEARS		1,830,180							

Figure 7. 105-year projection of "sustainability" where the initial projection of growth (1,830) had not considered harvest that was described in the plan.

Description	Starting Volume	Growth	Harvests	Ending Volume
Start 2009	3,402	0	0	3,402
Harvest 2024	3,402	1,830	1,830	3,402
Harvest 2039	3,402	2,035	2,000	3,437
Harvest 2054	3,437	2,240	2,000	3,677
Harvest 2069	3,667	2,445	2,400	3,712
Harvest 2084	3,712	2,650	2,400	3,942
Harvest 2099	3,962	2,855	2,400	4,417
Harvest 2114	4,417	3,060	3,060	4,417

Based on the RPFs own narrative write-up regarding what he planned to harvest, which included all trees 32-inches in diameter and larger as they were represented as “over-mature,” actual growth levels would have been about one-half of the “592” board feet per acre per year as shown in the STP table.

Fortunately, the Department went on to reject the RPF’s analysis. A subsequent analysis was submitted where growth and harvest projections were based on a state-of-the-art computer growth and yield model that resulted in a 62% reduction in the original harvest forecast for the first 15-year period. Besides failing to account for harvest in the Stand Table Projections, this 62% reduction was further acerbated because the 206-acre forests had not been stratified in to the three stand types that we had observed during the field inspection. This reduction was also attributed to Forest Practice post-harvest Basal Area stocking was now a constraint on harvest that had not been accounted for in the Stand Table Projection.

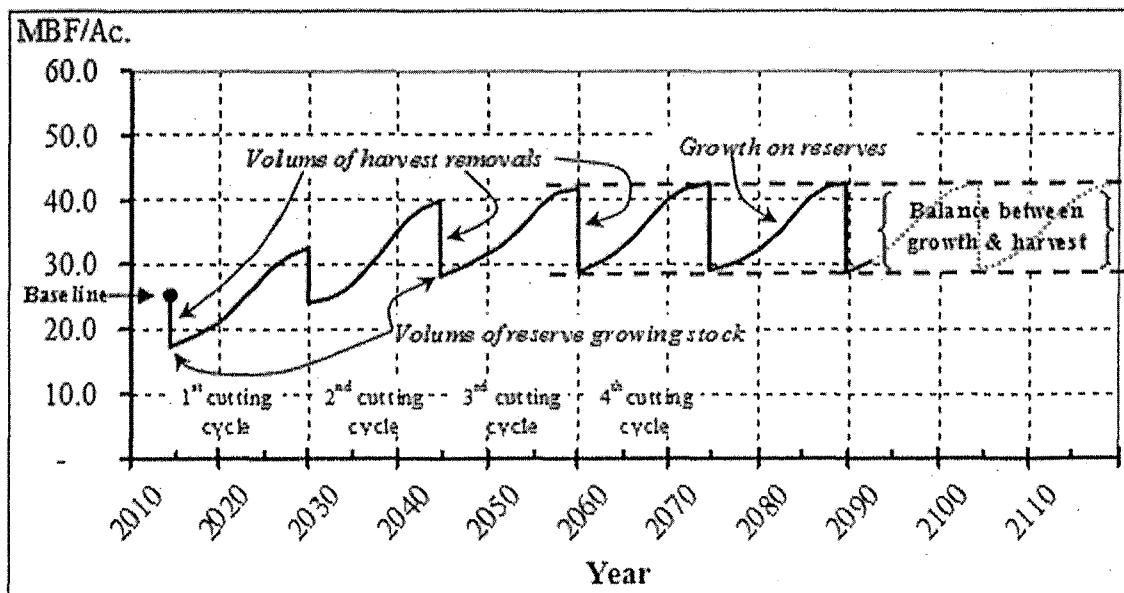
Please note that this example was one that I had presented to the Assembly’s Natural Resource Committee working group in 2012.

5) Failure to understand the concept of balancing growth with harvest over time:

Many RPFs seem not able to grasp a central tenant of sustained yield, that is “*balancing growth with harvest.*” NTMP rule CCR §1090.5(j) requires RPFs to comply with this principle however there are quite a few approved plans that have completely ignored this rule. When an RPF has attempted to comply, the most common belief of what this rule means is that if harvest levels are always below growth levels, then they have met the definition of sustained yield. **This is not a correct interpretation.** Other RPFs will go on to provide an estimate for when growth and harvest will come in to balance but only in a narrative sense (e.g., “*balance will occur in 50 years*”) that is absent of any objective analysis, thus providing unsupported representations. (If only the IRS accepted tax returns based on unsupported deductions!) There are too many variables at play to rely on a purely unsupported demonstration of sustained yield.

Figure 8 comes from a draft paper I developed 2010-2012 that I had planned to incorporate into the Department’s 2006 growth and yield guidelines for NTMPs. Unfortunately, efforts to get the Board of Forestry to endorse these guidelines in 2011, like they did in 1995 for the Department’s first NTMP guidelines, fell flat. Attached as **Appendix 13** and entitled “**The Balanced State for NTMPs-- Interpretation and Application of 1090.5(j)**” is my draft write-up that goes on to connect each rule provision with the over-arching concept that is required by CCR §1090.5(j). I hesitate to distribute this

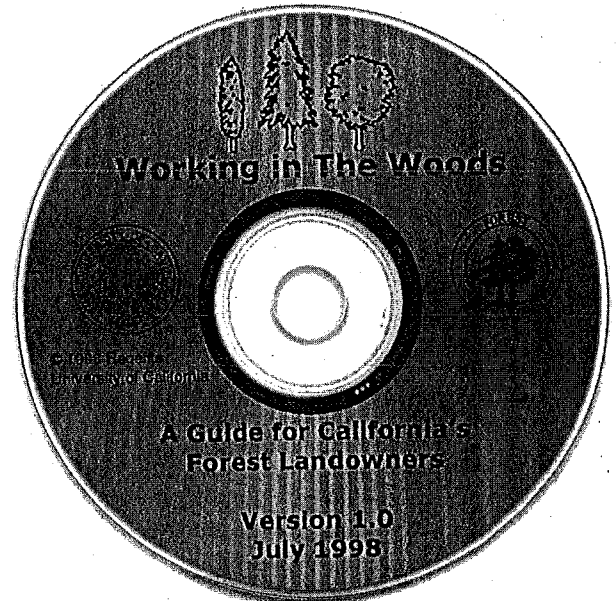
Figure 8. Graphical portrayal of the concept to balance growth with harvest over time as required by NTMP rule CCR § 1090.5(j).



write-up because I have learned that RPFs will glom onto technical language and go on to make the appearance to our review teams that they understand what they are doing when in fact they don't.

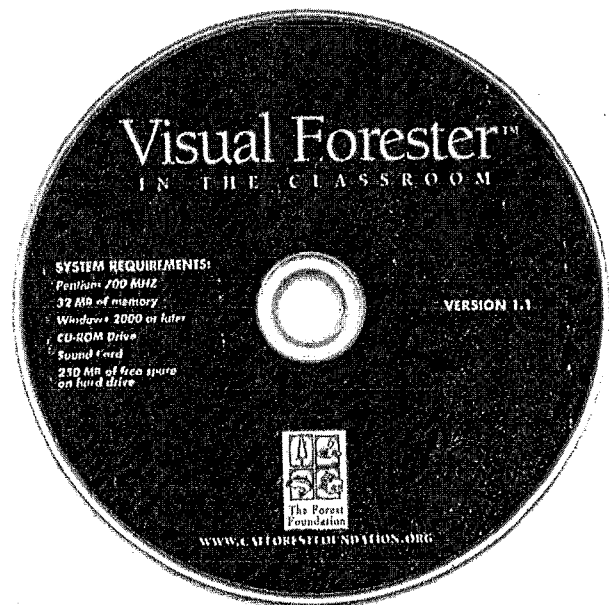
C. What Does the Profession Say to the Public About the Practice of Forestry in California?

1) UC Forestry Cooperative Extension. In my efforts at trying to understand California RPFs, I looked at what state institutions were saying in their public media. In 1998 UC Forestry Cooperative Extension released a CD entitled "Working in the Woods; A Guide for California's Forest Landowners", which I acquired in 1999 at the annual CLFA conference. This too, as stated on the last page, was funded by CDF/CalFire. The information in this CD was targeted for California's non-industrial timber landowners and covered many elements that private forest landowners face, including "The ABC's of Timber Harvest Plans" which imparts that NTMP cost more due to the sustained yield analysis. One topic covered on the CD relates to "stand typing." Attached as **Appendix 14** is their paper entitled "What Do We Own: Understanding Forest Inventory" that describes why it is necessary to stratify one's forest. In summary, many NTMPs do not match representations presented on this CD, which are supposed to reflect the current professional standards.



2) The Forest Foundation¹⁴: Another example comes from 2002 called "Visual Forester in the Classroom" which was released by the forest industry education group, *The Forest Foundation*. Their axiom "This is your forest. How will you manage it?" was designed to teach secondary students about forest management and how California Law provides for a sustainable forest, both now and in the future. Here is a quote from their lead-in:

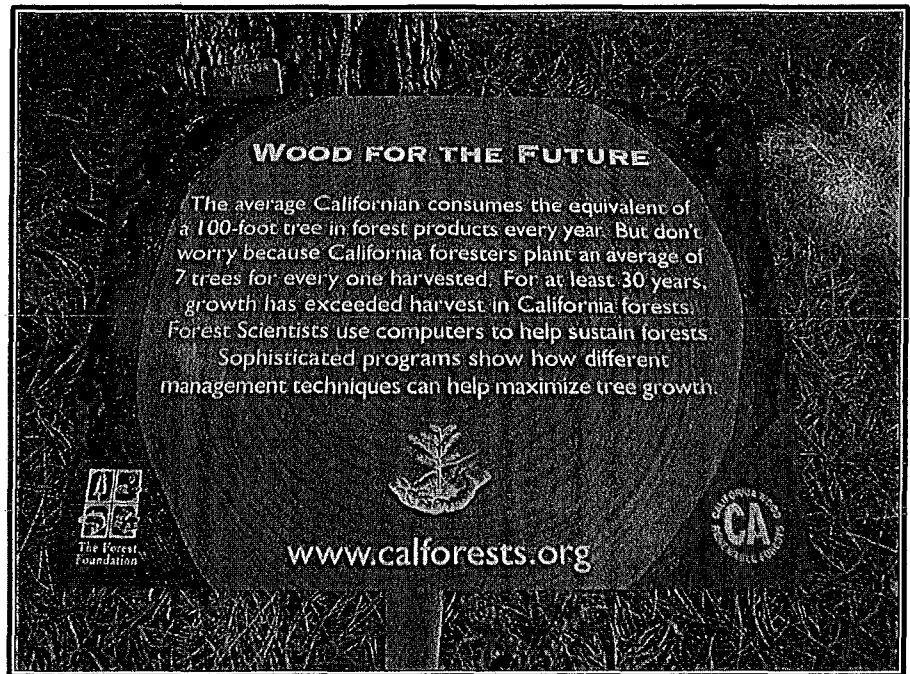
Employing a computer simulator students are placed in the shoes of today's professional forester where they could make some of the same decisions that foresters deal with on a daily basis. Using some of the same state-of-the-art tools that today's 21st century forester employed (GIS, 3D visualization, forest growth models), students can manage the forest to promote forest health, produce wood products, protect wildlife and leave behind a forest that was better off than when you found it.



¹⁴ **The Forest Foundation** is a "non-profit educational organization with the goal of providing balanced, science-based information on environmental, economic and societal uses of forest resources. The foundation conducts educational programs in schools throughout California, as well as providing free materials for educators and the general public." (source: <http://www.soperwheeler.com/newsclips/california-forest-center-at-cal-expo-gets-new-redwood-deck/> accessed 9/16/2016.)

I want to point out that the basic foundation that fed into these educational scenarios was data from a real forest that had been stratified in to stand types. Many NTMPs do not come close to the analyses contained in this children's educational tool. Most unfortunately, many of the RPFs practicing today do not use the available tools to implement the style of planning that this application promotes.

3) California Forestry Center at Sacramento Cal Expo: Each year during the State Fair, 40,000 visitors walk through California Forestry Center where many displays inform Californians about forestry in California. The photo below is of a display along the footpath I took in 2006 that in part explains "*Forest Scientists use computers to help sustain forests. Sophisticated programs show how different management techniques can help maximize tree growth*". I don't believe that the last two statements accurately reflect a lot of what goes on in California forests, and certainly not for the majority of RPFs that submit NTMPs. An honest examination of review records would bear this out.



D. Attempts to raise concerns with my Professional Colleagues including
(1) Department Management, (2) Board of Forestry, (3) Foresters Licensing
and (4) Consulting Foresters

Over the last 17-years I have made many attempts to raise the *red flag* that things were not what was perceived. Although not completely inclusive the following list summarizes some of my more significant attempts to circulate concerns from those of us in the Department that understand just what the issues are.

1) 2002, Board of Forestry meetings. In my discussion with the BOF committee on the Department policy "*regarding the applicability of intermediate treatments for NTMPs that demonstrate MSP by Option C*"¹⁵, I informed the committee that part of the issue was that RPFs were not stratifying their forest inventory in to stand types (which is necessary to develop accurate projections of sustainability¹⁶).

¹⁵ This memorandum resides on the Department's public Internet site at the following address: http://calfire.ca.gov/resource_mgt/downloads/Reg_AssstReg_UnitChiefs07_15_02_NTMP_MSP_OpC.pdf. Its precursor that was chiefly formulated by Dr. Eng and First Review Team member Shane Cunningham and resides as a valid companion to this revised policy, is found at the following address: http://calfire.ca.gov/resource_mgt/downloads/Reg_Unit_Chiefs_2_01_02_TreatmentsforNTMPsthatDemoMSP.pdf.

¹⁶ As previously presented, in a prominent forest mensuration textbook authors Avery and Burkhart (1983) write "*When applying growth and yield models, one assumes a relatively homogeneous stand with regard to independent variables (e.g., age, site index, BA) used to predict stand values. If there is significant variation in variables such as site or stand density for a given area, the area must be stratified into reasonably homogeneous stands and predictions made separately for each of these stands to ensure accurate results.*" (in section 15-15--Applying Growth & Yield Models, Chapter 15: Growth & Yield

Committee chairman Robert Heald stated aloud to the packed room that ***"The Department should not approve any NTMPs in which the inventory had not been stratified."*** No one in the audience or the committee offered a single word to Chairman Heald's statement, and they moved on to the next business item.

Further, this revised policy signed by Assistant Deputy Director of Forest Practice Dean Lucke, makes it clear (page #2, item #1) that stratification is necessary. It further makes it clear that the only acceptable models for demonstrating compliance included CACTOS, CRYPTOS, FVS (i.e., Individual Tree Models) or stand table projection. Chairman Heald further stated that the revised policy *"looked straight forward to me"* and without any further discussion being raised, the committee endorsed this revised policy.

2) August 15, 2002, CDF Forest Management Committee (FMC) meeting. Granzella's Inn, Williams, CA. Assistant Deputy Director Dean Lucke had me lead-off this meeting where I discussed with a series of PowerPoint presentation issues in NTMP and industry MSP review. Chief Lucke was very concerned about these issues that staff across the state were raising. I have attached as **Appendix 15** an excerpt specific to my presentation that was prepared by the FMC secretary where I have highlighted my more salient comments. Regarding the committee that was formed, like so many other endeavors there was no follow-up—at all—and at the time I became alarmed that such a simple issue would require formation of a committee. Could this mean that many CalFire Foresters simply to not have an adequate background? This should be explored by the Department and Forester's Licensing because something is clearly broken. You will also note the attendance record that includes individuals recently retired and currently employed by CalFire just to make it clear that the issues I have made have been known within management over the last 15+ years of my tenure.

3) September 2002, Discussion with Board of Forestry Executive Officer & CDF Inspectors.

Discussion with Executive Officer of the Board of Forestry, George Gentry (YG) regarding NTMP issues, mainly stratification. Attached as **Appendix 16** is my e-mail to "YG" where following our discussion I had e-mailed him a University of California Forestry Coop Extension paper that addressed why it was necessary to stratify. In this paper, I had highlighted important comments that applied to this issue. Again, plans that have not been stratified do not lead themselves to monitoring.

Discussion with Department Inspectors Cary Japp and Heather Brent (like myself, recent hires by the Department) on the issues that they were facing in NTMP review, chiefly failure to stratify forests in to stands. Attached as **Appendix 17** is my e-mail to both where in part I state the following (emphasis added):

- i. *I'll take care of these issues with a mass mailing;*
- ii. *Regarding the subject of re-inventory, see attached "CDF Revised..." section "re-evaluations." The BOF (committee chaired by Robert Heald) had no problem with this, nor the entire document. Although the FPRs (Rules) do not specify "re-inventories" under the NTMP, PTEIR, or Option A plans of MSP (only for SYPs), it is clearly recognized that in the subject of growth and yield that it is prudent to make re-inventories to ascertain the results of one's management practices.*
- iii. *See the attached file by UC Coop Extension on "Understanding Forest Inventory." We have RPFs that can't even properly stand type, but yet this document conveys to the private landowner that they need to seek a RPF to prepare an inventory. Again, I'll take care of this, and it might start in the upcoming Licensing News.*

Models, pg. #303.; from Forest Measurements, 3rd ed., McGraw-Hill Book Company. Statement also made word-for-word in 5th edition (2002))

- iv. Regarding that NTMP you called me about regarding stand typing; Sacramento brass is aware of what is going on, and I am working to stop this nonsense. After my FMC presentation on what has been going on in NTMPs, Jerry Ahlstrom chided, at some lengths, the review staffs for taking substandard plans and trying to bring into conformance as part of the review process.

Regarding the mass mailing, one like the Department was known for preparing during the 1990s, I developed one with the help of Shane Cunningham and Chris Browder. It was submitted up the chain-of-command in early 2005 which was the last that I can recall of it. Perhaps there was discussion in the chain-of-command at that time about developing the NTMP Growth & Yield Guidelines that the Department embarked on during 2005. This was completed with distribution to the RPF community March 2006.

And the comment about addressing the issue in the upcoming Licensing News apparently did not materialize. This period (2000 to 2006) was flat-out chaotic with PALCO and other industry issues dominating my time. Like Chief Ahlstrom had commented to me, when the MSP rules came out most of industry was falling over themselves just trying to develop an inventory of their forests. This carried over in to their analysis and implementation which continues today.

4) 2001—October 2003, Development of the Department's NTMP Report to the Legislature. As required in Article 7.5(c) of the Forest Practice Act, CDF releases the ***NTMP Report to the Legislature***¹⁷ in October 2003 (attached as **Appendix 18**). The enabling legislation required response back with an *"evaluation on whether the objectives of unevenaged management and sustained yield are being met"* in approved plans. This report, that was due to the Legislature in 1997 became bogged down prior to my taking over as the original rough draft that was handed off to me by CDF Foresters Carol Jolly and Tom Hoffman had painted a negative but accurate picture of the program. In several formal and informal instances identified below with CDF/CalFire management, I had highlighted statements that had been made in the early draft to underscore that staff besides myself had concerns for the quality of the analyses that were being submitted in NTMPs.

Additionally, there were several disconcerting factors in my aiding development of the final report. One, the Department had not considered how they would subsequently address if *"sustained yield"* was being met. If, at the outset, the Department would have ensured that there were actual projections of growth and harvest in each approved plan, a tabular and graphic portrayal of what the future for the State was going to look like could have been prepared rather easily. This is something that we readily could complete with the 30 industry plans that we have on file. Secondly, I had to develop language that essentially bailed the Department out for the time being, as I was hoping that the Department would see their discrepancies and correct the problems going forward. **This did not happen**¹⁸. For example, regarding discussion on the question *"Is the Objective of Sustained Yield being Met?"* the report closes with the following:

"The management plans for many approved NTMPs have projected the growing of larger trees and building of timber inventory. As these approved plans enter their second cutting cycle, landowners and CDF will begin to evaluate whether the plan is on course for meeting the original growth and sustained yield goals."

First, many plans have conveyed only in a narrative form the intent to grow larger trees and produce higher forest inventory levels. But you will not find an actual demonstration consistent with Board Rules and professional standards. Secondly, the determination about how evaluations will be made in the second cutting cycle has not occurred and the Department does not have enough staff that can do such a critique.

¹⁷ Report available on-line on the Department's website:

http://calfire.ca.gov/resource_mgt/downloads/NTMPReport_FINAL_10.23.03.pdf

¹⁸ As I am sure you understand, it is important to try to resolve issues internally if at all possible.

5) November 2003, Meeting with CalFire's Coast Region and Sacramento review staffs. Howard Forest (Ranger) Unit. The genesis of this meeting evolved from my offer to meet specifically with the Howard Forest staff on sustained yield issues related to NTMPs. In the end, it turned into a region-wide meeting¹⁹. Over a course of 2.5 hours I presented a PowerPoint presentation consisting of 104 slides that covered the gamut including my scathing indictment of the Department's review practices. Like Dr. Eng wrote back in August 2000, and which I shared with this group, the Department bends over backwards to accommodate RPFs that prepare NTMPs and goes on to *"accept analyses that are so simplistic that they are meaningless both in a professional and regulatory sense."* Over my brief tenure, it had become clear to me that a RPF could simply label a standard THP document with "NTMP", throw in a few numbers, and it would likely reach approval whether it complied with the Rules or not. And, as I have stated above, some NTMPs have less "disclosure" than a standard THP. Perhaps some of the problem is the belief that if people just practice "unevenage management" and meet the minimum retention standards, everything will be fine. This has proven to not be the case and we must come to terms with the error of this group-think. Attached as **Appendix 19** is my outline of my presentation including the introductory slide. This also includes two slides containing comments out of the draft report which painted a much different portrait than what was actually submitted to the Legislature. A print-out or digital copy of my presentation is available upon request. Please note as further described below, I have shared this presentation with the most recent EO's of *Forester's Licensing*, Eric Huff and Matt Dias, in my efforts to explain the problems that have plagued the Department.

6) September 2004, CalFire public meetings on the NTMP program. The Department conducted three meetings (Redding, Eureka, Willits) to take comment on how to better implement the NTMP program. I prepared a handout attached as **Appendix 20** that explained the benefits and concerns for which I was prevented from disseminating.²⁰ However, due to how these meetings played out, I had no choice to interject on some of the major issues because RPFs were asking questions of the Department that required a response. Thus, at each meeting in response to comments I would go on to pose one of the most central questions to each group regarding the lack stratification; Does the lack to stratify ("**#7**) *Compromises the ability for any RPF that may subsequently assume the plan to continue to implement it as he has little to no idea what the original RPF was attempting to accomplish—thus potentially costing the landowner for another "analysis"*. Only one RPF at two venues gave a response to my question, where he affirmed with a "yes" to my question.

In leading up to the Department's statewide tour for formal request for comment, I had received messages from RPFs preemptively voicing their issues. One RPF wrote the following comments directly to me on 12/11/2003:

- *"Cactos projections are nothing more than a fairly-tale of what the ground will look like and CDF is fooling itself to think that they have any real value past year 10."*
- *"The FPR (Rules) is specific about what is required in terms of Growth & Yield work. It only calls for 'projected growth' and 'The period of time over which growth will be balanced with harvest;' anything above and beyond these requirements is in my mind underground regulation."*

¹⁹ Attendees included Bill Snyder, Dennis Hall, Tim Robards, Leslie Markham, Wendy Wickizer, John Marshall, Jeanette Pederson, Charlie Martin, and many other review staff members.

²⁰ The notion that government should be a punching bag is flawed. If you know your craft, you shouldn't be afraid to engage in dialogue with those that are affected by the regulation.

- *“Cactus is a road apple. Being that this is probably the only program accepted by the state for interior mixed conifer projections, the onus is on the state to make the program more user friendly.”*

Another RPF on 8/24/2004 posted comments on the CLFA Internet bulletin board where he said, *“My aversion to any ‘model’ is that it is simply ‘cartoon’ forestry in my humble opinion. The projections from the model rarely resemble what occurs on the ground.”* This was the same RPF that months prior had submitted an NTMP that was based on using only one silviculture regime in the CACTOS computer model to emulate 3 unique prescriptions consisting of Selection, Transition and Fuelbreak across two Site Productivity Classes. I should add that this plan over a course of 8 years was over-harvested by 149% when based on numbers presented in the approved plan. I subsequently and widely reported my findings across Forest Practice management chain in 2012 that due to many errors I found in the plan that the over-harvest was likely lower, approximately 131% of what the RPF had projected in the approved plan. However, a subsequent field review by two very experienced Inspectors and myself concluded that the initial baseline inventory had been significantly under-estimated. *To what degree*, we never determined as the plan was subsequently withdrawn.

7) October 2004, UC-Cooperative Forestry Extension. Following the Department’s traveling meetings the prior month, I had discussions and email correspondence with UC-Cooperative Forestry Extension Yana Valochovic regarding problems in the NTMP program, principally the lack of inventory stratification. Although I have not reviewed my phone logs for the exact date, I had a similar conversation with Extension Forester Gary NaKamura around 2001 where Mr. Nakamura commented that the Extension Service should be addressing these problems by offering training as it was their responsibility to do so. **But again, nothing came of it.**

Please note that UC forestry extension used to provide training to the RPF community in the use of growth and yield computer models and I attended one offered in 1994. Unfortunately, this training was discontinued a long time ago, likely attributed to low participation as only four RPFs attended the multi-day workshop that I attended in 1994. I can’t help but think that the Department’s acceptance of faulty demonstrations set a low standard and communicated to RPFs that this was a waste of time.

8) October 2005, CLFA growth and yield workshop. Red Lion Inn, Redding, CA. I gave the Department’s presentation chiefly regarding issues in the NTMP program. Attached as **Appendix 21** is workshop agenda, my presentation and the audience evaluation score card as well as feedback from staff that were in attendance.

9) March 2006, CDF issues NTMP Growth and Yield Guidelines. Developed to aid RPFs in what constitutes an adequate demonstration of sustained yield. Guidelines continue to reside on CalFire’s Internet site at: http://calfire.ca.gov/resource_mgt/downloads/NTMPGrowthandYieldGuidlines3_06.pdf. *Appendix C* of this document centers on the lack of inventory stratification. With several exceptions, the Department received substantial criticism from the RPF community. One exception was received by RPF #2093, Allen Overfield, where he provided the following comment:

“This is the most positive, pro-active action that I have seen from CDF forest practices in my 30 years as a forester. I want to commend the department for the development of this document. I have reviewed the document and I believe that it will be a very useful guide when I prepare the growth and yield information...Thank you for all of the effort that was put into this document.”

I must note that we did not receive criticism from a single RPF that is recognized for submitting adequate plans as they have been doing all along the level of work that the Rules and professional standards require.

10) 2009, 2011; New Discoveries. Up until 2009 I had made several informal reviews of NTMPs where I had discovered that the plan was based only on projections of growth without any factor for planned harvests. I would communicate back to Region usually by phone that the plan was a “do-nothing” or “grow-only” analysis and that the RPF needed to include projections of harvest. From what I remember, most of our staff did not understand the mechanics in projections produced from a Stand Table Projection. Commonly the data columns that represent how many trees would move up to the next larger diameter class had been confused for the number of trees that were being projected for harvest. Besides, the thought by our Review Teams had to of been, “*how could an RPF not understand that if they plan to harvest trees, future growth will be impacted?*” And, “*harvested trees don’t grow anymore?*”

In 2009, Region requested my review of the NTMP work that was being provided by a problematic RPF. This “elder” RPF had strongly represented himself in writing as being fully competent in the subject of growth and yield and having extensive experience throughout the West. I found in the current NTMP that I was reviewing as well as all seven previous NTMPs that had been approved that the RPF had not been accounting for harvest in development of his analysis of sustained yield. Figure 6 reflects this issue. I then began to suspect that other RPFs that employ the Stand Table Projection model were not accounting for harvest in their assessments for sustained yield. Then in 2011, two NTMPs were submitted at the same time by RPFs employed by a large consulting firm. Inspector Kurt McCray called me with concerns he had in his review of the plan. Up until this point this firm of RPFs, to my knowledge, had never submitted a copy of their “model.” I had Inspector McCray pose a question to the RPF about whether harvest had been accounted for in projecting growth. The response came back “no.” Playing out at the same time was the second NTMP submitted by a different RPF of the same firm. The same question was posed and we received the same response.

Since then, I have discovered more plans by different RPFs dating to the 1990’s, with some now working for CalFire, that have submitted and gained approval of NTMPs that had not accounted for harvest. I have also discovered that RPFs that project growth using a simple percent of inventory factor (e.g., 3%) have not been depleting inventory levels before projecting growth. This issue revolves around some of the more prominent RPFs and their firms that are active in the NTMP market. Now don’t assume that this issue embroils all RPFs, as it does not. There are RPFs that fully understand what they are supposed to be doing and they submit plans that I can professional defend if called upon, but they appear to be outnumbered. The most recent example of a plan that complies with the Rules and professional standards is 2-17NTMP-001-SIS; a 2,184-acre plan that was stratified in to 13 stand types. And each type came with a growth and harvest projection that converged to a balanced condition out in the future, just like the Rules require. As a RPF, I could easily continue the implementation of this plan at any point in the future. Conversely, with plans that are based on homogenized inventory which comes with its own issues such as vague silviculture prescriptions, any future RPFs that may come along to take over management of the NTMP, will have little idea what the original RPF was trying to do. This could likely cost the landowner for another “analysis”, that the RPF will likely disguise as a need for a “new inventory.”

11) February 2010—November 2010, BOF Evaluation of NTMP Regulations. Up until this point in what was an exceptionally busy and at times trying tenure in Forest Practice, I was not aware that the BOF would periodically review the respective program rules (SYP, NTMP, etc.) for effectiveness. As the BOF’s *Forest Management Committee* began what I learned was a periodic review on the adequacy of the NTMP rules I decided to drop in for the initial meeting. After listening to the Executive Officer of Foresters Licensing describe what was an effectively administered program, I had to insert myself into the discussion

to inform the committee that contrary to what had just been presented, that the program had significant issues that had plagued it for nearly two decades.

As previously discussed, at the time the most significant issue was RPF failure to stratify the forests in to unique stand types. Over subsequent meetings I described to the committee with examples how RPF's would try to intimidate CalFire review staff and their supervisors, as well as routinely claim "under-ground" regulations when our review staffs would request additional information that they deemed necessary in order to either understand the RPF's "plan" or to shore up perceived deficiencies. (Again, many NTMPs more closely fit a "management *theme*" rather than a "management *plan*".) Most of my efforts were centered on illustrating failures to stratify, the assortment of methodologies RPFs were using to project growth, which I questioned the validity of some, and my recent discovery of an RPF having received prior approval of seven (7) NTMPs where harvesting had not been accounted for in projecting growth and sustainability.

In response to my concerns, the Executive Officer of Foresters Licensing received feedback from a coalition of RPFs that described the type of "analysis" that they produce as "intuitive" forestry, which I contend would represent malpractice rather than any form of legitimate forestry. Such work also fails to meet the requirements of CEQA with respect to providing Substantial Evidence to allow CalFire to conclude that the proposed plans are consistent with our regulations. Further, our experienced Inspectors would tell you that these "*intuitive*" plans are subject to abuse as there is no way to enforce them. Recognize that this term "*intuitive*" describes NTMPs for which growth projections had been submitted that had not accounted for harvesting! I should point out that such "plans" fail to comply with the following Forest Practice Rules: CCR §1090.5(g)-(j), §913, §913.2, §913.4(b), §912.7(d), §913.1(c)(1)(A) and §913.11(c)(2).

Furthermore, when a plan is in compliance with the Rules, CalFire Inspectors can monitor the plan in real-time for compliance with the following Rules: CCR §1090.7(l)(2) and §1090.14(b)(1), as well as effect PRC §4594.7, **Cancellation of plan by department**, if necessary. However, when these provisions of the Rules are not complied with, attempting to make any assessment from a Forest Practice enforcement standpoint as to whether uneven-aged management and sustained yield are being met is made very problematic. Twice I have been asked by CalFire Legal to review specific NTMPs for rule compliance as the Department was expecting legal challenges after approval. When a plan has been properly developed, I am then able to supplement the review record to defend potential legal challenges. Attached as **Appendix 22** is one example for the Ranks Forest NTMP where I document for the review record how the plan in terms of the sustained yield analysis was in compliance with the Rules and Act. When a plan is prepared based on recognized professional standards and has addressed each provision of the rules, I can then sign my name and license (#2502) as I am able to defend the plan as I would be able to cross-reference the elements in the plan with each Rule provision as well as concepts presented in our forestry mensuration, silviculture and forest management textbooks.

Finally, during this period I continued to be sensitive (i.e., bite-my-tongue) to not disclose too much because of the public venue that I was in which included what are referred to as "environmental activist." During the November 2010 meeting committee chair and Professor of Silviculture at Cal Poly, Doug Piirto made two poignant comments to the RPF community on their lack of acceptance of the Department's 2006, **Growth and Yield Guidelines** for NTMPs. Attached as **Appendix 23** are the transcripts of his comments and I have provided the audio of his comments on the included CD; it is worthwhile to hear his comments in his own voice as you read along. As discussed below, please note that I played these recordings to the assembled audience as part of the Department's "Agency" presentations "*on the good and bad aspects of the NTMP program*," made October 16, 2012 in development of the WFMP legislation. And I also shared these clips with the Department's review staffs that were also concerned about the program.

12) 2010 and 2012, Discussions with Executive Officers of Forester's Licensing. During this period, I shared my October 2002 Howard Forest presentation (discussed above) with Executive Officers of Foresters Licensing Eric Huff (2010) and Matt Dias (2012), along with other appropriate documents including Dr. Eng's August 2000 summary of issues. I made it clear that the program was plagued with significant issues related to RPF competency that included failure to stand type (inventory stratification) and account for harvest when making projections of growth in their "analyses" of sustained yield.

13) 2011, Assistance with forestry groups to develop the WFMP. Following my testimony to the BOF's Forest Management Committee during 2010, CLFA's Bill Keye approached me to request my assistance in writing what became the original **Working Forest Management Plan** (AB 2170). In that, AB 2170 and subsequently re-submitted as AB 904 in 2013, made it clear that inventory stratification was required. The bill also included inventory accuracy standards, as well as enhancing the definition of "sustained yield" to make it clear that sustained yield must be accomplished at the earliest practical time, rather than allowing a landowner to prolong it for decades out to possibly over-harvest the site on the front-end of the 100-year planning horizon. Attached as **Appendix 24** please find RPF Bill Keye's comments to me regarding what became the initial draft legislation.

14) 2013-2014, Assistance with the California Assembly Natural Resources Committee, working group. This group was initially charged with how to make the NTMP program better. It subsequently evolved in to development of the WFMP. As discussed previously under subsection **"(3) Improper Use of Growth Models,"** I provided the department's presentation on the *"good and bad"* aspects of the NTMP program. My presentation was also the first time that I had disclosed in public analyses not having accounted for harvest in developing projections of growth and sustainability. Department representatives that were present included Bill Snyder, Caroline Godkin, Dennis Hall, as well as *Forester's Licensing* EO Matt Dias.

15) 2014, BOF Regulations Coordinator. At her request, I worked with the new BOF's Regulations Coordinator Thembi Borrás to help her understand development of the WFMP legislation as well as issues that plagued the NTMP program. In my July 31, 2014 e-mail I appraised her of the following:

- I cautioned her to be prepared for RPFs that could provide inaccurate or misleading testimony to the BOF;
- I touched on the Department's NTMP report to the Legislature where early drafts had painted a fairly negative but accurate picture of the program;
- I discussed and provided her a copy of Dr. Eng's 8/1/2000, "SUMMARY OF NTMP ISSUES" where he states that he viewed most NTMPs as *"so simplistic that they are meaningless both in a professional and regulatory sense"*; and,
- I raise the specter of *"alarm...that the state is considering opening another harvest permit program when we have pervasive problems in existing programs."*

16) 2014-2016, BOF's development of the WFMP regulations.

Throughout this period, I was active in assisting CalFire respond to the Board's draft regulations. At times the Department has provided comment requesting that certain elements be incorporated in to the regulations so that the WFMP program could be effectively managed. Roughly, the Board adopted about half of the Department's requests. But the Board continued to not understand "why" the Department was making such requests as they continued to refer to the Department's 2003 report to the Legislature on the adequacy of the NTMP program, again a report that inaccurately painted a rosy picture of the program. Then in 2016 as the Board took up the draft regulations following OAL's apparent informal rejection of the draft rules that had been submitted October 2015, I conveyed to the Board's committee how the 2003 report did not tell the whole story. Revealing this information had practically no bearing with the

committee as they continued to ignore Department information, even after they had requested evidence from the Department that we bring forward our evidence at the subsequent meetings for which they subsequently did not want to hear about. Based on comments that BOF Chairman Dr. Keith Gilless had made when the BOF reconvened January 2016 to specifically take-up correcting the issues in the WFMP regulations that OAL had identified, I felt it was time that I privately contact Dr. Gilless in hopes of having a private discussion about sustainability issues. Dr. Gilless communicated to me that he would call, but that never happened. As I conveyed previously, it was subsequently conveyed to me by another BOF member that I should approach Director Pimlott and Secretary Laird, which again became the final impetus for this letter.

E. RPF Inability to Follow Regulations and Professional Practices

As this letter is lengthy and technical, I need to be clear about several elements.

1) Inventory Stratification

The BOF rules for NTMPs lay out specific standards but many RPFs seem incapable to understand and comply with them. For example, RPFs will argue that the Rules do not require them to stratify the forest that they are proposing to place in the NTMP program because the Rules do not explicitly so state it. When it comes to fundamentals, delineating a forest in to stands is a basic standard. Expressed another way, one of the central reasons for stratifying a forest is to identify geographically areas where tree stocking is less than what a site is capable of growing. To identify a few characteristics, poor past management, or “high-grading” has been the primary reason that created under-stocked forests or forest now composed of tree species of poor value that are less fire and drought resistant. Just like rangeland managers must stratify rangelands in order to determine Animal Unit Months (i.e., AUM’s), in order to accurately project stand growth and thus tree response to silviculture prescriptions, stratification is critical.

Further, if the BOF felt it necessary to enumerate each and every element that revolves around the practice of forestry, our rule book would have a thickness five times what it currently is. Previous Legislatures and BOFs sufficiently set standards that properly trained foresters could implement. As evidenced below in the following terms, although not explicitly stated, these terms as defined in the Rules should make it clear that the basic level for devising a management plan is at the “stand” level (emphasis **added**).

Silvicultural system is defined as “*the planned program of forest stand treatments during the life of a stand. It consists of a number of integrated steps conducted in logical sequence leading to or maintaining a forest stand of distinctive form for the level of management intensity desired*” {CCR § 895.1}.

Uneven aged management is defined as “*the management of a specific forest, with the goal of establishing a well stocked stand of various age classes and which permits the periodic harvest of individual or small groups of trees to realize the yield and continually establish a new crop*” {PRC § 4593.2(c); CCR § 895.1}; where **various age classes** is defined as “*a stand with at least three distinct layers of tree crowns (size classes)*” {CCR § 895.1}.

As the BOF committee was finishing writing the WFMP regulations in 2016, there was an attempt to represent to the committee that inventory stratification was *not a requirement under the NTMP rules*, which I replied, “**was not true.**” I went on to convey to the committee that back in the early 1990’s when the then BOF was drafting what are our current sustained yield (MSP) and silviculture rules, the Office of Administrative Law (OAL) required of the BOF to identify just what were our professional standards. The BOF responded that the Society of American Foresters sets professional standards where the BOF provided to OAL select chapters from our forestry text books that covered silviculture and forest-wide planning. Then around 2005 when the Department under Bill Snyder’s leadership, THP Administrator Chris Browder

independently researched the issue and concluded that based on the BOF's communications with OAL, stratification was indeed required.²¹ And even without the explicit language included in the Rules, the Board repeatedly told CalFire staffers that they expected the Department to ask for any information they deemed necessary to make the determinations required by the law and regulations. CalFire staff believed that it was necessary for the Board to be more explicit in its expectations, but the Board did not agree.

2) Not Accounting for Harvest in the Development of Projections of Growth for Assessing Sustainability.

Regarding RPFs that have not accounted for harvest in developing projections of growth, the rules should have been more than clear to them. For example, the following terms and rule requirements all relate to what is required to quantitatively establish sustainable harvest levels for a forest.

- **Sustained yield** is defined as *“the yield of commercial wood that an area of commercial timberland can produce continuously at a given intensity of management consistent with required environmental protection and which is professionally planned to achieve over time a balance between growth and removal”* {PRC § 4593.2(d); CCR § 895.1}.
- NTMP rule 1090.5(j) requires the RPF to address *“The period of time over which growth will be balanced with harvest”*.

Many RPFs will attempt to address this rule with a simple statement such as *“a balance will occur in 50-years,”* a representation that is unsupported by any quantitative analysis. Other RPFs will conclude that their plan is currently in a balanced state for the simple matter that their forecast of growth is greater than planned harvest, thus their forest is “balanced” even though their own statements throughout the “plan” describe as one objective is to grow larger trees and greater inventory levels.

The most significant standard that should have been clear to RPFs that harvest projections were required by the Rules can be found in what is defined under CCR§ **1090.14, NTMP Deviations**. This section includes an extensive list for elements that constitutes a “substantial deviation” where subsection “(l)” specifies that a *“change in...volume planned to be cut”* would apply. And if that was not clear enough, the Department's 1995 “...Review Guidelines...” that was vetted by the BOF and disseminated for the first time at the 1995 CLFA Growth & Yield Workshop I attended should have made it abundantly clear to RPFs that accounting for harvest in assessing for sustained yield was part of the process. I am beside myself to reconcile how RPFs could have not understood such a simplistic and fundamental part. With that and other fundamental aspects that I have presented here, I have to ask, *“what else do they not understand for which they are afforded a standing to appraise? Just what else?”*

F. Department Experts and Competent Inspectors **Having been Over-Ruled or Ignored**

I have a number of examples from my predecessors, other review staff, as well as myself, some of which I go on to present below that will illustrate the breakdown in the Department's administration of the rules.

²¹ I should also add that during a period of intense discussion, another comment was made in committee that the Department should train its review staffs. My immediate response was, *“doesn't 752(b) apply to the RPF community!”* This code section found within “Professional Foresters Law” provides that the “professional forester” is only licensed *“to perform forestry services only in those areas of expertise in which the person is fully competent as a result of training or experience.”* Defining “training” is easy enough to address, but the question on what constitutes *experience* might be viewed differently. I have to ask, does that fact that the Department approved plans that are not in compliance with the Rules and professional standards serve as qualifying experience? I wouldn't think so.

Example #1. The first one involved a member of industry where in 2000, then *Timber Supply Forester* and one of two Department experts, Dr. Helge Eng was over-ruled. Attached as **Appendix 25** is his email correspondence with the Coast Region Forest Practice Manager where he requests that the “*public comment period for this Option A plan be re-opened to resolved these unanswered review questions*” due to “*vague and unenforceable language*” that “*draws the accuracy of the LTSY estimate into question, and raises further questions about the accuracy of the modeling on the rest of the assessment area.*”

The Department did not heed Dr. Eng’s request and went on to approve the plan that I too would have concluded was not approvable at that time. Over the next 5 years our review teams kept raising concerns regarding THP consistency with the modeling described in the Option A. The company kept maintaining that THP implementation was consistent with the modeling and they agreed to provide me with a series of data to support their claims. As I built up to what would have been my final data request, the point at which the Department could conclude whether or not consistency was being met, they balked. At that point when push-came-shove, the Department’s management would not support my demand for the company to provide their evidence and thus THPs continued to be approved based on an analysis that was likely flawed.

Example #2. My second example again involves Dr. Eng’s review of NTMP 2-00-003 (SHA) in the summer of 2000. The review record contains the following:

- Dr. Eng’s May 4, 2000 review question #6: “*This prescription is applied to 933 acres. The current stocking ranges from 20 to 150 square feet per acre. These facts suggest it may be desirable to break out the better stocked stands for transition or selection. Please discuss.*”
- RPF’s June 14, 2000 reply: “*The entire ranch was logged at the same time, and therefore, stands are similar over the entire parcel.*”
- CDF Cascade Region final reply July 24, 2000 (emphasis **added**): “*The NTMP implied that site classifications range from II to V with more than one site quality class located on any one management unit. Additionally, some units have multiple prescriptions proposed within them and as such different stocking standards. To better illustrate management goals and objectives, in future NTMPs, stand table projections should be specific to each of these variables.*”

A copy of the official letter is attached as **Appendix 26** where this statement can be found under “**Note**” on the signature page. {Perhaps you noticed that in my public presentations that are provided in this letter, that I had omitted the part “...in future NTMPs...” in my PowerPoint slide for the fact that it would have revealed that the Department was approving a plan that should not have been. Again, I was attempting walk cautiously with this subject.}

There is a lot more to this sad saga that I will not raise here except for the following. One of the Departments savvier inspectors had made a recommendation during his PHI to incorporate a 10-day window to review before harvest the RPF’s harvest tree marking because he had legitimate concerns over how the plan would be implemented. The plan was approved with his recommendation. Months later the restriction was quietly removed by a minor amendment because the Cascade Area Forest Practice Program manager did not believe that such a requirement by the Department was permissible under the Rules. The Inspector would not discuss the matter with me and he ultimately transferred over to Fire Protection.

This plan clearly should not have been approved in the condition that it was and it became more problematic with time. Further, the RPF has been warned countless times and as recently as 2014 where in

this instance he submitted a NTMP where he had gone on to delineate 8 strata, but then compromised his work by combining the 8 strata in to two strata for modeling purposes, with a rationale that could not be supported.

Related, the two pictures presented below as **Figure 9**, I took October 2004 which show the two primary stands that was the focus of Dr. Eng's question. The significance of this issue is that since the RPF had homogenized both stand types, his computation of the arithmetic average for trees 18-inches and larger translated to an average of 7.9 tree-per-acre (TPA), which the Board rules would not allow any harvesting as the minimum retention standard was 8.0 TPA. As I told the RPF during this field review that if he would have stratified this 933-acre block there would exist immediate harvest opportunities in the denser mix-conifer stand that is pictured here. This NTMP became one of those seminal moments in my working for CDF that illustrated to me that much of the timber regulation program is dysfunctional.

Figure 9. Photos of the NTMP that Dr. Eng reviewed in 2000 that had not been stratified. Each scene represented about ½ of the roughly 1,000-acre "stand."



Example #3. My third example is a 2003 e-mail exchange with then Inspector Cary Japp where PHI recommendations to stratify the proposed NTMP were not supported by the Second Review chair. Inspector Japp wrote to me with the following:

"I talked to Kurt McCray about the NTMP that I had brought to you before I left for the academy. ...I will be looking at it tomorrow with Kurt. It appears that it was approved and left as one management unit. [N]one of my recommendations were addressed in the plan. I am curious to look it over and see where things went wrong. Kurt is concerned because it is like now what? What do we do with it if an NTO comes in."

On a side note, both Inspectors were hired months before myself and they both came to me almost immediately raising questions about the adequacy of NTMPs being submitted. Please recognize that we went to separate forestry schools and had different professional development tracks leading to CDF employment. But they both recognized that there were issues with the Department's ability to enforce what were vague and incomplete "planning" documents that in no way were in compliance with the Rules and professional standards. I should add that I have many other examples with different Inspectors that were doing their best to enforce the Rules but depending on individuals involved, there has been a disconnect within the Department as to exactly what we are supposed to be doing.

Example #4. Another example is a 2004 NTMP where following what was a forth (4th) analysis by the RPF (one original analysis plus 3 re-analysis), I had concluded that the RPF was not making progress to understand the issues so I decided to make a recommendation to Second Review to consider plan denial. The Second Review chairperson elected to hold the plan open for additional time and give the RPF another chance which subsequently I was required to make a fifth (5th) review. The Second Review Team Chairperson was noted for having a poor understanding of forest management principles. This example was further evidence that the process was not protecting and serving the public, forest landowners or serving the welfare of my own profession.

Example #5. I have many additional examples related to specific sustainability analyses that have been submitted to the Department. My final example relates to the PALCO SYP that the Department approved in 1999. **Appendix 27** illustrates concern by Forest Practice Inspector Cary Japp in writing to Ranger Unit Forester John Marshall regarding implementation of PALCO's SYP. {Note that this e-mail was one year before we uncovered how PALCO had manipulated the computer model. Our experienced Inspectors could see what was happening on-the-ground and they could conclude by reading PALCO's own "plan" that they were not following it.} Inspector Japp was not the only Inspector raising concerns but this email exchange goes on to reflect just how inadequate the Department can be when leadership is not in lockstep or does not have the courage to confront and challenge RPF's and politically connected timber companies when the Department discovers evidence of fraud. I have further attached in this appendix additional communications to give you a sense of what we really have to deal with, which somewhat continues today with other companies.

G. Other Issues

1. Silviculture: Failure to Recognize Stand Differentiation and relationship to in High-Grading: A common issue that I have seen in NTMPs and THPs is RPF failure to understand the process of "stand differentiation." *Stand differentiation* is the divergence in growth patterns of individual trees due to redistribution of growing space during stand development. It is first evident as divergence in diameter growth patterns that is followed by divergence in height growth patterns.²² **Figure 10** is a view in to what was represented as **Shelterwood-Removal Step** prescription presented in an industry THP that covered 1,275-acres. This photo shows tree #1 and the three other larger trees to the right and down slope as illustrated that were marked for harvest with blue paint, and the smaller trees were represented as "advance regeneration" or the progeny of the larger trees reflected in these photos.

Figure 10. View in to a shelterwood removal area.



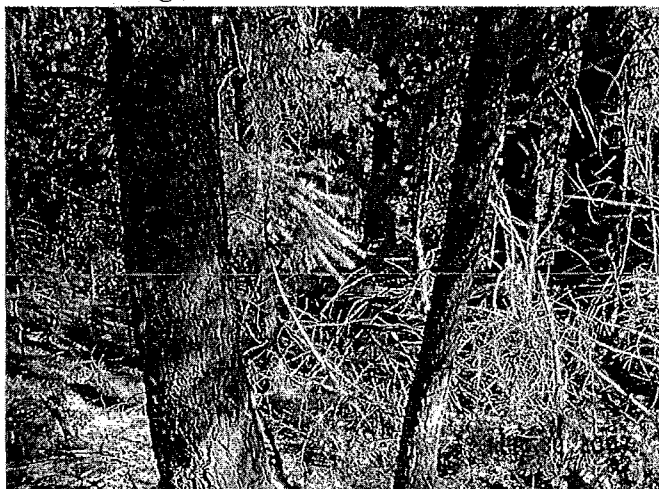
As annotated within this photo, trees marked for harvest were approximately 16-inches DBH, frankly quite small for site potential but consistent for a site that likely had a history of high-grading. I took sample cores from tree #1 and #2 to determine age for

²² From "The Dictionary of Forestry". 1998. John A. Helms, editor. The Society of American Foresters. Bethesda, MD. 210p.

the respective size classes. Measured at what would correspond to a one-foot stump height, tree #1 was 49-years in age and tree #2, having a 6-inch DBH, had an equal age of 48-years.

From this it was clear that the remainder of similar sized trees appeared to have equal ages. **Figure 11** shows another “advance regen” tree that was approximately 1-inch DBH, and likely had an age similar to its neighbors. This proposed prescription was a classical *high-grade* and dysgenic practice (harvesting the best and leaving the worst) which appears to be a somewhat common practice that I have seen and which is supported by York’s 2015 ancillary study “*Is high-grading common in California.*” The central study²³ by York was focused on the consequence of three types of tree harvesting methods: (1) thin from below, (2) Single tree selection, and (3) Large tree removal [a.k.a., “high-grading”]. This growth-and-yield study included as **Appendix 28** had covered 26-years (1980-2006) and demonstrated that “high-grading” practices, that are quite common throughout the country, resulted in growth rates that were one-half of rates measured in Single-Tree Selection methods.

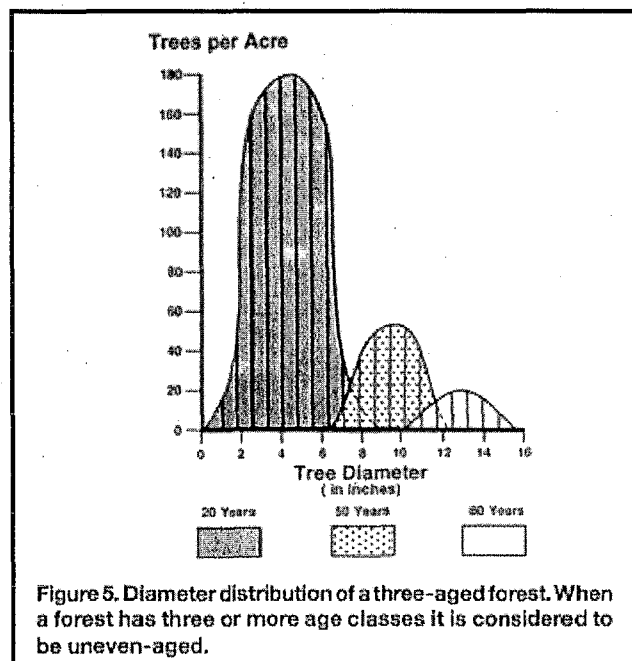
Figure 11. Offset view of figure 2 highlighting another “advance regen” tree located behind tree #1.



Again, the Rules state that uneven-aged management consist of a stand having three age classes. Almost every forester that has submitted harvest plans based on uneven-aged management has failed to conduct an assessment for the number of age classes that exist within a particular stand. Typically, RPFs will simply -state in their plans that “*tree ages range from 1 to 120-years in age.*” And if a stand table is presented, the data will show a very broad distribution of in diameter classes, and then the RPF will go on to represent that the stand is “*uneven-aged*” when in fact all the trees actually reflect one or two age classes.

Figure 12 illustrates concept of a stand having three age classes.²⁴ Each age class is the result of a specific regeneration event, and typically, past harvest events are responsible for creating each age class. In this illustration, the oldest age class is 80 years which has a corresponding diameter distribution that ranges from 10 inches up to 16 inches. The second age class is 50

Figure 12. As presented by Wittwer *et. al.*, this figure illustrates the concept of an uneven-aged stand that is composed of 3 age classes.



²³ York, Robert A. 2015. Large-tree removal in a mixed-conifer forest halves productivity and increases white fir. *California Agriculture*, 69(1): 27-35. University of California, Berkeley.

²⁴ Figure 1 from Wittwer, Robert F, Steven Anderson, Dave Marcouiller. *Even and Uneven-Aged Forest Management*. NREM-5028. Oklahoma Cooperative Extension Service, Division of Agricultural Sciences and Natural Resources. Oklahoma State University. Stillwater, OK.

years with a diameter distribution ranging from 6 inches to 12 inches, and the third age class was the result of a regeneration event 20 years ago where diameters currently range from 0 to roughly 9 inches. Diameter variation for each age class can be attributed to stand differentiation and temporal relationships of the regeneration event.

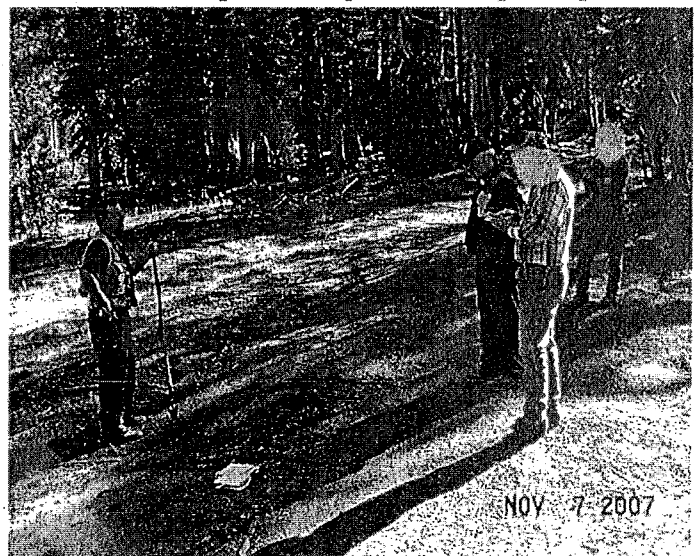
Further, U.C. Berkeley Professor of Silviculture Kevin O'Hara provides a related discussion on this issue that reflects observations I have made during field reviews of THPs and NTMPs. In his paper attached as **Appendix 29**, Dr. O'Hara points out several miss-interpretations can be made as a result of assuming that an inverse-J shaped curve (or a broad diameter distribution) automatically associates with an uneven-aged or multi-aged stand/²⁵:

- *"When a reverse-J diameter distribution is observed, foresters have tended to assume—erroneously—that it is uneven-aged."*
- *"There are also many well-documented cases of reverse-J diameter distributions in even-aged stands and many examples of poor management resulting from an assumed correlation between size and age. Previous misinterpretations are due to failure to determine what ecological processes created the observed structure."*
- *"Managers have also typically ignored the ages of trees, and in many cases cutting amounted to highgrading..."*
- *"Reconstructing stand age structure is difficult but well worth the effort if our management is to be ecologically sound and convince skeptical citizens."*

When I was writing THPs, one of the first objectives I had was to assess disturbance history in each stand as this was needed to prepare a silviculture prescription. And, "yes" it required quite a bit of sample cores taken from trees across the stand which became part of my inventory sample and stand reconnaissance. In summing up, it has been very surprising to see foresters intimidated, even at the industry level, by the increment borer and there are countless examples of RPFs failing to understand stand differentiation in what they ultimately went on to carry out was a "high-grade" harvest.

Figure 13 is another example of a NTMP where the RPF was proposing to harvest only the larger trees within each Group "Opening" under a Group Selection prescription. As the picture faintly shows, the 6-foot diameter red fir tree in the background is marked for harvest, including some of the other trees in this Group Selection "Opening," but the departure from BOF Rules was that the RPF would not clear the Group "Opening" entirely that is necessary in order to create a new age class. The RPF was simply planning to leave many of the merchantable but smaller trees (some of which were suppressed), therefore meeting stocking with Basal Area. This

Figure 13. A 2007 NTMP that had proposed Group Selection where Inspector Tom Tinsley (far left) is attempting by way of diagramming in the dirt, the RPFs notions in how he plans to implement his "prescription."



²⁵ Previously published paper entitled Silviculture for Structural Diversity: A new look at multiaged systems. July 1998. Journal of Forestry. Presented by author at CLFA's 2002 "Advancements in Silviculture" workshop.

was not consistent with the Rules and amounted to what I call a slow *high-grade*.

Figure 14 is another example of a high-grade on a *THP* (Timber Harvest Plan) out of eastern Humboldt county where the picture reflects the view in to the center of a Group “Opening” where only the largest diameter trees—mostly what are baby sized 14-inch DBH trees—would be harvested, leaving the subordinates and thus the “losers” to meet stocking. Even though the written plan indicated that planting would be employed in the Group Openings to meet the 300 point count standard of the Rules, the RPF’s true intention was to remove only the largest trees and rely on residuals to meeting stocking. This prescription was in clear violation of the Rules and professional standards.

Other issues on this THP that occur on other plans because RPFs fail to “ground-truth” the Soil

Conservation Service site class maps. Site Class on this THP was miss-classified as a lower Site 4. My assessment of potential site trees derived from actually taking increment cores indicated that a high Site Class 3 actual existed for most of the THP, with a minor acreage in Site 4. Because of a higher site classification, the RPF could not remove more of the inventory as the RPF had planned. If the forest was a Site Class IV, the retention standard was 50 sq.ft./acre in conifer Basal Area. However, with the higher site classification, the RPF would have to retain 75 sq.ft./acre. To illustrate how the change in Site

Classification affects the density of trees that must be left after harvest, one tree that is 14-inches in diameter represents 1.07 sq.ft. in Basal Area. Consequently, the RPF would be forced to leave roughly an additional 25 trees per acre. This is just one example of RPF’s gaming the system in order to liquidate as much as they can. In this case, the property had been recently acquired by a speculator, an aspect that comes with its own issues.

Figure 14. A 2004 Group Selection THP with view in to center of Group Opening. Helmet identifies a proposed harvest tree while leaving subordinates to meet stocking.



2. Age Class Assessment. In his 8/1/2000 memo, Dr. Eng raises the issue that he had observed from NTMP preparers were not addressing the disposition of current age class distributions and went on to question whether RPFs were exacerbating the problem. I have seen the exact same issue in my review of NTMPs and nothing has changed in the several decades that the program has been running. And there exist quantitative techniques taught in forestry schools and available in forestry literature that are used to address age class.

3. Defining Upper Diameter Thresholds for Uneven-aged Management.

I have seen a lot of NTMPs where there appears to be little consideration in managing for upper diameter sizes that potentially could be achieved biologically and with greater financial returns for the landowner. Implementation of uneven-aged management by many RPFs seems more driven by maximizing immediate harvest volume where the diameter distribution is compressed from the top downward. Typically, with this strategy, upper diameter sizes are identified (usually as a result of a review question) where all trees above

a particular size (e.g., 18-inches {yes, it happens}, 24-inches, 26, 28, 30-inches) will be harvested. At times, there are representations made that such sizes reflect trees that have reached their biological potential. In almost every case that I and other staff have reviewed together in the field, the RPF's proposal would result in the cutting of trees that were in the prime of their growth; but there was nothing we could do about it! It would seem to me that a good starting point for defining an upper diameter threshold could come from tree ages that correspond to cumulation of mean annual increment as approximated in even-aged yield studies.

4. Inventory sampling, monumenting inventory cruise plots, effectiveness monitoring. Many RPF's do not document sample plot locations in the field or on maps, or identify plots with a numbering system which makes the inventory analysis problematic for monitoring purposes. Moreover, there have been cases where experienced Department staff have speculated whether an actual sample had been conducted as no evidence could be found out in the field during efforts to confirm representations made about current inventory levels. In the profession, it is common to flag the location of inventory sample plots and the lines between plots (referred to as "lines and plots"). This is performed for many reasons to include (1) the landowner is paying for the cruise and the flagging serves as evidence that one was conducted per the "cruise plan"; (2) flagging allows the cruiser to maintain location control with respect to already established cruise lines in order to ensure proper spacing between cruise lines is maintained; (3) flagging allows "check" cruising of the original cruisers' work either by the landowner or the timber buyer(s); and finally, (4) flagging allows a cruiser to re-locate their plots to address errors that may have been recorded on the cruise cards, or assess an element that was over-looked during the original cruise.

In my past I have attempted to illustrate the errors of RPFs sustainability assessments by requesting copies of the inventory field cards and maps of the sample plot locations, only to learn that the plots were not identifiable. Management is well aware of this issue and of my attempts to illustrate these errors to RPFs.

5. Cruise Plan. Many NTMPs and some industry plans are submitted without documenting the inventory cruise plan. This is necessary so that subsequent inventory analyses can be comparable to the previous results.

6. Inventory Accuracy. Most RPF have been using inventory sampling designs whose only purpose is to appraise the amount of timber volume that exist in a forest so it can be sold to a mill. Such a sampling scheme is vastly different than one that is necessary for making management decisions, producing accurate projections of growth in appraising for sustainability, and monitoring silviculture success. Chiefly what differentiates the two sampling schemes is that when the purpose is long term management based on a policy of sustained yield, the inventory is stratified in to stand types, and the non-merchantable trees (also called understory) are included in the sampling scheme. Understory trees are important in an uneven-aged management system as they are needed to grow in to merchantable trees as they replace trees previously harvested. After I began to question RPFs about their lack to stratify their forests, besides having no response at first, RPFs started to offer one of three other responses which included the following:

- a) **Cruise Intensity:** RPFs have attempted to represent the accuracy of their inventory by simply assuming the sampling error of their inventory was equivalent to "cruise intensity." This is not related. RPFs have assumed that a 3% cruise intensity (how much of the ground was covered by the sample) was equivalent to a low sampling error, incorrectly concluding that variability within the inventory had been captured by the cruise. Cruise intensity refers to how much of the ground was covered by the sample. If the cruise intensity was 3% on a 100-acre inventory sample, that means that the total area of the sample plots represented on the ground would amount to 3-acres, and

nothing more. Many foresters that understand these issues aim for intensity levels that range between 10 and 20%.

- b) **Standard Error:** Other RPFs went on to represent that a low statistical value for the Standard Error (i.e., less than 15%) could supplant the need to stratify, apparently assuming that a low value would also result for the individual stands if the forest was divided in to stand types and sampled. This is not correct. To explain this issue here would take considerable effort and space. But suffice it to say that in the SYP Rules (Option B), the Board defined the following: “*The SYP shall describe how the submitter will, over time, make reasonable progress to improve inventory estimates for the major WHR or vegetation types, with a goal of achieving standard errors that are no greater than 15% of their respective inventory estimates within the effective period of the SYP.*” *Vegetation types* as used by the Board is the same as *stand types*, *inventory strata*, etc. Attached as **Appendix 30** is one example of an RPF believing it is not necessary to stratify for the fact that the Standard Error was low.
- c) **Over-Sample:** On the other end of the spectrum, RPFs will over-sample by laying a grid of sample plots across the NTMP that has a representation of one plot for every 1.25-acres, with a belief that stratification was not necessary for making accurate projections of growth (such an explanation is also reflected in Appendix 30). An intensity of this magnitude and cost to the client is not necessary and likely will not result in growth projections that would be equivalent to projections developed from stratified inventories. (There are a number of issues in this memo that I won’t address in this venue but you may recognize some as you read the memo.) Typically, to capture stand variability small strata can be explained with 6-10 sample plots, and large strata usually require 30-50 plots, assuming that the forest has been adequately stratified. Stratifying a forest is not that difficult but it requires proper training and discipline.

7. Issues with NTMPs being submitted and approved under Confidentiality.

Many NTMPs have been submitted and approved where the public including other RPFs are prevented from viewing the timber assessment. This has been another conundrum within the Department that according to senior staff was the result of a misguided question that was incorporated in to the NTMP form when the form was first created in the 1990’s alongside the forms used for industry. The Forest Practice Act (PRC 4593.3) is very clear that the NTMP “*shall be a public record*” to include details described in subsection (f): “*A description of the existing stand, its current projected growth, alterations required to achieve the management objectives, the projected timber volumes and tree sizes to be available for harvest and projected frequencies of harvest.*”

In the Z’berg-Nejedly Forest Practice Act of 1973, the California Legislature declared that “*the forest resources and timberlands of the state are among the most valuable of the natural resources of the state*” and that they would be managed to “*furnish high-quality timber*”. Maximum sustained production of high quality timber products (abbreviated as MSP) is a public value and for that value, timberland owners receive a lower tax rate. Commensurate with the Legislature granting a harvest permit having an indefinite life, the Legislature intended that the sustained yield analysis would consist of a document completely available to the public so that they could be assured that *maximum sustained yield of high quality timber products* was indeed the management goal of the NTMP that would be met in a timely manner. It is important to recognize that the realm of “*confidentiality*” allows the RPF as well as the CalFire reviewer to mask their level of competency. And this issue is going to inflict the *Working Forest Management Plan* that is set for implementation beginning January 1, 2018.

8. Department has No Authority to Request Information.

It is not uncommon for RPFs to balk at Department requests.

Example #1. In a 2015 NTMP, the RPF described stand characteristics only from the aspect of mathematical averages without any information on statistical variation encountered in the sample. In statistics, any discussion about the average is meaningless unless the variation about the average is disclosed and evaluated. This variation speaks to how well the sample describes the average. Consequently, I provided the following question for our First Review team member:

“When providing a discussion about stand metrics, please include other statistical measures that describe the variability about the mean, such as the standard deviation and coefficient of variation. Finally, in terms of the estimate of standing inventory measured for each Unit, it is also customary to provide the Standard Error.”

The RPF’s response included the following:

“Plan Reviewers. The scope of this project is 47 acres. I have written eight approved NTMP’s and never discussed any of these items. A request for the statistical measures is not customary but is in fact extra ordinary. I have discussed this matter with a number of RPF’s who have written numerous NTMP’s and this information has never been required. There is no Forest Practice Rule cited which specifically requires this level of statistical analysis...In addition Plan Reviewers may wish to consider that even if the requested Statistical Analysis occurred it would be meaningless without a check cruise...without any field verification the statistical analysis has no valid basis.”

The RPF’s response illustrates a widely-held perception that the Department has no authority to request specific information when we cannot refer to a specific rule section that so instructs the RPF that the information must be provided. Several high-profile court cases attest to the authority for CalFire to request any information they believe is necessary in order to make their decisions. Further, the RPF’s response reflects a poor understanding about sampling. The Standard Deviation (SD) and Coefficient of Variation (CV) are simple computations that any statistical calculator or computer spreadsheet could quickly provide. The SD is used for significance testing, confidence intervals and computing the CV, whereas the formula for the CV is simply the (SD/Mean) x100. The usefulness of the CV is that it relates in percentage terms the variability of the sample. When CV’s are high, it is common to add additional sample plots in order to reduce sample variability which is needed to increase confidence in the results. Typically, when I see CV’s on a stand’s Basal Area that approaches 50%, we should be investigating if additional stand types may be present and feasible to map.

Example #2. During review of an industry Option A plan in 2009, the Department’s Northern Region had requested that the company provide monitoring reports. Their response is as follows:

“There is nothing in 933.11(a) that requires us to report actual harvest or to compare it with predicted or projected harvests. Harvest acres and volumes are reported to the State Board of Equalization (SBE) on a quarterly basis. We suggest that if you want annual reports that you contact the SBE. We would be willing to provide you acres and volumes harvested by THP on a decadal basis...”

There are many examples in Department files of review staffs having tried for decades to get Option A participants to provide annual monitoring reports but most of those efforts have not been successful for a number of reasons. The exception applies to three companies whom have been exceptional in providing

these reports. Fruit Growers provides a “balance sheet” report with the submittal of each THP, and Roseburg and Green Diamond provide annual reports in terms of silviculture acres actually harvested and the corresponding cumulative board foot volume that is harvested off those acres.

Example #3. More recently I have begun to hear from review staff of RPFs coming back to the Department claiming that it had no authority to impose re-inventory analysis on NTMPs that they were currently administering. This involved plans that were approved a decade ago where the plan was approved based on periodic re-inventory analysis, usually every 10-years. So, they are trying to get out of their obligations, even though many insufficient plans were approved since there were provisions for decadal re-inventories.

I. Solutions

I want to offer several ideas that potentially could fix many of these issues. First, recall that decades before the NTMP program took effect, the Timber Harvest Plan (THP) permit was the only permit type available for harvesting timber which was valid for only three years. The NTMP program became effective in 1991 and was the very first permit type to require sustained yield. An approved NTMP represented a continuous harvest permit having no sunset that was issued in exchange for a detailed management plan based on sustained yield principles that included a “*detailed timber inventory*” that further “*must show in detail how much of the timber will be harvested in a given period as well as where and when it will be harvested.*” Thus, “*in effect, the NTMP becomes a highly coordinated collection of individual THPs that are only submitted once to demonstrate a long term commitment to all of the resources.*”²⁶ The NTMP permit was followed in 1994 by the original Sustained Yield Plan permit (also referred to as Option B) and in 1997 by the Program Timberland Environmental Impact Report.

Moreover, the licensing of foresters began I vaguely recall around 1972 where the **Professional Foresters Law** PRC § 751 was developed for the following **Purpose**:

“The purpose of this article is to declare the existence of a public interest in the management and treatment of the forest resources and timberlands of this state and to provide for the regulation of persons who practice the profession of forestry and whose activities have an impact upon the ecology of forested landscapes and the quality of the forest environment, and through that regulation to enhance the control of air and water pollution, the preservation of scenic beauty, the protection of watersheds by flood and soil erosion control, the production and increased yield of natural resources, including timber, forage, wildlife, and water, and outdoor recreation, to meet the needs of the people.”

Further, **Professional Foresters Law** goes on to identify specialties that a RPF may have to consult as part of their duties. Specifically, PRC § 752(b) in part specifies the following (emphasis added):

“A professional forester is licensed to perform forestry services only in those areas of expertise in which the person is fully competent as a result of training or experience. In order for a professional forester to fulfill all of his or her responsibilities with regard to a particular activity on a site, if the

²⁶ Passof, Peter C. 1993. Chapter 1, page #4 in *Managing Your Redwood Forest: An Owner’s Manual for the Nineties*. Publ. of University of Calif. Cooperative Extension Division of Agriculture & Natural Resources, Davis, 104 pp. Reviewed and funded in part by CalFire.

expertise that is prudently required exceeds the expertise possessed by the professional forester in that regard, the professional forester may need to utilize the services of other qualified experts, including, but not limited to, archaeologists, botanists, civil engineers, ecologists, fisheries biologists, geologists, hydrologists, land surveyors, landscape architects, range scientists, soil scientists, or wildlife biologists."

It appears that many RPFs have wrongly concluded that for the simple matter that they possess an RPF license, that they are then qualified to prepare a sustained yield analysis. They further have gone on to define their own "professional" standards, most of which are inconsistent with the Society of American Foresters and the Association of Consulting Foresters.

The rules and regulations are pretty well thought out, but something surely has gone awry with the breakdown in the various processes that were developed to protect California's forest resources. The following represent a few comments I have on restoring integrity to our profession.

1. RPF Specialty Credential in the field of sustainability. In my opinion developing a Specialty Credential for sustained yield analysis could return our profession in California back to one of respectability. The PFEC has the capacity to create this specialty credential. Testing should be very rigorous and mandate Continuous Forestry Education in appropriate subjects. And the curse to any profession—grandfathering—should not be allowed under any circumstance.

2. RPF Certificate. Alternatively, institute a program like archaeology whereby individuals that seek to develop a plan requiring a demonstration of sustained yield must successfully complete an initial course work in sustained yield to attain certification that requires periodic re-certification.

3. Supplement existing NTMP Rules. One improvement in the review of NTMPs can be made by expanding the timelines for agency "filing" and "first review" from 10 out to 20 calendar days. Most if not all of our review staff personnel will tell you that 10 calendar days can at times not represent a sufficient amount of time to evaluate a NTMP for "filing" and "first review." First off, "10-days" is the same timeline for the standard THP, but an NTMP is required to contain a sustained yield analysis. I have been told many times including most recently 2 months ago that our review staffs spend most of their time reviewing the standard elements of the harvest document common to THPs. And since they do not have a good handle on sustained yield, they take only a cursory look at the analysis relying on the RPF's license and seeming expertise. Rather than triaging plan review, having the additional days would allow time to balance workloads and allow discussions between review staff when the reviewer has specific questions about an analysis that they need help with. NTMPs are highly technical and just like *plan preparers*, *plan reviewers* vary in technical skills and experience. More time in the initial review cycle would allow for proper consultation when needed.

4. CalFire Re-organization.

a. Commit to training Review Staffs and Inspectors: Outside of the training given in "Basic Forest Practice" and "Forest Practice Enforcement" that is routinely offered to CalFire staff, training in silviculture, mensuration and growth and yield needs to be taken much more seriously. Provided in **Appendix 31** is a 2005 e-mail string between Deputy Director Bill Snyder and Assistant Deputy Director Duane Shintaku that discusses amongst other things training in these disciplines.

It is noteworthy that in the 1990's the Department contracted with CalPoly Forestry to develop curriculum for training in these three core disciplines. These classes were offered but the last class was in the summer of 2000. For an unclear reason the Department abandoned the CalPoly curriculum. Periodically, the

Department sends out surveys to forestry staff requesting that they document their training needs. From the survey records that I have seen, training in growth and yield has been hands-down the number one request. I found one e-mail string of one attempt in 2008 to develop an in-house curriculum but those efforts stalled. Then in 2010 a course was offered that was focused on using the recently released FORSEE growth and harvest model that the Department had helped to finance. From the comments that I have heard from participants, this class was of limited value. Then in 2012 another class was offered in which I was a member of the teaching cadre, that was focused on Forest Practice where I gave a number of case studies about how to address NTMP inadequacies. This class seemed to be well received by the ≈15 review staff in attendance but it was surprising with this apparent success, management did not once call upon the instructor cadre to offer more classes in order to cycle all ≈100 review staff members through it.

This past spring with assistance of the Department's firefighter training academy at Lone, CA., the Department embarked on developing curriculum for the three core disciplines. I make up the cadre developing the curriculum for what we have combined and entitled "Mensuration and Growth & Yield for MSP Compliance." The other cadre is developing the "Silviculture" curriculum.

My chief concern about this effort is twofold:

- 1) Likelihood that individuals receiving this training may have difficulty with the subject matter if they have not been exposed to important subjects such as forest ecology, forest soils or familiarity with standard tools used to measure certain characteristics of a tree and forest, and
- 2) The professional backgrounds of individuals that will be selected to teach these disciplines.

First off, training in forestry comes with its own sequence of prerequisite subject matter. For example, in the fire service training to become a Battalion Chief comes with its own set of prerequisites that each individual must successfully train for and master before they can advance to the next position. You cannot train someone for a BC position when they have not yet been exposed to say a "forward hose lay" that it taught at the basic firefighter level.

The same applies to forestry. For example, respective to forestry curriculum provided by universities accredited by the Society of American Foresters, in order for a forestry student to enroll in *Silviculture*, prerequisites typically include the following: introduction to forest management, forest ecology, forest soils, dendrology and remote sensing. And some of these prerequisite subjects have their own prerequisites that include general biology or botany and general chemistry and physics. And typically, *Mensuration* is a prerequisite to *Silviculture*, that comes with its own initial coursework in calculus, statistics, and introduction to forest measurements. All of this becomes a prerequisite for classes in *forest finance* and *landscape planning* also known as *harvest scheduling* where concepts about sustained yield are expanded upon.

I don't believe that you can take someone off the street, in essence someone that has not been exposed to prerequisite coursework, and give them a 4- to 5-day class in these three important forestry topics and conclude that they will be able to represent the Department adequately.

My second concern centers on the parameters that have been identified as necessary for a staff member to be selected for the instructor cadre. In developing both classes we are obligated to follow procedures and standards outlined in the CalFire Policy 4000 manual.

Respective to the Silviculture class that is being developed by the “silviculture” cadre, the prerequisites needed to be considered for membership in the instructor cadre is simply RPF license and CalFire rank, as the “instructor level” statement reads as follows:

- “CalFire Registered Professional Foresters at the rank of Unit Forester, Region and Sacramento Staff at rank of Forester II or above.”

Conversely, respective to the Mensuration and Growth & Yield for MSP Compliance that is being developed for which I am a member in the cadre, our prerequisite statement recognizes that RPF license and CalFire rank within Resource Management is not a sufficient measure of one’s background. Our “instructor level” statement reads as follows:

- “CalFire employees with education, experience and knowledge in Forest Mensuration.”

I should point out that earlier this year when the initial cadre groups assembled to begin working on the corresponding curriculums, additional CalFire staff were proposed for invitation to fill out positions needed for the cadres. As I expressed, and others supported, some of the individuals named, some of which had become recently employed by the Department had a history of submitting sustainability analyses that were not consistent with the Rules and professional standards. One example is reflected in this letter.

The reason that this is important flows back to PALCO. I want to caution the Department about falling in to the same trap that occurred during PALCO’s implementation of their SYP. Back between 2001—2003 the Department was for the most part paralyzed enforcing PALCO’s SYP thus allowing PALCO to do almost whatever they pleased. Some of the parameters of their SYP that they were able to breach enforcement likely would not have occurred if staff had a proper background and had confidence to stick to their guns. As I subsequently wrote in 2008 for the State and Federal Qui Tam cases against PALCO where I chronologically laid out how the fraud was uncovered (see **Appendix 32**), I wrote that a number of other staff held the position that PALCO had to ensure that their THPs were being implemented consistently with their own analysis--as discussed in their own written documents. But we received substantial resistance from other staff that I subsequently concluded were lacking in forestry training. In my write-up to the legal teams I start off by cautioning them in preparation for depositions that they should not to fall in to the same trap that I had by incorrectly assuming that just because an individual occupied a higher rank position within the Department, that they had more experience and education than their subordinates and thus were more “qualified” to come to a correct assessment of an issue.

b. Designate specific individuals at each Region to review sustained yield analyses submitted under NTMP. Since CalFire has not been committed to training its foresters as it once was, designate specific CalFire staff at each Region to review NTMPs. The caveat to such a program is “*stability*” as the person selected must be dedicated to do the job for an extended period of time versus taking another job one, two, three, or four years down the road. I want to add that last summer I had suggested this course as I continue to see approval of plans that are not in compliance with the rules. And I offered to train the designated persons, but the response to my suggestion for having dedicated review staff was, “*that’s not going to happen*”. Again, and again, this response and other prior responses, whether verbally stated or communicated by their mode of “silence,” confirms that the Department does not take the central pillar of the Forest Practice Act very seriously. Which is puzzling for a group of “public servants” that are handsomely compensated in salary and pension by the public.

c. **Silviculture & Sustained Yield Administrator.** Create new position out of Sacramento Headquarters where sole responsibility is ensuring compliance with silviculture and sustained yield rules. The appointment should not have other responsibilities such as firefighting and personnel matters that could deflect from their primary job. Minimum education should be a Ph.D. where all three degrees (BS, MS, Ph.D.) are in silviculture and forest biometrics. And must have at least 10-years of related experience and a California RPF license is not necessary. This Department cannot afford to have managers over-seeing programs in which they have little background which explains why it has been so easy to *divide-and-conquer* the Department.

H. Issues related to Industry **Option A, B (SYP) & PTEIR**

1. Are the Option A "Rules" Sufficient?

Numerous times I have heard comments by non-Department RPFs made to Board of Forestry committees as well as the Professional Foresters Examining Committee that there have been no problems respective to sustained yield plans filed under Option A, B or PTEIR. They then claim that the current rules and regulations are working fine. **This is not true.** There is a long list of companies that I could name where we formally rejected their initial analysis, or questions were raised during implementation that subsequently required re-analysis.

Inadequacies with the quality of one's work is not something that individual RPFs or companies want to talk about openly, for obvious reasons. Indeed, if this information was more out in the public some companies and consultants would have a difficult time remaining in business. So, it makes sense that the larger community does not hear about these problems. Similarly, correspondence from the Department does not always make it into the public eye, first because we have only been posting review documents since about 2007 and second because plans that are withdrawn have the documents removed from the public FTP site. You can see where some RPFs, especially the ones working hard to comply with the Rules have no idea just how bad some of their colleagues work really is. Some of this explains why many CalFire foresters find Forest Practice exceptionally challenging to work for.

Many of the issues with industry related to their computer model projections that when examined were inconsistent with the plan's narrative for how the model was parameterized to simulate specific silviculture methods. Other issues included failure to ensure harvest simulations could actually be implemented out in the forest. My letter previously presented several examples.

Moreover, there have been dire periods when Department representatives had refused to sign THPs that were specifically filed under Option A. As one example of two known cases, **Appendix 33** is an e-mail from Deputy Chief Marc Jameson to me during 2007 where he conveys the following:

"I found it quite interesting in discussing Coastal's Option A with Leslie (Markham), that she refuses to sign their THPs with her RPF license. It's hard to blame her, but also a sad situation if it has come to this."

The Department has tried to have the Board address some of these issues. Starting around 2008 the Department has made an annual attempt to get the Board of Forestry to address the inequalities in the Rules that exists between Option B (the original SYP) and Option A. The Option B rules are very specific whereas Option A, as the Department presents, is being used in a fashion that the original Board of Forestry

from 1994 had never intended. I was not aware until the following year (2009) that the Department had made this request of the Board thus I had no involvement directly or indirectly in its preparation, such as what I go on to identify below.²⁷ Attached as **Appendix 34** is this request, as well as the Board's response where incredulously they decided that no action was necessary. Again, during committee hearings RPFs and members of the public had postulated that since they had not heard of issues with Option A's, they then concluded that the Department had not had significant issues with Option A. And again, I had to challenge their statements as they were not reflective of reality. Attached as **Appendix 35** is my briefing I prepared for my supervisors following my appearance March 1, 2011, in front of the Board committee regarding this issue. I should add that audio recordings of these meetings were made by the Executive Officer of Forester's Licensing should you want to confirm what I have presented here. I need to state that there have been significant issues with specific companies in the enforcement of the Rules that apply to industry. There are at least two clear examples and possibly three additional examples which based on my review of their computer simulations I believe would have merit the filing of complaints with Forester's Licensing.

With the issues that have resulted out of the Option A "rules", I should also convey what the original Board of Forestry wrote when they were developing the SYP (Option B) rules. These writings came from the package of documents that Department staff disseminated to the public and RPF community during the state-wide workshops they held in the month leading up to the May 1994 implementation of the then new sustained yield rules, which I attended the meeting held in Ukiah April 4th.

B. Adopt an optional Sustained Yield Plan which deals only with the sustained yield issue.

1. A Brief Description:

The alternative would provide for a Sustained Yield Plan limited to timber growth and harvest questions. It would have different levels of informational requirements for different size ownerships. The lower level of informational requirements would apply to smaller ownerships which could not support high timber inventory expenses and on the assumption that the degree of accuracy is not as critical on smaller ownerships. At either level of information the requirement would be the minimum necessary for the Director to determine if the objective of MSP would be met under the proposed management plan:

2. Findings:

The advantage to this approach is that subsequent THPs could rely upon the SYP for questions of the ability to meet MSP. This would reduce the informational costs of those THPs which are covered by the SYP. Information contained the SYP can still be reviewed by the public and any issues identified which are covered in the SYP will have to be addressed in the individual THP.

The approach suggested by this alternative would not give additional guidance desired by the Board in assessing the effects of selecting particular silvicultural practices on wildlife habitat values. The selection of a one or more silvicultural regeneration methods or intermediate treatments dictates the distribution of age classes, species composition, and the spatial distribution of those

²⁷ I note that this document reads consistent with the writing style of Bill Snyder. I also should add that years ago Bill made a comment during a meeting that Option A submitters could not propose clearcut harvests on stands where the age of the stand was below the 50-, 60-, 80-year limitations, unless the submitter could demonstrate that a higher yield would result relative to what could be produced compared to the standard 50-, 60-, 80-year minimum age standard. You will find that this is consistent with Board of Forestry discussions during their finalization of the MSP rules in 1994, but yet it has been ignored/overlooked as the Rules are not so clear on this aspect.

characteristics. This has a direct effect on the habitat value of the planning watershed or ownership to any individual species.

Similarly, the alternative would not give additional guidance desired by the Board in assessing the effects of anticipated harvesting methods and schedules on water quality. The arrangement and timing of harvests as well as the intensity of ground disturbance resulting from selected regeneration methods can have a direct effect on water quality, on a watershed(s) level, the overall spatial distribution and timing of harvesting is important information in determining the potential extent of discharge into a watercourse system and whether the system can absorb that level of discharge. The Board desires to encourage more focus on such things as information on the overall road system to be used so erosion impacts from construction and maintenance can be evaluated. Roads are commonly known to be one of the major contributors to the sedimentation of watercourses.

For the reasons stated above, the alternative does not accomplish the intent of the Board in enacting its amended rules.

Benefits of going Option A

Further, I want to detail just what are the "benefits" of going the Option A route; there are many:

1. **Accountability:** The SYP rules state that the plan "**shall be prepared under the supervision of and signed by an RPF...**" (CCR § 1091.4(a)) which you will not find under Option A. Don't let anyone try to mislead you that the accompanying THP that is signed by a RPF is equivalent. In almost every single Option A that has been submitted, the *RPF of Record* for the THP did not prepare the analysis and could not represent it. This is validated when members of review team ask questions about compliance of the THP with the Option A and are told by the RPF they have to talk to the "modeling guy" for answers. A few Option A's have been prepared by non-RPFs officed outside of California and they have no idea what our rules require. Then the problem becomes larger when the company RPF that is serving as an intermediary between their out-of-state modeler and CalFire has no or little background in modeling.
2. **Accuracy of Baseline Inventory:** Inventory standards are silent for Option A but are spelled out for SYPs (CCR § 1091.4.5(c)(4)) where for the major inventory stand types, the submitter shall describe how they will work to bring down the statistical variance of the sample to no less than 15%.
3. **Deviations from Approved Projections:** In terms of the *timber assessment*, the SYP requires that any activity, man-made or a cause of nature, that would change the original harvest projections by more than 10% constitutes a "substantial deviation" (CCR § 1091.13(a)), which would then trigger a major amendment and public recirculation. There is no such provision for Option A.
4. **Effective Period:** The *effective period* for a SYP is 10 years (CCR § 1091.9), but the RULES are silent for Option A. We now have companies telling CalFire that they can continue to submit THPs indefinitely on Option A's that are well in to their second decade. I can guarantee to you that they will ride this locomotive as long as CalFire allows them to. I should point out that no other State requires landowners to demonstrate that they are managing for sustained yield. Further, the discipline of forest sustainability and planning is continually evolving. Consequently, this notion

that an Option A is good forever assumes that these complex projects are error free, which is not the case. If they were error free, and the forest environment does not change, why would the Board define an *effective period* of only 10 years for SYPs (Option B)? In my personal library, I have four forestry textbooks by separate authors that all conclude 10 years represents an adequate period for updating such analyses. I can also convey that many of the plans I reviewed have had errors in the modeling and some were extensive enough to require a remodel. Even when I was preparing plans for submittal to CDF during the 1990's, mistakes were made. The 3 questions that we would ask ourselves—when mistakes were discovered—were the following:

- (1) How much does the error impact the forecast of LTSY;
- (2) What is the likelihood that CalFire (i.e., "Tim and Helge") will find it; and
- (3) If they find it, how professionally embarrassing will the mistake look on us?

The caveat to this reasoning was that back in the 1990's we all thought that the Option A had an effective lifespan of only 5 years, which was the life span of the first THP that the Option A was submitted under (I can refer you to current staff that will confirm this). Thus, we could correct the mistake at the next re-assessment, which would be 5 years down the road. Ask yourself this; if the Board had wanted all of industry to prepare an SYP (Option B) that came with an effective period of only 10 years, why would any landowner proceed down the SYP route when they could garnish far less regulatory oversight under an Option A?

To share a recent example of an error presumably made in an Option A analysis, I present the following. This example comes from a landowner that I feel has been a responsible forest steward and consistently prepares thorough and defensible timber assessment analyses. Some of their timberlands had recently been burned over in wildfires and thus on their own accord they updated their Option A to reflect the losses. In my review of the new Option A projections of growth, harvest and future standing inventory levels, I observed a significant upward change in their inventory that did not plateau like past analysis. I went on to raise questions and subsequently received a reply that in addition to a "bug" in the harvest scheduler application, they had been incorrectly compiling their baseline inventory data. This affected all previous analyses. The magnitude of this error indicated that the estimate of current standing inventory was 159% higher than what was presented in the original submission. The discovery of this error clearly worked in the companies favor, as their larger standing inventory would allow for more future growth and harvesting than had been accounted for previously. Over a course of two days reviewing stands and corresponding inventory information, we determined that the revised inventory appeared reasonably accurate.

These plans and the forest inventories upon which they are based, are very complicated and they come with a lot of vagaries and potential for error making. Typically, the computer simulations that go in to preparing company plans are prepared by one individual, and that person does not have any luxury of a second set of eyes to review his work. The notion that such planning documents are error free comes from insincerity or inexperience. Those actually "in the trenches" of forest modeling and planning know that even with the right starting point, the forest grows, things don't go as plan during implementation and sometimes the growth we are counting on never materializes how we expected. Again, I think about my four forest management textbooks from four separate authors that convey that 10-years is an ample period for updating analyses.

5. **Public Comment Period:** Under the SYP, there is a defined public comment period of 90 days as well as provisions to conduct a public hearing (CCR § 1091.10(a)). Not so for Option A since it follows the same review mechanism as a standard Timber Harvest Plan (THP). This results in a public comment period that can vary from $\frac{1}{3}$ to $\frac{1}{2}$ of the defined 90-day public comment period prescribed for SYPs. For further clarity, the SYP rules have the following timelines: Upon receipt of a SYP, the Department has 20 days to determine if the plan is “acceptable for filing” (twice as long as an Option A). Then another 45-days to conduct a *sufficiency* review to ensure that the plan “contains sufficient and complete information” before opening the plan up for official public comment period (no such equivalent for Option A). Once the Department determines that the SYP “contains sufficient and complete information”, the minimum 90-day public comment window begins. A public hearing must be completed within 45-days of the 90-day public comment window. Then at the end of the public comment window, the Department has “30 days to review public input, consider recommendations and mitigations measures from other public agencies, respond in writing to the issues raised, and then determine if the SYP is in conformance with the rules.” Under a standard THP that the Option A review timelines follow, rather than 30 days the Department has 15 days to decide to approve or deny the Option A.
6. **Implementation Monitoring:** SYP rule 1091.8 requires periodic reporting to CalFire, whereas the Option A is silent. It is important to recognize that monitoring implementation of the components that went in to the timber assessment are significant in that they directly relate to development of the assessments of wildlife and watersheds. The timber supply solution is intimately linked to the watershed and wildlife assessments. Further, as part of the effectiveness monitoring procedures, the SYP rules (PRC § 4551.3) provide the public an opportunity to request Department review of an SYP at the mid-point of the 10-year effective period when “evidence of potential noncompliance” is made. The Department must provide for a public hearing following a 30-day public notice to address the allegations. This provision does not apply to Option A.
7. **Detailed Harvest Activity including 1st Decade geographic specificity:** The SYP rules have very detailed mapping and information requirements to show the impacts from timber harvesting that is planned to occur in the first decade and through the 100-year planning horizon, however, Option A is silent. For example, under an SYP the timber land owner is required to address the following:
 1. Fish and Wildlife Assessment (CCR § 1091.5): The SYP rules require first decade mapping “showing significant changes to WHR types or stand structure types that are likely to result from projected timber operations...” The rules further state “For the remaining periods within the planning horizon [100 years by Rule], type changes shall, at minimum, be discussed in a narrative manner (including tabular analyses by management unit) and may include maps.”
 2. Watershed Assessment and Planning (CCR § 1091.6): The SYP rules require an analysis of impacts which includes the following information for all planning watersheds in which harvesting will take place:
 1. For all planning watersheds in the ownership acreage estimates of stand structure types and percent composition of the watershed for each decade of the planning horizon;
 2. Maps and descriptions of unstable areas and unstable soils that are actively or potentially discharging sediment;

3. Maps of existing roads and approximate location and miles of proposed new, reconstructed and abandoned roads;
 4. Estimates of forest types to be harvested by silviculture method and yarding methods, and the location of past, present and future timber operations covering the first decade of the SYP;
 5. Identification of areas known to be sensitive to ground disturbance and present sources of erosion.
8. **Constraints imposed from Public Trust Resources:** What has degraded over the last 10+ years in Option A review is the aspect of demonstrating how non-timber elements have been accounted for in the analysis. Back in the 1990s and early 2000's to illustrate that such issues as maintaining wildlife habitat had been accounted for, Option A's would include WHR projections or something similar, as required by the SYP Rules. More recently, the responses I receive are that WHR projections or their equivalent are not required, else the Board of Forestry would have written them in to the Rules. I subsequently raised this up to management but like many other issues, it didn't go anywhere. Again, I think back to all the times the Board has told me and other staff that we are expected to ask for any information we need. We can't have it both ways.
9. **Adequate Site Occupancy:** On the other hand, one rule provision within the Option A codes that appears to have been ignored since inception of the MSP rules is "adequate site occupancy." Subsection (3) of the Option A rules states the following:

"Realizing growth potential as measured by adequate site occupancy by species to be managed and maintained given silvicultural methods selected by the landowner."

The Rules go on to define "*adequate site occupancy*" as the following:

"Means the range of stocking levels which provide a balance between the largest number of trees per acre capable of maximum individual tree growth on future crop trees and maximum overall stand growth. This balance is achieved when stocking levels are within Zone 2 and 3 of the Langsaeter curve, as shown in 'The Practice of Silviculture', by David Smith (1962)."

Conversely, the SYP Rules explicitly allow compliance with the *minimum stocking standards* for the selected silviculture method. Based on the Board's writings from the early 1990's, they recognized that much of the Forest Practice Rules *minimum stocking standards* were at levels well below what the site could potential produce; simply stated, higher annual growth rates could be attained if higher post-harvest stocking levels were employed. My sense is that the Board wanted to entice all landowners to develop SYPs and thus in exchange provided "relief" from the "adequate site occupancy" standard. One of the chief principles in forest management is *site occupancy*, or how well the area is filled or occupied with desirable trees, and good forestry will promote *full site occupancy* that entails that every square foot of potential growing space is supporting desirable trees.

Although in my schooling I was not presented with the Langsaeter curve, the general concept was covered in Timber Management; A Quantitative Approach (Clutter, et al. 1983). **Figure 15** was part of the presentation that I gave on behalf of the Department to the Assembly's Natural Resource Committee working group October 2012 in their preparation of what became the WFMP legislation. Embedded in this "productivity frontier" trajectory are several concepts; growth rates and wood quality.

If your objective is fast individual tree growth and thus larger trees over shorter periods of time, you would manage your stands for lower stocking levels. But the wood quality of fast growing trees is of the poorest form.

Conversely, if you manage the site for higher density levels, individual tree growth rates become lower thus representative trees sizes are smaller, but the quality of the wood produced is much higher and thus likely to demand higher prices in a competitive market.

There is very little applied research on management utilizing uneven-age management. There is one example illustrated in Figure 16 from Leak (1969) as presented by Silviculturalist/Forest Practice Professor Ralph D. Nyland²⁸ (2010) related to single-tree selection that shows the relationship of growing space occupancy and growth potential in a northern hardwood forests. This research from 1969 found that maximum growth rates occurred when the basal area density ranged between 80 and 100 sq.ft./acre (California forests are more productive than northern hardwood forests). In my discussions with growth and yield experts in California that work in the redwood region, they have relayed that optimum growth rates on their timberlands

Figure 15. Slide from my presentation to Assembly's Natural Resource Committee about optimizing growth rates with relationship to wood quality.

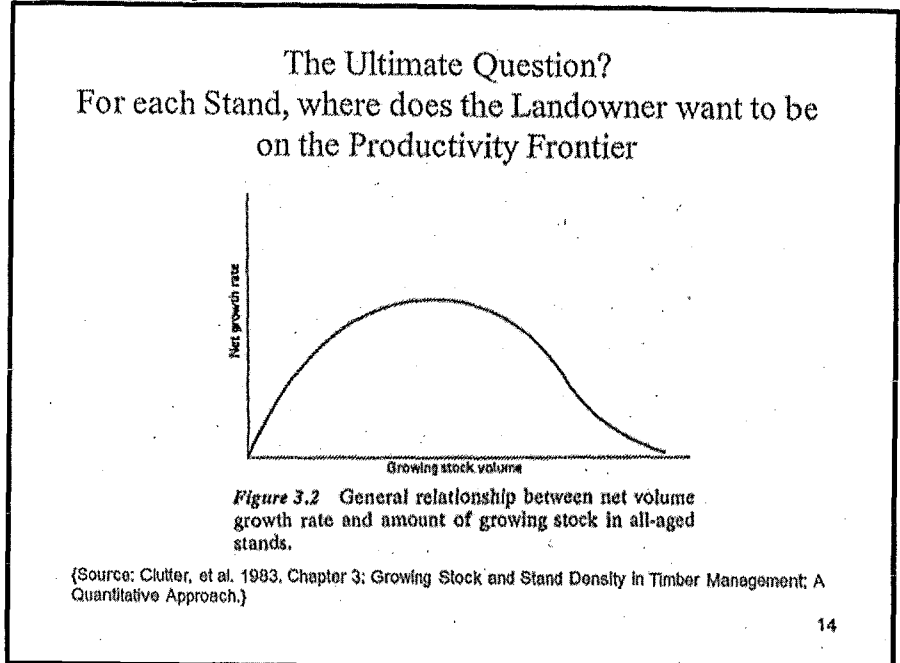
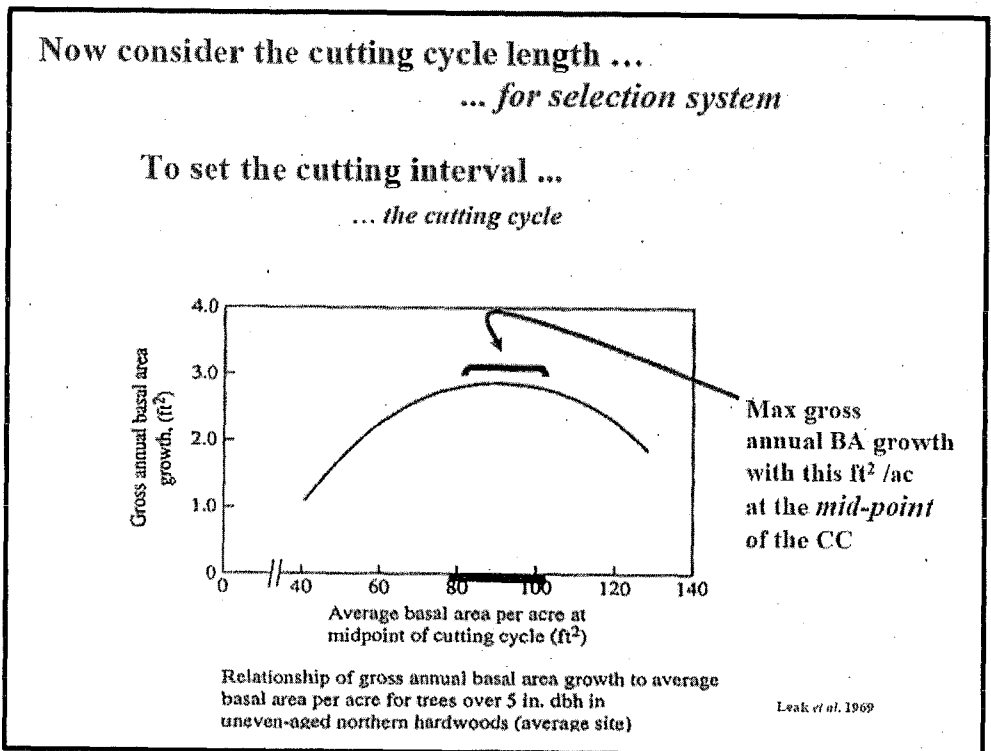


Figure 16. Slide from Professor Nyland's silviculture class regarding relationship of growth rates to basal area stocking.



²⁸ College of Environmental Science and Forestry, State University of New York, in Class #17, "Selection System: Regulating Growth and Yield." (Document accessed August 26, 2017; <http://www.esf.edu/fnrn/nyland/334.534/Class%2017%20Regulating%20Growth%20&%20Yield%20With%20Selection%20system-%202020.pdf>)

occurs at density levels nearly twice the minimums defined by the Forest Practice Rules. From my experience modeling growth in the interior regions of the northern California, the highest annual growth rates on Site Class I and II were found when post-harvest Basal Area retention was held between 120 to 150 square feet per acre.

2. Field Evaluations of Industry Plans

If the Department took the evaluation of sustained yield planning documents more seriously, we would hire more staff. Below is but one reason.

Attached as **Appendix 36** is a table that I developed years ago to illustrate how small increases in the actual size of a tree interacts to produce near exponential increases in tree volume. **Figure 17** provides summary results based on a sample plot having its tree attributes inflated by three conditions. When tree heights are inflated by 10%, the corresponding board foot volume increases by 19%. When heights are inflated by 15%, volume goes up by 29%. And when both heights and diameters are inflated by 10%, volume increases by 44%. My point is that it is easy to fabricate a sample inventory and whether I find it during what is a very cursory field review becomes a crapshoot. Ten percent increases I will not find with ocular exams. And I may not even find 20% increases especially in the Coastal region because of the undulating landscape.

Figure 17. Summary that illustrates how small increases in tree size dramatically affects tree volume.

<i>Summary</i>				
	Actual Field Measurements	Outcomes If Increase--		
		Heights by 10%	Heights by 15%	Heights & Diameters by 10%
Board Foot Volume Per Acre	21,604	25,763	27,969	31,046
Percent Change from Actual	N.A.	19%	29%	44%

Discovery of PALCO's fabrication was pretty easy but only because the difference between numbers contained in their inventory reports were extremely different compared to what I found while surveying their forests. For example, one 700-acre stand was represented as having 61,000

board feet per acre but only in the best pockets of timber could I find 20,000. I asked PALCO to come with me to the field and show me where the 61,000 board feet was at, which they declined. That inventory ended up being inflated by 181%. Inflating the inventory by that amount was needed in order for the computer model to produce the harvest levels that PALCO had promised to their investors would result. Without going any further in explaining PALCO, corporate raiders are known for "buy, strip, sell" or "buy, strip, bankrupt," and in this case, it was "bankrupt" and walk away from your debt. According to a senior DAG at the California DOJ, to avoid a fraud complaint, the owner needed to get to 2008 for the statute-of-limitations to have run out; he was successful in accomplishing this.

The concern in this matter is twofold; these baseline inventories feed in to the model that goes on to produce projected harvest levels. If the inventory has been inflated, the projected harvest levels will also be inflated—and thus will certainly not materialize. Then they embark on the campaign that PALCO followed, they'll blame state regulations and CalFire along with our sister agencies as preventing them from reaching their harvest level that, by-the-way, CalFire had approved.

Secondly, as has happened in the past, certain landowners have gone on to use the Department as de facto appraisers in their business matters. They represent to investors, for example, that they have a sustained yield plan that was reviewed and approved by the Department, thus insinuating that the baseline inventory and projections of harvest and growth must be accurate and valid. Here, you have a fraudulent actor using the "prestige of the Department" to make their deception appear as truth. How angry do we get when we hear of some con-man running around in a stolen uniform and badge shaking down people for money under

the disguise of a “fire inspection” or “traffic violation”? And how much embarrassment do we all feel when one of our employees is caught breaking the law or abusing their authority? This is no different in that our reputation, our pride and our honor being used to line someone else’s pockets.

I once attempted to have the Department’s insert a conditional statement in to the approval letter for an Option A, that the Department makes no guarantees that the inventory and projections are accurate. This seemed appropriate as we only test certain elements of the plan at a very cursory level. Unfortunately, this effort went nowhere.

I should also add that on one Option A, Deputy Director Bill Snyder not believing much about their modeling, went on to impose that each THP would be required to leave the two largest trees per acre. The difficulty in what has devolved within the review process is that these people with their persistently inadequate “analyses” keep coming back time again with a different “rock” and they ultimately wear you down to where you start to concede! This process results in RPFs being made successful that in all likelihood would not have been in any other environment. Forester’s Licensing should be on the frontlines addressing these issues which needs to be “job-1” of the Executive Officer rather than splitting time assisting the Board of Forestry in developing new regulation that frankly are overwhelming the profession and especially small landowners.

3. Big Trees or Little Trees; Is the liquidation model still running in California?

During the 1980s and early 1990s the public was rightfully concern about the apparent liquidation of many corporate forests. Forest liquidation was also playing out in Idaho during this period while I was attending forestry school at the University of Idaho. There, billboards were on display that showed colorful graphics of forested hillslopes “before” and “after” clearcutting. Idaho governor Cecil Andrus was involved with my major professor in a helicopter flight over the affected timberlands. There was nothing that could have been done to stop it since Idaho had very limited regulations that came nowhere to approaching what California even had at the same time. Satellite imagery of Idaho still shows the checkerboard scars where every other section of land—640-acres—was a clearcut.

Is the liquidation model still running in California? I cannot say that it is still running, but I certainly cannot look you in the eye and tell you that it is not. This is what I can tell you. Early during implementation of the 1994 silviculture and sustained yield rules, “several” industrial landowners had come forward with sustained yield plans that were based on growing larger trees, retaining higher Basal Area levels in Selection silviculture, and building higher inventory levels over the 100-year planning horizons. I believe that 28 out of the 30 plans on file with the Department are based on building higher inventory levels, many doubling what they start with.

Springing forward, some plans have been revised to now reflect lower retention standards than their initial analysis. And other plans were revised to grow for harvest smaller trees than what their initial analysis was based on. For example, one Option A developed in 1997 was based on growing the then current average tree size of 16.1-inches DBH to an average size of 24.3-inches at the end of the 100-year planning horizon. This plan was subsequently revised in 2007 where their target tree size after 100-years fell to average 11.8-inches. My memorandum regarding this is presented in **Appendix 37**.

Other plans had originally been submitted and approved based on growing redwood plantations to rotations lengths of 50 and 60-years, and higher. These plans were subsequently revised to rotation lengths mostly at 35-years, sandwiched with 25 and 45-year rotations. Previously, the manager for another redwood forest

company spoke that based on their analysis, any tree that exceeded 37-years in age was a negative asset growth.

From my read of the Board's writings during their drafting of the sustained yield rules (that also resulted in revising numerous silviculture rules), the maintenance and recruitment of large trees across the landscape was an important issue which in part was the justification for defining minimum rotation ages of 50, 60, and 80-years for clearcut harvest methods. I believe that they recognized that these minimum tree ages would be more palatable to industry as they more closely approximated financial maturity (vs. higher ages associated with biological maturity).

Regarding Single-Tree Selection silviculture, the Board again in 1994 imposed standards to ensure that trees sized 18-inches and larger in diameter were maintained, which additionally included a post-harvest stocking credit for each tree sized 24-inches and larger.

Almost every NTMP that I have reviewed, whether a quantitative analysis existed or not, have represented a commitment to develop larger inventory levels. Typically, such a commitment translates in to larger tree sizes.

Also, included in **Appendix 38** are three documents that draw attention to the plight of California's forests. In the 2004 Buckeye Forest Project, *Non-industrial Timber Management Plan, Workshop Report* (page #8), they offer the follow commentary under subsection **The Catch-22 of Increased Timber Size and Value;**

"Ironically as the trees grow larger, timber companies (the buyers for almost NIPF logs) continue to retool their plants for smaller-diameter logs, and there is an increasingly limited milling capacity for large logs."

(NIPF refers to non-industrial private forest landowners)

Secondly, as reported by media and announced in a Sierra Pacific Industries (SPI) press release of January 25, 2016, SPI included the following explanation for the upcoming closure of their Arcata mill: *"A fall-off in the amount of suitable timber for sale in this area...But, make no mistake, the largest factor was that the type and size of logs that this mill cuts are simply not available in ample supply to continue to run the mill."*

Then a month and half later as reported by the Eureka Times-Standard on March 11, 2016, it was announced that SPI had purchased federal timber for the Arcata mill. Quoting from the article, *"SPI officials said the Arcata mill was designed for 16-inch or bigger diameter logs, and they struggled to find suitable timber despite efforts to import logs form Washington state or British Columbia."* The article goes on to state that the federal timber was coming from the Six Rivers National Forest and would be made up of trees sized 12 to 16 inches in diameter.

The former PALCO timberlands: Last year Humboldt Redwood Company submitted their first Option A analysis on the former PALCO timberlands. Their own inventory indicated that the average tree size on three-fourths of the 200,000-acre timberland was in trees 16-inches and less. And 53,000-acres, one-quarter of the ownership was in plantations approximately 15-years in age.

Furthermore, my concerns have been elevated on another company in the redwood region where I had reviewed their Option A analysis around 2007 and was very pleased with what I had seen. My observation at the time was that their efforts to restore what were clearly abused timberlands by the previous owner was going to translate in to impressive timber stands some 20 to 30 years out. However, just recently I have

been made aware that the company has been going back in to these young timber stands and removing the larger tree component which according to my source is apparently inconsistent with the analysis that they are operating under.

Finally, around 2001 the Board had asked of the Department the question if industry was growing larger trees. I had some input in the response which reported back that most of the industry plans on file were based on increasing forest inventory levels and thus by extension the assumption was made that larger trees would result.

There are other on-going issues that continue to fester, so I want to close by offering the following observation; If the 1993-94 Board would have had any idea of the issues that the Department would go on to face respective to industry, they likely would have written their regulations differently so that the State could be assured that their policy of *maximum sustained production of high quality timber products* would be a certainty.

I. Department Governance and Ethical Propriety

I hope that it is now clear that (1) competent leadership, (2) having a sufficient number of experts, and (3) properly trained staff is of critical importance to have within the Department. Forestry is a very complicated profession and as a result there has been on-going discussion within the profession regarding whether a Master's degree should be the minimum entry level standard (see **Appendix 39**). Further, to implement such a dynamic program for timberland management, the State of California cannot afford to appoint RPFs into state service or in to manager positions that do not have basic training and experience. There is a long list of RPFs that have gone on to attain positions through the ranks for which it surely appeared they did not have the necessary background in forest management. You will even find some of the same RPFs that prepared inadequate analyses of sustained yield, such as failing to account for harvest, now working for CalFire.

As I step back and reflect on the many issues that the Department has had in Forest Practice as well as our State Forests, I believe most if not all can be attributed to RPFs not having a proper background in the discipline of forest management. It seems wrong to appoint an individual to manage a state demonstration forest when they do not have a background in forest management and the greater understandings in statistics and in the scientific method of research. Without this background, they are handicapped as they may not recognize improper research methods or understand results.

Secondly, CalFire's really needs to decide just whom it is answerable to; Do we serve the public, as in every California citizen or do we serve merely the forest industry and their partners? Forest liquidation continues to plague our profession and most professionals only talk about it under their breath. When I was schooling in Idaho during the latter half of the 1980s to early '90's, the liquidation plague was in full swing and remained through the mid 2000's--when they ran out of trees to cut. The public was outraged but unlike California, the state could do nothing about it as Idaho did not have forest practice rules that could prevent forest liquidation.

Attached as **Appendix 40** is *commentary* from January 2013 Society of American Foresters (SAF), *The Forestry Source* monthly newspaper by former SAF president Jim Coufal where he addresses both high-grading and sustainability:

“High grading continues. It may be most common in eastern hardwoods, but there is evidence to indicate it occurs throughout the country. To cut the best and leave the rest does not require a forester! There is plenty of scientific evidence that high grading, by whatever name, is a non-sustainable practice. The fact that SAF does not take a position against high grading raises the question of whether there is worry about a candid discussion of current timber harvesting practices and what it would reveal. Some of this is apparent when forest sustainability is discussed largely in terms of growth versus cut, often showing favorable statistics while bypassing inventory reports that show declining residual tree quality, stand structure, and regeneration.”

Further, the liquidation plague has more recently affected other states such as Montana and Texas. Attached as **Appendix 41** is a 2007 account from Montana where State Forester Bob Harrington, a guest speaker several years ago to a California forestry workshop here in Sacramento, voice concern for the long-term timber supply in Montana. He is quoted with the following (emphasis added): *“They have been harvesting those lands in excess of sustained yield for years...I think that’s pretty common knowledge now.”*²⁹ This was followed with reports that former lumber mills were being converted to casinos such as the “Lucky Logger Casino” (Missoulian newspaper May 9, 2009 article included with Appendix 41). This article goes on to detail how the liquidation plague began in Montana.

It doesn’t take much skill to recognize that a forest is being liquidated when you look around to find increasing expanses of denuded forestlands. I have had conversations with experienced foresters here in California including CDF/CalFire staff and they didn’t need any formal inventory information, computer models or satellite imagery to have concluded that PALCO’s forests were being liquidated.

About a decade ago in Texas a corporate raider was successful breaking up Temple-Inland where the timberlands were sold off to TIMO’s and REIT’s and the State Forester voiced concerns about the future of timber supply.

Will the liquidation plague return to California? It most certainly will, especially if the Department, the Board of Forestry, and Forester’s Licensing does not change.

To close with just one past example of problems that have faced the Department, included on the accompanying CD is an audio recording made in 2002 when I had uncovered PALCO’s fraudulent computer modeling of “sustained yield.” In this you will hear PALCO’s resource manager (and former CDF Deputy Director before as I understand being fired by Director Richard Wilson in 1999) go on to reply to CDF’s Deputy Director Dean Lucke’s request that corrections would have to be made to PALCO’s computer model before the Department would accept any additional analysis:

“Well, my understanding is that a, a we’re going to file this Option A, and, and a, you’re just not going to be able to have time to dig in to it for a while, it’s just going to be filed.”

Several weeks later in November 2002, PALCO submitted a “place-holder” Option A “analysis of sustained yield” as they were anticipating a court ruling that would invalidate their SYP. After PALCO delivered their “place-holder” plan to our region office, I was then required to make a finding that their Option A met the “filing” standards of the rules (i.e., “was complete, accurate and in proper order”) and

²⁹ This is the same company that liquidated their lands in Idaho. And some of the foresters and one Executive that the Department dealt with in the last decade of the PALCO saga, were recruited by PALCO from this company. It is also worthy to note another business connection in that the SFI “forest sustainability” certification that PALCO received around 1999, was done by the same accounting firm, Arthur-Andersen that was involved in the Enron energy trading debacle that cost Californians dearly.

ignore any Department knowledge of how they had gamed the model to produce growth and harvest projections that had been inflated 30 to 50%. A week after the Department had accepted their Option A for "filing," I subsequently confirmed with CDF management that I was not to review the plan.

Then several months following the "filing" incident, there was a face-to-face meeting with the PALCO resource manager at CDF's region office in Santa Rosa that turned out to be the most disturbing episode during my employment with CDF/CalFire. Before this meeting, an extensive letter had been drafted that documented the apparent fraud discovered in the PALCO model. This implicated every analysis that they had submitted, and the Department's management was preparing to go public with our findings. However, CDF's Director squashed our efforts to go public and instructed me to send our draft letter to PALCO. Consequently, at my request Chief Dean Lucke called PALCO to a meeting in Santa Rosa to discuss the Department's letter. In attendance were Deputy Director Dean Lucke, Staff Chief Bill Snyder, Forester II Ron Pape and myself along with PALCO's resource manager and two other staff. As I was quite perturbed with the whole situation, the night before I prepared a 3-page summary based on the issues discussed in our draft letter. At the meeting, I read word-for-word what I thought of PALCO and their phony "sustained yield" model. Afterwards, the resource manager looked directly at me and wanted to know exactly who knew about the draft letter. I answered by listing aloud the names of the few individuals that were aware of the letter. And as I was the lowest ranking person at the table no one spoke up to cry foul. I guess because they already knew what I had just concluded, "*the fix was on.*" This was further reinforced a year or so later when the PALCO resource manager was re-hired by CDF, along with a PALCO attorney.

About six months after the "filing" issue, the SYP was invalidated by a court on grounds that I believe were procedural in nature. Since PALCO had the "place-holder" plan in place, they didn't miss a beat in their liquidation scheme.

Immediately after the PALCO executive was re-hired by the Department, I had never seen so many CDF chiefs in the break room, many that I had not recognized, standing around worrying about his return. And my phone lit up from our region and ranger unit staffs concerned that their hires were enacted to protect PALCO.

During this whole saga, PALCO played the Department like a fiddle. For every one of us that stuck out our necks to raise the red flag, there was an equal number who just acted "deaf-and-dumb", taking a back seat and letting it all play out. How can we tell people we are leaders in forestry when we cower from a just fight? Leaders must stand for what's right, even when it hurts, even when people who are more powerful than us oppose what we are doing. Isn't this why people admire firefighters; You stand tall when others run for cover. Isn't it the duty of our foresters to do the same? What makes it OK to cower in fear when some powerful company decides to make us carry their water?

I have to ask besides our own, how many environmental laws were broken by allowing PALCO to continue their liquidation scheme! Moreover, PALCO filed suit December 2006 against the State claiming, "*breach of contract.*" They sought damages of \$629,000,000 (\$629 Million) alleging that regulators (Water Board, F&W, CDF) and environmental activist were preventing them from reaching their annual harvest level of 178 million board feet.³⁰ The Department knew very well that their modeling was fraudulent but we

³⁰ After defendant State of California had been losing motions before the court, Sacramento Superior Court Judge Raymond Cadei took it upon himself to actually read the Headwaters implementation agreement, where he found a provision that prevented each party from seeking damages from the other party. Without any notice to the parties, he dismissed the suit stating that it never should have been filed and he went on to admonish the DOJ for their failure to raise what was a prominent provision of the agreement. His ruling withstood all appeals. Sadly, this episode came close to costing California tax payers over half-billion dollars and goes on to buttress my beliefs that our "State machinery" cannot protect its citizens.

approved their THPs from 2002 to 2008, when the company with a one-billion-dollar debt was dissolved by a Texas bankruptcy court. This 2006 lawsuit would have never occurred if the state would have done its job in 2002 to expose the fraud. I have no doubt that the owner of PALCO would have been paying California for the cleanup of its watersheds and paying restitutions to residents that were impacted by the increase flooding.

And the specter has been raised by staff perturbed in the Department's hiring of former PALCO foresters, because as one staffer lamented, "*they lied to us!*" Also, worthy of bringing up, in 2008 I had discovered that there were individual foresters submitting affidavits and providing depositions to two federal courts where false representations had been made for which they were never held accountable! One even went on to obtain an RPF license 1-2 years later. In one case, I stuck my neck out to force the Department's Chief Legal Counsel (a former attorney for PALCO) to notify the DOJ that affidavits were being submitted to the federal bankruptcy judge that were making false representations about PALCO's Option A, that of no surprise to me, they had refused to submit to the court on grounds of *confidentiality*. And of course, doing so would have revealed their deception. Because of the Department's initial dismissive behavior towards the information that I had—by accident—discovered and brought to them, to me this information was so significant that I felt compelled to approach representatives of the Fisher family as they had a bid to acquire the property. At the same time the Governor's office had already come out expressing the State's desire that the Fisher family based on their land ethic acquire the PALCO property. But it was only after I went to the Department's Chief Deputy Director with my information, was action taken to force management to get in line with the State's interest. The Chief Deputy Director subsequently conveyed to me in front of Counsel that because of my actions, that the Governor's official pronouncement in support of the Fisher family bid was written to acknowledge that PALCO was indeed liquidating their forests. To wit:

"While it may be possible for an operator to harvest at elevated rates from a given forest for a short period of time, unsustainable forestry practices will devalue the large stock of remaining trees, degrade water quality in streams and tributaries and impair vital habitat for salmon and endangered species – all of which result in detrimental economic impact. Sustainable forestry, harvesting trees at a rate that can be maintained or grown over many decades in a way that keeps or improves the ecological values of the forest, is essential to maximize the long-term value of the forest."

And finally, and not to be lost, to know that Senate Bill No. 730 (see **Appendix 42**) signed by Governor Brown on February 29, 2012 which authorized the Department of Justice to pay "*claims against the state*"—using taxpayer monies—the sum of \$6,000,000 to EPIC³¹. They along with the United Steel Workers union were awarded this money as a result of successfully challenging CDF's approval of the PALCO SYP that a Superior Court had invalidated in 2003 due to several significant issues. So, the California taxpayers footed the real bill and the actual culprit walked away scot-free. Why? Because certain public servants either grossly struggled with propriety or purposely aided and abetted a crime that destroyed a local logging community and deceived many investors out of \$400,000,000+. And never mind the PALCO employee's pension that was looted and then became underfunded to a tune of \$32 million. The political appointees under Governor Gray Davis and certain Deputy Attorney Generals during Governor Brown's tenure as the Attorney General, as well as certain staff within CalFire conducted themselves collectively in a manner that I would equate to a "mortal sin." From this truly miserable experience, I have concluded that "Sacramento" cannot protect the interest of its citizens. Perhaps

³¹ Environmental Protection Information Center v. California Department of Forestry and Fire Protection (Humboldt County Superior Court, 2011, No. CV990445), and Steelworkers of American v. California Department of Forestry and Fire Protection (Humboldt County Superior Court, 2011, No. CV990452).

California's timber counties should start drumming up their own "county rules" if Sacramento cannot make the necessary changes; I certainly would encourage them to do so.

J. Conclusion

The issues that confront the Forest Practice program are broad and deep. Like I conveyed in my personal letter to Dr. Gilless, the Department is not likely to confront an issue unless outside pressure is brought to bear. By the lack of action either driven by under-trained staff, or their greater concern for not upsetting the status-quo in order to get the next promotion, CalFire's culture does not reflect that of a leader in the realm of forestry. And sadly, it has become clear to me that the profession of forestry as practiced in California is incapable of governing itself.

When the Department stamps "*approved*" that a specific NTMP or Option A or any other plan has been found to be in conformance with the BOF's rules, the Department is conveying to the public and the landowner that employs the RPF that the RPF's work is legit. However, the evidence is overwhelming that when it comes to assessing for forest growth and yield and analyses of sustainability many California RPF's are **under-trained**. It is further clear that the RPF community has successfully turned the NTMP program into one of *entitlement* where the adequacy of an analysis doesn't matter since the real intent of the program—apparently in their views—is to shelter nonindustrial landowners from regulation. They also expect for the Department to accept each plan's short-comings irrespective of the magnitude where many times the Department goes on and behaves like a custodian rather than a regulator.

When I first raised my concerns formally to Department management in August 2002, I stated to the FMC group that the Department review practices routinely interfere in the **competitive element** of our free market system by making successfully RPFs that probably would not have been successful in any other environment. I have been in this position for 17+ years and have observed CalFire's culture and the cyclical nature of individuals placed in to management positions. Many that are propelled in to these positions seem not to understand the significance of the issues that I and others have raised, and it is clear to me and many other former and current CalFire staff that at minimum the Forest Practice program needs dramatic reforming. I know that for some people, their role in all this is simply not wanting to be seen as the "bad cop" and sinking their next promotion. Again, I must ask, who are we here to serve, one's own self-interest or the public? Foresters are handsomely compensated in salary and pension by the public, but I question just how deserving we are.

Although SAF's Code of Ethics, ACF's Code of Ethics, CLFA Business Practices manual, and Professional Foresters Law 752(b) warn foresters not to represent themselves as competent in any aspect of forestry without proper training and experience, many RPFs fail this standard.

The Forest Practice Rules for SYPs enacted in 1994 (CCR 1091.1, et al.) to govern sustained yield have been and remain adequate and workable but only when implemented by trained professional foresters. Without competent staff, you cannot have a successful program. It is clear that within CalFire, forestry is no longer "job 1" and hasn't been for quite some time. Back in the 1990s the Department had developed, required and delivered a mandatory training program for its foresters that included silviculture, mensuration, growth and yield, and technical report writing. Even though foresters within the Department are required to receive specific training, only once since 2000 has the Department offered any of this,

which consisted of a growth and yield class in 2012.³² Despite the success of the class that was tailored towards our Inspectors, not once did management indicate that they wanted to repeat this class. Frankly, since 2003 with exception of Bill Snyder's efforts early in his tenure, management hasn't seemed to care very much about training Inspectors in the core disciplines.³³ Should we be surprised when they fail to recognize a problem or do not have the skills so that they can adequately enforce our Rules?

After coming to face these issues, I have "wondered" for the longest time would the public and environmental community and some of our sister agencies continue their objections and/or resistance to the practice of forestry if they believed that California forest lands were truly being managed **sustainably for high quality timber products**. Humboldt county attorney Bill Bertain whom grew up with the Murphy brothers in Scotia and was a staunch Charles Hurwitz adversary, would frequently comment to me, "*why is the CDF helping the industry destroy itself?*" Sadly, I have no answer for this. Just look at the poor quality of lumber in our lumber yards and the small, young trees sitting in log decks, with much of the fiber amounting to sapwood being sold to unaware consumers that two to three decades ago would not have been acceptable. When I go to the local lumber yard, I must sort through about 80% of the lumber stack to find acceptable pieces (e.g., straight, few knots, no sapwood, and at least 7-rings per radial inch).

Our rule book has grown considerably since 1994 when the sustained yield rules became effective. I would like to think that much of its growth would not have occurred if CalFire would have actively worked to ensure that *maximum sustained production of high quality timber products* was "**job-1**" rather than being so passive and focusing on maintaining their generous "safety retirement" formula.³⁴

I am confident in the assessment I present here; current and historical forestry literature supports my conclusions and I am prepared to lay my credentials on the table against any individual RPF or group of RPFs, provided that the jury is composed of foresters having received university **training** in silviculture; mensuration, harvest scheduling and forest finance, as well as having an employment track record with companies that were truly committed to following professional standards of sustainability.

The evidence that I have presented here clearly shows that the RPF community at large does not understand basic principles to forest management. With that, again I must pose a follow-up question, "*What else do they not understand for which they are given authority to assess?*" I hope that you all find what I have presented here worthy of your direct involvement to force a change in a program that is plague and inflicted with deficiencies on many fronts.

K. Final Word

A lot of people that know of my past with CalFire are probably wondering what drives me to keep pushing ahead on the issues that plague the Department. I could have easily looked the other way and *joined the club* but I refuse to. What's the point of having a future when you are polluting the environment that is necessary to sustain yourself! I have witnessed a few things in life that most people couldn't fathom. One

³² Although I did not participate in the growth and yield class that was held in 2010, I have heard many complaints that this class was not very helpful in terms of Forest Practice regulation as the class was primarily focused on using the computer model FORSEE.

³³ I distinctively remember one time when Bill Snyder issued an "all call" for staff having timber cruising skills so that we could come together to conduct an inventory of the Soquel Demonstration State Forest. Individuals were identified, approximately 30 but many could not attend as they were doing their periodic public safety training. This cause frustration for Bill as we needed to update the old inventory ASAP in order to prepare their Option A in order to supplement the Department's budget.

³⁴ I offer to discuss this comment in private, which was precipitated in my discussion with a former Deputy Director May 2013.

occurred around 1982 when I witnessed firsthand the government's failure to protect Oklahoma citizens from oilfield pollution. Although well-known but little investigated by the media, 8,000-gallon tanker trucks would dump their loads of caustic chemical waste under the cover of darkness in to nearby creeks rather than transport the drilling waste to designated disposal sites. I had worked myself in to the position of Derrickman on Navajo Drilling Company, Rig #12 that was working 1-mile northwest of Sterling Oklahoma, very near to where I was raised. We were contracted to drill a 20,000-foot well for a petroleum company where the rent for the drilling rig and crew was \$10,000/day.

Drilling produces a lot of liquid waste that is typically trucked to disposal sites for treatment. This adds to the cost in producing a well. This waste is caustic and capable of chemically burning your skin. I know because it happened to me several times over my 3-year tenure working in the oil fields.

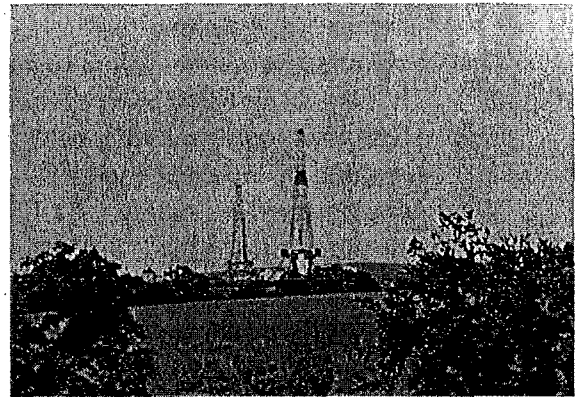
One Saturday morning I witnessed the rancher that owned the land where we were drilling arrive to confront the Driller with his allegation that the chemical waste was being pumped down the creek at night. Then several weeks later I witnessed a white Ford LTD driven by a tall slender cowboy wearing a white Stetson drive up to the rig where the same Driller went out to meet him. The Driller returned to inform us that the individual was an official with the "EPA" (Environmental Protection Agency I assume) and was sent to inspect the rancher's allegation. I watched the official walk his way out of visibility over the break in slope down to the creek to inspect the ground between the creek and waste pond that held the chemical fluid. The Driller and inspector met up afterwards where the Driller told us that the EPA inspector could find no evidence of disposal in to the creek.

I found his "inspection" suspect because I had witnessed numerous times crews set up a pump each night with a hose that ran from the waste pond down into the flowing creek. I once volunteered to help the Motorman set up the pumping just to get a closer look. Set-up required use of a standard sized forklift to ferry the pump and hose over to the head of the waste pond. The 4-inch diameter hardline hose was in 25-foot sections and there was no effort to disguise the slurry waste that came out when each section of hose was broken apart after a night of pumping, other than a "kick" of dirt so it wasn't so obvious.

For this reason, as well as the case of PALCO and several other offences, it is difficult for me to accept the conduct of individuals that have failed in their responsibilities to protect the public and our natural resources, even as I suspect, it has come at the detriment of my own "career" with CalFire. Hopefully, CalFire, the Board of Forestry and Forester's Licensing go on to take a very hard look at themselves.

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Navajo Drilling Company drilling rigs northeast of Sterling Oklahoma. Rig #12 in foreground.



"Tripping pipe" to change out drill bit.



Appendix Key

1. Personal letter to Professional Foresters Examining Committee.
2. Draft write-up proposal for inclusion in the "Licensing News" regarding PRC 752(b) & education needed in order to prepare analyses of sustained yield.
3. Memorandum on the sustained yield analysis for the Collins Almanor SYP renewal.
4. Memorandum describing the mathematical reconstruction of a post-harvest stand to assess its pre-harvest state needed to evaluate compliance with regulations for emergency Fuel Hazard Reduction.
5. Appendix D of the Department's 2002 draft report to the Legislature on the adequacy of the NTMP program, including corresponding e-mail communications with Department personnel.
6. Department's 1995 Review Guidelines for Maximum Sustained Production in Nonindustrial Timber Management Plans.
7. Private letter to Dr. Gilless regarding sustained yield analyses.
8. Dr. Eng response to issue of inventory stratification.
9. Historical map from 1892 of what is thought to be American's first forest management plan prepared by Gifford Pinchot.
10. Memorandum on review of 1-08NTMP-010 (SCR).
11. The beginning: NTMP 1-01NTMP-054-HUM
12. E-mail correspondence with Mario DeBernardo of the Assembly Committee on Natural Resources.
13. The Balanced State for NTMPs--Interpretation and Application of 1090.5(j)
14. University of California Forestry Cooperative Extension paper "Working in the Woods; A Guide for California's Forest Landowners".
15. CDF's Forest Management Committee Meeting minutes, August 15-16, 2002.
16. E-mail correspondence with BOF Executive Officer George Gentry
17. E-mail correspondence with CDF Inspectors
18. CDF's NTMP Report to the Legislature.
19. Outline and excerpts of presentation given to CDF review teams November 2003 covering issues in review of NTMPs
20. Handout I had prepared in order to identify for RPFs attending Department meetings issues that the Department had identified in the NTMP program.
21. CDF's 2005 presentation to the CLFA Growth and Yield workshop.
22. My memorandum on the review of the Ranks Forest NTMP.
23. Dr. Doug Piirto's comments about the Department's 2006 Growth and Yield Guidelines for NTMPs. (Audio of his comments are contained on the included CD.)
24. E-mail from Bill Key regarding draft legislation on the WFMP.
25. Example of Department expert Dr. Eng being over-ruled.
26. Department letter to RPF "don't do it again."
27. Liability concern from Inspector regarding PALCO
28. Is high-grading common in California in Large-tree removal in a mixed-conifer forest halves productivity and increases white fir.
29. Silviculture manuscript by Kevin O'Hara
30. RPF comments regarding issue of inventory stratification
31. E-mail correspondence regarding Department training
32. Cover page to my "Chronology of Events in Uncovering PALCO's Fraud"
33. Staff forester comments regarding approval of THPs associated with an Option A
34. Department's request of the Board of Forestry to harmonize the lacking Option A "rules" with Option B, and the Board's reply.

35. My summary to Department management about Board discussion on harmonizing Option A and B.
36. Illustration how easy it is to manipulate forest inventory
37. Switch in course; from growing bigger trees to growing smaller trees
38. Buckeye report "catch-22", SPI mill closure
39. SAF president Jim Coufal comment on whether a Master's degree required for entry level professional positions?
40. SAF president Jim Coufal on high-grading and sustainability
41. Missoula Montana newspaper stories on forest liquidation in their state
42. Copy of Senate Bill No. 730 authorizing payment of \$6,000,000

