3.7. Threatened, Endangered and Sensitive Plants

3.7.1. Introduction

This is a discussion of the affected environment and environmental consequences to plants designated as Threatened, Endangered, Sensitive (TES) or Forest Species of Concern (FSOC).

3.7.1.1. Overview of Issues Addressed

Project-related activities that may affect Sensitive plants and FSOC habitat include timber harvesting, existing road improvements, road construction and decommissioning and fuels reduction treatments. All of the preceding activities may have direct impacts to TES Plants and FSOC. Timber harvesting and fuels reduction activities may cause indirect effects by altering the light and moisture regime of understory plant communities. Increased light in the forest understory, in combination with soil disturbance, may introduce noxious weeds that are highly competitive with native plants.

3.7.1.2. Issue Indicators

There is a potential for timber harvesting and associated activities to adversely affect suitable habitat and/or occurrences of TES Plants and FSOC of the moist forest, wet forest, and dry forest rare plant guilds.

- The effects indicator for TES plants is the determination of effects call in the Biological Assessment and Biological Evaluation (PF Doc. TES-39 and PF Doc. TES-42), and as listed in Table 93.
- FSOC plants are not addressed in Biological Evaluations; therefore, the effects indicator is the specific effects to plant occurrences and habitat that are predicted to result from proposed activities under the alternatives.

3.7.2. Affected Environment and Existing Conditions

3.7.2.1. Existing TES Plant Species

There are no federally-listed Endangered plants for the Idaho Panhandle National Forests; therefore Endangered plants are eliminated from further analysis. See Appendix B for more details.

A Threatened species, as determined by the US Fish and Wildlife Service, is any species that is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range. Currently, the US Fish and Wildlife Service (USDI 2009, PF Doc. TES-11) lists two species as Threatened for the Idaho Panhandle National Forests: Water Howellia (Howellia aquatilis) and Spalding’s Catchfly (Silene spaldingii). There are no documented occurrences of these species on the Idaho Panhandle National Forests, although suitable habitat is suspected to occur. No suitable habitat for Spalding’s catchfly was found during field surveys. Grassland areas in dry forest guild habitat were searched for Spalding’s Catchfly and no suitable habitat or plants were found. This species is not analyzed in detail in this document; additional information is contained in Appendix B and the Biological Assessment in the Project Files (PF Doc. TES–39).
3.7.2.2. Existing Sensitive Plant Species and Forest Species of Concern

Sensitive species are determined by the Regional Forester as those species for which population viability is a concern, as indicated by a current or predicted downward trend in population numbers or in habitat capability which would reduce the specie’s existing distribution. Twenty-nine species of Sensitive plants are known or suspected to occur on the Coeur d’Alene River Ranger District (Table 89). Plant species identified as "Forest Species of Concern" (FSOC) are species that may not be at risk on a range-wide, regional or state scale, but may be imperiled within a planning area, such as a National Forest (USDA 1997, PF Doc. TES-14, p. 5). FSOC are addressed in effects analyses to provide for continued diversity of plant species, as directed in NFMA (PF Doc. TES-60) and the IPNF Forest Plan (TES-02). Biological Evaluations are not required to address FSOC. A discussion of habitats for FSOC is included with the description of rare plant guilds.

Threatened and Sensitive plants and Forest species of concern can be assigned to one or more rare plant guilds (Mousseaux 1998; PF Doc.TES-5). These guilds are artificial assemblages based on similar habitat requirements used for the purpose of analysis. For the Coeur d'Alene River Ranger District, the rare plant guilds are aquatic, deciduous riparian, peatland, wet forest, moist forest, dry forest, grassland, and subalpine. Rock outcrops, seeps and springs are microsites that can support certain sensitive plants, such as Briton’s Grimmia moss (Grimmia brittoniae) and Chickweed Monkeyflower (Mimulus alsinoides), however, these can occur across all guilds and are not identifiable at a coarse scale. Rock outcrops and seep habitats are detected through field surveys and aerial photo interpretation.

The tables below identify US Fish and Wildlife Service Threatened plants, Region 1 Sensitive plants, and IPNF Forest Species of Concern by habitat guild that are known or suspected to occur on the Coeur d'Alene River Ranger District. Refer to the project files (Mousseaux 1998; PF Doc. TES-5) for specific plant guild descriptions.

Table 88. Threatened Plants on the Coeur d'Alene River Ranger District, by Rare Plant Habitat Guild  

<table>
<thead>
<tr>
<th>Status and Species</th>
<th>Common Name</th>
<th>Habitat Guild</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Howellia aquatilis</em></td>
<td>Water Howellia</td>
<td>Aquatic</td>
</tr>
<tr>
<td><em>Silene spaldingii</em></td>
<td>Spalding’s Catchfly</td>
<td>Dry grassland/grassy openings in Dry Forest</td>
</tr>
</tbody>
</table>

*Species suspected to occur on the Coeur d’Alene River Ranger District.
** Based on the updated Regional Forester’s TES species list, February 25, 2011.
Table 89. Sensitive Plants on the Coeur d'Alene River Ranger District, by Rare Plant Habitat Guild **

<table>
<thead>
<tr>
<th>Status and Species</th>
<th>Common Name</th>
<th>Habitat Guild</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Asplenium trichomanes</em></td>
<td>Maidenhair Spleenwort</td>
<td>rock seeps in Moist/Wet Forest</td>
</tr>
<tr>
<td><em>Blechnum spicant</em></td>
<td>Deerfern</td>
<td>Moist/Wet Forest</td>
</tr>
<tr>
<td><em>Botrychium ascendens</em></td>
<td>Upswept Moonwort</td>
<td>Wet Forest</td>
</tr>
<tr>
<td><em>Botrychium crenulatum</em></td>
<td>Dainty Moonwort</td>
<td>Wet Forest</td>
</tr>
<tr>
<td><em>Botrychium lanceolatum</em></td>
<td>Triangle Moonwort</td>
<td>Wet Forest/Moist Forest</td>
</tr>
<tr>
<td><em>Botrychium lineare</em></td>
<td>Slender Moonwort</td>
<td>Wet Forest/Moist Forest</td>
</tr>
<tr>
<td><em>Botrychium minganense</em></td>
<td>Mingan Moonwort</td>
<td>Wet Forest/Moist Forest</td>
</tr>
<tr>
<td><em>Botrychium montanum</em></td>
<td>Western Goblin</td>
<td>Wet Forest</td>
</tr>
<tr>
<td><em>Botrychium paradoxum</em></td>
<td>Paradox Moonwort</td>
<td>Wet Forest/Moist Forest</td>
</tr>
<tr>
<td><em>Botrychium pendunculosum</em></td>
<td>Stalked Moonwort</td>
<td>Wet Forest</td>
</tr>
<tr>
<td><em>Botrychium pinnatum</em></td>
<td>Northwestern Moonwort</td>
<td>Wet Forest/Moist Forest</td>
</tr>
<tr>
<td><em>Botrychium simplex</em></td>
<td>Least Moonwort</td>
<td>Wet Forest/Moist Forest</td>
</tr>
<tr>
<td><em>Buxbaumia aphylla</em></td>
<td>Leafless Bug-on-a-Stick Moss</td>
<td>Subalpine</td>
</tr>
<tr>
<td><em>Buxbaumia viridis</em></td>
<td>Green Bug-on-a-Stick Moss</td>
<td>Wet Forest</td>
</tr>
<tr>
<td>Cardamine constancei</td>
<td>Constance's Bittercress</td>
<td>Deciduous Riparian/Moist/Wet Forest</td>
</tr>
<tr>
<td>Carex chordorrhiza*</td>
<td>String-Root Sedge</td>
<td>Peatland</td>
</tr>
<tr>
<td>Carex livida*</td>
<td>Livid Sedge</td>
<td>Peatland</td>
</tr>
<tr>
<td>Cyprizedium fasciculatum</td>
<td>Clustered Lady's Slipper</td>
<td>Moist/Wet/Dry Forest</td>
</tr>
<tr>
<td>Cyprizedium parviflorum var. pubescens</td>
<td>Greater Yellow Lady’s Slipper</td>
<td>Wet Forests/Peatlands</td>
</tr>
<tr>
<td>Grimmia brittoniae*</td>
<td>Britton’s Grimmia</td>
<td>Rock outcrops in Moist Forest</td>
</tr>
<tr>
<td>Hookeria lucens (H)</td>
<td>Clear Moss</td>
<td>Wet Forest</td>
</tr>
<tr>
<td>Hypericum majus</td>
<td>Large Canadian St. John's Wort</td>
<td>Peatland</td>
</tr>
<tr>
<td>Mimulus alsinoides*</td>
<td>Chickweed Monkeyflower</td>
<td>Rock Cliffs/Seeps in Wet/Moist/Dry Forest</td>
</tr>
<tr>
<td>Rhizomnium nudum</td>
<td>Naked Mnium</td>
<td>Wet Forest/Moist Forest</td>
</tr>
<tr>
<td>Rhynchospora alba*</td>
<td>White Beakrush</td>
<td>Peatlands</td>
</tr>
<tr>
<td>Schuchzeria palustris</td>
<td>Pod Grass</td>
<td>Peatlands</td>
</tr>
<tr>
<td>Schoenoplectus subterminalis*</td>
<td>Water Clubrush</td>
<td>Peatlands</td>
</tr>
<tr>
<td>Thelypteris nevadensis*</td>
<td>Sierra Woodfern</td>
<td>Wet Forest Seeps</td>
</tr>
</tbody>
</table>

*Species suspected to occur on the Coeur d'Alene River Ranger District.
** Based on the updated Regional Forester’s TES species list, February 25, 2011.
(C) Candidate plant for federal listing.
(H) Historical Occurrence on the Coeur d'Alene River Ranger District.
Table 90. Forest Species of Concern Plants on the Coeur d'Alene River Ranger District, by Rare Plant Habitat Guild **

<table>
<thead>
<tr>
<th>Status and Species</th>
<th>Common Name</th>
<th>Habitat Guild</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astragalus bourgovii</td>
<td>Bourgeau's Milkvetch</td>
<td>Subalpine</td>
</tr>
<tr>
<td>Botrychium michiganense*</td>
<td>Michigan Moonwort</td>
<td>Moist Forest</td>
</tr>
<tr>
<td>Calochortus nitidus*</td>
<td>Broad-fruit Mariposa Lily</td>
<td>Dry Forest, Palouse Soils (St. Joe, St. Maries)</td>
</tr>
<tr>
<td>Cephalanthera austiniae</td>
<td>Phantom Orchid</td>
<td>Moist/Wet Forest</td>
</tr>
<tr>
<td>Carex californica</td>
<td>California Sedge</td>
<td>Subalpine</td>
</tr>
<tr>
<td>Carex hendersonii</td>
<td>Henderson’s Sedge</td>
<td>Moist/Wet Forest</td>
</tr>
<tr>
<td>Cetraria sepincola</td>
<td>Eyed Ruffle Lichen</td>
<td>Deciduous Riparian, Peatland</td>
</tr>
<tr>
<td>Cladonia bellidiflora*</td>
<td>Toy Soldiers</td>
<td>Moist Forest</td>
</tr>
<tr>
<td>Cladonia transcendens*</td>
<td>Transcending Reindeer Lichen</td>
<td>Wet Forest</td>
</tr>
<tr>
<td>Collema curtisporum</td>
<td>Short-spored Jelly Lichen</td>
<td>Deciduous riparian</td>
</tr>
<tr>
<td>Corydalis caseana spp. hastata</td>
<td>Case's Fitweed</td>
<td>Wet Forest (St. Maries, North Fk Clearwater)</td>
</tr>
<tr>
<td>Dodecatheon dentatum</td>
<td>White-flowered Shooting Star</td>
<td>Wet Forest</td>
</tr>
<tr>
<td>Lobaria hallii</td>
<td>Hall's Lung Wort</td>
<td>Deciduous Riparian</td>
</tr>
<tr>
<td>Lobaria scrobiculata*</td>
<td>Textured Lungwort</td>
<td>Deciduous Riparian</td>
</tr>
<tr>
<td>Ludwigia polycarpa*</td>
<td>Many-Fruit False-Loosestrife</td>
<td>Peatland/aquatic</td>
</tr>
<tr>
<td>Mimulus clivicola</td>
<td>Bank Monkeyflower</td>
<td>Dry Forest</td>
</tr>
<tr>
<td>Romanzoffia sitchensis</td>
<td>Sitka Mistmaiden</td>
<td>Subalpine</td>
</tr>
<tr>
<td>Orobanche pinorum</td>
<td>Pine Broomrape</td>
<td>Dry Forest</td>
</tr>
<tr>
<td>Pinus albicaulis (C)</td>
<td>Whitebark Pine</td>
<td>Alpine/Subalpine</td>
</tr>
<tr>
<td>Platanthera orbiculata</td>
<td>Round-Leaved Rein Orchid</td>
<td>Moist/Subalpine</td>
</tr>
<tr>
<td>Pilophorus acicularis*</td>
<td>Devil's Matchstick Lichen</td>
<td>Wet Forest</td>
</tr>
<tr>
<td>Ribes sanguineum*</td>
<td>Red-Flowered Currant</td>
<td>Moist forest</td>
</tr>
<tr>
<td>Sedum rupicolum</td>
<td>Lance-Leaved Sedum</td>
<td>Subalpine</td>
</tr>
<tr>
<td>Sphaerophorus globosus</td>
<td>Christmas Tree Lichen</td>
<td>Wet Forest</td>
</tr>
<tr>
<td>Tauschia tenuissima*</td>
<td>Lieberg’s Tauschia</td>
<td>Dry/Moist Forest, meadows</td>
</tr>
<tr>
<td>Trientalis latifolia</td>
<td>Western Starflower</td>
<td>Deciduous Riparian/Moist/Wet Forest</td>
</tr>
<tr>
<td>Vallisneria americana*</td>
<td>Wild Celery</td>
<td>Aquatic</td>
</tr>
<tr>
<td>Schoenoplectus subterminalis</td>
<td>Water Clubrush</td>
<td>Peatlands</td>
</tr>
<tr>
<td>Thelypteris nevadensis*</td>
<td>Sierra Woodfern</td>
<td>Wet Forest Seeps</td>
</tr>
<tr>
<td>Waldsteinia idahoensis</td>
<td>Idaho Barren Strawberry</td>
<td>Moist and Wet Forest</td>
</tr>
</tbody>
</table>

*Species suspected to occur on the Coeur d’Alene River Ranger District.
** Based on the updated Regional Forester’s TES species list, February 25, 2011.
(C) Candidate plant for federal listing.
(H) Historical Occurrence on the Coeur d'Alene River Ranger District.
3.7.2.3. Extent and Type of Suitable TES Plant Habitat

Suitable habitat for the Dry Forest, Moist Forest, and to a lesser extent, the Wet Forest Plant Guild was verified during botanical field surveys. No suitable habitat was found to be present for the Grassland, Subalpine, Deciduous Riparian, Peatland, and Aquatic Plant Guilds. The project files contain descriptions of the Rare Plant Guilds and species with potential for effects from proposed activities (Mousseaux 1998; PF Doc. TES-5). Botanical field surveys include an assessment of habitat suitability and documentation of TES plant occurrences (PF Doc. TES-16).

3.7.2.4. Plant Surveys and Known TES Plant Occurrences

Features designed to protect TES (Appendix E) require botanical field surveys in suitable habitat where activities are proposed and there is a risk of impacts to TES plants that cannot be avoided by the application of design features or mitigation measures. The intensity of botanical survey for the Beaver Creek project was based on several factors. The factors include: the location of known TES plant occurrences, the level of habitat suitability, and the potential for proposed activities to affects TES plants and habitat. Some surveys used in the effects analysis were done for projects other than Beaver Creek.

Over 90 percent of the required field survey acres were completed in 2012. The remaining activity area acreage requiring surveys would be completed prior to implementation. Copies of completed botanical surveys (PF Doc. TES-16) and a list of units that would be surveyed in 2013 (PF Doc. TES-83) are contained in the project files.

Table 92 illustrates the potential risk to Sensitive Plants and Forest Species of Concern from various types of activities. Regional direction (Leonard 1992; PF Doc. TES-15) states that the need for and extent of field reconnaissance should be commensurate with the risk associated with the project, the species involved, and the level of knowledge already in hand. Three new occurrences of FSOC species were discovered during botanical surveys for this project. Four occurrences were previously known to exist in the resource area. Table 88 through Table 90 display the species, status, and total number of rare plant occurrences known to exist in the resource area. There are no known occurrences of Threatened and Endangered plants.

The Dry Forest, Moist Forest, and Wet Forest Habitat Guilds are present in the Beaver Creek Resource Area, and may be affected by project-related activities. Only plant species that are known to occur in the resource area, or have a high likelihood of occurring, are discussed in detail in the Existing Condition and Environmental Consequences sections.

The Grassland, Subalpine, Deciduous Riparian, Aquatic, and Peatland Plant Guilds do not occur in the resource area. These guilds were not analyzed in detail because potential effects to these Guilds are unlikely to occur.
guilds and species are unlikely. Additional information on these guilds and species is contained in Appendix B.

A complete description of Coeur d’Alene River Ranger District rare plant guilds and associated species is contained in the Project Files (PF Doc. TES-5 and TES-17).

3.7.2.4.1. Dry Forest Plant Guild

The Dry Forest Guild occupies approximately 45 percent of the Forest Service lands in the resource area (PF Doc. TES-06). The Dry Forest Guild Forest Species of Concern plants bank monkeyflower (*Mimulus clivicola*) and pine broomrape (*Orobanche pinorum*), are present in management units and would have features implemented to protect the populations (see Appendix E, Features Designed to Protect TES Plants).

**Bank Monkeyflower** is a Forest Species of concern on the IPNF. Bank monkeyflower is a regional endemic of the interior Pacific Northwest. In north Idaho it occupies a narrow set of environmental conditions consisting almost exclusively of steep slopes, (generally greater than 60 percent) on south facing aspects. Plants are usually found growing in mineral soil created by natural or human caused disturbances (Lorain 1993; PF Doc. TES-69). This tiny annual plant flowers in early summer and is highly dependent on seasonal moisture conditions for germination, flowering and reproduction.

This species is vulnerable to competition from invasive weeds such as spotted knapweed (*Centaurea stoebe ssp. micranthos*), Dalmatian toadflax (*Linnaria dalmatica*), cheatgrass (*Bromus tectorum*), and St. Johnswort (*Hypericum perforatum*), which can dominate disturbed mineral soils on dry sites.

About 16 populations of bank monkeyflower are present on the Coeur d’Alene River Ranger District. These populations are important because they are the northernmost extension of the species range in Idaho. The largest populations are located near Elk Mountain and Carrill Peak about 35 miles west of the resource area. One small occurrence of bank monkeyflower is present on the southwest slopes of the Pony Gulch drainage. The occurrence is approximately 0.5 miles from the nearest proposed harvest or prescribed fire unit. More suitable habitat for this species is present in the resource area in the Shehee, Beaver, and Ferguson drainages; intensive searches of habitat within and outside of proposed management units did not locate additional bank monkeyflower populations.

**Pine Broomrape** is a parasitic plant that inhabits dry Douglas-fir, grand fir, and ponderosa pine forests. Pine broomrape is found in mature forests associated with the host plant, oceanspray (*Holodiscus discolor*). There is very little information in the literature about this plant’s biology and its response to various types of forest management activities. About 53 occurrences of pine broomrape are documented to occur on the IPNF, 31 of which occur on the Coeur d’Alene River Ranger District. One occurrence of pine broomrape was located during botanical surveys in the resource area in a burn-only unit (Unit F17).

3.7.2.4.2. Moist Forest and Wet Forest Plant Guilds

Moist Forest and Wet Forest Habitat Guilds occupy approximately 50 percent and 5 percent, respectively, of the Forest Service lands in the resource area (PF Doc. TES-06). Moist forest habitat occupies mainly east to northwest slopes, and drainage bottoms, while Wet forest habitat occupies a relatively small acreage in the resource area, and is restricted to stream bottoms. These areas have been considerably altered from historical conditions due to road building and logging.
Springs and seeps are relatively uncommon in the resource area, and when present, are usually associated with riparian areas.

Wet Forest Guild habitats would be excluded from timber harvesting by riparian buffers, as described in the Appendix E (Features Designed to Protect Aquatic Resources), therefore, the likelihood is low that harvesting would affect plants of this guild. Prescribed fire would not be applied in riparian buffers, but fires would be allowed to creep down into these areas. Control lines would be implemented only when necessary to prevent resource damage due to the burn (see Appendix E, Features Designed to Protect TES Plants).

The most likely species in these guilds to occur based on the presence of suitable habitat and known occurrences are the Sensitive Moonwort species round-leaved Rein Orchid, Hall’s lungwort and short-spored jelly lichen.

Moonworts (*Botrychium ascendens, B. crenulatum, B. lanceolatum, B. lineare, B. minganense, B. montanum, B. paradoxum, B. pedunculosum, B. pinnatum, and B. simplex*) are fern-like plants that are found in a variety of habitats ranging from damp meadows and boggy areas to moist coniferous western hemlock and cedar forest (Lorain 1990, PF Doc. TES-21, p. 7). On the IPNF they occur most often in shallow sloped microsites in densely shaded moist to wet forest habitats. Moonworts frequently occur in “genus groups” of several different species. The species Triangle Moonwort (*B. lanceolatum*) often occurs in meadows bordering older roads and trails with a low level of natural or human-caused disturbance.

There are approximately 28 occurrences of Moonworts on the Coeur d’Alene River Ranger District. One moonwort occurrence is documented from a roadside habitat in the vicinity of Armstrong Creek. There are no proposed activities in the vicinity of this occurrence. Other undetected individuals may be present in the resource area based on potentially suitable moist to wet forest habitat. Moonwort plants are very difficult to detect, and can easily be missed during field surveys because they are small and inconspicuous. There can be large fluctuations in Moonwort plant emergence from one year to the next, depending on annual precipitation levels. For the above reasons Moonwort species are usually assumed to be present in highly suitable habitat.

Suitable habitat for Moonworts in the resource area is present mainly in the riparian zones of the Alder, Deer, Dudley, Scott, and White Creek drainages and the edges of older road prisms within moist to wet forest habitats.

**Round-leaved Rein Orchid** (Platanthera orbiculata) occurs in boreal, subalpine, montane and coastal forests of the Pacific Northwest, in mixed forests of the Great Lakes Region, and in mixed and deciduous forests of the Appalachian mountains. The species most often occupies damp, rich humus soil in the deep shade of heavily forested areas and is associated with late-successional forests (USDA 2003a; PF Doc. TES-70). Round-leaved rein orchid occurs in small widely scattered populations and is dependent on an association with wood decaying soil fungi for growth and development.
Figure 51. Roundleaved rein Orchid (*Platanthera orbiculata*)

Timber management activities can alter moisture, temperature, and light availability in large round-leaved orchid’s densely shaded habitats, and can impact the litter layer and result in loss of mycorrhizal fungi from clearing and soil compaction (USDA 2003a; PF Doc. TES-70).

Eighteen occurrences of round-leaved rein orchid are known to occur on the Coeur d’Alene River Ranger District. Two occurrences of this species were found within proposed harvest units during botanical surveys for the project. Units C34a and C55 would have design criteria implemented to protect the occurrences from effects due to activities.

**Short-spored jelly lichen and Hall's lungwort are FSOC** with very similar habitat requirements: large black cottonwood trees (approximately 15 inches diameter or greater) in moist to wet forest guild habitat. There are known occurrences of each species within the resource area in the Beaver, Pony, and Trail Creek drainages. The primary threat to these lichens is mining and road work in riparian areas and wet habitat.
3.7.3. Management Framework

Federal legislation, regulations, policy and direction require protection of plant species and provisions for evaluation and planning process consideration of Threatened, Endangered and other rare (Forest Service “Sensitive” and Forest Species of Concern, or “FSOC”) plant species. Pertinent policy, law, and direction include the following:

- The Endangered Species Act (1973, as amended) requires Federal agencies to insure that any action authorized, funded or carried out by them is not likely to jeopardize the continued existence of listed species or modify their critical habitat.
- The National Forest Management Act (1976) states that National Forests “will provide for a diversity of plant and animal communities”.
- The Forest Service Manual (FSM 2670.1-2673.4; PF Doc. TES-1) requires that the FS will document project-related effects to TES plant species in Biological Assessments and Biological Evaluations.
- The IPNF Forest Plan, 1987 (PF Doc. CR-002, pp. II-1, 5, 6, and 27) provides a standard for sensitive species to "manage the habitat of species listed in the Regional Sensitive Species List to prevent further declines in populations which could lead to Federal listing under the Endangered Species Act" (Forest Plan, p. II-28, PF Doc. TES-02).

3.7.4. Environmental Consequences

3.7.4.1. Methodology

A pre-field review was conducted of aerial photos, topographical maps, Idaho Department of Fish and Game Conservation Data Center (ICDC, 2010; PF Doc. TES-3) element occurrence records, Timber Stand Management Records System (TSMRS), U.S. Fish and Wildlife Service National Wetlands Inventory Maps (USDI, 1987; PF Doc. TES-4) and pertinent literature.

This assessment describes the extent of all rare plant guilds in the resource area. The potential for Threatened, Endangered, Sensitive, and Forest Species of Concern (FSOC) plant occurrence in the resource area was based on a habitat assessment for species that are known or suspected to occur on the Coeur d'Alene River Ranger District. A Sensitive plant list for the IPNFs was provided by the Regional Forester in February 2011 (USDA 2011: PF Doc. 13). For analysis purposes, the Coeur d'Alene Forest Threatened and Sensitive plant species list is grouped into eight habitat guilds; moist forest, wet forest, dry forest, grassland, subalpine, deciduous/riparian, aquatic, and peatland guilds (Mousseaux, 1998; PF Doc. TES-5). Photo interpretation, USFWS Wetland Maps, the Natural Resource Information System database (NRIS-TESP 2008, PF Doc. TES-61), the Idaho Conservation Data Center database (ICDC 2012, PF Doc. TES-3 ), and professional judgment were used to identify activity areas in need of field survey. Highly suitable habitat for Sensitive plants where project work is proposed was field surveyed. Botanical surveys list all identifiable plant species, including rare species and invasive, exotic species. All botanical surveys for the project have been completed, and documentation is contained in the project files (PF Doc. TES-16).

Effects analysis was conducted using the results of botanical surveys, current distribution and condition of Sensitive plant occurrences relative to the proposed activities, and the likely effects to existing occurrences and habitat from the proposed activities based on the literature and professional judgment. During project development, Features Designed to Protect TES Plants and
FSOC (Appendix E) were developed to avoid detrimental impacts to plant species and habitat. Discussion of effects will focus on the wet forest, moist forest, and dry forest guilds, as these habitats are most likely to be impacted by proposed activities.

Effects to TES Plants, Forest Species of Concern, and suitable habitat from proposed activities are generally described as very low, low, moderate or high, with the following definitions:

- **very low** = no measurable effect on individuals, populations or habitat
- **low** = individuals, populations and/or habitat not likely affected
- **moderate** = individuals and/or habitat may be affected, but populations would not be affected, and habitat capability would not over the long term be reduced below a level which could support sensitive plant species
- **high** = populations may be affected and/or habitat capability may over the long term be reduced below a level which could support sensitive plant species

The table below illustrates the inherent risk level to TES plants and Forest Species of Concern, in the absence of mitigation measures, associated with various management activities that would be implemented with the action alternatives.

**Table 92. Potential risk of adverse impacts to TES Plants and Forest Species of Concern as a result of proposed activities in highly suitable habitat, by plant guild.**

<table>
<thead>
<tr>
<th>Proposed Activity or Event</th>
<th>Rare Plant Guild potentially affected</th>
<th>Potential Risk of Adverse Impact to TES Plants/FSOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelterwood or Seed Tree</td>
<td>Moist Forest / Dry Forest</td>
<td>High</td>
</tr>
<tr>
<td>Improvement cut or Commercial Thinning</td>
<td>Moist Forest / Dry Forest</td>
<td>High</td>
</tr>
<tr>
<td>Tree Planting</td>
<td>Wet Forest / Moist Forest / Dry Forest</td>
<td>Low</td>
</tr>
<tr>
<td>Road decommissioning, storage</td>
<td>Wet Forest / Moist Forest / Dry Forest</td>
<td>Moderate</td>
</tr>
<tr>
<td>New road construction</td>
<td>Wet Forest / Moist Forest / Dry Forest</td>
<td>High</td>
</tr>
<tr>
<td>Temporary road construction</td>
<td>Wet Forest / Moist Forest / Dry Forest</td>
<td>Moderate to High</td>
</tr>
<tr>
<td>Road reconstruction, reconditioning, maintenance</td>
<td>Wet Forest / Moist Forest / Dry Forest</td>
<td>Low to Moderate</td>
</tr>
<tr>
<td>Gate Installation</td>
<td>Moist Forest / Dry Forest</td>
<td>Low</td>
</tr>
<tr>
<td>Post-harvest prescribed burning</td>
<td>Wet Forest/ Moist Forest / Dry Forest</td>
<td>Moderate to High</td>
</tr>
<tr>
<td>Post-harvest grapple piling</td>
<td>Moist Forest / Dry Forest</td>
<td>Moderate to High</td>
</tr>
<tr>
<td>Prescribed burning – without harvest</td>
<td>Moist Forest/ Dry Forest</td>
<td>Moderate</td>
</tr>
<tr>
<td>Fuel break construction</td>
<td>Wet Forest / Moist Forest / Dry Forest</td>
<td>Moderate</td>
</tr>
<tr>
<td>Noxious weed prevention and herbicide application</td>
<td>Dry Forest / Moist Forest</td>
<td>Low to Moderate</td>
</tr>
<tr>
<td>Gopher Abatement</td>
<td>Wet Forest / Moist Forest / Dry Forest</td>
<td>None</td>
</tr>
</tbody>
</table>

3.7.4.1.1. **Incomplete and Unavailable Information**

Effects to populations from disturbance events (natural or man-caused) are difficult to quantify with certainty for all Sensitive plant species and FSOC. Specific knowledge of population ecology is lacking for several species addressed in this analysis, particularly the sensitive Moonworts (Botrychium spp.), pine broomrape, and phantom orchid. Much of the current knowledge regarding sensitive plant species is based on observational (non-empirical) and even anecdotal information. Recent literature and monitoring reports on several species including
Moonworts (USDA 2005; PF Doc. TES-67), Deerfern (USDA 2003, PF Doc. TES-7), Clustered lady’s-slipper (Lichthardt 2003; PF Doc. TES-8), Henderson's sedge and Constance's bittercress (Lichthardt 1998; PF Doc. TES-9) and Idaho barren strawberry (Crawford 1980, PF Doc. TES-10), provide a greater understanding of the relationship of natural and management related habitat disturbance to the persistence of these species.

For unsurveyed habitat that is highly suitable to support Sensitive plants, presence is assumed. This applies to the portion of Alternative 2 activity areas in suitable TES plant habitat that have not been field surveyed.

Protection of large occurrences and contiguous, unoccupied highly suitable habitat is assumed to be an effective conservation strategy (Burgman, et al 2001, PF Doc. TES 37). Examples of conservation strategies for Region 1 include Lichthardt, 1992 (PF Doc. TES-38), Lichthardt 2003 (PF Doc. TES-8), and Lorain, 1991 (PF Doc. TES-39a). As described in Features Designed to Protect TES Plants (Appendix E), populations would be protected, while some isolated individuals may be impacted by activities.

### 3.7.4.2. Spatial and Temporal Context for Effects Analysis

The geographic scale of the analysis area for TES plants and FSOC is the Beaver Creek Resource Area boundary. Potential effects would be localized in nature to the activity area (i.e. timber sale unit, fuelbreak, or new road right-of-way). The temporal scale of effects to habitat range from approximately 25 years to 100 years or greater, depending on the species. Moonworts may occur in younger stands of around 25 years old on moist to wet sites. Most other moist to wet site species require a longer time frame of 100 years or greater. This is the estimated time span required for shading from the tree canopy to re-establish and understory communities to recover, following timber harvesting or fuels reduction.

### 3.7.4.3. Alternative 1 – No Action

#### 3.7.4.3.1. Direct and Indirect Effects of Taking No Action

The No-Action Alternative would have no direct impact on Sensitive plants or Forest Species of Concern. Under No-Action, no harvest treatments and associated activities would occur. While there would be no direct effects to Sensitive plant occurrences and habitat with No-Action, there may be indirect effects to Sensitive plants in the event of a wildfire in the resource area. In the long term, the Dry Forest and Moist Forest Guilds would be most affected because they would be the most likely habitats to burn.

Possible indirect effects to Sensitive plant habitat and populations would include an increased risk to sensitive plants and habitat due to a gradual increase in fuel loads over time, with continuing fire suppression. In the future, with the No-Action Alternative, if a wildfire started in the resource area fuels accumulations could result in areas of high intensity fire, and possibly a loss of rare plants and suitable habitat in these areas. The effects to rare plants resulting from a wildfire would depend on factors like the intensity of the fire, the species ability to survive the event, and its ability to regenerate in early seral habitat. The ability to analyze the possible effects for all sensitive plant species is limited given the available literature and relatively few monitoring studies regarding IPNF sensitive plant species. The following section provides information on the known responses of species that may be affected by the No-Action Alternative.
Effects to Moist and Wet Forest Plant Guilds

Indirect impacts to the moist forest guild would be low to moderate if a wildfire started and burned through fully stocked, moist forest habitat with moderate fuel levels. Such a fire, if it were to occur, would be detrimental to obligate mycorrhizal species such as Round-leaved rein orchid, and Moonworts. Populations of these species could be destroyed if the fire was severe enough to remove a substantial amount of duff and organic material, destroying plant root systems. The prospect of recolonization of affected habitat by any of these species would depend on the extent and duration of habitat alteration, and the availability of an adjacent seed source.

The wet forest plant guild would be the least affected guild in the event of a wildfire. Indirect effects to these species under the No-Action Alternative would be low. These habitats are confined to riparian areas which burn infrequently, except in the case of a stand replacing fire. If a mixed-severity fire should creep into riparian areas, it is likely that some patches of unburned habitat for Sensitive plants would remain, allowing re-colonization to take place over time.

Effects to the Dry Forest Guild

Indirect effects to Dry Forest Guild species and habitat with the No-Action Alternative are expected to be low to moderate. Dry forest habitats would be inherently at greater risk of a high intensity fire with continued fire suppression, and without timber harvesting or fuels reduction treatments. Dry Forest Guild species are adapted to habitats which, historically, experienced a greater fire frequency, and some individuals would likely survive a stand replacing fire in scattered microsites. Successful re-colonization for Sensitive plant species after such disturbance events is likely to be more uncertain than under historical conditions due to habitat fragmentation, modification, and introduction of exotic weeds.

3.7.4.3.2. Cumulative Effects to TES Plants under Alternative 1

The cumulative effects analysis for Sensitive plants considered the effects of the No-Action Alternative in combination with the effects of past, present, and reasonably foreseeable future actions listed in Appendix A (Past, Ongoing and Reasonably Foreseeable Activities). Historical occurrence information for rare plants in the resource area is incomplete. Prior to 1988 the IPNF did not conduct rare plant surveys, and occurrence reports to the Idaho Conservation Data Center were incidental (IPNF 2010; PF Doc. CR-040). Past activities on federal lands prior to policies affording protection of rare plants, have negatively affected populations and habitat of Sensitive species. Current activities proposed on Federal lands are required by law and policy to address sensitive plant species. Populations are managed for when they are found. Considering current Forest Service policy, there would be no cumulative effects to Sensitive plants under the No-Action Alternative.

3.7.4.4. Alternative 2

3.7.4.4.1. Direct and Indirect Effects on TES Plants under Alternative 2

The specific effects to Sensitive plants and Forest Species of Concern from proposed activities in Alternative 2 would be very similar to those of Alternative 3. However, the magnitude of the effects of Alternative 2 would be greater than with Alternative 3 because the acreage affected by regeneration harvesting and associated activities would be about twice as much as Alternative 3. Likewise, the effects from fuels treatments, road building and road management activities would be greater in Alternative 2, when compared with Alternative 3.
The gate installation in Pony Gulch in Alternative 2 would limit traffic to non-motorized only. This action would tend to control motorized vehicle travel that has affected the riparian area and introduced noxious weeds. Habitat for TES plants and Forest Species of Concern may improve if this action were implemented.

3.7.4.4.2. Cumulative Effects of Alternative 2

The added effect of implementing Alternative 2 in combination with the effects of past, present, and reasonably foreseeable future actions listed in Appendix A would be low, but somewhat greater than the cumulative effects predicted as a result of implementing Alternative 3.

3.7.4.5. Alternative 3

3.7.4.5.1. Direct and Indirect Effects on TES Plants under Alternative 3

The direct and indirect effects to habitat for TES plants and Forest Species of Concern (due to timber harvesting and associated management activities under Alternative 3) would be about half that of Alternative 2 due to the acreage affected.

Alternative 3 would construct no new roads, which would be less of a long-term impact to TES plant and Forest Species of Concern habitat on the acres affected. Alternative 3 would also decommission slightly less than double the miles of roads that Alternative 2 would. Road decommissioning contributes to recovery of TES plant habitat in the long term.

Aggregate retention of 360 acres would only take place with Alternative 3. Aggregate retention may be beneficial to TES plants and habitat in that patches may provide more shade and moisture retention.

3.7.4.5.2. Cumulative Effects on TES Plants under Alternative 3

The added effect of implementing Alternative 3 in combination with the effects of past, present, and reasonably foreseeable future actions listed in Chapter 2 and Appendix A would be low, but somewhat less than cumulative effects with Alternative 2.

3.7.4.6. Direct and Indirect Effects to TES Plants Common to Alternative 2 and Alternative 3

3.7.4.6.1. Effects of Timber Harvesting

Direct impacts of timber harvest can include elimination of individual Sensitive plants through ground disturbance. Indirect impacts to sensitive plants can include changes in fuel loading, duff levels, moisture regime, and increased light levels. Effects to sensitive plants would vary according to species and harvest prescription. Most timber harvest would take place in moist forest habitats, so most of the effects would be confined to moist forest guild species. Fewer acres of dry and wet, as opposed to moist forest guild habitat, would be potentially impacted by harvest in any alternative. Since Riparian Habitat Conservation Area guidelines would be followed for all action alternatives, most wet forest habitat would be excluded from harvest activities.
Effects of intermediate harvests (improvement cutting and commercial thinning)

Intermediate harvesting and associated activities would directly affect suitable habitat for sensitive plants of the moist and dry, especially those that are intolerant of changes in the moisture and light regime (i.e. the mycotrophic species, Moonworts and round-leaved rein orchid). Because most of the canopy cover would be retained in stands with intermediate harvesting, effects to suitable habitat of these guilds would generally be less than those resulting from regeneration harvesting. Intermediate harvesting with ground based yarding systems would have greater impacts to suitable habitat than skyline systems.

Effects of regeneration harvests (shelterwood and seed tree harvesting)

Regeneration harvesting would take place in the majority of commercial harvest units in both action alternatives. Primarily, live trees would be cut in order to provide conditions suitable for reforestation with long-lived seral tree species. Most of the tree canopy cover would be removed. Fuels treatment would occur in all regeneration units, consisting of mechanical fuels treatment (grapple) or a form of prescribed burning. Regeneration harvesting would directly affect moist and dry forest habitats by increasing sunlight, reducing soil organic matter, and elevating temperatures in the understory.

The limited data and observations available indicate that most species in the moist and dry forest plant guilds are intolerant of substantial canopy removal, with the exception of bank monkeyflower, which grows in grassy balds and open forest conditions on southerly slopes. Mycotrophic species such as Moonworts, and round-leaved rein orchid are very vulnerable to the effects of regeneration harvest. The most detrimental sort of regeneration harvest treatment would be with ground based equipment, followed by an intense burn, which consumes much of the organic matter on the site, or with mechanical fuels treatment. The action alternatives display various fuels treatment and harvest combinations.

Round-leaved rein orchid is present in shelterwood units C34a and C55. No-activity buffers would be implemented in these units to protect the orchids. Prescribed burning in Units C34a and C55 would be designed to eliminate any effects to the round-leaved rein orchid by having protection measures implemented to prevent fire from burning the buffered area. These measures may include a constructed fireline or localized fuels reduction measures to limit burn intensity.

Design features of the action alternatives for Soils, Aquatics, Sensitive Plants, Noxious Weeds, and Vegetation discussed in Appendix E would minimize potential adverse effects to Sensitive plant habitat from regeneration harvesting and associated activities.

3.7.4.6.2. Effects of different yarding systems

The yarding methods proposed for the action alternatives consist of, skyline, cable, and ground-based yarding (escaliner-swing, tractor or forwarder). The effects of skyline yarding would be somewhat less than those resulting from tractor yarding. Skyline would necessitate construction of corridors for yarding purposes in which long narrow canopy openings would be created. Some ground disturbance would result from the yarding process. Tractor yarding has the potential to cause the most detrimental and long lasting impacts to sensitive plant habitat, but effects would be confined mainly to designated skid trails. Soil compaction and displacement can affect soil structure and nutrient levels, which in turn lengthens the time for native plant communities to recolonize. Features of the action alternatives related to soils would maintain standards for down woody material and minimize soil displacement and compaction (refer to Appendix E, Features Designed to Reduce Impacts to Soils, and the Soils Section 3.5).
3.7.4.6.3. **Effects of New Road Construction, Road Reconstruction, and Reconditioning**

New road construction, road reconstruction, and reconditioning would take place in both action alternatives. These activities vary in the potential to affect moist, wet, and dry forest guild habitats and species. New road construction is a highly ground disturbing activity, constituting a considerable risk to sensitive species in these guilds. In contrast, road reconstruction and reconditioning are relatively low risk activities, in terms of direct or indirect effects to sensitive plants and habitat. For these activities, existing road prisms would be treated which are currently disturbed and of low habitat suitability. While there are a few sensitive plant occurrences on the District on old roads or cutbanks they are, in general, individuals isolated from the main occurrence.

There are no known occurrences of short-spored jelly lichen or Hall’s lungwort lichen in areas proposed for road construction, road reconstruction, and reconditioning. There would be no direct or indirect effects to these species.

3.7.4.6.4. **Effects of Fuels Treatments**

Various methods of fuels reduction are proposed under the action alternatives, all having the potential to directly and indirectly impact sensitive plants and habitat. Slashing and lop and scatter fuels treatments would have a negligible effect on sensitive plant species. Grapple piling would have high impacts on sensitive plant habitat in the affected areas because this is a ground based activity that can disturb soils and cause compaction. Grapple piles, when burned, can impact soil structure and microorganisms in a localized area. Fuelbreak construction would be done manually using hand tools, and would result in low effects to rare plant habitat.

Prescribed burning for fuels reduction would be done within most regeneration harvest units, and as a fuels reduction treatment alone, without harvesting. Spring burning has the potential to impact rare plant individuals of Pine Broomrape, Clustered Lady's Slipper (Harrod 1995; PF Doc. TES-31), Round-Leaved Rein Orchid, and Moonwort species. Features and design criteria (Appendix E) would protect known Sensitive plant populations of the moist forest guild (Round-leaved Rein Orchid) and minimize effects to highly suitable habitat. A Pine Broomrape occurrence in burn-only Unit F17 would not be buffered from prescribed burning. This dry forest guild FSOC plant depends upon oceanspray for growth and reproduction. Prescribed burning prescriptions would not eliminate oceanspray, and may result in stimulating understory shrub growth. There is a possibility that the pine broomrape occurrence in could be impacted with this activity. Prescribed burning carries a risk of increasing noxious weeds in activity areas, thus causing competition with TES species and other native plants, especially on dry forest cover types (refer to Noxious Weeds section in Appendix B).

Regeneration units would generally have control lines constructed to contain the fire. Fire line construction has the potential to impact undetected sensitive plants and suitable habitat by vegetation and ground disturbance. There would be no direct ignition within designated Riparian Habitat Conservation Areas (RHCAs), however fire would be allowed to back down into RHCAs. Impacts to moist forest habitat would be very low. Specific features of the action alternatives would protect documented populations and mitigate for new ones discovered prior to implementation.
3.7.4.7. Cumulative Effects Common to Alternative 2 and Alternative 3

Reasonably foreseeable and ongoing activities in the cumulative effects analysis area are identified in Appendix A. Activities on Forest Service lands including mining, and minerals exploration, wildfire response, special uses, road and trail maintenance, dispersed recreation, Christmas tree cutting, fuelwood gathering, and noxious weed treatment would have immeasurable impacts to Sensitive plants and FSOC. These activities are regulated by the Forest Service to minimize resource impacts; therefore effects to plants are very low. Timber harvesting, Travel Plan implementation, and Outfitter Guide activities, have been through the NEPA process, and features to protect TES plants have been implemented. These activities would have a low level of cumulative effects to TES plants.

Implementation of projects on National Forest System lands would have low impacts on sensitive plants or suitable habitat, since Federal lands are managed to maintain sensitive plant populations. Sensitive plant habitat assessment is conducted for all ground and/or vegetation disturbance on the District. While individuals of some sensitive plants may occasionally be impacted, cumulative impacts to species and habitats are expected to be low.

The Forest Service has no control over timber harvesting and related activities on private lands. Impacts to TES plants have likely occurred in the past and are continuing because there are no policies in place providing protection of rare plant species on private lands. Because no baseline data exists for TES plants on private lands, it is not known to what extent activities have affected plants there.

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

3.7.4.8.1. Forest Plan

All of the proposed activities with the requirements for surveys and implementation of mitigation measures would meet the intent of the Forest Plan. The No-Action Alternative would also meet the intent of the Forest Plan.

A Forest Plan management goal is to "manage habitat to maintain populations of identified sensitive species of animals and plants". Also to “Provide for a diversity of plant and animal communities”. (Forest Plan, p. II-1, TES-02).

A Forest Plan standard for sensitive species is to "manage the habitat of species listed in the Regional Sensitive Species List to prevent further declines in populations which could lead to Federal listing under the Endangered Species Act" (Forest Plan, p. II-28, PF Doc. TES-02).

The effects analysis considered the distribution of habitat for rare plants, including Region 1 Forest Service Sensitive plants, Forest Species of Concern, and Threatened plants. The Idaho Conservation Data Center was consulted for information on rare plant occurrence in the State. Alternative design considered the documented occurrence of TES plants in the resource area, and the potential effects of proposed activities. Features Designed to Protect Rare Plants (Appendix E) provides that rare plant surveys will be conducted in all areas of suitable habitat where activities would occur prior to project implementation. Mitigation measures for rare plants would protect known occurrences and those that may be discovered during project implementation. Documentation of botanical surveys for rare plants is included in the Project File in PF Doc.TES-16.
The Forest Plan also identifies the need to "Determine the status and distribution of Threatened, Endangered and Rare (sensitive) plants on the IPNF" (Forest Plan, p. II-18, PF Doc. TES-02).

Two species of Threatened plants are listed by the USFWS for the Coeur d’Alene River Ranger District (USDI 2009; PF Doc. TES-11). Although there is potentially suitable habitat, no Threatened species have been discovered on Forest Service lands. There are no Endangered plant species currently listed for the IPNF or Coeur d’Alene River Ranger District. All projects on the Coeur d’Alene River Ranger District are analyzed for effects to Threatened plant species. Potentially suitable habitat is surveyed prior to project implementation. Projects that may have effects to Threatened plants are consulted on with the U.S. Fish and Wildlife Service according to Section 7 Guidelines under the Endangered Species Act, 1999.

3.7.5. Effects Summary

3.7.5.1. Determination of Effects for Threatened and Endangered Plant Species

There would be no effect to Threatened and Endangered plants with implementation of Alternative 2 or 3. Refer to PF Doc. TES-39 for the complete Biological Assessment for Threatened and Endangered plants.

3.7.5.2. Determination of Effects for Sensitive Plant Species

Based on the above analysis, and given implementation of Features Designed to Protect Rare Plants, described in Appendix E, summarizes the determination of effects to Sensitive plants for each alternative. A description of habitat guilds (PF Doc. TES-5) and list of sensitive species (PF Doc. TES-13) is included in the Project Files. Also refer to Project File document TES-42 for the full Biological Evaluation for Sensitive plants.

<table>
<thead>
<tr>
<th>Species Guild</th>
<th>Alt. 1 (No Action)</th>
<th>Alt. 2</th>
<th>Alt. 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moist Forest Guild</td>
<td>No Impact</td>
<td>May Impact*</td>
<td>May Impact*</td>
</tr>
<tr>
<td>Dry Forest Guild</td>
<td>No Impact</td>
<td>May Impact*</td>
<td>May Impact*</td>
</tr>
<tr>
<td>Wet Forest Guild</td>
<td>No Impact</td>
<td>May Impact*</td>
<td>May Impact*</td>
</tr>
<tr>
<td>Subalpine Guild</td>
<td>No Impact</td>
<td>No Impact</td>
<td>No Impact</td>
</tr>
<tr>
<td>Peatland Guild</td>
<td>No Impact</td>
<td>No Impact</td>
<td>No Impact</td>
</tr>
<tr>
<td>Deciduous Riparian Guild</td>
<td>No Impact</td>
<td>No Impact</td>
<td>No Impact</td>
</tr>
<tr>
<td>Aquatic</td>
<td>No Impact</td>
<td>No Impact</td>
<td>No Impact</td>
</tr>
</tbody>
</table>

* May Impact = May Impact Individuals or Habitat with no trend to federal listing or loss of species or population viability

3.7.5.3. Summary of Effects to Forest Species of Concern

There would be no direct effect to known occurrences of Forest Species of Concern with implementation of any action alternative. Alternative 2 would impact more suitable habitat of moist forest and wet forest FSOC species than Alternative 3. Alternative 3 would restore more acres of suitable FSOC habitat over time with more road decommissioning and no new road building.
3.7.6. **TES Plants References**


3.8. Recreation

3.8.1. Introduction

3.8.1.1. Overview of Issues Addressed

Recreation managers are concerned for public safety and any impacts to the full range of existing recreational patterns, opportunities and improvements of a project area. This analysis will evaluate any effects from proposed activities to public safety and the various recreational activities near or within the Beaver Creek Resource Area.

Off Highway Vehicle (OHV) riding is by far the largest form of recreation in the Beaver Creek Resource Area. Hunting and snowmobiling compete as noteworthy activities in the area while such things as camping, berry picking, gold panning, mushroom hunting, sightseeing, hiking and other forms of recreation occur on a more limited or isolated basis. Firewood gathering, considered by some as a recreational activity, occurs often in the Beaver Creek area. Road 1505 is within the project boundary and is designated as a “disabled hunt” area.

This analysis is focused on three primary activities: OHV riding, disabled hunting, and snowmobiling. Trails and recreational activities that lie immediately adjacent to the project area boundary and may be impacted are included in the analysis.

3.8.1.2. Issue Indicators

Indicators of effects to recreation from project activities include the following:

- Operations along or near travel routes, recreation improvements and high use recreation areas
- Projected increases or decreases in the amount of recreational use
- Physical damage to recreational signs and trails
- Proximity of recreation areas to potential noise, smoke or other project related activities
- Loss of habitat or other physical change on the landscape that may alter an individual’s “sense of place,” briefly defined as a psychological outcome that is expected by an individual while enjoying nature.

Quantitative measurements of effects to OHV riding, disabled hunting and snowmobile trails were calculated using miles and percentages of routes subject to log haul, snow plowing, and general logging operations along with an accompanying map displaying the broader impacts. Qualitative measurement follows the Recreation Opportunity Spectrum framework discussed in Section 3.8.3 – Management Framework.

Determination of the existing conditions for recreation activities, facilities and opportunities are derived from inventories, maintenance work, observation by recreation specialists and technical personnel and contact with recreation groups and individuals.
3.8.2. Existing Conditions

When compared to other areas of the Coeur d’Alene River Ranger District, overall recreational use within the Beaver Creek Resource Area is light. It consists solely of dispersed recreation, briefly defined as recreating in a general forested area or an area with no developed recreation sites. Once off of the two paved roads that are in or near the area (Forest Highway 9 and County Road 456), access becomes remote with rough and narrow gravel roads.

There are no lakes, rivers, or developed recreation sites within the Beaver Creek Resource Area. Without major water bodies, developed sites, or other attracting features, camping is infrequent through the summer months. Most of the recreation use during this time is generated from OHV riding or firewood, huckleberry and mushroom gathering. Camping increases somewhat during hunting season, yet even then it is less than in many other parts of the District as small hunting camps are scattered about the area at some of the road junctions or trailheads. Much of the increased use during this time is from nearby residents who, rather than camp, are close enough in proximity to drive in for a day of hunting and return home in the evenings.

3.8.2.1. Designated OHV Routes

The Motor Vehicle Use Map (MVUM) serves as the enforcement tool of the 2009 Coeur d’Alene River Ranger District Travel Plan Decision. The Motor Vehicle Use Map not only displays the routes designated for motorized use, but also identifies the types of motor vehicle classes that can operate upon them.

Within the Beaver Creek Resource Area, only Forest Roads 271, 424, 429, 957, 1505, 2322, and 2361 are designated as open to all vehicles (Figure 52). Routes 933, 1586, 151, 1505, 6003, 6328 and 6328A are designated as seasonally-restricted Off Highway Vehicle (OHV) trails open to motorized vehicles less than 50 inches. These OHV trails lie either within or immediately adjacent to the project area, for a combined total of 40.7 miles.

A 1.3-mile portion of the 6-mile Graham Ridge Trail 17 (a single-track trail used predominantly by motorcycles) lies along the far western boundary of the project area. There are no other motorized routes designated on the Motor Vehicle Use Map within the project area. There are no District-managed routes within the area that are designated for non-motorized uses only.

<table>
<thead>
<tr>
<th>Table 94. Miles of Motorized Designated Routes within the Beaver Creek Resource Area.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Route</td>
</tr>
<tr>
<td>4-wheel drive (high-clearance vehicle) trails</td>
</tr>
<tr>
<td>Seasonally-restricted double track (OHV) trails</td>
</tr>
<tr>
<td>Single-track (motorcycle) trails</td>
</tr>
<tr>
<td>Roads open to all vehicles</td>
</tr>
<tr>
<td>Total motorized designated routes</td>
</tr>
</tbody>
</table>
Figure 52. Designated Motorized Routes within the Beaver Creek Resource Area as authorized by the Motor Vehicle Use Map.
3.8.2.2. Snowmobile Routes

The Motor Vehicle Use Map only designates routes for motorized traffic during the non-winter months. The Beaver Creek Resource Area also includes 39.5 miles of routes groomed for snowmobiles (Figure 53). These winter trails are designated on the Motor Vehicle Use Map as motorized routes 271, 424, 429, 933, 1586, and 2361. Once snow grooming occurs on these routes, their definition changes from a road to a trail and wheeled vehicles are restricted.

Although available for snow grooming, the routes in the Beaver Creek Resource Area are not always groomed, because there are several more popular snowmobile areas of the District that demand the attention of the grooming program during winter operations. If the routes are not groomed, wheeled traffic is not restricted.

3.8.2.3. Disabled Hunt Program

The Motor Vehicle Use Map restricts motorized travel each year on OHV Trail 1505 from September 7 through April 1. From October 10–31, it is dedicated by the District to the disabled hunt program. This program issues a key to the participants for unlocking the gate at Potosi Gulch and authorizes permitted hunters to operate full-sized motorized vehicles on routes 1505, 1505D, 6328 and 6328A (Figure 54), a total of 20 miles.

Disabled hunters are able to take along a partner for assistance with the gate and for game retrieval, but only the disabled hunter is allowed to shoot. The disabled hunter is provided a quiet opportunity to pursue game without interference from motors and machinery. The Disabled Hunt Program is highly popular and fully booked with hunters chosen through a District-administered lottery.

3.8.2.4. Motorized Use on Non-Designated Routes

Illegal OHV use on routes not designated for motorized use is reported to be prevalent in the Beaver Creek Resource Area. This is especially noteworthy on the 1505 system as the District has received numerous reports from disabled hunters of their encounters with OHVs during its restricted period. Although physical barriers, enforcement and education efforts combined with the widespread availability of the Motor Vehicle Use Map have all helped slow the illegal use of OHVs on undesignated routes over the past few years, it continues as a problem in the Beaver Creek Resource Area.
Figure 53. Groomed Snowmobile Trails in or near the Beaver Creek Resource Area.
Figure 54. Disabled Hunting Program Route in Potosi Gulch.
3.8.3. Management Framework

Guidance for recreation managers on the Idaho Panhandle National Forest is provided through the Forest Plan which identifies specific goals, objectives and standards related to a variety of recreation opportunities and settings (Forest Plan, pages II-1 and II-3). The following Forest Plan standards (PF Doc. CR-002, Section E. II-24) are applicable to the Beaver Creek Resource Area:

1. The Forest Service shall continue to provide a share of recreation opportunities and diversity in relation to other public and private entities.
2. Consult with recreational users and other recreational suppliers to coordinate public needs.
3. Provide a broad spectrum of dispersed and developed recreation opportunities in accord with identified needs and demands.
4. Trailhead facilities in dispersed areas will be minor and limited to resource protection.
5. Trails will be managed in accordance with management area requirements as identified in a more site-specific analysis of needs.

The Forest Plan designates National Forest System lands according to Management Areas (MA). MA's are described in terms of their distinctive resource values and characteristics. Recreation, along with wildlife, fish, range, timber, water, soil, facilities and protection, are resource elements within the MA's to be managed according to the Standards established by the Forest Plan. For recreation, these Standards are defined within the framework of seven categories or "settings" under the Recreation Opportunity Spectrum. The Beaver Creek Resource Area occupies portions of MAs 1, 4, 6 and 9, all of which include the settings of either "Roaded Modified," "Roaded Natural," or "Semi-Primitive." In brief, the primary goals of these MA's and their ROS settings are:

- **MA-1:** long term growth and production of commercially viable timber (in a *Roaded Natural* or *Roaded Modified* setting)
- **MA-4:** management of big game winter range (in a *Roaded Natural* or *Roaded Modified* setting)
- **MA-6:** provide high quality elk summer habitat and production of wood products (in a *Roaded Natural* or *Semi-Primitive* setting)
- **MA-9:** manage to maintain a protect existing improvements and resource productive potential with minimum investments (in a *Roaded Natural* or *Semi-Primitive* setting)

Following is a synopsis of the definitions for applicable ROS settings in the Beaver Creek Resource Area (Management Areas 1, 4, 6 & 9):

- **Roaded Modified Setting:** Recreation management for this setting can allow a substantially-modified environment with easy access but must also assure some self-reliance and an opportunity for the user to get away from the comforts of an urban environment. Other than gated roads, there are few site controls. Roads, landings, slash and debris may be strongly dominant from within but must remain subordinate from distant and sensitive roads.

- **Roaded Natural Setting:** Under this category, recreation management is responsible for assuring a natural appearing setting, with moderate sights and sounds of human
activities and structures. The overall perception needs to be one of naturalness. Evidence of human activities can vary in the Roaded Natural setting. Roads and motorized equipment and vehicles are common in this setting. Density of use is moderate except at specific developed sites, and regulations on user behaviors are generally less evident than in higher classes of the Recreation Opportunity Spectrum.

- **The Semi-Primitive Motorized Setting:** The size of this setting typically exceeds 2,500 acres and is characterized predominantly by a natural appearing environment. It is an essentially unroaded block where motorized use may be permitted. Vegetative alterations are small in number and size, are widely dispersed and visually subordinate.

### 3.8.4. Environmental Consequences

#### 3.8.4.1. Methodology

Effects to Recreation Opportunity Spectrum settings appropriate for any given project or analysis area are considered under the guidelines and framework described above. Recreation managers compare these guidelines to the conditions of the landscape both before and after project activities. Any changes to the mode of access, degree of remoteness, the number and type of other recreationists met along travel ways or camped within sight or sound of others, the level of facility development, impacts to visitor use, as well as the degree of naturalness that might affect psychological outcomes associated with enjoying nature (sense of place) must remain within the appropriate Recreation Opportunity Spectrum setting once activities are complete.

Effects that might lead to increased and/or decreased recreational use are determined by recreation managers through careful scrutiny of proposed activities in relation to the existing recreational opportunities. Considerations are given to the timing and location of activities, compromises to public safety, alterations of habitat, potential damage to recreational improvements, physical inconveniences such as noise or smoke, and alterations to lengths and/or locations of access routes.

Determination of the existing conditions for recreation activities, facilities and opportunities are derived from facility inventories, facility maintenance work, observation by recreation specialists and/or technical personnel and contact with recreation user groups and individuals. Guidance for the management of recreation resources is provided in various Forest Service manuals and handbooks, as well as professional publications and documents.

#### 3.8.4.2. Geographic Scale of the Analysis

The geographic scale for effects to recreation in the Beaver Creek Resource Area encompasses all of the contiguous National Forest System lands in Shoshone County, north to south from Forest Highway 9 to Dobson Pass via Forest Road 424, and east to west from OHV Trail 6328 to Forest Road 424 at Moon Pass. The temporal scale of effects ranges from 1 season to 100 years. A one season effect might be to the temporary restriction of a road used for OHV riding while a 100 year effect might be to changes of landscape and vegetation that does not readily, if ever, recover.

#### 3.8.4.3. Alternative 1 (No Action)

#### 3.8.4.3.1. Direct and Indirect Effects

No activities are proposed under the No-Action Alternative, therefore there would be no direct or indirect effects to the current forms of recreation from this alternative.
3.8.4.3.2. Cumulative Effects

Since there are no direct or indirect effects to recreation under this alternative, there would be no cumulative effects.

3.8.4.4. Alternatives 2 and 3

3.8.4.4.1. Direct and Indirect Effects Common to Both Action Alternatives

Neither Alternatives 2 nor 3 propose a change to the Motor Vehicle Use Map, however both alternatives propose harvest and burn units along Routes 271, 424, 429, 957, 1505, 2322, 2361, 933, 1586, 151, 1505, 6003, 6328 and 6328A. These routes are designated as OHV Trails, snowmobile trails and, in the case of Route 1505, the Disabled Hunting Area.

Effects from haul, snowplowing, full sized vehicle travel and operations in general would be the same from both alternatives and so they are analyzed together. The duration of the effects could be somewhat less for Alternative 3, since there is less volume to be harvested and hauled, but the reduced effect is not enough to be analyzed separately.

Designated OHV Routes

Proposed burning and harvest activities would affect the 40.7 miles of OHV trails made up from routes 151, 1505, 6003, 6328, 6328A, 933 and 1586. All are proposed for timber haul under either action alternative.

Because of the Motor Vehicle Use Map restrictions on routes 151, 1505, 6003, 6328, 6328A, 1586, and the portion of 933 from White Creek Saddle to the 1586 junction, users have become accustomed to operating on these “trails” without encountering full-sized vehicles. OHV operators who assume the route is closed to full-sized vehicles could be unpleasantly surprised as they speed left of center around a blind curve only to meet one unexpectedly. Requiring caution signs and other forms of public notice coupled with haul restrictions on weekends and summer holidays will help to address this concern. Public safety (through signing and haul restrictions) is addressed in the Design Features listed in Appendix E.

All routes except portions of 151 were originally excavated as logging roads with road prisms of 12 feet. To accommodate timber haul there would be brushing, grading and culvert upgrades but no change to the current Roaded Natural and Roaded Modified Recreation Opportunity Spectrum settings. Recreational users may be impacted on any given day from noise, equipment, vehicles, signs, workers, and other aspects of project activities, but operations would end, vegetation would soon grow back, and the recreational users “Sense of Place” would return to what it is now. Effects from harvest may linger the first few years but would soon fall into the background as it has always done.

Except for portions of 151, these routes were originally constructed as logging roads and are able to accommodate full-sized vehicles. They are separated east and west within the resource area by Beaver Creek (see Figure 52). All are restricted from motorized use each year between September 8 and March 31 and allow only motorized vehicles less than 50 inches from April 1 to September 7.

On the east side of Beaver Creek, routes 151, 1505, 6003, 6328 and 6328A are connected forming a system with loops (Figure 55). On the west side, routes 933 and 1586 join to form a lineal trail that connects routes 957 at White Creek Saddle with route 2361 at Route 424 near Two Mile Saddle (Figure 56). Table 95 summarizes the separation.
Table 95. Summary of the two separate OHV trail systems within Beaver Creek Resource Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Routes</th>
<th>Miles</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>East of Beaver Creek (Kings Pass –</td>
<td>151, 6003,</td>
<td>24.1</td>
<td>Except route 151, all routes are 12-foot road prisms. Route 1505 is used for the Disabled Hunt. Portions of Routes 1505 and 6328 (totaling 8.3 miles) are outside of the resource area boundary. Two trailheads (Potosi Gulch and Kings Pass) are both gated.</td>
</tr>
<tr>
<td>Potosi Gulch)</td>
<td>1505, 6328,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6328A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West of Beaver Creek (Jack Ass Ridge)</td>
<td>933, 1586</td>
<td>16.6</td>
<td>Both routes are gated at the trailhead and are 12-foot road prisms.</td>
</tr>
</tbody>
</table>

**Kings Pass–Potosi Gulch (Eastside) OHV Trails:** If operations occur on both sides simultaneously (Potosi Gulch Road 1505 and Kings Pass Road 6003) all 24.1 miles of OHV trail in this area would be impacted (see Figure 55).

Operations along route 1505 must channel through the gate located in Potosi gulch. The operations along this route would effectively disturb 3.5 miles to Unit 68 (15% of the 24.1 OHV miles in this area).

Timber from Unit 77 would haul out either Kings Pass or Potosi Gulch. If it goes out Kings Pass then once it and Unit 57 are completed, 20.6 miles or 85% of OHV trail could be accessed from Kings Pass undisturbed from harvest activities.

Burning activities would also allow full-sized vehicles on these OHV routes. With access from both entries likely during the burning operations, it is safe to conclude that all 24.1 miles of OHV trail in the Kings Pass – Potosi Gulch section of the Beaver Creek Project would be affected by its operations throughout the duration of the project.

**Jackass Ridge (Westside) OHV Trails:** Route 1586 and the upper portion of route 933 serve as one contiguous OHV route totaling 16.6 miles (Figure 58). Units located along the southern portion of this area along route 1586 are expected to haul using route 424 through Dobson Pass, while the units to the north on 933 and the upper end of route 1586 are planned to haul using route 933 down Scott Creek. OHV riding typically takes in several miles during the course of a day. Loops in this area are made using the entire distance of lineal trail 1586 and 933 to connect with routes 424, 933, 957 or 2361 all roads that are open to full sized vehicles. Thus, any Beaver Creek operation along routes 1586 or 933, be it north or south, will affect the entire 16.6 mile OHV route.
Figure 55. Kings Pass/Potosi Gulch (Eastside) OHV Trails.
Figure 56. Jackass Ridge (Westside) OHV Trails.
Beaver Creek

**Snowmobile Routes**

Routes 271, 424, 429, 620, 933, 946, 957, 1586, and 2361 connect, creating almost 65 miles of groomed snowmobile trail loops in the area known locally as “Jackass Ridge.” Due to proposed harvest activities, routes 271, 424, 429, 933, 957, 1586, and 2361 are subject to snowplowing. To provide for public safety, Idaho Statute 677109 prohibits snowmobiles from operating on plowed roads, thus plowing any portion of the Jackass Ridge road system would impact snowmobile recreation for that area (Figure 57).

Snow plowing for timber haul down Scott Gulch Road 933 would eliminate as many as 23 miles (35%) of the snowmobile trail system for the season while snow plowing on Road 424 to Dobson Pass would eliminate 33% or 21 miles. Should both sides be snowplowing at the same time, a total of 44 miles (68%) of the 65-mile system could be unusable by snowmobilers.

The 21-mile connection between two trailheads leading into this system (Cinnabar Creek Road 620 and Montgomery Gulch Road 946) would not be affected by snowplowing.

As noted earlier, these routes are not always groomed as several more popular snowmobile areas in Shoshone County (such as Steamboat and Lookout Pass) demand greater attention of the grooming program during winter operations. Attempts are made to groom the Jackass system at least one to two times each winter but some winters have passed when no grooming occurred. It remains a popular area for local snowmobile enthusiasts however, and even without grooming they can be seen along these routes “powdering” through the snow.

These potential effects have been discussed with the Shoshone County Grooming Board and they are agreeable to winter plowing of these routes. Effects to the program could be reduced if plowing were only allowed through either Scott Gulch Road 933 or Dobson Pass Road 424, but not both at the same time. Snowplowing restrictions are addressed in the Design Features listed in Appendix E.

**Disabled Hunt Program**

As stated earlier, OHV route 1505 is closed to motorized travel each year from September 7 through April 1, and is dedicated by the District to the Disabled Hunting Program from October 10–31. Any type of operations from the Beaver Creek project during this time would be incompatible (Figure 58). Effects to the Disabled Hunting program can be reduced by the Design Features listed in Appendix E. There will be no long term effects from proposed activities.

### 3.8.4.4.2. Cumulative Effects Common to Both Action Alternatives

Effects to recreation from the Beaver Creek Project are expected to be short term. There are no foreseeable activities or past activities that have added toward a cumulative effect to recreation in this area. There would be no cumulative effects to recreation from the Beaver Creek Project.
Figure 57. Groomed snowmobile routes and timber haul routes in the Beaver Creek Resource Area; (routes highlighted in yellow indicate potential plowing on a snowmobile trail).
Figure 58. Potosi Gulch disabled hunting routes in relation to proposed harvest units.
3.8.4.4.3. **Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans**

The Forest Plan identifies specific goals and objectives related to providing a variety of recreation opportunities and settings (Forest Plan, pages II-1 and II-3). The following standards apply to recreation management in the Beaver Creek Resource Area.

1. **The Forest will continue to provide a share of recreation opportunities and diversity in relation to other public and private entities; recreation planning and operations will be coordinated with other federal, state, local and private recreational managers.**

   All alternatives would continue to provide a diversity of recreation opportunities. Coordination with other recreation managers is done on an ongoing basis throughout the Coeur d'Alene River Ranger District. Based on this information, all alternatives would meet this standard.

2. **Forest Service recreational programs will be complementary with other public and private programs where possible.**

   Recreational programs on the Coeur d'Alene River Ranger District are complementary with other recreational programs provided by county, state, and private facilities. The activities proposed under the action alternative would not change this situation; therefore all alternatives would meet this standard.

3. **Consult with recreational users and other recreational suppliers to coordinate public needs.**

   Consultation occurs with recreational organizations on an ongoing basis, and with the recreating public at large through project scoping. Recreation needs in the Beaver Creek Resource Area have been considered and would be provided under all alternatives. Based on this information, all alternatives would meet this standard.

4. **Provide a broad spectrum of dispersed and developed recreation opportunities in accord with identified needs and demands. Enhance user experience by on and off-site interpretation.**

   Broad spectrums of dispersed opportunities are provided in the Project Area. There are no developed recreation sites other than the logging roads that have been turned into OHV and snowmobile trails. Under all Alternatives these opportunities will continue throughout the Beaver Creek Resource Area.

5. **Trailhead facilities in dispersed areas will be minor and limited to resource protection. Off-site interpretation is encouraged.**

   At this time, no expansion of trailheads in the area is warranted. All alternatives would be consistent with this standard.

6. **Trails will be managed in accordance with management area requirements as identified in a more site-specific analysis of needs.**

   All alternatives would meet this standard for trails.
3.9. Visuals

3.9.1. Introduction

The Beaver Creek Resource area is located south of Forest Highway 9 between Babin’s Junction and Murray, Idaho. Within the 28,200-acre Beaver Creek resource area management activities are proposed to improve water quality and aquatic habitats, develop resilient forest conditions, and reduce hazardous fuels. The Proposed Action utilizes vegetation management, fuel management and watershed improvements to respond to these needs.

3.9.1.1. Overview of Issues Addressed

The analysis considers the character and appearance of the surrounding natural (and modified) landscape, and the visual quality objectives (VQOs) of areas proposed for treatments as assigned under the current Forest Plan. Visual quality objectives are a desired level of scenic quality and diversity of natural features based on physiological and sociological characteristics of an area, and refers to the degree of acceptable alterations of the. Management activities such as commercial timber harvest, prescribed burning, and road construction can alter the scenic character of the landscape. There is a potential concern that activities proposed under the action alternatives could adversely affect visual resources to the extent that the visual quality objectives established by the current Forest Plan (1987; PF Doc. CR-002) would not be met.

3.9.1.2. Issue Indicators

Effects to the visual resource will be discussed in general terms; however, the indicator used to measure effects will be whether or not visual quality objectives are achieved. Visual quality Objectives are listed below, along with a brief description of each objective level.

- **Preservation**: In general, human activities are not detectable to the visitor.
- **Retention**: Human activities are not evident to the casual Forest visitor.
- **Partial Retention**: Human activities may be evident, but must remain subordinate to the character of the landscape.
- **Modification**: Human activities may dominate the characteristic of the landscape but must, at the same time, utilize naturally established form, line, color, and texture.
3.9.2. Affected Environment or Existing Conditions

The Beaver Creek Resource Area forms a background to the rural corridor that lies adjacent to Forest Road 456. The scenic quality of the Resource Area is highly influenced by private lands that form the foreground (approximately one-quarter to one-half mile) from this forest road. The private lands have been slightly modified from natural conditions and have the appearance of an agrarian community.

![Figure 59. View of Beaver Creek Resource Area from Forest Road 456 near Dobson Pass.](image)

The Beaver Creek Resource Area is also visible in the background view from locations identified in the Idaho Panhandle National Forest Plan as having a high to average sensitivity and concern for the scenic quality of the area. The Forest Plan has designated U.S. Interstate Highway 90 (I-90) and Forest Highway 9 as corridors of scenic concern (see Table 96). For the lands that can be observed from the points of high visual sensitivity (levels 1 and 2) the Forest Plan assigned visual quality objectives of retention and partial retention. Portions of the resource area not observable from key viewpoints have a visual quality objective of modification or maximum modification. Also within the resource area are several miles of motorized trails. These trails have not been identified in the forest plan as having a high visual sensitivity, but do act as popular summer recreation activity areas.

The Beaver Creek Resource Area is made up of many side drainages and ridgelines that all drain into Beaver Creek. Full observation of the resource area is largely blocked by terrain that interrupts the view. The foreground visual range is limited to slopes adjacent to roads. Much of the Beaver Creek Resource Area is only visible in the middle ground (generally extending from the foreground up to 3 to 5 miles) and background when viewed from most sensitive viewpoints although Forest Road 456.

Due to steep topography in the northern and southern portions of the analysis area, there are limited views of the resource area from any critical viewpoints along I-90 or Forest Highway 9.
Visitors to the Resource Area will notice that the land has received past timber harvest and related road development. When the view changes, it may be readily noticed. It may take some time for residents and other observers to become accustomed to the changes on the landscape.

3.9.2.1. Past Management Activities

The private lands in the foreground have been modified slightly from the natural condition through home construction and vegetative manipulation for agrarian use. Around the turn of the 20th century approximately 85% of the area was affected by wildfire. Within the resource area there has been timber harvest and other management activities since the early 1900’s. Most of the earlier activity no longer appears as openings on the landscape, but approximately 8,000 acres of harvest completed since the 1960s still appears as openings. These are in varying stages of regeneration ranging from almost closed canopy to recently harvested openings (see Figure 60).

Figure 60. Google Earth image of Beaver Creek Resource Area showing past harvest units.
Figure 61. Harvest area adjacent to Road 605 near Kings Pass.

Roads were created in order to access these areas of timber harvest. These roads provided greater access within the resource, but also changed the scenic quality of the landscape. From the late 1970’s to the early 1990’s regeneration harvests (clearcut, shelterwood and seed tree cuts) were the predominant means of timber removal, though sanitation and salvage continued during this period as well. New roads were also created in association with these activities. These activities created grouped scatterings of angular openings, most of which were approximately 30 to 40 acres in size. Many of these past activities fall within areas assigned objectives of *partial retention* and *modification*. 
Figure 62. Evidence of insect and disease activity is found throughout the analysis area.

3.9.2.2. Current Conditions

Visual quality objectives for the majority of the resource area are *Modification* and *Maximum Modification*. The foreground viewing zone from I-90 and Forest Highway 9 have an objective of Retention and the foreground viewing zone from Forest Road 456 is Partial Retention, but none of the activities occur within these viewing zones. The visual landscape within the Beaver Creek visual resource area is primarily classified as common (Class B). Slopes are moderately dissected or rolling. The vegetation cover is generally continuous with interspersed patterns, some natural, some created from past management activity as discussed above. Many of the past regeneration harvest openings are still visible in contrast to adjacent stands when viewed from key viewpoints due to differences in shape and texture; and in some areas these openings tend to dominate other features and patterns of the surrounding landscape. Terrain greatly limits full observation into the proposed treatment units within the resource area and gives it a fairly high capacity for visual absorption of management activities. Many areas of the drainage show areas of insect and disease activity.

3.9.3. Management Framework

General direction for scenery management is provided Forest Service Manual 2380 (Landscape Management). Specific visual resource management direction is provided by the Forest Plan (PF Doc. CR-002) and is described in terms of Visual Quality Objectives (VQO). Forest Plan visual quality objective standards and guidelines were based on the Visual Management System described in Agriculture Handbook Number 462, National Forest Landscape Management, Volume 2 (PF Doc. VIS-R02). The visual management system was revised in 1995, and is now known as the Scenery Management System. The revised guidelines are provided in Agricultural Handbook 701, Landscape Aesthetics: A Handbook for Scenery Management (USDA Forest Service, 1995; PF Doc. VIS-R01).
Visual quality objectives provide measurable standards for scenery management in conjunction with demands for goods and services from the forest. Visual resource management is integral to all management areas and implied in all management goals. The Forest Plan standards relevant to the Beaver Creek visual resources are:

1. Meet adopted visual quality objectives. Exceptions occur in unusual situations: these will be identified through the project planning process involving an interdisciplinary team... Mitigation measures should be developed for areas when visual quality objectives are not met.

2. The visual resource has been evaluated based on visual sensitivity levels assigned to travel routes, use areas and water bodies in and adjacent to the Idaho Panhandle National Forests. Adjustments in the visual quality objective boundaries based on project level analysis will conform to principles in FSM 2380.

3.9.3.1. Geographic Scale of the Analysis

The geographic scope of the scenery analysis for the Beaver Creek Resource Area includes landscapes visible from key locations both within and outside the project area boundary. Key visual points bounding the visual resource area include I-90 to the south; Forest Highway 9 to the north and west and Forest Road 456 that bisects the analysis area. Table 1 lists key travel ways and their sensitivity levels identified in the IPNF 1987 Forest plan that are relevant to the Beaver Creek visual resource analysis (PF Doc. CR-002, p. D-1). The direct and indirect effects analysis focuses on the viewshed within which the proposed activities that occur can be seen from these travel ways, and the extent proposed treatment units affect the Visual Quality Objectives assigned to that piece of ground. The cumulative effects area is similar to that for the direct and indirect effects, except that it takes into account the whole viewshed, as opposed to focusing on the individual units and surrounding area. The temporal scope of the analysis is limited to the 25 to 30 years following harvest activities – the length of time openings created by regeneration harvest are likely to be evident.

Table 96. Sensitive level and visual quality objective for viewpoints/viewing corridors in the Beaver Creek Resource Area.

<table>
<thead>
<tr>
<th>View Point or Viewing Corridor</th>
<th>Sensitivity Level</th>
<th>Foreground (0 – ¼ mi.)</th>
<th>Middleground (¼ mi. – 3 mi.)</th>
<th>Background (3 mi. – 5+ mi.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interstate 90 (I-90)</td>
<td>1</td>
<td>Retention</td>
<td>Part. Retention</td>
<td>Part. Retention</td>
</tr>
<tr>
<td>Forest Highway 9</td>
<td>1</td>
<td>Retention</td>
<td>Part. Retention</td>
<td>Part. Retention</td>
</tr>
<tr>
<td>Forest Road 456</td>
<td>2</td>
<td>Partial Retention</td>
<td>Modification</td>
<td>Maximum Mod.</td>
</tr>
<tr>
<td>Motorized Trails</td>
<td>3</td>
<td>Maximum Mod</td>
<td>Maximum Mod</td>
<td>Maximum Mod</td>
</tr>
</tbody>
</table>

3.9.4. Environmental Consequences

3.9.4.1. Methodology

Although the Visual Management System (PF Doc. VIS-R02) has been replaced by the Scenery Management System (PF Doc. VIS-R01), this analysis uses terminology used in the Forest Plan which was developed and written under the latter. A crosswalk between the two systems is found in Agricultural Handbook 701, Appendix A (PF Doc. VIS-R01). Visual quality objectives are based on the area seen from sensitive viewpoints such as travel corridors, urban areas where the forest background scenery is important and other features where there may be a high visual sensitivity level. These visually sensitive viewpoints are located in the Forest Plan Appendix D...
A variety of tools were used in the visual resource analysis including analyzing VQO maps, field visit and visibility modeling.

Using ArcMap 9.3.1 (ESRI Inc, 1999-2009), GIS shapefiles of prescribed burning, harvest units, and new road construction were overlaid on spatially-rectified visual quality objective maps displaying scenic variety class, distance zones and sensitivity levels, and quality objectives (PF Doc VIS-03; VIS-04) across the analysis area. Original visual quality objective maps were prepared for the current Forest Plan (1987) utilizing the process outlined in the Agriculture Handbook Number 462 (1976; PF Doc. VIS-R02). Units were imported into Google Earth to get a sense of existing landscape patterns such as opening size, texture and color compared to the existing topography. Viewpoints were analyzed using both existing photography and Google Earth (Google Inc. 2012) simulations.

Treatment units and their associated visual quality objectives were evaluated in relation to visually sensitive viewpoints identified in the Forest Plan Appendix D (PF Doc. CR-002, p. D-1), to determine the extent to which proposed activities would likely be seen, and the likelihood that those activities would adversely affect visual quality objectives. Areas identified as having visual quality objectives of “retention” were given specific consideration, since these were the most visually sensitive locations within the resource area. Visual quality objective maps prepared under the Forest Plan are very general in nature. Scenic class and sensitivity level can provide a general understanding; however, the maps can’t always illustrate how visible specific treatments would be from locations of concern, or the extent to which treatments are likely to stand out or blend with existing scenic features.

Initial field reconnaissance was done to further assess the visibly of potential treatments in the context of the current landscape. Points on visual quality objective maps with direct line of site to treatment units were identified. Units were observed from these locations, using unit maps and digital representations from Google Earth (Google Inc. 2012). Many of the units are in the background or middle ground when viewed from key viewpoints, and the specific locations of proposed treatments were difficult to discern on the ground due to the variability of the existing terrain and distance from treatment units. To assist in determining unit visibility, the analysis utilized Google Earth Treatment units for each alternative were imported into Google Earth and draped over the landscape. Units were then viewed from ground-level or “street view” at a variety of representative sensitive locations, including: Interstate 90, various residences, Forest Highway 9 and Forest Road 456. This 3-D modeling gives a different perspective on how visible a given area is from a specific geographic location. A limitation of using Google Earth for determining visibility is that near view screening from adjacent trees cannot be taken into consideration; for instance, if you are on a trail or road, the 3-D imaging cannot place you down amongst the trees, where your view might be obscured by trees and other vegetation in the foreground.

After establishing relative sensitivity of affected areas when viewed from key viewpoints, Agricultural Handbooks 462 and 701 were used as references to determine if proposed activities were likely to modify the landscape to the extent that visual quality objectives could not be met.

3.9.4.2. Spatial and Temporal Context for Effects Analysis

The geographic scope of the scenery analysis for the Beaver Creek Project includes areas visible from key locations both within and outside the project area boundary. Key visual points bounding the visual resource area include Interstate 90 to the south, Forest Highway 9 to the north, and Forest Road 456 which bisects the analysis area from northwest to southeast. Table 96 lists all key viewpoints or viewing corridors and their sensitivity levels identified in the Forest Plan that are relevant to the Beaver Creek project scenic quality analysis.
Direct and indirect effects analysis focuses on the viewshed within which the proposed activities can be seen from these viewpoints, and the extent proposed treatment units affect the visual quality objectives assigned to that piece of ground. The cumulative effects area is similar to that for the direct and indirect effects, except that it takes into account the whole viewshed, as opposed to focusing on the individual units and surrounding area. The temporal scope of the analysis is limited to the 25 - 30 years following harvest activities – the length of time openings created by regeneration harvest are likely to be evident.

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

Past Activities – Several harvest units visible within the analysis area are in various stages of regeneration. There are examples of seed tree harvest, commercial thinning, and pre-commercial thinning. The harvest units are evident, but they do not dominate the existing landscape character from the major travelways in the drainage. Therefore the existing visible units meet and in some cases exceed Forest Plan visual quality objective of modification and maximum modification in the middleground and background views. All of the existing visible harvest units within the analysis area should be regenerated to the point they no longer appear as openings within the next 25-35 years. In addition to timber harvest on Forest Service lands there is also mining, ranching and farming, timber harvest, road building and other development on the private, State and BLM lands within and adjacent to the project area.

Present Activities – There is ongoing development and activities associated with agrarian activities on private land within the analysis area. The Forest Service is currently treating noxious weeds, maintaining roads, and allowing public activities such as dispersed camping and trail use, firewood gathering and completing minor vegetation manipulation for hazard tree removal and utility corridor maintenance.

Foreseeable Activities – Within the next 20 years it is planned to complete under-burning and wildlife improvement activities on 12 acres and 828 acres respectively. It is planned to pre-commercial thin, prune and complete regeneration exams on 6,129 acres. There are also opportunities to complete road and stream improvements within the area. On private land it is expected that mining and harvesting will continue. The activities on Forest Service lands will be minor and all proposed activities should meet or exceed Forest Plan Visual Quality Objectives.

3.9.4.4. Alternative 1 – No Action

3.9.4.4.1. Direct and Indirect Effects of Taking No Action

With no harvest activity planned to occur under Alternative 1 (no-action) there would be no direct or short-term affects to the scenic condition of the area. The openings in forest cover that are visible as a result of past forest management would continue to recover tree growth, and overtime would recover unnatural appearing openings. Processes affecting forest dynamics would continue, including continuing insect and disease related mortality which would appear as individual and groups of dead trees scattered across the landscape. While for some, this may have a negative impact on the scenic quality of the area; these are considered natural processes the Resource area would continue to meet assigned visual quality objectives.

3.9.4.4.2. Cumulative Effects

There would be no change in the scenic quality of the analysis area in Alternative 1 in the short term, but the risk of wildfire would increase with time. The existing openings would continue to
regenerate and within 20 to 35 years would no longer appear as openings. The potential for wildfire would remain. Alternative 1 would not change the landscape character of the geographic area encompassed within the Beaver Creek drainage and its tributaries.

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

This area currently meets the Forest Plan visual quality objectives of Modification and Maximum Modification in the middle and background viewing zones from all identified viewpoints and viewing corridors. Although there are currently harvest units that appear as openings they do not dominate the existing landscape character of the area.

3.9.4.5. Effects Common to Both Action Alternatives

Commercial Thinning – In both Alternative 2 and 3 the activities outlined for commercial thinning will retain enough canopy cover within those harvest units that there would there have minimal effect on the scenic quality of the analysis area and the activity would meet either Modification in the middleground or Maximum Modification in the background views.

Fuels Treatment – Fuel management activities including both landscape burns and fuel breaks will be apparent, but will appear as a natural process on the landscape. Burning within harvest units will have some visual effect depending on the amount of retention vegetation affected. All burning activities should meet the visual quality objectives for the analysis area.

3.9.4.6. Alternative 2

3.9.4.6.1. Direct and Indirect Effects

This analysis is mainly concerned with the landscape that can be observed from viewpoints identified in the Forest Plan. Proposed activities that are blocked from these viewpoints by terrain are considered to be in compliance with visual quality objectives. Proposed management actions that have concern from a scenic resource standpoint are evaluated for how they conform to naturally occurring features that exist or could be created by natural events. Many of the proposed management features have short term visual effects, but will not have long-term scenic effects.

The Beaver Creek Resource Area is located within the middleground and background viewsheds of Forest Road 456, and within the background viewsheds of I-90 and Forest Highway 9. While some of the analysis area is visible from I-90 and Forest Highway 9, there are no proposed units that are visible from these visually sensitive travel corridors due to steep landforms blocking views of the area. Units that are visible or partially visible from the Forest Road 456, which has a moderate visual sensitivity, include portions of the following seed tree (263-acres) and shelterwood units (917-acres) 17A, 27, 30, 31, 32, 33, 39, 38, 55, 56, 61, 65 and 79. Since these units are observed in the middle and background views from the travel corridor they should meet the visual quality objectives of Modification and Maximum Modification. All other units are unseen from Forest Road 456.
Design measures for edge treatment to naturalize the openings can be developed for these units to reduce the visual impact of the harvest activities to the point that they may exceed the Visual Quality Objectives. Use of edge treatment between new and existing openings could also reduce the visual impact of past harvest units. For many of these units only a small portion of the unit is visible from critical viewpoints so no design measures will be required. Units proposed for Improvement Cuts (493-acres) and Commercial Thinning (300-acres) should meet VQO given the percentage of crown coverage retained.

Transportation System – New permanent road construction is limited occurs mostly along the ridge top areas which would not be visible from critical viewpoints or viewing corridors. Temporary road construction will occur throughout the project area, but these roads will not be used after the project is complete so should not have a long term effect on the visual resource from sensitive travel corridors. The roads will be visible from motorized recreation trails in the areas. Reconstruction, storage, and decommissioning of existing roads would have no visual impacts in the long term.

Watershed Improvements – Culvert replacement and gate installation will not have long-term impacts for the visual resource.
3.9.4.6.2. Cumulative Effects

Currently several past harvest units are visible in the northern and central portions of the analysis area and are viewed from Forest Road 456 in the middle and background viewing areas. The units currently visible are in a variety of age classes from almost regenerated to recently harvested. These areas could take from 10 to 35 years to completely regenerate. Additional openings in this proposal will be visible, but still will meet the VQO of Modification and Maximum Modification for the analysis area. This proposal will not significantly impact the condition of the viewshed within the analysis area. Currently the proposed harvest may reduce the visual impact of some units due to feathering of unit edges. There will be more openings visible within the analysis area, but these openings would emulate natural fire patterns within the middle and background viewsheds. Given the aspect and growing history of the area, the openings created by this proposal would no long appear as openings within 25 to 35 years.

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

This alternative would meet the visual quality objectives found in the IPNF Forest Plan (PF Doc. CR-002, Appendix D).
3.9.4.7. Alternative 3

3.9.4.7.1. Direct and Indirect Effects

The amounts of harvesting, watershed improvements and road building are reduced in Alternative 3, so the impact on the visual resource will be less than that outlined in Alternative 2. Alternative 3 proposes to harvest approximately 498 acres using shelterwood harvest and 121 acres of seed tree harvest. This will reduce the visual impact of the proposal and this alternative should meet or exceed Forest Plan standards for Visual Quality Objectives in both middle and background viewing zones.

3.9.4.7.2. Cumulative Effects

Cumulative effects for Alternative 3 will be similar to Alternative 2. Visual impacts will be slightly reduced due to a reduction in the number of units proposed in this alternative.

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

With implementation of the outlined design measures, similar to those in Alternative 2, this alternative would meet the Forest Plan Visual Quality Objectives found in the Scenic Quality section (3.9).

3.9.5. Effects Summary

For Alternatives 2 and 3, the proposed activities will be evident, but will meet the Forest Plan Visual Quality Objectives of Modification and Maximum Modification as observed from Forest Road 456. Activities in both Alternatives will not be visible from more visually sensitive scenic viewpoints found along I-90 and Forest Highway 9. Once the project has been implemented it should be reviewed in the field by the Landscape Architect to determine if it met the Forest Plan Visual Quality Objectives. Of greatest concern will be the visual effects of post-harvest burning on reserve trees within the units. This review will then be documented in the Idaho Panhandle National Forest Monitoring Report.

3.9.6. Visuals References


Cooley, Patrick; Dickerson, Gary; Maffei, Tom; Novak, Lis. 2009. Scenic Resource Mitigation Menu & Design Considerations for Vegetation Treatments. [Unpublished] Missoula, MT: U.S. Department of Agriculture, Forest Service, Northern Region. 8 p.; PF Doc. VIS-R03
3.10. Financial Analysis

3.10.1. Introduction

The management of natural resources on the Idaho Panhandle National Forest (IPNF) has the potential to affect local economies. People and economies are an important part of the ecosystem. Use of resources and recreational visitation to the Forest generate employment and income in the surrounding communities and counties and generate revenues that are returned to the federal treasury or are used to fund additional on the ground activities to accomplish resource management objectives.

This analysis delineates the affected area and outlines methods and results of analyzing the economic effects of the project, including the sale feasibility, project feasibility, financial efficiency, and economic impacts. Sale feasibility, project feasibility and financial efficiency relate to the costs and revenues of doing the action. Economic impacts relate to how the action affects the local economy in the surrounding area.

3.10.1.1. Overview of Issues Addressed

The Economic analysis is completed to determine the costs and revenues associated with the project and the economic impact to the local community. The costs include those related to the amount of timber harvested in each proposal as well as the additional restoration activities to be accomplished as funds become available. The value generated by the sale of the timber is measured against the costs of timber sale activities and other project-related costs. This analysis is done to inform the decision maker of the economic feasibility of each alternative.

3.10.1.2. Issue Indicators

The indicators for this analysis include sale feasibility, project feasibility, financial efficiency, and economic impact. Sale feasibility indicates whether or not the timber sale portion of the project is likely to attract bids. Project feasibility outlines the anticipated costs and revenues that are part of Forest Service monetary transactions (and used in the financial efficiency analysis). Financial efficiency is assessed using Present Net Value (PNV) which takes into account the timing of the activities over the course of the project. Financial efficiency provides information relevant to the future financial position of the Coeur d’Alene River Ranger District’s timber program if the project is implemented. The economic impact analysis estimates the potential job and labor income impacts to the local area.

3.10.2. Affected Environment

The combination of small towns and rural settings, larger towns such as Coeur d’Alene, Idaho, and the urban area of Spokane, Washington create a diverse social environment for the geographical region around the Idaho Panhandle National Forest. Local residents pursue a wide variety of life-styles, but many share a common theme, an orientation to the outdoors and natural resources, especially within the smaller communities. This is evident in both vocational and recreational pursuits including employment in logging and milling operations, outfitter and guide businesses, hiking, hunting, fishing, camping and many other recreational activities.

Timber, tourism, and agricultural industries are important to the economy of local areas. Despite the common concern for, and dependence on, natural resources within the local communities, social attitudes vary widely with respect to their management. Local residents hold a broad
spectrum of perspectives and preferences ranging from complete preservation to maximum development and utilization of natural resources.

Socioeconomic measures used to describe the affected environment were obtained from the Headwater Economics’ Economic Profile System – Human Dimensions Toolkit (EPS-HDT 2011), which compiles and summarizes primary population and economic data from a variety of government sources into a report. Key measures used in this report include land ownership, population, employment, income, and wildland urban interface development.

Timber management activities within the project area have the potential to impact the economic conditions of local communities and counties. To estimate the potential effect on jobs and income, a zone of influence (or impact area) was delineated. Counties were selected based on commuting data suggesting a functioning economy and where the timber is likely to be processed (log flows). Recent data on log flows from the IPNF was provided by the University of Montana’s Bureau of Business and Economic Research. The zone of influence for this project is comprised of Shoshone and Kootenai counties in Idaho.

A comprehensive socio-economic analysis and social assessment was completed during the revision of the forest plan. See the social and economics section of Chapter 2 of the Analysis of the Management Situation for the revised Forest Plan (March 2003; PF. FIN-02) and the Social Assessment for the Idaho Panhandle National Forests (Parker et al, 2002; PF FIN-01) for a description of the employment, income and social composition of the counties comprising the analysis area and the impact on each county from management of the IPNF.

3.10.2.1. Land Ownership

The vast majority of the land in the two-county impact area is managed by various public agencies. Shoshone County has the largest share of Federal public lands with more than 1.2 million acres (76.8 percent) under federal management. By comparison, Kootenai County has 259,232 acres of federal public lands (30.8 percent). Only 28.8 percent of the land area of the United States is publicly owned (figure 1). In Shoshone County, the US Forest Service holds 73 percent of all of the federal lands in the county.

![Figure 65. Land Ownership, by percent of land area (source: U.S. Geological Survey, Gap Analysis Program. 2012).](image-url)
3.10.2.2. Population, Employment, and Income

3.10.2.2.1. Population and Demographics

From 1970 to 2011, the population of the Kootenai - Shoshone County impact area grew 178 percent. However, all of this growth was associated with Kootenai County. Kootenai County’s population increased rather steadily during this period while the population of Shoshone County decreased by 36 percent. In the time period 2000-2011 Kootenai County grew 26 percent (28,492 new residents). In this same time period Shoshone County shrunk by 7 percent with an attrition of 922 residents (Figure 66). The majority of the people in both counties are between the age of 45-64, and all residents are overwhelmingly white (96 percent).

Figure 66. Change in population, 2000-2011 (source: US Department of Commerce 2012).

3.10.2.2.2. Employment and Economic Well Being

Employment in the two-county impact area from 1970 to 2011 increased, but only in Kootenai County (491 percent). Overall employment decreased in Shoshone County by 28 percent. The total number of people involved in wage and salary employment (people who work for someone else) and proprietors (the self-employed) has continued to increase since 1970 in both counties, but this is disproportionately skewed by the large increase in jobs in Kootenai County versus the overall loss of jobs in Shoshone County.

In 2011 the three industry sectors with the largest number of jobs were Retail Trade with 11,729 jobs (up 17 percent since 2001), Government with 11,526 jobs (up 15 percent since 2001), and Health Care and Social Assistance with 7,706 jobs (up 39 percent since 2001). From 2001 to 2011, the three industry sectors that added the most new jobs were Real Estate & Rental & Leasing (2,264 new jobs), Health Care and Social Assistance (2,176 new jobs), and Retail Trade (1,629 new jobs). The biggest losses in jobs from 2001-2011 were in Information (-409 jobs), and Forestry, Fishing and related activities (-184 jobs).

The Headwater Economics’ Economic Profile System – Human Dimensions Toolkit (EPS-HDT 2013) describes commodity sectors as industrial sectors that have the potential to use Federal public lands for the extraction of commodities. Commodity sectors include timber, mining (including oil, gas, and coal), and agriculture. In 2010, mining was the largest component of commodity sector employment in Shoshone County, accounting for 17.2 percent of total jobs. However, there was a large difference between the two counties in the impact area in terms of reliance on commodity sectors. In 2010, nearly 20 percent of private employment in Shoshone County was in commodity sectors, while commodity sectors only accounted for 3.5 percent of
Kootenai County’s private employment. In comparison, commodity sectors accounted for 2.7 percent of the Nation’s jobs.

Currently, the service sector accounts for the majority of jobs created in the U.S. The service sector includes a wide variety of jobs, ranging from lower-wage occupations such as restaurant workers and retail store clerks to high-wage, high skilled occupations such as doctors and software developers. Some service sectors, such as utilities and transportation, are associated with goods-producing sectors. From 1970 to 2000, employment in services in the Kootenai-Shoshone County impact area increased by 16,967 jobs, while employment in non-services increased by 4,884 jobs. From 2001 to 2011, employment in service-related sectors increased by 12,462 jobs, while employment in non-service related sectors increased by only 351 jobs.

In 2011, the unemployment rate in the impact area was 10.6 percent. Shoshone County had the highest unemployment rate (13.7 percent), and Kootenai County had the lowest (10.6 percent), as compared to the national average of 8.9 percent. Since 1990, the annual unemployment rate ranged from a low of 3.4 percent in 2007 to a high of 10.7 percent in 2010.

3.10.2.2.3. Income

Labor income and total personal income are often used as proxies for standard of living. Total personal income is comprised of labor earnings (employee compensation and proprietor income) and non-labor income. From 1970 to 2011, total personal income in Kootenai and Shoshone County grew, by 551 percent for Kootenai County and 4.4 percent for Shoshone County.

Average earnings are often used as an indicator of the quality of local employment, in terms of high-wage jobs. In 2011, average earnings per job in the U.S. were $54,897. In 2011, the average earnings for Shoshone County were $40,647, and for Kootenai County were $37,000, both below the national average. In 2011 mining jobs paid the highest annual average wages ($91,535) and leisure and hospitality jobs paid the lowest ($15,324). Manufacturing, including forest products, paid $39,487.

3.10.2.2.4. Wildland Urban Interface (WUI) Development

As defined in the National Fire Plan, the wildland urban interface includes areas “where structures and other human development meet or intermingle with undeveloped wildland.” Other federal documents define the wildland urban interface as areas “where humans and their development meet or intermix with wildland fuel” or “the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel." [Excerpted from Economic Profile System – Human Dimensions Toolkit]. Headwaters Economics, the developers of The Headwater Economics’ Economic Profile System – Human Dimensions Toolkit, define the wildland urban interface as private forestlands that are within 500 meters of public forestlands. Land (public or private) was classified as forestland based upon land cover imagery from the National Land Cover Dataset (Vogelmann et al. 2001) using the classifications of evergreen needleleaf forest, evergreen broadleaf forest, deciduous needleleaf forest, deciduous broadleaf forest, mixed forests, and closed shrublands. Further information on how the wildland urban interface area in Economic Profile System – Human Dimensions Toolkit was calculated can be found in the report, “A Profile of Development and the Wildland Urban Interface” found in the project file (PF Doc. FIN-12).

Using this definition, in 2010 Kootenai County had developed 23 percent of its wildland urban interface, whereas Shoshone County had developed 5.3 percent of their wildland urban interface, as compared to the national average of 16.3 percent. Development of homes adjacent to fire prone public lands can present management challenges to land management agencies such as the
Forest Service. As a percent of total number of homes in the County, Shoshone has 44 percent of the county’s homes in the wildland urban interface. While Kootenai County has a larger total acreage of the wildland urban interface developed, the total number of homes in the wildland urban interface is only 13.7 percent. For both counties, a little less than 20 percent of the homes built in the wildland urban interface are second homes.

3.10.3. Management Framework

The preparation of NEPA documents is guided by the Council on Environmental Quality (CEQ) regulations for implementing NEPA [40 CFR 1500-1508]. NEPA requires that consequences to the human environment be analyzed and disclosed, based on issues. NEPA does not require a monetary benefit-cost analysis. If an agency prepares an economic efficiency analysis, then one must be prepared and displayed for all alternatives [40 CFR 1502.23]. The preparation of NEPA documents is also guided by CEQ regulations for implementing NEPA [40 CFR 1500-1508].

The development of timber sale programs and individual timber sales is guided by agency direction found in Forest Service Manual (FSM) 2430. Forest Service Handbook (FSH) 2409.18 (PF FIN-03) guides the financial and, if applicable, economic efficiency analysis for timber sale.

Many of the costs and benefits associated with a project are not quantifiable in financial terms. For example, the benefit to wildlife from habitat improvement from a project is not quantifiable in financial terms. These costs and benefits are described qualitatively in the indicated resource sections of this document.

Executive Order 12898, issued in 1994 orders Federal Agencies to identify and address any adverse human health and environmental effects of agency programs that disproportionately impact minority and low-income populations.

The Civil Rights Act of 1964 provides for nondiscrimination in voting, public accommodations, public facilities, public education, federally assisted programs, and equal employment opportunity. Title VI of the Act, Nondiscrimination in Federally Assisted Programs, as amended (42 U.S. C. 2000d through 2000d-6) prohibits discrimination based on race, color, or national origin.

Executive Order 1298, issued in 1994 orders Federal Agencies to identify and address any adverse human health and environmental effects of agency actions that may disproportionately impact minority and low-income populations.

Additionally, the Idaho Panhandle Forest Plan includes the following forest-wide goals and standards related to the effects of a timber sale on community stability:

- Management activities should contribute to local employment, income and lifestyles. (IPNF Forest Plan, II-11, CR-002).
3.10.4. Environmental Consequences

3.10.4.1. Methodology

The economic measures used for this analysis are sale feasibility, project feasibility, financial efficiency, and economic impacts. These measures, including methodologies, are described below.

3.10.4.1.1. Sale Feasibility

Sale feasibility is used to determine if a project is feasible, that is, will it sell, given current market conditions. The determination of feasibility relies on a residual value (stumpage = revenues - costs) feasibility analysis that uses local delivered log prices and stump to mill costs to determine if a project is feasible. The appraised stumpage rate from this analysis is compared to the base rate (revenues considered essential to cover regeneration plus minimum return to the Federal treasury). The timber portion of the project is considered to be feasible if the appraised stumpage rate exceeds the base rates. If the feasibility analysis indicates that the project is not feasible, the project may need to be modified. Infeasibility indicates an increased risk that the project may not attract bids and may not be implemented.

3.10.4.1.2. Project Feasibility

Project feasibility deals with the issue of whether or not a project is financially feasible. Historically, since many of our projects had a substantial commercial timber component, project feasibility dealt mainly with “sale feasibility”, or the likelihood that the timber would sell. However, since many of our projects today often involve restoration work, which may have a very small commercial timber component or none at all, the notion of feasibility needs to be extended. Project feasibility looks at the feasibility of a project from a budgetary standpoint; that is, how much is the project going to cost, for all of the planned activities. If the project is going to be implemented through a stewardship contract, estimates of potential revenue from timber removals and the costs of mandatory activities provides information on whether or not the value of the timber removed will likely be enough to cover the costs of the mandatory stewardship activities.

3.10.4.1.3. Financial Efficiency

Financial efficiency provides information relevant to the future financial position of the program if the project is implemented. Financial efficiency considers anticipated costs and revenues that are part of Forest Service monetary transactions. Present net value (PNV) is used as an indicator of financial efficiency and presents one tool to be used in conjunction with many other factors in the decision-making process. Present net value combines benefits and costs that occur at different times and discounts them into an amount that is equivalent to all economic activity in a single year. A positive present net value indicates that the alternative is financially efficient. Financial efficiency analysis is not intended to be a comprehensive analysis that incorporates monetary expressions of all known market and non-market benefits and costs. Many of the values associated with natural resource management are best handled apart from, but in conjunction with, a more limited financial efficiency framework. These non-market benefits and costs associated with the project are discussed throughout the various resource sections of this document. Management of the forest is expected to yield positive benefits, but not necessarily financial benefits.
Costs for restoration activities are based on recent experienced costs and professional estimates. Non-harvest related costs are included in the present net value analysis, but they are not included in appraised timber value.

3.10.4.1.4. Economic Impacts

Economic impacts are used to evaluate potential direct, indirect, and cumulative effects on the economy. Economic impacts are estimated using input-output analysis. Input-output analysis is a means of examining relationships within an economy, both between businesses and between businesses and final consumers. It captures all monetary market transactions for consumption in a given time period. The resulting mathematical representation allows one to examine the effect of a change in one or several economic activities on an entire economy, all else constant. This examination is called impact analysis. The IMPLAN modeling system (MIG 2003) allows the user to build regional economic models of one or more counties for a particular year. The model for this analysis used the 2010 IMPLAN data. IMPLAN translates changes in final demand for goods and services into resulting changes in economic effects, such as labor income and employment of the affected area’s economy.

The economic impact effects are measured by estimating the direct jobs and labor income generated by (1) the processing of the timber volume from the project, and (2) Forest Service expenditures for contracted restoration activities included as part of the proposed treatments. The direct employment and labor income benefit employees and their families and, therefore, directly affect the local economy. Additional indirect and induced multiplier effects (ripple effects) are generated by the direct activities. Indirect effects are felt by the producers of materials used by the directly affected industries. Induced effects occur when employees of the directly and indirectly affected industries spend the wages they receive. Together the direct and multiplier effects comprise the total economic impacts to the local economy.

Data used to estimate the direct effects from the timber harvest and processing were provided by the University of Montana’s Bureau of Business and Economic Research (Morgan et al. 2007). This national data is broken into multi-state regions and is considered more accurate than that which is available from IMPLAN. The Northern Rockies Bureau of Business and Economic Research Region (Montana and Idaho) is used for this analysis. The Bureau of Business and Economic Research data represents the results of mill censuses that correlate production, employment, and labor income. The economic impact area for this analysis consists of Kootenai and Shoshone County, Idaho.

Potential limitations of these estimates are the time lag in IMPLAN data and the data intensive nature of the input-output model. Significant changes in economic sectors since the latest data for IMPLAN have been adjusted using information from the University of Montana’s Bureau of Business and Economic Research.

3.10.4.2. Spatial and Temporal Context for Effects Analysis

The analysis area for the project feasibility analysis is the Beaver Creek Resource Area. It is approximately 28,200 acres in size and is located north of Wallace, Idaho in Shoshone County. The temporal scope of this analysis is the duration of the proposed activities. The project is expected to be implemented over a 5-10 year period, with most harvest activity occurring within the first 5 years.

Timber management activities within the project area have the potential to impact the economic conditions of local communities and counties. To estimate the potential effect on jobs and income, a zone of influence (or economic impact area) was delineated. This analysis uses
Kootenai and Shoshone Counties as appropriate counties to include in the economic impact analysis area.

3.10.4.3. Alternative 1 – No Action

3.10.4.3.1. Direct and Indirect Effects of Taking No Action

The no-action alternative would not harvest timber, implement best management practices on haul routes, return fire to the landscape or take other restorative actions and, therefore, incurs no financial costs. It would also produce no revenue and have no effects on jobs or income.

Indirectly, as stated in Chapter 3 Fire/Fuels analysis, a lack of fuel-reduction activities under Alternative 1 would heighten fire hazards to forest homes as people continue to develop and settle lands along the urban-wildland interface. The loss of homes and human life can escalate as the surrounding forest advances in succession because of the buildup of canopy and surface fuels. Moreover, multi-layered canopies and dense crowns would increase the chance of crown fires that are difficult to control. This would increase the cost of fighting to control the fires, as well as the cost to homeowners if property is lost.

3.10.4.3.2. Cumulative Effects

Under Alternative 1, there would be little cumulative effect on economics. Overall, there may be an indirect future effect of increased costs of fire suppression in the area. Fixed costs, such as road maintenance costs would continue to be incurred.

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

Forest-wide goals, objectives and standards for economics are not specifically addressed in the 1987 Forest Plan. This issue was addressed indirectly in the discussion of community stability. Chapter II of the Forest Plan states, “management activities will continue to contribute to local employment, income, and lifestyles”. The Forest will be managed to contribute to the increasing demand for recreation and resource protection while at the same time continuing to provide traditional employment opportunities in the wood products industry” (Forest Plan, p. II-11CR-002). Alternative 1 does not meet this Forest Plan direction.

3.10.4.4. Alternatives 2 and 3

3.10.4.4.1. Environmental Consequences

Sale Feasibility

The estimation of sale feasibility was based on the Region 1 sale feasibility model, which is a residual value timber appraisal approach that takes into account logging system, timber species and quality, volume removed per acre, lumber market trends, costs for slash treatment, and the cost of specified roads, temporary roads and road maintenance. The appraised stumpage rate from the feasibility analysis was compared to base rates (revenues considered essential to cover regeneration plus minimum return to the federal treasury), which varies by alternative. The base rate is $26.53 per CCF (hundreds of cubic feet) for Alternative 2 and $23.87/CCF for Alternative 3. The appraised stumpage rate and base rates for each alternative are displayed in Table 97. For each of the action alternatives, the appraised stumpage rate is greater than the base rate, indicating that each of the alternatives is feasible (highly likely to sell). Alternative 3 has the
highest appraised stumpage rate ($50.22/CCF) and, therefore, would likely generate the most revenue.

Table 97. Project Feasibility and Financial Efficiency Summary (2012 dollars)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Alternative 1 (No Action)</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timber harvest (acres)</td>
<td>0</td>
<td>1,973</td>
<td>1,661</td>
</tr>
<tr>
<td>Timber volume (CCF)</td>
<td>0</td>
<td>73,329</td>
<td>66,330</td>
</tr>
<tr>
<td>Base rates ($/CCF)</td>
<td>$0</td>
<td>$26.53</td>
<td>$23.87</td>
</tr>
<tr>
<td>Appraised stumpage rate ($/CCF)</td>
<td>$0</td>
<td>$40.48</td>
<td>$50.22</td>
</tr>
<tr>
<td>Predicted high bid ($/CCF)</td>
<td>$0</td>
<td>$59.69</td>
<td>$69.43</td>
</tr>
<tr>
<td>Total revenue (thousands of $)</td>
<td>$0</td>
<td>$4,377</td>
<td>$4,605</td>
</tr>
<tr>
<td>Timber Harvest &amp; Required Design Criteria - PNV (thousands of $)</td>
<td>$0</td>
<td>$1,566</td>
<td>$2,070</td>
</tr>
<tr>
<td>Timber Harvest &amp; All Other Planned Non-timber Activities - PNV (thousands of $)</td>
<td>$0</td>
<td>$792</td>
<td>$848</td>
</tr>
</tbody>
</table>

**Project Feasibility**

The table below outlines estimated financial costs associated with all of the planned project activities. Planning (NEPA) costs were not included since they are sunk costs at the point of alternative selection. The costs associated with Alternative 3 are highest due to the larger amount of restoration activities such as road decommissioning and fish barriers. However, Alternative 3 will also likely generate more revenue, as seen in the table below.

**Table 98. Activity expenditures (not included in appraisal), by alternative.**

<table>
<thead>
<tr>
<th>Planned Activities</th>
<th>Alt. 1 Total Cost</th>
<th>Alt. 2 Total Cost</th>
<th>Alt. 3 Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road decommissioning (non-haul routes)</td>
<td>$0</td>
<td>$110,000</td>
<td>$360,000</td>
</tr>
<tr>
<td>Gate installation</td>
<td>$0</td>
<td>$4,000</td>
<td>$0</td>
</tr>
<tr>
<td>KV site prep burning</td>
<td>$0</td>
<td>$389,400</td>
<td>$323,070</td>
</tr>
<tr>
<td>Regeneration planting</td>
<td>$0</td>
<td>$702,300</td>
<td>$566,340</td>
</tr>
<tr>
<td>Regeneration exams</td>
<td>$0</td>
<td>$35,115</td>
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</tr>
<tr>
<td>Regeneration animal damage control</td>
<td>$0</td>
<td>$10,200</td>
<td>$8,075</td>
</tr>
<tr>
<td>Fireline/fuel break construction (manual; not connected to harvest)</td>
<td>$0</td>
<td>$12,000</td>
<td>$12,000</td>
</tr>
<tr>
<td>Fish barriers</td>
<td>$0</td>
<td>$600,000</td>
<td>$900,000</td>
</tr>
<tr>
<td>Prescribed fire in non-commercial areas</td>
<td>$0</td>
<td>$208,000</td>
<td>$208,000</td>
</tr>
<tr>
<td>Sale preparation</td>
<td>$0</td>
<td>$989,942</td>
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</tr>
<tr>
<td>Sale administration</td>
<td>$0</td>
<td>$329,981</td>
<td>$298,485</td>
</tr>
<tr>
<td>Total costs</td>
<td>$0</td>
<td>$3,390,937</td>
<td>$3,599,742</td>
</tr>
</tbody>
</table>
Financial Efficiency

The financial efficiency analysis is specific to the timber harvest and ecosystem management activities associated with the alternatives (as directed in Forest Service Manual 2400-Timber Management and guidance found in the Forest Service Handbook 2409.18). Costs for sale preparation, sale administration, regeneration, and ecosystem restoration are included. All costs, timing, and amounts were developed by the specialists on the project’s interdisciplinary team.

The expected revenue is the corresponding predicted high bid (Table 1) from the sale feasibility analysis times the amount of timber harvested. The predicted high bid is used for the expected revenue (rather than the appraised stumpage rate) since the predicted high bid is the best estimate of the high bid resulting from the timber sale auction. The actual timber value will depend on the market when the timber is sold and may be higher or lower than the predicted high bid. Present Net Value was calculated using a 4 percent discount rate over the lifespan of the project. For more information on the values or costs, see the project file

This analysis is not intended to be a comprehensive benefit-cost or present net value analysis that incorporates a monetary expression of all known market and non-market benefits and costs that is generally used when economic efficiency is the sole or primary criterion upon which a decision is made. Many of the values and costs associated with natural resource management are best handled apart from, but in conjunction with, a more limited benefit-cost framework. Therefore, they are not described in financial or economic terms for this project, but rather are discussed in the various resource sections of this analysis. For instance, changes in fire risk are described in terms of changes in fire behavior, while wildlife resource changes are described in terms of changes to habitat conditions.

Table 97 summarizes sale feasibility and financial efficiency, including the base rate, stumpage rate, predicted high bid, total revenue, and two present net value calculations for each alternative. One present net value calculation indicates the financial efficiency of the timber sale, including all costs and revenues associated with the timber harvest and required design criteria. A second present net value calculation includes all costs for the proposed action, including other restoration activities disclosed in the NEPA but not required for the timber sale to occur.

Table 97 indicates that all alternatives are financially efficient for both the timber harvest and required design criteria, as well as for all activities, as indicated by the positive present net value for all alternatives. Alternative 3 has the highest present net value, for timber related activities only at $2.1 million. For all project activities, the present net value for Alternative 3 is also higher at $848 thousand. Alternative 2 has the lowest present net value, with a present net value of approximately $1.6 million for the timber-related activities and $792 thousand for all activities.

When evaluating trade-offs, the use of efficiency measures is one tool used by the decision maker in making the decision. Many things cannot be quantified, such as effects on wildlife, impacts on local economies, and restoration of watersheds and vegetation. The decision maker takes many factors into account in making the decision.

Economic Impact Effects

The analysis calculated the jobs and labor income associated with the processing of the timber products harvested and the other planned restoration activities. Timber products harvested from the proposed project and the non-timber activities would have direct, indirect, and induced effects on local jobs and labor income. In order to estimate jobs and labor income associated with timber harvest, the timber harvest levels were proportionally broken out by product type.
(Table 99). In order to estimate jobs and labor income associated with reforestation and restoration activities, expenditures for these activities were developed by the resource specialists. Only the expenditures associated with the contracted activities are included in the impact analysis.

Table 99. Proportion of timber harvest by product type.

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Proposed Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sawmills</td>
<td>90</td>
</tr>
<tr>
<td>Log Homes</td>
<td>0</td>
</tr>
<tr>
<td>Post and Poles</td>
<td>0</td>
</tr>
<tr>
<td>Pulp</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 100 displays the direct, indirect and induced, and total estimates for employment (part and full-time) and labor income that may be attributed to each alternative. A job (as defined in IMPLAN) is an annual average of monthly jobs. Thus, one job lasting 12 months = two jobs lasting six months each = three jobs lasting four months each. Each of those examples would appear as one job. That one job lasting 12 months can be either full-time or part-time; but it does last for 12 months. When jobs are counted this way, one cannot tell from the data the number of hours worked or the proportion that are full or part-time or anything about seasonality; only that they are yearlong. These jobs are different than full-time equivalent (FTE) jobs. However, they can be converted to average full-time equivalent jobs by using industry-specific full-time equivalent to employment ratios (the number of full-time equivalent jobs in an industry divided by total employment in the industry). These ratios are all less than one because Employment contains part-time jobs (so there are more jobs than there are full-time equivalents).

Estimates of average year-long part-time and full-time jobs shown in the following table are heavily dependent upon the implementation period of the project. The estimates shown reflect the average over an estimated implementation time of 10 years. If the actual implementation period is shorter than this, more jobs would be supported over a shorter period of time. Conversely, if the implementation period is expanded, fewer jobs would be supported annually but for a longer period of time. Also, within the implementation period of a project, numbers of jobs supported may or may not be distributed evenly over time depending upon the nature of the project.
### Table 100. Economic impacts (employment and labor income), total and annual ($2010).

<table>
<thead>
<tr>
<th>Non-timber harvest activities</th>
<th>Alt. 1 (No Action)</th>
<th>Alt. 2 Total</th>
<th>Alt. 2 Annual</th>
<th>Alt. 3 Total</th>
<th>Alt. 3 Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part- and full-time jobs contributed(^1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct</td>
<td>0</td>
<td>39</td>
<td>6</td>
<td>40</td>
<td>6</td>
</tr>
<tr>
<td>Indirect and induced</td>
<td>0</td>
<td>14</td>
<td>2</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>53</td>
<td>8</td>
<td>55</td>
<td>8</td>
</tr>
<tr>
<td>Labor income contributed ($M2010)(^2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct</td>
<td>$0</td>
<td>$1,695</td>
<td>$242</td>
<td>$4,748</td>
<td>$250</td>
</tr>
<tr>
<td>Indirect and induced</td>
<td>$0</td>
<td>$438</td>
<td>$65</td>
<td>$458</td>
<td>$65</td>
</tr>
<tr>
<td>Total</td>
<td>$0</td>
<td>$2,133</td>
<td>$305</td>
<td>$2,206</td>
<td>$315</td>
</tr>
</tbody>
</table>

| Timber harvest activities     |                     |              |               |              |              |
| Part- and full-time jobs contributed\(^1\) |                     |              |               |              |              |
| Direct                        | 0                  | 208          | 52            | 188          | 47           |
| Indirect and induced          | 0                  | 236          | 59            | 216          | 53           |
| Total                         | 0                  | 443          | 111           | 402          | 100          |
| Labor income contributed ($M2010)\(^2\) |                     |              |               |              |              |
| Direct                        | $0                 | $10,533      | $2,633        | $9,528       | $2,382       |
| Indirect and induced          | $0                 | $11,020      | $2,755        | $9,968       | $2,492       |
| Total                         | $0                 | $21,553      | $4,388        | $19,496      | $4,874       |

| All activities                |                     |              |               |              |              |
| Part- and full-time jobs contributed\(^1\) |                     |              |               |              |              |
| Direct                        | 0                  | 247          | 57            | 228          | 53           |
| Indirect and induced          | 0                  | 249          | 61            | 228          | 55           |
| Total                         | 0                  | 496          | 118           | 455          | 108          |
| Labor income contributed ($M2010)\(^2\) |                     |              |               |              |              |
| Direct                        | $0                 | $12,228      | $2,875        | $11,276      | $2,632       |
| Indirect and induced          | $0                 | $11,458      | $2,818        | $10,426      | $2,557       |
| Total                         | $0                 | $23,686      | $5,693        | $21,702      | $5,189       |

\(^1\) Employment is the total full- and part-time wage, salaried, and self-employed jobs in the region.

\(^2\) Labor income includes the wages, salaries and benefits of workers who are paid by employees and income paid to proprietors.

Alternative 3 would contribute approximately 228 direct and 455 total jobs and $21.7 million in total labor income over the life of the project. On an annual basis, this would amount to approximately 108 jobs over the life of the project and about $5.2 million annually in total labor income. Approximately 402 jobs and $19.5 million of the total would be associated with the timber harvest activities, with the rest associated with non-timber activities.

Alternative 2 would result in more total jobs (247 direct and 496 total jobs) and more labor income ($23.7 million over the life of the project). On an annual basis, this would amount to approximately 118 jobs over the life of the project and about $5.7 million annually in labor income. Approximately 443 jobs and $21.5 million of the total would be associated with the timber harvest activities, with the rest associated with non-timber activities. The No-Action Alternative maintains no jobs nor income because there are no activities associated with this alternative.
3.10.4.4.2. **Effects Common to Both Action Alternatives**

**Cumulative Effects**

Many factors influence and affect the local economies, including changes to industry technologies, economic growth, international trade, and the economic diversity and dependency of the counties. This analysis focuses on the cumulative impacts of proposed activities. Past, ongoing and reasonably foreseeable activities on National Forest System and other lands within the project area (Chapter 2, Section 2.10 and Appendix A) would not have an effect on the economics issues for these alternatives because they would not come as a direct result of the proposed project. The financial aspect of the project is not expected to add to any existing cumulative effect. However, the jobs and income associated with the action alternatives may bring the local economy some increased relative stability during the life of the project.

Many of the costs and benefits associated with a project are not quantifiable. For example, the benefit to wildlife from habitat improvement or the cost associated with the degradation of visual quality from a project is not quantifiable. These costs and benefits may be described qualitatively, in the individual resource sections of this document. Title 40 Code of Federal Regulations for NEPA (CFR 1502.23) indicates “For purposes of complying with the Act, the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are qualitative considerations.” Management of the forest is expected to yield positive benefits, but not necessarily financial benefits.

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

Forest-wide goals, objectives and standards for finances are not specifically addressed in the 1987 Forest Plan. This issue was addressed indirectly in the discussion of community stability. Chapter II of the Forest Plan states, “management activities will continue to contribute to local employment, income, and lifestyles”. The Forest will be managed to contribute to the increasing demand for recreation and resource protection while at the same time continuing to provide traditional employment opportunities in the wood products industry.” (Forest Plan, p. II-11, CR-002) Alternatives 2 and 3 would meet this direction.

Executive Order 12898 requires that all federal actions consider the potential of disproportionate effects of projects on minority and low-income populations in the local area. No disproportionate impacts to minority or low-income populations were identified during scoping or during any other portion of public involvement portion of this analysis.
3.10.4.5. Effects Summary

As shown in the table below, both alternatives would generate funds (positive present net value) in both circumstances (whether the entire project is implemented or just the required portions for the timber harvest). Alternative 2 would generate less overall funds than Alternative 3.

Both alternatives would also generate jobs. Alternative 2 would generate 41 more jobs than Alternative 3. Overall, the largest number of jobs in both alternatives would come from the activities related to the timber sale, but more non-timber related jobs would be generated by Alternative 3 than by Alternative 2.

Table 101. Project feasibility and financial efficiency summary (2012 dollars).

<table>
<thead>
<tr>
<th>Measure</th>
<th>Alternative 1 (No Action)</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timber harvest (acres)</td>
<td>0</td>
<td>1,973</td>
<td>1,661</td>
</tr>
<tr>
<td>Timber volume (CCF)</td>
<td>0</td>
<td>73,329</td>
<td>66,330</td>
</tr>
<tr>
<td>Base rates ($/CCF)</td>
<td>$0</td>
<td>$26.53</td>
<td>$23.87</td>
</tr>
<tr>
<td>Appraised stumpage rate ($/CCF)</td>
<td>$0</td>
<td>$40.48</td>
<td>$50.22</td>
</tr>
<tr>
<td>Predicted high bid ($/CCF)</td>
<td>$0</td>
<td>$59.69</td>
<td>$69.43</td>
</tr>
<tr>
<td>Total revenue (thousands of $)</td>
<td>$0</td>
<td>$4,377</td>
<td>$4,605</td>
</tr>
<tr>
<td>Timber Harvest &amp; Required Design Criteria - PNV (thousands of $)</td>
<td>$0</td>
<td>$1,566</td>
<td>$2,070</td>
</tr>
<tr>
<td>Timber Harvest &amp; All Other Planned Non-timber Activities - PNV (thousands of $)</td>
<td>$0</td>
<td>$792</td>
<td>$848</td>
</tr>
</tbody>
</table>

3.10.5. Financial References


USDA Forest Service. 2003. Analysis of the Management Situation for the Revised Forest Plan. PF DOC. FIN-02


4. Chapter 4 - Required Disclosures

4.1. Short-term Uses and Long-term Productivity

NEPA requires consideration of “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR 1502.16). As declared by the Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

An evaluation of the relationship between the local short-term uses of the human environment and the maintenance and enhancement of long-term productivity discloses the trade-offs between short-term adverse impacts and long-term benefits of the proposed project. Short-term impacts, disruptions, and uses of the local environment may be worthwhile if there are long-term benefits to the environment resulting from the actions. The intensity and duration of the effects described in this EIS are dependent on the alternative selected and the activities that are associated with that alternative.

All alternatives would come under the mandate of the Multiple Use and Sustained Yield Act of 1960. This act requires the Forest Service to manage National Forest System lands for multiple uses, including timber, recreation, fish, wildlife, and watershed, ensuring that these resources are available for future generations. There may be short-term impacts to these resources (i.e. removal of timber) that will not affect these resources in the long term (e.g., trees can be re-established if the land productivity is not impaired).

Maintaining the productivity of the Beaver Creek area is the goal of this project and both action alternatives aim to protect the long-term productivity of the resource area. The No-Action Alternative has the potential to negatively impact long-term productivity in the resource area.

Discussion of the impacts both short and long term are documented in more detail in the environmental consequences section of each resource report in Chapter 3 and in the Specialist Reports in the project file. Most of the impacts are minimized through the design features developed for each alternative, as described in Appendix E).

4.1.1. Vegetation

The capability of the land to produce timber, high quality water, and forage would not be impaired by any the action alternatives. Silvicultural treatments would reduce competition and improve growth of individual trees, and maintain the health and vigor of timber stands, thus enhancing long-term productivity of the area. In the short-term, harvesting stands at high risk of mortality would utilize commercially valuable wood products that would otherwise not be used as forest products. Reforestation would contribute to maintaining these lands in a productive state.

Alternatives would make progress to ensure the long term productivity of the Beaver Creek Resource Area. Silvicultural treatments would reduce competition and improve growth of individual trees, and maintain the health and vigor of timber stands, thus enhancing long-term productivity of the area. In the short-term, harvesting stands at high risk of mortality would utilize commercially valuable wood products that would otherwise not be used as forest products. Reforestation would contribute to maintaining these lands in a productive state.
4.1.2. Fire/Fuels

Timber harvest could affect both short- and long-term fuel loading. Harvest moves unavailable canopy fuels (tops, stems, limbs, needles) into available surface fuels. The risk of a crown fire may be reduced, but the risk of surface fires could be increased. Proposed fuel treatments would reduce some ignition risk over time and improve our ability to control wildfires.

The action alternatives have the potential to aid in long-term productivity of sites as a result of the reduction in the potential impacts of a large wildfire. In the short term there would be effects from prescribed burning such as reddened trees and an immediate reduction in available browse, but all these affects are short term in nature.

4.1.3. Wildlife

The availability of various elements of wildlife habitat (such as stand structure, composition, and species-specific habitat elements) are dynamic and change over time. Appropriate scheduling of fuels reduction/silvicultural treatments and road improvement activities, as well as ongoing access management, can provide for and help sustain a mosaic of habitat conditions.

Under either alternative, there would be short-term effects to elk security during project activities, but both alternatives would reduce the total amount of roads in the resource area over time, providing for a long-term benefit in elk security.

4.1.4. Water Quality

The duration of effects of fuels reduction and silvicultural treatments on the water resource is highly variable and dependent on site-specific characteristics and features. Under the action alternatives, road construction, culvert replacement, and decommissioning may temporarily introduce a small amount of sediment into streams. The long-term benefits of culvert replacement and road decommissioning would reduce the amount of sediment reaching streams; over time increasing water quality and improving habitat conditions for fish. See the Hydrology Report (PF Doc. SR-03) and Fisheries Report (PF Doc. SR-04) for more information and sections 3.3 and 3.4 in Chapter 3.

4.2. Adverse Environmental Effects Which Cannot Be Avoided

Implementation of any of the alternatives would inevitably result in some adverse environmental effects. The severity of the effects of the action alternatives can be minimized by adhering to the features of the alternatives, such as Best Management Practices (see Appendices E and F for more information). If management activities occur, however, some effects cannot be avoided. Even the No Action Alternative has effects. See the individual resource discussions for detailed analyses of effects.

4.2.1. Hydrology

Road construction, reconstruction, and maintenance activities could create sediment that would reach some stream systems during the short term, but Best Management Practices, site-specific design criteria, and use of stream buffers would reduce the effects to a minimal level (see Appendices E and F).
4.2.2. Fish

During Aquatic Organism Passage (culvert) upgrade activities, a variety of fish species would most likely be displaced from the immediate area for a portion or the duration of the activities. After upgrades have occurred, there is the potential for increased competition or hybridization among native and non-native fish species.

4.2.3. Wildlife

During timber harvest and site-preparation activities a variety of wildlife species would most likely be displaced from the immediate area for a portion of or the duration of the activities. Prescribed burning that occurs in the spring may result in mortality to some species of nesting birds and small mammals.

The availability of various elements of wildlife habitat (such as stand structure, composition, and species-specific habitat elements) are dynamic and change over time. Consequently, wildlife populations associated with specific habitat conditions also change with time. Such changes can result in changes in local populations of specific species.

4.2.4. Recreation

Implementation of project activities would temporarily affect recreational users of the Beaver Creek Resource Area. Timber hauling has the potential to affect motorized vehicle use because users may encounter full size vehicles. Should winter hauling occur in the resource area there is the possibility that some of the groomed snowmobile trails could be partially plowed for timber haul. Additionally, project activities may impact the disabled hunting program on Road 1505.

4.2.5. Visual Resources

The introduction of timber harvest units would add a variety of line, form, color, and texture to the landscape. Forest users may see a modified forest in the foreground, middleground, and background where harvest and prescribed burning is implemented.

4.2.6. Soil Productivity

Compaction and displacement can affect soil physical, chemical and biological properties, which can indirectly affect growth and health of trees and other vegetation. Some soils could be compacted during timber harvest activities; however, none of the stands proposed for harvest activities would have compaction over Regional or Forest Plan standards.

4.2.7. Cultural Resources

There is no assurance that every cultural resource site would be located in advance of all planned management activities. Some ground-disturbing activity may affect an undiscovered historic or pre-historic site. Sites discovered in this manner would be immediately protected from further disturbances through project design features.
4.2.8. **Noxious Weeds**

Any activity has a risk of introducing and spreading weeds. Vehicle use and travel associated with timber harvest, road construction, and other activities can increase the risk of spread. Design features (Appendix E) would reduce but not eliminate the risk of weed spread from proposed activities.

4.2.9. **Air Quality**

Temporary seasonal effects on air quality are unavoidable under either of the action alternatives. Prescribed fire is an integral part of ecosystem management, fuel treatment, and site preparation for reforestation. Prescribed burning of slash and prescribed fires may cause a temporary reduction in air quality. The District will comply with procedures and requirements to limit smoke accumulations to legal, acceptable levels (Appendix B, Section B.6), and will schedule these activities when air dispersion is good.

4.3. **Irreversible and Irretrievable Commitments of Resources**

**Irreversible** commitments of resources describe the loss of future options; those apply primarily to effects of using nonrenewable resources such as minerals or cultural resources, or to factors such as soil productivity that are renewable only over long periods of time.

**Irretrievable** commitments are opportunities foregone, and represent tradeoffs in the use and management of Forest resources. Irretrievable commitments apply to the loss of production, harvest, or use of natural resources, such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line rights-of-way or road. The production loss is irretrievable, but the action is not irreversible (if the use changes, it is possible to resume production).

4.3.1. **Soil Productivity**

Permanent road construction (as proposed under Alternative 2) would cause irreversible effects to soil productivity, since there is removal of topsoil, and compaction. These sites can only be restored after a long period of time or after recontouring and revegetation of the road. Best management practices would be used to avoid soil productivity losses from timber harvesting and associated temporary road/skid trail construction. Temporary roads would constitute an irretrievable commitment of resources even though they would be recontoured. The soil mixing and disturbance that would be associated with temporary construction would lower soil productivity. Temporary roads constructed under Alternative 2 would be decommissioned following completion of timber harvest activities. While plant and tree growth on these sites would occur over the short term, full productivity recovery could take decades to hundreds of years.

Discussion of the effects of road construction on the soil resource can be found in Chapter 3 (Section 3.5) and in the Soils Report (PF. Doc. SR-05).
4.4. Other Required Disclosures

NEPA at 40 CFR 1502.25(a) directs “to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with …other environmental review laws and executive orders.”

4.4.1. Administration of the Forest Development Transportation System

A roads analysis has been prepared for the Beaver Creek in accordance with the Roads Policy at 36 CFR Part 212, published in the Federal Register on January 12, 2001 (PF Doc. TRANS-01).

4.4.2. Environmental Justice Act

Executive Order 12898 (issued in 1995) required federal agencies to conduct activities related to human health and the environment in a manner that does not discriminate or have the effect of discriminating against low-income and minority populations. Although low-income and minority populations live and recreate in the vicinity, activities under the Beaver Creek project would not discriminate against these groups. Based on the composition of the affected communities and the cultural and economic factors, there would be no adverse effects to human health and safety or environmental effects to low income, minority or any other segment of the population.

4.4.3. National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) directs all Federal agencies to take into account the effects of their undertakings (actions, financial support, and authorizations) on properties included in or eligible for the National Register. Advisory Council on Historic Preservation regulations at 36 CFR part 800 implement NHPA section 106.

An appropriate inventory has been conducted in the Beaver Creek Resource Area. The project has been designed (Appendix E, Section E.9) to avoid significant effects to components or features associated with cultural sites determined to be eligible for listing in the National Register of Historic Places (Appendix B, Section B.8). No known cultural resources would be adversely affected by this project. Any future discovery of cultural resource sites would be inventoried and protected if found to be of cultural significance (Appendix B, Section B.8).

Consultation with the State Historic Preservation Office has been completed as in accordance with the National Historic Preservation Act. For more information see the Cultural Resources section in Appendix B (Concerns Addressed but Not Analyzed in Detail) and project design features (Appendix E).
4.5. Possible Conflicts with Other Agency or Government Policies, Plans or Regulations

Public involvement and consultation efforts with other federal and state agencies and the Coeur d’Alene Tribe indicate no major conflicts between activities proposed in the Beaver Creek Resource Area and the policies, plans or regulations of other government entities.

4.5.1. Clean Water Act

Section 313 of the Clean Water Act requires Federal Agencies to comply with all Federal, State, interstate and local requirements, administrative authority, and process and sanctions with respect to the control and abatement of water pollution. Executive Order 12088 also requires the Forest Service to meet the requirements of the Act.

All action alternatives would comply with the Clean Water Act and Idaho State Water Quality Standards. These alternatives would incorporate reasonable Soil and Water Conservation Practices, avoid channel degradation, and comply with the Forest Plan.

For more information see the Specialist Reports on Hydrology (PF Doc. SR-03) and Fisheries (PF Doc. SR-04). The Inland Native Fish Strategy (INFS) standards and guidelines and the BMP (Best Management Practices) implemented with this project would protect floodplains and wetlands. For more information see Appendix F (Application of Soil and Water Conservation Practices).

4.5.2. Endangered Species Act

Effects to Threatened and Endangered wildlife, fish, and plant species as a result of implementing the alternatives (including No Action) have been considered and addressed (Sections 3.6, 3.4, and 3.7, respectively). A biological assessment will be prepared and submitted to the US Fish and Wildlife Service for concurrence according to the Endangered Species Act, to ensure protection of these species. For more information see the specialist reports on Wildlife (PF Doc. SR-06), Fisheries (PF Doc. SR-04), and TES Plants (PF Doc. SR-07).

4.6. Incomplete or Unavailable Information

4.6.1. Rare Plants

Effects to populations from disturbance events (natural or man-caused) are difficult to quantify with certainty for all Sensitive plant species and Forest Species of Concern. Specific knowledge of population ecology is lacking for several species addressed in this analysis, particularly the sensitive Moonworts (Botrychium spp.), pine broomrape, and phantom orchid. Much of the current knowledge regarding sensitive plant species is based on observational (non-empirical) and even anecdotal information. Recent literature and monitoring reports on several species including Moonworts (USDA 2005; PF Doc. TES-67), Deerfern (USDA 2003, PF Doc. TES-7), Clustered lady’s-slipper (Lichthardt 2003; PF Doc. TES-8), Henderson's sedge and Constance's bittercress (Lichthardt 1998; PF Doc. TES-9) and Idaho barren strawberry (Crawford 1980, PF Doc. TES-10), provide a greater understanding of the relationship of natural and management related habitat disturbance to the persistence of these species.
For unsurveyed habitat that is highly suitable to support Sensitive plants, presence is assumed. This applies to the portion of Alternative 2 activity areas in suitable TES plant habitat that have not been field surveyed.

Protection of large occurrences and contiguous, unoccupied highly suitable habitat is assumed to be an effective conservation strategy (Burgman, et al 2001, PF Doc. TES 37). Examples of conservation strategies for Region 1 include Lichthardt, 1992 (PF Doc. TES-38), Lichthardt 2003 (PF Doc. TES-8), and Lorain, 1991 (PF Doc. TES-39a). As described in Features Designed to Protect TES Plants (Appendix E), populations would be protected, while some isolated individuals may be impacted by activities.