

Appendix 1. Existing vs. Desired Condition of the Project Area

Forested Vegetation

Historically, wildfire disturbances helped shape forested landscapes across the Project area. Decades of fire exclusion, forest management, insect outbreaks, and other factors have substantially altered forest structures, especially in the low- to-mid-elevation ponderosa pine forest that comprise about 65 percent of the forested acres in the project area.

The discrepancies between the current and desired vegetative conditions include forested conditions with:

- Less large tree size class than desired;
- More canopy cover than desired, and
- Less of an early seral species (i.e. - ponderosa pine and western larch) component than desired.

These differences can generally be attributed to past fire suppression and timber management practices and are similar to the trends identified in the analysis at the Forest-wide scale completed for the draft WCS

Vegetation within the project area is comprised of both forested and non-forested vegetation types. Table 1 identifies the amount of different groups of vegetation in the project area. The classification system utilized in the Forest Plan is Potential Vegetation Groups (PVGs). An explanation and definitions of PVG can be found in Appendix A of the Forest Plan and in the draft Wildlife Conservation Strategy (USDA Forest Service 2011).

Table 1. Project Area Potential Vegetation Groups

Potential Vegetation Group	Acres within Project Area	Percent of Project Area
PVG 1—Dry Ponderosa Pine/Xeric Douglas-fir	1,705	2%
PVG 2—Warm Dry Douglas-fir/Moist Ponderosa Pine	14,187	18%
PVG 3—Cool Moist Douglas-fir	14	<1%
PVG 4—Cool Dry Douglas-fir	0	0%
PVG 5—Dry Grand Fir	12,770	16%
PVG 6—Cool Moist Grand Fir	26,256	33%
PVG 7—Warm Dry Subalpine Fir	7,343	9%
PVG 8—Warm Moist Subalpine Fir	686	1%
PVG 9—Hydric Subalpine Fir	785	1%
PVG 10—Persistent Lodgepole Pine	883	1%
PVG 11—High Elevation Subalpine Fir	8	<1%
Grassland/Shrubland	13,243	17%
Other ¹	715	1%
Project Area Total	78,596	

1 – Other is barren and water

Tables 2-4 display the differences in forested areas by Potential Vegetation Group (PVG) for tree size class, canopy closure and species composition based on the desired conditions specified in the Forest Plan and the science in the draft WCS. An explanation and definitions of desired tree size class, desired canopy closure and desired species composition can be found in Appendix A of the Forest Plan and in the draft WCS. Only PVGs 2, 5, and 6 are displayed as they account for 82 percent of the forested area in the project area and comprise the forest types that are most departed from historical conditions. PVG 1 values are not displayed because insufficient acres are present in the project area to conduct a meaningful analysis of this PVG and the general trends from forest level data indicate that the discrepancies between current and desired conditions for PVG 1 are similar to those of PVG 2.

Table 2. Current versus Desired Tree Size Class¹

Tree Size Class	Acres by PVG (percentage in parenthesis)					
	PVG 2		PVG 5		PVG 6	
	<i>Desired</i>	<i>Existing</i>	<i>Desired</i>	<i>Existing</i>	<i>Desired</i>	<i>Existing</i>
GFSS (<4.5 feet tall)	567-709 (4-5)	71 (1)	383-511 (3-4)	38 (0)	1837-2100 (7-8)	216 (1)
Saplings (0.1–4.9" DBH)	426-993 (3-7)	64 (1)	383-894 (3-7)	47 (0)	1837-2363 (7-9)	231 (1)
Small (5.0-11.9" DBH)	709-2979 (5-21)	2720 (19)	511-2809 (4-22)	1240 (10)	2888-7089 (11-27)	7068 (27)
Medium (12.0–19.9" DBH)	993-4965 (7-35)	8135 (57)	894-3831 (7-30)	5003 (39)	4726-9452 (18-36)	10148 (39)
Large (≥20" DBH)	8370-11350 (59-80)	3252 (23)	8428-10727 (66-84)	6471 (51)	7352-14703 (28-56)	8663 (33)

1 – Desired values are derived from the Payette Forest Plan and the draft Wildlife Conservation Strategy.

Table 3. Current versus Desired Canopy Closure in Large Tree Size Class stands¹

Canopy Cover (CC)	Acres by PVG (percentage in parenthesis)					
	PVG 2		PVG 5		PVG 6	
	<i>Desired</i>	<i>Existing</i>	<i>Desired</i>	<i>Existing</i>	<i>Desired</i>	<i>Existing</i>
Low (10-39% CC)	1,984-2,634 (61-81)	304 (9)	1618-2912 (25-45)	893 (14)	0-1,733 (0-20)	196 (2)
Moderate (40-69% CC)	618-1,268 (19-39)	2,488 (77)	3,559-4,853 (55-75)	3,448 (53)	6,930-8,663 (80-100)	5,402 (62)
High (≥70% CC)	0 (0)	459 (14)	0 (0)	2,130 (33)	0 (0)	3,065 (35)

1 – Desired values are derived from the Payette Forest Plan and the draft Wildlife Conservation Strategy.

Table 4. Current versus Desired Species Composition^{1,2}

Species ³	PVGs (%)					
	2		5		6	
	<i>Desired</i>	<i>Existing</i>	<i>Desired</i>	<i>Existing</i>	<i>Desired</i>	<i>Existing</i>
Aspen	⁴ <i>T</i>	-	<i>T</i>	-	<i>T</i>	-
Lodgepole Pine	<i>T</i>	-	<i>T</i>	-	1-5%	-
Ponderosa Pine	81-87%	54%	80-88%	21%	23-41%	22%
Whitebark Pine	-	-	-	-	-	-
Western larch	-	-	0-1%	-	15-29%	-
Douglas-fir	10-16%	28%	7-17%	33%	15-25%	33%
Engelmann spruce	-	-	<i>T</i>	-	0-2%	-
Grand fir	-	14%	0-1%	33%	9-23%	33%
Subalpine fir	-	-	-	-	0-3%	-
⁵ OTHER	-	4%	-	13%	-	13%

1 – Desired values are derived from the Payette Forest Plan and the draft Wildlife Conservation Strategy.

2 – For project purposes the desired species composition should be based on species composition of the habitat types present within the analysis area.

3 - Denotes average species compositions for all habitat types. Desired compositions will be based on site specific habitat type information.

4 – T = Trace

5 – OTHER is not a “desired condition”, but depicts how the Working Group information is grouped.

Fire and Fuels

Decades of commercial timber harvests have removed the larger and more fire-resilient tree species (such as ponderosa pine and western larch), favoring species that are less fire-resilient (grand fir). Fire suppression has led to a buildup of ground, surface, and canopy fuels and favored the maturation of less fire-resilient species. Recurrent commercial harvests, fire suppression, and grazing have led to:

- An increase in canopy densities;
- A decrease in canopy base heights (height to live crown);
- A change in species composition from a majority of more fire-resilient to less fire-resilient tree species;
- An increase in ground and surface fuels.

As a result, vegetation and fuel conditions are outside the historic range of natural conditions. Historically the drier forest types (PVGs 1, 2, and 5) of the project area consisted of a diverse understory of grasses, forbs, and low shrubs with a large-diameter fire-resilient overstory. This condition was maintained over time by frequent low-intensity fires. The moister, mixed severity fire regimes of PVGs 3, 4, 6, 7, and 11 occurred in the Douglas-fir, grand fir, and white bark pine communities.

Table 5. Departure from Historic Fire Return Interval.

Historic Fire Regimes	PVGs	Acres	Range of Historic Fire Return Intervals (years)	Average Historic Fire Return Intervals (years)	Missed Intervals
Non-Lethal	1, 2, 5, 99 ¹	41,905	5-25	15	6.8
Mixed Severity I	3, 4, 6	26,270	5-70	37.5	2.7
Mixed Severity II	7, 11	7,351	70-300	185	0
Stand Replacement	8,9, 10	2,354	100-400	250	0

Note: It has been assumed that non-forested (grass/shrub) has a fire frequency equivalent to PVGs 1, 2, and 5 (Non-Lethal and Mixed Severity I Fire Regimes). Range of Historic Fire Return Intervals taken from information in Appendix A of the Draft WCS, Payette NF. ¹99 is not a PVG, but denotes grassland/shrubland.

Due to suppression efforts the project area has not experienced many significant wildfires event in the last decade. The largest wildfire on record, the Wesley Fire, occurred in 2012 and grew to 16,405 acres; only 5,522 acres were within the Lost Creek-Boulder Creek project area. The North Star Butte Fire occurred in 2004 and grew to 1,330 acres, 1,030 acres within the project area. The other two fires, Rock Jack in 1996, and Sale in 1989 were 117 acres and 28 acres respectively. Records show that the project area experienced 364 fire starts from 1956 to 2009, an average of seven fire starts per year. These fires were a tenth of an acre or less.

Approximately 87 percent of the acres in the project area have missed two or more fire return intervals. The extent to which a system has departed from historic conditions influences the extent to which key ecosystem components, critical to the integrity of the ecosystem, are altered. Many of the Non-lethal and Mixed-Severity I Fire Regimes acres have transitioned to Mixed-Severity II and Stand Replacement Regimes in the project area. This is consistent with the research by Sanders (1997), and Barrett (1987, 1994, 2000) on the Payette indicating a shift in the fire regimes.

This shift in fire regimes indicates that a higher percentage of the project area acres would likely burn at higher severities as well as larger patch sizes given a wildfire event. Uncharacteristic fire effects threaten desirable plant communities, ecological processes and the ability to protect life, investments, and other valuable resources.

Soil and Water

The 2003 Payette Forest Plan and the Watershed Condition Framework Categorization process in 2011 developed reference condition values of ecological indicators, or WCIs, which are useful as diagnostic tools to assist in comparing and evaluating current soil, water, riparian, and aquatic conditions. WCIs provide a means for assessing how management actions may potentially influence the condition and trend of aquatic resources, including threatened, endangered, proposed, and candidate (TEPC) fish species, soil, water, and riparian resources. The Forest Plan identified a restoration priority and type for each subwatershed. Three subwatershed condition classes were recognized by the WCF directly related to the degree or level of watershed functionality or integrity. Subwatersheds are identified as Impaired (class 3) because some physical, hydrological, or biological threshold has been exceeded. Substantial changes to the factors that caused the degraded state are commonly needed to set them on a trend or trajectory of improving conditions that sustains physical, hydrological, and biological integrity. By contrast, a Class 1 watershed in properly functioning condition has minimal undesirable human impact on natural, physical, or biological processes and is resilient and able to recover to the desired condition when disturbed by large natural disturbances or land management activities.

Current Condition

The Watershed Condition Framework identifies the desired condition for Watershed Condition Indicators (WCIs) at the subwatershed scale. Many of WCIs are Impaired or Functioning at Risk categories.

Many subwatersheds have road densities that are contributing to reductions in long-term soil productivity, road-related sediment contributing to stream channels, negative effects to floodplains and riparian conservation areas (RCAs), and changes to hillslope hydrology due to the intersection of subsurface water by cutslopes. Effects to channel stability, peak flows, and stream channel resiliency are likely due to past harvest, livestock grazing, and roads.

Table 6. Subwatershed WCI Rating and Restoration Priority

Subwatershed or drainage (as identified by 2003 Forest Plan)	2003 Payette Forest Plan Restoration Type/Priority	Watershed Condition Framework Rating ¹ (as identified by subwatershed)
Upper West Fork Weiser River	Active/Moderate	Impaired (Class 3)
Lower West Fork River	Active/Moderate	Functioning at Risk (Class 2)
Upper Lost Creek	Active/Low	Impaired (Class 3)
Lower Lost Creek	Active/Moderate	
Upper Weiser River (East and West Branches)	Active/Low	Impaired (Class 3)
Lower Boulder Creek	Active/High Identified Priority Watershed	Impaired Identified Priority Watershed (Class 3)
Upper Boulder Creek	Active/High Identified Priority Watershed	

Aquatic Organism Passage (AOP), especially in the Boulder Creek subwatershed, (which is an ACS priority watershed), has been surveyed and important passage barriers have been 16 road-stream crossings have been identified in the Boulder Creek subwatershed which is occupied by ESA listed fishes or in Designated Critical Habitat (DCH). Outside of the Boulder Creek subwatershed, an additional 24 road-stream crossings have been identified as not meeting requirements for AOP in the Lost Creek, Upper West Fork Weiser River and Upper Weiser River subwatersheds.

Desired Condition

The desired condition within the project area for soil, water, riparian, and aquatic resources is to improve overall watershed functionality and integrity. This would include reducing sediment and other ecological effects from roads, improving stream bank stability and resiliency, improving aquatic organism and fish passage at road-stream crossings, improving long-term soil productivity, and improving riparian vegetation and floodplain function.

Wildlife Habitat

Changes in forested conditions, fire regimes, and the presence of roads have altered wildlife habitats. Some modifications to habitat have led to the federal listing of terrestrial wildlife species such as northern Idaho ground squirrel (NIDGS). The subspecies declined from an estimated 5,000 individuals in 1985, to less than 1,000 by 1998, when it was listed under the Endangered Species Act. This species listing and precipitous declines in other habitats led to the development of the Forest's Wildlife Conservation Strategy (WCS) including proposed amendments to Forest Plan direction. The Plan revisions are currently in draft stage, but the science behind the revisions also drives the purpose and need for this project. A primary need Forest-wide and in the project area is to maintain and promote dry, lower elevation, large tree and old forest habitats for the associated wildlife species and reduce road densities and fragmentation that negatively affect elk and other Forest species of concern. The processes, function, patch size and diversity of forested habitats must all be considered in order to properly address wildlife habitat needs.

Appendix 2. Northern Idaho Ground Squirrel Emphasis Areas

Background and Direction for Northern Idaho Ground Squirrel Treatments

The following proposal was developed based on the NIDGS Recovery Plan and NIDGS Technical Working Group recommendations. The US Fish and Wildlife Service NIDGS Recovery Plan States (p. 23):

Restore and Maintain Habitat

Thinning, burning, reseeding, and other measures are necessary management tools for habitat restoration and maintenance. Site-specific habitat management plans for primary metapopulation sites will need to be completed within 2 years of this Recovery Plan, and as stipulated by the Payette National Forest in their Land and Resource Management Plan. The following management tools and sociological considerations should be used to create the habitat at appropriate stages of ecological succession:

Development of site-specific management plans for primary metapopulation sites

- Consider compatible human uses;
- Assess potential forestry practices;
- Conduct plant community composition analysis

Restoration of habitat

- Thinning and burning (i.e., treatments from East Fork Lost Creek NIDGS, etc.)
- Reseeding with native grass and forb species;
- Livestock management

Maintenance of appropriate habitat

- Prescribed burning at site-specific intervals;
- Vegetation management (*e.g.*, noxious weed control);
- Grazing regimes appropriate to each site

Priority areas for NIDGS emphasis treatment have been developed and divided into two types. Priority one (P1) areas are areas within ¼ mile of occupied habitat and within USFWS recovery plan metapopulation areas. Priority two (P2) areas are based on potential habitat that could link metapopulations to increase and maintain genetic diversity within the known populations. Approximately 12,100 acres of P1 and 11,600 acres of P2 areas have been identified.

Within the P1 areas, approximately 4,900 acres of mechanical treatments are proposed. Within these NIDGS priority areas, the objective of these treatments would be as described in the Vegetative Treatments section of this document. The treatment objectives should be designed to move toward the desired conditions specified in Appendix A of the Forest Plan. The following additional direction should be applied to treatments in the NIDGS priority areas.

NIDGS objectives in P1 areas

1. Prioritize the timing of treatments in these areas to be as soon as practical (i.e. treat these areas first).

2. Manage areas immediately adjacent to occupied sites toward the low end of desired canopy closures (i.e. – average canopy closures should typically be between 15-30 percent in these areas).
3. Emphasize forage production for NIDGS. This can typically be accomplished by managing for frequent (return interval 3-7 years), low intensity disturbance (i.e. – prescribed fire).
4. Identify potential corridors for connecting occupied sites. Manage portions of these stands to encourage dispersal and exchange of individuals. (i.e. – reduce canopy closure to near 10-20 percent mostly in PVG 2, but sometimes in PVG 5 in corridor areas). Work with wildlife staff (utilizing NIDGS Recovery Plan and NIDGS technical team recommendations) to determine appropriate corridor location and spatial arrangement.

NIDGS objectives in P2 areas

1. Identify suitable habitat within one quarter mile of known populations and treat to improve habitat.
2. Encourage geographic growth of metapopulations toward other known populations and high quality habitat.
3. Treatments in currently unoccupied habitat should be designed to achieve low to moderate canopy closure.

Appendix 3. Riparian Conservation Area Treatments

Delineation of Riparian Conservation Areas

Riparian Conservation Areas (RCAs) are stream and wetland protection zones delineated for the protection of riparian-dependent resources. Management activities are subject to specific Forest Plan goals, objectives, standards, and guidelines. RCAs include traditional riparian corridors, perennial and intermittent streams, wetlands, lakes, springs, reservoirs, and other areas where riparian functions and ecological processes are crucial to maintenance of the area's water quality, sediment regime, large woody debris, nutrient delivery system, and associated biotic communities and habitat.

The Forest Plan (Appendix B) outlines criteria to aid delineation of RCAs for perennial and intermittent streams, ponds, lakes, reservoirs, and wetlands (USDA Forest Service 2003). The RCAs within the project area have been identified utilizing Option 2 (Forest Plan page B-34) delineation method. Forest Plan Option 2 provides a more specific delineation of an RCA boundary using site potential tree heights.

For this project, field reconnaissance and stand exam data has indicated that PVG 2, 5, and 6 are the dominant PVGs in forested areas within the proposed activity units in the project area. RCA widths in forested areas will be based on the more conservative PVG 2 and 6 potential tree heights (Forest Plan page B-36) which are displayed in the following table:

	RCA width
<i>Perennial Forested Streams (and intermittent streams providing seasonal rearing and spawning habitat)</i>	240 feet (two site-potential tree heights) from the ordinary high water mark
<i>Intermittent Forested Streams</i>	120 feet (one site-potential tree height) from the ordinary high water mark
<i>Ponds, Lakes, Reservoirs, and Wetlands</i>	120 feet (one site-potential tree height) from the ordinary high water mark
<i>Non Forested Streams (perennial and intermittent)</i>	The extent of the flood prone width, or riparian vegetation, whichever is greater.

The current model identifies 16,250 acres within RCAs in the project area. Actual buffers would be delineated using more detailed field reconnaissance. Based on other projects, additional RCAs are typically discovered during layout and implementation of project activities. The increase in RCAs acres is generally an additional 15 to 30 percent.

Need for Treatment

Initial project area analysis indicates that approximately 12,600 acres of vegetative treatments (i.e. thinning and prescribed burning) in the RCAs would need to be completed to move toward or maintain desired vegetative conditions as specified in the Forest Plan (Appendix A). This initial review indicated that approximately 6,100 acres of mechanical treatments in RCAs would aid in improving or maintaining the desired vegetative conditions. The other 6,500 acres would need to have prescribed fire applied to maintain the desired conditions. Based on other resource concerns and management direction provided in the Forest Plan, a closer look at proposed treatments in RCAs has been taken to develop a

proposal that is sensitive to aquatic resource concerns and consistent with management direction, including Appendix B of the Forest Plan and the Aquatic Conservation Strategy.

Proposed Treatments in RCAs

Based on the purpose of the project and need to treat vegetation in RCAs, both mechanical and prescribed fire treatments are proposed in the RCAs.

Commercial Thin

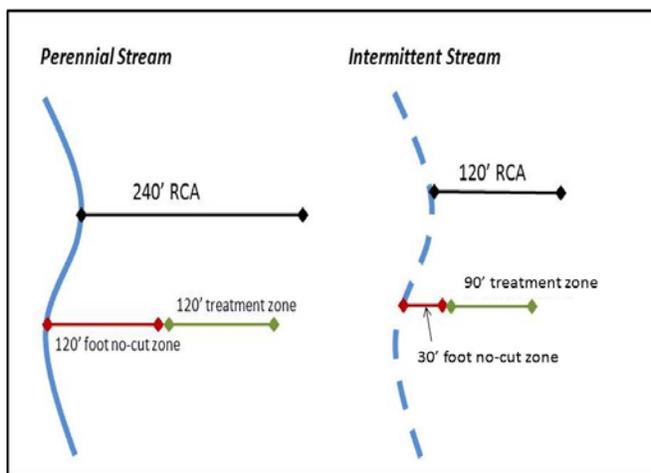
The intent of these treatments is to move upland vegetation within RCAs toward the desired conditions in the Forest Plan while ensuring that attainment of soil, water, riparian and aquatic desired conditions are neither degraded nor retarded. All RCA treatments would apply only to upland vegetation that occurs within the outer portion of a RCA, not to riparian vegetation (i.e. – willow, spruce). This action, on a site specific basis, is consistent with direction for upland vegetation desired conditions and RCAs in the Forest Plan Appendix A and B (USDA Forest Service 2003).

Treatments would be limited to thinning where at least 30 percent canopy closure would be retained and would be developed in consultation with the district fish biologist and/or hydrologist to ensure streambank stability, ground cover and floodplain width are considered and riparian function is maintained.

In portions of RCAs where it would not be feasible or unacceptable affects to the riparian functions and ecological processes described in the Forest Plan (page B-37) are anticipated the unit (or portion of) would be excluded from treatment.

Generally, mechanical disturbance in RCAs would be avoided. Due to the unique nature of each RCA, a map and description of the layout of the RCA portion of the unit would be provided to the District fisheries biologist, hydrologist, or hydrologic technician for field verification of the RCA treatment areas. A site specific plan would need to be approved by a District hydrologist and fisheries biologist prior to implementation, the following guidelines would generally be used for RCA treatment layout and implementation:

Figure 1. RCA Treatments



1. Only upland vegetation in the outer portion of the RCA would be treated (see Figure 1).
2. On intermittent streams, thinning and limited equipment use could only occur in the outer 90 feet of the RCA. Generally, no cutting of vegetation within 30 feet of the stream (Figure 1).

3. On perennial streams, thinning and limited equipment use could only occur in the outer 120 feet of the RCA. Generally, no cutting of vegetation within 120 feet of the stream (Figure 1).
4. No harvesting would be allowed in the no-cut zones. Cutting of trees within the no-cut zone may be approved in rare instances on a case by case basis but no removal of material would be permitted.
7. If unidentified RCAs are discovered during layout or implementation, they may be treated if: 1) they meet intent of RCA treatments; 2) all project design features and restrictions can be adhered to; and 3) they meet the following criteria:
 - a) They fall outside of the Boulder Creek drainage and the Pony Creek RNA;
 - b) The area is proposed for treatment but was identified during the layout/implementation phase of the project;
 - c) In PVG 1 and 2 – the existing canopy closure of forested areas within the stand is greater than 65 percent.
 - d) In PVG 5 and 6 – the existing canopy closure of the stand is greater than 70 percent.

Non-Commercial Thinning

Non-commercial thinning would be permitted within RCAs in all watersheds except Boulder Creek. Non-commercial thinning would not be allowed within 30 feet of stream channels or within 30 feet of riparian vegetation (i.e. spruce, willows).

Prescribed Fire Treatments

In order to protect and enhance riparian vegetation fire would not be directly applied within 120 feet of stream channels (perennial and intermittent) within Boulder Creek watershed or within 30 feet of stream channels (perennial or intermittent) within other watersheds in the project area. When applying fire within RCAs, no fire would be directly applied to riparian vegetation (e.g., spruce, willows). Fire within the RCAs would create a mosaic burn pattern.

