

**U.S. Fish & Wildlife Service**

**National Marine Fisheries Service**

# **Green Diamond Resource Company, Del Norte and Humboldt Counties, California**

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## **Final Environmental Impact Statement**

**For Authorization for Incidental Take and Implementation  
of a Multiple Species Aquatic Habitat Conservation Plan and  
Candidate Conservation Agreement with Assurances**



**Volume 1 of 2**

October 2006

prepared by

**CH2MHILL**

# Cover Sheet

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**Title of Proposed Action:** Issuance of Federal Incidental Take Permits/Enhancement of Survival Permits and Implementation of a Multiple Species Aquatic Habitat Conservation Plan for Green Diamond Resource Company Lands in Northern California

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**Legal Authority:** Endangered Species Act of 1973, as amended, Sections 10(a) and 10(b)

**Location of Proposed Action:** Portions of lands owned by Green Diamond Resource Company Humboldt and Del Norte Counties, California

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# Abstract

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The National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) (collectively referred to as the Services) are responding to applications from Green Diamond Resource Company (Green Diamond) (previously Simpson Resource Company) for an Incidental Take Permit (ITP) and Enhancement of Survival Permit (ESP), respectively, as authorized under Section 10 of the Federal Endangered Species Act (ESA). Green Diamond has initiated efforts to expand and improve its aquatic species conservation and ecosystem management on its forestlands in Humboldt and Del Norte Counties, California. Green Diamond's aquatic species management activities have resulted in the development of a comprehensive multiple species Aquatic Habitat Conservation Plan/Candidate Conservation Agreement with Assurances (AHCP/CCAA). The AHCP/CCAA was prepared to support the ITP and ESP applications to the Services. (It should be noted that Green Diamond's AHCP/CCAA is not intended to address Federal Clean Water Act/Total Maximum Daily Load requirements.)

Green Diamond's ITP application to NMFS, if approved, would allow the incidental take of several fish species listed as threatened under the ESA that may be impacted by otherwise lawful timber harvesting and forest management activities conducted on Green Diamond's lands in northern California. These species are coho salmon (Southern Oregon/Northern California Coast Evolutionary Significant Unit [ESU]), Chinook salmon (California Coastal ESU), and steelhead (Northern California DPS). The ITP application to NMFS and the ESP application to USFWS would also cover other, currently unlisted, aquatic species should they become listed in the future. These unlisted species are Chinook salmon (Southern Oregon and Northern California Coastal ESU, Upper Klamath/Trinity Rivers ESU), steelhead (Klamath Mountains Province ESU), coastal cutthroat trout, rainbow trout, southern torrent salamander, and tailed frog.

Green Diamond could conduct timber harvesting and other covered activities under the proposed AHCP/CCAA, but could also conduct these activities without the AHCP/CCAA. In this document, the environmental effects of implementing Green Diamond's proposed AHCP/CCAA are compared to the effects of managing without the AHCP/CCAA. Three other alternatives are also considered.

The AHCP/CCAA would likely provide improved aquatic habitat conditions relative to the No Action Alternative. Although aquatic habitat conditions (and therefore anadromous fish populations) are also anticipated to improve under the No Action Alternative relative to existing conditions, the improvements are expected to be greater under the proposed AHCP/CCAA and other alternatives. In many cases, these improvements would benefit a broader range of species than just the covered AHCP/CCAA species. As described in Green Diamond's proposed AHCP/CCAA, the impacts of take to listed covered species are minimized and mitigated to the maximum extent practicable. Impacts to unlisted covered species are avoided or minimized to the extent that any authorized take, should the species become listed in the future, will not appreciably reduce the likelihood of survival and recovery in the wild of the species.

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# Acronyms and Abbreviations

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|        |   |
|--------|---|
| 7DMAVG | 7-day mean average (temperature)                      |
| AHCP   | Aquatic Habitat Conservation Plan                     |
| AQMB   | Air Quality Management Board                          |
| ASL    | above mean sea level                                  |
| ATV    | all-terrain vehicle                                   |
| BLM    | Bureau of Land Management                             |
| BMP    | best management practices                             |
| BOF    | Board of Forestry                                     |
| CCAA   | Candidate Conservation Agreement with Assurances      |
| CCR    | California Code of Regulations                        |
| CDC    | California Department of Conservation                 |
| CDF    | California Department of Forestry and Fire Protection |
| CDFG   | California Department of Fish and Game                |
| CDMG   | California Division of Mines and Geology              |
| CDPR   | California Department of Pesticide Regulation         |
| CEG    | Certified Engineering Geologist                       |
| CEQ    | Council on Environmental Quality                      |
| CEQA   | California Environmental Quality Act                  |
| CESA   | California Endangered Species Act                     |
| CFPR   | California Forest Practice Rules                      |
| CFR    | Code of Federal Regulations                           |
| CFS    | cubic feet per second                                 |
| CMZ    | Channel Migration Zone                                |
| CNDD   | California Natural Diversity Database                 |
| CSC    | coastal scrub   |
| CWA    | Clean Water Act                                       |
| CWHR   | California Wildlife Habitat Relationships System      |

|      |                                       |
|------|---------------------------------------|
| dbh  | diameter at breast height             |
| DEIS | Draft Environmental Impact Statement  |
| DFR  | Douglas-fir                           |
| DPS  | distinct population segment           |
| EEZ  | Equipment Exclusion Zone              |
| EFH  | Essential Fish Habitat                |
| EIR  | Environmental Impact Report           |
| EIS  | Environmental Impact Statement        |
| ELZ  | Equipment Limitation Zone             |
| EPA  | U.S. Environmental Protection Agency  |
| ESA  | Endangered Species Act                |
| ESP  | Enhancement of Survival Permit        |
| ESU  | Evolutionarily Significant Unit       |
| FEIS | Final Environmental Impact Statement  |
| FR   | Federal Register                      |
| HCP  | Habitat Conservation Plan             |
| HPA  | Hydrographic Planning Area            |
| IA   | Implementation Agreement              |
| ITP  | Incidental Take Permit                |
| km   | kilometers                            |
| KMC  | Klamath Mixed Conifer                 |
| LAC  | lacustrine                            |
| LWD  | large woody debris                    |
| MHC  | montane hardwood conifer              |
| MHW  | montane hardwood                      |
| MSP  | maximum sustained production          |
| MWAT | Maximum Weekly Average Temperature    |
| NEPA | National Environmental Protection Act |
| NHPA | National Historic Preservation Act    |
| NMFS | National Marine Fisheries Service     |

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|                  |   |
|------------------|---|
| NOI              | Notice of Intent                                    |
| NRHP             | National Register of Historic Places                |
| NSOHCP           | Northern Spotted Owl Habitat Conservation Plan      |
| NWFP             | Northwest Forest Plan                               |
| PALCO            | Pacific Lumber Company                              |
| PFA              | Post Fledging Area                                  |
| PGS              | perennial grassland                                 |
| PM <sub>10</sub> | particulate matter less than 10 microns in diameter |
| RDW              | redwood   |
| RIV              | riverine  |
| RM               | river mile  |
| RMZ              | Riparian Management Zone                            |
| RNP              | Redwood National Park                               |
| RPF              | Registered Professional Forester                    |
| RWQCB            | Regional Water Quality Control Board                |
| SMRA             | Surface Mining and Reclamation Act                  |
| SMZ              | Slope Management Zone                               |
| SR               | State Route   |
| STA              | Special Treatment Area                              |
| SWRCB            | State Water Resources Control Board                 |
| SYP              | Sustained Yield Plan                                |
| THP              | Timber Harvesting Plan                              |
| TMDL             | total maximum daily load                            |
| TPZ              | Timberland Production Zone                          |
| TSS              | total suspended solids                              |
| URB              | urban   |
| USFS             | United States Forest Service                        |
| USFWS            | United States Fish and Wildlife Service             |
| USGS             | United States Geological Survey                     |
| WLPZ             | Watercourse and Lake Protection Zone                |

|      |                                |
|------|--------------------------------|
| WTM  | wet meadow                     |
| YTFP | Yurok Tribal Fisheries Program |

# **Addendum: Update on Projected Initial Plan Area**

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## **ADDENDUM**

### **Update on Projected Initial Plan Area**

Section 1.4 of this Final Environmental Impact Statement (FEIS) defines the Action Area as all commercial timberland acreage within 11 Hydrographic Planning Areas (HPAs) on the west slopes of the Klamath Mountains and the Coast Range of California in Del Norte and Humboldt Counties where Green Diamond owns lands or harvest rights during the 50-year permit term. Under the Proposed Action, the Action Area will adjust during the permit term in response to real property transactions involving Green Diamond. The FEIS considers these potential adjustments in the Action Area by analyzing the impacts of the Proposed Action and alternatives on all commercial timberlands within the 11 HPAs constituting the Primary Assessment Area.

The initial Action Area and related permit conditions will be established based on Green Diamond's ownership and harvest rights at the time of permit issuance. The Services anticipate that the current estimate of the Action Area provided in Section 1.4 of the FEIS will be adjusted based on the following Green Diamond real estate transactions that have recently occurred or are reasonably certain to occur before or soon after an approval of the Proposed Action:

#### **Sale of Goose Creek Tract**

The Western Rivers Conservancy has exercised a legally binding option to purchase all of Green Diamond's 9,478-acre Goose Creek tract located in the Smith River HPA. The sale of this tract is proceeding in three phases. Western Rivers has closed on the purchase of Phase I (3,858 acres) and Phase IIA (1,844 acres) and these lands have been conveyed to Western Rivers. Western Rivers is expected to complete the acquisition of the Goose Creek tract and close on the purchase of Phase IIB (3,776 acres) before or soon after the potential approval of the Proposed Action. The Goose Creek land acquired from Green Diamond by Western Rivers has been conveyed or will be conveyed to the United States for management as part of the Six Rivers National Forest and subject to the Northwest Forest Plan Amendments and PACFISH biological opinion. The Services consider ownership and management of the Goose Creek tract as part of the Six Rivers National Forest to provide conservation benefits that are comparable to those under the Proposed Action. Should the transfer of Goose Creek Phase IIB occur after the issuance of the permits, the transfer would not compromise the effectiveness of the Plan.

#### **Property Under Threat of Condemnation**

Green Diamond has recently received notice that the California Department of Transportation intends to take two small parcels of Green Diamond land for public use as highway right of way. Green Diamond has agreed to sell a parcel of 1.88 acres abutting California State Route 299 to the State of California prior to the potential approval of the Proposed Action. Another parcel of 0.15 acres abutting California State Route 197 is likely to be acquired by the State prior to the potential approval of the Proposed Action.

## Executive Summary

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# Executive Summary

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This Final Environmental Impact Statement (FEIS) addresses the potential environmental effects that could result from implementing Green Diamond Resource Company's (Green Diamond) Aquatic Habitat Conservation Plan/Candidate Conservation Agreement with Assurances (AHCP/CCAA). The FEIS has been prepared in accordance with the National Environmental Policy Act (NEPA).

This FEIS comprises two volumes. Volume I contains: (1) a description of the No Action Alternative, the Proposed Action, and other action alternatives; (2) a summary description of baseline conditions; and (3) the analysis of potential environmental effects that could result from implementation of the AHCP/CCAA. It also includes the identification of the NEPA Preferred Alternative, modifications and updates to the EIS and proposed AHCP/CCAA since the publication of the Draft EIS (DEIS), and appendices containing additional information. Volume II provides a summary of major comment areas, copies of all public comments and letters received by the lead agencies, and the responses to the comments.

## ES-1 Introduction

The National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) (collectively referred to as the Services) are responding to applications from Green Diamond Resource Company (formerly Simpson Resource Company) for an Incidental Take Permit (ITP) and Enhancement of Survival Permit (ESP), respectively, as authorized under Section 10 of the Federal Endangered Species Act (ESA). Green Diamond has initiated efforts to expand and improve its aquatic species conservation and ecosystem management program on its forestland in Humboldt and Del Norte Counties in California. Green Diamond's recent efforts have resulted in the development of the multi-species AHCP/CCAA. The AHCP/CCAA was prepared to support applications for an ITP and ESP from the Services.

Green Diamond is requesting authorization for the incidental take of two fish Evolutionarily Significant Units (ESUs) and one Distinct Population Segment (DPS) that are listed as threatened under the ESA and that overlap Green Diamond's lands in northern California. These fish ESUs/DPSs are the Southern Oregon/Northern California Coast coho salmon ESU, the California Coastal Chinook salmon ESU, and the Northern California steelhead DPS. Green Diamond also is requesting authorization for the incidental take of three other fish ESUs, two fish species and two amphibian species that are currently unlisted, if they become listed in the future. These unlisted ESUs/species are Chinook salmon (Southern Oregon and Northern California Coastal ESU, Upper Klamath/Trinity Rivers ESU), steelhead (Klamath Mountains Province ESU), coastal cutthroat trout, rainbow trout, southern torrent salamander, and tailed frog. Chapter 3 of the proposed AHCP/CCAA describes the ESUs/species for which Green Diamond is seeking Permit coverage. Green Diamond has proposed an AHCP/CCAA duration (Permit period) of 50 years. (It should be noted that Green Diamond's AHCP/CCAA is not intended to address Federal Clean Water Act/Total Maximum Daily Load requirements.)

NMFS and USFWS have determined that issuance of an ITP by NMFS and issuance of an ESP by USFWS are major Federal actions that trigger the National Environmental Policy Act (NEPA) requirement for the analysis and disclosure of the potential environmental impacts of the actions. Pursuant to NEPA, the environmental consequences of the Federal incidental take authorizations are analyzed in this Environmental Impact Statement (EIS), which was prepared with the USFWS and NMFS as co-lead Federal agencies.

This Executive Summary includes the following sections:

- ES-2 Purpose and Need of the Proposed Action
- ES-3 Action Area
- ES-4 Proposed Action and Alternatives
- ES-5 Public Scoping Issues
- ES-6 Preferred Alternative
- ES-7 Summary of Impacts

Table ES-2 is a comparative summary of the impacts of the Proposed Action and alternatives, including the No Action Alternative.

## **ES-2 Purpose and Need of the Proposed Action**

The USFWS and NMFS are responding to applications from Green Diamond for: (1) an ESP pursuant to Section 10(a)(1)(A) of the Federal ESA; and (2) an ITP pursuant to Section 10(a)(1)(B) of the ESA, respectively. Pursuant to ESA Section 10(a), if NMFS finds that all ESA requirements for ITP issuance are met, NMFS is required to issue the requested Permit. Similarly, USFWS may approve an ESP if it finds that the CCAA meets the regulatory requirements for such permits. In addition, implementing the provisions of these permits will further the NMFS and USFWS long-term objective of ensuring long-term survival of ITP/ESP species, while allowing otherwise lawful activities of the applicant to continue. The Services' purpose and need in this action, therefore, is to respond to Green Diamond's ITP and ESP application for incidental take authorization pursuant to an HCP/CCAA that provides protection and conservation to listed, proposed, and unlisted species and their habitats consistent with the requirements of Section 10(a)(1)(A) and Section 10(a)(1)(B) of the ESA.

The applications request that NMFS approve Green Diamond's application and issue an ITP, and USFWS approve Green Diamond's application and issue an ESP. The Services' approval and issuance of these Permits are the NEPA "actions" analyzed in this EIS.

## **ES-3 Action Area**

As discussed in Chapter 1, the Action Area includes all commercial timberland acreage within the 11 Hydrographic Planning Areas (HPAs) on the west slopes of the Klamath Mountains and the Coast Range of California in Del Norte and Humboldt counties where Green Diamond owns lands or harvesting rights, during the period of such ownership within the term of the Permits. The Action Area is currently 416,532 acres, including approximately 1,866 acres of lands on which Green Diamond owns perpetual harvesting rights. The Action Area acreage will

adjust during the Permit term to reflect real property transactions involving Green Diamond.<sup>1</sup> To account for those potential adjustments, the EIS analyzes possible impacts of the Proposed Action and the alternatives on all commercial timberlands within the 11 HPAs, defined as the “Primary Assessment Area.” Under Alternative C, the Action Area and Primary Assessment Area contain additional areas outside the 11 HPAs that are known as “rain-on-snow” areas (see Section 2.5).

## ES-4 Proposed Action and Alternatives

The process used in developing the alternatives to the Proposed Action included the review and analysis of the purpose and need for the Action, oral and written comments received during public scoping, detailed information provided in the AHCP/CCAA, and the issues described in Chapter 1.

Five alternatives are considered in detail in this EIS, as summarized in Table ES-1. The No Action Alternative and the three action alternatives represent the reasonable range of alternatives to the Proposed Action. Key attributes of the No Action, Proposed Action, and three action alternatives are summarized in more detail in Table 2.7-1 at the end of Chapter 2. Additional alternatives were considered; those eliminated from detailed evaluation are summarized in Section 2.6. This EIS compares the Proposed Action and the other three action alternatives against the No Action Alternative as required by NEPA.

**TABLE ES-1**  
Alternatives Analyzed in Detail in the Green Diamond AHCP/CCAA EIS

| Title                            | Brief Description   |
|----------------------------------|---|
| No Action<br>(No Permit/No Plan) | <ul style="list-style-type: none"> <li data-bbox="667 1108 1435 1199">• Continuation of Green Diamond’s existing timber harvesting and forest management practices in the Action Area under existing regulations (see Sections 2.1.1 and 2.1.2)</li> <li data-bbox="667 1213 1435 1272">• Continued application of existing measures for protection of fish and wildlife habitat (Section 2.1.3)</li> <li data-bbox="667 1287 1435 1402">• Continued implementation of measures contained in Green Diamond’s NSOHCP and associated IA that provide for the legal incidental take of northern spotted owls in connection with timber harvesting and forest management operations</li> <li data-bbox="667 1417 1435 1535">• Continued implementation of measures designed to avoid take of other listed species; continued implementation of other measures to mitigate or avoid significant impacts to unlisted species (Section 2.1.4 and 2.1.5)</li> </ul> |

<sup>1</sup> Additional commercial timberlands that Green Diamond may acquire in the future may be added to Green Diamond’s Initial Plan Area (known herein as the current Action Area), subject to Green Diamond submitting to the Services a description of the lands it intends to add, along with a summary of relevant characteristics they share with existing Action Area lands within that HPA. Up to 15 percent of the current Action Area (e.g., 61,821 acres), including areas on which Green Diamond owns perpetual harvesting rights, may be added to or deleted from the Action Area without an amendment to the proposed HCP/CCAA. The 15 percent cap would not apply to certain categories of land transfers as specified in the proposed Implementation Agreement between Green Diamond and the Services.

**TABLE ES-1**

Alternatives Analyzed in Detail in the Green Diamond AHCP/CCAA EIS

| Title  | Brief Description   |
|--|---|
| Proposed Action                                  | <ul style="list-style-type: none"> <li>• Continuation of existing operations pursuant to existing regulations, other applicable laws, and Green Diamond's NSOHCP, as augmented by the proposed AHCP/CCAA Conservation Strategy</li> <li>• Incidental take coverage for three listed fish ESUs/DPSs, three unlisted fish ESUs, two unlisted fish species, and two unlisted amphibians through issuance of an ITP by NMFS and an ESP by the USFWS</li> <li>• AHCP/CCAA/ITP/ESP obligations for the covered species and their habitats, to include: (1) fixed and variable RMZ/EEZ widths for Class I, II, and III watercourses and implementation of other riparian measures; (2) implementation of road management, slope stability, and ground disturbance measures; and (3) effectiveness and implementation monitoring</li> </ul> |
| Listed Species Only (Alternative A)              | <ul style="list-style-type: none"> <li>• Same as the Proposed Action except for no incidental take coverage for unlisted species/ESUs and, consequently, no monitoring of amphibian populations</li> </ul>  |
| Simplified Prescription Strategy (Alternative B) | <ul style="list-style-type: none"> <li>• Continuation of existing operations pursuant to existing regulations, other applicable laws, and Green Diamond's NSOHCP, as augmented by an AHCP/CCAA conservation strategy</li> <li>• An AHCP/CCAA would be implemented for the same fish and wildlife species covered by the Proposed Action, and an ITP/ESP would be issued for those species.</li> <li>• Obligations for the covered species include fixed, no-cut riparian buffer widths for Class I and II watercourses on the fee-owned lands of the Action Area.</li> </ul>  |
| Expanded Species/Geographic Area (Alternative C) | <ul style="list-style-type: none"> <li>• Same as Proposed Action except that conservation measures would be applied over an expanded area (an additional 25,677 acres) which has a different hydrology (rain-on-snow hydrology) than the majority of the area that would be covered under the Proposed Action</li> <li>• The HCP/ITP would provide incidental take coverage for three listed fish ESUs/DPSs, three unlisted fish ESUs, two unlisted fish species, one listed fish species, four unlisted amphibians, one unlisted reptile, and two listed bird species through issuance of ITPs by NMFS and the USFWS</li> <li>• Modifications to the HCP/ITP obligations that include additional species-specific measures</li> </ul>  |

## ES-5 Scoping and Public Review Process

### ES-5.1 Public Scoping

Following publication of a Notice of Intent (NOI), which appeared in the *Federal Register* on July 11, 2000, the Services initiated the EIS and began the scoping process. Scoping meetings were held on July 11 and July 12, 2000 in Eureka and Crescent City, California. Attendees were given an overview of Green Diamond's proposed AHCP/CCAA and asked to present their questions, concerns, and information pertinent to development of the associated EIS. Green Diamond also held a series of six informational meetings with cooperating agencies and local tribal groups. The meetings were held on August 11, August 18, August 25, August 29, August 30, and September 21, 2000 at various locations. All comments are summarized in greater detail in the Scoping Report for this EIS dated September 18, 2000 and included herein as Appendix B.

### ES-5.2 DEIS Public Review Process

A Notice of Availability (NOA) for the DEIS was published in the Federal Register by NMFS and USFWS on August 16, 2002. The public review period was scheduled for 90 days from August 16, 2002 to November 14, 2002. Two public meetings to formally introduce Green Diamond's proposed AHCP/CCAA and the DEIS were held on September 4, 2002, in Eureka, California. Approximately 20 people attended the DEIS public meeting. A total of 20 oral questions and comments were received from the two meetings held in Eureka. In addition, 25 comment letters were received during the 90-day public review period that closed on November 14, 2002, comprising 1,267 separate comments. Written comments, plus oral comments received at the public meetings, are included in Volume II of this FEIS. See Volume II for a description of the comments received, and the responses to comments.

### ES-5.3 FEIS Public Review Process

The public outreach process will continue through completion and approval of the Record of Decision (ROD) by the Services. Statements on the FEIS will be accepted by the Services considered in the decision on the Proposed Action. The FEIS is being distributed for a 30-day notification period.

## ES-6 Differences between the DEIS and FEIS

This section presents the key changes to the DEIS in this FEIS as summarized below. These revisions do not alter the significant conclusions in the DEIS.

- Revisions to text have been made to reflect changes in the listing of steelhead, one of the covered species, from the "Northern California Evolutionarily Significant Unit (ESU)" to the "Northern California Distinct Population Segment (DPS)." The DPS policy adopts criteria similar to, but somewhat different from, those in the ESU policy for determining when a group of vertebrates constitutes a DPS: the group must be discrete from other populations, and it must be significant to its taxon. A group is discrete if it is "markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, and behavioral factors." Using the DPS policy, resident

rainbow trout are considered “markedly separated” from the anadromous form and are not included in the current steelhead listing (71 FR 834).

- Refinements and clarifications have been made to Green Diamond’s Operating Conservation Strategy (see AHCP/CCAA Section 6); these changes are also reflected in the FEIS.
- Additional information has been provided to explain and clarify in greater detail the basis for the cumulative effects analysis in Chapter 4 (*Environmental Consequences*) relating to geology and geomorphology (Section 4.2) and aquatic resources (Section 4.3).
- A new Section 4.13, *Summary of Cumulative Impact Analysis*, has been prepared that summarizes the overall cumulative effect to the environment as a result of implementation of the Proposed Action and the other alternatives.

## ES-7 Preferred Alternative

CEQ regulations require that the Record of Decision specify “the alternative or alternatives which were considered to be environmentally preferable” (40 CFR 1505.2(b)). The environmentally preferred alternative is the alternative that will promote the national environmental policy as expressed in NEPA’s Section 101. Ordinarily this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic cultural and natural resources. NEPA’s Section 101 calls for Federal agencies to make decisions to achieve “conditions under which man and nature can exist in productive harmony and full fill the social, economic, and other requirements of present and future generations of Americans.” Federal agencies should strive to attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences. It also calls for Federal agencies to achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities.

Based on the analysis of alternatives in the FEIS, there are more similarities than differences in the overall effects of the alternatives on the human environment, thus making it difficult to choose any particular alternative in the FEIS as the environmentally preferred alternative. Upon further review, the Services will identify the Environmentally Preferred Alternative or Alternatives in the Record of Decision as required by NEPA.

## ES-8 Summary of Impacts

### ES-8.1 Overview

This section presents a summary of the impacts of implementing the proposed AHCP/CCAA, which contains prescriptive conservation measures related to Green Diamond’s forestry management and related activities. The AHCP/CCAA conservation strategy is designed to: (1) avoid the environmental effects that could cause take; and (2) minimize and mitigate the potential impacts of take. The AHCP/CCAA measures are summarized above and in Chapter 2 of this EIS. The potential direct, indirect, and cumulative effects of the Proposed Action and alternatives, including the No Action Alternative, are described and evaluated in Chapter 4 (*Environmental Consequences*) for the

resource areas listed below. (The affected environment for each of these resource areas is presented in Chapter 3, *Affected Environment*.)

- Geology, Geomorphology, and Mineral Resources (Section 4.2)
- Hydrology and Water Quality (Section 4.3)
- Aquatic Resources (Section 4.4)
- Vegetation/Plant Species of Concern (Section 4.5)
- Terrestrial Habitat/Wildlife Species of Concern (Section 4.6)
- Air Quality (Section 4.7)
- Visual Resources (Section 4.8)
- Recreational Resources (Section 4.9)
- Cultural Resources (Section 4.10)
- Land Use (Section 4.11)
- Social and Economic Conditions (Section 4.12)

Table ES-2 (at the end of this Executive Summary) provides a comparative overview of the impacts of the Proposed Action (i.e., the proposed AHCP/CCAA) and the alternatives for each of the resource areas assessed in this EIS. Detailed analysis of impacts is contained in Chapter 4 (*Environmental Consequences*).

## ES-8.2 Summary of Impacts

On the basis of the assessment of direct and indirect impacts presented in Chapter 4, implementing the proposed AHCP/CCAA or the other action alternatives would result in either no change to the environment or slight improvements to the environment.

Implementing the Proposed Action would improve the overall condition of habitat for the covered species in the Action Area. Implementation of the AHCP/CCAA would contribute to the development and maintenance of properly functioning habitat and, therefore, would also help to preclude the possible need to list unlisted covered species in the future. Implementing the Proposed Action or the action alternatives would result in additional benefits to the environment.

Overall, the critical resources assessed in this EIS are the aquatic species covered by the AHCP/CCAA measures and the resource areas that contribute most directly to their maintenance (e.g., geology, geomorphology, hydrology, and water quality). Hydrology, riparian conditions, sediment production and delivery, the potential for mass soil movement, and water quality conditions have the greatest potential to affect aquatic habitat quality in the Primary Assessment Area (see Chapter 4). Implementing the measures contained in the Proposed Action would result in either no change or an improvement in conditions for the benefit of the covered species and their riparian habitat. Key AHCP/CCAA provisions that would contribute to such improved conditions are summarized below and in Chapter 2. They include:

- Implementation of an ownership-wide Road Management Plan that provides for road-related fish passage enhancement (barrier removal); implementation of practices that are designed to minimize sediment discharge to Class I, II, and III streams; and decommissioning of some roads. The proposed Road Management Plan provides for accelerated repair (over a 15-year period) of high- and moderate-risk sediment delivery

sites on roads on the Green Diamond fee ownership, in accordance with the schedule established in the proposed AHCP/CCAA.

- Protection of specified unique geomorphic features (i.e., channel migration zones and floodplains).
- Adoption of various slope stability and ground disturbance conservation measures.
- Implementation of effectiveness monitoring, plus adaptive management with structured feedback loops.

Under the No Action Alternative, environmental conditions are also anticipated to improve over time but not at the accelerated rate at which they would improve under the Proposed Action. The differences among the alternatives is summarized above and detailed in Chapter 2.

The AHCP/CCAA conservation measures under the Proposed Action differ from the No Action Alternative in the following ways.

- The No Action Alternative would apply existing regulations and guidelines, whereas the Proposed Action would apply the additional AHCP/CCAA conservation measures (in conjunction with existing regulations and guidelines). The additional conservation measures of the Proposed Action are designed to minimize erosion and sediment-causing activities throughout the Primary Assessment Area on an accelerated basis.
- The No Action Alternative would apply the existing regulations and guidelines only on a THP-by-THP basis, whereas the Proposed Action would apply the additional AHCP/CCAA conservation measures (in conjunction with existing regulations and guidelines) more broadly throughout each of the HPAs in the Action Area. Application of the Proposed Action conservation measures on an ownership-wide basis throughout the Action Area would result in broader (i.e., not on a THP-by-THP basis) and expedited application of the conservation measures compared with existing conditions or the conditions expected to occur over time under the No Action Alternative.

### **ES-8.3 Cumulative Impacts**

Adverse conditions currently exist in some areas of the 11 HPAs, primarily as a result of past practices. Continuing impacts of these past practices include conditions associated with a general lack of LWD, lack of riparian vegetation, and aggraded stream channels (AHCP/CCAA Sections 4.2 through 4.6). Many of these areas and conditions may recover over the next 50 years, while others, such as low gradient aggraded stream channels may take longer than 50 years to recover (AHCP/CCAA Section 4.2).

The No Action Alternative, in which Green Diamond continues to conduct its timber management program pursuant to its institutional BMPs and the CFPRs, would result in an improving trend from the current adverse conditions and will lead to an overall reduction in the level of adverse environmental conditions which currently exist in some areas of the HPAs. However, this improvement may not reduce the level of concern below a level of significance within the next 50 years.

Management of the Action Area under all the action alternatives would further improve current conditions relative to implementation of the No Action Alternative. The benefits to

geomorphology are expected to be equal or slightly greater under the Proposed Action and Alternatives A and C than under Alternative B, because of differences (or, in some cases, absences) in a broad range of enhanced forest management practices and implementation of an adaptive management monitoring program with structured feedback mechanisms. The sediment control benefits associated with implementation of the Road Management Plan and the accelerated road sediment site repairs under the Proposed Action, Alternative A, and Alternative C will result in a greater reduction in sediment delivery compared to all the other sediment conservation measures combined. Therefore, implementation of the Road Management Plan, the accelerated road repair, and limitations on equipment use during wet weather conditions provide the greatest benefit to the covered species.

Implementation of the measures contained in the Proposed Action would result in equivalent or improved water quality conditions, as discussed in Sections 4.3.2 through 4.3.6. Hydrologic conditions associated with the Proposed Action and other action alternatives are not anticipated to significantly change compared with existing conditions or the No Action Alternative. One potential for an impact under the action alternatives is a slight (and less than significant) change in water temperature resulting from increased shade attributable to overstory canopy closure retention requirements. Another possible impact is locally increased peak flows on a short-term basis following harvesting. These impacts would be insignificant given implementation of the riparian management prescriptive measures included in the Proposed Action (AHCP/CCAA Section 6.2.1).

The aquatic and riparian habitat conditions would improve under the Proposed Action relative to existing conditions and relative to implementation of the No Action Alternative. The anticipated improvement in riparian conditions and the reduction in sediment production and delivery to streams would speed the improvements expected over time under the No Action Alternative, and would likely result in improved physical habitat for the covered species. Improvements in aquatic and riparian habitat benefiting the covered species would, in general, benefit other species associated with these habitats. It is expected that benefits to all of these species and their habitats under the Proposed Action would accumulate incrementally over the next 50 years as the improved forest management practices and conservations measures are implemented throughout this period.

Conditions resulting from implementation of all the action alternatives related to air quality (Section 4.7), visual resources (Section 4.8), recreation (Section 4.9), and cultural resources (Section 4.10) are anticipated to be the same as those expected to result under the No Action Alternative.

The Proposed Action would result in an improvement in the overall condition of habitat for the covered species in the Action Area over the 50-year term of the Plan and the Permits. Implementation of the Proposed Action would contribute to the development and maintenance of properly functioning habitat. Implementation of the Proposed Action or any of the action alternatives would result in an overall reduction in adverse impacts to the environment compared to existing conditions. However, ongoing impacts associated with past activities (i.e., the persistence of historic management-generated sediment), present actions, and reasonably foreseeable future actions are expected to continue, although with a decreasing trend in impact, over the term of the Permits with implementation of the Proposed Action (Section 2, Section 4.2).

**TABLE ES-2**

Summary of Potential Environmental Impacts Associated with Each Alternative

| No Action Alternative   | Proposed Action  | Alternative A                      | Alternative B   | Alternative C                      |
|---|--|------------------------------------|---|------------------------------------|
| <b>4.2 Geology, Geomorphology and Mineral Resources</b>   |  |                                    |   |                                    |
| <b>Surface Erosion</b>  |  |                                    |   |                                    |
| The potential for riparian management and harvest-related (i.e., non road-related) activities to affect surface erosion is expected to remain about the same as under current conditions. | The risk of sediment delivery through harvest-related surface erosion is expected to decrease slightly relative to the No Action Alternative.  | Same as the Proposed Action.       | Similar to the Proposed Action.   | Same as the Proposed Action.       |
| Erosion from fire areas is not expected to differ from current conditions.  | Same as the No Action Alternative.   | Same as the No Action Alternative. | Same as the No Action Alternative.  | Same as the No Action Alternative. |
| <b>Mass Soil Movement</b>   |  |                                    |   |                                    |
| The risk of mass soil movement owing to timber harvesting in sensitive areas would decrease under the No Action Alternative.  | The risk of mass soil movement owing to timber harvesting in sensitive areas would decrease relative to the No Action Alternative through implementation of slope stability and other conservation measures. | Same as the Proposed Action.       | The risk of mass soil movement owing to timber harvesting would decrease relative to the No Action Alternative, but would likely be greater than would occur under the Proposed Action. | Same as the Proposed Action.       |
| Shallow landslide potential would be reduced under the No Action Alternative.   | Shallow landslide potential would decrease relative to the No Action Alternative through implementation of slope stability conservation measures.  | Same as the Proposed Action.       | Shallow landslide potential would decrease relative to the No Action Alternative, but would increase relative to the Proposed Action.   | Same as the Proposed Action.       |

**TABLE ES-2**

Summary of Potential Environmental Impacts Associated with Each Alternative

| <b>No Action Alternative</b>   | <b>Proposed Action</b>   | <b>Alternative A</b>               | <b>Alternative B</b>   | <b>Alternative C</b>               |
|--|--|------------------------------------|--|------------------------------------|
| The risk of deep-seated landslides is expected to remain the same as current conditions.   | Deep-seated landslide potential would decrease relative to the No Action Alternative through implementation of slope stability conservation measures.  | Same as the Proposed Action.       | Same as the No Action Alternative.   | Same as the Proposed Action.       |
| Soil creep is expected to remain the same as under current conditions.   | Same as the No Action Alternative.   | Same as the No Action Alternative. | Same as the No Action Alternative.   | Same as the No Action Alternative. |
| <b>Road-Related Sediment Production</b>  |  |                                    |  |                                    |
| Sediment production from roads and landings is expected to remain the same or decrease relative to current conditions.           | Numerous additional protective measures would decrease sediment production from roads and landings relative to the No Action Alternative.  | Same as the Proposed Action.       | Sediment control measures would likely decrease sediment production from roads and landings relative to the No Action Alternative, but would offer less protection than the Proposed Action. | Same as the Proposed Action.       |
| The potential for road construction and use to affect mass soil movement is expected to decrease relative to current conditions. | Management measures related to road construction and use under the Proposed Action would substantially reduce the potential for road-related mass soil movement relative to the No Action Alternative. | Same as the Proposed Action.       | Same as the No Action Alternative.   | Similar to the Proposed Action.    |
| Sediment production related to skid trails is expected to decrease relative to current conditions.                               | Sediment production from skid trails would likely be reduced relative to the No Action Alternative.  | Same as the Proposed Action.       | Sediment control measures would likely decrease sediment production from skid trails relative to the No Action Alternative, but would offer less protection than the Proposed Action.        | Same as the Proposed Action.       |

**TABLE ES-2**

Summary of Potential Environmental Impacts Associated with Each Alternative

| No Action Alternative  | Proposed Action   | Alternative A                      | Alternative B  | Alternative C                      |
|--|---|------------------------------------|--|------------------------------------|
| <b>4.3 Surface Water Hydrology and Water Quality</b>   |   |                                    |  |                                    |
| <b>Hydrology</b>   |   |                                    |  |                                    |
| No substantive changes in the existing hydrologic regime or in the magnitude and timing of naturally occurring peak or low (base) flows are anticipated.   | Same as the No Action Alternative.  | Same as the No Action Alternative. | Same as the No Action Alternative.   | Same as the No Action Alternative. |
| <b>Water Temperature</b>   |   |                                    |  |                                    |
| Generally suitable water temperatures are expected to remain at suitable levels. Stream shading is expected to improve over time compared with current conditions, contributing to slight decreases in water temperatures. | Similar to the No Action Alternative, stream shading would likely improve over time to a greater degree than under the No Action Alternative, contributing to slight decreases in water temperatures.                   | Same as Proposed Action.           | Stream shading is expected to increase slightly more than under the Proposed Action due to the non-managed riparian buffers, contributing to slight decreases in water temperatures. | Same as Proposed Action.           |
| <b>Sediment-Related Water Quality Parameters</b>   |   |                                    |  |                                    |
| Suspended sediment levels, turbidity, and nutrient and contaminant loading are expected to decline over time as sediment delivery is reduced.  | Conservation measures implemented under the Proposed Action would likely reduce suspended sediment, turbidity, and nutrient and contaminant loading over time to a greater degree than under the No Action Alternative. | Same as the Proposed Action.       | Sediment control measures would be similar to the No Action Alternative, with increased sediment filtration provided by the non-managed riparian buffers.                            | Same as the Proposed Action.       |

**TABLE ES-2**  
Summary of Potential Environmental Impacts Associated with Each Alternative

| No Action Alternative  | Proposed Action   | Alternative A                      | Alternative B   | Alternative C                      |
|--|---|------------------------------------|---|------------------------------------|
| <b>4.4 Aquatic Resources</b>   |   |                                    |   |                                    |
| <b>Hydrologic Effects</b>  |   |                                    |   |                                    |
| Because no substantive changes in peak or low (base) flows are anticipated, there would likely be no flow-related changes in channel morphology, incidence of bed scour and bank erosion, or quality of aquatic habitat relative to existing conditions. | Same as the No Action Alternative.  | Same as the No Action Alternative. | Same as the No Action Alternative.  | Same as the No Action Alternative. |
| <b>Large Woody Debris Recruitment</b>  |   |                                    |   |                                    |
| Current levels of large woody debris recruitment would likely be maintained or enhanced over time.   | With increased riparian protection under the Proposed Action, LWD recruitment would increase relative to the No Action Alternative. | Same as the Proposed Action.       | LWD recruitment may increase slightly more than under the Proposed Action due to the non-managed riparian buffers.  | Same as the Proposed Action.       |
| <b>Stream Shading</b>  |   |                                    |   |                                    |
| As it relates to stream shading, canopy coverage would likely increase relative to current conditions, with improvements over time as riparian stands grow and mature.   | Canopy closure is expected to increase relative to the No Action Alternative, with corresponding benefits to stream shading.        | Same as the Proposed Action.       | Canopy closure is expected to increase slightly more than under the Proposed Action due to the non-managed riparian buffers, with corresponding benefits to stream shading. | Same as the Proposed Action.       |
| <b>Sediment Filtration</b>   |   |                                    |   |                                    |
| Sediment filtration, relative to current conditions, is expected to remain the same or increase over time.   | Sediment filtration would not be substantially different relative to the No Action Alternative.                                     | Same as the Proposed Action.       | Similar to the Proposed Action, with increased sediment filtration provided by the non-managed riparian buffers.  | Same as the Proposed Action.       |

**TABLE ES-2**

Summary of Potential Environmental Impacts Associated with Each Alternative

| No Action Alternative  | Proposed Action  | Alternative A                | Alternative B   | Alternative C                |
|--|--|------------------------------|---|------------------------------|
| <b>Bank Stability</b>  |  |                              |   |                              |
| Riparian conservation measures under the No Action Alternative will improve bank stability relative to existing conditions, primarily along Class I watercourses.  | Riparian protection under the Proposed Action will increase bank stability relative to the No Action Alternative, particularly along Class II and III watercourses.  | Same as the Proposed Action. | Similar to the Proposed Action.   | Same as the Proposed Action. |
| <b>Nutrient Input (Leaf and Litterfall)</b>  |  |                              |   |                              |
| Riparian conservation measures under the No Action Alternative will favor conifers over hardwoods in the WLPZs. In the long term, this may reduce the amount of high quality leaf and litterfall relative to current levels. | Increased riparian protection under the Proposed Action will favor conifers over hardwoods in the RMZs. In the long term, this may reduce the amount of high quality leaf and litterfall relative to existing conditions and similar to the No Action Alternative. | Same as the Proposed Action. | Similar to the Proposed Action, with decreased amounts of high quality leaf and litterfall in the long term provided by the non-managed riparian buffers. | Same as the Proposed Action. |
| <b>Sediment Production and Delivery</b>  |  |                              |   |                              |
| Sediment production and delivery to Primary Assessment Area streams would likely be reduced relative to existing conditions.   | Sediment production and delivery to Primary Assessment Area streams would be reduced under the Proposed Action relative to the No Action Alternative, primarily from the accelerated road work.  | Same as the Proposed Action. | Sediment production and delivery to Primary Assessment Area streams under Alternative B would be generally comparable to the No Action Alternative.       | Same as the Proposed Action. |

**TABLE ES-2**

Summary of Potential Environmental Impacts Associated with Each Alternative

| No Action Alternative   | Proposed Action   | Alternative A                | Alternative B  | Alternative C                |
|---|---|------------------------------|--|------------------------------|
| <b>Aquatic Habitat</b>  |   |                              |  |                              |
| A positive trend in the quality of aquatic habitat is expected, with a concomitant benefit to anadromous and resident salmonids.  | Aquatic habitat conditions related to forestry management activities are expected to improve under the Proposed Action relative to existing conditions and to the No Action Alternative.  | Same as the Proposed Action. | Similar to the No Action Alternative, with the non-managed riparian buffers contributing to the positive trend in the quality of aquatic habitat.  | Same as the Proposed Action. |
| Water quality and substrate conditions would likely improve over time as sediment inputs are decreased.   | Water quality and substrate conditions are expected to be equal or slightly improve under the Proposed Action relative to existing conditions and to the No Action Alternative.   | Same as the Proposed Action. | Similar to the No Action Alternative, water quality and substrate conditions would likely improve over time as sediment inputs are decreased.  | Same as the Proposed Action. |
| Because little change or improvement in canopy cover, shading, or sediment production and delivery is expected, thermal conditions are likely to remain similar to existing conditions.     | Because improvements in canopy cover, shading, and reduced sediment production and delivery are anticipated, future thermal conditions would be improved relative to existing conditions and relative to the No Action Alternative. | Same as the Proposed Action. | Because canopy coverage and shading would likely increase, and there would be little change in sediment production and delivery, future thermal conditions would improve slightly relative to existing conditions, but to a lesser extent than under the Proposed Action.. | Same as the Proposed Action. |
| Habitat complexity would likely increase slightly through increased LWD recruitment, bank stability, canopy coverage, and reduced sediment input over time relative to existing conditions. | Habitat complexity would likely increase over time through increased LWD recruitment, bank stability, canopy coverage, and reduced sediment inputs relative to existing conditions and to the No Action Alternative.                | Same as the Proposed Action. | Similar to the Proposed Action, with the non-managed buffers contributing to the increase in LWD recruitment, bank stability, and canopy closure.  | Same as the Proposed Action. |

**TABLE ES-2**

Summary of Potential Environmental Impacts Associated with Each Alternative

| <b>No Action Alternative</b>  | <b>Proposed Action</b>  | <b>Alternative A</b>         | <b>Alternative B</b>               | <b>Alternative C</b>         |
|---|---|------------------------------|------------------------------------|------------------------------|
| Restoration and maintenance of fish passages during road upgrades and new road construction would occur in association with THP implementation. Systematic and comprehensive barrier removal over the entire ownership would not occur. | The Road Management Plan under the Proposed Action will result in an inventory, prioritization, and elimination of fish passage problems at road crossings over time in a systematic process. | Same as the Proposed Action. | Same as the No Action Alternative. | Same as the Proposed Action. |

**4.5 Vegetation/Plant Species of Concern****Riparian Management Effects**

Vegetation management activities in riparian areas would be expected to remain relatively unchanged from existing timber harvesting practices, and similar species compositions would be retained. Riparian vegetation would likely be composed of a greater number of mature trees, over time, compared with existing conditions.

Vegetation management activities in riparian areas would result in a more desirable plant community composition over time. More conifers would be maintained where mostly hardwoods currently exist in riparian areas. Due to limited harvest activities in riparian areas, riparian vegetation would be composed of a greater number of mature trees by the end of the Permit term compared with either existing conditions or conditions under the No Action Alternative.

Same as the Proposed Action.

Similar to the No Action Alternative, but the riparian areas and corridors would not be disturbed or manipulated, favoring shade-tolerant and woody species over shade-intolerant and non-woody species.

Same as the Proposed Action.

**TABLE ES-2**

Summary of Potential Environmental Impacts Associated with Each Alternative

| No Action Alternative   | Proposed Action   | Alternative A                      | Alternative B  | Alternative C                      |
|---|---|------------------------------------|--|------------------------------------|
| <b>Listed Plant Species and Other Plant Species of Concern</b>  |   |                                    |  |                                    |
| Potential impacts to listed plant and other plant species of concern are anticipated to be minimal. Continued implementation of existing regulations and operating guidelines, including Green Diamond's Plant Protection Program will avoid or minimize potential adverse impacts to listed plant species.   | Same as the No Action Alternative.  | Same as the No Action Alternative. | Same as the No Action Alternative.   | Same as the No Action Alternative. |
| <b>4.6 Terrestrial Habitat/ Wildlife Species of Concern</b>   |   |                                    |  |                                    |
| <b>Riparian Management Effects</b>  |   |                                    |  |                                    |
| There would be retention of a greater number of mature forest stands throughout the Primary Assessment Area, especially in riparian zones and northern spotted owl protection zones, relative to existing conditions. The species that would benefit the most from this effect include frogs, salamanders, herons, eagles, bats, marbled murrelets, and owls. | Vegetation structure in riparian areas would be more diverse and less intensively harvested compared to the No Action Alternative. Vegetation management activities in riparian areas would result in maintenance of a greater number of conifers where mostly hardwoods currently exist in riparian areas. The species that would benefit the most from this effect include frogs, salamanders, herons, eagles, bats, marbled murrelets, and owls. | Same as the Proposed Action.       | Similar to the No Action Alternative, except riparian areas and corridors would not be disturbed or manipulated. Vegetation in riparian areas would develop naturally over time, resulting in a greater number of stands with older, mature trees compared to the No Action Alternative. The species that would benefit the most from this effect include frogs, salamanders, herons, eagles, bats, marbled murrelets, and owls. | Same as the Proposed Action.       |

**TABLE ES-2**

Summary of Potential Environmental Impacts Associated with Each Alternative

| No Action Alternative   | Proposed Action   | Alternative A                | Alternative B  | Alternative C  |
|---|---|------------------------------|--|--|
| <b>Listed Wildlife Species and Other Wildlife Species of Concern</b>  |   |                              |  |  |
| Continued compliance with existing regulations and implementation of Green Diamond's NSOHCP should result in development of greater structural diversity and a greater number of stands with late-seral forest characteristics, relative to what currently exists, especially within WLPZs. This trend is beneficial to listed species and other wildlife species of concern that breed or forage in older trees or late-seral stands. These species include the bald eagle, marbled murrelet, northern spotted owl, osprey, Vaux's swift, Humboldt marten, red tree vole, and tailed frog. | Potential benefits to listed species under the Proposed Action would generally be greater than under the No Action Alternative, primarily because of increased overstory-canopy requirements within Class II RMZs, retention of all LWD within Class III Tier A EEZs, and retention of evenly distributed conifer trees within SMZs. Also, slightly more land would likely be left undisturbed in riparian areas relative to the No Action Alternative. These differences would amplify benefits described under the No Action Alternative for listed species and other wildlife species of concern that breed or forage in older trees and late-seral-forest stands. | Same as the Proposed Action. | Similar to the No Action Alternative. Potential benefits to listed species under Alternative B would generally be greater than under the No Action Alternative, primarily because slightly more land would likely be left undisturbed in riparian areas relative to the No Action Alternative. These differences would amplify benefits described under the No Action Alternative for listed species and other wildlife species of concern that breed or forage in older trees and late-seral-forest stands. | Similar to the Proposed Action, with the exception of short-term adverse impacts to some species from the phased harvesting of isolated marbled murrelet stands. Phased harvesting would result in short-term impacts to listed species and other wildlife species of concern that breed or forage in older trees and late-seral-forest stands. Species that would benefit from the phased removal of late-seral habitat include: Cooper's hawk, sharp-shinned hawk, and yellow-breasted chat. |
| <b>4.7 Air Quality</b>  |   |                              |  |  |
| PM <sub>10</sub> would be generated by slash-burning activities associated with site preparation under even-aged management. There would be little change from existing conditions.   | Similar to the No Action Alternative. Although various alternative management practices would result in some change in PM <sub>10</sub> generation, these changes are not expected to be substantial relative to overall PM <sub>10</sub> conditions under the No Action Alternative.   | Same as the Proposed Action. | Same as the No Action Alternative.   | Same as the Proposed Action.   |

**TABLE ES-2**

Summary of Potential Environmental Impacts Associated with Each Alternative

| No Action Alternative  | Proposed Action  | Alternative A                      | Alternative B  | Alternative C                      |
|--|--|------------------------------------|--|------------------------------------|
| <b>4.8 Visual Resources</b>  |  |                                    |  |                                    |
| Current CFPRs and Green Diamond's operational policies may reduce, to some degree, the visual effects of commercial forest management relative to the historical level of impact.            | Implementation of the AHCP/CCAA may reduce, to some degree, the visual effects of commercial forest management relative to the historical level of impact.       | Same as the Proposed Action.       | Similar to the Proposed Action, with minor potential benefits associated with no-harvest riparian buffers. | Same as the Proposed Action.       |
| <b>4.9 Recreation</b>  |  |                                    |  |                                    |
| Recreational activities would continue to occur on the ownership, subject to written entry permits. The potential for harvest-related impacts would likely be similar to current conditions. | Same as the No Action Alternative, with some potential for additional benefits to recreational experiences provided by improved riparian and fishery conditions. | Same as the Proposed Action.       | Similar to the Proposed Action, with minor potential benefits associated with no-harvest riparian buffers. | Same as the Proposed Action.       |
| <b>4.10 Cultural Resources</b>   |  |                                    |  |                                    |
| Current CFPRs contain measures for protection of cultural resources that would minimize the effects of timber harvesting on cultural resources.  | Same as the No Action Alternative.   | Same as the No Action Alternative. | Same as the No Action Alternative.   | Same as the No Action Alternative. |
| <b>4.11 Land Use</b>   |  |                                    |  |                                    |
| Current land use on the ownership would continue in a manner consistent with local land use plans and compatible with surrounding land uses.   | Same as the No Action Alternative.   | Same as the No Action Alternative. | Same as the No Action Alternative.   | Same as the No Action Alternative. |

**TABLE ES-2**

Summary of Potential Environmental Impacts Associated with Each Alternative

| <b>No Action Alternative</b>  | <b>Proposed Action</b>             | <b>Alternative A</b>               | <b>Alternative B</b>               | <b>Alternative C</b>               |
|---|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| <b>4.12 Social and Economic Conditions</b>  |                                    |                                    |                                    |                                    |
| Timber harvest levels under the No Action Alternative are expected to remain about the same as current conditions; therefore, job growth and local tax revenues are expected to remain similar to current conditions. | Same as the No Action Alternative. |

CHAPTER 1

# Introduction/Purpose and Need

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# Introduction/Purpose and Need

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This Final Environmental Impact Statement (FEIS) addresses the potential environmental effects that could result from implementing Green Diamond Resource Company's (Green Diamond) Aquatic Habitat Conservation Plan/Candidate Conservation Agreement with Assurances (AHCP/CCAA). The FEIS has been prepared in accordance with the National Environmental Policy Act (NEPA).

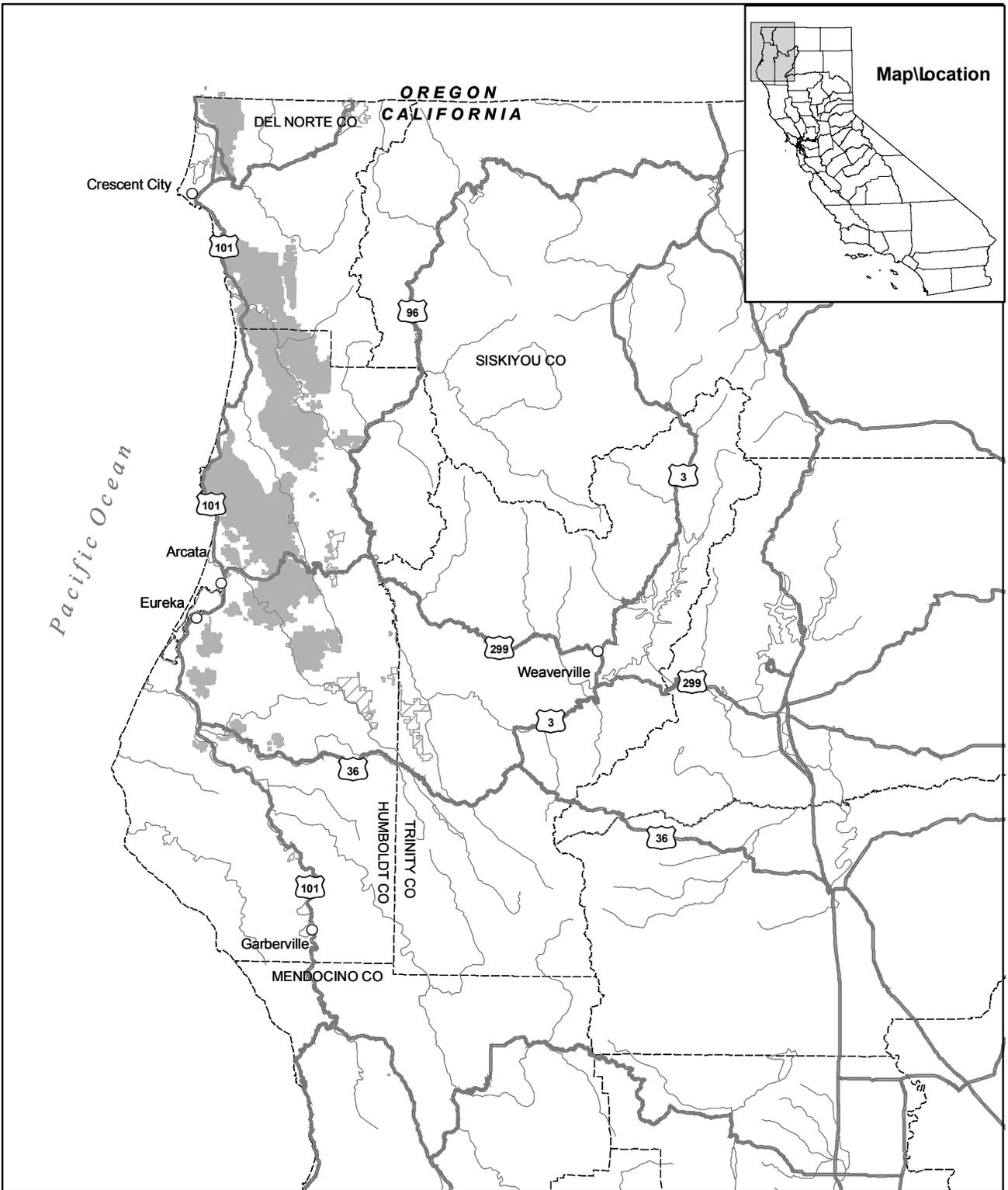
This FEIS comprises two volumes. Volume I contains: (1) a description of the No Action Alternative, the Proposed Action, and other action alternatives; (2) a summary description of baseline conditions; and (3) the analysis of potential environmental effects that could result from implementation of the AHCP/CCAA. It also includes the identification of the NEPA Preferred Alternative, modifications and updates to the EIS and proposed AHCP/CCAA since the publication of the Draft EIS (DEIS), and appendices containing additional information. Volume II provides a summary of major comment areas, copies of all public comments and letters received by the lead agencies, and the responses to the comments.

## 1.1 Background and Document Overview

The National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) (collectively referred to as the Services) are responding to applications from Green Diamond (previously Simpson Resource Company) for an Incidental Take Permit (ITP) and Enhancement of Survival Permit (ESP), respectively, as authorized under Section 10 of the Federal Endangered Species Act (ESA). Green Diamond has initiated efforts to expand and improve its aquatic species conservation and ecosystem management program on its forestland in Humboldt and Del Norte counties in California (Figure 1.1-1). Green Diamond's recent efforts have resulted in the development of the multi-species AHCP/CCAA. The AHCP/CCAA was prepared to support applications for an ITP and ESP from the Services.

Green Diamond manages its forestlands for timber production and other purposes pursuant to California's Timberland Productivity Act, the Z' Berg-Nejedly Forest Practice Act, the Board of Forestry's implementing rules and regulations for management of private forestlands, various other State laws, and Green Diamond's internal management policies and guidelines. These internal policies and guidelines are primarily contained in the *Habitat Conservation Plan for the Northern Spotted Owl on the California Timberlands of Simpson Resource Company* (Simpson Resource Company, 1992) and Green Diamond's "Option (a)" document (Simpson, 1999) filed with the California Department of Forestry and Fire Protection.

Green Diamond is requesting authorization for the incidental take of two fish Evolutionarily Significant Units (ESUs) and one Distinct Population Segment (DPS) that are listed as threatened under the ESA. Individual fish within these ESUs and DPS exist on Green Diamond lands. These fish ESUs/DPSs are the Southern Oregon/Northern California Coast coho salmon ESU, California Coastal Chinook salmon ESU, and Northern California steelhead DPS. Green Diamond also is requesting authorization for the incidental take of



- LEGEND**
- PROPOSED GREEN DIAMOND AHCP/CCA PLAN AREA
  - GREEN DIAMOND OWNERSHIP NOT INCLUDED IN AHCP/CCA PLAN AREA
  - Counties
  - Major Roads
  - Rivers

**Figure 1.1-1  
Green Diamond Resource Company  
California Ownership**



SCALE IS APPROXIMATE



three other fish ESUs, two fish species and two amphibian species, currently unlisted, should they become listed in the future. These unlisted ESUs/species are Chinook salmon (Southern Oregon and Northern California Coastal ESU, Upper Klamath/Trinity Rivers ESU), steelhead (Klamath Mountains Province ESU), coastal cutthroat trout, rainbow trout, southern torrent salamander, and tailed frog. Chapter 3 of the proposed AHCP/CCAA describes the ESUs/species for which Green Diamond is seeking Permit coverage. Green Diamond has proposed an AHCP/CCAA duration (Permit period) of 50 years.

The Services have determined that issuance of an ITP by NMFS and issuance of an ESP by USFWS are major Federal actions that trigger the National Environmental Policy Act (NEPA) requirement for the analysis and disclosure of the potential environmental impacts of the actions. Pursuant to NEPA, the environmental consequences of the Federal incidental take authorizations are being analyzed in this Environmental Impact Statement (EIS), with the USFWS and NMFS as co-lead Federal agencies.

## 1.2 Purpose and Need for the Proposed Action

The USFWS and NMFS are responding to applications from Green Diamond for: (1) an ESP pursuant to Section 10(a)(1)(A) of the Federal ESA; and (2) an ITP pursuant to Section 10(a)(1)(B) of the ESA, respectively. Pursuant to ESA Section 10(a), if NMFS finds that all ESA requirements for incidental take permit issuance are met, NMFS will issue the requested Permit. The USFWS may approve an ESP if it finds that the CCAA meets the regulatory requirements for such permits. In addition, implementing the provisions of these permits will further NMFS' and USFWS' long-term objective of ensuring long-term survival of ITP/ESP species while allowing otherwise lawful activities of the applicant to continue.

The Services' purpose and need in this action, therefore, is to respond to Green Diamond's ITP and ESP application for incidental take authorization pursuant to the AHCP/CCAA that provides protection and conservation to listed, proposed, and unlisted species and their habitats, consistent with the requirements of Section 10(a)(1)(A) and Section 10(a)(1)(B) of the ESA.

The applications request that NMFS approve Green Diamond's application and issue an ITP and that the USFWS approve Green Diamond's application and issue an ESP. The Services' approval and issuance of these Permits are the NEPA "actions" analyzed in this EIS.

## 1.3 Decisions to Be Made

NMFS must decide whether to issue, issue with conditions, or deny an ITP pursuant to Section 10(a)(1)(B) of the ESA. Pursuant to Section 10(a)(2)(B) the applicant is required to prepare a habitat conservation plan, and in reaching its decision to issue an ITP, NMFS must find that:

- The taking will be incidental to, and not the purpose of, the carrying out of an otherwise lawful activity
- The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking

- The applicant will ensure that adequate funding for the conservation plan and procedures to deal with unforeseen circumstances will be provided
- The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild
- Other measures that NMFS may require as necessary or appropriate for purposes of the conservation plan will be met and plan implementation will be assured

The USFWS must decide whether to issue, issue with conditions, or deny an ESP pursuant to Section 10(a)(1)(A) of the ESA (June 17, 1999, 64 FR 32706). The applicant for an ESP is required to prepare a CCAA and in reaching its decision to issue an ESP, the USFWS must find that:

- The take will be incidental to an otherwise lawful activity
- The CCAA complies with CCAA/ESP regulations that incorporate the Services' Candidate Conservation Agreement with Assurances policy (i.e., the benefits of the conservation measures as implemented, when combined with those benefits that would be achieved if it is assumed that conservation measures were also to be implemented on other necessary properties) would preclude or remove the need to list the covered species
- The probable direct and indirect effects of any authorized take will not appreciably reduce the likelihood of survival and recovery in the wild of any species
- Implementation of the terms of the CCAA is consistent with applicable Federal, State, and tribal laws and regulations
- Implementation of the terms of the CCAA will not conflict with any ongoing conservation programs for species covered by the Permit
- The applicant has shown capability for and commitment to implementing all of the terms of the CCAA

## 1.4 Action Area

As discussed in Chapter 1, the Action Area includes all commercial timberland acreage within the 11 Hydrographic Planning Areas (HPAs) on the west slopes of the Klamath Mountains and the Coast Range of California in Del Norte and Humboldt counties where Green Diamond owns lands or harvesting rights, during the period of such ownership within the Permit term. The Action Area is currently 416,532 acres, including approximately 1,866 acres of lands on which Green Diamond owns perpetual harvesting rights. The Action Area acreage will adjust during the Permit term to reflect real property transactions involving Green Diamond.<sup>1</sup> To account for those potential adjustments, the EIS analyzes

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<sup>1</sup> Additional commercial timberlands that Green Diamond may acquire in the future may be added to Green Diamond's Initial Plan Area (known herein as the current Action Area), subject to Green Diamond submitting to the Services a description of the lands it intends to add, along with a summary of relevant characteristics they share with existing Action Area lands within that HPA. Up to 15 percent of the current Action Area (e.g., 62,479 acres), including areas on which Green Diamond owns perpetual harvesting rights, may be added to or deleted from the Action Area without an amendment to the proposed AHCP/CCAA. The 15 percent cap would not apply to certain categories of land transfers as specified in the proposed Implementation Agreement between Green Diamond and the Services.

possible impacts of the Proposed Action and the alternatives on all commercial timberlands within the 11 HPAs, defined as the “Primary Assessment Area.” Under Alternative C, the Action Area and Primary Assessment Area contain additional areas outside the 11 HPAs that are known as “rain-on-snow” areas (see Section 2.5).

## 1.5 Regulatory Background

Federal authorization of incidental take is subject to several laws and regulations. Timber harvest-related activities on private lands are subject to numerous Federal and State regulations and other applicable guidelines. Key relevant State regulations and guidelines applicable to management activities on Green Diamond’s lands in northern California, and those associated with issuance of an ITP and ESP by the Services, are described below. In essence, these laws and regulations, which are summarized below, establish what are “otherwise lawful activities” pursuant to which any take that is authorized under the ITP and ESP must be incidental. In addition, laws that do not directly control these issues but are related are also summarized below.

### 1.5.1 Federal Regulatory Provisions Relating to Approval of ITPs

#### 1.5.1.1 Endangered Species Act

The Federal Endangered Species Act of 1973, as amended (ESA), is administered by the Secretaries of the Interior and Commerce through the USFWS and NMFS. Species listed as endangered or threatened under the ESA are provided protection as described herein.

**Section 9/Section 4(d).** Section 9 of the ESA prohibits the take of fish and wildlife species listed as endangered. Pursuant to Section 4(d) of the ESA, the Services may, by regulation, extend the prohibition of take to species listed as threatened. NMFS has extended the prohibition of take to the listed ESUs/DPS (50 CFR 223.203). As defined in the ESA, take includes harm or harassment as well as more directed activities such as hunting, capturing, collecting, or killing [16 USC 1532(19)]. By regulation, USFWS and NMFS have defined harm as an act that actually kills or injures fish or wildlife, and may include significant habitat alteration that significantly impairs essential behavioral patterns, such as migrating, spawning, feeding, breeding, and sheltering (50CFR17.3, 50CFR222.102).

**Section 10.** Section 10(a)(1)(A) of the ESA authorizes USFWS and NMFS to authorize take of individual members of endangered and threatened species for scientific purposes or to enhance the propagation and survival of the species.

In recognition that take cannot always be avoided, Section 10(a)(1)(B) of the ESA allows USFWS and NMFS to authorize taking of endangered and threatened species by non-Federal entities that is incidental to, but not the purpose of, otherwise lawful activities. Similar provisions are found in Section 7 for actions by Federal agencies (see below). Under Section 10(a)(1)(B), such authorizations are granted through the issuance of ITPs. Applicants for such permits must submit Habitat Conservation Plans (HCPs) that specify:

- The names of the species that will be taken
- The impact(s) that will likely result from the proposed taking
- The measures the applicant will take to minimize and mitigate those impacts

- The source of funding available to implement the measures
- Procedures that will be used to respond to unforeseen circumstances
- Alternatives to the taking and the reason the alternatives were not chosen
- Any other measures considered by the Secretaries (i.e., USFWS and NMFS) as necessary or appropriate for minimizing or mitigating the impacts of the taking

The Services also approve HCPs and issue ITPs that cover unlisted species if they are in the same area as the listed species. If an ITP and HCP treat an unlisted species as if listed, additional mitigation would not be required within the area covered by the ITP and HCP upon listing the species. The 'No Surprises' regulation adopted by USFWS and NMFS, 63 FR 8859 (February 23, 1998), codified at 50 CFR 17.22 and 17.32 for USFWS and 50 CFR 222.307(g) for NMFS, also provides that, as long as the HCP is being properly implemented, the Services will not require additional conservation and mitigation measures beyond those required in the plan in the event of changed circumstances not provided for in the plan. In the event of unforeseen circumstances, the Services may require additional measures limited to modifications within the conserved habitat area or the plan's operating conservation program, but the Services will not require the commitment of additional land, water or money, or impose additional restrictions on the use of land, water or natural resources beyond the level otherwise agreed upon without the consent of the permittee. However, in the unlikely event that the permitted activity no longer meets the issuance criteria that the activity will not appreciably reduce the likelihood of survival and recovery of the species in the wild, and the Services are not able to take steps to prevent that reduction, the Services will as a last resort revoke the permit, 69 FR 71723 (December 10, 2004). Under the Proposed Action addressed in this EIS, NMFS would issue an ITP based on implementation measures contained in Green Diamond's proposed AHCP that would cover the six listed and unlisted salmon and steelhead ESUs and one listed steelhead DPSs within NMFS's jurisdiction.

Additionally, in 1999 the Services announced a joint policy that provided additional ESA assurances through issuance of ESPs to non-Federal landowners for currently unlisted species that are: (1) proposed for listing under the ESA as threatened or endangered, (2) candidates for listing, or (3) likely to become candidates or proposed in the near future. Similar to issuance of ITPs in which the applicant must submit an HCP, issuance of an ESP requires that landowners enter into a Candidate Conservation Agreement with Assurances (CCAA) that commits them to implement voluntary conservation measures for the proposed or candidate species, or species likely to become candidates or proposed in the near future. The ESP provides assurances that additional conservation measures will not be required and additional land, water, or resource use restrictions will not be imposed if the species are listed in the future. Under the Proposed Action, the USFWS would issue an ESP based on conservation measures contained in Green Diamond's proposed CCAA for two species of trout, one salamander, and one frog species in USFWS's jurisdiction. Applicants for ESPs must provide the following information:

- The common and scientific names of the species for which the applicant requests incidental take authorization
- A description of the land use or water management activity for which the applicant requests incidental take authorization

- A Candidate Conservation Agreement that complies with the requirements of the CCAA policy available from the Service

**Section 7.** Under Section 7 of the ESA, Federal agencies must ensure that actions they authorize, fund or carry out are not likely to jeopardize the continued existence of endangered, threatened, or proposed species or result in the destruction or adverse modification of designated critical habitat of listed species by Federal agency actions. Because issuance of an ITP or ESP is a Federal action, the Services consult with themselves to ensure ITP/ESP issuance will comply with Section 7 of the ESA. This EIS is being prepared to support possible issuance of an ITP and/or ESP, which requires compliance with ESA Section 7.

#### **1.5.1.2 National Environmental Policy Act**

The NEPA of 1969, as amended, applies to all Federal agencies and most of the activities they manage, regulate, or fund that affect the environment. It establishes environmental policies for the nation, provides an interdisciplinary framework for Federal agencies to assess environmental impacts, and contains “action-forcing” procedures to ensure that Federal agency decision makers take environmental factors into account.

NEPA requires the analysis and full public disclosure of the potential environmental impacts of a proposed major Federal action. The issuance of an ITP by NMFS and issuance of an ESP by USFWS, as defined in this EIS, are major Federal actions that trigger the NEPA requirement for the analysis and disclosure of the potential environmental impacts of the actions. Pursuant to NEPA, the environmental consequences of the Federal incidental take authorizations are being analyzed in this EIS, which is being prepared with the USFWS and NMFS as co-lead Federal agencies.

#### **1.5.1.3 1996 Amendments to the Magnuson-Stevens Fishery Conservation and Management Act**

The 1996 Sustainable Fisheries Act amended the Magnuson-Stevens Fishery Conservation and Management Act (the Magnuson Act) to add provisions requiring NMFS and the various fishery management councils to identify and protect essential fish habitat (EFH) for fish species managed under the Magnuson Act. EFH can include coastal areas and oceans, and it can also include rivers used by anadromous fish. The amendments require that whenever Federal or State approval is required for any activity, including a non-fishing related activity that could adversely affect EFH, a consultation similar to the consultation required under the ESA must be conducted. If it is determined that the activity would adversely affect EFH, recommendations would be made on measures that the agency can take to conserve the habitat. The Magnuson Act did not, however, place mandatory requirements on agencies for compliance with conservation measures recommended by NMFS.

Currently, among the covered species EFH has been defined only for Chinook and coho salmon.

#### **1.5.1.4 Migratory Bird Treaty Act**

The Migratory Bird Treaty Act of 1918 (MBTA) makes it unlawful to pursue, hunt, capture, kill, or possess or attempt to do the same to any migratory bird or part, nest, or egg of such bird listed in wildlife protection treaties between the United States and Great Britain,

Mexico, Japan, and Russia. As with the Federal ESA, the act also authorizes the Secretary of the Interior to issue permits for take. The procedures for securing such permits are found in Title 50 of the Code of Federal Regulations (CFR), together with a list of the migratory birds covered by the act. The USFWS has recently determined that an ITP issued under Section 10 of the ESA also constitutes a Special Purpose Permit under 50 CFR 21.27.

#### **1.5.1.5 Bald Eagle and Golden Eagle Protection Act**

The Bald Eagle and Golden Eagle Protection Act makes it unlawful to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb any bald or golden eagle.

### **1.5.2 Related Federal Laws**

#### **1.5.2.1 Clean Water Act**

The Clean Water Act of 1977 (CWA) is the principal Federal legislation designed to protect the quality of the nation's waters. The purposes of the CWA include "the protection and propagation of fish, shellfish, and wildlife." The U.S. Environmental Protection Agency (EPA) is charged with implementing most of the CWA, including Section 303, which contains provisions for establishing and meeting water quality standards. The CWA provides for establishment of Total Maximum Daily Loads (TMDLs) where water bodies are not meeting established water quality standards. The CWA includes provisions for states to assume much of the implementation responsibility, which is largely the case in California. (See subsequent discussion on the Porter-Cologne Water Quality Control Act of 1969.) Many stream reaches and watersheds in the Action Area have been listed as impaired water bodies by the North Coast Regional Water Quality Control Board (RWQCB). Green Diamond's proposed AHCP/CCAA is not intended to ensure compliance with CWA or TMDL requirements. However, the species, and their associated habitats, which are the focus of this plan, are also commonly identified as a component of the set of beneficial uses CWA is designed to protect. As a result, some elements of the AHCP/CCAA will likely contribute towards the achievement of CWA identified beneficial uses.

#### **1.5.2.2 National Historic Preservation Act**

The National Historic Preservation Act (NHPA) of 1966, as amended, requires Federal agencies to take into account the effects of a proposed undertaking on cultural resources listed or eligible for listing on the National Register of Historic Places (NRHP). The purpose of Section 106 is to ensure that Federal agencies consult with State and local groups before non-renewable cultural resources, such as archaeological sites and historic structures, are affected. Section 106 requires Federal agencies to take into account the effects of their actions on properties that may be eligible for listing or that are listed in the NRHP for projects that they finance, permit, or own.

### **1.5.3 State Regulation of Timber Harvesting and Related Activities**

#### **1.5.3.1 California Forest Practice Act and Forest Practice Rules**

**Overview.** In general, commercial timber operations on State and private land in California are governed by the Z'berg-Nejedly Forest Practice Act of 1973 (Forest Practice Act) as implemented through Forest Practice Rules (Title 14 of the California Code of Regulations [14 CCR]) promulgated by the Board of Forestry (BOF) and administered by the California

Department of Forestry and Fire Protection (CDF). Pertinent examples of California Forest Practice Rules (CFPRs) relevant to fish and wildlife habitat management under Green Diamond's proposed AHCP/CCAA include: (1) the environmental review process undertaken by CDF, with input from other agencies, that applies to review and approval of proposed commercial timber operations; (2) watercourse and lake protection zone rules; (3) special rules to protect fish, wildlife, and watersheds; (4) rules for defined special treatment areas; (5) rules specific to the requirement for maximum sustained production of high quality timber products; and (6) a methodology for assessing cumulative environmental effects. The CFPRs also incorporate significant requirements contained in other State laws, such as the Porter-Cologne Water Quality Control Act, the California Environmental Quality Act (CEQA), and the California Endangered Species Act (CESA) (see below).

**Environmental Review Process.** The CFPRs impose a two-tiered environmental review process on timber harvesting operations in California. The review process is a certified regulatory program that produces the functional equivalent of an Environmental Impact Report (EIR) process and documentation required under CEQA for discretionary permitting decisions by State agencies. As a certified program, it is exempt from CEQA requirements regarding preparation of initial studies, negative declarations, and EIRs. Other provisions of CEQA, however, apply to BOF decisions, such as the policy of avoiding significant adverse effects on the environment (where feasible) and the requirement to consult with responsible agencies.

The first tier of the review process entails the programmatic consideration by the BOF and CDF of environmental impacts common to timber operations and the adoption of rules (the CFPRs) to control those impacts. The second tier of review occurs when the rules are applied to individual timber operations through the preparation, review, and approval of Timber Harvesting Plans (THPs).

A THP is a three-year plan for the harvesting of commercial tree species on private and state-owned forestlands. The primary purpose of the THP is to identify the scope of the proposed timber operations, assess potential site-specific and area-specific individual and cumulative effects on the environment, and discuss all feasible mitigation measures and alternatives that will reduce or avoid potentially significant impacts. Each plan is filed with CDF and reviewed by an interdisciplinary team that, if necessary, also inspects the plan site. No harvesting can occur until the THP for the site is approved. Approval of a THP requires a determination by the Director of CDF that all significant adverse impacts, including cumulative effects, have been avoided or mitigated to a level of insignificance.

Green Diamond regularly submits proposed THPs to CDF for review by CDF and a State agency review team (comprising the RWQCB, Department of Fish and Game, and the California Geologic Service [CGS] (formerly known as the California Division of Mines and Geology [CDMG]). Additional input is received from interested State and Federal agencies, often including the California Department of Parks and Recreation, the National Park Service, USFWS, and NMFS. Green Diamond's THPs cover only small areas (generally fewer than 100 acres).

**Watercourse and Lake Protection Rules.** The California Watercourse and Lake Protection Zone (WLPZ) rules require buffers of specified widths along streams and other bodies of

water. They also require maintenance of specified percentages of overstory canopy and understory vegetation in the buffers. These buffers are intended to: (1) provide a vegetative filter strip that will capture and reduce sediment carried by runoff from side-slopes; (2) preserve canopy cover to maintain water temperatures; and (3) provide for filtration of organic and inorganic material and vegetation, as well as streambed and flow modification by instream woody debris. In addition, the construction, use, and maintenance of logging roads, skid trails, and landings are regulated to minimize erosion and sedimentation impacts to watercourses and to remove or prevent in-stream obstructions to unrestricted fish passage.

**Special Rules for Wildlife and Sensitive Watersheds.** The CFPRs also require the retention of snags, intended for wildlife purposes and for the recruitment of large woody debris (LWD) for instream habitat through retention of larger living trees near aquatic habitats. Specific habitat protection and harvesting prescriptions are established for wildlife species designated as sensitive species. In addition, wildlife needs must be considered in the cumulative effects assessment, discussed below.

If substantial evidence exists that timber operations within a planning watershed will create a reasonable potential to cause or contribute to ongoing, significant cumulative effects on resources within the watershed, the BOF may classify the planning watershed as sensitive. Subsequent to classification, the BOF may further define watershed-specific performance standards for timber operations that will avoid or mitigate new or continuing significant cumulative effects. None of the planning watersheds in Green Diamond's proposed AHCP/CCAA have been designated as sensitive watersheds by the BOF.

Further, the CFPRs stipulate that no THP can be approved if it would result in an unauthorized taking of species listed under either the Federal or State ESAs.

**Special Treatment Area.** The State Coastal Commission has designated a number of special treatment areas along the north coast of California, within which general development and various management activities are restricted. Approximately 280 acres of Green Diamond's proposed AHCP/CCAA coverage area lies within any of these designated areas.

The State BOF, however, has created a separate network of special treatment areas (STAs) that could limit the scope of silvicultural treatments, including the size of clearcut units, time intervals between harvest entries, and logging practices that may be employed. STAs under the CFPRs are specific locations containing one or more of the following significant resource features:

- Are within 200 feet of the watercourse transition line of Federal or State designated wild and scenic rivers
- Are within 200 feet of national, State, regional, county, or municipal park boundaries
- Are key habitat areas of Federal or State designated threatened, rare or endangered species
- Are within 200 feet of State designated scenic highways

Approximately 1,800 acres in Green Diamond's proposed AHCP/CCAA coverage area are considered STAs by virtue of being within 200 feet of State or Federal park lands.

**Maximum Sustained Production of High Quality Timber Products.** Pursuant to the Forest Practice Act, the BOF adopted regulations designed to achieve the goal of maximum sustained production (MSP) of high-quality timber products, while giving consideration to various other forest benefits and amenities. Each proposed timber harvest operation must demonstrate that it will contribute toward achievement of MSP. Pursuant to Section 913.11(a) (also known as “Option [a]”) of the CFPRs, MSP will be achieved by:

- Producing a yield of timber products specified by the landowner, which takes into account biological and economic factors, as well as consideration of other forest values
- Balancing growth and harvest over time
- Realizing growth potential as measured by adequate site occupancy by the tree species to be managed and maintained given silvicultural methods selected by the landowner
- Maintaining good stand vigor
- Providing for adequate regeneration, as defined in the CFPRs

**Cumulative Environmental Effects.** The CFPRs provide that all THPs must address cumulative environmental effects, which are defined as two or more individual effects that, when considered together, are considerable or that compound or increase other environmental impacts. Under the CFPRs, the cumulative impact from several projects is the change in the environment that results from the incremental impacts of a project when added to other closely related past, present, and reasonably foreseeable future projects. The CFPRs provide that no THP can be approved unless it avoids or mitigates with feasible measures all significant environmental impacts, including cumulative impacts. Each THP is required to include a CEQA-based assessment of potential cumulative impacts and, if necessary, avoid or mitigate such impacts to a level of insignificance, and incorporate feasible mitigation measures that exceed those required by the CFPRs.

**CFPRs as a Benchmark for No Action.** As discussed in Section 2.1, the CFPRs are part of the No Action Alternative. The No Action Alternative also includes Green Diamond’s operational policies and guidelines.

In response to a joint request made by NMFS and the California Resources Agency, an independent Scientific Review Panel found in 1999 that the CFPRs and their implementation (the forest practice rulemaking process, the rules themselves, and the THP review and approval process) do not “achieve properly functioning habitat conditions” necessary to “adequately conserve anadromous salmonids” listed under the ESA (Ligon et al., 1999). Since then the BOF has adopted “interim” rules for Class I watercourses that further strengthen the forest practice rules and the THP process. NMFS continues to find that the CFPRs do not ensure the achievement of properly functioning habitat for conservation of anadromous salmonids throughout their range in California, although forest practices operations conducted pursuant to this process in a particular area, land ownership, or region under this process may achieve such conditions.

### 1.5.3.2 California Environmental Quality Act

Similar to NEPA, CEQA requires State agencies with discretionary permitting authority to evaluate the environmental effects of a proposed project. If one or more significant impacts are identified, a detailed EIR must be prepared. If no significant impacts are determined or

if all of the significant impacts can be mitigated to levels less than significant, a negative declaration is prepared. CEQA also requires that a negative declaration or Draft EIR be prepared if a project has statewide, regional, or area-wide significance, including projects that would substantially affect sensitive habitats.

As noted above, the preparation, review, and approval of THPs that detail activities associated with timber harvesting on State and private lands serves as the functional equivalent of an EIR under CEQA.

### **1.5.3.3 Porter-Cologne Water Quality Control Act**

The California Porter-Cologne Water Quality Control Act of 1969 authorizes RWQCBs to establish water quality objectives necessary for the reasonable protection of beneficial uses, including preservation and enhancement of fish, wildlife, and other aquatic resources or preserves. The objectives are stated in basin plans. The North Coast Basin Plan, which encompasses Green Diamond's ownership, includes water quality objectives for several pollutants associated with non-point source discharges from timber operations. These include the suspended sediment load and suspended sediment discharge rate of surface waters, turbidity, and the natural receiving water temperatures of intrastate waters. The North Coast Basin Plan regulates certain practices relating to logging and related activities pursuant to the North Coast RWQCB's authority to regulate discharges of pollutants that may affect water quality. Under the CFRs, no THP may be approved if it would result in the violation of an applicable Basin Plan provision.

As previously noted (see Clean Water Act above), the State Water Resources Control Board (SWRCB) and regional water boards implement the Federal CWA in California under the oversight of the EPA, Region IX. Direction for implementation of the CWA is provided by the Code of Federal Regulations (40 CFR) and by a variety of EPA guidance documents on specific subjects. The SWRCB and the North Coast RWQCB have the authority and responsibility to ensure compliance with the provisions of the CWA in the north coast region of California, which includes Green Diamond's northern California ownership.

### **1.5.3.4 Streambed Alteration**

Pursuant to California Fish and Game Code sections 1600-1603, the Department of Fish and Game (CDFG) regulates the alteration of streambeds through streambed alteration agreements. Under these provisions, CDFG specifies conditions that must be followed during timber operations to protect fish and wildlife resources that could be impacted by the construction of stream crossings and related timber harvest activities.

### **1.5.3.5 California Endangered Species Act**

The CESA is part of the California Fish and Game Code. As a guide to State agencies, Section 2053 states that, "it is the policy of the State that State agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives consistent with conserving the species or its habitat which would prevent jeopardy."

The CESA also states, however, that such reasonable and prudent measures must at the same time maintain the project purpose to the greatest extent possible. CESA also prohibits take of species listed or proposed for listing as endangered or threatened and provides a number of regulatory mechanisms to authorize the incidental take of species.

## **1.5.4 Related State Laws**

### **1.5.4.1 Timberland Productivity Act**

The California Timberland Productivity Act of 1982 (TPA) affirms the State's interest in providing a favorable climate for long-term investment in forest resources through establishment of "timberland production zones" (TPZs). The use of lands designated as TPZ is limited to the growing and harvesting of timber and uses compatible with those activities. All of Green Diamond's lands included in the coverage area for its proposed AHCP/CCAA are zoned as TPZ.

## **1.6 Green Diamond Planning and Management**

### **1.6.1 Silviculture and MSP**

Green Diamond's lands that would be covered by the provisions of the proposed AHCP/CCAA are characterized by a number of unique conditions based on climate, tree species mix, geologic factors, and past harvesting and management history. The conifers of primary economic value on Green Diamond's lands are coast redwood and Douglas-fir, which require substantial direct sunlight to grow rapidly at young ages. Even-aged silvicultural techniques are used to promote propagation of these species throughout the North Coast redwood region. Although the use of uneven-aged regeneration systems can be beneficial to many shade-tolerant species, such as western hemlock and white fir, these systems generally are less suited to the economically valuable redwood and Douglas-fir which grow at maximum rates when free to grow in full sunlight (Smith, 1962; USFS, 1973; Perry, 1994). On the basis of the unique growing conditions of the region and the long-term management approach implemented by Green Diamond, Green Diamond feels the continued use of even-aged regeneration tools is necessary to support its management and business objectives, as well as to achieve the State law mandates of maximum sustained production of high quality timber products as discussed below. Appendix A provides a table outlining considerations for selecting even-aged versus uneven-aged management.

### **1.6.2 State Laws and Regulations**

As noted above, Green Diamond operates its timberlands under multiple regulatory controls. The California Forest Practice Act mandates the achievement of maximum sustained production of high quality timber products and consideration of other significant values, including protection of wildlife, fisheries, water quality, and regional economic vitality and employment. In addition, all of Green Diamond's lands that would be covered by the ITP/ESP are designated as TPZ under California's TPA, which limits the use of TPZ lands to growing and harvesting timber and uses compatible with those activities. California's timber harvest regulations also require compliance with water quality protection measures adopted by Regional and State Water Boards under the Porter-Cologne Water Quality Control Act. Further, all timber harvesting is subject to the Federal and State

ESAs, and the CFPRs stipulate that no THP may be approved if it would result in an unauthorized taking of species listed under those acts.

### **1.6.3 Watershed and Landscape Plans**

Although timber harvesting operations are regulated at the individual THP level, many of the productivity, resource protection, and environmental issues may be addressed on a larger landscape scale. Green Diamond has undertaken a number of watershed- and ownership-level planning efforts to protect terrestrial wildlife and aquatic habitat that meet or exceed State standard rules and regulations. These planning efforts are designed to address the State of California's mandates of: (1) enhancing timberland productivity; and (2) protecting endangered species, timber resources, and related environmental values. The planning efforts also seek to reconcile those mandates with Green Diamond's management objectives and the unique environmental and productivity conditions on Green Diamond's ownership. Green Diamond feels that even-aged management is also key to implementation of these other landscape management templates, including the Green Diamond Northern Spotted Owl HCP (see below), and achievement of maximum sustained production on Green Diamond's lands under Option (a).

Green Diamond has developed a substantive database on site-specific and regional conditions by conducting extensive data gathering and scientific research. The results of this research are incorporated in the watershed and ownership planning efforts. These various plans form the basis of Green Diamond's short- and long-term management decisions. Many of the internal policies, programs, and measures used by Green Diamond to govern planning and management on its lands are discussed below.

#### **1.6.3.1 Northern Spotted Owl Habitat Conservation Plan**

The proposed AHCP/CCAA builds on conservation provided under Green Diamond's HCP for the northern spotted owl (NSOHCP), which provides protection to the AHCP/CCAA covered species through resource management measures, such as enhanced stream protection zones and wildlife habitat retention areas. In addition, the NSOHCP also provides some benefit to 39 other terrestrial species thought to be the most sensitive to timber operations on the ownership.

#### **1.6.3.2 Maximum Sustained Production Option (a) Document**

Green Diamond manages its properties for the primary purpose of growing and harvesting commercial timber. Implicit in this goal is achievement of a sustained yield in perpetuity (i.e., the harvesting of timber at a rate commensurate with the ability of the land base to grow replacement trees). Green Diamond's "Option (a)" document is the company's blueprint for achieving maximum sustained production of high quality timber products over a 100-year planning horizon. The Option (a) document is submitted as part of Green Diamond's THPs to demonstrate compliance with the CFPR mandate that each THP demonstrate achievement of MSP. Similar to the NSOHCP, the Option (a) document is premised on the primary use of even-aged regeneration methods to meet MSP and wildlife habitat objectives given the unique conditions of Green Diamond's ownership and this region. The document also provides consideration to other significant values, including protection of wildlife, fisheries, water quality, and regional economic vitality and employment.

### 1.6.3.3 Road Management Policy

Green Diamond currently has approximately 4,000 miles of management roads on its ownership in northern California. These roads are used by Green Diamond for land management activities and historically by the public for various recreational activities. Roads can be sources of erosion, particularly if improperly used or maintained. Erosion problems, road maintenance costs, as well as concerns over wildlife species sensitivity, have prompted Green Diamond over the last several years to restrict hundreds of miles to motorized public use through construction and installation of gates, barricades, and earthen berms. These restrictions benefit salmonids and other aquatic species by reducing erosion and associated sediment delivery to streams. They also benefit terrestrial wildlife species that are sensitive to local human presence. In addition, Green Diamond has invested substantial economic resources in road reconstruction and maintenance that is not associated with timber harvesting plan operations. The investment is intended to minimize further any sedimentation of aquatic habitat.

### 1.6.3.4 Other Programs and Measures

Other programs and measures that provide a foundation for Green Diamond's proposed AHCP/CCAA are:

- A long-term stream channel monitoring program initiated in 1995 (active and ongoing)
- Stream assessments and studies of aquatic species conducted on Green Diamond property since 1993 (active and ongoing)
- The Salmon Creek Management Plan, prepared in 1993 in coordination with CDF, the CDFG, and the North Coast RWQCB (active and currently being implemented)
- The Management Strategies for the Little River Watershed, prepared in 1999 after Green Diamond acquired the Little River timberlands formerly owned by Louisiana-Pacific Corporation (active and currently being implemented)
- A cooperative effort with the Yurok Tribe fisheries staff and the Coastal Conservancy on a long-term program to restore anadromous fish habitat in 30 basins and sub-basins of the lower Klamath River (active and ongoing)
- A cooperative effort with Redwoods National Park in the upper Redwood Creek watershed to inventory roads and hillslopes and prioritize treatment areas to reduce the risk of future erosion (currently inactive, but may be resumed)
- Habitat restoration and enhancement projects completed in cooperation with restoration groups on 33 streams (active and ongoing)
- Standardized field methods to assess salmonid populations and habitat, originally developed through cooperative efforts of the Fish, Farm, and Forest Communities Forum (active and currently being implemented)
- The Redwood Creek Total Maximum Daily Load (TMDL) Implementation Plan proposed by the Redwood Creek Landowners Association (under consideration, but not currently implemented)

### 1.6.3.5 Structure of Green Diamond's Timberlands Operations

On December 31, 2001, Simpson Timber Company transferred its California timberlands assets to a new affiliate, Simpson Resource Company. The timberlands employees and management functions associated with those assets were transferred to Simpson Resource Company on June 30, 2002. Subsequent to release of the Draft EIS (DEIS), Simpson Resource Company changed its name to Green Diamond Resource Company, effective April 30, 2004. All references in this EIS to past or continuing operation of Green Diamond are also intended to refer to past operation of the Green Diamond timberlands when they were owned and operated by Simpson Timber Company and during that period of time when it was known as Simpson Resource Company.

### 1.6.4 AHCP/CCAA Planning and Development

Green Diamond submitted its application for an ITP and ESP in the context of the above-discussed regulatory controls, which, under ESA Section 10, limit, shape and authorize, the "otherwise lawful activities" to which the take for which Green Diamond seeks authorization will be incidental. Accordingly Green Diamond's AHCP/CCAA is premised on achieving and maintaining consistency with the above-discussed legal and regulatory controls as well as management objectives.

Under the Proposed Action, the Services would authorize take of species covered under the plans pursuant to ESA Section 10, but the take must be incidental to otherwise lawful activities. In the context of the ESA and this EIS, those "otherwise lawful activities" include Green Diamond's timber harvesting operations that are regulated and approved under State law. Accordingly, the Federal action does not include authorization of the harvesting itself.

According to Green Diamond, its proposed AHCP/CCAA is necessarily designed to be consistent with Green Diamond's unique management and productivity objectives that are based on Green Diamond's extensive site-specific and regional analysis, as reflected in the various internal planning templates. In addition to the ownership-wide planning processes and documents used by Green Diamond to address its company-specific operating mandates, Green Diamond must also comply with all the applicable laws and regulatory requirements discussed above, including the CFPR requirements for incorporating into THPs measures that are designed to protect aquatic species and their habitats. The CFPRs also prohibit approval of THPs that would result in the unauthorized take of a listed species. However, rather than relying solely on the THP process to determine what measures to use for protecting aquatic species and their habitats, the AHCP/CCAA process provides ownership-wide protection for aquatic species and their habitats and also addresses Green Diamond's needs of obtaining greater regulatory certainty and remaining competitive in the forest products market.

As with the other environmental and productivity concerns discussed above, Green Diamond has determined that protection of aquatic species and their habitats is best addressed at the ownership level. Accordingly, Green Diamond has proposed an AHCP/CCAA that, if approved, would add an additional planning "template" to Green Diamond's existing plans relating to forest and resource management.

Green Diamond indicates that it seeks greater regulatory certainty in the operation of its business by obtaining the ITP and ESP. Approval of these Permits would improve Green

Diamond's ability to conduct long-term forest planning and contribute to a stable business climate that supports Green Diamond's ability to remain competitive in the forest products market. Incidental take authorization based on an AHCP and a CCAA would allow greater certainty for Green Diamond's forest planning by providing assurances that, so long as Green Diamond complies with the terms of the AHCP and CCAA, the Services will not require additional conservation and mitigation measures beyond those required in the Plan in the event of changed circumstances not provided for in the Plan. In the event of unforeseen circumstances, the Services may require additional measures limited to modifications within the conserved habitat area or the Plan's operating conservation program, but the Services will not require the commitment of additional land, water or money, or impose additional restrictions on the use of land, water or natural resources beyond the level otherwise agreed upon without the consent of the permittee. However, in the unlikely event that the permitted activity no longer meets the issuance criteria that the activity will not appreciably reduce the likelihood of survival and recovery of the species in the wild, and the Services are not able to take steps to prevent that reduction, the Services will as a last resort revoke the Permit, 69 FR 71723 (December 10, 2004).

## **1.7 Consultation and Coordination**

### **1.7.1 Scoping**

Public scoping was conducted to identify issues and concerns pertaining to implementation of Green Diamond's proposed AHCP/CCAA and the content of this EIS. The scoping process involved solicitation of comments from the public, as well as feedback from other agencies, tribal groups, and organizations.

#### **1.7.1.1 Dates and Times of Scoping Meetings**

The Services and Green Diamond held four public scoping meetings over a two-day period on July 11 and July 12, 2000 in Eureka and Crescent City, California. Prior to these meetings, the Services published a Notice of Intent (NOI) in the Federal Register (July 11, 2000, 65 FR 42674) to advertise the Services' intent to prepare an EIS and to announce the public scoping meetings. The NOI, provided information on the background and purpose of the proposed AHCP/CCAA, requested public comment on the EIS for the AHCP/CCAA within a 30-day comment period, and provided preliminary information on the public scoping meetings. The meetings also were advertised in the local Eureka and Crescent City newspapers, as well as through mailings to members of the public who had previously expressed interest in the AHCP/CCAA.

The objectives of the meeting were to inform the public about Green Diamond's AHCP/CCAA and the associated EIS, and to solicit public comment on the scope of the EIS for the Proposed Action and possible alternatives for consideration in the EIS. During these meetings, Green Diamond outlined the proposed AHCP/CCAA and opened the floor to questions and comments. Additional public input was obtained during pre-meeting "open house" sessions that allowed the public to view poster material on the AHCP/CCAA and to visit with representatives from Green Diamond and the Services on a more informal basis.

Green Diamond also held a series of six informational meetings with cooperating agencies and local tribal groups. Meeting objectives were to inform the agencies and tribes (Yurok

Nation and Hoopa Tribe) about Green Diamond's AHCP/CCAA, solicit feedback on the AHCP/CCAA, and receive suggestions on the content of the associated EIS. Agencies in attendance were:

- State of California Resources Agency
- CDFG
- California Department of Forestry and Fire Protection (CDF)
- California Department of Mines and Geology (CDMG)
- California Department of Parks and Recreation
- SWRCB
- North Coast RWQCB
- U.S. Forest Service (USFS)
- EPA

Informational meetings were conducted using a presentation/question-and-answer format, and were hosted by Green Diamond. The meetings were held as follows: August 11, 2000 (Green Diamond offices, Eureka); August 18, 2000 (CDFG offices, Redding); August 25, 2000 (Yurok Tribal offices, Eureka); August 29, 2000 (CH2M HILL offices, Sacramento); August 30, 2000 (North Coast RWQCB offices, Santa Rosa); and September 21, 2000 (Hoopa Tribal offices). Attendees signed an attendance list with their affiliation and introduced themselves at the beginning of the meeting to the group. Attendees were informed that they should ask questions during or after the presentation as necessary.

#### **1.7.1.2 Summary of Scoping Comments**

Comments on the EIS were grouped into five broad categories: (1) suggested alternatives; (2) general comments regarding the contents of the EIS; (3) scope of the impacts analysis; (4) analysis of impacts on aquatic species; and (5) analysis of other impacts. All comments are summarized in greater detail in the Scoping Report for this EIS dated September 18, 2000 and included herein as Appendix B.

### **1.7.2 Coordination between the Services and Green Diamond**

Extensive interaction also occurred between the Services and Green Diamond during the development of the AHCP/CCAA in policy and technical committee meetings comprised of representatives from all three organizations.

## **1.8 Summary of Scoping and the Public Review Process**

### **1.8.1 Public Scoping**

Following issuance of a Notice of Intent (NOI), which appeared in the *Federal Register* on July 11, 2000, the Services initiated the EIS and began the scoping process. Scoping meetings were held on July 11 and July 12, 2000 in Eureka and Crescent City, California. Attendees were given an overview of Green Diamond's proposed AHCP/CCAA and asked to present their questions, concerns, and information pertinent to development of the associated EIS. Green Diamond also held a series of six informational meetings with cooperating agencies and local tribal groups. The meetings were held on August 11, August 18, August 25, August 29, August 30, and September 21, 2000 at various locations. All comments are

summarized in greater detail in the Scoping Report for this EIS dated September 18, 2000 and included herein as Appendix B.

### **1.8.2 DEIS Public Review Process**

A Notice of Availability (NOA) for the Draft EIS (DEIS) was published in the Federal Register by NMFS and USFWS on August 16, 2002 (67 FR 53567). The public review period was scheduled for 90 days from August 16, 2002 to November 14, 2002. Two public meetings to formally introduce Green Diamond's proposed AHCP/CCAA and the DEIS were held on September 4, 2002, in Eureka, California. Representatives from NMFS, USFWS, and Green Diamond were available to discuss the AHCP/CCAA conservation strategy and the DEIS.

Advertisements were placed in local newspapers prior to the meeting date describing when and where each public meeting would be held. The two public meetings were held at the following location:

Wednesday, September 4, 2002  
1:00 – 3:00 p.m. and 5:00 – 7:00 p.m.  
Red Lion Inn  
1929 4th Street  
Eureka, California

Subsequent to introductions and a brief history of the AHCP/CCAA and summary of the associated environmental review process by the Services, representatives from Green Diamond described the key elements of the AHCP/CCAA conservation strategy. Members of the public in attendance at the meetings were then invited to ask questions or provide comments about the AHCP/CCAA and DEIS. Attendees were also encouraged to provide written comments on the DEIS before close of the public comment period. Approximately 30 people were in attendance at both meetings.

### **1.8.3 Number of Comments Received**

A total of 20 oral questions and comments were received from the two meetings held in Eureka. In addition, 25 comment letters were received during the 90-day public review period, comprising 1,267 separate comments addressed in this Final EIS (FEIS). Written comments, plus oral comments received at the public meetings, are included in Volume II of this FEIS. See Volume II for a description of the comments received, and the responses to comments. FEIS Volume II provides a complete listing of the individuals, agencies, and organizations that submitted comments on the AHCP/CCAA and DEIS.

### **1.8.4 FEIS Public Review Process**

The public outreach process will continue through completion and approval of the Record of Decision (ROD) by the Services. Statements on the FEIS will be accepted by the Services considered in the decision on the Proposed Action. The FEIS is being distributed for a 30-day notification period.

## 1.9 Differences between the DEIS and FEIS

This section presents the key changes to the DEIS in this FEIS as summarized below. These revisions do not alter the significant conclusions in the DEIS.

- Revisions to text have been made to reflect changes in the listing of steelhead, one of the covered species, initially listed by NMFS as the “Northern California Evolutionarily Significant Unit (ESU)” but currently listed as the “Northern California Distinct Population Segment (DPS).” The DPS policy adopts criteria similar to, but somewhat different from, those in the ESU policy for determining when a group of vertebrates constitutes a DPS: the group must be discrete from other populations, and it must be significant to its taxon. A group is discrete if it is “markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, and behavioral factors.” Using the DPS policy, resident rainbow trout are considered “markedly separated” from the anadromous form and are not included in the current steelhead listing (71 FR 834).
- Refinements and clarifications have been made to Green Diamond’s Operating Conservation Strategy (see AHCP/CCAA Section 6); these changes are also reflected in the FEIS.
- Additional information has been provided to explain and clarify in greater detail the basis for the cumulative effects analysis in Chapter 4 (*Environmental Consequences*) relating to geology and geomorphology (Section 4.2) and aquatic resources (Section 4.3).
- A new Section 4.13, *Summary of Cumulative Impact Analysis*, has been prepared that summarizes the overall cumulative effect to the environment as a result of implementation of the Proposed Action and the other alternatives.

## 1.10 NEPA Environmentally Preferred Alternative

CEQ regulations require that the Record of Decision specify “the alternative or alternatives which were considered to be environmentally preferable” (40 CFR 1505.2[b]). The environmentally preferred alternative is the alternative that will promote the national environmental policy as expressed in NEPA’s Section 101. Ordinarily this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic cultural and natural resources. NEPA’s Section 101 calls for Federal agencies to make decisions to achieve “conditions under which man and nature can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations of Americans” (42 USC 4341[a]). Federal agencies should strive to attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences. It also calls for Federal agencies to achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities.

Based on the analysis of alternatives in the FEIS, there are many similarities in the overall effects of the alternatives on the human environment, thus making it difficult to choose any particular alternative in the FEIS as the environmentally preferred alternative. Upon further

review, the Services will identify the Environmentally Preferred Alternative in the Record of Decision as required by NEPA.

## **1.11 Adequacy of the EIS**

Based on the standards included in NEPA for adequacy of analysis, the Services have determined that with the clarifications, corrections, and supportive information included in this FEIS and the proposed Final AHCP/CCAA, the FEIS complies with NEPA. For purposes of NEPA, the Federal lead agencies (i.e., USFWS and NMFS) are responsible for the final determination of adequacy.

CHAPTER 2

# Proposed Action and Alternatives

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# Proposed Action and Alternatives

NEPA requirements for alternatives analysis (40 CFR 1502.14) direct Federal agencies to consider a range of alternatives that could accomplish the agency’s purpose and need and present the alternatives in comparative form to define the issues and provide a clear basis for decision makers and the public to choose among options. Five alternatives are considered in this EIS, as briefly described in Table 2-1 and described in more detail in Table 2.7-1 found at the end of this chapter. The No Action Alternative and the three action alternatives represent a reasonable range of alternatives to the Proposed Action. Additional alternatives were considered; those eliminated from detailed evaluation are summarized in Section 2.6.

As required by NEPA, this EIS compares the Proposed Action and the other three action alternatives with the No Action Alternative. The No Action Alternative is the benchmark against which the effects of all other alternatives are measured.

**TABLE 2-1**  
Alternatives Analyzed in Detail in the Green Diamond AHCP/CCAA EIS

| Title                            | Brief Description   |
|----------------------------------|---|
| No Action<br>(No Permit/No Plan) | <ul style="list-style-type: none"> <li>• Continuation of Green Diamond’s existing timber harvesting and forest management practices in the Action Area under existing regulations (see Sections 2.1.1 and 2.1.2)</li> <li>• Continued application of existing measures for protection of fish and wildlife habitat (Section 2.1.3)</li> <li>• Continued implementation of measures contained in Green Diamond’s NSOHCP and associated IA that provide for the legal incidental take of northern spotted owls in connection with timber harvesting and forest management operations</li> <li>• Continued implementation of measures designed to avoid take of other listed species; continued implementation of other measures to mitigate or avoid significant impacts to unlisted species (Sections 2.1.4 and 2.1.5)</li> </ul>                                |
| Proposed Action                  | <ul style="list-style-type: none"> <li>• Continuation of existing operations pursuant to existing regulations, other applicable laws, and Green Diamond’s NSOHCP, as augmented by the proposed AHCP/CCAA Conservation Strategy</li> <li>• Incidental take coverage for two listed fish ESUs and one listed fish DPS, three unlisted fish ESUs, two unlisted fish species, and two unlisted amphibians through issuance of an ITP by NMFS and an ESP by the USFWS</li> <li>• AHCP/CCAA/ITP/ESP obligations for the covered species and their habitats, to include: (1) fixed and variable RMZ/EEZ widths for Class I, II, and III watercourses and implementation of other riparian management measures; (2) implementation of road management, slope stability, and ground disturbance measures; and (3) effectiveness and implementation monitoring</li> </ul> |

**TABLE 2-1**  
 Alternatives Analyzed in Detail in the Green Diamond AHCP/CCAA EIS

| Title  | Brief Description   |
|--|---|
| Listed Species Only (Alternative A)              | <ul style="list-style-type: none"> <li>• Same as the Proposed Action except for no incidental take coverage for unlisted species/ESUs and, consequently, no monitoring of amphibian populations</li> </ul>  |
| Simplified Prescription Strategy (Alternative B) | <ul style="list-style-type: none"> <li>• Continuation of existing operations pursuant to existing regulations, other applicable laws, and Green Diamond's NSOHCP, as augmented by an AHCP/CCAA conservation strategy</li> <li>• An AHCP/CCAA would be implemented for the same fish and wildlife species covered by the Proposed Action, and an ITP/ESP would be issued for those species.</li> <li>• Obligations for the covered species include fixed, no-cut riparian buffer widths for Class I and II watercourses on the fee-owned lands of the Action Area.</li> </ul>  |
| Expanded Species/Geographic Area (Alternative C) | <ul style="list-style-type: none"> <li>• Same as Proposed Action except for conservation measures that would be applied over an expanded area (an additional 25,677 acres) which has a different hydrology (rain-on-snow hydrology) than the majority of the area that would be covered under the Proposed Action</li> <li>• The AHCP/ITP would provide incidental take coverage for two listed fish ESUs and one listed fish DPS, three unlisted fish ESUs, two unlisted fish species, one listed fish species, four unlisted amphibians, one unlisted reptile, and two listed bird species through issuance of ITPs by NMFS and the USFWS</li> <li>• Modifications to the AHCP/ITP obligations that include additional species-specific measures</li> </ul> |

## 2.1 No Action (No Permit/No Plan)

This alternative has been developed to evaluate the conditions, as they would occur over time with "no Federal action" or "no project" in relation to current conditions. Under the No Action Alternative, NMFS and USFWS would not issue Green Diamond an ITP or an ESP, and Green Diamond would not implement an AHCP/CCAA. As a result, Green Diamond would remain subject to the ESA's prohibitions on unauthorized take of listed species. Green Diamond would, however, continue to implement measures contained in its NSOHCP and associated Implementation Agreement that provide for the legal incidental take of northern spotted owls in connection with timber harvesting and forest management operations.

Green Diamond would continue to conduct timber harvesting and related operations in the Action Area in accordance with existing State and Federal regulations as well as operational and policy management actions currently being implemented by Green Diamond. The applicable regulations that provide the framework for implementing No Action elements are described in Section 1.5.3. Activities which would continue to occur as part of the No Action Alternative pursuant to existing laws and regulations where incidental take is not authorized are described in detail as components of the No Action Alternative in

Sections 2.1.1 through 2.1.5, and include activities associated with the growing, harvesting, and transporting timber products on and off the property; conducting ancillary activities necessary to protect the property from fire, insects, disease, and vandalism; complying with various local, State, and Federal laws and regulations that assess and seek to protect environmental resources (including listed fish and wildlife species); and voluntarily conducting research on wildlife and fish species and their habitats.

## **2.1.1 Green Diamond's Timber Harvesting and Forest Management Activities**

Descriptions of the major activities associated with Green Diamond's management of its lands under this alternative are provided below:

- Harvesting and transporting timber
- Timber stand regeneration and improvement
- Road and landing construction, reconstruction, and maintenance
- Monitoring and research activities

### **2.1.1.1 Harvesting and Transporting Timber**

Green Diamond manages its forestlands for the primary purpose of growing and harvesting timber that subsequently will be milled to produce various commercial wood products. As specified in its "Option (a)" document, Green Diamond has implemented a schedule and rate of tree harvesting that seeks to balance timber harvesting with replacement tree growth.

Lands within Green Diamond's northern California ownership are generally managed under even-aged silvicultural prescriptions; this would continue under the No Action Alternative. These areas would be replanted with seedlings, or regenerated by seed from residual trees left on site. In accordance with the CFPRs and Green Diamond's operating guidelines, even-aged regeneration harvests must not exceed 40 acres. Harvesting of timber within even-aged units with stand age classes of 50 years or greater would be implemented under this alternative.

Historically, uneven-aged management has been focused: (1) in and around watercourse and lake protection zones and water supply areas; (2) along or around visually sensitive road and highway corridors; (3) around nest site locations of selected bird species (e.g., northern spotted owls); (4) within some demonstration units upslope of riparian and watercourse protection corridors; (5) generally near property lines where neighborhoods exist; and (6) in geologically unstable areas that are identified for special protection. Under the No Action Alternative, uneven-aged management would continue to be focused in these areas, and would be accomplished by marking and removing individual trees or small groups or clusters of trees. Cutting cycles (the number of years between two successive harvest entries into the same stand) in uneven-aged stands on Green Diamond lands under this alternative would be 10 to 50 years.

No harvesting would occur within 39 set-aside areas identified in Green Diamond's NSOHCP for purposes of promoting suitable owl habitat following harvesting in other areas. Combined, the 39 set-asides contain 13,242 acres, and range from 100 to 2,000 acres in size.

Chainsaws and feller-bunchers are currently used for all tree felling and log bucking activities, but other types of mechanical felling and bucking equipment could be used under this alternative. Where possible, log yarding on Green Diamond lands would continue to be accomplished using cable-logging systems. Tractor operations would generally be confined to stands that occur on slopes of less than 40 to 45 percent, depending on proximity to other environmentally sensitive areas (e.g., unstable slopes) and variability of terrain. Tractor operations also would be limited to dry months (May 1 through October 15), except for circumstances and locations defined in a winter operating plan. Pursuant to the CFPRs, tractor operations would not be conducted on:

- Unstable areas
- Slopes greater than 65 percent
- Slopes greater than 50 percent that have a high or extreme erosion hazard rating
- Slopes greater than 50 percent that lead without flattening to sufficiently dissipate water flow and trap sediment before reaching a watercourse or lake

Helicopters would be used within isolated (i.e., difficult to access) harvesting units to yard downed timber where road and landing access would otherwise traverse extremely steep, sensitive, or unstable topography where a high risk of road/landing failure exists.

Helicopters would also be used to gain access to isolated timber stands in areas where extremely risky and difficult stream crossings exist.

Both heel-boom and wheeled front-end loaders would be used in conjunction with log yarding, sorting, and loading activities on landings. Log trucks would be used to transport logs to a mill for further processing.

### **2.1.1.2 Timber Stand Regeneration and Improvement**

Consistent with its sustained yield objective, Green Diamond would continue to rely on non-intensive as well as intensive timber management techniques to maximize growth and yield on its lands. Current management practices for regenerating harvested stands and promoting their growth would continue to be implemented under this alternative. These practices would include a variety of activities, such as site preparation, tree planting and occasional seeding, fertilization, precommercial and commercial thinning, pruning, prescribed burning, and cone collecting. The level and degree to which these practices would be used would depend on the regeneration method for a particular harvest unit (e.g., even-aged vs. uneven-aged harvest), the amount of basal area remaining after harvesting in uneven-aged units, proximity to special treatment areas (e.g., WLPZs and nest site buffer areas), and the post-harvest existence of special elements (e.g., large trees) requiring protection.

**Site Preparation.** Site preparation on Green Diamond forestlands could entail broadcast burning of entire harvesting units for purposes of removing concentrations of logging slash and other debris, reducing herbaceous competition, and exposing mineral soil to provide greater planting or seeding access to the site. Elimination of larger slash and debris would also eliminate potential fuel for wildfire, thereby reducing the fire hazard during the life of the future stand. Control of existing unwanted vegetation may also be facilitated through use of contact and translocated herbicides. Use of all herbicides and adjuvants used on Green Diamond forestlands would continue to be applied consistent with the EPA

registration requirements and other applicable laws or court-ordered mandates. Harvested units are usually burned in early fall to mid-winter months after slash and/or competing vegetation has thoroughly dried and a significant amount of rain has fallen to minimize the risk of uncontrolled fires. Burning is also conducted in early spring before fuels dry excessively. Under this alternative, these practices would continue and would be implemented in accordance with local air quality regulations. Broadcast burning would be concentrated on even-aged regeneration units; brush piles could also be used in uneven-aged areas. Pursuant to Green Diamond's NSOHCP, however, burning limitations would apply adjacent to set-aside and other sensitive owl habitat retention areas (e.g., WLPZs).

**Planting.** As part of its plan to obtain successive crops of trees from its lands on a sustained yield basis, Green Diamond would continue to replant each even-aged harvesting unit with approximately 300 to 500 redwood and Douglas-fir seedlings per acre in the first planting season (winter) after harvesting is completed. Seedlings would be planted 10 to 12 feet apart. Many regenerated areas would contain at least 1,000 seedlings per acre two years after planting, reflecting the effects of adjacent seed fall and redwood stump sprouting. Pursuant to the CFPRs, stocking surveys would be conducted after the first and second growing season to ensure that all replanted areas have the proper number and distribution of trees. If a survey indicates that the number or distribution of trees is not adequate, the area would be replanted to achieve desired results.

For uneven-aged regeneration units where single tree and group selection are employed, interplanting of coniferous species could occur. These areas would generally be planted with tree species representative of the original stand and in numbers necessary to meet stocking requirements.

**Vegetation Control and Stand Growth Enhancement.** Green Diamond would continue to strive for a long-term stocking level of approximately 100 to 200 trees per acre, with a species composition similar to that previously occupying the site. In order to effect maximum growth in the shortest period of time, newly established stands may receive a variety of treatments subsequent to planting. These treatments would generally be initiated at the end of the second growing season and continue until the stand is approximately 35 years of age, and include chemical treatment of invasive and competing brush and herbaceous species, as well as precommercial and commercial thinning of overstocked stands. Depending on growth performance, stands may also be fertilized to enhance growth.

**Herbicides.** A list of all herbicides and adjuvants used on Green Diamond forestlands and method of application are contained in Appendix C. These products are approved for forestry use and are registered by the California Department of Pesticide Regulation (CDPR) for use in forestry. In addition, the EPA is responsible for regulating the sale, distribution and use of herbicides under the Federal Insecticide, Fungicide, and Rodenticide Act. Decisions whether to approve (register) an herbicide for sale or distribution are based on a risk/benefit standard that weighs risks to humans and the environment, considering economic, social, and ecological costs and benefits from use of the product. Herbicide application on Green Diamond lands is divided into two main categories: hand and aerial. Their use is governed by manufacturer's label specifications, the guidance provided by the EPA and the CDPR, and Green Diamond's own best management practices (BMPs). In addition, site-specific application requires (1) a written recommendation of a pest control

adviser (PCA), (2) supervision of a State-certified applicator, and (3) inspection by and reporting to the county agricultural commissioner.

Green Diamond BMPs for ground and aerial application of herbicides require:

- Notification to adjacent landowners living within 300 feet of a spray area or within 1,000 feet downstream of the treatment area prior to herbicide use.
- Routine inspections by Green Diamond personnel in addition to county agricultural inspections.
- Prohibitions against foliar treatments when wind speeds exceed 5 and 10 miles per hour for aerial and ground applications, respectively, on the spray site.
- Maintenance of an untreated buffer on designated Class I and Class II watercourses at the distance prescribed for WLPZs for ground applications, or within a 100-foot horizontal buffer zone of a Class I or II watercourse when aerially applied.
- Maintenance of an untreated 100-foot horizontal buffer zone adjacent to all flowing water when aerially applied.
- Prohibitions against helicopters carrying herbicides flying over Class I or Class II watercourses (if reasonably avoidable).

These BMPs are generally voluntary, but in some instances are attached as conditions to the spray permit.

Green Diamond currently applies herbicides to approximately one to three percent of its California ownership in any given year. This level of treatment converts to a range of 4,500 to 13,700 acres per year. Additionally, 50 to 100 miles of rights-of-way may be treated annually to control roadside vegetation. These activities would continue to occur under the No Action Alternative.

**Fertilizers.** Green Diamond periodically applies fertilizer to young forest stands. Treated stand ages typically vary from about 25 to 35 years old, and the fertilizer is aerially applied using helicopters. Treatment to date has been limited to nitrogen applied as urea in pill form. Application rates are nominally at 200 pounds of nitrogen per acre. Stands treated in the younger age classes may receive a second treatment seven to ten years before rotation.

**Pruning and Cone Collection.** Some pruning activity would continue to occur under this alternative. Cone collection activities would also continue in both even-aged and uneven-aged stands under the No Action Alternative.

**Fire Prevention and Suppression.** Under the No Action Alternative, fire prevention would continue to be practiced by Green Diamond when and where necessary. This would include removal of logging slash from forestlands within 100 feet of public roads, control of public access to the forest, limitation or suspension of harvesting activities during periods of high fire danger, and prescribed burning for purposes of reducing fuel loads on the forest floor.

Fire suppression activities might also be required periodically to fight fires. Depending on the location and characteristics of a particular fire, these activities would be supervised by CDF or the U.S. Forest Service as necessary and might include constructing firelines by hand or bulldozer, lighting backfires, applying aerial fire suppressants, and felling trees or snags.

### 2.1.1.3 Road and Landing Construction, Reconstruction, and Maintenance

New road and landing construction might involve timber felling and removal in the road or landing right-of-way. Construction and major reconstruction activities might include excavation, filling, realignment, and recontouring of roads; installation of erosion control facilities and structures; dust abatement; road surface enhancement, such as rocking; and soil stabilization.

All new roads and landings would be constructed in accordance with practices specified in the CFPRs plus additional Green Diamond operational policies and guidelines. The location, design, timing, and construction standards of new (and upgraded) roads and landings would be generally governed by the techniques described in Weaver and Hagans (1994). In accordance with the CFPRs, new roads (other than necessary crossings) and landings would be located and constructed upslope of all watercourses and outside WLPZs, except for stream crossings and unless justified on a site-specific basis in a THP. Culverts, bridges and/or occasional fords would be placed or constructed at all watercourse crossings, and would generally be designed to withstand 100-year flood events and to allow for unrestricted fish passage. Where feasible, bridges would be installed on fish-bearing streams. When a bridge installation is not feasible, a countersunk or bottomless culvert or other “fish-friendly” structure would be installed to provide for upstream and downstream fish passage. Installed culverts would not restrict the active channel flow. Construction or reconstruction of logging roads, tractor roads, and landings would not take place during the winter period, unless otherwise provided for under a winter operating plan.

Erosion control structures and facilities (e.g., ditch relief culverts and/or rolling dips) would be installed at maximum spacing intervals suggested by Weaver and Hagans (1994), as modified by Green Diamond. Maximum spacing intervals would range from 115 to 600 feet on the basis of a “two percent” stratification of road grade classes and associated erosion hazard ratings (see Section 6.2.3.6.12 of the AHCP/CCAA.) Pursuant to the CFPRs, the construction, reconstruction, maintenance, and use of roads and landings in conjunction with timber operations on steep slopes and within WLPZs would be restricted during wet weather periods and on unstable terrain. Additional restrictions could be applied on a site-specific basis prior to timber harvesting.

Road and landing construction, reconstruction, and maintenance frequently require the application of water to road and landing surfaces. Under this alternative, water would be provided by water trucks that pump water from streams, reservoirs, lakes, and ponds located on Green Diamond forestlands. Occasionally, specific locations within or adjacent to watercourses would be excavated or dammed to increase the in-channel storage area for drafting purposes. These activities would be subject to approval from CDFG pursuant to CDFG’s streambed alteration regulatory program. Under the No Action Alternative, Green Diamond would continue to pump water from these sources as permitted by law. Road and landing construction, reconstruction, and maintenance may also involve the surfacing of soil roads with rock, lignin, pavement, or other surface treatments. These alternative road surface treatments would also continue as necessary under the No Action.

Historically, road and landing construction, reconstruction, and maintenance within areas outside of THP boundaries have generally occurred in an opportunistic manner to take advantage of the proximity of current THP operations and heavy equipment availability

within the local area. Some activities, on the other hand, such as control of roadside vegetation, have required preparation and implementation of long-term plans. These practices would continue under the No Action Alternative.

Currently, approximately 4,000 miles of road exist and are in active use on the Green Diamond ownership. Under the No Action Alternative, there would be a slight net increase in the total number of miles of roads over the next 50 years; the number of miles of new road construction would exceed the number of miles of roads abandoned. Green Diamond would continue its existing practice of decommissioning non-management roads, and fixing road-related sediment sources, where they are appurtenant to THPs being operated by Green Diamond. Where road decommissioning is part of the THP, the process would occur in accordance with procedures outlined in the CFPRs and techniques described in Weaver and Hagans (1994). Road and landing abandonment would include the removal of culverts and soil stabilization as necessary.

Green Diamond has estimated the volume of potential sediment associated with high- and moderate-risk sediment delivery sites (based on both the probability of delivery to watercourses and the sediment volume associated with such delivery) to be 6.4 million cubic yards. Under the No Action Alternative, fewer than 1.3 million cubic yards of sediment would be removed during the first 15 years of the term of the Permits. The estimated cost associated with treating this volume is approximately \$1.0 million per year, as required by the CFPR's THP processes.

Under the No Action Alternative, Green Diamond would continue to voluntarily implement a biannual training program for equipment operators and supervisors on proper road and landing construction, upgrading, maintenance, and decommissioning practices with an emphasis on practical, effective erosion and sediment control.

Key differences between CFPR requirements and Green Diamond operational guidelines and policies, both of which will be implemented under the No Action Alternative, are summarized in Table 2.1-1 below.

**TABLE 2.1-1**

Standard CFPR Requirements Compared to Green Diamond Road Construction, Reconstruction, and Maintenance Guidelines, Both of Which Will Be Implemented Under the No Action Alternative

| <b>CFPR Requirements</b>  | <b>Green Diamond Guidelines</b>  |
|---|--|
| Implementation of prescriptive road construction, reconstruction, maintenance, and decommissioning standards contained in the CFPRs for all roads appurtenant to THP project areas. | CFPR requirements plus implementation of additional best management practices (BMPs) based on techniques described in Weaver and Hagans (1994).  |
| No method contained in the CFPRs for assessing and prioritizing low-, moderate-, and high-risk sediment delivery sites on roads.  | Utilization of a formal methodology for assessing and prioritizing low-, moderate-, and high-risk sediment delivery sites on roads. Methodology is based on watershed sensitivity and basin resource issues (e.g., TMDLs), and proposed THP activity within the watershed. |

**TABLE 2.1-1**

Standard CFPR Requirements Compared to Green Diamond Road Construction, Reconstruction, and Maintenance Guidelines, Both of Which Will Be Implemented Under the No Action Alternative

| CFPR Requirements  | Green Diamond Guidelines   |
|--|--|
| On-site review of road and landing construction, upgrading, maintenance, and decommissioning standards and prescriptions contained in individual THPs required of equipment operators and supervisors. No other periodic training program required for equipment operators and supervisors on proper road and landing construction, upgrading, maintenance, and decommissioning practices. | CFPR requirements plus biannual informal training program for equipment operators and supervisors on proper road and landing construction, upgrading, maintenance, and decommissioning practices.  |
| Installation of waterbreaks on logging roads at maximum spacing intervals ranging from 50 to 300 feet on the basis of a “15 percent” stratification of road grade classes and associated erosion hazard ratings.   | Installation of ditch relief culverts and/or construct rolling dips on logging roads at maximum spacing intervals ranging from 115 to 600 feet on the basis of a “two percent” stratification of road grade classes and associated erosion hazard ratings.   |
| Installation of bridges not required. Requires that drainage structures on Class I watercourses shall allow for unrestricted passage of all life stages of fish or listed aquatic species that may be present.   | Installation of bridges on Class I watercourses where economically feasible; installation of a countersunk or bottomless culvert (or other fish-friendly structure) where bridge installation is not possible on Class I watercourses.   |
| Design of drainage structures and facilities on logging roads so as to not discharge on erodible fill or other erodible material unless suitable energy dissipators are used. No minimum distance requirement from Class I or Class II watercourses indicated.   | Design of ditch drains so as to effect discharge 50 to 100 feet before water enters a Class I or Class II watercourse.   |
| Treatment of areas of bare mineral soil exceeding 800 continuous square feet exposed by timber operations within the WLPZ of Class I or II waters (or Class III waters if an ELZ or WLPZ is required). Protection measures may include seeding, mulching, or replanting, but specific treatments, seeding rates, and minimum mulching depths are not specified.                            | Seeding and mulching of all new road cut and fill slopes, exposed slopes associated with temporary stream crossings, and any other management-induced ground disturbance larger than 100 square feet (except hand-constructed firelines) within the WLPZ of a Class I or II watercourse at a seeding rate of 30 lbs/acre (or 20 lbs/acre if Green Diamond seed mix is used) and a mulching depth of 2 inches with 90 percent coverage. |

#### 2.1.1.4 Monitoring and Research Activities

As part of the THP process and other regulatory and management regimes, including the NSOHCP, Green Diamond conducts a number of research and monitoring activities. These include compliance and effectiveness monitoring, wildlife surveys, environmental assessments and watershed studies (e.g., in the TMDL context).

#### 2.1.2 Green Diamond’s Other Operations and Activities

In addition to forest management operations noted above, other activities would be undertaken by Green Diamond and by third parties pursuant to Green Diamond authorization (e.g., leases, easements, and licenses) under this alternative. Such activities would be consistent with the zoning of Green Diamond’s lands as TPZ. Under California’s Timberland Productivity Act, TPZ zoning is for growing and harvesting of timber and for designated “compatible uses.” Compatible uses on the Green Diamond forestlands include:

- Commercial and non-commercial development and use of local rock pits and quarries
- Water use
- Harvesting and transportation of minor forest products
- Public recreation activities
- Watershed, fish and wildlife enhancement and monitoring
- Administrative and non-timber related use of roads, landings, and equipment fords

#### **2.1.2.1 Rock Pits and Quarries**

Under the No Action Alternative, Green Diamond would quarry rock from several rock (borrow) pit locations throughout its ownership to obtain road surfacing or filling material. These pits would typically be smaller than 2 acres. Because these pits would be excavated for purposes of road construction and maintenance associated with timber harvesting and forest management and are located more than 100 and 75 feet from Class I and Class II watercourses, respectively, they would be exempt from regulation under the Surface Mining and Reclamation Act (SMRA) as administered by the California Division of Mines and Geology.

Green Diamond would also continue extracting instream gravel from several locations throughout the ownership in compliance with permitting requirements of the CDFG.

#### **2.1.2.2 Water Use**

On-site facilities rely on water delivery from many reservoirs, lakes, and ponds located on Green Diamond forestlands. Under the No Action Alternative, Green Diamond would continue to pump water from these sources.

#### **2.1.2.3 Minor Forest Products**

Minor forest products (e.g., firewood, burls, poles, stumps, and split wood products) are currently harvested from and transported over Green Diamond lands in accordance with Green Diamond and State law permitting requirements. These products are either removed from and transported over Green Diamond lands in conjunction with active timber harvesting activities or removed from inactive landings subsequent to cessation of timber harvesting operations during non-winter operating periods. These activities would continue under this alternative.

#### **2.1.2.4 Public Recreation**

Green Diamond currently provides recreational opportunities on its forestlands to some groups and individuals, subject to a written entry permit. Entry for these activities, which include hunting, fishing, camping, picnicking, hiking, motorcycle use and target shooting, are permitted on a limited basis within specified areas. Under the No Action Alternative, Green Diamond would continue to provide these recreational opportunities subject to Green Diamond's discretion and its permitting requirements.

#### **2.1.2.5 Voluntary Watershed, Fish and Wildlife Enhancement, and Monitoring**

Under the No Action Alternative, Green Diamond may continue to conduct voluntarily, or allow the conduct of, various watershed, fish, and wildlife management activities for the

enhancement or monitoring of watershed, wildlife, and fisheries resources. Examples of activities that could be conducted include:

- Aquatic habitat enhancement (e.g., instream boulder or large woody debris placement)
- Activities associated with improving fish passage (e.g., fish ladder construction or repair, culvert replacement or improvement, blockage removal)
- Instream surveys and sampling of fish (including spawning surveys and downstream migrant trapping), aquatic habitat conditions, macroinvertebrates, and water quality

### 2.1.2.6 General Maintenance and Administrative Use of Road and Landings

General maintenance and administrative use of roads on the Green Diamond ownership is an ongoing, year-round activity that may occur in the absence of timber harvesting operations. Specific maintenance routines are not different from those outlined above for timber harvesting operations, except that they do not require coverage under a THP or other regulatory regime. Such general maintenance and administrative use would continue under the No Action Alternative.

## 2.1.3 Fish and Wildlife Habitat

This section summarizes the practices and regulatory requirements that would be implemented by Green Diamond (that have the potential to affect fish and wildlife habitat) under the No Action Alternative. Practices specific to key components and elements of fish and wildlife habitat, such as riparian habitat, large woody debris, snags, and hardwoods, are described.

### 2.1.3.1 Riparian Habitat

Measures that would be implemented under the No Action Alternative for riparian habitats adjacent to Class I, II, and III watercourses, plus ponds, swamps, seeps, springs, and bogs, are described in detail below, but could be modified and expanded on the basis of site-specific individual and cumulative effects analyses during THP preparation.

**Class I Watercourses.** Existing CFPRs require the establishment of WLPZs immediately adjacent to streams and lakes. Under the No Action Alternative, standard minimum zone widths for Class I (fish-bearing) watercourses are 150 feet, and can be increased depending on the percent slope of areas immediately upslope of these streams. Pursuant to Green Diamond's NSOHCP, Green Diamond widens WLPZs immediately adjacent to Class I watercourses wherever possible to take advantage of natural conditions.

Within a Class I WLPZ, at least 85 percent overstory canopy would be retained within 75 feet of the watercourse or lake transition line; at least 70 percent overstory canopy would be retained within the remainder of the WLPZ. The residual overstory canopy after timber harvesting would be composed of at least 25 percent of the overstory conifers existing prior to harvesting. Under No Action, this requirement would be augmented by additional measures identified in the Green Diamond NSOHCP that provide for retention of a variety of tree sizes (height and diameter) and species within WLPZs, with priority given to wildlife habitat trees. Within Class I WLPZs, at least 75 percent surface cover and undisturbed area would be retained after harvesting to act as a sediment filter strip, to dissipate raindrop

energy, and to provide wildlife habitat. In addition, where an inner gorge extends beyond a Class I WLPZ and slopes are greater than 55 percent, a special management zone would be established where the use of even-aged regeneration methods would be prohibited.

Single tree selection harvesting would be Green Diamond's preferred harvesting method within the WLPZ of Class I watercourses. Use of heavy equipment for timber felling, yarding, or site preparation would be prohibited within the WLPZ except at prepared tractor road crossings or at existing or new road crossings approved by CDF and CDFG.

The 10 largest dbh conifers (living or dead) per 330 feet of stream channel would be retained within 50 feet of Class I watercourses to provide future instream large woody debris. Green Diamond would retain a variety of tree sizes (height and diameter) and species within Class I WLPZs, with priority given to wildlife habitat trees and down woody material.

In addition to prescriptive measures, the design of site-specific measures within Class I WLPZs by Green Diamond foresters, as well as review of these measures by a multi-disciplinary review team, would be included in the No Action Alternative (see Section 1.5.3.1).

**Class II Watercourses.** Watercourse and lake protection measures for streams where aquatic habitat exists for non-fish aquatic species (Class II) would include minimum, variable WLPZ widths of 50 to 100 feet, depending on the adjacent hillslope gradient and associated erosion hazard rating. At least 50 percent total canopy closure would be retained subsequent to any commercial harvesting. However, at least 70 percent minimum total canopy closure would be retained post-harvest where it exists within the WLPZ prior to timber harvesting. Pursuant to Green Diamond's NSOHCP, Green Diamond would widen WLPZs immediately adjacent to Class II watercourses wherever possible to take advantage of natural conditions and on the basis of site-specific review where other special circumstances (e.g., geologic instabilities) warrant.

Existing regulations require that the residual overstory canopy after timber harvesting be composed of at least 25 percent of the overstory conifers existing prior to harvesting. This requirement would be augmented by additional measures identified in the Green Diamond NSOHCP that provide for retention of a variety of tree sizes (height and diameter) and species within WLPZs, with priority given to wildlife habitat trees. Within Class II WLPZs, at least 75 percent surface cover and undisturbed area would be retained after harvesting to act as a sediment filter strip, to dissipate raindrop energy, and to provide wildlife habitat.

Single tree selection harvesting would be Green Diamond's preferred harvesting method within the WLPZ of Class II watercourses where more than 50 percent canopy exists prior to timber operations. Use of heavy equipment for timber felling, yarding, or site preparation would be prohibited within the WLPZ except at prepared tractor road crossings or at existing or new road crossings approved by CDF and CDFG. At least two living conifers per acre, measuring at least 16 inches dbh and 50 feet tall, would be retained within 50 feet of Class II watercourses to provide future instream large woody debris.

**Class III Watercourses.** Protection for Class III streams where no aquatic life is present but the stream is capable of transporting sediment to a Class I or Class II watercourse would include establishing 25- to 50-foot ELZs, depending on the adjacent hillslope gradient and associated erosion hazard rating. To the extent allowed by existing regulations, timber

harvesting would still continue in ELZs, within which heavy equipment use would be limited. All trees within the Class III channel or that are needed for bank stability would be retained. Under some circumstances, WLPZs could be established for Class III watercourses in lieu of ELZs. WLPZ widths and WLPZ protection measures for Class III watercourses would be determined from a joint on-site inspection by Green Diamond foresters and the THP review team. In the event a WLPZ is designated for a Class III watercourse, at least 50 percent of the understory vegetation present before timber operations would be retained as cover subsequent to any commercial harvesting. Even-aged management would be Green Diamond's preferred regeneration method within the ELZ of Class III watercourses; these areas are replanted subsequent to harvesting.

**Ponds, Swamps, Bogs, and Seeps.** Ponds, swamps, bogs, and seeps would receive Class II protection as described above. Springs would also receive Class II protection provided that they contain habitat for non-fish aquatic species.

### 2.1.3.2 Large Woody Debris

Although existing regulations do not provide retention standards for large woody debris (LWD), LWD issues are analyzed and addressed in the individual and cumulative effects analysis in THPs. Green Diamond currently retains some existing LWD on the forest floor. Merchantable sections of some downed logs or trees are periodically subject to salvage. Stumps, on the other hand, are not removed except where clearing is required for road and landing construction, and in these cases stumps are left on-site. Where stumps are removed, they are often stock-piled for use in stream restoration work. Salvage operations not related to a THP might also occur after major storms or fires; then, high-quality old-growth logs might be salvaged. There would, however, be no salvage allowed within the WLPZ of a Class I and Class II watercourse. Outside of a Class I or Class II WLPZ, all merchantable sections of downed trees would be salvaged, unless site-specific reasons dictated otherwise. All snags that are felled (including those intentionally felled for safety) would also be salvaged. Stumps and cull sections of downed trees would not be salvaged. Under the No Action Alternative, this general salvage policy would continue to apply to all silvicultural treatments covered by a THP, except within WLPZs adjacent to Class I and Class II watercourses.

Under the No Action Alternative, some large, downed woody debris would be depleted as a result of broadcast burning of some even-aged units subsequent to timber harvesting. These units would be burned to facilitate planting and natural seeding. The frequency of broadcast burning would be relatively low; less than 40 percent of harvested even-aged areas would be burned each year. If such a depletion occurs, it would be addressed in the regular cumulative effects analysis of the THP.

### 2.1.3.3 Snags

Under this alternative, Green Diamond would, in general, retain all snags greater than 16 inches dbh and greater than 50 feet tall that are not merchantable and that do not pose a safety or fire hazard. Under this alternative, future recruitment of snags would occur through the retention of old-growth elements in the 39 set-aside areas, minimum overstory canopy retention standards within the WLPZ of Class I and Class II watercourses, and

retention of a variety of tree sizes and species within WLPZs as noted above. Snags would also be recruited pursuant to species-specific measures noted below for listed species.

#### **2.1.3.4 Hardwoods**

Under the No Action Alternative, Green Diamond generally would not harvest hardwoods in WLPZs. Under special circumstances, Green Diamond might remove hardwoods in WLPZs to enable conifer regeneration, enhance riparian function, establish cable corridors for timber harvesting operations, or for safety. Outside of WLPZs, Green Diamond would retain hardwoods in all uneven-aged silvicultural areas, except where they may impede the regeneration of conifers (see below). Green Diamond's tree retention standard in even-aged management units would be one to two trees per acre. When hardwoods occur in THPs, Green Diamond would retain them in range of diameter classes and would attempt to retain them in equal ratio to conifers. In hardwood dominated stands, two merchantable hardwood trees per acre would be retained in even-aged management units following timber harvesting. In all harvested areas, hardwood trees that show evidence of substantial wildlife use (i.e., whitewash, acorn granaries, old raptor nests, etc.) or that repeatedly provide a superior crop of acorns would also have priority for retention.

As has occurred in the past, Green Diamond would continue under the No Action Alternative to remove hardwoods where they impede the regeneration of conifers; removal would be subject to the retention standards noted above. Green Diamond may take measures to reduce the competitive influence of tanoak and madrone in stands where hardwood competition threatens the survival of the conifer seedlings. These species would be treated with herbicides or, sometimes by mechanical means, as noted above. Green Diamond would not use herbicides within WLPZs along Class I and Class II watercourses or within the ELZs (or WLPZs) of Class III watercourses where water is present.

#### **2.1.4 Measures to Protect Federal and State Listed Species**

Under the No Action Alternative, Green Diamond would remain subject to existing regulatory requirements and would continue to implement its existing operational practices. Green Diamond would remain subject to the prohibition on unauthorized taking of State and federally listed species as well as the provision of the CFPRs that no THP may be approved that would result in the unauthorized take of a listed species. The only exception to the applicability of the take prohibition would continue to be the northern spotted owl, which is covered by an HCP/ITP issued to Green Diamond previously and is discussed in more detail below. Further, Green Diamond would remain subject to the State law regulatory requirements to avoid or mitigate significant adverse impacts of timber harvesting on all wildlife, including species listed or proposed for listing under the Federal and State ESA. State and federally listed species known to occur on or in the vicinity of the Green Diamond ownership in northern California are the coho salmon (Southern Oregon/Northern California Coast ESU), Chinook salmon (California Coastal ESU), steelhead (Northern California DPS), American peregrine falcon, bald eagle, bank swallow, little willow flycatcher, marbled murrelet, northern spotted owl, and western snowy plover. The tidewater goby is not known to occur on the Green Diamond ownership, but can be found in lagoons locally.

#### **2.1.4.1 Coho Salmon, Chinook Salmon, and Steelhead**

The coho salmon (Southern Oregon/Northern California Coast ESU), Chinook salmon (California Coastal ESU), and steelhead (Northern California DPS) are federally listed as threatened under the Federal Endangered Species Act (ESA). The population segment of coho salmon from Punta Gorda, California to the northern border of California is listed as threatened under the California Endangered Species Act (CESA). Under the No Action Alternative, Green Diamond would remain subject to the prohibition on unauthorized take of these species and other fish species listed (or proposed for listing under State law) in the future. Measures presently include implementation of watercourse and lake protection and other operational guidelines. Further, Green Diamond would continue to incorporate site-specific measures into THPs as necessary for the purposes of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.1.4.2 Tidewater Goby**

The tidewater goby is listed as endangered under the Federal ESA, and occur primarily in shallow lagoons and lower stream reaches in the Action Area where waters are brackish to fresh and fairly slow moving. Under the No Action Alternative, Green Diamond would remain subject to the prohibition on unauthorized take of these species. Measures presently utilized include implementation of watercourse and lake protection and other operational guidelines. Further, Green Diamond would continue to incorporate site-specific measures into THPs, as necessary, for the purposes of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.1.4.3 American Peregrine Falcon**

The peregrine falcon is listed as endangered under CESA. Five peregrine falcon nest sites have been documented on or near Green Diamond lands. Under the No Action Alternative, Green Diamond would remain subject to the prohibition on unauthorized take of this species. Green Diamond would incorporate into THPs site-specific measures, as necessary, for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.1.4.4 Bald Eagle**

Bald eagles are listed as threatened under the Federal ESA and endangered under CESA. Two bald eagle nest sites and frequent winter use in all major drainages have been documented on Green Diamond lands. Under the No Action Alternative, Green Diamond would remain subject to the take prohibition for this species. Green Diamond would seek technical assistance from the USFWS and/or CDFG to develop and implement site-specific measures as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.1.4.5 Bank Swallow**

The bank swallow is listed as threatened under CESA. Bank swallows have not been observed on the Green Diamond ownership. Under the No Action Alternative, however, if bank swallows were found on Green Diamond lands, Green Diamond would incorporate site-specific measures into THPs as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.1.4.6 Little Willow Flycatcher**

The little willow flycatcher is listed as endangered under CESA. One willow flycatcher breeding site is known to occur in the Klamath region of Green Diamond's ownership. Under the No Action Alternative, Green Diamond would incorporate site-specific measures into THPs as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.1.4.7 Marbled Murrelet**

The marbled murrelet is listed as threatened under the Federal ESA and endangered under CESA. From past surveys, the marbled murrelet is known to occur in a number of residual old-growth stands in the Klamath region and one second-growth stand with residual structure in the Little River drainage. Under the No Action Alternative, Green Diamond would incorporate site-specific measures into THPs as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

Approximately 1,400 acres of Green Diamond's current ownership, and an additional 3,350 acres within the adjustment area lands, are within the boundaries of a marbled murrelet critical habitat unit (CHU) (CA-03-a). Portions of adjacent lands in public ownership, such as the Redwood National and State Parks and the Headwaters Reserve, have been designated as marbled murrelet critical habitat by the USFWS. However, Green Diamond is not seeking coverage under the Permits for the harvest of trees, as described in Sections 2.2.1, 2.2.2, 2.2.3, and 2.2.5, in any portion of the Action Area that has been designated as critical habitat for the marbled murrelet, as defined in 50 CFR 17.95, when the harvest of those trees would affect a "primary constituent element" of critical habitat for the marbled murrelet, as defined in 50 CFR 17.95 (adopted May 24, 1996 61 FR 26256).

#### **2.1.4.8 Northern Spotted Owl**

The northern spotted owl is listed as threatened under the Federal ESA. Since surveys for northern spotted owls were initiated on Green Diamond lands in 1989, over 200 northern spotted owl nest sites or activity centers have been identified throughout its ownership in northern California. Under the No Action Alternative, Green Diamond would continue to comply with measures contained in its NSOHCP and associated Implementation Agreement that provide for the legal incidental take of northern spotted owls in connection with timber harvesting and management operations. Pursuant to the NSOHCP, Green Diamond would continue to implement a four-point conservation program that includes (1) habitat management and nest protection, (2) a spotted owl research program, (3) establishment of set-asides and special management areas in selected habitat areas, and (4) employee/contractor training.

Under the No Action Alternative, habitat management and nest site protection measures would be implemented primarily through the THP process. Green Diamond would use its NSOHCP to guide the development of individual THPs. Timber harvesting would be planned and implemented to: (1) protect spotted owl nest sites during the nesting and fledging season; (2) maintain suitable foraging, roosting, and nesting habitat on Green Diamond's property; and (3) accelerate the development of replacement habitat following harvesting.

Surveys for spotted owls would continue pursuant to protocols identified in the NSOHCP. Banding and monitoring of spotted owls would continue where appropriate to facilitate population estimates and to gather additional demographic information.

To protect existing owl sites in select areas for purposes of avoiding take and promoting development of suitable owl habitat following harvesting, Green Diamond would continue to not harvest timber in 39 set-aside areas. In addition, a separate “special management area” would continue to be monitored in which no take of spotted owls would be allowed.

#### **2.1.4.9 Western Snowy Plover**

The western snowy plover is listed as threatened under the Federal ESA. Western snowy plovers are known to nest on some of Green Diamond’s coastal property between the Mad River and Redwood Creek, as well as one gravel bar in the Van Duzen drainage. Under the No Action Alternative, Green Diamond would incorporate site-specific measures into THPs, as necessary, for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

### **2.1.5 Measures for Other Species**

Green Diamond would implement measures designed to avoid or mitigate potentially significant impacts to other species under the No Action Alternative in various ways, including implementing nest protection measures for several unlisted species considered “sensitive” by the Board of Forestry. Sensitive species include the osprey, northern goshawk, golden eagle, great blue heron, and great egret. These species-specific measures would continue to be implemented under the No Action Alternative. In addition, Green Diamond’s THPs would identify significant reductions in the amount and distribution through harvesting of late-successional forest stands, as well as site-specific or general measures that would mitigate significant adverse impacts to fish and wildlife associated with these stands. These practices would be in addition to other direct and indirect general measures relating to riparian habitat, watercourse and lake protection, and snag retention. In addition, Green Diamond would remain subject to State and Federal laws, such as the Migratory Bird Treaty Act, Bald Eagle and Golden Eagle Protection Act, and the prohibitions on taking of certain raptors pursuant to Sections 3503.3 and 3511 of the California Fish and Game Code.

Under the No Action Alternative, THPs would also include a cumulative effects analysis that would address past and future impacts on biological resources. This analysis would include discussion on the following within the context of impacts to fish and wildlife: (1) structural diversity within streams; (2) instream and upslope downed woody debris; (3) riparian vegetation; (4) presence and recruitment of snags, dens, and nest trees; (5) presence of multi-storied tree canopies; hardwood cover; (6) presence of late seral forest characteristics and late seral continuity; and (7) presence of other special wildlife habitat elements.

Green Diamond would, as appropriate and with input from the multi-disciplinary review team, other interested agencies, and the public, incorporate into THPs other site-specific measures designed to reduce significant individual and cumulative impacts to sensitive and other species.

## 2.2 Proposed Action

Under the Proposed Action, Green Diamond would continue to conduct timber harvesting and related operations in accordance with existing State and Federal regulations, including the CFPRs, its NSOHCP, and the operational and policy management actions currently being implemented by Green Diamond. Green Diamond would also implement an Aquatic HCP/CCAA within the Action Area. Operations within the Action Area would be subject to the provisions of an ITP and ESP.<sup>1</sup>

NMFS would issue Green Diamond an ITP with a term of 50 years for two listed fish ESUs and one listed fish DPS (coho salmon [Southern Oregon/Northern California Coast ESU], Chinook salmon [California Coastal ESU], and steelhead [Northern California DPS]) and three unlisted fish ESUs (Chinook salmon [Southern Oregon and Northern California Coastal ESU, Upper Klamath/Trinity Rivers ESU] and steelhead [Klamath Mountains Province ESU]). The USFWS would issue Green Diamond an ESP, also with a 50-year term, covering two unlisted fish species, (coastal cutthroat and rainbow trout), and two unlisted amphibians (southern torrent salamander and tailed frog). Table 2.2-1 lists species that would receive ITP/ESP coverage under the Proposed Action.

**TABLE 2.2-1**

Fish and Amphibian Species That Would Be Covered Under the Proposed Action

| Species Common Name ( <i>Scientific Name</i> )  | Listing/Sensitivity Status Within the Action Area |       |
|---|---|-------|
|   | Federal   | State |
| <b>Fish</b>   |   |       |
| Coho salmon ( <i>Oncorhynchus kisutch</i> )<br>Southern Oregon/Northern California Coast ESU              | FT  | ST    |
| Steelhead trout* (anadromous) ( <i>Oncorhynchus mykiss</i> )<br>Northern California DPS                   | FT  | None  |
| Steelhead trout* (anadromous) ( <i>Oncorhynchus mykiss</i> )<br>Klamath Mountains Province ESU            | None  | None  |
| Chinook salmon ( <i>Oncorhynchus tshawytscha</i> )<br>California Coastal ESU                              | FT  | None  |
| Chinook salmon ( <i>Oncorhynchus tshawytscha</i> )<br>Southern Oregon and Northern California Coastal ESU | None  | None  |
| Chinook salmon ( <i>Oncorhynchus tshawytscha</i> )<br>Upper Klamath/Trinity Rivers ESU                    | None  | None  |
| Coastal cutthroat trout (anadromous and resident)<br>( <i>Oncorhynchus clarki clarki</i> )                | FSS   | CSC   |
| Rainbow trout* (resident)<br>( <i>Oncorhynchus mykiss</i> )   | None  | None  |

<sup>1</sup> It is anticipated that Green Diamond, CDF, and others may on occasion and on a site-specific basis propose mitigations through the THP review process that go beyond the conservation measures in the proposed AHCP/CCAA.

**TABLE 2.2-1**  
Fish and Amphibian Species That Would Be Covered Under the Proposed Action

| Species Common Name ( <i>Scientific Name</i> )                    | Listing/Sensitivity Status Within the Action Area |       |
|---|---|-------|
|   | Federal   | State |
| <b>Amphibians</b>   |   |       |
| Southern torrent salamander<br>( <i>Rhyacotriton variegatus</i> ) | None  | CSC   |
| Tailed frog<br>( <i>Ascaphus truei</i> )                          | None  | CSC   |

\* Although both steelhead and rainbow trout are of the species *Oncorhynchus mykiss*, they are considered to be separate DPSS, This is, in part, because they exhibit markedly different behavioral patterns. For additional details regarding the differences between these species see 71 FR 834. Steelhead are under the jurisdiction of the NMFS, whereas rainbow trout are under the jurisdiction of the USFWS.

Federal

FT Federal threatened species  
FSS Forest Service sensitive species

State

CSC CDFG Species of Special Concern  
ST State threatened species

Existing measures employed by Green Diamond to protect Class I, II, and III streams would be supplemented by Green Diamond's AHCP/CCAA Conservation Strategy, which includes enhanced riparian management zone (RMZ) widths, enhanced riparian protection within the RMZs, and establishment of equipment exclusion zones (EEZs) (see below). Green Diamond would also implement *ownership-wide* mitigation, management, and monitoring measures. These include:

- Implementation of an ownership-wide Road Management Plan that provides for selective and road-related fish passage enhancement (barrier removal); implementation of practices that are designed to minimize sediment discharge to Class I, II, and III streams; and decommissioning of some roads.
- Protection of unique geomorphic features, such as channel migration zones and floodplains
- Adoption of various slope stability and ground disturbance measures
- Effectiveness and compliance monitoring, plus adaptive management and structured feedback loops, subject to the available funding of the account

## 2.2.1 Timber Harvesting and Forest Management Activities

General forest management and timber harvesting activities noted under the No Action Alternative would continue under this alternative. The use of fertilizers and herbicides for purposes of enhancing tree growth and controlling competing brush vegetation in even-aged regeneration units and roadside areas would continue under the Proposed Action; however, they would not be covered activities under the ITP or ESP.

Under the Proposed Action, Green Diamond would implement the following additional key measures on its fee-owned lands within the Action Area that supplement the measures described under the No Action Alternative.

### 2.2.1.1 Harvesting and Transporting Timber

- Harvest timber within RMZs in accordance with conservation measures defined in the AHCP/CCAA, as summarized below in Section 2.2.3.1 of this EIS.
- Prohibit timber harvesting within the “inner zone” of all Class I RMZs and 2nd order or larger Class II RMZs (see Section 2.2.3.1 below) that are located below designated “steep streamside slope management zones” (SMZs) (see Sections 6.2.2.1 and 6.3.2.1 of the proposed AHCP/CCAA), except for purposes of creating cable-yarding corridors when other options are impractical. (RMZ areas located below an SMZ are referred to as RSMZs in the proposed AHCP/CCAA.) Retention of a minimum 85 percent overstory canopy would be required in Class I and 2nd order or larger Class II RSMZ “outer zones.”
- Allow limited timber harvesting within the first 1,000 feet of a 1st order Class II RSMZ inner zone subject to 85 percent canopy closure retention post-harvest. A minimum 75 percent overstory canopy retention within the first 1,000 feet of a 1st order Class II RSMZ outer zone would also be required. (See Section 6.2.2.1 of the proposed AHCP/CCAA.)
- Prohibit timber harvesting within the entire RSMZ for the Coastal Klamath and Blue Creek Hydrographic Regions.
- Exclude use of heavy equipment within RMZs, with the exception of existing roads and landings, construction of spur roads to extend outside the RMZ, and stream crossings.
- Use single-tree selection as the initial silvicultural prescription within SMZs and the only prescription within headwall swales. In addition, one commercial harvesting entry would be allowed within SMZs and headwall swales, except where cable corridors are necessary to conduct intermediate treatments in adjacent stands, for the term of the Permits. All hardwoods within SMZs and headwall swales would be retained and, wherever possible, Green Diamond would provide for even spacing of unharvested conifers such that all species and size classes represented in pretreatment stands would generally be represented post harvest.
- Establish no-cut zones within the toe, and 25 feet upslope from the top of the toe of active deep-seated landslides, except for purposes of creating cable-yarding corridors when other options are impractical. Similarly establish no-cut zones upslope of the deep-seated landslide scarp so as to taper to the lateral margins of the scarp.
- Prohibit timber harvesting within the boundaries of shallow rapid landslides, and retain a minimum 70 percent overstory canopy within 50 feet above and 25 feet on the sides of shallow rapid landslides. This default prescription may be modified subsequent to a site-specific geologic review.
- Cease log hauling and landing use (including helicopter service landing areas) if such use results in runoff of waterborne sediment in amounts sufficient to cause a visible

increase in turbidity in any ditch or road surface which drains into a Class I, II, or III watercourse, regardless of the time of year.

- Allow loading and hauling of logs during the winter period (October 15 through May 14) only on roads and landings with rocked surfaces during extended dry fall periods (October 16 through November 15), if less than four inches of rainfall has accumulated from September 1. Loading and hauling will cease when cumulative rainfall reaches four inches. Loading and hauling will be permitted with early spring drying (May 1 through May 14), if no measurable rainfall has occurred within the last 5 days and no rain is forecasted by the National Weather Service for the next 5 days.
- Prohibit the use of landings on roads within RMZs during the winter period.
- Limit vehicular use on unrocked roads during the winter period to all-terrain vehicles (ATVs) only. Other vehicular use of seasonal roads would be allowed if early spring drying or an extended dry fall occurs (see above).
- Restrict water drafting and use of gravity-fed water storage systems for timber operations in accordance with procedures detailed in the AHCP/CCAA. (See Section 6.2.3.13 of the AHCP/CCAA.)

#### **2.2.1.2 Timber Stand Regeneration and Improvement – Site Preparation**

- Implement various measures contained in the AHCP/CCAA that focus on minimizing surface erosion from site preparation operations through: (1) minimization of bare soil exposure within harvest units, (2) minimization of fireline construction, (3) maintenance of a nearly continuous forest floor layer of duff and woody material, and (4) prevention of drainage failures and sediment delivery from firelines.

#### **2.2.1.3 Road and Landing Construction, Reconstruction, and Maintenance**

- Complete within five years of issuance of the Permits a prioritization of sub-watershed road work units for risk assessment that weights risk on the basis of biological, geomorphic, and road-related management criteria, as described in the AHCP/CCAA.
- Based on a priority ranking of sub-watershed road work units, identify road-related sediment sources using a two-step process of air photo analysis and field inventories, as outlined in the AHCP/CCAA.
- On the basis of the road assessment and treatment prioritization noted above, develop an implementation plan to effect (1) temporary road decommissioning; (2) permanent road decommissioning; or (3) road upgrading, as appropriate.<sup>2</sup>
- Implement a formalized biannual training program for equipment operators and supervisors on proper road and landing construction, upgrading, maintenance, and decommissioning practices with an emphasis on practical, effective erosion and sediment control.

<sup>2</sup> Green Diamond would apply road assessment and implementation plan measures to all fee-owned lands and the 1,866 acres in which it owns perpetual harvesting rights granted by Green Diamond Timber Company on June 28, 2002, within the Action Area; these measures would not be applied to other existing perpetual harvesting rights areas or any harvesting rights areas acquired over time, unless provided for in an agreement with the fee owner.

- Decommission or upgrade roads in accordance with the implementation plan during the non-winter period only, except during dry fall periods under circumstances defined in the AHCP/CCAA. Green Diamond may also upgrade roads during early spring drying periods. (See Sections 6.2.3.3 and 6.2.3.4 of the AHCP/CCAA.)
- Front-load treatment of high- and moderate-risk sediment delivery sites (beginning in the high priority road work units) by providing for an average of \$2.5 million per year (which includes Green Diamond's required THP-related road work, currently estimated to be \$1.0 million per year), to be adjusted for inflation in 2002 dollars for each year for the first 15 years of the Permits (for a total of \$37.5 million unless the acceleration period is adjusted following revision of the estimate of sediment yield from high- and moderate-risk sediment delivery sites at the end of the first five years following issuance of the Permits. The acceleration period and monetary commitment could be adjusted (upward or downward) by up to 1.5 years and \$3.75 million depending on the revised estimate of sediment yield. Under the Proposed Action, 3.1 million cubic yards of sediment would be removed during the first 15 years of the term of the Permits (compared to 1.3 million cubic yards under the No Action Alternative).
- Surface roads and landings used during the winter period to a minimum compacted depth of 12 inches of pit run rock or a combination of pit run and crushed rock.
- Install culverts with a minimum diameter of 24 inches in all stream crossings on management roads and 18 inches on logging road ditch drains.
- Inspect all mainline roads prior to September 15 of each year and perform priority repair/maintenance tasks prior to the winter period.<sup>3</sup>
- Maintain other management roads or roads yet to be decommissioned on a three-year rotating basis in accordance with a maintenance schedule contained in the AHCP/CCAA.<sup>4</sup> (See Section 6.2.3.9.4 of the AHCP/CCAA.)
- Implement a response plan as described in the AHCP/CCAA to large storm events that could result in major sediment inputs to stream channels.
- Draft water from streams, reservoirs, lakes, and ponds in accordance with various guidelines and procedures described in the AHCP/CCAA to protect covered species.
- Implement various other road/landing construction, reconstruction, and maintenance measures contained in the AHCP/CCAA, for purposes of further minimizing potential sediment delivery to the waters of Class I, II, or III streams.

#### 2.2.1.4 Monitoring and Research Activities

Under the Proposed Action, Green Diamond would commit to continue the various watershed, fish, and wildlife management activities for the enhancement or monitoring of

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<sup>3</sup> Green Diamond would apply routine road maintenance and inspection measures only where Green Diamond has exclusive road-use rights. Road maintenance and inspection where Green Diamond does not have exclusive road-use rights in the Action Area would be conducted in accordance with existing CFPRs and Green Diamond's management policies.

<sup>4</sup> Approximately 45 percent of all of Green Diamond's roads will be maintained annually following this routine maintenance schedule. The actual percentage of roads to be maintained each year will increase over time because a portion of the current road network is planned for decommissioning. In addition, as the Road Management Plan is implemented and more roads are decommissioned, the overall miles of roads that require maintenance will decrease.

watershed, wildlife, and fisheries resources described under the No Action Alternative in Section 2.1.2.5.

Under the Proposed Action, Green Diamond would also commit to the following additional monitoring and research programs:

- Annual summer temperature monitoring at selected sites throughout the Action Area
- Annual population monitoring of tailed frog larval populations in paired headwater sites of first and second order streams
- Annual sub-population monitoring of southern torrent salamanders in paired headwater sites in watersheds with and without harvesting activity
- Annual measuring and monitoring of spawning gravel permeability in selected Class I streams at selected sites
- Annual measuring and monitoring of water turbidity above and below stream crossings and permanent monitoring stations at selected sites
- Annual or periodic long-term trend monitoring of Class I channel conditions, sediment delivery from Class III watercourses, effectiveness of hillslope management measures (augmented by focused studies within designated “experimental watersheds”), road-related catastrophic sediment inputs, detailed channel and habitat conditions for selected stream reaches throughout the Action Area, LWD occurrence, and slope stability as a result of implementation of the proposed AHCP/CCAA conservation measures
- Annual summer juvenile salmonid and outmigrant trapping monitoring
- Conduct an assessment of steep streamside slope delineations within five years of approval of the Permits by the Services
- Convene a Scientific Review Panel to assess adequacy of SMZ conservation measures after the 15th winter following approval of the AHCP/CCAA by the Services
- Conduct a property-wide hillslope mass wasting assessment within 20 years for purposes of examining relationships between hillslope mass wasting processes and timber management practices

## 2.2.2 Other Operations and Activities

Other operations and activities noted under the No Action Alternative would continue under the Proposed Action, with the following exception. Instream gravel extraction, subject to permitting requirements of the CDFG, would continue under the Proposed Action; it would not be a covered activity under the ITP or ESP.

Under the Proposed Action, Green Diamond would implement the following additional key measures on its fee-owned lands within the Action Area that supplement the measures described under the No Action Alternative.

- Prohibit establishment of new rock quarries and borrow pits within a Class I or Class II RMZ.

- Prohibit use of an existing rock quarry or borrow pit that is within 150 feet of a Class I watercourse, within 100 feet of a 2nd order or larger Class II watercourse, or within 70 feet of a 1st order Class II watercourse (first 1,000 feet).
- Extract or haul rock from quarries so as to not cause a visible increase in turbidity in watercourses or hydrologically connected facilities which discharge into watercourses.
- Place overburden generated during development of rock quarries and borrow pits in a stable location away from watercourses and RMZs.

## 2.2.3 Fish and Wildlife Habitat

### 2.2.3.1 Riparian Habitat

Following the distinctions used in the CFPRs, riparian management measures under the Proposed Action would vary among three broad classes of streams: Class I, Class II, and Class III watercourses. Further divisions would apply within some stream classes on the basis of stream size (Class II streams) and side slopes (Class III streams). Riparian management measures would apply on fee-owned lands within the Action Area.

**Class I Watercourses.** Under the Proposed Action, Class I streams would include all current or historical fish-bearing streams. RMZ widths for Class I streams would be a minimum of 150 feet slope distance, as measured from the first line of perennial vegetation or from the outer channel migration zone (CMZ) or outer floodplain edge (if greater than 150 feet on one side), where applicable. Under the Proposed Action, the RMZ for Class I streams would contain two sub-zones: an inner zone and outer zone. The minimum width of the inner zone (closest to the stream) would be a variable 50 to 70 feet, depending on side slope gradient. The outer zone would be the remaining 80 to 100 feet and would extend from the outer limit of the inner zone edge. The outer zone could be extended, where applicable and necessary, to cover the entire floodplain and an additional 30 to 50 feet (depending on side slope gradient) beyond the outer edge of the floodplain.

Riparian habitat management described under the No Action Alternative would continue, unless superseded or augmented by conservation measures contained in the AHCP/CCAA. Measures superseding those described under the No Action Alternative, plus additional AHCP/CCAA conservation measures, would be as follows:

- Within the 50- to 70-foot inner zone, Green Diamond would retain at least 85 percent overstory canopy closure. Within the remainder of the RMZ (outer zone), at least 70 percent overstory canopy would be retained, except as noted below for Class I RMZs located below SMZs where 75 percent overstory canopy closure would be retained.
- If the inner zone is predominately composed of hardwoods, no conifers would be taken from the inner zone. In addition, timber harvesting within RMZs would not reduce the conifer stem density to less than 15 conifer stems per acre.
- Within the RMZ, no trees would be harvested that contribute to bank stability or are judged likely to recruit to the watercourse.<sup>5</sup>

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<sup>5</sup> The distinction in retention levels between inner and outer zones of the RMZ would be reduced on increasingly steeper slopes (generally greater than 50 percent) because of the increased potential for trees to recruit at greater distances from the

- The Class I RMZ would be an EEZ, except for (1) existing roads and landings, (2) construction of new spur roads to extend operations outside the RMZ, (3) road watercourse crossings, (4) skid trail watercourse crossings, and (5) designated skid trail intrusions.

The exception for skid trail watercourse crossings would only be applicable when the following conditions are met:

- Construction and use of skid trail watercourse crossings within the RMZ would occur only when construction and use of alternative routes to otherwise inaccessible areas outside of the RMZ would result in substantially greater impacts to aquatic resources. Preference would be given to utilizing existing skid trail watercourse crossing sites in the RMZ over establishing new skid trail watercourse crossing sites in the RMZ.
- Skid trail watercourse crossings would not be constructed or used in the RMZ to provide access to RMZs for the purpose of their harvest.
- Within the Class I RMZ, trees would be felled to facilitate skid trail watercourse crossing construction and use. All such felled trees would be retained as downed wood in the RMZ and would be counted towards estimated reductions in full tree equivalent (FTE) values and reductions in potential recruitment of LWD.
- Green Diamond would submit to the Services an explanation, justification, and map of any proposed skid trail watercourse crossings as part of the informational copy of the THP notice of filing (see AHCP/CCAA Section 6.2.7.2).

The exception for skid trail intrusions would only be applicable when the following conditions are met:

- RMZ hillslopes are less than 25 percent.
- Construction and use of skid trails within the RMZ would occur only when construction and use of alternative routes to otherwise inaccessible areas outside of the RMZ would result in substantially greater impacts to aquatic resources. Preference would be given to utilizing existing skid trails in the RMZ over construction of new skid trails in the RMZ.
- Skid trails would not be constructed or used in the RMZ to provide access to RMZs for the purpose of their harvest.
- Within the RMZ, only trees less than 10 inches in dbh would be felled to facilitate skid trail use. All such felled trees would be retained as downed wood in the RMZ and will be counted towards estimated reductions in FTE values and reductions in potential recruitment of LWD.
- Green Diamond would submit to the Services an explanation, justification, and map of the proposed skid trail and use in the RMZ as part of the informational copy of the THP notice of filing (see AHCP/CCAA Section 6.2.7.2).

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stream. Redwoods would be preferentially harvested over other conifers, because of their ability to sprout from the remaining root system.

- During the life of the Permits, only a single harvest entry would occur into an RMZ except where cable corridors are necessary to conduct intermediate treatments in adjacent stands.
- Salvage would not occur within inner zones, on floodplains, or CMZs. Salvage would be limited to downed trees in the outer zone, and would be allowed only if the wood could not be incorporated into the bankful channel, is not contributing to bank or slope stability, or is not positioned so as to intercept sediment moving toward the stream.
- Timber harvesting would be prohibited within all Class I RMZ inner zones that are located below SMZs (i.e. RSMZs) (see Sections 6.2.2.1 and 6.3.2.1 of the proposed AHCP/CCAA), except for purposes of creating cable-yarding corridors when other options are impractical. Retention of a minimum 85 percent overstory canopy closure would be required in RSMZ outer zones. In addition, no timber harvesting would be allowed within the entire RSMZ in the Coastal Klamath and Blue Creek HPAs.
- Where features of instability are identified within the RMZ, additional site-specific conservation measures may apply (see Section 2.2.1.1, Harvesting and Transporting Timber).
- Any ground disturbance larger than 100 square feet in size caused by management activities within the RMZ (except hand-constructed firelines) would be mulched and seeded or otherwise treated to reduce the potential for sediment delivery to the stream.
- Prohibit establishment of new rock quarries and borrow pits within a Class I RMZ.
- Prohibit use of an existing rock quarry or borrow pit that is within 150 feet of a Class I watercourse.

**Class II Watercourses.** For purposes of the proposed AHCP/CCAA, Class II streams contain no fish, but support or provide habitat for aquatic vertebrate species. RMZ widths for Class II streams would be a minimum of 75 or 100 feet (slope distance), as measured from the first line of perennial vegetation. The 75-foot minimum buffer would apply to the first 1,000-foot segment of the smallest (1st order) Class II stream (Class II-1); the 100-foot minimum buffer would apply to the remaining portion of the small (1st order) Class II streams, as well as to larger Class II streams (2nd order or higher) (Class II-2). A preliminary assessment of Class II RMZ widths on Green Diamond fee-owned lands indicates that approximately 61 percent of the total Class II stream lengths would receive 100-foot RMZs, and 75-foot RMZs would apply on the remaining 39 percent. Under the Proposed Action, the RMZ for Class II streams, as with Class I streams, would contain an inner zone and outer zone. The minimum width of the inner zone would be a fixed 30 feet. The outer zone would be the remaining 45 or 70 feet (see above) and would extend to the edge of the floodplain from the outer limit of the inner zone edge.

- Riparian habitat management within the RMZ of Class II streams would generally be the same as for Class I streams under this alternative, with the exception that trees that are judged likely to recruit to a watercourse would not be harvested within the first 200 feet of the Class II RMZ adjacent to a Class I RMZ. Other exceptions specific to Class II RSMZs are noted below.

- The Class II RMZ would be an EEZ, except for (1) existing roads and landings, (2) construction of new spur roads to extend operations outside the RMZ, (3) road watercourse crossings, (4) skid trail watercourse crossings, and (5) designated skid trail intrusions.

The exception for skid trail watercourse crossings would only be applicable when the following conditions are met:

- Construction and use of skid trail watercourse crossings within the RMZ would occur only when construction and use of alternative routes to otherwise inaccessible areas outside of the RMZ would result in substantially greater impacts to aquatic resources. Preference would be given to utilizing existing skid trail watercourse crossing sites in the RMZ over establishing new skid trail watercourse crossing sites in the RMZ.
- Skid trail watercourse crossings would not be constructed or used in the RMZ to provide access to RMZs for the purpose of their harvest.
- Within the Class II-1 RMZs, trees would be felled and harvested to facilitate skid trail watercourse crossing construction and use. All harvested trees would be counted towards estimated reductions in full tree equivalent (FTE) values and reductions in potential recruitment of LWD.
- Within Class II-2 RMZs, trees would be felled to facilitate skid trail watercourse crossing construction and use. All such felled trees would be retained as downed wood in the RMZ and would be counted towards estimated reductions in FTE values and reductions in potential recruitment of LWD.
- Green Diamond would submit to the Services an explanation, justification, and map of any proposed skid trail watercourse crossings as part of the informational copy of the THP notice of filing (see AHCP/CCAA Section 6.2.7.2).

The exception for skid trail intrusions would only be applicable when the following conditions are met:

- RMZ hillslopes are less than 25 percent.
- Construction and use of skid trails within the RMZ would occur only when construction and use of alternative routes to otherwise inaccessible areas outside of the RMZ would result in substantially greater impacts to aquatic resources. Preference would be given to utilizing existing skid trails in the RMZ over construction of new skid trails in the RMZ.
- Skid trails would not be constructed or used in the RMZ to provide access to RMZs for the purpose of their harvest.
- Within the RMZ, only trees less than 10 inches in dbh would be felled to facilitate skid trail use. All such felled trees would be retained as downed wood in the RMZ and will be counted towards estimated reductions in FTE values and reductions in potential recruitment of LWD.

- Green Diamond would submit to the Services an explanation, justification, and map of the proposed skid trail and use in the RMZ as part of the informational copy of the THP notice of filing (see AHCP/CCAA Section 6.2.7.2).
- Timber harvesting would be prohibited within the inner zone of 2nd order or larger Class II RSMZs (see Sections 6.2.2.1 and 6.3.2.1 of the proposed AHCP/CCAA), except for purposes of creating cable-yarding corridors when other options are impractical. Retention of a minimum 85 percent overstory canopy closure would be required in 2nd order or larger Class II RSMZ outer zones.
- Timber harvesting would be allowed within the first 1,000 feet of a 1st order Class II RSMZ inner zone subject to retaining 85 percent overstory canopy closure post-harvest. Retention of a minimum 75 percent overstory canopy closure within the first 1,000 feet of a 1st order Class II RSMZ outer zone would also be required. (See Section 6.2.2.1 of the proposed AHCP/CCAA.)
- Prohibit use of an existing rock quarry or borrow pit that is within 100 feet of a 2nd order or larger Class II watercourse, or within 70 feet of a 1st order Class II watercourse (first 1,000 feet).

**Class III Watercourses.** Under the Proposed Action, protection of Class III streams would occur in a two-tiered system, where the tiers correspond to two slope classes. Tier A protections would generally apply where streamside gradients are less than 60 percent to 70 percent. Conversely, Tier B protections would apply where gradients are greater than 60 percent to 70 percent. (The threshold gradient percent is different for different Hydrologic Planning Area (HPA) groups (see Sections 1.3.2.3 and 6.2.1.5 of Green Diamond's proposed AHCP/CCAA and Section 3.2.4 of this EIS.)

ELZ management measures for Class III watercourses described under the No Action Alternative would be superceded, as appropriate, or augmented by the following EEZ conservation measures contained in the AHCP/CCAA:

- **Tier A:** Green Diamond would establish a 30-foot EEZ, except for (1) existing roads, (2) road watercourse crossings, and (3) skid trail watercourse crossings. The exception for skid trail watercourse crossings would only be applicable when the following conditions are met:
  - Construction and use of skid trail watercourse crossings within the Class III EEZ would occur only when construction and use of alternative routes to otherwise inaccessible areas outside of the RMZ would result in substantially greater impacts to aquatic resources. Preference would be given to utilizing existing skid trail watercourse crossing sites in the Class III over establishing new skid trail watercourse crossing sites in the Class III.
  - Within Class III EEZs, trees would be felled and harvested to facilitate skid trail watercourse construction and use.
  - Green Diamond would submit to the Services an explanation, justification, and map of any proposed skid trail watercourse crossings as part of the informational copy of the THP notice of filing (see AHCP/CCAA Section 6.2.7.2).

- **Tier B:** Establishment of a 50-foot EEZ (except for watercourse crossings, existing roads, and identified skid trails), within which all hardwoods, non-merchantable trees, and on-the-ground LWD would be retained. Conifers would also be retained where they contribute to maintaining bank stability or if they are acting as a control point (retaining sediment and or preventing headcutting) in the channel. A minimum average of one conifer per 50 feet of stream length within the EEZ would also be retained. Ignition of fire during site preparation would also be prohibited within the EEZ.

The exception for skid trail watercourse crossings would only be applicable when the following conditions are met:

- Construction and use of skid trail watercourse crossings within the Class III EEZ would occur only when construction and use of alternative routes to otherwise inaccessible areas outside of the RMZ would result in substantially greater impacts to aquatic resources. Preference would be given to utilizing existing skid trail watercourse crossing sites in the Class III over establishing new skid trail watercourse crossing sites in the Class III.
- Within Class III EEZs, trees would be felled and harvested to facilitate skid trail watercourse construction and use.
- Green Diamond would submit to the Services an explanation, justification, and map of any proposed skid trail watercourse crossings as part of the informational copy of the THP notice of filing (see AHCP/CCAA Section 6.2.7.2).

**Ponds, Swamps, Bogs, Springs, and Seeps.** Ponds, swamps, bogs, springs, and seeps that support aquatic species would also be afforded the same protection as other Class II watercourses noted above for riparian habitats.

### 2.2.3.2 Large Woody Debris

Under the Proposed Action, large woody debris retention, removal, and recruitment activities would be the same as those described under the No Action Alternative, but would be augmented by AHCP/CCAA conservation measures noted above for Class I and II RMZs and Class III EEZs.

### 2.2.3.3 Snags

General snag retention and recruitment measures under the Proposed Action would be the same as under the No Action Alternative, as augmented by additional measures contained in the AHCP/CCAA. As noted for the No Action Alternative, future recruitment of snags would occur through the retention of old-growth elements in the 39 set-aside areas, minimum overstory canopy retention standards within RMZs, and retention of a variety of tree sizes and species within RMZs. Recruitment would be enhanced under the Proposed Action through RMZ-specific measures noted above. These include the establishment of a 50- to 70-foot inner zone for Class I streams and 30-foot inner zone for Class II streams, restrictions on salvage activity, single harvest entry limitations (except where cable corridors are necessary to conduct intermediate treatments in adjacent stands), minimum conifer retention standards, and limitations on harvesting of “stream recruitment” trees.

#### **2.2.3.4 Hardwoods**

Under the Proposed Action, management of hardwood resources within the Action Area would be the same as under the No Action Alternative, except for retention of a greater number of hardwoods within SMZ areas, headwall swales, and Tier B Class III EEZs (see Section 2.2.1.1).

### **2.2.4 Measures to Protect Federal and State Listed Species**

Under the Proposed Action, take of listed species covered under the AHCP/CCAA would be permitted provided such action is incidental to a covered activity, such as timber harvesting. Specific measures contained in the CFPRs or developed pursuant to the THP process that are designed for the purpose of avoiding take of listed species and minimizing and mitigating environmental impacts to such species and their habitats would be superseded by measures contained in the AHCP/CCAA and its accompanying ITP to minimize and mitigate the impacts of incidental take and comply with other requirements of the ESA. Green Diamond would remain subject to the take prohibition for other listed species that are not covered by the ITP but that may occur within the Action Area. For listed species not covered by the AHCP/CCAA and ITP, Green Diamond would implement measures designed to avoid take of these listed species, including continuing to adhere to measures contained in its NSOHCP and the CFPRs (e.g., for certain listed bird species, the CFPRs include nest protection and other measures designed to avoid take), and measures identified during the THP preparation and review process). If a species is also state listed under CESA, Green Diamond would not undertake any AHCP measures that would result in a violation of CESA's prohibition on unauthorized take as that term is defined under state law.

#### **2.2.4.1 Coho Salmon, Chinook Salmon, and Steelhead**

Under the Proposed Action, incidental take of these species would be authorized subject to the terms of the ITP. Green Diamond would implement AHCP/CCAA measures intended to minimize and mitigate the impacts of incidental take of these fish species. These include many of the general forest management, riparian habitat, large woody debris, and snag measures noted above, which were designed to protect or enhance habitat for salmonid fish species.

#### **2.2.4.2 Tidewater Goby**

As with the No Action Alternative, Green Diamond would remain subject to the prohibition on unauthorized take of this species. The Services do not anticipate under the Proposed Action that Green Diamond would change any of the measures it currently implements for this species. It is anticipated that Green Diamond would incorporate into THPs site-specific measures, as necessary, for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.2.4.3 American Peregrine Falcon**

Under the Proposed Action, Green Diamond would implement CFPR prescriptive protection measures specific to the species and incorporate into THPs site-specific measures, as necessary, for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.2.4.4 Bald Eagle**

As with the No Action Alternative, Green Diamond would seek technical assistance from the USFWS and/or CDFG to develop and implement site-specific measures as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.2.4.5 Bank Swallow**

As with the No Action Alternative, Green Diamond would incorporate into THPs site-specific measures, as necessary, for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.2.4.6 Little Willow Flycatcher**

As with the No Action Alternative, Green Diamond would incorporate site-specific measures into THPs, as necessary, for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.2.4.7 Marbled Murrelet**

Under the Proposed Action, the Services do not anticipate that Green Diamond would change any of the measures it currently implements for this species. As with the No Action Alternative, Green Diamond would seek technical assistance from the USFWS and/or CDFG to develop and implement site-specific measures as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts. As with the No Action Alternative, Green Diamond is not seeking coverage under the Permits for the harvest of trees, as described in Sections 2.2.1, 2.2.2, 2.2.3, and 2.2.5, in any portion of the Action Area that has been designated as critical habitat for the marbled murrelet, as defined in 50 CFR 17.95, when the harvest of those trees would affect a “primary constituent element” of critical habitat for the marbled murrelet, as defined in 50 CFR 17.95 (adopted May 24, 1996 61 FR 26256).

#### **2.2.4.8 Northern Spotted Owl**

Under the Proposed Action, Green Diamond would continue to comply with measures contained in its NSOHCP and associated Implementation Agreement that provide for the legal incidental take of northern spotted owls in connection with timber harvesting and forest management operations.

#### **2.2.4.9 Western Snowy Plover**

As with the No Action Alternative, Green Diamond would incorporate site-specific measures, as necessary, into THPs for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

### **2.2.5 Measures for Other Species**

The ITP/ESP would provide Green Diamond authorization to incidentally take unlisted, covered fish and amphibian species (see above) that have either been proposed for listing or are considered to be sensitive because populations or habitats are thought to be declining, if those species become listed under the ESA during the term of the Permits. Under the

Proposed Action, specific measures developed pursuant to the THP process designed to mitigate or avoid significant impacts to the unlisted, covered species would be augmented by measures contained in the AHCP/CCAA and its accompanying ITP/ESP to mitigate or avoid significant impacts to these species and to minimize the impacts of incidental take in the event these species are listed in the future. The conservation strategy for unlisted, covered species relies extensively on AHCP/CCAA measures intended to minimize and mitigate the impacts of incidental take of the listed, covered species discussed above. These include many of the general forest management, riparian habitat, large woody debris, and snag measures noted above that were designed to protect or enhance habitat for listed salmonid fish species.

Under the Proposed Action, Green Diamond would continue to implement measures designed to mitigate or avoid significant impacts to other unlisted species, not covered by the AHCP/CCAA but considered “sensitive” by the Board of Forestry (osprey, northern goshawk, golden eagle, great blue heron, and great egret). Green Diamond would implement CFPRs specific to these species and incorporate site-specific measures into THPs as necessary, to avoid or mitigate potentially significant environmental effects to insignificance. In addition, Green Diamond would remain subject to State and Federal laws, such as the Migratory Bird Treaty Act, Bald Eagle and Golden Eagle Protection Act, and the prohibitions on taking of certain raptors pursuant to Sections 3503.3 and 3511 of the California Fish and Game Code.

## 2.3 Alternative A (Listed Salmonid Species Only)

Under Alternative A, Green Diamond would continue to conduct timber harvesting and related operations in the Action Area in accordance with existing State and Federal regulations, including the CFPRs and its NSOHCP, and the operational and policy management actions currently being implemented by Green Diamond. Green Diamond would also implement an AHCP within the Action Area. Operations within the Action Area would be subject to the provisions of an ITP only, meaning that there would be no coverage for unlisted species and no application for an ESP.

NMFS would issue Green Diamond an ITP with a term of 50 years for two listed fish ESUs and one listed fish DPS (coho salmon [Southern Oregon/Northern California Coast ESU], Chinook salmon [California Coastal ESU], and steelhead [Northern California DPS]).

Table 2.3-1 lists species that would receive ITP coverage under Alternative A.

**TABLE 2.3-1**  
Fish Species That Would Be Covered Under Alternative A

| Species Common Name ( <i>Scientific Name</i> )   | Listing/Sensitivity Status Within the Action Area |       |
|--|---|-------|
|  | Federal   | State |
| Coho salmon ( <i>Oncorhynchus kisutch</i> )<br>Southern Oregon/Northern California Coast ESU | FT  | ST    |
| Steelhead trout* ( <i>Oncorhynchus mykiss</i> )<br>Northern California DPS                   | FT  | None  |

**TABLE 2.3-1**  
Fish Species That Would Be Covered Under Alternative A

| Species Common Name ( <i>Scientific Name</i> )                               | Listing/Sensitivity Status Within the Action Area |       |
|--|---|-------|
|  | Federal   | State |
| Chinook salmon ( <i>Oncorhynchus tshawytscha</i> )<br>California Coastal ESU | FT  | None  |

\* Steelhead are the anadromous life history type of the species *Oncorhynchus mykiss* and are under the jurisdiction of the NMFS.

Federal

FT Federal threatened species

State

ST State threatened species

Under Alternative A, mitigation, management, and monitoring measures would be the same as those specified for the Proposed Action, except that monitoring measures specific to amphibians would be dropped under this alternative.

### 2.3.1 Timber Harvesting and Forest Management Activities

General forest management and timber harvesting activities noted for the Proposed Action would be the same under this alternative, except that monitoring of tailed frog larval and southern torrent salamander populations would not occur.

### 2.3.2 Other Operations and Activities

Under Alternative A, other operations and activities would be the same as noted under the Proposed Action.

### 2.3.3 Fish and Wildlife Habitat

Conservation measures for riparian habitat, large woody debris, snags, and hardwoods described for the Proposed Action would be the same under this alternative.

### 2.3.4 Measures to Protect Federal and State Listed Species

Under Alternative A, take of AHCP covered listed species would be permitted provided such action is incidental to covered activities. Specific measures contained in the CFPRs or developed pursuant to the THP process that are designed for the purpose of avoiding take of the three listed fish species would be superseded by measures contained in the AHCP and its accompanying ITP to minimize and mitigate the impacts of incidental take and comply with other requirements of the ESA. Green Diamond would remain subject to the take prohibition for other listed species that are not covered by the ITP but that may occur within the Action Area. For other listed species not covered by the AHCP, Green Diamond would continue to implement measures designed to avoid unauthorized take of listed species, including nest protection and other measures designed to avoid take, measures defined in its NSOHCP, and measures identified during the THP preparation and review process. If a species is also state listed under CESA, Green Diamond would not undertake any AHCP measures that would result in a violation of CESA's prohibition on unauthorized take as that term is defined under state law.

#### **2.3.4.1 Coho Salmon, Chinook Salmon, and Steelhead**

Under Alternative A, incidental take of these species would be authorized subject to the terms of the ITP. Green Diamond would implement AHCP measures intended to minimize and mitigate the impacts of incidental take of these fish species. These include many of the general forest management, riparian habitat, large woody debris, and snag measures described for the Proposed Action, which were designed to protect or enhance habitat for salmonid fish species.

#### **2.3.4.2 Tidewater Goby**

As with the No Action Alternative, Green Diamond would remain subject to the prohibition on unauthorized take of this species. The Services do not anticipate under Alternative A that Green Diamond would change any of the measures it currently implements for this species. It is anticipated that Green Diamond would incorporate site-specific measures into THPs, as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.3.4.3 American Peregrine Falcon**

Under Alternative A, Green Diamond would implement CFPR prescriptive measures specific to the species and incorporate site-specific measures, developed by Green Diamond foresters and biologists or identified during the THP preparation and review process, into THPs, as necessary, for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.3.4.4 Bald Eagle**

As with the No Action Alternative, Green Diamond would seek technical assistance from the USFWS and/or CDFG to develop and implement site-specific measures as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.3.4.5 Bank Swallow**

As with the No Action Alternative, Green Diamond would incorporate site-specific measures into THPs, as necessary, for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.3.4.6 Little Willow Flycatcher**

Under Alternative A, Green Diamond would incorporate site-specific measures into THPs, as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.3.4.7 Marbled Murrelet**

The Services do not anticipate under Alternative A that Green Diamond would change any of the measures it currently implements for this species. As with the No Action Alternative, Green Diamond is not seeking coverage under the Permits for the harvest of trees, as described in Sections 2.2.1, 2.2.2, 2.2.3, and 2.2.5, in any portion of the Action Area that has been designated as critical habitat for the marbled murrelet, as defined in 50 CFR 17.95, when

the harvest of those trees would affect a “primary constituent element” of critical habitat for the marbled murrelet, as defined in 50 CFR 17.95 (adopted May 24, 1996 61 FR 26256).

#### **2.3.4.8 Northern Spotted Owl**

As would be the case for both the No Action Alternative and the Proposed Action, Green Diamond would continue under Alternative A to comply with measures contained in its NSOHCP and associated Implementation Agreement that provide for the legal incidental take of northern spotted owls in connection with timber harvesting and forest management operations.

#### **2.3.4.9 Western Snowy Plover**

As with the No Action Alternative, Green Diamond would implement site-specific measures as necessary, for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

### **2.3.5 Measures for Other Species**

In contrast to the Proposed Action, the ITP under Alternative A would not provide Green Diamond authorization to incidentally take unlisted fish and amphibian species that have either been proposed for listing or are considered to be sensitive because populations or habitats are thought to be declining, if those species become listed under the ESA during the term of the Permits. However, the AHCP conservation measures for this alternative relating to general forest management, riparian habitat, large woody debris, and snags would also benefit and mitigate or avoid significant impacts to unlisted aquatic species not covered by the ITP (e.g., the tailed frog and southern torrent salamander).

Under Alternative A, Green Diamond would continue to implement measures designed to mitigate or avoid significant impacts to other unlisted species, not covered by the AHCP but considered “sensitive” by the Board of Forestry (osprey, northern goshawk, golden eagle, great blue heron, and great egret). Green Diamond would implement CFPRs specific to these species and design THPs that incorporate site-specific measures identified during the THP preparation and review process, as necessary, to avoid or mitigate potentially significant environmental effects to insignificance. In addition, Green Diamond would remain subject to State and Federal laws, such as the Migratory Bird Treaty Act, Bald Eagle and Golden Eagle Protection Act, and the prohibitions on taking of certain raptors pursuant to Sections 3503.3 and 3511 of the California Fish and Game Code.

## **2.4 Alternative B (Simplified Prescriptions Strategy)**

Under Alternative B, Green Diamond would continue to conduct timber harvesting and related operations on its property in accordance with existing State and Federal regulations, including the CFPRs, its NSOHCP, and the operational and policy management actions currently being implemented by Green Diamond. Green Diamond would also implement an AHCP/CCAA within the Action Area. Operations within the Action Area would be subject to the provisions of an ITP and ESP.

NMFS would issue Green Diamond an ITP with a term of 50 years for two listed fish ESUs and one listed fish DPS (coho salmon [Southern Oregon/Northern California Coast ESU],

Chinook salmon [California Coastal ESU], and steelhead [Northern California DPS]) and three unlisted fish ESUs (Chinook salmon [Southern Oregon and Northern California Coastal ESU, Upper Klamath/Trinity Rivers ESU] and steelhead [Klamath Mountains Province ESU]). The USFWS would issue Green Diamond an ESP, also with a 50-year term, covering two unlisted fish species (coastal cutthroat and rainbow trout), and two unlisted amphibians (southern torrent salamander and tailed frog). Table 2.4-1 lists species that would receive ITP or ESP coverage under Alternative B.

Existing measures employed by Green Diamond to protect Class I, Class II, and Class III streams would be supplemented by an AHCP/CCAA Conservation Strategy specific to this alternative, which includes fixed riparian buffer widths within which no management or timber harvesting would occur, and establishment of ELZs. Green Diamond would not implement an ownership-wide Road Management Plan or implement slope stability and ground disturbance measures, or provide protection for unique geomorphic features, such as CMZs and floodplains, other than those required by the CFPRs on a THP by THP basis. Effectiveness and compliance monitoring would not be as extensive under this alternative as for the Proposed Action, and the results of monitoring would not be used to make changes to the Operating Conservation Plan.

## 2.4.1 Timber Harvesting and Forest Management Activities

General forest management and timber harvesting activities noted under the No Action Alternative would continue under this alternative. Although fire suppression would continue on Green Diamond lands, it would not be a covered activity under the ITP or ESP under this alternative. Similarly, although Green Diamond would continue their use of fertilizers and herbicides, which they apply for the purposes of enhancing tree growth and controlling competing brush vegetation in even-aged regeneration units and roadside areas, this would not be a covered activity under the ITP or ESP.

**TABLE 2.4-1**  
Fish and Amphibian Species That Would Be Covered Under Alternative B

| Species Common Name ( <i>Scientific Name</i> )  | Listing/Sensitivity Status Within the Action Area |       |
|---|---|-------|
|   | Federal   | State |
| <b>Fish</b>   |   |       |
| Coho salmon ( <i>Oncorhynchus kisutch</i> )<br>Southern Oregon/Northern California Coast ESU              | FT  | ST    |
| Steelhead trout* (anadromous) ( <i>Oncorhynchus mykiss</i> )<br>Northern California DPS                   | FT  | None  |
| Steelhead trout* (anadromous) ( <i>Oncorhynchus mykiss</i> )<br>Klamath Mountains Province ESU            | None  | None  |
| Chinook salmon ( <i>Oncorhynchus tshawytscha</i> )<br>California Coastal ESU                              | FT  | None  |
| Chinook salmon ( <i>Oncorhynchus tshawytscha</i> )<br>Southern Oregon and Northern California Coastal ESU | None  | None  |
| Chinook salmon ( <i>Oncorhynchus tshawytscha</i> )<br>Upper Klamath/Trinity Rivers ESU                    | None  | None  |

**TABLE 2.4-1**  
Fish and Amphibian Species That Would Be Covered Under Alternative B

| Species Common Name ( <i>Scientific Name</i> )   | Listing/Sensitivity Status Within the Action Area |       |
|--|---|-------|
|  | Federal   | State |
| Coastal cutthroat trout (anadromous and resident)<br>( <i>Oncorhynchus clarki clarki</i> ) | FSS   | CSC   |
| Rainbow trout* (resident)<br>( <i>Oncorhynchus mykiss</i> )                                | None  | None  |
| <b>Amphibians</b>  |   |       |
| Southern torrent salamander<br>( <i>Rhyacotriton variegatus</i> )                          | None  | CSC   |
| Tailed frog<br>( <i>Ascaphus truei</i> )   | None  | CSC   |

\* Although both steelhead and rainbow trout are of the species *Oncorhynchus mykiss*, they are considered to be separate DPSs. This is, in part, because they exhibit markedly different behavioral patterns. For additional details regarding the differences between these species see 71 FR 834. Steelhead are under the jurisdiction of the NMFS, whereas rainbow trout are under the jurisdiction of the USFWS.

#### Federal

FT Federal threatened species  
FSC Federal species of concern  
FSS Forest Service sensitive species

#### State

CSC CDFG Species of Special Concern  
ST State threatened species

Under Alternative B, Green Diamond would commit to the following additional key measures in implementing the AHCP/CCAA relative to the No Action Alternative:

- Prohibit timber harvesting within riparian buffers, except for purposes of creating cable-yarding corridors when other options are impractical
- Exclude use of heavy equipment within riparian buffers, with the exception of existing roads and stream crossings
- Prohibit use of landings within riparian buffers

## 2.4.2 Other Operations and Activities

Other operations and activities noted under the No Action Alternative would continue under Alternative B, with the following exception. Instream gravel extraction, subject to permitting requirements of the CDFG, would continue as under the Proposed Action; it would not be a covered activity under the ITP or ESP.

## 2.4.3 Fish and Wildlife Habitat

### 2.4.3.1 Riparian Habitat

Following the distinctions used in the CFPRs, riparian management measures under Alternative B would vary among three broad classes of streams: Class I, Class II, and Class III watercourses.

**Class I Watercourses.** Under Alternative B, Class I streams would include all fish-bearing streams. Riparian buffers for Class I streams would have fixed widths of 200 feet (slope distance), as measured from the first line of perennial vegetation. Under this alternative, there would be no forest management or riparian habitat management within Class I riparian buffers (with the exception of creating cable-yarding corridors when other options are impractical). Many measures described under the No Action Alternative for riparian buffer areas would consequently become inapplicable, because the CFPRs assume some level of timber harvesting within these zones. The use of heavy equipment within Class I riparian buffers would also be prohibited under this alternative, except for the use of existing roads and stream crossings for log hauling and access purposes (unless otherwise qualified by the CFPRs).

**Class II Watercourses.** Riparian buffers for Class II streams would have fixed widths of 130 feet (slope distance), as measured from the first line of perennial vegetation. Under this alternative, there also would be no forest management or riparian habitat management within Class II riparian buffers (with the exception of creating cable-yarding corridors when other options are impractical). Many measures described under the No Action Alternative for riparian buffer areas would again become moot, because the CFPRs assume some level of timber harvesting within these zones. The use of heavy equipment within Class II riparian buffers would also be prohibited under this alternative, except for the use of existing roads and stream crossings for log hauling and access purposes (unless otherwise qualified by the CFPRs).

**Class III Watercourses.** Under Alternative B, protection of Class III streams would be the same as under the No Action Alternative.

**Ponds, Swamps, Bogs, Springs and Seeps.** Ponds, swamps, bogs, springs, and seeps that support aquatic species would also be afforded the same protection as other Class II watercourses noted above for riparian habitats.

#### **2.4.3.2 Large Woody Debris**

Under Alternative B, large woody debris retention, removal, and recruitment activities would be the same as those described under the No Action Alternative. However, because no timber or riparian management would occur within the riparian buffers under this alternative, future recruitment of snags would be almost totally dependent on natural causes (e.g., windthrow events, landslides, and natural mortality-inducing processes within the buffer areas).

#### **2.4.3.3 Snags**

General snag retention and recruitment measures under the Proposed Action would be the same as under the No Action Alternative. However, because no timber or riparian management would occur within the riparian buffers under this alternative, future recruitment of snags would be almost totally dependent on natural mortality-inducing processes within the buffer areas.

#### **2.4.3.4 Hardwoods**

Under the Alternative B, management of hardwood resources within the Action Area would generally be the same as under the No Action Alternative.

## **2.4.4 Measures to Protect Federal and State Listed Species**

Under Alternative B, take of AHCP/CCAA covered listed species would be permitted provided such action is incidental to covered activities. Specific measures contained in the CFPRs, other applicable laws, or developed pursuant to the THP process that are designed for the purpose of avoiding take of listed species would be superseded by measures contained in the AHCP/CCAA and its accompanying ITP. Green Diamond would remain subject to the take prohibitions for other listed species that are not covered by the ITP but that may occur within the Action Area. For other listed species not covered by the AHCP/CCAA, Green Diamond would continue to implement measures designed to avoid unauthorized take of listed species, including continuing nest protection and other measures designed to avoid take, measures defined in its NSOHCP, and measures identified during the THP preparation and review process. If a species is also state listed under CESA, Green Diamond would not undertake any AHCP measures that would result in a violation of CESA's prohibition on unauthorized take as that term is defined under state law.

### **2.4.4.1 Coho Salmon, Chinook Salmon, and Steelhead**

Under Alternative B, incidental take of these species would be authorized subject to the terms of the ITP. Green Diamond would implement AHCP/CCAA measures intended to minimize and mitigate the impacts of incidental take of these fish species, including establishment of fixed riparian buffers and no harvesting or other management within riparian buffer areas.

### **2.4.4.2 Tidewater Goby**

As with the No Action Alternative, Green Diamond would remain subject to the prohibition on unauthorized take of this species. The Services do not anticipate under Alternative B that Green Diamond would change any of the measures it currently implements for this species. It is anticipated that Green Diamond would incorporate site-specific measures as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

### **2.4.4.3 American Peregrine Falcon**

Under Alternative B, Green Diamond would implement CFPR site-specific measures as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

### **2.4.4.4 Bald Eagle**

As with the No Action Alternative, Green Diamond would seek technical assistance from the USFWS and/or CDFG to develop and implement site-specific measures as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

### **2.4.4.5 Bank Swallow**

As with the No Action Alternative, Green Diamond would incorporate site-specific measures into THPs as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.4.4.6 Little Willow Flycatcher**

Under Alternative B, Green Diamond would incorporate site-specific measures into THPs, as necessary, for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.4.4.7 Marbled Murrelet**

The Services do not anticipate under Alternative B that Green Diamond would change any of the measures it currently implements for this species. As with the No Action Alternative, Green Diamond is not seeking coverage under the Permits for the harvest of trees, as described in Sections 2.2.1, 2.2.2, 2.2.3, and 2.2.5, in any portion of the Action Area that has been designated as critical habitat for the marbled murrelet, as defined in 50 CFR 17.95, when the harvest of those trees would affect a “primary constituent element” of critical habitat for the marbled murrelet, as defined in 50 CFR 17.95 (adopted May 24, 1996 61 FR 26256).

#### **2.4.4.8 Northern Spotted Owl**

As would be the case for both the No Action Alternative and the Proposed Action, Green Diamond would continue under Alternative A to comply with measures contained in its NSOHCP and associated Implementation Agreement that provide for the legal incidental take of northern spotted owls in connection with timber harvesting and forest management operations.

#### **2.4.4.9 Western Snowy Plover**

As with the No Action Alternative, Green Diamond would incorporate site-specific measures as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

### **2.4.5 Measures for Other Species**

The ITP and ESP would provide Green Diamond authorization for incidental take of unlisted, covered fish and amphibian species (see above) that have either been proposed for listing or are considered to be sensitive because populations or habitats are thought to be declining, if those species become listed under the ESA during the term of the Permits. Under Alternative B, specific measures contained in the CFPRs or developed pursuant to the THP process would be augmented by measures contained in the AHCP/CCAA and its accompanying ITP and ESP. The conservation strategy for unlisted, covered species relies extensively on AHCP/CCAA measures intended to minimize and mitigate the impacts of incidental take of the listed, covered species discussed above.

Under Alternative B, Green Diamond would continue to implement measures designed to mitigate or avoid significant impacts to other unlisted species, not covered by the AHCP/CCAA but considered “sensitive” by the Board of Forestry (osprey, northern goshawk, golden eagle, great blue heron, and great egret). Green Diamond would implement CFPRs specific to these species and design THPs that incorporate site-specific measures developed by Green Diamond foresters and biologists or identified during the THP preparation and review process, as necessary, to avoid or mitigate potentially significant environmental effects to insignificance. In addition, Green Diamond would remain subject to State and Federal laws, such as the Migratory Bird Treaty Act, Bald Eagle

and Golden Eagle Protection Act, and the prohibitions on taking of certain raptors pursuant to Sections 3503.3 and 3511 of the California Fish and Game Code.

## 2.5 Alternative C (Expanded Geographic and Species Coverage)

Under Alternative C, Green Diamond would continue to conduct timber harvesting and related operations on its property in accordance with existing State and Federal regulations, including the CFPRs, its NSOHCP, and the operational and policy management actions currently being implemented by Green Diamond. Green Diamond would also implement an AHCP within the Action Area. An additional 25,677 acres of rain-on-snow areas within Trinity and Del Norte counties are also included in the coverage area for this alternative. Operations within these areas would be subject to the provisions of an ITP.

NMFS and the USFWS would issue Green Diamond an ITP with a term of 50 years for 16 species. The 16 covered species would consist of three listed fish ESUs, three unlisted fish ESUs, two unlisted fish species, one listed fish species, four unlisted amphibians, one unlisted reptile, and two listed bird species, as shown in Table 2.5-1.

**TABLE 2.5-1**

Federal and State Protective Status of Fish, Amphibian, and Reptile Species Covered Under Alternative C

| Species Common Name ( <i>Scientific Name</i> )  | Listing/Sensitivity Status Within the Action Area |         |
|---|---|---------|
|   | Federal   | State   |
| <b>Fish</b>   |   |         |
| Coho salmon ( <i>Oncorhynchus kisutch</i> )<br>Southern Oregon/Northern California Coast ESU              | FT  | ST      |
| Steelhead trout* (anadromous) ( <i>Oncorhynchus mykiss</i> )<br>Northern California ESU                   | FT  | None    |
| Steelhead trout* (anadromous) ( <i>Oncorhynchus mykiss</i> )<br>Klamath Mountains Province ESU            | None  | None    |
| Chinook salmon ( <i>Oncorhynchus tshawytscha</i> )<br>California Coastal ESU                              | FT  | None    |
| Chinook salmon ( <i>Oncorhynchus tshawytscha</i> )<br>Southern Oregon and Northern California Coastal ESU | None  | None    |
| Chinook salmon ( <i>Oncorhynchus tshawytscha</i> )<br>Upper Klamath/Trinity Rivers ESU                    | None  | None    |
| Coastal cutthroat trout (anadromous and resident)<br>( <i>Oncorhynchus clarki clarki</i> )                | FSS   | CSC     |
| Rainbow trout* (resident) ( <i>Oncorhynchus mykiss</i> )  | None  | None    |
| Tidewater goby ( <i>Eucyclogobius newberryi</i> )   | FE  | CSC     |
| <b>Amphibians</b>   |   |         |
| Southern torrent salamander ( <i>Rhyacotriton variegatus</i> )  | None  | CSC     |
| Tailed frog ( <i>Ascaphus truei</i> )   | None  | CSC     |
| Foothill yellow-legged frog ( <i>Rana boylei</i> )  | FSS   | CSC/CFP |

TABLE 2.5-1

Federal and State Protective Status of Fish, Amphibian, and Reptile Species Covered Under Alternative C

| Species Common Name ( <i>Scientific Name</i> )             | Listing/Sensitivity Status Within the Action Area |         |
|--|---|---------|
|  | Federal   | State   |
| Northern red-legged frog ( <i>Rana aurora aurora</i> )     | FSS   | CSC/CFP |
| <b>Reptiles</b>  |   |         |
| Western pond turtle ( <i>Clemmys marmorata marmorata</i> ) | FSS   | CSC/CFP |
| <b>Birds</b>   |   |         |
| Marbled murrelet ( <i>Brachyramphus marmoratus</i> )       | FT  | SE      |
| Bald eagle ( <i>Haliaeetus leucocephalus</i> )             | FT  | SE      |

\* Although both steelhead and rainbow trout are of the species *Oncorhynchus mykiss*, they are considered to be separate DPSSs. This is, in part, because they exhibit markedly different behavioral patterns. For additional details regarding the differences between these species see 71 FR 834. Steelhead are under the jurisdiction of the NMFS, whereas rainbow trout are under the jurisdiction of the USFWS.

#### Federal

FE Federal endangered species  
 FT Federal threatened species  
 FSS Forest Service sensitive species

#### State

CSC CDFG Species of Special Concern  
 ST State threatened species  
 CFP California Fully Protected Species  
 SC Candidate for State listing  
 SE State Endangered Species

Because this alternative is an expansion of the Proposed Action, the mitigation and monitoring measures described for the species covered under the Proposed Action, would also be applied under Alternative C, where applicable and practicable. The adaptive management program noted for the Proposed Action would also be included under Alternative C. Extra mitigation management and monitoring measures relating to the covered species, as well as their aquatic and semi-aquatic habitat in local and downstream drainages, would be implemented throughout the expanded coverage area as needed. Additional mitigation and management measures specific to the marbled murrelet, bald eagle, and western pond turtle would also be included, and are summarized below.

## 2.5.1 Timber Harvesting and Forest Management Activities

General forest management and timber harvesting activities noted for the Proposed Action would generally be the same under this alternative, except that Green Diamond would commit to the following additional key measures in implementing the AHCP relative to the Proposed Alternative.

### 2.5.1.1 Harvesting and Transporting Timber

Prohibit timber harvesting operations within the rain-on-snow area from November 15 through May 14, except for non-mechanized planting.

### **2.5.1.2 Monitoring and Research Activities**

Expand the monitoring program for the three types of effectiveness monitoring projects (rapid response, response, and long-term trend) to include additional sites in the rain-on-snow area.

### **2.5.2 Other Operations and Activities**

Under Alternative C, other operations and activities would be the same as noted under the Proposed Action.

### **2.5.3 Fish and Wildlife Habitat**

Conservation measures for riparian habitat, large woody debris, snags, and hardwoods described for the Proposed Action would generally be the same under this alternative. Some loss of snags, however, would be anticipated under Alternative C as a result of phased harvesting of isolated timber stands of suitable marbled murrelet habitat over the term of the Permit (see Section 2.5.4.7. below).

### **2.5.4 Measures to Protect Federal and State Listed Species**

Under Alternative C, take of AHCP-covered listed species would be permitted provided such action was incidental to covered activities. Specific measures contained in the CFPRs or developed pursuant to the THP process that are designed for the purpose of avoiding take of listed species and minimizing and mitigating environmental impacts to such species and their habitats would be superseded by measures contained in the AHCP and its accompanying ITP to minimize and mitigate the impacts of incidental take and comply with other requirements of the ESA. Green Diamond would remain subject to the take prohibition for other listed species that are not covered by the ITP but that may occur within the coverage area for this alternative. For other listed species not covered by the AHCP, Green Diamond would continue to implement measures designed to avoid unauthorized take of listed species, including nest protection and other measures designed to avoid take, measures defined in its NSOHCP, and measures identified during the THP preparation and review process. If a species is also state listed under CESA, Green Diamond would not undertake any AHCP measures that would result in a violation of CESA's prohibition on unauthorized take as that term is defined under state law.

#### **2.5.4.1 Coho Salmon, Chinook Salmon, and Steelhead**

Under Alternative C, incidental take of these species would be authorized subject to the terms of the ITP. Green Diamond would implement AHCP measures intended to minimize and mitigate the impacts of incidental take of these fish species. These include many of the general forest management, riparian habitat, large woody debris, and snag measures described for the Proposed Action, which were designed to protect or enhance habitat for salmonid fish species.

#### **2.5.4.2 Tidewater Goby**

Under Alternative C, incidental take of the tidewater goby would be authorized subject to the terms of the ITP. Green Diamond would implement AHCP measures intended to minimize and mitigate the impacts of incidental take of this fish species. These include

many of the general forest management, riparian habitat, and large woody debris described for the Proposed Action, which were designed to protect or enhance habitat for salmonid fish species.

#### **2.5.4.3 American Peregrine Falcon**

Under Alternative C, Green Diamond would implement prescriptive measures specific to the species as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.5.4.4 Bald Eagle**

Under Alternative C, mitigation and management measures designed to avoid take would be superseded by species-specific measures contained in the AHCP under this alternative designed to minimize and mitigate the impacts of take and comply with other ESA requirements, to include the following:

- Within proposed THP harvesting units, survey for bald eagle nests and establish 30- to 40-acre nest site management zones within which management prescriptions would be jointly developed by Green Diamond and USFWS representatives on a site-specific basis

Insofar as the bald eagle is also a State-listed species under CESA, Green Diamond would not undertake any AHCP measures that are likely to take this species unless it also receives incidental take authorization under State law.

#### **2.5.4.5 Bank Swallow**

As with the No Action Alternative, Green Diamond would incorporate site-specific measures into THPs, as necessary, for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.5.4.6 Little Willow Flycatcher**

Under Alternative C, Green Diamond would incorporate site-specific measures into THPs, as necessary, for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

#### **2.5.4.7 Marbled Murrelet**

Under Alternative C, specific measures designed to avoid take of the marbled murrelet would be superseded by species-specific measures contained in the AHCP under this alternative designed to minimize and mitigate the impacts of take and comply with other ESA requirements, to include the following:

- Retention and protection over a 50-year period of timber stands identified as suitable for murrelet nesting located adjacent to large blocks of high value murrelet habitat on public lands
- Phased harvest of other isolated timber stands, with harvest occurring first in stands with the lowest potential value for murrelets and provisions for extended phasing of harvests in stands with the highest potential value for murrelets
- Seasonal restrictions on timber operations in and adjacent to murrelet stands

- Designation of no-cut and operational buffers to avoid take of murrelets on adjacent lands
- Thinning of overstocked stands in neighboring Redwood National Park (RNP) to accelerate development of buffer habitat and potential murrelet nesting habitat on public lands
- Development of a corvid management program to reduce predation pressure on nesting murrelets in Redwood National and State Parks
- Funding for murrelet research

Potential significant adverse impacts to the marbled murrelet would also be further reduced through implementation of the general forest management and riparian habitat measures described for the Proposed Action and carried forward under this alternative, which were designed to protect or enhance habitat for salmonid fish species.

Insofar as the murrelet is also a State-listed species under CESA, Green Diamond would not undertake any AHCP measures that are likely to take this species unless it also receives incidental take authorization under State law.

#### **2.5.4.8 Northern Spotted Owl**

Under Alternative C, Green Diamond would continue to comply with measures summarized under the No Action Alternative and contained in its NSOHCP and associated Implementation Agreement that provide for the legal incidental take of northern spotted owls in connection with timber harvesting and forest management operations.

#### **2.5.4.9 Western Snowy Plover**

As with the No Action Alternative, Green Diamond would incorporate site-specific measures as necessary for the purpose of avoiding unauthorized take and mitigating or avoiding significant environmental impacts.

### **2.5.5 Measures for Other Species**

The ITP would provide Green Diamond incidental take authorization for unlisted, covered fish, amphibian, and reptile species (see above) that have either been proposed for listing or are considered to be sensitive because populations or habitats are thought to be declining, if those species become listed under the ESA during the term of the Permits. Under Alternative C, specific measures contained in the CFPRs or developed pursuant to the THP process that are designed to mitigate or avoid significant impacts to the unlisted, covered species would be augmented by measures contained in the AHCP and its accompanying ITP to mitigate or avoid significant impacts to these species and to minimize and mitigate the impacts of incidental take in the event these species are listed in the future. The conservation strategy for unlisted, covered species relies extensively on AHCP measures intended to minimize and mitigate the impacts of incidental take of the listed, covered species discussed for the Proposed Action. These include many of the general forest management, riparian habitat, large woody debris, and snag measures noted under the Proposed Action that were designed to protect or enhance habitat for listed salmonid fish species.

Under Alternative C, one additional species-specific mitigation/management measure would be implemented for the western pond turtle: Green Diamond will avoid road building in meadows and open areas in upland habitats, near suitable aquatic habitat for pond turtles.

Under Alternative C, Green Diamond would continue to mitigate or avoid significant impacts to other unlisted species, not covered by the AHCP but considered “sensitive” by the Board of Forestry (osprey, northern goshawk, golden eagle, great blue heron, and great egret). Green Diamond would implement CFPRs specific to these species and design THPs that incorporate site-specific measures developed by Green Diamond foresters and biologists or identified during the THP preparation and review process as necessary to avoid or mitigate potentially significant environmental effects to insignificance. In addition, Green Diamond would remain subject to State and Federal laws, such as the Migratory Bird Treaty Act, Bald Eagle and Golden Eagle Protection Act, and the prohibitions on taking of certain raptors pursuant to Sections 3503.3 and 3511 of the California Fish and Game Code.

## **2.6 Alternatives Considered but Dismissed from Further Consideration**

Other alternatives were considered by the Services but not carried forward for detailed analysis during preparation of this EIS. The alternatives considered but not carried forward are: (1) broad application of generic management prescriptions; (2) ITP coverage for terrestrial species (in addition to those considered in Alternative C above) and aquatic and riparian species; (3) alternative Permit terms; and (4) application of Pacific Lumber Company Habitat Conservation Plan prescriptive elements. These alternatives were not selected for detailed analysis because they do not meet the Services’ purposes and needs or the applicant’s objectives, or they are beyond the scope of the EIS.

### **2.6.1 Generic Management Prescriptions**

In addition to the alternatives carried forward for detailed analysis, the Services considered approaches that would adopt numerous “generic” management prescriptions that have been applied on a regional basis in other conservation efforts, often on federally managed lands. These management prescriptions are discussed below in the context of two applications: (1) silvicultural applications; and (2) existing application of Federal forest policies on private lands.

#### **2.6.1.1 Silvicultural Applications**

By definition, generic prescriptions do not take into account site-specific conditions. They are systematically applied regardless of the actual existence of a biological concern (or the cause of that concern), or the likely effectiveness of the prescription in a given area. Further, the burden imposed by the prescription can be greater than what is required to address targeted biological concerns or to mitigate the actual taking of listed species by the landowner. Generic management prescriptions often include blanket restrictions on certain silvicultural practices (for example, no clearcutting), and/or percent limits on harvesting within a set time period. All of these approaches are typically applied systematically across the landscape.

These types of prescriptions are not carried forward for detailed analysis as separate alternatives because they are not consistent with Green Diamond's management and productivity objectives, which are based on the unique growing conditions of the North Coast redwood region and on Green Diamond's ownership-wide and watershed-level approach to managing its timberlands. On the basis of the unique growing conditions of the local area and the long-term management approach implemented by Green Diamond, the continued use of even-aged regeneration tools are necessary to support Green Diamond's management and business objectives. Even-aged management is also key to implementation of other ownership-wide management templates, including Green Diamond's NSOHCP and achievement of maximum sustained production on Green Diamond's lands under the MSP Option (a) document.

Such generic prescriptions would also be inconsistent with Green Diamond's existing harvesting and management framework reflected in documents reviewed and approved pursuant to State statutes (see Sections 1.5 and 1.6). Further, absent the need to operate within this context, transitioning to another silvicultural regime, such as uneven-aged management, within the proposed timeframe of the ITP/ESP is impractical, infeasible and uneconomic because of numerous logistical and operational constraints, such as:

- **Reconfiguration and relocation of Green Diamond's entire road and skid trail network** – Uneven-aged management systems require placement and concentration of roads, skid trails corridors, and landings along the mid- and lower slope reaches within a watershed. (Even-aged management concentrates roads, yarding corridors, and landings on mid- and upper slope reaches.) Such an undertaking is impractical within the proposed timeframe of the ITP/ESP. Also, skid trails are generally wider than cable corridors for even-aged systems, and landings are generally larger to accommodate ground yarding of logs by skidders and bulldozers.
- **Species redistribution** – The conifers of primary economic value on Green Diamond's lands are coast redwood and Douglas-fir, which require substantial direct sunlight to grow rapidly at young ages. Even-aged silvicultural techniques are used to promote propagation of these species throughout the North Coast redwood region. Although the use of uneven-aged regeneration systems can be beneficial to many shade-tolerant species, such as western hemlock and white fir, these systems generally are less suited to the economically valuable redwood and Douglas-fir which grow at maximum rates when free to grow in full sunlight (Smith, 1962; USFS, 1973; Perry, 1994).
- **Product specialization** – Less opportunity exists to "manage" and promote individual tree diameter growth of selected species under uneven-aged management. Because diameter and species mix from harvested stands is more unpredictable under uneven-aged management, general product manufacturing and marketing is also more opportunistic in nature. The manufacture of the high-quality wood products that is the foundation of Green Diamond's current niche within the marketplace relies on a consistent redwood/Douglas-fir species mix within a narrowly defined diameter range that is difficult to "plan" for over the long-term under an uneven-aged management scenario.

Pursuant to Federal Council of Environmental Quality guidelines, alternatives are to be reasonable, practical and feasible. Therefore, transitioning to another silvicultural regime, such as uneven-aged management, should not be carried forward for detailed analysis.

### **2.6.1.2 Application of Federal Forest Management Measures to Private Lands, Including the Green Diamond Ownership**

Applying forest management measures used for Federal lands to the lands owned by Green Diamond was considered but eliminated from further consideration in this EIS. Measures for managing Federal forest lands are designed for lands that are subject to the operating guidelines and principles of Federal land management agencies, such as the U.S. Forest Service and the Bureau of Land Management, and take into consideration the management and operational issues and mandates pertinent to those Federal land managers. Such considerations in managing Federal lands often emphasize recreational use and other passive and limited actions rather than commercial operations. For this reason, the Federal management measures are not directly pertinent to privately owned lands or the uses of those private lands (in this case, timber harvesting operations by Green Diamond).

For example, the Northwest Forest Plan (NWFP) was developed for the U.S. Forest Service and Bureau of Land Management to address management objectives in lands in western Washington, Oregon, and northern California. In those areas covered by the NWFP, management prescriptions include interim fixed-width 300-foot, 150-foot, and 100-foot riparian no-cut buffers along either side of Class I, Class II, and Class III streams, respectively. (Riparian buffer widths and harvesting prescriptions may be adjusted on the basis of completed watershed analyses.) NWFP standards were developed to provide a wide range of benefits to many unlisted and listed species under Federal multiple-use management principles.

NWFP standards and other available information were considered in developing Green Diamond's proposed AHCP/CCAA, and Green Diamond considers it unlikely that it would adopt more restrictive NWFP-like standards not already reflected in the Proposed Action or other action alternatives, based on economic operational considerations, its management objectives, and the number of species considered in the design of the NWFP standards for which Green Diamond is not seeking authorization for incidental take (e.g., the grizzly bear, Vaux's swift, and long-legged myotis).

As a result of the different management objectives of Federal agencies and Green Diamond, use of the Federal forest management measures on Green Diamond's lands would affect existing operations to the extent that areas currently available for timber harvesting would be precluded from approved operations. Approximately 94 percent of the timber resource that sustains Simpson Timber Company's California mills in Korb, Orick, and Brainard originates from Green Diamond Resource Company lands within the Action Area. The large reductions in harvestable acreage that would result from implementing Federal land management policies for forest lands could limit Green Diamond's ability to harvest minimum amounts of timber to the extent that Simpson Timber Company mills would not be sustained. Because Simpson Timber Company is the largest purchaser of Green Diamond Resource Company timber, the large reductions in harvestable acreage that likely would occur from implementing Federal land management policies would adversely affect Simpson Timber Company's ability to compete in the redwood and Douglas-fir market.

Application of Federal forest management measures to Green Diamond's ownership could limit Green Diamond's competitive market position and potentially constrain continued regional economic vitality. Green Diamond employs more than 265 workers in Humboldt and Del Norte counties, and mills dependent on Green Diamond timber in the region employ approximately 410 people. By constraining Green Diamond's existing operations to an extent that limits its regional competitiveness, implementing the management prescriptions designed for Federal lands could result in layoffs and contribute to regional unemployment.

## 2.6.2 Extensive Terrestrial Species Coverage

In addition to the species covered in the Proposed Action, the Services considered covering a large number of terrestrial species that are often associated with upland habitats during portions of their life histories (e.g., peregrine falcon and bank swallow). The Services did not carry this approach forward as an alternative for several reasons. Identifying terrestrial species as additional Permit species in an HCP/CCAA would require developing species-specific, upland prescriptions. These would be in addition to those developed for the northern spotted owl in Green Diamond's NSOHCP and would extend beyond the riparian focus of the proposed AHCP/CCAA and the other action alternatives, and are therefore beyond the scope of this EIS. The marbled murrelet and bald eagle were included as covered species under Alternative C in this EIS because of the species' habitat requirements; survey results on Green Diamond lands and nearby parks suggest overlap with aquatic and riparian ecosystems (see Section 3.6.3).

## 2.6.3 Different Permit Term

As discussed in Section 2.2, Proposed Action, the Federal action assessed in this EIS is the issuance of an ITP by NMFS and the issuance of an ESP by the USFWS to Green Diamond. The ITP would cover three listed fish ESUs and three unlisted fish ESUs. The USFWS action would cover one unlisted fish and two unlisted amphibians. The term of both Permits would be 50 years. This Permit term was selected because it generally corresponds to the rotation age of timber stands on the Green Diamond ownership.

A different Permit term for the ITP/ESP assessed in this EIS (other than 50 years) was considered but not carried forward. Both a shorter term (to 25 years) and a longer term (to 75 years) were considered. A 25-year Permit would not allow adequate time for the conservation measures to be implemented and assessed for effectiveness. Specifically, a shortened Permit term would not allow for appropriate application and interpretation of site-specific prescriptions using the adaptive management and monitoring provisions of the proposed AHCP/CCAA. Conversely, if the Permit term was 75 years, the data used to assess possible modifications to prescriptive measures would be outdated or invalid and, therefore, inadequate to rely on for decisions made so far into the future.

## 2.6.4 Pacific Lumber Company Habitat Conservation Plan Prescriptions

The Services considered application of the prescriptive elements and overall approach required by the Pacific Lumber Company (PALCO) HCP, which PALCO is currently implementing on a portion of its commercial timberlands immediately adjacent to Green Diamond's southern holdings. The Services, however, did not carry this approach forward

for several reasons. The PALCO HCP was developed absent significant information describing the status of their proposed HCP covered lands and the relative risk to the species present on their lands if subjected to their proposed forest management activities. As a result, the PALCO HCP's operational restrictions (e.g., riparian buffer widths, etc.) were based on information collected from and representative of other areas, often outside the redwood region. To address this issue, the PALCO HCP incorporates reasonable, though conservative, interim operational restrictions, based on the best available science at that time, combined with requirements to collect extensive site-specific watershed information. This information, collected through a combination of required individual watershed analyses and monitoring, can then be used to refine the HCP's operational restrictions to more accurately reflect the potential for PALCO's covered activities to affect their HCP covered species. In contrast, Green Diamond has been studying the aquatic resources on its ownership for more than a decade and has extensive, site-specific knowledge about many of its environmental resources. This site-specific information allows for the opportunity to develop prescriptive measures specific to the varying environmental conditions on their ownership and demonstrates that there are enough environmental differences between their property and the PALCO HCP covered lands that different prescriptive elements are warranted. As an example, Green Diamond's research has shown there are significant differences in the presence of some of their proposed covered species relative to the distribution of these same species on PALCO HCP covered lands. In addition, the existence of site-specific information regarding Green Diamond's proposed covered lands does not necessitate the same level of data collection as required by the PALCO HCP watershed analyses and monitoring programs. Hence, it is reasonable to expect that Green Diamond's monitoring programs and research efforts would be significantly different and tailored to their landscape and information needs. Finally, although Green Diamond and PALCO both conduct commercial timber harvest activities, they conduct these activities under significantly different internal operational constraints born of unique financial, logistical, and philosophical characteristics. For these reasons, application of the PALCO HCP requirements was not considered to be a feasible alternative.

## 2.7 Comparison of Alternatives

Table 2.7-1 presents the five alternatives considered in detail in a comparative format. The table summarizes the differences in key management measures under each of the alternatives. In general, the comparison is geared toward how the key management measures of each alternative are similar to or different from the provisions of the other alternatives. Many management activities will not differ by alternative (e.g., recreation), and are therefore not included in Table 2.7-1.

A comparison of the effects of each of the alternatives is presented in the Executive Summary section at the beginning of this EIS (Table ES-1).

## 2.8 Environmentally Preferred Alternative

CEQ regulations require that the Record of Decision specify "the alternative or alternatives which were considered to be environmentally preferable" (40 CFR 1505.2[b]). The environmentally preferred alternative is the alternative that will promote the national

environmental policy as expressed in NEPA's Section 101. Ordinarily this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic cultural and natural resources. NEPA's Section 101 calls for Federal agencies to make decisions to achieve "conditions under which man and nature can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations of Americans" (42 USC 4341[a]). Federal agencies should strive to attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences. It also calls for Federal agencies to achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities.

Based on the analysis of alternatives in the FEIS, there are many similarities in the overall effects of the action alternatives on the human environment, thus making it difficult to choose any particular alternative in the FEIS as the environmentally preferred alternative. Upon further review, the Services will identify the Environmentally Preferred Alternative in the Record of Decision as required by NEPA.

**TABLE 2.7-1**  
Description of Alternatives

| <b>No Action<br/>(No AHCP/No Permit)</b>  | <b>Proposed Action<br/>(Green Diamond AHCP/CCAA)</b>  | <b>Alternative A<br/>(Listed Species Only)</b>                    | <b>Alternative B<br/>(Simplified Prescriptions)</b>                    | <b>Alternative C<br/>(Expanded Species and<br/>Geographical Coverage)</b>  |
|---|---|---|--|--|
| <b>Federal ESA Compliance for Covered Species</b>   |   |   |  |  |
| Federal ITP/ESP not issued. Subject to take prohibition of listed species, except the northern spotted owl under Green Diamond's 1992 NSOHCP.   | Federal ITP/ESP issued. Implementation of an Aquatic HCP/CCAA.  | Federal ITPs only issued. Implementation of an Aquatic HCP.       | Same as Proposed Action.   | Federal ITP only issued. Implementation of an Aquatic HCP.   |
| <b>Covered Species</b>  |   |   |  |  |
| N/A   | Three listed fish ESUs, three unlisted fish ESUs, two unlisted fish species, and two unlisted amphibians. | Three listed fish ESUs only.                                      | Same as Proposed Action.   | Three listed fish ESUs, three unlisted fish ESUs, two unlisted fish species, one listed fish species, four unlisted amphibians, one unlisted reptile, and two listed bird species. |
| <b>General Timber Harvesting and Forest Management Activities</b>   |   |   |  |  |
| Harvesting and management as per the CFPRs and other applicable law, Green Diamond's NSOHCP, and Green Diamond operational policies and guidelines (with technical assistance from the Services, as appropriate). | Same as No Action, plus additional measures contained in the proposed AHCP/CCAA.                          | Same as No Action, plus additional measures contained in an AHCP. | Same as No Action, plus additional measures contained in an AHCP/CCAA. | Same as Proposed Action.   |
| <b>(Harvesting and Transporting Timber)</b>   |   |   |  |  |
| Harvest scheduling pursuant to Green Diamond's "Option A" document.   | Same as No Action.  | Same as No Action.  | Same as No Action.   | Same as No Action, except would include specific conservation measures for marbled murrelet and bald eagle habitat.  |

**TABLE 2.7-1**  
Description of Alternatives

| <b>No Action<br/>(No AHCP/No Permit)</b>  | <b>Proposed Action<br/>(Green Diamond AHCP/CCAA)</b>  | <b>Alternative A<br/>(Listed Species Only)</b> | <b>Alternative B<br/>(Simplified Prescriptions)</b> | <b>Alternative C<br/>(Expanded Species and<br/>Geographical Coverage)</b> |
|---|---|--|---|---|
| Harvesting limited to single-tree selection within WLPZs.   | Same as No Action, except CFPRs augmented by additional measures for RMZs and cable corridors would be allowed where necessary to conduct intermediate treatments in adjacent stands. See Riparian Habitat below for additional information.  | Same as Proposed Action.                       | No harvesting within riparian buffers.              | Same as Proposed Action.  |
| Only uneven-aged management allowed within special management zones for steep inner gorge areas immediately upslope of Class I WLPZs. | Only single-tree selection and one commercial harvesting entry for the term of the Permits within headwall swales, deep-seated landslides, and "steep streamside slope management zones" (SMZs) immediately upslope of Class I and Class II RMZs, except where cable corridors are necessary to conduct intermediate treatments in adjacent stands. Within the SMZ, retain all hardwoods and leave conifer trees evenly distributed across the landscape where feasible. No-cut zones within the toe, and 25 feet upslope from the top of the toe of deep-seated landslides, except for purposes of creating cable-yarding corridors when other options are impractical. Similarly no-cut zones upslope of deep-seated landslide scarps so as to taper to the lateral margins of the scarp. | Same as Proposed Action.                       | Same as No Action.                                  | Same as Proposed Action.  |

**TABLE 2.7-1**  
Description of Alternatives

| No Action<br>(No AHCP/No Permit)  | Proposed Action<br>(Green Diamond AHCP/CCAA)   | Alternative A<br>(Listed Species Only) | Alternative B<br>(Simplified Prescriptions) | Alternative C<br>(Expanded Species and<br>Geographical Coverage)   |
|---|--|--|---|--|
| Log loading and hauling from October 15 to May 1 limited to roads with “stable operating surfaces.”   | Loading and hauling of logs from October 15 through May 14 limited to roads with rocked surfaces, except during dry fall and early spring periods under circumstances defined in the AHCP/CCAA. Use of landings within RMZs also not permitted during this period.   | Same as Proposed Action.               | Same as No Action.                          | Same as Proposed Action, plus timber harvesting operations within the additional rain-on-snow areas are not allowed from November 15 through May 14 except for purposes of non-mechanized tree planting. |
| Use of roads during the winter period (October 15-May 1) not allowed where saturated soil conditions exist, where a stable logging road, landing, or skid trail does not exist, or when visibly turbid water from road/landing/skid trail surfaces may reach a watercourse or lake. | Same as No Action, except use of roads, landings, and skid trails additionally not allowed at any time of the year if such use results in runoff of waterborne sediment in amounts sufficient to cause a visible increase in turbidity in any ditch or road surface which drains into a Class I, II, or III water-course. Limit vehicular use on unrocked roads during the winter period (October 15 – May 15) to ATVs only. | Same as Proposed Action.               | Same as No Action                           | Same as Proposed Action.   |
| Harvesting on unstable slopes (defined by CFPRs), inner gorge areas and slope greater than 65 percent would not occur without review by a licensed geologist or certified engineering geologist.  | Unstable slope harvesting by default conservation measures for steep streamside slopes, headwall swales, and shallow—deep seated landslides, unless reviewed by a licensed geologist or certified engineering geologist.   | Same as Proposed Action.               | Same as No Action.                          | Same as Proposed Action.   |

**TABLE 2.7-1**  
Description of Alternatives

| No Action<br>(No AHCP/No Permit)   | Proposed Action<br>(Green Diamond AHCP/CCAA)   | Alternative A<br>(Listed Species Only) | Alternative B<br>(Simplified Prescriptions) | Alternative C<br>(Expanded Species and<br>Geographical Coverage) |
|--|--|--|---|--|
| <b>(Timber Stand Regeneration and Improvement)</b>   |  |  |   |  |
| Site preparation activities pursuant to the CFPRs; incorporation of a site preparation addendum required with THPs. Other activities include tree planting, vegetation control and stand growth enhancement, pruning and cone collection, and fire prevention and suppression. | Same as No Action, plus implementation of various additional measures to minimize surface erosion from site preparation through minimization of bare soil exposure within harvest units, minimization of fireline construction, maintenance of a continuous forest floor layer of duff and woody material, and prevention of drainage failures and sediment delivery from firelines. | Same as Proposed Action.               | Same as No Action.                          | Same as Proposed Action.   |
| <b>(Road and Landing Construction, Reconstruction, and Maintenance)</b>  |  |  |   |  |
| Construction, reconstruction, and maintenance activities pursuant to the CFPRs, implementation of best management practices (BMPs) based on techniques described in Weaver and Hagens(1994), and other Green Diamond operational policies and guidelines.                      | Same as No Action, plus implementation of additional measures (noted below) contained in Green Diamond's ownership-wide Road Management Plan.  | Same as Proposed Action.               | Same as No Action.                          | Same as Proposed Action.   |
| Does not require road inventory.   | Requires inventory of Green Diamond's road network every five years to ensure that management roads that are no longer needed for log transport or administrative access are changed to decommission status.   | Same as Proposed Action.               | Same as No Action.                          | Same as Proposed Action.   |

**TABLE 2.7-1**  
Description of Alternatives

| <b>No Action<br/>(No AHCP/No Permit)</b>   | <b>Proposed Action<br/>(Green Diamond AHCP/CCAA)</b>   | <b>Alternative A<br/>(Listed Species Only)</b> | <b>Alternative B<br/>(Simplified Prescriptions)</b> | <b>Alternative C<br/>(Expanded Species and<br/>Geographical Coverage)</b> |
|--|--|--|---|---|
| <p>Provides for risk assessment methodology to identify and prioritize treatment of road-related sediment sources based on watershed sensitivity and basin resource issues (e.g. TMDLs), and proposed THP activity within the watershed. Currently, the approximate cost of roadwork for priority sites under the THP process is estimated at \$1 million.</p> | <p>Provides for risk assessment methodology to identify and prioritize treatment of road-related sediment sources over the entire ownership based on a process described in the AHCP/CCAA that utilizes results of aerial photos and field inventories. Requires subsequent development of an implementation plan to effect temporary or permanent road decommissioning, or road upgrading, as appropriate. Front load treatment of high- and moderate-risk sediment delivery sites (beginning in the high priority road work units) by providing for an average of \$2.5 million per year (approximately \$1.5 million in addition to the No Action) for the first 15 years (for a total of \$37.5 million) (The acceleration period would be adjusted following revision of the estimate of sediment yield from high- and moderate-risk sediment delivery sites at the end of the first five years following issuance of the Permits. The acceleration period and monetary commitment could be adjusted (upward or downward) by up to 1.5 years and \$3.75 million depending on the revised estimate of sediment yield.)</p> | <p>Same as Proposed Action.</p>                | <p>Same as No Action.</p>                           | <p>Same as Proposed Action.</p>   |
|  | <p>Provides for treatment of all high- and moderate-risk sediment delivery sites by the end of the term of the Permits.</p>  |  |   |   |

**TABLE 2.7-1**  
Description of Alternatives

| <b>No Action<br/>(No AHCP/No Permit)</b>   | <b>Proposed Action<br/>(Green Diamond AHCP/CCAA)</b>   | <b>Alternative A<br/>(Listed Species Only)</b> | <b>Alternative B<br/>(Simplified Prescriptions)</b> | <b>Alternative C<br/>(Expanded Species and<br/>Geographical Coverage)</b> |
|--|--|--|---|---|
| Pursuant to the CFPRs, road inspection and maintenance generally limited to THP operating areas and access roads.  | Requires inspection and priority repair or maintenance of all mainline roads throughout the ownership once a year prior to the winter period.  | Same as Proposed Action.                       | Same as No Action.                                  | Same as Proposed Action.  |
| Does not require maintenance of other management roads or roads yet to be decommissioned outside of THP operating areas.   | Requires maintenance of other management roads or roads yet to be decommissioned throughout the ownership on a 3-year rotating basis in accordance with a schedule contained in the AHCP/CCAA. | Same as Proposed Action.                       | Same as No Action.                                  | Same as Proposed Action.  |
| Does not require a response plan to large storm events that could result in major sediment inputs to stream channels.  | Requires a response plan to large storm events that could result in major sediment inputs to stream channels.  | Same as Proposed Action.                       | Same as No Action.                                  | Same as Proposed Action.  |
| Requires installation of ditch relief culverts or construction of rolling dips at maximum spacing intervals ranging from 115 to 600 feet on the basis of "2 percent" stratifications of road gradient and associated soil erodibility ratings. | Same as No Action.   | Same as No Action.                             | Same as No Action.                                  | Same as No Action.  |

**TABLE 2.7-1**  
Description of Alternatives

| No Action<br>(No AHCP/No Permit)  | Proposed Action<br>(Green Diamond AHCP/CCAA)   | Alternative A<br>(Listed Species Only) | Alternative B<br>(Simplified Prescriptions) | Alternative C<br>(Expanded Species and<br>Geographical Coverage) |
|---|--|--|---|--|
| Requires general treatment of roads and landings to prevent waterborne transport of sediment and concentration of runoff during the winter period.  | Requires surfacing of roads and landings used during the winter period to a minimum compacted depth of 12 inches of pit run rock or a combination of pit run and crushed rock.   | Same as Proposed Action.               | Same as No Action.                          | Same as Proposed Action.   |
| Requires installation of bridges on Class I watercourses where economically feasible; requires installation of countersunk or bottomless culverts that accommodate a 100-year flood flow where bridge installation is not possible. | Requires installation of culverts with a minimum diameter of 24 inches for Class I streams and 18 inches for logging road ditch drains. Requires design of <u>all</u> new stream crossing culverts to handle a 100-year return interval flow event and to minimize water diversion potential.  | Same as No Action.                     | Same as No Action.                          | Same as No Action.   |
| Permanent culverts on Class II watercourse crossings or logging road ditch drains must accommodate a 100-year flood flow.   | Requires installation of culverts with a minimum diameter of 24 inches for Class II streams and 18 inches for logging road ditch drains. Requires design of <u>all</u> new stream crossing culverts to handle a 100-year return interval flow event and to minimize water diversion potential. | Same as Proposed Action.               | Same as No Action.                          | Same as Proposed Action.   |

**TABLE 2.7-1**  
Description of Alternatives

| <b>No Action<br/>(No AHCP/No Permit)</b>   | <b>Proposed Action<br/>(Green Diamond AHCP/CCAA)</b>   | <b>Alternative A<br/>(Listed Species Only)</b>  | <b>Alternative B<br/>(Simplified Prescriptions)</b>   | <b>Alternative C<br/>(Expanded Species and<br/>Geographical Coverage)</b>                        |
|--|--|---|---|--|
| Requires seeding and mulching of (1) new road cut and fill slopes, (2) exposed slopes associated with temporary stream crossings, or (3) within the RMZ of Class I or II watercourses and Class III EEZs at a seeding rate of 30 lbs/acre and a mulching depth of 2 inches with 90 percent surface coverage. | Same as No Action.   | Same as No Action.  | Same as No Action.  | Same as No Action.   |
| Road construction on unstable slopes would require review by a licensed geologist or certified engineering geologist.  | Road construction on steep streamside slopes, headwall swales, and shallow–deep seated landslides would not occur without licensed geologist or certified engineering geologist review.          | Same as Proposed Action.  | Same as No Action.  | Same as Proposed Action.   |
| <b>Monitoring and Research</b>   |  |   |   |  |
| Compliance and effectiveness monitoring, wildlife studies, environmental assessments, and watershed studies pursuant to existing regulations and Green Diamond's NSOHCP.   | Same as No Action, plus various additional short- and long-term effectiveness monitoring programs as described in the AHCP/CCAA. Provides for adaptive management and structured feedback loops. | Same as Proposed Action, except that species-specific monitoring and research is limited to fish species only and does not include unlisted amphibians (tailed frog and southern torrent salamander). | Same as No Action.  | Same as Proposed Action, plus establishes additional monitoring sites within rain-on-snow areas. |
| <b>Riparian Habitat</b>  |  |   |   |  |
| Management pursuant to the CFPRs and other applicable law, Green Diamond's NSOHCP, and Green Diamond operational policies and guidelines.  | Same as No Action, plus additional measures contained in the proposed AHCP/CCAA. Some measures would supersede CFPRs.  | Same as No Action, plus additional measures contained in an AHCP. Some measures would supersede CFPRs.  | Same as No Action, plus additional measures contained in an AHCP/CCAA. Some measures would supersede CFPRs. | Same as Proposed Action.   |

**TABLE 2.7-1**  
Description of Alternatives

| No Action<br>(No AHCP/No Permit)   | Proposed Action<br>(Green Diamond AHCP/CCAA)   | Alternative A<br>(Listed Species Only) | Alternative B<br>(Simplified Prescriptions)   | Alternative C<br>(Expanded Species and<br>Geographical Coverage) |
|--|--|--|---|--|
| <b>(Riparian Zone Widths, Zone Stratifications, Buffer Areas)</b>  |  |  |   |  |
| Class I WLPZ:<br>at least 150 feet<br>Class II WLPZ:<br>50-100 feet<br>Class III ELZ:<br>25-50 feet<br>Class III WLPZ designation<br>possible under some<br>circumstances. | Class I RMZ <sup>a</sup> :<br>at least 150 feet<br>Class II-1 RMZ <sup>b</sup> :<br>at least 75 feet<br>Class II-2 RMZ <sup>c</sup> :<br>at least 100 feet<br>Class III (Tier A) EEZ <sup>d</sup> :<br>30 feet<br>Class III (Tier B) EEZ <sup>e</sup> :<br>50 feet | Same as Proposed Action.               | Class I riparian buffer:<br>200 feet<br>Class II riparian buffer:<br>130 feet<br>Class III ELZ:<br>25-50 feet | Same as Proposed Action.   |
| Class I Inner Zone:<br>75 feet<br>Class I Outer Zone:<br>75 feet   | Class I Inner Zone:<br>50-70 feet<br>Class I Outer Zone:<br>80-100 feet<br>Class II Inner Zone:<br>30 feet<br>Class II Outer Zone:<br>45-70 feet   | Same as Proposed Action.               | No inner/outer zone<br>stratification within the riparian<br>buffer.  | Same as Proposed Action.   |

**TABLE 2.7-1**  
Description of Alternatives

| No Action<br>(No AHCP/No Permit)   | Proposed Action<br>(Green Diamond AHCP/CCAA)   | Alternative A<br>(Listed Species Only) | Alternative B<br>(Simplified Prescriptions)                  | Alternative C<br>(Expanded Species and<br>Geographical Coverage) |
|--|--|--|--|--|
| Plus: 25-50 foot special operating zone adjacent to (upslope) of a Class I WLPZs where even-aged management occurs; special management zone upslope of a Class I WLPZ inner gorge where slopes exceed 55 percent.  | Establishes steep streamside slope management zones (SMZs) upslope of the RMZs along Class I and II watercourses where steep streamside slopes have been identified.   | Same as Proposed Action                | No special operating zone adjacent to the riparian buffer.   | Same as Proposed Action.   |
| <b>(Class I Retention and Operational/Silvicultural Restrictions)</b>  |  |  |  |  |
| 75 percent surface cover and undisturbed area; single-tree selection; no use of heavy equipment except at prepared tractor and road crossings.<br><br>Retention and protection of understory and mid-canopy trees within the 25-50 foot special operating zone; even-aged management prohibited in Class I special management zone where slopes exceed 55 percent. | Same as No Action, except SMZ protections supersede No Action restrictions within special operating/management zones. In addition: prohibit timber harvesting within RMZ "inner zones" that are located below designated SMZs, except for purposes of creating cable-yarding corridors when other options are impractical. In addition, no timber harvesting within the entire RMZ below an SMZ in the Coastal Klamath and Blue Creek HPAs; post-harvest conifer stem density of at least 15 stems per acre; greater than 16 inches dbh; no harvesting of trees likely to recruit to the watercourse; only a single harvest entry (except where cable corridors are necessary to conduct intermediate treatments in adjacent stands) within the life of the Permits. | Same as Proposed Action.               | No harvesting or management within Class I riparian buffers. | Same as Proposed Action.   |

**TABLE 2.7-1**  
Description of Alternatives

| <b>No Action<br/>(No AHCP/No Permit)</b>   | <b>Proposed Action<br/>(Green Diamond AHCP/CCAA)</b>  | <b>Alternative A<br/>(Listed Species Only)</b> | <b>Alternative B<br/>(Simplified Prescriptions)</b>          | <b>Alternative C<br/>(Expanded Species and<br/>Geographical Coverage)</b> |
|--|---|--|--|---|
| Inner Zone: at least 85 percent overstory canopy post-harvest; at least 25 percent of pre-harvest conifers; 10 largest dbh conifers per 330 feet of stream channel within first 50-foot width of zone; no salvage permitted. | Inner Zone: at least 85 percent overstory canopy closure post-harvest; no conifer removal if zone is predominately composed of hardwoods; no salvage permitted.   | Same as Proposed Action.                       | No harvesting or management within Class I riparian buffers. | Same as Proposed Action.  |
| Outer Zone: at least 70 percent overstory canopy post-harvest; no salvage permitted.   | Outer Zone: at least 70 percent overstory canopy closure post-harvest; salvage permitted but limited to downed trees if they cannot be incorporated into the bankful channel, not contributing to bank/slope stability, or not intercepting sediment. | Same as Proposed Action.                       | No harvesting or management within Class I riparian buffers. | Same as Proposed Action.  |

**TABLE 2.7-1**  
Description of Alternatives

| No Action<br>(No AHCP/No Permit)   | Proposed Action<br>(Green Diamond AHCP/CCAA)  | Alternative A<br>(Listed Species Only) | Alternative B<br>(Simplified Prescriptions)                   | Alternative C<br>(Expanded Species and<br>Geographical Coverage) |
|--|---|--|---|--|
| <b>(Class II Retention and Operational/Silvicultural Restrictions)</b>   |   |  |   |  |
| 75 percent surface cover and undisturbed area; single-tree selection only where more than 50 percent total canopy exists pre-harvest; no use of heavy equipment except at prepared tractor and road crossings. At least 70 percent minimum total canopy closure required where it exists within the WLPZ prior to timber harvesting. | Same as No Action, except SMZ protections supersede No Action restrictions within special operating/management zones. In addition: prohibit timber harvesting within RMZ “inner zones” that are located below designated SMZs, except for purposes of creating cable-yarding corridors when other options are impractical. In addition, no timber harvesting within the entire RMZ below an SMZ in the Coastal Klamath and Blue Creek HPAs; no harvesting of trees likely to recruit to the watercourse within the first 200 feet adjacent to a Class I RMZ; only a single harvest entry (except where cable corridors are necessary to conduct intermediate treatments in adjacent stands) within the life of the Permits. | Same as Proposed Action.               | No harvesting or management within Class II riparian buffers. | Same as Proposed Action.   |
| 50 percent to 70 percent total canopy closure (understory plus overstory) post-harvest; at least two living conifers per acre post-harvest measuring at least 16 inches dbh and 50 feet tall within 50 feet of the watercourse.  | Inner Zone: at least 85 percent overstory canopy closure post-harvest; no salvage permitted.<br><br>Outer Zone: at least 70 percent overstory canopy closure post-harvest; salvage permitted but limited to downed trees if they cannot be incorporated into the bankful channel, not contributing to bank/slope stability, or not intercepting sediment.   | Same as Proposed Action.               | No harvesting or management within Class II riparian buffers. | Same as Proposed Action.   |

**TABLE 2.7-1**  
Description of Alternatives

| No Action<br>(No AHCP/No Permit)  | Proposed Action<br>(Green Diamond AHCP/CCAA)  | Alternative A<br>(Listed Species Only)   | Alternative B<br>(Simplified Prescriptions)   | Alternative C<br>(Expanded Species and Geographical Coverage) |
|---|---|--|---|---|
| <b>(Class III Retention and Operational/Silvicultural Restrictions)</b>   |   |  |   |   |
| Heavy equipment use limited; even-aged management allowed; retention of 50 percent of pre-harvest understory vegetation in the event a WLPZ is designated; retention of all trees within the Class III channel or that are needed for bank stability. | Same as No Action. Possible Class III WLPZ designation superseded by the following:<br><br>Tier A (< 60-70 percent slopes): retention of all LWD on the ground; fire ignition during site preparation prohibited.<br><br>Tier B: (> 60-70 percent slopes): all hardwoods and non-merchantable trees retained; conifers retained that contribute to bank stability or that act as a control point in the channel; post-harvest retention of at least one conifer per 50 feet of stream length; fire ignition during site preparation prohibited. | Same as Proposed Action.                 | Same as No Action.  | Same as Proposed Action.                                      |
| <b>Large Woody Debris</b>   |   |  |   |   |
| LWD sources: see Riparian Habitat above.  | LWD sources: see Riparian Habitat above.  | LWD sources: see Riparian Habitat above. | LWD sources: see Riparian Habitat above.  | LWD sources: see Riparian Habitat above.                      |
| <b>Site Preparation and Burning in Riparian Buffers</b>   |   |  |   |   |
| Prohibits mechanical site preparation in Class I or Class II WLPZs by wheeled or tracked equipment.   | Prohibits mechanical site preparation in Class I or Class II RMZs by wheeled or tracked equipment.  | Same as Proposed Action.                 | Prohibits mechanical site preparation in Class I and Class II riparian buffers by wheeled or tracked equipment. | Same as Proposed Action.                                      |
| Prohibits fire ignition within Class I or II WLPZs, as well as Class III ELZs.  | Prohibits fire ignition within Class I or II RMZs, as well as Class III EEZs.   | Same as Proposed Action.                 | Prohibits fire ignition within Class I or II riparian buffers, as well as Class III ELZs.                       | Same as Proposed Action.                                      |

**TABLE 2.7-1**  
Description of Alternatives

| No Action<br>(No AHCP/No Permit)   | Proposed Action<br>(Green Diamond AHCP/CCAA)  | Alternative A<br>(Listed Species Only) | Alternative B<br>(Simplified Prescriptions)   | Alternative C<br>(Expanded Species and<br>Geographical Coverage)   |
|--|---|--|---|--|
| <b>Snags</b>   |   |  |   |  |
| Retains all snags greater than 16 inches dbh and 50 feet tall that do not pose a safety or fire hazard. Future recruitment would occur through retention of old-growth elements in the 39 NSO set asides areas, minimum overstory canopy and conifer tree stem retention noted above within WLPZs, and natural mortality elsewhere throughout the Action Area. | Retains all snags greater than 16 inches dbh and 50 feet tall that do not pose a safety or fire hazard. Future recruitment would occur through retention of old-growth elements in the 39 NSO set asides areas, minimum overstory canopy and conifer tree stem retention noted above within RMZs and Tier B Class III EEZs, and natural mortality elsewhere throughout the Action Area. | Same as Proposed Action.               | Retains all snags greater than 16 inches dbh and 50 feet tall that do not pose a safety or fire hazard. Future recruitment would occur through retention of old-growth elements in the 39 NSO set asides areas, and natural mortality within riparian buffers and elsewhere throughout the ownership. | Same as Proposed Action, except for implementation of species-specific conservation measures for the marbled murrelet. |
| <b>Hardwoods</b>   |   |  |   |  |
| In general, retains all hardwoods in uneven-aged areas, except where removal would enable conifer regeneration, enhance riparian function, establish cable corridors, or for safety. One to two trees per acre would be retained in even-aged management units. Hardwood removal also subject to other retention standards noted above.                        | Same as No Action, except also requires retaining all hardwoods within SMZs.  | Same as Proposed Action.               | Same as No Action.  | Same as Proposed Action.   |

**TABLE 2.7-1**  
Description of Alternatives

| No Action<br>(No AHCP/No Permit)  | Proposed Action<br>(Green Diamond AHCP/CCAA)  | Alternative A<br>(Listed Species Only) | Alternative B<br>(Simplified Prescriptions) | Alternative C<br>(Expanded Species and<br>Geographical Coverage)   |
|---|---|--|---|--|
| <b>Listed Species</b>   |   |  |   |  |
| Subject to take prohibition for all listed species; incidental take allowed for the spotted owl pursuant to previous authorization. | Allows take of covered species, provided incidental to a covered activity, through implementation of general forest management, riparian habitat, large woody debris, and snag measures noted above. Subject to take prohibition for other listed species.  | Same as Proposed Action.               | Same as Proposed Action.                    | Same as Proposed Action. Incidental take of the marbled murrelet and bald eagle authorized pursuant to implementation of additional conservation measures specific to these species. |
| <b>Unlisted Species</b>   |   |  |   |  |
| Avoids and minimizes significant impacts to unlisted species.   | Provides assurances for covered, unlisted species that have either been proposed for listing or are considered to be sensitive. Allows take of these species (provided incidental to a covered activity) in the event they become listed in the future through implementation of the general forest management, riparian habitat, large woody debris, and snag measures noted above.<br><br>Avoids and minimizes significant impacts to unlisted species that are not covered. (Same as No Action for these species.) | Same as No Action.                     | Same as Proposed Action.                    | Same as Proposed Action, plus requires implementation of species-specific conservation measures for the western pond turtle.   |

<sup>a</sup> Includes floodplains and channel migration zones (CMZs).

<sup>b</sup> Would apply to the first 1,000-foot segment of the smallest (first order) Class II stream.

<sup>c</sup> Would apply to remaining portions of first order Class streams, as well as to larger Class II streams (second order and higher).

<sup>d</sup> Where streamside slope gradients are less than 60 percent to 70 percent.

<sup>e</sup> Where streamside slope gradients are greater than 60 percent to 70 percent.