Summary

Introduction

The Mattole Forest Futures Program has been developed by the Mattole Restoration Council (MRC) to facilitate beneficial forest management in the Mattole River Basin by providing Mattole landowners with an alternative regulatory option whereby they may engage in "light touch" timber harvest that can be approved after simplified agency review. Light touch timber harvest is defined in detail in Chapter 2 but can be summarized here as 1) generally using only selection silviculture, 2) growing larger trees and increasing the proportion of conifer to hardwood stocking, 3) retaining old-growth, 4) maintaining or enhancing late seral conditions, 5) tractor logging restrictions, 6) generous riparian buffers, and 7) road upgrade requirements. By reducing the cost of preparing and filing a Program Timber Harvesting Plan (PTHP), the Program aims to make it feasible for landowners to harvest timber at a lower intensity than if they needed to recover the higher planning costs they would incur under a conventional Timber Harvesting Plan (THP) or Nonindustrial Timber Management Plan (NTMP).

The environmental effects to the Mattole River watershed from Program implementation, as well as from three feasible alternatives to the Program, are analyzed in this Program Timberland Environmental Impact Report (PTEIR). The analysis assesses impacts to land, water, and biological resources of the Mattole basin as they might occur from implementation of the Program or alternatives to the Program, based on several factors, including: skid trail and landing construction; road construction, reconstruction, and maintenance; construction and/or use of stream crossings; prescribed burning; and treatment of slash via mastication, piling and burning, chipping, and other treatments. The Program is designed to be consistent with the requirements of the Z'berg-Nejedly Forest Practice Act of 1973 (Forest Practice Act), utilizing the PTEIR/PTHP process detailed in California Code of Regulations (CCR) Sections 1092.01-1092.32 of the California Forest Practice Rules (CA FPR) and the California Environmental Quality Act (CEQA) and Guidelines. A detailed description of the Program is found in Chapter 2.

Program Purpose

The ultimate purpose of the Mattole Forest Futures Program is to facilitate beneficial forest management practices in the Mattole. Implementing the Program will provide an alternative regulatory pathway for timber harvest approval, containing extensive environmental protection measures which require less analysis (and thus cost less) than more intensive actions allowed under the California Forest Practice Rules (FPR). Landowners who agree to engage in "light touch" timber harvest may tier to this watershed-wide environmental review of the impacts of these specific practices, greatly simplifying the plan preparation process on most private parcels.

Use of EIR

A PTEIR is prepared by a timberland owner or group of timberland owners and submitted to the California Department of Forestry and Fire Protection (CAL FIRE) for a program or series of actions that can be characterized as one large project, which in this case is the ongoing

management of timberlands, including timber operations and related land management practices, on multiple ownerships [see the Forest Practice Rules (14 CCR 1092.01) for information on PTEIR content and intent] in the Mattole Basin. This PTEIR analyzes the Program's proposed "light touch" practices in detail, and once certified by CAL FIRE, landowners in the Program area may implement such practices by filing a PTHP with CAL FIRE. Program EIRs generally analyze broad environmental effects of a particular program, with the acknowledgment that site-specific environmental review may be required for particular aspects or portions of the program (see California Environmental Quality Act Guidelines, Section 15168).

This PTEIR, like other EIRs (and program EIRs), documents the environmental impacts of the Proposed Program and alternatives to the Proposed Program in order to:

- Inform decision makers and the public about a project's significant environmental effects and ways to enhance or reduce such effects
- Demonstrate to the public that the environment is being protected during Program implementation
- Adopt mitigation measures designed to minimize significant effects
- Ensure political accountability by disclosing to citizens the environmental values held by their elected and appointed public officials

The California Environmental Quality Act (CEQA) **a**pplies only to discretionary activities by public agencies that are defined as "projects". A "project" is defined as the whole of an action, which has the potential for resulting in either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment. (CEQA Guidelines sec. 15378(a); PRC 21065)

> A "project" under CEQA is considered to be an activity directly undertaken by a public agency, an activity that is supported, in whole or in part, through public agency contracts, grants, subsidies, loans, or other assistance from a public agency, or an activity involving the public agency issuance of a lease, permit, license, certificate, or other entitlement for use by a public agency. CEQA encourages the application of a programmatic approach where a group or series of projects are similar in activities and impacts and where potential impacts can be avoided or mitigated in a similar manner.

As required by regulation, CAL FIRE is the lead agency for this project. The Mattole Restoration Council (MRC) is preparing the PTEIR for CAL FIRE under letter agreement**.** The PTEIR process and CEQA require the preparation and circulation of a draft PTEIR. The certification of a final PTEIR by the CAL FIRE Director may occur once comments on the draft PTEIR have been addressed and specific findings are made with regard to the potentially significant effects of the project. At the time of Program approval, the lead agency will adopt a Mitigation Monitoring and Reporting Plan (PRC 21081.6; MMRP). The monitoring plan is an important component of the PTEIR process. It ensures that the FPRs and mitigation measures contained in the PTEIR are in fact carried out in future PTHPs tiered to the PTEIR.

The Forest Practice Rules require that PTHPs be accompanied by a checklist developed in the PTEIR to determine whether practices within individual PTHPs are within the scope of the analysis of the PTEIR. CAL FIRE will use this checklist as the agency evaluates these

individual projects.

How the Proposed Program will be Accomplished

Critical steps necessary for accomplishment of the proposed Program include:

- Develop a set of Program goals that are realistic, practical, and achievable;
- Conduct public scoping and outreach to adequately inform the community about the project, and incorporate community values and knowledge into the array of practices that will be included in the Program;
- Design and base the Program on an array of forest management practices that are environmentally, economically, technically, scientifically, and socially sound;
- Prepare a PTEIR that can be certified by CAL FIRE;
- Develop a Program-specific checklist to accompany all PTHP filings that is cost-effective to submit and facilitates agency approval;
- Implement the Program land management practices across significant timbered acreage in the basin;
- Verify, through monitoring, that the goals of the Program are being met.

CAL FIRE regulates commercial timber harvesting on non-federal timberlands in California. Harvesting for commercial purposes is defined as: "(1) the cutting or removal of trees which are processed into logs, lumber, or other wood products and offered for sale, barter, exchange, or trade, or; (2) the cutting or removal of trees or other forest products during the conversion of timberlands to land uses other than the growing of timber which are subject to the provisions of Section 4621, including, but not limited to, residential or commercial developments, production of other agricultural crops, recreational developments, ski developments, water development projects, and transportation projects." (PRC 4527) The Mattole basin is within a state responsibility area where CAL FIRE has wildland fire suppression responsibility. CAL FIRE depends on the voluntary cooperation of private landowners to implement local fuel reduction measures. (For areas immediately around structures, state law PRC 4291 requires fuels management.)

Individual landowners who are interested in harvesting timber and in mitigating environmental impacts from such harvest by complying with the prescribed practices in the proposed Program are key to implementing the Mattole Forest Futures Project. In order to commercially harvest timber, California landowners must obtain approval from CAL FIRE through either:

- A THP (14 CCR 1032)
- An approved Modified THP (14 CCR 1051)
- A NTMP (14 CCR 1090)
- An Emergency Notice (14 CCR 1052)
- A Notice of Conversion Exemption Timber Operations (14 CCR 1104.1)
- A THP exemption (14 CCR 1038)
- An approved Program THP (PTHP) (14 CCR 1092)

PTHPs filed by individual landowners or groups of landowners are tiered to the PTEIR, which analyzes the consequences of the proposed action at the landscape scale. The Program contains

an array of forest management practices developed to be applied and analyzed at the landscape level. Once the PTEIR is certified, individual landowners may, at their discretion, submit a PTHP to CAL FIRE in lieu of a standard THP, and it may be approved by CAL FIRE as long as it is within the scope of the PTEIR. In such a case, landowners are potentially afforded a significantly simplified approval process, including potentially reduced costs for preparation of the PTHP, compared to a THP that is not tiered to the PTEIR. Landowners would still have the option of filing any of the other CAL FIRE permits listed above.

Alternatives Analyzed, Including the Proposed Program

One measure of comparison between alternatives (including the Proposed Program) is acreage of effects, particularly acreage of logging activities. Two measures are utilized in this regard in the PTEIR: the "footprint" landbase, which represents each individual acre of forest land upon which harvest operations are projected to occur, at least once, under activities prescribed under the Program (or alternatives); and the projected total area of logging plans implemented over the 50-year analysis period, which may include multiple entries within the same footprint landbase.

Proposed Program: The Mattole Forest Futures Project: The Program footprint area is estimated at 15,038 acres, and the total logging area over the 50-year analysis period at 41,718 acres.

The Program encourages landowners who are interested in timber harvest to opt for long-term, sustainable timber management practices on their properties. Stands brought under sustainable management as envisioned in the Program are expected to produce timber in approximately 15-20 year re-entry cycles, with increasing inventory and growth over time as stands are managed for larger, more mature trees.

Under the Program, private forest landowners within the Program area would implement a range of treatments designed to improve forest conditions in the Mattole basin. These treatments would vary depending on existing vegetation, slope stability, and proximity to streams or improvements. The range of permitted prescriptions under the Program is limited to those that are considered "light touch". Intensive silvicultural systems such as Clearcut, Rehabilitation, Variable Retention, Shelterwood (all steps) and Seed Tree (all steps), are not included in the range of acceptable prescriptions. Three standard prescriptions: Selection, Group Selection, and Commercial Thinning (as described in Section 913.2 & 3 of the Forest Practice Rules (FPR)), are considered suitably "light touch", once appropriate "sideboards" particular to this Program are added. Aside from these three standard prescriptions, the Program also includes an Alternative Prescription customized to the forest conditions of the Mattole that is termed the All-Aged prescription. These prescriptions are described in detail in Chapter 2 of the PTEIR.

The Program includes special requirements for all included prescriptions, as described in Section 2.1.A.2 of the PTEIR. These include provisions for growing larger trees and developing higher conifer densities over time, special requirements for stocking standards under the All-Aged prescription, and development of stand tables by the Plan Preparer that must be presented during filing of a PTHP. The Program also specifies particular restrictions on logging methods, upgrades to culverts and roadways, avoidance and protection of unstable geological features, restrictions on operations during wet conditions, and limits on new road construction.

Geological Checklists are utilized under the Program to evaluate needs for protection of geological features, application of operational constraints, and consultation with a Registered Geologist.

The Program does not allow for the use of silvicultural herbicides during the term of the PTHP nor the harvest of old growth trees (>150 years old). Standard Watercourse and Lake Protection buffer widths apply to areas harvested under the Program, but with increased retention requirements.

Standard CA Forest Practice requirements, such as completion of an Archaeological Reconnaissance Report, implementation of T&E species protocols and practices and standards for Sudden Oak Death, and preparation of an Erosion Control Plan apply as in standard timber harvest plans.

Alternative 1: No Program. Under the No Program alternative, the Program/PTEIR/PTHP process would not be used to implement commercial timber harvest in the Mattole. The process used to estimate acres of harvest under Alternative 1 is described in detail in Section 2.4 of the PTEIR. The footprint harvest area for Alternative 1 is estimated at 14,715 acres and the total logging area over the 50-year analysis period is estimated at 24,051 acres.

Alternative 2: Broader Buffers While Allowing Even-Aged Management: Alternative 2 increases the size of stream buffers, disallows harvest on extreme erosion hazard-rated soils and within inner gorges, and places additional limits on road building; in return, even-aged prescriptions are allowed outside of no-harvest areas. The footprint harvest area for Alternative 1 is estimated at 15,157 acres and the total logging area over the 50-year analysis period is estimated at 28,157 acres.

Alternative 3: Fire and Fuels Alternative: Alternative 3 includes treatments similar to the Program but requires retention of at least 60% canopy cover in all harvested areas in order to maintain shaded conditions, and additional reduction of logging slash in areas at risk from wildfire; but allows for limited harvest within some riparian buffer zones as a method of reducing fire hazard. The footprint harvest area for Alternative 1 is estimated at 20,228 acres and the total logging acres over the 50-year analysis period is estimated at 21,889 acres.

Table S-1 shows the acres by silvicultural treatment for the Program and Alternatives.

Table S-1
Comparison Of Treatment Acreages by Prescription by Alternative

Alternative	ACRES BY PRESCRIPTION TYPE				
	All-Aged	Program Selection, Group Selection, Commercial Thinning[1/]	FPR Uneven-aged[2/]	FPR Even-Aged[3/]	Total
Proposed Program	12,766	28,952[1/]			41,718
ALT. 1	0	0	16,836	7,215	24,051
ALT. 2	0	0	19,710	8,447 [4/]	28,157
ALT. 3	8,328	18,561			26,889

1/ Prescriptions as defined in the Proposed Project, with additional restrictions over and above FPR requirements for these prescriptions.
2/ Includes Selection, Group Selection, and Commercial Thinning as defined in the Forest Practice Rules.
3/ Includes all FPR prescriptions except those listed under FPR selection. .
4/ In Alternative 2, clearcut prescriptions are limited to 10 acres, seed tree and shelterwood to 40 acres; no acreage limit on other even-aged prescriptions.

Table S-2 shows the footprint and total acreage for the Proposed Program and the Alternatives.

Table S-2
Comparison Of Footprint and Total Acreage By Alternative

	ALTERNATIVE			
	Proposed Program	Alt. 1: Status Quo	Alt. 2: Broader buffers, even-aged	Alt. 3: Fire and Fuels
Footprint Acreage	**15,038**	**14,715**	**15,400**	**10,228**
Total Acreage [1/]	**41,718**	**24,051**	**28,157**	**26,889**

1/ Including multiple entries on same footprint acres over 50 years.

Environmentally Superior Alternative: CEQA Guidelines §15126.6(e)(2) require a lead agency in an EIR to identify an Environmentally Superior Alternative. For the Mattole PTEIR the Proposed Program is considered the environmentally superior alternative because it treats the most acres with "light touch" prescriptions compared to any of the alternatives and helps to achieve more of the goals identified by the MRC during development of the Program. In addition, overt efforts would be made to bring maturing timber stands under management while incorporating measures to encourage development of mature and late-successional stands, improve stocking of conifers, increase the average size of trees in managed stands, and improve water quality through reduction of controllable sediment sources. The Program encourages attempts to bring hardwood-dominated stands into commercial management through application of special prescriptions, without the use of herbicides or broad-scale clearing of forest stands.

For those utilizing the Program, filing of timber harvest plans would be easier and more cost-effective (for the limited range of prescriptions allowed under the Program) compared to the normal THP submission process. The Program does the most of any of the alternatives to set a course for future forest management in the Mattole Basin that is conservation-oriented but economically viable over the long term.

Potentially Significant Impacts Generated During Scoping

The Program is designed to improve a number of resources within the basin, including improving the drainage of existing haul roads as well as installation of larger culverts, and limiting harvest and expanding requirements for leave trees and residual basal area, measures intended to improve wildlife habitat and accelerate the progression to late-seral characteristics.

However, timber harvest has the potential to significantly impact a number of resources in the watershed. Although the Program is designed to keep these effects within more-than-acceptable limits, they must still be analyzed and evaluated. The following potentially significant impacts that might result from Program implementation were generated during public scoping:

- Landslides resulting from the loss of vegetation
- Impacts to treated areas from wildfire
- Potential for cumulative watershed effects due to timber harvest and road construction
- Impacts to water quality.

The analysis of the environmental impacts that might result from Program implementation on the above issue areas is described in detail in Chapter III; in summary, implementing the Program would have a less-than-significant impact on these issue areas.

Environmental Impacts and Mitigations Measures

Table S-3 below summarizes the environmental impacts and any mitigation measures that were developed during analysis of the Program's effects. There are three levels of significance used in Table S-3 below: Significant and Unavoidable, an impact that exceeds the defined threshold(s) of significance and cannot be eliminated or reduced to a less-than significant level through the implementation of feasible mitigation measures; Less-than-Significant, which is an impact that does not exceed the defined threshold(s) of significance or an impact for which mitigation measure(s) can reduce the impact to a less-than-significant level; and No Impact, which means the project would result in no discernable impact. A complete discussion of each impact and associated mitigation measure is provided in Chapter III, Environmental Impacts and Mitigation Measures.

TABLE S-3 SUMMARY OF ENVIRONMENTAL IMPACTS, MITIGATION MEASURES AND DETERMINATIONS OF SIGNIFICANCE		
Potential Impact	**Mitigation Measure**	**Level of Significance (After Mitigation Measure)**
Air Quality		
a. Conflict with or obstruct implementation of the applicable air quality plan;	None Recommended	Less Than Significant
b. Violate any air quality standard or contribute to an existing or projected air quality violation;	None Recommended	Less Than Significant
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);	None Recommended	Less Than Significant
d. Expose sensitive receptors to substantial pollutant concentrations;	None Recommended	Less Than Significant
e. Create objectionable odors affecting a substantial number of people;	None Recommended	No Impact
f. Otherwise degrade the atmospheric environment; or	None Recommended	No Impact
g. Expose workers or the public to hazardous toxic emissions or substantial pollutant concentrations.	None Recommended	No Impact
Aquatic Resources Including Fish and Amphibians		
a) Have an adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;	None Recommended	Less Than Significant
b) Have an adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service;	None Recommended	Less Than Significant
c) Interfere with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites;	None Recommended	Less Than Significant
d) Conflict with any City or County adopted General Plan policies or ordinances protecting biological resources, such as water quality regulations applicable to a particular stream system;	None Recommended	No Impact
e) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan;	None Recommended	Less Than Significant
f) Cause a reduction in the quality of water by an increase in sediment, temperature, bacteria, or chemical contamination;	None Recommended	Less Than Significant

g) Modify existing vegetation so as to reduce future critical habitat development, including retention of woody species that will eventually comprise habitat elements;	None Recommended	Less Than Significant
h) Adversely or positively affect the input of large wood components into a stream system;	None Recommended	Less Than Significant
i) Reduce the quantity of water available to species of concern, by water withdrawal for program-related fire or dust control purposes;	None Recommended	No Impact
j) Cause a decrease in the quantity or quality of botanical or animal food necessary to maintain a healthy and diverse biological component of a water body.	None Recommended	No Impact
Cultural, Archaeological and Historical Resources		
a) Cause an adverse change in the significance of a historical resource, as defined in Section 15064.5 of the CEQA Guidelines (Bass et al 1999);	None Recommended	Less Than Significant
b) Cause an adverse change in the significance of an archaeological resource, pursuant to Section 15064.5 of the CEQA Guidelines;	None Recommended	Less Than Significant
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature;	None Recommended	No Impact
d) Disturb any human remains, including those interred outside of formal cemeteries.	None Recommended	No Impact
Greenhouse Gases		
a) Generate greenhouse gas emissions, either directly or indirectly that conflict with the State goal of reducing GHG emissions in California to 1990 levels by 2020, as set forth in AB 32, California Global Warming Solutions Act of 2006.	None Recommended	Less Than Significant
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	None Recommended	No Impact
Geology and Soils		
a) Soil erosion rates, loss of topsoil, or soil quality;	None Recommended	Less Than Significant
b) Exposure of people or structures to the risk of loss, injury, or death involving landslides;	None Recommended	No Impact
c) In a geologic unit or soil that is unstable, or that would become unstable as a result of the Program or Alternatives, potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.	None Recommended	Less Than Significant
Noise		
a) Exposure of persons to or generation of noise levels in excess of standards; established in the local general plan or noise ordinance, or applicable standards of other agencies;	None Recommended	No Impact
b) Exposure of persons to, or generation of, excessive ground-borne vibration	None Recommended	No Impact

or ground-borne noise levels;		
c) Substantial permanent increase in ambient noise levels in the program vicinity (above levels existing without the program);	None Recommended	No Impact
d) Substantial temporary increase in ambient noise levels in the program vicinity (above levels existing without the program).	None Recommended	Less Than Significant
Population and Housing		
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).	None Recommended	No Impact
Recreation		
a) Would the program increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	None Recommended	No Impact
b) Does the program include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	None Recommended	No Impact
Hazards and Hazardous Materials		
a) Create a hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;	None Recommended	Less Than Significant
b) Create a hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;	None Recommended	No Impact
c) Create hazardous emissions, or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of sensitive receptors (existing or proposed schools, hospitals, assisted living facilities, etc.);	None Recommended	Less Than Significant
d) Expose people or structures to the risk of loss, injury or death involving escape of prescribed fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands; or	None Recommended	Less Than Significant
e) Create a public nuisance.	None Recommended	No Impact
Traffic and Transportation		
a) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways**.**	None Recommended	Less Than Significant
Utilities and Energy		
a.) Cause substantial alterations to water, wastewater, or power systems.	None Recommended	Less Than Significant
b.) Cause substantial disruption in utility service or access to public facilities.	None Recommended	Less Than Significant
c.) Cause substantial damage to utilities, utility service or public facilities	None Recommended	Less Than Significant

within the Program area.		
Vegetation		
a) Have an adverse impact, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status plant species or any of its life forms in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	None Recommended	Less Than Significant
b) Have an adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	None Recommended	Less Than Significant
c) Have a substantial adverse impact on federally protected wetlands, as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool coastal, etc.), through direct removal, filling, hydrological interruption, or other means?	None Recommended	Less Than Significant
d) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	None Recommended	Less Than Significant
e) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?	None Recommended	No Impact
Visual\Aesthetic Resources		
a) Have an adverse effect on a scenic vista;	None Recommended	Less Than Significant
b) Damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; or	None Recommended	Less Than Significant
c) Degrade the existing visual character or quality of the site and its surroundings.	None Recommended	Less Than Significant
Water Quality		
a) Violate any water quality standards or waste discharge requirements;	None Recommended	Less Than Significant
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);	None Recommended	Less Than Significant
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;	None Recommended	Less Than Significant
d) Substantially alter the existing drainage pattern of the site or area,	None Recommended	Less Than Significant

including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;		
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;	None Recommended	Less Than Significant
f) Otherwise substantially degrade water quality;	None Recommended	Less Than Significant
g) Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;	None Recommended	No Impact
h) Place structures within a 100-year flood hazard area that would impede or redirect flood flows;	None Recommended	No Impact
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or	None Recommended	No Impact
j) [Cause] Inundation by seiche, tsunami, or mudflow.	None Recommended	No Impact
Wildfire		
a) Expose people or structures to the risk of loss, injury or death involving wildfires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.	None Recommended	Less Than Significant
Wildlife		
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the DFG or USFWS;	None Recommended	Less Than Significant
b) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;	None Recommended	Less Than Significant
c) Conflict with any local policies or ordinances protecting biological resources; or	None Recommended	No Impact
d) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.	None Recommended	No Impact
Timberland Resources		
a) Would the program result in a conflict with the Forest Practice Rules, Public Resource Code or other applicable rules and regulations adopted for the purpose of avoiding or mitigating environmental effects relating to Maximum Sustained Productivity of high quality timber products.	None Recommended	Less Than Significant

Mattole Forest Futures Project

Draft
Program Timberland
Environmental Impact Report
(PTEIR)
for private timberlands in the Mattole River watershed

California Department of Forestry and Fire Protection
(CAL FIRE)

Lead Agency under the
California Environmental Quality Act

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Chapter 1: Introduction

1.0 Program (Project) Description

The Mattole Forest Futures Project (hereafter the Program) has been developed by the Mattole Restoration Council (MRC) to facilitate beneficial forest management in the Mattole River Basin by providing Mattole landowners with an alternative regulatory option whereby they may engage in "light touch" timber harvest that can be approved by simplified agency review. Light touch timber harvest is defined in detail in chapter 2 but can be summarized here as 1) generally using only selection silviculture, 2) growing larger trees and increasing the proportion of conifer to hardwood stocking, 3) retaining old-growth, 4) maintaining or enhancing late seral conditions, 5) tractor logging restrictions, 6) generous riparian buffers, and 7) road upgrade requirements. By reducing the cost of preparing and filing a Program Timber Harvesting Plan (PTHP), the Program aims to make it feasible for landowners to harvest timber at a lower intensity than if they needed to recover the higher planning costs they would incur under a conventional Timber Harvesting Plan (THP) or Nonindustrial Timber Management Plan (NTMP) – see ISF 2011, cited in the bibliography, for an analysis of Timber Harvest Planning Costs vis a vis the Mattole Forest Futures Program.

The environmental effects to the Mattole River watershed from Program implementation, as well as from three feasible alternatives to the Program, are analyzed in this Program Timberland Environmental Impact Report (PTEIR). The analysis assesses impacts to land, water, and biological resources of the Mattole basin as they might occur from implementation of the Program or alternatives to the Program, based on several factors, including:

1. Landowner interest in light touch timber harvest under a PTHP,
2. Availability of commercial-sized timber by parcel as projected over time,
3. Size, timber stocking, and terrain of private parcels in terms of harvest operability,
4. Areas requiring protection from harvest impacts (e.g., Watercourse and Lake Protection Zones [WLPZs], geologically unstable areas)**,** and
5. Presence of cultural resources and/or species of concern requiring protection or mitigation.

A detailed description of the Program is found in Chapter 2. Activities resulting from the Program include timber harvesting and related activities, including skid trail and landing construction; road construction, reconstruction, and maintenance; construction and/or use of stream crossings; prescribed burning; and treatment of slash via mastication, piling and burning, chipping, and other treatments. The Program is designed to be consistent with the requirements of the Z'berg-Nejedly Forest Practice Act of 1973 (Forest Practice Act), utilizing the PTEIR/PTHP process detailed in California Code of Regulations (CCR) Sections 1092.01-1092.32 of the California Forest Practice Rules (CA FPR) and the California Environmental Quality Act (CEQA) and Guidelines.

1.1 Program Location

The Mattole River drainage is approximately 189,760 acres in extent (296 sq. mi.). It is located in the California Coast Range, in western Humboldt and northern Mendocino Counties, about 290 miles north of San Francisco and 26 miles southwest of Eureka, the largest nearby city and the county seat of Humboldt County. The watershed drains into the Pacific Ocean near the town of Petrolia.

The Program area consists of approximately 156,484 acres of private parcels that contain or have the potential to contain, forest and woodland vegetation types, within the Mattole River watershed. The bulk of the population in the watershed is concentrated around the five communities of Ettersburg, Thorn Junction, Whitethorn, Honeydew, and Petrolia. The total resident population of the Mattole basin in the 2000 census was estimated at about 1,200, or four people per square mile (NCWAP, 2002). Local residents pursue a variety of economic activities, including stock raising (cattle, sheep, and goats), nonindustrial timber management, logging, agriculture (including orchards, pasture, field crops, and viticulture), and heavy equipment operation. No state highways run through the watershed, but all the main access routes eventually lead eastward to U.S Route 101, a major north-south travel corridor.

The current vegetation is predominately forestland. Mixed conifer/hardwood forestland occupies 57% of the watershed while hardwood forests occupy 17% and more purely conifer forests occupy another 8%. Annual grasslands occupy 15% of the watershed. The current vegetation is the result of fire history in addition to timber harvesting and grazing.

Figure 1-1 shows the general location of the Program area by Cal Wat (California Interagency Watershed Map of 1999 normally referred to as CalWater Version 2.2.1) hydrological units (HUC) hereafter referred as the Cal Wat HUC's. In addition, for purposes of analysis, the Program area was divided into seven sub-basins, which are aggregations of 2 to 5 contiguous Cal Wat HUCs. The relationship of these sub-basins to the Cal Wat HUCs is shown in the following table and figure. The designation of these subbasins was influenced by the subbasins described in the California Resources Agency and California Environmental Protection Agency's North Coast Watershed Assessment Program Mattole Watershed Assessment Report (NCWAP, 2002). The three largest sub-basins in that planning effort (North, East, and West) were each broken in two for this analysis; the South sub-basin was used here in the same form in which it appears in the NCWAP analysis. Throughout the remainder of the document, the Program subbasins are used for analysis of environmental impacts, because the geographic scale is more appropriate than either the entire Mattole basin or the larger NCWAP sub-basins for the consideration of cumulative watershed effects. At the same time, a choice was made not to disaggregate the analysis to each of the twenty-five Cal Wat HUCs in the basin, except for qualitative discussion of each HUC provided in Chapter 4. This was done both to avoid redundancy, and because some of the baseline data on the effects of concern (erosion, sedimentation, and water quality) were available at the scale of the sub-basin only.

TABLE 1-1
CAL WAT HUC'S AND PROGRAM SUBBASINS

PTEIR Subbasin Name	CAL FIRE Name	CDFNUM22	Acres
East 1	Dry Creek	1112.300304	7,384
East 1	Westlund Creek	1112.300302	7,271
East 1	Sholes Creek	1112.300303	11,421
East 2	Mattole Canyon	1112.300301	10,573
East 2	Blue Slide Creek	1112.300305	6,482
East 2	Eubank Creek	1112.300102	8,044
North 1	Long Ridge	1112.300602	6,655
North 1	Joel Flat	1112.300603	4,904
North 1	Rainbow	1112.300604	7,247
North 1	Apple Tree	1112.300601	3,951
North 1	Petrolia	1112.300702	4,940
North 2	Oil Creek	1112.300403	8,897
North 2	Cow Pasture Opening	1112.300704	6,661
North 2	Rattlesnake Creek	1112.300401	8,720
North 2	McGinnis Creek	1112.300503	4,724
North 2	Camp Mattole	1112.300502	7,006
South 1	Bridge Creek	1112.300101	10,281
South 1	Thompson Creek	1112.300104	7,322
West 1	Shenanigan Ridge	1112.300701	9,833
West 1	Woods Creek	1112.300501	5,154
West 1	Squaw Creek	1112.300504	10,657
West 2	Honeydew Creek	1112.300402	12,101
West 2	North Fork Bear Creek	1112.300201	8,329
West 2	Big Finley Creek	1112.300103	5,970
West 2	South Fork Bear Creek	1112.300202	5,234
	Total acreage		**189,760**

Figure 1-1

Mattole Basin Cal Wat HUCs and PTEIR Sub Basins
1112.300602
1112.300603
North_1
1112.300601
1112.300604
1112.300702
1112.300704
1112.300503
1112.300403
North_2
1112.300701
1112.300401
1112.300502
West_1
1112.300501
1112.300304
1112.300504
East_1
1112.300302
1112.300402
1112.300301
1112.300303
East_2
1112.300305
West_2
1112.300201
1112.300103
1112.300102
1112.300202
1112.300101
South_1
1112.300104
1 inch equals 3.25 miles
Legend
PTEIR Sub basins
CalWat Sub basins
N

1.2 Program Background

The majority of timber stands currently occupying the private parcels in the Program area are "second growth" that reoccupied timberlands after broad-scale elimination of the ancient old growth conifer forest by logging, which largely occurred during the post-WWII Douglas-fir boom from 1945 to 1965. (Another factor that encouraged forest depletion was the ad valorem state tax, which levied taxes on standing timber.) Between 1945 and 1974, over 75% of the old growth Douglas-fir-dominated forests that had occupied much of the watershed for hundreds of years were either clearcut or high-graded. A comparison of aerial photos before and after logging shows a drastically changed landscape, in which relatively pristine forests were replaced by bare ground and a massive network of skid roads, which in many cases ran down watercourses, along which the logs were moved to landings (which also were often located in watercourses). Logging-related erosion on the cleared slopes, aggravated by disastrous floods in 1955 and 1964, caused many hillsides to unravel and sediment to fill in the stream channels. The once-abundant anadromous fisheries experienced a severe decline, which, despite many efforts to improve conditions, still persists.

During the Douglas-fir boom, few provisions were made by landowners or loggers to encourage regeneration by desired commercial species. Tanoak trees, in particular, which had experienced their own decimation by bark stripping for tannin in the early 1900s, had sprouted abundantly in the understory of the conifer stands, and after release, aggressively occupied many sites. Tanoak and other native hardwoods comprise an abundant and accessible resource, but efforts to develop a commercial market have not come to fruition. Many other logged acres did regenerate abundantly or partially with Douglas-fir (and other commercial conifers, including coast redwood and grand fir), and these stands are beginning to reach commercial size. Since 1976, all private timberland logging has been conducted under the California Forest Practice Rules (FPR). This management has generally been successful in regeneration of desirable species and is also poised to produce abundant commercial timber over time, as well as other ecosystem services. The climate and soils of the Mattole watershed are ideal for growing forests. This ability, combined with the steepness of the slopes and their unsuitability for most other uses, indicates that forest management is one obvious economic activity that could help sustain livelihoods in the basin.

Within the Mattole, a host of citizen groups have come together to seek solutions to environmental and economic challenges. In particular, streams in the basin have been the focus of extensive restoration efforts. Since impacts to streams are in many cases related to logging—particularly failed or poorly maintained logging roads and associated watercourse crossings—there is a recognition that, if any resurgence of timber harvest begins across non-industrial ownerships as timber stands mature, it must be held to very high standards of environmental protection.

The last few years have also seen drastic changes in the local timber industry, which continues to contract as mills close and markets for raw logs move further away. Globalization has made timber and lumber from other states and countries competitive with local sources. Logs originating in the Mattole watershed must travel scores of miles to the few operating mills. To make matters worse, prices for California conifers, particularly Douglas-fir, have slumped badly

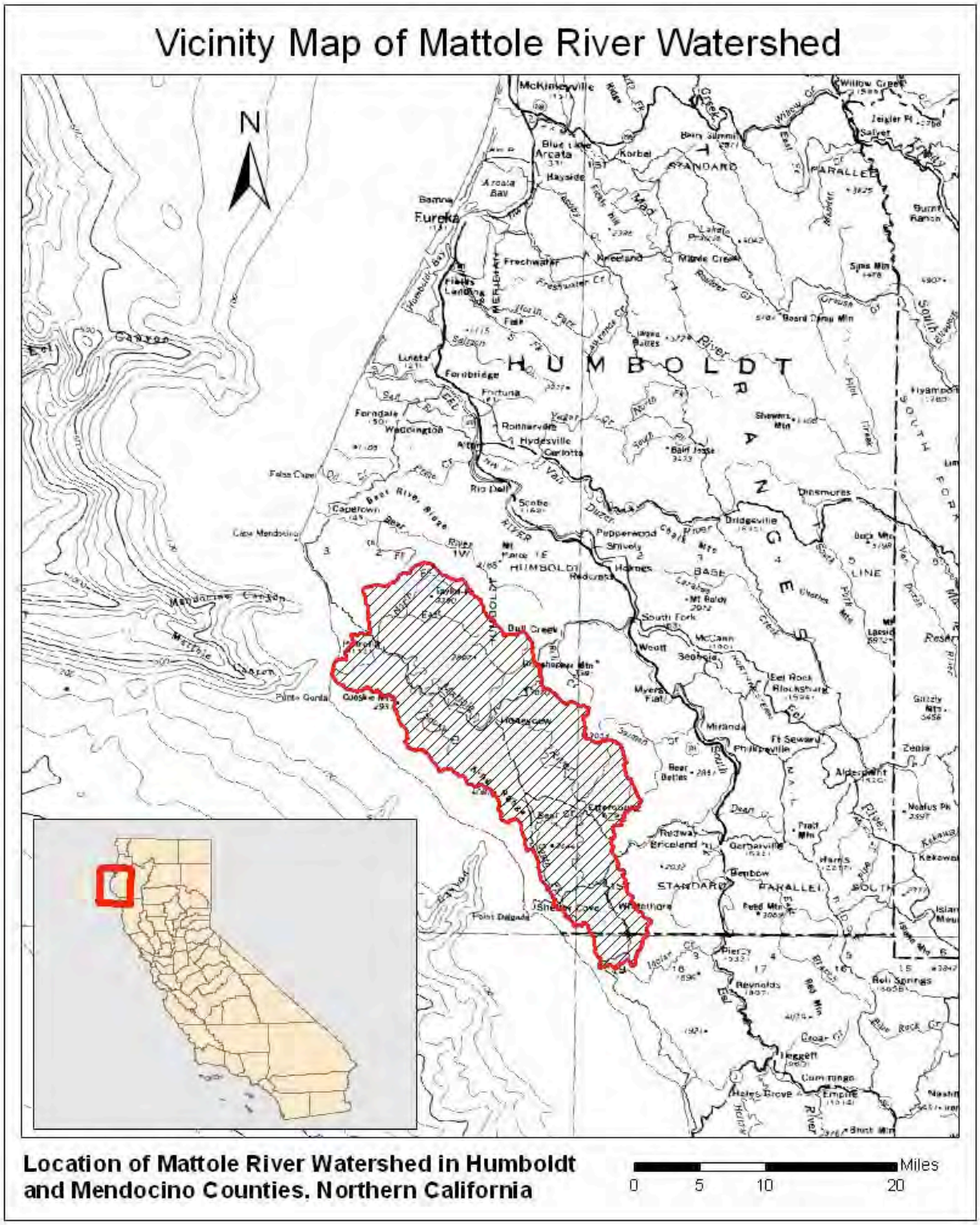
along with the decline in housing starts that also began in 2007.

Landowners with potentially commercial conifer stands face a difficult task in bringing their stands into sustainable management. By state law, protection of environmental values must be built into every timber harvest plan, the preparation and approval of which adds to the cost of timber management – and makes timber and wood products from neighboring states and foreign countries with less restrictive laws competitive with local timber. (Until its shutdown in 2007, Harwood Industries, located just south of the Program area in northern Mendocino County, operated largely with feedstock from Washington State and British Columbia.) The "light touch" logging described in the description of the Proposed Program in Chapter 2 adds further restrictions to the already extensive provisions of the FPR, in order to ensure that not only are resources being protected, but timber stands are also being managed to increase in size and age and develop into a variety of wildlife habitats over the next several decades. Current prices for preparation of a timber harvesting plan under the FPRs are well into five figures (Thompson and Dicus 2005), making even "normal" timber harvest barely feasible commercially, much less the more restrictive silvicultural treatments proposed under the Program.

In addition to the challenges posed by eroded and unstable slopes, shaky economics, and the necessity of focused environmental protection, the Mattole watershed is recognized as having a high propensity for stand-replacing wildfire (http://firesafecouncil.org/fireplanindex.html May 2002). The young, closed-canopy timber stands that have developed since the Douglas-fir boom are particularly flammable. Citizens of the area have worked to create fire-resistant forested areas around homes, communities, and along strategic firebreak locations such as roads and ridgelines. Nevertheless, the overall risk is still high. The prescriptions proposed by the Program incorporate components that could help reduce fire hazard across a potentially large portion of the watershed over time.

The MRC believes that analyzing the long-term timber management practices proposed by the Program under a blanket document such as this PTEIR will allow landowners to reduce their management planning costs. PTHPs, which are organized in a checklist format tiering to the analysis in the PTEIR, are expected to substantially lower costs for preparing timber harvest plans (THPs), while encouraging application of environmentally sensitive practices within managed stands that will benefit timberland owners and the environment over both the short and long term. Even though there are a host of obstacles to developing a sustainable timber-based economy in the Mattole basin over the next several decades, the ability of the land to produce trees, combined with the environmental consciousness of many residents of the basin, leads the MRC to believe that this effort has a good chance of succeeding.

Figure 1-2



Location of Mattole River Watershed in Humboldt and Mendocino Counties, Northern California

1.3 Program Purpose and Program Objectives

The ultimate purpose of the Mattole Forest Futures Program is to facilitate improved forest management practices in the Mattole. Implementing the Program will provide an alternative regulatory pathway for timber harvest approval, containing extensive environmental protection measures which require less analysis (and thus cost less) than more intensive actions allowed under the California Forest Practice Rules (FPR). Landowners who agree to engage in "light touch" timber harvest may tier to this watershed-wide environmental review of the impacts of these specific practices, greatly simplifying the plan preparation process on most private parcels. The objectives of the Mattole Forest Futures Program include:

- Encourage the development of mature to late successional stands
- Maintain or improve wildlife habitat, particularly by developing late-seral habitat for listed species
- Increase the average size of trees so that timber stands become more commercially and ecologically valuable over time
- Improve water quality through reduction of controllable sediment sources
- Improve stocking of conifer species so that long-term sustainable timber management becomes more economically feasible
- Reduce the danger of catastrophic fire
- Manage existing stands, rather than "clearcut and start over"
- Retain legacy trees that are large and old, to provide stand structural diversity
- Maintain or improve the health and structure of riparian stands

1.4 Purpose of PTEIR

A PTEIR is prepared by a timberland owner, group of timberland owners, or other organization and submitted to the California Department of Forestry and Fire Protection (CAL FIRE) for a program or series of actions that can be characterized as one large project, which in this case is the ongoing management of timberlands, including timber operations and related land management practices, on multiple ownerships [see the Forest Practice Rules (14 CCR 1092.01) for information on PTEIR content and intent] in the Mattole Basin. This PTEIR analyzes the Program's proposed "light touch" practices in detail and once "certified" by CAL FIRE, landowners in the Program area may implement such practices by filing a PTHP with CAL FIRE. Program EIRs generally analyze broad environmental effects of the program, with the acknowledgment that site-specific environmental review may be required for particular aspects or portions of the program (see California Environmental Quality Act Guidelines, Section 15168).

This PTEIR, like other EIRs (and program EIRs), documents the environmental impacts of the Proposed Program and alternatives to the Proposed Program in order to:

- Inform decision makers and the public about a project's significant environmental effects and ways to enhance or reduce such effects

- Demonstrate to the public that the environment is being protected during Program implementation
- Adopt mitigation measures designed to minimize significant effects
- Ensure political accountability by disclosing to citizens the environmental values held by their elected and appointed public officials

1.5 Decisions Subject to California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) **a**pplies only to discretionary activities by public agencies that are defined as "projects". A "project" is defined as the whole of an action, which has the potential for resulting in either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment. (CEQA Guidelines sec. 15378(a); PRC 21065)

> A "project" under CEQA is considered to be an activity directly undertaken by a public agency, an activity that is supported, in whole or in part, through public agency contracts, grants, subsidies, loans, or other assistance from a public agency, or an activity involving the public agency issuance of a lease, permit, license, certificate, or other entitlement for use by a public agency. CEQA encourages the application of a programmatic approach where a group or series of projects are similar in activities and impacts and where potential impacts can be avoided or mitigated in a similar manner.

As required by regulation, CAL FIRE is the lead agency for this project. The Mattole Restoration Council (MRC) is preparing the PTEIR for CAL FIRE under letter agreement**.** The PTEIR process and CEQA require the preparation and circulation of a draft PTEIR. The certification of a final PTEIR by the CAL FIRE Director may occur once comments on the draft PTEIR have been addressed and specific findings are made with regard to the potentially significant effects of the project. At the time of Program approval the lead agency will adopt a Mitigation Monitoring and Reporting Plan (PRC 21081.6; MMRP). The monitoring plan is an important component of the PTEIR process. It ensures that the FPRs and mitigation measures contained in the PTEIR are in fact carried out in future PTHPs tiered to the PTEIR.

The Forest Practice Rules require PTHPs be accompanied by a checklist developed in the PTEIR to determine whether practices within individual PTHPs are within the scope of the analysis of the PTEIR. CAL FIRE will use this checklist as the agency evaluates these individual projects.

1.6 How Will the Proposed Program be Accomplished?

Critical steps necessary for accomplishment of the proposed Program include:

- Develop a set of Program goals that are realistic, practical, and achievable;
- Conduct public scoping and outreach to adequately inform the community about the project, and incorporate community values and knowledge into the array of practices that will be included in the Program;
- Design and base the Program on an array of forest management practices that are environmentally, economically, technically, scientifically, and socially sound;
- Prepare a PTEIR that can be certified by the CAL FIRE;

- Develop a Program specific checklist to accompany all PTHP filings that is cost-effective to submit and facilitates agency approval;
- Implement the Program land management practices across significant timbered acreage in the basin;
- Verify, through monitoring, that the goals of the Program are being met.

CAL FIRE regulates commercial timber harvesting on non-federal timberlands in California. Harvesting for commercial purposes is defined as: "(1) the cutting or removal of trees which are processed into logs, lumber, or other wood products and offered for sale, barter, exchange, or trade, or; (2) the cutting or removal of trees or other forest products during the conversion of timberlands to land uses other than the growing of timber which are subject to the provisions of Section 4621, including, but not limited to, residential or commercial developments, production of other agricultural crops, recreational developments, ski developments, water development projects, and transportation projects." (PRC 4527) The Mattole basin is within a state responsibility area and CAL FIRE has wildland fire suppression responsibility. CAL FIRE depends on the voluntary cooperation of private landowners to implement local fuel reduction measures. (For areas immediately around structures, state law PRC 4291 requires fuels management.)

Individual landowners who are interested in harvesting timber and in mitigating environmental impacts from such harvest by complying with the prescribed practices in the proposed Program are key to implementing the Mattole Forest Futures Project. In order to commercially harvest timber, California landowners must submit a Notice to or obtain approval from CAL FIRE through either:

- A THP (14 CCR 1032)
- An approved Modified THP (14 CCR 1051)
- A NTMP (14 CCR 1090)
- An Emergency Notice (14 CCR 1052)
- A Notice of Conversion Exemption Timber Operations (14 CCR 1104.1)
- A THP exemption (14 CCR 1038)
- An approved Program THP (PTHP) (14 CCR 1092)

PTHPs filed by individual landowners or groups of landowners are tiered to the PTEIR, which analyzes the consequences of the proposed action at the landscape scale. The Program contains an array of forest management practices developed to be applied and analyzed at the landscape level. Once the PTEIR is certified, individual landowners may, at their discretion, submit a PTHP to CAL FIRE in lieu of a standard THP, and it may be approved by CAL FIRE as long as it is within the scope of the PTEIR. In this case landowners are potentially afforded a significantly simplified approval process, including potentially reduced costs for preparation of the PTHP, compared to a THP that is not tiered to the PTEIR. Landowners would still have the option of filing any of the other CAL FIRE permits listed above.

1.7 State Agency Oversight of Program and PTHPs

There are three possible tiers of agency involvement in implementing the Program in addition to CAL FIRE. As noted above, CAL FIRE is the lead agency for the PTEIR and is responsible for overall decision-making at both the programmatic and project (PTHP) levels.

The California Department of Fish and Game (DFG) is both a trustee agency since it manages the state's wildlife and fisheries resources on behalf of the citizens of California and a responsible agency due to its role in permitting for stream crossings through Lake and Streambed Alteration Agreements (LSAAs). For the PTEIR, because DFG is a trustee agency, CAL FIRE will be required to consult on and coordinate all Program projects directly with DFG. The California Geological Survey (CGS) (Eureka office) ensures that geologic concerns for THPs submitted for Del Norte, Humboldt and Trinity counties are addressed and that landslide and mass wasting requirements are implemented. In addition to THP review, CGS provides technical advice in the development of site-specific prescriptions and provides ground verification of mapped landslides during the engineering geologic review of THPs.

Another tier of involvement by other State agencies in the Program includes responsible agencies that will use this EIR as the basis for making their own regulatory approvals such as the North Coast Regional Water Quality Control Board (NCRWQCB), which will be requested to issue a Waiver from Waste Discharge Requirements. Other responsible agencies that could be involved in project regulatory oversight and approval include the Coastal Commission or another agency with an approved Local Coastal Plan, and the North Coast Unified Air Quality Management Districts (NCUAQMD).

The third tier of State agency involvement includes commenting agencies (State Parks, Caltrans, etc.)

Another possible nexus for the involvement of responsible agencies in PTHP oversight is related to the use of prescribed fire, such as pile burning and broadcast burning, which are required to comply with the NCUAQMD burning requirements, such as obtaining a burn permit, etc. Removal of vegetation within the coastal zone is defined as a "development" project and is subject to permitting by the Coastal Commission or another local government agency that has an approved Local Coastal Plan, which could act as a responsible agency in projects near the coast.

As noted, the NCRWQCB may use this document for any necessary National Pollutant Discharge Elimination System (NPDES) waivers and the California Department of Fish and Game may use it not only for Lake and Streambed Alteration agreements but also for any permits required under the State Endangered Species Act.

The approval process for a PTHP is slightly different from that of a THP. The following describes the approval process for a PTHP:

- PTHP is submitted to CAL FIRE
- Consultation with responsible and trustee agencies occurs and their comments are considered prior to PTHP approval.

- Suggested alternatives, recommendations or mitigation by public agencies may be used by CAL FIRE in determining if the PTHP is within the scope of the analysis in the PTEIR and accurately applied.
- Preharvest inspection (PHI) held, if necessary, to determine consistency w/PTEIR and FPRs – PHIs may be necessary less frequently because PTHPs will rely on standard mitigations developed in the PTEIR in consultation with agencies.
- PTHP approval timelines would remain consistent with FPA and FPRs but without a second review.

1.8 PTEIR and Program Duration

A PTEIR remains in effect until such time as substantial changes in conditions occur or significant environmental impacts are identified which were not previously addressed in the PTEIR. When either of these situations occurs, the PTEIR may be amended or supplemented to address such new information (14 CCR 1092.28(c)). Thus, landowners could file PTHPs well into the future – perhaps as long as 20-50 years into the future - as long as the conditions within the Program area do not change substantially beyond the conditions described in the document. In order to calculate the environmental impacts of the proposed Program and its alternatives, an estimate of harvest under the Program across a 50-year time span was calculated, based on estimated landowner interest and timber stand conditions. For some stand types, the impacts on Timberland Resources were projected farther into the future – long enough to demonstrate that there would be a less than significant (or beneficial) impact on the resource.

1.9 Role of Local Government in PTEIR Process

A number of plans prepared by local governmental and non-governmental entities, regional, state and federal government have been prepared in the Mattole over the past ten years. Most of these plans contain general recommendations about specific components of the forested landscape in the Mattole and do not directly influence nor regulate private land forest management within the basin. These plans contain guidance, which might apply to persons managing forestland within the Mattole River watershed. They are listed below and described in Appendix E.

1. Upper Mattole Fire Plan, 2004 – prepared by Mattole Restoration Council and ForEverGreen Forestry Consultants
2. Lower Mattole Fire Plan, 2002– prepared by Mattole Restoration Council
3. Humboldt County Master Fire Protection Plan (MFPP), 2006 – prepared by Humboldt Fire Safe Council.
4. Humboldt County General Plan Update – 2008 – prepared by Humboldt County Planning Department
5. Humboldt Del Norte Fire Plan, 2005 – prepared by CAL FIRE
6. Resource Management Plan for the King Range Resource Area, 2005, prepared by USDI Bureau of Land Management (hereafter KRNCA) USDI BLM, 2005.
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1.10 Chapter 1 Bibliography

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Chapter 2: Environmental Setting, Program Description and Alternatives

2.0 Environmental Setting

The following overview and environmental setting provide a brief description of the Program area and the surrounding landscape. A detailed description of the environmental setting precedes each environmental impacts subchapter.

The Mattole River drainage is approximately 189,760 acres in extent (296 sq. mi.). It is located in the California Coast Range, in western Humboldt and northern Mendocino Counties, about 290 miles north of San Francisco and 26 miles southwest of Eureka, the largest nearby city and the county seat of Humboldt County. The watershed drains into the Pacific Ocean near the town of Petrolia.

Precipitation in the Mattole is highly seasonal, with 90 percent falling between October and April. Annual precipitation ranges from about 45" near Petrolia to 115" on Rainbow Ridge. Snowfall occurs occasionally at elevations above 2,000 feet, but rarely accumulates for long.

The total resident population of the Mattole basin in the 2000 census was estimated at about 1,200, or four people per square mile (NCWAP, 2002). The bulk of the population is located around the communities of Petrolia, Whitethorn, Ettersburg and Honeydew. Local residents pursue a variety of economic activities, including stock raising (cattle, sheep, and goats), nonindustrial timber management, logging, agriculture (including orchards, pasture, field crops, and viticulture), and heavy equipment operation. Two large timber companies, Barnum Timber, which practices intensive management, and Humboldt Redwood Company, which practices somewhat less intensive management, own substantial acreage in the drainage. Many residents commute outside the area for their livelihoods, mostly accessing the U.S. Highway 101 corridor.

The current vegetation is predominantly forestland. Mixed conifer/hardwood forestland occupies 57% of the watershed while hardwood forests occupy 17% and more purely conifer forests occupy another 8%. Twenty percent of the area is covered by stands that average greater than 24-inch DBH trees, half of the watershed is covered by trees that have an average size of 12-24 inches diameter at breast height (DBH), and 11% is covered by pole-sized trees 6-11 inches DBH (NCWAP, 2002).

Annual grasslands occupy approximately 15% of the watershed. The size and location of mapped grasslands has experienced a sharp decline in recent decades due to the curtailment of intentional fire and decline in grazing, leading to encroachment by woody vegetation.

In characterizing vegetation, NCWAP states that, *"Studies cited in the Redwood Creek Watershed Analysis suggest that a climatic shift towards the currently cooler and moister climate occurred about 2500 to 2800 years ago. While Native American burning practices prior to the arrival of European settlers suppressed the encroachment of Douglas-fir and other woody*

vegetation, the region-wide loss of about one-quarter of the prairie and oak woodlands since 1850 is attributed to fire exclusion and road building. The hypothesis that the mosaic of vegetation that existed prior to the historic land practices of the last 150 years was probably more varied and in smaller patches was tested by the BLM as part of the BLM Honeydew Watershed Analysis (1996). This study compared the 1948 vegetation as shown on soil and vegetation maps prepared by the USDA Forest Service and the State of California Division of Forestry using 1947-48 aerial photography against current vegetation data acquired as a part of their analysis project. The study indicates that of three sub-watersheds, 90% of the Upper Honeydew sub-watershed has never been harvested, while Beartrap and Eastern Honeydew sub-watersheds were harvested between 1954 and 1966; thus, the patchy and variable 1948 vegetation in Upper Honeydew sub-watershed can be assumed to be relatively characteristic of the pristine vegetation for that time period."

Vegetation types other than forest or grassland occupy only three percent of the watershed. With the exception of the Mattole River estuary and side channels, there are no lakes or other reservoirs of significant size.

The current vegetation is the result of fire history in addition to timber harvesting and grazing. Fire was a natural and frequent occurrence in the Mattole Basin. Interviews of Honeydew Creek watershed residents during compilation of the BLM watershed analysis indicated that many ranchers burned the same areas every two or three years to control poison oak and other brush (Anders 1995). However, active fire suppression efforts beginning in the 1940s changed the nature of wildfire from frequent, low-intensity ground fires to occasional, catastrophic fires. Fires now have the ability to burn through large acreages and to severely damage both upslope and riparian areas, setting back the seral stage. A summer weather pattern of lightning and periods of strong winds, combined with unnaturally high fuel loading may lead to forest stand replacement wildfire as a major upslope contributor to the quality of anadromous fish habitat within the Mattole Basin.

The towns of Petrolia, Ettersburg, Whitethorn, and Honeydew are all listed in the California Fire Plan as being in a high wildfire threat area (http://firesafecouncil.org/fireplanindex.html, May 2002). The Mattole Valley/Prosper Ridge area and the Shelter Cove subdivisions, which extend to the watershed boundary, are identified in the CAL FIRE Humboldt/Del Norte Ranger Unit Fire Management Plan as being two of the highest risk areas in the county.

The mainstem Mattole River is approximately 60 miles in length. Seventy-four named tributaries feed the mainstem. Major tributaries include the Lower and Upper North Forks, Bear Creek, Honeydew Creek, and Squaw Creek. The Mattole watershed borders the watershed of the South Fork Eel River on the east and the Bear River watershed on the north. To the west a long ridge separates the Mattole Valley from numerous small watersheds that drain directly into the Pacific Ocean (Mattole Restoration Council 2005).

2.0.1 Land Uses in the Mattole

Land uses in the Program area include cattle ranching, outdoor recreation, forest and timber management, stream restoration, forest preservation and protection, and rural residential use.

Many residents practice agriculture, including marijuana growing and viticulture. The formerly important activities of sheep ranching and orchard fruit production are in steep decline. Residents of the Mattole are flexible in their opportunities for making a living, including commuting to outside jobs. No one community is considered the predominant center of the community, though semi-urban development patterns predominate around the main named communities. A detailed description of land uses and timber harvest history is included in Appendix B of the NCWAP report.

The future of the Mattole watershed is linked to several factors. The Mattole Watershed Plan (Mattole Restoration Council 2005) notes that

> *"…the kind of growth we are likely to see in the Mattole – second homes, trophy ranches, and boutique agriculture. The past decade has seen an influx of retirees, many bringing a deep connection and love of the Mattole, and wealthier individuals purchasing ranchland at prices that are locally expensive, but cheap from a statewide perspective."*

and that:

> *"residential land demand and protection of family-owned ranchlands will likely result in higher land values across the region. As of 2004, 80% of Humboldt County residents could not afford to buy a median-priced house on their income (Smith and Steinberg 2005)."*

Approximately 22% of the Mattole is in public ownership and 78% is private. Public ownership is split unevenly between Bureau of Land Management (BLM) and the State of California. BLM manages 20.2% of the land in the Mattole, while the State holds only about 1.1%. None of the public lands are actively managed for resource extraction. Outdoor recreation primarily occurs on the BLM-managed King Range National Conservation Area or California State Park lands (NCWAP 2002).

Table 2-1 below shows the number of acres by land use category within the Mattole basin while Figure 2-1 shows generally where such lands are located.

Table 2-1
Acres By Land Use Category

Category	Acres
Non-Industrial Private	123,920
Industrial Timberland	24,660
Private Conservation	650
BLM	38,375
State	2,065
Total	189,760

There are two relatively large (>5,000 acres) industrial timber ownerships in the Mattole that constitute 13% of the area (see Figure 2-1). Industrial timberlands are actively managed for timber growth and harvest. However, there has been a trend among the large timberland owners of selling off parcels for conversion to rural residential use, a trend that is expected to continue into the future (NCWAP 2002). Landowners committed to forest preservation, such as Save the

Redwoods League and Sanctuary Forest; own approximately 0.3% of the Mattole. There is limited public access on these lands and no extractive uses.

2.0.2 Land Ownership in the Mattole

The majority of the private land in the Mattole watershed is composed of small and moderate sized ownerships. Over 50% of landowners own 40 acres or less and an additional 35% own 40-160 acres, so 85% of landowners own 160 or fewer acres. The ownerships of 160 or fewer acres account for approximately 40,000 acres or 20% of the analysis area. Moderate sized landowners (160-5,000 acres) account for an additional 85,000 acres or 45% of the analysis area. The two large, industrial forest ownerships in the Mattole own 23,000 acres, or 12% of the analysis area (Table 2-2).

The largest single landowner in the Mattole is the BLM, which manages over 35,000 acres or 18% of the watershed. The other public landowner in the Mattole is the State of California, which owns approximately 2,800 acres, mostly in the Southern subbasin.

Table 2-2
Percentage of Subbasin in each Ownership Class

	Ownership Size Classes (acres)				
Subbasin	**<160**	**160-640**	**640-5,000**	**5,000-20,000**	**>20,000**
East_1	31.17%	31.01%	37.83%	0.00%	0.00%
East_2	55.90%	28.54%	13.93%	1.62%	0.02%
North_1	7.06%	11.17%	64.73%	15.97%	1.08%
North_2	12.23%	13.66%	43.81%	30.30%	0.00%
South_1	34.60%	22.84%	14.40%	21.24%	6.92%
West_1	17.84%	30.40%	22.59%	0.00%	29.17%
West_2	15.63%	14.32%	8.40%	0.00%	61.65%

Small ownerships (<160 acres) are concentrated in the Eastern two subbasins and the Southern subbasin (Table 2-2). The larger ranch and timberlands occur primarily in the North_1, North_2 and West_1 subbasins. The majority of the federal public land occurs in the West_1 and West_2 subbasins, where BLM stewards 29% and 62%, respectively, of the subbasins.

2.0.3 Timber Harvest History

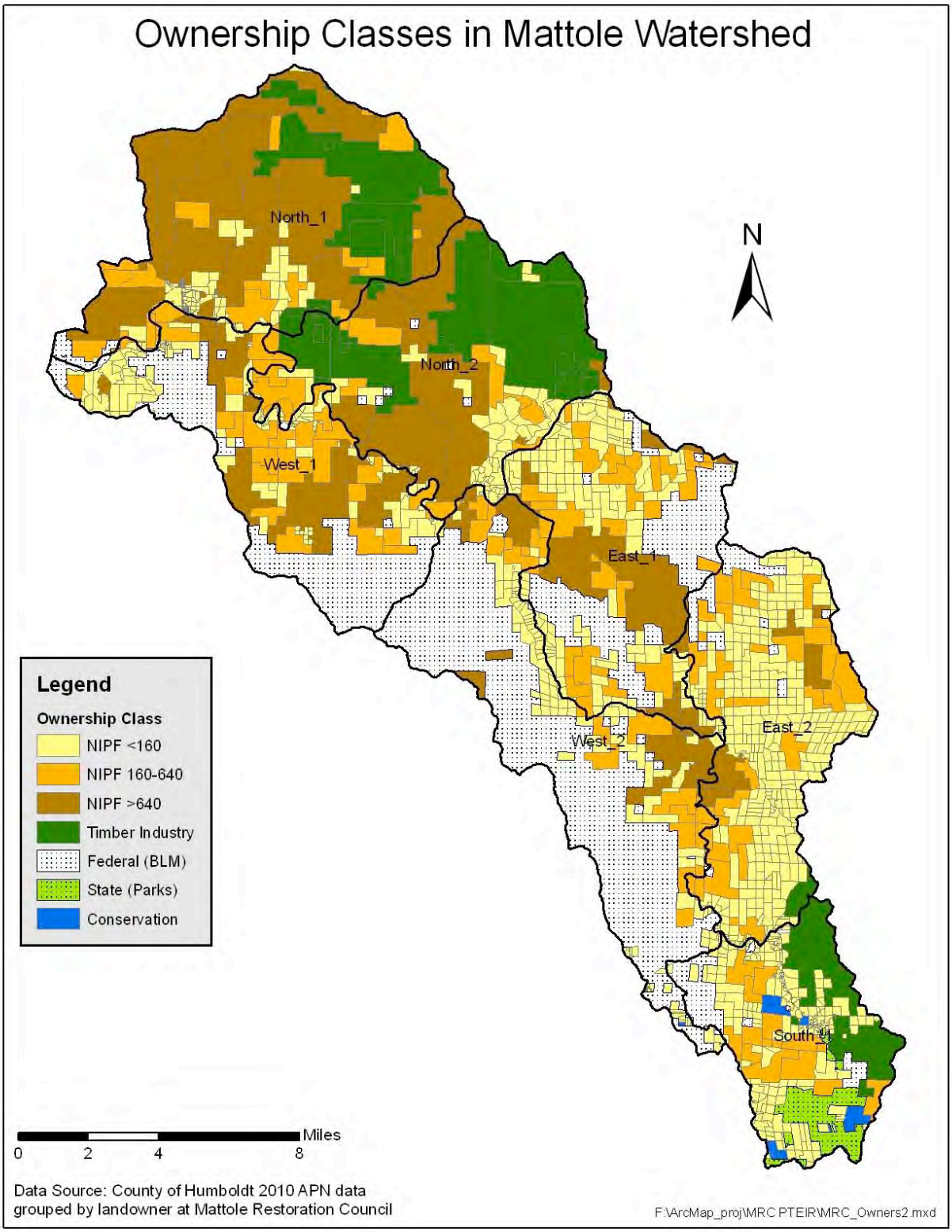
Approximately 93% of the available forested land in the Mattole was harvested between 1945 and 1983; predominantly using even-age systems of clearcut, seed tree or shelterwood harvest (NCWAP 2002). Tractor yarding was the most common logging system, often skidding downhill into the tributary streams and using streambeds for roads and landings. The following discussion and table (Table 2-3) is a summary of the timber harvest history across the Mattole basin that was included in Appendix B of the NCWAP report. Note that Table 2-3 and the following discussion refer to the entire Mattole watershed, not just the timbered portion.

Table 2-3
Timber Harvest History- Entire Watershed*

	Total Harvested Acres	Total Area Harvested (%)	Average Annual Harvest (ac)	Average Annual Harvest Rate
Harvested ~ 1945-1961**	72,897	38%	4,288	2.3%
Harvested 1962-1974**	21,141	11	1,626	0.9%
Harvested 1975-1983**	6,948	4	772	0.4%
Harvested 1984-1989	3,900	2	650	0.3%
Harvested 1990-1999	8,405	4	840	0.4%
Harvested 2000-2001	1,809	1	905	0.5%
Grasslands	33,504	18		
Brush and Hardwoods	38,828	20		

*Does not add to 100% due to data discrepancies, re-harvest areas and uncut timber areas.
** CAL FIRE has not validated the accuracy of this data (obtained from MRC).

Figure 2-1


Ownership Classes in Mattole Watershed
North_1
North_2
West_1
West_2
East_1
East_2
South_1
N
Legend
Ownership Class
NIPF <160
NIPF 160-640
NIPF >640
Timber Industry
Federal (BLM)
State (Parks)
Conservation
Miles
0
2
4
8
Data Source: County of Humboldt 2010 APN data
grouped by landowner at Mattole Restoration Council
F:\ArcMap_proj\MRC PTEIR\MRC_Owners2.mxd

From the NCWAP report: "In Table 3.1.3-1, [table 2-3 above] *the harvest periods are broken into irregular time intervals as a result of the way existing data was compiled. For the most part, the first period consists of the post-war logging boom, although a portion of the southern headwaters were harvested just prior to the 1942 aerial photos. This category includes most of the area harvested and roaded before the 1964 flood which is estimated to be a one-hundred-year event, meaning that in any given year there is a one percent chance of the stream carrying the same volume of water. Thirty-eight percent of the watershed was harvested during this time period. The harvest period 1964-1974, also prior to the establishment of the first iteration of the Forest Practice rules authorized by the Z'Berg-Nejedly Forest Practice Act of 1973, brought the cumulative total to 49 percent of the watershed area logged by tractor and skidded downhill to log landings and access roads low on the slopes and often adjacent to streams. The next interval, 1975-1983, is a time period of Forest Practice rules prior to substantive watercourse protection. The acres listed in the years 1984-2001 are based on the completion date of timber harvesting plans (THP) and submission dates for non-industrial timber management plans (NTMP) submitted to the California Department of Forestry and Fire Protection. There were 1,022 acres in NTMPs in the time interval 1990-1999 and 73 acres in 2000-2001. This time period is the most current and harvesting practices reflect increasingly restrictive measures for activities near watercourses. Only about 7 percent of the watershed has been harvested since 1984. These years are broken into intervals that are similar to those used for other analyses in the NCWAP program."*

A rough rate of harvest would indicate that from 1945-1961, an average of 2.2 percent of the watershed was harvested per year, from 1962-74, almost one percent, and about one-half percent of the watershed harvested per year from 1984-2001. Much of the watershed is in young stands of trees. As these grow into harvestable size, one could reasonably anticipate an increased rate of harvest on private lands beginning in the next ten to twenty years."

The NCWAP harvest history analysis extended through 2001. There were 1,534 acres of timber harvested during the 2001 to 2007 time period, or approximately 255 acres/year. This rate of harvest is lower than any of the periods reported in Table 2-3.

The most intensive harvest in the period from 1983 to 2007 occurred in the Southern subbasin, where approximately 3,400 acres or 19% of the subbasin was harvested in the 24-year period using predominantly even-aged or overstory removal silvicultural systems (Table 2-4). The greatest total acreage harvested occurred in the North_1 and North_2 subbasins and exceeded 3,500 acres each. Conversely, the East_2 subbasin was subject to only 283 acres of harvest or 1.1% of the subbasin in the same time period.

Table 2-4
Mattole Harvest By Subbasin 1983-2007 (Complete And Active)

	Silviculture 1 (Acres)	Silviculture 2 (Acres)	Silviculture 3 (Acres)	Total (Acres)	% Of subbasin	Annual Rate (acres)
East_1	632	1,236	433	2,301	8.9%	96
East_2	119	124	40	283	1.1%	12
North_1	1,588	1,213	795	3,597	10.5%	150
North_2	1,662	460	1,482	3,604	12.4%	150
South_1	1,427	1,049	921	3,397	19.3%	142
West_1	242	-	180	422	1.6%	18
West_2	149	116	8	273	0.9%	11
Total	5,819	4,199	3,859	13,877	7.3%	578

Silviculture Category 1 includes even-aged regeneration prescriptions: clear-cut, rehabilitation, seed tree step, shelterwood seed step and road construction.
Silviculture Category 2 includes prescriptions that remove most of the largest trees: shelter wood prep step, shelterwood removal step and alternative prescriptions.
Silviculture Category 3 includes prescriptions that leave large amounts of vegetation after harvest: selection, group selection, commercial thin, sanitation salvage, transition and seed tree removal step prescriptions.

2.0.4 Roads

Roads were installed throughout the Mattole basin to harvest timber in the twentieth century. According to the TMDL analysis (NCRWQCB, 2002):

> "There are approximately 3,310 miles of active and abandoned roads in the Mattole basin (Perala et al., 1993). The county maintains about 100 miles of road, and about 25 miles are maintained by the BLM. About 385 miles of active roads are maintained at various levels, leaving 2,800 miles of abandoned roads, which are neither managed nor maintained. These old roads still contribute "legacy" sediment to the system. Roads contribute sediment not only through surface runoff, but also through road-construction-related failures such as cut and fill failures, gullies, and landslides."

The density of roads (mi/mi^2) is generally proportional to the quantity of sediment that originates from the road network. According to the TMDL analysis, the density of roads ranges from a low of 3.0 miles per square mile (mi/mi^2) in the Northern subbasin to a high of 9.1 (mi/mi^2) in the Southern subbasin. Table 2-5 below shows road densities as reported in the TMDL analysis (NCRWQCB, 2002) from a data layer compiled by the UC Davis Information Clearinghouse for the Environment (ICE) and as reported in NCWAP.

Table 2-5[1]
Road And Stream Densities By Subbasin

Subbasin	NCWAP Road Density (Miles/mile^2)	ICE Road Density (Miles/mile^2)	ICE Stream Density (Miles/mile^2)
East_1	4.6	6.0	4.1
East_2	4.6	6.0	4.1
North_1	2.3	3.0	4.4
North_2	2.3	3.0	4.4
South_1	7.0	9.1	4.2
West_1	4.8	6.2	4.2
West_2	4.8	6.2	4.2

2.0.5 Vegetation

The Mattole basin is notable for its disturbance regimes. The terrain is geologically unstable, with disturbances ranging from surface erosion on exposed soils to mass-wasting landslides, to active, frequent seismic activity related to the young geologic terrain. Rainfall in the Mattole area is among the highest recorded in the state, which, because of the Mediterranean climate, occurs almost all within the six-month winter season. Single rain events can sometimes yield up to 12 inches in 24 hours (Mattole Restoration Council 2005). The abundance of rainfall results in all dimensions of flood events, from high water events that occur several times during the rainy season to the "100-year" 1955 and 1964 floods that devastated the entire watershed. Lightning-generated wildfires, which can, under the right conditions, sweep across the rugged terrain, are also common natural disturbances.

Through adaptation to disturbance, therefore, all the vegetative types of the basin contain species that can adapt and even thrive through frequent disturbances. Douglas-fir, the most common conifer species in the basin, regenerates quickly by seed fall on bare ground created by landslides or fires; but when mature, has a thick bark that can insulate its living tissue from all but the most intense fires. Hardwoods, such as tanoak, madrone, and pepperwood, sprout abundantly from the root collar when their aboveground portions are damaged or destroyed. Riparian species, such as willow, alder, and cottonwood produce abundant seed that can quickly re-vegetate denuded floodplains.

These natural disturbance regimes have been influenced by human activities. For thousands of years, Native American inhabitants managed their landscape by setting frequent fires. The presence of grassland prairies is at least partly correlated with Native burning, although grazing and other post-settlement activities were contributing factors as well. Stripping and selling the

[1] According to the text of the TMDL analysis (Coates 2002) the road density values reported in the TMDL were based on a combination of the mapped road network GIS layers originally developed for the NCWAP and additional mapping effort completed for the TMDL by UC Davis' Information Center for Environment (ICE) in 2002 (ICE 2002). The RWQCB furnished the resultant ICE road layer to the Mattole Restoration Council, however queries of this dataset by MRC and its contractors yielded different road densities for each subbasin than those reported in the TMDL. RWQCB staff were not able to explain the reason for the apparent disparity (B. McFadin pers comm. 2008).

bark from tanoak trees for use in the tanning industry was a lucrative economic activity practiced by European-descended settlers, and while it did little to reduce the abundance of tanoak in the basin, it led to the widespread loss of large and ecologically and culturally valuable tanoaks.

The pre-European settlement landscape therefore contained a disturbance-related mosaic of vegetation ranging from regeneration in recently disturbed areas to old growth on sites where disturbance was either infrequent or the vegetation was able to withstand its impacts. Until the end of WWII, about 50% of the basin was occupied by old growth conifer forests of varying density; but by 1965, 60% of these stands had been clearcut or high-graded. In the North Fork of the Mattole, Carkeet reported in 1967 that "…*nearly 25 percent of the total watershed area has been logged of 70 percent of the merchantable timber volume within the last five years; whereas only 3.2 percent of the total watershed area has been logged prior to five years, to the extent that no merchantable timber remains to date.*" After the elimination of most of the old growth forests, logged areas were left to regenerate as best they could. In many cases this meant that understory species such as tanoak were able to capture stands denuded of conifer seed trees. Also, because understory tanoaks were ignored by the loggers, it was easy for the tanoaks to capture the site, even if conifer seed was available, because they had a headstart on the fir seedlings. Soils were exposed to rainfall by removal of the tree cover, but even more degraded by the extensive network of skid trails and logging roads that were installed, usually without planning or engineering, for logging. And although the native species are disturbance-adapted, many introduced plant species also found an easy pathway into the area via areas cleared for roads or logging, or on overgrazed pastureland.

Despite enormous impacts within a relatively short time, the current vegetation in the Mattole Basin remains predominantly forestland, with over 80 percent comprised of mixed conifer and hardwood forestland, hardwood forests, and coniferous forests. Vegetation of the watershed includes various successional stages of Douglas fir (*Pseudotsuga menziesii*) mixed with hardwood forest and coast redwood (*Sequoia sempervirens*) near the headwaters, with ridge tops and hillsides being dominated by fescue and oatgrass coastal prairie. The Northern subbasin contains the largest contiguous old growth forest remaining in the entire watershed, but across the rest of the basin the vegetation type is predominantly second-growth mixed hardwood/Douglas Fir forest, with grasslands as a significant secondary component (NCWAP 2002).

The Mattole watershed contains a diversity of vegetation types. For the purposes of analysis in this EIR, land cover in the watershed is divided into four broad categories of vegetation: commercial forest types, non-commercial forest types, grasslands, and other non forested vegetation types not proposed for treatment under the Program (Figure 2-2). These categories are based on the CALVEG 1998 GIS data – a typing and mapping exercise carried out by the USFS Region 5 utilizing LANDSAT imagery as the base layer. Certain forest types, such as Coastal Oak Woodland (COW) and Montane Hardwood (MHW), were eliminated from further analysis due to their low stocking and/or lack of occupancy by commercially viable species. After these areas were eliminated, the 1998 GIS data showed there were 116,831 acres of commercial forest types, 34,134 acres of non-commercial forest types, 33,737 acres of grasslands and 4,762 acres of non-forested types within the Mattole watershed in 1998 (Table 2-6). It is important to recognize that satellite imagery classification is inherently an imprecise process.

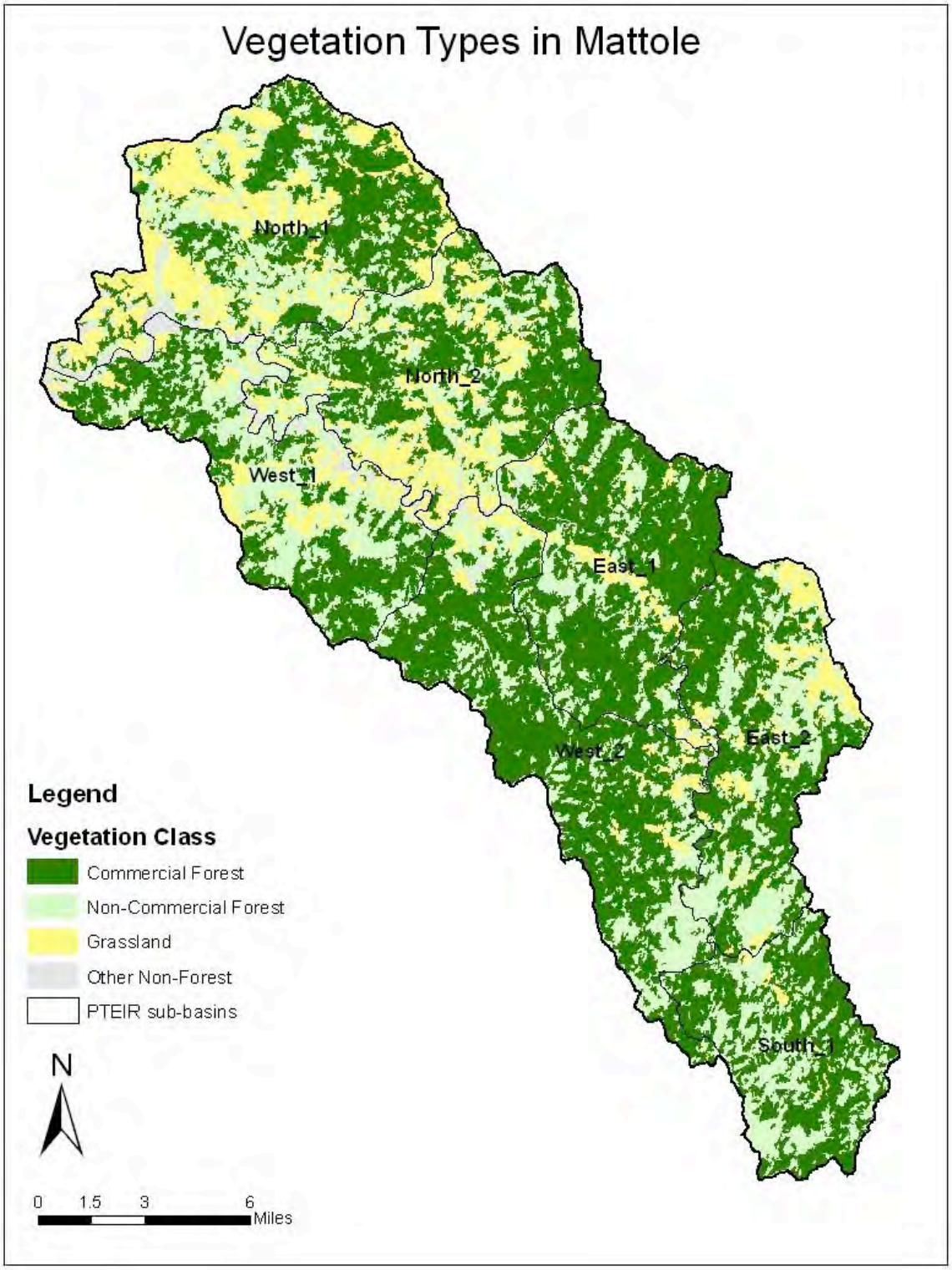
Consequently, in the ultimate implementation of the program, it is possible that timber harvest layout may include some areas that were classified as non-commercial forestland from satellite imagery, but which ground-based analysis reveals to be commercial forest. The analysis of the Proposed Project's effects are not dependent on the program of harvest being implemented only within those areas categorized as commercial forestland on in Figure 2-2. Regardless of any such classification errors, the total harvest area analyzed for each sub-basin will still apply for the purposes of limiting cumulative effects of harvest.

Table 2-6

(Totals for each subbasin preceed the breakdown by diameter class.)

Vegetation Type Categories in Mattole						
		Commercial Forest	**Non Commercial Forest**	**Grasslands and Oak Woodlands**	**Other Non Forested**	**Grand Total**
Sub-basin	**East_1**	**20,351**	**2,996**	**2,151**	**394**	**25,892**
Diameter Class	<1"	-	10	1,874	**394**	2,278
	1-6"	0	21	-	-	21
	6-11"	1,871	1,200	73	-	3,144
	11-24"	12,142	1,452	193	-	13,787
	>24"	6,338	313	11	-	6,662
Sub-basin	**East_2**	**15,616**	**5,939**	**3,195**	**162**	**24,911**
Diameter Class	<1"	9	10	3,191	**162**	3,372
	1-6"	13	60	-	-	73
	6-11"	1,447	1,468	-	-	2,915
	11-24"	11,177	3,614	-	-	14,791
	>24"	2,970	787	4	-	3,761
Sub-basin	**North_1**	**15,060**	**4,608**	**13,178**	**1,446**	**34,292**
Diameter Class	<1"	-	157	11,167	**1,446**	12,771
	1-6"	26	5	4	-	34
	6-11"	1,561	1,542	233	-	3,336
	11-24"	7,777	2,518	1,684	-	11,979
	>24"	5,696	386	90	-	6,171
Sub-basin	**North_2**	**15,313**	**4,704**	**8,359**	**728**	**29,105**
Diameter Class	<1"	-	15	6,777	**728**	7,520
	1-6"	54	32	-	-	87
	6-11"	1,642	1,471	263	-	3,377
	11-24"	8,771	2,940	1,238	-	12,950
	>24"	4,846	245	81	-	5,172
Sub-basin	**South_1**	**13,164**	**4,163**	**300**	**16**	**17,644**
Diameter Class	<1"	11	10	300	**16**	338
	1-6"	18	23	-	-	40
	6-11"	948	1,160	-	-	2,109
	11-24"	9,096	2,037	-	-	11,133
	>24"	3,092	933	-	-	4,025
Sub-basin	**West_1**	**13,734**	**5,997**	**4,546**	**1,459**	**25,736**
Diameter Class	<1"	-	55	3,146	**1,459**	4,660
	1-6"	4	6	-	-	9
	6-11"	1,353	816	106	-	2,275
	11-24"	8,848	4,641	1,264	-	14,753
	>24"	3,529	480	29	-	4,038
Sub-basin	**West_2**	**23,593**	**5,767**	**2,008**	**555**	**31,923**
Diameter Class	<1"	-	14	1,753	**555**	2,322
	1-6"	14	48	3	-	65
	6-11"	2,126	1,215	24	-	3,364
	11-24"	14,898	3,625	215	-	18,738
	>24"	6,556	865	14	-	7,434
Grand Total		**116,831**	**34,174**	**33,737**	**4,762**	**189,504**

Figure 2-2


Vegetation Types in Mattole
North_1
North_2
West_1
East_1
West_2
East_2
South_1
Legend
Vegetation Class
Commercial Forest
Non-Commercial Forest
Grassland
Other Non-Forest
PTEIR sub-basins
N
0 1.5 3 6
Miles

The 1998 vegetation data are based on remotely sensed information using satellite imagery and subsequent ground truthing for verification and slight modification. For the purposes of this EIR, vegetation analysis utilizes the Wildlife Habitat Relationship (WHR) classification system developed by CA DFG. The following table shows the classification system categories for forestlands found in the Mattole. Forest type designations are based on predominant species, size class by average overstory tree diameter, and density by total canopy cover.

Table 2-7
WHR Classification Key for Mattole Forestlands

SPECIES		SIZE CLASS avg dbh of overstory		DENSITY Total Canopy Cover %	
DFR	>50% relative overstory cover by conifers (Douglas fir /redwood)	6	> 24" & multi-storied	S	Sparse 10-25%
MHC	Montane Hardwood/Conifer - relative overstory conifer cover between 25 & 50%	5	> 24"	P	Patchy 25-40%
MHW	Montane Hardwood – relative conifer cover < 25%	4	11" – 24"	M	Moderate 40-60%
		3	6" – 11"	D	Dense > 60%
		2	1" – 6"		
		1	< 1"		

A search of the NDDB database from 2009 and a current list from the USFWS Arcata office for Humboldt County (document Number 55346743-11305) shows that there are 15 "special status" plant species within the basin. Three species are listed as endangered on the federal and state lists, and one species is listed as 'rare' on the state list. Also from the state plant list, CNPS lists six species as category 2.2 (eligible for state listing and "fairly threatened"). All of the plants constituting List 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.

Table 2-8
Special Status Plant Species

Scientific Name	Common Name	# occurrences	Fed List Status 1/	CA List Status 1/	CNPS LIST
Astragalus pycnostachyus var. pycnostachyus	coastal marsh milk-vetch		None	None	1B.2
Calamagrostis foliosa	leafy reed grass	4	None	Rare	4.2
Castilleja affinis ssp. litoralis	Oregon coast paintbrush		None	None	2.2
Erysimum menziesii	Menzies' wallflower	N/a	Endangered	Endangered	1B.1
Erythronium oregonum	giant fawn lily	1	None	None	2.2
Erythronium revolutum	coast fawn lily	7	None	None	2.2
Gilia capitata ssp. Pacifica	Pacific gilia	6	None	None	1B.2
Hesperevax sparsiflora var. brevifolia	short-leaved evax		None	None	1B.2
Layia carnosa	beach layia	1	Endangered	Endangered	1B.1
Lillium occidentale	Western lily	N/a	Endangered	Endangered	1B.1
Montia howellii	Howell's montia		None	None	2.2
Packera bolanderi var. bolanderi	seacoast ragwort		None	None	2.2
Piperia candida	white-flowered rein orchid		None	None	1B.2
Polemonium carneum	Oregon polemonium		None	None	2.2
Sidalcea malviflora ssp. patula	Siskiyou checkerbloom		None	None	1B.2

2.0.6 Water Quality

The NCWAP analysis contains an extensive description of the water quality conditions within the basin as well as an exhaustive description of pool quantity and quality, spawning gravel quality, shade canopy, fish passage and large woody debris conditions within the basin. These descriptions are not repeated in detail here, but instead are summarized below. For a more detailed description of water quality within the Mattole basin, see NCWAP, 2002, pages 110-115, and pages 146-148.

> *"The Mattole River has been placed on a list of water bodies for impairment or the threat of impairment by sediment and temperature as required by Section 303(d) of the Clean Water Act. The 303(d) list describes water bodies that do not fully support all beneficial uses or are not meeting water quality objectives, and the pollutants for each water body that impair beneficial use and water quality.*
>
> *At the time of the listing sediment and temperature were judged to be impacting the cold (COLD) water fishery and associated beneficial uses, described in the Water Quality Control Plan, North Coast Region, Region 1 (Basin Plan, 1996). Nearly all aspects of the cold-water fishery are presumed affected by sediment and temperature pollution, including the migration, spawning and reproduction, and early development of cold-water fish such as coho and Chinook salmon, and steelhead trout.*
>
> *Other beneficial uses of water in the Basin Plan for the Mattole River include municipal, agricultural, industrial, water contact and non-contact recreation, commercial and sport fishing, wildlife habitat and those plant and animal populations associated with terrestrial ecosystems, as*

well as similar attributes in estuarine ecosystems. Aquaculture in the Mattole River is also foreseen as a potential beneficial use in the Basin Plan."

In addition to the NCWAP report, the MRC and its partner groups the Mattole Salmon Group and Sanctuary Forest, recently completed their Integrated Coastal Watershed Management Plan, Foresight 2020 in August 2009, which also contains a description of the water quality within the basin, including discussion of new and emergent issues not described in the 2002 assessment by NCWAP. Excerpts from the Mattole Integrated Coastal Watershed Management Plan Foresight 2020 (MRRP 2009) are reproduced below with the intent to characterize the water quality within the basin to provide the reviewer with sufficient information to make an informed decision about the consequences of implementing the Program.

"There is a large amount of research describing the soft geology and high rate of naturally occurring background sedimentation that occurs in the Mattole, which has been exacerbated by historic and present land use practices (Downie et al. 2003). Due to the high natural and human caused erosion throughout the watershed, the Mattole was listed as Impaired by the EPA and placed on the 303(d) list for both sediment and temperature, and has completed and adopted TMDL allocations from the EPA.

These two pollutants, while not typically thought of as pollutants in the traditional sense, significantly affect the ability of the river to support native salmonids, and have the potential to further impact water quality and other beneficial uses of the watershed. Elevated water temperatures increase the risk of algae blooms, lower the concentrations of dissolved oxygen, and lower the ecosystem's resistance to invasive species and pathogens, further diminishing water quality. The result is degraded salmon and steelhead habitat in most of the basin.

Historic accounts, including early photos (from 1875-1940) and aerial photographs from 1942, portray the Mattole River system with a much different morphology. Pools were deeper. There was far less erosion of main stem river terraces. These historic conditions facilitated thermal stratification, habitat cover, and streamside shading that moderated summertime water temperatures. The river system provided suitable habitat for robust runs of salmonid species, including Chinook salmon, coho salmon and steelhead. Taken together, these changes damaged Mattole salmon and steelhead habitat by reducing aquatic habitat complexity, burying stream channels, and raising summertime water temperatures.

The Mattole's excessive water temperature is the result of reduced streamside trees and increased sedimentation. Without the shade provided by the historic canopy, the river itself is subjected to increased solar radiation. The lack of streamside trees also promotes stream bank erosion, which further perpetuates temperature increases by continually adding sediment to the system, and thus widening stream channels, exposing them to greater solar inputs. The Mattole TMDL document provided a number of maps showing the current and potential shade throughout the watershed, as well as the difference between the two.

The TMDL uses shade as a surrogate measurement for heat entering the stream, as it is a more applicable measurement for land management and decision making (USEPA, 2002). Shade is easily measured in the field, easily modeled, and is the stream temperature factor mostly likely to be altered from natural conditions (USEPA, 2002). Total shade is of most concern on smaller tributaries, which make up the majority of the stream network in the Mattole. Shade has a major

influence on both the mean and maximum water temperatures in any given reach in small tributaries, and is easily affected by human activity (USEPA, 2002).

Shade is less important to main stem temperatures, where water temperature is the result of sediment delivery and channel aggradations (USEPA, 2002). This results in wider channels, shallower maximum depths, and little if any streamside trees. In many cases, the main stem channel is too wide for even tall trees to provide shade. Water temperature is therefore dependent on cold-water inputs from tributaries and groundwater, or the impacts of thermal stratification, where temperature at the bottoms of deeper pools maintains a lower temperature than the water at the surface.

According to the MSG, the upper Mattole provides the majority of thermally suitable main stem over summering habitat for juvenile salmonids (Figure 7-10). Water temperatures in the upper river are significantly cooler than in the lower main stem. However, only the uppermost temperature monitoring locations have suitable summer thermal habitat for juvenile coho; more areas are thermally suitable for steelhead survival due to their greater temperature tolerance.

Other concerns with water quality are just emerging and are not yet well characterized as to severity and extent. These include the likely impacts of diesel spills, nutrient pollution, bacteria and herbicides. Diesel fuel is delivered widely in the watershed to power residential electric generators. Accidents in the storing and handling of diesel are not uncommon. Fertilizers and nutrient fortified soil are used in potentially significant quantities for agriculture. Herbicides are used to aid coniferous forest regeneration on industrial forestlands, which constitute 14% of the watershed.

There is no municipal sewage treatment in the Mattole and all sewage is handled through septic or pit systems. The total number of traditional septic systems in the watershed is unknown due to a lack of permitted building, but it is assumed that every developed parcel either contains a septic or a pit system."

2.0.7 Fisheries and Aquatic-Riparian Conditions

As is the case with water quality, both the NCWAP analysis and the Mattole Integrated Coastal Watershed Management Plan, Foresight 2020 (MRRP 2009) contain detailed descriptions of the fishery conditions within the Mattole neither of which are repeated here. Excerpts from the NCWAP report are repeated below. For a more detailed description of the Fisheries and Aquatic-Riparian conditions within the Mattole basin, see NCWAP, 2002, pages 115-134, and pages 148-151.

"Fishery resources of the Mattole Basin include fall-run Chinook salmon, coho salmon, winter-run steelhead trout, and summer -run steelhead trout. Other fish present in the Mattole Basin include sticklebacks, lampreys, and sculpins (Table 16). Two notable fish species that have apparently been extirpated in the Mattole Basin are spring-run Chinook salmon (CDFG 1972) and green sturgeon (Moyle et al. 1989)."

Table 2-9, from the NCWAP contains a list of fish species that can be found in the Mattole Basin which is reproduced below:

Table 2-9

Table 16. Fish species in the Mattole Basin.

Common Name:	Scientific Name:
Anadromous	
Chinook salmon	*Oncorhynchus tshawytscha*
Coho salmon	*Oncorhynchus kisutch*
Rainbow trout	*Oncorhynchus mykiss*
Pacific lamprey	*Lampetra tridentata*
Freshwater	
Coast Range sculpin	*Cottus aleuticus*
Prickly sculpin	*Cottus asper*
River lamprey	*Lampetra ayresi*
Western brook lamprey	*Lampetra richardsoni*
Sacramento sucker	*Catostomus occidentalis*
Threespine stickleback	*Gasterosteus aculeatus*
Marine or Estuarine Dependent	
Pacific staghorn sculpin	*Leptocottus armatus*
Shiner perch	*Cymatogaster aggregata*
Redtail surf perch	*Amphistichus rhodoterus*
Walleye surf perch	*Hyperprosopon argenteum*
Speckled sanddab	*Citharichthys stigmeus*
Starry flounder	*Platichthys stellatus*
Surf smelt	*Hypomesus pretiosus*
Topsmelt	*Atherinops affinis*

> *"Many fish in the Mattole Basin use the estuary during some part of their life history. Anadromous salmonids and pacific lampreys pass through the estuary on migrations. Threespine stickleback (Busby et al. 1988), pacific staghorn sculpin, prickly sculpin, shiner perch, and topsmelt spawn within the estuary. Juvenile Chinook salmon, some steelhead trout, threespine stickleback (Busby et al. 1988), Coast Range sculpin, shiner perch, starry flounder, surf smelt, and topsmelt rear in the estuary."*

The NCWAP analysis and report contains a brief discussion of riparian habitat as well as an assessment of amphibian conditions within the basin (pages 134-135) which is excerpted below:

> *"Southern torrent salamanders (Rhyacotriton variegates) and tailed frogs (Ascaphus truei) are two of the many amphibian species that inhabit the Mattole Basin. Like coho salmon, these two amphibians are sensitive to temperature and sediment. However, they live in small, lower order streams, upstream from coho salmon habitat. Therefore, torrent salamander and tailed frog populations can serve as indicators of environmental stressors such as increased water temperature and excessive fine sediment (Welsh and Ollivier 1998), which are also potential habitat problems for coho salmon."*

As expected, the Mattole Integrated Coastal Watershed Management Plan, Foresight 2020 (MRRP 2009) contains a description of the fishery and aquatic resources of the Mattole basin, which is excerpted below (for more information see pages 28-32 of the plan):

> *"The Mattole supports Chinook salmon, coho salmon, anadromous steelhead, resident steelhead (rainbow trout), as well as sticklebacks, lampreys, and sculpins. Of these, the three species of salmonids, coho salmon, Chinook salmon, and steelhead are listed as threatened under the Federal Endangered Species Act, and as such have been the foci of local monitoring and restoration efforts. Coho salmon are also listed as Threatened under the California Endangered Species Act.*

The coho salmon population of the Mattole is part of the Southern Oregon/Northern California Coast (SONCC) coho salmon Evolutionarily Significant Unit (ESU), composed of populations inhabiting coastal streams between Punta Gorda, California and Cape Blanco, Oregon. The Chinook salmon population of the Mattole is part of the California Coastal (CC) Chinook salmon ESU, composed of populations inhabiting coastal streams from Redwood Creek in Humboldt County south through the Russian River (70 FR 52488). The steelhead population of the Mattole is part of the Northern California (NC) Steelhead Distinct Population Segment, composed of populations inhabiting coastal streams from Redwood Creek in Humboldt County south through the Gualala River (70 FR 52488).

The Mattole watershed populations of coho salmon, Chinook salmon, and steelhead are all considered Functionally Independent Populations of their respective ESUs (Bjorkstedt et al. 2005, Williams et al. 2006). This designation outlines the importance and necessity of recovering the Mattole salmonid populations in order for the ESUs to recover as a whole.

In 1960, US Fish and Wildlife personnel extrapolated from the extent of existing spawning gravels that 10,000 pairs could potentially utilize the watershed. DFG (1965) made historical population estimates of 5,000 Chinook salmon, 2,000 coho salmon, and 12,000 steelhead. NOAA Fisheries reported the same historical estimate of Chinook salmon at 5,000 individuals (Myers et al. 1998). Since 1960, declines have been documented in the Mattole, with most observers indicating severe declines in the early 1980s.

Spawning habitat is no longer considered a limiting factor in the Mattole. Surveys find low rates of redd superimposition and spawning locations appear to be primarily determined by the timing and size of flows, so it seems clear that there is far more suitable spawning habitat available than there are spawning adults to utilize it.

Water quality and concurrent salmonid population monitoring indicates rearing habitat is a crucial limiting factor for Mattole salmonids. Temperatures recorded at monitoring locations suggest a lack of suitable thermal habitat for all species of juvenile salmonids in the main stem downstream of Bridge Creek (RM 52.1). Suitable thermal habitat for over summering juvenile coho exists only in the uppermost main stem locations. Low summertime flow and resulting poor water quality, especially low dissolved oxygen, further deplete available habitat in the coolest areas of the main stem. In recent years (2002-2007), MSG dive surveys have documented fewer coho than in the past (1983-2001).

The Mattole Basin contains about 692 miles of blue-line streams (CGS Geologic Report-Table 10). The blue-line streams were chosen because they are a consistent depiction of the major streams within the network and include perennial, ephemeral, and intermittent streams. The river system within the Mattole Basin is arranged in a contorted or irregular drainage pattern. The mainstem of the Mattole River flows in a general northwesterly direction, parallel to the structural grain of the Franciscan Complex. Tributaries to the mainstem flow generally to the northeast or southwest, perpendicular to the Mattole River, and often the larger tributaries branch upstream into channels that trend parallel to the mainstem.

Streams are about evenly distributed spatially throughout the subbasins of the study area. That is the cumulative lengths of streams within a subbasin, expressed, as a percentage of the total stream length for the study area, is similar to the area of each subbasin expressed as a percentage of the total study area. The stream density calculated for the entire Mattole Basin study area is 2.3 (miles/square mile). Stream density varies considerably between areas

underlain by bedrock and alluvial terrains; these density values forms the point of comparison for portions of the study area.

Table 2-10 below shows the miles of anadromous fish habitat by subbasin, according to GIS information on file with the MRC GIS department.

Table 2-10
Miles Of Anadromous Fish Habitat By Subbasin

Subbasin	Steelhead Only	Coho And Steelhead	Coho, Chinook And Steelhead	Chinook And Steelhead	Grand Total	Anadromous Stream Density (Miles/Mile^2)
East_1	13.8		14.5		28.3	0.70
East_2	11.6	2.3	14.6	0.2	28.8	0.74
North_1	13.7	0.0	3.2		17.0	0.32
North_2	10.3		7.9	4.5	22.7	0.50
South_1	12.3	4.8	17.0		34.1	1.24
West_1	8.3	1.0	18.0	9.3	36.6	0.91
West_2	16.7	0.5	28.0		45.1	0.90
Grand Total	**86.7**	**8.6**	**103.2**	**14.1**	**212.5**	**0.72**

A search of the NDDB database from 2009 and a current list from the USFWS Arcata office for Humboldt County (document Number 55346743-11305) shows that there are nine "special status" aquatic or riparian species within the basin. Three species are federally listed as threatened. From the state list, three species (all fishes) are listed as threatened and the balance are listed as species of special concern.

Table 2-11
Special Status Fish and Amphibian Species

Scientific Name	Common Name	# Occurrences	Fed List Status 1/	CA List Status 1/	CNPS LIST
Ascaphus truei	western tailed frog	5	None	SpcSpCon	
Emys marmorata marmorata	Northwestern pond turtle	None	Candidate	SpcSpCon	
Oncorhynchus kisutch	coho salmon – Southern Oregon Northern CA Coast ESU	N/a	Threatened	Threatened	
Oncorhynchus mykiss	Northern California steelhead	N/a	Threatened	Threatened	
Oncorhynchus tshawytscha	CA coastal Chinook salmon	N/a	Threatened	Threatened	
Plethodon elongatus	Del Norte salamander	None	None	SpcSpCon	
Rana aurora aurora	Northern red legged frog		SpcSpCon	SpcSpCon	
Rana boylii	foothill yellow-legged frog	3	SpcSpCon	SpcSpCon	
Rhyacotriton variegates	Southern torrent salamander	N/a	SpcSpCon	SpcSpCon	

1/ SpcSpCon = species of special concern

2.0.8 Terrestrial Wildlife Species

Terrestrial wildlife species (those not dependent on constant access to standing or flowing water for their survival or reproduction) in the Mattole have been much less studied than other resources such as water quality, fisheries and aquatic conditions (water-dependent wildlife species are discussed in Chapter 3.4). Important resources for these species include the BLM King Range Resource Management Plan (BLM 2004), the Mill Creek Cooperative Management Plan (Mill Creek Watershed Conservancy et al. 2004), and the draft Gilham Butte Cooperative Management Plan (Middle Mattole Conservancy and Mattole Restoration Council 2005), which contain excellent descriptions of the relationship between vegetative habitat and wildlife. These general relationships can be expected to approximate wildlife conditions throughout the Mattole watershed. Descriptions from the King Range Resource Management Plan are excerpted:

> *Douglas-fir habitat supports a high abundance of wildlife (Mayer and Laudenslayer 1988). A number of amphibians do well in this habitat type, including the northwestern salamander, Pacific giant salamander, Olympic salamander, black salamander, clouded salamander, tailed frog, and ensatina salamander. Northwest coastal coniferous forests reportedly support higher bird densities than any other forest type in North America (Weins 1975, reprinted in Mayer and Laudenslayer 1988). Typical bird species include western flycatcher, chestnut-backed chickadee, golden-crowned kinglet, Hutton's vireo, solitary vireo, hermit warbler, varied thrush and spotted owl. Common mammals include deer mouse, dusky-footed woodrat, western red-backed vole, creeping vole, Douglas' squirrel, Trowbridge's shrew, and shrew mole.*
>
> *Small areas of coastal oak woodland habitats occur on the eastern edge of the KRNCA, with more extensive acreage on adjoining private lands in the Mattole Valley. This habitat type is home to at least sixty mammal species and 110 bird species (Mayer and Laudenslayer 1988), many of which include acorns for their diet. Several woodpecker species utilize this habitat, especially the acorn woodpecker. Acorn woodpeckers store acorns in granary trees, with the same tree often shared by a family for several generations. Western scrub jays similarly store or cache acorns that are often forgotten and end up germinating. California quail and wild turkeys also rely heavily on acorns during fall and winter. Many rodent species, such as dusky-footed woodrat and western gray squirrels, cache acorns, and deer and black bear also consume them. Oak woodland is also a rich habitat for herpetofauna, supporting approximately 20 reptile and amphibian species; the arboreal salamander, skinks, gopher snake, and slender salamander are common (Mayer and Laudenslayer 1988).*
>
> *Vegetation associated with forested riparian areas is characterized as the Red Alder Series (Sawyer and Keeler-Wolf 1995). This series colonizes substrates that are seasonally or permanently flooded or saturated, such as along the margins of perennial and ephemeral watercourses, and in some forests on the immediate coastline. Even-aged stands of deciduous tree species such as red alder (Alnus rubra) are typical of these habitats, with sword fern (Polystichum munitum), chain fern (Woodwardia fimbriata), and other herbs and shrubs dominating the understory. Such riparian habitats provide food, nesting, and migration/dispersal corridors for many wildlife species. Black salamander, tailed frog, and rubber boa are common herpetofauna (CWHR 2001). Common bird species include Anna's hummingbird, yellow-breasted chat, California yellow warbler, winter wren, orioles, black-headed grosbeak, and many other song birds. Typical mammals include Virginia opossum, skunks, raccoon, gray fox, and river otter (CWHR 2001).*

…grasslands, usually less than one meter in height, [are] composed predominantly of sod/tussock-forming perennial grasses in the California Oatgrass, Idaho Fescue, Pacific Reedgrass, Introduced Perennial Grassland, and California Annual Grassland Series (Sawyer and Keeler-Wolf 1995). These vegetation series are dominated by both native perennial grasses such as California oatgrass (Danthonia californica), Pacific reedgrass (Calamagrostis nutkaensis), seacliff bluegrass (Poa unilateralis), and non-native annual and perennial grasses such as velvet grass (Holcus lanatus), hairy oatgrass (Danthonia pilosa), hedgehog dogtail (Cynosurus echinatus), bromes (Bromus ssp.), and fescues (Festuca ssp.). Isolated islands of native stands of Idaho fescue (Festuca idahoensis) and California melic (Melica californica) also exist along the coast and represent rare examples of remnant, unaltered coastal prairies. Herpetofauna typical of grasslands include red-legged frog, Pacific tree frog, western fence lizard, common garter snake, and western rattlesnake (Mayer and Laudenslayer 1988). Birds that commonly breed within this habitat include savannah sparrow and western meadowlark. Grasslands are important foraging habitat for the turkey vulture, northern harrier, American kestrel, white-tailed kite, peregrine falcon, as well as many song birds. Mammals that utilize this habitat include the black-tailed jackrabbit, Roosevelt elk, striped skunk, California vole, pocket gopher, and coyote.

Chaparral habitats are comprised of dense stands of fire-adapted plant communities such as those characterized as Blue Blossom, Manzanita, Chaparral Whitethorn, and Wedgeleaf Ceanothus Series (Sawyer and Keeler-Wolf 1995). Species such as manzanita (Arctostaphylos ssp.), and ceanothus (Ceanothus ssp.) dominate this habitat, where the vegetation rarely exceeds three meters in height. Chaparral often hosts species adapted for sites with unique or unusual edaphic conditions. Shrubs within this habitat provide important shade during hot weather and moderate protection from wind and temperature in winter. Herpetofauna include Pacific tree frog, fence lizard, gopher snake, and rattlesnake. Birds common in chaparral habitats include turkey vulture, red-tailed hawk, California quail, and Anna's hummingbird. Elk, deer, brush rabbits, black-tailed jackrabbit, squirrel, voles, coyote, and striped skunk all utilize chaparral habitats."

A search of the NDDB database from 2009 and a current list from the USFWS Arcata office for Humboldt County (document Number 55346743-11305) shows that there are 22 "special-status*" terrestrial wildlife species that might occur within either the basin or the Program area, as shown in the following table.

*(*Listed by Federal or State databases as Threatened or Endangered, candidate species, species of special concern, etc.)*

TABLE 2-12
Special Status Species in the Mattole Watershed

Scientific Name	Common Name	Fed List Status [1/]	CA List Status [1/]
Accipiter cooperi	Cooper's hawk	None	SpcSpCon
Accipiter gentiles	Northern goshawk	SpcSpCon	SpcSpCon/BOFsen
Accipiter striatus	Sharp shinned hawk	None	SpcSpCon
Aquila chrysaetos	Golden eagle	None	DFG FP/BOFsen
Ardea alba	Great egret	None	BOF sen
Arborimus albipes	White footed tree vole	Candidate	SpcSpCon
Arborimus pomo	Red tree vole	None	SpcSpCon
Ardea herodias	Great blue heron	None	BOF sen
Bonasa umbellus	Ruffled grouse	None	DFG WL
Brachyramphus marmoratus	Marbled murrelet	Threatened	Endangered
Chaetura vauxi	Vaux's swift	Threatened	SpcSpCon
Contopus cooperi	Olive sided flycatcher	SpcSpCon	SpcSpCon
Corynorhinus townsendii	Townsend's big eared bat	None	SpcSpCon
Dendroica occidentalis	Hermit warbler	SpcSpCon	None
Empidonax difficilis	Pacific slope flycatcher	SpcSpCon	None
Empidonax traillii brewsteri	Little willow flycatcher	SpcSpCon	Endangered
Falco peregrinus	Peregrine falco	Delisted	Endangered/BOFsen
Haliaeetus leucocephalus	Bald eagle	Delisted	Endangered/BOFsen
Pandion haliaetus	Osprey	None	SpcSpCon/BOFsen
Progne subis	Purple martin	None	SpcSpCon
Martes pennanti pacificus	Pacific fisher	Candidate	SpcSpCon
Martes americana humboldtensis	Humboldt marten	Sensitive	SpcSpCon
Strix occidentalis caurina	Northern spotted owl	Threatened	Threatened

[1/] SpcSpCon = DFG species of special concern, BOF sen = Board of Forestry sensitive species. DFG WL = DFG Watch List, DFG FP = DFG fully protected

A search of the California Wildlife Habitat Relationship System online database was conducted on February 15, 2011 for Humboldt and Mendocino Counties and in particular for the WHR types most likely to occur within Program harvest areas (DFR5&6, MHC5&6). The results of this search included eight mammal species, of which four also turned up on an NDDB search and are discussed in detail in Section 3.18, and four species (American badger, California wolverine, hoary bat, and Sonoma tree vole) which were not listed on the NDDB search and which are not known to be found within the basin and are not discussed in Chapter 3. The two bird species noted on the CWHR search, the northern goshawk and ruffed grouse, are discussed in detail in Section 3.18.

Two invertebrates, the Mendocino leptoneitid spider and the Pomo bronze shoulderband snail, both state endemic special species, were noted on the CWHR search as possible residents of these vegetation types, but little information about these species could be obtained and they are not discussed further in this document.

2.1 Proposed Program – Mattole Forest Futures Program

Under the Program, private forest landowners within the 156,484-acre Program area would implement a range of treatments designed to improve forest conditions in the Mattole basin. These treatments would vary depending on existing vegetation, slope stability, and proximity to streams or improvements. Although the PTEIR will be valid until an indeterminate point in the future when conditions will have changed significantly, it was necessary to select a time frame for analysis. Treatments are analyzed in the PTEIR as they might be implemented during the next 50 years (longer for the Greenhouse Gas section and parts of the Timberland Resources section), based on informed assumptions regarding landowner interest, timber quantity and quality, management accessibility, maturity of timber stands; and other resources such as wildlife habitat, terrain, slope stability, access, road conditions, etc. Timber prices and the variation in timber markets over time has been used to model price trends for timber originating from the Program area and help determine the financial feasibility of predicted harvests. (In the event that conditions change substantially enough before the end of that 50-year time horizon to cast doubt on the projected environmental effects and future conditions, a supplemental analysis could then be conducted to extend the lifetime of the EIR.)

The range of permitted prescriptions under the Program is limited to those that are considered "light touch". Intensive silvicultural systems such as Clearcut, Rehabilitation, Variable Retention, Shelterwood (all steps) and Seed Tree (all steps), are <u>not</u> included in the range of acceptable prescriptions. Three standard prescriptions: Selection, Group Selection, and Commercial Thinning (as described in Section 913.2 & 3 of the Forest Practice Rules (FPR)), are considered suitably "light touch", once appropriate "sideboards" particular to this Program are added. Given the conditions of the forests of the Mattole basin (as described herein), standard prescriptions may not be adequate to achieve the goals of the Program. Accordingly, the Program includes an Alternative Prescription customized to the forest conditions of the Mattole that is termed the All-Aged prescription, as described in 2.1.A.2.d below.

For those who choose to participate in the Program, it includes restrictions on silvicultural practices, logging methods, and other timber management-specific practices, as well as requirements that apply to harvest-related operations conducted under the umbrella of the Program, including upgrading of culverts and roadways, avoidance and protection of unstable geological features, restrictions on operations during wet conditions, and limits on new road construction.

The balance of this chapter describes the Program and alternatives to the Program. Section 2.1 describes the detailed Program practices and treatments and how they might be applied to each of the vegetation treatment areas. Section 2.2 details the methodology used to project harvest under the Program. Section 2.3 describes elements that would be common to all alternatives, including the no-project alternative. Sections 2.4 to 2.6 describe three alternatives to the Program, since CEQA requires that a range of feasible alternatives to the proposed Program be developed and compared. Section 2.7 compares the alternatives, while section 2.8 describes several alternatives that were considered but eliminated from detailed consideration. Section 2.9 identifies the "environmentally superior alternative" as required by CEQA Guidelines at §15126.6(e)(2).

Proposed Program (project) activities are projected to take place on about 15,038 acres of private forest lands over the 50-year analysis period, some of which may be entered more than once. All of the forests that the Program is designed to treat have been logged to one extent or another, some several times. One of the Program goals is to encourage landowners who are interested in timber harvest to opt for long-term, sustainable timber management practices on their properties. Stands brought under sustainable management as envisioned in the Program are expected to produce timber in approximately 15- to 20-year re-entry cycles, with increasing inventory and growth over time as stands are managed for larger, more mature trees.

A. Silvicultural Prescriptions

Background: The Mattole basin has been extensively harvested over the last 60 years, with less intensive harvest documented in coast redwood stands as far back as 125 years ago. Today, however, the landscape is recovering and much of the basin contains well-developed mid-successional forest stands. Many of these stands are not currently suitable for long-term sustainable timber management because they either contain a preponderance of low-value Group B species (as defined in Section 895.1 of the FPR) or because the higher-value Group A species they do contain are not yet of commercial size. In some stands, recovery lags because wildfire or the tenacity of tanoak sprouts has affected the trajectory of post-logging succession.

Goals: The Program silvicultural treatments are designed to accomplish a variety of goals, as follows:

- Encourage the development of mature to late successional stands
- Maintain or improve wildlife habitat, particularly by developing late-seral habitat for listed species
- Increase the average size of trees so that timber stands become more commercially and ecologically valuable over time
- Improve water quality through reduction of controllable sediment sources
- Improve stocking of Group A species so that long-term sustainable timber management becomes more feasible
- Reduce the danger of catastrophic fire
- Manage existing stands, rather than “clearcut and start over”
- Retain legacy trees that are large and old to provide stand structural diversity
- Maintain or improve the health and structure of riparian stands

1. Range of Silvicultural Prescriptions:

The range of permitted prescriptions under the Program is limited to those that are considered “light touch”. Intensive silvicultural systems such as Clearcut, Rehabilitation, Variable Retention, Shelterwood (all steps) and Seed Tree (all steps), are not included in the range of acceptable prescriptions. Some standard prescriptions (as described in Section 913.2 & 3 of the FPR) can be considered suitably “light touch” once appropriate sideboards are added particular to the Mattole Forest Futures Program. These include Selection, Group Selection, and Commercial Thinning. However, given the conditions of the forests of the Mattole

basin, these prescriptions may not be adequate to achieve the goals noted above. Accordingly, the Program contains an Alternative Prescription customized to the forest conditions of the Mattole that is termed the All-Aged prescription, as described below. The following four silvicultural prescriptions are available under the Program:

a) **Commercial Thinning** is removal of trees from a young-growth stand to improve the health and growth rate of the stand. Post-harvest stocking requirements, as measured by basal area, are specified in the FPRs. On Site II or III lands, the most common site classes, 100 square feet basal area per acre (sq ft/ac) must be retained across the stand after timber operations are completed (See the FPRs for other site classes). However, additional requirements to retain higher stocking levels after harvest apply under the Program, as described below.

b) **Individual Tree Selection** is used to establish or maintain a balanced uneven-aged stand structure: Uneven-aged management promotes growth on leave trees across a broad range of diameter classes and encourages natural regeneration. According to the FPR's, on Site II and III lands, 75 sq. ft. ba/ac must be retained on average across the stand after harvest (See the FPRs for other site classes). However, additional requirements apply to retain higher stocking levels after harvest, as described below. Also, at least 15 ft^2 per acre of seed trees greater than 18" dbh must be retained.

c) **Group Selection**, like individual tree selection, promotes an uneven-aged structure across the stand, while deliberately creating openings where regeneration is to be established. No more than 20% of the stand may be comprised of group openings in any entry. Outside of the openings, the same stocking standards as for the Selection method apply, including the retention of 15 ft^2 per acre of seed trees greater than 18" dbh. Special provisions for the Program specify that no openings larger than 1 acre may be created unless there is retention in the opening: openings of 1 to 2.5 acres may be created as long as 15 ft^2 of basal area per acre are retained in structural stand elements such as snags, wildlife habitat trees, legacy trees (of Group A or B species), and/or patches of advance reproduction of Group A species. Where appropriate and feasible these retention elements should be dispersed across the opening and clearly within the confines of the polygon boundary. The survey protocols described in 14CCR 913.2(a)(2)(B) shall be employed to assess achievement of the stocking standards.

d) **The All-Aged Prescription** is specific to this Program and is designed to address specific on-the-ground challenges to forest management faced by landowners in the Mattole watershed. Many forested acres in the Mattole are so dominated by hardwoods that commercial harvest is not economically viable, and landowners are not interested in or cannot afford to use intensive rehabilitation prescriptions. The all-aged prescription has been developed in order to allow landowners to increase the proportion of Group A species in stands currently dominated by Group B species, through both initial and successive entries. The goal of the prescription is to move hardwood-dominated stands toward a multi-aged stand with a higher proportion of Group A (conifer) timber species, containing a diversity of age classes and forest structures across the management area, which can be commercially and sustainably managed over time.

Conifer-dominated stands are not eligible for this prescription. The all-aged prescription may only be used if the conifer basal area is less than 50 percent of the total basal area in the proposed PTHP unit, and if the total basal area of conifers over 5 inches in diameter is les than l50 ft^2 per acre.

The all-aged prescription incorporates elements of both the even-aged and uneven-aged prescriptions defined in the FPR, allowing for more flexibility in harvest and reforestation methods and in assessing post-harvest stocking levels than is represented by either prescription alone. It is most similar to the Transition prescription (14CCR 913.2(b)) with some important differences explained below.

Under the all-aged prescription, trees are removed individually across the stand and/or in small groups. Upon completion of operations, at least 100 sq ft/acre basal area must be retained outside of group openings, 50 sq ft of which must be conifers. Notable differences from the transition and group selection prescriptions include: group openings must be planted with conifers, stocking plots may not be offset to avoid group openings, and planted seedlings may be used to meet stocking requirements.

After harvest, not more than 20% of the harvest area may be occupied by small group openings. An individual small group opening may not exceed 2.5 acres in size, and groups must be separated by logical logging areas (these could be unharvested areas or areas treated by individual tree selection harvest). Under the all-aged prescription, group cuts over 1 acre in size must retain structural stand elements such as snags, wildlife habitat trees (see Stocking Standards below), legacy trees (of Group A or B species), and/or patches of advance reproduction of Group A species. These residual stand components must equal at least 15 sq ft ba/ac in the group openings.

In addition, outside the group openings but within the PTHP area, the RPF must address retention of seed trees as defined in the Transition prescription [913.2(b)(6)]. In summary, this requires retention of 15 sq. ft. BA of seed trees >12 inches dbh for all site classes. For the sake of practicality, no distinction is made between site classes for this retention requirement. The seed trees to be retained must be in the 18-inch or greater diameter classes, if enough are present to meet the basal area requirement. If not, all trees >18 inches dbh must be retained, along with enough trees >12 inches dbh to fill out the seed tree basal area requirement.

Application of the all-aged prescription must increase the proportional stocking of Group A vs. Group B species by means of leave-tree retention and post-harvest regeneration. Group B species will need to be removed in order to meet this requirement. Those removals shall take place within the lifetime of the same PTHP as the conifer harvest. The RPF shall explain in the PTHP what methods will be used to ensure that the prescription results in a substantially greater proportion of Group A versus Group B species.

Regeneration – all aged prescription: Group openings shall be planted with conifers. The plan submitter must control competition such that all Group A trees counted toward

stocking can achieve a free-to-grow condition (i.e., their crowns must be above the level of hardwood competition and show a rate of growth indicating that they will eventually move into overstory stocking).

In all-aged harvest entries subsequent to the first harvest entry, the post-harvest conifer % of BA must be 10% higher than the pre-harvest proportion from the previous entry. If it appears during or after the harvest that the stand may not meet the +10% standard, the situation can be remedied by cutting additional hardwoods. After two or at the most three entries, the stand would necessarily contain over 50% conifers by basal area, and, under the Program, would be managed under the selection system with its associated requirements. The all-aged prescription shall not be used more than three times in any stand.

2. Special requirements for the application of these prescriptions:

Growing Larger Trees
To support the project's goal of growing larger trees, a restriction designed to prevent high-grading and thinning from above will apply to **all prescriptions** in the Program. The restriction is that half of the largest-diameter conifer trees within each stand must be retained. The largest-diameter trees in each stand are defined as those whose diameters are within the upper 30% of the conifer basal area by diameter class distribution. Additionally, at least 25% of the trees within the top 15% of the basal area distribution must also be retained. Trees within zones mandated as no-cut under the Program do not count toward this retention. (See RPF responsibilities below.) The objective of this provision is to ensure that the pre-harvest diameter distribution is generally maintained by removing trees from across this 30% range and not concentrating removals in the largest diameter classes. Unless clearly explained and justified in the PTHP and approved by CAL FIRE, concentrating large tree removals in the largest size classes is not considered an appropriate application of the Program. Financial elements such as high log prices or landowner hardships are not justifiable causes for CAL FIRE to grant variances against this provision.

Developing Higher Conifer Densities though Time: In order to ensure that harvesting under the Program contributes to the goal of improving the stocking of conifer species, a graduated leave requirement shall apply to the commercial thinning, individual tree selection, and group selection prescriptions (but not the all-aged prescription as described below). These requirements are intended to facilitate building conifer stocking until it can be maintained above 150 ft2 of basal area.

1. <u>Constraints on conifer stocking for first PTHP</u>:

If pre-harvest conifer basal area is less than 140 ft^2: leave 70% of pre-harvest conifer BA, else
If pre-harvest conifer basal area 140 to 165 ft^2: leave 100 ft^2 of conifer BA, else
If pre-harvest conifer basal area greater than 165 ft^2: leave 60% of pre-harvest conifer BA.

2. Constraints on subsequent PTHP's:
   Leave 20% more conifer BA than was left after the previous entry, or 150 ft^2 of conifer, whichever is less. In any case, at least 60% of the conifer BA present before the current harvest must be retained post-harvest even if this is greater than 150 ft^2.

3. Stocking Standards:

For the commercial thinning, individual tree selection and group selection prescriptions, stocking must be met immediately post-harvest and shall be assessed using the sampling methods described in Article 5, sections 1070 – 1075. In addition, application of all the above-noted prescriptions must maintain or increase the proportional stocking of Group A vs. Group B species immediately post-harvest. If group B species need to be removed in order to meet this requirement, those removals shall take place at the same time as the conifer harvest. If the post-harvest stand is considered "obviously stocked" then the post-harvest inventory (data-collection) survey is not required.

For the all-aged prescription: Upon completion of operations, outside of group openings at least 100 sq ft/acre total must be retained, including at least 50 sq ft of conifers, or all conifers if the pre-harvest conifer stocking was below 50 ft^2/acre. Within group openings planted conifers can be used to meet stocking following the procedure found in 14CCR 913.5. Stocking shall be measured using the sampling methods described in Article 5, sections 1070 – 1075 and can be a combination of basal area and 300 point-count standard. Stocking plots may not be offset to avoid group openings.

4. Responsibilities of RPF under all Program Prescriptions:

The RPF shall delineate **stands** to be managed under the Program for which individual inventory data will be collected. Stand typing shall make use of aerial imagery of sufficient quality and at a proper scale such that stands can be accurately delineated. Further guidance on stand delineation is provided in Appendix C. Generally 10 acres should be considered the minimum mapping unit, but delineation of smaller polygons may be warranted if their inclusion in the surrounding type would compromise development of an accurate inventory estimate now and into the future. In general, any stratum that comprises more than 15% of the total plan area, whether in a single polygon or multiple distinct stands geographically dispersed across the PTHP, should be considered a separate stand.

Harvest units can contain multiple stands (each with their own dataset) that will all be treated under the same silvicultural system (e.g. Single Tree Selection, Group Selection, etc.). In order to facilitate tracking stand conditions over time, it is recommended that, whenever feasible, identifiable features such as roads, streams, ridges and property lines be used as polygon boundaries. *(Note: Please see Appendix C for additional discussion related to PTEIR requirements to differentiate proposed PTHP areas into unique stand types.)*

RPFs shall employ standard cruising techniques recognized in forestry texts. Each PTHP shall include a section that describes the inventory sampling scheme that was employed to establish the pre-harvest conditions. The description of the cruise design shall

at minimum describe instruments used in the cruise, plot layout (fixed, variable, strip, and spacing), variables measured, and how borderline trees were addressed. Besides demonstrating that the baseline has been properly assessed, this information will be necessary so that RPFs in the future can conduct comparisons between the new and old inventory in order to demonstrate ownership progress in meeting goals of the program.

Further, at the time the inventory is conducted, each cruise plot shall at least be temporarily identified with flagging at plot center. The inventory design shall further be documented by including a cruise plot map consisting of either a topographic or planimetric map that identifies plot locations and stand type boundaries.

Development of **stand tables** that provide estimates of the pre- and post-harvest stocking and basal area per acre are a required element of each PTHP submission. For each stand, stand tables shall be provided for trees over 5 inches in diameter. For conifers, the tables must show trees per acre by 2-inch diameter class, and basal area per acre by 2-inch diameter class. For hardwoods, the tables need only to show the total basal area per acre. The purpose of this requirement is to document the status of conifer vs. hardwood stocking in each stand before harvest and to develop the large-tree retention requirements.

The PTHP submitter shall indicate the diameter above which 30% of the conifer basal area exists and will be restricted to harvesting fewer than half the conifers above this diameter. The PTHP submitter will also have to disclose the diameter above which 15% of the conifer basal area exists and be restricted to harvesting less than 75% of the conifers above this diameter (at least 25% of upper 15% must be retained). Areas of group openings within a stand are included in the stand average metrics, but it is not required to leave half of the largest trees in each opening as long as enough trees are retained in the rest of the stand to balance out those removed from group openings.

Inventory data must have a standard error no greater than +/-15% based on total stand basal area. Areas in which no harvesting is allowed under the Mattole Forest Futures Program due to watercourse or geologic restrictions should not be included in the stand average metrics. Any inventory plots landing in these zones must be either offset or dropped.

The RPF must designate cut or leave trees for each harvest entry. Conifers retained in individual tree selection areas shall be phenotypically superior trees that are free to grow, not over-topped by hardwoods, and with little or no logging damage. .

3. Slash treatment (all prescriptions)

After operations, slash shall not exceed 36” in height across 90% of the harvest area.

4. Snags and LWD (all prescriptions)

All snags shall be retained unless they are a hazard to the operator’s safety. LWD recruitment to Class I and II watercourses is assumed to occur as a result of Watercourse and Lake Protection Zones (WLPZ) requirements on all Class I and II watercourses.

5. Old-growth protection (all prescriptions)

No old-growth trees present on the landscape in 1850 and meeting certain minimum diameters per species, may be cut under the Program. The minimum diameters are 42 inches for coast redwoods, 40 inches for Douglas-fir and grand fir, and 32 inches for hardwoods. In case of suspected violation, standard silvicultural techniques shall be used to infer the dbh of the tree from its stump diameter.

6. Late seral habitat (all prescriptions)

Stands of trees that meet the definition of late seral habitat (defined in the FPR as late successional forest stands of WHR class 5M, 5D, or 6, with an open, moderate, or dense canopy, with multiple canopy layers, and at least 20 acres in size) will be managed to maintain or enhance the late seral nature of the stand during the application of any PTHP.

7. Herbicide use (all prescriptions)

Within the Program, landowners will agree to forgo the use of synthetic herbicides to suppress native vegetation during implementation of a PTHP.

CAL FIRE will take responsibility for enforcing this agreement during implementation of a PTHP, until the PTHP is signed off by CAL FIRE as completed.

8. Re-evaluation of Silviculture Prescriptions with Program Goals

As part of the continuing monitoring process for an approved PTEIR, at each five year anniversary date beginning from the date of original PTEIR approval, the Department will initiate and conduct a review to evaluate the general success of the program's silviculture prescriptions. The Department shall complete its review within 120 days. Where necessary, modifications to these prescriptions may occur following CAL FIRE's consideration of the need for additional review and disclosure per CCR §§ 15162, 15163 or 15164.

B. Roads, Watercourses, Haul, Winter Season and Other Management Prescriptions

Each PTHP will be subject to the California Forest Practice Rules that are in effect at the time of filing. The following measures (which were more restrictive than the 2011 FPRs) were included in the PTEIR in order to further decrease the risk of impacts to watercourses due to forestry operations.

1. New road construction requirements

New road construction is limited to 1000 linear feet per PTHP, unless accompanied by a Sediment Prevention Plan (SPP) and justified as having less impact than the re-use of existing roads. The required components of an SPP are described in Appendix F and shall be submitted to CAL FIRE along with the PTHP.

2. Operations in Class I, II, and III WLPZs (Watercourse and Lake Protection Zones)

If ground-based equipment or other heavy equipment is proposed for use in a watercourse or lake protection zone (WLPZ), the Project shall contain an SPP. Exceptions include: use and maintenance of existing permanent roads (not requiring reconstruction according to standards in the geological flow chart); use of existing bridges and culverts as skid trail crossings; and maintenance of associated drainage facilities or structures. Upgrading of roads to permanent standards by rocking, paving or other suitable surfacing materials to establish a stable operating surface prior to the start of hauling operations, is allowed.

An SPP is not required for log hauling within a WLPZ on existing permanent or seasonal roads from May 1st to October 15th. An SPP is required for construction or use of new roads or temporary crossings in a WLPZ.

Class I WLPZ requirements

Within a WLPZ for all Class I waters, no harvest is allowed within 75 feet of the watercourse or lake transition line or within the channel migration zone, and at least 80 percent overstory canopy must be maintained within the remainder of the WLPZ out to 100 ft or to the edge of the flood prone area (defined in 14CCR 895.1) whichever is greater. For the first 50 feet beyond the edge of the WLPZ, no openings greater than 0.25 acre would be allowed. The overstory canopy within the WLPZ must be composed of at least 25 percent overstory conifer canopy post-harvest, if there was at least 25% conifer canopy prior to harvest.

Class II WLPZ requirements

Within a WLPZ for all Class II waters, no harvest may take place within 30 feet of the watercourse and lake transition line. PTHP filers must distinguish between Class II-Standard (S) and Class II-Large (L) watercourses according to 14CCR 916.9(g)(1) to determine protections in the remainder of the WLPZ. Under the Program, a Class II-S WLPZ must retain at least 70 percent overstory canopy outside the no-cut buffer. Otherwise the Program rules match the new ASP rules. In summary, WLPZs along Class II-S streams have slope-dependent widths of 50, 75 and 100 feet, while Class II-L WLPZ's are always 100 feet wide with 80% canopy retention required outside the no-cut buffer. Conifers must account for at least 25% of the post-harvest overstory canopy, if there was at least 25% conifer canopy prior to harvest. In addition, trees whose roots visibly contribute to bank stability may not be cut.

In addition to information found in 14CCR 916.5 table 1, foresters shall use the presence of the following indicators, to guide their delineation of Class II watercourses, along with additional guidance from DFG:

- Free water during the dry season
- Aquatic plants
- Water-dependent stages of aquatic insects
- Physical characteristics of the channel (e.g., pools, substrate)

- Position of the watercourse in the landscape.

The determination that a watercourse is a Class II does not depend on a minimum number of these indicators being met, and may apply to a spring or seep as well as a stream reach. Any one or more of these indicators and other visible evidence is to be used in the field by the RPF in deciding how to classify a given stream reach.

Class III WLPZ

The following protections would apply to Class III watercourses throughout the Mattole watershed and are drawn from the Anadromous Salmonid rules (14 CCR 916.9 (h)) except as noted.

- A 30- to 50- foot Equipment Limitation Zone (50 feet for slopes >30%; 30 feet otherwise)
- Within 30 feet from the high water mark, to protect bank stability, retain 50% canopy closure when slopes are 50% or less, and 75% canopy closure for slopes 50-65%. Other provisions prohibit cutting on slopes greater than 65% leading directly to a watercourse, until the break in slope. (Program-specific)
- Retain trees whose boles are within or overlapping the channel, or whose roots contribute to bank stability. The latter criterion is clearly met when tree roots visibly appear in the channel bed and/or banks. Further, because crown extent closely mirrors root extent below ground, trees whose crowns extend substantially over the channel should also be considered for retention.
- Retain hardwoods where feasible
- Retain at least 50% of pre-existing understory (Program-specific)
- Retain all snags and large woody debris
- Retain countable trees needed to meet standards in 14CCR 912.7 (50 ft^2 basal area)
- No group selections or openings > 0.25 acre within the 30- to 50-foot ELZ (Program-specific)
- Exceptions pursuant to 14CCR 916.9 (e)(1)(A)-(F) are permitted

Seeps and springs

Seeps and springs shall be evaluated based on similar criteria as are used to determine whether a watercourse should be categorized as a Class II. Any that meet the Class II criteria shall receive the same protections of no-cut buffer and equipment exclusion as if they were part of a watercourse.

3. Limitations on operations due to soil erosion/slope steepness.

No operations shall be allowed which result in a soil Erosion Hazard Rating (EHR) of Extreme, or in the upper half of "High," labeled for the purposes of this PTEIR "Very High."[2] In order to prevent operations from resulting in an "Extreme" or "Very High" erosion hazard rating (greater than 75), the removal of vegetative cover shall be limited so that the sum of the factors contributing to the Erosion Hazard Rating remains at 70 or below.

4. Limitations on operations due to slope stability/geology.

Timber harvest activities on slides and unstable areas that have been mapped as high or very high hazard by CGS (2002) are governed by the accompanying Geologic Flow Charts (Appendix B). Instead of requiring a geologic report for all slides and unstable areas within PTHP areas, a set of three Mattole-specific slope stability flow charts have been prepared by a Professional Geologist (PG) to guide silvicultural prescriptions, yarding methods and road construction under the Program. The flow charts guide the RPF through a site review and delineate the kinds of operations suitable for the site. The intent is for an RPF to use the flow charts and available CGS maps to evaluate each site and apply a set of prescriptions developed by an RG. For silviculture, for instance, the flow charts determine which of the following outcomes applies to each unstable area rated as high or very high hazard:

a. standard Program prescriptions may be used;
b. standard Program prescriptions may be used, but without the creation of group openings;
c. low-risk prescriptions developed for the flowchart by an RG may be used, requiring retention of at least 100 ft^2 of basal area, and only the use of Individual Tree Selection or Commercial Thinning prescriptions; or
d. site needs review by an PG in order to proceed, and a Geologic Report will be required in order to operate on the site.

Mapped slides or unstable areas that have been rated as moderate or lower hazard may be available for standard Program prescriptions, unless otherwise indicated by the geologic flow chart.

No timber harvest is allowed on inner gorges as defined in the FPRs: "a geomorphic feature formed by coalescing scars originating from landsliding and erosional processes caused by active stream erosion," or on a category defined as "Steep Stream-Side Slopes" (SSSS), which includes any slope of 65% or greater rising directly from a stream channel. At the head-wall of an inner gorge, the no-cut zone extends 10 feet beyond the break in slope.

[2] The Erosion Hazard Category "VERY HIGH" is defined for this PTEIR as occurring where the sum of the erosion rating factors is between 71- and 75, a sub-set of the "HIGH" category which ranges from 66-75 (See Appendix II of the FPRs, Tech. Rule Addendum No. 2). The goal of defining a new category of EHR and prohibiting PTHPs from exceeding it is to reduce the potential for surface erosion due to excess removal of vegetative cover.

5. **Skid road limitations.**

   Ground-based heavy equipment operations on slopes greater than 50% are prohibited unless the Project contains an SPP.

   There shall be no construction of new skid trails on slopes over 40% within 200 feet of a watercourse unless the Project contains an SPP.

   The Geologic Flow Chart for Yarding (Appendix B) prepared for the PTEIR by a Professional Geologist must be utilized by the RPF in determining the location and treatment of skid trails.

6. **Operations during winter operating period.**
   No ground-based yarding, road construction, road reconstruction, or road rocking shall occur during the winter period (November 15 to April 1). This measure does not apply to erosion control maintenance of existing roads and watercourse crossings or timber falling.

7. **Logging and log haul limitations due to wetness.**

   No timber harvest activities may take place during measurable rain events (defined as greater than 0.25" in a 24-hour period) with the exception of non-mechanized timber falling, fuels treatment such as hand piling and burning, hand fire line construction, or other activities which do not involve the use of heavy equipment or timber hauling. This measure does not apply to maintenance of existing roads and watercourse crossings. No log hauling will occur during the winter period, except from rocked permanent roads that will not generate waterborne sediment in amounts sufficient to cause a turbidity increase in downstream Class I, II, III, or IV waters, or in amounts sufficient to cause a turbidity increase in drainage facilities that discharge into Class I, II, III, or IV waters or that is visible or would violate applicable water quality requirements.

8. **Inventory of controllable sediment discharge (CSDS) sources and schedule for implementation.**

   An inventory of controllable sediment discharge sources must be developed and implemented for timber harvesting, including the logging area, roads and skid trails used to access or haul timber harvesting materials that are owned by or under the control of the Discharger. The inventory and implementation plan must be designed to prevent and minimize the discharge or threatened discharge of sediment from existing controllable sediment discharge sources into waters of the state. The inventory and implementation plan are commonly known as an "Erosion Control Plan" or ECP, and the specific requirements for the ECP are described in Appendix F.

C. Miscellaneous Management Requirements

1. Archaeology survey requirements

All requirements in the FPRs in effect at the time a PTHP is submitted shall be adhered to.

2. Threatened and Endangered (T&E) survey requirements

MRC intends to make NDDB, CWHR or BIOS search results available to RPFs preparing PTHPs.

Apart from the survey requirements for NSO and murrelets (see below), survey requirements shall be commensurate with the likelihood of species presence. In addition, MRC and USF&WS may develop an incidental take avoidance strategy to provide specific guidance for PTHP submitters.

Large down wood that can provide denning cover for animals may not be salvaged.

3. Owl/Murrelet survey requirements

Before harvest, plan submitters will have to address the possible presence of the northern spotted owl using one of the methods contained in 14 CCR § 919.9. and will apply the most current survey protocol. Murrelet survey requirements must be complied with in areas with potential habitat.

4. Cumulative impact limit on rate of harvest

In order to prevent the potential for cumulative effects due to Program Timber Harvests within the Mattole watershed, a limit on the rate of harvest will apply to PTHPs. No PTHPs will be considered for review by CAL FIRE if the average annual rate of harvest exceeds 1.5% of the watershed area within the subbasin where a PTHP is proposed. The rate of harvest calculation includes plans of operation of any kind filed over the previous 10 years within the subbasin (THPs, NTOs, PTHPs, etc., but not NTMPs or SYPs). The method for calculating the rate of harvest will follow the Clear Cut Equivalent area method described by Klein et al. (2008). The limit on rate of harvest applies only to PTHPs; landowners may submit other harvest plan documents after the 1.5% rate of harvest level has been exceeded.

As a service to landowners, and subject to available funding, MRC intends to maintain planning-watershed-level calculations of ground disturbance by updating harvest history at the start of each year. CAL FIRE maintains records of approved THPs, PTHP's, NTMPs and their Notices of Operations, which will enable plan submitters to calculate the intensity of ground-disturbing activities that have taken place within the decade preceding the submission of a PTHP. PTHP submitters may obtain data from CAL FIRE at: ftp://ftp.fire.ca.gov/forest/ Data is publically available and is organized by county and the georeferenced plan maps are in a directory labeled plan maps. Data is refreshed regularly. Maps are georeferenced and posted to the ftp site within the timeframe of 1st review. New plans are entered into the GIS

after approval. Old data is systematically corrected as new plans and recent aerial imagery inform changes.

5. Monitoring elements

Water quality monitoring may not be required if the NCRWQCB determines that proposed PTHP practices "do not pose a significant threat to water quality." This determination may vary by practice, i.e., some projects may need monitoring while others don't. If monitoring is required, watershed-scale monitoring coordinated by and potentially conducted by MRC is recommended. Monitoring parameters must be negotiated; hillslope monitoring of BMPs is least expensive while water quality monitoring is most expensive, particularly for sediment parameters.

All monitoring data should be coordinated by the MRC and the data stored at MRC for wider use in the basin. Landowners filing PTHPs may be required to participate in monitoring efforts, particularly for tracking wildlife surveys that may be done at a larger scale than individual parcels. Participation in monitoring programs may relieve individuals of obligation to do site-specific monitoring. Monitoring needs must be sensitive to concerns about individual privacy, but benefits in the form of reduced survey costs may be significant for landowners, if larger scale strategies can be employed. Monitoring protocols will need to be negotiated with agencies.

6. Sudden Oak Death

The following practices and standard BMPs to minimize the spread and potential impacts of SOD during PTHP implementation shall be followed. The RPF should inform personnel that they are working in an area with Sudden Oak Death disease, unauthorized movement of plant material is prohibited, and the intent of mitigation measures is to prevent disease spread (14 CCR 1035.2).

A. The RPF shall query the APHIS website and list the species within the PTHP area that are known hosts for SOD [http://www.aphis.usda.gov/plant_health/plant_pest_info/pram/downloads/pdf_files/7cfr30192-10.txt].
B. Host material shall not be removed outside of the regulated area without amendment of appropriate state and federal permits into the PTHP.
C. The PTHP shall serve as a compliance agreement for movement of host material within the regulated area:
    1. The RPF shall describe the destination for all products to be removed from the PTHP area. Additional destinations may be designated and communicated by minor amendment.
    2. Firewood in the form of rounds or split bolts shall not be transported out of the regulated area.

3. Material smaller than 4" in diameter must be moved in a closed container except split firewood bolts.
4. Material greater than 4" in diameter does not require a closed container

D. The LTO shall take reasonable steps to check and remove any host plant debris from log trucks, crummies, loaders, pickup trucks, etc., leaving the plan area to ensure that host plant material does not move from the site. This includes branches, limbs, leaves, etc. stuck in log loads as well as leaves of hosts encased in mud.

E. To the extent practical and feasible, route equipment away from host plants and trees, especially in areas with disease symptoms.. Locate landings, log decks, logging roads, tractor roads, and other sites of equipment activity away from host plants, especially areas with disease symptoms.

F. After working in an infested area, remove or wash off accumulations of soil, mud, and organic debris from shoes, boots, vehicles and heavy equipment, etc. before traveling to an area that is not infested with Sudden Oak Death

G. If water is drafted and used for dust control, draft water from areas upstream of known infestations or from uninfested drainages.

H. If drafting from known infested watercourses, do not water roads with that source in areas that are not known to be infested.

I. Approaches to drafting sites should be sufficiently rocked to minimize accumulating infested soil on drafting vehicles.

J. The PTHP shall be amended to update the above restrictions if the standard restrictions have changed.

K. Particular to the PTEIR - If SOD kills more than 80% of tanoak on 35% or more of the acres in any one subbasin, then the Program's practices associated with the All Aged prescription in that subbasin will be modified to mitigate for the loss of hardwood canopy and mast. If healthy hardwoods are present on site, at least 50 square feet of hardwood basal area must be retained post-harvest in units harvested with the all-age prescription. (Openings may be created, but stocking levels will be averaged across the entire unit.) In the event this provision comes into effect, at least 90 percent of the hardwoods others than tanoak or bay laurel should be left to count toward that hardwood minimum leave requirement, up to an average of 50 ft^2 basal area per acre. Only healthy live hardwoods apparently free from disease would be countable towards meeting stocking targets.

7. Reasonably Foreseeable Related Activities

CEQA requires a project description to include "the whole of an action" (CCR § 15378). In this case reasonably foreseeable actions which may be outside of CAL FIRE's approval authority under the FPRs, but are considered part of the project and may require the permitting or approval of other federal, state or local agencies, include, but are not limited to the following:

- prescribed burning of slash created by logging,
- herbicide applications which might take place either before a PTHP is approved, or take place after the completion period has expired for a PTHP. Herbicides would not be allowed during the life of the PTHP,

- in-stream work associated with the PTHP requiring Fish and Game Approval such as projects/work requiring a 1602 permit,
- precommercial treatment of forest stands,
- operation of existing quarries or development of new quarries for purposes of road rocking associated with PTHPs, and noncommercial forest clearing aimed at slowing the spread of Sudden Oak Death.

2.2 Methodology For Calculating Projected Acreage Harvested For Program And Alternatives

Ownership-Based Analysis

Most landscape level timber management planning documents (Habitat Conservation Plans (HCPs), Sustained Yield Plans (SYPs), USFS Forest Plans, etc.) are developed for single ownerships where the owner is able to state what they intend to do, where and how. In contrast, the Mattole Forest Futures Program could include any of the approximately 900 private forestland landowners in the Mattole watershed who choose to participate. Therefore, evaluating the environmental effects that may occur due to implementation of the Mattole Forest Future Program (and the alternatives required by CEQA) necessitates developing predictions (estimates) of how many acres will be harvested, where the harvests will occur and which treatments will be used (See Appendix A for detailed description of how this was carried out).

Summary of Methods

1. Identify Commercial Timber Landbase

As noted, 156,484 acres of private lands held by approximately 900 landowners in the Mattole Basin support or could support forest or woodland vegetation types in the Mattole Basin. Certain types, such as Coastal Oak Woodland and Montane Hardwood, were eliminated from further analysis due to their lack of occupancy by commercial species, leaving 116,831 acres as shown in Table 2-6. This area was further reduced to exclude stands that are too small or sparse to have commercial value at present or over the first cutting cycle of the Program (20 years). After these areas were eliminated, approximately 86,671 acres within the Program landbase were considered occupied by vegetation types containing trees of the size, species, and density of stocking that potentially could support a commercial timber harvest during the planning horizon (potentially commercial types were “grown forward” in time using computer growth models to estimate their future merchantability).

The distribution of vegetation types was analyzed based on remotely sensed vegetation typing data, i.e. LANDSAT data (see Appendix A). These data are expected to be accurate in terms of quantifying the relative distribution of the vegetation types in the Mattole watershed. However, the precision of the location of each vegetation type polygon is variable. Thus, the total extent of commercial timber types within the Mattole is expected to be accurate, although the location of these vegetation types may vary from the locations depicted on Figure 2-2.

2. Identify Available Landbase

The pool of potential acres based on timber type as described above was then reduced by eliminating areas designated as no-harvest zones by either state regulation or to meet the goals of the Program or alternatives. No-harvest watercourse buffers and (for some alternatives) unstable slopes of certain classifications made up the bulk of the excluded acreage. After elimination of no-harvest areas, an available landbase was calculated for the Program and each alternative. For the proposed Program, the available landbase is estimated at 57,601 acres.

3. Identify Feasible Landbase

The identified available landbase was then subjected to a financial feasibility analysis to determine if particular landowners could likely conduct a viable economic timber harvest operation, considering the size of their timbered landbase, volume of harvestable timber, accessibility, etc. After elimination of non-commercial operations, a feasible landbase was calculated for each alternative. For the proposed project, the feasible landbase as of the beginning of the Program is 22,465 acres. Over time, more acres will grow into feasibility as they develop greater stocking.

4. Identify "Footprint" Landbase

In order to assess the landscape effects of implementing the program, the feasible landbase was reduced in accordance with the propensity of landowners to engage in timber harvest activities, as identified in the public opinion survey conducted during early PTEIR preparation. For each of the first four five-year harvest periods, MRC "rolled the dice" for each landholding to determine whether it would be modeled as being logged. The footprint landbase for the proposed program is estimated at 15,038 acres.

5. Identify Projected Landbase

The final step involved calculating the total number of acres projected to be impacted by timber harvest over the entire period of analysis. While the footprint landbase represents each individual acre projected to take part in the Program and harvested at least once, the projected landbase includes the total area of logging plans expected to be filed for harvest under the PTE|IR, including multiple entries on the same property. For NIPF and industrial landowners the Projected total area of logging units over the 50-year analysis period was estimated at 41,718 acres.

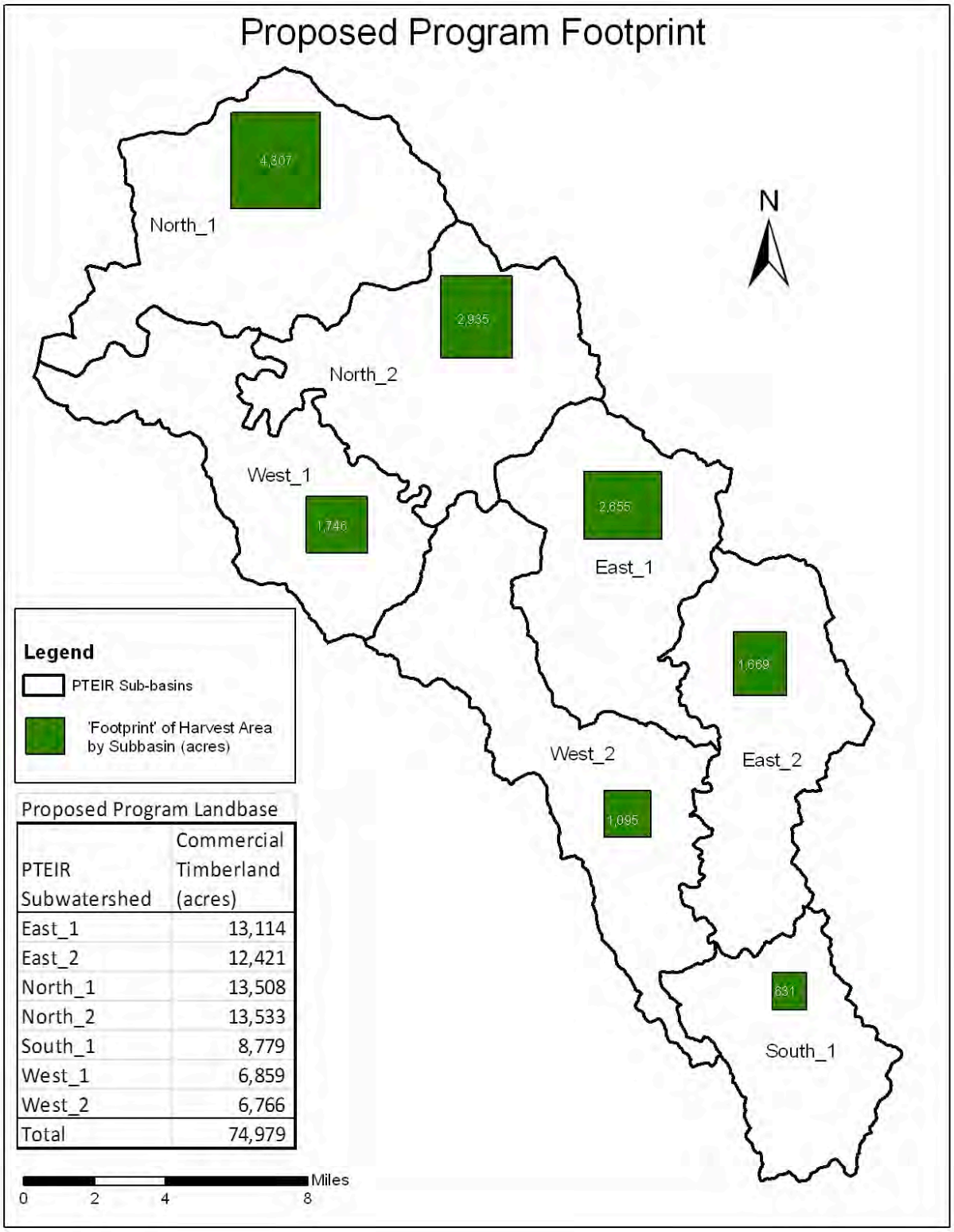
Table 2-13 below shows the breakdown of the proposed Program landbase identified by application of the methodology described in Appendix A, while Figure 2-3 shows the location of the potentially harvestable area in 2010.

To further determine the environmental effects of proposed treatments, the operational harvest landbase was further subdivided into areas projected for harvest using one of the allowed silvicultural prescriptions and related treatments (e.g., slash treatments, road crossing repair). These acres by treatment were analyzed over the 50-year planning horizon and include multiple harvest entries, regeneration and growth, and variability in timber prices projected over time.

Table 2-13
Breakdown of Program Landbase by Acreage

Landbase	Area (acres)
Private land in watershed	156,484
Commercial forest vegetation types	116,831
Commercial Timberland (commercial forest type + adequate stocking)	86,671
Commercial Timberland outside of riparian buffers	74,979
Available Landbase (minus areas excluded from harvest because of geologic instability)	57,601
Feasible Landbase (commercial harvest >=$30,000 net profit)	22,465
Program "footprint" – Estimated harvest acres enrolled in program during analysis period	15,038* **Includes only first-time entries, and does not re-count acres that are reentered during the analysis period (see projected acreage below).*
Projected total acreage of harvest, based on propensity-to-harvest data from public survey). Acres harvested twice are counted twice.	41,718* ** Total acreage of harvest, counting acres with multiple harvests multiple times.*

Figure 2-3



Proposed Program Landbase

PTEIR Subwatershed	Commercial Timberland (acres)
East_1	13,114
East_2	12,421
North_1	13,508
North_2	13,533
South_1	8,779
West_1	6,859
West_2	6,766
Total	74,979

Distribution of Program Harvest Acres by Subbasin by Landowner Type

The distribution of likely harvest across the Mattole during the analysis period was allocated based on the amount of operationally harvestable land in each Program subbasin, and is shown in Table 2-14, for the proposed project.

Table 2-14
Total Acres Projected to be Harvested and Harvest "Footprint"
By PTHP's 2011-2060
Under The Proposed Program
Acres By Ownership Type By Subbasin

	NIPF	Industrial	Total	"Footprint" 1/
East_1	8,094		8,094	2,655
East_2	5,149		5,149	1,669
North_1	7,594	3,500	11,094	4,307
North_2	3,492	3,500	6,992	2,935
South_1	1,777		1,777	631
West_1	5,007		5,007	1,746
West_2	3,605		3,605	1,095
Total	34,718	7,000	41,718	15,038

1/ See definition of footprint in Table 2-13 above.

The total landbase in the proposed program is comprised of 57,601 acres. On this landbase, it is projected that logging plans totalling 34,718 acres will be filed during the 50-year analysis period by NIPF owners, and another 7,000 acres by industrial owners. It should be noted, however, that many of these acres will represent re-entry harvests on the same acres and not previously unharvested acres brought into the program. The analysis recognizes that some landowners who employ the Program will not conduct subsequent harvests, but that some additional landowners who have not participated will enter the program during the analysis period; these effects are assumed to balance out over the analysis period.

In order to predict the future acreage of THPs and PTHP's, the 1993-2007 time period was used to estimate the acreage of each silviculture type for Non-Industrial Forest Landowners (NIPFs). NIPFs used even-aged methods on approximately 30% of the acres and uneven-aged or thinning methods on 70% of acres during this period. For analysis of the program it was assumed that all uneven-aged methods would convert over to PTHP's, while the 30% of even-aged harvests would still use THPs. (For HRC, data obtained directly from the company was used to estimate harvest for that ownership. In order to conservatively estimate potential impact from the Program, the entire projected HRC harvest was estimated to be implemented under the Program. If some of HRC's harvest is carried out under other FPR permitting methods, such as THPs, the Program's impact would be less than projected in this EIR.)

Based on these assumptions, the 2011-2060 projected harvest level represents a 74% increase in harvest levels compared to the '93-'07 time period. This harvest acreage is projected to increase

over time due to increased volume on WHR size class 4 and 5 stands (stands with diameters > 11" DBH). However, the projection also recognizes that some landowners who employ the Program will not conduct subsequent harvests; therefore, for analysis purposes the additional new acres and non-repeated PTHP acres are projected to balance each other out, so that the 11,239 NIPF acres harvested by 2034 is carried over as the analyzed landbase through the remainder of the analysis period (2060). While it is not known whether in-growth of feasible land and interested owners will exceed or fall short of the number of owners who drop out of the program, there is no particular reason to believe that balance would tend one way or another.

The projected NIPF harvestable acreage represents 71 ownerships that can support a feasible harvest, which were chosen randomly based on the propensity of landowners of their size class to conduct a timber harvest. Fifteen of these landowners own 160 acres or less and 56 own more than 160 acres. Table 2-15 below shows estimated harvest by subbasin by NIPF landowner class across the 50-year analysis period. *(Note: Wide fluctuations in totals by period shown in the table are related to the estimated volume of mature timber per modeled parcel combined with the modeled price of timber per period. In one five-year cycle, the model did not predict any high-log-value years. Minor variations in numbers are caused by rounding).*

Table 2-15

Projected PTHP Harvest 2011-2060
For The Proposed Program
NIPF Owners By Size Of Ownership By 5-Year Period

Analysis Period	Acres Harvest NIPF =<160 Acres	Acres Harvest NIPF >160 Acres	Total
2011-15	638	4,242	4,880
2016-20	145	1,196	1,341
2021-25	182	2,462	2,664
2026-30	598	4,178	4,776
2031-35	135	2,538	2,673
2036-40	143	2,052	2,196
2041-45	781	5,782	6,562
2046-50	0*	265	265
2051-55	134	3,395	3,528
2056-60	744	5,108	5,852
TOTAL	3,500	31,217	34,718

*Modeled timber harvest prices for this period were projected to be too low to support commercial harvest.
**Please note that the acres projected to be treated under the Program (and Alternatives 2 and 3) are not directly comparable to treatment acres for Alternative 1 (see Table 2-16), since the Program includes 'off-Program' harvest, but Alternative 1, being entirely 'off-Program' includes no additional off-Program acres.

2.3 Elements Common to All Alternatives and Alternative Development

2.3.1 Provisions that apply across program and alternatives

The sections below describe development of alternatives and the differences in practices and acres treated between the Program and its alternatives. However, there are several activities critical to achieving approval of a timber harvest plan which are identical to the Program and to each alternative. These include requirements for:

- Protection of cultural, archaeological and historical resources
- Northern spotted owl/marbled murrelet surveys and management requirements
- Other T&E species surveys and management requirements
- Sudden oak death mitigations

2.3.2 Alternative development

In accordance with Section 15126.6 of the CEQA Guidelines, the PTEIR must analyze a range of reasonable alternatives to the Proposed Program, which could feasibly attain most of the objectives of the Program but would avoid or substantially lessen any significant effects of the project. The CEQA Guidelines provide the following direction for analysis of the alternatives:

- Describe a range of reasonable alternatives to the project, or to the location of the project.
- Evaluate the comparative merits of the alternatives.
- If there is a specific proposed project, explain why other alternatives were rejected in favor of the proposal.
- Focus on alternatives capable of avoiding or substantially lessening significant adverse environmental effects or reducing them to a level of less than significant, even if these alternatives would impede to some degree the attainment of the Program objectives, or would be more costly.
- If an alternative would cause one or more significant effects in addition to those that would be caused by the Program as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the Program as proposed.

Alternatives to the Proposed Program are based, in part, on public comments received during the initial scoping of the Project. Stakeholders cited potential impacts to fisheries and water quality, along with interruption of terrestrial dispersal corridors, as significant concerns.

2.4 Alternative 1: No Program - Continue Status Quo

CEQA requires the evaluation of a “no project” alternative (CCR 15126.6(e)) in order to allow decision makers to compare the impacts of approving the Program with the impacts of not approving any project at all. The no Program alternative shall describe the existing conditions as well as what would reasonably be expected to occur in the future if the Program was not approved.

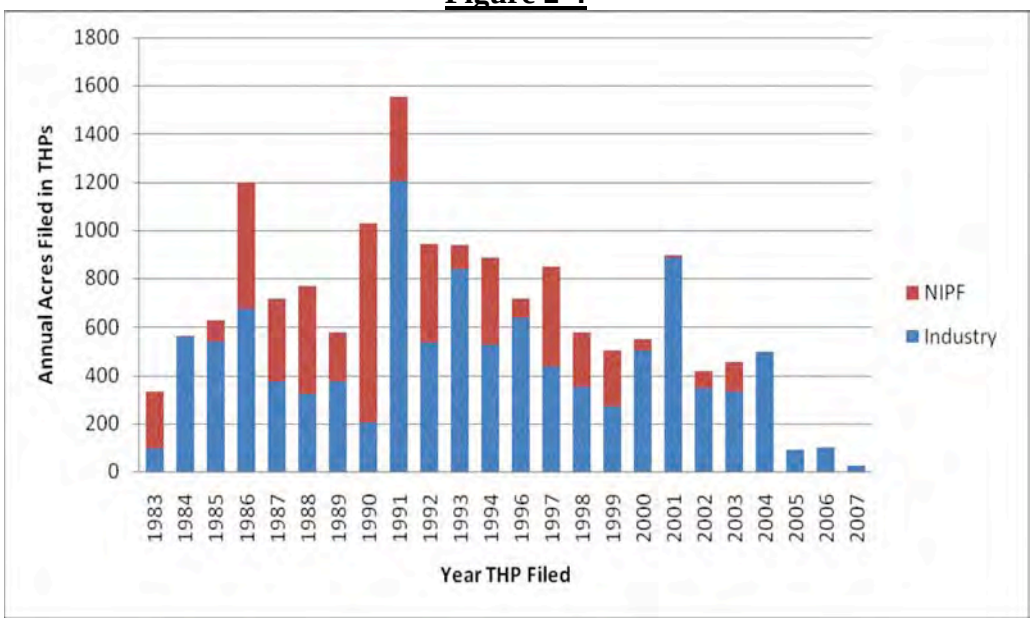
Under the No Program alternative, the Program/PTEIR/PTHP process would not be used to

implement commercial timber harvest in the Mattole. Individual landowners would continue to file THPs, NTMPs and Exemptions to the Forest Practice Rules to harvest timber as they do today and as some would also do even if the Program is approved, but the 'all-aged' silvicultural prescriptions developed for the Program would not be available to them, and the light-touch application of standard prescriptions would be economically infeasible for many owners.

After the elimination of riparian buffers from the area of private commercial timberland, the private landbase for Alternative 1 is estimated at 76,759 acres. After eliminating areas for geologic unsuitability, the acreage available for harvest in Alternative 1 is less than under the Proposed Program (at 52,108 acres compared to 57,601 acres in the Program) because only 65% of acres in the most extreme geologic hazard class in this Alternative were considered available for harvest due to the requirement to have an engineering geologist review these areas compared to 80% in the Program as a result of use of the Geologic Flow Chart. The acres projected to be harvested under this Alternative, however, is far less at 12,334 acres of NIPF lands and 11,717 acres of Industrial lands because this Alternative tries to replicate "current conditions" where harvest has been low. The process for predicting harvest trends under this Alternative is described below. In addition, the even-aged harvests would typically represent one or at most two entries during the course of the time horizon, whereas any given acre could be entered two or three times in 50 years under the Program's light-touch harvests.

While the entire data set of harvest by acres by treatment (1983-2008) was useful to understand certain elements of the harvest history, the most recent 14 years from 1993 to 2007 were most instructive for predicting future harvests under the No Program Alternative (Figure 2-4). This is because the Forest Practice Rules and regulatory environment in general have become much more prescriptive and expensive to operate within over the past 14 years (Thompson and Dicus 2005).

Figure 2-4



Harvest history 1983-2007 in Mattole watershed, based on filing dates of THPs and NTOs.

From 1993 to 2007, the acres of THPs and NTMP Notice of Timber Operations (NTOs) filed in the Mattole averaged 508 acres/year, 25% on NIPF land and 75% on industrial land. However, the year-to-year variation is quite high, with total harvest ranging from less than 50 acres to almost 1,000 acres/year. During this period, silviculture on NIPF lands was approximately 70% uneven-aged and 30% even-aged, and just the inverse on industrial lands.

It is assumed that under the No Program alternative, the choice of silviculture on NIPF lands will remain approximately the same as it has been. However, on industrial lands the choice of silviculture is likely to change in the future since the change in ownership of Pacific Lumber Company (PALCO) forest lands to Humboldt Redwood Company (HRC). HRC has stated that they will implement uneven-aged silviculture on well-stocked conifer stands in the Mattole, whereas PALCO tended to implement even-aged prescriptions in these stand types.

Where historical (pre-FPR) logging in the Mattole has left stands with high hardwood stocking, HRC will likely continue the policies of its sister company, Mendocino Redwood Co. (which has taken over and rehabilitated 42,000 acres of former Louisiana Pacific holdings in Mendocino County, with about 40,000 to go (Mike Jani, personal communication 2010)). HRC treatments apply the Variable Retention (VR) prescription to hardwood-dominated stands, first reducing the hardwoods with basal herbicide injection followed by removal of a portion of the conifer overstory, after which the stand is regenerated by planting with conifers. As the title of the prescription indicates, a certain proportion of the pre-harvest stand is retained during and after stand treatments and harvest (FPR 913.4.d.(3)).

Over the projected timeline of the Program, the rate of harvest using FPR prescriptions is likely to increase (compared to the 1993-2007 period), as the volume of harvestable timber (through growth and ingrowth) of Group A species on many ownerships increases. The acreage of land in the Mattole considered feasible to harvest using a THP (see Appendix A) is projected to increase 21% from 2011 to 2030. The increase in harvested acres is likely to be similar, which would mean an increase in the average annual harvest rate (base ’93-’07) from 508 acres/year to 613 acres/year by 2030.

Table 2-16

Total Acres Projected to be Harvested and Harvest "Footprint"
By THP's or NTOs 2011-2060
For Alternative 1 (Status Quo)
Acres By Ownership Type By Subbasin

	NIPF	Industrial	Total	Footprint
East_1	3,451		3,451	1,950
East_2	1,458		1,458	770
North_1	3,949	5,000	8,949	5,330
North_2	1,959	5,000	6,959	4,292
South_1	253 1/	1,717	1,970	1,717
West_1	562		562	277
West_2	702		702	379
Total	12,334	11,717	24,051	14,715

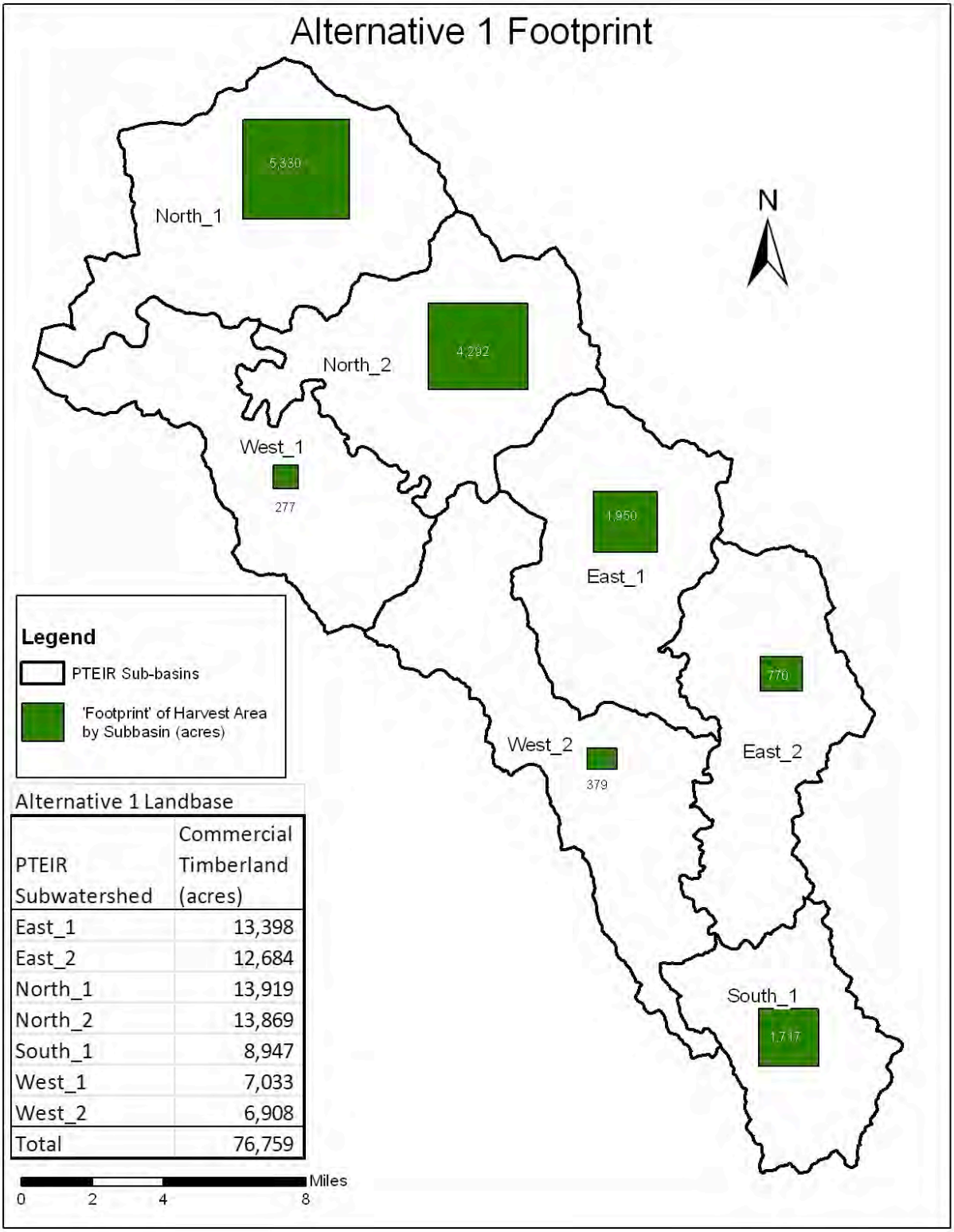
1/ Parcel sizes are such that little harvest from NIPF's likely. Also, timber volumes are small compared to costs of road rehabilitation measures, and there is little evidence of recent timber harvest in this basin.

Table 2-17
Projected Harvest 2011-2060
For Alternative 1 (Status Quo)
NIPF Owners By Size Of Ownership By 5-Year Period

Analysis Period	Acres Harvest NIPF =<160 Acres	Acres Harvest NIPF >160 Acres	Total
2011-15	231	1,103	1,334
2016-20	40	420	460
2021-25	56	1,146	1,202
2026-30	201	1,183	1,384
2031-35	98	1,171	1,269
2036-40	40	917	957
2041-45	257	1,861	2,118
2046-50[1]	0	271	271
2051-55	98	1,613	1,711
2056-60	241	1,387	1,628
TOTAL	1,262	10,072	12,334

[1] Note that, as with the projections of harvest under the Program, harvest levels during this five-year period are low — an artifact of the log-value model having projected no years from 2046 to 2050 with high log values. The same dip in harvest projections can be seen for all the other alternatives as well.

Figure 2-5



Alternative 1 Landbase

PTEIR Subwatershed	Commercial Timberland (acres)
East_1	13,398
East_2	12,684
North_1	13,919
North_2	13,869
South_1	8,947
West_1	7,033
West_2	6,908
Total	76,759

70% of harvests are projected to utilize uneven-aged silviculture, and the other 30% will use even-aged prescriptions, based on historical trends. HRC is expected to utilize uneven-aged prescriptions 70% of the time and Barnum is expected to use only even-aged methods.

2.5 Alternative 2: Broader Buffers While Allowing Even-Aged Management

Alternative 2 addresses the widespread and longstanding interest of the Mattole community in restoring the once-abundant fisheries of the watershed. All of the Program requirements apply to this Alternative with the exception of those described below, including using the Appendix B Geologic Flow Chart, no harvest on extreme erosion hazard rated soils, no harvest on inner gorges, T&E species requirements, road building requirements, etc.

The major differences between the Program and Alternative 2 are associated with extra protections for wildlife and water quality purposes, but in return, even-aged prescriptions are allowed outside of those buffers. Alternative 2 attempts to increase protection of wildlife and water quality by widening no-harvest buffers along watercourses and prohibiting harvest on areas delineated as “Very High” landslide hazard. Under Alternative 2, no-harvest buffers are 150’ wide on Class I streams, 100’ wide on Class II streams and 50’ wide on Class III streams (both sides of stream, slope distance). Because of the increase in no-harvest areas, the available landbase on NIPF lands for Alternative 2 is the lowest of the considered alternatives, at 46,644 acres, even before the elimination of potentially unstable areas. In addition, Alternative 2 would not allow any harvest on geologic hazard category 5 (the most landslide prone).

In contrast to restricting the potential harvestable acreage, Alternative 2 would allow the full suite of FPR silvicultural prescriptions to be applied on the remaining manageable landbase, subject to some constraints. Under this alternative, clearcuts and variable retention harvests would be limited to 10 acres in size, and shelterwood and seed tree harvests would be limited to 40 acres, with no size restriction on the other FPR prescriptions. The flexibility to apply the full range of FPR prescriptions is designed to allow landowners to harvest a larger volume of timber from fewer acres compared to the Program’s prescriptions, helping offset the negative economics of the increased no-cut stream buffers.

Table 2-18 below shows projected harvest by subbasin for Alternative 2, and Table 2-19 projected harvest by NIPF size class.

Table 2-18

Total Acres Projected to be Harvested and Harvest "Footprint" By PTHP's 2011-2060 For Alternative 2 Acres By Ownership Type By Subbasin

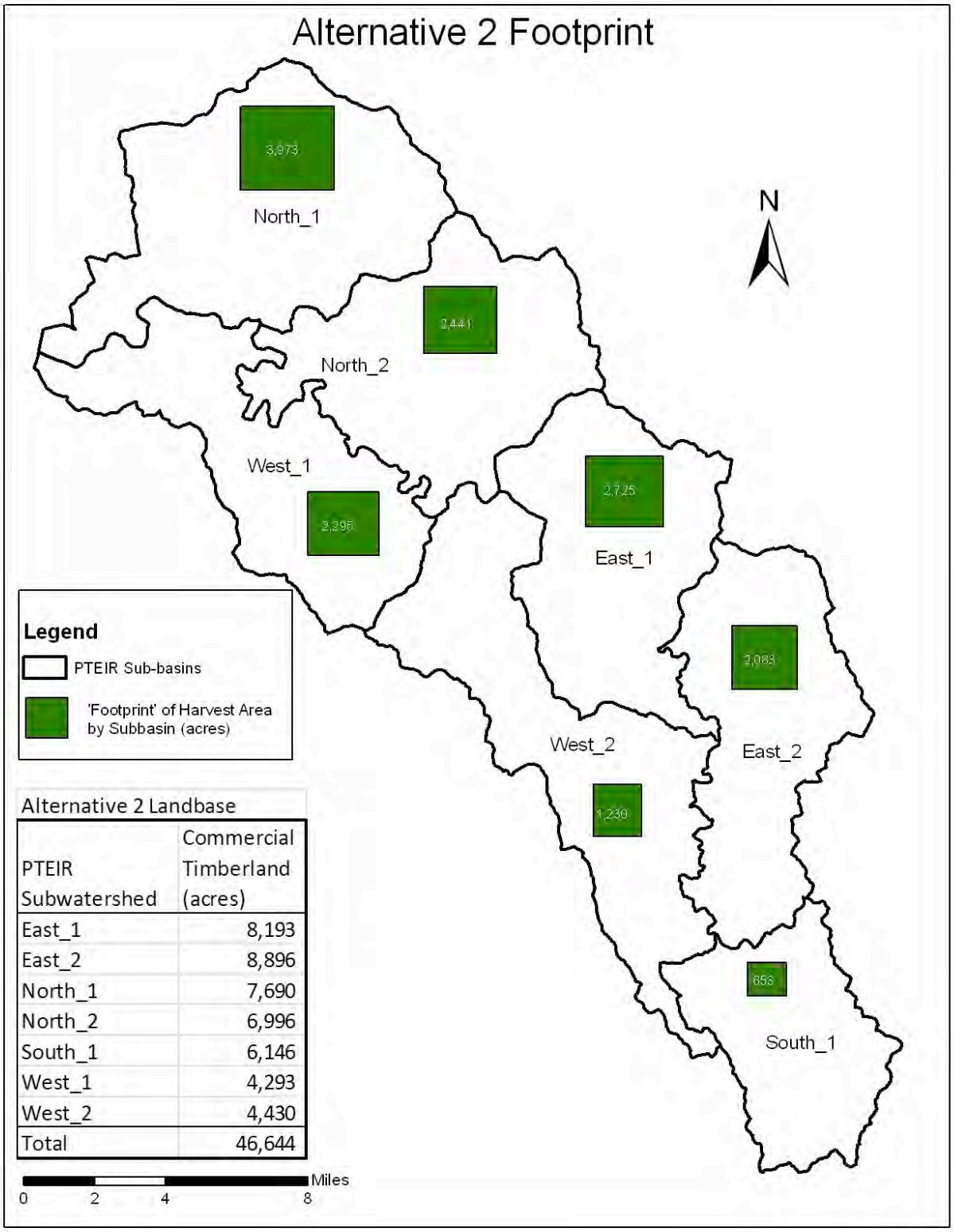
Program Subbasin	NIPF	Industrial	Total	Footprint
East_1	4,965		4,965	2,725
East_2	3,927		3,927	2,083
North_1	5,602	1,750	7,352	3,973
North_2	2,489	1,750	4,239	2,441
South_1	1,209		1,209	653
West_1	4,112		4,112	2,295
West_2	2,353		2,353	1,230
Total	24,657	3,500	28,157	15,400

Table 2-19

Projected Harvest 2011-2060 For Alternative 2 NIPF Owners By Size Of Ownership By 5-Year Period

Analysis Period	Acres Harvest NIPF =<160 Acres	Acres Harvest NIPF >160 Acres	Total
2011-15	497	2,332	2,819
2016-20	168	1,208	1,376
2021-25	270	1,685	1,995
2026-30	479	2,482	2,961
2031-35	229	2,206	2,435
2036-40	229	1,537	1,766
2041-45	642	3,541	4,183
2046-50	65	866	931
2051-55	281	2,225	2,506
2056-60	591	3,134	3,725
TOTAL	3,451	21,206	24,657

Figure 2-6



Alternative 2 Landbase

PTEIR Subwatershed	Commercial Timberland (acres)
East_1	8,193
East_2	8,896
North_1	7,690
North_2	6,996
South_1	6,146
West_1	4,293
West_2	4,430
Total	46,644

2.6 Alternative 3: Fire and Fuels Alternative

The private timberland landbase for Alternative 3 is 76,759 acres before allowing for geological exclusions, the same as Alternative 1, as no acres available under the FPR's are excluded from treatment by this alternative. There are substantial differences in some elements of this alternative, compared to the Program and Alternative I as described below. However, all of the Program requirements associated with using the Appendix B geologic flow chart, restrictions on harvest in inner gorges, no harvest on extreme erosion hazard rated soils, limitations on road building, T&E species requirements, etc. would be retained.

The California Defensible Space Guidelines specified under SB 4291 require reduction of fire hazard in areas where significant values are at risk from wildfire. Alternative 3 shares that goal and applies fuels reduction treatments to the 19,888 acres of NIPF and 10,000 acres of industrial land that are potentially harvestable under this alternative (over the 50-year analysis period). Under this alternative, all operations-related slash would have to be either piled and burned, lopped to 18" from the ground surface, removed, or chipped so that flame lengths in a subsequent fire would not exceed 2' in height.

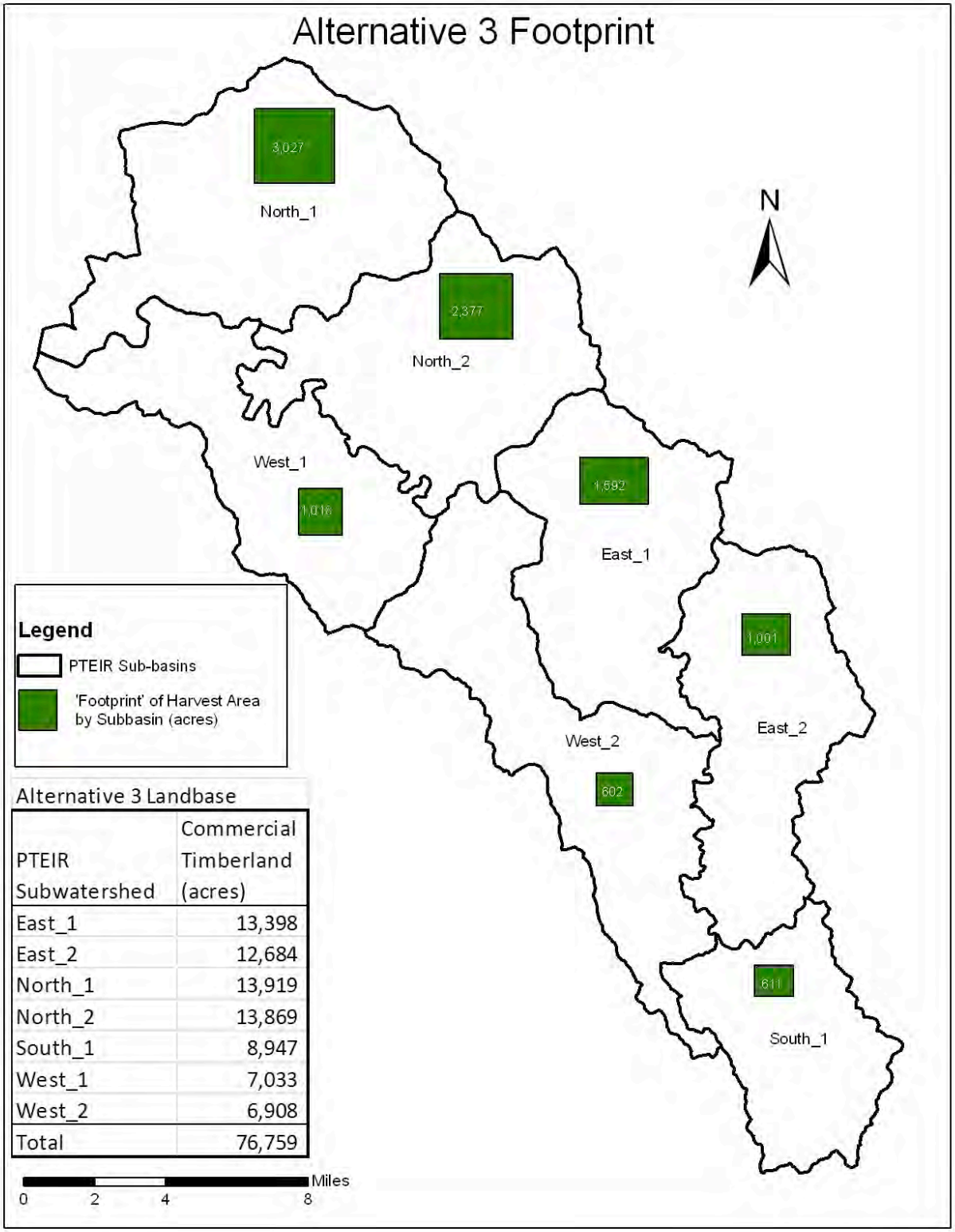
Alternative 3 also requires that at least 60% canopy cover be retained in all harvested areas, to provide shade sufficient to retard the growth of flammable understory vegetation and buildup of fire ladders. For this reason, no group selection openings are allowed under Alternative 3, whereas the other Program-specific prescriptions (AA (without the group selection option), STS & CT) would be allowed. However, unlike the Proposed Program and Alternative 2, Alternative 3 would allow limited timber harvest within portions of riparian buffers (as described below), with the goal of reducing fuel loading and fire hazard across a larger portion of the Program acreage.

The only prescription allowed in riparian buffers would be thinning from below. Specifications of this Program prescription require that the treatment result in an increase in the quadratic mean diameter (QMD) of the trees in the treated stand (within the buffer). In addition, no tree 20" DBH or larger could be harvested from a riparian zone.

Table 2-20
Total Acres Projected to be Harvested and Harvest "Footprint" By PTHP's 2011-2060 For Alternative 3 Acres By Ownership Type By Subbasin

Program Subbasin	NIPF	Industrial	Total	Footprint
East_1	4,915		4,915	1,592
East_2	3,114		3,114	1,001
North_1	3,537	3,500	7,037	3,027
North_2	1,769	3,500	5,269	2,377
South_1	1,718		1,718	611
West_1	2,937		2,937	1,018
West_2	1,899		1,899	602
Total	19,889	7,000	26,889	10,228

Figure 2-7



Alternative 3 Landbase

PTEIR Subwatershed	Commercial Timberland (acres)
East_1	13,398
East_2	12,684
North_1	13,919
North_2	13,869
South_1	8,947
West_1	7,033
West_2	6,908
Total	76,759

Table 2-21

Projected Harvest 2011-2060
For Alternative 3
NIPF Owners By Size Of Ownership By 5-Year Period

Analysis Period	Acres Harvest NIPF =<160 Acres	Acres Harvest NIPF >160 Acres	Total
2011-15	235	2,867	3,102
2016-20	46	817	864
2021-25	132	967	1,099
2026-30	231	2,659	2,890
2031-35	33	1,631	1,663
2036-40	46	817	864
2041-45	364	3,625	3,989
2046-50	0	0	0
2051-55	33	1,631	1,663
2056-60	278	3,476	3,754
TOTAL	1,399	18,489	19,888

2.7 Comparison of Treatments

Table 2-22 below contains an overview of practices required and allowed under the Proposed Program compared to the Alternatives.

Table 2-22

Comparison Of Proposed Program Practices To Alternatives

Provisions and Restrictions	Proposed Program	Alt 1	Alt 2	Alt 3
Class I Watercourse Provisions	100' wide each side, 75' no cut each side 80% canopy retention, No group openings adjacent to WLPZ	FPR – 150', 30' inner no cut zone, 80% canopy retention 30-100', 50% in 100-150 band	150' all no cut	100' wide each side, 30' no cut, commercial thin to increase avg diam outer band
Class II Watercourse Provisions (higher #s are for large IIs)	50'/75'/100' slope dependent width each side 30' no cut inner band 70-80% canopy retention outer band	FPR- 50-100' based on slope, 0'-30'no cut inner band, 50-80% canopy retention in outer band	100' all no cut	50-100' based on slope, 15'-30' no harvest, commercial thin to increase avg diam outer band
Class III Watercourse Provisions	30' or 50' off-limits to heavy equipment no harvest of trees within or overlapping the channel or whose roots contribute to bank stability 50-75% overstory and 50% understory retention, no group selection	30' or 50' off-limits to heavy equipment no harvest of trees within or overlapping the channel. Retain 50 ft^2/acre	50' all no cut	Same as Program

Provisions and Restrictions	Proposed Program	Alt 1	Alt 2	Alt 3
Geological Review of Harvest Units	Program Geology Flow Charts	Completed by RPF except that Geologist required for any operations on areas of instability	Same as Program	Same as Program
Very High Landslide Class	Potential limited harvest after Geologist review	Harvest according to Geologist recommendation	No harvest	Same as Program
Silvicultural Prescriptions Allowed	Single Tree and Group Selection (STS & GS) Commercial Thinning (CT) All-Aged Prescription (AA)	FPR -Clearcut, Seed Tree, Shelterwood, STS, GS, CT, Rehab, Transition	Same as Alt 1	STS, CT, AA (no GS) CT allowed in Stream Buffers
Old Growth Trees	No Harvest of pre-1850 Trees that are > 40" diameter (32" hdwd)	No restriction	No Restriction	Same as Program
Trees Comprising Upper 30% Diameter Classes	Retain 50%	No Restriction	No Restriction	Same as Program
Herbicides	None for life of PTHP (except control of exotics)	No FPR restriction	State Regs	Same as Program
New Road Construction	<=1000' per PTHP, except where justified as having less impact than existing roads	No restriction	Same As Alt 1	Same as Program
Inventory Build-up	AA prescription requires increasing conifer proportion to >50%. Selection requires conifer basal area increase to >150 ft^2 over time.	No restriction	No Restriction	Same as Program
Leave Tree Requirement	All conifer leave trees must be high quality trees free from logging damage, no whips	All conifer leave trees must be high quality	Same as Program	Same as Program
Stream Reconnaissance	Requires walking all Class I, II and III streams courses	Same as Program	Same as Program	Same as Program
Inventory, growth and yield	Requires plot based sampling of each stand, statistical standards established	No Restriction	No Restriction	Same as Program
Demarcate all Streams	Requires flagging all WLPZ and EEZ boundaries	Same as Program	Same as Program	Same as Program
Disconnect Roads from Streams	FPR requirements, essentially disconnect all roads from all streams	Same as Program	Same as Program	Same as Program
Diversion Potential	Eliminate diversion potential on all temporary and permanent roads appurtenant to the plan area	Same as Program	Same as Program	Same as Program

Table 2-23 below shows the treatment acreage by prescription for the Proposed Program and Alternatives. For comparison, prescriptions with similar environmental effects have been combined; for example, the all-aged prescription with its emphasis on conifer restoration, has been separated from the other Program prescriptions, which are generally intended to remove mostly conifers from conifer-dominated stands; likewise for the landscape treated by FPR prescriptions under Alternatives 1 and 2, even-aged prescriptions have been combined into one category and uneven-aged into another.

Table 2-23

Comparison Of Treatment Acreages By Prescription By Alternative

Alternative	ACRES BY PRESCRIPTION TYPE				
	All-Aged	Program Selection, Group Selection, Commercial Thinning[1/]	FPR Uneven-aged[2/]	FPR Even-Aged[3/]	Total
Proposed Program	12,766	28,952[1/]			41,718
ALT. 1	0	0	16,836	7,215	24,051
ALT. 2	0	0	19,710	8,447 [4/]	28,157
ALT. 3	8,328	18,561			26,889

1/ Prescriptions as defined in the Proposed Project, with additional restrictions over and above FPR requirements for these prescriptions.
2/ Includes Selection, Group Selection, and Commercial Thinning as defined in the Forest Practice Rules.
3/Includes all FPR prescriptions except those listed under FPR selection.
4/In Alternative 2, clearcut prescriptions are limited to 10 acres, seed tree and shelterwood to 40 acres; no acreage limit on other even-aged prescriptions.

Table 2-24 shows the footprint acreage, by sub-basin, for the Proposed Program and the Alternatives.

Table 2-24

Comparison Of Footprint Acreage By Alternative and subbasin

Subbasin	ALTERNATIVE			
	Proposed Program	Alt. 1: Status Quo	Alt. 2: Broader buffers, even-aged	Alt. 3: Fire and Fuels
East_1	2,655	1,950	2,725	1,592
East_2	1,669	770	2,083	1,001
North_1	4,307	5,330	3,973	3,027
North_2	2,935	4,292	2,441	2,377
South_1	631	1,717	653	611
West_1	1,746	277	2,295	1,018
West_2	1,095	379	1,230	602
Total	**15,038**	**14,715**	**15,400**	**10,228**

2.8 Alternatives Considered But Eliminated From Detailed Analysis

Enhanced Stream Buffer Alternative

An “Enhanced Stream Buffer” Alternative was considered to address landscape level processes, particularly the role that small upper stream channels play in supporting downstream aquatic life

and enhancing ecosystem integrity. The premise of this alternative was that much more stringent stream protections than customary would be necessary to promote the recovery of coho salmon and sensitive amphibians such as the tailed frog and southern torrent salamander.

The specific standard chosen was to extend no-cut buffer widths to include all streamside slopes greater than 30% (see below), in order to decrease the potential for timber harvest to trigger or accelerate landslides which degrade aquatic habitat.

Under this alternative, no-cut buffers would have been established alongside Class II and III watercourses, extending 10 meters beyond the point where slopes that led directly to the watercourse decreased to <=30%, above which point any of the Program prescriptions could be applied. In addition, Class II stream buffer widths would have been measured not from the edge of the wetted channel (as is currently the case), but from the break in slope above the channel.

This alternative was submitted during scoping and the interdisciplinary Mattole Technical Advisory Committee (MTAC – a body of agency and university scientists who review restoration work in the Mattole) appointed a subcommittee to review it. The conclusion of this subcommittee was that scientific research does not support concern about mass-wasting where slopes are less than 50% – a cutoff point identified by geomorphologists concerned with landslide hazards. As a result, the underpinning of this proposed alternative – concern for landsliding on slopes all the way down to 30 % – could not be supported. In addition, this alternative did not meet many of the Program objectives associated with controlling sediment sources, increasing tree size and reducing the potential for catastrophic fire. Also, very few acres would have been available for management, resulting in an alternative that was projected to be infeasible to implement.

In addition, Alternative 2, as described above and analyzed in this document, incorporates the concept of broader buffers for enhanced watercourse and aquatic life protection. Another consideration was that the Proposed Program requires the application of geologic flow-chart analyses to determine appropriate management responses to slope instability problems; and includes stream buffer requirements exceeding those in the FPR; this combination of approaches was felt to be more science-based than those of this proposed alternative. While this alternative might meet some of the project objectives, it was considered infeasible to implement because the vast acreage of Class III no harvest buffers would have eliminated timber harvest virtually everywhere. Because this alternative was considered infeasible along with the combination of the other factors discussed above, this alternative was eliminated from more detailed analysis.

Corridors and Refugia Alternative

An alternative was considered to increase protection of wildlife and water quality within a corridor encompassing the East_1, West_2 and South_1 subbasins. This alternative was generated from comments received during public meetings and from public scoping. These three subbasins form a corridor between Gilham Butte and the Humboldt Redwoods State Park, on the northeastern side of the Mattole, and the King Range National Conservation Area on the southwestern side of the Mattole. This corridor would provide a functional link for terrestrial species to move through the Mattole watershed within forests of improved structural

composition. The alternative had as a goal enhancing protection of valuable salmonid spawning and rearing habitat in the Southern subbasin.

Protection of habitat within the corridor would be accomplished by requiring landowners choosing to file PTHP's in the 3 subbasins to adhere to the following measures:

- minimum post-harvest residual stocking levels of 125 sq.ft. BA/acre;
- group selection harvests prohibited;
- prohibition of harvest on areas delineated as "Very High" landslide hazard;
- no-cut buffers 150' wide on Class I streams; 100' wide on Class II streams and 50' wide on Class III streams.

For the other 4 subbasins it was expected that watercourse protection measures would be loosened somewhat, but this was not finalized before the alternative was eliminated from consideration.

The PTEIR team concluded that this alternative, because of its restriction of the landbase in three subbasins and the corresponding decrease in available land for timber management, would deter most landowners from using the Program to manage their timber making this alternative infeasible to implement. Instead, at least in the three affected basins, they would opt to utilize the existing FPR rather than this alternative, thereby having much the same environmental effect as Alternative 1. As a result, many of the Program objectives would not be met in these three subbasins.

This alternative was eliminated from further analysis because it was considered infeasible to implement due to the acreage of Class III no harvest buffers in these three subbasins which would have eliminated timber harvest virtually everywhere. Because this alternative was considered infeasible along with the combination of the other factors discussed above, this alternative was eliminated from more detailed analysis in favor of Alternative 2, based on the argument that, if larger buffers and restrictions on harvest would substantially improve wildlife habitat and corridor function, application of these provisions across all seven subbasins rather than just three should be considered. Restriction of these provisions to a subset of the subbasins as proposed in the alternative also made analysis of the effects of the alternative more complex than Alternative 2, which applies enhanced buffers across the landscape.

Fire Hazard Reduction and Fuel Break Alternative

This alternative aimed to both limit new road construction (thereby reducing inputs of sediment into streams) and encourage the development of a network of shaded fuel breaks within the Mattole watershed. Under this alternative, the same prescriptions would apply as in the proposed project, but operations would be limited to areas within 150' of an existing roadway.

Drawbacks to this alternative included a likely reduction in the financial viability of the Program/PTHP option for many landowners, given that much of the forestland owned by landowners in the basin would not be included in the area available for harvest, making it harder to meet the FPR requirement to demonstrate maximum sustained productivity. In addition, to the

extent that re-opening roads for PTHP's would lead to increased maintenance and storm-proofing of those legacy roads, a restriction on re-opening roads for harvest purposes could actually increase sediment yields over the long term, as untreated, failed roads delivered sediment to streamcourses. In addition, a number of non-commercial treatments (e.g., understory removal, brush suppression) would be required to construct logical and effective firebreaks, and the added costs of these treatments tended to exacerbate the already questionable economics of this alternative.

Another critique of this alternative was that some Program silvicultural prescriptions did not logically lend themselves to establishment of functional fuelbreaks (e.g., group selection, all-aged) and thus the suite of prescriptions (and the ability to address silvicultural conditions in the Mattole) would be reduced.

It was also noted that AB 2420, Forest Fire Prevention Exemption 14 CCR 1038(i) already allows landowners to apply many of the provisions of this alternative without filing a THP or other harvest plan, thus negating the benefit promised by the Program of streamlining the timber harvest permit process.

A final argument against conducting a detailed analysis of this alternative was that the fuels reduction measures it contained would be awkward to analyze because of the difficulty in identifying the Program landbase, because of the difficulty inherent in defining 'existing' roads, which occur in many states of openness and condition.

As a result of the concerns above, it became apparent that the proposed alternative would not meet many of the Program goals and in large measure would likely be infeasible to implement. However, the concept of developing an alternative which provided enhanced fire protection for the basin was carried over into Alternative 3, as described and analyzed in this document.

Silvicultural Prescription Eliminated from Detailed Analysis – Oak and Prairie Restoration

Earlier versions of the Mattole Forest Futures Program considered a silvicultural prescription, which, like the All-Aged Prescription, was specific to the Mattole. The Oak/Prairie Restoration Prescription was designed to maintain or restore areas of native grassland prairie or deciduous oak woodland/savannah, through commercial harvest of invading conifers. It is recognized by the MRC that hundreds if not thousands of acres across the Mattole basin were, in prehistoric and historic times, occupied by oak woodland or savannah (savannah is comprised of 5-7 trees/acre while oak woodland carries a heavier stocking), but have declined sharply in extent over the last 50 years due to the decline in cultural burning and grazing, allowing many of these areas to be invaded by conifers, particularly Douglas-fir. Oak stands and native grasslands are a valuable resource for wildlife and grazing activities, and the Program was originally seen as a vehicle to offset the loss of these vegetation types.

The treatment areas for the oak/prairie maintenance prescription consisted of those areas shown as true oak stands and native prairies on Soil Conservation Service maps from the early 1950s, which are in GIS shapefiles housed at the MRC. Under this prescription the areas in question were proposed to be returned to their 1950s vegetative type by conifer removal. The prescription

proposed requiring any person filing a PTHP with this prescription to include a detailed plan demonstrating how the oak stands and prairies would be returned to their 1950s condition and maintained in that state (e.g., by periodic burning and/or intensive grazing). Protection measures for the oak component of the stands were also required during harvest and slash treatment. In addition to removal of commercial timber, removal or reduction of seedling and sapling-size conifers also had to be addressed in any harvest plan with this prescription.

As the Program developed and public input was collected, the question arose as to whether this prescription met the definition of 'light-touch' silviculture as described in the Program goals and objectives. Although it would apply to a limited landscape as defined by the maps noted above, application of the prescription amounted to more or less clearcut-style removal of all the merchantable conifer trees at one entry over a still-significant acreage. Initially this concern was addressed by development of mitigation measures for the prescription, including limitations on operable slope classes, size of harvest units, and frequency of application. But when the prescription was reviewed by CAL FIRE, it was brought to the attention of the PTEIR planning team that such a treatment was currently allowed by the FPR under a Conversion Exemption; and if an attempt were made in the Program to obtain approval for this treatment specifically for oak stands and prairies (as is currently allowed for aspen stands in the Sierras) it would have to be approved by the Board of Forestry as an amendment to the FPR. Given the regulatory difficulties associated with such an effort and the questions about the environmental effects of its application, this prescription was eventually dropped from the Program because it appeared to be infeasible to implement.

2.9 Environmentally Superior Alternative

CEQA Guidelines §15126.6(e)(2) requires a lead agency in an EIR to identify an Environmentally Superior Alternative.

The Proposed Program treats the most acres with "light touch" prescriptions compared to any of the alternatives, and helps to achieve more of the goals identified by the MRC during development of the Program. The proposed program sets a course for future forest management in the Mattole Basin that is conservation-oriented but economically viable over the long term. Under this program, overt efforts would be made to bring maturing timber stands under management while incorporating measures to encourage development of mature and late-successional stands, improve stocking of conifers, increase the average size of trees in managed stands, and improve water quality through reduction of controllable sediment sources. Attempts to bring hardwood-dominated stands into commercial management through application of special prescriptions, but without the use of herbicides or broad-scale clearing of forest stands would be encouraged. Filing of timber harvest plans would be easier and more cost-effective for the limited range of prescriptions allowed under the program (compared to the normal THP submission process) for those utilizing the Program.

Alternative 1, continuation of the status quo, assumes that forest management activities will continue to occur under the wide range of prescriptions now available to landowners under the FPR. Landowners would continue to file standard timber harvest plans or other harvest

documents, incurring the steadily increasing costs related to the increasing complexity of the FPR.

Fewer acres are projected to be harvested per decade under Alternative 1 compared to the program or the other alternatives. However, many of these acres are expected to be one-time even-aged entries rather than re-entries into previously harvested uneven-aged prescription areas. These even-aged silvicultural prescriptions, such as clearcutting and variable retention harvest, are estimated to be applied at rates approximate to those that have occurred during past decades, with no additional attempts (i.e., Program provisions) to limit their less desirable ancillary effects, such as reliance on herbicides and exposure of large areas of mineral soil to erosion. Much of the harvest that is projected to occur would tend to remove larger, more merchantable trees when prices are high, in order to maximize net present value, while doing little to encourage forest stands to develop mature structures and the variety of tree sizes that are conducive to selection management, and that enhance wildlife habitat for interior-dwelling species. Modifications of treatments to address unstable slopes would be limited to those required by law, as would watercourse protection measures. Fewer controllable sediment sources would be reduced under this alternative than the program or other alternatives, because the area covered by harvest plans would be smaller. As timber stands in the Mattole basin mature over time, the likelihood of a period of high timber prices initiating a boom of intense logging, followed by an eventual bust as the timber was depleted, would be more likely under this alternative than the program or alternatives.

Alternative 2, with its emphasis on protection of watercourses, reduces the potential landbase to 62% of that of the proposed program, and is 60% of the landbase considered for the status quo and Alternative 3. Its requirements for large no-harvest buffers would create refugia and travel corridors that could provide definite wildlife benefits over the long term. However, tree retention and enhanced stand development in riparian areas under this alternative is offset by the allowance for application of standard FPR silvicultural prescriptions including even-aged silviculture (with its attendant soil exposure and resetting of maturing stands back to regeneration status) across much of the remaining manageable landscape, in order for this alternative to be economically viable. Alternative 2 has the lowest manageable landbase of any of the alternatives and therefore causes the least overt effect in terms of acres disturbed by timber harvest. However, fewer miles of road would be rehabilitated under this alternative compared to the program and Alternative 3. Fuel reduction treatments are not an emphasis under this alternative, and the large no-harvest buffers could potentially represent high fire hazard zones during periods of extreme fire conditions. Although the large untreated buffers could prevent some delivery to watercourses; this could be offset by fewer controllable sediment sources being treated compared to the program or Alternative 3.

Alternative 3, with its emphasis on fuels reduction following harvest, would be the most expensive alternative to implement and therefore require higher timber prices before harvest under it would be feasible, or cause a concomitant reduction in feasible acres of harvest which would be limited to better-stocked stands. Unlike the other alternatives or the program, wildland fire hazard would remain the same as before harvest or be reduced below this level, after post-harvest slash treatments. Unlike the program or other alternatives, Alternative 3 would reduce high fuel loading within WLPZs while adding these areas to the projected acreage of the

alternative, which is nevertheless lower (at 19,889 NIPF acres plus 7,000 industrial acres, for a total of 26,889 acres) than any of the alternatives except the status quo (Alt. 1). Under this alternative, more soil disturbance would occur closer to streamcourses compared to the program or other alternatives.

Table 2-25 below summarizes the potential environmental impacts described in chapter 3, which shows that the Program is the environmentally superior alternative. The effects of the Program are projected to be less than significant, or beneficial, in all resource areas — a finding that does not apply to any of the other alternatives.

Table 2-25
Summary Of Effects

Resource Area	Prog	Alt 1	Alt 2	Alt 3
Air Quality	-	-	-	+
Fish & Aquatic	-	-	-	-
Cultural	-	-	-	-
GHG	+	+	+	+
Geology	-	- -	-	- -
Soils	-	- -	-	-
Noise	-	-	-	+
Pop/Housing	-	-	-	+
Recreation	-	-	-	-
Hazardous Mat	-	- -	-	-
Transport/Traffic	-	-	-	+
Utilities/Energy	o	o	o	o
Vegetation	+	+	+	+
Visual/Aesthetic	-	-	-	o
Water Quality	+	+	+	+
Wildlife	+		-	+
Wildfire	-	- - -	- - -	+

"-" less than significant, "- -" potentially significant
"- - -" significant [before mitigation]
"o" no effect, "+"beneficial

2.10 Chapter 2 Bibliography

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