Placer County Water Agency
Middle Fork American River Project
(FERC Project No. 2079)

VEGETATION AND INTEGRATED PEST MANAGEMENT PLAN

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List of Acronyms

AP	avoidance and protection
BA/BE	Biological Assessment/Biological Evaluation
BMPs	Best Management Practices
CAR	Critical Aquatic Refuge
CDFG	California Department of Fish and Game
Commission	Federal Energy Regulatory Commission
DSOD	Department of Safety of Dams
ENF	Eldorado National Forest
FERC	Federal Energy Regulatory Commission
HPMP	Historic Properties Management Plan
IMPP	Invasive Mussel Protection Plan
IPM	integrated pest management
MFP	Middle Fork American River Project
MW	megawatts
NGO	non-governmental organization
PAC	Protected Activity Center
PCA	Pest Control Advisor
PCWA	Placer County Water Agency
Project	Middle Fork American River Project
RCAs	Riparian Conservation Areas
RCO	Riparian Conservation Objective
ROD	Record of Decision
SD	Supporting Document
TNF	Tahoe National Forest
TCP	Traditional Cultural Property
USDA-FS	United States Department of Agriculture-Forest Service
USFWS	United States Fish and Wildlife Service
VIPMP	Vegetation and Integrated Pest Management Plan

1.0 INTRODUCTION

This Vegetation and Integrated Pest Management Plan (VIPMP) has been developed in consultation with state and federal resource agencies, Native American tribes, county and local governments, non-governmental organizations (NGOs), and members of the public for the Placer County Water Agency's (PCWA) Middle Fork American River Project (MFP or Project). The MFP is located on the west slope of the Sierra Nevada range primarily within Placer County, California. The MFP is almost entirely in the Tahoe National Forest (TNF) and the Eldorado National Forest (ENF), with a small portion on PCWA-owned property. The MFP consists of two major storage reservoirs—French Meadows and Hell Hole (with a combined capacity of 342,583 acre-feet), five smaller regulating reservoirs and diversion pools, and five powerhouses (VIPMP Map 1). The Project began operations in 1967 and has a generating capacity of approximately 224 megawatts (MW). The Project also includes developed recreation facilities concentrated near storage reservoirs and diversion pools.

The VIPMP includes a description of routine vegetation and pest management at Project facilities and features and Project recreation facilities and features. Vegetation and pest management described in this Plan includes activities that are currently implemented by PCWA and future activities to be implemented during the term of the new license. Vegetation management includes trimming by hand and with equipment, and use of herbicides. Pest management includes noxious weed management and rodent control. The VIPMP also includes measures to avoid and protect environmental and cultural resources. Environmental resources or resource issues considered in this Plan include water quality; erosion; groundwater; Riparian Conservation Areas (RCAs); Critical Aquatic Refuges (CARs); special-status aquatic species; soils; and special-status plants and wildlife; and cultural resources. A program to prevent the inadvertent and unwanted introduction of invasive mussel species is included in the Invasive Mussel Protection Plan (IMPP) (PCWA 2010) developed by PCWA in consultation with the California Department of Fish and Game (CDFG). This IMPP covers MFP facilities and other PCWA facilities not included under the FERC license. The initial IMPP plan was prepared in compliance with Fish and Game Code Section 2302 (FGC §2302) and was accepted by CDFG on September 17, 2010.

Annual review and periodic updates of this plan will occur to ensure that new information is incorporated and the results of project monitoring are addressed. Analysis of potential effects to environmental resources resulting from implementation of routine vegetation and pest management activities is included in the Exhibit E, Section 8, Environmental Analysis of Proposed Action and in the Biological Assessment/Biological Evaluation (BA/BE) for the MFP (Supporting Document [SD] C) (PCWA 2011b; SD C) and the Supplemental Filing (PCWA 2011c).

1.1 PLAN ORGANIZATION

The VIPMP is organized into the following sections:

Section 2.0 Plan Objectives: This section defines the purpose of the VIPMP.

Section 3.0 Vegetation and Integrated Pest Management: This section defines routine vegetation and pest management activities to be implemented over the term of the license.

Section 4.0 Avoidance and Protection Measures: This section identifies measures to avoid and protect environmental and cultural resources during implementation of routine vegetation and pest management activities.

Section 5.0 Special-Status Plant and Noxious Weed Inventory Surveys: This section describes special-status plant and noxious weed inventory surveys and associated reporting that will be implemented over the term of the license.

Section 6.0 Water Quality Monitoring: This section describes water quality monitoring and associated reporting to be conducted over the term of the license.

Section 7.0 Agency Consultation: This section outlines annual resource agency consulting requirements.

Section 8.0 Literature Cited: This section provides a list of documents or other resources that are referenced in the VIPMP.

2.0 PLAN OBJECTIVE

The overall objective of the VIPMP is to define a framework for implementation of routine vegetation and pest management over the term of the new license.

The specific objectives of the VIPMP are to:

- Identify special-status plant species and habitat for specific special-status species populations potentially affected by Project activities and protect those populations and habitat, as required;

- Implement measures to eradicate, control, and prevent the spread of known populations of noxious weeds and monitor them to track changes in their populations. Measures are both to prevent noxious weed spread and protect special-status plant populations;

- Implement measures to prevent the introduction of new noxious weeds to the Project and Project-affected areas;

- Revegetate areas disturbed by Project activities to reduce soil erosion, restore habitat (both botanical and wildlife), conserve native vegetation resources, and monitor these efforts;

- Review, evaluate, and implement acceptable pesticide/herbicide use and restrictions; and

- Implement specific vegetation management actions to maintain safe access to and reduce fire hazards in the vicinity of Project facilities and features and Project recreation facilities and features (including transmission lines) and resources.

3.0 VEGETATION AND INTEGRATED PEST MANAGEMENT

Routine vegetation and pest management activities described in this Plan were developed in accordance with the principles of integrated pest management (IPM), an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques, such as manual or physical removal of undesirable species, and habitat manipulation (e.g., revegetation). Pesticides are also used as needed in compliance with United States Department of Agriculture-Forest Service (USDA-FS) and other applicable guidelines, and treatments are made with the goal of controlling only the target organism. Pesticide use as described in this Plan includes herbicides and associated surfactants, fungicides, and rodenticides. Pest control methods are selected and applied in a manner that minimizes risks to human health, non-target organisms, and the environment.

The following describes the framework for vegetation and pest management to be implemented at Project facilities and features and Project recreation facilities and features during the term of the new license.

3.1 VEGETATION MANAGEMENT

Vegetation management activities include a combination of trimming by hand or with equipment and use of herbicides, surfactants, and fungicides to remove woody and herbaceous vegetation and fungi. The purpose of vegetation management is to ensure the safe and effective operation of the MFP by reducing fire hazards (fuel reduction), maintaining safe access to Project facilities and features and Project recreation facilities and features, and protecting worker and public health and safety. Methods are selected on a site-specific basis considering public health and safety, presence of sensitive resources (e.g., aquatic/riparian and terrestrial resources), and effectiveness.

In general, vegetation management is implemented in the spring and early summer to avoid work during high fire danger periods and inclement weather. However, vegetation management may also be conducted at other times of the year based on the specific location, accessibility, and weather conditions.

Refer to VIPMP Table 1 for a list of Project facilities and features and Project recreation facilities and features where vegetation management (activity and frequency) is implemented. The areas where vegetation management activities are implemented include:

- Within 2 feet on either side of trails including Project Recreation facility trails;

- Within 5 feet around the perimeter of the dams; outside the perimeter fence of powerhouses, switchyards, and substations; gaging stations and weirs; and around ancillary support facilities and Project fences;

- Within 10 feet on either side of penstocks, removable sections, valve houses, and diversion pools; on either side of communication lines, powerlines, photovoltaic poles and lines; and roads and access points;

- Within 50 feet around intakes, outlet works, gatehouses, surge tanks, adits, portals, microwave reflectors, radio towers, sediment disposal and augmentation sites, and drop inlets; and

- Within 100 feet of recreation features (e.g., campsites, picnic sites, sanitation buildings) for fuel management and up to 150 feet of recreation features for hazard tree removal.

PCWA does not conduct vegetation management around large and medium reservoirs or underground tunnels.

3.1.1 Vegetation Trimming by Hand

Vegetation trimming by hand includes trimming of grasses and forbs with a string trimmer and removal or trimming of shrubs and trees (including hazard trees) with a chain saw or other handheld saw. These activities are implemented annually or infrequently, depending on location and facility type. As shown in VIPMP Table 1 vegetation trimming by hand is conducted at Project facilities, roads, and trails to maintain safe access and protect worker and public safety. At most Project recreation facilities and features vegetation trimming by hand is implemented for fuel management and hazard tree removal. Each of these is described below.

Fuel management at Project recreation features will be conducted in accordance with the standards specified in Public Resources Code 4291. Specifically, fuels within 100 feet of developed recreation features will be reduced to create a “defensible space” around these features. The intensity of fuels management within this area will be determined in consultation with the USDA-FS based on site-specific conditions, but is expected to be consistent with the “Reduced Fuel Zone” guidelines outlined in the State Board of Forestry and Fire Protection (BOF) California Department of Forestry and Fire Protection Guidelines for creating Defensible Space (2006).

Hazard tree removal will be implemented as necessary within 150 feet of Project recreation facility features. A hazard tree is defined by the USDA-FS as a tree with defects that may cause a failure that could result in property damage, personal injury or death. Specific hazard trees to be removed will be identified in consultation with the appropriate USDA-FS staff.

3.1.2 Vegetation Trimming with Equipment

Vegetation trimming with equipment includes removal of vegetation on the shoulder of Project roads using mechanical equipment such as a flail-type mower. As with trimming of vegetation by hand, this activity is implemented annually or infrequently, depending on location (VIPMP Table 1).

A rubber-tired T- or Y-shaped flail mower, attached to the hitch of a tractor or other vehicle, is used along Project roads to cut grasses, other herbaceous vegetation, and woody vegetation (less than ¾ inch in diameter). Use of a flail mower is preferred especially in locations where there is the potential for contact with loose debris (e.g., gravel).

3.1.3 Herbicide Use

Herbicides and associated surfactants would be applied to manage vegetation at select Project facilities and features and Project recreation facilities and features over the term of the license as provided in VIPMP Table 1. Herbicides would be used in place of, or in addition to, vegetation trimming by hand or with equipment at locations where their use is more effective, provides for worker safety, or is integral for the management of noxious weeds (Section 3.2.1) when consistent with needs of sensitive resources (Section 4.0 and VIPMP Tables 6, and 7). A list of herbicides and surfactants to be used at Project facilities and features and Project recreation facilities and features is provided in VIPMP Table 2. This table also provides information on the active ingredient to be used per acre, as well as dilution and application rates. If different herbicides and/or treatment methods are approved by USDA-FS, or if new information about environmental risks becomes available during the term of the license, then PCWA will consult with USDA-FS to determine whether modifications to the authorized herbicides or treatment methods are necessary (Section 7.0).

The following provides a description of herbicide application methods:

- **Foliar application:** A sprayer would be used to apply herbicides to control broadleaf plants through application of herbicides (spot or broadcast spray);

- **Basal stem application:** A sprayer would be used to spot spray shrubs with stems 4 inches in diameter or less through application of herbicides to the lower portion of the stem; and

- **Cut-stump/wiping application:** A sprayer would be used to control shrubs with stems greater than 4 inches in diameter by applying herbicides to the cut surface. Herbicides may also be applied by hand (brushed/wiped directly onto the cut surface).

3.1.4 Fungicide Use

Fungicides (e.g., Borax soap) are used infrequently on tree stumps at Project recreation facilities and features to prevent the spread of fungus. The fungicide is applied directly

to a cut tree stump using a cut-surface application. Information on fungicides to be used at select Project recreation facilities and features is provided in VIPMP Table 2.

3.2 PEST MANAGEMENT

This section provides a description of activities implemented for the management of noxious weeds and vertebrate pests (i.e., rodents).

3.2.1 Noxious Weeds Management

Noxious weed management includes the following elements:

- Conducting periodic surveys to determine the location and extent of noxious weeds within the MFP;
- Controlling noxious weeds through treatment; revegetation, implementation of measures to prevent the introduction of new weeds; and implementation of a noxious weed training program; and
- Monitoring noxious weed treatment and revegetation areas.

Each of these elements is described below.

Noxious Weed Inventory Surveys

PCWA will conduct surveys every five years, beginning the first year following license issuance, to document the location and extent of ENF and TNF priority noxious weeds within the MFP. The list of priority noxious weed species for the ENF and TNF will be reviewed by the USDA-FS and updated as necessary prior to each 5-year inventory survey. Refer to Section 5.2 for a detailed description of survey timing and reporting requirements.

Noxious Weed Control

Target noxious weed species to be managed on National Forest System lands within the MFP were determined through review of ENF and TNF forest-specific priority noxious weed species lists and consultation with resource agencies. ENF and TNF priority species are those noxious weed species on which the ENF and TNF are focusing their forest-wide noxious weed management efforts (VIPMP Table 3). The MFP target noxious weeds list, provided as VIPMP Table 4, includes all ENF and TNF priority species that are known to occur in the MFP and applicable control approaches. The MFP target noxious weeds list may be modified during annual consultation (Section 7.0), if necessary, based on the results of the five-year noxious weed inventory surveys (Section 5.2) or changes in USDA-FS noxious weed priorities.

Specific treatments to eradicate or control known infestations of target noxious weed species will be described in detail and agreed upon with agency representatives during the annual review process.

Provided below is a description of applicable control approaches for the management of target noxious weeds.

MANUAL/CHEMICAL TREATMENT AND REVEGETATION

As described above, PCWA will conduct noxious weed inventory surveys in the first year following license issuance. Following these surveys, noxious weed populations targeted for treatment within the FERC Project boundary will be identified in consultation with the USDA-FS. In areas where MFP target noxious weed populations extend outside FERC Project boundary, treatments would extend up to 500 feet beyond the FERC Project boundary. If noxious weed populations extend more than 500 feet from the FERC Project Boundary, and are determined to be Project-related, PCWA will consult with USDA-FS to determine if the populations should be treated and, if so, the appropriate treatment methods.

The agreed-upon treatments (including manual treatments chemical treatments, and revegetation) would be implemented in year 1 or 2 following license issuance, after the results of the noxious weed and special-status plant surveys have been reviewed by the USDA-FS and following completion of consultation. Monitoring, which is described below under "Monitoring Associated with Treatment of Noxious Weed Populations and Adjustment of Treatments," would begin in the first year of treatment following license issuance. The treatment of noxious weeds would continue over the term of the license in consultation with the USDA-FS, taking into account the results of periodic noxious weed and special status plant surveys and evaluation of treatment effectiveness.

Provided below is a description of target noxious weed manual/chemical treatment methods and revegetation. Refer to VIPMP Table 5 for manual and chemical treatment methods and timing of treatment (i.e., early spring/summer or fall) to be implemented for MFP target noxious weed species.

- Manual Treatment (Hand Pulling/Trimming by Hand)

  Herbaceous noxious weeds may be removed by hand (e.g., with a small shovel or trowel) or trimmed with a string trimmer. Any trees or shrubs considered to be noxious may be removed with a chain saw or other handheld saw.

- Chemical Treatment (Herbicide Use)

  Herbicides would be used in place of, or in addition to, hand pulling or trimming by hand at locations where their use is more effective, provides for worker safety, reduces overall management costs, or is integral for the successful management of target noxious weeds when consistent with protection of sensitive resources. Herbicides and surfactants for the treatment of target noxious weed populations are the same as those identified for use in controlling vegetation around Project facilities and features and Project recreation facilities and features. Refer to VIPMP Table 2 for a list of herbicides and surfactants to be used. As stated above, if new herbicides and/or noxious weed treatment methods are approved by USDA-FS

during the term of the license, then PCWA would consult with the appropriate agency during annual consultation (Section 7.0) to determine whether modifications to the authorized herbicides or treatment methods are necessary. All herbicides will be administered by a licensed PCA.

- Revegetation and Seeding

It may also be necessary, based on annual agency consultation, to revegetate an area where target noxious weed populations have been treated to prevent the reintroduction of weeds and to encourage growth of native species. In these cases, revegetation would be implemented consistent with USDA-FS guidelines as described below.

Revegetation with carefully selected plant materials is a critical component of integrated weed management strategies. Commonly used control tactics, such as manual or chemical treatments, may eliminate or suppress invasive species in the short term, but the resulting gaps in vegetation and bare soil are susceptible to further invasion by the same or other undesirable plant species. Areas with greater than 100 square feet of bare soil created by the treatment of invasive plants would be evaluated for restoration needs.

Determination of the need for passive versus active revegetation would occur during the annual consultation meeting. Passive restoration depends on re-colonization from the existing seedbank and from plant propagules dispersed from surrounding sources, as well as native species from within the invasive plant site. Passive restoration may be appropriate where treated sites leave relatively little bare ground or along less-disturbed roadsides where adjacent native vegetation can provide adequate seed source to recolonize treated areas.

Active revegetation is a long-term commitment that would be focused on highest priority areas that are either ecologically unique, or to provide competition for highly aggressive invasive plant species. Information on areas needing restoration following treatments, and recommendations regarding use of active or passive restoration and on sources for native seed or plant materials, would be developed at the annual consultation meeting.

Revegetation or seeding will be approved by the USDA-FS and will be implemented in accordance with the following guidance documents:

- Chapter 2070, Native Plant Materials (Forest Service Manual, National Headquarters, National Forest Resource Management) (VIPMP Attachment A).
- Chapter 40, Revegetation (Forest Service Handbook, Pacific Southwest Region 5, Botanical Program Management) (VIPMP Attachment B).
- Seeding Guidelines for the Tahoe National Forest (VIPMP Attachment C).

- Seeding Guidelines for the Eldorado National Forest (VIPMP Attachment D).
- USDA-FS Native Plant Policy (Region 5) (VIPMP Attachment E).

If new revegetation or seeding guidance is developed during the term of the license, PCWA will consult with USDA-FS botanists to determine its appropriateness for the MFP.

MEASURES TO PREVENT THE INTRODUCTION OR SPREAD OF NOXIOUS WEEDS

This section provides a list of measures to be implemented during routine operations and maintenance to prevent the introduction or spread of noxious weeds. USDA-FS noxious weed management policies and guidelines, including the USDA-FS *Guide to Noxious Weed Prevention Practices* (VIPMP Attachment F) have been incorporated, as appropriate.

Truck and Equipment Cleaning

- PCWA will avoid driving off-road in noxious weed infested areas. Vehicle and foot travel will be restricted to established roads and trails whenever possible.
- All PCWA and PCWA contractor field vehicles and equipment previously used on non-paved surfaces outside of the watershed will be thoroughly cleaned before entering the Project area.
- PCWA will ensure that off-road vehicles and heavy equipment are free of material that may contain seeds of noxious weeds prior to leaving an area infested with weeds. All off-road vehicles and heavy equipment will be inspected for weed seeds stuck in tire treads or mud on the vehicle. PCWA will designate appropriate cleaning sites, and all such equipment will be cleaned (power or high-pressure cleaning) before entering weed-free areas and/or National Forest lands.
- Vehicle and equipment cleaning need not be conducted in emergency situations. Instead, PCWA will notify the USDA-FS of the location after the emergency so that the site can be checked for the introduction of noxious weeds the following year. Notification will include identifying the location of the equipment's most recent operations.

Stockpiling

- PCWA will maintain stockpiles of gravel and soil in a weed-free state. If stockpiles are found to be infested, PCWA will document the weed populations and discuss treatment with USDA-FS prior to moving gravel or soil from an infested site.

Clothing and Boots

- Workers will inspect, remove, and properly dispose of readily observable weed seeds and plant parts found on their clothing and equipment. Proper disposal includes bagging the seeds and plant parts prior to disposal.

Erosion Control

- Certified weed-free hay, mulch, or straw will be used for erosion control. If certified weed-free straw is not available, certified weed-free rice straw will be used. If weed-free material is not available, PCWA will consult with USDA-FS botanist regarding other options (e.g., sterilized straw pellets).

NOXIOUS WEED TRAINING PROGRAM

PCWA will develop a noxious weed training program for PCWA personnel and contractors. The noxious weed training program will include photographs, descriptions, and other materials to assist personnel in identifying weed species listed on VIPMP Table 4, MFP Target Noxious Weeds List. It will also include a review of measures to control or prevent the introduction and spread of noxious weeds.

Monitoring Associated with Treatment of Noxious Weed Populations and Adjustment of Treatments

Monitoring of target noxious weed populations would be conducted following each treatment and continue for three years after the population is determined absent. The following information will be collected for each treated target noxious weed population monitored: (1) date; (2) approximate size in acres or square feet; (3) infestation level/density[1] of the population; and (4) photographs of the population. In conjunction with noxious weed treatment area monitoring, PCWA will monitor the condition of the special-status plant populations within 100 to 300 feet of noxious weed treatments areas (dependent on herbicide, application rate, and treatment method; VIPMP Table 7) during the year of treatment and for two years following treatment. If herbicides change from those listed in VIPMP Table 2 or if effects to sensitive plants are documented during monitoring, buffers for sensitive plants will be reevaluated in consultation with USDA-FS.

Target noxious weed and special-status plant inventory survey and monitoring results would be submitted to the resource agencies annually, no later than 30 days prior to the annual consultation.

Treatment methods (including appropriate buffers) would be modified as necessary based on consultation with and approval of USDA-FS. If treatments are determined

[1] Levels of noxious weed infestation will be categorized as follows: 0%; 1–5%, 6–25%, 26–50%, 51–75%, 76–90%, 91-99%, or 100%

unsuccessful through consultation with resource agencies, modified treatment methods or cessation of treatment and monitoring will be evaluated during the annual consultation meeting. Any changes in treatment and monitoring are subject to approval by USDA-FS.

Noxious Weed Management and Monitoring Associated with Future Ground Disturbing Activities

PCWA will also conduct target noxious weed treatment and monitoring, and implement measures to prevent the spread or introduction of noxious weeds at all locations where ground disturbance occurs as a result of MFP activities or outside material such as rock, gravel, or fill is imported. This includes activities associated with recreation facility rehabilitation, construction of new facilities, and modification of existing facilities. During the planning and site design process for these activities, site-specific noxious weed management actions will be developed in consultation with and approval of USDA-FS.

3.2.2 Rodent Control

Management of rodents at Project facilities and features includes a combination of physical control and rodenticide use. The purpose of rodent control is to protect the structural integrity of dams and prevent rodent infestations in building interiors, thereby protecting worker and public health and safety and maintaining system reliability. Methods are selected on a site-specific basis considering public health and safety, target rodent species, and the effectiveness of methods.

Rodent control (i.e., physical control and rodenticide use) is implemented on an as-needed basis at existing Project facilities and features as identified in VIPMP Table 1.

Physical Control

Physical control includes the use of use of traps or other non-chemical methods to manage rodents in the interior of Project facilities and features. PCWA would use rodent traps in the interior of facilities and features.

Rodenticide Use

OVER-THE-COUNTER RODENTICIDE USE

PCWA would use over-the-counter rodenticides (e.g., d-CON®) in the interior of Project facilities and features on an as-needed basis.

FUMIGANTS

PCWA would use metal phosphide fumigants (i.e., gas cartridges) in rodent burrows or other small holes on dam faces (VIPMP Table 1). Metal phosphide fumigants are gaseous rodenticides that are effective for use in small, enclosed areas such as rodent burrows. Fumigants are not suitable for use in building interiors, and their use would be restricted to rodent burrows or other small holes on dam faces. If more effective

rodenticides are identified during the term of the license, PCWA would consult with USDA-FS to obtain authorization for their use.

Rodenticide applications would be conducted on Hell Hole and French Meadows dams to meet Department of Safety of Dams (DSOD) requirements and control rodent populations using the following methods:

- **Licensed Pest Control Advisor (PCA):** All rodenticides will be administered by a licensed PCA.

- **Determine the location of active burrows:** All potential treatment areas (i.e., earthen dams) will be surveyed for evidence of burrows prior to implementation of treatment. All burrows will be flagged and backfilled. Flagged burrows will be monitored the next day to determine which burrows are active (i.e., which burrows have been re-opened).

- **Administer rodenticide treatment:** Rodenticides will be placed at the opening of each active burrow, and the opening filled with paper, and then firmly packed with soil.

- **Conduct follow-up treatment and monitoring:** The PCA will return following treatment to determine if additional active burrows are present. Additional burrows will then be treated.

- **Collect and dispose of rodent carcasses:** The day following each treatment, the PCA will search for and collect any rodent carcasses. Carcasses will be bagged and properly disposed.

4.0 AVOIDANCE AND PROTECTION MEASURES

The approach for avoiding potential effects to environmental and cultural resources during implementation of routine vegetation and pest management activities was to develop measures that:

- Refine management activities;

- Establish limited operating periods and buffer areas; and

- Incorporate applicable USDA-FS standards and guidelines.

Refer to VIPMP Table 6 for the list of avoidance and protection (AP) measures developed to protect environmental and cultural resources, and provide for human health and safety during implementation of routine vegetation and pest management activities. USDA-FS standards and guidelines considered in development of the AP measures include the Record of Decision (ROD) for the Sierra Nevada Forest Plan Amendment Final Supplemental Impact Statement, Appendix A (USDA-FS 2004), *Water Quality Management for Forest System Lands in California: Best Management Practices* (USDA-FS September 2000), the ENF Land and Resource Management Plan

(USDA-FS 1988), and the TNF Land and Resource Management Plan (USDA-FS 1990).

Aquatic/riparian resource measures were developed for consistency with the Sierra Nevada Forest Plan Riparian Conservation Objective (RCO) #1 for the protection of beneficial uses of water within the Middle Fork American River watershed. Specifically, standards 97 and 98 for the protection of RCAs have been incorporated into the A/P measures in VIPMP Table 6. VIPMP Attachment G provides the full text of the *Standards and Guidelines for Riparian Conservation Areas and Critical Aquatic Refuges.* Standards and guidelines for California spotted owl and northern goshawk Protected Activity Centers (PACs) (VIPMP Attachment G) were also incorporated.

In addition, applicable USDA-FS Best Management Practices (BMPs) (USDA-FS 2000) for water quality have been incorporated into many of the AP measures provided in VIPMP Table 6. These BMPs were developed by USDA-FS, and then certified by the State, to ensure compliance with the Clean Water Act as well as regional Water Board standards. The measures are based on the September 2000 version of *Water Quality Management for Forest System Lands in California: Best Management Practices* (USDA-FS 2000). If USDA-FS issues updated BMPs for the protection of water quality and aquatic resources, then the updated BMPs would be implemented as appropriate. The BMPs in VIPMP Table 6 are general and site-specific project BMPs will be developed as necessary in coordination with the USDA-FS during the annual consultation process.

Routine vegetation and integrated pest management activities have the potential to adversely affect Traditional Cultural Properties (TCPs), including Traditional Gathering Areas. PCWA has conducted extensive consultation with the Native American Tribes and the USDA-FS in association with the MFP relicensing. To date, neither the Tribes nor the USDA-FS have identified any specific TCPs (including Traditional Gathering Areas) in the vicinity of the MFP. However, PCWA understands the importance of TCPs to the Native American Tribes. Accordingly, VIPMP Table 6 includes measures that will be implemented to manage Project activities that may impact TCPs, including Traditional Gathering Areas, that are yet to be identified by the Native American Tribes or USDA-FS.

5.0 SPECIAL-STATUS PLANT AND NOXIOUS WEED INVENTORY SURVEYS

This section describes periodic special-status plant and noxious weed inventory surveys to be implemented during the term of the new license.

5.1 SPECIAL-STATUS PLANT INVENTORY SURVEYS

PCWA will conduct protocol-level surveys for terrestrial special-status plants including mosses, fungi and lichens consistent with the methods described in the TERR 2 – Special-Status Plants Technical Study Report (PCWA 2010d; SD B). Surveys will be conducted every five years with the first survey beginning in year 1 following license issuance. Surveys for special-status fungi and lichens would be conducted only if new

facilities are added to the MFP or if operations and maintenance activities are proposed in areas where appropriate habitats to support these species are present. Survey results will be submitted to USDA-FS, CDFG, and United States Fish and Wildlife Service (USFWS) for review and comment at least 30 days prior conducting annual consultation (Section 7.0). The report will include the location or size of special-status plant populations including mosses, fungi, and lichens identified. Following incorporation of agency comments, the report will be submitted to the FERC.

5.2 PRIORITY NOXIOUS WEED INVENTORY SURVEYS

PCWA will conduct ENF and TNF priority noxious weed surveys in conjunction with special-status plant surveys every five years, with the first survey beginning in year 1 following license issuance. The surveys will be conducted consistent with the methods described in the TERR 3 – Noxious Weeds Technical Study Report (PCWA 2010e; SD B). The following information will be collected for each population observed:

- Date;
- Approximate size and infestation level of the population. Levels of infestation will be categorized as follows: 0%; 1–5%, 6–25%, 26–50%, 51–75%, 76–90%, 91-99%, or 100%; and
- Photographs of the population.

A report of the inventory survey results will be submitted to USDA-FS for review and comment at least 30 days prior to conducting annual consultation. Following incorporation of agency comments, the report will be submitted to FERC.

6.0 WATER QUALITY MONITORING

USDA-FS BMP 5-9 requires periodic monitoring of water quality to determine whether pesticides have been safely applied. PCWA will conduct water quality monitoring as described in the Water Quality Monitoring Plan (VIPMP Attachment H). The results of monitoring will be submitted to USDA-FS for review and comment at least 30 days prior to conducting annual consultation. Based on the monitoring results, PCWA will consult with USDA-FS to determine if additional actions are required. Following incorporation of USDA-FS comments, the report will be submitted to FERC.

7.0 AGENCY CONSULTATION

PCWA will conduct annual consultation with the USDA-FS to address and discuss the following:

- Proposed vegetation and pest management activities for the coming year and appropriateness of current AP measures included in this Plan. If necessary, AP measures would be modified in consultation with resource agencies.

- Results of special-status plant inventory surveys or the location of other newly identified occurrences of special-status plant or wildlife (e.g., raptor nests) in relation to routine vegetation and pest management activities.

- Development of site-specific protective measures for newly identified special-status plant or animal populations. Measures would be developed considering the vegetation management activity, species, and location of the population; the topography of the site; and health and safety of field personnel.

- Changes in special-status species lists.

- Results of target noxious weed treatment area monitoring, including the effectiveness of current treatments and timing and water quality monitoring results. Determine new target noxious weed treatment methods or timing, as necessary.

- Results of priority noxious weed inventory surveys.

- Changes in ENF and TNF priority noxious weeds lists.

- If aquatic and invasive weeds are identified as being present at French Meadows or Hell Hole reservoirs or become established within the watershed, PCWA will consult with the agencies (e.g., CDFG, USDA-FS, and USFWS) to determine appropriate measures to prevent their spread.

- If future scientific studies document that the presence or abundance of invasive algae *(Didymosphenia geminata)* found in river and stream reaches in the vicinity of the MFP is Project-related, and if a safe method of reducing this invasive algae exists, PCWA will consult with the USDA-FS to determine the feasibility of reducing the algae in Project-affected reaches. If a feasible method exists, PCWA will implement this task in Project-affected locations.

Within two week after the annual consultation meeting with USDA-FS, PCWA will notify Native American Tribes of area proposed for vegetation and integrated pest management (including vegetation removal and application of pesticides, herbicides or rodenticides). The notification will be provided in writing and will include activity- and location-specific information. A copy of the notification will be provided to the USDA-FS. The purpose of this notification is to allow the Native American Tribes to contact PCWA if the Project activities could potentially impact a previously unidentified Traditional Gathering Area. If a Traditional Gathering Area is identified through this process, PCWA will consult with the USDA-FS and Native American Tribes to document the location of the gathering area and to identify additional measures to manage Project activities at that location.

8.0 LITERATURE CITED

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TABLES

VIPMP Table 1. Vegetation and Pest Management Activities to be Implemented at Existing Project Facilities and Features and Project Recreation Facilities and Features.

Project Facility or Feature	Land Ownership	Vegetation Management				Pest Management			
		Trimming by Hand	Trimming w/Equipment	Herbicide Use	Fungicide Use	Noxious Weed Management[1]	Physical Rodent Control (snap traps)	Over-the-Counter Rodenticide Use	Rodenticide Use - Fumigants
Dams, Reservoirs, and Diversion Pools									
Large Dams									
French Meadows Dam and Outlet Works (modified)	TNF	A		A		X			X
Hell Hole Dam and Outlet Works (modified)	ENF	A		A		X			X
Medium Dams									
Middle Fork Interbay Dam and Outlet Works (modified)	TNF	A							
Ralston Afterbay Dam and Outlet Works	TNF	A							
Small Dams									
Duncan Creek Diversion Dam (modified)	TNF	A							
North Fork Long Canyon Diversion Dam (modified)	ENF	A				X			
South Fork Long Canyon Diversion Dam (modified)	ENF	A							
Large Reservoirs									
French Meadows Reservoir	TNF								
Hell Hole Reservoir	ENF								
Medium Reservoir									
Middle Fork Interbay	TNF/ENF								
Ralston Afterbay	TNF/ENF								
Small Diversion Pools									
Duncan Creek Diversion Pool (modified)	TNF								
North Fork Long Canyon Diversion Pool (modified)	ENF								
South Fork Long Canyon Diversion Pool (modified)	ENF								
Water Conveyance Systems									
Tunnels									
Duncan Creek - Middle Fork Tunnel	TNF								
French Meadows - Hell Hole Tunnel	TNF								
Hell Hole - Middle Fork Tunnel	ENF								
Middle Fork - Ralston Tunnel	ENF								
Ralston - Oxbow Tunnel	TNF								
Diversion Pipes and Drop Inlets									
North Fork Long Canyon Diversion Pipe and Drop Inlet	ENF	A							
South Fork Long Canyon Diversion Pipe and Drop Inlet	ENF	A							
Surge Shafts and Adits									
Brushy Canyon Adit	ENF	A				X			
Hell Hole - Middle Fork Tunnel Surge Shaft and Tank	ENF	A							
Middle Fork - Ralston Tunnel Surge Shaft and Tank	ENF	A				X			
Removable Sections and Portals									
Duncan Creek - Middle Fork Tunnel Portal	TNF	A							
French Meadows - Hell Hole Tunnel Removable Section	TNF	A							
Hell Hole - Middle Fork Tunnel Removable Section	ENF	A				X			
Middle Fork - Ralston Tunnel Removable Section	ENF	A							
North Fork Long Canyon Crossing Removable Section	ENF	A				X			

VIPMP Table 1. Vegetation and Pest Management Activities to be Implemented at Existing Project Facilities and Features and Project Recreation Facilities and Features.

Project Facility or Feature	Land Ownership	Vegetation Management				Pest Management			
		Trimming by Hand	Trimming w/Equipment	Herbicide Use	Fungicide Use	Noxious Weed Management[1]	Physical Rodent Control (snap traps)	Over-the-Counter Rodenticide Use	Rodenticide Use - Fumigants
Water Conveyance Systems (continued)									
Intakes and Gatehouses									
Duncan Creek - Middle Fork Tunnel Intake	TNF	A							
French Meadows - Hell Hole Tunnel Gatehouse	TNF	A							
French Meadows - Hell Hole Tunnel Intake	TNF	A							
Hell Hole - Middle Fork Tunnel Gatehouse	ENF	A							
Hell Hole - Middle Fork Tunnel Intake	ENF	A							
Middle Fork - Ralston Tunnel Intake and Gatehouse	ENF	A				X			
Ralston - Oxbow Tunnel Intake	TNF	A				X			
Penstocks and Valve Houses									
French Meadows Powerhouse Penstock and Butterfly Valve House	TNF	A		A					
Middle Fork Powerhouse Penstock and Butterfly Valve House	ENF	A		A		X			
Ralston Powerhouse Penstock and Butterfly Valve House	ENF	A		A					
Powerhouses, Switchyards, and Substations									
French Meadows Powerhouse and Switchyard	TNF	A		A		X	X	X	
Hell Hole Powerhouse	ENF	A				X	X	X	
Hell Hole Substation	ENF	A				X	X	X	
Middle Fork Powerhouse and Upper and Lower Switchyards	ENF	A		A		X	X	X	
Ralston Powerhouse and Switchyard	ENF	A		A		X	X	X	
Oxbow Powerhouse and Switchyard	TNF	A		A		X	X	X	
Gaging Stations and Weirs									
Stream Gages and Weirs									
Duncan Creek near French Meadows (USGS Gage No. 11427700) (interim)[2]	TNF	A							
Duncan Creek below Diversion Dam (USGS Gage No. 11427750)	TNF	A							
Middle Fork American River at French Meadows (USGS Gage No. 11427500)	TNF	A							
Middle Fork American River at French Meadows Dam (new)[3]	TNF					X			
Rubicon River at Hell Hole Dam Spillway (HHDS) (new)[3]	ENF								
Rubicon River below Hell Hole Dam (USGS Gage No. 11428800)	ENF	A							
Rubicon River at Hell Hole Dam	ENF	A							
North Fork Long Canyon Creek below Diversion Dam (USGS Gage No. 11433085) (interim)[2]	ENF	A				X			
North Fork Long Canyon Creek below Diversion Dam (NFLCC) (new)[3]	ENF	A				X			
South Fork Long Canyon Creek below Diversion Dam (USGS Gage No. 11433065) (interim)[2]	ENF	A							
South Fork Long Canyon Creek below Diversion Dam (SFLCC) (new)[3]	ENF	A							

VIPMP Table 1. Vegetation and Pest Management Activities to be Implemented at Existing Project Facilities and Features and Project Recreation Facilities and Features.

Project Facility or Feature	Land Ownership	Vegetation Management				Pest Management			
		Trimming by Hand	Trimming w/Equipment	Herbicide Use	Fungicide Use	Noxious Weed Management[1]	Physical Rodent Control (snap traps)	Over-the-Counter Rodenticide Use	Rodenticide Use - Fumigants
Gaging Stations and Weirs (continued)									
Stream Gages and Weirs (continued)									
Middle Fork American River below Interbay Dam (USGS Gage No. 11427770) (interim)[2]	ENF	A				X			
Middle Fork American River above Middle Fork Powerhouse (USGS Gage No. 11427760)	ENF	A				X			
Middle Fork American River below Interbay Dam (MFARIB) (new)[3]	TNF	A				X			
Middle Fork American River near Foresthill (USGS Gage No. 11433300)	TNF	A							
Middle Fork American River at Ralston Afterbay Dam (new)[3]	PCWA	A				X			
Rubicon River above Ralston Powerhouse (RRRP) (existing, added to MFP)[4]	ENF	A				X			
North Fork American River above American River Pump Station (NFARPS) (new)[3]	BOR	A				X			
Rubicon River above Ellicott Bridge (RREB) (existing, added to MFP)[4]	Private	A				X			
Diversion Gages									
Duncan Creek Diversion Tunnel (DCDT) (new)[3]	TNF								
North Fork Long Canyon Creek Diversion Tunnel (USGS Gage No. 11433080) (modified)	ENF					X			
South Fork Long Canyon Creek Diversion Tunnel (USGS Gage No. 11433060) (modified)	ENF								
Reservoir Gages									
French Meadows Reservoir (USGS Gage No. 11427400)	TNF								
French Meadows Reservoir Staff Gage	TNF					X			
Hell Hole Reservoir (USGS Gage No. 11428700)	ENF								
Hell Hole Reservoir Staff Gage	ENF								
Middle Fork Interbay Reservoir	ENF					X			
Ralston Afterbay Reservoir	TNF								
Powerhouse Gages									
French Meadows Powerhouse (USGS Gage No. 11427200)	ENF					X			
Middle Fork Powerhouse (USGS Gage No. 11428600)	ENF					X			
Ralston Powerhouse (USGS Gage No. 11427765)	TNF					X			
Oxbow Powerhouse (USGS Gage No. 11433212)	ENF					X			
Oxbow Powerhouse Penstock (OXBPP) (new)[3]	ENF					X			
Leakage Weirs									
French Meadows Dam Leakage Weirs Nos. 1-6	TNF	A							
Hell Hole Dam Leakage Weir	ENF	A				X			

VIPMP Table 1. Vegetation and Pest Management Activities to be Implemented at Existing Project Facilities and Features and Project Recreation Facilities and Features.

Project Facility or Feature	Land Ownership	Vegetation Management				Pest Management			
		Trimming by Hand	Trimming w/Equipment	Herbicide Use	Fungicide Use	Noxious Weed Management[1]	Physical Rodent Control (snap traps)	Over-the-Counter Rodenticide Use	Rodenticide Use - Fumigants
Project Communication Lines and Powerlines									
French Meadows Area									
French Meadows Dam Generator Building to French Meadows Dam Outlet Works Powerline	TNF	A				X			
French Meadows Dam Generator Building to French Meadows Dam Spillway Gates Powerline	TNF	A							
Hell Hole Area									
French Meadows Powerhouse to French Meadows Powerhouse Penstock and Butterfly Valve House Communication Line/Powerline	ENF	A		A					
French Meadows Powerhouse and Switchyard to Hell Hole - Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator's Cottages, and Hell Hole Powerhouse Communication Line/Powerline	ENF	A							
Dormitory and Cottages Water Supply Tank Powerline	ENF	A							
Hell Hole Powerhouse to Rubicon River Gage below Hell Hole Dam Communication Line/Powerline	ENF	A				X			
Hell Hole Dam Spillway Crest Gates Control Building Communication Line/Powerline (new)[3]	ENF	A							
Middle Fork Interbay Area									
Middle Fork Powerhouse to Middle Fork Powerhouse Butterfly Valve House Communication Line/Powerline	ENF	A		A					
Middle Fork Powerhouse Butterfly Valve House to Radio Repeater near Hell Hole - Middle Fork Tunnel Surge Tank (underground) Communication Line/Powerline	TNF	A				X			
Middle Fork Powerhouse to Middle Fork - Ralston Tunnel Intake and Gatehouse Communication Line/Powerline	ENF	A				X			
Middle Fork Powerhouse to Middle Fork American River Gage above Middle Fork Powerhouse Communication Line/Powerline	ENF	A				X			
Ralston - Oxbow Area									
Ralston - Oxbow Tunnel Intake to Ralston Powerhouse Communication Line	TNF	A				X			
Ralston Powerhouse to Ralston Powerhouse Butterfly Valve House Communication Line/Powerline	TNF/ENF	A		A		X			
Ralston Afterbay Dam Generator Building to Ralston - Oxbow Tunnel Intake Communication Line/Powerline	TNF	A				X			
Oxbow Powerhouse to Ralston Afterbay Dam Generator Building Communication Line/Powerline	TNF	A				X			
Photovoltaic Poles and Powerlines									
Photovoltaic Poles and Powerline to Duncan Creek Gage near French Meadows	TNF	A							
Photovoltaic Pole and Powerline at Duncan Creek Gage below Diversion Dam	TNF	A							

VIPMP Table 1. Vegetation and Pest Management Activities to be Implemented at Existing Project Facilities and Features and Project Recreation Facilities and Features.

Project Facility or Feature	Land Ownership	Vegetation Management				Pest Management			
		Trimming by Hand	Trimming w/Equipment	Herbicide Use	Fungicide Use	Noxious Weed Management[1]	Physical Rodent Control (snap traps)	Over-the-Counter Rodenticide Use	Rodenticide Use - Fumigants
Project Communication Lines and Powerlines (continued)									
Photovoltaic Poles and Powerlines (continued)									
Photovoltaic Pole and Powerline at Duncan Creek Gage at Diversion Tunnel (new)[3]	TNF	A				X			
Photovoltaic Pole and Powerline at Middle Fork American River Gage at French Meadows	TNF	A				X			
Photovoltaic Pole and Powerline at Middle Fork American River Gage above Middle Fork Powerhouse	ENF	A							
Photovoltaic Pole and Powerline at Middle Fork American River Gage below Interbay Dam (new)[3]	TNF	A				X			
Photovoltaic Pole and Powerline at North Fork Long Canyon Gage (USGS Gage No. 11433085) below Diversion Dam	ENF	A							
Photovoltaic Pole and Powerline at North Fork Long Canyon Creek Gage (NFLCC) below Diversion Dam (new)[3]	ENF	A				X			
Photovoltaic Pole and Powerline at South Fork Long Canyon Gage below Diversion Dam	ENF	A							
Photovoltaic Pole and Powerline at Rubicon River Gage above Ralston Powerhouse (existing, added to MFP)[5]	ENF	A							
Photovoltaic Pole and Powerline at Middle Fork American River Gage near Foresthill	TNF	A							
Photovoltaic Pole and Powerline at North Fork American River Gage above American River Pump Station (new)[3]	BOR	A				X			
Photovoltaic Pole and Powerline at Rubicon River Gage above Ellicott Bridge (existing, added to MFP)[5]	Private	A				X			
Microwave Reflectors and Radio Towers									
Passive Microwave Reflector Station above Middle Fork Interbay	TNF	I							
Radio Communications Tower near French Meadows - Hell Hole Tunnel Gatehouse	ENF	I							
Radio Communications Tower and Repeater near Hell Hole - Middle Fork Tunnel Surge Shaft and Tank	ENF	I							
Passive Microwave Reflector Station above Ralston Afterbay	ENF	I				X			
Disposal Areas									
Duncan Creek Diversion Sediment Disposal Area	TNF								
North Fork Long Canyon Crossing Sediment Disposal Area	ENF					X			
Middle Fork Interbay Sediment Disposal Area	TNF					X			
Ralston Ridge Sediment Disposal Area	ENF					X			
Sediment Augmentation Areas									
Middle Fork Interbay Augmentation Areas (new)[3]	TNF	A							
Junction Bar Augmentation Area (new)3	TNF	A				X			
Indian Bar Augmentation Area (existing, added to MFP)[5]	TNF	A				X			

VIPMP Table 1. Vegetation and Pest Management Activities to be Implemented at Existing Project Facilities and Features and Project Recreation Facilities and Features.

Project Facility or Feature	Land Ownership	Vegetation Management				Pest Management			
		Trimming by Hand	Trimming w/Equipment	Herbicide Use	Fungicide Use	Noxious Weed Management[1]	Physical Rodent Control (snap traps)	Over-the-Counter Rodenticide Use	Rodenticide Use - Fumigants
Ancillary Facilities									
French Meadows Dam Generator Building	TNF	A		A			X	X	
French Meadows Dam Staging Area	TNF			I		X			
Dormitory Facility	ENF	A		A			X	X	
Dormitory and Cottages Water Supply Tank	ENF	A		I			X	X	
Hell Hole Staging Areas	ENF			A					
Operator Cottages and Shop	ENF	A		A		X	X	X	
Hell Hole Dam Spillway Crest Gates Control Building (new)[3]	ENF	A					X	X	
Ralston Afterbay Dam Generator Building	TNF	A		A		X	X	X	
Storage Building at Middle Fork - Ralston Tunnel Surge Shaft and Tank	ENF	A		A		X			
Project Fences									
Slope Fences									
French Meadows Powerhouse Penstock Rock Fence	ENF								
French Meadows Powerhouse Slope Fence	ENF	I				X			
Long Canyon Crossing Slope Fence	ENF	I							
Middle Fork Powerhouse Upper Switchyard Slope Fence	ENF			I		X			
Middle Fork Interbay Dam Slope Fence	ENF								
Ralston Powerhouse Penstock and Butterfly Valve House Slope Fences	ENF			I		X			
Ralston Powerhouse Slope Fence	ENF			I		X			
Oxbow Powerhouse Slope Fence	TNF			I		X			
Public Safety Fences									
Dormitory Facility Barrier Fence	TNF								
Hell Hole Dam General Parking Area Barrier Fence	ENF					X			
North Fork Long Canyon Crossing Removable Section Barrier Fence	ENF					X			
Project Roads									
Duncan Creek Area									
Duncan Creek Diversion Intake Road	TNF	A	A			X			
Duncan Creek Diversion Dam Road	TNF	A	A						
Duncan Creek Diversion Pool Road	TNF	A	A						
French Meadows Area									
Duncan Creek - Middle Fork Tunnel Portal Road	TNF	A	A			X			
French Meadows - Hell Hole Tunnel Gatehouse Road	TNF	A	A	I					
French Meadows Dam Outlet Works and South Leakage Weir Road	TNF	A	A	A		X			
French Meadows Dam Staging Area and Spillway West Access Road	TNF	A	A			X			
French Meadows Spillway East Access Road	TNF	A	A			X			
French Meadows Dam North Leakage Weir Road	TNF	A	A			X			

VIPMP Table 1. Vegetation and Pest Management Activities to be Implemented at Existing Project Facilities and Features and Project Recreation Facilities and Features.

Project Facility or Feature	Land Ownership	Vegetation Management				Pest Management			
		Trimming by Hand	Trimming w/Equipment	Herbicide Use	Fungicide Use	Noxious Weed Management[1]	Physical Rodent Control (snap traps)	Over-the-Counter Rodenticide Use	Rodenticide Use - Fumigants
Project Roads (continued)									
French Meadows Area (continued)									
French Meadows Campground Water Supply Facility Access Road	TNF	A	A			X			
Hell Hole Area									
Hell Hole Dam and Powerhouse Road	ENF	A		A		X			
Rubicon River Gage below Hell Hole Dam Road	ENF	A	A			X			
Hell Hole Dam Leakage Weir Road	ENF	A	A			X			
Hell Hole Dam Spillway Northern Access Point Road	ENF	A	A			X			
French Meadows - Hell Hole Tunnel Portal Road	ENF	A	A						
French Meadows Powerhouse Road	ENF	A	A			X			
Hell Hole - Middle Fork Tunnel Gatehouse Road	ENF	A	A						
Dormitory Facility Road	ENF	A	A						
Operator Cottage and Shop Road	ENF	A	A						
Spur on North Side of Operator Cottages	ENF	A	A			X			
Spur on South Side of Operator Cottages	ENF	A	A			X			
Hell Hole Dam Spillway Discharge Channel Road Spur to Communication Line/Powerline	ENF	A	A						
Hell Hole Dam Spillway Discharge Channel Road	ENF	A	A						
Big Meadows Campground Water Supply Facility Access Road	ENF	A	A			X			
Hell Hole Dam Spillway Gates Road (new)[3]	ENF								
Long Canyon Area									
North Fork Long Canyon Diversion North Road	ENF	A	A						
North Fork Long Canyon Diversion South Road	ENF	A	A						
North Fork Long Canyon Diversion Drop Inlet Road	ENF	A	A						
South Fork Long Canyon Diversion and Drop Inlet Road	ENF	A	A						
South Fork Long Canyon Diversion and Drop Inlet Cutoff Road	ENF	A	A						
South Fork Long Canyon Diversion Drop Inlet Access Road	ENF	A	A						
North Fork Long Canyon Crossing Removable Section North Road	ENF	A	A			X			
North Fork Long Canyon Crossing Removable Section South Road	ENF	A	A			X			
Middle Meadows Group Campground Water Supply Facility Access Road	ENF	A	A			X			
Middle Fork Interbay Area									
Middle Fork Interbay Dam Road	ENF					X			
Middle Fork Interbay Dam to Powerhouse Road	ENF	A	A			X			
Middle Fork Powerhouse Butterfly Valve House Road	ENF	A	A						
Middle Fork Powerhouse Penstock and Butterfly Valve House Road	ENF	A	A	A		X			

VIPMP Table 1. Vegetation and Pest Management Activities to be Implemented at Existing Project Facilities and Features and Project Recreation Facilities and Features.

Project Facility or Feature	Land Ownership	Vegetation Management				Pest Management			
		Trimming by Hand	Trimming w/Equipment	Herbicide Use	Fungicide Use	Noxious Weed Management[1]	Physical Rodent Control (snap traps)	Over-the-Counter Rodenticide Use	Rodenticide Use - Fumigants
Project Roads (continued)									
Middle Fork Interbay Area (continued)									
Middle Fork Powerhouse Upper Switchyard Road	ENF	A	A			X			
Ralston - Oxbow Area									
Brushy Canyon Adit Road	ENF	A	A			X			
Ralston Powerhouse Butterfly Valve House Road	ENF	A	A	A		X			
Ralston Afterbay Dam Access Road	TNF	A	A			X			
Indian Bar Access Road	TNF	A	A			X			
Oxbow Powerhouse Road	TNF	A	A			X			
Ralston - Oxbow Tunnel Intake Road	TNF	A	A			X			
Ralston Afterbay Private Boat Ramp Road	TNF	A	A						
Ralston Afterbay Dam and Access Point Road	TNF	A	A			X			
Project Trails									
Duncan Creek Area									
Duncan Creek Diversion Dam North Trail	TNF	A							
Duncan Creek Diversion Dam South Trail	TNF	A							
Photovoltaic Poles and Powerline to Duncan Creek Gage near French Meadows Trail	TNF	A							
Duncan Creek Gage Trail	TNF	A							
Duncan Creek Gage below Diversion Dam Trail	TNF	A		I					
Long Canyon Area									
North Fork Long Canyon Creek Gage below Diversion Dam Trail (new)[3]	ENF	A				X			
South Fork Long Canyon Creek Gage below Diversion Dam Trail (new)[3]	ENF	A							
Middle Fork Interbay Area									
Middle Fork American River Gage above Middle Fork Powerhouse Trail	ENF	A				X			
Passive Microwave Reflector Station above Middle Fork Interbay Trail	TNF	A							
Middle Fork American River Gage below Interbay Dam Trail (new)[3]	TNF	A				X			
Middle Fork American River Gage below Interbay Dam (MFARIB)	TNF	A							
Ralston Afterbay Area									
Passive Microwave Reflector Station above Ralston Afterbay Trail	ENF	A				X			
Rubicon River Gage above Ralston Powerhouse Trail (existing, added to MFP)[5]	TNF	A				X			
North Fork American River Gage above American River Pump Station Trail (new)[3]	BOR	A				X			

VIPMP Table 1. Vegetation and Pest Management Activities to be Implemented at Existing Project Facilities and Features and Project Recreation Facilities and Features.

Project Facility or Feature	Land Ownership	Vegetation Management				Pest Management			
		Trimming by Hand	Trimming w/Equipment	Herbicide Use	Fungicide Use	Noxious Weed Management[1]	Physical Rodent Control (snap traps)	Over-the-Counter Rodenticide Use	Rodenticide Use - Fumigants
Project Recreation Facilities									
Duncan Area									
Duncan Creek Diversion Primitive Recreation Site (new)[3]	TNF	A							
French Meadows Area									
Ahart Campground (reduce, enhance)	TNF	A			I				
Coyote Group Campground (enhance)	TNF	A			I				
Poppy Campground (reduce, enhance)	TNF	A			I				
French Meadows Campground (reduce, enhance)	TNF	A			I				
Gates Group Campground (enhance)	TNF	A			I				
Lewis Campground (reduce, enhance)	TNF	A			I				
French Meadows Picnic Area (reduce, enhance)	TNF	A			I				
French Meadows Boat Ramp (enhance)	TNF	A			I	X			
French Meadows RV Dump Station (enhance)	TNF					X			
McGuire Group Campground (new)	TNF	A			I				
McGuire Boat Ramp and Associated Parking (enhance, consolidate)	TNF	A			I				
Poppy Trail (existing, added to MFP)[6]	TNF	A							
French Meadows Reservoir Trail (new)[3]	TNF	A							
Hell Hole Area									
Big Meadows Campground (enhance)	ENF	A			I	X			
Hell Hole Campground (enhance, potentially convert, potentially reduce)	ENF	A			I				
Hell Hole Vista (enhance)	ENF	A			I				
Hell Hole Boat Ramp (enhance)	ENF	A				X			
Hell Hole General Parking Area and Hell Hole Boat Ramp Parking Area (enhance)	ENF	A				X			
Ellicott Bridge Parking Area (new)[3]	ENF	A				X			
Hell Hole Reservoir Trail (existing, added to MFP)[6]	ENF	A				X			
Long Canyon Area									
Middle Meadows Group Campground	ENF	A			I	X			
Middle Fork Interbay Area									
Middle Fork Interbay Angler Access (new)[3]	TNF/ENF/ PCWA	A				X			
Ralston Afterbay Area									
Ralston Picnic Area (reduce, enhance)	TNF	A				X			
Ralston Afterbay Sediment Removal Access Point Boat Ramp (new)[3]	TNF	A				X			
Indian Bar Rafting Access (enhance)	ENF	A				X			
Middle Fork American River above Ralston Afterbay Trail (existing, added to MFP)[6]	TNF	A				X			

VIPMP Table 1. Vegetation and Pest Management Activities to be Implemented at Existing Project Facilities and Features and Project Recreation Facilities and Features.

Project Facility or Feature	Land Ownership	Vegetation Management				Pest Management			
		Trimming by Hand	Trimming w/Equipment	Herbicide Use	Fungicide Use	Noxious Weed Management[1]	Physical Rodent Control (snap traps)	Over-the-Counter Rodenticide Use	Rodenticide Use - Fumigants
Project Recreation Facility Water Supplies and Associated Maintenance Trails									
French Meadows North Shore Water Supply (Dolly Creek Water Supply) (replace)	TNF	I							
French Meadows South Shore Water Supply (French Meadows Campground Water Supply) (replace)	TNF	I							
Big Meadows Campground Water Supply	ENF	I							
Middle Meadows Group Campground Water Supply	ENF	I				X			

A = Activity occurs on an annual basis.

I = Activity occurs on an infrequent basis.

X = Activity occurs or ancillary facility is present.

[1]Indicates areas where manual and chemical treatment of target noxious weeds populations will be implemented. Manual and chemical treatments may be completed at other locations during the term of the license if new target noxious weeds populations are identified during inventory surveys.

[2]Existing gage to remain in place until infrastructure modification is complete.

[3]Facility or feature to be constructed under the Proposed Action.

[4]Existing gage or trail now required for Project operation and maintenance.

[5]Existing facility that has been added to the Project.

[6]Existing unimproved trail to be upgraded for public use.

VIPMP Table 2. Herbicides, Surfactants, Fungicides, and Rodenticides to be used at Select Project Facilities and Features and Project Recreation Facilities and Features.

Active Ingredient	Formulations	Concentration		Application Rate (per acre)	Total spray volume (gal/acre)	Expected AI (lb/acre)
		Amount of Active Ingredient (AI) and Acid Equivalent (AE)	Dilution Rate (per 100 gal)			
Herbicides						
Aminopyralid	Milestone, Milestone VM	3.9 lb/gal AI 2.0 lb/gal AE	Up to 43 oz	Up to 7.0 oz	16	0.11
Chlorsulfuron	Telar, Glean, Corsair	12 oz/lb AI[1]	Up to 14 oz	Up to 2.25 oz	16	0.01
Clopyralid	Transline	4.0 lb/gal AI 3.0 lb/gal AE	Up to 32 oz	Up to 10.6 oz	33	0.25
Glyphosate	Many formulations	5.5 lb/gal AI[2] 4.5 lb/gal AE[2]	Up to 320 oz	128 oz	40	5.4
Glyphosate (aquatic formulation)	Aquamaster or equivalent	5.4 lb/gal AI 4.0 lbs/gal AE	Up to 320 oz	128 oz	40	5.4
Triclopyr	Garlon 3A and 4, Pathfinder II, Remedy RTU, Renovate 3	6.0 lb/gal AI[3] 4.0 lb/gal AE[3]	192 oz	77 oz	40	2.4
Surfactants[4]						
Oil-based surfactants	Hasten, Syl-Tac	N/A	N/A	N/A	N/A	N/A
Fungicides[5]						
Boric acid	Borax or Sporax	N/A	N/A	N/A	N/A	N/A
Rodenticides						
Metal phosphide	Metal phosphide fumigants	N/A	N/A	N/A	N/A	N/A

[1]Telar and Glean labels list active ingredient concentration by weight
[2]Roundup
[3]Garlon 4
[4]Surfactants are agents that are mixed with other herbicides and therefore the buffer area for the herbicide that the surfactant is mixed with will apply.
[5]Fungicides will be applied directly to a cut tree stump using a cut-surface application.

VIPMP Table 3. ENF and TNF Priority Noxious Weeds.

Scientific Name	Common Name	TNF Priority Species[1]	ENF Priority Level[2]	Acres in the MFP (TNF and ENF)[3,4]
Acroptilon repens	Russian knapweed		1	—
Aegilops cylindrica	Jointed goatgrass		2	—
Aegilops triuncialis	Barbed goatgrass		2	—
Ailanthus altissima	Chinese tree of heaven		2	2.67
Arundo donax	Giant reed grass		1	—
Brachypodium distachyon	False brome		4	—
Brassica nigra	Black mustard		3	—
Bromus diandrus	Ripgut brome		4	97.21
Bromus madritensis ssp. rubens	Red brome		4	—
Bromus tectorum	Cheat grass	X	2	246.8
Cardaria spp.	Hoarycress (whitetop)		1	—
Carduus nutans	Musk thistle	X	1	—
Carduus pycnocephalus	Italian thistle		2	18.31
Carthamus lanatus	Woolly distaff thistle		1	—
Centaurea calcitrapa	Purple starthistle		1	—
Centaurea diffusa	Diffuse knapweed	X	1	—
Centaurea maculosa	Spotted knapweed	X	1	—
Centaurea melitensis	Tocalote	X	2	18.93
Centaurea pratensis	Meadow knapweed		1	—
Centaurea solstitialis	Yellow starthistle	X	2	6.65
Chenopodium botrys	Jerusalem-oak goosefoot		4	—
Chondrilla juncea	Rush skeletonweed	X	2	75.89
Cirsium arvense	Canada thistle	X	1	0.05
Cirsium vulgare	Bull thistle		3	103.78
Conium maculatum	Poison hemlock		4	—
Cortaderia jubata	Jubatagrass		4	—
Cortaderia selloana	Pampasgrass		4	—
Cynodon dactylon	Bermudagrass		4	—
Cynoglossum officinale	Houndstongue		4	—
Cynosurus echinatus	Hedgehog dogtailgrass		4	81.43
Cystisus scoparius	Scotch broom	X	2/4	—
Dipsacus fullonum	Common teasel		4	—
Dittrichia graveolens	Stinkwort		2/3	—
Egeria densa	Brazilian egeria		1	—

VIPMP Table 3. ENF and TNF Priority Noxious Weeds (continued).

Scientific Name	Common Name	TNF Priority Species[1]	ENF Priority Level[2]	Acres in the MFP (TNF and ENF)[3]
Euphorbia esula	Leafy spurge		1	—
Euphorbia oblongata	Oblong spurge	X	1	—
Festuca arundinaceae	Tall fescue		4	—
Foeniculum vulgare	Fennel		2	—
Genista monspessulana (outlying infestations)	French broom	X	2	—
Geranium dissectum	Cutleaf geranium		4	—
Halogeton glomeratus	Halogeton	X	—	—
Hedera helix, H. canariensis	English, Algerian Ivy		2	—
Hirschfeldia incana	Shortpod mustard		4	43.83
Holcus lanatus	Common velvet grass		4	—
Hordeum marinum, H. murinum	Mediterranean barley		4	—
Hydrilla verticillata	Hydrilla	X	—	—
Hypericum perforatum	Klamathweed	X	3	125.05
Hypochaeris radicata	Rough cat's-ear		4	—
Isatis tinctoria	Dyer's woad	X	1	—
Lathyrus latifolium	Perennial sweet pea		3	—
Lepidium latifolium	Tall whitetop (pepperweed)	X	1	8.90
Leucanthemum vulgare	Ox-eye daisy		3	—
Linaria genistifolia ssp. dalmatica	Dalmatian toadflax	X	1	—
Linaria vulgaris	Butter and eggs		1	—
Lolium multiflorum	Italian ryegrass		4	—
Lythrum salicaria	Purple loosestrife	X	1	—
Melilotus officinalis, M.albus	Yellow sweet clover, white sweet clover		3	57.88
Myriophllum spicatum	Eurasian water milfoil	X	—	—
Nicotiana glauca	Tree tobacco		2	—
Onopordum acanthium	Scotch thistle	X	1	—
Phalaris aquatica	Harding grass		4	—
Phragmites australis	Common reed		1	—
Polygonum cuspidatum	Japanese knotweed		2	—
Polygonum sachalinense	Sakhalin knotweed		2	—
Rubus discolor	Himalayan blackberry	X	3	32.13
Rumex acetosella	Red (sheep) sorrel		4	189.48

VIPMP Table 3. ENF and TNF Priority Noxious Weeds (continued).

Scientific Name	Common Name	TNF Priority Species[1]	ENF Priority Level[2]	Acres in the MFP (TNF and ENF)[3]
Sesbania punicea	Scarlet wisteria		1	—
Sparticum junceum (outlying infestations)	Spanish broom	X	2	—
Taeniatherum caput-medusae	Medusahead	X	2	21.18
Tamarix spp.	Salt cedar, tamarisk		1	—
Tanacetum vulgare	Tansy		3	—
Torilis arvensis	Spreading hedgeparsley		4	84.41
Trifolium hirtum	Rose clover		4	—
Ulex europaeus	Gorse	X	1	—
Verbascum thapsus	Woolly mullein	X	4	318.68
Vinca major	Periwinkle		3	—
Vulpia myuros	Rattail fescue		4	225.26

[1]TNF Noxious Weed list received from K. VanZuuk on March 4, 2010 (TNF Weed List and Current Management Direction.doc)

[2]ENF Noxious Weed list received from S. Durham dated January 27, 2010 (ENF Proposed Treatment Tables 012710.docx)

[3]Numbers represent acres of noxious weeds present both within the MFP FERC Project boundary, as well as extending outside the Project boundary based on noxious weed surveys completed in 2007 and 2008. Many of these noxious weed species co-occur with other noxious weed populations. Acreage numbers will be updated after completion of noxious weed inventory surveys to be implemented in the first year following license issuance.

VIPMP Table 4. MFP Target Noxious Weeds List.

Scientific Name	Common Name	TNF Priority Species[1]	ENF Priority Level[2]	Acres in the MFP[3]	Applicable Control Methods		
					Conduct Manual/ Chemical Treatment and Associated Monitoring	Implement Measures To Prevent Introduction Or Spread of Noxious Weeds	Conduct Noxious Weeds Training Programs
Ailanthus altissima	Chinese tree of heaven		2	2.67	X	X	X
Bromus diandrus	Ripgut brome		4	97.21		X	X
Bromus tectorum	Cheatgrass	X	2	246.8	X[4]	X	X
Carduus pycnocephalus	Italian thistle		2	18.31	X	X	X
Centaurea melitensis	Tocalote	X	2	18.93	X	X	X
Centaurea solstitialis	Yellow starthistle	X	2	6.65	X	X	X
Chondrilla juncea	Rush skeletonweed	X	2	75.89	X	X	X
Cirsium arvense	Canada thistle	X	1	0.05	X	X	X
Cirsium vulgare	Bull thistle		3	103.78		X	X
Cynosurus echinatus	Hedgehog dogtailgrass		4	81.43		X	X
Hirschfeldia incana	Shortpod mustard		4	43.83		X	X
Hypericum perforatum	Klamathweed	X	3	125.05	X[4]	X	X
Lepidium latifolium	Tall whitetop (pepperweed)	X	1	8.90	X	X	X
Melilotus officinalis, M.albus	Yellow sweet clover, white sweet clover		3	57.88	X	X	X
Rubus discolor	Himalayan blackberry	X	3	32.13	X	X	X
Rumex acetosella	Red (sheep) sorrel		4	189.48		X	X
Taeniatherum caput-medusae	Medusahead	X	2	21.18	X	X	X
Torilis arvensis	Spreading hedgeparsley		4	84.41		X	X
Verbascum thapsus	Woolly mullein	X	4	318.68		X	X
Vulpia myuros	Rattail fescue		4	225.26		X	X

[1]Source: TNF Noxious Weed List received from K. VanZuuk on March 4, 2010 (TNF Weed List and Current Management Direction.doc).
[2]Source: ENF Noxious Weed List received from S. Durham dated January 27, 2010 (ENF Proposed Treatment Tables 012710.docx).
[3]Numbers do not include facilities or features added to the Project after completion of technical studies conducted for the relicensing in 2007 and 2008. Acreage numbers will be updated after completion of noxious weed inventory surveys to be implemented in the first year following license issuance.
[3]Numbers represent acres of noxious weeds present both within the MFP FERC Project boundary, as well as extending outside the Project boundary based on noxious weed surveys completed in 2007 and 2008. Many of these noxious weed species co-occur with other noxious weed populations. Acreage numbers will be updated after completion of noxious weed inventory surveys to be implemented in the first year following license issuance.
[4]This species will be treated only where it co-occurs with other noxious weeds populations selected for treatment.

VIPMP Table 5. Manual and Chemical Treatment of MFP Target Noxious Weeds.

MFP Target Noxious Weeds		Chemical Treatments					Manual Treatments and/or Revegetation	Timing for Implementation	
		Aminopyralid	Chlorsulfuron	Clopyralid	Glyphosate[1]	Triclopyr		Late Spring/ Early Summer	Fall
1	Canada thistle *Cirsium arvense*	X		X	X	X	Trimming of seedheads by hand (string trimmer) Revegetation, if appropriate	X	
2	Chinese tree of heaven *Ailanthus altissima*				X	X	Hand pull seedlings Revegetation, if appropriate	X	X
3	Yellow starthistle *Centaurea solstitialis*	X		X	X		Trimming of seedheads by hand (string trimmer) Revegetation, if appropriate	X	
4	Tall whitetop *Lepidium latifolium*		X		X		Trimming by hand (string trimmer) (bolting to flower bud stage) Revegetation, if appropriate	X	
5	Italian thistle *Carduus pycnocephalus*	X		X			Hand pull seedlings (for small infestations) Revegetation, if appropriate	X	
6	Tocalote (Malta starthistle) *Centaurea melitensis*	X					Trimming of seedheads by hand Revegetation, if appropriate	X	
7	Medusahead *Taeniatherum caput-medusae*				X		Trimming by hand (string trimmer) Revegetation, if appropriate	X	
8	Himalayan blackberry *Rubus discolor*				X	X	Trimming by hand (string trimmer) (flowering or berry stage) Revegetation, if appropriate	X	X
9	Yellow sweet clover/white sweet clover *Melilotus officinalis/M.albus*			X	X	X	Trimming by hand (string trimmer) Revegetation, if appropriate	X	
10	Rush skeletonweed *Chondrilla juncea*	X			X		Trimming by hand (string trimmer) Revegetation, if appropriate	X	

[1]Aquatic formulations of glyphosate will be used in areas adjacent to aquatic and riparian areas.

VIPMP Table 6. Avoidance and Protection Measures for Environmental and Cultural Resources and Human Health and Safety.

Avoidance and Protection Measures	Environmental and Cultural Resources or Issues										Human Health and Safety
	Water Quality	Erosion	Groundwater	Riparian Conservation Areas/ Critical Aquatic Refuges	Special-Status Aquatic Species	Soils	Special-Status Plants	Special-Status Wildlife	Protected Activity Centers	Traditional Cultural Properties	
USDA-FS Water Quality Best Management Practices (BMPs)											
USDA-FS BMP 5-2: To reduce gully and sheet erosion and associated sedimentation mechanical equipment will be restricted to slopes generally less than 35 percent. Within Riparian Conservation Areas, mechanical treatments would be minimized on moderate slopes (15-30 %) and restricted to slopes less than 30%.	X	X	X	X	X	X					
USDA-FS BMP 5-3: To limit turbidity and sediment production in wetlands and meadows mechanical equipment would not be allowed within 50 feet of meadows, springs, and wetlands.	X	X	X	X	X		X	X			
USDA-FS BMP 5-8: Pesticides and surfactants will be applied according to label directions, prescriptions, and applicable legal requirements to avoid water contamination. Pesticide label directions for application rates and methods, mixing, and container disposal will be followed. Application of pesticides and surfactants will be consistent with applicable laws and regulations governing the use of pesticides, as required by the U.S. Environmental Protection Agency, the California Department of Pesticide Regulation, CalEPA regulations and safety regulations, and Forest Service policy.	X	X	X	X	X	X	X	X	X		X
USDA-FS BMP 5-9: The Licensee will conduct water quality monitoring to determine whether pesticides have been applied safely, restricted to intended target areas, and have not resulted in unexpected non-target species effects. All spray equipment would be calibrated to insure accuracy of delivered amounts of pesticide. Periodically during application, equipment would be rechecked for calibration. The Water Quality Monitoring Plan is included as **Appendix H** of this VIPMP.	X	X	X	X	X	X	X	X	X		X

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	Water Quality	Erosion	Groundwater	Riparian Conservation Areas/ Critical Aquatic Refuges	Special-Status Aquatic Species	Soils	Special-Status Plants	Special-Status Wildlife	Protected Activity Centers	Traditional Cultural Properties	
USDA-FS Water Quality Best Management Practices (BMPs) (continued)											
USDA-FS BMP 5-10: The Licensee will update the existing contingency plan to include actions to be taken to prevent contamination of water resulting from accidental spills of pesticides, fuels, or other toxic materials. The plan will include notification lists, persons responsible for cleanup, requirements for notification, and guidelines for spill containments. A copy will be retained onsite. It will be reviewed by all personnel and contractors involved in the project. Any herbicide application contract will contain clauses that will minimize the chances of herbicide spills (such as designating routes of travel and mixing sites, minimizing herbicide mix in tanks while traveling between units, requiring a separate water truck from the batch truck) and, if a spill occurs, outlining responses required by the contractor. Spill kits will be required in all PCWA and contractor vehicles on site and at locations where pesticides are stored. These actions would reduce the risk of contamination of water by accidental spills. To prevent pollutants from being discharged into streamcourses, all mechanized equipment will be refueled outside of Riparian Conservation Areas, if possible.	X	X	X	X	X	X	X	X	X		X
USDA-FS BMP 5-11: Cleaning and disposal of pesticide and surfactant containers will be done in accordance with federal, state, and local laws, regulations, and directives. All containers will be triple rinsed, with clean water, at an approved site. Contaminated water (rinsate) would be disposed of by placing it in the batch tank for application. Used containers would be punctured on the top and bottom to render them unusable after rinsing. Disposal of containers would be at legal dumpsites. Equipment would not be cleaned and personnel would not bathe in a manner that allows contaminated water to enter any body of water.	X	X	X	X	X	X	X	X	X		X
USDA-FS BMP 5-13: Pesticide applications shall not occur when weather parameters exceed label requirements, during precipitation, or when there is a forecast of greater than a 50% chance of precipitation in the next 48 hours. Pesticide use will be limited to days when measured wind conditions are less than 5 mph and shall be applied in a downwind direction from nesting tree(s).	X	X	X	X	X	X	X	X	X		X
USDA-FS BMP 5-12: To minimize the risk of pesticide inadvertently entering waters, or unintentionally altering the riparian area of the wetland, untreated streamside buffers (**Table 9)** will be employed. Buffer strip boundaries will be flagged or otherwise designated on the ground. PCWA personnel or contractors will be informed of the location and extent of each of the strips prior to treatment. Spray application personnel would not be allowed into these buffers.	X	X	X	X	X	X	X	X	X		

VIPMP Table 6. Avoidance and Protection Measures for Environmental and Cultural Resources and Human Health and Safety.

Avoidance and Protection Measures	Environmental and Cultural Resources or Issues										Human Health and Safety
	Water Quality	Erosion	Groundwater	Riparian Conservation Areas/ Critical Aquatic Refuges	Special-Status Aquatic Species	Soils	Special-Status Plants	Special-Status Wildlife	Protected Activity Centers	Traditional Cultural Properties	
Pesticide (Herbicide, Fungicide, and Rodenticide) Measures											
All pesticide treatments will be supervised by a licensed Pest Control Advisor (PCA). Coordination with the Placer County Agricultural Commissioner's Office will occur, and all required licenses and permits would be obtained prior to any pesticide application. Pesticide use reports will be submitted to the Commissioner's Office on a monthly basis.	X	X	X	X	X	X	X	X	X		X
All areas that are accessible to the general public (e.g., recreation areas or noxious weed treatment areas that extend beyond MFP facility boundaries) that are being treated with pesticides will be identified with a clearly visible sign along likely access points. The sign will indicate the specific pesticide used, the treatment date, and the name and phone number of a contact person. Signs will remain posted for 48 hours following pesticide application.											X
Fungicide use will be restricted to Project recreation facilities, and will be applied only to tree stumps using a cut-surface application and follow the stream buffer restrictions in Table 7.	X	X	X	X	X	X	X	X	X		
A 10-foot buffer will be maintained around reservoirs or streams when applying rodenticides (i.e., fumigants) on Hell Hole and French Meadows dams.	X	X	X	X	X						
Rodenticide applications on earthen dams will administered as described in Section 3.2.2, and will be applied only within rodent burrows and/or in bait stations.											
Riparian Measures											
Riparian vegetation that may become established at the sediment augmentation areas will annually be removed to allow for mobilization of sediments. Removal will occur between August and March. This would include removal of:	X		X	X	X	X	X	X	X		X
• No more than 0.34 acre annually at Junction Bar and 0.53 acre annually at Indian Bar to prevent future establishment of riparian vegetation; and • Approximately 0.04 acre periodically at Junction Bar (0.01 acre), Indian Bar (0.01 acre), and Willow Bar (0.02 acre) for the placement of the temporary bridge necessary to provide access to Junction Bar during sediment augmentation activities.				X	X		X	X			
One-time removal of riparian vegetation will be conducted as necessary for modification/construction activities including 0.01 acres at South Fork Long Canyon Diversion Pool, 0.03 acres at Duncan Creek Diversion Pool, and 0.24 acres at the Hell Hole Dam Outlet Works. Removal will occur between August and March.				X	X		X	X			

VIPMP Table 6. Avoidance and Protection Measures for Environmental and Cultural Resources and Human Health and Safety.

Avoidance and Protection Measures	Environmental and Cultural Resources or Issues										Human Health and Safety
	Water Quality	Erosion	Groundwater	Riparian Conservation Areas/ Critical Aquatic Refuges	Special-Status Aquatic Species	Soils	Special-Status Plants	Special-Status Wildlife	Protected Activity Centers	Traditional Cultural Properties	
Riparian Measures (continued)											
Riparian vegetation at all other Project facilities, roads, trails, and recreation facilities will not be destroyed or removed. If it is determined that riparian vegetation must be removed, the Licensee will consult with USDA-FS and CDFG.				X	X		X	X			
The Licensee will implement measures to prevent the introduction or spread of noxious weeds during implementation of all routine vegetation and pest management, sediment management, road and trail maintenance, Project recreation facility maintenance activities, and ground disturbing activities.				X	X		X	X	X		
Noxious Weed Prevention Measures											
Special-status Plant Measures											
If a new special-status plant species is detected during the term of the license, the Licensee will consult with USDA-FS, USFWS, and CDFG, as appropriate, to determine a site-specific protective buffer around the population considering the vegetation management activity, special-status plant species, location of the population, topography of the site, and health and safety of field personnel.						X			X		
Stebbins' Phacelia Measures											
The Licensee will implement the following measures (except at locations where site-specific measures have been developed [see below]) to protect Stebbins' phacelia (PHST) populations during vegetation and noxious weed management: • No manual target noxious weed treatments (i.e., trimming by hand or with equipment) will be conducted within 50 feet of any known PHST population. • No herbicides will be used within 100 feet of any known PHST population or otherwise will comply with Sensitive plant buffers in Table 7 or as agreed in annual consultation. Vegetation management and target noxious weed treatments will be implemented as soon as practical following snow melt near PHST populations.								X			

VIPMP Table 6. Avoidance and Protection Measures for Environmental and Cultural Resources and Human Health and Safety.

Avoidance and Protection Measures	Environmental and Cultural Resources or Issues										Human Health and Safety
	Water Quality	Erosion	Groundwater	Riparian Conservation Areas/ Critical Aquatic Refuges	Special-Status Aquatic Species	Soils	Special-Status Plants	Special-Status Wildlife	Protected Activity Centers	Traditional Cultural Properties	
Stebbins' Phacelia Measures (continued)											
Site-Specific Measures[1]											
• **Brushy Canyon Adit Road:** Vegetation trimming by hand and with equipment and herbicide use within 100 feet of PHST populations BC01 and BC02 will be restricted to the gravel road and adjacent shoulders**.**								X			
• **East End of Hell Hole Dam:** Vegetation trimming by hand and herbicide use within 100 feet of PHST population HH 52 will be restricted to the graveled surface of Hell Hole Dam.								X			
• **Hell Hole Dam Spillway Discharge Channel Road:** Vegetation trimming by hand and with equipment within 50 feet of PHST populations HH01–HH06 will be implemented as soon as practical following snow melt and will be restricted to the gravel road and adjacent shoulders.								X			
• **Hell Hole General Parking Area:** Vegetation trimming by hand within 50 feet of PHST population HH07 will be restricted to developed parking area and adjacent shoulder.								X			
• **Hell Hole–Middle Fork Tunnel Gatehouse:** Vegetation trimming by hand within 50 feet of PHST population HH08 will be restricted to the developed area around the gatehouse.								X			
• **French Meadows Powerhouse and Switchyard to Hell Hole-Middle Fork Tunnel Gatehouse, Dormitory Facility, Operator Cottages and Hell Hole Powerhouse Communication Line/Powerline:** Vegetation trimming by hand under the powerline within 50 feet of PHST population HH08 will be limited to shrubs and trees.								X			
• **Hell Hole Campground:** o Vegetation trimming by hand within 50 feet of PHST population HH09 will be restricted to the developed campground. o Fungicide will only be applied to tree stumps within the campground using a cut-surface application.							X				
• **French Meadows Powerhouse Road:** Vegetation trimming by hand and with equipment within 50 feet of PHST populations HH10, HH15, and HH19 will be implemented as soon as practical following snow melt and will be restricted to the gravel road and adjacent shoulders.							X				

VIPMP Table 6. Avoidance and Protection Measures for Environmental and Cultural Resources and Human Health and Safety.

Avoidance and Protection Measures	Environmental and Cultural Resources or Issues										Human Health and Safety
	Water Quality	Erosion	Groundwater	Riparian Conservation Areas/ Critical Aquatic Refuges	Special-Status Aquatic Species	Soils	Special-Status Plants	Special-Status Wildlife	Protected Activity Centers	Traditional Cultural Properties	
Stebbins' Phacelia Measures (continued)											
• **Hell Hole Vista:** o Vegetation trimming by hand and with equipment will be restricted to the developed trail, overlook, and parking lot. o Fungicide will only be applied to tree stumps using a cut-surface application and using the stream buffers in Table 7.							X				
• **French Meadows–Hell Hole Tunnel Portal Road:** o Vegetation trimming by hand on the upslope side of the road within 50 feet of PHST populations HH14, HH17, and HH18 will be restricted to shrubs and trees. o Vegetation trimming with equipment within 50 feet of PHST populations HH14, HH17, and HH18 will be restricted to the downslope edge of the road.							X				
• **Hell Hole Reservoir Trail:** o Vegetation trimming by hand and with equipment will be restricted to the developed trail. o Fungicide will only be applied to tree stumps using a cut-surface application and using the stream buffers in Table 7.											
Raptor Measures											
If vegetation trimming or pesticide use occurs within a 500-foot buffer area around a raptor nest, northern goshawk PAC, or California spotted owl PAC during the nesting season:								X	X		
• The Licensee will locate staging areas outside of the buffer area.								X	X		
• Vegetation trimming will be allowed within the buffer area during the nesting season provided that these activities, once initiated, will continue without stopping until maintenance personnel have left the buffer area.								X	X		
• Vegetation trimming will not be conducted on vegetation that supports a nest. If trimming is required on vegetation that supports a nest, the Licensee will consult with the appropriate state and federal agencies (e.g., USFWS, USDA-FS, and/or CDFG).								X	X		
• Pesticides will be applied in a downwind direction from the nesting tree(s).								X	X		

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Avoidance and Protection Measures	Environmental and Cultural Resources or Issues										Human Health and Safety
	Water Quality	Erosion	Groundwater	Riparian Conservation Areas/ Critical Aquatic Refuges	Special-Status Aquatic Species	Soils	Special-Status Plants	Special-Status Wildlife	Protected Activity Centers	Traditional Cultural Properties	
Aquatic Amphibian Measures											
Pesticides will not be applied within 500 feet of known occupied sites for the California red-legged frog, Cascades frog, Yosemite toad, foothill yellow-legged frog, mountain yellow-legged frog, and northern leopard frog.	X		X	X	X						
Employee Training Program											
PCWA will develop and annually implement an Employee Training Program (ETP) to educate PCWA personnel and contractors (as appropriate) about special-status biological resources in the vicinity of the MFP. The ETP will include the following: • Photographs, and habitat, and life history information for special-status plant and wildlife species that are known to occur or may potentially occur in the vicinity of the MFP; • Measures to be implemented to protect special-status plant and animal species and their habitats during routine Project maintenance activities; and Reporting procedures for discovery of raptor or other bird nests in the vicinity of the MFP.					X		X	X	X		
Cultural Resource Measures											
PCWA will conduct an annual consultation meeting with the USDA-FS to identify vegetation and pest management activities for the upcoming year, including the specific areas to be treated. After identifying the specific areas to be treated, PCWA will implement the following measures to manage Project activities at potential Traditional Gathering Areas: • PCWA will notify the Native American Tribes within two weeks after completion on the annual consultation meeting with USDA-FS to identify areas proposed for vegetation and integrated pest management (including vegetation removal and application of pesticides, herbicides or rodenticides). The notification will be provided in writing and will include activity and location-specific information. A copy of the notification will be provided to the USDA-FS. The purpose of this notification is to allow the Native American Tribes to contact PCWA if the Project activities could potentially impact a previously unidentified Traditional Gathering Area. If a Traditional Gathering Area is identified through this process, PCWA will consult with the USDA-FS and Native American Tribes to document the location of the gathering area and to identify additional measures to manage Project activities at that location.										X	

VIPMP Table 6. Avoidance and Protection Measures for Environmental and Cultural Resources and Human Health and Safety.

Avoidance and Protection Measures	Environmental and Cultural Resources or Issues										Human Health and Safety
	Water Quality	Erosion	Groundwater	Riparian Conservation Areas/ Critical Aquatic Refuges	Special-Status Aquatic Species	Soils	Special-Status Plants	Special-Status Wildlife	Protected Activity Centers	Traditional Cultural Properties	
Cultural Resource Measures (continued)											
• In addition, all areas that are being treated with pesticides, herbicides or rodenticides will be identified with clearly visible signs along likely access points. The signs will indicate the type of treatment, treatment date, and the name and phone number of a contact person. The signs will remain posted for three weeks following application of any chemicals.											
PCWA will consult with the TNF prior to removing hazardous trees along Middle Fork Interbay Road.										X	

[1]Site-specific measures have been developed and approved in consultation with resource agencies, considering the vegetation management activity, species, and location of the population; the topography of the site; and health and safety of field personnel. Site-specific protective buffers will be evaluated based on herbicide proposed for use and other site-specific conditions.

VIPMP Table 7. Streamside and Sensitive Plant Protective Buffers for Pesticide Applications.

Active Ingredient w/ Maximum lbs AI/acre	Application Method[1]	Buffer (feet)[7]				
		Perennial or Seasonal Streams and Ditches with Water	Dry Aquatic Features	Special Aquatic Features[2]	Reservoirs	Sensitive Plants[3]
Herbicides						
Aminopyralid 0.11	Broadcast spray	100	25	300	50	500
	Directed foliar spray	25	25	100	25	200
	Wiping	10-15	10-15	10-15	10-15	25
Chlorsulfuron[4] 0.01	Directed foliar spray	100	25	100	75	500[6]
	Wiping	10-15	10-15	10-15	10-15	25
Clopyralid 0.25	Broadcast spray	100	25	300	100	500
	Directed foliar spray	50	25	50	50	100
	Wiping	10-15	10-15	10-15	10-15	25
Glyphosate 5.4	Broadcast spray	10-50	0	10-50	10-50	50
	Directed foliar spray or drizzle	10-25	0	10-25	10-25	25
	Wiping or cut stump	10-15	0	10-15	10-15	25
Glyphosate – (Aquatic Formulation)	Broadcast spray	10-50	0	10-50	10-50	50
	Directed foliar spray or drizzle	10-25	0	10-25	10-25	25
	Wiping or cut stump	5-15	0	5-25	5-15	25
Triclopyr 2.4	Directed foliar spray	75	25	100	75	200
	Wiping or cut stump	10-15	10-15	10-15	10-15	25
Surfactants						
Oil-based surfactants		same as herbicide	same as herbicide	same as herbicide	same as herbicide	same as herbicide
Fungicides						
Boric acid		15	0	15	15	25[5]
Rodenticides						
Metal phosphide		10	10	10	10	

[1]Broadcast spray and directed spray based on backpack sprayers with no boom.

[2]Meadows, seeps, fens, ponds, springs, and seasonal wetlands. Site-specific measures may be developed with resource agencies, considering the location of the population in relation to the special aquatic site, the chemical and application method to be used, the topography of the site, and the health and safety of field personnel.

[3]As measured from exterior edge of sensitive plant occurrence.; herbicide restriction zones may be modified if approved in annual consultation with USDA-FS (including botanist) and based on adjustments in treatment.

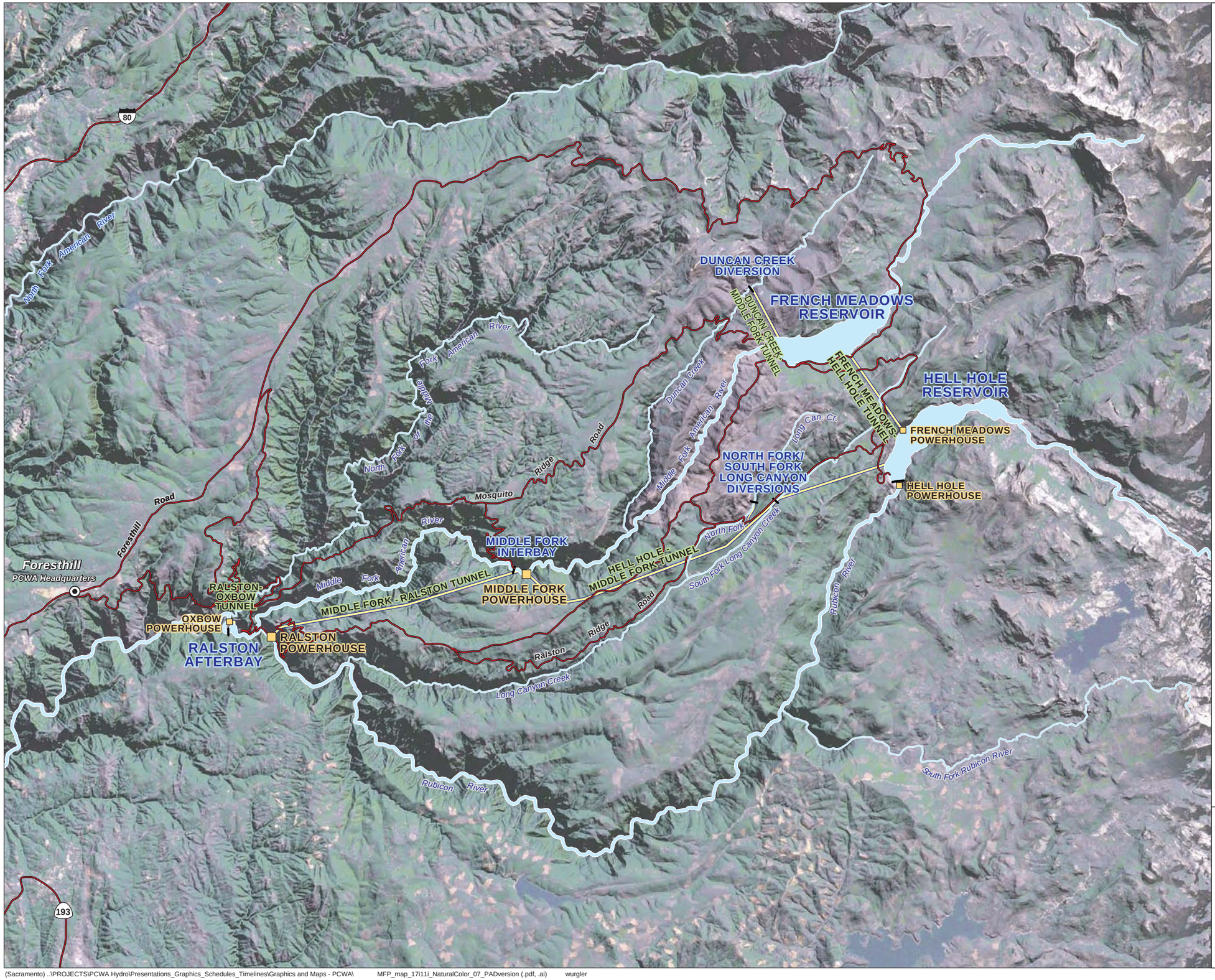
[4]Chlorsulfuron should be used only when no other method is effective.

[5]Boric acid buffer applies to Sensitive fungi.

[6]Requires stringent design criteria that must be approved in annual consultation with USDA-FS (including botanist).

[7]Where a range of buffers is provided, the widest buffer will be applied unless USDA-FS determines, during annual consultation based on the proposed site-specific treatments, that a lesser buffer within the range is appropriate. Additional monitoring may be required if a lesser buffer is implemented to ensure compliance with BMPs.

MAPS



Middle Fork Project Facts and Figures

PROJECT SUMMARY

Project Completed 1967	
Total Energy Production Capacity:	223.7 MW
Average Annual Energy Production:	1,039,078 MWh
Total Gross Water Storage:	345,560 acre-feet (af)
Earth and Rockfill Dams:	11,900,000 cubic yards
Concrete Dams and Diversions:	94,000 cubic yards
Tunnels and Penstocks:	23.2 miles

RESERVOIRS AND DIVERSIONS	Elevation	Storage Capacity
Duncan Creek Diversion	5,265'	20 af
French Meadows Reservoir	5,244.5'	134,993 af
Hell Hole Reservoir	4,630'	207,590 af
North Fork Long Canyon Diversion	4,716'	0.39 af
South Fork Long Canyon Diversion	4,640'	0.83 af
Middle Fork Interbay	2,529'	175 af
Ralston Afterbay	1,179'	2,782 af

POWERHOUSES		Production Capacity
French Meadows Powerhouse	4,630'	15.3 MW
Hell Hole Powerhouse	4,240'	0.73 MW
Middle Fork Powerhouse	2,529'	122.4 MW
Ralston Powerhouse	1,175'	79.2 MW
Oxbow Powerhouse	1,089'	6.1 MW

TUNNELS		Discharge Capacity
Duncan Creek-Middle Fork Tunnel	-	400 cfs
French Meadows-Hell Hole Tunnel	-	400 cfs
Hell Hole-Middle Fork Tunnel	-	920 cfs
Middle Fork-Ralston Tunnel	-	836 cfs
Ralston-Oxbow Tunnel	-	1,088 cfs

PCWA

Placer County Water Agency
Middle Fork American River Project

VIPMP Map 1

Middle Fork Project and Vicinity

N W E S

0 1 2
Miles

Date: 3/25/11

CONFIDENTIAL

MAPS

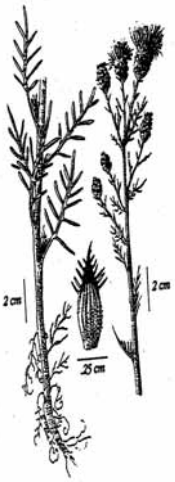
"VIPMP Maps 2a–2e: Location of Stebbins' Phacelia and Vegetation Management Work Areas"

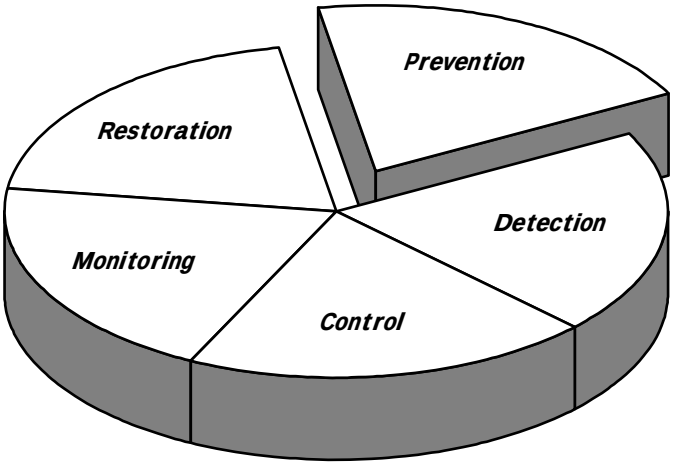
(from Vegetation and Integrated Pest Management Plan)

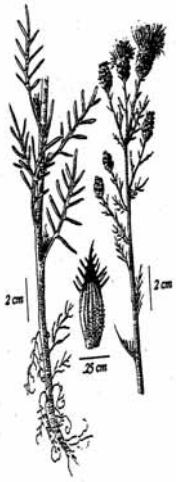
Maps 2a-2e have been removed from this document because they contain the location(s) of special-status biological resources and are considered "confidential" information. Confidential special-status biological resources information is located in Volume 4 which may not be made available to the public pursuant to the Federal Energy Regulatory Commission's (FERC's) regulated contained in 36 CFR 385.1112. This information is not maintained in FERC's Public Reference Room or on the Commission's electronic library except as an indexed item.

ATTACHMENT A

USDA-FS Guide to Noxious Weed Prevention Practices







USDA - FOREST SERVICE

Guide *to Noxious Weed Prevention Practices*

INDEX

USDA-Forest Service

GUIDE TO NOXIOUS WEED PREVENTION PRACTICES

Introduction

Preventing the introduction and spread of noxious weeds is one objective of Integrated Weed Management Programs on National Forest System lands throughout the United States. This Guide to Noxious Weed Prevention Practices (Guide) provides a comprehensive directory of weed prevention practices for use in Forest Service planning and wildland resource management activities and operations. This Guide will help National Forest and Grassland managers and cooperators identify weed prevention practices that mitigate identified risks of weed introduction and spread for a project or program.

This Guide uses the term "*weed*" to include all plants defined as "*noxious weeds*" by Forest Service policy:

> **". . .plants designated as noxious weeds by the Secretary of Agriculture or by the responsible State official. Noxious weeds generally possess one or more of the following characteristics: aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or disease, and being native or new to or not common to the United States or parts thereof."** (FSM 2080.5)

For National Forests and Grasslands that use a State-defined noxious weed list, the listed weed species are the priority for implementing weed prevention practices in cooperation with neighbors and partners. National forests and grasslands that do not have a State-defined noxious weed list need to determine local weed prevention priorities using weed lists created by other State or local organizations. At line officer's discretion, the practices described in this Guide may also be applied to non-native invasive plants that are not defined as "noxious".

Supporting Direction

This Guide to Noxious Weed Prevention Practices supports implementation of the February 3, 1999 Executive Order on Invasive Species. Federal agencies are expected to follow the direction in the Executive Order.

Development of weed prevention practices is supported by Forest Service noxious weed policy and strategy. Forest Service policy identifies prevention of the introduction and establishment of noxious weed infestations as an agency objective. This policy directs the Forest Service to: (1) determine the factors that favor establishment and spread of noxious weeds, (2) analyze weed risks in resource management projects, and (3) design management practices to reduce these risks. The Forest Service Noxious Weed Strategy identifies development of practices for prevention and mitigation during ground-disturbing activities as a long-term emphasis item. The February 1999 Executive Order on Invasive Species requires Federal agencies to use relevant programs and authorities to prevent the introduction of invasive species and not authorize or carry out actions that are likely to cause the introduction or spread of invasive species unless the agency has determined, and made public, documentation that shows that the benefits of such actions clearly outweigh the potential harm, and all feasible and prudent measures to minimize risk of harm will

need to be taken in conjunction with the actions.

Using This Guide

All resource management projects need to analyze weed risks in the planning stage. Risk includes identifying the likelihood of weeds spreading to the project area and determining the consequence of weed establishment in the project area. Resource programs undertaking maintenance operations need to analyze weed risks when preparing operating plans. A finding of risk is the basis for identifying the appropriate weed prevention practices from the Guide, which are likely to be effective in a particular project situation.

The Guide to Noxious Weed Prevention Practices provides a toolbox of ideas for use in mitigating identified weed risks in resource management operations. The Guide adds no new requirements or regulations.

In 2001 two weed prevention practices are required by Forest Service policy:

1. **For forested vegetation management operations, use equipment cleaning contract provisions WO-C/CT 6.36 (see Appendix 1)**

2. **Post and enforce weed-free feed orders, where they exist. (FSM 2081.03).**

All other weed prevention practices in this Guide are optional for use based upon an analysis of weed risks. This list of practices, if applied, is considered to be good overall direction, however, not all of these practices can be implemented in every project.

When considering the use of a weed prevention practice for a specific project or resource program, evaluate the efficacy of the weed prevention practice to meet the goal, its feasibility to implement in the specific situation, and its cost-effectiveness. A determination of cost-effectiveness may consider the probability and cost of weed control if a weed prevention practice is not used and the relative contribution of the project or activity to the overall weed risk at the site.

The Guide identifies weed prevention practices that can be applied to specific site-disturbing projects and that may also be applicable for maintenance activities. These weed prevention practices are listed in the first section: "*General Weed Prevention Practices for Site-disturbing Projects and Maintenance Activities*." The remaining sections list weed prevention practices that are more uniquely applicable to particular resource management programs, listed by type of resource activity. The intent of this Guide is for managers to first identify and apply the General Weed Prevention practices and then supplement those practices with the appropriate resource activity specific guidance.

General Weed Prevention Practices for Site-disturbing Projects and Maintenance Programs

Goal 1: Incorporate weed prevention and control into project layout, design, alternative evaluation, and project decisions.

- Practice 1: Environmental analysis for projects and maintenance programs will need to assess weed risks, analyze potential treatment of high-risk sites for weed establishment and spread, and identify prevention practices. Determine prevention and maintenance needs, to include the use of herbicides, if needed, at the onset of project planning.

Goal 2. Avoid or remove sources of weed seed and propagules to prevent new weed infestations and the spread of existing weeds.

- Practice 2. Before ground-disturbing activities begin, inventory and prioritize weed infestations for treatment in project operating areas and along access routes. Identify what weeds are on site, or within reasonably expected potential invasion vicinity, and do a risk assessment accordingly. Control weeds as necessary.

- Practice 3. After completing "Practice 2" above, to reduce risk of spreading weed infestations, begin project operations in uninfested areas before operating in weed-infested areas.

- Practice 4**.** Locate and use weed-free project staging areas. Avoid or minimize all types of travel through weed-infested areas, or restrict to those periods when spread of seed or propagules are least likely.

- Practice 5**.** Determine the need for, and when appropriate, identify sites where equipment can be cleaned. Clean equipment before entering National Forest System lands; a Forest Officer, in coordination with the Unit Invasive Species Coordinator, needs to approve use of on-Forest cleaning sites in advance. This practice does not apply to service vehicles traveling frequently in and out of the project area that will remain on the roadway. Seeds and plant parts need to be collected when practical and incinerated. Remove mud, dirt, and plant parts from project equipment before moving it into a project area.

- Practice 6. Clean all equipment, before leaving the project site, if operating in areas infested with weeds. Determine the need for, and when appropriate, identify sites where equipment can be cleaned. Seeds and plant parts need to be collected when practical and incinerated.

- Practice 7. Workers need to inspect, remove, and properly dispose of weed seed and plant parts found on their clothing and equipment. Proper disposal means bagging the seeds and plant parts and incinerating them.

- Practice 8. Coordinate project activities with any nearby herbicide application to maximize cost effectiveness of weed treatments.

- Practice 9. Evaluate options, including closure, to regulate the flow of traffic on sites where desired vegetation needs to be established. Sites could include road and trail rights-of-way, and other areas of disturbed soils.

Goal 3. Prevent the introduction and spread of weeds caused by moving infested sand, gravel, borrow, and fill material in Forest Service, contractor and cooperator operations. For practices 10 through 12 below, work with the responsible transportation agencies to voluntarily adopt these practices where county and state governments have responsibility for maintenance of roads that cross National Forest System lands.

- Practice 10. Inspect material sources on site, and ensure that they are weed-free before use and transport. Treat weed-infested sources for eradication, and strip and stockpile contaminated material before any use of pit material.

- Practice 11. Inspect and document the area where material from treated weed-infested sources is used, annually for at least three years after project completion, to ensure that any weeds transported to the site are promptly detected and controlled.

- Practice 12. Maintain stockpiled, uninfested material in a weed-free condition.

Goal 4. In those vegetation types with relatively closed canopies, retain shade to the extent possible to suppress weeds and prevent their establishment and growth.

- Practice 13. Retain native vegetation in and around project activity to the maximum extent possible consistent with project objectives.

Goal 5. Avoid creating soil conditions that promote weed germination and establishment.

- Practice 14. Minimize soil disturbance to the extent practical, consistent with project objectives.

Goal 6. Where project disturbance creates bare ground, consistent with project objectives, re-establish vegetation to prevent conditions to establish weeds.

- Practice 15. Revegetate disturbed soil (except travelways on surfaced projects) in a manner that optimizes plant establishment for that specific site. Define for each project what constitutes disturbed soil and objectives for plant cover revegetation.

- Practice 16. Revegetation may include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching as necessary. Use native material where appropriate and feasible. Use certified weed-free or weed-seed-free hay or straw where certified materials are required and/or are reasonably available. Always use certified materials in areas closed by administrative order; refer to Appendix 3 for a sample closure order. Where practical, stockpile weed-seed-free topsoil and replace it on disturbed areas (e.g. road embankments or landings)

- Practice 17. Use local seeding guidelines to determine detailed procedures and appropriate mixes. To avoid weed-contamination, a certified seed laboratory needs to test each lot against the all-State noxious weed list to Association of Seed Technologists and Analysts (AOSTA) standards, and provide documentation of the seed inspection test. There are plant species not on State and Federal noxious weed lists that the Forest Service would consider non-native invasive weeds. Check State and Federal lists to see if any local weeds need to be added prior to testing. Seed lots labeled as certified weed free at time of sale may still contain some weed seed contamination. Non-certified seed should first be tested before use.

- Practice 18. Inspect and document all limited term ground-disturbing operations in noxious weed infested areas for at least three (5) growing seasons following completion of the project. For on-going projects, continue to monitor until reasonable certainty is obtained that no weeds have occurred. Provide for follow-up treatments based on inspection results.

Goal 7. Improve effectiveness of prevention practices through weed awareness and education.

- Practice 19. Provide information, training and appropriate weed identification materials to people potentially involved in weed introduction, establishment, and spread on National Forest System lands, including agency managers, employees, forest workers, permit holders, and recreational visitors. Educate them to an appropriate level in weed identification, biology, impacts, and effective prevention measures.

- Practice 20. Provide proficient weed management expertise at each administrative unit. Expertise means that necessary skills are available and corporate knowledge is maintained.

- Practice 21. Develop incentive programs encouraging weed awareness detection, reporting, and for locating new invaders.

Goal 8. Set the example; maintain weed-free administrative sites.

- Practice 22. Treat weeds at administrative sites and use weed prevention practices to maintain sites in a weed-free condition.

Aquatic Weed Prevention Practices

Goal 1. To prevent new weed infestations and the spread of existing weeds, avoid or remove sources of weed seed and propagules.

- Aquatic 1. Provide outreach to state fish and game departments, counties, and other agencies concerning the unique prevention measures and control practices associated with aquatic weeds.

- Aquatic 2. Inspect boats (including air boats), trailers, and other boating equipment and remove any visible plants, animals, or mud before leaving any waters or boat launching facilities. Drain water from motor, live well, bilge, and transom wells while on land before leaving the vicinity. Wash and dry boats, tackle, downriggers, anchors, nets, floors of boats, props, axles, trailers, and other boating equipment to kill weeds not visible at the boat launch.

- Aquatic 3. Before transporting to new waters, rinse boat and boating equipment with hot (40°C or 104°F) clean water, spray boat or trailer with high-pressure water, or dry boat and equipment for at least 5 days.

- Aquatic 4. Inspect seaplanes and remove weeds from floats, wires, cables, water rudders, and pump floats; wash with hot water or spray with high-pressure water, or dry for at least 5 days.

- Aquatic 5. Before take-off – avoid taxiing through heavy surface growths of weeds before takeoff; raise and lower water rudders several times to clear off plants. If weeds were picked up during landing, clean off the water rudders before take-off and leave the water rudders up during take-off. After take-off – if water rudders were down during take-off, raise and lower water rudders several times to free weed plant fragments while over original body of water or over land. If weeds remain visible on floats or water rudders, the pilot may return to flight origin and remove plants if an extra

landing and takeoff is not a safety concern.

- Aquatic 6. Maintain a l00 feet buffer of aquatic weed-free clearance around boat launches and docks.

- Aquatic 7. Promptly post sites if aquatic invasives are found. Confine infestation; where prevention is infeasible or ineffective, close facility until infestation is contained.

- Aquatic 8. Wash and dry tackle, downriggers, float tubes, waders, and other equipment to remove or kill harmful species not visible at the boat launch.

- Aquatic 9. Avoid moving weed plants from one body of water to another.

- Aquatic 10. Avoid running personal watercraft through aquatic plants near boat access locations. Instead, push or winch watercraft onto the trailer without running the engine. After the watercraft is out of the water, start the engine for 5-10 seconds to blow out any excess water and vegetation. After engine has stopped, pull weeds out of the steering nozzle. Inspect trailer and any other sporting equipment for weed fragments and remove them before leaving the access area. Wash or dry watercraft before transporting to another body of water.

- Aquatic 11. Waterfowl hunters may use elliptical, bulb-shaped, or strap anchors on decoys, because these types of anchors avoid collecting submersed and floating aquatic plants. Inspect waders and hip boots, removing any aquatic plants, and where possible, rinse mud from them before leaving the water. Remove aquatic plants, animals, and mud attached to decoy lines and anchors.

- Aquatic 12. Construct new boat launches and ramps at deep-water sites. Restrict motorized boats in lakes near areas that are infested with weeds. Move sediment to upland or quarantine areas when cleaning around culverts, canals, or irrigation sites. Clean equipment before moving to new sites. Inspect and clean equipment before moving from one project area to another.

Cultural Resources

- Use the General weed prevention practices.

Fire Management

Pre-fire, Pre-incident Training

Goal 1. Improve effectiveness of prevention practices through weed awareness and education.

- Fire 1. Increase weed awareness and weed prevention in all fire training.

- Fire 2. Include weed risk factors and weed prevention practices in Resource Advisor duties on all

Incident Management Teams and Burn Rehabilitation Teams.

Plans

Goal 2. Improve effectiveness of prevention practices through weed awareness and education.

- Fire 3. Assign a local weed specialist or include in Resource Advisor duties to the Incident Management Team when wildfire or control operations occur in or near a noxious weed area.
- Fire 4. Resource Advisors need to provide briefings that identify operational practices to reduce weed spread, (for example: avoiding known weed infestation areas when locating fire lines). Include this information in shift briefings.
- Fire 5. Provide weed identification aids to Field Observers.

Wildfires – General

All wildfire weed prevention goals apply except in instances where human life or property is at risk.

Goal 3. Avoid or remove sources of weed seed and propagules to prevent new weed infestations and the spread of existing weeds.

- Fire 6. Ensure that rental equipment is free of weed seed and propagules before the contracting officers representative accepts it.
- Fire 7. Maintain a network of airports, helibases, camps, and staging areas in a noxious weed-free condition.
- Fire 8. Coordinate with local weed specialists to locate and treat practice jump areas to make them weed-free.
- Fire 9. Inspect and treat weeds that establish at equipment cleaning sites after fire incidents.

Goal 4. Avoid creating soil conditions that promote weed germination and establishment.

- Fire 10. Use appropriate suppression tactics to reduce suppression-induced disturbances to soil and vegetation while minimizing seedbed creation due to disturbance from fire effects. .
- Fire 11. Avoid moving water buckets from infested lakes to lakes that are not infested prior to inspection and cleaning. There is no hazard in using water infested with aquatic weeds on terrestrial sites.

Prescribed Fire

Goal 5. To prevent new weed infestations and the spread of existing weeds, avoid or remove sources of weed seed and propagules or manage fire as an aid in control of weeds.

- Fire 12. Ensure that rental equipment is free of weed seed and propagules before the contracting officers representative accepts it.

- Fire 13. Avoid ignition and burning in areas at high risk for weed establishment or spread due to fire effects. Treat weeds that establish or spread because of unplanned burning of weed infestations.

- Fire 14. When possible use staging areas and helibases that are maintained in a weed-free condition.

- Fire 15. Pre-inventory project area and evaluate weeds present with regard to the effects on the weed spread relative to the fire prescription.

Goal 6. Avoid creating soil conditions that promote weed germination and establishment.

- Fire 16. Use appropriate preparation and suppression tactics to reduce disturbances to soil and vegetation.

Fire Rehabilitation

Goal 7. Incorporate weed prevention into project layout, design, alternative evaluation, and decisions.

- Fire 17. Evaluate weed status and risks in Burned Area Emergency Rehabilitation plans. When appropriate, apply for Burned Area Emergency Rehabilitation and restoration funding.

Goal 8. To prevent conditions favoring weed establishment, re-establish vegetation on bare ground caused by project disturbance as soon as possible using either natural recovery or artificial techniques as appropriate to the site objectives.

- Fire 18. To prevent weed spread, treat weeds in burned areas as part of the Burned Area Emergency Rehabilitation plan. For known infestations that will likely increase, the first preference is prevention, such as planting species to compete with unwanted plants.

- Fire 19. Inspect and document weed establishment at fire access roads, cleaning sites, all disturbed staging areas, and within burned areas; control infestations to prevent spread within burned areas. If you suspect the presence of noxious weeds, request BAER funds to inspect and document for emergence in the spring. Request BAER funds for control if noxious weeds are present and NEPA has already been approved.

- Fire 20. Seed and straw mulch to be used for burn rehabilitation (for wattles, straw bales, dams, etc.) all need to be inspected and certified that they are free of weed seed and propagules.

- Fire 21. Regulate human, pack animal, and livestock entry into burned areas at risk for weed invasion until desirable site vegetation has recovered sufficiently to resist weed invasion.

Forest Vegetation Management

Timber Harvest Operations & Stewardship Contracting

Goal 1. Avoid or remove sources of weed seed and propagules to prevent new weed infestations and the spread of existing weeds.

- Forest Veg 1. Treat weeds on projects used by contractors, emphasizing treatment of weed infestations on existing landings, skid trails, and helibases before activities commence.

- Forest Veg 2. Train contract administrators to identify noxious weeds and select lower risk sites for landings and skid trails.

- Forest Veg 3. Encourage operators to maintain weed-free mill yards, equipment parking, and staging areas.

- Forest Veg 4. Use standard timber sale contract provisions such as WO-C/CT 6.36 to ensure appropriate equipment cleaning (reference Appendix 1).

Goal 2. To prevent weed germination and establishment, retain native vegetation in and around project activity and keep soil disturbance to a minimum consistent with project objectives.

- Forest Veg 5. Minimize soil disturbance to no more than needed to meet project objectives. Logging practices to reduce soil disturbance include, but are not limited to:

    - Over-snow logging
    - Skyline or helicopter logging
    - Reuse landings, skid trails and helibases when they are weed free

- Forest Veg 6. Minimize period from end of logging to site preparation, revegetation, and contract closure.

Post Vegetation Management Operations

Goal 3. To prevent weed germination and establishment, retain native vegetation in and around project activity and keep soil disturbance to a minimum consistent with project objectives.

- Forest Veg 7. Minimize soil disturbance to no more than needed to meet vegetation management objectives. Prevention practices to reduce soil disturbance include, but are not limited to:

    - Treating fuels in place instead of piling
    - Minimizing heat transfer to soil in burning
    - Minimizing fireline construction

Goal 4. To prevent favorable conditions for weed establishment, re-establish vegetation on bare ground caused by project disturbance.

- Forest Veg 8. For long-term restoration and weed suppression where forested vegetation management has created openings, recognize the need for prompt reforestation.

Grazing Management

Goal 1. Consider noxious weed prevention and control practices in the management of grazing allotments.

- Grazing 1. Include weed prevention practices, inspection and reporting direction, and provisions for inspection of livestock concentration areas in allotment management plans and annual operating instructions for active grazing allotments.

- Grazing 2. For each grazing allotment containing existing weed infestations, include prevention practices focused on preventing weed spread and cooperative management of weeds in the annual operating instructions. Prevention practices may include, but are not limited to:

    - Altering season of use
    - Exclusion
    - Activities to minimize potential ground disturbance
    - Preventing weed seed transportation
    - Maintaining healthy vegetation
    - Weed control methods
    - Revegetation
    - Inspection
    - Reporting
    - Education

Goal 2. Avoid or remove sources of weed seed and propagules to prevent new weed infestations and the spread of existing weeds. Minimize transport of weed seed into and within allotments.

- Grazing 3. If livestock are potentially a contributing factor to seed spread, schedule use by livestock in units with existing weed infestations which are known to be susceptible to spread by livestock, to be prior to seed-set or after seed has fallen.

- Grazing 4. If livestock were transported from a weed-infested area, annually inspect and treat allotment entry units for new weed infestations.

- Grazing 5. Close pastures to livestock grazing when the pastures are infested to the degree that livestock grazing will continue to either exacerbate the condition on site or contribute to weed seed spread. Designate those pastures as unsuitable range until weed infestations are controlled.

Goal 3. Maintain healthy, desirable vegetation that is resistant to weed establishment.

- Grazing 6. Through the allotment management plan or annual operating instructions, manage the timing, intensity (utilization), duration, and frequency of livestock activities associated with harvest of forage and browse resources to maintain the vigor of desirable plant species and retain live plant cover and litter.

- Grazing 7. Manage livestock grazing on restoration areas to ensure that vegetation is well established. This may involve exclusion for a period of time consistent with site objectives and conditions. Consider practices to minimize wildlife grazing on the areas if needed.

Goal 4. Minimize disturbed ground conditions favorable for weed establishment in the management of livestock grazing.

- Grazing 8. Include weed prevention practices that reduce ground disturbance in allotment management plans and annual operating instructions. Consider for example: changes in the timing, intensity, duration, or frequency of livestock use; location and changes in salt grounds; restoration or protection of watering sites; and restoration of yarding/loafing areas, corrals, and other areas of concentrated livestock use.

- Grazing 9. Inspect known areas of concentrated livestock use for weed invasion. Inventory and manage new infestations.

Goal 5. Improve effectiveness of weed prevention practices through awareness programs and education. Promote weed awareness and prevention efforts among range permittees.

- Grazing 10. Use education programs or annual operating instructions to increase weed awareness and prevent weed spread associated with permittees' livestock management practices.

- Grazing 11. To aid in their participation in allotment weed control programs, encourage permittees to become certified pesticide use applicators.

Lands and Special Uses

Goal 1. Avoid or remove sources of weed seed and propagules to prevent new weed infestations and the spread of existing weeds.

- Lands 1. Consider weed status of lands when making land adjustment decisions.

- Lands 2. Conduct weed inventories of all lands considered for acquisition.

- Lands 3. As a condition of land adjustment decisions, the Forest Service may require the nonfederal proponent to treat weeds, to federal standards, on the land proposed for federal acquisition.

- Lands 4. Include a weed prevention and control provision in all new special-use authorizations such as, permits, easements or leases involving ground-disturbing activities when authorized activities present a high risk for weed infestation or the location of the activity is vulnerable to weed introduction or spread. Include a weed prevention and control provision in existing authorizations that authorize ground-disturbing activities when the authorization is amended for other reasons; consider the need to amend an authorization directly, when ground-disturbing activities are involved. These provisions can be accomplished through the development and incorporation of a supplemental clause (reference sample clause R1-D4 in Appendix 2) or as a requirement in an associated operation and maintenance plan.

Minerals

Goal 1. Incorporate weed prevention into project layout, design, alternative evaluation, and decisions.

- Minerals 1. Include weed prevention measures, including project inspection and documentation, in operation and reclamation plans.

Goal 2. To prevent conditions favoring weed establishment, minimize bare soil conditions and re-establish vegetation on bare ground caused by project disturbance.

- Minerals 2. Retain bonds until reclamation requirements are completed, including weed treatments, based on inspection and documentation.

Recreation, Wilderness, and Special Management Areas

Goal 1. To prevent new weed infestations and the spread of existing weeds, avoid or remove sources of weed seed and propagules.

- Recreation 1. Encourage public land users before recreating on public lands, to inspect and clean motorized and mechanized trail vehicles of weeds and their seeds.

- Recreation 2. On designated public lands, issue closure orders that specify the use of weed free or weed-seed-free feed, hay, straw, and mulch. Refer to 36 CFR 251.50 and Appendix 3. Cooperate with State, County, Tribal governments, and other agencies to develop and support publicly available weed-free materials.

- Recreation 3. Where they exist, post and enforce weed-free feed orders. (FSM 2081.03)

- Recreation 4. Encourage backcountry pack and saddle stock users to feed stock only weed-free feed for several days before travel on National Forest System lands.

- Recreation 5. Inspect, brush, and clean animals, especially hooves and legs before entering public land. Inspect and clean tack and equipment.

- Recreation 6. Tie or hold stock in ways that minimize soil disturbance and avoid loss of desirable native vegetation.

- Recreation 7. Annually inspect all campgrounds, trailheads, and recreation areas that are open to public vehicle use for weeds; treat new infestations.

- Recreation 8. Maintain trailheads, boat launches, outfitter and public camps, picnic areas, airstrips, roads leading to trailheads, and other areas of concentrated public use in a weed-free condition. Consider high use recreation areas as high priority for weed eradication.

- Recreation 9. Consider seasonal or full time closure to campgrounds, picnic areas, and other recreation use areas until weeds are reduced to levels that minimize potentials for spread.

- Recreation 10. In areas susceptible to weed infestation, limit vehicles to designated, maintained travel routes. Inspect and document inspections on travelways for weeds and treat as necessary.

Goal 2. Improve effectiveness of prevention practices through weed awareness and education.

- Recreation 11. Post weed awareness messages and prevention practices at strategic locations such as trailheads, roads, boat launches, and forest portals.

- Recreation 12. In weed-infested areas, post weed awareness messages and prevention practices at roadsides.

Research Activities

Goal 1. Incorporate weed prevention into research project design, layout, installation, and decisions.

Research 1. Address weed establishment risk and spread in research project study plans and decisions.

Road Management

New and Reconstruction

Goal 1. Incorporate weed prevention into project layout, design, alternative evaluation, and decisions.

- Road 1. For timber sale purchaser road maintenance and decommissioning, use standard timber sale contract provisions such as WO-C/CT 6.36 to ensure appropriate equipment cleaning (reference Appendix 1).

- Road 2. For road new and reconstruction conducted as part of public works (construction) contracts and service contracts include contract language for equipment cleaning such as is in WO-C/CT 6.36 (Appendix 1).

Road Maintenance and Decommissioning

Goal 2. Minimize roadside sources of weed seed that could be transported to other areas.

- Road 3. Periodically inspect system roads and rights-of-way for invasion of noxious weeds. Train road maintenance staff to recognize weeds and report locations to the local weed specialist. Inventory weed infestations and schedule them for treatment.

- Road 4. Schedule and coordinate blading or pulling of noxious weed-infested roadsides or ditches in consultation with the local weed specialist. Do not blade or pull roadsides and ditches that are infested with noxious weeds unless doing so is required for public safety or protection of the roadway. If the ditch must be pulled, ensure the weeds remain on-site. Blade from least infested to most infested areas. When it is necessary to blade noxious weed-infested roadsides or ditches,

schedule activity when seeds or propagules are least likely to be viable and to be spread. Minimize soil surface disturbance and contain bladed material on the infested site.

- Road 5. Avoid acquiring water for dust abatement where access to the water is through weed-infested sites.

- Road 6. For timber sale purchaser road maintenance and decommissioning, use contract provisions for equipment cleaning such as WO-C/CT 6.36 (Appendix 1).

- Road 7. For road maintenance and decommissioning conducted as part of public works (construction) contracts and service contracts include contract language for equipment cleaning such as is in WO-C/CT 6.36 (Appendix 1).

- Road 8. Treat weeds in road decommissioning and reclamation projects before roads are made impassable. Reinspect and follow-up based on initial inspection and documentation.

Watershed Management

Goal 1. Avoid or remove sources of weed seed and propagules to prevent new weed infestations and the spread of existing weeds.

- Watershed 1. Inspect and document for early detection of noxious weed establishment and spread in riparian areas and wetlands. Eradicate new infestations before they become established.

- Watershed 2**.** Address noxious weed risks in watershed restoration projects and water quality management plans.

- Watershed 3. Pay particular attention to practices listed under "General Weed Prevention Practices for Site-disturbing Projects and Maintenance Programs" and Aquatic Weed Prevention Practices".

Wildlife, Fisheries, and Botany

Goal 1. Avoid creating soil conditions that promote weed germination and establishment.

- Wildlife 1. Periodically inspect and document those areas where wildlife concentrate in the winter and spring resulting in overuse or soil scarification.

- Wildlife 2. Use weed-free materials at big game baiting stations.

- Wildlife 3. For wildlife openings and habitat improvement projects, follow the practices outlined in General Weed Prevention Practices--Goal 4; Forest Vegetation Management, Timber Harvest Operations & Stewardship Contracting.

APPENDIX 1
FOREST SERVICE TIMBER SALE CONTRACT PROVISIONS

WO-C6.36

C6.36 – EQUIPMENT CLEANING. (5/01) Unless the entire Sale Area is already infested with specific noxious weed species of concern, Purchaser shall ensure that prior to moving on to the Sale Area all off-road equipment, which last operated in areas known by Forest Service to be infested with specific noxious weeds of concern, is free of soil, seeds, vegetative matter, or other debris that could contain or hold seeds. Purchaser shall certify in writing that off-road equipment is free of noxious weeds prior to each start-up of timber sale operations and for subsequent moves of equipment to Sale Area. The certification shall indicate the measures taken to ensure that off-road equipment is free of noxious weeds will be identified. "Off-road equipment" includes all logging and construction machinery, except for log trucks, chip vans, service vehicles, water trucks, pickup trucks, cars, and similar vehicles. A current list of noxious weeds of concern to Forest Service is available at the Forest Supervisor's Office.

Purchaser must clean off-road equipment prior to moving between cutting units on this timber sale that are known to be infested with noxious weeds and other units, if any, that are free of such weeds. Sale Area Map shows areas, known by Forest Service prior to timber sale advertisement, that are infested with specific noxious weed species of concern.

Purchaser shall employ whatever cleaning methods are necessary to ensure that off-road equipment is free of noxious weeds. Equipment shall be considered free of soil, seeds, and other such debris when a visual inspection does not disclose such material. Disassembly of equipment components or specialized inspection tools is not required.

Purchaser shall notify Forest Service at least 5 days prior to moving each piece of off-road equipment on to the Sale Area, unless otherwise agreed. Notification will include identifying the location of the equipment's most recent operations. If the prior location of the off-road equipment cannot be identified, Forest Service may assume that it was infested with noxious weed seeds. Upon request of Forest Service, Purchaser must arrange for Forest Service to inspect each piece of off-road equipment prior to it being placed in service.

If Purchaser desires to clean off-road equipment on National Forest land, such as at the end of a project or prior to moving to a new unit that is free of noxious weeds, Purchaser and Forest Service shall agree on methods of cleaning, locations for the cleaning, and control of off-site impacts, if any.

New infestations of noxious weeds, of concern to Forest Service and identified by either Purchaser or Forest Service on the Sale Area, shall be promptly reported to the other party. Purchaser and Forest Service shall agree on treatment methods to reduce or stop the spread of noxious weeds when new infestations are found. In the event of contract modification under this Subsection, Purchaser shall be reimbursed for any additional protection required, provided that any work or extra protection required shall be subject to prior approval by Forest Service. Amount of reimbursement shall be determined by Forest Service and shall be in the form of a reduction in stumpage rates, unless agreed otherwise in writing. However, in no event may stumpage rates be reduced below Base Rates.

INSTRUCTIONS: Include in all new contracts.

The Forest Service must identify on the sale area map units that are infested with specific noxious weeds species of concern.

The prospectus for the sale must notify prospective purchasers that maps of these known locations are available from the local Forest Supervisor's Office or District Ranger Station. A list of noxious weeds of concern to the Forest Service (normally included in the Noxious Weed Program Guide) must be available for the purchaser's inspection. The current National Forest Noxious Weed Program Guide, noxious weed atlas, or other data sources, as needed, will be used to determine locations of known infestation.

Significant changes in the status of noxious weed infestations on the sale may require contract modifications to deal with changed conditions. An example might be where new noxious weed infestations are discovered after contract award, which require costly additional methods to prevent the spread of such infestations.

WO-CT6.36

CT6.36 – EQUIPMENT CLEANING. (5/01) Unless the entire Sale Area is already infested with specific noxious weed species of concern, Purchaser shall ensure that prior to moving on to the Sale Area all off-road equipment, which last operated in areas known by Forest Service to be infested with specific noxious weeds of concern, is free of soil, seeds, vegetative matter, or other debris that could contain or hold seeds. Purchaser shall certify in writing that off-road equipment is free of noxious weeds prior to each start-up of timber sale operations and for subsequent moves of equipment to Sale Area. The certification shall indicate the measures taken to ensure that off-road equipment is free of noxious weeds will be identified. "Off-road equipment" includes all logging and construction machinery, except for log trucks, chip vans, service vehicles, water trucks, pickup trucks, cars, and similar vehicles. A current list of noxious weeds of concern to Forest Service is available at the Forest Supervisor's Office.

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If Purchaser desires to clean off-road equipment on National Forest land, such as at the end of a project or prior to moving to a new unit that is free of noxious weeds, Purchaser and Forest Service shall agree on methods of cleaning, locations for the cleaning, and control of off-site impacts, if any.

New infestations of noxious weeds, of concern to Forest Service and identified by either Purchaser or Forest Service on the Sale Area, shall be promptly reported to the other party. Purchaser and Forest Service shall agree on treatment methods to reduce or stop the spread of noxious weeds when new infestations are found. In the event of contract modification under this Subsection, Purchaser shall be reimbursed for any additional protection required, provided that any work or extra protection required shall be subject to prior approval by Forest Service. Amount of reimbursement shall be determined by Forest Service and shall be in the form of a reduction in stumpage rates, unless agreed otherwise in writing. However, in no event may stumpage rates be reduced below Base Rates.

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Significant changes in the status of noxious weed infestations on the sale may require contract modifications to deal with changed conditions. An example might be where new noxious weed infestations are discovered after contract award, which require costly additional methods to prevent the spread of such infestations.

APPENDIX 2

SAMPLE SPECIAL USE SUPPLEMENTAL CLAUSE
USDA-FOREST SERVICE
NORTHERN REGION

Include a weed prevention and control provision, such as the following supplemental clause example, in all new special-use authorizations such as, permits, easements, and leases, or when those authorizations are amended, when there are ground-disturbing activities.

The following is a weed prevention and control supplemental clause approved for use in Region 1. **(Reminder: Supplemental clauses used in a special use authorization must be reviewed and approved by the Regional Forester, after review by the local Office of the General Counsel.)**

R1 SUPPLEMENT 2709.11-2000-1 **2709.11, 50**
EFFECTIVE 02/08/2000 **Page 31 of 41**

R1-D4 - Noxious Weed/Exotic Plant Prevention and Control. Use this clause in all authorizations involving ground disturbance which could result in the introduction or spread of noxious weeds and/or exotic plants. This clause may also be used where cooperative agreements for noxious weed control are in place with state and local governments.

> The holder shall be responsible for the prevention and control of noxious weeds and/or exotic plants of concern on the area authorized by this authorization and shall provide prevention and control measures prescribed by the Forest Service. Noxious weeds and exotic plants of concern are defined as those species recognized by (*insert county weed authority and/or national forest*) in which the authorized use is located.
>
> The holder shall also be responsible for prevention and control of noxious weed and exotic plant infestations which are not within the authorized area, but which are determined by the Forest Service to have originated within the authorized area.
>
> When determined to be necessary by the authorized officer, the holder shall develop a site-specific plan for noxious weed and exotic plant prevention and control. Such plan shall be subject to Forest Service approval. Upon Forest Service approval, the noxious weed and exotic plant prevention and control plan shall become a part of this authorization, and its provisions shall be enforceable under the terms of this authorization.

With respect to the second paragraph of the above provision, the intent is to apply this provision only for a well defined confined area such as a narrow linear right-of-way where it can be determined without a doubt that the noxious weeds resulted from the activities of the holder.

APPENDIX 3
Example of a Closure Order

Closure Order

SPECIAL ORDER
OCCUPANCY AND USE
ON NATIONAL FOREST SYSTEM LANDS
IN THE STATE OF MONTANA

Pursuant to the Regulations of the Secretary of Agriculture, Title 36 CFS 261.50 (a) and (b), the following acts are prohibited within all National Forest System lands within the State of Montana.

These restrictions are in addition to those enumerated in Subpart A, part 261, Title 36 of the Code of Federal Regulations and will remain in effect from October 6, 1997, until rescinded or revoked.

1. The possession or storage of hay, grain, straw, cubes, palletized feed or mulch that is not certified as being noxious weed free or noxious weed seed free by an authorized State Department of Agriculture official or designated county official; each individual bale or container must be tagged or marked as weed free and reference the written certification (36 CFR 261.58 (t)).

Pursuant to 36 CFR 261.50 (e), the following are exempt from this Order:

A. Persons with a permit specifically authorizing the action or omission.

B. Transporting feeds, straw, or hay on Federal, State, and county roads that are not Forest Development Roads or Trails.

The above restrictions are necessary to prevent the spread of noxious weeds on National Forest Systems lands (16 USC 551). Upon issuance of this order, all previous orders requiring the use of certified noxious weed free or noxious weed seed free forage on NFS lands in Montana shall be superceded.

Violation is punishable by a fine of up to $5,000 and/or up to six months imprisonment (16 U.S.C. 551 and 18 U.S.C. 3571 (b) (6).

/S/ Kathleen A. McAllister 10-8-97

_____ _____

HAL SALWASSER Date
Regional Forester
Northern Region

ATTACHMENT B

Chapter 2070, Native Plant Materials (Forest Service Manual, National Headquarters, National Forest Resource Management)

FOREST SERVICE MANUAL
NATIONAL HEADQUARTERS (WO)
WASHINGTON, DC
NATIVE PLANT MATERIALS

FSM 2070 – NATIVE PLANT MATERIALS

ZERO CODE

Amendment No: The Directive Manager completes this field.

Effective Date: The Directive Manager completes this field.

Duration: This amendment is effective until superseded or removed.

Approved: NAME OF APPROVING OFFICIAL
Title of Approving Official

Date Approved: mm/dd/yyyy

Posting Instructions: Amendments are numbered consecutively by title and calendar year. Post by document; remove the entire document and replace it with this amendment. Retain this transmittal as the first page(s) of this document. The last amendment to this title was xx00-xx-x to xxxxx.

New Document		xx Pages
Superseded Document(s) by Issuance Number and Effective Date		xx Pages

Digest:

2070 – Changes the name of the chapter from "Biological Diversity" to "Native Plant Materials" and adds new direction on the use, growth, development, and storage of native plant materials. A

FSM 2000 – NATIONAL FOREST RESOURCE MANAGEMENT
CHAPTER ZERO CODE 2070 – NATIVE PLANT MATERIALS

TABLE OF CONTENTS

FSM 2000 – NATIONAL FOREST RESOURCE MANAEMENT
CHAPTER ZERO CODE 2070 – NATIVE PLANT MATERIALS

2070.1 – AUTHORITY

Authority to manage National Forest System (NFS) lands, including the use of native and non-native plant materials, is derived from laws enacted by Congress that authorize the Secretary of Agriculture (the Secretary) to administer NFS lands and resources and to issue necessary regulations. Many of these authorities have subsequently been delegated from the Secretary to the Chief of the Forest Service.

2070.11 – Laws

The principal statues governing the management and use of native and non-native plant materials on NFS lands and other lands under Forest Service administration include, but are not limited to, the following statutes. Except where specifically stated, these statutes apply to all NFS lands and resources.

1. Organic Administration Act of 1897 (16 U.S.C. §§473 *et seq.*). Authorizes the Secretary of Agriculture to establish regulations governing the occupancy and use of national forests and to protect national forests from destruction.

2. Knutson-Vanderberg Act of June 9, 1930 (16 U.S.C. 576, 576a-576b). Section 3 specifies that the Secretary may require any purchaser of national forest timber to make deposits of money in addition to the payments for the timber, to cover the cost to the United States of planting, sowing with tree seeds, cutting, destroying, or otherwise removing undesirable trees or other growth, on the national forest land cut over by the purchaser, in order to improve the future stand of timber, or protecting and improving the future productivity of the renewable resources of the forest land on such sale area.

3. Bankhead-Jones Farm Tenant Act of 1937 (7 U.S.C. §§1010 *et seq.*). Title III authorizes the Secretary to develop a program of land conservation and land utilization in order to correct maladjustments in land use. Applies only to national grasslands and land utilization projects.

4. Anderson-Mansfield Reforestation and Revegetation Joint Resolution Act of October 11, 1949 (16 U.S.C. 581j (note), 581j, 581k). Requires the agency to accelerate and provide a continuing basis for the needed reforestation and revegetation of national forest lands and other lands under Forest Service administration or control.

5. Granger-Thye Act of 1950 (16 U.S.C. §§580 *et seq.*). Authorizes the Secretary to use a portion of grazing fees for range improvement projects on NFS lands. Specific projects mentioned are artificial revegetation, including the collection or purchase of necessary seed and

eradication of poisonous plants and noxious weeds, in order to protect or improve the future productivity of the range.

Section 11 of the act authorizes the use of funds for rangeland improvement projects on lands outside NFS under certain circumstances. (FSM 2204, ex. 01).

6. Sikes Act (Fish and Wildlife Conservation) of September 15, 1960 (16 U.S.C.670g-670*l*, 670o). Section 201 directs the Secretary of Agriculture to plan, develop, maintain, coordinate, and implement programs for the conservation and rehabilitation of wildlife, fish, and game, including specific habitat improvement projects, on public land under their jurisdiction.

7. Multiple Use-Sustained Yield Act of 1960 (16 U.S.C. §§528 *et seq*.). Authorizes the Secretary to, among other things: administer NFS lands for outdoor recreation, range, timber, watershed, and wildlife and fish purposes; to develop the surface renewable resources for multiple use and sustained yield of several products and services to be obtained from these lands, without impairment of the productivity of the land; and to cooperate with interested State and local governmental agencies and others in the development and management of the national forests.

8. Wilderness Act of 1964 (16 U.S.C. §§1131 *et seq*.). Authorizes the Secretary to administer certain congressionally designated NFS lands as wilderness. Directs the protection and preservation of these wilderness areas in their natural state, primarily affected by nature and not man's actions.

9. The Endangered Species Act (ESA) of 1973 (16 U.S.C. §§1531 *et seq*.). Provides for the conservation of threatened and endangered species of plants and animals. Section 7 requires Federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of the species' critical habitat. This provision also requires Federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) (for non-marine species) or the National Oceanic and Atmospheric Administration (NOAA) Fisheries (for marine species) whenever an agency action is likely to affect a threatened or endangered species or its critical habitat. Section 9 prohibits the *take* of a threatened or endangered species.

10. Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S.C. §§1700 *et seq*.). Section 102 directs management of public lands in a manner that will protect the quality of the ecological values; where appropriate, will preserve and protect in their natural condition; will provide food and habitat for fish and wildlife and domestic animals; and will provide for outdoor recreation and human occupancy and use.

11. Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 as amended by the National Forest Management Act (NFMA) of 1976 (16 U.S.C. §§1600 *et seq*.). Section 6 provides for diversity of plant and animal communities based on the suitability and capability of the specific land area.

12. Surface Mining Control and Reclamation Act of (30 U.S.C. 1201, 1201 (note), 1236, 1272, 1305). Section 515 directs the establishment on the regarded areas, and all other lands affected, a diverse, effective, and permanent vegetative cover of the same seasonal variety native to the area of land to be affected and capable of self-regeneration and plant succession at least equal in extent of cover to the natural vegetation on the area; except that introduced species may be used in the revegetation process where desirable and necessary to achieve the approved post mining land use plan.

13. Cooperative Forestry and Assistance Act of 1978 (16 U.S.C. 2101 (note), 2101-2103, 2103a, 2103b, 2104-2105. Section 3 details the assistance that may be given to State foresters or equivalent State officials, and State extension directors, in the form of financial, technical, educational, and related assistance.

14. The North American Wetland Conservation Act 1989 (16 U.S.C. 4401 (note), 4401-4413, 16 U.S.C. 669b (note)). Section 9 directs Federal agencies to cooperate with the Director of the U.S. Fish and Wildlife Service to restore, protect, and enhance the wetland ecosystems and other habitats for migratory birds, fish, and wildlife within the lands and waters of each agency.

15. Section 323 of Public Law 108-7, the Consolidated Appropriations resolution, (16 U.S.C. 2104 note). Establishes new authorities allowing the Forest Service to enter into stewardship contracts with public or private entities or persons to perform services to achieve land management goals for NFS lands that meet local and rural community needs.

16. Healthy Forests Restoration Act of 2003 (H.R. 1904). Provides improved statutory processes for hazardous fuel reduction projects on certain types of at-risk NFS and Bureau of Land Management lands and also provides other authorities and direction to help reduce hazardous fuel and restore healthy forest and rangeland conditions on lands of all ownerships.

17. The National Historic Preservation Act of 1966 (16 U.S.C. §§470 *et seq.*). Requires agency heads to assume responsibility for the preservation of historic properties owned or controlled by the agency and to develop a preservation program for the identification, evaluation, and nomination of historic properties to the National Register. Requires agency heads to evaluate the effects of an undertaking on property that is included or eligible for inclusion in the National Register and to afford the Advisory Council a reasonable opportunity to comment on the undertaking. Defines undertaking to include permitting activities or Federal financial assistance under the jurisdiction of an agency.

2070.12 – Regulations

The authority to manage NFS lands is delegated from the Secretary of Agriculture to the Under Secretary for Natural Resources and Environment (NRE) at 7 CFR §2.20. This authority has been delegated in turn from NRE to the Chief of the Forest Service at 7 CFR §2.60. The subsequent regulation for management of NFS lands and other lands under Forest Service administration including the use of native and non-native plant materials is:

36 CFR Part 10, Subpart (b). These rules provide for sustainable ecological systems through supporting diversity of native plant and animal species within a plan area.

2070.13 – Executive Orders

1. Executive Order 13112 (February 3, 1999). Provides for restoration of native species and habitat conditions in ecosystems that have been invaded by non-native invasive species.

3. Executive Order 13148 (April 21, 2000). Directs federal agencies to promote the sustainable management of Federal facility lands through the implementation of cost-effective, environmentally sound landscaping practices, and programs to reduce adverse impacts to the natural environment.

4. Executive Order 13352 (August 26, 2004). Directs the Departments of the Interior, Agriculture, Commerce, and Defense and the Environmental Protection Agency to implement laws relating to the environmental and natural resources in a manner that promotes cooperative conservation, with an emphasis on appropriate inclusion of local participation in Federal decision making, in accordance with their respective agency missions, policies, and regulations.

2070.2 – Objectives

Objectives for native plant materials in both aquatic and terrestrial ecosystems are to:

1. Maintain, restore, or rehabilitate native ecosystems that are self sustaining, resistant to invasion by non-native invasive species and/or provide habitat for a broad range of species including, threatened, endanger and rare species.

2. Maintain adequate protection for soil and water resources, through timely and effective revegetation of disturbed sites which would not be restored naturally.

3. Promote revegetation of native ecosystems by the use of native plant materials.

4. Promote the appropriate use and availability of native and non-native plant materials.

5. Cooperate with other federal agencies, tribal, State, and local governments, academic institutions and the private sector to increase the knowledge and availability of native plant materials, including developing sources of genetically appropriate plant materials.

6. Increase and disseminate information which will guide the selection, use, and availability of genetically appropriate plant materials.

7. Promote the study, planning, and implementation of actions which will maintain, restore, and rehabilitate native ecosystems on NFS lands and other lands administered by the Forest Service and in the United States.

2070.3 – Policy

Policies for selection, use, and storage of native and non-native plant materials are as follows:

1. Ensure native plant materials are given primary consideration.

2. Restrict use of non-native, non-invasive plant materials to only those situations when timely reestablishment of a native plant community either through natural regeneration or with the use of native plant materials is not likely to occur. For example:

a. When emergency conditions exist where it becomes necessary to protect basic resource values (e.g., soil stability, water quality and to help prevent the establishment of invasive species).
b. When native plant materials are not available and/or are not economically feasible.
c. In permanently, highly altered plant communities, such as road cuts, sites dominated by exotic weeds
d. In designated historical sites where maintenance of historical vegetation communities (including agricultural crops) is needed to maintain historical integrity (FSM 2630).

3. Select non-native plants as interim, non-persistent plant materials provided they will not hybridize with local species, will not permanently displace native species, or offer serious long-term competition to the recovery of endemic plants, and are designed to aid in the re-establishment of native plant communities.

4. Base determination and selection of genetically appropriate plant materials on the site characteristics and ecological setting, using the best available information and plant materials.

5. Ensure that development, review, and/or approval of revegetation plans, including species selection, genetic heritage, growth stage, and any needed site preparation, is done by a senior plant specialist who is knowledgeable and certified or trained in the plant community type where the revegetation will occur. For example: rangeland ecologist, forest ecologist, silviculturalist, plant geneticist, aquatic plant specialist, or botanist.

6. Do not use Federally or state designated noxious weeds.

7. Cooperate and coordinate within the Forest Service, with other federal agencies, organizations, and private industry in the development of native plant materials and supplies.

8. Anticipate plant material needs for emergency and planned revegetation. Develop core plant lists, planting guidelines, plant material sources, and seed caches and seed storage facilities.

Specific direction for commercial timber species is in FSM 2470.

2070.4 – RESPONSIBILITIES

The Chief delegates the authority and responsibility for the overall administration of the native plant materials program on NFS lands and other lands administered by the Forest Service in conformance with applicable Federal law, regulation, and policy to the Deputy Chief, National Forest System (NFS). This delegated authority is reserved to the Deputy Chief, NFS, except for the delegations to the regional foresters (RF), forest/grassland supervisors (F/GS), and/or district rangers (DR).

2070.41 – Chief

1. Retains overall authority over and responsibility for establishing national policy for restoration of disturbed sites and degraded ecosystems.

2. Establishes national policy for appropriate use of native and non-native plant materials.

3. Promotes cooperation and coordination between federal agencies, state, tribal and local governments, the nursery industry and the public for the development and supply of native and non-native plant materials.

4. Provides coordination across Deputy Areas to ensure the use of native plant materials are integrated into all Forest Service program areas.

2070.42 - Deputy Chief for National Forest System

The Deputy Chief, National Forest Systems (NFS) is delegated the authority and responsibility for management and restoration of NFS lands in conformance with applicable Federal law, regulation and policy. All authorities are reserved to the Deputy Chief, except for the delegations to the Regional Foresters (RF), Forest and Grassland Supervisors, and District Rangers set forth in the following sections.

1. Establishes national policy for selection of appropriate plant materials for use on NFS lands.

2. Delegates the authority to use native and non-native plant materials consistent with national policy.

3. Establishes national policy to ensure that the appropriate use of plant materials, native and non-native, are integrated into all program areas on NFS lands.

4. Establishes national policy for evaluation and monitoring of plant materials on NFS lands.

2070.43 – Regional Forester

1. Establishes regional policy for use of native plant materials consistent with national policy.

2. Establishes management direction and policy to ensure native plants materials are integrated into regional programs and Land Management Plans (LMP).

3. Shall appoint a regional native plant program coordinator.

4. Coordinates with Forest Service nurseries, Natural Resource Conservation Service Plant Materials centers, other federal agencies, state and tribal governments and private industry to ensure a supply of genetically appropriate plant materials.

5. May delegate the authority to use genetically appropriate native and non-native plant materials.

6. Anticipate plant material needs for emergency and other restoration activities by developing seeding guidelines and lists of important, core native species based on ecological types and available seed sources.

2070.44 - Station Directors

1. Establishes research objectives which will further the understanding and knowledge of native plant materials, propagation techniques and genetic requirements of plant species used in revegetation.

2. Coordinates research and research priorities on native plants with other research institutions and organizations.

3. Ensures the use of all plant materials, used in research, are consistent with national policy.

2070.45 – Forest and Grassland Supervisors

1. Shall ensure forest and grassland programs are implemented consist with national and regional policy for native plant materials.

2. Establishes management direction and policy to ensure native plants materials are integrated into forest and grassland programs and are also included in the Land Management Plan (LMP).

3. Shall appoint a forest or grassland native plant materials coordinator.

4. May delegate the authority to use genetically appropriate native and non-native plant materials in revegetation projects. A

5. Anticipates plant material needs for emergency and other restoration activities by developing seeding guidelines and a list of core native species based on ecological types and available seed sources.

6. Shall ensure all revegetation projects are reviewed and approved by journeyman level plant specialist (FMS 2073) and are consistent with national, regional and forest/grassland polices for the use of native plant materials.

7. Coordinates with other federal agencies, state, tribal and county governments and private industry to ensure a supply of genetically appropriate plant materials.

2070.46 – District Ranger

1. Shall ensure the use of all plant materials is consistent with national, regional and forest policy

2. Shall ensure native plant materials are incorporated into all district programs.

3. Shall review and approve revegetation projects to ensure they are consistent with national, regional and forest polices for the use of native plant materials.

2070.5 – DEFINITIONS

Genetically appropriate. A plant adapted to target site conditions (e.g., has good establishment, vigor, and reproductive capabilities); sufficiently diverse to respond and adapt to changing climates and environment conditions; unlikely to cause genetic contamination and undermine local adaptations, community interactions, and function of resident native species within the ecosystem; unlikely to become (unnaturally or inappropriately) invasive and displace other native species; unlikely to be a source of non-native invasive pathogens; likely to maintain critical connections with pollinators.

Invasive species. A species, including its seed, spores or other biological material, whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Native plant. All indigenous, terrestrial, and aquatic plant species that evolved naturally in an ecosystem.

Noxious weeds. Those plant species designated as noxious weeds by the Secretary of Agriculture or by the responsible State official. Noxious weeds generally possess one or more of the following characteristics: aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or disease, and being native or new to or not common to the United States or parts thereof.

Plant materials. Seeds, parts of plants, or whole plants.

Rehabilitation. Reparation of ecosystem processes, productivity, and services based on functioning preexisting or extant ecosystems.

Restoration. Assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed (including) the re-establishment of the pre-existing biotic integrity in terms of species composition and community structure.

Revegetation. Re-establishment of plants on a site.

2070.6 – REFERENCES

1. Restoring Western Ranges and Wildland, Volumes 1 -3. General Technical Report-136. 2004. United States Department of Agriculture, Forest Service, Rocky Mountain Research Station.

2. Roger, D.L. and A. M. Montavio. 2004. Genetically appropriate choices for plant materials to maintain biological diversity. University of California. Report to the USDA Forest Service. Rocky Mountain Region, Lakewood, CO. AI

ATTACHMENT C

Chapter 40, Revegetation (Forest Service Handbook, Pacific Southwest Region 5, Botanical Program Management)

R5 AMENDMENT R5_FSH_2609.26-2007-01 2609.26_40
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40 - REVEGETATION

40.1 - Authority

1. The National Forest Management Act of 1976 (Sec. 6, 90 Stat. 2949) is the principal legislative mandate that directs the conservation of biological diversity and recognizes the value of adapted plant and animal communities.

2. Further direction is provided in Title 36, Code of Federal Regulations, Part 219.

40.2 - Objectives

1. Conserve the native biological diversity and adaptive capacity of plant and fungi communities, species, and populations. Include maintaining the integrity of the natural pattern of adaptive genetic structure within and among populations of a species.

2. Reduce the adverse impacts of management activities on the basic natural resources of soil, water, and plant and fungi gene pool diversity.

3. Stabilize soil after major disturbances while concurrently avoiding long-term adverse effects on the composition, structure, and function of natural plant and fungi communities.

4. Maintain or enhance water quality by controlling the composition and structure of plant and fungi communities through use of appropriate plant materials.

5. Prevent the displacement of native species through the introduction of aggressive, long lasting, undesirable vegetation into managed or natural plant communities.

6. Move rapidly toward the general use of locally adapted native plant species in ecosystem management.

7. Guide the program development for acquiring, propagating, and using native plant materials for interdisciplinary ecosystem management projects. These include wildlife, riparian, watershed, road-side, emergency post-fire soil stabilization, and other revegetation and restoration projects.

8. Stimulate development of new ways to achieve ecosystem management objectives that consider multidisciplinary long-term effects. Include the evaluation of alternatives that provide economical as well as practical means to restore plant and fungi communities.

40.3 – Policy

FSH 2609.26 – BOTANICAL PROGRAM MANAGEMENT HANDBOOK
CHAPTER 40 – REVEGETATION

Maintaining the rich native flora and associated vegetative communities of the Pacific Southwest Region is a critical element of ecosystem management. The use of native plants for revegetation and restoration is integral to the overall national goal of conserving the biodiversity, health, productivity, and sustainable use of forest, rangeland and aquatic ecosystems. Maintaining biodiversity includes retaining the inherent genetic variability within plant populations. Therefore, conservation of local germplasm is a desired outcome.

To the extent practicable, seeds and plants used in erosion control, fire rehabilitation, riparian restoration, forage enhancement, and other vegetation projects shall originate from genetically local sources of native plants. Native plants are intrinsically valuable, biologically diverse, and ecologically adapted to their habitats. They are key to sustaining resilient, healthy, and productive ecosystems. This policy supports management for sustainable use of ecosystems. A key element of sustainability is the conservation of natural biological diversity.

1. Prescriptions for use of plant materials are developed for revegetation by knowledgable plant resource specialists prior to implementation to ensure that the project is feasible and that suitable plant material is used.

2. Evaluate revegetation considerations to establish objectives EARLY in the planning process for Forest projects. If the proposed project requires revegetation or involves severe soil disturbance, such as construction or mining sites or other large soil disturbances, consider stockpiling topsoil beforehand. The topsoil can be respread after the soil disturbing activities are completed and aid revegetation with conserved soil organic matter, nutrients, native seed bank, and mycorrhizae. All revegetation projects must consider both natural and artificial regeneration alternatives including collection of local sources of suitable native plant seed or cuttings, nursery propagation, and on-site planting and maintenance activities.

3. To the extent practicable, plant materials (seed, cuttings, and whole plants) used in all revegetation projects shall originate from genetically local sources of native species.

a. Encourage natural regeneration where seed source and soil conditions are favorable. Where natural regeneration is likely to fail within the desired time frame and soil protection is necessary, evaluate the use of non-vegetative techniques that allow natives to return, for example in weed- and disease-free mulching, erosion blankets, or sterile straw waddles.

b. Alternatively, collect seed as near to the site as possible within an adaptive (seed) zone, follow genetic guidelines, and grow in the appropriate nursery. If a genetically local or similarly adapted stock of native species is not available for revegetation, consider either eliminating, delaying, or modifying the project to plant native species in stages as they become available.

c. When project objectives justify the use of non-native plant materials, documentation explaining why non-natives are preferred must be part of the project planning process.

4. Do not use plant materials sold as natives if the genetic origin and physiological quality is not known. Consider using commercial sources of native plant materials collected within the same ecological section (National Hierarchy of Ecological Units) or geographic district level, as mapped in The Jepson Manual (1993), as the project area. Use the seed zoning rules and the genetic guidelines (see Exhibit 01.) for further guidance. Avoid the use of plant material bred and/or grown outside of California, except where ecological zones extend past the California border such as the east side of the Sierra Nevada ecoprovince and the northern Klamath-Siskiyou boundary.

5. Carefully evaluate plant materials collected or purchased for National Forest projects to ensure that these materials are healthy, free of pests, and that they are properly handled, stored, and conditioned for successful use.

6. Constraints to use of native species. Many factors such as: cost; availability of plant materials; the capability of propagating a wide variety of native plants; as well as budgeting constraints where the project spans multiple years, yet funding is linked to a single year target; may be barriers to the use of native species. If after other alternatives have been thoroughly evaluated, the use of exotics is deemed necessary, the revegetation plan will include a justification for the use of nonnative species. In such circumstances, favor exotics with low reproductive fitness, short longevity, or self-pollination to reduce gene pollution and undesirable long-term effects on the ecosystem.

40.4 - Responsibilities

Forest Botanist or Forest Sensitive Plant Coordinator.

The Forest Botanist or Forest Sensitive Plant Coordinator shall develop the botanical section of all revegetation plans developed on a National Forest.

40.5 - Definitions.

1. Revegetation - a general term for renewing the vegetation on a project site, which may include restoration and rehabilitation.

2. Rehabilitation - improving a project site to a more desired condition than previously existed usually as a result of a major disturbance.

3. Restoration - reestablishing a project site to a previously existing natural condition using similar or identical native vegetation.

4. Native plant - one that occurs and has evolved naturally in the region as determined by climate, soil, and biotic factors.

5. Genetically local source - plant materials that originated at or within the same seed zone and elevation band as the project site.

6. Exotic or nonnative species - one that was introduced through human activity.

7. Undesirable plant - may be nonnative species, non-adapted source, genetically changed through selection in a foreign dissimilar environment, or possesses trait(s) that conflict with accomplishment of objectives.

40.6 - Guidelines

40.6 - Exhibit 01
Genetic Guidelines for Plant Collections

1) Origin is known

a) Document location of parent plants (see FSH 2409.42)

b) Identify and track collections from origin to nursery and back to field using a database management system.

c) Monitor survival, health, and growth performance over time.

2) Locally adapted

a) Seed origin should be as close as possible to the project site.

b) Use California tree seed zones to guide the transfer of plant materials.

1. For grasses, forbs, and shrubs, follow locally developed transfer guidelines where available, such as *Native Plant Seed Zones of the Klamath Mountains and Southern Cascades Section.*

2. Where locally developed guidelines are not available and for conifers or other trees, see California tree seed zone map and rules established in 1970 (Buck and others). These provide a framework for determining gene transfer priorities based on geoclimatic factors, when other information is lacking.

3. Collect and use plant materials within local 500 foot elevation bands where possible and never transfer woody plants more than 1000 feet up or down in elevation in the same seed zone.

4. Avoid transferring plant materials from one geographic district to another. Geographic districts are those described in the Jepson Manual.

c) Where possible, within seed zones and elevation bands, collect and use plant materials within the same vegetation series, or for riparian species, within watershed delineations.

d) Collect and use plant materials in more localized area in certain situations where site-specific ecotypes may develop, including:

1. Populations on unusual soils (for example, serpentine)

2. Populations from extreme or marginal environments for the species (tolerance limits to temperature, precipitation, nutrients, and others).

3. Populations with known or suspected unique genetic characteristics.

3) Genetically diverse

a) Plant materials should be collected from the project site. If not possible, plant materials should be collected from several sub-populations that are well-distributed within an adaptive (seed) zone.

b) Separate collections by 100 feet or greater for most outcrossing woody plants to ensure unrelatedness. Note: closer spacing may be appropriate for certain forbs and grasses that are highly specialized to their microenvironments.

c) Collect an approximately equal number of seeds/cuttings from each parent representative of that population. Ensure that the collection comes from a large number (30-50 but number depends on exact species) unrelated parents.

4) High quality

a) Select healthy, vigorous parent stock.

b) Collect at appropriate time (for example, when seeds are mature and cuttings are dormant).

c) Use optimal collection, processing, and storage procedures.

d) Use cultural practices that will maximize the success rate (minimize losses) from collection to nursery and on through project completion.

40.6 - Exhibit 02.
Quality Control Guidelines

1) Acquisition of plant material

a) Nursery and other appropriate resource personnel provide advice on quality standards for the acquisition of plant materials (force account, contract, or purchase) that will ensure that the plant materials are in a suitable physiological condition when delivered for whatever cultural activity (sowing, growing, storing, outplanting, etc) is required.

2) Plans for using plant material

a) Prior to receipt of plant material, handling procedures must be determined to ensure proper storage conditions for seeds, cuttings, or plants and to ensure proper care and tending during seeding, grafting, or planting operations.

40.6 - Exhibit 03.
Project Coordination Guidelines

1) Project Implementation

a) All projects should be carefully reviewed prior to implementation by appropriate biological professionals for advice on how to obtain suitable genetic sources and how to care for local, native plant materials (geneticists, nursery managers), on help to prepare and administer contracts for planting (contracting personnel), and to ensure the suitability of species and resource objectives (botanists, ecologists, silviculturists).

b) The review process should evaluate whether objectives are sound and that they can feasibly be met.

2) Monitoring process

a) Project monitoring should include assessing the effectiveness of the use of native plants for restoration and/or rehabilitation.

ATTACHMENT D

Seeding Guidelines for the Tahoe National Forest

Seeding Guidelines for the Tahoe National Forest

March 2003
With edits 2006
Kathy Van Zuuk

Reviewed by:
Blaze Baker
Carol Kennedy
Matt Wacker
Bob DeTar

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Introduction

In 1994, the Regional Forester adopted a native plants policy (see Appendix A). This native plants policy provides the general guidance for identifying the appropriate plant materials for rehabilitation and restoration projects in the Pacific Southwest Region.

During emergency rehabilitation, as occurs during fire suppression rehabilitation, Burned Area Emergency Rehabilitation (BAER), and other projects, the teams responsible for implementing the project benefit from having local guidelines that:

- describe the conditions when seeding is appropriate,
- identify appropriate local seed sources,
- list the species considered desirable and effective for rehabilitation and restoration efforts,
- list the unacceptable species, and
- provide a plan for monitoring the effectiveness of seedling treatments.

The purpose of this document is to provide these local guidelines.

General Seeding Guidelines

1. Do not introduce plants that will damage or have long lasting effects to the ecosystem.
    - Avoid planting persistent or invasive non-native. Refer to Table 1 for a list of these types of plants.
    - Use native plant material that is genetically appropriate and will not harm native gene pools.

2. Determine the probability of success before seeding.
    - Are the site, soil condition, available plant materials, and weather patterns within acceptable ranges for the plants selected?
    - Will there be unacceptable damage to resources without seeding?
    - What are the existing on-site seedbanks and nearby seed sources? Are they adequate for revegetation within the desired time frame?
    - Are there invasive exotic weeds present at the site?
    - Are the right tools and budgets available?

3. Choose the right plant(s) for the job
    - Use the basic seed mix of site-appropriate grasses and legumes for soil stabilization. Refer to Table 2.
    - If mulching is required, use certified weed free materials.
    - Consider adding other plant species for wildlife, aesthetics, or other purposes depending on the objective(s).

Emergency Seeding Guidelines

1. Seed only where erosion hazard is high to very high.
2. Use native seed if its origin is within the appropriate seed zone and elevation.
3. If native seed of suitable origin is not available, certified weed-free cereal grains may be used such as barley, wheat, or white oats.
4. If mulching is required, use certified weed free materials.
5. Consider using palletized seed or seed/mulch combinations such as hydro seeding, etc.

Criteria for selecting appropriate native species for seedling

1. Use material collected from within the same native plant seed zone. Native plant seed zone is defined (at this time) as the ecological subsection-based seed zone maps.
2. Use material collected from within +/- 1,000 feet in elevation of the planting site.
3. Use species appropriate to the vegetation types in the project area. Consult Ecological Subregions of California, Ecological Unit Inventory species lists, and your unit botanist for information.
4. Consider the soil types. Use the soil map unit maps and soil map unit descriptions for typical vegetation for a particular soil type.
5. Consider the site moisture condition. Are the soils wet, dry, or somewhere in between?

Table 1. Examples of plant materials unsuitable for use on the Tahoe National Forest (TNF)[1]

Common Name	Scientific Name	Common Use
Intermediate & pubescent wheatgrass	*Elytrigia intermedia*	Forage, erosion control
Crested wheatgrass	*Agropyron desertorum*	Forage, erosion control
Smooth brome	*Bromus inermis*	Forage, erosion control
Quackgrass	*Elytrigia repens*	Forage, erosion control
Orchardgrass	*Dactylis glomerata*	Forage, erosion control
Annual & perennial ryegrass	*Lolium* species	Forage, erosion control
Birdsfoot trefoil	*Lotus corniculatus*	Forage, erosion control
Yellow or white sweet clover	*Melilotus* species	Forage, erosion control
Red, crimson, or white clover	*Trifolium pratense, T. incarnatum, T. repens*	Forage, erosion control, cover crops
Alfalfa, medics, &bur-clover	*Medicago* species	Forage, erosion control
Common timothy	*Phleum pratense*	Forage, erosion control
Zorro fescue	*Vulpia myuros* (was *Festuca myuros var. hirsute*)	Forage, erosion control
Tree-of-heaven	*Ailanthus altissima*	Ornamental[2]
Black locust	*Robinia pseudoacacia*	Ornamental
Saltcedar	*Tamarix ramosissima*	Ornamental
Giant reed	*Arundo donax*	Ornamental
Spanish broom	*Spartium junceum*	Ornamental
Scotch broom	*Cytisus scoparius*	Ornamental
French broom	*Genista monspessulana*	Ornamental
Perennial sweet pea	*Lathyrus latifolius*	Ornamental
Ox-eye daisy	*Leucanthemum vulgare*	Ornamental

[1] These plants have a tendency to naturalize and permanently displace native species.
[2] Some of the ornamentals listed here are on the state of California noxious weed list.

Table 2. Native species suitable for use in the TNF Ecological Sections

Common Name	Scientific Name	Comments
California brome	*Bromus carinatus*	Germinates easily
Slender hairgrass	*Deschampsia elongata*	Germinates easily
Blue wildrye	*Elymus glaucus*	Germinates easily
Squirreltail	*Elymus elymoides*	Germinates easily
California fescue	*Festuca californica*	Germinates easily
Idaho fescue	*Festuca idahoensis*	Germinates easily
Sandberg bluegrass	*Poa secunda*	Germinates easily
Annual fescue	*Vulpia microstachys*	Germinates easily
Needlegrass	*Achnatherum occidentalis*	Plug planting may be needed.
Native bentgrass	*Agrostis* species	Plug planting may be needed.
Sedges	*Carex* species	Plug planting may be needed.
California oatgrass	*Danthonia californica*	Plug planting may be needed.
Tufted hairgrass	*Deschampsia caespitosa*	Plug planting may be needed.
Meadow barley	*Hordeum brachyantherum*	Plug planting may be needed.
Rushes	*Juncus* species	Plug planting may be needed.
Annual lotus	*Lotus purshianus*	Good germination success on TNF
Melic grass	*Melica* species	Plug planting may be needed.
Alpine timothy	*Phleum alpinum*	Plug planting may be needed.
Sandberg bluegrass	*Poa secunda*	Plug planting may be needed.
Bluebunch wheatgrass	*Pseudoregneria spicata*	Plug planting may be needed.
Yarrow	*Achillea millefolium*	Wildlife wildflowers, ornamentals
Columbine	*Aquilegia formosa*	Wildlife wildflowers, ornamentals
Mugwort	*Artemisia ludoviciana*	Wildlife wildflowers, ornamentals
Western aster	*Aster occidentalis*	Wildlife wildflowers, ornamentals
Sulfur buckwheat	*Eriogonum umbellatum*	Wildlife wildflowers, ornamentals
Woolly sunflower	*Eriophyllum lanatum*	Wildlife wildflowers, ornamentals
Bush penstemon	*Keckiella lemmonii*	Wildlife wildflowers, ornamentals
Cinquefoil	*Potentilla glandulosa*	Wildlife wildflowers, ornamentals
Red-osier dogwood	*Cornus stolonifera*	Wildlife wildflowers, ornamentals

Appendix A. Native Plant Policy (June 30, 1994)

Maintaining the rich native flora and associated vegetative communities of the Pacific Southwest Region is a critical element of Ecosystem Management. The use of native plants fore revegetation and restoration is integral to the sustainable use of forest, rangeland, and aquatic ecosystems. Maintaining biodiversity includes retaining the inherent genetic variability within plant populations. Therefore, conservation of local germplasm is a desired outcome of our activities.

We will begin to broaden the base of local native plant materials through careful collection, storage, and production efforts to meet current need and to anticipate the future demand for revegetation. We must move as rapidly as possible toward the use of local native plant material and away from the use of exotics and non-local sources. Forests will follow the set of operational guides (enclosed) to avoid irreversible impacts on native ecosystems. This policy includes the restoration of historic ranges.

The following policy supports ecosystem management efforts. A key element of sustainability is the conservation of natural biological diversity. Native plants are intrinsically valuable, biologically diverse, and ecologically adapted to their habitats. They are key factors in sustaining resilient, healthy, and productive ecosystems.

Effective immediately, R5 policy on the use of native vegetative materials on National Forests will be:

To the extent practicable, seeds and plants used in erosion control, fire rehabilitation, riparian restoration, forage enhancement, and other vegetation projects shall originate from genetically local sources of native plants.

1. Prescriptions for use of plant materials for revegetation must be developed by knowledgeable plant resource specialists prior to implementation to ensure that the project is feasible and suitable plant material is used.
2. All revegetation facets must be evaluated early in the planning process for Forest projects.
3. Plant materials (seed, cutting, and whole plants) used in all revegetation projects shall originate from genetically local sources of native species, to the extent practicable.
4. Do not use plant materials of species sold as natives if the genetic origin is not known.
5. Plant materials collected or purchased for Forest projects must be carefully evaluated to ensure that these materials are healthy, free of pests, and that they are properly handled, stored, and conditioned for successful use.

The enclosed document is further guidance for implementing this policy. Much of the enclosed material will become part of the Forest Service manual as an R5 supplement. Questions regarding this policy should be referred to David Diaz at Ddiaz@fs.fed.us.
/S/Joyce T. Muraoka, for RONALD E. STEWART, Regional Forester

Appendix B. Policy on the Use of Certified Weed-free Products (June 22, 2001)

The Region is working with the State of California, the Bureau of Land Management, the National Park Service and other agencies to implement a program designed to help slow the spread of noxious weeds by requiring the use of certified weed-free hay and straw. The purpose of this letter is to address the use of certified weed-free hay and straw products by Forest Service employees and the placement of clauses in permits and contracts requiring certified weed-free products where hay and straw would be necessary. The County Agricultural Commissioners and the State of California have already developed procedures to certify fields growing hay or straw as weed-free. These procedures are guidelines under the California Agricultural Code, and are available on the interanet at www.cdfa.ca.gov/weedhome.

Current national policy (FSM 2080.03(3)) requires the Forest Service and its contractors to utilize certified weed-free hay, straw and mulch products. These products include livestock feed, erosion control and reclamation materials. All new contracts shall include a clause requiring the use of certified weed-free hay and straw products. The authorized officer may make exceptions to this requirement based on product availability. Forests shall make every effort to assure the products we utilize are weed-free.

Permit holders such as livestock and special uses permittees are also key in meeting our objective of stopping the spread of noxious weeds. As permits are issued or amended, clauses shall be added to require the use of weed-free products unless approved by the authorized officer.

We understand there is limited availability of certified weed-free products in some areas at this time. The availability of weed-free products should increase as the demand increases and more producers get their fields certified. If weed-free products are not available, there are precautions that may be taken to limit the potential for noxious weeds to be spread through the use of hay and straw. These precautions include 1) Using rice straw for erosion control projects 2) Using pelleted feed rather than hay bales and 3) Inspecting and sampling hay bales before purchase. Attached to this letter is a current list of suppliers of weed-free hay and straw. This list is linked to the above website, and is updated as new suppliers get their products certified.

Using certified weed-free products helps to meet our objective of stopping the spread or introduction of noxious weeds. We must take a leadership position on the use of weed-free products on the National Forests as a positive step forward. If you have any questions on the direction of the use of weed-free products or our noxious weed program, please contact Cheri Rohrer at 707-562-8682 or crohrer@fs.fed.us.

/s/Gilbert J. Espinosa(for)

BRADLEY E. POWELL
Regional Forester

For more information we recommend you visit http://www.extendinc.com/weedfreefeed.

Appendix C. Some sources of native plants and weed free products

Table C-1. Some Sources of Native Plants

Name	Address	Phone
NRCS (sometimes give away trees)	113 Presley Way, Ste 1 GV, CA 95959	(530) 272-3417
CNPS – Redbud Chapter	13896 Jesse Lane Grass Valley, CA 95945	(530) 272-5532
NRCS (sometimes give away trees)	251 Auburn Ravine Rd #201 Auburn, CA 95603	(530) 823-6830
Peaceful Valley Farm Supply (some native plants)	P.O. Box 2209 Grass Valley, CA 95945	(530) 272-4769
Placer County U.C. Master Gardeners (give advice on what to plant)	11477 E. Ave. Auburn, CA 95603	(530) 663-2929
Redwood City Seed Co.	P.O. Box 361 Redwood City, CA 94064	(415) 325-7333
CA Conservation Corps	P.O. Box 7199 Napa, CA 94558	(707) 253-1421
Pacific Coast Seed, Inc.	6144-A Industrial Way Livermore, CA 94550 jonshilling@bigvalley.net	(800) 733-3462 (530) 432-5914 (530) 432-5297 fax
Comstock Seed	8520 W. 4th Street Reno, Nevada 89523	(702) 746-3681
Sierra Valley Wholesale Nursery	P.O. Box 79 Beckwourth, CA 96129	(916) 832-0114
Hedgerow Farms	21740 County Road 88 Winters, CA 95694	(530) 668-8369
Bitterroot Restoration, Inc.	55 Sierra College Boulevard Lincoln, CA	(916) 434-9695
Freshwater Farms	5851 Myrtle Avenue Freshwater, CA 95503	(707) 444-8261

The local nurseries all carry trees – you could call around and ask for what you want. In addition, the Department of Conservation, Office of Mine Reclamation, 801 K Street, MS 09-06, Sacramento, California 95814-3529 has produced a document called *Nursery Sources For California Native Plants*, 1995. This document is available for $10.00.

Table C-2. Some Growers of Certified Weed Free Products

Name	Address	Phone	Product(s)
Chamberlain Farms	34530 County Road 29 Woodland CA 95695	(800) 794-9019 (530) 662-2620	Certified straw for stall bedding, erosion control, ski runs, landscape
David Allan	E. End County Road 18 Cedarville, CA 96104	(530) 279-2172	CA certified grass hay bales
Den-Lor Farms, Dennis M. Serpa	700 East Avenue Turlock, CA 95380	(209) 667-2220 (209) 531-5175	Certified weed free forage mix hay – mixture of oats, wheat and barley
G & G Farms Joe Gonzales	2320 McKean Road San Jose, CA 95141	(409) 268-2567 (409) 398-5120	California certified bales
G & K Farms of California, Inc	720 Las Animas Road Gilroy, CA 95020	(409) 848-1400	California Certified baled hays – oats, alfalfa, orchard, grass, orchard grass/alfalfa mix, straw
Nature's Best Pelleting	875 Alfalfa Plant Road, Courtland, CA 95615	(916) 775-1175, (916) 775-2535 FAX	California certified – write or call for a complete list of distributors
R.S. Green Specialties	213 County Road S, Willows, CA 95988	(530) 934-7225, (530) 934-9662 FAX, (530) 570-0459 mobile	Certified rice and wheat straw for erosion control, bedding and mulch
R.H. Dyck, Inc. EarthSaver TM	P.O. Box 665 Winters, CA 95694	(866) 928-8537 (530) 795-3972 Fax	Certified weed free rice straw for erosion control
Rice Straw Cooperative	P.O. Box 562 Biggs, CA 95917	(530) 868-1511 (530) 868-5043	Certified rice straw in small and large bales.
Running Wolf Farms Ron Wolf	15800 Ranchero Drive, Morgan Hill, CA 95037	(408) 779-4555	California certified
Sears Point Farming	5400 Sears Point Road Sonoma, CA 95476	(707) 938-3028	CA certified weed free oat hay and wheat straw.
Bill Throgmorton	1995 Day Road, Gilroy, CA 95020	(408) 842-5570	California certified baled hays
Lockeford Hay Station	19226 N Highway 88 Lockeford, CA 95237	(209) 727-0131	California certified pellets

ATTACHMENT E

Seeding Guidelines for the Eldorado National Forest

APPENDIX B
ELDORADO FOREST SEED, MULCH, AND FERTILIZER PRESCRIPTION

APPENDIX B

Eldorado Forest Seed, Mulch and Fertilizer Prescription

File Code 2500, 2670, 7100 **Date:** March 21, 2000
RouteTo: Forest Leadership Team
Subject: Seed, Mulch and Fertilizer Prescription

Enclosed are the new Eldorado National Forest Seed, Mulch and Fertilizer Prescriptions. These prescriptions supercede any previous recommendations. Please note one of the primary changes is the replacement of non-native species in the standard seed mix for special projects with native species found in the Sierra Nevada. The reason for changing the seed mix is due to increasing evidence of the importance of native species in ecosystems and the need to preserve and restore native bio-diversity. To reflect this new information Region 5 adopted a policy in June 1994 regarding the use of native plant material in restoration and revegetation projects.

This policy states that on the use of native vegetative materials on National Forests: "To the extent practical, seeds and plants used in erosion control, fire rehabilitation, riparian restoration, forage enhancement, and other vegetation projects shall originate from genetically local sources of native plants."

1. Prescriptions for use of plant materials for revegetation must be developed by knowledgable plant resource specialists prior to implementation to ensure that the project is feasible and suitable plant material is used.

2. All revegetation facets must be evaluated early in the planning process for Forest projects.

3. Plant materials (seed, cuttings, and whole plants) used in all revegetation projects shall originate from genetically local sources of native species, to the extent practical.

4. Do not use plant materials of species sold as natives if the genetic origin is not known.

5. Plant materials collected or purchased for Forest projects must be carefully evaluated to ensure that these materials are healthy, free of pests, and that they are properly handled, stored, and conditioned for successful use.

Efforts to protect native species and restore bio-diversity also include measures to reduce the risk of introducing noxious weeds. Forest Service Manual, 2080 Noxious Weed Management, states: Make every effort to ensure that all seed, feed, hay, and straw used on National Forest System lands is free of noxious weed seeds. (FSH 6309.12, sec. 42 and 42.1). To this end straw used for erosion control on the Eldorado National Forest will be certified weed-free. A state-wide certification program is being developed. Implementation of a weed-free forage and mulch program by the California Agricultural Commissioners and Sealers Association (CACASA) is

scheduled for 2002. Pending implementation of that program, rice straw, (local) native grass straw, or pine needle mulch may be substituted for weed-free certified mulch.

When a fertilizer application is necessary the use of quick release, inorganic materials should be avoided. Beneficial effects from these types of fertilizers are short term and tend to favor the initial establishment of exotic grasses and weeds. A slow release organic product that provides a slow release of nutrients over multiple seasons, will be used.

Although this change in the ENF standard seed mix for special projects does not entirely meet the intent of Region 5 policy, it is a step in the right direction. Please ensure that this new prescription is accepted as quickly as possible and that the original seed mix is no longer used. The recommended seed and fertilizer are commercially available. If there are any questions or concerns regarding these changes please contact Mike Taylor, at 530-621-5219 or Dave Jones, at 530-621-5248.

/s/ *Judie L. Tartaglia*
JUDIE L. TARTAGLIA
Acting Forest Supervisor

ATTACHMENT F

USDA-FS Native Plant Policy (Region 5)

Appendix A. Native Plant Policy (June 30, 1994)

Maintaining the rich native flora and associated vegetative communities of the Pacific Southwest Region is a critical element of Ecosystem Management. The use of native plants fore revegetation and restoration is integral to the sustainable use of forest, rangeland, and aquatic ecosystems. Maintaining biodiversity includes retaining the inherent genetic variability within plant populations. Therefore, conservation of local germplasm is a desired outcome of our activities.

We will begin to broaden the base of local native plant materials through careful collection, storage, and production efforts to meet current need and to anticipate the future demand for revegetation. We must move as rapidly as possible toward the use of local native plant material and away from the use of exotics and non-local sources. Forests will follow the set of operational guides (enclosed) to avoid irreversible impacts on native ecosystems. This policy includes the restoration of historic ranges.

The following policy supports ecosystem management efforts. A key element of sustainability is the conservation of natural biological diversity. Native plants are intrinsically valuable, biologically diverse, and ecologically adapted to their habitats. They are key factors in sustaining resilient, healthy, and productive ecosystems.

Effective immediately, R5 policy on the use of native vegetative materials on National Forests will be:

To the extent practicable, seeds and plants used in erosion control, fire rehabilitation, riparian restoration, forage enhancement, and other vegetation projects shall originate from genetically local sources of native plants.

1. Prescriptions for use of plant materials for revegetation must be developed by knowledgeable plant resource specialists prior to implementation to ensure that the project is feasible and suitable plant material is used.
2. All revegetation facets must be evaluated early in the planning process for Forest projects.
3. Plant materials (seed, cutting, and whole plants) used in all revegetation projects shall originate from genetically local sources of native species, to the extent practicable.
4. Do not use plant materials of species sold as natives if the genetic origin is not known.
5. Plant materials collected or purchased for Forest projects must be carefully evaluated to ensure that these materials are healthy, free of pests, and that they are properly handled, stored, and conditioned for successful use.

The enclosed document is further guidance for implementing this policy. Much of the enclosed material will become part of the Forest Service manual as an R5 supplement. Questions regarding this policy should be referred to David Diaz at Ddiaz@fs.fed.us.
/S/Joyce T. Muraoka, for RONALD E. STEWART, Regional Forester

Appendix C. Some sources of native plants and weed free products

Table C-1. Some Sources of Native Plants

Name	Address	Phone
NRCS (sometimes give away trees)	113 Presley Way, Ste 1 GV, CA 95959	(530) 272-3417
CNPS – Redbud Chapter	13896 Jesse Lane Grass Valley, CA 95945	(530) 272-5532
NRCS (sometimes give away trees)	251 Auburn Ravine Rd #201 Auburn, CA 95603	(530) 823-6830
Peaceful Valley Farm Supply (some native plants)	P.O. Box 2209 Grass Valley, CA 95945	(530) 272-4769
Placer County U.C. Master Gardeners (give advice on what to plant)	11477 E. Ave. Auburn, CA 95603	(530) 663-2929
Redwood City Seed Co.	P.O. Box 361 Redwood City, CA 94064	(415) 325-7333
CA Conservation Corps	P.O. Box 7199 Napa, CA 94558	(707) 253-1421
Pacific Coast Seed, Inc.	6144-A Industrial Way Livermore, CA 94550 jonshilling@bigvalley.net	(800) 733-3462 (530) 432-5914 (530) 432-5297 fax
Comstock Seed	8520 W. 4th Street Reno, Nevada 89523	(702) 746-3681
Sierra Valley Wholesale Nursery	P.O. Box 79 Beckwourth, CA 96129	(916) 832-0114
Hedgerow Farms	21740 County Road 88 Winters, CA 95694	(530) 668-8369
Bitterroot Restoration, Inc.	55 Sierra College Boulevard Lincoln, CA	(916) 434-9695
Freshwater Farms	5851 Myrtle Avenue Freshwater, CA 95503	(707) 444-8261

The local nurseries all carry trees – you could call around and ask for what you want. In addition, the Department of Conservation, Office of Mine Reclamation, 801 K Street, MS 09-06, Sacramento, California 95814-3529 has produced a document called *Nursery Sources For California Native Plants*, 1995. This document is available for $10.00.

ATTACHMENT G

Appendix A, Record of Decision for the Sierra Nevada Forest Plan Amendment Final Environmental Impact Statement

SNFPA Final Supplemental Environmental Impact Statement
January 2004

Record of Decision

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Record of Decision

Appendix A: Management Direction

Appendix B: Glossary

SNFPA Final Supplemental Environmental Impact Statement
January 2004

Appendix A: Management Direction

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Appendix A: Management Direction

B. Land Allocations and Desired Conditions

California Spotted Owl Protected Activity Centers (PACs)

Designation

California spotted owl protected activity centers (PACs) are delineated surrounding each territorial owl activity center detected on National Forest System lands since 1986. Owl activity centers are designated for all territorial owls based on: (1) the most recent documented nest site, (2) the most recent known roost site when a nest location remains unknown, and (3) a central point based on repeated daytime detections when neither nest or roost locations are known.

PACs are delineated to: (1) include known and suspected nest stands and (2) encompass the best available 300 acres of habitat in as compact a unit as possible. The best available habitat is selected for California spotted owl PACs to include: (1) two or more tree canopy layers; (2) trees in the dominant and co-dominant crown classes averaging 24 inches dbh or greater; (3) at least 70 percent tree canopy cover (including hardwoods); and (4) in descending order of priority, CWHR classes 6, 5D, 5M, 4D, and 4M and other stands with at least 50 percent canopy cover (including hardwoods). Aerial photography interpretation and field verification are used as needed to delineate PACs.

As additional nest location and habitat data become available, boundaries of PACs are reviewed and adjusted as necessary to better include known and suspected nest stands and encompass the best available 300 acres of habitat.

When activities are planned adjacent to non-national forest lands, available databases are checked for the presence of nearby California spotted owl activity centers on non-national forest lands. A 300-acre circular area, centered on the activity center, is delineated. Any part of the circular 300-acre area that lies on national forest lands is designated and managed as a California spotted owl PAC.

PACs are maintained regardless of California spotted owl occupancy status. However, after a stand-replacing event, evaluate habitat conditions within a 1.5-mile radius around the activity center to identify opportunities for re-mapping the PAC. If there is insufficient suitable habitat for designating a PAC within the 1.5-mile radius, the PAC may be removed from the network.

Desired Conditions

Stands in each PAC have: (1) at least two tree canopy layers; (2) dominant and co-dominant trees with average diameters of at least 24 inches dbh; (3) at least 60 to70 percent canopy cover; (4) some very large snags (greater than 45 inches dbh); and (5) snag and down woody material levels that are higher than average.

Appendix A: Management Direction

B. Land Allocations and Desired Conditions

Northern Goshawk Protected Activity Centers (PACs)

Designation

Northern goshawk protected activity centers (PACs) are delineated surrounding all known and newly discovered breeding territories detected on National Forest System lands. Northern goshawk PACs are designated based upon the latest documented nest site and location(s) of alternate nests. If the actual nest site is not located, the PAC is designated based on the location of territorial adult birds or recently fledged juvenile goshawks during the fledgling dependency period.

PACs are delineated to: (1) include known and suspected nest stands and (2) encompass the best available 200 acres of forested habitat in the largest contiguous patches possible, based on aerial photography. Where suitable nesting habitat occurs in small patches, PACs are defined as multiple blocks in the largest best available patches within 0.5 miles of one another. Best available forested stands for PACs have the following characteristics: (1) trees in the dominant and co-dominant crown classes average 24 inches dbh or greater; (2) in westside conifer and eastside mixed conifer forest types, stands have at least 70 percent tree canopy cover; and (3) in eastside pine forest types, stands have at least 60 percent tree canopy cover. Non-forest vegetation (such as brush and meadows) should not be counted as part of the 200 acres.

As additional nest location and habitat data become available, PAC boundaries are reviewed and adjusted as necessary to better include known and suspected nest stands and to encompass the best available 200 acres of forested habitat.

When activities are planned adjacent to non-national forest lands, available databases are checked for the presence of nearby northern goshawk activity centers on non-national forest lands. A 200-acre circular area, centered on the activity center, is delineated. Any part of the circular 200-acre area that lies on national forest lands is designated and managed as a northern goshawk PAC.

PACs are maintained regardless of northern goshawk occupancy status. PACs may be removed from the network after a stand-replacing event if the habitat has been rendered unsuitable as a northern goshawk PAC and there are no opportunities for re-mapping the PAC in proximity to the affected PAC.

Desired Conditions

Stands in each PAC have: (1) at least two tree canopy layers; (2) dominant and co-dominant trees with average diameters of at least 24 inches dbh; (3) at least 60 to70 percent canopy cover; (4) some very large snags (greater than 45 inches dbh); and (5) snag and down woody material levels that are higher than average.

Appendix A: Management Direction

B. Land Allocations and Desired Conditions

California Spotted Owl Home Range Core Areas (HRCAs)

Designation

A home range core area is established surrounding each territorial spotted owl activity center detected after 1986. The core area amounts to 20 percent of the area described by the sum of the average breeding pair home range plus one standard error. Home range core area sizes are as follows: 2,400 acres on the Hat Creek and Eagle Lake Ranger Districts of the Lassen National Forest, 1,000 acres on the Modoc, Inyo, Humboldt-Toiyabe, Plumas, Tahoe, Eldorado, Lake Tahoe Basin Management Unit and Stanislaus National Forests and on the Almanor Ranger District of Lassen National Forest, and 600 acres of the Sequoia and Sierra National Forests.

Aerial photography is used to delineate the core area. Acreage for the entire core area is identified on national forest lands. Core areas encompass the best available California spotted owl habitat in the closest proximity to the owl activity center. The best available contiguous habitat is selected to incorporate, in descending order of priority, CWHR classes 6, 5D, 5M, 4D and 4M and other stands with at least 50 percent tree canopy cover (including hardwoods). The acreage in the 300-acre PAC counts toward the total home range core area. Core areas are delineated within 1.5 miles of the activity center.

When activities are planned adjacent to non-national forest lands, circular core areas are delineated around California spotted owl activity centers on non-national forest lands. Using the best available habitat as described above, any part of the circular core area that lies on national forest lands is designated and managed as a California spotted owl home range core area.

Desired Conditions

HRCAs consist of large habitat blocks that have: (1) at least two tree canopy layers; (2) at least 24 inches dbh in dominant and co-dominant trees; (3) a number of very large (greater than 45 inches dbh) old trees; (4) at least 50 to 70 percent canopy cover; and (5) higher than average levels of snags and down woody material.

Appendix A: Management Direction

B. Land Allocations and Desired Conditions

Riparian Conservation Areas

Designation

Riparian conservation area (RCA) widths are described below. RCA widths shown below may be adjusted at the project level if a landscape analysis has been completed and a site-specific RCO analysis demonstrates a need for different widths.

Perennial Streams: 300 feet on each side of the stream, measured from the bank full edge of the stream

Seasonally Flowing Streams (includes intermittent and ephemeral streams): 150 feet on each side of the stream, measured from the bank full edge of the stream

Streams in Inner Gorge[1]: top of inner gorge

Special Aquatic Features[2] or Perennial Streams with Riparian Conditions extending more than 150 feet from edge of streambank or Seasonally Flowing streams with riparian conditions extending more than 50 feet from edge of streambank: 300 feet from edge of feature or riparian vegetation, whichever width is greater

Other hydrological or topographic depressions without a defined channel: RCA width and protection measures determined through project level analysis.

Desired Conditions

Water quality meets the goals of the Clean Water Act and Safe Drinking Water Act; it is fishable, swimmable, and suitable for drinking after normal treatment.

Habitat supports viable populations of native and desired non-native plant, invertebrate, and vertebrate riparian and aquatic-dependent species. New introductions of invasive species are prevented. Where invasive species are adversely affecting the viability of native species, the appropriate State and Federal wildlife agencies have reduced impacts to native populations.

Species composition and structural diversity of plant and animal communities in riparian areas, wetlands, and meadows provide desired habitat conditions and ecological functions.

The distribution and health of biotic communities in special aquatic habitats (such as springs, seeps, vernal pools, fens, bogs, and marshes) perpetuates their unique functions and biological diversity.

Spatial and temporal connectivity for riparian and aquatic-dependent species within and between watersheds provides physically, chemically and biologically unobstructed movement for their survival, migration and reproduction.

The connections of floodplains, channels, and water tables distribute flood flows and sustain diverse habitats.

Soils with favorable infiltration characteristics and diverse vegetative cover absorb and filter precipitation and sustain favorable conditions of stream flows.

In-stream flows are sufficient to sustain desired conditions of riparian, aquatic, wetland, and meadow habitats and keep sediment regimes as close as possible to those with which aquatic and riparian biota evolved.

The physical structure and condition of stream banks and shorelines minimizes erosion and sustains desired habitat diversity.

The ecological status of meadow vegetation is late seral (50 percent or more of the relative cover of the herbaceous layer is late seral with high similarity to the potential natural community). A diversity of age classes of hardwood shrubs is present and regeneration is occurring.

Meadows are hydrologically functional. Sites of accelerated erosion, such as gullies and headcuts are stabilized or recovering. Vegetation roots occur throughout the available soil profile. Meadows with perennial and intermittent streams have the following characteristics: (1) stream energy from high flows is dissipated, reducing erosion and improving water quality, (2) streams filter sediment and capture bedload, aiding floodplain development, (3) meadow conditions enhance floodwater retention and groundwater recharge, and (4) root masses stabilize stream banks against cutting action.

[1] Inner gorge is defined by stream adjacent slopes greater than 70 percent gradient
[2] Special Aquatic Features include: lakes, wet meadows, bogs, fens, wetlands, vernal pools, and springs

Appendix A: Management Direction

D. Management Standards and Guidelines

Forest-wide Standards and Guidelines

Standards and guidelines described in this section apply to all land allocations (other than wilderness areas and wild and scenic river areas) unless stated otherwise.

Fire and Fuels Management

1. Strategically place area fuels treatments across the landscape to interrupt fire spread and achieve conditions that: (1) reduce the size and severity of wildfire and (2) result in stand densities necessary for healthy forests during drought conditions. Complete a landscape-level design of area treatment patterns prior to project-level analysis. Develop treatment patterns using a collaborative, multi-stakeholder approach. Determine the size, location, and orientation of area fuels treatments at a landscape-scale, using information about fire history, existing vegetation and fuels condition, prevailing wind direction, topography, suppression resources, attack times, and accessibility to design an effective treatment pattern. The spatial pattern of the treatments is designed to reduce rate of fire spread and fire intensity at the head of the fire. Strategic placement of fuels treatments should also consider objectives for locating treatment areas to overlap with areas of condition class 2 and 3, high density stands, and pockets of insect and disease. Avoid PACs to the greatest extent possible when locating area treatments. Incorporate areas that already contribute to wildfire behavior modification, including timber sales, burned areas, bodies of water, and barren ground, into the landscape treatment area pattern. Identify gaps in the landscape pattern where fire could spread at some undesired rate or direction and use treatments (including maintenance treatments and new fuels treatments) to fill identified gaps.

2. Vegetation within treatment areas should be modified to meet desired surface ladder, and crown fuel conditions as well as stand densities necessary for healthy forests during drought conditions. Site specific prescriptions should be designed to reduce fire intensity, rate of fire spread, crown fire potential, mortality in dominant and co-dominant trees, and tree density. Managers should consider such variables as the topographic location of the treatment area, slope steepness, predominant wind direction, and the amount and arrangement of surface, ladder, and crown fuels in developing fuels treatment prescriptions.

3. Where young plantations (generally Pacific Southwest Region size classes 0x, 1x, 2x) are included within area treatments, apply the necessary silvicultural and fuels reduction treatments to: (1) accelerate the development of key habitat and old forest characteristics, (2) increase stand heterogeneity, (3) promote hardwoods, and (4) reduce risk of loss to wildland fire. In size class 2x plantations, treatments should be designed to reduce fire intensity, rate of fire spread and tree mortality. Design a sequence of fuel reduction projects to achieve the standards below.

   Plantations (0x-2x):

- 3 inches and smaller surface fuel load: less than 5 tons per acre,
- less than 0.5 foot fuel bed depth,
- stocking levels that provide well-spaced tree crowns (for example, approximately 200 trees per acre in 4 inch dbh trees),
- less than 50 percent surface area with live fuels (brush), and
- tree mortality less than 50 percent of the existing stocking under 90th percentile fire weather conditions (2x type only)

4. Design mechanical treatments in brush and shrub patches to remove the material necessary to achieve the following outcomes from wildland fire under 90th percentile fire weather conditions: (1) wildland fires would burn with an average flame length of 4 feet or less and (2) fire line production rates would be doubled. Treatments should be effective for more than 5 to 10 years.

5. Design a sequence of fuel reduction treatments in conifer forest types (including 3x plantation types) to achieve the following standards within the treatment area:

   - an average of 4-foot flame length under 90th percentile fire weather conditions.
   - surface and ladder fuels removed as needed to meet design criteria of less than 20 percent mortality in dominant and co-dominant trees under 90th percentile weather and fire behavior conditions.
   - tree crowns thinned to meet design criteria of less than 20 percent probability of initiation of crown fire under 90th percentile weather conditions.

Mechanical Thinning Treatments

6. For all mechanical thinning treatments, design projects to retain all live conifers 30 inches dbh or larger. Exceptions are allowed to meet needs for equipment operability.

7. For mechanical thinning treatments in mature forest habitat (CWHR types 4M, 4D, 5M, 5D, and 6) **outside WUI defense zones:**

   - Design projects to retain at least 40 percent of the existing basal area. The retained basal area should generally be comprised of the largest trees.
   - Where available, design projects to retain 5 percent or more of the total treatment area in lower layers composed of trees 6 to 24 inches dbh within the treatment unit.
   - Design projects to avoid reducing pre-existing canopy cover by more than 30 percent within the treatment unit. Percent is measured in absolute terms (for example, canopy cover at 80 percent should not be reduced below 50 percent.)

- Within treatment units, at a minimum, the intent is to provide for an effective fuels treatment. Where existing vegetative conditions are at or near 40 percent canopy cover, projects are to be designed remove the material necessary to meet fire and fuels objectives.

- **Within California spotted owl Home Range Core Areas:** Where existing vegetative conditions permit, design projects to retain at least 50 percent canopy cover averaged within the treatment unit. Exceptions are allowed in limited situations where additional trees must be removed to adequately reduce ladder fuels, provide sufficient spacing for equipment operations, or minimize re-entry. Where 50 percent canopy retention cannot be met for reasons described above, retain at least 40 percent canopy cover averaged within the treatment unit.

- **Outside of California spotted owl Home Range Core Areas:** Where existing vegetative conditions permit, design projects to retain at least 50 percent canopy cover within the treatment unit. Exceptions are allowed where project objectives require additional canopy modifications (such as the need to adequately reduce ladder fuels, provide for safe and efficient equipment operations, minimize re-entry, design cost efficient treatments, and/or significantly reduce stand density.) Where canopy cover must be reduced below 50 percent, retain at least 40 percent canopy cover averaged within the treatment unit.

- **Within California spotted owl PACs**, where treatment is necessary, remove only material needed to meet project fuels objectives. Focus on removal of surface and ladder fuels.

The standards in the bulleted list above *do not apply* to the eastside pine type.

8. For mechanical thinning treatments **outside defense zones in the eastside pine type:** in mature forest habitat (CWHR types 4M, 4D, 5M, 5D, and 6), design projects to retain 30 percent of the existing basal area. The retained basal area should be generally comprised of the largest trees. Projects in the eastside pine type have no canopy cover retention standards and guidelines.

9. Standards and guidelines # 6, 7, and 8 above apply only to mechanical thinning harvests specifically designed to meet objectives for treating fuels and/or controlling stand densities.

Snags and Down Woody Material

10. Determine down woody material retention levels on an individual project basis, based on desired conditions. Emphasize retention of wood in the largest size classes and in decay classes 1, 2, and 3. Consider the effects of follow-up prescribed fire in achieving desired down woody material retention levels.

11. Determine snag retention levels on an individual project basis for vegetation treatments. Design projects to implement and sustain a generally continuous supply of snags and live decadent trees suitable for cavity nesting wildlife across a landscape. Retain some mid- and large diameter live trees that are currently in decline, have substantial wood defect, or that have desirable characteristics (teakettle branches, large diameter broken top, large cavities in the bole) to serve as future replacement snags and to provide nesting structure. When determining snag retention levels and locations, consider land allocation, desired condition, landscape

position, potential prescribed burning and fire suppression line locations, and site conditions (such as riparian areas and ridge tops), avoiding uniformity across large areas.

General guidelines for large-snag retention are as follows:

- **westside mixed conifer and ponderosa pine types** - four of the largest snags per acre
- **red fir forest type** - six of the largest snags per acre
- **eastside pine and eastside mixed conifer forest types** - three of the largest snags per acre
- **westside hardwood ecosystems** - four of the largest snags (hardwood or conifer) per acre
    - **where standing live hardwood trees lack dead branches** - six of the largest snags per acre (where they exist to supplement wildlife needs for dead material).

Use snags larger than 15 inches dbh to meet this guideline. Snags should be clumped and distributed irregularly across the treatment units. Consider leaving fewer snags strategically located in treatment areas within the WUI. When some snags are expected to be lost due to hazard removal or the effects of prescribed fire, consider these potential losses during project planning to achieve desired snag retention levels.

Tree Species Composition

12. Promote shade intolerant pines (sugar and Ponderosa) and hardwoods.

Salvage

13. Determine the need for ecosystem restoration projects following large, catastrophic disturbance events (wildfire, drought, insect and disease infestation, windstorm, and other unforeseen events). Objectives for restoration projects may include limiting fuel loads over the long term, restoring habitat, and recovering economic value from dead and dying trees. In accomplishing restoration goals, long-term objectives are balanced with the objective of reducing hazardous fuel loads in the short-term.
    Salvage harvest of dead and dying trees may be conducted to recover the economic value of this material and to support objectives for reducing hazardous fuels, improving forest health, re-introducing fire, and/or re-establishing forested conditions.

    - Design projects to reduce potential soil erosion and the loss of soil productivity caused by loss of vegetation and ground cover. Examples are activities that would: (1) provide for adequate soil cover in the short term; (2) accelerate the dispersal of coarse woody debris; (3) reduce the potential impacts of the fire on water quality; and (4) carefully plan restoration/salvage activities to minimize additional short-term effects.
    - Design projects to protect and maintain critical wildlife habitat. Examples are activities that would: (1) avoid areas where forest vegetation is still largely intact; (2) provide for sufficient quantities of large snags; (3) maintain existing large woody material as needed;

(4) provide for additional large woody material and ground cover as needed; (5) accelerate development of mature forest habitat through reforestation and other cultural means; and (6) provide for a mix of seral stages over time.

- Design projects to manage the development of fuel profiles over time. Examples are activities that would: (1) remove sufficient standing and activity generated material to balance short-term and long-term surface fuel loading; and (2) protect remnant old forest structure (surviving large trees, snags, and large logs) from high severity re-burns or other severe disturbance events in the future.

- Design projects to recover the value of timber killed or severely injured by the disturbance. Examples are activities that would: (1) conduct timber salvage harvest in a timely manner to minimize value loss; (2) minimize harvest costs within site-specific resource constraints; and (3) remove material that local managers determine is not needed for long-term resource recovery needs.

14. In post fire restoration projects for large catastrophic fires (contiguous blocks of moderate to high fire lethality of 1,000 acres or more), generally do not conduct salvage harvest in at least 10 percent of the total area affected by fire.

15. Use the best available information for identifying dead and dying trees for salvage purposes as developed by the Pacific Southwest Region Forest Health Protection Staff.

16. Outside of WUI defense zones, salvage harvests are prohibited in PACs and known den sites unless a biological evaluation determines that the areas proposed for harvest are rendered unsuitable for the purpose they were intended by a catastrophic stand-replacing event.

17. Consider ecological benefits of retaining small patches of mortality in old forest emphasis areas.

Hardwood Management

18. Where possible, create openings around existing California black oak and canyon live oak to stimulate natural regeneration.

19. Manage hardwood ecosystems for a diversity of hardwood tree size classes within a stand such that seedlings, saplings, and pole-sized trees are sufficiently abundant to replace large trees that die.

20. Retain the mix of mast-producing species where they exist within a stand.

21. Retain all blue oak and valley oak trees except: (1) stand restoration strategies call for tree removal; (2) trees are lost to fire; or (3) where tree removal is needed for public health and safety.

22. When planning prescribed fire or mechanical treatments in hardwood ecosystems: (1) consider the risk of noxious weed spread and (2) minimize impacts to hardwood ecosystem structure and biodiversity.

23. During mechanical vegetation treatments, prescribed fire, and salvage operations, retain all large hardwoods on the westside except where: (1) large trees pose an immediate threat to human life or property or (2) losses of large trees are incurred due to prescribed or wildland fire. Large montane hardwoods are trees with a dbh of 12 inches or greater. Large blue oak woodland hardwoods are trees with a dbh of 8 inches or greater. Allow removal of larger hardwood trees (up to 20 inches dbh) if research supports the need to remove larger trees to maintain and enhance the hardwood stand.

24. Prior to commercial and noncommercial hardwood and fuelwood removal in hardwood ecosystems, pre-mark or pre-cut hardwood trees to ensure that stand goals are met. Retain a diverse distribution of stand cover classes.

25. During or prior to landscape analysis, spatially determine distributions of existing and potential natural hardwood ecosystems (Forest Service Handbook (FSH) 2090.11). Assume pre-1850 disturbance levels for potential natural community distribution. Work with province ecologists or other qualified personnel to map and/or model hardwood ecosystems at a landscape scale (approximately 30,000 to 50,000 acres). Include the following steps in the analysis: (1) compare distributions of potential natural hardwood ecosystems with existing hardwood ecosystems; (2) identify locations where existing hardwood ecosystems are outside the natural range of variability for potential natural hardwood ecosystem distribution; and (3) identify hardwood restoration and enhancement projects.

26. Include hardwoods in stand examinations. Encourage hardwoods in plantations. Promote hardwoods after stand-replacing events. Retain buffers around existing hardwood trees by not planting conifers within 20 feet of the edge of hardwood tree crowns.

Habitat Connectivity for Old Forest Associated Species

27. Minimize old forest habitat fragmentation. Assess potential impacts of fragmentation on old forest associated species (particularly fisher and marten) in biological evaluations.

28. Assess the potential impact of projects on the connectivity of habitat for old forest associated species.

29. Consider retaining forested linkages (with canopy cover greater than 40 percent) that are interconnected via riparian areas and ridgetop saddles during project-level analysis.

30. If fishers are detected outside the southern Sierra fisher conservation area, evaluate habitat conditions and implement appropriate mitigation measures to retain suitable habitat within the estimated home range. Institute project-level surveys over the appropriate area, as determined by an interdisciplinary team.

31. Identify areas for acquisition, exchange, or conservation easements to enhance connectivity of habitat for old forest associated species.

Wolverine and Sierra Nevada Red Fox Detections

32. Detection of a wolverine or Sierra Nevada red fox will be validated by a forest carnivore specialist. When verified sightings occur, conduct an analysis to determine if activities within 5

miles of the detection have a potential to affect the species. If necessary, apply a limited operating period from January 1 to June 30 to avoid adverse impacts to potential breeding. Evaluate activities for a 2-year period for detections not associated with a den site.

California Spotted Owl Surveys

33. Conduct surveys in compliance with the Pacific Southwest Region's survey protocols during the planning process when proposed vegetation treatments are likely to reduce habitat quality in suitable California spotted owl habitat with unknown occupancy. Designate California spotted owl protected activity centers (PACs) where appropriate based on survey results.

Northern Goshawk Surveys

34. Conduct surveys in compliance with the Pacific Southwest Region's survey protocols during the planning process when vegetation treatments are likely to reduce habitat quality are proposed in suitable northern goshawk nesting habitat that is not within an existing California spotted owl or northern goshawk PAC. Suitable northern goshawk nesting habitat is defined based on the survey protocol.

Great Gray Owl Surveys

35. Conduct additional surveys to established protocols to follow up reliable sightings of great gray owls.

Noxious Weeds Management

36. Inform forest users, local agencies, special use permittees, groups, and organizations in communities near national forests about noxious weed prevention and management.

37. Work cooperatively with California and Nevada State agencies and individual counties (for example, Cooperative Weed Management Areas) to: (1) prevent the introduction and establishment of noxious weed infestations and (2) control existing infestations.

38. As part of project planning, conduct a noxious weed risk assessment to determine risks for weed spread (high, moderate, or low) associated with different types of proposed management activities. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy to develop mitigation measures for high and moderate risk activities.

39. When recommended in project-level noxious weed risk assessments, consider requiring off-road equipment and vehicles (both Forest Service and contracted) used for project implementation to be weed free. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy.

40. Minimize weed spread by incorporating weed prevention and control measures into ongoing management or maintenance activities that involve ground disturbance or the possibility of spreading weeds. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy.

41. Conduct follow-up inspections of ground disturbing activities to ensure adherence to the Regional Noxious Weed Management Strategy.

42. Encourage use of certified weed free hay and straw. Cooperate with other agencies and the public in developing a certification program for weed free hay and straw. Phase in the program as certified weed free hay and straw becomes available. This standard and guideline applies to pack and saddle stock used by the public, livestock permittees, outfitter guide permittees, and local, State, and Federal agencies.

43. Include weed prevention measures, as necessary, when amending or re-issuing permits (including, but not limited to, livestock grazing, special uses, and pack stock operator permits).

44. Include weed prevention measures and weed control treatments in mining plans of operation and reclamation plans. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy. Monitor for weeds, as appropriate, for 2 years after project implementation (assuming no weed introductions have occurred).

45. Conduct a risk analysis for weed spread associated with burned area emergency rehabilitation (BAER) treatments. The BAER team is responsible for conducting this analysis. Monitor and treat weed infestations for 3 years after the fire.

46. Consult with American Indians to determine priority areas for weed prevention and control where traditional gathering areas are threatened by weed infestations.

47. Complete noxious weed inventories, based on regional protocol. Review and update these inventories on an annual basis.

48. As outlined in the Regional Noxious Weed Management Strategy, when new, small weed infestations are detected, emphasize eradication of these infestations while providing for the safety of field personnel.

49. Routinely monitor noxious weed control projects to determine success and to evaluate the need for follow-up treatments or different control methods. Monitor known weed infestations, as appropriate, to determine changes in weed population density and rate of spread.

Grazing

50. To protect hardwood regeneration in grazing allotments, allow livestock browse on no more than 20 percent of annual growth of hardwood seedlings and advanced regeneration. Modify grazing plans if hardwood regeneration and recruitment needs are not being met.

51. Grazing utilization in annual grasslands will maintain a minimum of 60 percent cover. Where grasslands are in satisfactory condition and annual precipitation is greater than 10 inches, manage for 700 pounds residual dry matter (RDM) per acre. Where grasslands are in satisfactory condition and annual precipitation is less than 10 inches, manage for 400 pounds RDM per acre. Where grasslands are in unsatisfactory condition and annual precipitation is greater than 10 inches, manage for 1,000 pounds RDM per acre; manage for 700 pounds RDM per acre where grasslands are in unsatisfactory condition and precipitation is less than 10 inches. Adjust these standards, as needed, based on grassland condition. This standard and guideline only applies to grazing utilization.

52. Where professional judgment and quantifiable measurements find that current practices are maintaining range in good to excellent condition, the grazing utilization standards above may be modified to allow for the Forest Service, in partnership with individual permittees, to rigorously test and evaluate alternative standards.

Yosemite Toad

53. Exclude livestock from standing water and saturated soils in wet meadows and associated streams and springs occupied by Yosemite toads or identified as "essential habitat" in the conservation assessment for the Yosemite toad during the breeding and rearing season (through metamorphosis). Wet meadow habitat for Yosemite toads is defined as relatively open meadows with low to moderate amounts of woody vegetation that have standing water on June 1 or for more than 2 weeks following snow melt. Specific breeding and rearing season dates will be determined locally. If physical exclusion of livestock is impractical, then exclude grazing from the entire meadow. This standard does not apply to pack and saddle stock.

54. Exclusions in standard and guideline #53 above may be waived if an interdisciplinary team has developed a site-specific management plan to minimize impacts to the Yosemite toad and its habitat by managing the movement of stock around wet areas. Such plans are to include a requirement for systematically monitoring a sample of occupied Yosemite toad sites within the meadow to: (1) assess habitat conditions and (2) assess Yosemite toad occupancy and population dynamics. Every 3 years from the date of the plan, evaluate monitoring data. Modify or suspend grazing if Yosemite toad conservation is not being accomplished. Plans must be approved by the authorized officer and incorporated into all allotment plans and/or special use permits governing use within the occupied habitat.

55. Complete one survey cycle in suitable habitat for the Yosemite toad within this species' historic range to determine presence of Yosemite toads.

Willow Flycatcher

The following definitions are needed to apply the standards and guidelines for willow flycatcher conservation. See Appendix D of the Final SEIS for a complete listing of existing willow flycatcher sites.

Definitions of Willow Flycatcher Site Occupancy

Occupied Willow Flycatcher Site: a site where willow flycatcher(s) have been observed sometime during the breeding season since 1982. For a site to be designated as an occupied site, it must meet the following criteria:

- Observation date(s) between 1982 and 2000:

    1. Willow flycatcher observed between 15 June and 1 August;

       OR

2. Willow flycatcher observed between June 1 - June 14 or August 2 -August 15, unless the willow flycatcher was:

    - Absent during surveys conducted between June 15 and July 15 in the same year
    - Absent during June 15 -July 15 surveys in multiple subsequent years; or
    - Detected at a site that is clearly outside of known habitat requirements.

    ■ For inclusion as an occupied willow flycatcher site, willow flycatcher(s) must be identified by the *Fitz-bew* song or in-hand examination. Museum skins that are identified as willow flycatchers may also be used if the collection date falls within the range of dates listed above.

    ■ Nests and egg sets in museum collections infer site occupancy, regardless of collection month and day.

    ■ All sites where willow flycatchers were identified using these criteria are included in the dataset, unless the site is known to have undergone an extreme site conversion rendering it incapable of supporting willow flycatchers currently and in the future (e.g., wetland conversions or inundation by reservoir).

◦ Observation date(s) in 2001 or later:

    ■ Willow flycatcher site occupancy will be determined based upon the criteria defined in the standardized protocol.

Historically Occupied Willow Flycatcher Site: a site where occupancy is only known from pre-1982 or one that has been surveyed for at least six years over a 10-year period and consistently found to contain no willow flycatchers during the breeding season. For a site to be designated as historically occupied, it must meet the following criteria:

- Sighting meets the criteria of an occupied willow flycatcher site but the most recent date of detection is prior to 1982

  OR

- Surveys across a minimum of six separate years during a 10-year period must have been performed (alternatively, surveys may be conducted annually for six years within a six- to 10-year period).

    ◦ Surveys conducted since June 2000 must be in compliance with the current standardized willow flycatcher survey protocol guidelines.

    ◦ If a historically occupied site is determined as occupied, the site is upgraded to occupied status until or unless the site meets the definition of historically occupied again.

Conditionally Occupied Willow Flycatcher Site: a site documented in the willow flycatcher database at the time of the Record of Decision that does not meet the criteria for an occupied site or a

historically occupied site. For these sites, either the month and date of detection are not known or the month and date occur outside of the breeding season as defined in the survey protocol.

There are five sites in the existing database where survey documentation necessary to determine if the observation meets the criteria for an occupied site is missing or incomplete. These sites are assigned to a temporary category of conditionally occupied until either they receive one survey cycle or the missing information is discovered and documented, at which time they will either be found to be occupied or they will be dropped from the database. Once these sites are resolved, this category is no longer used.

Standards and Guidelines

56. **For occupied and historically occupied willow flycatcher sites:** Initiate a 4-year cycle for willow flycatcher surveys. Conduct surveys to established protocols in all sites the first year. Second year surveys will be conducted in those sites where willow flycatchers were not found. Surveys will not be conducted in the third and fourth years. The survey cycle will then be repeated. **For conditionally occupied sites:** Surveys will be conducted in the first year. If willow flycatchers are found, these sites will be managed as occupied sites. If not found, these sites will be surveyed in the second year. If birds are not found in the second year, these sites will be dropped from the willow flycatcher site database.

57. In meadows with **occupied willow flycatcher sites**, allow only late-season grazing (after August 15) in the entire meadow.

58. Standard and guideline #57 above may be waived if an interdisciplinary team has developed a site-specific meadow management strategy. This strategy is to be developed and implemented in partnership with the affected grazing permittee. The strategy objectives must focus on protecting the nest site and associated habitat during the breeding season and the long-term sustainability of suitable habitat at breeding sites. It may use a mix of management tools, including grazing systems, structural improvements, and other exclusion by management techniques to protect willow flycatcher habitat.

59. In willow flycatcher sites receiving late-season grazing, monitor utilization annually using regional range analysis and planning guide. Monitor willow flycatcher habitat every 3 years using the following criteria: rooting depth cores for meadow condition, point intercepts for shrub foliar density, and strip transects for shrub recruitment and cover. Meadow condition assessments will be included in a GIS meadow coverage. If habitat conditions are not supporting the willow flycatcher or trend downward, modify or suspend grazing.

60. For **historically occupied willow flycatcher sites**, assess willow flycatcher habitat suitability within the meadow. If habitat is degraded, develop restoration objectives and take appropriate actions (such as physical restoration of hydrological components, limiting or re-directing grazing activity, and so forth) to move the meadow toward desired conditions.

61. Evaluate site condition of **historically occupied willow flycatcher sites**. Those sites that no longer contain standing water on June 1 and a deciduous shrub component and cannot be reasonably restored may be removed from the willow flycatcher site database.

62. As part of the project planning process, survey **emphasis habitat** within 5 miles of occupied willow flycatcher sites to determine willow flycatcher occupancy. Emphasis habitat is defined

as meadows larger than 15 acres that have standing water on June 1 and a deciduous shrub component. Use established protocols to conduct these surveys. If these surveys determine willow flycatcher occupancy, add these to the database of occupied willow flycatcher sites and include them in the 4-year survey cycle of willow flycatcher sites described above.

63. Evaluate proposals for new concentrated stock areas (for example, livestock handling and management facilities, pack stations, equestrian stations, and corrals) located within 5 miles of occupied willow flycatcher sites.

Mining

64. Ensure that plans of operation, reclamation plans, and reclamation bonds address the costs of: (1) removing facilities, equipment, and materials; (2) isolating and neutralizing or removing toxic or potentially toxic materials; (3) salvaging and replacing topsoil; and (4) preparing the seed bed and revegetating to meet the objectives of the land allocation in which the operation is located.

65. Ensure that mine owners and operators limit new road construction, decommission unnecessary roads, and maintain needed roads consistent with Forest Service roads policy and management direction for the land allocation.

66. Require mine reclamation to be conducted in a timely manner.

67. Inspect and monitor mining-related activities on a regular basis to ensure compliance with laws, regulations, and operating plans. Base the frequency of inspections and monitoring on the potential severity of mining activity-related impacts.

68. During mining-related activities, limit the clearing of trees and other vegetation to the minimum necessary. Clearing of vegetation should be pertinent to the approved phase of mineral exploration and development.

Wheeled Vehicles

69. Prohibit wheeled vehicle travel off of designated routes, trails, and limited off highway vehicle (OHV) use areas. Unless otherwise restricted by current forest plans or other specific area standards and guidelines, cross-country travel by over-snow vehicles would continue.

Road Construction, Reconstruction, and Relocation

70. To protect watershed resources, meet the following standards for road construction, road reconstruction, and road relocation: (1) design new stream crossings and replacement stream crossings for at least the 100-year flood, including bedload and debris; (2) design stream crossings to minimize the diversion of streamflow out of the channel and down the road in the event of a crossing failure; (3) design stream crossings to minimize disruption of natural hydrologic flow paths, including minimizing diversion of streamflow and interception of surface and subsurface water; (4) avoid wetlands or minimize effects to natural flow patterns in wetlands; and (5) avoid road construction in meadows.

Appendix A: Management Direction

D. Management Standards and Guidelines

Standards and Guidelines for California Spotted Owl and Northern Goshawk Protected Activity Centers

71. Within the assessment area or watershed, locate fuels treatments to minimize impacts to PACs. PACs may be re-mapped during project planning to avoid intersections with treatment areas, provided that the re-mapped PACs contain habitat of equal quality and include known nest sites and important roost sites. Document PAC adjustments in biological evaluations.
When treatment areas must intersect PACs and choices can be made about which PACs to enter, use the following criteria to preferentially avoid PACs that have the highest likely contribution to owl productivity.

    - **lowest contribution to productivity:** PACs presently unoccupied and historically occupied by territorial singles only.
    - PACs presently unoccupied and historically occupied by pairs,
    - PACs presently occupied by territorial singles,
    - PACs presently occupied by pairs,
    - **highest contribution to productivity:** PACs currently or historically reproductive.

    Historical occupancy is considered occupancy since 1990. Current occupancy is based on surveys consistent with survey protocol (March 1992) in the last 2-3 years prior to project planning. These dates were chosen to encompass the majority of survey efforts and to include breeding pulses in the early 1990s when many sites were found to be productive. When designing treatment unit intersections with PACs, limit treatment acres to those necessary to achieve strategic placement objectives and avoid treatments adjacent to nest stands whenever possible.
    If nesting or foraging habitat in PACs is mechanically treated, mitigate by adding acreage to the PAC equivalent to the treated acres using adjacent acres of comparable quality wherever possible.

72. Mechanical treatments may be conducted to meet fuels objectives in protected activity centers (PACs) located in WUI defense zones. In PACs located in WUI threat zones, mechanical treatments are allowed where prescribed fire is not feasible and where avoiding PACs would significantly compromise the overall effectiveness of the landscape fire and fuels strategy. Mechanical treatments should be designed to maintain habitat structure and function of the PAC.

73. While mechanical treatments may be conducted in protected activity centers (PACs) located in WUI defense zones and, in some cases, threat zones, they are prohibited within a 500-foot radius buffer around a spotted owl activity center within the designated PAC. Prescribed

burning is allowed within the 500-foot radius buffer. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), may be conducted prior to burning as needed to protect important elements of owl habitat. Treatments in the remainder of the PAC use the forest-wide standards and guidelines for mechanical thinning.

74. In PACs located outside the WUI, limit stand-altering activities to reducing surface and ladder fuels through prescribed fire treatments. In forested stands with overstory trees 11 inches dbh and greater, design prescribed fire treatments to have an average flame length of 4 feet or less. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), may be conducted prior to burning as needed to protect important elements of owl habitat.

75. **For California spotted owl PACs:** Maintain a limited operating period (LOP), prohibiting vegetation treatments within approximately ¼ mile of the activity center during the breeding season (March 1 through August 31), unless surveys confirm that California spotted owls are not nesting. Prior to implementing activities within or adjacent to a California spotted owl PAC and the location of the nest site or activity center is uncertain, conduct surveys to establish or confirm the location of the nest or activity center.

76. **For northern goshawk PACs:** Maintain a limited operating period (LOP), prohibiting vegetation treatments within approximately ¼ mile of the nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting. If the nest stand within a protected activity center (PAC) is unknown, either apply the LOP to a ¼- mile area surrounding the PAC, or survey to determine the nest stand location.

77. The LOP may be waived for vegetation treatments of limited scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location. Where a biological evaluation concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be modified.

78. Breeding season limited operating period restrictions may be waived, where necessary, to allow for use of early season prescribed fire in up to 5 percent of **California spotted owl PACs** per year on a forest.

79. Breeding season limited operating period restrictions may be waived, where necessary, to allow for use of early season prescribed fire in up to 5 percent of **northern goshawk PACs** per year on a forest.

80. **For California spotted owl PACs:** Conduct vegetation treatments in no more than 5 percent per year and 10 percent per decade of the acres in California spotted owl PACs in the 11 Sierra Nevada national forests. Monitor the number of PACs treated at a bioregional scale.

81. **For northern goshawk PACs:** Conduct mechanical treatments in no more than 5 percent per year and 10 percent per decade of the acres in northern goshawk PACs in the 11 Sierra Nevada national forests.

82. Mitigate impacts where there is documented evidence of disturbance to the nest site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance). Evaluate proposals for new roads, trails, off highway vehicle routes, and recreational and other developments for their potential to disturb nest sites.

Appendix A: Management Direction

D. Management Standards and Guidelines

Standards and Guidelines for Riparian Conservation Areas and Critical Aquatic Refuges

91. Designate riparian conservation area (RCA) widths as described in Part B of this appendix. The RCA widths displayed in Part B may be adjusted at the project level if a landscape analysis has been completed and a site-specific RCO analysis demonstrates a need for different widths.

92. Evaluate new proposed management activities within CARs and RCAs during environmental analysis to determine consistency with the riparian conservation objectives at the project level and the AMS goals for the landscape. Ensure that appropriate mitigation measures are enacted to (1) minimize the risk of activity-related sediment entering aquatic systems and (2) minimize impacts to habitat for aquatic- or riparian-dependent plant and animal species.

93. Identify existing uses and activities in CARs and RCAs during landscape analysis. At the time of permit reissuance, evaluate and consider actions needed for consistency with RCOs.

94. As part of project-level analysis, conduct peer reviews for projects that propose ground-disturbing activities in more than 25 percent of the RCA or more than 15 percent of a CAR.

Standards and Guidelines Associated with RCO #1

95. For waters designated as "Water Quality Limited" (Clean Water Act Section 303(d)), participate in the development of Total Maximum Daily Loads (TMDLs) and TMDL Implementation Plans. Execute applicable elements of completed TMDL Implementation Plans.

96. Ensure that management activities do not adversely affect water temperatures necessary for local aquatic- and riparian-dependent species assemblages.

97. Limit pesticide applications to cases where project level analysis indicates that pesticide applications are consistent with riparian conservation objectives.

98. Within 500 feet of known occupied sites for the California red-legged frog, Cascades frog, Yosemite toad, foothill yellow-legged frog, mountain yellow-legged frog, and northern leopard frog, design pesticide applications to avoid adverse effects to individuals and their habitats.

99. Prohibit storage of fuels and other toxic materials within RCAs and CARs except at designated administrative sites and sites covered by a Special Use Authorization. Prohibit refueling within RCAs and CARs unless there are no other alternatives. Ensure that spill plans are reviewed and up-to-date.

Standards and Guidelines Associated with RCO #2

100. Maintain and restore the hydrologic connectivity of streams, meadows, wetlands, and other special aquatic features by identifying roads and trails that intercept, divert, or disrupt natural surface and subsurface water flow paths. Implement corrective actions where necessary to restore connectivity.

101. Ensure that culverts or other stream crossings do not create barriers to upstream or downstream passage for aquatic-dependent species. Locate water drafting sites to avoid adverse effects to in stream flows and depletion of pool habitat. Where possible, maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows, wetlands, and other special aquatic features.

102. Prior to activities that could adversely affect streams, determine if relevant stream characteristics are within the range of natural variability. If characteristics are outside the range of natural variability, implement mitigation measures and short-term restoration actions needed to prevent further declines or cause an upward trend in conditions. Evaluate required long-term restoration actions and implement them according to their status among other restoration needs.

103. Prevent disturbance to streambanks and natural lake and pond shorelines caused by resource activities (for example, livestock, off-highway vehicles, and dispersed recreation) from exceeding 20 percent of stream reach or 20 percent of natural lake and pond shorelines. Disturbance includes bank sloughing, chiseling, trampling, and other means of exposing bare soil or cutting plant roots. This standard does not apply to developed recreation sites, sites authorized under Special Use Permits and designated off-highway vehicle routes.

104. In stream reaches occupied by, or identified as "essential habitat" in the conservation assessment for, the Lahonton and Paiute cutthroat trout and the Little Kern golden trout, limit streambank disturbance from livestock to 10 percent of the occupied or "essential habitat" stream reach. (Conservation assessments are described in the record of decision.) Cooperate with State and Federal agencies to develop streambank disturbance standards for threatened, endangered, and sensitive species. Use the regional streambank assessment protocol. Implement corrective action where disturbance limits have been exceeded.

105. At either the landscape or project-scale, determine if the age class, structural diversity, composition, and cover of riparian vegetation are within the range of natural variability for the vegetative community. If conditions are outside the range of natural variability, consider implementing mitigation and/or restoration actions that will result in an upward trend. Actions could include restoration of aspen or other riparian vegetation where conifer encroachment is identified as a problem.

106. Cooperate with Federal, Tribal, State and local governments to secure in stream flows needed to maintain, recover, and restore riparian resources, channel conditions, and aquatic habitat. Maintain in stream flows to protect aquatic systems to which species are uniquely adapted. Minimize the effects of stream diversions or other flow modifications from hydroelectric projects on threatened, endangered, and sensitive species.

107. For exempt hydroelectric facilities on national forest lands, ensure that special use permit language provides adequate in stream flow requirements to maintain, restore, or recover favorable ecological conditions for local riparian- and aquatic-dependent species.

Standard and Guideline Associated with RCO #3

108. Determine if the level of coarse large woody debris (CWD) is within the range of natural variability in terms of frequency and distribution and is sufficient to sustain stream channel physical complexity and stability. Ensure proposed management activities move conditions toward the range of natural variability.

Standards and Guidelines Associated with RCO #4

109. Within CARs, in occupied habitat or "essential habitat" as identified in conservation assessments for threatened, endangered, or sensitive species, evaluate the appropriate role, timing, and extent of prescribed fire. Avoid direct lighting within riparian vegetation; prescribed fires may back into riparian vegetation areas. Develop mitigation measures to avoid impacts to these species whenever ground-disturbing equipment is used.

110. Use screening devices for water drafting pumps. (Fire suppression activities are exempt during initial attack.) Use pumps with low entry velocity to minimize removal of aquatic species, including juvenile fish, amphibian egg masses and tadpoles, from aquatic habitats.

111. Design prescribed fire treatments to minimize disturbance of ground cover and riparian vegetation in RCAs. In burn plans for project areas that include, or are adjacent to RCAs, identify mitigation measures to minimize the spread of fire into riparian vegetation. In determining which mitigation measures to adopt, weigh the potential harm of mitigation measures, for example fire lines, against the risks and benefits of prescribed fire entering riparian vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could be damaging to habitat or long-term function of the riparian community.

112. Post-wildfire management activities in RCAs and CARs should emphasize enhancing native vegetation cover, stabilizing channels by non-structural means, minimizing adverse effects from the existing road network, and carrying out activities identified in landscape analyses. Post-wildfire operations shall minimize the exposure of bare soil.

113. Allow hazard tree removal within RCAs or CARs. Allow mechanical ground disturbing fuels treatments, salvage harvest, or commercial fuelwood cutting within RCAs or CARs when the activity is consistent with RCOs. Utilize low ground pressure equipment, helicopters, over the snow logging, or other non-ground disturbing actions to operate off of existing roads when needed to achieve RCOs. Ensure that existing roads, landings, and skid trails meet Best Management Practices. Minimize the construction of new skid trails or roads for access into RCAs for fuel treatments, salvage harvest, commercial fuelwood cutting, or hazard tree removal.

114. As appropriate, assess and document aquatic conditions following the Regional Stream Condition Inventory protocol prior to implementing ground disturbing activities within suitable habitat for California red-legged frog, Cascades frog, Yosemite toad, foothill and mountain yellow-legged frogs, and northern leopard frog.

115. During fire suppression activities, consider impacts to aquatic- and riparian-dependent resources. Where possible, locate incident bases, camps, helibases, staging areas, helispots, and

other centers for incident activities outside of RCAs or CARs. During pre-suppression planning, determine guidelines for suppression activities, including avoidance of potential adverse effects to aquatic- and riparian-dependent species as a goal.

116. Identify roads, trails, OHV trails and staging areas, developed recreation sites, dispersed campgrounds, special use permits, grazing permits, and day use sites during landscape analysis. Identify conditions that degrade water quality or habitat for aquatic and riparian-dependent species. At the project level, evaluate and consider actions to ensure consistency with standards and guidelines or desired conditions.

Standards and Guidelines Associated with RCO #5

117. Assess the hydrologic function of meadow habitats and other special aquatic features during range management analysis. Ensure that characteristics of special features are, at a minimum, at Proper Functioning Condition, as defined in the appropriate Technical Reports (or their successor publications): (1) "Process for Assessing PFC" TR 1737-9 (1993), "PFC for Lotic Areas" USDI TR 1737-15 (1998) or (2) "PFC for Lentic Riparian-Wetland Areas" USDI TR 1737-11 (1994).

118. Prohibit or mitigate ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining bog and fen ecosystems and plant species that depend on these ecosystems. During project analysis, survey, map, and develop measures to protect bogs and fens from such activities as trampling by livestock, pack stock, humans, and wheeled vehicles. Criteria for defining bogs and fens include, but are not limited to, presence of: (1) sphagnum moss (*Spagnum spp*.), (2) mosses belonging to the genus *Meessia*, and (3) sundew (*Drosera spp*.) Complete initial plant inventories of bogs and fens within active grazing allotments prior to re-issuing permits.

119. Locate new facilities for gathering livestock and pack stock outside of meadows and riparian conservation areas. During project-level planning, evaluate and consider relocating existing livestock facilities outside of meadows and riparian areas. Prior to re-issuing grazing permits, assess the compatibility of livestock management facilities located in riparian conservation areas with riparian conservation objectives.

120. Under season-long grazing:

    - For meadows in early seral status: limit livestock utilization of grass and grass-like plants to 30 percent (or minimum 6-inch stubble height).

    - For meadows in late seral status: limit livestock utilization of grass and grass-like plants to a maximum of 40 percent (or minimum 4-inch stubble height).
      Determine ecological status on all key areas monitored for grazing utilization prior to establishing utilization levels. Use Regional ecological scorecards and range plant list in regional range handbooks to determine ecological status. Analyze meadow ecological status every 3 to 5 years. If meadow ecological status is determined to be moving in a downward trend, modify or suspend grazing. Include ecological status data in a spatially explicit Geographical Information System database.
      Under intensive grazing systems (such as rest-rotation and deferred rotation) where meadows are receiving a period of rest, utilization levels can be higher than the levels described above if the meadow is maintained in late seral status and meadow-associated

species are not being impacted. Degraded meadows (such as those in early seral status with greater than 10 percent of the meadow area in bare soil and active erosion) require total rest from grazing until they have recovered and have moved to mid- or late seral status.

121. Limit browsing to no more than 20 percent of the annual leader growth of mature riparian shrubs and no more than 20 percent of individual seedlings. Remove livestock from any area of an allotment when browsing indicates a change in livestock preference from grazing herbaceous vegetation to browsing woody riparian vegetation.

Standard and Guideline Associated with RCO #6

122. Recommend restoration practices in: (1) areas with compaction in excess of soil quality standards, (2) areas with lowered water tables, or (3) areas that are either actively down cutting or that have historic gullies. Identify other management practices, for example, road building, recreational use, grazing, and timber harvests, that may be contributing to the observed degradation.

Standards and Guidelines for Critical Aquatic Refuges

123. Determine which critical aquatic refuges or areas within critical aquatic refuges are suitable for mineral withdrawal. Propose these areas for withdrawal from location and entry under U.S. mining laws, subject to valid existing rights, for a term of 20 years.

124. Approve mining-related plans of operation if measures are implemented that contribute toward the attainment or maintenance of aquatic management strategy goals.

ATTACHMENT H

Water Quality Monitoring Plan for Chemical Treatment Program

WATER QUALITY MONITORING FOR CHEMICAL TREATMENT PROGRAM

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1.0 INTRODUCTION

On February 26, 1981, the State Water Resources Control Board (State Water Board) Executive Director signed a Management Agency Agreement with the United States Department of Agriculture-Forest Service (USDA-FS). The Management Agency Agreement waives discharge requirements for certain non-point source discharges, provided that the USDA-FS implements State Water Board-approved best management practices (BMPs) and procedures and the provisions of the agreement. The Management Agency Agreement covers all National Forest System lands in California.

The Placer County Water Agency's (PCWA) Middle Fork American River Project (FERC Project No. 2079) (MFP or Project) is located within the Eldorado National Forest and the Tahoe National Forest. PCWA's Vegetation and Integrated Pest Management Plan (VIPMP), developed for the MFP, includes the use of herbicides on USDA-FS lands. The Management Agency Agreement requires that this activity (herbicide use on USDA-FS lands) include a water quality monitoring program and BMPs.

The USDA-FS's Water Quality Management for Forest Service Lands in California – Best Management Practices (USDA-FS 2000) includes BMPs designed to prevent degradation of water quality from management activities, including herbicides use. These BMPs were certified by the State Water Board and approved by the United States Environmental Protection Agency (US EPA). PCWA's VIPMP incorporates USDA-FS BMPs to protect water quality during implementation of vegetation and integrated pest management activities (VIPMP Table 8). Implementation of these BMPs ensures compliance with the Clean Water Act.

This water quality monitoring program satisfies the Management Agency Agreement requirements regarding implementation of measures to ensure that aquatic and riparian species are adequately protected. It also satisfies the USDA-FS Riparian Conservation Objective (RCO) # 1 (USDA-FS 2004) and USDA-FS BMP 5.9 which identifies the need for a monitoring plan during the herbicide use planning process as part of the project environmental evaluation and documentation.

2.0 ORGANIZATON

The Water Quality Monitoring Program is organized into the following sections:

Section 3.0 Program Objective: This section defines the purpose of the Water Quality Monitoring Program.

Section 4.0 Monitoring Approach: This section provides the locations and schedule for monitoring, and describes monitoring procedures (including data collection, sample handling, lab analysis, and quality assurance/quality control (QA/QC) procedures), as well as reporting and agency consultation requirements.

Section 5.0 Literature Cited: This section provides a list of documents or other resources that are referenced in this document.

3.0 PROGRAM OBJECTIVE

The objectives of the water quality monitoring program are to:

- Characterize the presence/absence of herbicides in perennial streams and special aquatic sites (i.e., Project reservoirs and diversion pools) adjacent to areas where herbicide are applied as part of the VIPMP, including both pre-treatment and post-treatment sampling;

- Use the sampling results, in consultation with the USDA-FS, State Water Board, California Department of Fish and Game (CDFG) to determine the effectiveness of protective measures and whether herbicides have been applied safely, restricted to intended target areas, and have not resulted in unexpected non-target effects; and

- Document results of the water quality monitoring program (reporting and evaluation).

4.0 MONITORING APPROACH

The following provides water quality monitoring locations and describes monitoring procedures (including data collection, sample handling, lab analysis, and QA/QC procedures), as well as reporting and agency consultation requirements.

4.1 MONITORING LOCATIONS

Monitoring locations for pre- and post-treatment sampling will be selected in consultation with the USDA-FS, State Water Board, and CDFG. The sampling locations will be selected based on an assessment of areas that have the greatest potential for off-site movement of herbicides into perennial streams or special aquatic sites, considering the chemical(s) that would be applied, specified protective buffer area, topography, and soil conditions.

The monitoring locations will be selected to meet the following criteria:

- Each herbicide will be monitored in two different habitat types, if applicable, including: (1) Perennial streams, and (2) special-aquatic sites (i.e., Project reservoirs or diversion pools).

- Within each habitat type, three different locations representing a range of site conditions will be monitored.

- Each location will be monitored for three consecutive years.

Using the criteria, a maximum of six water quality monitoring locations (two habitat types X three locations) for each herbicide will be identified in consultation with the aforementioned resource agencies. Each location will be monitored for three consecutive years.

4.2 MONITORING SCHEDULE

Water quality monitoring will be conducted concurrent with the first herbicide application period, anticipated to be in the first year following license issuance (Year 1), and will be repeated for an additional two years (Years 2 and 3).

If the water quality monitoring results for Years 1–3 do not detect any harmful levels of herbicides, no further monitoring will occur unless new herbicides are identified and authorized for use in the MFP. If the water quality monitoring results detect harmful levels of herbicides, PCWA and the aforementioned resource agencies will modify components of the VIPMP regarding herbicide application (e.g., protective buffers, avoidance protection measures and/or authorized chemicals). In that event, the monitoring program will resume the three-year monitoring cycle. Water quality monitoring will continue until no harmful levels of herbicides are detected at sampling sites for three consecutive years.

4.3 MONITORING PROCEDURES

PCWA will collect surface water quality samples (grab samples) at each monitoring location and submit the samples to a California state-certified laboratory to conduct appropriate analytical techniques. Three replicate surface water samples will be collected at each of the monitoring locations one time before (pre-treatment) and after (post-treatment) herbicide application to evaluate and determine whether off-site movement of chemical residue is occurring.

Pre-treatment samples will serve as “control” or background samples and will be taken prior to application of any herbicide treatments. Samples will not be taken during herbicide application. Post-treatment samples will be taken during a significant runoff-producing storm, after herbicide application, when any off-site movement is most likely to occur. Additional post-treatment monitoring may be required depending on the protective buffers implemented during pesticide application (VIPMP Table 7).

Data collection, sample handling, laboratory analyses, and QA/QC protocols are described below.

4.3.1 Data Collection

A pre-treatment water sample will be collected at all monitoring stations prior to application of any of the herbicides. All samples will be grab samples of a volume required by the laboratory.

Post-treatment samples will be collected at the same water quality monitoring locations sampled during pre-treatment, (plus at any sites that were previously dry but at the time of post-treatment sampling have water present). The sampling site will be kept constant so that results from different years can be compared. The post-treatment water samples will be collected during the first significant runoff-producing storm that occurs within 90 days of herbicide application. If no such storm event occurs, the second post-treatment samples will not be collected. Samples taken during storm runoff periods will attempt to

catch the rising limb of the hydrograph. The exact timing will depend on weather conditions and monitoring location access. A determination of "no harmful effects for three consecutive years" will require that storm run-off sampling data has been included for a minimum of two years.

At each location, the sampler will characterize conditions at the time of sampling in a water quality monitoring field log, including, but not limited to, the following information:

- herbicide treatment date, chemical, concentration and method of application;
- date and time of sample collection;
- monitoring location identification number;
- name of water body or special-aquatic site;
- sample jar number and type of container;
- preservatives added, if any;
- an estimate of stream discharge;
- other local influences (stream clarity, weather, other pertinent notes or unusual conditions observed at the time of sample collection);
- any deviations related to the location or depth of sample collection; and
- name of individual(s) collecting the sample.

Each sample jar will also be labeled with the following information in waterproof ink:

- date and time of sample collection;
- monitoring location identification number;
- name of water body;
- sample jar number;
- preservatives added, if any;
- name of individual(s) collecting the sample;
- type of sample; and
- chemical(s) to be analyzed.

A chain-of-custody form will be completed to trace the possession and handling of the samples from the point of collection through delivery to the laboratory. Individual(s) collecting, handling, or transporting the samples will sign and record the date and time of their possession of the samples.

4.3.2 Sample Handling

Extreme care will be taken to prevent sample contamination. Personnel involved in collecting samples will not participate in herbicide application. The collector will not have any herbicide or other contaminant on his/her clothing, hands, or boots. The sample containers will be obtained from a state-certified laboratory and kept away from all herbicides and related equipment. Sample containers will not be transported or stored with herbicide application equipment.

Collected samples will be stored and transported in a light-proof cooler. The samples will be sent to a state-certified laboratory for analysis consistent with holding time requirements for the chemicals to be analyzed. PCWA and the laboratory will initiate special procedures to ensure that concentration or other information is not lost due to expiration of the holding times. The laboratory will be directed either to analyze for the specific chemicals immediately upon arrival or to chemically preserve the samples for later analysis. Chemical preservation will only be performed in circumstances where the preservation does not influence the detection limit of the analytical technique. If necessary, preservatives may also be placed into the sample jars prior to collecting the samples. If this preparation occurs, then the samplers will be notified of the jar constituents and any special handling instructions prior to entering the field.

4.3.3 Laboratory Analyses

Laboratory analyses will be conducted to determine whether chemical residue from herbicide applications is found in downstream water bodies. Table I-1 provides a list of herbicides used in the MFP and associated chemicals to be tested. The state-certified laboratory selected to perform the analyses for PCWA will provide methodology (specific analysis techniques and EPA Standard Method) for each chemical to be tested. For each chemical to be tested, the laboratory results will include a description of the analysis method, the current method detection limits, reporting limits, and practical quantification limits, as appropriate.

Samples will be stored in accordance with laboratory standard operating procedures. Compliance with laboratory-approved storage procedures, and with maximum holding periods allowed by laboratory methods, will be documented, and, as described above, a chain-of-custody record will be maintained for each sample jar.

4.3.4 Quality Assurance/Quality Control

All samples will be collected, handled and delivered to the lab consistent with specific U.S. EPA methods or other approved sampling/handling protocols. Appropriate QA/QC methods and documentation will be followed. Quality control procedures will include

sending a blank and a spiked sample to the laboratory with selected batches of samples.

Field QA/QC methods will vary by chemical parameters being analyzed, but certain methods will be uniformly applied to all field sampling. Clean sampling techniques will be applied throughout the sampling effort. All sample bottles will be prepared by a California state-certified laboratory.

All field crew members collecting samples will wear waterproof gloves to prevent possible sample contamination. The labeled samples will be placed in closed, lightproof coolers filled with ice and maintained at an appropriate temperature throughout storage and transport. Iced samples will be delivered to the laboratory within the specified holding time. Quality control in the field will be assured through completion of sample labels, field sheets, chain of custody forms, and sample log forms.

4.4 REPORTING AND CONSULTATION

For each year in which water quality monitoring is conducted, the results of monitoring will be submitted in a report to USDA-FS, State Water Board, and CDFG for review and comment within 120 days after completion of the post-treatment sampling. The report will include all sampling locations, field notes and methods, EPA Standard Method used, laboratory results, analyses, and a discussion regarding the effectiveness of avoidance and protection measures and BMPs implemented to protect water quality. Each subsequent report will include the findings of all previous years' monitoring results.

A determination of "no harmful effects for three consecutive years" will require that storm run-off sampling data for a minimum of two years as well as pre-treatment and post-treatment data for three years (or more) demonstrate constituent levels that fall below thresholds of risk for freshwater aquatic life.

Based on the monitoring results, the Licensee will consult with USDA-FS, State Water Board, CDFG to determine if modifications to avoidance and protection measures or BMPs, application methods, or authorized herbicides are required. Following agency consultation, the water quality monitoring report will be submitted to FERC.

5.0 LITERATURE CITED

California Regional Water Quality Control Board, Central Valley Region. 2009. The Water Quality Control Plan (Basin Plan) For the California Regional Water Quality Control Board Central Valley Region. The Sacramento River Basin and the San Joaquin River Basin. Fourth Edition. Revised September 2009 with Approved Amendments.

USDA Forest Service (USDA-FS). 2000. Water Quality Management for Forest System Lands in California: Best Management Practices, September 2000.

____. 2004. Sierra Nevada Forest Plan Amendment – Final Supplemental Environmental Impact Statement. January 21, 2004. USDA-FS, Pacific Southwest Region and Intermountain Region.

TABLES

Table H-1. Herbicides to be used in the Middle Fork Project and Associated Laboratory Aqueous Matrix Information.

Active Ingredient	Formulations	Concentration			Total spray volume (gal/acre)	Expected AI or AE/acre	Laboratory Aqueous Matrix (Water Sample)[1]		
		Amount of Active Ingredient (AI) or Acid Equivalent (AE)	Dilution Rate (per 100 gal)	Application Rate (per acre)			Reporting Limits	Holding Time	Reference
Herbicides									
Aminopyralid	Milestone, Milestone VM	3.9 lb/gal AI 2.0 lb/gal AE	Up to 43oz	Up to 7.0oz	16	0.11	0.10 µg/L	14 days	NCL Method 299
Chlorsulfuron	Telar, Glean, Corsair	12 oz/lb AI1	Up to 14oz	Up to 2.25oz	16	0.01	0.50 µg/L	7 days	NCL Method 214
Clopyralid	Transline	4.0 lb/gal AI 3.0 lb/gal AE	Up to 32oz	Up to 10.6oz	33	0.25	10 µg/L	7 days	NCL Method 213
Glyphosate	Many formulations	5.5 lb/gal AI2 4.5 lb/gal AE2	Up to 320oz	128oz	40	5.4	5 µg/L	14 days	EPA 547
Glyphosate (aquatic formulation)	Aquamaster or equivalent	5.4 lb/gal AI 4.0 lbs/gal AE	Up to 320oz	128oz	40	5.4	5.0 µg/L	14 days	EPA 547
Triclopyr	Garlon 3A and 4, Pathfinder II, Remedy RTU, Renovate 3	6.0 lb/gal AI3 4.0 lb/gal AE3	192oz	77oz	40	2.4	0.50 µg/L	7 days	EPA 8151A

[1]Information for each analyte (herbicide) can be found at: North Coast Labs http://www.northcoastlabs.com/analyte-search/index.php, and Human Health and Ecological Risk Assessments prepared for the USDA-FS can be found at: http://www.fs.fed.us/foresthealth/pesticide/risk.shtml.