Jocko Lakes Fire Salvage Project

Botany Biological Assessment and Biological Evaluation

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Introduction

The Seeley Lake Ranger District of the Lolo National Forest is proposing to salvage timber within the area burned by the Jocko Lakes fire of 2007. Salvage activities would take place under winter, snow-cover conditions on 95 percent of the units and 1 percent in summer using tractor yarding. The remaining 5 percent would be salvaged in summer using skyline yarding. In summary, this project proposes to: salvage dead timber from burned area on 1,648 acres of National Forest System, maintain approximately 55 miles of classified NFS road to be used as haul-routes for the salvaged timber, construct approximately 4 miles of temporary or short-term specified roads to access proposed salvage areas, replace 3 culverts, store or decommission approximately 10 miles of unneeded classified NFS roads and unclassified roads, plant trees in some units, and conduct ground-based noxious weed treatments along portions of the 55 miles of NFS roads, disturbed soil areas such as landings, and 10 miles of decommissioned roads in order to mitigate potential weed spread from ground-disturbing activities.

This analysis will focus on the potential impacts of the above proposed actions on Threatened, Endangered, and Sensitive (TES) plants that may occur there as required by Forest Service policy.

Past plant surveys have been conducted in this area of the Seeley Lake district. There are no known occurrences of the federally threatened Spalding's catchfly or Water howellia within the affected action area. There are 10 locations of unoccupied but potential habitat for water howellia of federal land within the project area. None are within salvage units but all are adjacent or near the haul roads.

There are no known occurrences of Regional Forester's sensitive plants with the project area. One sensitive plant, Howell's gumweed is located within 2 miles of the project area. There are three occurrences on road edges of common camas, a Lolo "species of interest", within the project boundary.

Overview of Issues Addressed

Resource specialists identified the following issues:

- Salvage logging actions may kill TES plants or negatively affect their habitat if either is present.
- Salvage logging may enhance invasions by noxious weeds affecting sensitive plants and biodiversity (see also Invasive Weeds Report).
- Grass seeding with non-native species can change species composition undesirably.
- Salvage logging may affect plant species that are specialists for early post-fire conditions. See Vegetation Analysis Chapter 3 & 4 in the EA.

Issue Indicators (measures)

- Presence of TES plants or potential habitat

Threshold

- No loss of viability of Sensitive or Threatened plants

The draft Lolo National forest Plan guides project level planning through program emphasis areas. The purpose for the Wildlife and Plant Species Diversity Emphasis area is: “To provide ecological conditions that support a diversity of native plant and animal species over the long term and that promote recovery of federally listed species”.

Affected Environment

Existing Condition

General Vegetation

Pre-fire

Prior to the Jocko Lakes fire, vegetation in the project units, based on the Lolo National Forest Lands Systems Inventory (Sasich & Lamotte-Hagen 1989) consisted of moist mixed coniferous forest, subalpine forests, and cool to somewhat dry Douglas fir forests. The remaining vegetation types consist of dry Douglas fir and dry mixed coniferous forest types. The elevation for these project unit stands ranges between 2,800 to 6,000 feet. Within these above mentioned vegetation types, there are additional small acreages described as: stream terraces with flat benches between 2,800 and 4,400 feet, broadly convex ridges and rounded mountain ridgetops with some common stringers along subsurface drainageways between 5,000 and 6,800 feet, and cool high elevation basins with some wet inclusions between 4,800 and 6,000 feet in elevation.

Currently, there are no known occurrences within the project area of plants listed as federally threatened, or Regional Forester sensitive for the Lolo NF. The nearest known sites are *Potamogeton obtusifolius*, two miles away in Placid Lake and *Grindelia howellii*, two miles to the east on state and private land.

Post-Fire

On August 3, 2007 the Jocko Lakes fire ignited and burned roughly 36,380 acres before the fire was contained in October (about 11,600 acres were NFS lands). The fire was a mosaic burn with the exception of the Placid Creed drainage, which experienced a wind-driven high-intensity burn throughout its length resulting in severely burned soils in much of the riparian area (BAER 2007). The Forest proposes to salvage some of the timber from the burned area. The proposal would harvest about 14 percent of the 11,600 Forest Service acres that burned.

Threatened and Sensitive Plants

Federally Listed Plants

Two plant species, *Howellia aquatilis* (water howellia) and *Silene spaldingii* (Spalding’s catchfly), are federally listed as Threatened. Both of these plants are suspected to occur on the Lolo National Forest. NOTE: Currently, no federally listed known or suspected Endangered plant species or critical habitat occurs on lands managed by the Lolo National Forest.

Howellia aquatilis is a member of the Campanulaceae family. It is an annual plant that occurs in small, vernal, freshwater glacial ponds and oxbow sloughs in the valley zone from 3100 to 4425 feet in elevation. These ponds typically dry by late summer. The plant flowers in late July to early August. Habitat for this plant occurs on the Seeley Lake Ranger District of the Lolo National

Forest. There are 134 occurrences known to Montana, all in the Swan Valley to the north. Threats to habitat include logging, development, and encroachment by invasive grass (NatureServe 2008).

Silene spaldingii is a member of the Caryophyllaceae family. It is a perennial plant that is endemic to mesic grasslands that make up the Palouse region is southeastern Washington, northwestern Montana, and adjacent portions of Idaho and Oregon. It is typically associated with grasslands dominated by native perennial grasses such as Idaho fescue or rough fescue. Other associated species include bluebunch wheatgrass, snowberry, Nootka rose, yarrow, prairie smoke avens, sticky purple geranium, and arrowleaf balsamroot. Scattered individuals of ponderosa pine may also be found in or adjacent to Spalding's catchfly habitat. Sites range from 1750 to 5100 feet in elevation. Habitat for this plant occurs on/near the Plains/Thompson Falls District of the Lolo National Forest.

Pre-field analysis show there is potential for habitat suitable for water howellia. Spalding's catchfly is unlikely in or near the project area (could occur on native plains). (See description of Pre-fire habitats above.)

Forest Sensitive Plants Known to Occur in the Project Area

There are no known previously documented occurrences of sensitive plants present within the project area (Lolo National Forest TES Plant Records (Lavelle 2008, Montana Natural Heritage Database, 2008).

Forest Sensitive Plants Suspected to Occur in the Project Area

Of the plant species listed for the Lolo NF (Appendix A) the following *Region One Sensitive* plant species and "species of interest" (SOI) could potentially occur based on habitats present and ecological preferences of the plants. Some of these species occur mainly in fire-dependent ecosystems but are not necessarily specialists for early post-fire conditions. There are no known occurrences of Regional Forester's sensitive plants with the project area. However, one sensitive plant, Howell's gumweed is located within 2 miles of the project area.

A habitat suitability analysis was conducted to evaluate the potential for additional sensitive plants occurrences within the action areas. Sensitive plants species were grouped in **habitat guilds** based on elevation, habitat descriptions from literature, element occurrence site forms, and associated species at known locations. These groups or guilds represent broad habitat associations occurring on the Lolo National Forest and are used as a tool to evaluate potential habitat of sensitive plants within a project area.

Habitat Guilds potentially occurring in the Jocko Lakes Fire Salvage project area:

- Aquatic and vernal pools
- Fens and Fen margins
- Other wetlands and Riparian associates
- Disturbed areas
- Moist Coniferous forests
- Dry Coniferous Forests

Aquatic and vernal pools

Bidens Beckii (Beck Water-marigold) Asteraceae family Habitat: Aquatic perennial plant, found in still or slow-moving water of lakes, rivers, and sloughs in the valleys. Usually grows in 0.1-3 meters depth of water at 3-4,000 feet elevation. On the Seeley District, it is known to occur in Seeley Lake, Salmon Lake, and Lake Alva. Survey: Flowers in late August through September.

Brasenia schreberi (Watershield) Nymphaceae family. Habitat: Aquatic perennial plant, found in shallow water of ponds, lakes, sloughs, slow-moving rivers, and sluggish streams in the valley zone, 3-4,000 feet elevation. On the Seeley Ranger District, it is known to occur in Seeley Lake and the Clearwater River; in 1-3 feet of water. Survey: Flowers in August.

Potamegton obtusifolius (Blunt-leaved Pondweed) Potamogetonaceae family. Habitat: Shallow water of lakes, ponds, and sloughs in the valley, foothill, and montane zones, 3080-5200 feet. Survey: Flowers in late July and August.

Schoenoplectus subterminalis (Water Bulrush) Cyperaceae family. Habitat: Open water and boggy margins of ponds, lakes, and sloughs at 0.1-3 m depth in the valley, foothill, and montane zones, 2890-6000 feet. On the Lolo NF, this plant has been found on the Seeley District in the Clearwater drainage on a floating peat mat. Survey: Flowers in late June and July, fruits in August.

Fens and Fen margins:

Amerorchis rotundifolia (Round-leaved Orchis) Orchidaceae family
Habitat: Spruce forests around seeps or along streams, often in soil derived from limestone, 3350-5920 feet. Survey: Flowers in late June through early July.

Carex chordorrhiza (Creeping Sedge) Cyperaceae family. Habitat: Wet, organic soil of sphagnum fens and bogs in the montane zone, 3410-5280 feet. Survey: Fruit matures in July.

Carex rostrata (Beaked Sedge) Cyperaceae family. Habitat: Wet, organic soils of fens in the montane zone, including floating peat mats, 4200-4360 feet. On the Seeley Lake Ranger District it is known to occur in the Clearwater drainage on a floating peat mat. Survey: Fruits in July and August

Cypripedium parviflorum (Small Yellow Lady's-slipper) Orchidaceae family Habitat: Fens, damp mossy woods, seepage areas, and moist forest meadow ecotones in the valley to lower montane zones, 2520-6200 feet. Survey: Flowers in May and June and fruits in July.

Cypripedium passerinum (Sparrow's-egg Lady's-slipper) Orchidaceae family Habitat: mossy, moist, or springy places in coniferous forests, often on calcareous substrates, 3100-5700 feet. Survey: Flowers in late June to early August.

Drosera anglica (English sundew) Droseraceae family. Habitat: wet, organic soils of fens in the montane zone, associated with Sphagnum moss. Flowers in late June-July and fruits in July and August.

Epipactis gigantea (Giant Helleborine) Orchidaceae family. Habitat: Streambanks, lake margins, fens with springs and seeps, often near thermal waters, 2900-6200 feet. Survey: Flowers from late June to early August.

Gentianopsis simplex (Hiker's Gentian) Gentianaceae family. Habitat: Fens, meadows, and seeps, usually in areas of crystalline parent material, in the montane and subalpine zones, 4460-8400 feet. On the Lolo NF, it has been found on the Missoula District in Granite Creek. Survey: Flowers in July and August.

Meesia triquetra (moss) *Meesia triquetra* has been found in calcium-rich areas of wetlands

Scheuchzeria palustris **(Podgrass)** Scheuchzeriaceae family. Habitat: Wet, organic soil of fens, bogs, and lake margins in the valley and montane zones, usually with sphagnum moss and *Carex* sp., 2950-6550 feet. Survey: Flowers in June and fruits in July.

Other wetlands and Riparian associates:

Botrychium paradoxum (Peculiar moonwort) Ophioglossaceae family. Habitat: Mesic meadows with an abundance of forbs associated with spruce and lodgepole pine forests in the montane and subalpine zones, on slopes ranging from 0-20 percent, and where snow is held late in the year; 3550-8480 feet elevation. Survey: Mature fronds are present in July.

Camassia quamash (Common camas) Liliaceae family. Habitat: Moist areas which often dry by late spring; damp forests, meadows and streamsides. Global ranking is “apparently secure”, not state-ranked, occurrences not previously tracked on the Lolo. A Species of Interest due to status as food plant of Native Americans. Survey: May and June flowering.

Dryopteris cristata (Buckler Fern) Polypodiaceae family. Habitat: Moist to wet, often organic soils at the margins of fens and swamps in the montane zone, 2950-7350 feet. On the Lolo NF, this plant is known to occur on the Seeley District at Summit Lake and on the Missoula District in Rattlesnake Creek. Survey: Mature fronds are present in July and August.

Heterocodon rariflorum **(Western Pearl-flower)** Campanulaceae family. Habitat: Is an annual plant that has been located on the Kootenai and Bitterroot Forests. Plant occurs in vernally moist grassland slopes, mossy ledges, and riparian swales in valley, foothills and montane zones, 2750-7000 feet. Initial searches for this plant should focus on south-facing mossy ledges and open mossy riparian areas. Survey: Flowers in June and July.

Trifolium eriocephalum (Wooly-head clover) Fabaceae family. Habitat: dry meadows, woods and margins in the foothills and montane zones between 4550 and 5130 feet. It is known from 8 occurrences in Ravalli County, on the Bitterroot NF. Survey: Flowers in May-June.

Waldsteinia idahoensis (Idaho Barren Strawberry) Rosaceae family. Habitat: On the Lolo NF, (only known Montana occurrence) it has been found in the edge zone of a seasonally wet meadow and a lodgepole and subalpine forest. The forest is a subalpine fir/twinflower/beargrass habitat type at 4220 feet. In Idaho, it grows in open sun to shade in meadows and moist woods along streams and seeps from 3400-4800 feet. It occurs in red cedar, hemlock, grand fir, and subalpine fir habitat types in Idaho. Survey: Flowers in June.

Disturbed areas:

Clarkia rhomboidea (Common Clarkia) Onagraceae family. Habitat: Dry, open forests with gravelly soils in the montane zone, 2460-6800 feet (one historic occurrence reported at 6800 feet). All known Lolo NF occurrences are on the Plains/Thompson Falls District from 3200-4400 feet. One historic occurrence reported at 6800 feet could not be relocated. Seven locations occur

within or adjacent to the Douglas-fir/ninebark habitat type. One occurs in a Douglas-fir/bluebunch wheatgrass habitat type. All occur on southerly aspects with one occurrence including a west aspect. Survey: Occurrences in Plains/Thompson Falls flower around the first 3 weeks of July.

Grindelia howellii (Howell's Gumweed) Asteraceae family. Habitat: Various disturbed and natural habitats, including roadsides, pine plantations, grazed pastures, forest openings, river terraces, and native grasslands, 3320-5960 feet. On the Lolo NF, it has been found on the Seeley District along roadsides. Survey: Flowers in July and August.

Mertensia bella (Oregon Bluebells) Boraginaceae family. Habitat: Wet, seepy, open or partially shaded slopes in the montane or subalpine zone, 6120-6600 feet. On the Lolo NF, it is known to occur on the Missoula District near the Idaho border in the subalpine zone in clearcuts and along/within the forest margin at the lower edge of the clearcut. Survey: Flowers in late May to July.

Orogenia fusiformis (Tapered-root Orogenia) Apiaceae family. Habitat: This plant grows in open to partially shaded areas in woods, meadows, sagebrush, and disturbed areas in woods like revegetated skid trails, animal trails, campground and picnic areas from lower foothills to the mid-montane zone, 4160-7300 feet.. On the Lolo NF, it has been located on the Missoula District near Lolo Hot Springs and in the Granite Creek drainage on disturbed sites within the forest (Douglas-fir/grouse whortleberry and subalpine fir/twinflower habitat types) at 4200 feet. On the Bitterroot NF, it has been found in an open meadow and Douglas-fir habitat types. On the Beaverhead-Deerlodge NF it has been found in sagebrush habitats. Survey: Flowers the end of April through May.

Moist Coniferous forests:

Cypripedium fasciculatum (Clustered Lady's-slipper) Orchidaceae family
Most Montana occurrences are in warm, dry mid-seral montane forest in the Douglas-fir/ninebark and grand fir/ninebark habitat types. Elsewhere in its range, it is in western red cedar habitat types. On the Lolo NF, it has been found on the Ninemile, Superior, and Plains/Thompson Falls Districts. It has been found mainly in the Douglas-fir/ninebark habitat type, but also in grand fir/twinflower, grand fir/ninebark, grand fir/queencup beadlily, and Douglas-fir/pinegrass habitat types. Elevation zone is 2600-4680 feet. Survey: On the Lolo NF it flowers in late-May through July.

Dry coniferous Forests:

Allium acuminatum (Tapertip Onion) Liliaceae family. Habitat: Dry, open forests and grasslands in the montane zone, 2600-8000 feet. On the Lolo NF, it occurs on the Plains/Thompson Falls District in a Douglas-fir/pinegrass/bluebunch wheatgrass habitat type, on a southwest aspect at 2600 feet. Survey: Flowers May through June.

Desired Condition

The National Forest Management Act and Forest Service policy direct that NSF lands be managed to maintain populations of <u>all</u> existing native plant and animal species at or above minimum population levels. A minimum viable population consists of the number of individuals adequately distributed throughout their range necessary to perpetuate the existence of the species

in natural, genetically stable, self-sustaining populations. This data is largely lacking in the literature for plant species.

Federally listed species: The Endangered Species Act (ESA) requires that the Forest Service conserve endangered and threatened species. The desired condition as described in the Lolo National Forest Plan (USDA Forest Service, Lolo National Forest Plan, 1986) for expected outcomes in 1995 and 2035 is that "habitat to support (federal) threatened and endangered species will have been protected consistent with recovery goals". Two plant species, *Howellia aquatilis* and *Silene spaldingii* are listed as federally threatened. Both of these plants are suspected to occur on the Lolo National Forest. (Currently, no federally listed known or suspected Endangered plant species or critical habitat occurs on lands managed by the Lolo National Forest).

Regional Forester Sensitive Species: In addition to plant protected under the ESA, the Forest Service identifies plant species for which population viability is a concern as Sensitive species. The Regional Forester designates these sensitive plants. As of 2004 there are 35 plant species listed for the Lolo NF in Region 1 (Appendix A).

Species of Concern: The Lolo NF also tracks 8 plants that it refers to as species of concern, all except one (Mission mountain kittentails) are also on the Regional Forester list (Appendix A).

Species of Interest: The Lolo NF also tracks 14 plants as Species of Interest in addition to sensitive. Some of these have high State risk ranking (usually S1 or S2) or are plants of cultural significance to Native Americans.

Environmental Consequences

Methodology

The plants listed on the Federal Endangered Species list and the Regional Forester's Sensitive Species list were assessed for risk of adverse effects from proposed project activities. This list (Appendix A) identifies two federally threatened plants and 35 Regional Forester sensitive plant species with potential to occur on the Lolo National Forest, and 13 "Species of Interest" to the forest.

In addition to the TES list and known habitat guilds, additional sources were used to in this pre-field review to determine the potential for these species to occur within and near the project areas:

- Montana Natural Heritage Program database/element occurrence records
- Lolo National Forest Sensitive Plant location maps from previous botanical surveys in the project vicinity
- Regional floristic manuals, including Hitchcock et al. (1973), Lackschewitz (1991), Kershaw et al (1998), and the Lolo NF TES Plant Field Guide for Sensitive Plants, Species of Concern, and Species of Interest (2007)
- Lolo National Forest Land Systems Inventory (1989)
- Timber stand database and field survey records, aerial photographs & topographic maps
- Pertinent sensitive species conservation strategies, status reviews, and research reports

Once the pre-field review was completed and species were identified that had potential to occur within and near the project area, field clearance surveys were conducted (Table 1). Field surveys were conducted using the intuitively controlled method of plant survey intensity (The surveyor conducts a complete examination of specific areas within the project area, in addition to walking through the area and its perimeter or walking more than once through the area.).

These surveys were accomplished by Cari Cardoni and Sara Levy (USFS TEAMS Biological technicians) during July of 2008 for all of the plants in Appendix A but keying in on the species of highest potential described by guilds above. See Project file for Botanical Survey Field Forms and maps.

Assumption: Plant surveys will not be done on winter harvest units. Units that would be harvested under winter snow cover conditions would have no (or negligible) soil disturbance, therefore if plants did occur there they would not receive direct negative impacts from harvest activities.

Assumption: Herbicide treatments proposed are proposed for road edges and log landings. No herbicide would be used within harvest units. If weeds need treatment within units, they would have to be surveyed under some other decision and receive rare plant surveys then.

Limitations: Burn severity is based on canopy conditions and ranged from low to moderate on the units surveyed. Much of the ground flora was absent so habitat suitability was interpreted by original vegetation and presence of small unburned patches.

Table 1 Jocko Lakes Project Botany Surveys (July 2008)

Section-Unit	acres	Action Proposed*	Burn severity
20-2	21	tractor salvage(summer)	moderate
20-12	9	skyline salvage	low / moderate
29-2	12	skyline salvage	low / moderate
34-2	56	skyline salvage	moderate
55 mi. haul roads	~220	travel, some repair	N/A
4 mi. temp roads	~16	construct then restore	N/A
10.7 mi. decommission rd	~40	store or decommission	N/A

* see EA chapter 2 and maps for a complete description of these proposed actions

Spatial and Temporal Context for Effects Analysis

Connected Actions, Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis

Any of the actions described in the cumulative effects worksheet (Appendix B) that disturb soil are relevant to TES plants. Ground disturbance can alter habitat and destroy TES plants directly and increase the risk of weeds invading and out-competing the desirable native plants.

Spatial Bounds

The analysis area for the Jocko Lakes Salvage Project is limited to the 2007 Jocko Lakes Fire perimeter on the Seeley Lake Ranger District, Lolo National Forest. The proposed salvage units

include approximately 1,648 acres of the 11,648 National Forest acres burned within the Jocko Lakes Fire.

Temporal Bounds

The temporal bounds include the past, present and the foreseeable actions described in the Cumulative Effects Worksheet, included in Appendix B. Negative short term effects from soil-disturbance would be detected in 1-2 years until the native ground vegetation regenerates (Alaback & Lee 2006 p 31). In the longer-term, the threat of indirect negative effects from weed competition could be measured by the appearance of weeds within the 5-10 years that weed seed remains viable in the seed bank.

Alternative 5 – No Action

Under the No-action alternative, no dead or dying timber would be harvested, temporary roads would not be built, and no roads would be decommissioned. Weeds may be treated along roads and wherever else they are found according to the Lolo Integrated Weed Management project (Weed FEIS 2007). However, no timber-related funding would be used to control invasive weeds in the area, which may affect the treatment schedule.

Direct, Indirect, & Cumulative Effects

There would be no direct, indirect effects because no actions would take place that could damage TES plants even if they were present and undetected. Treatment of weeds would occur under other decisions (Weed FEIS 2007; Post BAER 2007). Since there are no direct or indirect effects, there is nothing to add cumulatively to effects of other past, present, and foreseeable actions.

Summary of Effects and Determination

This Biological Evaluation considered 52 TES species of plants listed as: Threatened, Regional Forester sensitive, and “species of interest” to the Lolo NF.

Federally Threatened:

Based on the measure of *presence of TES plants or habitat*, Alternative 5 (No Action) would have **no effect on federally threatened plants** since they do not occur in or near the project area. This does not exceed the threshold of *loss of viability* for Threatened plants.

Regional Forester Sensitive and Species of Interest:

Based on the measure of *presence of TES plants or habitat*, Alternative 5 (No Action) would have **no impact on sensitive plants** since no ground-disturbing action would take place that would meet the threshold of *loss of viability for Threatened or Sensitive plants* even if they were present but undetected. If the No-action is selected no timber-related funding would be used to control weeds that could have a negative indirect impact. However, invasive plant control would take place under other decisions.

Alternative 3 – Modified Proposed Action

Of the 1,648 acres proposed for salvage, 94 percent (1550 acres) would be harvested under winter, snow-covered conditions using tractor skidding. One unit (20-2) is proposed for summer tractor logging (It is possible even this unit would be winter tractor yarded; but, to assure all potential impacts are considered it was analyzed as a summer tractor unit). 77 acres are proposed for skyline harvest method in summer. Ground-based noxious weed herbicide treatments would take place where weeds are present along approximately 63 miles of NFS haul and temporary roads, and disturbed soil such as landings and the 10.7 miles of stored or decommissioned roads. Disturbed areas would be seeded with Lolo NF seed mix. Trees would be planted in some units.

Design Features and Mitigation Measures

This project was designed to have no significant impact to TES plants by logging in winter, minimizing soil impacts, and protecting wetlands. Additional Resource Protection Measures proposed that pertain to wetland and soil resources can be found in the EA chapter 2. The following design features that pertain to botanical resources are:

- Tractor logging would be conducted over snow where needed to minimize impacts to soils and water quality. (94 percent of salvage is proposed over snow)
- Riparian habitat conservation area protective measures would prohibit harvest activities within
    - 300 feet of perennial fish bearing streams, 150 feet of perennial non-fish bearing streams, ponds, lakes, or wetlands, and 100 feet of seasonally flowing or intermittent streams of landslide prone areas.
- Boundaries of wetlands and RHCAs would be flagged prior to activities to exclude ground-based equipment and other activities.
- If sensitive plants are identified during implementation, the areas will be flagged and no ground disturbing activities would occur within 50 feet.
- Weed treatments will tier to Lolo National Forest Integrated Weed Management Plan (USDA FS 2007), including approved herbicides, treatment strategies and mitigation measures.
- Revegetation on disturbed or treated sites should include native plant species as recommended by the USFS-R1 native species policy (USDA FS 1994). This policy emphasizes the use of locally adapted native plant seed, whenever possible. Seeding should be used as a reclamation tool only where resource damage will occur without it. Otherwise, sites should be allowed to re-vegetate naturally from the localized adjacent seed source.
- Monitoring will tier to Lolo National Forest Integrated Weed Management Plan (USDA Forest Service, 2007) which includes the following:
    - Monitoring before Treatment
        - Surveys for threatened, endangered or sensitive (TES) plants or animals will be conducted prior to grazing and herbicide weed control projects. These surveys will not be conducted for biological agent, pulling, mowing and seeding weed control projects.

- Site specific recommendations will be developed, and monitored as needed to protect TES populations.
- Relative abundance of native, beneficial, and desirable vegetation present on representative treatment sites will be evaluated to determine if revegetation will be needed after weed treatment.

- Monitoring after Treatment

  - Non-target vegetation and effectiveness of treatments on weeds will be monitored on a representative sample of the treatment areas to determine changes in plant species and life form as a result of weed treatments. This will include monitoring herbicide effects on TES plant populations if they are treated. TES plant monitoring should include herbicide used, rate, application type, date of application and effects on TES plants.

Survey Results

Table 2 Jocko Lakes Fire TES Plant Survey Results (July 2008)

Section-Unit	activity size	Propose Action	TES Plants
20-2	21 ac	tractor (summer)	none
20-12	9 ac	skyline salvage	none
29-2	12 ac	skyline salvage	none
34-2	56 ac	skyline salvage	none
55 mi. haul roads	~220 ac	haul	none*
4 mi. temp roads	~16 ac	construct / restore	none*
10.7 mi. roads	~40 ac	decommission or storage	none*
road 4339	.1 ac	culvert 1244 replacement	none
road 4367	.1 ac	culvert 1222 replacement	none
road 9975	.1 ac	culvert 1469 replacement	none
***Roads with TES**	**size of pop. w/in activity**		
FR 36279 (Site # 1 on map)	<.1 mi	decommission .2 mi	**common camas SOI** (5+ acres; 300+ of plants, could not detect end of population from road surveyed)
FR 2191 Sec 36 (Site # 3 on map)	<.1 mi	haul road	**common camas** (2-3 ac patch w/ 200+ plants both sides of road)
FR 349 (Sec 10NW) (Site # 4 on map)	<.05 mi	haul road	**common camas** (1-3 ac patch w/ 100+ plants 10 meters from road)
FR 4347 (site #2 on map)	< .1 mi	haul road through **private land**	**common camas** (300+ plants on non-FS land - proposed temp road #28 bisects camas patch)

* except as noted in lower part of table and described in direct and indirect effects below

Habitats Found

Table 3 Habitat Guilds associated with habitats found during surveys July 2007

Habitat Guilds	Habitat Survey Results
Aquatic and vernal pools	**10 vernal ponds** (only mapped those within 50 meters of haul roads)
Fens and Fen margins	no fens located
Other wetlands and Riparian associates	**10 vernal ponds** as above and in Table 4. Ephemeral stream at the bottom of slope in 34-2 could provide suitable orchid habitat. Wet seeps in 29-2. No perennial streams within units surveyed. No TES at culverts
Disturbed areas	**abundant disturbed habitats** -about 75 miles of road edges were surveyed No TES at culverts
Moist Coniferous forests	unburned patches of ground flora mostly associated with ground water seepage or where the fire skipped within in units 20-2 & 12; 29-2, 34-2.
Dry Coniferous Forests	ground flora mostly burned; units 20-2 & 12; 29-2, 34-2. Difficult to interpret suitability for species in this guild

Table 4 Howellia aquatilis <u>potential</u> habitat (wetlands) – No Plants Found

Road #	Section	Quartersec	Ownership	Notes
16687	32	sw	fs	
20608	31	ne	fs	
17682	31	sw	fs	
2191	36	se	fs	
2191	2	ne	fs	
349	4	se	fs	
349	10	nw	fs	btwn units 10-100 & 10-2
349	10	ne	fs	across from jct 46622
9974-2	22	sw	fs	RHCS*
46556	14	ne	fs	RHCS* Beaver Crk
17457	15	center	plum crk**	RHCS*
9974-2	23	nw	plum crk**	RHCS* Finley Crk
9975	23	se	plum crk**	
9974-2	33	nw	plum crk**	

* Riparian Habitat: As interpreted from visually scanning GIS layer and comparing to hard-copy maps provided by botany field surveyors.
**Cost Share Agreement Rd with a MOU for FS to treat right-of-way if there are weeds.

Direct Effects

No federally threatened or Regional Forester Sensitive plants were found in the surveyed units and roads of the proposed project area (Table 1). Units that were not surveyed are proposed for harvest in winter conditions where snow cover is expected to protect the ground flora from direct negative impact. The project proposes to replace or remove three culverts. There are no TES

plants near any of the culverts. Alternative 3 would have no direct effects to Threatened or Regional Forester Sensitive plants. Weeds that occur along roads in the winter-harvest units would be treated with herbicide as part of this proposal. Since this project only covers roads, landings, and other already highly disturbed sites, no direct effects to threatened or Regional Forester Sensitive plants from herbicide application are expected.

Forest "Species of Interest"

The field survey crew found and mapped four large populations (one on Plum creek land) of *Camassia quamash* (common camas) a Lolo "species of interest" (see Table 2). This plant is widespread throughout western North America (NatureServe 2008) and occurs in moist forested areas in open sites created by disturbance, and favors frequent fire (Howard 1993). It is also found in damp forests, meadows and stream-sides. It is "of interest" because it is a traditional food plant of Native Americans. Haul road 2191 and a road proposed for decommissioning (#36279) each bisect a site. Hauling on road 2191 (camas site #3) would not negatively effect plants because the closest are 15 feet from the road. Decommissioning work would directly impact a few individuals (<1 percent of population #1) but not contribute to a loss of viability due to large population size (Table 2). Herbicide application may cause a direct negative impact to nearby camas plants if spray were to contact them. Following the Lolo weed management mitigation measures would minimize negative impacts to camas plants: "Site-specific treatment guidelines would be developed and followed for infestations within or adjacent to known TES plant populations…may include…herbicide application timing…buffers or avoidance." (Weed FEIS 2007 pg 28). See Mitigation measures below.

Indirect Effects

Federally Threatened Plants: All haul roads, temporary roads, and store/decommission roads were surveyed for potential rare plant habitat adjacent to them (especially for that of federally threatened *Howellia aquatilis*) to identify potential effects from road and culvert work or weed treatments with herbicide. Ten vernal ponds, suitable habitat for *Howellia,* were found on National Forest land within the project boundaries near or adjacent to surveyed roads and were examined for presence of the plant with none found. While five of these ten sites have weeds along the nearby road (10-30 meters away), the weeds present (spotted knapweed, oxeye daisy, and Canada thistle) favor dry-site conditions and do not threaten the aquatic native plant habitat. No invasive plants (such as reed canary grass) that threaten wetlands were found. Because all haul roads were surveyed for *Howellia* habitat where it may be threatened by weeds, another four potential vernal wetlands were mapped on Plum Creek lands. There was no *Howellia aquatilis* found in any of the four and only one (in section 23) had weeds (knapweed and oxeye daisy) on the road that are proposed for herbicide treatment. Resource protection measures designed to safeguard water quality (see EA Chapter 2) and mitigations during herbicide control of invasive plants are expected to protect habitat for native plants. The proposed project would have no indirect effect on any listed federally threatened plants.

Regional Forester Sensitive Plants: No Regional Forester sensitive plants were found in the areas surveyed. Removal of competing weeds would provide a beneficial indirect effect in the long term. The project would have no indirect impacts on Regional Forester Sensitive plants.

Cumulative Effects

The cumulative effects of past, present, and reasonably foreseeable actions are summarized in Chapter 3 of the EA and described in more detail in the cumulative effects worksheet for TES plants (Appendix B). It is reasonable to assume that controlling invasive weeds throughout the project area would decrease their threat to the ecosystems and benefit TES plants over the long term. Since no direct or indirect effects to Threatened or Regional Sensitive plants are anticipated there are no effects to add cumulatively to the actions in Appendix B. Direct impacts of loss of a few individuals of common camas (Species of Interest), would not contribute to a loss of viability due to their large populations and the species' tolerance of disturbance (NRCS 2000). Frozen ground and snow cover would protect the few camas plants growing close to the road bed (FR 36279) when it is used during proposed harvest operations. While decommissioning (FR 36279) may result in loss of a few individuals (see direct effects above) other actions to control non-native invasive weeds would prevent their encroachment on the camas population providing a beneficial effect.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

All alternatives comply with the Lolo National Forest plan and State and Federal Law.

Interagency cooperation between the Forest Service and the USFWS, regarding proposed, threatened, or endangered species is described in Section 7 of the Endangered Species Act and in Forest Service Manual (FSM) 2670 and FSM 2671. Lolo National Forest management direction and goals for endangered species directs the forest to manage and contribute to the recovery of each species to non-threatened status (USDA FS 1986).

For Regional Forester Sensitive plant species, (FSM) 2670 direction is to ensure the viability of sensitive botanical species and to preclude actions that would contribute to the federal listing of a species. To ensure compliance with this direction, a biological evaluation is required for forest management activities that may alter habitat for proposed, endangered, threatened, or sensitive species (FSM 2672.4) in order to determine the possible effects of the proposed activities on these species.

Summary of Effects and Determination

This Biological Evaluation considered 52 TES species of plants listed as Threatened, Regional Forester sensitive, and "species of interest".

Federally Threatened:

Based on the measure of *presence of TES plants*, Alternative 3 (Proposed action) would have **no effect** on Threatened plants since none were found in the project area. This does not exceed the threshold of *loss of viability* for Threatened or Sensitive plants.

Regional Forester Sensitive:

Based on the measure of *presence of TES plants*, Alternative 3 (Proposed action) would have **no impact** on sensitive plants since no Regional Forester Sensitive plants were found in the proposed project area that would meet the threshold of *loss of viability for Threatened or Sensitive plants*.

Species of Interest:

Direct impacts of loss of a few individuals of common camas (Species of Interest), would not contribute to a loss of viability. These are four large populations, numbering in the hundreds of individuals each. Road work and the decommissioning of road 36279 would negatively impact less than an estimated one percent of the populations. Camas is tolerant of disturbance such as fire and soil scarification and is often found in forest openings created by disturbance (NRCS 2000). It is conceivable that decommissioning of road 36279 would ultimately contribute suitable habitat for camas but only if the natural hydrologic properties are restored (see Other Recommendations and Monitoring below). Additionally, Alternative 3 proposes to use timber-related funds to control weeds already present throughout the project area that threaten native ecosystems. This, combined with implementing the Lolo Integrated Weed Management program would provide a long-term beneficial effect.

Mitigation Recommendations

Exclude ground-based equipment and other activities from all wetlands identified as potential *Howellia aquatilis* habitat (see field maps provided to district). Do not spray herbicide on roadsides where drift could carry it to wetlands (see herbicide label for reducing drift potential).

Re-locate the mapped sites of Common Camas on the ground and flag where the population meets the road prior to any herbicide treatment of weeds. This can be done using GIS coordinates (GIS maps in project file). If GIS coordinates are not available, locate sites with map and buffer 0.1 to .25 miles in either direction to ensure site is protected. Do not spray non-selective herbicide on the roadside in this camas protection zone. Either hand-pull weeds or use a broadleaf selective herbicide within this zone. Camas is a monocot and should not be affected by broadleaf-specific (dicot) herbicide. Use a drift-reducing adjuvant and low boom pressure and spray only when wind is below 10 mph to avoid drift.

Use caution and avoidance of populations of Common camas in the roadside wet areas during road upgrading and keep the soil disturbance confined to the road bed. To allow the population of common camas near road 36279 to expand across the road bed, restore the natural grade level during decommissioning or follow road mitigation for closure level 3D which states that ripping under a level 3 closure would not be needed if it is found that the road bed has revegetated. See maps in Field Survey forms for exact locations of Sites # 1, 2, 3, and 4. Use the site-specific treatment guidelines for herbicide spraying according to the 2007 Weed FEIS:

- # 25 Herbicide applications near live water or in areas with shallow water tables will follow label directions.
- #32 Low boom pressure (less than 40 psi) will be used to reduce drift
- # 33 Drift-reduction products will be used a needed near sensitive resources
- # 34 Ground-based herbicide application will occur only when wind speed is 10 mph or less

Monitoring Recommendations

This report does not recommend any specific monitoring for Threatened or Regional Forester Sensitive plants.

Other Recommendations

Revegetate where necessary (highly disturbed sites such as decommissioned roads and log landings) using native seed or non-persistent, annual grasses.

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Appendix A. Lolo National Forest Sensitive, Species of Concern, and Species of Interest Plants

Table 5. Lolo National Forest - Sensitive and Threatened Species (10/04 List), Species of Concern (SOC), and Species of Interest (SOI)*

Scientific Name	Common Name	List (10/04)	SOC	SOI	Scientific Name	Common Name	List (10/04)	SOC	SOI
Adoxa moschatellina	musk-root	X		X	*Hierochloe hirta ssp. arctica*	sweetgrass			X
Allium acuminatum	tapertip onion	X		X	***Howellia aquatilis (Threatened)***	water howellia	X	X	
Allotropa virgata	candystick			X	***Idahoa scapigera***	scalepod	X		
Amerorchis rotundifolia	round-leaved orchis	X			***Kalmia polifolia***	pale laurel, swamp laurel	X		X
Arabis fecunda	sapphire rockcress	X			*Lagophylla ramoisissima*	slender hareleaf			X
Athysanus pusillus	sandweed	X			*Lewisia rediviva*	bitterroot			X
Bidens beckii	Beck water-marigold	X		X	***Meesia triquetra (moss)***		X		
Botrychium paradoxum	Peculiar moonwort	X	X		***Mertensia bella***	Oregon bluebells	X		X
Brasenia schreberi	watershield	X		X	*Nymphaea tetragona ssp. Leibergii*	Leiberg's waterlily			X
Camassia quamash	common camas			X	*Orobanche fasciculata*	clustered broomrape			X
Carex chordorrhiza	creeping sedge	X			***Orogenia fusiformis***	tapered-root orogenia	X		X
Carex rostrata	beaked sedge	X		X	***Phlox kelseyi v. missoulensis***	Missoula phlox	X	X	
Carex scoparia	pointed broom sedge			X					
Cirsium brevistylum	short-styled thistle			X	***Potamogeton obtusifolius***	blunt-leaved pondweed	X		X
Clarkia rhomboidea	common clarkia	X		X	*Ribes oxyacanthoides ssp. cognatum*	shinyleaf gooseberry, Canada gooseberry			X
Claytonia arenicola	sand springbeauty	X		X	*Ribes triste*	swamp red currant			X
Cypripedium fasciculatum	clustered lady's slipper	X		X	*Clinopodium douglasii*	yerba buena			X
Cypripedium parviflorum	small yellow lady's slipper	X		X	***Scheuchzeria palustris***	pod grass	X		X
Cypripedium passerinum	sparrow's egg lady's slipper	X			***Schoenoplectus subterminalis***	water bulrush	X		X
Drosera anglica	English sundew	X		X	***Silene spaldingii (Threatened)***	Spalding's catchfly/campion	X	X	
Dryopteris cristata	buckler fern	X		X	*Sphagnum mendocinum*				X
Epipactis gigantea	giant helleborine	X		X	*Sphagnum riparium*				X
Eupatorium occidentale	western boneset	X		X	*Synthris canbyi*	Mission mountain kittentails		X	
Gentianopsis simplex	hiker's gentian	X		X	***Trifolium eriocephalum***	wooly-head clover	X		
Grimmia brittoniae	Britton's moss	X	X		***Trifolium gymnocarpon***	hollyleaf clover	X		X
Grindelia howellii	Howell's gumweed	X	X		***Waldsteinia idahoensis***	Idaho barren strawberry	X	X	
Heterocodon rariflorum	western pearl-flower	X					35	8	

* There are 14 plant “Species of Interest” on the Lolo NF some of which were analyzed as sensitive species
Lavelle 2008

Appendix B. Cumulative Effects Summary by Ownership

"**X**" indicates an action that could affect TES plants. Plant-related comments are in **bold**.

Actions on All Land Ownerships			
Action	**Past**	**Present (Spring 2008 – Spring 2009)**	**Reasonably Foreseeable**
Wildland Fire	**May have killed TES plants if they were present** Wildland fires were historically a major disturbance factor throughout history on the Seeley Lake Ranger District. Within the Jocko Lakes Fire perimeter three relatively recent fires have occurred. 1981-Grouse Creek Fire (91 ac.); 1987 Slippery John Fire (10 ac.); and 2003 Boles Meadow Fire (85 ac.). All of these fires are encompassed within the 2007 Jocko Lakes Fire perimeter (Total = 36,000 ac.: National Forest = 11,600 ac. State = 2,100; Private = 19,300; Tribal = 3,000).		**X** It is reasonable to assume wildland fire may occur in the area in the future.
Wildland Fire Suppression	**May have killed TES plants if they were present -most adapted to fire** Beginning with the Fire Control Policy of 1935, the Forest Service procedure has been to suppress forest fires as quickly as possible. Suppression efforts for the Jocko Fire included 79 miles of dozer line; 9 miles of hand-line; and retardant drops (Project file document M2-12 BAER report October 5, 2007) Four maps showing the location of these suppression activities are found in the project file (M-2-8 through M2-11)	Suppression of wildland fires, as appropriate will continue. Wildland fire use may be used on portions of the Seeley Ranger District (not within the project area)	**May kill TES plants if they are present** Suppression of wildland fires, as appropriate will continue. Wildland fire use may expand, where resource objectives can be met, in the future.
Implementation of Burned Area Emergency Stabilization & Rehabilitation (BAER)	**Most damage was already done during suppression** BAER activities in the Jocko Lakes post-fire environment were initiated immediately after the suppression efforts. Due to weather (snow) some of the BAER work could not be completed. Please refer to document M19-69 in the planning record for a description of activities. Specific activities that either occurred last fall or will occur before spring 2009 include: Nine miles of handline restored to infiltrate precipitation; 60 miles of dozer line berms pulled back, logs, topsoil, and organic matter put on fireline to blend with adjacent ground to promote infiltration, erosion control implemented including waterbarring; 30 miles of rehabilitated roads seeded with approved seed mix (PF M19-69 damage repair plan p. 11); spot seeding of safety zones, helispots, drop points and staging areas; replaced 3 culverts (Culvert # 1397 on Placid Cr., Trib. #1289 on Slippery John Cr. # 1194 on Grouse Cr.); closed stabilized 2.1 miles of road; storm-proofed 3.25 miles of roads, armored 5	**X** Three repairs that will occur prior to any hauling for Jocko Salvage include: Rd. 9974 which was damaged by fire (Finley Creek). 4347 (Buck Creek) pipe (plastic pipe culvert burned). 17458 (plastic pipe culvert burned). Approximately 5.2 miles of road will be decommissioned including recountouring (Rd. 36210, 36212, 36213, 3614, 4342, 36023, and 36022 in Grouse Creek – outside the Jocko Salvage project area, and 46618 in Slippery John Creek	

Actions on All Land Ownerships			
Action	**Past**	**Present (Spring 2008 – Spring 2009)**	**Reasonably Foreseeable**
	spillways.		
Mushroom Harvest	**X minor impact** Past personal use mushroom harvest likely occurred on all ownerships after past fires.	**X minor impact** Fee commercial harvest permits will be issued by the USFS in a designated portion of NFS Land in the Jocko fire perimeter to harvest mushrooms. Personal harvest will also occur. Though no specific permitted season or picking start/end dates are proposed for the Forest most activity is expected between April and July. No camp sites will be designated.	
Road Maintenance and BMPs	**X May have killed TES plants if they were present** Roads on all ownerships have been maintained for use either by all users or for just the individual landowners. Roads used for the transport of forest products are generally maintained to meet Montana Best Management Practices (BMP). Road work to improve surface drainage, stabilize slopes, and reduce erosion and stream sedimentation has occurred.	**X May kill TES plants if they are present** Will continue.	**X May kill TES plants if they are present** Will continue.
Hiking trails	Boles Creek trail was maintained in 1993. The trail is probably used mostly by hunters.	**X minor impact - indirectly from potential weed introduction** Use will continue.	**X minor impact - indirectly from potential weed introduction** Use will continue.
Power lines and Substations	**X a likely pathway for competing weeds** Northwestern Energy has easements and maintains a 230 KV line 100 feet wide across multiple ownerships. There is a substation near the mouth of Finely Creek.	**X** Will continue.	**X** Will continue.

Actions on National Forest System Land Only			
Actions	**Past**	**Present (Spring 2008 – Spring 2009)**	**Reasonably Foreseeable**
Fishing/Camping and Dispersed Sites.	Fishing and camping at Hidden Lake has a long history of use. In 2006 a new vault toilet (SST) was installed to create a healthier atmosphere for Forest visitors. This area does not receive as much dispersed recreation use as compared to the east side of the district, which is mostly wilderness and proposed wilderness.	**X minor impact - indirectly from potential weed introduction** Use will continue	**X minor impact - indirectly from potential weed introduction** Fishing and camping use at Hidden Lake is expected to continue to rise.
Road Construction	**X Impact from noxious weeds via these pathways that out-compete TES.** Within the Jocko Lakes project area approximately 64 miles of road have been built on the national forest. The roads are in varying levels of use including roads that are closed and no longer drivable. The majority of roads built on federal lands were completed between 1950 to the mid- 1980s. .	No new system roads are being constructed.	Unlikely any new system roads will be built in the reasonably foreseeable future on NFS land.
Road Maintenance	**X Impact from noxious weeds via these pathways that out-compete TES** Roads open for motorized use by the public are maintained with safety as a high priority. This primarily involves repairing drainage features and clearing live and down vegetation. Some roads have been closed (via closure orders) year-long or seasonally and are maintained at a lower level. There are approximately 49 miles of road under USFS jurisdiction; 13.4 miles of which are open year-long and receive a higher level of maintenance. Approximately 17 miles of USFS roads are closed year-long and 18.6 miles are closed seasonally. Culvert replaced with brigde at NFSR#2190 and Archibald crossing (completed with KV funds from Archloop Timber Sale).	**X Impact from noxious weeds via these pathways that out-compete TES. Road-grading spreads weeds** Will continue.	**X Impact from noxious weeds via these pathways that out-compete TES** Will continue.
Road Storage and Decommissioning	**X Impact from noxious weeds that out-compete TES. May impact TES directly if present** Across the Forest approximately 788 miles of road under USFS jurisdiction have been closed or decommissioned since 1996. 51.6 miles in 2007. On the Seeley Ranger District approximately 15.2 miles of road were closed or decommissioned in 2007 and 125.2 miles since 1996. In the past 10-15 years five roads or portions of roads totaling approximately 1 mile, in the Jocko Lakes Fire Salvage analysis area have been decommissioned.	**X Impact from noxious weeds via these pathways that out-compete TES. May impact TES directly if present** **Positive effect if weeds reduced**	**X Impact from noxious weeds via these pathways that out-compete TES. May impact TES directly if present** The Jocko Lakes Roads Analysis recommends the storage or decommissioning of 9.6 miles of road within the roads analysis area that are not part of the salvage proposal and may be completed in the reasonable foreseeable future.

Actions on National Forest System Land Only			
Actions	**Past**	**Present (Spring 2008 – Spring 2009)**	**Reasonably Foreseeable**
Noxious Weed Control		**X direct or indirect - but mitigated thru Weed FEIS** Noxious weed control as outlined in the 2007 Integrated Weed Management on the Lolo National Forest Environmental Impact Statement and Decision will take place in the Jocko Fire perimeter.	**X** Will continue.
Timber Harvest	**X -high impact if not mitigated** Approximately 34,092 acres of timber have been harvested on National Forest System land in the project area since the 1950s within the six, 6th order HUC's that encompass or are next to the project area. An acre of land may have had multiple harvest entries, so a straight percentage of the area that has been treated is not accurate. Within the Jocko Lakes Fire Salvage Project area approximately 4,894 acres of timber have been harvested on NFS land. An acre of land may have had multiple harvest entries, so a straight percentage of the area that has been treated is not necessarily accurate. The majority (67%) of the treatments in the HUC were accomplished in the 1970s and 1980s.	**X - high impact** Within the Jocko Salvage project area the Hidden Lake Timber Sale planned in 2007 to thin 388 ac. A portion of the area planned for thinning was burned by the Jocko Lakes fire and is included in this Salvage proposal (Unit 131).	**X -high impact if not mitigated**
Removal of timber associated with fire suppression and hazard reduction	**X** Approx. 0.5 mbf was removed from fire lines and roadside areas for fire suppression efforts that had commercial value and was sold.	**X** Less then 1 mbf of timber removed for fire suppression or safety remains to be sold.	

Actions on State and Private Ownership Only			
Actions	**Past**	**Present (Spring 2008 – Spring 2009)**	**Reasonably Foreseeable**
State – School Trust Land: Timber Sales including Jocko Fire Salvage and activities	**X may have introduced noxious weeds (that out-compete TES) that could spread to LNF lands** In 1990, the DNRC completed the Double Arrow Timber Sale shelterwood harvesting approximately 2.5 MMBF from 362 acres in Section 6, and N1/2 Section 8, Township 16 North, Range 15W – Winter harvest. In the early 1990's, DNRC harvested approximately 1.8 MMBF from approx. 220 acres in Section 16, T16N, R16W - In 1991 the Finley Creek Timber Sale harvested approx. 1.8 mmbf of seedtree and overstory removal from 220 acres in Section 16, T16N, R16W. Additional harvest entries occurred in the early 1960s. In 1996 Hidden Bugs Salvage Timber Sale and Hidden Bugs Timber Sale Supplemental EA – Under the original timber sale, the DNRC was harvesting approximately 800 thousand board feet of dead, dying, and susceptible lodgepole pine from approximately 125 acres in Section 18, Township 16 North, Range 15 West. In addition to timber harvesting, the original activities also included approximately 4 miles of road maintenance, 0.5 miles of new road construction, and 0.25 miles of road decommissioning. In August of 2007, the Jocko Lakes Fire burned approximately 140 acres of the original project area. Under the Hidden Bugs Supplemental EA, the DNRC harvested an additional 70 acres of partially and severely burned timber within Section 18. No additional road was constructed but some road maintenance was conducted to meet Montana Best Management Practices. Approximately 5,000 feet of fireline was used as a skid trail, and then it was obliterated. In Section 6 and 8 of Township 16 North, Range 15 West and Section 16 of Township 16 North Range 16 West, harvest approx. 8 to 11 MMBF of dead and dying timber from up to 1,503 acres. Approx. 2.75 miles of road constructed and decommissioned approx. 0.5 miles of existing road all within Section 16.	**X** The DNRC is currently developing a proposed timber permit to salvage harvest approximately 34 acres of burned timber in Section 36 T16N R16W.	DNRC will plant, starting as early as the spring of 2009, appropriate tree species (western larch, ponderosa pine, and Douglas-fir) in high-severity burned areas to supplement natural regeneration. Approx. 0.5 miles of the new road construction, Section 16 of Township 16 North Range 16 West, would be removed post-harvest.

Actions on State and Private Ownership Only			
Actions	**Past**	**Present (Spring 2008 – Spring 2009)**	**Reasonably Foreseeable**
State – School Trust Land: Road construction, reconstruction	**X may have introduced noxious weeds (that out-compete TES) that could spread to LNF lands** Jocko Salvage Roadwork – In 2007 the DNRC constructed new roads, reconstructed existing roads, and replaced road features within Section 6 of Township 16 North Range 15 West and Section 16 of Township 16 North Range 16 West. Specifically, the DNRC constructed 1.5 miles of new road, reconstructed and maintained 3.6 miles of existing road, and replaced 10 culverts that were at risk of flooding or loss due to fire effects, with larger culverts. Activities are expected to be completed during the fall of 2007.		
Private – Commercial Timber Lands	**X has introduced noxious weeds (that out-compete TES) that could spread to LNF lands** Since 1999 through 2007 Plum Creek has harvested, with associated actions, approx. 7,600 ac., removing approx. 26 mmbf of timber from their ownership in or near the Jocko Lakes fire perimeter (an area of roughly 18,000 ac.). Approx. 5,400 ac. of the harvest was some stage of regeneration harvest and 2,200 ac. was intermediate harvests. (PF – M19-60)	**X may introduce noxious weeds (that out-compete TES) that could spread to LNF lands** Additional timber harvest can be anticipated on Plum Creek lands within the Jocko fire perimeter..	**X may introduce noxious weeds (that out-compete TES) that could spread to LNF lands** Additional timber harvest can be anticipated on Plum Creek lands within the Jocko fire perimeter. (PF-M19-60)
Private Land Development	**X may have introduced noxious weeds (that out-compete TES) that could spread to LNF lands** Within the Jocko Fire perimeter, T16,R16,S12,S ½, has been subdivided and sold to individuals.		
Noxious Weed Control	The State of Montana applies herbicides on State lands near or adjacent to the Lolo NF. These programs treat adjacent areas and roads, State roads and highways within and around the Jocko Salvage area. Adjacent private landowners actively control weeds and some use herbicides. Methods include both aerial and ground application of herbicides..	**X Indirect - benefit, removes competitive weeds** Weed control is likely to continue.	**X Indirect - benefit, removes competitive weeds** Weed control is likely to continue.